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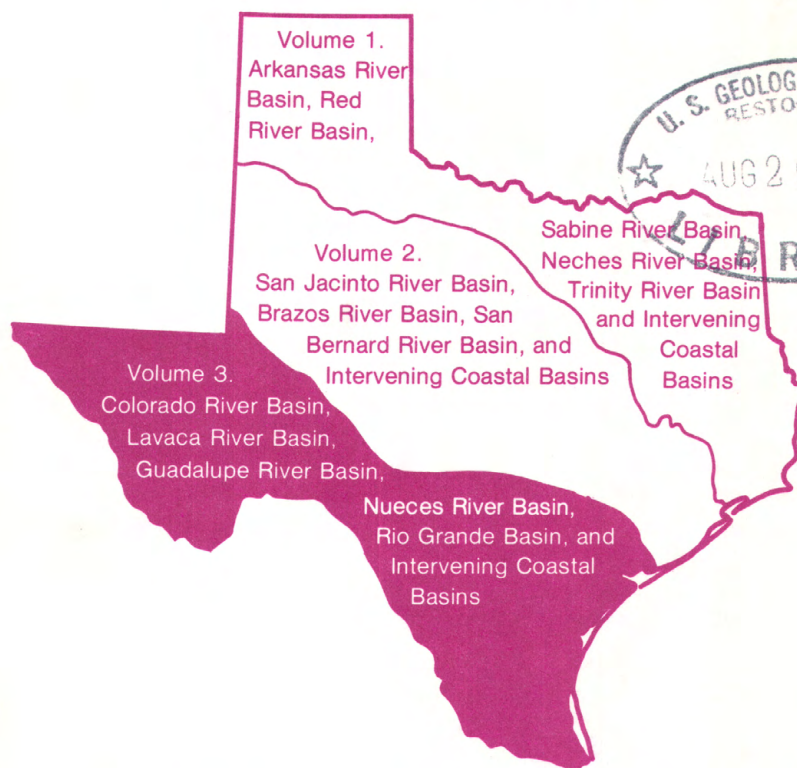


Samples

Water Resources Data Texas

Water Year 1989

Volume 3. Colorado River Basin, Lavaca River Basin,
Guadalupe River Basin, Nueces River Basin,
Rio Grande Basin, and Intervening Coastal Basins



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT TX-89-3
Prepared in cooperation with the State of Texas
and with other agencies

CALENDAR FOR WATER YEAR 1989

1988

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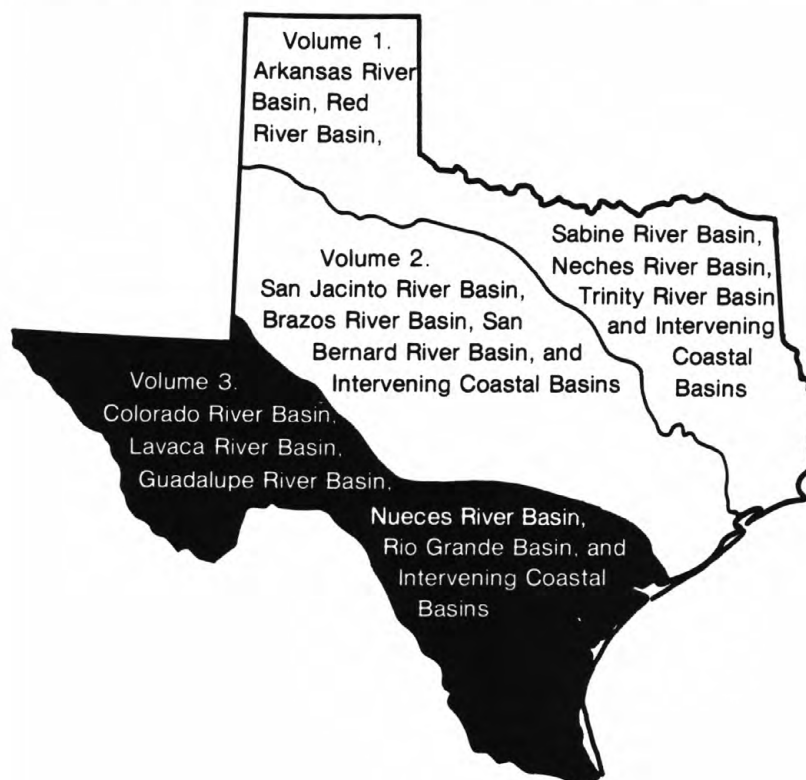
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Water Resources Data Texas Water Year 1989

Volume 3. Colorado River Basin, Lavaca River Basin,
Guadalupe River Basin, Nueces River Basin,
Rio Grande Basin, and Intervening Coastal Basins

by H.D. Buckner, W.J. Shelby, and H.J. Davidson



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT TX-89-3
Prepared in cooperation with the State of Texas
and with other agencies

UNITED STATES DEPARTMENT OF THE INTERIOR

MANUEL LUJAN, JR., Secretary

GEOLOGICAL SURVEY

Dallas L. Peck, Director

For additional information write to:
District Chief, Water Resources Division
U.S. Geological Survey
8011A Cameron Rd.
Austin, Texas 78753

1990

Preface

This volume of the annual hydrologic data report of Texas is one of a series of annual reports that document hydrologic data gathered from the U.S. Geological Survey's surface- and ground-water data-collection networks in each State, Puerto Rico, and the Trust Territories. Records of streamflow and quality-of-water data required to provide the hydrologic information needed by State, local and Federal agencies, and the private sector for developing and managing land and water resources in Texas are contained in 3 volumes:

- Volume 1. Arkansas River Basin, Red River Basin, Sabine River Basin, Neches River Basin, Trinity River Basin, and intervening and adjacent Coastal Basins
- Volume 2. San Jacinto River Basin, Brazos River Basin, San Bernard River Basin, and intervening Coastal Basins
- Volume 3. Colorado River Basin, Lavaca River Basin, Guadalupe River Basin, Nueces River Basin, Rio Grande Basin, and intervening Coastal Basins

This report is the culmination of a concerted effort by dedicated personnel of the Texas District, U.S. Geological Survey, who collected, compiled, analyzed, verified, and organized the data, typed, edited, and assembled the report, and who assured that the information contained here is accurate, complete, and adheres to Geological Survey policy and established guidelines.

This report was prepared in cooperation with the State of Texas and other agencies under the supervision of C. R. Burchett, District Chief.

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4. Title and Subtitle Water Resources Data for Texas, Water Year 1989, Volume 3; Colorado River, Lavaca River, Guadalupe River, Nueces River, Rio Grande basins and Intervening Coastal basins		5. Report Date May 1990		6.
7. Author(s)		8. Performing Organization Rept. No. USGS-WDR-TX-89-3		
9. Performing Organization Name and Address U.S. Geological Survey, Water Resources Division 8011 Cameron Road, Building 1 Austin, TX 78753		10. Project/Task/Work Unit No.		
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		14.		
15. Supplementary Notes Prepared in cooperation with the State of Texas and with other agencies				
16. Abstract (Limit 200 words) Surface-water data for the 1989 water year for Texas are presented in three volumes, appropriately identified as to content by river basins. Data in each volume consist of records of stage, discharge, and water quality of streams and canals; and stage, contents, and water quality of lakes and reservoirs. Also included are crest-stage and flood-hydrograph partial-record stations, reconnaissance partial-record stations, and low-flow partial-record stations. Additional water data were collected at various sites, not part of the systematic data-collection program, and are published as miscellaneous measurements. 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 U.S. Geological Survey and cooperating State and Federal agencies in Texas.				
17. Document Analysis - a. Descriptors *Texas, *Hydrologic data, *Surface water, *Water quality, Flow rate, Gaging stations, Lakes, Reservoirs, Chemical analyses, Sediments, Water temperatures, Sampling sites, Water analyses				
b. Identifiers/Open-Ended Terms				
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CONTENTS

	Page
Preface.....	iii
List of gaging stations, in downstream order, for which records are published.....	v
Introduction.....	1
Cooperation.....	2
Hydrologic conditions.....	3
Streamflow.....	3
Water quality.....	5
Special networks and programs.....	7
Explanation of the records.....	8
Station identification numbers.....	8
Downstream order numbering.....	8
Records of stage and water discharge.....	9
Data collection and computation.....	9
Data presentation.....	11
Identifying estimated daily discharge.....	13
Accuracy of the records.....	13
Other records available.....	14
Records of surface-water quality.....	14
Classification of records.....	14
Arrangement of records.....	15
On-site measurements and sample collection.....	15
Water temperature.....	16
Sediment.....	16
Laboratory measurements.....	16
Data presentation.....	17
Remark codes.....	18
Access to WATSTORE data.....	18
Definition of terms.....	19
Publications of techniques of water-resources investigations.....	31
Gaging-station records.....	33
Discharge at partial-record stations and miscellaneous sites.....	417
Low-flow partial-record stations.....	417
Crest-stage partial-record stations.....	419
Discharge measurements at miscellaneous sites.....	421
Index.....	423

ILLUSTRATION

Figure 1. Area of Texas covered by volume 3 and location of selected streamflow and water-quality stations in volume 3.....	4
2. Comparison of monthly mean discharge at four long-term representative gaging stations during the 1988 water year with median of the monthly mean discharge for the period 1951-80.....	6

GAGING STATIONS, IN DOWNSTREAM ORDER,
FOR WHICH RECORDS ARE PUBLISHED

	Page
WESTERN GULF OF MEXICO BASINS	
COLORADO RIVER BASIN	
Colorado River near Gail.....	33
Colorado River near Ira.....	34
Colorado River near Cuthbert.....	35
Colorado River at Colorado City.....	39
Morgan Creek:	
Lake Colorado City near Colorado City.....	43
Beals Creek near Westbrook.....	44
Colorado River above Silver.....	52
E.V. Spence Reservoir near Robert Lee.....	58
Colorado River at Robert Lee.....	59
Colorado River near Ballinger.....	60
Elm Creek at Ballinger.....	64
South Concho River (head of Concho River):	
South Concho River at Christoval.....	67
Middle Concho River above Tankersley.....	68
Spring Creek above Tankersley.....	69
Dove Creek at Knickerbocker.....	70
Twin Buttes Reservoir near San Angelo.....	71
South Concho River:	
Lake Nasworthy near San Angelo.....	72
South Concho River:	
North Concho River near Carlsbad.....	73
O.C. Fisher Lake at San Angelo.....	74
North Concho River at San Angelo.....	75
Concho River at San Angelo.....	76
Concho River at Paint Rock.....	77
Colorado River near Stacy.....	81
Colorado River at Winchell.....	85
Pecan Bayou:	
Jim Ned Creek:	
Hords Creek:	
Hords Creek Lake near Valera.....	86
Hords Creek near Valera.....	87
Pecan Bayou near Mullin.....	88
San Saba River at Menard.....	91
San Saba River near Brady.....	92
San Saba River at San Saba.....	93
Colorado River near San Saba.....	94
Lake Buchanan near Burnet.....	98
Colorado River:	
Llano River near Junction.....	99
Llano River near Mason.....	100
Beaver Creek near Mason.....	101
Llano River at Llano.....	102
Sandy Creek near Kingsland.....	103
Pedernales River near Fredericksburg.....	104
Pedernales River near Johnson City.....	105
Lake Travis near Austin.....	106
Colorado River below Mansfield Dam, Austin.....	107
Bull Creek at Loop 360 near Austin.....	109
Lake Austin at Austin.....	111
Colorado River (Town Lake):	
Barton Creek at State Highway 71 near Oak Hill.....	118
Barton Creek at Lost Creek Boulevard, Austin.....	120
Barton Creek at Loop 360, Austin.....	123
Barton Springs at Austin.....	125
Barton Creek below Barton Springs at Austin.....	128
Shoal Creek at 12th Street, Austin.....	129
Town Lake at Austin.....	131
Colorado River at Austin.....	141
Walnut Creek at Webberville Road, Austin.....	145
Colorado River below Austin.....	148
Union Creek near Driftwood.....	149
Bear Creek below Farm Road 1826 near Driftwood.....	151
Slaughter Creek at Farm Road 1826 near Austin.....	153
Williamson Creek at Oak Hill.....	155
Union Creek at U.S. Highway 183 near Austin.....	158
Colorado River at Bastrop.....	159

GAGING STATIONS, IN DOWNSTREAM ORDER,
FOR WHICH RECORDS ARE PUBLISHED

vii

	Page
WESTERN GULF OF MEXICO BASINS--Continued	
COLORADO RIVER BASIN--Continued	
Colorado River above LaGrange.....	168
Cummins Creek:	
Redgate Creek near Columbus.....	169
Colorado River at Columbus.....	170
Colorado River at Wharton.....	171
Colorado River near Bay City.....	175
TRES PALACIOS RIVER BASIN	
Tres Palacios River near Midfield.....	176
LAVACA RIVER BASIN	
Lavaca River at Hallettsville.....	177
Lavaca River near Edna.....	178
Navidad River near Hallettsville.....	181
Navidad River near Speaks.....	182
Sandy Creek near Louise.....	183
Mustang Creek:	
West Mustang Creek near Ganado.....	185
Lake Texana near Edna.....	187
GARCITAS CREEK BASIN	
Garcitas Creek near Inez.....	193
PLACEDO CREEK BASIN	
Placedo Creek near Placedo.....	194
GUADALUPE RIVER BASIN	
Guadalupe River:	
North Fork Guadalupe River near Hunt.....	195
Guadalupe River at Hunt.....	196
Johnson Creek near Ingram.....	197
Guadalupe River at Kerrville.....	198
Guadalupe River at Comfort.....	199
Guadalupe River near Spring Branch.....	200
Canyon Lake near New Braunfels.....	201
Guadalupe River at Sattler.....	202
Guadalupe River above Comal River at New Braunfels.....	203
Comal River at New Braunfels.....	204
Guadalupe River below New Braunfels.....	205
San Marcos River spring flow at San Marcos.....	207
Blanco River at Wimberley.....	208
Blanco River near Kyle.....	211
San Marcos River at Luling.....	212
Plum Creek at Lockhart.....	214
Plum Creek near Luling.....	215
Sandies Creek near Westhoff.....	216
Guadalupe River at Cuero.....	218
Guadalupe River at Victoria.....	219
Coleta Creek:	
Fifteenmile Creek near Weser.....	222
Coleta Creek at Arnold Road Crossing near Schroeder.....	223
Coleta Creek Reservoir inflow (Guadalupe Diversion) near Schroeder...	224
Perdido Creek at Farm Road 622 near Fannin.....	225
Coleta Creek Reservoir (Condenser No. 1) near Fannin.....	226
Coleta Creek Reservoir near Victoria.....	228
Coleta Creek Reservoir (Outflow) near Victoria.....	229
Coleta Creek near Victoria.....	231
San Antonio River:	
Olmos Creek at Dresden Drive, San Antonio.....	232
Olmos Reservoir at San Antonio.....	234
San Antonio River at Hildebrand Avenue, San Antonio.....	236
San Antonio River at Woodlawn Avenue, San Antonio.....	238
San Antonio River at San Antonio.....	239
San Antonio River at Loop 410 at San Antonio.....	242
Salado Creek (upper station) at San Antonio.....	243
Salado Creek (lower station) at San Antonio.....	246
Medina River at Bandera.....	256
Medina Lake near San Antonio.....	259
Diversion Lake:	
Medina Canal near Riomedina.....	260
Medina River at La Coste.....	261
Medina River near Macdona.....	270
Medio Creek at Pearsall Road at San Antonio.....	271

	Page
WESTERN GULF OF MEXICO BASINS--Continued	
GUADALUPE RIVER BASIN--Continued	
Guadalupe River:	
San Antonio River:	
Medina River near Somerset.....	280
Culebra Creek:	
Helotes Creek at Helotes.....	281
Leon Creek at I.H. 35 at San Antonio.....	284
Medina River at San Antonio.....	293
San Antonio River near Elmendorf.....	302
San Antonio River near Falls City.....	311
Cibolo Creek near Boerne.....	320
Cibolo Creek at Selma.....	321
Cibolo Creek near Falls City.....	322
Ecletto Creek near Runge.....	328
San Antonio River at Goliad.....	329
Guadalupe-Blanco River Authority Calhoun Canal	
Flume No. 1 near Long Mott.....	333
Guadalupe River near Tivoli.....	334
COPANO CREEK BASIN	
Copano Creek near Refugio.....	338
MISSION RIVER BASIN	
Mission River at Refugio.....	339
ARANSAS RIVER BASIN	
Aransas River near Skidmore.....	341
Chiltipin Creek at Sinton.....	342
NUECES RIVER BASIN	
Nueces River at Laguna.....	344
West Nueces River near Brackettville.....	347
Nueces River below Uvalde.....	348
Nueces River near Asherton.....	349
Nueces River at Cotulla.....	350
San Casimiro Creek near Freer.....	351
Nueces River near Tilden.....	352
Frio River at Concan.....	353
Dry Frio River near Reagan Wells.....	356
Frio River below Dry Frio River near Uvalde.....	359
Sabinal River near Sabinal.....	360
Sabinal River at Sabinal.....	363
Hondo Creek near Tarpley.....	364
Hondo Creek at King Waterhole near Hondo.....	366
Seco Creek at Miller Ranch near Utopia.....	367
Seco Creek at Rowe Ranch near D'Hanis.....	369
Frio River near Derby.....	370
Frio River at Tilden.....	371
San Miguel Creek near Tilden.....	372
Choke Canyon Reservoir near Three Rivers.....	373
Atascosa River at Whitsett.....	374
Nueces River near Three Rivers.....	375
Lagarto Creek near George West.....	378
Lake Corpus Christi near Mathis.....	379
Nueces River near Mathis.....	381
OSO CREEK BASIN	
Oso Creek at Corpus Christi.....	385
SAN FERNANDO CREEK BASIN	
San Diego Creek (head of San Fernando Creek) at Alice.....	386
RIO GRANDE BASIN	
Rio Grande at El Paso.....	387
Rio Grande at Foster Ranch near Langtry.....	388
Pecos River at Red Bluff, NM.....	390
Delaware River near Red Bluff, NM.....	391
Red Bluff Reservoir near Orla.....	392
Pecos River near Orla.....	393
Reeves County Water Improvement District No. 2 canal near Mentone.....	396
Ward County Irrigation District No. 1 canal near Barstow.....	397
Pecos County Water Improvement District No. 2	
(upper diversion) canal near Grandfalls.....	398
Pecos County Water Improvement District No. 2 canal	
near Imperial.....	399
Pecos County Water Improvement District No. 3 canal	
near Imperial.....	400

GAGING STATIONS, IN DOWNSTREAM ORDER,
FOR WHICH RECORDS ARE PUBLISHED

ix

WESTERN GULF OF MEXICO BASINS--Continued

RIO GRANDE BASIN--Continued

Rio Grande:

Pecos River near Girvin.....	401
Pecos River near Langtry.....	402
Devils River at Pafford Crossing near Comstock.....	404
Rio Grande below Amistad Dam near Del Rio.....	406
Rio Grande below Falcon Dam.....	407
Rio Grande at Fort Ringgold, Rio Grande City.....	408
Rio Grande near Los Ebanos.....	409
Rio Grande below Anzalduas Dam.....	410
Arroyo Colorado at Harlingen.....	412
Rio Grande near Brownsville.....	414

WATER RESOURCES DATA - TEXAS, 1989

VOLUME 3

COLORADO RIVER BASIN, LAVACA RIVER BASIN, GUADALUPE RIVER BASIN, NUECES RIVER BASIN, RIO GRANDE BASIN, AND INTERVENING COASTAL BASINS

INTRODUCTION

The Water Resources Division of the U.S. Geological Survey, in cooperation with Federal, State, and City agencies, obtains a large amount of data pertaining to the water resources of Texas each water year. Such data, accumulated during many water years, constitute a valuable data base for developing an improved understanding of the water resources of the State. To make these data readily available to interested parties outside the Geological Survey, the data are published annually in three volumes of this report series entitled "Water Resources Data - Texas."

This report series includes records of stage, discharge, and water quality of streams and canals; stage, contents, and water quality of lakes and reservoirs. Volume 3 contains records for water discharge at 156 gaging stations; stage only at 3 gaging station; stage and contents at 16 lakes and reservoirs; and water quality at 85 gaging stations. Also included are data for 28 partial-record stations. Additional water data were collected at 4 miscellaneous sites not involved in the systematic data-collection program. The data in this report represent that part of the National Water Data System collected by the U.S. Geological Survey and cooperating State and Federal agencies in Texas.

This series of annual reports for Texas began with the 1961 water year with a report that contained only data relating to the quantities of surface water. For the 1964 water year, a similar report was introduced that contained only data relating to water quality. Beginning with the 1975 water year, the report was changed to its present format, with data on quantities and quality of surface water contained in each of three volumes.

Prior to introduction of this series and for several water years concurrent with it, water resources data for Texas were published in U.S. Geological Survey Water-Supply Papers. Data on stream discharge and stage and on lake or reservoir contents and stage, through September 1960, were published annually under the title "Surface-Water Supply of the United States, Parts 7 and 8." For the 1961 through 1970 water years, the data were published in two 5-year reports. Data on chemical quality, temperature, and suspended sediment for the 1941 through 1970 water years were published annually under the title "Quality of Surface Waters of the United States," and water levels for the 1935 through 1974 water years were published under the title "Ground-Water Levels in the United States." The above mentioned Water-Supply Papers may be consulted in the libraries of the principal cities of the United States and may be purchased from U.S. Geological Survey, Books and Open-File Reports, Federal Center, Bldg. 41, Box 25425, Denver, CO 80225.

Publications similar to this report are published annually by the Geological Survey for all States. These official Geological Survey reports have an identification number consisting of the two-letter State abbreviation, the last two digits of the water year, and the volume number. For example, this volume is identified as "U.S. Geological Survey Water Data Report TX-89-3." For archiving and general distribution, the reports for the 1971-74 water years also are identified as water-data reports. These water-data reports are for sale in paper copy or may be purchased on microfiche from the National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161.

Additional information, including the current prices, for ordering specific reports may be obtained from the District Chief at the address given on the back of the title page or by telephone (512) 832-5791.

COOPERATION

Federal agencies that assisted the Geological Survey in the collection of data in this report in the form of funds or services in 1989 are:

Corps of Engineers, U.S. Army.

International Boundary and Water Commission, United States
and Mexico, U.S. Section.

U.S. Bureau of Reclamation.

Organizations that assisted in the collection of data in this report through joint funding agreements through the Texas Department of Water Resources or through direct joint-funding agreements with the Geological Survey are:

Texas Water Development Board, M.R. Arnold II, Executive Administrator; the cities of Abilene, Arlington, Austin, Carrollton, Corpus Christi, Dallas, Fort Worth, Gainesville, Garland, Graham, Houston, Lubbock, Nacogdoches, Runaway Bay, San Angelo, San Antonio, and Wichita Falls; Bexar, Medina, and Atascosa Counties Water Control and Improvement District No. 1; Brazos River Authority; Coastal Industrial Water Authority; Colorado River Municipal Water District; Dallas Public Works Department; Dallas Utilities Water Department; Edwards Underground Water District; Franklin County Water District; Galveston County; Greenbelt Municipal and Industrial Water Authority; Guadalupe-Blanco River Authority; Harris County Flood Control District; Lavaca-Navidad River Authority; Lower Colorado River Authority; Lower Neches Valley Authority; North Central Texas Municipal Water Authority; Northeast Texas Municipal Water District; North Texas Municipal Water District; Pecos River Commission; Red Bluff Water Power Control District; Red River Authority; Sabine River Authority of Texas; Sabine River Compact Administration; San Antonio City Public Service Board; San Antonio City Water Board; San Antonio River Authority; San Jacinto River Authority; Tarrant County Water Control and Improvement District No. 1; Texas Water Commission; Texas Water Development Board; Titus County Fresh Water Supply District No. 1; Trinity River Authority; Upper Guadalupe River Authority; Upper Neches River Municipal Water Authority; West Central Texas Municipal Water District; and Wichita County Water Improvement District No. 2.

HYDROLOGIC CONDITIONS

Large variations in precipitation, runoff, and streamflow characterize the usual hydrologic conditions in Texas. In the eastern part of the State, streams typically are deep with wide alluvial flood plains, and streamflow is perennial. In the western part of the State, most streams flow through arroyos, and streamflow usually is ephemeral.

Precipitation distribution for water year 1989 followed the long-term pattern and decreased across the State from east to west. Total precipitation for the year was near normal in the area between the Brazos and Colorado Rivers, greater than normal east of the Brazos River, and below normal west of the Colorado River.

The greater than normal precipitation totals recorded in North Central, East, and extreme Southeast Texas during the year were the result of heavy rains that occurred during May and June. Several locations had totals near 19 inches, with more than 10 inches common throughout the entire area during May. Intense storms in June over the same areas as the May storms resulted in severe flooding in some areas. During June, several stations in North Central Texas reported nearly 17 inches of rainfall. In East Texas, rainfall amounts for June were almost 20 inches, and in extreme Southeast Texas, rainfall amounts in excess of 20 inches for the month were not uncommon.

Streamflow during water year 1989 generally followed the precipitation patterns. North and East of the Brazos River, streamflow was normal to greater than normal, while West of the Brazos River, streamflow usually was normal to below normal.

The precipitation pattern was reflected by changes in reservoirs contents. Conservation storage in 74 selected reservoirs throughout the State, with a combined conservation capacity of 33,958,690 acre-feet, increased from 78 percent at the end of September 1988 to 86 percent at the end of September 1989. Records from these reservoirs indicate that storage increased in 47, decreased in 23, and remained the same in 4.

The area for which water-resources data are presented in volume 3 includes the entire southwestern one-half of the State, extending from the western tip of the State to the central and lower Texas Gulf Coast. Normal annual precipitation ranges from less than 8 inches in parts of west Texas to more than 40 inches along the middle Texas coast. Average annual runoff ranges from less than 0.1 inch in parts of western Texas to more than 10 inches in some places along the central Gulf Coast. The area described in volume 3 and the location of selected streamflow and water-quality stations in the area are shown in figure 1.

Streamflow

Streamflow was below normal in most of the area described in volume 3 for water year 1989. At four of five selected streamflow stations in the area, runoff was below normal with only the index station North Concho River near Carlsbad in the normal to greater than normal range. The runoff pattern was the result of below normal precipitation over the area during the year. Precipitation amounts during the year ranged from 22 to 47 percent below normal for this area of the State.

Streamflow at the hydrologic index stations North Concho River near Carlsbad and Guadalupe River near Spring Branch ranged from below normal (within the lowest 25

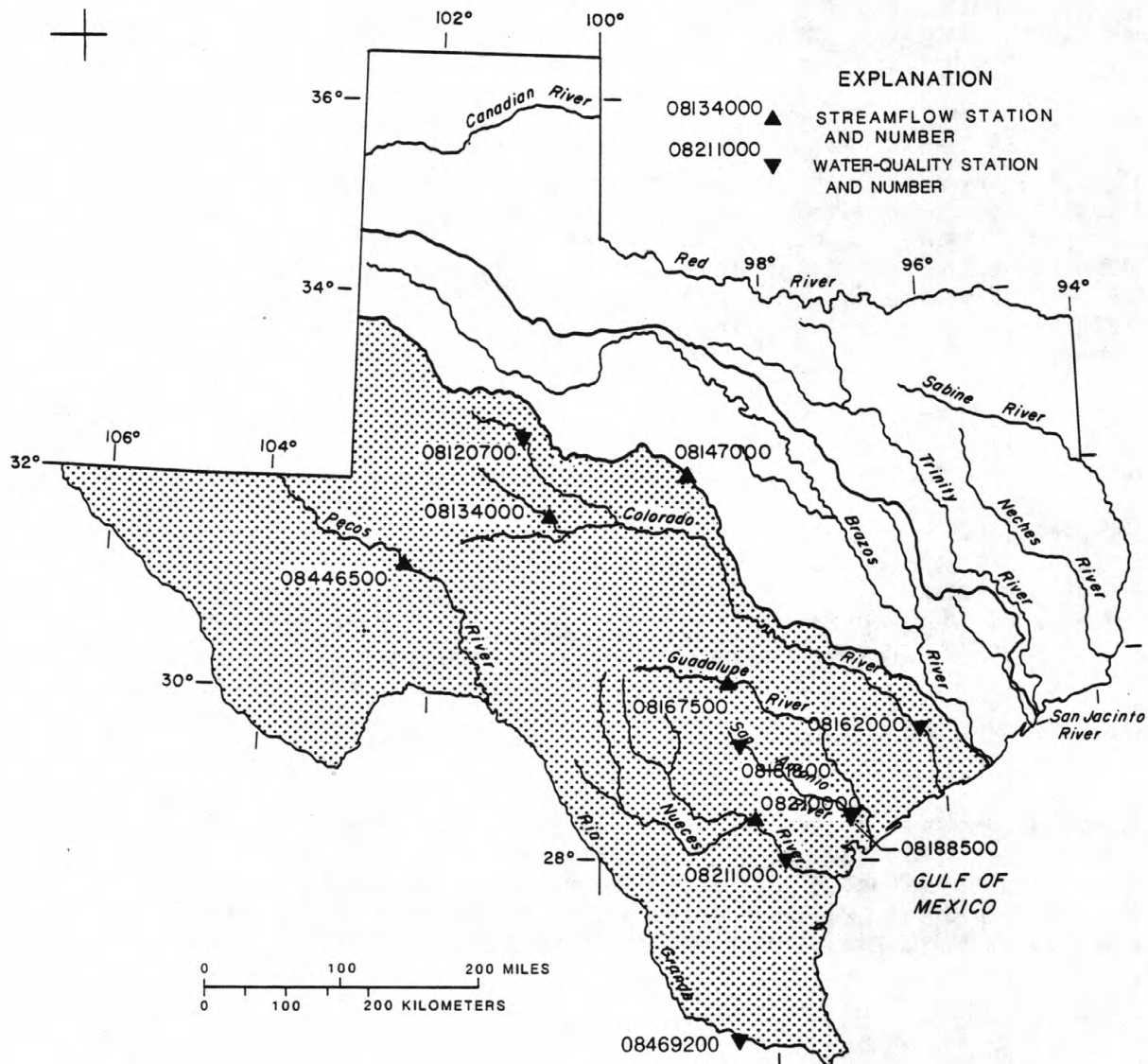


Figure 1.--Area of Texas covered by volume 3 (shaded) and location of selected streamflow and water-quality stations in volume 3.

percent of record) to greater than normal (within the highest 25 percent of record) during the year. At the North Concho River near Carlsbad, streamflow was greater than normal from December through March, and in June, and normal for the remainder of the year. The Guadalupe River near Spring Branch had normal streamflow from October through August, and below normal streamflow for September. A comparison of streamflow for water year 1989 with streamflow for the period of record at the five selected stations for which data are included in volume 3 is presented in the following table:

Station no. and name	Discharge during 1989 water year (cubic feet per second)			Discharge during period of record (cubic feet per second)		
	Max.	Min.	Avg.	Max.	Min.	Avg.
<u>Colorado River basin</u>						
08134000 North Concho River near Carlsbad, Tex. <u>1/</u> <u>2/</u>	1,490	0	4.67	94,600	0	32.3 (1925-89)
08147000 Colorado River near San Saba, Tex.	22,000	8.0	409	224,000	0	638 (1969-89)
<u>Guadalupe River basin</u>						
08167500 Guadalupe River near Spring Branch, Tex. <u>2/</u>	1,620	26.0	132	160,000	0	330 (1923-89)
<u>Nueces River basin</u>						
08210000 Nueces River near Three Rivers, Tex. <u>2/</u>	980	35.0	268	141,000	0	419 (1983-89)
<u>Rio Grande basin</u>						
08446500 Pecos River near Girvin, Tex.	110	9.4	29.3	20,000	1.9	80.6 (1940-89)

1/ National Stream Quality Accounting Network (NASQAN) site.

2/ Hydrologic index station.

At the two other index stations in the State, streamflow ranged from below normal to greater than normal. Monthly mean discharge and the median of the long term monthly means for the water years 1951-80 for four hydrologic index stations in the State are shown in figure 2. Streamflow during water year 1989 at the Neches River near Rockland was greater than normal during the period April through July, and normal for the remainder of the year. Streamflow at the North Bosque River near Clifton was greater than normal for March, and May through September, and normal for the remainder of the year except for November which was below normal.

Conservation storage in 19 selected reservoirs in this area of the State, with a total combined conservation capacity of 8,814,360 acre-feet, decreased from 86 percent of capacity at the end of September 1988 to 65 percent of capacity at the end of September 1989. Records from these reservoirs indicate that storage increased in 2, decreased in 16, and remained the same in 1 during water year 1989.

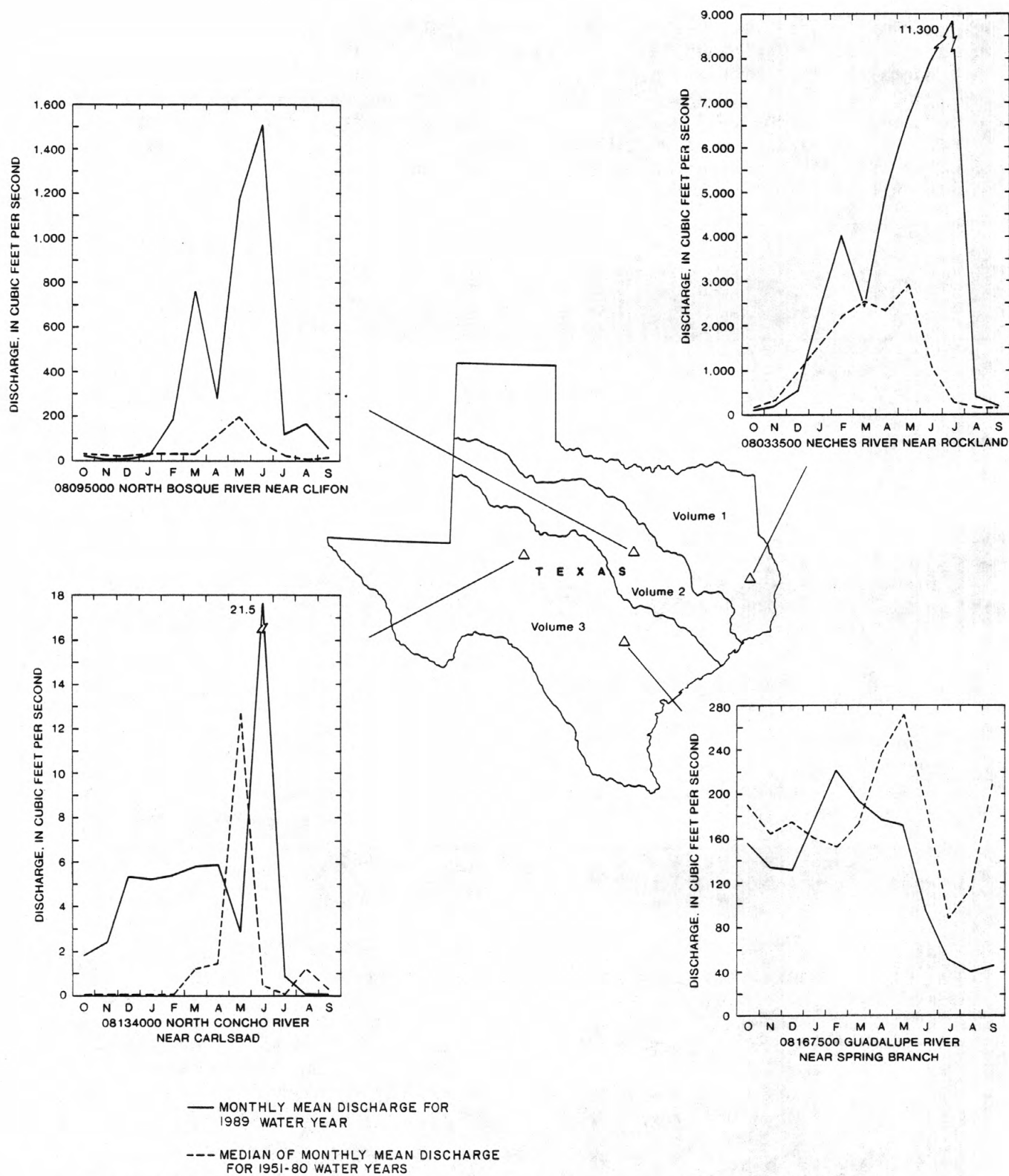


Figure 2.--Comparison of monthly mean discharges at four long-term hydrologic index gaging stations during the 1989 water year with median of the monthly mean discharges for 1951-80 water years.

Water Quality

Dissolved-solids concentrations in most streams in the State are inversely related to streamflow. During years when precipitation and runoff are less than normal, streamflow commonly is more mineralized than during years when precipitation and runoff are normal or greater than normal. However, for streams where discharge is controlled by reservoirs, the dissolved-solids concentration may remain relatively constant despite large fluctuations in precipitation and runoff.

Records of discharge-weighted-average concentrations of dissolved solids for water year 1989 are compared with those for the water years 1985-89 for selected long-term daily or continuous-record water-quality stations in the Colorado River, Guadalupe River, Nueces River, and Rio Grande basins. Results are shown in the following table:

Station no. and name	Mean discharge (cubic feet per second)		Discharge-weighted-average concentration of dissolved solids (milligrams per liter)	
	1989	1985-89	1989	1985-89
<u>Colorado River basin</u>				
08120700 Colorado River near Cuthbert, Tex.	9.5	39	2,490	1,130
08162000 Colorado River at Wharton, Tex.	924	2,618	352	261
<u>Guadalupe River basin</u>				
08181800 San Antonio River near Elmendorf, Tex.	239	*652	480	*375
08188500 San Antonio River at Goliad, Tex.	288	912	621	400
<u>Nueces River basin</u>				
08211000 Nueces River near Mathis, Tex.	158	435	381	306
<u>Rio Grande basin</u>				
08469200 Rio Grande below Anzalduas Dam, Tex.	2,372	1,612	771	750

* Covers water years 1985-86 and February 1987 through September 1989.

SPECIAL NETWORKS AND PROGRAMS

Hydrologic Bench-Mark Network is a network of 57 sites in small drainage basins around the country whose purpose is to provide consistent data on the hydrology, including water quality, and related factors in representative undeveloped watersheds nationwide, and to provide analyses on a continuing basis to compare and contrast conditions observed in basins more obviously affected by the activities of man.

National Stream Quality Accounting Network (NASQAN) is a nationwide data-collection network designed by the U.S. Geological Survey to meet many of the information needs of government agencies and other groups involved in natural or regional water-quality planning and management. The 500 or so sites in NASQAN are generally located at the downstream ends of hydrologic accounting units designated by the U.S. Geological Survey Office of Water Data Coordination in consultation with the Water Resources Council. The objectives of NASQAN are (1) to obtain information on the quality and quantity of water moving within and from the United States through a systematic and uniform process of data collection, summarization, analysis, and reporting such that the data may be used for, (2) description of the areal variability of water quality in the Nation's rivers through analysis of data from this and other programs, (3) detection of changes or trends with time in the pattern of occurrence of water-quality characteristics, and (4) providing a nationally consistent data base useful for water-quality assessment and hydrologic research.

The National Trends Network (NTN) is a 150-station network for sampling atmospheric deposition in the United States. The purpose of the network is to determine the variability, both in location and in time, of the composition of atmospheric deposition, which includes snow, rain, dust particles, aerosols, and gases. The core from which the NTN was built was the already existing deposition-monitoring network of the National Atmospheric Deposition Program (NADP).

Radiochemical Program is a network of regularly sampled water-quality stations where samples are collected to be analyzed for radioisotopes. The streams that are sampled represent major drainage basins in the conterminous United States.

EXPLANATION OF THE RECORDS

The surface-water records published in this report are for the 1989 water year that began October 1, 1988, and ended September 30, 1989. A calendar of the water year is provided on the inside of the front cover. The records contain streamflow data, stage and content data for lakes and reservoirs, and water-quality data for surface water. The following sections of the introductory text are presented to provide users with a more detailed explanation of how the hydrologic data published in this report were collected, analyzed, computed, and arranged for presentation.

Station Identification Numbers

Each data station in this report is assigned a unique identification number. This number is unique in that it applies specifically to a given station and to no other. The number usually is assigned when a station is first established and is retained for that station indefinitely. The systems used by the U.S. Geological Survey to assign identification numbers for surface-water stations and for ground-water well sites differ, but both are based on geographic location. The "downstream order" system is used for regular surface-water stations and the "latitude-longitude" system is used for wells and, in Texas, for surface-water stations where only miscellaneous measurements are made.

Downstream Order Numbering

Since October 1, 1950, the order of listing hydrologic-station records in Survey reports is in a downstream direction along the main stream. All stations on a tributary entering upstream from a mainstream station are listed before that station. A

station on a tributary that enters between two mainstream stations is listed between them. A similar order is followed in listing stations on first rank, second rank, and other ranks of tributaries. The rank of any tributary with respect to the stream to which it is immediately tributary is indicated by an indention in the "List of Stations" in the front of this report. Each indention represents one rank. This downstream order and system of indention shows which stations are on tributaries between any two stations and the rank of the tributary on which each station is situated.

The station-identification number is assigned according to downstream order. In assigning station numbers, no distinction is made between partial-record stations and other stations; therefore, the station number for a partial-record station indicates downstream-order position in a list made up of both types of stations. Gaps are left in the series of numbers to allow for new stations that may be established; hence, the numbers are not consecutive. The complete eight-digit number for each station, such as 08057000, which appears just to the left of the station name, includes the two-digit Part number "08" plus the six-digit downstream-order number "057000." The Part number designates the major river basin; for example, Part "08" is the Western Gulf of Mexico basin.

Records of Stage and Water Discharge

Records of stage and water discharge may be complete or partial. Complete records of discharge are those obtained using a continuous stage-recording device through which either instantaneous or mean daily discharges may be computed for any time, or any period of time, during the period of record. Complete records of lake or reservoir content, similarly, are those for which stage or content may be computed or estimated with reasonable accuracy for any time, or period of time. They may be obtained using a continuous stage-recording device, but need not be. Because daily mean discharges and end-of-day contents commonly are published for such stations, they are referred to as "daily stations."

By contrast, partial records are obtained through discrete measurements without using a continuous stage-recording device and pertain only to a few flow characteristics, or perhaps only one. The nature of the partial record is indicated by table titles such as "Crest-stage partial records," or "Low-flow partial records." Records of miscellaneous discharge measurements or of measurements from special studies, such as low-flow seepage studies, may be considered as partial records, but they are presented separately in this report.

Data Collection and Computation

The data obtained at a complete-record gaging station on a stream or canal consist of a continuous record of stage, individual measurements of discharge throughout a range of stages, and notations regarding factors that may affect the relationships between stage and discharge. These data, together with supplemental information, such as weather records, are used to compute daily discharges. The data obtained at a complete-record gaging station on a lake or reservoir consist of a record of stage and of notations regarding factors that may affect the relationship between stage and lake content. These data are used with stage-area and stage-capacity curves or tables to compute water-surface areas and lake storage.

Continuous records of stage are obtained with analog recorders that trace continuous graphs of stage or with digital recorders that punch stage values on paper tapes at selected time intervals. Measurements of discharge are made with current meters using methods adopted by the Geological Survey as a result of experience accumulated since 1880. These methods are described in standard textbooks, in Water-Supply Paper 2175, and in U.S. Geological Survey Techniques of Water-Resources Investigations, Book 3, Chapter A6.

In computing discharge records, results of individual measurements are plotted against the corresponding stages, and stage-discharge relation curves are then constructed. From these curves, rating tables indicating the approximate discharge for any stage within the range of the measurements are prepared. If it is necessary to define extremes of discharge outside the range of the current-meter measurements, the curves are extended using: (1) logarithmic plotting; (2) velocity-area studies; (3) results of indirect measurements of peak discharge, such as slope-area or contracted-opening measurements, and computations of flow over dams or weirs; or (4) step-backwater techniques.

Daily mean discharges are computed by applying the daily mean stages (gage heights) to the stage-discharge curves or tables. If the stage-discharge relation is subject to change because of frequent or continual change in the physical features that form the control, the daily mean discharge is determined by the shifting-control method, in which correction factors based on the individual discharge measurements and notes of the personnel making the measurements are applied to the gage heights before the discharges are determined from the curves or tables. This shifting-control method also is used if the stage-discharge relation is changed temporarily because of aquatic growth or debris on the control. For some stations, formation of ice in the winter may so obscure the stage-discharge relations that daily mean discharges must be estimated from other information such as temperature and precipitation records, notes of observations, and records for other stations in the same or nearby basins for comparable periods.

At some stream-gaging stations, the stage-discharge relation is affected by the backwater from reservoirs, tributary streams, or other sources. This necessitates the use of the slope method in which the slope or fall in a reach of the stream is a factor in computing discharge. The slope or fall is obtained by means of an auxiliary gage set at some distance from the base gage. At some stations the stage-discharge relation is affected by changing stage; at these stations the rate of change in stage is used as a factor in computing discharge.

In computing records of lake or reservoir contents, it is necessary to have available from surveys, curves or tables defining the relationship of stage and content. The application of stage to the stage-content curves or tables gives the contents from which daily, monthly, or yearly changes then are determined. If the stage-content relationship changes because of deposition of sediment in a lake or reservoir, periodic resurveys may be necessary to redefine the relationship. Even when this is done, the contents computed may become increasingly in error as the lapsed time since the last survey increases. Discharges over lake or reservoir spillways are computed from stage-discharge relationships much as other stream discharges are computed.

For some gaging stations, there are periods when no gage-height record is obtained, or the recorded gage height is so faulty that it cannot be used to compute daily discharge or contents. This happens when the recorder stops or otherwise fails

to operate properly, intakes are plugged, the float is frozen in the well, or for various other reasons. For such periods, the daily discharges are estimated from the recorded range in stage, previous or following record, discharge measurements, weather records, and comparison with other station records from the same or nearby basins. Likewise, daily contents may be estimated from operator's logs, previous or following record, inflow-outflow studies, and other information. Information explaining how estimated daily-discharge values are identified in station records is included in the next two sections, "Data Presentation" (REMARKS paragraph) and "Identifying Estimated Daily Discharge."

Data presentation

The records published for each gaging station consist of two parts, the manuscript or station description and the data table for the current water year. The manuscript provides, under various headings, descriptive information, such as station location; period of record; average discharge; historical extremes; record accuracy; and other remarks pertinent to station operation and regulation. The following information, as appropriate, is provided with each continuous record of discharge or lake content. Comments to follow clarify information presented under the various headings of the station description.

LOCATION.--Information on locations is obtained from the most accurate maps available. The location of the gage with respect to the cultural and physical features in the vicinity and with respect to the reference place mentioned in the station name is given. River mileages, given for only a few stations, were determined by methods given in "River Mileage Measurement," Bulletin 14, Revision of October 1968, prepared by the Water Resources Council or were provided by the U.S. Army Corps of Engineers.

DRAINAGE AREA.--Drainage areas are measured using the most accurate maps available. Because the type of maps available varies from one drainage basin to another, the accuracy of drainage areas likewise varies. Drainage areas are updated as better maps become available.

PERIOD OF RECORD.--This indicates the period for which there are published records for the station or for an equivalent station. An equivalent station is one that was in operation at a time that the present station was not and whose location was such that records from it can reasonably be considered equivalent with records from the present station.

REVISED RECORDS.--Published records, because of new information, occasionally are found to be incorrect, and revisions are printed in later reports. Listed under this heading are all the reports in which revisions have been published for the station and the water years to which the revisions apply. If a revision did not include daily, monthly, or annual figures of discharge, that fact is noted after the year dates as follows: "(M)" means that only the instantaneous maximum discharge was revised; "(m)" that only the instantaneous minimum was revised; and "(P)" that only peak discharges were revised. If the drainage area has been revised, the report in which the most recently revised figure was first published is given.

GAGE.--The type of gage in current use, the datum of the current gage referred to National Geodetic Vertical Datum of 1929 (see glossary), and a condensed history of the types, locations, and datums of previous gages are given under this heading.

REMARKS.--All periods of estimated daily discharge record will either be identified by date in this paragraph of the station description for water-discharge stations or flagged in the daily-discharge table. (See next section, "Identifying Estimated Daily Discharge.") If a remarks statement is used to identify estimated record, the paragraph will begin with this information presented as the first entry. The paragraph is also used to present information relative to the accuracy of the records, to special methods of computation, to conditions that affect natural flow at the station and, possibly, to other pertinent items. For reservoir stations, information is given on the dam forming the reservoir, the capacity, outlet works and spillway, and purpose and use of the reservoir.

COOPERATION.--Records provided by a cooperating organization or obtained for the Geological Survey by a cooperating organization are identified here.

AVERAGE DISCHARGE.--The discharge value given is the arithmetic mean of the water-year mean discharges. It is computed only for those stations having at least 5 water years of complete record, and only water years of complete record are included in the computation. It is not computed for stations where diversions, storage, or other water-use practices cause the value to be meaningless. If water developments significantly altering flow at a station are put into use after the station has been in operation for a period of years, a new average is computed as soon as 5 water years of record have accumulated following the development. The median of yearly mean discharges also is given under this heading for stations having 10 or more water years of record, if the median differs from the average given by more than 10 percent.

EXTREMES FOR PERIOD OF RECORD.--Extremes may include maximum and minimum stages and maximum and minimum discharges or content. Unless otherwise qualified, the maximum discharge or content is the instantaneous maximum corresponding to the highest stage that occurred. The highest stage may have been obtained from a graphic or digital recorder, a crest-stage gage, or by direct observation of a nonrecording gage. If the maximum stage did not occur on the same day as the maximum discharge or content, it is given separately. Similarly, the minimum is the instantaneous minimum discharge, unless other-wise qualified, and was determined and is reported in the same manner as the maximum.

EXTREMES OUTSIDE PERIOD OF RECORD.--Included here is information concerning major floods or unusually low flows that occurred outside the stated period of record. The information may or may not have been obtained by the U.S. Geological Survey.

EXTREMES FOR CURRENT YEAR.--Extremes given here are similar to those for the period of record, except the peak discharge listing may include secondary peaks. For stations meeting certain criteria, all peak discharges and stages occurring during the water year and greater than a selected base discharge are presented under this heading. The peaks greater than the base discharge, excluding the highest one, are referred to as secondary peaks. Peak discharges are not published for canals, ditches, drains, or streams for which the peaks are subject to substantial control by man. The time of occurrence for peaks is expressed in 24-hour local standard time. For example, 12:30 a.m. is 0030, and 1:30 p.m. is 1330. The minimum for the current water year appears below the table of peak data.

REVISIONS.--If a critical error in published records is discovered, a revision is included in the first report published following discovery of the error. Although rare, occasionally the records of a discontinued gaging station may need revision. Because, for these stations, there would be no current or, possibly, future station manuscript published to document the revision in a "Revised Records" entry, users of

data for these stations who obtained the record from previously published data reports may wish to contact the offices whose addresses are given on the back of the title page of this report to determine if the published records were ever revised after the station was discontinued. Of course, if the data were obtained by computer retrieval, the data would be current and there would be no need to check because any published revision of data is always accompanied by revision of the corresponding data in computer storage.

Manuscript information for lake or reservoir stations differs from that for stream stations in the nature of the "Remarks" and in the inclusion of a skeleton stage-capacity table when daily contents are given.

The daily table for stream-gaging stations gives mean discharge for each day and is followed by monthly and yearly summaries. In the monthly summary below the daily table, the line headed "TOTAL" gives the sum of the daily figures. The line headed "MEAN" gives the average flow in cubic feet per second during the month. The lines headed "MAX" and "MIN" give the maximum and minimum daily discharges, respectively, for the month. Discharge for the month also is usually expressed in cubic feet per second per square mile (line headed "CFSM"), or in inches (line headed "IN."), or in acre-feet (line headed "AC-FT"). Figures for cubic feet per second per square mile and runoff in inches are omitted if there is extensive regulation or diversion or if the drainage area includes large noncontributing areas. In the yearly summary below the monthly summary, the figures shown are the appropriate discharges for the calendar and water years. At some stations monthly and (or) yearly observed discharges are adjusted for reservoir storage or diversion, or diversions or reservoir contents are given.

Data collected at partial-record stations follow the information for continuous-record sites. Data for partial-record discharge stations are presented in two tables. The first is a table of discharge measurements at low-flow partial-record stations, and the second is a table of annual maximum stage and discharge at crest-stage partial-record stations. The tables of partial-record stations are followed by a listing of discharge measurements made at sites other than continuous-record or partial-record stations. These measurements are generally made in times of drought or flood to give better areal coverage to those events. Those measurements and others collected for some special reason are called measurements at miscellaneous sites.

Identifying Estimated Daily Discharge

Estimated daily discharge values published in the water-discharge tables of annual State data reports are identified either by flagging individual daily values with the letter symbol "e" and printing a table footnote, "e Estimated," or by listing the dates of the estimated record in the REMARKS paragraph of the station description.

Accuracy of the Records

The accuracy of streamflow records depends primarily on: (1) The stability of the stage-discharge relation or, if the control is unstable, the frequency of discharge measurements; and (2) the accuracy of measurements of stage, measurements of discharge, and interpretation of records.

The accuracy attributed to the records is indicated under "REMARKS." "Excellent" means that about 95 percent of the daily discharges are within 5 percent of their true values; "good," within 10 percent; and "fair," within 15 percent.

Records that do not meet the criteria mentioned are rated "poor." Different accuracies may be attributed to different parts of a given record.

Daily mean discharges in this report are given to the nearest hundredth of a cubic foot per second for values less than 1 ft³/s; to the nearest tenth between 1.0 and 10 ft³/s; to whole numbers between 10 and 1,000 ft³/s; and to 3 significant figures for more than 1,000 ft³/s. The number of significant figures used is based solely on the magnitude of the discharge value. The same rounding rules apply to discharges listed for partial-record stations and miscellaneous sites.

Discharge at many stations, as indicated by the monthly mean, may not reflect natural runoff due to the effects of diversion, consumption, regulation by storage, increase or decrease in evaporation due to artificial causes, or to other factors. For such stations, figures of cubic feet per second per square mile and of runoff, in inches, are not published unless satisfactory adjustments can be made for diversions, for changes in contents of reservoirs, or for other changes incident to use and control. Evaporation from a reservoir is not included in the adjustments for changes in reservoir contents, unless it is so stated. Even at those stations where adjustments are made, large errors in computed runoff may occur if adjustments or losses are large in comparison with the observed discharge.

Other Records Available

Information used in the preparation of the records in this publication, such as discharge-measurement notes, gage-height records, temperature measurements, and rating tables, is on file in the Texas District. Also, most of the daily mean discharges are in computer-readable form and have been analyzed statistically. Information on the availability of the unpublished information or on the results of statistical analyses of the published records may be obtained from the offices whose addresses are given on the back of the title page of this report.

Records of Surface-Water Quality

Records of surface-water quality ordinarily are obtained at or near stream-gaging stations because interpretation of records of surface-water quality nearly always requires corresponding discharge data. Records of surface-water quality in this report may involve a variety of types of data and measurement frequencies.

Classification of Records

Water-quality data for surface-water sites are grouped into one of three classifications.

A continuing-record station is a site where data are collected on a regularly scheduled basis. Frequency may be once or more times daily, weekly, monthly, or quarterly. A partial-record station is a site where limited water-quality data are collected systematically over a period of years. Frequency of sampling is usually less than quarterly. A miscellaneous sampling site is a location other than a continuing or partial-record station where random samples are collected to give better areal coverage to define water-quality conditions in the river basin. A careful distinction needs to be made between "continuing records", as used in this report, and "continuous recordings," which refers to a continuous graph or a series of discrete values punched at short intervals on a paper tape. Some records of water

quality, such as temperature and specific conductance, may be obtained through continuous recordings; however, because of costs, most data are obtained only monthly or less frequently.

Arrangement of Records

Water-quality records collected at a surface-water daily record station are published immediately following that record, regardless of the frequency of sample collection. Station number and name are the same for both records. Where a surface-water daily record station is not available or where the water quality differs significantly from that at the nearby surface-water station, the continuing water-quality record is published with its own station number and name in the regular downstream-order sequence. Water-quality data for partial-record stations and for miscellaneous sampling sites appear in separate tables following the table of discharge measurements at miscellaneous sites.

On-site Measurements and Sample Collection

In obtaining water-quality data, a major concern needs to be assuring that the data obtained represent the in situ quality of the water. To assure this, certain measurements, such as water temperature, pH, and dissolved oxygen, need to be made onsite when the samples are taken. To assure that measurements made in the laboratory also represent the in situ water, carefully prescribed procedures need to be followed in collecting the samples, in treating the samples to prevent changes in quality pending analysis, and in shipping the samples to the laboratory.

Procedures for on site measurements and for collecting, treating, and shipping samples are given in publications on "Techniques of Water-Resources Investigations," Book 1, Chap. D2; Book 3, Chap. C2; Book 5, Chap. A1, A3, and A4. All of these references are listed under "PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS" which appears at the end of the introductory text. Detailed information on collecting, treating, and shipping samples may be obtained from the Texas Office of the Central Regional Office.

One sample can define adequately the water quality at a given time if the mixture of solutes throughout the stream cross section is homogeneous. However, the concentration of solutes at different locations in the cross section may vary widely with different rates of water discharge, depending on the source of material and the turbulence and mixing of the stream. Some streams must be sampled through several vertical sections to obtain a representative sample needed for an accurate mean concentration and for use in calculating load. All samples obtained for the National Stream Quality Accounting Network (see definitions) are obtained from at least several verticals. Whether samples are obtained from the centroid of flow or from several verticals depends on flow conditions and other factors which must be evaluated by the collector.

Chemical-quality data published in this report are considered to be the most representative values available for the stations listed. The values reported represent water-quality conditions at the time of sampling as much as possible, consistent with available sampling techniques and methods of analysis. In the rare case where an apparent inconsistency exists between a reported pH value and the relative abundance of carbon dioxide species (carbonate and bicarbonate), the inconsistency is the result of a slight uptake of carbon dioxide from the air by the sample between measurement of pH in the field and determination of carbonate and bicarbonate in the laboratory.

For chemical-quality stations equipped with digital monitors, the records consist of daily maximum, minimum, and mean values for each constituent measured and are based upon hourly punches beginning at 0100 hours and ending at 2400 hours for the day of record. More detailed records (hourly values) may be obtained from the Texas District Office whose address is given on the back of the title page of this report.

Water Temperature

Water temperatures are measured at most of the water-quality stations. In addition, water temperatures are taken at time of discharge measurements for water-discharge stations. For stations where water temperatures are taken manually once or twice daily, the water temperatures are taken at about the same time each day. Large streams have a small diurnal temperature change; shallow streams may have a daily range of several degrees and may follow closely the changes in air temperature. Some streams may be affected by waste-heat discharges.

At stations where recording instruments are used, either mean temperatures or maximum and minimum temperatures for each day are published. Water temperatures measured at the time of water-discharge measurements are on file in the Texas District Office.

Sediment

Suspended-sediment concentrations are determined from samples collected by using depth-integrating samplers. Samples usually are obtained at several verticals in the cross section, or a single sample may be obtained at a fixed point and a coefficient applied to determine the mean concentration in the cross sections.

During periods of rapidly changing flow or rapidly changing concentration, samples may have been collected more frequently (twice daily or, in some instances, hourly). The published sediment discharges for days of rapidly changing flow or concentration were computed by the subdivided-day method (time-discharge weighted average). Therefore, for those days when the published sediment discharge value differs from the value computed as the product of discharge times mean concentration times 0.0027, the reader can assume that the sediment discharge for that day was computed by the subdivided-day method. For periods when no samples were collected, daily discharges of suspended sediment were estimated on the basis of water discharge, sediment concentrations observed immediately before and after the periods, and suspended-sediment loads for other periods of similar discharge.

At other stations, suspended-sediment samples were collected periodically at many verticals in the stream cross section. Although data collected periodically may represent conditions only at the time of observations, such data are useful in establishing seasonal relations between quality and streamflow and in predicting long-term sediment-discharge characteristics of the stream.

In addition to the records of suspended-sediment discharge, records of the periodic measurements of the particle-size distribution of the suspended sediment and bed material are included for some stations.

Laboratory Measurements

Sediment samples, samples for biochemical-oxygen demand (BOD), samples for indicator bacteria, and daily samples for specific conductance are analyzed locally.

All other samples are analyzed in the Geological Survey laboratory in Arvada, Colorado. Methods used in analyzing sediment samples and computing sediment records are given in TWRI, Book 5, Chap. C1. Methods used by the Geological Survey laboratory are given in TWRI, Book 1, Chap. D2; Book 3, Chap. C2; Book 5, Chap. A1, A3, and A4.

Data Presentation

For continuing-record stations, information pertinent to the history of station operation is provided in descriptive headings preceding the tabular data. These descriptive headings give details regarding location, drainage area, period of record, type of data available, instrumentation, general remarks, cooperation, and extremes for parameters currently measured daily. Tables of chemical, physical, biological, radio-chemical data, and so forth, obtained at a frequency less than daily are presented first. Tables of "daily values" of specific conductance, pH, water temperature, dissolved oxygen, and suspended sediment then follow in sequence.

In the descriptive headings, if the location is identical to that of the discharge gaging station, neither the LOCATION nor the DRAINAGE AREA statements are repeated. The following information, as appropriate, is provided with each continuous-record station. Comments that follow clarify information presented under the various headings of the station description.

LOCATION.--See Data Presentation under "Records of Stage and Water Discharge;" same comments apply.

DRAINAGE AREA.--See Data Presentation under "Records of Stage and Water Discharge;" same comments apply.

PERIOD OF RECORD.--This indicates the periods for which there are published water-quality records for the station. These periods are shown separately for records of parameters measured daily or continuously and those measured less than daily. For those measured daily or continuously, periods of record are given for the parameters individually.

INSTRUMENTATION.--Information on instrumentation is given only if a water-quality monitor temperature record, sediment pumping sampler, or other sampling device is in operation at a station.

REMARKS.--Remarks provide added information pertinent to the collection, analysis, or computation of the records.

COOPERATION.--Records provided by a cooperating organization or obtained for the Geological Survey by a cooperating organization are identified here.

EXTREMES.--Maximums and minimums are given only for parameters measured daily or more frequently. None are given for parameters measured weekly or less frequently, because the true maximums or minimums may not have been sampled. Extremes, when given, are provided for both the period of record and for the current water year.

REVISIONS.--If errors in published water-quality records are discovered after publication, appropriate updates are made to the Water-Quality File in the U.S. Geological Survey's computerized data system, WATSTORE, and subsequently by monthly transfer of update transactions to the U.S. Environmental Protection Agency's STORET system. Because the usual volume of updates makes it impractical to document individual changes in the State data-report series or elsewhere, potential users of

U.S. Geological Survey water-quality data are encouraged to obtain all required data from the appropriate computer file to insure the most recent updates.

The surface-water-quality records for partial-record stations and miscellaneous sampling sites are published in separate tables following the table of discharge measurements at miscellaneous sites. No descriptive statements are given for these records. Each station is published with its own station number and name in the regular downstream-order sequence.

Remark Codes

The following remark codes may appear with the water-quality data in this report:

<u>PRINTED OUTPUT</u>	<u>REMARK</u>
E	Estimated value
>	Actual value is known to be greater than the value shown
<	Actual value is known to be less than the value shown
K	Results based on colony count outside the acceptance range (non-ideal colony count)
L	Biological organism count less than 0.5 percent (organism may be observed rather than counted)
D	Biological organism count equal to or greater than 15 percent (dominant)
&	Biological organism estimated as dominant

ACCESS TO WATSTORE DATA

The National Water Data Storage and Retrieval System (WATSTORE) was established for handling water data collected through the activities of the U.S. Geological Survey and to provide for more effective and efficient means of releasing the data to the public. The system is operated and maintained on the central computer facilities of the Survey at its National Center in Reston, Virginia.

WATSTORE can provide a variety of useful products ranging from simple data tables to complex statistical analyses. A minimal fee, plus the actual computer cost incurred in producing a desired product, is charged to the requester. Information about the availability of specific types of data, the acquisition of data or products, and user charges can be obtained locally from the District office (see address given on the back of the title page).

General inquiries about WATSTORE may be directed to:

Chief Hydrologist
U.S. Geological Survey
437 National Center
Reston, Virginia 22092

DEFINITION OF TERMS

Terms related to streamflow, water-quality, and other hydrologic data, as used in this report, are defined below. See also table for converting English units to International System (SI) Units on the inside of the back cover.

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 or about 326,000 gallons or 1,233 cubic meters.

Adenosine triphosphate (ATP) is an organic, phosphate-rich, compound important in the transfer of energy in organisms. Its central role in living cells makes it an excellent indicator of the presence of living material in water. A measure of ATP therefore provides a sensitive and rapid estimate of biomass. ATP is reported in micrograms per liter of the original water sample.

Algae are mostly aquatic single-celled, colonial, or multi-celled plants, containing chlorophyll and lacking roots, stems, and leaves.

Algal growth potential (AGP) is the maximum algal dry weight biomass that can be produced in a natural water sample under standardized laboratory conditions. The growth potential is the algal biomass present at stationary phase and is expressed as milligrams dry weight of algae produced per liter of sample.

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

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

Fecal coliform bacteria are bacteria that are present in the intestine 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 that produce blue colonies within 24 hours when incubated at 44.5°C plus or minus 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 also in the intestine 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 plus or minus 1.0°C on KF-streptococcus medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

Bed material is the sediment mixture of which a streambed, lake, pond, reservoir, or estuary bottom is composed.

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.

Biomass is the amount of living matter present at any given time, expressed as the mass per unit area or volume of habitat.

Ash mass is the mass or amount of residue present after the residue from the dry mass determination has been ashed in a muffle furnace at a temperature of 500°C for 1 hour. The ash mass values of zooplankton and phytoplankton are expressed in grams per cubic meter (g/m^3), and periphyton and benthic organisms in grams per square meter (g/m^2).

Dry mass refers to the mass of residue present after drying in an oven at 105°C for zooplankton and periphyton, until the mass remains unchanged. This mass represents the total organic matter, ash and sediment, in the sample. Dry-mass values are expressed in the same units as ash mass.

Organic mass or volatile mass of the living substance is the difference between the dry mass and ash mass and represents the actual mass of the living matter. The organic mass is expressed in the same units as for ash mass and dry mass.

Wet mass is the mass of living matter plus contained water.

Bottom material: See Bed material.

Cells/volume refers to the number of cells of any organism which is counted by using a microscope and grid or counting cell. Many planktonic organisms are multicelled and are counted according to the number of contained cells per sample, usually milliliters (mL) or liters (L).

Cubic-foot-per-second day is the volume of water represented by a 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 2,445 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.

Chlorophyll refers to the green pigments of plants. Chlorophyll a and b are the two most common green pigments in plants.

Color unit is produced by one 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. Unless otherwise indicated, volume is computed on the basis of a level pool and does not include bank storage.

Control designates a feature downstream from the 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.

Control structure as used in this report is a structure on a stream or canal that is used to regulate the flow or stage of the stream or to prevent the intrusion of salt water.

Cubic foot per second (ft³/s) is the rate of discharge representing a volume of 1 cubic foot passing a given point during 1 second and is equivalent to 7.48 gallons per second or 448.8 gallons per minute or 0.02832 cubic meters per second.

Cubic feet per second per square mile [(ft³/s)/mi²] 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.

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 μ m 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.

Dissolved-solids concentration of water is determined either analytically by the "residue-on-evaporation" method, or mathematically by totaling the concentrations of individual constituents reported in a comprehensive chemical analysis. During the analytical determination of dissolved solids, the bicarbonate (generally a major dissolved component of water) is converted to carbonate. Therefore, in the mathematical calculation of dissolved-solids concentration, the bicarbonate value, in milligrams per liter, is multiplied by 0.492 to reflect the change.

Diversity index is a numerical expression of evenness of distribution of aquatic organisms. The formula for diversity index is:

$$d = - \sum_{i=1}^s \frac{n_i}{n} \log_2 \frac{n_i}{n}$$

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 point. Figures of drainage area given herein include all closed basins, or noncontributing areas, within the area unless otherwise specified.

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.H.) 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.

Hardness of water is a physical-chemical characteristic that is commonly recognized by the increased quantity of soap required to produce lather. It is computed as the sum of equivalents of polyvalent cations and is expressed as the equivalent concentration of calcium carbonate (CaCO_3).

Hydrologic Bench-Mark Network is a network of 57 sites in small drainage basins around the country whose purpose is to provide consistent data on the hydrology, including water quality, and related factors in representative undeveloped watersheds nationwide, and to provide analyses on a continuing basis to compare and contrast conditions observed in basins more obviously affected by the activities of man.

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.

Metamorphic stage refers to the stage of development that an organism exhibits during its transformation from an immature form to an adult form. This developmental process exists for most insects, and the degree of difference from the immature stage to the adult form varies from relatively slight to pronounced, with many intermediates. Examples of metamorphic stages of insects are egg-larva-adult or egg-nymph-adult.

Methylene blue active substances (MBAS) are apparent detergents. The determination depends on the formation of a blue color when methylene blue dye reacts with synthetic anionic detergent compounds.

Micrograms per gram ($\mu\text{g/g}$) is a unit expressing the concentration of a chemical constituent as the mass (micrograms) of the element per unit mass (gram) of material analyzed.

Micrograms per liter (UG/L, $\mu\text{g/L}$) 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 one 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 represents the mass of solute per unit volume (liter) of water. Concentration of suspended sediment also is expressed in mg/L and is based on the mass of dry sediment per liter of water-sediment mixture.

National Geodetic Vertical Datum of 1929 (NGVD of 1929) 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" in this series of reports. 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.

National Stream Quality Accounting Network (NASQAN) is a nationwide data-collection network designed by the U.S. Geological Survey to meet many of the information needs of government agencies and other groups involved in natural or regional water-quality planning and management. The 500 or so sites in NASQAN are generally located at the downstream ends of hydrologic accounting units designated by the U.S. Geological Survey Office of Water Data Coordination in consultation with the Water Resources Council. The objectives of NASQAN are (1) to obtain information on the quality and quantity of water moving within and from the United States through a systematic and uniform process of data collection, summarization, analysis, and reporting such that the data may be used for, (2) description of the areal variability of water quality in the Nation's rivers through analysis of data from this and other programs, (3) detection of changes or trends with time in the pattern of occurrence of water-quality characteristics, and (4) providing a nationally consistent data base useful for water-quality assessment and hydrologic research.

The National Trends Network (NTN) is a 150-station network for sampling atmospheric deposition in the United States. The purpose of the network is to determine the variability, both in location and in time, of the composition of atmospheric deposition, which includes snow, rain, dust particles, aerosols, and gases. The core from which the NTN was built was the already-existing deposition-monitoring network of the National Atmospheric Deposition Program (NADP).

Organism is any living entity.

Organism count/area refers to the number of organisms collected and enumerated in a sample and adjusted to the number per area habitat, usually square meter (m^2), acre, or hectare. Periphyton, benthic organisms, and macrophytes are expressed in these terms.

Organism count/volume refers to the number of organisms collected and enumerated in a sample and adjusted to the number per sample volume, usually milliliter (mL) or liter (L). Numbers of planktonic organisms can be expressed in these terms.

Total organism count is the total number of organisms collected and enumerated in any particular sample.

Parameter Code is a 5-digit number used in the U.S. Geological Survey computerized data system, WATSTORE, to uniquely identify a specific constituent. The codes used in WATSTORE are the same as those used in the U.S. Environmental Protection Agency data system, STORET. The Environmental Protection Agency assigns and approves all requests for new codes.

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.

Particle size is the diameter, in millimeters (mm), of a particle determined by either sieve or sedimentation methods. Sedimentation methods (pipet, bottom-withdrawal tube, visual-accumulation tube) determine fall diameter of particles in either distilled water (chemically dispersed) or in native water (the river water at the time and point of sampling).

Particle-size classification used in this report agrees with the recommendation made by the American Geophysical Union Subcommittee on Sediment Terminology. The classification is as follows:

<u>Classification</u>	<u>Size (mm)</u>	<u>Method of analysis</u>
Clay.....	0.00024 - 0.004	Sedimentation
Silt.....	.004 - .062	Sedimentation
Sand.....	.062 - 2.0	Sedimentation or sieve
Gravel.....	2.0 - 64.0	Sieve

The particle-size distributions given in this report are not necessarily representative of all particles in transport in the stream. Most of the organic matter is removed, and the sample is subjected to mechanical and chemical dispersion before analysis in distilled water. Chemical dispersion is not used for native-water analysis.

Percent composition is a unit for expressing the ratio of a particular part of a sample or population to the total sample or population, in terms of types, numbers, mass, or volume.

Periphyton is the assemblage of microorganisms attached to and living upon submerged solid surfaces. While primarily consisting of algae, they also include bacteria, fungi, protozoa, rotifers, and other small organisms.

Pesticides are chemical compounds used to control undesirable organisms. Major categories of pesticides include insecticides, miticides, fungicides, herbicides, and rodenticides.

Picocurie (PC, pCi) is one trillionth (1×10^{-12}) of the amount of radioactivity represented by a curie (Ci). A curie is the amount of radioactivity that yields 3.7×10^{10} radioactive disintegrations per second. A picocurie yields 2.22 dpm (disintegrations per minute).

Plankton is the community of suspended, floating, or weakly swimming organisms that live in the open water of lakes and rivers.

Phytoplankton is the plant part of the plankton. They are usually microscopic and their movement is subject to the water currents. Phytoplankton growth is dependent upon solar radiation and nutrient substances. Because they are able to incorporate as well as release materials to the surrounding water, the phytoplankton have a profound effect upon the qual-

ity of the water. They are the primary food producers in the aquatic environment and are commonly known as algae.

Blue-green algae are a group of phytoplankton organisms having a blue pigment, in addition to the green pigment called chlorophyll. Blue-green algae often cause nuisance conditions in water.

Diatoms are the unicellular or colonial algae having a siliceous shell. Their concentrations are expressed as number of cells per milliliter (cells/mL) of sample.

Green algae have chlorophyll pigments similar in color to those of higher green plants. Some forms produce algae mats or floating "moss" in lakes. Their concentrations are expressed as number of cells per milliliter (cells/mL) of sample.

Zooplankton is the animal part of the plankton. Zooplankton are capable of extensive movements within the water column and are often large enough to be seen with the unaided eye. Zooplankton are secondary consumers feeding upon bacteria, phytoplankton, and detritus. Because they are the grazers in the aquatic environment, the zooplankton are a vital part of the aquatic food web. The zooplankton community is dominated by small crustaceans and rotifers.

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.

Primary productivity is a measure of the rate at which new organic matter is formed and accumulated through photosynthetic and chemosynthetic activity of producer organisms (chiefly, green plants). The rate of primary production is estimated by measuring the amount of oxygen released (oxygen method) or the amount of carbon assimilated by the plants (carbon method).

Milligrams of carbon per area or volume per unit time [mg C/(m².time)] for periphyton and macrophytes and [mg C/(m³.time)] for phytoplankton are units for expressing primary productivity. They define the amount of carbon dioxide consumed as measured by radioactive carbon (carbon 14). The carbon 14 method is of greater sensitivity than the oxygen light and dark bottle method and is preferred for use in unenriched waters. Unit time may be either the hour or day, depending on the incubation period.

Milligrams of oxygen per area or volume per unit time [mg O/(m².time)] for periphyton and macrophytes and [mg O/(m³.time)] for phytoplankton are the units for expressing primary productivity. They define production and respiration rates as estimated from changes in the measured dissolved-oxygen concentration. The oxygen light and dark bottle method is preferred if the rate of primary production is sufficient for accurate measurements to be made within 24 hours. Unit time may be either the hour or day, depending on the incubation period.

Radiochemical program is a network of regularly sampled water-quality stations where samples are collected to be analyzed for radioisotopes. The streams that are sampled represent major drainage basins in the conterminous United States.

Recoverable from bottom material is the amount of a given constituent that is in solution after a representative sample of bottom material has been digested by a method (usually using an acid or mixture of acids) that results in dissolution of readily soluble substances. Complete dissolution of all bottom material is not achieved by the digestion treatment and thus the determination represents less than the total amount (that is, less than 95 percent) of the constituent 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.

Return period is the average time interval between occurrences of a hydrological event of a given or greater magnitude, usually expressed in years. May also be called recurrence interval.

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.

Sediment is solid material that originates mostly from disintegrated rocks and is transported by, suspended in, or deposited from water; it includes chemical and biochemical precipitates and decomposed organic material, such as humus. The quantity, characteristics, and cause of the occurrence of sediment in streams are influenced by environmental factors. Some major factors are degree of slope, length of slope, soil characteristics, land usage, and quantity and intensity of precipitation.

Bed load is the sediment that is transported in a stream by rolling, sliding, or skipping along the bed and very close to it. In this report, bed load is considered to consist of particles in transit within 0.25 ft of the streambed.

Bed load discharge (tons per day) is the quantity of bed load measured by dry weight that moves past a section as bed load in a given time.

Suspended sediment is the sediment that at any given time is maintained in suspension by the upward components of turbulent currents or that exists in suspension as a colloid.

Suspended-sediment concentration is the velocity-weighted concentration of suspended sediment in the sampled zone (from the water surface to a point approximately 0.3 ft above the bed) expressed as milligrams of dry sediment per liter of water-sediment mixture (mg/L).

Mean concentration is the time-weighted concentration of suspended sediment passing a stream section during a 24-hour day.

Suspended-sediment discharge (tons/day) is the rate at which dry mass of sediment passes a section of a stream or is the quantity of sediment, as measured by dry mass or volume, that passes a section in a given time. It is calculated in units of tons per day as follows: concentration (mg/L) x discharge (ft³/s) x 0.0027.

Suspended-sediment load is a general term that refers to material in suspension. It is not synonymous with either discharge or concentration.

Total sediment discharge (tons/day) is the sum of the suspended-sediment discharge and the bed-load discharge. It is the total quantity of sediment, as measured by dry mass or volume, that passes a section during a given time.

Total-sediment load or total load is a term which refers to the total sediment (bed load plus suspended-sediment load) that is in transport. It is not synonymous with total-sediment discharge.

Sodium-adsorption-ratio (SAR) is the expression of relative activity of sodium ions in exchange reactions within soil and is an index of sodium or alkali hazard to the soil. Waters range in respect to sodium hazard from those which can be used for irrigation on almost all soils to those which are generally unsatisfactory for irrigation.

Solute is any substance 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 microsiemens 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 of the water. Commonly, the concentration of dissolved solids (in milligrams per liter) is about 65 percent of the specific conductance (in microsiemens). This relation is not constant 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 volume 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.

Substrate is the physical surface upon which an organism lives.

Natural substrate refers to any naturally occurring emerged or submersed solid surface, such as a rock or tree, upon which an organism lives.

Artificial substrate is a device which is purposely placed in a stream or lake for colonization of organisms. The artificial substrate simplifies the community structure by standardizing the substrate from which each sample is taken. Examples of artificial substrates are basket samplers (made of wire cages filled with clean streamside rocks) and multiplate samplers (made of hardboard) for benthic organism collection, and plexiglass strips for periphyton collection.

Surface area of a lake is that area outlined on the latest U.S.G.S. topographic map as the boundary of the lake and measured by a planimeter in acres. In localities not covered by topographic maps, the areas are computed from the best maps available

at the time planimetered. All areas shown are those for the stage when the planimetered map was made.

Surficial bed material is the part (0.1 to 0.2 ft) of the bed material that is sampled using U.S. Series Bed-Material Samplers.

Suspended (as used in tables of chemical analyses) refers to the amount (concentration) of undissolved material in a water-sediment mixture. It is associated with the material retained on a 0.45-micrometer filter.

Suspended, recoverable is 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 μ m 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 the 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 are 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 is the total amount of a given constituent in the part of a representative water-suspended sediment sample that is retained on a 0.45 μ m 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.

Taxonomy is the division of biology concerned with the classification and naming of organisms. The classification of organisms is based upon a hierarchical scheme beginning with Kingdom and ending with Species at the base. The higher the classification level, the fewer features the organisms have in common. For example, the taxonomy of a particular mayfly, *Hexagenia limbata*, is the following:

Kingdom.....	Animal
Phylum.....	Arthropoda
Class.....	Insecta
Order.....	Ephemeroptera
Family.....	Ephemeridae
Genus.....	Hexagenia
Species.....	Hexagenia limbata

Thermograph is an instrument that continuously records variations of temperature on a chart. The more general term "temperature recorder" is used in the table headings and refers to any instrument that records temperature whether on a chart, a tape, or any other medium.

Time-weighted average is computed by multiplying the number of days in the sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the total number of days. A time-weighted average represents the composition of water that would be contained in a vessel or reservoir that had received equal quantities of water from the stream each day for the year.

Tons per acre-foot indicates the dry mass of dissolved solids in 1 acre-foot of water. It is computed by multiplying the concentration of the constituent, in milligrams per liter, by 0.00136.

Tons per day (T/DAY) is the quantity of a substance in solution or suspension that passes a stream section during a 24-hour period.

Total is 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 a water-suspended sediment mixture and that the analytical method determined all of the constituent in the sample.)

Total discharge is the total quantity of any individual constituent, as measured by dry mass or volume, that passes through a stream cross-section per unit of time. This term needs to be qualified, such as "total sediment discharge," "total chloride discharge," and so on.

Total, recoverable is 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 are required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

Tritium Network is a network of stations which has been established to provide baseline information on the occurrence of tritium in the Nation's surface waters. In addition to the surface-water stations in the network, tritium data are also obtained at a number of precipitation stations. The purpose of the precipitation stations is to provide an estimate sufficient for hydrologic studies of the tritium input to the United States.

Water year in Geological Survey reports dealing with surface-water supply is the 12-month period October 1 through September 30. The water year is designated by the calendar year in which it ends and which includes 9 of the 12 months. Thus, the year ending September 30, 1989, is called the "water year 1989."

WDR is used as an abbreviation for "Water-Data Report" in the REVISED RECORDS paragraph to refer to State annual hydrologic-data reports (WRD was used as an abbreviation for "Water-Resources Data" in reports published prior to 1976).

Weighted average is used in this report to indicate discharge-weighted average. It is computed by multiplying the discharge for a sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the sum of the discharges. A discharge-weighted average approximates the composition of water that would be found in a reservoir containing all the water passing a given location during the water year after thorough mixing in the reservoir.

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

PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS

The U.S. Geological Survey publishes a series of manuals describing procedures for planning and conducting specialized work in water-resources investigations. The material is grouped under major subject headings called books and is further divided into sections and chapters. For example, Section A of Book 3 (Applications of Hydraulics) pertains to surface water. The chapter, the unit of publication, is limited to a narrow field of subject matter. This format permits flexibility in revision and publication as the need arises.

The reports listed below are for sale by the U.S. Geological Survey, Books and Open-File Reports Section, Federal Center, Box 25425, Denver, Colorado 80225 (authorized agent of the Superintendent of Documents, Government Printing Office). Prepayment is required. Remittance should be sent by check or money order payable to the U.S. Geological Survey. Prices are not included because they are subject to change. Current prices can be obtained by writing to the above address. When ordering or inquiring about prices for any of these publications, please give the title, book number, chapter number, and "U.S. Geological Survey Techniques of Water-Resources Investigations."

- 1-D1. *Water temperature--influential factors, field measurement, and data presentation*, by H. H. Stevens, Jr., J. F. Ficke, and G. F. Smoot: USGS--TWRI Book 1, Chapter D1. 1975. 65 pages.
- 1-D2. *Guidelines for collection and field analysis of ground-water samples for selected unstable constituents*, by W. W. Wood: USGS--TWRI Book 1, Chapter D2. 1976. 24 pages.
- 2-D1. *Application of surface geophysics to ground-water investigations*, by A. A. R. Zohdy, G. P. Eaton, and D. R. Mabey: USGS--TWRI Book 2, Chapter D1. 1974. 116 pages.
- 2-D2. *Application of seismic-refraction techniques to hydrologic studies*, by F. P. Haeni: USGS--TWRI Book 2, Chapter D2. 1988. 86 pages.
- 2-E1. *Application of borehole geophysics to water-resources investigations*, by W. S. Keys and L. M. MacCary: USGS--TWRI Book 2, Chapter E1. 1971. 126 pages.
- 2-F1. *Application of drilling, coring, and sampling techniques to test holes and wells*, by Eugene Shuter and Warren E. Teasdale: USGS--TWRI Book 2, Chapter F1. 1989. 97 pages.
- 3-A1. *General field and office procedures for indirect discharge measurements*, by M. A. Benson and Tate Dalrymple: USGS--TWRI Book 3, Chapter A1. 1967. 30 pages.
- 3-A2. *Measurement of peak discharge by the slope-area method*, by Tate Dalrymple and M. A. Benson: USGS--TWRI Book 3, Chapter A2. 1967. 12 pages.
- 3-A3. *Measurement of peak discharge at culverts by indirect methods*, by G. L. Bodhaine: USGS--TWRI Book 3, Chapter A3. 1968. 60 pages.
- 3-A4. *Measurement of peak discharge at width contractions by indirect methods*, by H. F. Matthai: USGS--TWRI Book 3, Chapter A4. 1967. 44 pages.
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WESTERN GULF OF MEXICO BASINS

33

COLORADO RIVER MAIN STEM

08117995 COLORADO RIVER NEAR GAIL, TX

LOCATION.--Lat 32°37'43", long 101°17'06", Borden County, Hydrologic Unit 12080002, near right downstream end of bridge on FM 1205, 5.0 mi north of junction with FM 1785, 14 mi northwest of Vincent, 25 mi west of Ira, and 13 mi southeast of Gail.

DRAINAGE AREA.--498 mi².

PERIOD OF RECORD.--March 1988 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,270 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except those for estimated daily discharges and those above 700 ft³/s, which are fair. No known regulation or diversions above station. Several observations of water temperature were made during the year.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 600 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Sept. 14	0215	*2,390	*13.19	No other peak greater than base discharge.			
Minimum discharge, no flow for many days.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.4	.00	.65	1.1	2.4	1.8	.79	.00	.00	.00	.00	.00
2	1.2	.00	.65	1.1	1.8	1.8	.76	.00	6.2	.00	.00	.00
3	1.0	.00	.65	1.1	1.6	2.0	.70	.00	111	.00	.00	.00
4	.90	.00	.65	1.1	1.5	1.8	.65	.00	110	.00	.00	.00
5	.89	.00	.65	1.1	1.1	1.7	.57	.00	118	.00	.00	.00
6	.88	.00	.65	1.1	1.1	1.8	.36	.00	51	.00	.00	.00
7	.78	.00	.73	1.1	.98	1.9	.33	.00	11	.00	.00	.00
8	.72	.00	.93	1.1	1.1	1.7	.35	.00	4.7	.00	.00	.00
9	.70	.00	1.1	1.1	1.1	1.4	.26	.00	2.4	.00	.00	.00
10	.70	.00	1.9	1.1	1.0	1.5	.09	.00	1.9	.00	.00	.00
11	.60	.00	2.0	1.1	1.0	1.6	.03	.00	1.7	.00	.00	34
12	.51	.00	2.0	1.1	1.0	1.6	e.01	.00	4.7	.00	.00	81
13	.38	.00	2.0	1.0	1.1	1.5	e.01	.00	2.8	.00	.00	369
14	.38	.00	2.1	.97	1.2	1.2	.10	.00	1.3	.00	.00	936
15	.33	.00	1.9	1.1	1.4	1.2	.47	.00	.86	30	.00	31
16	.33	.00	1.7	1.1	2.3	1.1	.57	.00	.70	4.7	.00	10
17	.33	.00	1.5	1.1	5.1	1.0	.50	.00	.54	.37	.00	4.9
18	.19	.00	1.5	1.1	9.2	.97	.33	.00	.17	.00	.00	2.7
19	.11	.00	1.4	1.1	7.1	.96	.17	8.9	.00	.00	.00	1.7
20	e.06	.00	1.2	1.1	6.7	.88	.09	6.6	.00	.00	.00	1.1
21	e.04	.00	1.2	1.1	4.5	.83	.07	2.4	.00	.00	.00	.84
22	e.02	.00	1.2	1.1	3.4	.90	.12	1.1	.00	.00	.00	.62
23	e.01	.00	1.1	1.1	2.7	.97	.88	.57	.00	.00	.00	.36
24	.00	.00	1.1	1.1	2.3	.97	1.2	.14	.00	.00	16	.07
25	.00	.00	1.1	1.1	2.2	.95	.65	e.03	.00	.00	1.6	.00
26	.00	.00	1.1	1.1	2.2	.88	.36	.00	.00	.00	.16	.00
27	.00	.00	1.1	1.2	2.0	.80	.08	.00	.00	.00	.00	.00
28	.00	.00	1.1	2.0	1.8	.86	e.04	.00	.00	.00	.00	.00
29	.00	.16	1.1	3.5	---	.89	e.02	.00	.00	.00	.00	.00
30	.00	.50	1.1	2.6	---	.89	e.01	.00	.00	.00	.00	.00
31	.00	---	1.1	2.9	---	.87	---	.00	---	.00	.00	---
TOTAL	12.46	0.66	38.16	40.57	70.88	39.22	10.57	19.74	428.97	35.07	17.76	1473.29
MEAN	.40	.022	1.23	1.31	2.53	1.27	.35	.64	14.3	1.13	.57	49.1
MAX	1.4	.50	2.1	3.5	9.2	2.0	1.2	8.9	118	30	16	936
MIN	.00	.00	.65	.97	.98	.80	.01	.00	.00	.00	.00	.00
AC-FT	25	1.3	76	80	141	78	21	39	851	70	35	2920

CAL YR 1988	TOTAL	MEAN	MAX	MIN	AC-FT
WTR YR 1989	2187.35	5.99	936	.00	4340

e Estimated.

COLORADO RIVER MAIN STEM

08119500 COLORADO RIVER NEAR IRA, TX

LOCATION.--Lat 32°32'18", long 101°03'12", Scurry County, Hydrologic Unit 12080002, on right bank 530 ft downstream from bridge on State Highway 350, 3.8 mi downstream from Bluff Creek, 4 mi upstream from Willow Creek, 4.5 mi southwest of Ira, and at mile 826.3.

DRAINAGE AREA.--3,483 mi², of which 2,371 mi² probably is noncontributing.

PERIOD OF RECORD.--October 1947 to September 1952 (monthly records only 1950-52), October 1958 to September 1989 (discontinued).

Water-quality records: Chemical analyses: November 1958 to September 1970, November 1974 to September 1982.

REVISED RECORDS.--WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 2,134.15 ft above National Geodetic Vertical Datum of 1929. Oct. 1-30, 1947, nonrecording gage at site 75 ft upstream at same datum.

REMARKS.--No estimated daily discharges. Records good. Since July 1952, flow largely regulated by Lake J. B. Thomas (capacity, 203,600 acre-ft) located 11 mi upstream. There are numerous diversions from Lake J. B. Thomas for municipal use and for oil-field operations.

AVERAGE DISCHARGE.--5 years (water years 1948-52) prior to completion of Colorado River Dam, 50.5 ft³/s (36,590 acre-ft/yr); 31 years (water years 1959-89) regulated, 9.32 ft³/s (6,750 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,500 ft³/s July 6, 1948 (gage height, 21.35 ft), from rating curve extended above 9,600 ft³/s by slope-conveyance method; maximum gage height, 22.84 ft May 15, 1980 (from shift in rating); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 16, 1913 (gage height, 32 ft), was the greatest since at least that date, from information by local resident. Flood in May 1947 reached a stage of 25.1 ft, from floodmark at site of former bridge 269 ft upstream from gage.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 193 ft³/s Sept. 11 at 0700 hours (gage height, 6.37 ft); no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.70	5.3	1.1	1.2	1.4	1.6	1.0	.61	.14	.00	.03	.00
2	.61	1.7	1.1	1.2	1.3	1.6	.92	.61	.22	.00	.06	.00
3	.61	1.4	1.1	1.2	1.2	1.5	.83	.61	.38	.00	3.0	.00
4	.61	1.4	1.1	1.2	1.1	1.5	.76	.61	29	.00	.11	.00
5	.61	1.1	1.1	1.2	1.1	1.6	.76	.60	3.9	.00	.07	.00
6	.61	1.0	1.1	1.2	1.2	1.6	.76	.48	1.5	.00	.04	.00
7	.61	.99	1.1	1.2	1.1	1.6	.76	.47	.95	.00	1.6	.00
8	.61	.94	1.3	1.2	1.1	1.6	.76	.41	.72	.00	.20	.00
9	.61	.92	1.3	1.2	1.1	1.4	.76	.36	.72	.00	.36	.00
10	.63	.85	2.0	1.2	1.1	1.4	.76	.36	.98	.00	.26	.00
11	.68	.85	1.8	1.2	1.1	1.4	.76	.36	1.1	.00	.14	70
12	.68	.85	1.6	1.2	1.2	1.4	.76	.44	.76	.00	.09	21
13	.68	.85	1.4	1.2	1.3	1.4	.80	.48	.77	.00	.09	15
14	.68	.85	1.3	1.3	1.5	1.4	.85	.48	1.2	.00	.09	4.6
15	.68	.90	1.2	1.3	1.6	1.3	.90	.51	1.2	29	.07	1.5
16	.68	.94	1.2	1.3	7.0	1.3	.92	.54	.94	3.7	.06	.67
17	.68	.94	1.3	1.3	16	1.3	.85	.53	.78	1.2	.09	.40
18	.68	.94	1.3	1.2	3.6	1.3	.85	.47	.56	.76	.09	.29
19	.68	.94	1.3	1.2	2.3	1.2	.85	.40	.36	.46	.09	.25
20	.72	.94	1.3	1.2	1.9	1.2	.85	.30	.20	.23	.04	.18
21	.76	.98	1.3	1.3	1.7	1.2	.83	.24	.07	.12	.03	.17
22	.76	1.0	1.3	1.3	1.6	1.1	.77	.16	.04	.11	.02	.14
23	.81	1.0	1.2	1.3	1.6	1.1	.85	.11	.04	.06	.01	.09
24	.85	1.1	1.2	1.3	1.6	1.1	.85	.07	.04	.08	.01	.07
25	.85	1.1	1.2	1.3	1.6	1.1	.85	.04	.03	.08	.01	.07
26	.85	1.1	1.2	1.3	1.6	1.1	.82	.03	.03	.04	.00	.07
27	.90	1.1	1.2	1.5	1.6	1.2	.67	.02	.02	.03	.00	.07
28	.94	1.1	1.2	2.1	1.6	1.2	.61	.02	.00	.03	.00	.07
29	.94	1.1	1.2	2.0	---	1.1	.61	.02	.00	.03	.00	.07
30	.94	1.1	1.2	1.7	---	1.1	.61	.03	.00	.03	.01	.07
31	24	---	1.2	1.5	---	1.0	---	.03	---	.03	.01	---
TOTAL	45.65	35.28	39.4	41.0	62.1	40.9	23.93	10.40	46.65	35.99	6.68	114.78
MEAN	1.47	1.18	1.27	1.32	2.22	1.32	.80	.34	1.55	1.16	.22	3.83
MAX	24	5.3	2.0	2.1	16	1.6	1.0	.61	29	29	3.0	70
MIN	.61	.85	1.1	1.2	1.1	1.0	.61	.02	.00	.00	.00	.00
AC-FT	91	70	78	81	123	81	47	21	93	71	13	228

CAL YR 1988 TOTAL 1971.58 MEAN 5.39 MAX 512 MIN .00 AC-FT 3910
WTR YR 1989 TOTAL 502.76 MEAN 1.38 MAX 70 MIN .00 AC-FT 997

COLORADO RIVER MAIN STEM

35

08120700 COLORADO RIVER NEAR CUTHBERT, TX

LOCATION.--Lat 32°28'38", Long 100°56'58", Mitchell County, Hydrologic Unit 12080002, on left bank at downstream side of bridge on Farm Road 1808, 4.0 mi downstream from Deep Creek, 4.8 mi east of Cuthbert, 8.0 mi northwest of Colorado City, and at mile 810.0.

DRAINAGE AREA.--3,912 mi², of which 2,381 mi² probably is noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1965 to current year.

REVISED RECORDS.--WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,073.49 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Since July 1952, flow largely regulated by Lake J. B. Thomas (capacity, 203,600 acre-ft) located 27 mi upstream. There are numerous diversions from Lake J. B. Thomas for municipal use and for oil field operations.

AVERAGE DISCHARGE.--24 years (water years 1966-89), 36.2 ft³/s (26,230 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,500 ft³/s Aug. 14, 1972 (gage height, 25.99 ft); maximum gage height, 27.18 ft Sept. 29, 1980; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods in 1941 and 1946 reached a stage of 36.1 ft, from State Department of Highways and Public Transportation bridge plans.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 717 ft³/s June 2 at 1330 hours (gage height, 8.75 ft); minimum daily, 0.01 ft³/s Aug. 28 to Sept. 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.2	26	8.6	11	10	13	13	6.0	.04	.13	.02	.01
2	9.2	19	7.5	10	9.4	13	12	6.0	221	.10	.02	.01
3	8.9	12	7.5	11	8.6	13	12	5.7	110	.09	.08	.02
4	9.1	8.7	7.5	10	7.2	e14	12	6.0	178	.08	6.1	.02
5	7.2	7.3	7.5	10	6.9	e14	12	6.3	135	.07	2.9	.02
6	6.2	6.7	7.5	10	6.6	14	11	5.5	79	.06	.97	.02
7	5.8	6.5	7.9	10	6.9	14	12	4.5	38	.05	12	.02
8	6.0	6.3	7.9	11	7.5	15	12	4.5	18	.04	7.5	.02
9	6.2	6.3	9.4	9.8	7.5	15	11	3.6	15	.04	2.9	.02
10	6.6	5.9	11	9.0	7.5	14	11	3.1	12	.03	1.1	.02
11	6.4	5.8	19	7.5	7.9	13	9.0	3.4	14	.02	.52	13
12	6.3	5.7	15	6.9	8.2	13	9.1	4.0	16	.02	.28	37
13	6.3	5.9	15	7.2	8.9	e13	9.4	e4.2	8.2	.02	.17	19
14	6.0	6.0	15	7.5	78	e13	10	e4.2	6.3	.02	.12	22
15	5.8	6.0	14	7.9	38	12	11	4.2	4.7	34	.09	11
16	5.5	6.0	12	8.6	11	12	12	4.2	4.2	14	.09	6.6
17	5.5	5.8	11	7.5	84	12	11	5.7	3.4	5.1	.12	3.8
18	5.5	5.8	9.8	7.2	47	12	10	6.0	2.3	1.2	.09	1.9
19	5.4	6.5	9.4	7.5	31	12	10	5.5	2.0	.34	.10	1.5
20	5.5	6.6	9.4	6.9	26	12	9.8	1.5	1.9	.15	.81	.91
21	5.5	6.3	9.4	7.2	22	12	9.4	.82	1.9	.10	.53	.66
22	5.6	6.3	9.8	7.9	18	12	9.0	.66	1.5	.07	.15	.42
23	5.7	6.3	10	8.2	14	12	8.6	.52	.99	.06	.10	.22
24	5.9	6.6	9.4	7.5	14	12	9.8	.42	.68	.05	.07	.16
25	6.0	7.4	8.6	8.6	13	14	9.0	.29	.51	.05	.05	.25
26	5.8	7.8	8.6	8.2	13	14	8.6	.19	.40	.04	.03	.82
27	5.7	7.9	9.0	8.3	13	14	6.9	e.16	.41	.02	.02	.66
28	5.7	8.2	10	13	13	14	6.6	e.12	.30	.02	.01	.42
29	5.5	8.2	9.4	17	---	13	e6.3	.10	.18	.02	.01	.42
30	5.5	7.9	9.8	15	---	13	6.3	.08	.15	.02	.01	.29
31	19	---	10	12	---	13	---	.05	---	.02	.01	---
TOTAL	208.5	237.7	315.9	289.4	538.1	406	299.8	97.51	876.06	56.03	36.97	121.21
MEAN	6.73	7.92	10.2	9.34	19.2	13.1	9.99	3.15	29.2	1.81	1.19	4.04
MAX	19	26	19	17	84	15	13	6.3	221	34	12	37
MIN	5.4	5.7	7.5	6.9	6.6	12	6.3	.05	.04	.02	.01	.01
AC-FT	414	471	627	574	1070	805	595	193	1740	111	73	240
CAL YR 1988	TOTAL	9415.23	MEAN	25.7	MAX	1220	MIN	.02	AC-FT	18680		
WTR YR 1989	TOTAL	3483.18	MEAN	9.54	MAX	221	MIN	.01	AC-FT	6910		

e Estimated.

COLORADO RIVER MAIN STEM

08120700 COLORADO RIVER NEAR CUTHBERT, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: March 1965 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: March 1965 to current year.

WATER TEMPERATURE: March 1965 to May 1980, April 1983 to current year.

INSTRUMENTATION.--From March 1965 to October 1987, specific conductance was recorded continuously at this station. From April 1983 to October 1987, water temperature was recorded continuously at this station.

REMARKS.--Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 70,000 microsiemens Nov. 17, 1968; minimum, 102 microsiemens Sept. 28, 1980.

WATER TEMPERATURE: Maximum, 36.0°C Aug. 7, 1985; minimum, 0.0°C on many days during winter months.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 12,600 microsiemens Sept. 8; minimum daily, 438 microsiemens June 3.

WATER TEMPERATURE: Maximum daily, 29.5°C May 25, Aug. 23; minimum daily, 3.0°C Jan. 14, 16, Feb. 10.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
OCT									
05...	1435	5.9	4500	20.0	830	620	200	81	670
NOV									
21...	1635	6.4	3860	10.0	870	580	200	91	400
JAN									
11...	1325	7.4	5520	8.0	1100	790	240	110	800
APR									
11...	1445	8.8	4900	14.5	1000	750	220	110	780
MAY									
31...	1500	0.05	5270	23.0	1100	730	230	120	800
JUL									
25...	1005	0.02	2340	26.0	540	380	130	52	300

DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CAC03	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 CONSTITUENTS, DIS- SOLVED (MG/L)
OCT								
05...	10	7.1	217	600	1100	0.60	9.4	2800
NOV								
21...	6	8.6	292	700	730	0.90	11	2320
JAN								
11...	11	6.6	267	930	1200	1.0	3.0	3450
APR								
11...	11	6.7	257	930	1000	1.3	7.0	3210
MAY								
31...	11	9.1	344	1100	1000	2.1	10	3480
JUL								
25...	6	8.3	161	460	420	0.70	7.4	1470

COLORADO RIVER MAIN STEM

37

08120700 COLORADO RIVER NEAR CUTHBERT, TX--Continued

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1988 TO SEPTEMBER 1989

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	DIS- SOLVED SOLIDS (MG/L)	DIS- SOLVED SOLIDS (TONS)	DIS- SOLVED CHLORIDE (MG/L)	DIS- SOLVED CHLORIDE (TONS)	DIS- SOLVED SULFATE (MG/L)	DIS- SOLVED SULFATE (TONS)	HARDNESS (CA, MG) (MG/L)
OCT. 1988	208.5	5100	3170	1780	1200	663	730	414	930
NOV. 1988	237.7	5370	3330	2140	1300	814	750	482	950
DEC. 1988	315.9	5370	3340	2850	1200	1070	770	654	970
JAN. 1989	289.4	5400	3360	2620	1300	983	770	602	980
FEB. 1989	538.1	4060	2530	3670	910	1320	610	882	760
MAR. 1989	406	5090	3160	3470	1200	1290	730	806	930
APR. 1989	299.8	5360	3330	2690	1200	1010	770	619	970
MAY 1989	97.51	4870	3030	798	1100	294	710	186	890
JUNE 1989	876.06	1430	897	2120	290	698	230	555	290
JULY 1989	56.03	2910	1820	275	630	95	450	68	570
AUG. 1989	36.97	3660	2270	227	850	84	530	52	660
SEPT 1989	121.21	3950	2460	806	880	288	590	194	750
TOTAL	3483.18	**	**	23500	**	8600	**	5510	**
WTD.AVG.	9.5	4010	2490	**	910	**	590	**	740

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
EQUIVALENT MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e4100	7000	5360	5390	e5200	5000	e5540	5630	e5800	3850	11600	11200
2	e4300	8760	5320	5370	5210	5000	e5370	5580	814	3960	8910	e11600
3	4690	8310	5270	5230	e5200	4970	5200	5430	438	4050	e8500	e11800
4	4640	7690	5330	5250	e5180	e4970	5300	5300	1990	e4220	7800	12200
5	4590	5680	5330	5260	e5140	e4980	5300	5160	1500	e4460	e7000	12400
6	4650	4760	5340	5360	e5120	4980	5400	5150	1860	4700	e5000	12400
7	4720	4250	5480	e5400	e5100	5010	5500	5070	1900	4680	3100	12500
8	4840	3910	5640	e5440	e5080	4920	5300	5040	1950	e4980	1500	12600
9	5370	3770	5600	5500	e5050	5020	5200	5110	2250	e5580	1420	12400
10	5140	3600	e5350	5330	5030	5130	5300	5240	e2010	5880	1460	9200
11	4960	3690	e5100	5500	5090	5070	5200	5390	e1890	6620	1520	5200
12	4900	e3730	4850	5520	5210	5010	5200	5090	1770	8130	1570	3600
13	4880	e3770	5150	5490	5270	5030	5300	e4770	1950	9260	1600	3650
14	4910	e3820	5550	5420	3020	4980	e5300	e4620	2310	10400	1740	4100
15	e5040	3860	5490	5400	3520	5010	e5400	4470	2400	3500	1900	4200
16	e5150	3960	5360	5350	3820	5040	5300	4540	2490	1730	1970	e3820
17	5300	4000	5330	5430	3670	4980	5600	4340	2690	2220	2060	e3150
18	5360	4010	5410	5390	e3650	e5020	5600	4000	2900	1880	2230	3200
19	5200	4220	5340	5340	e3620	e5080	5500	3450	3050	2010	e2260	3210
20	5260	4220	5380	5440	3610	5130	5400	3520	3200	2120	e2300	3780
21	5320	4070	5430	e5490	4010	5160	5400	3680	3180	2200	2330	4050
22	5440	4270	5500	e5530	4670	5010	5400	4080	3140	e2280	2200	4330
23	5400	4370	5470	5580	4730	5110	5200	4670	3180	e2440	2230	4500
24	5390	4490	5490	5640	4760	5200	5200	e4760	e3270	2520	2360	4620
25	5460	4710	5510	5570	4750	5280	5300	4950	e3360	3270	2520	4750
26	5430	e4890	5530	5520	4800	5390	5400	5040	3550	4070	3200	4520
27	5370	e5080	5400	5470	4850	5130	5300	e5120	3640	4930	4400	4450
28	5610	5260	5540	5600	4940	5160	5400	e5260	3710	6070	6480	4370
29	e5650	5490	5490	5570	---	5290	e5400	5540	4230	8460	9300	4310
30	e5700	5350	5440	4970	---	5340	5500	5730	3780	10400	10400	4100
31	5730	---	5290	5150	---	5410	---	5910	---	11200	11400	---
MEAN	5110	4830	5390	5420	4620	5090	5360	4890	2670	4910	4270	6670

e Estimated

COLORADO RIVER MAIN STEM

08120700 COLORADO RIVER NEAR CUTHBERT, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	14.0	5.0	6.5	---	10.0	---	17.5	---	28.5	23.5	24.0
2	---	15.5	5.5	6.5	---	18.0	---	19.0	12.5	27.5	23.0	---
3	17.5	15.5	6.5	8.0	---	12.5	18.0	22.5	18.5	25.0	26.0	---
4	17.0	14.5	7.0	8.0	---	---	16.5	20.5	21.0	---	26.5	23.5
5	---	15.5	8.5	11.0	---	---	18.0	21.5	20.0	---	---	27.5
6	17.0	13.0	7.0	8.0	---	4.5	16.0	22.5	22.0	28.0	---	24.5
7	17.5	13.0	6.5	---	---	6.0	16.5	24.0	22.0	24.0	25.0	25.0
8	19.0	13.0	4.5	---	---	10.5	17.5	24.0	---	---	23.0	26.0
9	18.5	14.0	3.5	5.0	---	11.0	15.0	23.0	23.0	---	24.5	24.0
10	16.0	15.5	---	5.0	3.0	11.0	12.0	20.0	---	24.0	23.5	21.0
11	16.5	14.5	---	10.5	7.5	15.0	11.0	20.0	---	24.5	23.5	21.5
12	16.5	---	5.5	5.0	7.0	16.0	11.5	19.0	24.0	27.0	23.0	21.5
13	17.0	---	5.5	4.0	8.0	15.5	11.5	---	24.5	24.5	23.0	17.5
14	16.5	---	9.0	3.0	6.0	16.0	---	---	25.0	24.5	22.5	17.5
15	---	15.5	6.0	4.5	8.0	16.0	---	21.0	23.0	24.0	23.0	18.0
16	---	12.0	5.0	3.0	6.5	15.5	---	23.5	22.5	27.0	23.0	---
17	20.0	10.0	5.0	3.5	5.0	16.0	18.5	25.0	23.5	27.5	25.0	---
18	19.5	10.5	6.0	4.5	---	---	21.0	21.5	26.5	28.0	24.0	23.5
19	18.5	11.0	6.0	7.0	---	---	23.0	21.0	26.0	26.0	---	21.0
20	18.5	9.0	6.0	6.0	8.5	16.0	21.5	24.5	27.0	26.5	---	22.0
21	18.5	7.0	6.0	---	9.5	10.0	21.5	25.5	---	24.0	29.0	20.0
22	18.0	6.5	9.0	---	10.5	10.0	22.5	24.5	28.0	---	26.0	21.0
23	18.0	7.0	7.5	5.5	8.5	12.0	23.0	26.0	24.5	---	29.5	16.5
24	15.0	8.5	---	8.0	9.0	---	22.5	---	---	21.5	24.5	16.0
25	15.5	9.0	---	12.0	11.0	17.0	21.5	29.5	---	23.0	24.5	18.5
26	15.5	---	11.0	9.0	13.0	19.0	22.0	24.0	25.5	24.0	24.0	15.5
27	17.5	---	10.5	8.0	12.0	19.0	25.5	---	26.0	23.5	25.0	15.0
28	15.5	5.5	8.0	7.0	10.5	19.0	20.0	---	28.0	23.5	27.5	18.5
29	---	6.0	4.0	9.0	---	19.0	---	21.5	25.5	24.0	24.0	15.5
30	---	7.0	4.5	7.0	---	20.0	18.0	22.0	25.0	24.0	24.0	15.5
31	15.5	---	5.5	8.0	---	16.0	---	22.0	---	23.0	28.0	---
MEAN	17.5	11.5	6.5	7.0	8.5	14.0	18.5	22.5	23.5	25.0	24.5	20.5

COLORADO RIVER MAIN STEM

39

08121000 COLORADO RIVER AT COLORADO CITY, TX

LOCATION.--Lat 32°23'33", long 100°52'42", Mitchell County, Hydrologic Unit 12080002, on right bank at Colorado City, 3,517 ft upstream from bridge on State Highway 377, 4,100 ft upstream from the Texas and Pacific Railroad Co. bridge, 1.3 mi downstream from bridge on Interstate Highway 20 and U.S. Highway 80, 1.6 mi upstream from Lone Wolf Creek, and at mile 796.3.

DRAINAGE AREA.--3,966 mi², of which 2,381 mi² probably is noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--November 1923 to August 1925 (published as "at Colorado"), May 1946 to current year.

REVISED RECORDS.--WSP 1512: 1946(M). WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 2,030.16 ft above National Geodetic Vertical Datum of 1929. Nov. 28, 1923, to Aug. 31, 1925, nonrecording gage at site 1.4 mi downstream at different datum. May 9 to Aug. 5, 1946, nonrecording gage at site 185 ft upstream at present datum.

REMARKS.--No estimated daily discharges. Records good. Since July 1952, flow largely regulated by Lake J. B. Thomas (capacity, 203,600 acre-ft) 31 mi upstream. The Colorado River Municipal Water District diverts low flow into an off channel reservoir 3 mi upstream for brine disposal. There are numerous diversions from Lake J. B. Thomas for municipal use and for oil field operations.

AVERAGE DISCHARGE.--6 years (water years 1947-52) prior to completion of Lake J.B. Thomas, 85.4 ft³/s (61,870 acre-ft/yr); 37 years (water years 1953-89) regulated, 38.0 ft³/s (27,530 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,900 ft³/s July 6, 1948 (gage height, 22.37 ft, from floodmark); maximum gage height, 27.81 ft Sept. 29, 1980, backwater from salt cedar; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1910, 35.9 ft June 20, 1939, present site and datum, based on floodmarks 1,000 ft upstream and 3,740 ft downstream from gage; discharge, 66,000 ft³/s, by slope-area measurement of peak flow at site 2.5 mi upstream from gage.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 772 ft³/s June 2 at 2200 hours (gage height, 8.98 ft); minimum daily, 0.02 ft³/s Aug. 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.3	.50	.62	12	15	.92	12	5.4	.44	.09	.02	.09
2	1.2	.41	.62	13	14	.94	13	5.4	263	.09	.03	.09
3	.64	7.2	.62	13	13	.83	8.4	6.0	460	.09	.04	.09
4	.62	14	.62	13	12	.71	.99	6.0	177	.09	.05	.10
5	.41	12	.53	13	11	15	.59	5.6	212	.09	.05	.11
6	.41	11	.62	13	11	16	.62	4.3	117	.05	.05	.06
7	.41	11	.62	13	11	16	.57	.68	32	.05	.05	.07
8	.41	10	.80	12	11	17	.57	.34	14	.05	.05	.07
9	.41	11	.69	12	12	16	.41	.25	13	.03	.05	.09
10	.41	10	1.3	11	12	15	.41	.35	13	.03	.05	.09
11	.41	10	12	11	13	15	.42	.40	9.9	.03	.04	1.5
12	.41	11	21	11	13	15	.41	.46	9.2	.03	.05	1.4
13	3.6	11	17	8.0	13	15	.62	.40	7.1	.03	.05	6.8
14	9.1	11	15	1.2	120	15	.62	.30	5.6	.03	.05	11
15	9.2	11	11	.80	90	14	.62	.51	4.4	.03	.05	11
16	9.2	9.7	13	.62	48	14	.51	4.3	3.9	2.1	.05	3.7
17	9.3	10	12	.62	146	14	.41	5.3	2.5	.17	.06	.24
18	9.4	10	12	.62	131	13	.41	.49	.29	.15	.06	.20
19	9.2	11	12	.62	48	13	4.9	.26	.24	.15	.05	.16
20	9.5	11	11	.59	39	14	7.9	3.5	.21	.09	.07	.15
21	9.1	11	12	.41	33	13	9.5	3.8	.15	.09	.05	.15
22	9.6	11	12	.45	26	14	8.3	3.2	.15	.09	.06	.10
23	9.9	11	11	.61	23	14	8.2	3.0	.15	.09	.09	.09
24	9.8	11	12	4.7	21	14	7.4	2.9	.15	.06	.09	.09
25	10	11	12	11	20	14	8.5	2.6	.15	.05	.09	.09
26	9.9	12	13	11	21	14	7.7	2.5	.15	.04	.09	.11
27	10	11	13	13	13	15	6.5	2.2	.15	.03	.06	.15
28	7.5	7.7	11	17	1.3	15	6.0	2.3	.15	.03	.07	.15
29	1.1	1.1	12	18	---	15	5.6	2.3	.10	.04	.05	.15
30	.62	.62	12	21	---	15	5.6	2.1	.09	.04	.08	.15
31	.62	---	12	16	---	13	---	.60	---	.03	.09	---
TOTAL	161.68	280.23	275.04	273.24	941.3	396.40	127.68	77.74	1346.17	4.06	1.80	38.24
MEAN	5.22	9.34	8.87	8.81	33.6	12.8	4.26	2.51	44.9	.13	.058	1.27
MAX	10	14	21	21	146	17	13	6.0	460	2.1	.09	11
MIN	.41	.41	.53	.41	1.3	.71	.41	.25	.09	.03	.02	.06
AC-FT	321	556	546	542	1870	786	253	154	2670	8.1	3.6	76

CAL YR 1988 TOTAL 10171.66 MEAN 27.8 MAX 1180 MIN .03 AC-FT 20180
WTR YR 1989 TOTAL 3923.58 MEAN 10.7 MAX 460 MIN .02 AC-FT 7780

COLORADO RIVER MAIN STEM

08121000 COLORADO RIVER AT COLORADO CITY, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: May 1946 to September 1954, November 1956 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: May 1946 to September 1954, November 1956 to current year.

WATER TEMPERATURE: November 1952 to September 1954, November 1956 to current year.

INSTRUMENTATION.--From 1969 to 1975, specific conductance was continuously recorded at this station.

REMARKS.--Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 67,400 microsiemens May 14, 17, 1961; minimum daily, 240 microsiemens Sept. 29, 1980.

WATER TEMPERATURE: Maximum daily, 37.0°C July 29, 1960, July 9, 1965, July 1, 1973, and June 29, 1979; minimum daily, 0.0°C on many days during winter months.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 25,100 microsiemens Sept. 12; minimum daily, 970 microsiemens June 4.

WATER TEMPERATURE: Maximum daily, 34.5°C July 12; minimum daily, 2.0°C Jan. 14.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
OCT 05...	1720	0.40	5960	25.0	960	760	220	100	1000
NOV 22...	1435	11	6580	12.0	1000	760	220	110	1100
JAN 11...	1520	11	6970	11.0	1100	870	250	120	1200
FEB 21...	1645	32	4260	13.0	700	500	160	74	730
MAY 30...	1450	2.4	9210	26.0	1100	910	250	110	1700
JUL 25...	1140	0.07	18800	25.0	1600	1500	360	180	3700

DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)
OCT 05...	14	6.5	205	1100	1400	0.80	8.5	3960
NOV 22...	16	7.8	243	900	1600	0.80	8.5	4090
JAN 11...	16	6.8	249	1000	1700	1.0	4.2	4430
FEB 21...	12	6.8	205	680	960	0.70	7.0	2740
MAY 30...	23	9.1	172	1000	2600	0.90	6.8	5780
JUL 25...	41	14	185	2000	5700	0.70	10	12100

COLORADO RIVER MAIN STEM

41

08121000 COLORADO RIVER AT COLORADO CITY, TX--Continued

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1988 TO SEPTEMBER 1989

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	DIS- SOLVED SOLIDS (MG/L)	DIS- SOLVED SOLIDS (TONS)	DIS- SOLVED CHLORIDE (MG/L)	DIS- SOLVED CHLORIDE (TONS)	DIS- SOLVED SULFATE (MG/L)	DIS- SOLVED SULFATE (TONS)	HARDNESS (CA, MG) (MG/L)
OCT. 1988	161.68	6760	4370	1910	1800	796	900	393	820
NOV. 1988	280.23	7350	4750	3590	2000	1500	970	737	890
DEC. 1988	275.04	7100	4590	3410	1900	1420	950	704	870
JAN. 1989	273.24	7180	4640	3420	1900	1430	960	706	870
FEB. 1989	941.3	4830	3120	7920	1300	3230	670	1700	610
MAR. 1989	396.40	6650	4300	4600	1800	1910	900	959	820
APR. 1989	127.68	7850	5080	1750	2100	736	1000	355	940
MAY 1989	77.74	8270	5350	1120	2300	475	1100	226	990
JUNE 1989	1346.17	2230	1440	5240	580	2100	320	1160	290
JULY 1989	4.06	13000	8420	92	3800	42	1500	16	*
AUG. 1989	1.80	16600	10800	52	5000	24	1800	8.7	*
SEPT 1989	38.24	8390	5430	561	2400	248	1000	103	930
TOTAL	3923.58	**	**	33700	**	13900	**	7070	**
WTD.AVG.	11	4920	3180	**	1300	**	670	**	610

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
EQUIVALENT MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e5280	6990	6370	7090	e6800	5880	e6900	7710	e6790	7360	17500	16200
2	e5600	7040	6360	7080	e6810	5780	e7000	7860	5590	7490	17400	e16300
3	5910	7430	6440	7100	e6800	5840	7050	8000	1080	7550	17800	e16600
4	5980	7970	6430	7060	e6800	e6070	7000	7950	970	e7620	16800	16800
5	6200	6730	6420	7050	e6810	e6300	7800	7950	1240	e7770	e16600	17000
6	6310	6790	6370	7130	e6810	6790	6500	8000	1940	7840	e16500	17000
7	6440	7320	6310	e7160	e6820	6490	6700	8080	2320	7910	16500	17200
8	6290	7100	6260	e7190	e6830	6370	6700	8100	2790	e7970	16300	17300
9	6290	7510	6180	7220	e6840	6360	6700	8130	2850	e8080	16000	16800
10	6260	8050	e6480	7150	6840	6350	6800	8030	e3080	8140	16000	18500
11	6290	8530	e7080	7090	6000	6390	6900	8000	e3400	8240	16100	18800
12	6400	e8500	7380	7070	6900	6460	6700	7760	3760	8360	16000	25100
13	6550	e8470	7000	7060	6800	6540	6500	e7690	4000	8360	15800	15800
14	1440	e8450	6780	6680	6060	6540	e6600	e7660	4420	8360	15500	5000
15	e3440	8430	7010	6300	4600	6670	e6600	7620	4560	8280	15700	4390
16	e5770	8150	7140	6450	2780	6820	e6700	7600	4730	10500	17000	e4770
17	7770	7760	7080	6370	3650	6820	6700	5860	5000	23200	16300	e5550
18	7590	7260	6840	6440	e3800	e6810	6800	6350	5420	22600	16500	5930
19	7520	6890	6890	6420	e3950	e6810	10600	7130	5590	22400	e16700	6210
20	7580	6830	6860	6540	4100	6820	9700	10300	5800	22100	e16900	6600
21	7670	6600	6980	e6580	4120	6870	8600	11500	6010	22100	17100	7260
22	7680	6570	7110	e6620	4880	6800	8050	9360	6300	e21600	17100	7280
23	7830	6610	7220	6660	e5000	6800	7900	8840	6420	e20500	17100	7660
24	7640	6670	e7260	6440	5150	6810	7700	e8490	e6500	19900	16900	7910
25	7730	6620	e7320	9000	5400	6700	7800	8320	e6680	19200	16700	8130
26	7720	e6640	7380	8280	5790	6630	7900	8260	6770	18400	16600	8230
27	7730	e6660	7300	7300	6000	6810	8000	e8390	6870	18000	16600	8330
28	7770	6680	7150	7100	5800	6700	7900	e8520	7000	17600	16600	8440
29	e7500	6580	7200	7200	---	6760	e7900	8780	6530	17500	16400	8440
30	e7210	6390	7220	6800	---	6850	7900	9190	7170	17500	16500	8480
31	6940	---	7140	6800	---	6850	---	9190	---	17600	16400	---
MEAN	6590	7270	6870	6980	5680	6560	7420	8210	4720	13900	16600	11600

e Estimated

COLORADO RIVER MAIN STEM

08121000 COLORADO RIVER AT COLORADO CITY, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	16.5	5.0	7.5	---	10.0	---	17.0	---	29.0	27.5	25.0
2	---	17.0	5.5	9.0	---	10.0	---	19.5	24.0	28.5	24.5	---
3	17.5	---	7.0	10.0	---	12.5	18.0	20.0	19.0	26.0	30.5	---
4	17.5	15.0	8.0	10.0	---	---	16.0	23.5	19.5	---	25.5	24.0
5	18.5	16.0	11.0	13.0	---	---	21.0	21.0	19.5	---	---	32.0
6	18.5	13.5	9.5	9.0	---	3.0	16.0	21.5	23.5	28.5	---	24.5
7	18.0	14.0	9.0	---	---	6.5	16.0	23.5	23.5	23.5	22.0	24.5
8	17.5	15.0	3.5	---	---	12.0	17.0	23.5	24.0	---	21.5	24.5
9	17.5	---	4.0	6.0	---	11.0	13.0	21.5	23.0	---	29.0	25.0
10	16.0	15.0	---	6.0	4.5	11.0	9.0	20.0	---	24.5	22.0	22.0
11	17.0	14.5	---	12.0	7.0	15.0	10.0	20.0	---	26.5	21.5	23.0
12	17.0	---	6.5	5.5	8.0	16.0	---	18.5	23.5	34.5	21.5	22.5
13	17.5	---	7.0	4.0	9.5	15.5	10.5	---	23.5	25.0	21.5	18.0
14	17.5	---	10.0	2.0	7.5	18.0	---	---	26.0	25.0	22.0	12.5
15	---	17.0	6.5	4.5	8.5	---	---	21.0	23.0	25.5	24.5	18.5
16	---	11.5	5.0	3.0	7.0	---	---	23.0	22.5	28.0	24.5	---
17	20.5	11.0	5.0	5.5	5.5	17.5	18.5	26.0	22.5	27.0	24.5	---
18	19.0	11.5	7.0	---	---	---	22.5	21.0	26.5	29.0	24.5	27.5
19	17.5	11.5	8.0	8.5	---	---	24.0	21.5	26.5	25.0	---	22.0
20	18.5	8.5	7.0	6.5	9.0	16.5	22.0	23.5	26.5	25.0	---	22.0
21	19.0	8.0	7.0	---	10.0	8.5	22.0	26.0	---	23.0	29.5	22.0
22	18.0	8.5	12.0	---	13.0	12.5	21.0	24.5	32.0	---	26.0	20.5
23	18.0	9.0	8.0	6.5	---	11.5	22.0	27.5	23.5	---	33.5	16.0
24	15.0	10.5	---	10.5	8.0	13.5	21.5	---	---	23.0	25.0	16.0
25	17.0	11.0	---	14.5	10.5	16.0	21.5	30.5	---	24.5	26.5	23.5
26	15.5	---	13.5	9.0	13.0	18.5	22.0	24.5	25.5	28.0	24.5	17.0
27	19.0	---	11.0	7.5	12.0	18.5	26.0	---	26.5	24.5	25.0	17.5
28	15.5	6.5	7.5	7.5	10.0	19.0	19.0	---	27.5	24.0	30.5	24.0
29	---	7.0	6.0	8.0	---	19.5	---	22.0	25.0	24.5	25.0	16.5
30	---	5.0	7.5	9.5	---	20.5	17.5	23.0	25.0	25.0	26.0	16.5
31	16.0	---	6.0	9.5	---	15.5	---	24.0	---	25.0	31.5	---
MEAN	17.5	12.0	7.5	8.0	9.0	14.0	18.5	22.5	24.0	26.0	25.5	21.5

08123000 LAKE COLORADO CITY NEAR COLORADO CITY, TX

LOCATION.--Lat 32°20'41", long 100°55'10", Mitchell County, Hydrologic Unit 12080002, on left bank at municipal water-intake structure, 1.7 mi upstream from Colorado City Dam on Morgan Creek, 2.2 mi downstream from the Texas and Pacific Railway Co. bridge, 2.5 mi upstream from mouth, and 4.0 mi southwest of Colorado City.

DRAINAGE AREA.--344.7 mi², of which 42.7 mi² probably is noncontributing.

PERIOD OF RECORD.--April 1949 to current year.

REVISED RECORDS.--WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Aug. 23, 1950, non-recording gages at or near powerplant about 0.7 mi downstream at same datum.

REMARKS.--The lake is formed by a rolled earthfill dam 4,800 ft long. Storage began in April 1949, and the dam was completed in September 1949. The dam and lake are owned by the Texas Electric Service Co. to operate their thermal electric powerplant. The uncontrolled spillway is an excavated cut channel through natural ground 1,200 ft wide located 600 ft upstream and to the left of left end of dam. The spillway is designed to discharge 150,000 ft³/s at the maximum design flood elevation. The service spillway is an uncontrolled rectangular drop inlet located 100 ft upstream from dam with two uncontrolled openings of 10.0 by 12.0 ft. The spillway is designed for a maximum discharge of 5,000 ft³/s. A service outlet is provided for small releases downstream through a 30-inch valve-controlled concrete pipe. Records furnished by the Texas Electric Service Co. will show pumpage from Champion Creek Reservoir, capacity 90,020 acre-ft, into Lake Colorado City. 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.....	2,090.0	
Design flood.....	2,086.7	70,700
Crest of spillway.....	2,073.7	37,850
Crest of service spillway (top of conservation pool).....	2,070.2	31,810
Lowest gated outlet (invert).....	2,024.3	316

COOPERATION.--Capacity curve was furnished by the Texas Electric Service Co. Record of diversions for municipal use was furnished by the city of Colorado City.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 40,280 acre-ft Sept. 7, 1962 (elevation, 2,075.10 ft); minimum since first appreciable storage, 5,800 acre-ft Apr. 11-13, 1950 (elevation, 2,045.72 ft).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 23,330 acre-ft Oct. 1 at 0100 hours (elevation, 2,064.39 ft); minimum, 19,110 acre-ft June 1 (elevation, 2,060.99 ft).

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

2,060.0	17,980	2,062.0	20,310	2,064.0	22,820
2,061.0	19,120	2,063.0	21,540	2,065.0	24,140

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23310	22560	21770	21360	20990	21470	20970	20020	19540	21830	21530	21370
2	23280	22540	21760	21370	20960	21480	20950	20000	20110	21820	21530	21370
3	23260	22510	21730	21330	20910	21470	20910	19980	20240	21870	21520	21370
4	23220	22490	21720	21320	20880	21420	20880	19950	20800	21870	21500	21340
5	23220	22450	21710	21320	20840	21400	20850	19910	21210	21830	21490	21320
6	23180	22440	21680	21310	20810	21380	20800	19870	21370	21810	21480	21310
7	23160	22400	21670	21280	20800	21380	20790	19850	21340	21760	21490	21290
8	23140	22370	21640	21270	20780	21370	20750	19810	21320	21770	21490	21310
9	23110	22350	21630	21240	20770	21360	20720	19750	21390	21760	21480	21310
10	23080	22330	21680	21220	20770	21290	20670	19710	21720	21730	21450	21310
11	23060	22320	21670	21210	20770	21290	20630	19690	21910	21720	21450	21360
12	23040	22300	21660	21160	20750	21270	20560	19670	21950	21720	21450	21380
13	23000	22280	21660	21130	20750	21270	20560	19630	21920	21720	21450	21540
14	22980	22260	21630	21150	20880	21240	20540	19640	21910	21720	21470	21550
15	22950	22220	21600	21120	20900	21220	20530	19630	21870	21740	21480	21550
16	22940	22190	21590	21120	21070	21220	20490	19710	21850	21720	21470	21520
17	22910	22100	21580	21110	21330	21210	20480	19790	21860	21680	21480	21490
18	22870	22080	21570	21100	21450	21180	20470	19750	21870	21660	21480	21450
19	22860	22040	21550	21100	21490	21160	20450	19700	21860	21620	21480	21400
20	22830	22010	21530	21070	21490	21130	20430	19670	21860	21600	21470	21370
21	22810	22000	21520	21060	21490	21110	20400	19630	21850	21620	21470	21330
22	22790	21990	21520	21040	21480	21100	20360	19580	21850	21600	21470	21280
23	22770	21960	21500	21020	21470	21060	20320	19550	21830	21570	21470	21210
24	22730	21940	21490	21010	21450	21040	20290	19500	21830	21590	21440	21170
25	22700	21940	21470	21010	21470	21040	20260	19440	21850	21580	21440	21120
26	22680	21890	21480	20990	21470	21020	20230	19380	21860	21570	21430	21080
27	22670	21860	21440	21010	21450	21070	20190	19330	21860	21580	21420	21060
28	22620	21820	21420	21050	21470	21070	20160	19270	21860	21580	21420	21020
29	22600	21800	21400	21040	---	21060	20110	19230	21850	21580	21400	21000
30	22590	21780	21390	21020	---	21040	20060	19180	21850	21570	21390	20970
31	22590	---	21370	21010	---	21010	---	19140	---	21550	21380	---
MAX	23310	22560	21770	21370	21490	21480	20970	20020	21950	21870	21530	21550
MIN	22590	21780	21370	20990	20750	21010	20060	19140	19540	21550	21380	20970
(↑)	2063.82	2063.19	2062.86	2062.57	2062.94	2062.57	2061.79	2061.02	2063.24	2063.01	2062.87	2062.54
(φ)	-760	-810	-410	-360	+460	-460	-950	-920	+2710	-300	-170	-410
CAL YR 1988	MAX	26280	MIN	21370	(φ)	-4920						
WTR YR 1989	MAX	23310	MIN	19140	(φ)	-2380						

(↑) Elevation, in feet, at end of month.
(φ) Change in contents, in acre-feet.

COLORADO RIVER BASIN

08123800 BEALS CREEK NEAR WESTBROOK, TX

LOCATION.--Lat 32°11'57", Long 101°00'49", Mitchell County, Hydrologic Unit 12080007, on left bank at downstream side of bridge on State Highway 163, 2.1 mi downstream from Hackberry Creek, 10.8 mi south of Westbrook, 15.7 mi southwest of Colorado City, and 19.1 mi upstream from mouth.

DRAINAGE AREA.--9,802 mi², of which 7,814 mi² probably is noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1958 to current year.

REVISED RECORDS.--WDR TX-72-1: 1971. WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,048.74 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Low flow is affected by diversion upstream from station.

AVERAGE DISCHARGE.--31 years, 27.0 ft³/s (19,560 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,780 ft³/s May 19, 1961 (gage height, 21.65 ft); maximum gage height, 21.94 ft Sept. 29, 1980; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1908, about 24.5 ft in 1922, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 900 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 11	1715	*1,220	*11.20	No other peak greater than base discharge.			

Minimum daily discharge, 0.06 ft³/s Sept. 5-7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	3.5	3.6	1.1	3.0	6.4	4.5	1.3	.46	2.4	.13	.08
2	12	3.9	3.3	1.0	2.7	6.3	4.2	1.2	18	2.4	.13	.07
3	11	4.8	3.2	1.1	2.6	6.8	3.4	.89	8.9	2.4	.11	.08
4	9.4	4.5	2.9	1.3	2.4	5.7	4.2	.89	40	2.1	.10	.07
5	8.0	4.1	3.0	1.1	2.2	7.1	3.5	.79	26	1.9	.09	.06
6	8.3	5.4	2.9	1.0	2.0	5.8	3.1	.73	7.5	1.8	.08	.06
7	7.9	5.2	2.3	.95	1.9	6.3	3.0	.89	3.4	1.6	.11	.06
8	6.3	4.9	2.6	.88	1.9	5.8	3.3	.86	1.5	1.5	11	.07
9	5.4	5.2	2.8	.87	1.9	5.6	3.4	.75	6.7	1.5	4.8	.09
10	6.1	4.8	2.9	.81	2.0	5.9	2.7	.79	146	1.2	1.8	91
11	5.6	5.5	2.2	.79	2.1	5.6	2.2	.81	1040	1.1	.64	10
12	4.7	4.3	19	.77	2.1	4.4	3.3	.83	148	1.0	.31	5.0
13	5.8	4.0	8.4	.82	2.1	5.0	3.2	.62	27	.92	.18	51
14	4.6	4.2	6.3	.96	67	4.7	4.0	1.9	9.2	.75	.14	59
15	3.8	4.7	5.7	1.1	28	3.9	5.5	99	5.5	.68	.10	16
16	4.6	3.6	6.7	1.0	15	4.6	4.5	11	5.7	.62	.09	5.9
17	3.8	3.3	5.0	.89	266	3.4	5.0	107	4.6	.55	.10	3.2
18	5.1	4.0	4.6	.95	75	3.8	6.2	7.2	3.8	.47	11	1.8
19	3.5	4.1	4.6	1.1	18	2.8	4.2	1.4	3.7	.40	4.9	1.0
20	3.7	3.8	5.0	.97	13	3.8	4.6	.71	3.4	.37	1.5	.56
21	4.0	4.3	4.8	.89	11	3.7	3.2	.39	3.4	.30	.51	.32
22	3.8	4.4	3.5	.92	10	2.3	2.0	.20	3.3	.28	.19	.19
23	3.5	4.5	2.4	.89	9.2	3.4	2.3	.17	3.2	.24	.10	.12
24	3.9	4.2	1.7	.94	7.1	3.1	2.3	.16	3.1	.19	12	.10
25	3.9	3.6	1.5	1.1	7.7	2.8	2.2	.14	3.0	.16	6.4	.09
26	3.2	4.0	1.5	1.2	7.5	3.6	2.1	.14	2.9	.13	3.1	.09
27	3.2	4.9	1.2	1.7	6.6	2.7	2.2	.13	2.8	.13	1.6	.08
28	3.5	3.5	1.1	2.1	7.2	3.4	2.1	.12	2.8	.14	.69	.08
29	3.5	3.3	.97	1.8	---	4.3	1.9	.12	2.8	.13	.33	.08
30	3.5	3.6	1.0	1.5	---	11	1.4	.11	2.5	.15	.17	.08
31	3.6	---	1.1	2.7	---	7.0	---	.11	---	.13	.11	---
TOTAL	172.2	128.1	117.77	35.20	577.2	151.0	99.7	241.35	1539.16	27.64	62.51	246.33
MEAN	5.55	4.27	3.80	1.14	20.6	4.87	3.32	7.79	51.3	.89	2.02	8.21
MAX	13	5.5	19	2.7	266	11	6.2	107	1040	2.4	12	91
MIN	3.2	3.3	.97	.77	1.9	2.3	1.4	.11	.46	.13	.08	.06
AC-FT	342	254	234	70	1140	300	198	479	3050	55	124	489
CAL YR 1988	TOTAL	11143.56	MEAN	30.4	MAX	459	MIN	.14	AC-FT	22100		
WTR YR 1989	TOTAL	3398.16	MEAN	9.31	MAX	1040	MIN	.06	AC-FT	6740		

COLORADO RIVER BASIN

45

08123800 BEALS CREEK NEAR WESTBROOK, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: November 1958 to current year. Chemical and biochemical analyses: October 1974 to October 1977. Sediment analyses: October 1974 to October 1977.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: November 1958 to current year.

WATER TEMPERATURE: November 1958 to current year.

INSTRUMENTATION.--Beginning Mar. 5, 1981, specific conductance and water temperature are recorded continuously at this station.

REMARKS.--Estimated mean specific conductance values were due to malfunction of the instruments. Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 24,500 microsiemens Aug. 9, 1989; minimum, 180 microsiemens May 25, 1986.

WATER TEMPERATURE: Maximum, 37.0°C June 28, 1960, and July 3, 1976; minimum, 0.0°C on many days during winter months.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 24,500 microsiemens Aug. 9; minimum, 556 microsiemens June 11.

WATER TEMPERATURE: Maximum, 35.5°C July 1; minimum, 3.0°C Feb. 6.

REVISIONS.--Revised figures for daily specific conductance and monthly and annual means and loads for water year 1988, superseding those published in the corresponding annual report, are given below.

EXTREMES FOR WATER YEAR 1988.--

SPECIFIC CONDUCTANCE: Maximum reported, 21,600 microsiemens July 24, 25; minimum, 1,880 microsiemens Sept. 19.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT-- ANCE (US/CM)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
OCT 04...	1125	7.0	17200	19.5	3600	3400	370	640	3000
NOV 21...	1300	3.3	15800	10.5	3400	3100	400	580	2700
JAN 10...	1230	0.82	13300	8.0	3100	2800	400	500	2000
APR 10...	1310	3.4	14600	12.0	3300	3200	400	560	2500
MAY 30...	1100	0.11	5120	25.0	1100	890	210	140	690
JUL 25...	1300	0.16	7520	27.5	1600	1400	290	220	1100

DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SI02)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)
OCT 04...	22	14	167	3700	4500	0.90	1.3	12300
NOV 21...	20	64	251	3200	4300	0.90	1.4	11400
JAN 10...	16	45	231	2500	3600	0.50	2.1	9190
APR 10...	19	60	90	2900	4300	0.70	1.0	10800
MAY 30...	9	14	217	620	1300	0.80	8.0	3110
JUL 25...	12	19	195	990	1900	0.80	11	4650

COLORADO RIVER BASIN

08123800 BEALS CREEK NEAR WESTBROOK, TX--Continued

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1987 TO SEPTEMBER 1988

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	DIS- SOLVED SOLIDS (MG/L)	DIS- SOLVED SOLIDS (TONS)	DIS- SOLVED CHLORIDE (MG/L)	DIS- SOLVED CHLORIDE (TONS)	DIS- SOLVED SULFATE (MG/L)	DIS- SOLVED SULFATE (TONS)	HARDNESS (CA, MG) (MG/L)
OCT. 1987	63.0	11100	7410	1260	3000	508	1900	318	*
NOV. 1987	63.3	13600	9140	1560	3700	633	2400	413	*
DEC. 1987	163.4	13300	8950	3950	3600	1600	2400	1040	*
JAN. 1988	93.9	13200	8870	2250	3600	910	2300	594	*
FEB. 1988	131.6	15700	10600	3780	4300	1540	2900	1040	*
MAR. 1988	64.98	15700	10600	1870	4300	760	2900	517	*
APR. 1988	96.39	9540	6370	1660	2600	667	1600	407	2100
MAY 1988	736.40	3780	2490	4950	990	1960	520	1030	820
JUNE 1988	202.52	6890	4570	2500	1800	1000	1100	579	1500
JULY 1988	5087.9	18200	12400	170000	5100	69700	3700	50500	*
AUG. 1988	1556.8	17300	11700	49300	4800	20200	3400	14300	*
SEPT 1988	2755	8740	5870	43600	2400	17600	1500	11300	1900
TOTAL	11015.19	**	**	287000	**	117000	**	82000	**
WTD.AVG.	30	14200	9640	**	3900	**	2800	**	**

1

08123800

BEALS CREEK NR WESTBROOK, TX

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1988 TO SEPTEMBER 1989

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	DIS- SOLVED SOLIDS (MG/L)	DIS- SOLVED SOLIDS (TONS)	DIS- SOLVED CHLORIDE (MG/L)	DIS- SOLVED CHLORIDE (TONS)	DIS- SOLVED SULFATE (MG/L)	DIS- SOLVED SULFATE (TONS)	HARDNESS (CA, MG) (MG/L)
OCT. 1988	173.8	16500	11200	5260	4600	2140	3100	1480	*
NOV. 1988	128.1	15600	10600	3650	4300	1480	2900	1010	*
DEC. 1988	117.77	15400	10400	3300	4200	1340	2800	905	*
JAN. 1989	35.20	13700	9220	876	3700	355	2400	232	*
FEB. 1989	577.2	5680	3790	5900	1500	2370	910	1420	1200
MAR. 1989	151.0	17500	11900	4850	4900	1980	3400	1390	*
APR. 1989	99.7	16400	11100	2990	4500	1220	3100	838	*
MAY 1989	241.35	7820	5210	3390	2100	1360	1200	809	1700
JUNE 1989	1539.16	3010	1980	8220	780	3250	410	1690	650
JULY 1989	27.64	8200	5450	407	2200	163	1300	95	1800
AUG. 1989	62.51	10100	6760	1140	2700	461	1700	293	*
SEPT 1989	246.33	2380	1560	1040	620	411	320	210	510
TOTAL	3399.76	**	**	41000	**	16500	**	10400	**
WTD.AVG.	9.3	6670	4470	**	1800	**	1100	**	1500

COLORADO RIVER BASIN

47

08123800 BEALS CREEK NEAR WESTBROOK, TX--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	---	---	8000	13900	13800	13800	12900	12600	12700	15700	15600	15600
2	---	---	8250	13800	13500	13600	12900	12700	12800	15600	14500	15200
3	---	---	8400	13600	13400	13500	12800	12500	12700	14500	13200	13800
4	---	---	8650	13800	13600	13700	13200	12800	13100	13100	12300	12700
5	---	---	8850	14000	13800	13900	13300	13200	13200	12300	11500	11900
6	9700	8150	9000	14300	14000	14200	13400	13200	13300	11500	11200	11400
7	9960	9710	9880	14700	14200	14400	13500	13300	13400	11200	11000	11100
8	10600	9940	10100	14700	14500	14600	13400	13300	13300	11100	10800	11000
9	11800	10700	11200	14500	14400	14400	13400	13300	13400	10900	10700	10800
10	12600	11900	12200	14600	14300	14400	13300	13100	13200	10800	10400	10600
11	12900	12600	12800	14700	14200	14400	13100	12900	13000	10500	10200	10400
12	13100	12900	13000	14400	14100	14300	13100	13000	13000	10400	10100	10300
13	13400	13000	13200	14500	14100	14200	13100	13000	13000	10300	10000	10200
14	13300	13000	13100	14100	13800	13900	13000	12700	12800	10300	10100	10200
15	13300	12700	13000	13800	13500	13700	13100	12800	12900	10400	10000	10200
16	12900	12200	12500	14000	13500	13800	13100	12900	13000	10100	9900	10000
17	12200	11900	12000	13900	13800	13800	13500	13100	13400	10100	9840	9960
18	12400	11900	12100	13700	13600	13700	13300	12300	12900	10000	9800	9950
19	12900	12300	12700	13700	13100	13400	12300	11900	12100	10100	9880	9990
20	13100	12900	13000	13300	12900	13000	11900	11700	11800	10200	9960	10100
21	13700	12600	12800	13400	13100	13200	11800	11600	11700	11800	10100	11200
22	13300	12300	12500	13100	12900	13000	11800	11600	11700	13600	11800	12600
23	12500	12300	12300	13200	12800	13000	12000	11800	11900	13900	13500	13700
24	13000	12600	12800	12800	12600	12700	12700	12000	12400	13800	13600	13700
25	13100	13000	13000	12900	12700	12800	12700	12000	12300	14000	13700	13900
26	13100	12800	13000	13100	12800	13000	13200	11400	12300	14100	13800	13900
27	12800	12400	12600	13200	13100	13200	14500	13100	14000	15600	14000	14400
28	13400	12300	12900	13300	13000	13200	15300	13700	14500	17400	15600	16600
29	13600	13300	13400	13300	13000	13200	16000	15300	15800	17400	16000	16700
30	13800	13600	13800	13200	12800	13000	16000	15500	15700	16000	15400	15600
31	13800	13400	13600	---	---	---	15700	15500	15600	16600	15600	16000
MONTH	13800	8150	11800	14700	12600	13600	16000	11400	13100	17400	9800	12400
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	16600	16200	16400	15900	15700	15800	13900	12800	13300	12100	11700	11900
2	17000	16600	16800	16100	15600	15800	14300	12500	13400	11800	11500	11700
3	---	---	17200	16200	14600	15300	14000	12100	12800	11700	11000	11400
4	---	e17000	e17000	14600	14000	14300	12300	11800	12100	11300	10600	10900
5	---	---	e16500	16200	14700	15500	12500	11900	12100	11000	10700	10900
6	---	---	16000	---	---	16000	13200	11800	12200	11100	10700	10900
7	---	---	15500	---	---	17000	12000	11800	11900	11000	10600	10800
8	15900	15000	15700	17500	17100	17300	11900	11600	11700	10700	10400	10600
9	---	---	15500	17400	16800	17200	11800	11400	11500	10600	9840	10100
10	---	---	15600	19900	16600	17000	11500	11000	11100	10100	4040	8810
11	---	---	15900	16600	16400	16500	11000	10500	10700	3960	3440	3700
12	---	---	15800	16700	16300	16400	10700	10400	10500	3440	2840	3230
13	---	---	15600	---	---	16200	10900	10400	10600	3060	2900	2990
14	---	---	15800	---	---	16100	11200	10800	11000	3420	3020	3210
15	---	---	16000	---	---	16000	11200	10800	11100	3620	3440	3500
16	---	---	15900	---	---	15700	11000	10700	10900	3840	3620	3710
17	---	---	16000	---	---	15800	16500	6980	11100	4020	3840	3910
18	---	---	16300	---	---	15700	18800	2120	9560	4160	3960	4050
19	---	---	16400	---	---	15600	5040	2980	4460	4280	4100	4190
20	---	---	14300	17200	15000	15300	5780	4500	5170	4440	3800	4140
21	---	---	14600	17100	14400	14900	9980	5840	7390	3740	3120	3320
22	---	---	15000	17500	14100	14700	13000	10300	11800	3140	3020	3090
23	---	---	15100	16200	13500	14900	14100	13000	13500	---	---	e3500
24	---	---	15200	15700	13200	14400	14200	13300	13900	---	---	e4000
25	---	---	15200	13600	13100	13300	13800	13200	13500	---	---	e4500
26	15500	15200	15300	14200	12900	13100	13500	13400	13400	---	---	e5000
27	15300	15100	15200	13000	12900	13000	13400	13200	13300	---	---	e6000
28	16000	15200	15400	12900	12600	12700	13200	12800	13000	---	---	e6500
29	16000	15500	15900	12800	12500	12700	12800	12200	12400	---	---	e7000
30	---	---	---	13300	12500	12700	12400	11900	12200	---	---	e7100
31	---	---	---	14100	12500	13000	---	---	---	---	---	e7200
MONTH	17000	15000	15800	19900	12500	15200	18800	2120	11400	12100	2840	6510

e Estimated

COLORADO RIVER BASIN

08123800 BEALS CREEK NEAR WESTBROOK, TX--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	---	---	e8600	---	---	5400	17900	17700	17800	---	---	e20400
2	---	---	e9500	---	---	4600	18100	17900	18000	---	---	e15900
3	---	---	e9200	---	---	3200	18100	9710	17600	10700	2970	5660
4	---	---	e9100	---	---	e5100	12500	7140	9020	10600	3650	6740
5	---	---	e9000	---	---	e7000	17200	13200	15800	14200	10800	12300
6	---	---	e8900	---	---	e9600	17400	16600	17100	18600	14600	16900
7	---	---	e8900	---	---	e11100	18600	17300	18000	---	---	e19900
8	---	---	e9000	---	---	e18600	19200	18500	18800	---	---	e20300
9	---	---	e9100	---	---	e21200	---	---	e19600	---	---	e20200
10	---	---	e9200	---	---	e18800	---	---	e20300	---	---	e20200
11	---	---	e9300	14300	11300	12800	---	---	e20300	---	---	e20400
12	---	---	e9400	---	---	e17600	---	---	e20100	---	---	e20400
13	---	---	e9400	---	---	e20100	---	---	e20300	---	---	e20400
14	---	---	e9400	---	---	e21300	---	---	e20000	---	---	e20200
15	---	---	9390	---	---	e21300	---	---	e19800	---	---	e12300
16	11800	7000	10400	---	---	e21400	---	---	e20000	13200	7790	10600
17	13000	11600	12300	---	---	e21400	---	---	e20300	14800	13300	14100
18	14200	13100	13700	---	---	e21400	---	---	e20500	14900	2280	10900
19	14200	13600	13900	---	---	e21400	---	---	e20500	4140	1880	2940
20	14100	13600	13800	---	---	e21500	---	---	e20400	5280	1900	3190
21	14000	13500	13700	---	---	e20500	---	---	e20400	8720	5660	7700
22	13900	13400	13600	---	---	e20300	---	---	e19700	11800	8470	9810
23	13800	13300	13500	---	---	e20300	---	---	e19900	14200	11900	13100
24	13600	13100	13300	---	---	e21600	---	---	e20200	17100	2170	7790
25	13100	9000	12300	---	---	e21600	---	---	e20400	6280	3590	4640
26	12900	8560	10100	---	---	e20100	---	---	e20400	7060	5880	6430
27	16200	5130	11000	20000	18300	19200	---	---	e20300	10700	7160	8560
28	---	---	4830	19200	18700	19000	---	---	e20000	12300	10800	11700
29	---	---	6250	19300	19000	19100	---	---	e20200	14500	12300	13200
30	---	---	5200	19100	18600	18900	---	---	e20400	14600	13800	14500
31	---	---	---	18900	17900	18500	---	---	e20400	---	---	---
MONTH	16200	5130	10200	20000	11300	16900	19200	7140	19200	18600	1880	13000

e Estimated

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	15400	14500	14900	15900	15700	15800	16300	15900	16100	14100	13600	13800
2	16100	15400	15700	15800	15600	15600	16200	15800	16000	13800	13500	13600
3	16700	15900	16200	15700	15500	15500	16200	15700	16000	13700	13400	13500
4	17400	16600	17100	16100	15800	16000	16000	15700	15900	13600	13300	13500
5	17700	17400	17500	16000	15700	15900	16000	15600	15800	13500	13300	13400
6	17900	17400	17700	15800	15600	15700	15900	15600	15700	13500	13200	13400
7	18000	17300	17600	16000	15800	15900	15900	15600	15700	13500	13200	13400
8	17900	17200	17500	15800	15600	15700	15900	15700	15800	13500	13300	13400
9	17400	17100	17300	15600	15500	15500	15800	15600	15700	13600	13200	13500
10	17400	17200	17300	15500	15300	15400	15700	15500	15600	13800	13300	13500
11	17200	16700	17100	15300	15100	15200	15500	15300	15400	13800	13300	13500
12	17100	16800	17000	15200	15100	15100	15500	15200	15400	13900	13600	13800
13	16900	16400	16700	15100	14900	15000	15500	15200	15300	14200	13800	13900
14	17200	16900	17000	15000	14800	14900	15400	15100	15300	14300	13300	13800
15	17000	16700	16900	14900	14800	14800	15400	15300	15300	14000	13300	13700
16	16700	16500	16700	15100	14700	14800	15400	15200	15300	14100	13400	13800
17	16800	16500	16700	15200	15000	15100	15400	15100	15300	14700	13900	14200
18	16700	16300	16500	15100	14900	15000	15400	15000	15200	14500	13700	14100
19	16600	16300	16400	15500	15100	15300	15200	14900	15100	14300	13800	14000
20	16300	16100	16200	15600	15400	15500	15200	15000	15100	14500	13800	14000
21	16400	16000	16200	15900	15600	15800	15300	14900	15100	14800	14100	14400
22	16300	16100	16200	16300	15900	16100	15400	15100	15200	14600	13900	14300
23	16100	16000	16000	16200	15900	16100	15400	15000	15200	14300	13600	14000
24	16200	15900	16000	16300	15900	16000	15400	15000	15200	14100	13600	13900
25	16400	16200	16300	16100	15900	16000	15300	14800	15000	13900	13500	13700
26	16200	16000	16100	16100	15900	16000	14900	14600	14800	14000	13700	13900
27	16100	15800	15900	16500	16100	16200	14800	14600	14700	14000	13200	13500
28	15800	15700	15800	16600	16200	16400	14800	14400	14600	13300	12900	13200
29	15900	15600	15700	16400	16100	16300	14600	14200	14400	13300	13000	13200
30	16200	16000	16100	16400	16000	16200	14400	14000	14200	13900	13300	13600
31	16000	15900	16000	---	---	---	14200	13700	14000	14100	13700	13900
MONTH	18000	14500	16500	16600	14700	15600	16300	13700	15300	14800	12900	13700

COLORADO RIVER BASIN

49

08123800 BEALS CREEK NEAR WESTBROOK, TX--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	14700	14200	14500	18900	18400	18700	16300	16000	16200	17200	16900	17000
2	15100	14600	14800	18700	18100	18400	16000	15800	15900	17200	16800	17100
3	15200	14900	15100	19000	18300	18600	15900	15700	15800	17300	16900	17100
4	15400	14900	15100	19100	18800	18900	15800	15600	15700	17200	16400	16700
5	15200	14800	15100	18800	18300	18500	15800	15500	15600	16600	15900	16200
6	15200	14800	15000	18800	17900	18300	15600	15300	15400	16100	15700	15900
7	15000	14300	14700	18600	17700	18200	15500	14900	15300	15700	15400	15500
8	15100	13700	14300	18300	17500	17900	14900	14200	14500	15200	14900	15100
9	14300	13700	14000	18300	17500	17900	14300	13800	14100	14900	14700	14800
10	14100	13300	13700	17700	17400	17500	15000	14300	14600	14700	14300	14500
11	13900	13200	13500	17500	17300	17500	16400	15000	15700	14700	14300	14400
12	13600	13400	13500	17600	16900	17200	17500	16400	16800	14900	14600	14800
13	13500	13100	13400	17500	16800	17100	17600	17400	17500	15400	14800	15000
14	13600	4440	12100	17800	17300	17500	17500	16900	17200	15300	14700	15100
15	4140	3220	3680	17900	17500	17700	16900	16200	16500	16600	5500	10200
16	3220	3020	3080	18000	17200	17700	16200	15900	16100	5610	5290	5400
17	3120	2310	2780	17100	16600	16800	16700	16100	16400	5310	4990	5160
18	2510	2310	2380	17000	16700	16900	17600	16600	17100	5270	5030	5120
19	---	---	e4500	16800	16300	16600	17600	17300	17500	5400	5060	5230
20	---	---	e6000	16900	16300	16700	17600	17300	17400	5440	5100	5300
21	---	---	e8300	17400	16300	16900	17500	17200	17300	5520	5260	5380
22	9600	9190	9410	17400	16600	16900	17500	17200	17300	5580	5310	5470
23	10700	9190	9610	16900	16400	16700	17500	17100	17200	5750	5370	5550
24	11600	10900	11200	17100	16900	17000	17300	17100	17200	5780	5310	5600
25	15500	11700	13800	17300	17000	17100	17300	17000	17200	5830	5370	5620
26	17000	15600	16200	17100	17000	17000	17400	17000	17200	5790	5430	5590
27	17700	16800	17100	17000	16900	17000	17200	17000	17200	5740	5260	5520
28	18600	17900	18400	16900	16700	16900	17300	16900	17100	5550	5210	5360
29	---	---	---	17000	16500	16800	17200	16900	17100	5400	5050	5230
30	---	---	---	16900	16500	16700	17200	16900	17000	5430	5110	5250
31	---	---	---	16700	16300	16500	---	---	---	5310	5190	5290
MONTH	18600	2310	11600	19100	16300	17400	17600	13800	16400	17300	4990	10200
e Estimated												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	5410	4470	5270	8350	8130	8210	8860	8400	8620	6700	6300	6490
2	4580	3320	3750	8330	8120	8240	8750	8520	8660	6800	6600	6690
3	3770	3300	3630	8420	8210	8300	8860	8630	8730	6900	6700	6790
4	3190	2950	3090	8410	8200	8280	8970	8630	8820	7100	6800	6940
5	3280	3060	3150	8500	8180	8350	9200	8860	8970	7200	6900	7070
6	3280	3160	3240	8480	8270	8340	9200	8970	9090	7300	7100	7190
7	3490	3260	3350	8370	8250	8310	9090	8860	9000	9000	7200	7750
8	3590	3260	3430	8350	8130	8200	20700	6700	13200	7800	7400	7520
9	3590	3470	3520	8230	8010	8110	24500	16300	21200	7700	7500	7600
10	3680	3460	3560	8210	8000	8090	16000	12700	14100	6100	800	2680
11	3570	556	2540	8200	7880	8070	12600	11300	12000	2700	2600	2650
12	5000	1560	3390	8180	7970	8090	11200	10200	10700	2700	2600	2660
13	5200	3880	4390	8180	7850	8070	10200	9880	10100	2700	700	2170
14	6310	5200	5760	8260	7950	8120	9880	9420	9540	2500	600	929
15	6970	6300	6610	8350	7930	8170	9430	9310	9360	5300	2700	4620
16	7400	7070	7210	8340	8030	8180	9430	8970	9230	4600	4000	4200
17	7500	7370	7410	8330	7910	8180	9200	8970	9040	4200	4100	4110
18	7370	7140	7310	8310	8000	8190	12300	5340	8540	4300	4100	4210
19	7570	7240	7410	8200	7890	8050	13900	11800	12600	4600	4200	4420
20	7550	7330	7430	8090	7770	8010	14300	13800	14100	4400	4200	4330
21	7640	7320	7480	8080	7760	7950	14200	13400	13700	4500	4200	4320
22	7740	7410	7580	8060	7750	7930	13600	13200	13400	4700	4400	4560
23	7830	7500	7650	7950	7730	7860	13400	12800	13100	5200	4500	4830
24	7810	7600	7720	7940	7420	7620	12900	3630	8350	5100	4700	4850
25	7800	7580	7730	7670	7400	7500	4430	3060	3420	5300	4700	5000
26	8000	7560	7760	8030	7580	7780	3860	3070	3390	5400	4900	5140
27	8200	7880	8080	8350	8020	8170	4770	3970	4440	5400	4900	5180
28	8290	7970	8140	8520	8170	8340	5500	4880	5210	5600	5100	5290
29	8270	7950	8150	8630	8180	8400	5900	5400	5650	5600	5300	5410
30	8360	8040	8190	8740	8290	8470	6200	5800	5960	5700	5400	5520
31	---	---	---	8740	8400	8530	6500	6100	6240	---	---	---
MONTH	8360	556	5800	8740	7400	8130	24500	3060	9630	9000	600	5040

COLORADO RIVER BASIN

08123800 BEALS CREEK NEAR WESTBROOK, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	23.0	18.0	20.5	19.5	15.0	17.0	9.5	8.0	9.0	9.0	7.0	8.0
2	22.5	18.0	20.5	18.5	15.5	17.0	10.0	8.0	9.0	11.0	9.0	9.5
3	22.5	17.5	20.0	18.5	15.0	16.5	10.5	8.0	9.5	11.5	10.0	11.0
4	22.5	17.0	20.0	19.0	15.0	17.0	11.0	9.5	10.0	12.0	10.5	11.0
5	22.5	15.0	19.5	17.5	14.5	16.0	11.0	9.0	10.0	13.0	11.5	12.0
6	21.5	17.5	19.5	16.5	12.5	14.5	12.0	10.0	11.0	12.0	10.5	11.5
7	22.5	15.0	20.0	18.0	14.0	15.5	11.5	10.5	11.0	12.0	10.5	11.5
8	23.0	18.0	20.5	18.0	13.5	16.0	10.5	7.0	8.5	11.0	9.0	9.5
9	21.5	18.5	20.0	20.0	16.5	18.0	7.5	6.5	7.0	9.0	8.0	8.5
10	21.0	16.5	19.0	18.0	15.5	16.5	8.5	7.5	8.0	9.0	7.0	8.0
11	21.5	16.5	19.0	17.0	15.0	16.0	10.0	8.5	9.0	10.5	8.0	9.5
12	21.5	16.5	19.0	18.5	16.0	17.0	9.0	8.0	8.5	10.5	7.5	8.5
13	21.0	16.0	18.5	17.5	13.5	15.5	9.0	7.5	8.5	7.5	5.5	6.5
14	22.5	17.5	19.5	18.5	15.0	16.5	10.0	8.0	9.0	6.5	4.5	5.5
15	23.5	18.5	21.0	18.0	15.5	17.5	9.5	8.0	8.5	7.5	5.0	6.5
16	24.5	19.5	21.5	15.0	12.5	14.0	8.0	7.0	7.5	8.0	5.5	7.0
17	24.5	20.0	22.0	12.5	10.5	11.5	8.0	6.5	7.0	8.5	6.0	7.5
18	23.0	19.5	21.5	15.0	11.5	12.5	8.5	6.5	7.5	10.0	7.5	8.5
19	22.0	18.0	20.0	14.0	10.5	12.5	9.5	8.0	9.0	9.5	8.5	9.0
20	23.5	19.0	21.0	11.5	8.5	10.0	9.5	8.5	9.0	10.0	8.5	9.5
21	21.0	19.5	20.0	11.0	8.0	9.5	9.0	7.5	8.5	9.0	7.0	8.5
22	22.0	17.5	19.5	11.0	8.5	10.0	11.0	9.0	10.0	8.5	7.0	8.0
23	21.0	18.5	19.5	11.5	9.0	10.5	11.0	8.5	10.0	10.0	8.0	9.0
24	19.5	15.5	17.5	13.0	10.5	11.5	10.0	9.0	9.5	12.0	9.5	10.5
25	21.5	15.0	18.5	13.0	12.0	12.5	10.5	8.0	9.0	14.0	11.5	12.5
26	20.0	17.5	18.5	13.0	11.5	12.5	13.5	10.5	12.0	13.5	10.5	11.5
27	22.0	17.5	19.5	12.0	10.5	11.0	13.5	11.5	12.5	10.5	9.5	10.0
28	20.0	15.5	17.0	10.0	8.5	9.5	11.0	8.5	9.5	12.0	9.0	10.5
29	19.5	15.0	17.0	10.5	8.5	9.5	8.5	7.0	7.5	11.5	9.5	10.5
30	18.0	16.5	17.5	10.0	8.0	9.0	9.5	7.5	8.5	12.0	9.0	10.5
31	19.0	15.0	17.5	---	---	---	9.5	7.5	8.5	13.0	9.5	11.5
MONTH	24.5	15.0	19.5	20.0	8.0	14.0	13.5	6.5	9.0	14.0	4.5	9.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	13.0	11.5	12.5	---	---	---	19.5	16.0	18.0	19.0	17.0	18.0
2	14.0	12.0	13.0	---	---	---	20.0	16.0	18.0	20.0	17.0	18.5
3	11.5	7.0	8.5	---	---	---	20.0	16.5	18.5	21.0	18.5	19.5
4	6.5	5.0	5.5	---	---	---	19.0	16.0	18.0	22.0	19.5	20.5
5	5.5	4.0	4.5	---	---	---	18.5	15.0	16.5	21.0	19.0	20.0
6	5.0	3.0	4.0	---	---	---	18.5	14.5	16.5	21.5	18.5	20.0
7	6.0	3.5	4.5	---	---	---	19.0	15.5	17.0	22.0	20.0	21.0
8	6.0	3.5	5.0	---	---	---	18.0	16.0	17.5	22.5	20.5	21.5
9	7.0	4.5	6.0	---	---	---	17.0	14.5	16.0	22.0	21.0	21.5
10	9.0	5.5	7.0	---	---	---	15.0	12.0	13.5	21.0	19.0	20.0
11	11.0	7.5	9.5	---	---	---	16.0	10.5	13.0	20.0	18.5	19.0
12	10.5	9.0	9.5	---	---	---	14.5	13.0	14.0	20.5	18.5	19.0
13	11.5	10.0	10.5	---	---	---	13.0	12.0	12.5	21.5	19.5	20.5
14	11.5	8.0	10.5	---	---	---	17.0	11.5	13.5	20.5	19.0	19.5
15	9.0	8.0	8.5	---	---	---	19.0	13.5	16.0	19.0	14.0	17.0
16	8.5	6.5	7.5	---	---	---	20.5	15.0	17.5	20.0	17.0	18.0
17	6.0	4.0	5.0	---	---	---	22.5	16.5	19.0	20.0	18.5	19.0
18	6.0	4.0	5.0	---	---	---	23.0	18.5	20.5	19.0	18.5	18.5
19	9.5	6.0	7.5	---	---	---	23.0	19.0	21.0	19.5	18.5	19.0
20	13.5	8.5	11.0	---	---	---	23.0	19.0	21.0	20.0	19.0	19.5
21	15.5	9.5	12.5	---	---	---	24.5	19.5	21.5	21.0	19.5	20.0
22	15.5	10.5	13.0	---	---	---	23.0	19.0	21.0	21.0	20.0	20.5
23	---	---	---	18.0	12.0	15.0	22.0	19.0	21.0	22.5	20.5	21.5
24	---	---	---	20.0	15.0	17.0	21.0	19.5	20.5	23.5	22.0	22.5
25	---	---	---	20.5	16.5	18.5	22.0	18.0	20.0	24.5	22.5	23.5
26	---	---	---	22.0	18.5	20.0	22.5	19.0	21.0	25.5	24.0	24.5
27	---	---	---	20.5	18.5	19.5	22.0	19.5	21.0	25.5	24.0	25.0
28	---	---	---	21.5	17.5	19.5	21.5	17.5	19.5	25.5	25.0	25.0
29	---	---	---	21.5	17.0	19.0	20.0	17.0	18.5	26.0	25.0	25.5
30	---	---	---	21.0	17.5	19.5	19.5	16.0	18.0	26.0	25.0	25.5
31	---	---	---	20.0	16.5	18.5	---	---	---	26.0	23.5	24.5
MON	15.5	3.0	8.0	22.0	12.0	18.5	24.5	10.5	18.0	26.0	14.0	21.0

COLORADO RIVER BASIN

51

08123800 BEALS CREEK NEAR WESTBROOK, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	27.0	23.0	25.0	35.5	27.5	31.0	33.5	26.5	30.0	31.5	25.5	28.0
2	27.5	24.5	26.0	33.0	27.5	30.0	31.5	27.5	29.5	30.5	26.0	28.0
3	27.0	24.5	25.5	33.0	27.5	30.0	31.5	27.0	28.5	29.5	25.5	28.0
4	27.0	23.0	25.0	33.5	27.5	30.0	32.5	26.5	29.0	30.0	25.0	27.5
5	27.5	25.0	26.5	33.5	26.5	30.0	32.5	26.5	29.5	30.0	25.5	27.5
6	27.5	25.5	27.0	33.0	26.5	29.5	31.5	27.5	29.5	29.0	25.0	27.5
7	27.5	25.5	26.5	31.5	26.5	28.5	29.0	25.5	27.0	29.5	25.5	27.5
8	26.5	24.0	25.5	32.0	26.5	28.5	29.5	23.0	26.0	29.5	25.0	27.0
9	25.5	23.5	24.5	31.5	26.5	28.5	30.0	23.0	26.5	29.5	25.0	27.0
10	24.5	23.0	24.0	32.0	26.5	28.5	30.0	24.5	27.0	28.0	24.0	26.0
11	24.5	22.0	23.0	32.5	26.5	29.0	28.0	25.0	26.5	26.0	24.5	25.0
12	31.5	24.5	27.5	33.0	26.5	29.5	26.0	24.0	25.0	27.0	23.5	25.0
13	29.5	26.0	27.5	32.5	27.0	29.5	26.5	24.0	25.0	25.5	18.0	21.0
14	29.5	24.0	26.5	33.5	27.5	30.0	29.0	24.0	26.0	20.0	16.5	18.0
15	30.5	23.5	27.0	33.5	27.5	30.0	30.5	24.5	27.0	24.5	17.5	21.0
16	31.0	24.5	28.0	34.5	27.5	31.0	29.0	25.5	27.0	25.0	20.0	22.5
17	32.0	25.5	28.5	34.0	27.5	30.5	30.0	25.0	27.0	25.5	20.0	23.0
18	33.0	26.5	29.5	33.5	26.5	29.5	32.0	25.5	28.5	26.0	21.0	23.5
19	34.0	27.0	30.5	33.0	27.5	30.0	32.0	27.0	29.5	27.0	21.0	24.0
20	33.5	28.5	31.0	32.0	26.5	29.0	31.5	27.5	29.5	26.5	21.0	23.5
21	32.5	27.5	30.0	31.5	26.0	28.5	31.0	27.5	29.0	26.5	21.5	24.0
22	32.5	26.5	29.0	30.5	25.0	28.0	31.5	27.0	29.0	24.0	21.0	22.5
23	32.5	26.0	29.0	27.5	25.0	26.0	32.0	27.0	29.0	22.0	17.5	19.5
24	32.5	26.5	29.5	29.5	23.5	26.0	31.0	27.0	29.0	21.0	14.5	17.5
25	33.0	26.5	29.5	33.5	24.0	28.0	30.5	27.0	29.0	21.5	15.0	18.0
26	34.5	27.0	30.5	31.0	25.5	28.0	31.0	27.0	29.0	22.5	15.5	19.0
27	35.0	27.5	31.0	30.0	25.5	27.5	30.5	27.5	29.0	22.5	15.5	19.0
28	35.0	28.0	31.0	32.5	25.5	29.0	31.0	27.5	29.0	22.5	16.5	19.5
29	34.0	28.0	30.5	33.5	26.0	29.5	31.0	26.5	28.5	23.0	16.5	19.5
30	34.5	27.5	30.5	34.0	26.5	30.0	30.5	26.0	28.0	23.0	17.0	20.0
31	---	---	---	34.0	26.0	30.0	31.0	25.5	28.0	---	---	---
MONTH	35.0	22.0	28.0	35.5	23.5	29.0	33.5	23.0	28.0	31.5	14.5	23.5

COLORADO RIVER MAIN STEM

08123850 COLORADO RIVER ABOVE SILVER, TX
(National stream-quality accounting network)

LOCATION.--Lat 32°03'13", long 100°45'42", Coke County, Hydrologic Unit 12080008, on right bank 25 ft downstream from Pan American Oil Co. bridge, 4.7 mi west of Silver, and at mile 756.0.

DRAINAGE AREA.--14,910 mi², of which 10,260 mi² probably is noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1967 to current year.

REVISED RECORDS.--WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,907.66 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 4, 1972, water-stage recorder at site 0.5 mi downstream at same datum.

REMARKS.--No estimated daily discharges. Records good. For affects by upstream diversions, see stations 08121000 and 08123720. There is upstream regulation by Lake J. B. Thomas (capacity, 203,600 acre-ft), and by Lake Colorado City and Champion Creek Reservoirs (see stations 08123000, and 08123600).

AVERAGE DISCHARGE.--22 years, 85.4 ft³/s (61,870 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,900 ft³/s Sept. 9, 1980 (gage height, 22.73 ft); no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,120 ft³/s June 11 at 0200 hours (gage height, 8.11 ft); minimum daily, 0.03 ft³/s Sept. 9.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	37	11	18	17	28	30	60	24	34	5.9	.09	.51
2	30	8.3	14	17	26	23	58	24	383	4.5	.05	.29
3	30	7.6	11	19	23	20	61	24	266	3.5	.09	.23
4	26	6.8	10	19	22	14	56	26	812	3.3	.11	.13
5	21	6.8	8.2	21	21	17	59	25	478	2.8	.08	.09
6	18	9.6	8.2	19	18	18	52	19	378	2.0	.07	.05
7	15	17	7.6	19	20	21	46	21	198	1.9	.07	.05
8	15	18	7.8	19	19	28	40	15	120	1.4	.07	.04
9	13	17	8.4	19	18	29	25	12	91	1.8	.07	.03
10	12	16	11	19	18	30	17	10	398	.99	.07	.04
11	10	16	12	19	19	30	11	10	1900	.55	.14	70
12	10	16	12	19	19	28	10	12	1100	.33	.94	31
13	10	16	17	20	21	28	10	11	208	.23	3.0	42
14	9.7	16	33	20	21	25	10	23	118	.20	2.4	71
15	9.7	17	29	21	92	25	10	13	75	.22	1.7	98
16	8.9	15	26	17	155	26	11	89	58	.30	2.6	59
17	13	17	25	12	161	26	12	37	47	.24	1.6	44
18	14	18	21	10	425	24	12	113	40	.16	.70	33
19	14	17	22	9.0	219	25	9.7	61	35	.21	.27	24
20	15	16	21	7.9	100	26	9.9	34	29	6.7	.16	16
21	14	18	21	7.5	66	23	12	21	22	11	2.5	11
22	14	18	20	7.1	55	27	13	11	18	8.3	4.5	7.6
23	14	20	20	6.7	48	28	24	8.1	15	4.3	2.5	5.8
24	13	21	19	6.1	42	28	24	6.7	11	2.1	1.2	4.3
25	14	21	19	6.1	39	28	23	5.8	11	1.4	.85	2.4
26	14	21	21	6.1	36	30	23	3.7	9.3	.79	.62	2.2
27	15	20	18	7.8	31	32	24	2.6	8.5	.60	8.0	1.8
28	14	21	17	20	31	35	24	2.3	8.5	.30	4.9	1.9
29	14	22	18	23	---	41	23	1.5	7.7	.19	2.4	1.6
30	14	22	18	27	---	41	24	1.4	6.4	.11	1.6	1.4
31	14	---	17	26	---	45	---	1.4	---	.11	1.0	---
TOTAL	485.3	486.1	530.2	486.3	1793	851	793.6	668.5	6885.4	66.43	44.35	529.46
MEAN	15.7	16.2	17.1	15.7	64.0	27.5	26.5	21.6	230	2.14	1.43	17.6
MAX	37	22	33	27	425	45	61	113	1900	11	8.0	98
MIN	8.9	6.8	7.6	6.1	18	14	9.7	1.4	6.4	.11	.05	.03
AC-FT	963	964	1050	965	3560	1690	1570	1330	13660	132	88	1050
CAL YR 1988	TOTAL	24522.79	MEAN	67.0	MAX	1200	MIN	.37	AC-FT	48640		
WTR YR 1989	TOTAL	13619.64	MEAN	37.3	MAX	1900	MIN	.03	AC-FT	27010		

08123850 COLORADO RIVER ABOVE SILVER, TX--Continued
(National stream-quality accounting network)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: August 1967 to current year. Chemical and biochemical analyses: November 1977 to current year. Pesticide analyses: October 1969 to August 1981. Sediment analyses: August 1977 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: December 1967 to current year.

WATER TEMPERATURE: December 1967 to current year.

INSTRUMENTATION.--Beginning December 1967, specific conductance was recorded continuously. Beginning June 22, 1981, specific conductance and water temperature are recorded continuously at this station.

REMARKS.--Estimated mean specific conductance values and interruptions in the mean temperature values were due to malfunctions of the instrument. Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 19,900 microsiemens Sept. 10, 1988; minimum, 180 microsiemens June 28, 1982.

WATER TEMPERATURE: Maximum, 35.5°C Aug. 2, 7, 1985; minimum, 0.0°C on many days during winter months.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 17,100 microsiemens May 16, 17; minimum, 819 microsiemens June 13.

WATER TEMPERATURE: Maximum, 33.0°C May 23, June 27, July 1; minimum, 0.5° Mar. 5.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

		DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI, FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS TOTAL (MG/L AS CAC03)
NOV 15...	1040	16	8620	8.20	19.0	53	7.9	94	2.2	96	360	1900
JAN 10...	1005	19	7460	8.40	5.0	9.1	12.9	111	1.4	92	32	1400
MAR 07...	1540	27	9130	8.30	9.5	4.9	14.1	135	6.8	K14	K3	1800
JUN 20...	1145	26	3890	8.00	26.0	38	7.1	95	2.2	K110	210	770
JUL 11...	1210	0.70	6300	7.80	26.0	43	5.3	71	7.7	230	52	1600
AUG 08...	1315	0.16	7690	7.90	23.0	28	4.8	61	12	84	130	2000
DATE	HARD-NESS NONCARB WH WAT TOT FLD MG/L AS CAC03	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT WH TOT FET FIELD MG/L AS CAC03	SULFATE DIS-SOLVED (MG/L AS S04)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SI02)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)
NOV 15...	1700	350	250	1300	13	38	191	1800	2200	0.70	7.8	6190
JAN 10...	1200	300	160	1200	14	11	206	1400	1800	0.80	3.4	5110
MAR 07...	1700	300	260	1400	15	21	106	1700	2200	0.70	0.70	6270
JUN 20...	650	170	82	560	9	12	116	710	890	0.70	8.4	2610
JUL 11...	1500	400	140	900	10	19	88	1400	1400	0.50	12	4610
AUG 08...	2000	500	190	1000	10	20	67	2000	1500	0.80	16	5860
DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHOROUS TOTAL (MG/L AS P)	PHOS-PHOROUS DIS-SOLVED (MG/L AS P)	PHOS-PHOROUS ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS P04)	SEDI-MENT, SUS-PENDED (MG/L)
NOV 15...	6070	<0.010	<0.100	0.120	0.100	1.1	1.2	0.050	0.010	<0.010	--	105
JAN 10...	5010	<0.010	<0.100	0.080	0.120	0.62	0.70	0.030	0.010	<0.010	--	20
MAR 07...	5950	<0.010	<0.100	0.060	0.070	1.2	1.3	0.090	0.010	<0.010	--	17
JUN 20...	2510	<0.010	<0.100	0.060	0.060	0.54	0.60	0.080	<0.010	<0.010	--	63
JUL 11...	4320	<0.010	<0.100	0.120	0.100	1.8	1.9	0.130	0.020	<0.010	--	68
AUG 08...	5280	<0.010	<0.100	0.160	0.170	2.2	2.4	0.160	0.050	0.030	0.09	54

COLORADO RIVER MAIN STEM

08123850 COLORADO RIVER ABOVE SILVER, TX--Continued
(National stream-quality accounting network)

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. STIEVE DIAM. % FINER THAN .062 MM	ALUM- [NUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
NOV 15...	4.5	96	<10	2	<100	<10	<1	<1	<1	2	30
JAN 10...	1.0	89	10	1	<100	<10	<1	2	<1	1	30
MAR 07...	1.2	81	--	--	--	--	--	--	--	--	--
JUN 20...	4.4	99	20	3	200	<10	<1	1	<1	2	30
JUL 11...	0.13	99	--	--	--	--	--	--	--	--	--
AUG 08...	0.02	98	<10	2	100	<10	<1	3	1	1	40

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
NOV 15...	<5	180	10	<0.1	28	2	1	<1.0	6800	57	<10
JAN 10...	<5	140	20	<0.1	12	1	2	<1.0	6000	37	<10
MAR 07...	--	--	--	--	--	--	--	--	--	--	--
JUN 20...	<1	80	50	<0.1	9	2	1	<1.0	3300	4	50
JUL 11...	--	--	--	--	--	--	--	--	--	--	--
AUG 08...	<1	170	140	<0.1	9	3	<1	<1.0	9600	12	20

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1988 TO SEPTEMBER 1989

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	DIS- SOLVED SOLIDS (MG/L)	DIS- SOLVED SOLIDS (TONS)	DIS- SOLVED CHLORIDE (MG/L)	DIS- SOLVED CHLORIDE (TONS)	DIS- SOLVED SULFATE (MG/L)	DIS- SOLVED SULFATE (TONS)	HARDNESS (CA, MG) (MG/L)
OCT. 1988	485.3	9170	6250	8180	2300	3010	1800	2320	2000
NOV. 1988	486.1	8960	6060	7950	2200	2920	1700	2250	2000
DEC. 1988	530.2	8120	5440	7780	2000	2850	1500	2190	1800
JAN. 1989	486.3	7040	4650	6110	1700	2230	1300	1700	1500
FEB. 1989	1793	3900	2510	12200	910	4430	690	3340	850
MAR. 1989	851	8230	5530	12700	2000	4650	1600	3570	1800
APR. 1989	793.6	9350	6360	13600	2300	5010	1800	3860	2100
MAY 1989	668.5	7410	5000	9020	1800	3310	1400	2540	1600
JUNE 1989	6894.4	1330	823	15300	300	5530	220	4100	280
JULY 1989	66.43	6430	4220	756	1500	276	1200	210	1400
AUG. 1989	44.35	8710	5870	703	2200	258	1700	198	1900
SEPT 1989	529.46	5420	3620	5170	1300	1890	1000	1450	1200
TOTAL	13628.64	**	**	99500	**	36400	**	27700	**
WTD.AVG.	37	4090	2700	**	990	**	750	**	900

COLORADO RIVER MAIN STEM

55

08123850 COLORADO RIVER ABOVE SILVER, TX--Continued
(National stream-quality accounting network)

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	6030	5630	5810	9340	9060	9190	7860	7760	7830	7120	7080	7100
2	7050	6050	6450	9160	9060	9110	7780	7740	7760	7080	7020	7040
3	7920	7110	7650	9100	8990	9040	7990	7760	7860	7090	7030	7050
4	7930	7700	7790	9120	8940	9020	8030	7950	8010	7090	6910	6990
5	8270	8010	8190	9180	9080	9130	7930	7710	7810	7090	6890	6970
6	9050	7740	8260	9100	8880	9000	7710	7630	7660	7160	7090	7140
7	9630	9110	9450	9690	8860	9300	7620	7540	7580	7180	7080	7130
8	10300	9600	9950	10400	9720	10100	7660	7560	7600	7080	7000	7030
9	10300	10200	10300	10800	10400	10600	8150	7700	7910	7020	6860	6960
10	11000	10200	10600	10900	9060	10000	8450	8090	8250	7110	6970	7040
11	11000	10800	10900	9040	8810	8920	8580	8250	8470	7050	6990	7020
12	11300	10800	11100	9250	8980	9100	8740	8580	8690	7030	6740	6910
13	11300	11200	11300	9130	8490	8910	8740	8640	8710	6850	6740	6800
14	11800	11300	11500	8450	8150	8270	9050	8720	8850	6890	6740	6830
15	11800	11500	11700	8920	8250	8450	10600	8630	9110	6900	6760	6850
16	11500	11300	11400	10200	9030	9600	10800	8250	9550	6870	6810	6830
17	11700	11200	11400	9640	8760	9220	8210	7420	7810	6920	6870	6900
18	12000	11800	11900	8740	8560	8670	7360	6640	6950	6910	6870	6890
19	11900	11600	11700	8660	8510	8580	6620	6300	6470	6940	6890	6920
20	12200	10600	11800	8680	8360	8520	10300	6340	8230	---	---	6920
21	10500	8930	9590	8780	8410	8690	10400	9030	9860	---	---	e6900
22	9300	8870	9030	8530	8300	8420	8950	8310	8560	---	---	e6900
23	9100	8340	8670	8700	8520	8640	8310	8090	8170	---	---	e7000
24	8880	8370	8680	9220	8660	8900	8150	8030	8090	---	---	e7000
25	8610	7780	8210	9290	9190	9250	8070	8010	8050	---	---	e7100
26	8710	7720	7940	9170	8890	9050	8040	7970	8000	---	---	e7100
27	11400	8900	10500	8970	8770	8870	8060	7760	7930	---	---	e7200
28	11100	9990	10500	8930	8320	8690	7760	7500	7640	---	---	e7200
29	9950	9360	9670	8400	8280	8340	7480	7240	7350	---	---	e7300
30	9530	9160	9280	8300	7840	8080	7240	7080	7150	---	---	e7300
31	9620	9360	9530	---	---	---	7140	7100	7120	---	---	e7400
MONTH	12200	5630	9700	10900	7840	8900	10800	6300	8030	7180	6740	7020

e Estimated

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	---	---	e7500	5860	5590	5700	8530	8080	8350	6110	5610	5840
2	---	---	e7500	6050	5880	5970	8600	8000	8280	7690	5630	6300
3	---	---	e7600	5910	5830	5880	11500	8310	10300	10400	7630	9150
4	---	---	e7600	6610	5940	6300	10600	9930	10300	10400	9720	10100
5	---	---	e7700	7020	6570	6790	9500	9110	9320	9660	8840	9050
6	---	---	e7700	8470	7040	7520	9400	8660	9190	8920	8100	8430
7	---	---	e7800	9150	8530	8820	8640	8410	8540	8400	8020	8210
8	---	---	e7800	10800	9250	10100	9390	8440	8900	8140	7620	7950
9	---	---	e7900	11400	8380	10300	9520	9130	9250	8320	7640	7980
10	---	---	e7900	8790	8240	8530	9480	9130	9340	8380	8020	8210
11	---	---	e8000	8290	7750	8090	9320	8490	8870	8400	8040	8140
12	---	---	e8000	9720	7510	8200	9180	8410	8840	8380	8060	8230
13	---	---	e8100	9800	8790	9240	9800	9080	9560	8320	8100	8230
14	---	---	e8100	9200	8560	8970	9820	9060	9680	8160	6820	7870
15	---	---	e7000	9090	8440	8770	10400	9640	10100	7800	6340	7160
16	---	---	e2600	8990	8170	8520	10800	10100	10200	17100	7000	10700
17	---	---	e2600	8880	8170	8580	10900	10000	10300	17100	13700	15000
18	---	---	e2300	8610	8160	8390	10900	10300	10700	13700	1770	4930
19	---	---	e2000	8590	8110	8330	10900	10000	10300	1930	1600	1730
20	---	---	e3000	8910	8130	8580	11000	10000	10200	6320	2010	4630
21	---	---	e3300	8680	8060	8340	10900	10000	10300	7690	6300	7120
22	---	---	e3800	8250	8020	8160	11100	10100	10500	7710	7030	7270
23	---	---	e4500	8540	8050	8300	11200	10200	10800	7150	6820	7030
24	---	---	e4750	8650	7930	8240	13000	10800	11000	7210	6830	6950
25	5190	4720	4990	8590	8220	8390	12400	10800	11400	7210	6850	7000
26	5040	4850	4950	8780	8290	8560	12200	10200	11700	6990	6310	6680
27	5000	4860	4940	8290	7930	8080	10400	8030	9180	6290	6070	6190
28	5570	5020	5370	8510	8000	8340	8230	6830	7570	6390	6030	6160
29	---	---	---	8510	8000	8270	7070	6310	6840	6390	6070	6250
30	---	---	---	8440	7840	8080	6390	6010	6180	6290	6030	6190
31	---	---	---	8610	8240	8430	---	---	---	6190	6070	6120
MONTH	5570	4720	5900	11400	5590	8150	13000	6010	9530	17100	1600	7450

e Estimated

COLORADO RIVER MAIN STEM

08123850 COLORADO RIVER ABOVE SILVER, TX--Continued
(National stream-quality accounting network)

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	---	---	5800	5380	5140	5240	7820	7500	7590	9910	9610	9760
2	---	---	1230	5980	5360	5600	7790	7410	7590	10100	9730	9900
3	2810	923	1730	6040	5430	5710	7840	7500	7640	10000	9740	9900
4	---	---	1150	6210	5950	6030	7780	7540	7680	9990	9690	9900
5	---	---	900	6270	6050	6120	7940	7470	7700	9990	9770	9910
6	---	---	1200	6280	6120	6190	8040	7660	7780	9920	9710	9830
7	2250	1740	1980	6400	5980	6260	7810	7620	7720	9850	9630	9750
8	2410	1760	2120	6440	6150	6310	7870	7440	7550	9780	9610	9710
9	2380	2070	2200	6570	6170	6380	7460	7260	7350	9750	9440	9600
10	---	---	1750	6710	6210	6530	7360	7210	7290	9560	9230	9460
11	---	---	880	6830	6450	6670	7280	7190	7250	16700	9310	13700
12	---	---	830	6860	6480	6740	7220	7150	7190	12800	8030	9630
13	2930	819	1750	6840	6490	6690	7970	7170	7530	7930	4640	5860
14	2440	2050	2230	6860	6480	6650	8220	7770	7880	4710	1930	3510
15	2370	2120	2230	6870	6510	6680	8050	7890	7970	4490	2300	2750
16	2990	2280	2540	6920	6510	6760	8280	7990	8170	4880	2390	3510
17	3280	2890	3070	6930	6510	6640	8300	7950	8090	4040	2320	2930
18	3250	2930	3080	6940	6530	6600	7930	7730	7830	4600	4150	4470
19	3960	3270	3680	6960	6540	6730	7710	7560	7640	4190	4040	4120
20	4190	3730	4010	6970	6540	6790	7620	7460	7560	4210	4080	4150
21	4350	3930	4210	6970	6670	6800	7710	7320	7480	4170	4060	4110
22	4540	4270	4370	6980	6570	6770	8890	7730	8320	4230	4020	4130
23	4550	4200	4370	6910	6680	6810	9320	8670	9050	4540	4210	4360
24	4520	4240	4320	7370	6830	7090	9240	9090	9200	4920	4530	4710
25	4570	4400	4460	7540	7250	7320	9100	8930	9010	5310	4750	5090
26	5120	4450	4610	7470	7320	7390	8970	8790	8890	5670	5270	5460
27	5260	5080	5130	7610	7230	7450	9950	8580	9190	5850	5480	5600
28	5440	5090	5270	7590	7350	7500	10200	9970	10100	6080	5590	5860
29	5440	5060	5310	7670	7470	7560	10100	9670	9840	6320	5970	6110
30	5470	5070	5120	7680	7470	7540	9630	9460	9570	6410	6150	6250
31	---	---	---	7740	7510	7610	9770	9490	9620	---	---	---
MONTH	5470	819	3050	7740	5140	6680	10200	7150	8170	16700	1930	6800

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER				NOVEMBER			DECEMBER			JANUARY		
1	24.0	18.0	21.0	21.5	15.0	18.0	12.0	6.0	9.0	9.5	5.5	7.5
2	23.0	18.5	21.0	20.5	16.0	18.0	12.5	6.5	9.5	12.0	9.0	10.0
3	23.5	17.5	20.5	21.0	15.0	18.0	14.0	6.5	10.0	13.0	9.5	11.0
4	23.5	17.5	20.5	21.0	15.0	18.0	13.5	9.0	11.0	12.5	9.5	11.0
5	23.5	18.0	20.5	19.0	14.0	16.5	14.0	8.0	11.0	15.0	11.5	13.0
6	23.5	17.5	20.5	18.5	12.0	15.0	15.5	9.5	12.5	14.5	10.0	12.0
7	23.0	18.5	20.5	20.0	14.5	16.5	14.0	10.5	12.5	13.0	10.0	11.5
8	24.5	18.0	21.0	20.5	14.5	17.0	11.5	4.0	7.5	10.0	7.5	9.0
9	23.5	19.0	21.0	23.0	17.5	20.0	6.0	4.0	5.0	9.5	6.0	7.5
10	23.0	17.0	20.0	20.5	16.5	18.0	7.5	5.5	6.5	10.0	5.0	7.5
11	23.0	16.5	19.5	18.5	15.5	17.0	10.0	7.0	8.0	13.0	7.0	9.5
12	23.0	17.0	19.5	21.0	16.5	18.0	11.5	7.0	9.0	---	---	---
13	22.5	16.5	19.0	20.0	14.5	17.0	12.0	6.5	9.0	---	---	---
14	24.0	17.0	20.0	21.0	16.5	18.5	11.5	8.0	9.5	---	---	---
15	25.0	18.0	21.0	20.5	15.5	18.5	10.0	7.0	8.0	---	---	---
16	26.5	19.5	22.5	17.0	12.0	14.5	9.0	5.5	7.0	---	---	---
17	26.0	20.5	23.0	14.0	10.0	12.0	9.0	4.5	7.0	---	---	---
18	24.5	20.0	22.0	17.5	10.5	14.0	10.0	5.0	7.5	---	---	---
19	24.0	18.5	21.0	14.5	9.0	13.0	11.5	7.5	9.0	---	---	---
20	26.0	19.5	22.0	13.0	7.5	10.0	10.5	8.0	9.0	---	---	---
21	23.5	20.5	21.5	12.5	7.5	9.5	11.0	6.0	8.5	---	---	---
22	24.5	19.0	21.5	13.0	7.0	9.5	14.0	10.0	11.5	---	---	---
23	22.5	18.5	20.5	14.5	9.0	11.0	13.5	8.0	10.5	---	---	---
24	21.5	15.5	18.5	16.0	10.5	13.0	11.0	8.0	9.5	---	---	---
25	24.0	17.5	20.0	14.5	13.0	13.5	11.0	6.0	9.0	---	---	---
26	21.0	19.0	20.0	14.0	11.5	12.5	16.5	11.0	14.0	---	---	---
27	24.5	18.0	20.5	12.5	8.5	10.5	14.5	9.0	12.0	---	---	---
28	20.5	16.0	18.5	11.5	6.5	8.5	9.0	5.5	7.5	---	---	---
29	21.0	14.5	17.5	11.5	7.0	9.0	7.0	4.0	5.5	---	---	---
30	20.5	18.0	19.0	11.5	6.0	8.5	10.5	6.0	8.0	---	---	---
31	20.5	17.5	18.5	---	---	---	10.5	6.5	8.5	---	---	---
MONTH	26.5	14.5	20.5	23.0	6.0	14.5	16.5	4.0	9.0	15.0	5.0	10.0

COLORADO RIVER MAIN STEM

57

08123850 COLORADO RIVER ABOVE SILVER, TX--Continued
(National stream-quality accounting network)

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	---	---	---	11.0	10.5	10.5	21.5	15.5	18.5	25.0	18.0	21.0
2	---	---	---	16.0	9.5	12.5	22.5	15.0	19.0	26.0	17.5	21.5
3	---	---	---	19.5	13.5	15.5	22.5	17.0	20.0	28.0	19.5	23.0
4	---	---	---	16.0	2.5	8.5	22.5	15.0	19.0	30.0	20.0	24.5
5	---	---	---	7.5	.5	3.5	22.5	15.0	18.0	28.0	20.0	23.5
6	---	---	---	10.5	3.0	6.5	22.5	14.5	18.5	28.0	20.0	23.5
7	---	---	---	12.0	5.5	8.5	24.5	15.0	19.5	30.0	21.0	25.5
8	---	---	---	13.5	6.5	10.0	22.5	16.5	19.5	30.5	21.0	25.5
9	---	---	---	16.0	9.5	13.0	21.5	14.0	17.5	26.0	20.5	23.5
10	---	---	---	18.0	11.5	15.0	17.5	10.0	13.5	24.5	19.5	21.5
11	---	---	---	19.5	13.5	16.5	17.5	9.5	13.0	21.0	17.5	19.5
12	---	---	---	21.5	15.5	18.0	14.0	10.0	11.5	26.0	17.5	21.0
13	---	---	---	22.5	16.0	19.0	11.0	10.0	10.5	26.0	20.5	23.0
14	---	---	---	23.0	17.5	20.0	20.0	10.0	13.5	22.5	19.5	20.5
15	---	---	---	19.0	15.0	17.0	22.5	14.0	18.0	26.0	17.5	21.5
16	---	---	---	20.0	13.0	16.5	24.5	15.0	19.5	28.5	22.5	24.5
17	---	---	---	23.5	17.0	20.0	26.0	17.0	21.0	28.5	22.5	25.0
18	---	---	---	20.0	16.0	18.5	28.0	20.0	23.0	26.5	20.5	24.0
19	---	---	---	21.5	15.5	18.0	28.0	20.0	23.5	28.5	20.5	24.5
20	---	---	---	21.0	14.0	18.0	27.5	20.5	24.0	31.5	22.5	26.5
21	---	---	---	13.5	7.0	9.0	28.0	20.0	24.0	31.0	24.5	27.5
22	---	---	---	14.5	5.5	9.5	27.5	19.5	23.5	31.5	22.5	27.0
23	---	---	---	18.0	9.5	13.5	27.5	20.5	23.5	33.0	25.0	28.5
24	---	---	---	20.5	13.5	16.5	25.5	21.0	23.0	31.5	23.0	27.5
25	17.0	10.5	14.0	23.0	16.0	19.0	28.0	20.5	23.0	31.0	22.5	26.5
26	18.5	13.0	16.0	24.0	18.0	20.5	29.5	21.0	24.5	31.5	24.5	27.5
27	17.5	13.5	15.5	22.0	18.0	19.5	26.0	21.0	23.5	28.0	22.5	26.0
28	14.5	11.0	12.5	22.0	16.5	19.0	26.0	18.0	22.5	26.5	23.0	25.0
29	---	---	---	24.0	16.0	20.0	23.0	19.5	21.0	26.5	21.0	24.0
30	---	---	---	22.5	17.0	20.0	26.0	16.0	20.5	26.5	21.5	24.5
31	---	---	---	22.5	16.0	19.0	---	---	---	26.5	22.5	25.0
MON	18.5	10.5	14.5	24.0	.5	15.0	29.5	9.5	19.5	33.0	17.5	24.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	28.0	20.5	24.0	33.0	25.0	28.5	---	---	---	29.0	23.5	26.0
2	---	---	---	31.0	25.0	28.0	---	---	---	30.5	24.5	27.0
3	24.5	20.0	22.0	30.5	25.0	27.5	---	---	---	29.0	24.5	26.5
4	22.0	20.0	21.0	31.0	25.0	28.0	---	---	---	28.5	24.0	26.5
5	25.5	20.0	22.5	31.0	25.0	28.0	---	---	---	29.0	24.5	26.5
6	26.0	22.0	24.0	30.5	25.0	28.0	---	---	---	27.5	24.0	25.5
7	28.0	22.5	25.0	30.0	25.0	27.5	---	---	---	27.5	24.0	25.5
8	30.0	23.0	26.0	27.5	25.0	26.5	---	---	---	27.5	23.0	25.0
9	27.0	22.0	23.5	29.0	24.0	26.5	---	---	---	29.5	23.5	25.5
10	25.5	19.5	21.5	30.5	24.5	27.0	---	---	---	25.0	23.0	24.0
11	22.5	19.0	20.5	---	---	---	---	---	---	24.0	22.5	23.0
12	26.0	21.0	23.0	---	---	---	---	---	---	25.5	21.0	23.0
13	25.5	22.5	24.0	---	---	---	---	---	---	23.5	16.0	19.0
14	27.0	22.0	23.5	---	---	---	---	---	---	20.0	15.0	17.5
15	28.0	20.5	24.0	---	---	---	---	---	---	23.0	16.0	19.5
16	27.5	20.5	24.5	---	---	---	---	---	---	24.0	18.5	21.5
17	29.0	22.0	25.0	---	---	---	---	---	---	25.0	19.0	22.0
18	30.5	22.5	26.5	---	---	---	---	---	---	25.5	19.5	22.0
19	32.5	25.0	28.0	---	---	---	---	---	---	25.5	19.0	22.0
20	32.5	25.0	28.5	---	---	---	---	---	---	25.5	18.5	22.0
21	31.0	25.0	27.5	---	---	---	---	---	---	25.5	19.0	22.5
22	30.5	22.5	26.5	---	---	---	---	---	---	23.5	20.0	21.5
23	31.0	22.5	27.0	---	---	---	---	---	---	21.0	16.5	18.5
24	30.5	22.5	26.5	---	---	---	---	---	---	19.0	13.5	16.5
25	31.0	24.0	27.0	---	---	---	---	---	---	21.0	14.5	17.5
26	32.5	24.5	28.0	---	---	---	---	---	---	20.5	15.5	18.0
27	33.0	25.0	28.0	---	---	---	---	---	---	20.5	16.0	18.0
28	32.5	25.0	28.5	---	---	---	---	---	---	21.5	16.5	18.5
29	31.0	25.0	28.5	---	---	---	---	---	---	22.0	17.0	19.5
30	31.0	25.0	28.0	---	---	---	28.0	24.0	26.0	22.5	17.5	20.0
31	---	---	---	---	---	---	28.0	23.5	26.0	---	---	---
MONTH	33.0	19.0	25.5	33.0	24.0	27.5	28.0	23.5	26.0	30.5	13.5	22.0

COLORADO RIVER MAIN STEM

08123950 E.V. SPENCE RESERVOIR NEAR ROBERT LEE, TX

LOCATION.--Lat 31°52'46", long 100°31'01", Coke County, Hydrologic Unit 12080008, in outlet works of Robert Lee Dam on the Colorado River, 2.2 mi west of Robert Lee, and at mile 716.0.

DRAINAGE AREA.--15,278 mi², approximately, of which 10,260 mi² probably is noncontributing.

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

Water-Quality records.--Chemical analyses: November 1969 to August 1988. Biochemical analyses: January 1978 to August 1988.

REVISED RECORDS.--WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to June 24, 1969, non-recording gage at same site and datum.

REMARKS.--The reservoir is formed by a rolled earthfill dam 21,500 ft long. Closure was made Dec. 30, 1968, and dam was completed in June 1969. The dam is the property of the Colorado River Municipal Water District, which has a permit to divert 50,000 acre-ft annually for municipal, mining, and industrial uses. Inflow into the reservoir is partially regulated by Lake J.B. Thomas (capacity, 283,600 acre-ft), Lake Colorado City (station 08123000), and Champion Creek Reservoir (capacity, 42,500 acre-ft). There are two spillways: The controlled service spillway is a morning-glory type that is partially controlled by 12 lift gates, 14.48 by 22.0 ft, and discharges through a 28.0-foot-diameter concrete conduit. The uncontrolled spillway is a 3,200-foot-wide cut through natural ground near the right end of dam. Figures given herein represent total contents. Data regarding the dam and reservoir are given in the following table:

	Elevation (feet)	Capacity (acre-feet)
Top of dam.....	1,928.0	-
Crest of spillway.....	1,908.0	653,400
Top of gates.....	1,900.0	519,300
Top of conservation pool.....	1,898.0	488,800
Crest of spillway.....	1,878.0	262,900
Lowest gated outlet (invert).....	1,815.85	4,000

COOPERATION.--Capacity table (dated March 1972) was furnished by the Colorado River Municipal Water District. Records of diversions can be obtained from the city of San Angelo and from the Colorado River Municipal Water District.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 355,300 acre-ft June 16, 1987 (elevation, 1,887.03 ft); minimum since first appreciable storage in June 1969 (not from recorder), about 330 acre-ft May 29, 1971.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 221,900 acre-ft June 12 at 2400 hours (elevation, 1,873.25 ft); minimum, 175,500 acre-ft Sept. 30 (elevation, 1,867.01 ft).

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

1,867.0	175,400	1,871.0	204,400	1,873.0	219,900
1,869.0	189,400	1,872.0	211,900	1,874.0	227,900

RESERVOIR STORAGE (ACRE-Feet), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	218900	214900	211300	210100	208700	212000	211100	205700	206900	e203200	187900	180600
2	218800	214800	211300	210100	208600	212100	211200	205500	207900	202200	187600	180300
3	218500	214800	211000	210100	208400	212100	211100	205600	208600	201000	187500	180100
4	218300	214500	211000	209800	208300	212100	210700	205300	211000	200200	187600	179700
5	218200	214400	211000	210100	208300	211800	210700	205200	211300	199000	187300	179500
6	218100	213700	211000	209900	208100	211400	210700	205000	211000	197400	186900	179100
7	218000	214100	210900	209800	208100	211500	210600	205600	210600	196200	186000	178800
8	217900	214100	211000	209800	207900	211300	210300	205300	209200	e195300	185700	178600
9	217900	213800	211000	209500	207900	211400	210000	205400	207800	194400	185300	179000
10	217800	213700	211200	209300	208000	211400	210100	204900	208200	e193200	185100	178900
11	217700	213400	211200	209600	208100	211400	210300	204700	221000	193100	184800	179000
12	217300	213700	211200	209200	208000	211500	210400	204700	221900	192700	184600	178800
13	217000	213300	211000	209500	208100	211500	209700	205700	220900	192600	184500	179700
14	216900	213300	211000	209100	208600	211500	208900	205600	219200	192400	184400	179300
15	216800	213300	210700	209200	208600	211400	208200	206500	218000	192300	184300	179300
16	216900	212900	210700	209100	210200	211000	207700	206800	216800	191900	184000	179300
17	216700	212500	210700	209100	210300	211300	207700	206500	215700	191700	183900	179000
18	216600	212700	210700	209100	211000	211300	207700	206600	214500	191400	183700	178900
19	216500	212300	210800	208900	211300	211200	207500	206400	213300	191300	183500	178700
20	216400	212200	210700	208700	211600	211000	207400	e206200	212000	191000	183300	178500
21	216100	212200	210700	208700	211600	210900	207100	206400	210800	190800	183200	178300
22	215900	212100	210700	208600	211600	210800	207100	206000	209600	190700	183000	177900
23	215800	211600	210600	208400	211500	210900	206900	205900	208300	190500	182800	177500
24	215700	211600	210600	208600	211800	210800	206800	205700	e207200	190100	182600	177000
25	215700	211700	210300	208600	211900	210800	206800	205500	206100	189900	182500	176900
26	215700	211400	211100	208500	212100	211000	206800	205100	205400	189700	182300	176400
27	215100	211400	210400	208900	211900	211100	206500	e204900	205000	189300	182100	176200
28	215200	210900	210000	208700	211800	211300	206200	204600	205000	189100	182000	175800
29	215100	211300	210000	208600	---	211500	206200	204400	204800	188800	181700	175700
30	215100	211300	210000	208600	---	211300	206000	204300	204100	188500	181600	175500
31	215100	---	210100	208600	---	211200	---	e204200	---	188000	181100	---
MAX	218900	214900	211300	210100	212100	212100	211200	206800	221900	203200	187900	180600
MIN	215100	210900	210000	208400	207900	210800	206000	204200	204100	188000	181100	175500
(+)	1872.40	1871.91	1871.75	1871.56	1871.99	1871.90	1871.21	1870.97	1870.96	1868.80	1867.81	1867.01
(φ)	-3900	-3800	-1200	-1500	+3200	-600	-5200	-1800	-100	-16100	-6900	-5600

CAL YR 1988 MAX 269200 MIN 207900 (φ) -59200
WTR YR 1989 MAX 221900 MIN 175500 (φ) -43500

(+) Elevation, in feet, at end of month.
(φ) Change in contents, in acre-feet.

e Estimated.

COLORADO RIVER MAIN STEM

59

08124000 COLORADO RIVER AT ROBERT LEE, TX

LOCATION.--Lat 31°53'07", long 100°28'49", Coke County, Hydrologic Unit 12080008, on left bank 190 ft upstream from bridge on State Highway 208 in Robert Lee, 0.4 mi upstream from Mountain Creek, 2.7 mi downstream from Messbox Creek, 3.6 mi downstream from Robert Lee Dam, and at mile 712.4.

DRAINAGE AREA.--15,307 mi², of which 10,260 mi² probably is noncontributing.

PERIOD OF RECORD.--October 1923 to December 1927, April 1939 to May 1956, and October 1968 to current year. Prior to December 1927, published as "near Robert Lee".

REVISED RECORDS.--WSP 1723: 1925(M). WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,771.70 ft above National Geodetic Vertical Datum of 1929. Prior to Dec. 31, 1927, nonrecording gage at site 9 mi downstream at different datum. Apr. 18 to Sept. 26, 1939, nonrecording gage, and Sept. 27, 1939, to May 9, 1956, water-stage recorder at site 200 ft downstream at same datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Beginning April 1949, flow was affected by Lake Colorado City and since July 1952 by Lake J. B. Thomas. Beginning December 1968, flow completely regulated by E. V. Spence Reservoir (station 08123950) 3.6 mi upstream. There are many diversions above station for municipal, mining, agricultural, and industrial uses. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--19 years (water years 1924-27, 1940-55) prior to completion of Robert Lee Dam, 207 ft³/s (150,000 acre-ft/yr); 21 years (water years 1969-89) regulated, 20.4 ft³/s (14,780 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 32,500 ft³/s Sept. 6, 1926 (gage height, 20.20 ft, site and datum then in use), from rating curve extended above 15,000 ft³/s; maximum gage height, 20.63 ft Sept. 9, 1980; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1907, 26.7 ft Oct. 13, 1957, from floodmarks. Flood in April 1922 reached a stage of 25.5 ft, present datum, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 10,800 ft³/s June 10 at 2130 hours (gage height, 14.07 ft); minimum daily 0.01 ft³/s May 5-7, 9.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.73	.39	.19	.39	.25	e.26	.11	.21	20	507	14	110
2	.69	.30	.16	.50	.22	e.26	.05	.10	144	508	11	111
3	.63	.30	.16	.55	.24	e.26	.06	.03	3.8	490	29	68
4	.52	.30	.21	.62	.17	e.26	.05	.03	33	502	110	2.1
5	.36	.30	.25	.39	.18	e.26	.06	.01	183	499	112	.97
6	.36	.30	.25	.24	.20	e.26	.05	.01	665	497	92	5.8
7	.45	.30	.25	.23	.23	e.26	.04	.01	659	494	5.9	6.6
8	.49	.40	.25	.27	.23	e.26	.03	.02	653	494	6.0	5.2
9	.48	.42	.28	.38	.19	e.26	.02	.01	644	489	15	14
10	.46	.37	.35	.34	.20	e2.2	52	.38	2130	221	14	9.9
11	.49	.34	.26	.18	.17	.84	120	.06	488	3.7	15	12
12	.47	.25	.23	.16	.22	.34	116	.05	560	2.0	15	11
13	.41	.25	.16	.16	.23	.20	120	.04	556	18	17	24
14	.35	.25	.15	.21	.47	.20	121	1.9	557	3.9	15	12
15	.33	.22	.13	.21	.99	.19	121	1.3	551	6.8	14	9.7
16	.39	.17	.13	.21	3.0	.18	120	187	548	7.8	13	9.2
17	.46	.19	.13	.27	5.4	.20	92	17	548	12	13	9.1
18	.49	.19	.12	.23	1.9	.22	4.7	.91	544	13	13	9.1
19	.47	.16	.15	.16	.86	.30	1.0	.36	543	1.7	13	9.1
20	.30	.19	.20	.18	.53	.23	.54	.24	545	.86	13	8.8
21	.27	.20	.20	.22	.43	.18	.31	.29	547	.76	12	9.2
22	.34	.23	.20	.20	.32	.19	.19	.21	545	1.1	12	54
23	.39	.28	.80	.23	.28	.24	.11	.19	547	1.3	38	121
24	.48	.28	.80	.28	.24	.29	.09	.09	540	1.5	36	122
25	.49	.25	.96	.29	.26	.24	.11	.04	538	1.2	13	68
26	.47	.25	.96	.21	.26	.24	.13	.03	297	.80	11	2.2
27	.42	.25	.96	.25	.26	.46	.11	.06	119	1.4	10	1.2
28	.42	.25	.87	.52	.26	.83	.10	.07	119	39	8.7	.99
29	.42	.25	.56	.34	---	.80	.11	.04	119	112	8.3	19
30	.46	.23	.42	.30	---	.36	.11	.04	259	73	8.0	23
31	.49	---	.40	.33	---	.18	---	.06	---	2.2	24	---
TOTAL	13.98	8.06	11.14	9.05	18.19	11.45	870.08	210.79	14204.8	5005.02	730.9	868.16
MEAN	.45	.27	.36	.29	.65	.37	29.0	6.80	473	161	23.6	28.9
MAX	.73	.42	.96	.62	5.4	2.2	121	187	2130	508	112	122
MIN	.27	.16	.12	.16	.17	.18	.02	.01	3.8	.76	5.9	.97
AC-FT	28	16	22	18	36	23	1730	418	28180	9930	1450	1720
CAL YR 1988	TOTAL	31474.80	MEAN	86.0	MAX	699	MIN	.06	AC-FT	62430		
WTR YR 1989	TOTAL	21961.62	MEAN	60.2	MAX	2130	MIN	.01	AC-FT	43560		

e Estimated.

COLORADO RIVER MAIN STEM

08126380 COLORADO RIVER NEAR BALLINGER, TX

LOCATION.--Lat 31°42'55", long 100°01'34", Runnels County, Hydrologic Unit 12090101, at left downstream end of bridge on Farm Road 2111, 0.4 mi upstream from Rocky Creek, 5.0 mi northwest of Ballinger, and at mile 665.8.

DRAINAGE AREA.--16,358 mi², approximately, of which 10,260 mi² probably is noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1907 to September 1979 (published as "at Ballinger", station 08126500), October 1979 to current year. Monthly discharge only for some periods published in WSP 1312. Gage-height records collected in this vicinity from 1903-29 are contained in reports of the National Weather Service.

REVISED RECORDS.--WSP 1118: Drainage area. WSP 1512: 1916-17, 1919-20, 1921(M), 1922-25, 1928(M), 1930(M). WSP 1712: 1935, 1954-55(M). WDR TX-78-3: 1975-77.

GAGE.--Water-stage recorder. Datum of gage is 1,606.51 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 29, 1930, nonrecording gages at several sites and at various datums near site 5.4 mi downstream. Nov. 29, 1930, to May 1, 1975, water-stage recorder at site 6.2 mi downstream and May 1, 1975, to Sept. 30, 1979, water-stage recorder at site 5.4 mi downstream, both at datum 12.77 ft lower.

REMARKS.--No estimated daily discharges. Records good. There are many diversions above station for irrigation, municipal supplies, and for oil field operation. Flow is affected by E. V. Spence (station 08123950) and Oak Creek Reservoirs (capacity, 39,360 acre-ft), and at times by discharge from the floodwater-retarding structures in the Kickapoo and Valley Creeks drainage basins.

AVERAGE DISCHARGE.--61 years (water years 1908-68) prior to completion of Robert Lee Dam, 336 ft³/s (243,400 acre-ft/yr); 21 years (water years 1969-89) partially regulated, 70.8 ft³/s (51,290 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 75,400 ft³/s Sept. 18, 1936 (gage height, 28.6 ft, at former site and datum); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1882, about 36 ft sometime in 1884, at former site and datum, from information by local residents. Flood of Aug. 6, 1906, reached a stage of about 32.0 ft, at former site and datum, from floodmarks (backwater from Elm Creek).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,650 ft³/s June 11 at 1530 hours (gage height, 15.31 ft); minimum, 0.58 ft³/s May 11, 12.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	9.6	20	12	7.1	7.5	7.9	2.2	2.1	223	66	3.5
2	15	9.6	20	16	7.5	7.5	7.9	1.6	4.0	484	25	2.1
3	14	9.7	20	16	7.9	7.5	7.1	1.3	199	499	13	67
4	11	10	20	16	7.9	8.2	4.3	1.7	52	486	6.5	94
5	9.6	9.5	18	18	7.9	8.2	2.8	2.0	33	497	4.4	56
6	7.9	6.8	18	16	7.9	7.1	3.0	1.2	21	499	75	23
7	7.1	8.8	17	13	7.5	7.1	3.0	1.2	436	499	98	12
8	6.7	7.4	20	12	6.7	6.9	2.7	1.3	494	496	76	7.0
9	6.4	8.8	22	12	6.3	7.3	1.9	1.1	514	491	29	5.2
10	6.0	11	21	9.6	6.1	7.5	1.6	1.5	557	478	14	6.0
11	5.7	14	20	6.6	5.9	7.4	1.3	.70	1970	288	10	20
12	5.7	14	16	3.7	5.8	7.9	1.4	1.2	930	73	7.8	27
13	4.8	14	14	5.8	6.5	16	88	1.4	840	34	5.9	356
14	5.2	15	13	6.4	9.9	13	114	1.7	771	21	6.3	284
15	5.9	18	12	4.5	48	9.7	109	24	721	15	7.4	62
16	6.0	15	10	4.5	50	8.3	109	57	679	14	8.3	28
17	6.4	12	8.5	4.7	96	7.7	107	52	648	16	8.9	18
18	6.4	14	8.0	4.7	68	7.2	107	128	624	11	8.4	13
19	6.4	17	8.1	4.8	39	6.8	69	40	605	9.9	5.7	12
20	6.4	18	9.0	5.3	25	7.2	31	20	585	7.0	5.9	12
21	6.9	18	9.4	5.5	19	6.4	18	14	568	8.6	6.1	10
22	7.1	17	9.7	5.0	14	6.5	13	9.9	565	8.8	4.7	10
23	7.1	16	10	4.7	11	5.9	9.2	7.1	549	9.9	3.9	9.0
24	7.5	18	9.6	4.6	10	4.8	6.0	5.3	544	10	4.5	32
25	7.5	19	9.9	4.6	9.4	4.9	6.2	4.6	536	10	4.0	105
26	7.5	19	10	4.7	8.9	5.8	5.8	3.8	525	9.4	3.7	110
27	8.9	17	11	5.2	8.1	6.7	4.8	2.7	334	8.1	3.7	56
28	8.3	18	11	9.4	7.5	12	3.2	2.7	150	5.0	3.4	25
29	8.3	19	11	9.6	---	14	2.2	2.3	135	5.3	2.5	14
30	8.3	20	11	8.6	---	11	1.6	2.1	128	5.0	2.7	11
31	9.2	---	11	7.6	---	8.4	---	2.0	---	67	1.5	---
TOTAL	253.2	423.2	428.2	261.1	514.8	252.4	848.9	397.60	14719.1	5288.0	522.2	1489.8
MEAN	8.17	14.1	13.8	8.42	18.4	8.14	28.3	12.8	491	171	16.8	49.7
MAX	24	20	22	18	96	16	114	128	1970	499	98	356
MIN	4.8	6.8	8.0	3.7	5.8	4.8	1.3	.70	2.1	5.0	1.5	2.1
AC-FT	502	839	849	518	1020	501	1680	789	29200	10490	1040	2960
CAL YR 1988	TOTAL	34418.61	MEAN	94.0	MAX	639	MIN	.00	AC-FT	68270		
WTR YR 1989	TOTAL	25398.50	MEAN	69.6	MAX	1970	MIN	.70	AC-FT	50380		

08126380 COLORADO RIVER NEAR BALLINGER, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: October 1979 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 13,500 microsiemens May 3, 1963; minimum daily, 244 microsiemens Sept. 9, 1980.

WATER TEMPERATURE: Maximum daily, 39.0°C July 3, 1977; minimum daily, 0.0°C Jan. 9-11, 1973.

SEDIMENT CONCENTRATION: Maximum daily mean, 3,740 mg/L Sept. 9 1980; minimum daily mean, 4 mg/L Feb. 2, 1980.

SUSPENDED SEDIMENT DISCHARGE: January 1978 to September 1981.

REMARKS.--Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request. Prior to October 1979, station was operated as 08126500 Colorado River at Ballinger.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 13,500 microsiemens May 3, 1963; minimum daily, 244 microsiemens Sept. 9, 1980.

WATER TEMPERATURE: Maximum daily, 39.0°C July 3, 1977; minimum daily, 0.0°C Jan. 9-11, 1973.

SEDIMENT CONCENTRATION: Maximum daily mean, 3,740 mg/L Sept. 9 1980; minimum daily mean, 4 mg/L Feb. 2, 1980.

SEDIMENT LOADS: Maximum daily, 94,100 tons Aug. 3, 1978; minimum daily, 0 tons on many days during 1978 and 1980-81.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 5,450 microsiemens Aug. 6; minimum daily, 650 microsiemens Sept. 15.

WATER TEMPERATURE: Maximum daily, 34.0°C July 17, 18; minimum daily, 5.5°C Feb. 3-5.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
OCT 26...	1405	7.3	3690	21.0	1300	1100	310	130	360
DEC 19...	1215	7.5	4440	10.5	1400	1200	320	140	360
FEB 01...	1115	7.0	4250	13.5	1700	1500	420	150	400
MAR 29...	1200	14	3930	21.5	1200	1100	300	120	440
JUN 12...	1330	959	1060	24.0	250	140	49	30	110
JUL 27...	1445	8.0	4860	29.5	1300	1100	270	150	610
DATE		SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SI02)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)
OCT 26...		4	11	184	1200	530	0.40	13	2660
DEC 19...		4	8.3	190	1200	570	0.40	11	2720
FEB 01...		4	8.6	190	1500	640	0.50	7.2	3240
MAR 29...		6	8.5	161	1100	650	0.50	4.0	2720
JUN 12...		3	6.9	110	150	170	0.30	5.8	588
JUL 27...		8	19	166	1100	960	0.60	9.0	3220

COLORADO RIVER MAIN STEM

08126380 COLORADO RIVER NEAR BALLINGER, TX--Continued

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1988 TO SEPTEMBER 1989

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	DIS- SOLVED SOLIDS (MG/L)	DIS- SOLVED SOLIDS (TONS)	DIS- SOLVED CHLORIDE (MG/L)	DIS- SOLVED CHLORIDE (TONS)	DIS- SOLVED SULFATE (MG/L)	DIS- SOLVED SULFATE (TONS)	HARDNESS (CA, MG) (MG/L)
OCT. 1988	253.2	3220	2320	1590	460	312	1000	703	1300
NOV. 1988	423.2	4370	3170	3630	680	780	1400	1570	1700
DEC. 1988	428.2	4550	3310	3830	720	834	1400	1650	1700
JAN. 1989	261.1	4290	3110	2190	660	468	1400	953	1600
FEB. 1989	514.8	3320	2390	3330	470	659	1100	1470	1300
MAR. 1989	252.4	3760	2720	1850	550	378	1200	814	1500
APR. 1989	848.9	4720	3440	7890	760	1750	1500	3390	1800
MAY 1989	397.60	3540	2560	2750	520	555	1100	1210	1400
JUNE 1989	14719.1	3690	2680	106000	560	22200	1200	46500	1400
JULY 1989	5288.0	4730	3450	49200	760	10900	1500	21200	1800
AUG. 1989	522.2	5080	3710	5240	850	1190	1600	2230	1900
SEPT 1989	1489.8	2480	1790	7210	360	1440	790	3190	990
TOTAL	25398.50	**	**	195000	**	41400	**	84900	**
WTD.AVG.	70	3920	2850	**	600	**	1200	**	1500

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
EQUIVALENT MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1550	3950	4640	e4460	4220	3780	4200	4650	3790	4800	5400	4760
2	2290	3960	4660	e4440	e4270	3830	4200	4560	e3040	4740	5310	4680
3	2320	3960	4650	e4410	4330	3830	4200	4550	2300	4720	5080	e4850
4	2870	3960	4660	e4380	4330	e3820	e4200	4450	1460	4710	5020	e5190
5	2900	4210	4660	e4360	4380	3820	4300	4480	1240	4720	5020	5360
6	2900	4350	4660	e4330	4380	3870	4300	4540	e2400	4700	5450	5150
7	2910	4280	4680	e4300	4400	e3880	4300	4540	3560	4710	4960	5150
8	2970	4220	4490	4280	4320	e3910	4300	4460	4770	4710	4960	5020
9	3510	4240	4480	4280	4400	3930	4400	e4410	4740	4720	4970	5000
10	3520	4220	4480	4270	4400	3860	4400	4360	4740	4730	4850	4590
11	3480	4240	4630	4260	4400	3670	4400	4050	2080	4720	4880	2930
12	3510	4240	4630	4210	4340	3670	e4500	4060	1100	4730	4830	e2450
13	3470	4310	4570	4210	4330	3470	4600	3910	3480	4730	4840	2010
14	3790	4280	4570	4210	e4110	3330	4100	e4340	3550	4750	4780	790
15	3790	4330	e4560	4220	e3890	e3380	5300	4780	3900	4730	4850	650
16	3790	4340	e4540	4200	3740	3480	4800	4370	3910	4730	4850	840
17	3770	4330	e4530	4200	2440	3480	4800	3380	4100	4790	4850	1230
18	3700	4370	e4520	4170	2690	3460	4800	3520	4110	4780	4860	1240
19	3700	4370	e4510	4160	3150	3590	4800	2740	4230	4810	4840	1480
20	3700	4410	e4500	e4150	2830	3600	4800	2800	4230	4820	4840	1490
21	3700	4430	e4480	4160	2790	3690	4800	2500	4430	4880	4860	1670
22	3700	4470	4470	4160	3230	3700	4800	2550	4520	4890	4870	1680
23	3730	4470	e4460	4150	3140	3720	e4800	2870	4540	4680	4870	1940
24	3710	e4500	e4450	4150	3370	3820	4800	2880	4570	4880	4910	1800
25	3780	4530	e4430	4150	3410	3890	4800	3240	4600	4880	4900	1660
26	3720	4560	e4420	4180	3610	4990	4800	3240	4540	4880	4850	2850
27	3810	4570	e4400	4230	3610	3980	4800	3240	4430	e4870	4840	4650
28	3810	4580	e4390	4200	3700	3820	4800	3530	4430	4880	4870	4660
29	3820	4580	e4370	4200	---	e3930	4800	3520	4530	4880	4890	4670
30	3830	4570	4360	4210	---	4060	4800	3640	4610	4880	4800	4660
31	3940	---	4490	4360	---	4000	---	3770	---	5160	4780	---
MEAN	3420	4330	4530	4250	3790	3780	4590	3800	3730	4790	4930	3170

e Estimated

COLORADO RIVER MAIN STEM

63

08126380 COLORADO RIVER NEAR BALLINGER, TX--Continued

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1988 TO SEPTEMBER 1989

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	DIS- SOLVED SOLIDS (MG/L)	DIS- SOLVED SOLIDS (TONS)	DIS- SOLVED CHLORIDE (MG/L)	DIS- SOLVED CHLORIDE (TONS)	DIS- SOLVED SULFATE (MG/L)	DIS- SOLVED SULFATE (TONS)	HARDNESS (CA, MG) (MG/L)
OCT. 1988	253.2	3220	2320	1590	460	312	1000	703	1300
NOV. 1988	423.2	4370	3170	3630	680	780	1400	1570	1700
DEC. 1988	428.2	4550	3310	3830	720	834	1400	1650	1700
JAN. 1989	261.1	4290	3110	2190	660	468	1400	953	1600
FEB. 1989	514.8	3320	2390	3330	470	659	1100	1470	1300
MAR. 1989	252.4	3760	2720	1850	550	378	1200	814	1500
APR. 1989	848.9	4720	3440	7890	760	1750	1500	3390	1800
MAY 1989	397.60	3540	2560	2750	520	555	1100	1210	1400
JUNE 1989	14719.1	3690	2680	106000	560	22200	1200	46500	1400
JULY 1989	5288.0	4730	3450	49200	760	10900	1500	21200	1800
AUG. 1989	522.2	5080	3710	5240	850	1190	1600	2230	1900
SEPT 1989	1489.8	2480	1790	7210	360	1440	790	3190	990
TOTAL	25398.50	**	**	195000	**	41400	**	84900	**
WTD.AVG.	70	3920	2850	**	600	**	1200	**	1500

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
EQUIVALENT MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1550	3950	4640	e4460	4220	3780	4200	4650	3790	4800	5400	4760
2	2290	3960	4660	e4440	e4270	3830	4200	4560	e3040	4740	5310	4680
3	2320	3960	4650	e4410	4330	3830	4200	4550	2300	4720	5080	e4850
4	2870	3960	4660	e4380	4330	e3820	e4200	4450	1460	4710	5020	e5190
5	2900	4210	4660	e4360	4380	3820	4300	4480	1240	4720	5020	5360
6	2900	4350	4660	e4330	4380	3870	4300	4540	e2400	4700	5450	5150
7	2910	4280	4680	e4300	4400	e3880	4300	4540	3560	4710	4960	5150
8	2970	4220	4490	4280	4320	e3910	4300	4460	4770	4710	4960	5020
9	3510	4240	4480	4280	4400	3930	4400	e4410	4740	4720	4970	5000
10	3520	4220	4480	4270	4400	3860	4400	4360	4740	4730	4850	4590
11	3480	4240	4630	4260	4400	3670	4400	4050	2080	4720	4880	2930
12	3510	4240	4630	4210	4340	3670	e4500	4060	1100	4730	4830	e2450
13	3470	4310	4570	4210	4330	3470	4600	3910	3480	4730	4840	2010
14	3790	4280	4570	4210	e4110	3330	4100	e4340	3550	4750	4780	790
15	3790	4330	e4560	4220	e3890	e3380	5300	4780	3900	4730	4850	650
16	3790	4340	e4540	4200	3740	3480	4800	4370	3910	4730	4850	840
17	3770	4330	e4530	4200	2440	3480	4800	3380	4100	4790	4850	1230
18	3700	4370	e4520	4170	2690	3460	4800	3520	4110	4780	4860	1240
19	3700	4370	e4510	4160	3150	3590	4800	2740	4230	4810	4840	1480
20	3700	4410	e4500	e4150	2830	3600	4800	2800	4230	4820	4840	1490
21	3700	4430	e4480	4160	2790	3690	4800	2500	4430	4880	4860	1670
22	3700	4470	4470	4160	3230	3700	4800	2550	4520	4890	4870	1680
23	3730	4470	e4460	4150	3140	3720	e4800	2870	4540	4680	4870	1940
24	3710	e4500	e4450	4150	3370	3820	4800	2880	4570	4880	4910	1800
25	3780	4530	e4430	4150	3410	3890	4800	3240	4600	4880	4900	1660
26	3720	4560	e4420	4180	3610	4990	4800	3240	4540	4880	4850	2850
27	3810	4570	e4400	4230	3610	3980	4800	3240	4430	e4870	4840	4650
28	3810	4580	e4390	4200	3700	3820	4800	3530	4430	4880	4870	4660
29	3820	4580	e4370	4200	---	e3930	4800	3520	4530	4880	4890	4670
30	3830	4570	4360	4210	---	4060	4800	3640	4610	4880	4800	4660
31	3940	---	4490	4360	---	4000	---	3770	---	5160	4780	---
MEAN	3420	4330	4530	4250	3790	3780	4590	3800	3730	4790	4930	3170

e Estimated

COLORADO RIVER BASIN

08127000 ELM CREEK AT BALLINGER, TX

LOCATION.--Lat 31°44'57", long 99°56'51", Runnels County, Hydrologic Unit 12090101, on right bank 1,000 ft upstream from storage dam at Ballinger and 1.9 mi upstream from mouth.

DRAINAGE AREA.--450 mi², of which 63.5 mi² is above Lake Winters dam.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1932 to current year.

REVISED RECORDS.--WSP 1442: 1935, 1946, 1954. WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder and masonry dam control. Datum of gage is 1,617.72 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those below 100 ft³/s, which are fair. The stage-discharge relation during periods of low flow are affected by wind action and by occasional accumulation of drift on dam. The city of Winters diverts water from New Lake Winters (capacity, 8,374 acre-ft at elevation 1,790.0 ft) for municipal use. Prior to June 1982, capacity of Old Lake Winters (former dam just upstream from new dam) was 3,060 acre-ft.

AVERAGE DISCHARGE.--57 years (water years 1933-89), 45.2 ft³/s (1.36 in/yr), 32,750 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 50,000 ft³/s Oct. 13, 1957 (gage height, 14.20 ft, from floodmark); no flow at times.

Highest stage, not affected by backwater from the Colorado River since at least 1904, was that of Oct. 13, 1957, from information by local residents.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1906 reached a stage of 14.5 ft, affected by backwater from Colorado River.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 8,240 ft³/s June 11 at 1000 hours (gage height, 7.38 ft); no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	1.2	2.0	2.7	5.8	.55	.21	.06	.00	.00
2	.01	.00	.00	1.3	2.3	2.8	3.7	.70	.15	.05	.00	.00
3	.09	.00	.00	1.5	2.1	3.1	2.4	.81	.07	.09	.00	.00
4	.11	.00	.00	1.4	1.5	3.0	2.1	.70	.13	.11	.00	.00
5	.08	.00	.00	1.4	1.6	2.6	2.2	.55	18	.11	.00	.00
6	.07	.00	.00	1.2	1.6	3.1	4.1	.32	26	.13	.00	.00
7	.05	.00	.00	1.2	1.6	3.1	3.2	.20	11	.12	.00	.00
8	.04	.00	.00	1.0	1.6	3.4	2.2	.17	4.1	.11	.00	.00
9	.03	.00	.00	1.0	1.6	3.6	1.6	e.17	2.2	.11	.00	.00
10	.01	.00	.20	1.1	1.6	3.6	1.3	.24	589	.10	.00	.00
11	.00	.00	.53	1.2	1.8	3.4	.98	.81	6470	.09	.00	.00
12	.00	.00	1.2	1.2	1.9	3.5	.83	2.0	973	.08	.00	.00
13	.00	.00	1.7	1.5	2.0	3.5	.77	2.3	393	.07	.00	288
14	.00	.00	1.3	1.6	2.3	3.0	.39	1.2	266	.11	.00	394
15	.00	.00	1.0	1.7	15	2.5	.18	1.1	314	.37	.00	56
16	.00	.00	1.3	1.6	20	2.1	1.4	1.1	212	.40	.00	21
17	.00	.00	1.7	1.7	38	2.1	3.5	108	130	.35	.00	9.6
18	.00	.00	1.9	1.7	34	2.5	121	89	75	.25	.00	4.1
19	.00	.00	1.7	1.7	21	2.5	19	33	42	.07	.00	2.0
20	.00	.00	1.8	1.6	14	2.2	2.7	14	20	.02	.00	1.5
21	.00	.00	1.8	1.4	9.3	2.3	1.8	5.4	7.9	.00	.00	1.2
22	.00	.00	2.0	1.4	6.3	2.0	1.8	2.7	2.8	.00	.00	.90
23	.00	.00	1.7	1.4	5.1	2.0	1.6	2.7	1.3	.00	.00	.35
24	.00	.00	1.4	1.4	3.8	2.0	1.4	1.6	.67	.00	.00	.14
25	.00	.00	1.3	1.7	3.6	2.0	1.1	1.4	.36	.00	.00	.07
26	.00	.00	1.2	1.6	3.5	1.9	1.1	1.1	.25	.00	.00	.03
27	.00	.00	1.3	1.8	3.3	2.1	1.1	.62	.26	.00	.00	.01
28	.00	.00	1.1	2.4	3.0	14	.81	.49	.20	.00	.00	.00
29	.00	.00	1.0	2.4	---	22	.70	.37	.14	.00	.00	.00
30	.00	.00	1.1	2.6	---	16	.49	.28	.11	.00	.00	.00
31	.00	---	1.2	2.3	---	9.8	---	.24	---	.00	.00	---
TOTAL	0.49	0.00	29.43	48.2	205.4	134.4	191.25	273.82	9559.85	2.80	0.00	778.90
MEAN	.016	.00	.95	1.55	7.34	4.34	6.37	8.83	319	.090	.00	26.0
MAX	.11	.00	2.0	2.6	38	22	121	108	6470	.40	.00	394
MIN	.00	.00	.00	1.0	1.5	1.9	.18	.17	.07	.00	.00	.00
AC-FT	1.0	.0	58	96	407	267	379	543	18960	5.6	.0	1540

CAL YR 1988 TOTAL 2001.29 MEAN 5.47 MAX 206 MIN .00 AC-FT 3970
WTR YR 1989 TOTAL 11224.54 MEAN 30.8 MAX 6470 MIN .00 AC-FT 22260

e Estimated

08127000 ELM CREEK AT BALLINGER, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: October 1957 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1967 to current year.

WATER TEMPERATURE: October 1967 to current year.

REMARKS.--Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression developed for this station may be obtained from the Geological Survey District office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 4,220 microsiemens Sept. 12, 17, 1970; minimum daily, 244 microsiemens Aug. 4, 1978.

WATER TEMPERATURE: Maximum daily, 35.0°C July 19, 1986; minimum daily, 0.0°C Jan. 8, 1968, Jan. 10, 13, 1973, and Jan. 11, 14, 1982.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 3,010 microsiemens Jan. 18, 24; minimum daily, 301 microsiemens June 11.

WATER TEMPERATURE: Maximum daily, 34.5°C July 1; minimum daily, 2.0°C Feb. 5.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
DEC 19...	1300	1.6	2450	9.0	760	560	140	100	230
FEB 01...	1150	2.0	2950	11.5	920	710	170	120	280
MAR 29...	1250	20	2560	21.0	690	470	130	88	270
MAY 31...	1145	0.30	1240	25.5	310	150	60	38	130
JUN 12...	1030	889	414	23.0	130	42	34	12	24

DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)
DEC 19...	4	5.2	207	460	440	0.60	11	1510
FEB 01...	4	5.9	212	600	530	0.70	5.8	1840
MAR 29...	5	4.9	214	370	500	0.80	4.3	1500
MAY 31...	3	5.4	159	150	200	0.70	11	690
JUN 12...	0.9	6.4	92	34	44	0.20	8.6	218

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1988 TO SEPTEMBER 1989

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	DIS- SOLVED SOLIDS (MG/L)	DIS- SOLVED SOLIDS (TONS)	DIS- SOLVED CHLORIDE (MG/L)	DIS- SOLVED CHLORIDE (TONS)	DIS- SOLVED SULFATE (MG/L)	DIS- SOLVED SULFATE (TONS)	HARDNESS (CA,MG) (MG/L)
OCT. 1988	0.49	2430	1450	1.9	480	0.6	350	0.5	720
NOV. 1988	0.00	*	*	0.00	*	0.00	*	0.00	*
DEC. 1988	29.43	2430	1450	115	480	38	350	28	720
JAN. 1989	48.2	2930	1750	228	610	79	440	58	870
FEB. 1989	205.4	2410	1430	795	480	264	350	195	710
MAR. 1989	134.4	2370	1410	512	460	168	340	125	700
APR. 1989	191.25	1650	977	504	300	157	230	118	490
MAY 1989	273.82	1320	777	574	230	169	180	130	390
JUNE 1989	9559.85	413	241	6210	63	1630	50	1300	120
JULY 1989	2.80	1430	842	6.4	250	1.9	190	1.4	420
AUG. 1989	0.00	*	*	0.00	*	0.00	*	0.00	*
SEPT 1989	778.90	488	285	599	75	157	60	125	140
TOTAL	11224.54	**	**	9500	**	2670	**	2080	**
WTD.AVG.	31	538	315	**	88	**	69	**	160

COLORADO RIVER BASIN

08127000 ELM CREEK AT BALLINGER, TX--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
EQUIVALENT MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	2760	2610	2340	2800	2810	1270	1180	---	---
2	e2700	---	---	2770	2260	2350	2800	2790	1280	1250	---	---
3	e2600	---	---	2810	2330	2320	2800	2800	1270	1270	---	---
4	e2500	---	---	2820	1880	2310	2800	2800	1260	1280	---	---
5	e2400	---	---	2830	2060	2320	2800	2800	1280	1320	---	---
6	e2400	---	---	2850	2910	2230	2800	2830	1300	1360	---	---
7	e2300	---	---	2860	2870	2340	2800	2820	1370	1320	---	---
8	e2300	---	---	2870	2930	2330	2800	2810	1400	1340	---	---
9	e2200	---	---	2880	2940	2340	2800	e2810	1440	1370	---	---
10	e2200	---	e2150	2880	2910	2340	2800	2820	850	1390	---	---
11	---	---	2020	2910	2910	2360	2800	2810	301	1420	---	---
12	---	---	2030	2950	2900	2360	2800	2750	491	1440	---	---
13	---	---	2170	2920	2890	2410	2200	2600	567	1470	---	e525
14	---	---	2260	2920	2910	2410	2800	2750	648	1470	---	469
15	---	---	2300	2930	2750	2390	2700	2770	660	1480	---	447
16	---	---	2300	2950	1080	2410	2650	2760	655	1500	---	451
17	---	---	2340	2920	2280	2450	2600	1350	659	1500	---	487
18	---	---	2370	3010	2670	2440	1250	1200	700	1510	---	493
19	---	---	2440	2970	2670	2470	1500	1160	738	1550	---	514
20	---	---	2450	2970	2610	2490	1900	1100	780	e1560	---	538
21	---	---	2490	3000	2590	2500	2000	1130	835	---	---	527
22	---	---	2490	2980	2530	2510	2200	1170	913	---	---	538
23	---	---	2500	3000	2500	2530	2400	1170	930	---	---	541
24	---	---	2520	3010	2490	2540	2600	1180	964	---	---	575
25	---	---	2560	3000	2430	2540	2700	1190	994	---	---	561
26	---	---	2560	3000	2350	2560	2800	1240	1030	---	---	e565
27	---	---	2610	2980	2350	2580	2800	1200	1030	---	---	e570
28	---	---	2630	2970	2350	2400	2800	1210	1080	---	---	---
29	---	---	2650	2970	---	2200	2800	1220	1150	---	---	---
30	---	---	2650	2970	---	2300	2800	1230	1160	---	---	---
31	---	---	e2640	2960	---	2660	---	1250	---	---	---	---
MEAN	2400	---	2410	2920	2530	2410	2570	2020	967	1400	---	520

e Estimated

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	13.0	13.5	12.0	20.5	25.0	28.5	34.5	---	---
2	---	---	---	14.0	10.0	13.5	22.5	26.0	25.0	33.0	---	---
3	---	---	---	11.0	6.0	16.0	23.5	26.5	27.0	29.0	---	---
4	---	---	---	14.0	3.0	7.5	22.0	30.0	27.0	30.5	---	---
5	---	---	---	14.0	2.0	7.0	22.0	24.0	29.0	31.0	---	---
6	---	---	---	14.0	3.0	7.5	22.0	23.0	---	31.0	---	---
7	---	---	---	13.5	4.5	9.0	23.0	26.0	28.0	32.5	---	---
8	---	---	---	10.5	4.5	11.0	20.5	28.5	30.5	29.5	---	---
9	---	---	---	9.5	5.0	12.0	21.0	---	26.0	27.0	---	---
10	---	---	---	9.0	11.0	15.0	17.0	25.0	27.0	25.0	---	---
11	---	---	9.5	11.5	10.0	16.0	15.0	23.5	24.0	28.0	---	---
12	---	---	9.5	8.0	9.0	17.0	14.5	23.0	26.0	29.5	---	---
13	---	---	10.0	6.0	12.5	22.0	12.0	24.0	25.0	28.0	---	---
14	---	---	9.0	6.5	9.0	20.5	18.5	23.0	26.0	29.5	---	24.0
15	---	---	7.0	8.5	9.0	16.0	16.0	23.0	25.0	31.0	---	24.0
16	---	---	9.0	8.0	6.0	19.0	20.0	22.0	25.5	30.0	---	24.0
17	---	---	6.5	9.5	7.0	21.0	23.0	24.0	27.0	29.5	---	24.0
18	---	---	9.5	11.5	6.0	18.0	28.0	24.0	27.0	29.0	---	22.0
19	---	---	10.5	10.0	7.0	19.5	29.0	24.5	31.0	26.0	---	26.0
20	---	---	10.5	9.5	10.5	---	26.0	32.0	31.5	---	---	25.0
21	---	---	11.0	11.0	10.5	11.0	27.0	28.0	31.0	---	---	27.0
22	---	---	11.5	9.5	12.0	16.0	25.0	26.5	30.5	---	---	24.0
23	---	---	12.5	9.0	11.0	15.0	27.0	29.0	28.0	---	---	20.0
24	---	---	10.0	12.0	12.0	18.0	26.0	30.0	29.0	---	---	23.0
25	---	---	10.0	13.0	14.0	16.0	25.5	34.0	29.5	---	---	21.0
26	---	---	13.5	9.5	16.5	19.5	28.0	30.0	29.0	---	---	---
27	---	---	11.0	9.0	15.0	18.0	25.0	29.0	31.5	---	---	---
28	---	---	9.5	11.5	12.0	17.0	23.5	28.0	30.0	---	---	---
29	---	---	10.0	10.5	---	23.0	23.5	29.5	30.0	---	---	---
30	---	---	10.5	12.0	---	21.0	27.0	29.0	32.0	---	---	---
31	---	---	---	13.5	---	22.5	---	28.0	---	---	---	---
MEAN	---	---	10.0	10.5	9.0	16.0	22.5	26.5	28.0	29.5	---	23.5

COLORADO RIVER BASIN

67

08128000 SOUTH CONCHO RIVER AT CHRISTOVAL, TX

LOCATION.--Lat 31°11'13", long 100°30'06", Tom Green County, Hydrologic Unit 12090102, on left upstream side of U.S. Highway 277 bridge, 9.5 mi upstream from Twin Buttes Dam, and 23.7 mi upstream from mouth.

DRAINAGE AREA.--412.6 mi², of which 58.6 mi² probably is noncontributing.

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

REVISED RECORDS.--WSP 1118: 1943(M). WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 2,010.22 ft above National Geodetic Vertical Datum of 1929. Prior to July 17, 1930, nonrecording gage at same site and datum. July 17, 1930, to Nov. 15, 1977, water-stage recorder at same site and datum. Nov. 16, 1977 to May 5, 1987, water-stage recorder at site 160 ft downstream at same datum.

REMARKS.--No estimated daily discharges. Records good. Low flow is materially affected by diversion to South Concho Irrigation Co.'s canal 800 ft upstream from station. Several observations of water temperature were made during the year. Satellite telemeter at station.

AVERAGE DISCHARGE.--59 years, 31.7 ft³/s (22,970 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 100,000 ft³/s July 23, 1938 (gage height, 21.95 ft, from floodmark), from rating curve extended above 15,100 ft³/s on basis of slope-area measurement of 80,100 ft³/s; no flow Feb. 28 and Mar. 1, 1955.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1882, about 23 ft Aug. 6, 1906 (discharge, 115,000 ft³/s), from rating curve extended as noted above, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 160 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 16	2100	*28	*2.07				

Minimum daily discharge, 6.9 ft³/s Sept. 23, 24, 27.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	18	17	18	15	24	22	21	18	12	8.7	8.9
2	21	18	17	16	15	24	20	21	14	12	8.1	8.3
3	21	18	17	16	14	24	20	21	15	12	8.2	8.3
4	20	18	17	16	14	24	20	21	15	12	8.3	8.3
5	20	16	17	16	14	24	20	18	14	12	8.4	8.3
6	20	16	17	16	14	24	21	19	15	12	9.0	8.3
7	20	16	18	16	15	24	22	20	15	12	9.7	8.3
8	21	16	19	16	15	24	22	20	14	12	8.7	8.8
9	21	16	19	16	15	25	21	18	15	13	8.0	9.1
10	20	16	18	16	15	25	21	17	15	13	8.5	9.6
11	20	16	18	15	15	25	21	17	16	14	8.7	9.9
12	20	16	17	15	15	25	22	18	14	13	8.8	9.7
13	19	15	17	15	15	24	22	18	13	14	8.6	11
14	20	16	16	14	15	24	21	18	13	14	8.8	9.8
15	20	16	16	14	18	24	21	18	13	13	8.7	12
16	19	15	16	14	19	24	21	17	13	12	8.3	10
17	19	16	16	15	24	23	20	20	14	12	8.0	10
18	20	17	17	15	21	21	20	17	14	14	8.4	8.0
19	19	16	18	15	22	21	20	17	14	14	8.0	8.3
20	19	16	18	15	22	21	20	17	13	13	8.7	8.3
21	18	16	18	15	22	21	19	18	14	11	8.7	8.4
22	17	16	19	15	23	21	20	20	14	11	8.0	7.9
23	17	17	19	15	24	20	20	22	14	11	8.3	6.9
24	17	17	20	15	26	21	20	22	14	11	8.3	6.9
25	17	16	19	15	26	21	20	19	14	11	8.3	7.1
26	17	15	19	14	26	22	21	20	14	9.4	8.3	7.3
27	18	15	18	15	24	22	21	18	14	9.0	8.3	6.9
28	18	16	18	16	24	24	20	17	12	9.0	8.3	7.7
29	18	17	18	15	---	21	18	16	12	9.4	8.2	8.1
30	18	16	18	15	---	21	19	16	12	9.4	8.7	7.6
31	18	---	18	15	---	21	---	16	---	9.3	9.0	---
TOTAL	592	488	549	474	527	709	615	577	421	365.5	263.0	258.0
MEAN	19.1	16.3	17.7	15.3	18.8	22.9	20.5	18.6	14.0	11.8	8.48	8.60
MAX	21	18	20	18	26	25	22	22	18	14	9.7	12
MIN	17	15	16	14	14	20	18	16	12	9.0	8.0	6.9
AC-FT	1170	968	1090	940	1050	1410	1220	1140	835	725	522	512
CAL YR 1988	TOTAL	7939	MEAN	21.7	MAX	71	MIN	15	AC-FT	15750		
WTR YR 1989	TOTAL	5838.5	MEAN	16.0	MAX	26	MIN	6.9	AC-FT	11580		

COLORADO RIVER BASIN

08128400 MIDDLE CONCHO RIVER ABOVE TANKERSLEY, TX

LOCATION.--Lat 31°25'38", long 100°42'39", Irion County, Hydrologic Unit 12090103, on left bank 0.3 mi upstream from East Rocky Creek, 0.5 mi southwest of Tullios Ranch Headquarters, 6.7 mi northwest of Tankersley, and 20.9 mi upstream from mouth.

DRAINAGE AREA.--2,084 mi², of which 968 mi² probably is noncontributing.

PERIOD OF RECORD.--March 1961 to current year.

REVISED RECORDS.--WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,986.47 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Several observations of water temperature were made during the year. Satellite telemeter at station.

AVERAGE DISCHARGE.--28 years, 17.3 ft³/s (12,530 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,500 ft³/s Sept. 21, 1974 (gage height, 24.98 ft); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1900, 29.5 ft Sept. 26, 1936. A flood in 1900 reached the same stage, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,700 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 10	2300	*540	*9.42				

Minimum discharge, no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.4	5.5	7.4	10	10	11	10	12	.67	.36	.00	.00
2	5.3	4.8	7.8	10	10	12	9.3	12	.65	.28	.00	.00
3	5.3	4.3	8.0	10	10	12	9.1	8.9	.58	.25	.00	.00
4	5.2	3.9	8.2	10	9.8	12	9.1	7.2	.52	.24	.00	.00
5	4.9	3.5	8.2	10	9.5	12	8.7	6.6	.57	.24	.00	.00
6	4.6	3.3	8.4	11	9.9	12	8.6	5.9	.50	.24	.00	.00
7	4.6	3.7	8.6	11	10	12	8.6	5.8	.41	.26	.00	.00
8	4.6	3.2	9.8	11	10	12	8.6	5.2	.41	.28	.00	.00
9	4.6	3.8	11	11	10	12	8.6	3.7	.41	.28	.00	.00
10	4.6	3.8	11	11	10	12	7.8	3.3	25	.27	.00	.00
11	4.6	3.8	11	11	10	11	7.8	3.6	7.6	.21	.00	.00
12	4.6	3.9	9.9	11	10	11	7.8	5.1	2.4	.21	.00	.00
13	4.3	4.0	9.5	10	11	11	9.3	5.9	3.0	.18	.00	.74
14	4.4	4.4	9.5	11	15	12	10	6.1	2.9	.15	.00	4.3
15	4.3	4.6	9.1	11	26	12	10	8.2	2.4	.17	.00	.89
16	4.3	4.6	9.1	11	18	11	10	9.1	2.1	.16	.00	.56
17	4.6	4.6	9.1	11	24	12	9.7	7.5	1.7	.08	.00	.40
18	4.6	5.5	9.1	11	20	12	9.5	7.0	1.4	.02	.00	.36
19	4.6	6.2	9.1	11	16	12	11	5.7	1.3	.00	.00	.36
20	4.6	6.4	9.1	11	14	12	11	4.3	.96	.00	.00	.36
21	4.5	6.3	9.1	11	13	12	9.7	3.1	.77	.00	.00	.36
22	4.7	6.6	9.1	11	12	12	8.9	2.4	.62	.00	.00	.30
23	4.9	6.2	9.2	11	12	12	8.4	2.0	.66	.00	.00	.28
24	4.9	7.1	9.5	11	12	12	8.6	1.6	.66	.00	.00	.28
25	4.6	7.7	9.5	11	12	12	8.6	1.3	.65	.00	.00	.28
26	4.6	8.1	9.5	11	12	12	8.6	.98	.58	.00	.00	.28
27	4.8	8.2	9.5	10	12	13	8.6	.95	.46	.00	.00	.28
28	4.8	8.4	9.5	12	11	21	8.2	.88	.46	.00	.00	.30
29	4.6	8.6	9.5	12	---	23	7.8	.79	.44	.00	.00	.34
30	4.8	8.6	9.5	11	---	14	7.4	.72	.40	.00	.00	.36
31	5.4	---	10	10	---	11	---	.66	---	.00	.00	---
TOTAL	146.6	163.6	286.8	335	359.2	389	269.3	148.48	61.18	3.88	0.00	84.29
MEAN	4.73	5.45	9.25	10.8	12.8	12.5	8.98	4.79	2.04	.13	.00	2.81
MAX	5.4	8.6	11	12	26	23	11	12	25	.36	.00	.74
MIN	4.3	3.2	7.4	10	9.5	11	7.4	.66	.40	.00	.00	.00
AC-FT	291	325	569	664	712	772	534	295	121	7.7	.0	167

CAL YR 1988	TOTAL	6026.99	MEAN	16.5	MAX	1480	MIN	.35	AC-FT	11950
WTR YR 1989	TOTAL	2247.33	MEAN	6.16	MAX	74	MIN	.00	AC-FT	4460

COLORADO RIVER BASIN

69

08129300 SPRING CREEK ABOVE TANKERSLEY, TX

LOCATION.--Lat 31°19'48", long 100°38'24", Tom Green County, Hydrologic Unit 12090102, on right bank at downstream side of bridge on Farm Road 2335, 1.4 mi south of Tankersley, 2.5 mi upstream from Dove Creek, and 10.4 mi upstream from mouth.

DRAINAGE AREA.--424.7 mi², of which 19.7 mi² probably is noncontributing.

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

REVISED RECORDS.--WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,964.72 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 10, 1960, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Records good. There are many small diversions above station for irrigation. Several observations of water temperature were made during the year. Satellite telemeter at station.

AVERAGE DISCHARGE.--29 years, 13.5 ft³/s (9,780 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,400 ft³/s Aug. 12, 1971 (gage height, 16.57 ft); no flow at times most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Outstanding floods since at least 1853 occurred in 1882 and 1884. Flood of Oct. 3, 1959, reached a stage of 18.4 ft, from floodmarks. At former gage near Tankersley 8 mi downstream, the flood of Oct. 3, 1959, had a discharge of 82,100 ft³/s and was found to be about 3 ft lower than the 1882 flood, the greatest at that location since at least 1853.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 400 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 17	1530	*33	*4.33				
Minimum daily discharge, 0.07 ft ³ /s Sept. 6-8.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	9.3	9.8	11	13	18	11	16	3.3	2.2	.09	.08
2	16	9.3	11	13	12	20	12	12	1.6	1.1	.09	.08
3	15	10	11	11	12	20	13	9.2	.86	.58	.09	.08
4	12	9.8	12	11	15	18	6.9	8.4	.66	.29	.08	.08
5	11	9.7	11	12	15	19	9.0	8.0	.63	.20	.08	.08
6	9.1	10	9.9	11	16	19	12	7.5	.56	.16	.08	.07
7	9.1	10	8.4	11	16	18	14	8.1	.55	.14	.15	.07
8	11	7.9	8.4	10	16	19	15	9.0	.48	.14	.16	.07
9	7.5	7.3	10	12	15	19	15	7.9	.35	.16	.13	.09
10	7.3	5.1	16	15	15	18	15	15	.33	.14	.12	.11
11	2.7	4.6	16	15	15	18	14	10	.93	.15	.11	.27
12	3.6	7.1	15	14	14	18	14	9.3	8.1	1.1	.11	.30
13	7.1	7.7	14	14	15	17	12	8.1	8.4	1.3	.11	.93
14	7.4	11	14	15	16	15	12	4.4	7.6	.73	.12	1.2
15	5.9	9.9	13	16	27	14	15	6.0	7.2	.51	.12	3.6
16	8.7	7.8	14	16	24	16	15	7.6	8.4	.31	.12	4.5
17	10	7.4	14	16	30	18	14	10	7.6	.20	.12	3.8
18	7.5	7.5	14	14	25	17	13	8.8	7.4	.15	.14	2.6
19	5.5	8.7	14	12	22	16	13	8.1	6.3	.12	.13	4.0
20	4.1	8.9	14	12	21	20	12	6.8	5.4	.12	.12	4.6
21	3.7	11	14	12	19	14	11	4.6	2.8	.12	.11	4.6
22	5.5	12	13	14	18	17	10	3.0	.84	.12	.10	3.5
23	11	12	12	14	17	15	8.4	1.6	.36	.11	.10	4.3
24	9.5	9.6	12	13	19	6.7	7.3	1.3	.23	.11	.09	3.7
25	8.9	13	13	15	19	5.9	9.0	.89	.19	.11	.09	2.8
26	7.2	13	14	14	18	5.9	8.8	.62	.19	.11	.08	4.6
27	7.6	13	11	14	17	10	6.5	.57	2.1	.11	.08	5.6
28	7.6	12	8.3	17	18	18	7.2	.62	4.9	.12	.09	6.0
29	7.9	13	8.2	16	---	19	9.4	2.9	4.4	.12	.09	5.9
30	8.6	13	8.6	15	---	13	9.8	3.0	3.3	.11	.09	4.9
31	9.5	---	8.7	13	---	10	---	3.1	---	.10	.09	---
TOTAL	264.5	290.6	372.3	418	499	491.5	344.3	202.40	95.96	11.04	3.28	72.51
MEAN	8.53	9.69	12.0	13.5	17.8	15.9	11.5	6.53	3.20	.36	.11	2.42
MAX	17	13	16	17	30	20	15	16	8.4	2.2	.16	6.0
MIN	2.7	4.6	8.2	10	12	5.9	6.5	.57	.19	.10	.08	.07
AC-FT	525	576	738	829	990	975	683	401	190	22	6.5	144
CAL YR 1988	TOTAL	5028.1	MEAN	13.7	MAX	51	MIN	1.6	AC-FT	9970		
WTR YR 1989	TOTAL	3065.39	MEAN	8.40	MAX	30	MIN	.07	AC-FT	6080		

COLORADO RIVER BASIN

08130500 DOVE CREEK AT KNICKERBOCKER, TX

LOCATION.--Lat 31°16'26", long 100°37'50", Tom Green County, Hydrologic Unit 12090102, on left downstream end of bridge on Farm Road 2335, 0.5 mi west of Knickerbocker, and 5.7 mi upstream from mouth.

DRAINAGE AREA.--226.43 mi², of which 8.43 mi² probably is noncontributing.

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

REVISED RECORDS.--WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,001.45 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 10, 1960, nonrecording gage, Nov. 10, 1960, to Mar. 17, 1986, water-stage recorder, both at site 278 ft to the right at present datum.

REMARKS.--No estimated daily discharges. Records good. Flow is partly regulated by storage, by diversions from two small upstream channel dams, and by small upstream diversions (for irrigation). Several observations of water temperature were made during the year. Satellite telemeter at station.

AVERAGE DISCHARGE.--29 years, 16.8 ft³/s (12,170 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,500 ft³/s Aug. 12, 1971 (gage height, 20.66 ft); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1882, 30.4 ft in 1906 and Oct. 3, 1959; floods in 1882 and 1884 reached about the same stage, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 100 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Aug. 6	2200	*84	*4.29				
Minimum discharge, 7.3 ft ³ /s June 20-21 (gage height, 2.73 ft).							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	13	14	15	12	15	15	14	11	12	20	9.4
2	15	13	14	15	12	15	15	14	11	18	20	9.4
3	15	13	14	15	13	15	15	13	11	18	24	9.4
4	15	13	14	15	13	15	15	13	12	20	21	9.3
5	15	13	13	15	14	15	14	13	11	19	18	8.5
6	14	13	14	15	14	15	14	12	11	18	27	8.4
7	14	13	13	13	14	15	14	12	11	19	24	8.5
8	14	13	15	14	14	15	14	11	11	16	13	8.7
9	14	12	16	15	14	15	14	11	12	18	11	8.6
10	14	13	17	15	14	15	14	12	13	19	10	9.6
11	13	14	17	14	13	15	15	12	16	18	10	12
12	13	14	16	14	12	15	15	12	13	17	10	12
13	14	14	15	15	12	15	17	12	13	14	10	22
14	14	14	15	15	13	15	17	12	13	14	10	14
15	15	14	14	15	17	15	16	12	12	14	11	12
16	15	13	14	15	19	15	15	11	11	14	10	12
17	13	13	15	15	25	15	14	12	11	20	10	11
18	11	13	15	15	18	13	14	11	9.9	18	10	10
19	10	14	15	15	17	12	15	11	8.1	15	9.7	9.0
20	10	14	15	15	16	15	15	11	7.7	15	9.7	8.8
21	9.4	13	16	15	16	14	14	11	7.7	14	9.7	8.8
22	9.4	13	16	15	15	13	13	11	8.2	15	9.7	8.8
23	9.4	13	16	14	15	13	13	11	9.0	14	9.6	8.8
24	10	13	16	15	15	13	13	11	8.9	18	9.4	8.8
25	11	14	16	15	15	9.8	12	10	9.2	16	9.6	8.8
26	11	14	16	15	16	9.7	12	10	9.9	15	9.6	8.5
27	12	14	15	16	15	11	12	9.9	10	16	9.4	8.4
28	12	14	14	17	15	20	12	10	12	18	9.4	8.4
29	12	14	14	17	---	16	12	9.7	12	20	9.4	8.5
30	12	14	15	15	---	14	13	9.7	12	20	9.7	8.5
31	13	---	15	13	---	14	---	10	---	20	9.7	---
TOTAL	395.2	402	464	462	418	442.5	423	354.3	327.6	522	393.6	298.9
MEAN	12.7	13.4	15.0	14.9	14.3	14.3	14.1	11.4	10.9	16.8	12.7	9.96
MAX	16	14	17	17	25	20	17	14	16	20	27	22
MIN	9.4	12	13	13	12	9.7	12	9.7	7.7	12	9.4	8.4
AC-FT	784	797	920	916	829	878	839	703	650	1040	781	593
CAL YR 1988	TOTAL	5725.4	MEAN	15.6	MAX	52	MIN	8.0	AC-FT	11360		
WTR YR 1989	TOTAL	4903.1	MEAN	13.4	MAX	27	MIN	7.7	AC-FT	9730		

08131200 TWIN BUTTES RESERVOIR NEAR SAN ANGELO, TX

LOCATION.--Lat 31°22'55", long 100°32'17", Tom Green County, Hydrologic Unit 12090102, in outlet control tower at Twin Buttes Dam on Middle Concho River, Spring Creek, and South Concho River, 3.8 mi upstream from Lake Nasworthy Dam, 8.1 mi southwest of San Angelo, and 75.0 mi upstream from mouth.

DRAINAGE AREA.--3,868 mi², of which 1,055 mi² probably is noncontributing.

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

REVISED RECORDS.--WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder on Middle Concho-Spring Creek pool and nonrecording gage on South Concho pool. Datum of gage is National Geodetic Vertical Datum of 1929.

REMARKS.--The reservoir is formed by a rolled earthfill dam 8.1 mi long, including a 200-foot-wide uncontrolled off-channel concrete gravity spillway with ogee weir section. Outlet works consist of three 15.5-foot concrete conduits, each controlled by a 12.0- by 15.0-foot fixed-wheel gate and a 12.0- by 15.0-foot radial gate, located in the Middle Concho-Spring Creek pool. Low-flow releases are made through 2.0- by 2.0-foot gates located in the center of three fixed-wheel gates. The South Concho and Middle Concho-Spring Creek pools are connected by a 3.22-mile equalizing channel. At an elevation of 1,926.5 ft, the two pools join to form one lake. Below elevation 1,926.5 ft, daily contents are obtained from capacity tables for South Concho and Middle Concho-Spring Creek pools and summed to obtain combined daily contents. Lake level elevations below 1,926.5 ft represent Middle Concho-Spring Creek pool only. Deliberate impoundment of water began on Dec. 1, 1962; dam was completed Feb. 13, 1963. Capacity curve is based on a survey made in 1958. Reservoir was built for flood control, irrigation, and municipal uses. Figures given herein represent total contents. Data regarding the dam and reservoir are given in the following table:

	Elevation (feet)	Capacity (acre-feet)
Top of dam.....	1,991.0	-
Crest of spillway.....	1,969.1	640,600
Top of conservation storage.....	1,940.2	186,200
Bottom of equalizing channel (Middle Concho-Spring Creek pool).....	1,926.5	86,480
Dead storage in South Concho pool.....	1,926.5	5,440
Lowest gated outlet (invert at Middle Concho-Spring Creek pool).....	1,885.0	3,750

COOPERATION.--Capacity curve furnished by the U.S. Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 205,200 acre-ft May 12, 1975 (elevation, 1,942.20 ft); minimum since first appreciable storage, 2,120 acre-ft Apr. 15, 1971.

EXTREMES FOR CURRENT YEAR.--Maximum combined daily contents, 142,300 acre-ft Mar. 29, Apr. 1; minimum, 100,500 acre-ft Sept. 30.

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	136700	134500	132400	133900	135400	139800	142300	139900	133000	127100	113400	103600
2	136600	134400	132400	134000	135600	140000	142100	139700	133000	126600	113000	103300
3	136600	134300	132400	134000	135500	140100	142000	139400	132800	126300	112400	103200
4	136600	134200	132400	134200	135500	140000	141900	139000	132500	126000	111800	103000
5	136500	134100	132500	134200	135500	140100	141800	138800	132200	125600	111400	102700
6	136400	134000	132600	134200	135500	140100	141700	138400	131900	125100	111600	102500
7	136400	133800	132600	134100	135500	140200	141600	138200	131600	124600	111800	102200
8	136300	133800	132800	134100	135500	140200	141400	137900	131300	124300	111300	102000
9	136200	133700	133000	134100	135500	140300	141300	137400	131100	123800	110900	101900
10	136200	133600	133200	134200	135600	140400	141100	137400	131900	123300	110500	101700
11	136000	133600	133200	134200	135600	140500	141000	137200	132300	122700	110200	101900
12	136000	133500	133300	134100	135800	140500	140800	137100	132300	122200	109900	101800
13	135800	133500	133400	134200	135900	140500	141100	137100	132300	121700	109600	102600
14	135600	133600	133400	134300	136100	140600	141200	137100	132200	121100	109400	102600
15	135500	133400	133300	134200	136600	140500	141200	137100	132100	120700	109100	102600
16	135500	133300	133400	134300	137300	140700	141200	137100	132000	120300	108900	102600
17	135500	133200	133400	134400	138200	140700	141200	137200	131700	119800	108600	102500
18	135300	133100	133500	134400	138400	140700	141200	137100	131600	119100	108300	102300
19	135300	132900	133500	134500	e138800	141000	141400	136900	131500	118600	108100	102100
20	135100	132800	133500	134400	138900	140700	141500	136600	131300	118100	107800	102000
21	135100	132700	133600	134500	139000	140900	141400	136400	130900	117600	107600	101800
22	135100	132700	133600	134600	139100	141000	141300	136200	130400	117000	107200	101600
23	134900	132800	133700	134600	139200	141000	141200	136100	130000	116400	106900	101400
24	134900	132700	133700	134600	139200	141000	141000	135900	129600	116000	106400	101200
25	134900	132600	133800	134700	139400	141000	140800	135500	129200	115400	106000	101100
26	134900	132600	133900	134700	139500	141100	140600	135200	128800	115100	105500	100900
27	134800	132500	133900	135000	139500	141700	140400	134900	128400	114800	105100	100800
28	134500	132600	133900	135100	139700	142100	140200	134400	128100	114600	104800	100700
29	134500	132400	133900	135200	---	142300	139900	134000	127600	114300	104500	100600
30	134500	132400	133900	135300	---	142200	139700	133500	127300	114000	104200	100500
31	134500	---	133900	135500	---	142200	---	133200	---	113800	103900	---
MAX	136700	134500	133900	135500	139700	142300	142300	139900	133000	127100	113400	103600
MIN	134500	132400	132400	133900	135400	139800	139700	133200	127300	113800	103900	100500
(↑)	1933.70	1933.39	1933.62	1933.85	1934.44	1934.79	1934.45	1933.51	1932.64	1930.50	1928.78	1928.17
(Φ)	-2300	-2100	+1500	+1600	+4200	+2500	-2500	-6500	-5900	-13500	-9900	-3400

CAL YR 1988 MAX 158400 MIN 131700 (Φ) -18000
WTR YR 1989 MAX 142300 MIN 100500 (Φ) -36300

(↑) Elevation, in feet, at end of month of Middle Concho and Spring Creek combined pools.
(Φ) Change in combined contents, in acre-feet.

e Estimated.

COLORADO RIVER BASIN

08132000 LAKE NASWORTHY NEAR SAN ANGELO, TX

LOCATION.--Lat 31°23'19", long 100°28'41", Tom Green County, Hydrologic Unit 12090102, on left bank 250 ft upstream from Nasworthy Dam on South Concho River, 3.8 mi downstream from Twin Buttes Dam, 6.0 mi southwest of San Angelo, and 68.9 mi upstream from mouth.

DRAINAGE AREA.--3,975 mi², of which 3,868 mi² is above Twin Buttes Reservoir and 1,055 mi² probably is noncontributing.

PERIOD OF RECORD.--March 1930 to current year. Prior to October 1969, monthend contents only.

REVISED RECORDS.--WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,840.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--The lake is formed by a 6,090-foot dam with a 5,590-foot earthen section that has an earthen spillway 300 ft long, a concrete spillway 475 ft long with a bank of fifteen 25.0- by 18.0-foot tainter gates, and a 25.0- by 3.0-foot collapsible floodgate. The dam was completed and storage began Mar. 28, 1930. Since July 1966, West Texas Utilities Co. has operated a steam generating powerplant on the lake. Since September 1962, the lake has been almost totally controlled by releases or pumpage from Twin Buttes Reservoir (station 08131200). Siltation surveys in December 1938 and May 1953 by the Soil Conservation Service show that 1,191 acre-ft of silt was deposited from March 1930 to December 1938 and an additional 1,023 acre-ft was deposited from December 1938 to May 1953, totaling 2,214 acre-ft. Water is used for part of San Angelo municipal supply and for irrigation east of San Angelo. The capacity curve is based on a survey by the Soil Conservation Service in 1953 and has been used since 1955. 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.....	43.5	-
Crest of spillway (300 ft).....	39.1	27,810
Top of gates.....	33.2	13,990
Top of collapsible floodgate.....	32.2	12,390
Lowest outlet to canal (invert).....	27.5	6,370
Crest of spillway (tainter gates sill).....	15.3	435
Lowest gated outlet (invert).....	-4.0	0

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 26,900 acre-ft Sept. 15, 1936 (gage height, 38.36 ft); minimum, 209 acre-ft Aug. 22, 1964 (gage height, 13.21 ft).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 12,410 acre-ft Mar. 3 at 0200 hours (gage height, 32.21 ft); minimum, 10,650 acre-ft Oct. 28 (gage height, 31.11 ft).

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

31.0	10,470	32.0	12,070
31.5	11,270	32.5	12,870

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10870	10770	10710	11090	11140	12340	11210	11090	11240	11140	10920	11300
2	10840	10760	10710	11130	11160	12390	11110	11140	11350	11090	10970	11240
3	10840	10740	10710	11090	11160	12050	11090	11060	11380	11030	11010	11210
4	10820	10730	10730	11170	11160	12050	11010	11110	11380	11050	11060	11160
5	10810	10740	10730	11110	11160	12050	11050	11130	11290	11010	11030	11130
6	10790	10760	10790	11170	11190	12070	11050	11250	11240	11050	11010	11080
7	10770	10760	10740	11140	11220	12090	11080	11330	11210	11010	11220	11080
8	10760	10790	10840	11160	11220	12100	11030	11350	11140	11050	11300	11060
9	10740	10790	10850	11170	11240	12120	10970	11250	11110	11050	11350	11090
10	10740	10790	10950	11190	11290	12130	11000	11240	11460	11030	11300	11140
11	10710	10820	10970	11190	11290	12150	11050	11210	11480	11080	11270	11220
12	10690	10790	11050	11160	11330	12170	11080	11160	11460	11080	11250	11270
13	10820	10810	11110	11210	11350	12170	11130	11090	11480	11090	11210	11410
14	10790	10760	11030	11170	11400	12150	11130	11080	11450	11130	11220	11370
15	10770	10710	11030	11170	11540	12100	11110	11080	11380	11130	11170	11320
16	10760	10690	11090	11170	11850	12100	11110	11060	11320	11060	11140	11240
17	10740	10690	11090	11220	12020	12100	11090	11050	11220	11060	11130	11140
18	10710	10740	11160	11220	12090	12050	10970	10950	11160	11000	11130	11130
19	10690	10770	11110	11250	12130	12040	11080	11010	11060	10950	11090	11130
20	10810	10810	11130	11250	12150	11910	11060	11080	11090	10930	11060	11130
21	10790	10820	11130	11210	12180	11850	11090	11140	11050	11060	11030	11140
22	10790	10820	11130	11170	12200	11750	11090	11140	11030	11160	11050	11140
23	10740	10810	11130	11170	12210	11650	11080	11010	11060	11250	11060	11090
24	10730	10810	11110	11130	12230	11560	10950	11090	11000	11270	11080	11090
25	10730	10810	11130	11090	12260	11450	11050	10970	10980	11290	11170	11090
26	10710	10770	11140	11090	12290	11330	11010	10900	10950	11350	11270	11080
27	10690	10760	11090	11140	12290	11330	11010	10970	10970	11330	11350	11050
28	10810	10740	11090	11140	12330	11330	11080	11050	10870	11240	11380	11030
29	10810	10710	11080	11130	---	11290	11010	11090	11010	11110	11380	11030
30	10770	10710	11090	11140	---	11190	11050	11080	11110	10980	11380	11060
31	10790	---	11110	11160	---	11160	---	11130	---	10850	11350	---
MAX	10870	10820	11160	11250	12330	12390	11210	11350	11480	11350	11380	11410
MIN	10690	10690	10710	11090	11140	11160	10950	10900	10870	10850	10920	11030
(†)	31.20	31.15	31.40	31.43	32.16	31.43	31.36	31.41	31.40	31.24	31.55	31.37
(Φ)	-100	-80	+400	+50	+170	-170	-110	+80	-20	-260	+500	-290

CAL YR 1988 MAX 12650 MIN 10550 (Φ) -370
WTR YR 1989 MAX 12390 MIN 10690 (Φ) +170

(†) Gage height, in feet, at end of month.
(Φ) Change in contents, in acre-feet.

COLORADO RIVER BASIN

73

08134000 NORTH CONCHO RIVER NEAR CARLSBAD, TX

LOCATION.--Lat 31°35'33", Long 100°38'12". Tom Green County, Hydrologic Unit 12090104, near left bank at downstream side of bridge on county road, 0.6 mi southeast of Carlsbad, 1.5 mi upstream from Mule Creek, 2.5 mi upstream from Grape Creek, 16.2 mi upstream from O. C. Fisher Dam, and 21.3 mi upstream from mouth.

DRAINAGE AREA.--1,266 mi², of which 75.1 mi² probably is noncontributing.

PERIOD OF RECORD.--March 1924 to current year.

Water-quality records: Chemical and biochemical analyses: October 1980 to September 1982.

REVISED RECORDS.--WSP 1512: 1924(M), 1925, 1926(M), 1928, 1930, 1932(M), 1935, 1937-38(M), 1941(M), 1945(M), 1947-49(M). WRD TX-81-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,968.02 ft above National Geodetic Vertical Datum of 1929. Prior to Feb. 4, 1925, and Sept. 27, 1936, to Feb. 7, 1937, nonrecording gage; Feb. 4, 1925, to Sept. 26, 1936, and Feb. 8, 1937, to Nov. 6, 1955, water-stage recorder, all at site 2.5 mi upstream at datum 32.76 ft higher.

REMARKS.--No estimated daily discharges. Records good. There are several diversions (by pumping) upstream from station.

AVERAGE DISCHARGE.--65 years, 32.3 ft³/s (23,400 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 94,600 ft³/s Sept. 26, 1936 (gage height, 16.0 ft, at former site, 29.1 ft at present site, from floodmark), by slope-area measurement of peak flow at former site; no flow at times. Maximum stage since 1853, that of Sept. 26, 1936.

EXTREMES OUTSIDE PERIOD OF RECORD.--Stage unknown for major flood in June 1853.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 11	0600	*1,490	*9.03				

Minimum discharge, no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.2	2.2	4.7	5.5	4.7	4.7	6.8	4.5	1.8	.71	.01	.00
2	2.2	2.2	4.9	5.5	4.7	4.9	6.8	3.9	2.0	.50	.02	.00
3	2.0	1.8	5.1	5.7	4.5	5.1	6.5	3.9	4.2	.27	.01	.00
4	2.0	2.2	5.1	5.5	4.2	4.9	6.2	3.9	1.8	.15	.01	.00
5	2.0	1.6	5.3	5.5	4.2	5.3	6.0	3.7	1.6	.08	.01	.00
6	2.2	1.2	5.3	5.5	4.2	5.3	6.0	3.5	1.4	.08	.01	.00
7	2.0	.84	5.5	5.3	4.2	5.5	6.0	3.3	1.2	.06	.03	.00
8	1.8	.84	5.7	5.3	4.2	5.5	6.0	2.9	1.0	.06	.02	.00
9	2.0	1.0	5.7	5.3	3.9	5.5	6.0	2.9	.06	.05	.02	.00
10	2.0	2.2	5.7	5.3	4.2	5.5	5.7	2.7	31	.05	.01	.00
11	1.8	2.0	6.0	5.3	4.7	5.5	5.7	2.4	401	.05	.01	.00
12	1.6	2.0	5.7	5.3	4.9	5.5	6.0	3.1	67	.04	.01	.00
13	1.5	1.8	5.5	5.1	4.9	5.5	6.5	4.3	38	.04	.01	.02
14	1.2	1.8	5.5	5.3	5.5	5.3	6.8	4.2	23	.04	.01	.01
15	1.2	1.8	5.3	5.3	6.3	5.3	6.8	6.1	13	.04	.01	.02
16	1.2	1.8	5.1	5.1	7.1	5.3	6.8	5.1	9.9	.05	.01	.02
17	1.5	1.8	5.3	5.1	11	5.5	6.5	4.5	7.0	.04	.01	.02
18	2.0	1.8	5.5	5.3	9.0	5.5	6.2	3.7	5.5	.03	.01	.02
19	1.4	2.0	5.5	5.5	8.0	5.5	6.2	3.3	5.2	.04	.00	.02
20	1.4	2.2	5.5	5.3	7.7	5.5	6.0	3.1	4.7	.03	.00	.01
21	1.4	2.4	5.5	5.3	7.1	5.5	6.0	2.9	3.9	.03	.00	.01
22	1.4	2.2	5.3	5.9	5.7	5.7	5.7	2.4	3.7	.04	.00	.01
23	1.4	2.4	5.3	5.3	4.7	6.2	5.5	2.0	3.3	.03	.00	.02
24	1.4	3.1	5.3	5.3	4.5	6.2	5.5	1.8	2.7	.03	.00	.02
25	2.0	3.6	5.3	5.1	4.5	6.2	5.3	1.2	2.4	.03	.00	.02
26	1.8	6.2	5.3	4.9	4.5	6.2	5.1	1.0	2.2	.03	.00	.02
27	1.8	4.2	5.2	4.7	4.7	6.8	4.9	.71	1.8	.02	.00	.02
28	1.8	4.2	5.1	5.3	4.5	7.7	4.7	.50	1.5	.02	.00	.02
29	2.2	4.2	4.9	5.1	---	8.3	4.5	.50	1.2	.02	.00	.02
30	2.7	4.7	5.1	4.7	---	8.3	4.2	.37	1.0	.02	.00	.02
31	2.4	---	5.5	4.7	---	7.3	---	.27	---	.02	.00	---
TOTAL	55.5	72.28	165.7	163.3	152.3	181.0	176.9	88.65	644.06	2.70	0.23	0.32
MEAN	1.79	2.41	5.35	5.27	5.44	5.84	5.90	2.86	21.5	.087	.007	.011
MAX	2.7	6.2	6.0	5.9	11	8.3	6.8	6.1	401	.71	.03	.02
MIN	1.2	.84	4.7	4.7	3.9	4.7	4.2	.27	.06	.02	.00	.00
AC-FT	110	143	329	324	302	359	351	176	1280	5.4	.5	.6
CAL YR 1988	TOTAL	3235.99	MEAN	8.84	MAX	736	MIN	.04	AC-FT	6420		
WTR YR 1989	TOTAL	1702.94	MEAN	4.67	MAX	401	MIN	.00	AC-FT	3380		

COLORADO RIVER BASIN

08134500 O.C. FISHER LAKE AT SAN ANGELO, TX

LOCATION.--Lat 31°29'04", long 100°28'53", Tom Green County, Hydrologic Unit 12090104, in intake structure of O.C. Fisher Dam on North Concho River, 3.1 mi northwest of San Angelo, and 6.6 mi upstream from mouth.

DRAINAGE AREA.--1,488 mi², of which 105 mi² probably is noncontributing.

PERIOD OF RECORD.--February 1952 to current year. Published as San Angelo Reservoir prior to October 1970, and as San Angelo Lake, October 1970 to September 1974.

REVISED RECORDS.--WSP 1922: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to May 12, 1953, non-recording gage at same site and datum.

REMARKS.--The lake is formed by a rolled earthfill dam 40,885 ft long, including spillway. Closure was completed Mar. 7, 1951, and the dam was completed May 3, 1951. Deliberate impoundment began Feb. 1, 1952. The lake is operated for flood control and recreation with part as municipal supply for the city of San Angelo. The spillway is an uncontrolled off-channel concrete gravity dam with ogee weir section 1,150 ft wide located to the right and upstream from the right end of dam. The spillway is designed to discharge 356,000 ft³/s at maximum design flood level. The control outlet works consist of six gate-controlled outlets, 7.5 by 14.5 ft, opening into two 18.0-foot-diameter concrete conduits, and two 2.5-foot gate-controlled outlets for water-supply outlets. Since February 1973, the capacity is based on a survey made in 1962. Prior to 1973, the capacity was based on a survey made in 1944. Gage-height telemeter at station. Figures given herein represent total contents. Data regarding the dam and lake are given in the following table:

	Elevation (feet)	Capacity (acre-feet)
Top of dam.....	1,964.0	
Design flood.....	1,958.0	690,000
Crest of spillway.....	1,938.5	392,700
Top of conservation pool.....	1,908.0	115,700
Lowest gated outlet (invert).....	1,840.0	0

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

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 174,100 acre-ft Oct. 14, 1957 (elevation, 1,916.47 ft); minimum since first appreciable storage, lake dry July 16, 1970, to Apr. 15, 1971.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 52,140 acre-ft Oct. 1 at 0100 hours (elevation, 1,891.92 ft); minimum, 35,950 acre-ft Sept. 30 (elevation, 1,885.87 ft).

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

1,885.0	33,940	1,888.0	41,220	1,891.0	49,460
1,886.0	36,260	1,889.0	43,870	1,892.0	52,370
1,887.0	38,680	1,890.0	46,620		

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	52050	49830	48050	47180	46400	46510	45840	44660	42610	42370	39510	37580
2	51990	49740	48000	47150	46400	46480	45840	44600	42560	42210	39410	37500
3	51900	49720	47940	47150	46370	46480	45760	44550	42500	42160	39310	37410
4	51810	49630	47880	47150	46340	46450	45700	44550	42430	42060	39230	37340
5	51720	49540	47830	47120	46280	46420	45620	44440	42370	41980	39180	37260
6	51640	49460	47800	47070	46230	46400	45560	44390	42270	41870	39480	37170
7	51550	49400	47800	47010	46170	46370	45540	44330	42210	41720	39460	37070
8	51490	49340	47800	46950	46150	46340	45460	44250	42140	41660	39380	36980
9	51400	49250	47740	46900	46120	46340	45400	44120	42060	41580	39330	36930
10	51340	49200	47740	46840	46090	46310	45290	44030	42660	41450	39260	36860
11	51260	49170	47740	46790	46060	46280	45210	43980	43330	41380	39200	36830
12	51140	49140	47740	46760	46040	46170	45150	43980	43470	41270	39130	36760
13	51020	49080	47710	46730	46040	46170	45290	43950	43680	41190	39060	37120
14	50960	49050	47710	46700	46040	46150	45260	43950	43660	41090	38980	37050
15	50940	49020	47690	46650	46260	46060	45260	43920	43630	41040	38930	36980
16	50760	49000	47690	46620	46590	46040	45180	43900	43550	40940	38830	36930
17	50790	48910	47660	46590	46680	46040	45180	43950	43470	40830	38780	36860
18	50730	48880	47600	46590	46680	45980	45150	43840	43410	40700	38730	36780
19	50670	48820	47520	46560	46680	45950	45150	43790	43360	40600	38660	36710
20	50580	48800	47460	46560	46680	45900	45120	43680	43280	40470	38530	36640
21	50530	48680	47430	46540	46620	45920	45070	43630	43170	40420	38460	36570
22	50470	48620	47400	46540	46590	45900	45020	43570	43090	40320	38390	36500
23	50380	48570	47400	46510	46560	45840	44930	43470	43040	40240	38310	36380
24	50320	48510	47380	46480	46560	45810	44880	43360	42930	40110	38210	36280
25	50240	48450	47350	46450	46560	45790	44820	43250	42850	40040	38140	36240
26	50150	48420	47320	46420	46560	45790	44770	43170	42800	39960	38070	36160
27	50090	48370	47320	46420	46560	45920	44740	43040	42720	39890	37990	36090
28	50030	48280	47260	46420	46540	46010	44660	42930	42640	39840	37920	36050
29	49950	48200	47240	46420	---	46010	44580	42850	42530	39760	37850	36020
30	49890	48140	47210	46420	---	45950	44630	42770	42450	39680	37770	35980
31	49860	---	47180	46420	---	45920	---	42690	---	39580	37650	---
MAX	52050	49830	48050	47180	46680	46510	45840	44660	43680	42370	39510	37580
MIN	49860	48140	47180	46420	46040	45790	44580	42690	42060	39580	37650	35980
(↑)	1891.14	1890.54	1890.20	1889.93	1889.97	1889.75	1889.28	1888.56	1888.47	1887.36	1886.58	1885.88
(φ)	-2280	-1720	-960	-760	+120	-620	-1290	-1940	-240	-2870	-1930	-1670
CAL YR 1988	MAX 64100	MIN 46630	(φ)	-16950								
WTR YR 1989	MAX 52050	MIN 35980	(φ)	-16160								

(↑) Elevation, in feet, at end of month.
(φ) Change in contents, in acre-feet.

COLORADO RIVER BASIN

75

08135000 NORTH CONCHO RIVER AT SAN ANGELO, TX

LOCATION.--Lat 31°27'57", Long 100°26'51", Tom Green County, Hydrologic Unit 12090104, near left bank at downstream side of pier of Sixth Street Bridge in San Angelo, 3.2 mi upstream from confluence with South Concho River, and 3.4 mi downstream from O. C. Fisher Dam.

DRAINAGE AREA.--1,525 mi², of which 75.1 mi² probably is noncontributing.

PERIOD OF RECORD.--October 1915 to June 1928, February 1929 to September 1931, July 1947 to current year.

Water-quality records.--Chemical and biochemical analyses: October 1980 to September 1982.

REVISED RECORDS.--WSP 568: 1916, 1918-22. WSP 1512: 1916(M), 1917-18, 1919-21(M). WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,813.42 ft above National Geodetic Vertical Datum of 1929. Prior to Sept. 1, 1920, nonrecording gage, and Sept. 1, 1920, to Feb. 11, 1929, water-stage recorder at site 1.6 mi downstream at datum 11.02 ft lower. Feb. 12, 1929, to Sept. 30, 1931, water-stage recorder at site 1.6 mi downstream at datum 13.02 ft lower.

REMARKS.--No estimated daily discharges. Records good. Since October 1951, flow regulated by O. C. Fisher Lake (station 08134500), 3.4 mi upstream.

AVERAGE DISCHARGE.--17 years (water years 1917-27, 1930-31, 1948-51), prior to completion of O. C. Fisher Dam, 54.5 ft³/s (39,490 acre-ft/yr); 38 years (water years 1952-89) regulated, 7.63 ft³/s (5,530 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 47,000 ft³/s June 13, 1930 (gage height, 22.52 ft, site and datum then in use); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Sept. 17, 1936, reached a stage of 34.6 ft, from floodmarks (discharge, 184,000 ft³/s), by slope-area measurement. The flood in 1936 was the greatest since flood in June 1853 (stage unknown).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 316 ft³/s June 10 at 2130 hours (gage height, 2.68 ft); minimum daily, 0.10 ft³/s Sept. 9.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.5	1.3	1.3	1.3	1.4	2.1	1.8	14	2.5	.42	.17	.15
2	1.3	1.3	1.2	1.2	2.4	2.1	1.8	2.3	5.2	.38	.17	.13
3	1.1	1.1	1.4	1.2	2.9	2.1	1.9	1.8	1.4	.36	.19	.12
4	1.0	1.1	1.4	1.2	1.4	2.9	1.8	1.8	1.1	.35	.19	.12
5	1.1	1.1	1.4	1.4	1.5	2.2	1.8	1.6	1.0	.36	.19	.13
6	1.1	1.1	1.4	1.3	1.5	2.1	1.8	1.5	.95	.31	25	.13
7	1.0	1.0	1.4	1.3	1.5	2.1	1.8	1.5	.86	.30	11	.12
8	1.1	.96	4.4	1.2	1.5	2.1	1.8	1.5	.78	.29	1.6	.11
9	1.2	1.1	3.5	1.3	1.5	2.0	1.8	2.1	.78	.31	1.79	.10
10	1.1	1.0	6.8	1.3	1.5	2.0	1.7	3.7	40	.28	.65	.12
11	1.0	1.1	2.2	1.3	1.5	2.0	1.8	1.8	18	.27	.61	.16
12	1.1	1.3	1.5	1.3	1.6	2.0	1.8	2.9	1.6	.24	.58	.24
13	1.1	1.1	1.6	1.4	1.7	2.1	5.3	2.1	2.8	.24	.57	29
14	1.1	1.2	1.8	1.5	2.5	2.0	3.0	1.7	1.6	.27	.59	2.1
15	1.1	1.3	1.8	1.4	30	2.0	2.0	2.6	1.2	.28	.60	.81
16	1.1	1.1	1.8	1.3	26	2.3	1.9	1.7	1.0	.20	.53	.58
17	1.0	1.0	1.9	1.3	19	2.6	1.9	5.6	.95	.20	.49	.48
18	.80	1.4	1.5	1.4	3.1	2.4	1.9	1.9	.82	.22	.40	.46
19	.70	1.3	1.4	1.3	2.6	2.3	6.7	1.5	.81	.21	.41	.43
20	.83	1.2	1.4	1.3	2.6	2.0	2.2	1.5	.77	.18	.38	.45
21	.79	1.2	1.4	1.3	2.4	1.8	1.8	1.4	.72	.39	.35	.44
22	.85	1.1	1.4	1.3	2.4	2.2	1.7	1.3	.68	.53	.32	.40
23	.92	1.2	1.4	1.2	2.4	2.0	1.7	1.3	.63	.38	.27	.30
24	.87	1.1	1.4	1.3	2.4	1.9	1.7	1.2	.65	.33	1.2	.31
25	1.0	1.4	1.4	1.2	2.3	2.0	1.6	1.1	.67	.28	1.8	.37
26	1.1	1.2	1.5	1.2	2.1	2.1	1.6	1.1	.63	.25	.49	.43
27	1.1	1.2	1.4	4.4	2.1	2.3	1.5	1.1	.59	.24	.32	.46
28	1.0	1.2	1.2	4.2	2.0	5.0	1.5	1.2	.53	.25	.25	.48
29	1.1	1.2	1.2	1.5	---	2.4	1.4	1.1	.49	.25	.22	.46
30	1.1	1.4	1.3	1.3	---	1.9	1.7	1.0	.46	.22	.21	.41
31	1.1	---	1.3	1.3	---	1.8	---	1.0	---	.19	.20	---
TOTAL	32.26	35.26	56.0	46.4	125.8	68.8	62.7	67.9	90.17	8.98	50.74	40.00
MEAN	1.04	1.18	1.81	1.50	4.49	2.22	2.09	2.19	3.01	.29	1.64	1.33
MAX	1.5	1.4	6.8	4.4	30	5.0	6.7	14	40	.53	.25	.29
MIN	.70	.96	1.2	1.2	1.4	1.8	1.4	1.0	.46	.18	.17	.10
AC-FT	64	70	111	92	250	136	124	135	179	18	101	79

CAL YR 1988 TOTAL 800.49 MEAN 2.19 MAX 32 MIN .70 AC-FT 1590
WTR YR 1989 TOTAL 685.01 MEAN 1.88 MAX 40 MIN .10 AC-FT 1360

COLORADO RIVER BASIN

08136000 CONCHO RIVER AT SAN ANGELO, TX

LOCATION.--Lat 31°27'16", long 100°24'37", Tom Green County, Hydrologic Unit 12090105, on left bank 0.4 mi downstream from confluence of North and South Concho Rivers, 1.8 mi southeast of Tom Green County Courthouse, and 61.9 mi upstream from mouth.

DRAINAGE AREA.--5,542 mi², of which 1,131 mi² probably is noncontributing.

PERIOD OF RECORD.--September 1915 to current year. Prior to October 1969, published as "near San Angelo".

REVISED RECORDS.--WSP 568: 1915-16, 1919-22. WSP 1148: 1916-22(M), 1924(M), 1925-26, 1929(M), 1930-32, 1935-37. WSP 1512: 1917-18. WSP 1712: 1936. WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,776.79 ft above National Geodetic Vertical Datum of 1929. Prior to Aug. 11, 1917, nonrecording gage at same site and datum. Aug. 11, 1917, to May 15, 1963, water-stage recorder on right bank at same datum.

REMARKS.--No estimated daily discharges. Records good. Many diversions upstream from station for irrigation, industrial, and municipal supply. Flow is regulated by Twin Buttes Reservoir (station 08131200) on the South Concho River and by O.C. Fisher Lake (station 08134500) on North Concho River. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--47 years (water years 1916-62) prior to construction of Twin Buttes Dam, 158 ft³/s (114,500 acre-ft/yr); 27 years (water years 1963-89) regulated, 21.5 ft³/s (15,580 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 230,000 ft³/s Sept. 17, 1936 (gage height, 46.6 ft, from floodmarks), from rating curve extended above 105,000 ft³/s on basis of slope-area measurements of 167,000 and 230,000 ft³/s; no flow at times in 1921, 1952-53, 1965, and 1971.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1853, 47.5 ft Aug. 6, 1906 (discharge, about 246,000 ft³/s), from information by local resident. Other large floods are known to have occurred in June 1853, August 1882, and April 1900.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 842 ft³/s Mar. 3 at 1900 hours (gage height, 4.07 ft); minimum daily, 1.4 ft³/s Nov. 16.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.6	4.7	5.0	7.5	3.1	4.4	4.7	42	12	2.2	7.3	3.0
2	4.9	4.5	4.1	8.6	6.6	4.7	4.3	8.2	59	1.8	9.3	3.2
3	6.3	4.9	3.5	6.8	6.8	111	4.6	3.3	9.3	3.6	11	4.2
4	3.8	3.3	3.0	3.8	4.1	32	4.1	3.0	3.3	3.4	9.1	2.7
5	3.7	2.9	2.9	7.0	2.9	7.5	4.9	3.2	21	2.7	10	1.5
6	3.5	2.9	3.5	3.3	2.4	4.1	4.5	2.9	10	3.0	77	2.0
7	3.7	2.9	7.1	4.4	2.6	4.4	4.7	3.1	5.8	2.2	31	2.1
8	3.8	3.0	15	2.4	2.7	4.5	4.2	3.3	3.3	6.6	e13	2.1
9	3.5	3.7	12	2.9	2.7	4.5	3.8	2.4	4.5	2.9	e4.8	2.6
10	3.5	3.0	29	3.3	2.9	4.5	3.4	5.2	106	1.7	1.5	2.3
11	3.2	3.4	14	3.9	3.1	5.1	3.7	4.0	246	10	3.0	3.2
12	3.0	3.9	5.6	3.7	3.0	5.2	4.7	9.4	14	9.7	16	2.5
13	3.3	3.1	3.4	4.2	3.3	5.2	21	4.7	21	2.7	16	444
14	3.3	3.2	3.3	4.1	6.0	5.1	14	4.2	9.9	2.2	12	87
15	2.9	4.4	2.9	3.6	132	4.2	4.6	8.3	3.8	4.3	11	18
16	2.9	1.4	2.5	4.0	99	4.4	3.4	6.0	3.0	8.0	11	4.4
17	3.1	2.8	3.5	4.1	178	5.0	3.5	24	6.0	6.5	15	11
18	2.5	3.4	3.3	3.8	29	4.6	3.5	10	5.6	3.4	11	20
19	2.5	5.1	3.0	3.7	15	4.9	66	3.6	7.2	4.8	11	18
20	2.7	1.5	3.2	3.6	13	5.3	18	3.3	4.2	8.2	11	16
21	2.9	2.8	3.0	3.4	7.8	4.5	5.4	3.1	2.6	12	11	10
22	3.3	2.8	4.0	4.2	4.1	3.8	4.4	3.2	2.7	3.7	7.5	e7.0
23	3.6	3.0	3.5	9.5	4.1	4.7	4.4	34	2.3	2.1	3.3	e5.6
24	2.9	3.1	3.0	6.2	4.3	4.6	4.5	28	3.3	2.2	18	e4.1
25	2.5	3.1	5.8	4.3	4.3	4.6	4.2	3.3	2.3	1.7	27	e3.5
26	2.5	4.0	11	3.7	4.6	4.9	5.1	2.6	3.1	2.1	9.0	e2.7
27	3.8	2.4	9.4	16	3.8	21	4.6	2.8	2.5	3.1	5.5	2.3
28	4.0	3.6	8.2	21	3.8	116	3.6	3.1	2.3	11	1.9	2.7
29	4.3	3.5	7.4	8.9	---	16	3.5	3.0	2.0	11	2.0	3.9
30	3.7	3.6	7.6	4.8	---	6.3	6.1	2.8	1.8	8.6	1.8	2.5
31	4.7	---	7.7	4.1	---	4.6	---	2.7	---	7.3	2.6	---
TOTAL	110.9	99.9	200.4	174.8	555.0	421.6	231.4	242.7	579.8	154.7	380.6	694.1
MEAN	3.58	3.33	6.46	5.64	19.8	13.6	7.71	7.83	19.3	4.99	12.3	23.1
MAX	6.6	5.1	29	21	178	116	66	42	246	12	77	444
MIN	2.5	1.4	2.5	2.4	2.4	3.8	3.4	2.4	1.8	1.7	1.5	1.5
AC-FT	220	198	397	347	1100	836	459	481	1150	307	755	1380
CAL YR 1988	TOTAL	4558.6	MEAN	12.5	MAX	308	MIN	1.4	AC-FT	9040		
WTR YR 1989	TOTAL	3845.9	MEAN	10.5	MAX	444	MIN	1.4	AC-FT	7630		

e Estimated.

COLORADO RIVER BASIN

77

08136500 CONCHO RIVER AT PAINT ROCK, TX

LOCATION.--Lat 31°30'57", long 99°55'09", Concho County, Hydrologic Unit 12090105, near left bank at downstream end of pier of bridge on U.S. Highway 83, 0.5 mi north of Concho County Courthouse in Paint Rock, 2.7 mi downstream from Kickapoo Creek, and 20.0 mi upstream from mouth.

DRAINAGE AREA.--6,574 mi², of which 1,131 mi² probably is noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1915 to current year. Prior to October 1970, published as "near Paint Rock".

REVISED RECORDS.--WSP 458: 1915-16. WSP 568: 1919-20. WSP 1712: 1922(M). WSP 1732: 1918(M), 1923(M). WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder with masonry dam control. Datum of gage is 1,574.36 ft above National Geodetic Vertical Datum of 1929. See WSP 1922 for history of changes prior to Jan. 15, 1940.

REMARKS.--No estimated daily discharges. Records good except those below 10 ft³/s, which are poor. There are many diversions above station for irrigation and municipal supply. Regulation is the same as that for Concho River at San Angelo (station 08136000). Flow is affected at times by discharge from flood-detention pools of two floodwater-retarding structures with a combined detention capacity of 2,690 acre-ft. These structures control runoff from 16.5 mi² in the Willow Creek drainage basin.

AVERAGE DISCHARGE.--47 years (water years 1916-62) prior to construction of Twin Buttes Dam, 210 ft³/s (152,100 acre-ft/yr); 27 years (water years 1963-89) regulated, 59.3 ft³/s (42,960 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 301,000 ft³/s Sept. 17, 1936 (gage height, 43.4 ft, from flood-marks), from rating curve extended above 98,000 ft³/s on basis of slope-area measurements of 144,000 and 301,000 ft³/s; no flow at times.

Maximum stage since at least 1853, that of Sept. 17, 1936.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1882 reached a stage of about 39.9 ft, and flood in August 1906 reached a stage of 39.5 ft, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 9,990 ft³/s May 15 at 0230 hours (gage height, 18.20 ft); minimum daily, 0.16 ft³/s Aug. 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	114	42	32	41	43	36	33	25	25	12	.16	9.7
2	65	39	35	43	41	38	28	27	31	10	1.6	8.1
3	51	36	33	43	38	37	25	39	33	13	11	6.6
4	46	36	34	41	36	35	22	29	51	16	6.1	5.7
5	46	35	40	43	38	121	19	21	41	15	1.4	8.9
6	44	35	42	41	42	56	16	16	30	12	3.8	11
7	42	36	41	38	41	42	17	13	28	9.3	50	6.9
8	41	35	42	38	40	36	18	11	27	8.7	110	3.9
9	41	36	50	38	38	34	21	9.4	24	9.9	83	1.6
10	43	36	69	36	39	32	23	7.3	27	9.9	38	.50
11	43	36	64	36	41	31	23	6.3	257	7.5	22	17
12	42	38	61	33	41	32	22	6.2	484	10	15	30
13	41	38	56	36	41	32	27	11	137	8.4	12	38
14	39	41	48	38	41	32	33	46	72	7.2	11	116
15	38	43	41	41	55	30	34	3660	56	6.6	23	136
16	40	39	38	41	141	30	36	276	48	5.9	23	60
17	41	35	38	41	251	31	29	782	40	6.4	23	42
18	41	35	38	41	340	30	24	212	35	6.6	18	37
19	40	36	38	41	140	29	23	81	34	6.0	16	34
20	35	35	36	41	79	30	24	61	33	3.0	16	37
21	33	37	33	38	59	28	51	54	30	2.4	14	35
22	33	39	31	41	50	29	40	54	26	2.8	13	33
23	36	40	31	41	45	30	28	43	22	1.8	12	32
24	38	40	29	41	41	30	21	38	18	1.0	11	28
25	38	38	31	41	38	29	19	41	17	1.4	9.2	26
26	37	37	33	38	36	29	16	57	18	2.2	7.1	29
27	35	34	36	38	36	31	11	37	16	1.9	14	28
28	33	33	38	41	36	42	9.3	30	14	1.1	17	28
29	33	34	41	43	---	99	11	26	13	.85	14	28
30	37	31	41	52	---	90	13	22	12	.44	11	26
31	47	---	41	49	---	48	---	23	---	.20	10	---
TOTAL	1333	1105	1261	1254	1907	1259	716.3	5764.2	1699	199.49	616.36	902.90
MEAN	43.0	36.8	40.7	40.5	68.1	40.6	23.9	186	56.6	6.44	19.9	30.1
MAX	114	43	69	52	340	121	51	3660	484	16	110	136
MIN	33	31	29	33	36	28	9.3	6.2	12	.20	.16	.50
AC-FT	2640	2190	2500	2490	3780	2500	1420	11430	3370	396	1220	1790
CAL YR 1988	TOTAL	22509.0	MEAN	61.5	MAX	3530	MIN	6.8	AC-FT	44650		
WTR YR 1989	TOTAL	18017.25	MEAN	49.4	MAX	3660	MIN	.16	AC-FT	35740		

COLORADO RIVER BASIN

08136500 CONCHO RIVER AT PAINT ROCK, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: April 1946 to October 1949. Chemical and biochemical analyses: March 1964 to current year. Pesticide analyses: April 1968 to October 1981. Sediment analyses: February 1978 to September 1980.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: April 1946 to October 1949, October 1967 to current year.

WATER TEMPERATURE: April 1946 to October 1949, October 1967 to current year.

SUSPENDED SEDIMENT DISCHARGE: February 1978 to September 1981.

REMARKS.--Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 3,690 microsiemens June 28, Aug. 12, 1984; minimum daily, 268 microsiemens

Sept. 9, 1980.

WATER TEMPERATURE: Maximum daily, 35.0°C on several days during summer months; minimum daily, 0.0°C on many days during winter months.

SEDIMENT CONCENTRATION: Maximum daily mean, 4,190 mg/L Sept. 9, 1980; minimum daily mean, 3 mg/L Feb. 2, 1979.

SEDIMENT LOAD: Maximum daily, 269,000 tons Sept. 9, 1980; minimum daily, 0.0 tons on several days during Sept. 1980.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 2,970 microsiemens May 7; minimum daily, 525 microsiemens May 17.

WATER TEMPERATURE: Maximum daily, 29.0°C July 30, Aug. 2, 3, 5; minimum daily, 7.0°C Feb. 6-8.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB TOT FLD MG/L AS CACO3
NOV 17...	1420	38	2680	8.10	11.0	11.0	106	1.7	810	660
JAN 12...	1130	14	2680	8.10	9.0	10.1	92	1.8	800	580
MAR 07...	1015	46	2380	8.20	8.0	12.7	113	2.3	710	510
MAR 29...	1500	158	2530	--	22.0	--	--	--	760	570
JUN 22...	1550	25	1800	8.00	28.0	7.4	101	2.0	480	320
JUL 13...	1115	7.2	2210	8.00	28.0	9.3	126	2.9	610	480
AUG 14...	1150	13	2400	8.10	24.0	8.0	101	1.4	790	640

DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
NOV 17...	180	88	210	3	4.5	156	350	540	0.60	19
JAN 12...	180	86	250	4	5.0	223	370	530	0.60	18
MAR 07...	160	76	210	4	4.9	199	300	460	0.60	18
MAR 29...	170	82	230	4	4.6	194	320	520	0.50	16
JUN 22...	100	56	180	4	6.2	160	210	370	0.60	19
JUL 13...	120	75	210	4	5.9	128	300	420	0.50	21
AUG 14...	170	88	230	4	6.2	151	330	550	0.60	22

DATE	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (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- PHOROUS TOTAL (MG/L AS P)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)
NOV 17...	1490	17.0	0.040	17.0	0.070	0.93	1.0	0.080	--	--
JAN 12...	1570	18.0	0.040	18.0	0.060	0.54	0.60	0.010	3	<100
MAR 07...	1350	11.9	0.050	12.0	0.090	1.0	1.1	0.040	--	--
MAR 29...	1460	--	--	--	--	--	--	--	--	--
JUN 22...	1040	2.71	0.090	2.80	0.110	0.69	0.80	0.030	9	160
JUL 13...	1230	1.81	0.090	1.90	0.040	1.2	1.2	0.060	--	--
AUG 14...	1490	7.21	0.190	7.40	0.070	0.83	0.90	0.120	--	--

COLORADO RIVER BASIN

79

08136500 CONCHO RIVER AT PAINT ROCK, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	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)	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)
NOV 17...	--	--	--	--	--	--	--	--	--	--
JAN 12...	2	1	1	20	<5	<10	0.1	7	1.0	<10
MAR 07...	--	--	--	--	--	--	--	--	--	--
MAR 29...	--	--	--	--	--	--	--	--	--	--
JUN 22...	4	1	1	11	<1	5	<0.1	2	<1.0	13
JUL 13...	--	--	--	--	--	--	--	--	--	--
AUG 14...	--	--	--	--	--	--	--	--	--	--

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1988 TO SEPTEMBER 1989

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	DIS- SOLVED SOLIDS (MG/L)	DIS- SOLVED SOLIDS (TONS)	DIS- SOLVED CHLORIDE (MG/L)	DIS- SOLVED CHLORIDE (TONS)	DIS- SOLVED SULFATE (MG/L)	DIS- SOLVED SULFATE (TONS)	HARDNESS (CA,MG) (MG/L)
OCT. 1988	1333	2470	1440	5190	530	1890	310	1110	730
NOV. 1988	1105	2640	1550	4640	570	1700	340	1020	780
DEC. 1988	1261	2700	1590	5430	590	2000	350	1200	800
JAN. 1989	1254	2740	1620	5480	600	2020	360	1220	810
FEB. 1989	1907	2410	1410	7250	510	2640	300	1550	710
MAR. 1989	1259	2450	1430	4870	520	1770	310	1040	720
APR. 1989	716.3	2740	1620	3130	600	1160	360	696	810
MAY 1989	5764.2	847	471	7330	160	2500	82	1280	250
JUNE 1989	1699	2100	1210	5560	430	1990	250	1130	620
JULY 1989	199.49	2130	1220	660	440	236	250	134	620
AUG. 1989	616.36	2450	1430	2380	520	868	310	510	720
SEPT 1989	902.90	2420	1410	3450	510	1250	300	733	710
TOTAL	18017.25	**	**	55400	**	20000	**	11600	**
WTD.AVG.	49	1960	1140	**	410	**	240	**	580

COLORADO RIVER BASIN

08136500 CONCHO RIVER AT PAINT ROCK, TX--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
EQUIVALENT MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2530	2550	2730	2700	2720	2090	2700	2920	2180	1980	2430	2620
2	2480	2590	2730	2660	2730	2120	2800	2950	2570	2070	2420	2580
3	2460	2600	2750	2720	2740	2140	2800	2670	2590	2090	2470	2580
4	2570	2560	2750	2690	2800	2160	2800	2930	2570	2010	2410	2580
5	2570	2600	2750	2700	2780	2390	2800	2770	2580	2130	2470	2600
6	2510	2610	2730	2720	2760	2330	2700	2850	2600	2040	2390	2580
7	2470	2610	2750	2750	2740	2400	2400	2970	2560	2030	2230	2550
8	2540	2600	2640	2810	2760	2440	2800	2910	2430	2100	2320	2550
9	e2560	2640	2650	2760	2770	2410	2800	2910	2570	2140	2300	2550
10	2090	2630	2710	2730	2570	2440	2800	2880	2580	2160	2370	2560
11	2520	2670	2650	2750	2730	2450	2700	2870	2430	2160	2550	2560
12	2400	2640	2660	2760	2740	2420	2800	2890	1900	2150	2510	2520
13	2480	2010	2700	2760	2750	2470	2700	2910	1890	2180	2630	2450
14	2460	2690	2700	2720	2570	2450	2700	2790	1920	2150	2460	2350
15	2410	2690	2710	2730	1980	2370	2800	665	1900	2180	2510	2510
16	2470	2720	2760	2740	2390	2410	2700	670	1950	2180	2170	2250
17	2430	2720	2810	2710	2550	2360	2700	525	1900	2190	2200	2370
18	2470	2690	2790	2720	2230	2460	2700	632	1890	2170	2740	2510
19	2500	2690	2810	2710	2510	e2520	2700	826	1930	2210	2750	2410
20	1750	e2720	2770	2720	2370	2590	2700	720	1890	2270	2750	2410
21	2470	2750	2110	2750	2070	2570	2700	635	1870	2250	2770	2400
22	2520	2720	2740	2770	2070	2490	2800	1100	1870	2280	2740	2380
23	2570	2740	2800	2730	2180	2530	e2750	1500	1920	2270	2750	2400
24	2550	2770	2790	2760	1580	2500	2700	2160	1950	2290	2710	2480
25	2550	2250	2730	2750	2050	2610	2800	2870	e1940	2280	2710	2400
26	2560	2750	2720	2800	2100	2550	2700	2770	1930	2350	2700	2430
27	2060	2760	2710	2780	2170	2590	2800	2870	1950	2290	2670	2350
28	2560	2770	2720	2770	2070	2550	2750	e2460	1910	2360	2640	2370
29	2550	2760	2710	2770	---	2600	2800	2060	2100	2350	2640	2380
30	e2580	2760	2680	2760	---	2620	2800	2210	1940	2360	2630	2340
31	2610	---	2630	2730	---	2690	---	2100	---	2360	2680	---
MEAN	2460	2640	2710	2740	2450	2440	2740	2160	2140	2190	2540	2470

e Estimated

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22.0	20.0	---	12.0	15.0	15.0	21.0	20.0	23.0	26.0	28.0	28.0
2	22.0	20.0	---	14.0	15.0	15.0	20.0	21.0	23.0	27.0	29.0	28.0
3	21.0	19.0	12.0	14.0	9.0	14.0	19.0	22.0	23.0	27.0	29.0	27.0
4	21.0	19.0	13.0	14.0	8.0	10.0	20.0	21.0	22.0	26.0	28.0	28.0
5	22.0	19.0	12.0	14.0	---	8.0	20.0	22.0	22.0	26.0	29.0	28.0
6	21.0	20.0	13.0	15.0	7.0	10.0	20.0	22.0	22.0	25.0	28.0	28.0
7	21.0	20.0	15.0	14.0	7.0	12.0	20.0	21.0	23.0	25.0	26.0	27.0
8	21.0	19.0	12.0	13.0	7.0	12.0	21.0	23.0	23.0	25.0	25.0	28.0
9	---	19.0	9.0	10.0	9.0	14.0	21.0	22.0	23.0	26.0	24.0	28.0
10	21.0	19.0	9.0	9.0	10.0	14.0	20.0	22.0	22.0	26.0	24.0	27.0
11	21.0	19.0	12.0	8.0	10.0	16.0	15.0	21.0	22.0	26.0	23.0	26.0
12	21.0	20.0	11.0	10.0	---	19.0	14.0	20.0	24.0	27.0	24.0	24.0
13	22.0	20.0	11.0	9.0	12.0	22.0	16.0	20.0	23.0	27.0	25.0	20.0
14	21.0	20.0	10.0	10.0	12.0	20.0	20.0	20.0	25.0	27.0	25.0	20.0
15	21.0	20.0	10.0	12.0	13.0	21.0	20.0	22.0	25.0	27.0	25.0	21.0
16	22.0	19.0	11.0	13.0	12.0	21.0	20.0	21.0	24.0	27.0	26.0	23.0
17	21.0	19.0	12.0	13.0	13.0	21.0	20.0	21.0	24.0	28.0	26.0	24.0
18	21.0	19.0	14.0	12.0	13.0	22.0	---	21.0	25.0	27.0	26.0	24.0
19	20.0	18.0	14.0	14.0	12.0	---	21.0	21.0	25.0	27.0	26.0	25.0
20	20.0	---	14.0	14.0	12.0	20.0	21.0	23.0	25.0	27.0	27.0	26.0
21	19.0	13.0	14.0	14.0	13.0	11.0	20.0	22.0	25.0	27.0	26.0	25.0
22	20.0	13.0	14.0	13.0	13.0	14.0	21.0	23.0	25.0	26.0	26.0	26.0
23	21.0	12.0	14.0	12.0	15.0	17.0	---	24.0	25.0	27.0	26.0	26.0
24	22.0	13.0	15.0	14.0	15.0	16.0	20.0	25.0	25.0	27.0	26.0	25.0
25	22.0	13.0	13.0	14.0	16.0	20.0	21.0	25.0	---	26.0	27.0	22.0
26	24.0	14.0	14.0	12.0	---	20.0	21.0	25.0	26.0	26.0	27.0	21.0
27	23.0	13.0	14.0	12.0	17.0	19.0	22.0	24.0	25.0	26.0	27.0	23.0
28	21.0	12.0	12.0	14.0	13.0	20.0	21.0	---	25.0	27.0	26.0	23.0
29	22.0	12.0	11.0	14.0	---	20.0	22.0	23.0	25.0	28.0	27.0	20.0
30	---	12.0	12.0	15.0	---	20.0	20.0	23.0	26.0	29.0	27.0	21.0
31	20.0	---	12.0	15.0	---	21.0	---	24.0	---	28.0	28.0	---
MEAN	21.0	17.0	12.5	12.5	12.0	17.0	20.0	22.0	24.0	26.5	26.5	24.5

COLORADO RIVER MAIN STEM

81

08136700 COLORADO RIVER NEAR STACY, TX

LOCATION.--Lat 31°29'37", long 99°34'25", Coleman County, Hydrologic Unit 12090106, on left bank at downstream side of bridge on Farm Road 503, 1.2 mi upstream from Bois d'Arc Creek, 1.8 mi northeast of Stacy, 24 mi downstream from Concho River, and at mile 604.8.

DRAINAGE AREA.--24,193 mi², approximately, of which 11,391 mi² probably is noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1968 to current year. Prior to October 1970, published as "at Stacy".

REVISED RECORDS.--WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,394.66 ft above National Geodetic Vertical Datum of 1929 (State Department of Highways and Public Transportation bridge plans).

REMARKS.--No estimated daily discharges. Records good. There are many diversions above station for irrigation, municipal, and oil field operations. Sewage effluent is returned to the river from numerous sewage plants above station. Flow is affected by upstream reservoirs (see stations 08126380 and 08136000) and at times by discharge from the flood-detention pools of 42 floodwater-retarding structures with a combined detention capacity of 56,730 acre-ft. These structures control runoff from 277 mi².

AVERAGE DISCHARGE.--21 years (water years 1969-89), 222 ft³/s (160,800 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 45,000 ft³/s Sept. 10, 1980 (gage height, 28.00 ft); no flow at times in 1974, 1980, and 1983-86.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1882, 356,000 ft³/s Sept. 18, 1936 (gage height, 64.59 ft), by slope-area measurement of peak flow. The flood of Sept. 18, 1936, was 4 ft higher than the 1906 flood and 7 to 8 ft higher than the 1882 flood, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 10,100 ft³/s June 12 at 0500 hours (gage height, 12.78 ft); minimum, 11 ft³/s Sept. 22.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	67	55	56	61	57	69	115	29	32	153	23	19
2	145	54	27	60	62	66	90	27	27	147	21	23
3	114	55	14	58	64	66	79	27	25	430	19	23
4	82	50	32	43	61	64	69	30	24	494	36	21
5	67	46	39	53	55	64	60	38	59	493	52	18
6	58	43	30	54	52	66	49	43	115	496	44	15
7	55	42	43	54	54	98	43	41	86	501	43	28
8	53	42	44	54	52	98	37	33	182	511	68	58
9	51	43	53	54	52	85	34	28	474	527	83	59
10	50	43	59	51	52	73	31	24	508	516	182	50
11	46	42	62	49	53	66	30	24	3660	508	121	40
12	46	42	72	51	54	60	31	27	6500	411	91	34
13	46	42	79	52	54	62	42	29	1970	185	78	37
14	46	42	75	52	54	58	52	35	1440	111	64	421
15	46	42	78	51	64	55	54	1920	1150	86	50	743
16	46	42	66	51	75	55	114	1200	1140	74	41	394
17	46	43	62	53	251	56	145	1180	994	60	38	201
18	44	43	56	55	388	57	144	1170	874	48	35	126
19	43	43	52	55	438	57	138	548	802	40	41	92
20	43	45	52	55	280	52	133	267	751	35	41	97
21	43	43	52	55	180	53	114	165	709	32	38	26
22	43	43	69	55	138	54	92	111	666	30	35	16
23	43	43	82	55	115	54	80	89	642	30	30	46
24	43	44	50	54	104	54	81	85	626	30	30	50
25	45	47	51	54	93	54	68	78	605	28	30	45
26	46	45	48	54	84	54	55	67	587	27	29	44
27	46	43	48	54	79	54	44	57	578	30	27	43
28	46	42	24	54	72	64	37	57	460	26	24	110
29	46	42	25	54	---	62	32	55	222	25	23	122
30	45	25	39	54	---	65	30	46	169	25	22	90
31	59	---	128	54	---	100	---	37	---	25	18	---
TOTAL	1699	1316	1667	1663	3137	1995	2123	7567	26077	6134	1477	3091
MEAN	54.8	43.9	53.8	53.6	112	64.4	70.8	244	869	198	47.6	103
MAX	145	55	128	61	438	100	145	1920	6500	527	182	743
MIN	43	25	14	43	52	52	30	24	24	25	18	15
AC-FT	3370	2610	3310	3300	6220	3960	4210	15010	51720	12170	2930	6130
CAL YR 1988	TOTAL	56772	MEAN	155	MAX	1830	MIN	14	AC-FT	112600		
WTR YR 1989	TOTAL	57946	MEAN	159	MAX	6500	MIN	14	AC-FT	114900		

COLORADO RIVER MAIN STEM

08136700 COLORADO RIVER NEAR STACY, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: December 1961 to current year. Chemical and biochemical analyses: October 1974 to October 1977. Pesticide analyses: April 1975 to August 1977. Sediment analyses: October 1974 to October 1977.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: April 1968 to current year.

WATER TEMPERATURE: April 1968 to current year.

REMARKS.--Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 8,530 microsiemens Aug. 8, 1987; minimum daily, 165 microsiemens June 9, 1986.

WATER TEMPERATURE: Maximum daily, 35.0°C July 1, 1980; minimum daily, 0.0°C Feb. 9, 10, 1981.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 5,070 microsiemens Aug. 8; minimum daily, 678 microsiemens May 18.

WATER TEMPERATURE: Maximum daily, 32.0°C May 26, July 19, 31, Aug. 31; minimum daily, 4.0°C Feb. 6.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
OCT 17...	1050	46	2860	22.0	790	680	160	95	320
DEC 05...	1045	39	2590	10.0	810	650	180	88	250
JAN 27...	0945	53	2970	10.0	950	790	200	110	280
MAR 27...	1035	54	2400	21.0	760	630	170	82	240
JUN 26...	0955	588	4040	28.0	850	710	160	110	540
AUG 10...	1615	175	4050	28.0	860	740	180	100	550

DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CAC03	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 CONSTITU- ENTS, DIS- SOLVED (MG/L)
OCT 17...	5	7.7	107	510	600	0.40	16	1770
DEC 05...	4	4.7	159	510	530	0.50	12	1670
JAN 27...	4	5.7	159	610	540	0.50	6.7	1850
MAR 27...	4	5.9	135	460	480	0.50	6.0	1530
JUN 26...	8	19	144	730	880	0.50	5.0	2530
AUG 10...	8	17	120	810	870	0.50	11	2610

COLORADO RIVER MAIN STEM

83

08136700 COLORADO RIVER NEAR STACY, TX--Continued

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1988 TO SEPTEMBER 1989

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	DIS- SOLVED SOLIDS (MG/L)	DIS- SOLVED SOLIDS (TONS)	DIS- SOLVED CHLORIDE (MG/L)	DIS- SOLVED CHLORIDE (TONS)	DIS- SOLVED SULFATE (MG/L)	DIS- SOLVED SULFATE (TONS)	HARDNESS (CA, MG) (MG/L)
OCT. 1988	1699	2730	1670	7660	530	2430	490	2260	760
NOV. 1988	1316	2650	1620	5750	510	1820	480	1690	750
DEC. 1988	1667	2810	1720	7760	550	2470	510	2300	770
JAN. 1989	1663	2900	1780	8000	570	2560	530	2380	790
FEB. 1989	3137	2590	1580	13400	500	4220	460	3920	730
MAR. 1989	1995	2440	1480	8000	460	2500	430	2330	710
APR. 1989	2123	3060	1890	10800	610	3500	570	3250	800
MAY 1989	7567	1140	679	13900	200	4150	190	3860	370
JUNE 1989	26077	2120	1300	91300	410	29000	380	27000	590
JULY 1989	6134	4650	2940	48700	1000	16900	950	15700	950
AUG. 1989	1477	3920	2450	9780	820	3290	770	3060	900
SEPT 1989	3091	2830	1740	14500	560	4680	520	4350	750
TOTAL	57946	**	**	240000	**	77500	**	72100	**
WTD.AVG.	159	2490	1530	**	500	**	460	**	650

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
EQUIVALENT MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3000	e2800	2690	e2850	2580	2580	2480	3980	1480	4370	4730	3810
2	e2700	2790	e2720	e2860	1800	2570	3160	3900	e1480	e4350	4770	3850
3	2570	2770	2740	2860	2620	2550	2650	e3780	1470	4340	4790	e3880
4	2540	2680	e2780	2870	2000	2600	2660	3650	e1470	e4480	4820	e3940
5	2680	2630	2820	2840	e2400	2590	2660	3520	1470	4750	4840	3980
6	2690	e2630	2820	e2860	2850	e2590	2680	3350	1380	4740	4800	4010
7	2580	2630	2820	2890	2840	2580	2660	e3320	1320	4740	4830	e4020
8	2510	2660	2780	2940	2860	2480	2700	3300	1340	4710	5070	4030
9	e2540	2710	2760	2960	2860	2380	e2700	3310	2190	e4670	4420	3950
10	e2570	2700	2750	2870	2860	2300	2800	3310	1720	4650	4090	e3710
11	2600	e2680	e2780	2960	2860	2270	2800	3320	e1400	4710	3350	3480
12	2680	2670	2820	2920	e2870	e2220	2800	3310	1070	4730	3620	3390
13	2780	e2660	2810	2890	2880	2160	2800	3310	1050	4740	e3550	3360
14	2830	2640	2760	2910	2890	2140	2800	e3250	1010	4740	3470	3350
15	2860	2620	2820	e2890	2860	2200	2800	1000	2000	4740	e3420	3580
16	e2880	2600	2850	e2880	2820	2230	e2700	800	2740	e4690	3370	2640
17	2890	2570	2920	e2870	e2540	2290	2700	758	2700	4660	e3380	e2230
18	2860	2550	e2920	2860	2280	2310	2700	678	e2950	4640	3380	1820
19	2850	2550	2910	2890	e2400	e2340	3000	693	3200	4650	3410	1770
20	2830	e2580	2870	2880	e2500	2370	3000	1700	3420	4650	3490	1660
21	2810	2600	2840	2880	2670	2400	e3100	e1930	3580	4690	3530	1660
22	2780	2610	2810	e2910	2730	2410	3300	2160	3720	4710	e3550	1670
23	e2760	2610	2780	2950	2830	2430	e3600	2270	3870	e4700	3560	1670
24	2750	e2610	2780	2980	2870	2460	3900	2270	4000	4710	3590	e1680
25	2740	2610	e2800	2960	2860	2490	4000	2160	e4150	4670	3620	1690
26	2780	2620	e2810	e2960	e2830	2540	4000	1920	4210	4680	3670	1680
27	2810	e2650	2830	2960	2800	2500	4300	1870	4290	4680	e3720	1710
28	2830	2690	2830	2920	2740	e2500	4400	e1740	4350	4700	3760	1760
29	2840	2700	2830	e2920	---	2500	4400	e1670	4370	4710	3780	1720
30	e2830	2700	2840	e2930	---	2530	e3990	1600	4370	e4720	3810	1800
31	2820	---	2850	2930	---	2770	---	1640	---	4730	3770	---
MEAN	2750	2650	2810	2900	2670	2430	3140	2430	2590	4660	3930	2780

e Estimated

COLORADO RIVER MAIN STEM

08136700 COLORADO RIVER NEAR STACY, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23.0	---	11.0	---	---	13.0	21.0	24.0	29.0	30.0	31.0	31.0
2	---	20.0	---	---	15.0	14.0	21.0	26.0	---	---	31.0	31.0
3	22.0	21.0	13.0	12.0	8.0	16.0	23.0	---	27.0	30.0	31.0	---
4	22.0	21.0	---	13.0	5.0	12.0	21.0	28.0	---	---	31.0	---
5	28.0	20.0	12.0	13.0	---	7.0	21.0	26.0	26.0	31.0	31.0	31.0
6	28.0	---	12.0	---	4.0	---	20.0	26.0	29.0	30.0	28.0	31.0
7	27.0	19.0	13.0	14.0	5.0	9.0	22.0	---	29.0	30.0	27.0	---
8	22.0	19.0	12.0	15.0	5.0	10.0	22.0	29.0	27.0	30.0	30.0	30.0
9	---	20.0	10.0	11.0	6.0	14.0	---	29.0	26.0	---	27.0	30.0
10	---	20.0	9.0	10.0	8.0	16.0	17.0	25.0	27.0	30.0	27.0	---
11	22.0	---	---	12.0	10.0	16.0	17.0	23.0	---	30.0	31.0	26.0
12	21.0	20.0	9.0	9.0	---	---	16.0	23.0	24.0	30.0	28.0	26.0
13	22.0	---	9.0	7.0	13.0	19.0	14.0	22.0	25.0	31.0	---	24.0
14	21.0	20.0	10.0	8.0	11.0	20.0	14.0	---	25.0	29.0	26.0	22.0
15	22.0	20.0	10.0	---	11.0	18.0	17.0	25.0	25.0	30.0	---	20.0
16	---	18.0	10.0	---	9.0	20.0	---	20.0	25.0	---	30.0	23.0
17	23.0	16.0	10.0	---	---	21.0	22.0	22.0	26.0	31.0	---	---
18	24.0	16.0	---	11.0	8.0	20.0	25.0	23.0	---	30.0	30.0	25.0
19	23.0	15.0	11.0	12.0	---	---	24.0	25.0	29.0	32.0	30.0	25.0
20	23.0	---	11.0	11.0	---	21.0	24.0	26.0	30.0	31.0	31.0	25.0
21	22.0	12.0	11.0	11.0	11.0	15.0	---	---	30.0	31.0	31.0	26.0
22	23.0	13.0	12.0	---	---	15.0	26.0	29.0	28.0	30.0	---	24.0
23	---	13.0	11.0	10.0	12.0	17.0	---	31.0	28.0	---	31.0	23.0
24	22.0	---	11.0	13.0	12.0	18.0	26.0	31.0	27.0	29.0	31.0	---
25	23.0	15.0	---	14.0	13.0	20.0	26.0	30.0	---	29.0	30.0	22.0
26	22.0	14.0	---	---	---	22.0	27.0	32.0	27.0	29.0	31.0	21.0
27	23.0	---	13.0	11.0	13.0	23.0	26.0	29.0	28.0	30.0	---	22.0
28	21.0	14.0	11.0	11.0	13.0	---	26.0	---	29.0	30.0	30.0	22.0
29	20.0	12.0	10.0	---	---	22.0	25.0	---	29.0	31.0	31.0	22.0
30	---	12.0	10.0	---	---	22.0	---	30.0	29.0	---	31.0	23.0
31	20.0	---	10.0	13.0	---	21.0	---	30.0	---	32.0	32.0	---
MEAN	23.0	17.0	11.0	11.5	9.5	17.0	21.5	26.5	27.5	30.0	30.0	25.0

COLORADO RIVER MAIN STEM

85

08138000 COLORADO RIVER AT WINCHELL, TX

LOCATION (REVISED).--Lat 31°28'04", long 99°09'43", McCulloch-Brown County line, Hydrologic Unit 12090106, near left bank at downstream end of pier of old abandoned bridge, 300 ft upstream from bridge on U.S. Highway 377, 0.3 mi south of Winchell, 5.9 mi downstream from Home Creek, and at mile 560.7.

DRAINAGE AREA.--25,179 mi², approximately, of which 11,391 mi² probably is noncontributing.

PERIOD OF RECORD.--November 1923 to September 1934 (published as "near Milburn"), June 1939 to current year.
Water-quality records.--Chemical analyses: November 1967 to September 1985.

REVISED RECORDS.--WDR TX-81-3: Drainage area. WDR TX-88-3: 1985.

GAGE.--Water-stage recorder. Datum of gage is 1,264.86 ft above National Geodetic Vertical Datum of 1929. November 1923 to September 1934, nonrecording gage at site 4.2 mi downstream at datum 10.14 ft lower. Jan. 13, 1939, to Mar. 24, 1940, nonrecording gage at present site and datum.

REMARKS.--No estimated daily discharges. Records good. There are many diversions above station for irrigation, municipal supply, and for oil field operation. Flow is affected by upstream reservoirs (see stations 08126300 and 08136000), and at times by discharge from the flood-detention pools of 89 floodwater-retarding structures with a combined detention capacity of 105,100 acre-ft. These structures control runoff from 512 mi² in an area above this site.

AVERAGE DISCHARGE.--39 years (water years 1925-34, 1940-68) prior to completion of Robert Lee Dam, 628 ft³/s (455,000 acre-ft/yr); 21 years (water years 1969-89) partially regulated, 274 ft³/s (198,500 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 76,100 ft³/s Oct. 15, 1930 (gage height, 51.8 ft, present site and datum); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Highest stages since 1882 were 62.2 ft Sept. 19, 1936, and 56.2 ft Aug. 8, 1906, at railway bridge 1,000 ft upstream and converted to present site and datum, from information by Gulf, Colorado, and Santa Fe Railway Co.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 13,000 ft³/s June 11 at 0400 hours (gage height, 19.84 ft); minimum daily 5.3 ft³/s Sept. 8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	52	75	36	74	58	78	65	37	49	161	13	11
2	50	60	34	79	60	74	112	34	44	147	12	10
3	109	53	33	61	64	70	100	31	39	153	11	9.0
4	138	52	39	58	66	62	82	30	35	408	9.7	8.3
5	100	52	25	57	65	60	72	26	33	457	8.9	7.7
6	78	47	18	46	61	62	63	25	33	453	9.1	6.6
7	66	44	26	51	58	63	56	32	294	459	43	5.9
8	61	40	37	52	56	73	49	42	165	490	84	5.3
9	57	40	36	52	55	96	43	42	184	503	69	7.4
10	56	39	48	52	55	91	37	37	981	486	55	65
11	53	39	60	52	56	81	33	40	7380	477	125	63
12	51	40	62	51	56	71	32	29	7880	466	125	43
13	49	39	64	51	56	65	32	28	3540	356	90	61
14	49	39	77	54	56	60	36	345	2690	193	72	67
15	49	40	77	54	73	54	43	315	1820	119	62	451
16	49	37	78	54	79	52	51	2530	1390	87	71	560
17	49	37	74	54	398	52	62	1490	1260	70	169	330
18	48	37	67	54	785	52	139	1980	1040	61	63	199
19	46	38	62	56	522	52	147	1090	908	45	33	136
20	44	38	58	57	479	52	144	576	816	36	26	101
21	42	38	56	57	294	51	136	347	747	30	23	90
22	43	39	56	57	198	52	124	229	687	25	23	75
23	43	37	56	57	151	52	100	157	648	22	24	36
24	40	38	86	57	124	50	86	109	614	20	24	21
25	40	41	70	57	112	50	82	93	598	18	22	15
26	41	41	52	56	102	51	79	87	574	17	19	25
27	42	42	48	58	91	50	66	76	555	17	17	33
28	42	42	48	62	83	55	55	67	540	17	17	31
29	45	39	48	60	---	77	47	57	391	16	16	34
30	46	38	40	58	---	77	41	56	215	14	14	116
31	57	---	30	57	---	64	---	55	---	13	13	---
TOTAL	1735	1281	1601	1755	4313	1949	2214	10092	36150	5836	1362.7	2623.2
MEAN	56.0	42.7	51.6	56.6	154	62.9	73.8	326	1205	188	44.0	87.4
MAX	138	75	86	79	785	96	147	2530	7880	503	169	560
MIN	40	37	18	46	55	50	32	25	33	13	8.9	5.3
AC-FT	3440	2540	3180	3480	8550	3870	4390	20020	71700	11580	2700	5200
CAL YR 1988	TOTAL	61539	MEAN	168	MAX	2200	MIN	18	AC-FT	122100		
WTR YR 1989	TOTAL	70911.9	MEAN	194	MAX	7880	MIN	5.3	AC-FT	140700		

COLORADO RIVER BASIN

08141000 HORDS CREEK LAKE NEAR VALERA, TX

LOCATION.--Lat 31°49'58", Long 99°33'38", Coleman County, Hydrologic Unit 12090108, at outlet-works structure near right end of dam on Hords Creek, 5.6 mi north of Valera, and 8.8 mi west of Coleman.

DRAINAGE AREA.--48 mi², approximately.

PERIOD OF RECORD.--April 1948 to current year. Prior to October 1970, published as Hords Creek Reservoir.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929.

REMARKS.--The lake is formed by a rolled earthfill dam 6,800 ft long, including spillway. Deliberate impoundment of water began Apr. 7, 1948, and the dam was completed in June 1948. The spillway is an excavated channel through natural ground, 500 ft wide, located about 600 ft from the right end of dam. The spillway consists of three concrete conduits; two controlled by 5.0- by 6.0-foot slide gates, and a third uncontrolled ogee spillway 4.0 ft wide and 19.5 ft high. The lake is operated for flood control and municipal water supply for the city of Coleman. The capacity table of August 1974 is based on a sedimentation survey made in 1948. Flow is affected at times by discharge from the flood-detention pool of one floodwater-retarding structure with a detention capacity of 1,370 acre-ft. This structure controls runoff from 6.82 mi² in the Jim Ned Creek drainage basin. 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.....	1,939.0	-
Design flood.....	1,933.6	-
Crest of spillway.....	1,920.0	24,730
Crest of spillway (top of conservation pool).....	1,900.0	8,110
Lowest gated outlet (invert).....	1,856.0	3

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

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 12,790 acre-ft May 1, 1956 (elevation, 1,906.86 ft); minimum since first appreciable storage in June 1951, 1,550 acre-ft Sept. 2, 1984 (elevation, 1,878.01 ft).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 4,590 acre-ft Oct. 1 at 0100 hours (elevation, 1,891.41 ft); minimum, 3,310 acre-ft Sept. 9 (elevation, 1,886.91 ft).

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

1,886.0	3,090	1,890.0	4,160
1,888.0	3,600	1,892.0	4,780

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4580	4420	4240	4170	4100	4140	4060	3930	4020	3880	3630	3390
2	4570	4410	4240	4170	4100	4140	4050	3920	4010	3870	3620	3380
3	4570	4400	4230	4160	4090	4140	4050	3920	4000	3870	3610	3370
4	4560	4390	4230	4160	4090	4130	4040	3910	4020	3860	3600	3360
5	4550	4390	4230	4160	4080	4140	4040	3900	4010	3850	3590	3350
6	4550	4380	4230	4160	4080	4140	4030	3900	4000	3840	3580	3340
7	4540	4370	4220	4150	4080	4140	4020	3890	3990	3840	3590	3340
8	4540	4360	4220	4150	4080	4130	4010	3880	3980	3830	3580	3320
9	4530	4360	4240	4150	4070	4130	4000	3880	3980	3820	3570	3340
10	4520	4360	4240	4140	4070	4130	4000	3890	4010	3810	3570	3330
11	4510	4360	4240	4140	4070	4120	3990	3900	4010	3800	3560	3340
12	4510	4350	4240	4140	4070	4120	3990	3900	4010	3790	3550	3330
13	4500	4340	4230	4140	4060	4120	4010	3900	4020	3780	3540	3610
14	4490	4340	4230	4130	4060	4110	4010	3900	4020	3780	3540	3610
15	4480	4330	4220	4130	4080	4110	4010	3890	4010	3780	3530	3610
16	4480	4320	4220	4130	4110	4110	4010	3910	4000	3760	3520	3610
17	4470	4320	4220	4120	4160	4100	4000	4120	3990	3750	3520	3600
18	4460	4310	4210	4120	4160	4100	4000	4120	3980	3740	3510	3590
19	4460	4310	4210	4120	4160	4090	4000	4110	3980	3730	3500	3590
20	4450	4300	4210	4110	4160	4090	3990	4120	3970	3720	3500	3580
21	4450	4300	4210	4110	4160	4080	3990	4110	3960	3710	3480	3570
22	4440	4290	4200	4110	4160	4080	3980	4110	3950	3700	3480	3570
23	4440	4280	4200	4110	4150	4080	3970	4110	3940	3700	3470	3550
24	4430	4280	4200	4100	4150	4070	3970	4100	3940	3700	3460	3550
25	4430	4280	4190	4100	4150	4070	3960	4090	3930	3690	3450	3540
26	4420	4270	4190	4100	4150	4070	3960	4080	3920	3680	3440	3540
27	4420	4260	4190	4100	4140	4070	3950	4070	3920	3680	3430	3530
28	4410	4260	4180	4110	4140	4080	3940	4060	3910	3670	3420	3530
29	4400	4250	4180	4110	---	4080	3940	4060	3900	3660	3410	3520
30	4400	4250	4180	4100	---	4070	3930	4040	3890	3650	3410	3520
31	4420	---	4170	4100	---	4070	---	4030	---	3640	3400	---
MAX	4580	4420	4240	4170	4160	4140	4060	4120	4020	3880	3630	3610
MIN	4400	4250	4170	4100	4060	4070	3930	3880	3890	3640	3400	3320
(↑)	1890.86	1890.30	1890.06	1889.81	1889.95	1889.70	1889.22	1889.57	1889.08	1888.17	1887.24	1887.71
(Φ)	-170	-170	-80	-70	+40	-70	-140	+100	-140	-250	-240	+120
CAL YR 1988	MAX 6110	MIN 4170	(Φ) -1940									
WTR YR 1989	MAX 4580	MIN 3320	(Φ) -1070									

(↑) Elevation, in feet, at end of month.
(Φ) Change in contents, in acre-feet.

COLORADO RIVER BASIN

87

08141500 HORDS CREEK NEAR VALERA, TX

LOCATION.--Lat 31°50'03", long 99°32'26", Coleman County, Hydrologic Unit 12090108, on right bank 74 ft downstream and 50 ft south of bridge on Farm Road 503, 1.1 mi downstream from Hords Creek Dam, 5.7 mi north of Valera, 7.5 mi west of Coleman, and 27.4 mi upstream from mouth.

DRAINAGE AREA.--54.2 mi², approximately, of which 49.3 mi² is above Hords Creek Dam.

PERIOD OF RECORD.--April 1947 to current year.

Water-quality records.--Chemical and biochemical analyses: October 1980 to September 1982.

REVISED RECORDS.--WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,826.72 ft above National Geodetic Vertical Datum of 1929 (U.S. Army Corps of Engineers bench mark). Prior to Oct. 1, 1979, at site 0.5 mi downstream at datum 6.84 ft lower.

REMARKS.--No estimated daily discharges. Records good. Flow is regulated by Hords Creek Lake (station 08141000) 1.1 mi upstream.

AVERAGE DISCHARGE.--42 years (water years 1948-89), 1.39 ft³/s (1,010 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,860 ft³/s Apr. 30, 1956 (gage height, 14.73 ft), at site 0.5 mi downstream at datum 6.84 ft lower, from rating curve extended above 1,900 ft³/s; no flow at times each year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1900, 23.0 ft July 3, 1932, from information by local residents (discharge not determined). Flood in July or September 1900 reached a stage 3.7 ft higher than that of July 1932, at site 12 mi downstream from station, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 562 ft³/s May 17 at 0430 hours (gage height, 4.18 ft); no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.01	.04	.04	.01	.22	.05	.00	.00
2	.00	.00	.00	.00	.01	.04	.04	.01	.68	.04	.00	.00
3	.00	.00	.00	.00	.02	.04	.04	.01	.87	.04	.00	.00
4	.00	.00	.00	.00	.02	.03	.04	.01	1.8	.04	.00	.00
5	.00	.00	.00	.00	.02	.04	.03	.01	1.1	.03	.00	.00
6	.00	.00	.00	.00	.02	.04	.03	.01	.88	.03	.00	.00
7	.00	.00	.00	.00	.02	.05	.03	.01	.83	.03	.00	.00
8	.00	.00	.00	.00	.02	.06	.03	.01	.87	.02	.00	.00
9	.00	.00	.00	.00	.02	.06	.03	.01	.94	.02	.00	.00
10	.00	.00	.00	.00	.02	.06	.03	.01	.93	.02	.00	.00
11	.00	.00	.00	.00	.02	.06	.03	.02	1.6	.01	.00	.00
12	.00	.00	.00	.00	.02	.06	.03	.02	.74	.00	.00	.00
13	.00	.00	.00	.00	.02	.06	.03	.02	.57	.00	.00	.17
14	.00	.00	.00	.00	.02	.06	.03	.02	.62	.00	.00	.00
15	.00	.00	.00	.00	.04	.05	.03	.02	.47	.00	.00	.00
16	.00	.00	.00	.00	.04	.04	.03	.03	.38	.00	.00	.00
17	.00	.00	.00	.00	.39	.04	.03	.72	.28	.00	.00	.00
18	.00	.00	.00	.00	.19	.04	.03	2.2	.22	.00	.00	.00
19	.00	.00	.00	.00	.11	.04	.03	2.5	.20	.00	.00	.00
20	.00	.00	.00	.00	.09	.05	.03	1.4	.15	.00	.00	.00
21	.00	.00	.00	.00	.07	.05	.03	1.1	.12	.00	.00	.00
22	.00	.00	.00	.00	.06	.04	.03	.56	.09	.00	.00	.00
23	.00	.00	.00	.00	.05	.04	.03	.38	.07	.00	.00	.00
24	.00	.00	.00	.00	.05	.04	.03	.31	.07	.00	.00	.00
25	.00	.00	.00	.00	.05	.05	.03	.25	.07	.00	.00	.00
26	.00	.00	.00	.00	.05	.04	.03	.22	.07	.00	.00	.00
27	.00	.00	.00	.01	.05	.04	.03	.19	.06	.00	.00	.00
28	.00	.00	.00	.01	.04	.04	.02	.18	.06	.00	.00	.00
29	.00	.00	.00	.01	---	.05	.02	.15	.06	.00	.00	.00
30	.00	.00	.00	.01	---	.05	.02	.14	.06	.00	.00	.00
31	.00	---	.00	.01	---	.04	---	.11	---	.00	.00	---
TOTAL	0.00	0.00	0.00	0.05	1.54	1.44	0.91	81.92	15.08	0.33	0.00	0.17
MEAN	.00	.00	.00	.002	.055	.046	.030	2.64	.50	.011	.00	.006
MAX	.00	.00	.00	.01	.39	.06	.04	.72	1.8	.05	.00	.17
MIN	.00	.00	.00	.00	.01	.03	.02	.01	.06	.00	.00	.00
AC-FT	.0	.0	.0	.1	3.1	2.9	1.8	162	30	.7	.0	.3
CAL YR 1988	TOTAL	21.36	MEAN	.058	MAX	8.0	MIN	.00	AC-FT	42		
WTR YR 1989	TOTAL	101.44	MEAN	.28	MAX	72	MIN	.00	AC-FT	201		

COLORADO RIVER BASIN

08143600 PECAN BAYOU NEAR MULLIN, TX

LOCATION.--Lat 31°31'02", long 98°44'25", Mills County, Hydrologic Unit 12090107, on right bank 44 ft downstream from bridge on Farm Road 573, 0.6 mi downstream from Blanket Creek, 5.5 mi southwest of Mullin, and 13.6 mi upstream from mouth.

DRAINAGE AREA.--2,073 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1967 to current year.

REVISED RECORDS.--WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,202.93 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Flow is affected by Lake Brownwood (capacity, 143,400 acre-ft) 47 mi upstream. At end of year, flow from 152 mi² above this station and below Lake Brownwood was partly controlled by 41 floodwater-retarding structures with a combined detention capacity of 43,420 acre-ft below the flood-spillway crests. Gage-height telemeter at station.

AVERAGE DISCHARGE.--22 years, 117 ft³/s (84,770 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,400 ft³/s June 11, 1989 (gage height, 31.06 ft), from rating curve extended above 13,400 ft³/s; no flow at times in 1974, 1978, 1980-81, 1984-85, and 1989.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 15,400 ft³/s June 11 at 0200 hours (gage height, 31.06 ft), from rating curve extended above 13,400 ft³/s; no flow part of Sept. 11.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.28	14	3.7	6.9	9.8	8.3	19	5.6	.87	12	1.5	.12
2	.25	12	3.8	6.7	8.9	8.3	12	4.2	.78	7.7	3.0	.07
3	.25	7.2	4.1	6.3	13	8.2	8.3	2.6	.61	5.3	3.7	.04
4	.20	5.3	3.9	6.2	10	9.7	6.9	1.9	.54	3.7	1.2	.04
5	.77	4.5	4.9	5.8	9.0	9.5	6.0	2.3	.54	2.4	.87	.04
6	1.0	4.5	5.5	5.5	9.2	7.8	5.1	3.7	1.1	1.7	.87	.03
7	.98	4.2	5.5	6.9	7.7	6.7	4.3	4.7	7.2	1.5	151	.02
8	.70	3.7	4.7	7.2	7.4	6.7	5.0	4.8	7.2	2.2	200	.02
9	.54	3.5	4.5	6.9	7.2	6.7	6.6	4.9	6.5	3.7	46	.01
10	.49	3.3	12	9.2	7.0	6.7	8.4	4.9	1320	2.4	17	.01
11	.36	3.3	13	7.1	6.2	6.7	6.3	4.9	10500	2.4	9.1	.01
12	.29	3.3	12	6.4	6.2	6.7	5.8	4.1	2630	2.4	6.2	.02
13	.22	3.3	10	6.9	6.2	6.7	6.4	11	1050	1.9	4.4	.02
14	.29	4.2	7.6	7.6	6.0	6.7	8.6	28	751	1.2	3.4	.03
15	.45	5.5	6.7	7.7	7.9	6.1	23	21	446	.75	3.3	1.4
16	.49	4.2	7.2	8.4	39	6.2	17	16	228	.64	3.7	9.0
17	.54	3.2	6.8	9.1	216	6.2	12	73	127	.37	5.7	5.0
18	.43	3.2	6.2	8.3	507	6.2	8.7	47	86	.25	6.0	2.4
19	.25	3.9	6.2	7.6	86	6.8	7.1	23	67	.20	5.2	1.3
20	.17	4.0	6.2	7.0	36	8.2	6.4	13	43	.16	3.7	1.1
21	.12	3.9	6.2	11	25	7.3	6.2	9.7	27	.16	2.3	.69
22	.09	4.1	6.2	12	19	7.1	6.2	7.3	21	.16	1.5	.64
23	.08	4.1	6.7	13	15	12	6.5	6.3	16	.16	1.2	.42
24	.07	4.4	7.2	12	13	11	5.0	6.1	13	.16	.69	.31
25	.06	4.9	7.2	11	11	7.2	4.9	4.4	11	1.7	.64	.25
26	.06	4.8	7.0	9.6	9.1	6.2	4.7	3.2	8.3	6.7	.45	.14
27	.05	4.1	7.2	8.6	7.3	6.0	4.6	3.0	7.2	5.8	.35	.13
28	.05	4.4	6.7	14	8.3	59	4.8	2.7	30	3.4	.25	.13
29	1.7	4.7	7.0	19	---	417	4.4	1.8	62	2.2	.20	.13
30	3.0	4.0	7.2	20	---	92	5.8	1.3	20	1.7	.20	.13
31	4.2	---	7.2	13	---	36	---	.99	---	1.7	.15	---
TOTAL	18.43	143.7	210.3	286.9	1113.4	805.9	236.0	327.39	17488.84	76.71	483.77	23.65
MEAN	.59	4.79	6.78	9.25	39.8	26.0	7.87	10.6	583	2.47	15.6	.79
MAX	4.2	14	13	20	507	417	23	73	10500	12	200	9.0
MIN	.05	3.2	3.7	5.5	6.0	6.0	4.3	.99	.54	.16	.15	.01
AC-FT	37	285	417	569	2210	1600	468	649	34690	152	960	47
CAL YR 1988	TOTAL	28374.11	MEAN	77.5	MAX	6720	MIN	.05	AC-FT	56280		
WTR YR 1989	TOTAL	21214.99	MEAN	58.1	MAX	10500	MIN	.01	AC-FT	42080		

08143600 PECAN BAYOU NEAR MULLIN, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: October 1967 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1967 to current year.

WATER TEMPERATURES: October 1967 to current year.

REMARKS.--Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 2,230 microsiemens May 14, 1978; minimum daily, 200 microsiemens July 24, 1984.

WATER TEMPERATURES: Maximum daily, 37.0°C July 18, 1979; minimum daily, 0.5°C Feb. 7, 1979.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,600 microsiemens Oct. 29; minimum daily, 230 microsiemens June 11.

WATER TEMPERATURE: Maximum daily, 30.0°C May 29; minimum daily, 5.0°C Feb. 4.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
OCT 17...	1550	0.59	1430	21.5	370	140	95	32	150
NOV 21...	1420	4.2	1290	11.5	360	150	93	30	140
JAN 30...	1150	19	1210	10.5	330	130	95	23	120
MAR 27...	1410	5.2	1150	20.0	310	130	83	26	120
JUN 26...	1700	8.6	570	29.5	190	38	54	13	33
AUG 09...	1000	44	738	25.5	190	66	57	12	69

DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CAC03	SULFATE DIS- SOLVED (MG/L AS S04)	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 CONSTITUENTS, DIS- SOLVED (MG/L)
OCT 17...	4	11	228	140	260	0.40	7.1	832
NOV 21...	3	10	210	140	230	0.50	11	780
JAN 30...	3	8.5	205	130	200	0.50	3.6	704
MAR 27...	3	13	184	120	200	0.40	1.9	675
JUN 26...	1	6.8	151	37	56	0.20	9.0	300
AUG 09...	2	8.9	126	62	110	0.40	11	406

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1988 TO SEPTEMBER 1989

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	DIS- SOLVED SOLIDS (MG/L)	DIS- SOLVED SOLIDS (TONS)	DIS- SOLVED CHLORIDE (MG/L)	DIS- SOLVED CHLORIDE (TONS)	DIS- SOLVED SULFATE (MG/L)	DIS- SOLVED SULFATE (TONS)	HARDNESS (CA, MG) (MG/L)
OCT. 1988	18.43	1450	793	39	290	14	97	4.8	290
NOV. 1988	143.7	1320	725	281	250	97	91	35	280
DEC. 1988	210.3	1220	669	380	220	127	86	49	270
JAN. 1989	286.9	1240	679	526	230	176	87	67	280
FEB. 1989	1113.4	688	380	1140	110	316	53	159	190
MAR. 1989	805.9	852	470	1020	140	296	64	140	220
APR. 1989	236.0	875	482	307	140	91	65	42	220
MAY 1989	327.39	1160	636	562	210	183	82	73	270
JUNE 1989	17488.84	302	167	7900	40	1880	25	1160	91
JULY 1989	76.71	933	514	106	160	32	69	14	230
AUG. 1989	483.77	725	400	523	110	144	56	73	200
SEPT 1989	23.65	681	376	24	100	6.5	53	3.4	190
TOTAL	21214.99	**	**	12800	**	3360	**	1820	**
WTD. AVG.	58	405	224	**	59	**	32	**	110

COLORADO RIVER BASIN

08143600 PECAN BAYOU NEAR MULLIN, TX--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
EQUIVALENT MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e1400	1460	1320	1250	1340	672	638	1140	1290	666	1200	762
2	1390	1340	1320	1260	1330	776	626	1140	1250	723	1190	766
3	1420	1280	1320	1240	1280	766	652	1320	1240	785	1060	767
4	e1420	1280	1320	1230	1280	766	626	1330	1240	831	1010	775
5	1430	1280	1320	1230	1270	765	623	1320	1240	862	993	783
6	1420	1280	1320	1240	1270	686	626	1330	1060	884	960	785
7	1430	1280	1070	1240	1260	684	626	1330	1050	904	772	794
8	1440	1310	1060	1240	1290	760	622	1330	1050	926	620	805
9	1440	1300	1070	1250	1260	779	624	1350	1050	931	728	814
10	1440	1320	1070	1240	1090	951	741	1330	950	975	872	826
11	1440	1320	1070	1240	1200	958	811	1330	230	999	947	828
12	1440	1320	1070	1210	1210	958	813	1330	258	1020	960	830
13	1440	1320	1190	1210	1060	960	813	1390	259	1040	952	836
14	1440	1320	1190	1150	1060	963	1000	1070	262	1040	913	834
15	1440	1320	1230	1160	1070	956	1010	1090	284	1040	878	798
16	1440	1320	1230	1150	1070	1080	994	1100	300	1040	837	728
17	1440	1320	1230	1150	607	1080	1000	1090	350	1040	806	680
18	1430	1330	1230	1140	594	1080	1000	1100	386	1050	778	621
19	1450	1320	1280	1140	597	1080	990	1070	414	1060	757	596
20	1440	1320	1280	1200	594	1080	1010	1250	459	1070	743	586
21	1420	1330	1280	1210	594	1080	1010	1250	492	1080	737	579
22	1400	1320	1290	1210	664	1140	950	1250	492	1080	735	579
23	1380	1320	1270	1210	664	648	948	1240	507	1080	729	583
24	1400	1300	1280	1230	665	e770	1130	1240	525	1090	731	594
25	1380	1300	1280	1260	666	e870	1130	1240	540	1100	732	600
26	1440	1310	1290	1230	673	e970	1070	1240	553	1080	738	605
27	1480	1300	1290	1260	672	1150	1100	1240	571	1140	748	613
28	1480	1300	1290	1320	670	e1000	1100	1250	590	1200	746	617
29	1600	1290	1290	1320	---	e850	1100	1240	560	1240	751	622
30	1460	1280	1260	1320	---	e750	1100	1230	577	1250	760	624
31	1420	---	1260	1310	---	e700	---	1230	---	1240	770	---
MEAN	1440	1310	1230	1230	964	894	883	1240	668	1020	844	708

e Estimated

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	19.0	16.0	11.0	15.0	10.0	19.0	24.0	28.0	27.0	28.0	27.0
2	23.0	21.0	16.0	13.0	13.0	12.0	19.0	26.0	27.0	27.0	27.0	27.0
3	23.0	20.0	14.0	13.0	6.0	9.0	18.0	25.0	28.0	27.0	27.0	27.0
4	---	22.0	19.0	13.0	5.0	13.0	21.0	26.0	26.0	28.0	27.0	27.0
5	24.0	21.0	15.0	15.0	6.0	11.0	22.0	26.0	28.0	28.0	28.0	27.0
6	22.0	20.0	11.0	14.0	7.0	12.0	23.0	27.0	27.0	28.0	28.0	26.0
7	25.0	22.0	13.0	13.0	8.0	10.0	19.0	26.0	28.0	28.0	28.0	26.0
8	24.0	22.0	10.0	13.0	8.0	13.0	23.0	27.0	26.0	28.0	24.0	26.0
9	26.0	21.0	11.0	12.0	8.0	14.0	19.0	27.0	27.0	27.0	25.0	26.0
10	23.0	20.0	11.0	14.0	9.0	15.0	19.0	25.0	26.0	28.0	24.0	25.0
11	23.0	21.0	10.0	13.0	13.0	17.0	22.0	23.0	24.0	28.0	25.0	24.0
12	23.0	19.0	11.0	12.0	10.0	17.0	19.0	24.0	24.0	28.0	25.0	24.0
13	23.0	17.0	13.0	8.0	11.0	16.0	19.0	23.0	21.0	28.0	25.0	25.0
14	22.0	19.0	12.0	10.0	13.0	14.0	20.0	27.0	24.0	28.0	25.0	20.0
15	23.0	20.0	10.0	13.0	11.0	17.0	21.0	29.0	22.0	28.0	25.0	20.0
16	24.0	19.0	11.0	15.0	9.0	18.0	22.0	28.0	22.0	28.0	26.0	21.0
17	23.0	18.0	7.0	14.0	8.0	17.0	22.0	28.0	23.0	28.0	26.0	21.0
18	22.5	17.0	9.0	10.0	9.0	17.0	20.0	25.0	25.0	28.0	26.0	21.0
19	23.0	14.0	7.0	13.0	9.0	18.0	23.0	28.0	26.0	29.0	27.0	22.0
20	23.0	14.0	10.0	11.0	10.0	17.0	22.0	29.0	27.0	27.0	27.0	21.0
21	22.5	13.0	8.0	10.0	12.0	13.0	22.0	26.0	27.0	26.0	28.0	22.0
22	24.0	14.0	9.0	11.0	11.0	19.0	23.0	27.0	27.0	25.0	27.0	22.0
23	26.0	14.0	7.5	9.0	10.0	18.0	20.0	28.0	27.0	26.0	28.0	20.0
24	23.0	15.0	11.0	10.0	9.0	20.0	23.0	27.0	27.0	25.0	28.0	17.0
25	23.0	15.0	11.0	13.0	10.0	21.0	21.0	28.0	26.0	25.0	27.0	16.0
26	22.0	14.0	14.0	11.0	11.0	19.0	25.0	28.0	26.0	26.0	27.0	16.0
27	21.0	16.0	13.0	10.0	10.0	20.0	22.0	27.0	26.0	26.0	27.0	16.0
28	20.0	15.0	13.0	10.0	9.0	19.0	24.0	27.0	26.0	26.0	27.0	16.0
29	21.0	15.0	13.0	11.0	---	17.0	24.0	30.0	27.0	27.0	27.0	16.0
30	20.0	13.0	12.0	13.0	---	18.0	22.0	28.0	26.0	27.0	27.0	16.0
31	19.0	---	11.0	14.0	---	20.0	---	26.0	---	27.0	27.0	---
MEAN	23.0	17.5	11.5	12.0	9.5	16.0	21.5	26.5	26.0	27.0	26.5	22.0

COLORADO RIVER BASIN

91

08144500 SAN SABA RIVER AT MENARD, TX

LOCATION.--Lat 30°55'08", long 99°47'07", Menard County, Hydrologic Unit 12090109, at downstream side of bridge on U.S. Highway 83 in Menard, 1.1 mi downstream from Las Moras Creek, 1.9 mi upstream from Volkmann Draw, and 116.3 mi upstream from mouth.

DRAINAGE AREA.--1,135 mi², of which 6.6 mi² probably is noncontributing.

PERIOD OF RECORD.--September 1915 to current year.

REVISED RECORDS.--WDR TX-81-3: Drainage area. WSP 1512: 1918-20, 1922-25, 1926(M), 1927-32, 1934(M), 1936, 1938(M).

GAGE.--Water-stage recorder. Datum of gage is 1,863.05 ft above National Geodetic Vertical Datum of 1929. Sept. 14, 1915, to Mar. 12, 1924, nonrecording gage at site 635 ft downstream at datum 2.20 ft lower. Mar. 13, 1924, to Feb. 21, 1939, nonrecording gage at site 1,000 ft upstream at datum 2.00 ft higher. Feb. 22, 1939, to Jan. 25, 1940, nonrecording gage at present site and datum. Jan. 26, 1940, to Sept. 19, 1957, water-stage recorder at site 240 ft to right at present datum. Feb. 8, 1962, to Jan. 22, 1963, nonrecording gage at site 600 ft downstream at present datum.

REMARKS.--No estimated daily discharges. Records good. Since about 1890, low flow regulated during irrigation season by diversions to Noyes Canal 4.5 mi upstream and diversions by pumping at several locations upstream. Records of the Texas Department of Water Resources show that permits have been granted to irrigate 3,338 acres above this station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--74 years, 60.8 ft³/s (44,050 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 130,000 ft³/s July 23, 1938 (gage height, 22.2 ft, from floodmark), present site and datum, from rating curve extended above 56,000 ft³/s on basis of slope-area measurement of peak flow; no flow at times as result of upstream diversion to Noyes Canal (station 08144000).

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1880, 23.3 ft June 6, 1899, present site and datum, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 670 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 20	2230	*68	*4.20				

Minimum daily discharge, 3.2 ft³/s July 20, 21.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	26	24	30	24	31	24	27	20	8.1	5.8	9.3
2	24	25	24	31	25	32	24	28	27	7.5	6.0	9.4
3	23	23	24	29	26	32	24	22	29	6.6	5.8	9.4
4	22	23	25	22	22	30	23	20	25	6.1	7.1	9.6
5	22	23	25	21	21	28	21	20	21	5.9	5.9	10
6	21	23	25	21	24	28	22	19	29	5.4	8.9	9.4
7	20	23	25	21	28	28	21	19	24	5.2	15	9.3
8	21	22	28	20	29	29	21	20	19	5.8	19	9.4
9	21	22	30	20	29	29	19	19	24	8.3	18	9.6
10	21	22	30	20	29	29	18	19	30	8.9	14	10
11	20	22	30	20	29	28	20	17	32	9.0	11	25
12	20	23	28	21	28	28	23	30	22	7.7	11	30
13	20	23	27	21	29	25	29	32	19	6.8	11	25
14	21	24	27	23	29	28	34	34	18	5.9	12	29
15	21	23	27	23	40	38	34	58	18	5.7	12	27
16	22	23	27	22	51	38	34	41	17	4.7	16	25
17	23	22	26	22	65	35	30	42	16	4.6	21	23
18	25	22	26	22	64	34	25	42	14	4.4	20	17
19	26	23	27	23	54	30	22	37	13	3.7	14	15
20	28	23	27	24	43	26	22	41	12	3.2	13	14
21	22	23	29	23	37	22	22	51	11	3.2	12	13
22	20	24	29	23	34	28	22	38	10	3.7	11	13
23	21	24	29	22	33	25	21	35	9.2	5.0	10	13
24	20	24	29	22	32	22	19	34	9.2	7.8	10	12
25	20	25	28	22	32	23	20	33	9.2	8.8	10	12
26	20	26	30	23	34	23	19	31	9.3	7.2	10	12
27	20	26	29	30	31	22	19	25	9.2	7.1	10	12
28	20	25	29	34	30	40	21	21	9.2	7.1	10	15
29	20	25	28	34	---	40	20	20	9.0	6.4	10	15
30	21	24	29	26	---	35	19	19	8.5	5.8	11	12
31	23	---	31	24	---	29	---	19	---	5.7	11	---
TOTAL	674	706	852	739	952	915	692	913	522.8	191.3	361.5	454.4
MEAN	21.7	23.5	27.5	23.8	34.0	29.5	23.1	29.5	17.4	6.17	11.7	15.1
MAX	28	26	31	34	65	40	34	58	32	9.0	21	30
MIN	20	22	24	20	21	22	18	17	8.5	3.2	5.8	9.3
AC-FT	1340	1400	1690	1470	1890	1810	1370	1810	1040	379	717	901
CAL YR 1988	TOTAL	9710.6	MEAN	26.5	MAX	457	MIN	9.6	AC-FT	19260		
WTR YR 1989	TOTAL	7973.0	MEAN	21.8	MAX	65	MIN	3.2	AC-FT	15810		

COLORADO RIVER BASIN

08144600 SAN SABA RIVER NEAR BRADY, TX

LOCATION.--Lat 31°00'14", long 99°16'07", McCulloch County, Hydrologic Unit 12090109, on right bank at downstream side of bridge on U.S. Highways 87 and 377, 0.4 mi upstream from Hudson Branch, and 8.4 mi southeast of Brady, and 72.9 mi upstream from mouth.

DRAINAGE AREA.--1,633 mi², of which 6.60 mi² probably is noncontributing.

PERIOD OF RECORD.--July 1979 to current year.

GAGE.--Water-stage recorder and crest-stage gages. Datum of gage is 1,530.98 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are poor. There are diversions above station for irrigation (see station 08144000). Several observations of water temperature were made during the year. Gage-height telemeter at station.

AVERAGE DISCHARGE.--10 years, 66.2 ft³/s (47,960 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 66,000 ft³/s Sept. 8, 1980 (gage height, 25.50 ft); minimum, 0.24 ft³/s Aug. 1, 1980.

EXTREMES OUTSIDE PERIOD OF RECORD.--Highest stage since June 1899, 33.8 ft July 23, 1938, from high-water mark on left bank 150 ft upstream from present site.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 14	2330	*13,600	*11.61	May 21	0100	1,060	4.61
May 17	0200	2,300	6.02				

Minimum daily discharge, 2.0 ft³/s July 26.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	27	29	38	44	54	52	60	14	14	3.6	8.5
2	29	27	27	38	43	54	50	42	141	13	3.3	9.9
3	37	30	28	38	44	54	50	39	50	13	2.5	11
4	37	31	29	38	43	52	50	41	63	11	2.5	11
5	37	30	26	39	43	52	45	43	65	9.0	2.3	12
6	34	29	27	37	41	50	40	34	31	7.8	2.5	15
7	26	27	30	34	41	48	40	31	33	7.4	4.4	15
8	25	26	31	32	40	48	46	25	26	6.5	6.8	16
9	23	26	31	30	38	48	48	23	45	6.4	7.0	16
10	23	23	38	36	39	47	45	24	85	5.4	6.5	16
11	24	19	41	38	40	46	45	24	92	4.8	7.1	29
12	26	19	41	38	41	44	45	24	21	4.2	7.7	123
13	26	19	41	39	43	43	51	26	22	3.8	8.6	44
14	24	23	39	41	41	41	55	522	e22	6.1	8.7	26
15	21	30	37	41	46	38	52	603	e21	7.3	8.6	20
16	21	29	37	40	61	34	52	106	e20	5.5	8.3	16
17	20	25	37	40	143	40	49	549	e20	4.5	8.3	15
18	23	22	38	43	161	43	48	70	e19	4.2	8.3	19
19	28	24	37	43	124	45	39	46	e19	3.8	8.0	16
20	29	24	38	44	95	46	40	41	18	2.9	7.9	16
21	28	27	38	43	76	50	33	385	17	2.7	7.9	16
22	28	31	38	43	69	48	30	77	16	2.7	7.9	15
23	28	31	37	41	63	48	27	48	18	2.7	7.3	15
24	24	31	35	42	60	48	24	33	17	2.7	8.0	13
25	22	29	35	38	57	48	28	28	16	2.5	6.6	12
26	20	30	39	32	56	49	30	24	17	2.0	5.7	12
27	17	29	40	39	55	50	30	25	16	5.4	5.9	12
28	17	30	40	48	54	61	34	24	14	6.2	5.0	11
29	24	30	37	47	---	62	34	24	14	5.7	4.4	9.8
30	22	30	35	46	---	60	33	16	e14	5.4	4.4	8.3
31	25	---	38	45	---	58	---	13	---	4.7	7.8	---
TOTAL	794	808	1094	1231	1701	1509	1245	3070	986	183.3	193.8	578.5
MEAN	25.6	26.9	35.3	39.7	60.7	48.7	41.5	99.0	32.9	5.91	6.25	19.3
MAX	37	31	41	48	161	62	55	603	141	14	8.7	123
MIN	17	19	26	30	38	34	24	13	14	2.0	2.3	8.3
AC-FT	1570	1600	2170	2440	3370	2990	2470	6090	1960	364	384	1150

CAL YR 1988 TOTAL 13668.5 MEAN 37.3 MAX 415 MIN 6.4 AC-FT 27110
WTR YR 1989 TOTAL 13393.6 MEAN 36.7 MAX 603 MIN 2.0 AC-FT 26570

e Estimated.

COLORADO RIVER BASIN

93

08146000 SAN SABA RIVER AT SAN SABA, TX

LOCATION.--Lat 31°12'47", long 98°43'09", San Saba County, Hydrologic Unit 12090109, on right bank at downstream side of bridge on State Highway 16, 1.2 mi north of San Saba, 2.7 mi upstream from Mill Creek, 4.8 mi downstream from China Creek, and 16.8 mi upstream from mouth.

DRAINAGE AREA.--3,046 mi², of which 6.6 mi² probably is noncontributing.

PERIOD OF RECORD.--December 1904 to December 1906 (gage heights only), September 1915 to current year. Published as "near San Saba" December 1904 to December 1906 and September 1915 to August 1930.

REVISED RECORDS.--WSP 458: 1915-16. WSP 1282: WDR TX-81-3: Drainage area. WSP 1512: 1918-19(M), 1922, 1931(M), 1935 WSP 1922: 1917.

GAGE.--Water-stage recorder. Datum of gage is 1,162.16 ft above National Geodetic Vertical Datum of 1929. See WSP 1922 for brief history of changes prior to July 8, 1953. Since Oct. 1, 1956, supplementary water-stage recorder 2,780 ft to right of main channel gage used for floodflows.

REMARKS.--No estimated daily discharges. Records good. Many diversions above station for irrigation and municipal use affect low flow. Flow partly affected by Brady Creek Reservoir, capacity 90,300 acre-ft. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--74 years, 222 ft³/s (160,800 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 203,000 ft³/s July 23, 1938 (gage height, 39.3 ft, present site and datum), from rating curve extended above 41,000 ft³/s on basis of slope-area measurement of peak flow; no flow at times in 1918, 1930, 1954-56, 1963-64, and 1984. Maximum stage since at least 1899, that of July 23, 1938.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 6, 1899, reached a stage of 36.7 ft, present site and datum, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 15	1830	*5,230	*17.23	May 17	2030	3,620	13.77

Minimum discharge, 2.8 ft³/s Aug. 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	51	57	51	67	77	88	89	36	50	24	3.3	17
2	48	52	50	68	77	90	90	34	48	26	4.7	18
3	41	46	51	68	76	89	84	45	45	25	26	18
4	36	47	52	65	72	87	77	63	44	25	14	17
5	36	44	50	64	72	81	73	47	44	21	15	17
6	43	47	52	63	69	81	71	39	45	17	15	16
7	41	51	54	62	66	79	67	41	47	17	26	13
8	39	50	52	65	69	79	58	40	43	26	37	10
9	37	49	54	59	67	78	50	36	36	37	39	11
10	33	48	66	56	67	77	52	46	42	34	31	12
11	33	47	66	54	67	77	56	46	223	28	28	13
12	31	49	67	57	67	75	54	43	432	25	26	17
13	31	44	71	59	69	73	59	55	173	24	25	21
14	31	43	72	64	70	71	72	67	123	19	26	30
15	33	44	70	69	72	64	80	2110	85	18	27	27
16	35	45	65	70	80	59	80	861	64	16	28	25
17	35	45	64	67	118	59	72	1420	58	14	28	27
18	30	54	64	67	252	55	69	1020	51	18	27	25
19	28	61	64	66	291	51	67	304	47	20	26	23
20	28	49	66	68	211	60	63	187	43	15	24	25
21	26	43	65	71	173	65	58	139	42	14	21	23
22	34	44	63	68	143	64	55	300	39	16	21	22
23	41	42	65	68	120	68	51	196	36	15	22	23
24	43	45	66	68	108	67	45	142	36	17	21	23
25	41	48	62	67	102	68	39	110	35	17	21	23
26	39	49	62	64	99	67	35	87	34	14	22	23
27	38	50	63	65	94	64	33	76	34	9.1	21	23
28	33	47	65	73	90	97	35	68	32	7.0	20	22
29	29	49	67	85	---	115	29	63	27	5.3	18	21
30	29	50	67	86	---	108	33	60	24	3.8	17	21
31	40	---	68	78	---	94	---	56	---	3.5	17	---
TOTAL	1113	1439	1914	2071	2938	2350	1796	7837	2082	570.7	697.0	606
MEAN	35.9	48.0	61.7	66.8	105	75.8	59.9	253	69.4	18.4	22.5	20.2
MAX	51	61	72	86	291	115	90	2110	432	37	39	30
MIN	26	42	50	54	66	51	29	34	24	3.5	3.3	10
AC-FT	2210	2850	3800	4110	5830	4660	3560	15540	4130	1130	1380	1200

CAL YR 1988	TOTAL	22305	MEAN	60.9	MAX	393	MIN	17	AC-FT	44240
WTR YR 1989	TOTAL	25413.7	MEAN	69.6	MAX	2110	MIN	3.3	AC-FT	50410

COLORADO RIVER MAIN STEM

08147000 COLORADO RIVER NEAR SAN SABA, TX
(National stream-quality accounting network)

LOCATION.--Lat 31°13'04", long 98°33'51", San Saba-Lampasas County line, Hydrologic Unit 12090201, near left bank at downstream side of pier of bridge on U.S. Highway 190, 5.2 mi downstream from San Saba River, 9.2 mi east of San Saba, and at mile 474.3.

DRAINAGE AREA.--31,217 mi², approximately, of which 11,398 mi² probably is noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1915 to October 1922 (published as "near Chadwick"), October 1923 to August 1930 (published as "near Tow"), September 1930 to current year. Monthly discharge only for some periods, published in WSP 1312.

REVISED RECORDS.--WSP 458: 1916. WSP 858: 1900(M), 1936(M). WDR TX-81-3: Drainage area. WSP 1512: 1916-18(M), 1936. WSP 1732: 1925-26(M).

GAGE.--Water-stage recorder. Datum of gage is 1,096.22 ft above National Geodetic Vertical Datum of 1929. See WSP 1922 for brief history of changes prior to May 23, 1940.

REMARKS.--No estimated daily discharges. Records good. There are many diversions above station for irrigation, municipal use, and for oil field operation. Flow is affected by four reservoirs upstream from Winchell and one reservoir in the San Saba River and Pecan Bayou basins; combined capacity, 1,973,000 acre-ft. Flow is affected at times by discharge from the flood-detention pools of 187 floodwater-retarding structures with a combined capacity of 205,700 acre-ft. These structures control runoff from 944 mi². Gage-height telemeter at station.

AVERAGE DISCHARGE.--50 years (water years 1917-19, 1921-22, 1924-68) prior to completion of Robert Lee Dam, 1,340 ft³/s (970,100 acre-ft/yr); 21 years (water years 1969-89) partially regulated, 638 ft³/s (462,200 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 224,000 ft³/s July 23, 1938 (gage height, 63.2 ft, present site), based on floodmarks at site then in use; no flow Aug. 27-31, 1954; Aug. 3-13, 1963; July 20 to Aug. 8, Aug. 11-14, 1964.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage during period 1878 to July 22, 1938, 58.4 ft Sept. 25, 1900 (discharge, 184,000 ft³/s, present site), from floodmarks at former site.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 22,000 ft³/s June 12 at 1330 hours (gage height, 18.98 ft); minimum, 8.0 ft³/s Sept. 10-11.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	123	95	101	128	169	203	260	91	141	430	25	20
2	109	118	103	127	167	197	210	84	132	358	23	19
3	101	136	101	121	170	193	180	75	125	350	21	19
4	93	140	100	119	186	183	179	78	117	320	21	17
5	86	124	98	152	169	174	193	92	110	309	24	16
6	154	110	95	138	153	164	173	70	101	510	25	15
7	161	105	93	131	153	159	156	59	96	513	26	15
8	135	105	100	127	146	158	142	59	91	674	222	12
9	116	105	95	124	144	157	126	52	155	917	685	10
10	104	100	98	113	139	157	113	45	275	599	299	8.6
11	92	95	103	114	136	174	108	55	9270	559	201	9.3
12	86	90	112	116	138	189	106	55	20700	536	130	11
13	81	87	132	122	142	181	105	1130	12900	530	101	22
14	79	85	145	128	143	168	114	1140	7310	499	127	27
15	77	85	149	130	148	155	132	902	4440	374	76	30
16	77	76	146	135	165	144	135	2890	2930	333	63	74
17	80	76	153	136	279	137	133	6780	2030	273	54	534
18	77	78	154	135	1050	132	129	4440	1740	198	44	497
19	74	125	158	136	1630	127	127	2570	1420	158	136	338
20	70	100	157	133	965	124	168	1560	1170	130	140	236
21	68	87	149	131	781	129	228	1410	1030	108	134	178
22	66	84	145	131	592	134	219	843	926	93	81	137
23	70	85	138	134	433	136	204	631	856	80	54	109
24	74	87	137	139	341	136	191	432	804	70	26	105
25	76	96	134	143	292	137	169	343	761	63	46	94
26	74	101	134	140	261	141	148	312	726	58	42	73
27	72	99	154	148	234	140	129	237	704	55	39	59
28	70	100	152	196	215	277	118	202	669	52	37	50
29	68	99	133	167	---	625	108	182	645	43	27	43
30	66	99	128	192	---	700	94	166	628	33	21	37
31	86	---	127	182	---	349	---	151	---	27	20	---
TOTAL	2765	2972	3924	4268	9541	6180	4597	27136	73002	9252	2970	2814.9
MEAN	89.2	99.1	127	138	341	199	153	875	2433	298	95.8	93.8
MAX	161	140	158	196	1630	700	260	6780	20700	917	685	534
MIN	66	76	93	113	136	124	94	45	91	27	20	8.6
AC-FT	5480	5890	7780	8470	18920	12260	9120	53820	144800	18350	5890	5580
CAL YR 1988	TOTAL	114734	MEAN	313	MAX	9060	MIN	37	AC-FT	227600		
WTR YR 1989	TOTAL	149421.9	MEAN	409	MAX	20700	MIN	8.6	AC-FT	296400		

COLORADO RIVER MAIN STEM

95

08147000 COLORADO RIVER NEAR SAN SABA, TX--Continued
(National stream-quality accounting network)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: August 1941, September 1947 to current year. Chemical and biochemical analyses: January 1968 to current year. Pesticide analyses: January 1968 to April 1982. Sediment analyses: May 1951 to October 1962, October 1977 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: September 1947 to current year.

WATER TEMPERATURE: September 1947 to current year.

SUSPENDED SEDIMENT DISCHARGE: December 1950 to September 1962.

REMARKS.--Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 8,120 microsiemens Aug. 16, 1988; minimum daily, 150 microsiemens Sept. 14, 1981, and Jan. 1, 1985.

WATER TEMPERATURE: Maximum daily, 37.0°C Aug. 3, 1956; minimum daily, 0.0°C Jan. 29, 1948, Jan. 30, 1951.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 4,730 microsiemens Sept. 17; minimum daily, 294 microsiemens June 12.

WATER TEMPERATURE: Maximum daily, 34.0°C July 17; minimum daily, 5.0°C Feb. 5.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI, KF AGAR (COLS. PER 100 ML)
NOV 03...	1310	143	2190	8.30	19.0	20	9.9	113	1.6	150	96
FEB 10...	1320	136	1500	8.50	5.5	22	12.8	104	1.0	21	K18
MAR 15...	1145	164	1360	8.20	17.5	16	10.2	111	0.9	22	28
JUN 14...	1240	6610	832	7.60	23.0	990	6.6	80	1.2	100	140
JUL 19...	1150	150	4200	8.30	29.0	9.4	6.2	85	0.8	K14	150
AUG 10...	1040	295	3160	8.10	25.0	22	8.9	112	5.0	100	98

DATE	HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB WH WAT TOT FLD (MG/L AS CAC03)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT WH TOT FET FIELD (MG/L AS CAC03)	SULFATE DIS-SOLVED (MG/L AS S04)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)
NOV 03...	560	360	100	75	260	5	9.3	199	340	420	0.30
FEB 10...	470	280	100	54	120	2	4.5	191	230	230	0.30
MAR 15...	450	260	100	48	100	2	4.5	184	220	200	0.30
JUN 14...	200	110	48	19	87	3	7.1	90	110	130	0.30
JUL 19...	870	710	150	120	530	8	16	156	700	880	0.60
AUG 10...	630	460	120	79	420	7	14	167	500	650	0.40

DATE	SILICA, DIS-SOLVED (MG/L AS SI02)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)
NOV 03...	11	1370	1340	--	--	<0.010	<0.010	<0.100	0.100	0.030
FEB 10...	6.3	900	877	2.98	2.98	0.020	0.020	3.00	3.00	0.030
MAR 15...	4.6	858	799	2.58	2.57	0.020	0.030	2.60	2.60	--
JUN 14...	7.3	496	466	0.440	0.480	0.060	0.040	0.500	0.520	0.050
JUL 19...	6.1	2730	2500	--	--	<0.010	<0.010	<0.100	<0.100	0.050
AUG 10...	0.20	1970	1880	--	--	<0.010	<0.010	<0.100	<0.100	0.040

COLORADO RIVER MAIN STEM

08147000 COLORADO RIVER NEAR SAN SABA, TX--Continued
(National stream-quality accounting network)

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV 03...	0.020	0.87	0.90	0.050	0.010	0.020	0.06	67	26	84
FEB 10...	0.010	0.47	0.50	0.030	0.010	<0.010	--	18	6.6	93
MAR 15...	0.040	--	0.60	0.020	0.010	0.040	0.12	70	31	92
JUN 14...	0.030	0.45	0.50	0.030	0.030	0.030	0.09	1990	35500	94
JUL 19...	0.040	0.95	1.0	0.030	<0.010	<0.010	--	17	6.9	98
AUG 10...	0.030	1.1	1.1	0.110	0.020	<0.010	--	29	23	96

DATE	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)
NOV 03...	10	2	<100	<10	<1	<1	<1	2	60	<5
FEB 10...	<10	1	95	<0.5	<1	<1	<3	<1	4	<5
MAR 15...	--	--	--	--	--	--	--	--	--	--
JUN 14...	30	2	110	<0.5	<1	2	<3	3	28	2
JUL 19...	--	--	--	--	--	--	--	--	--	--
AUG 10...	<10	2	<100	<10	<1	1	<1	1	20	<1

DATE	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
NOV 03...	50	<10	<0.1	4	<1	<1	1.0	1500	10	40
FEB 10...	43	1	<0.1	<10	4	<1	<1.0	1700	<6	3
MAR 15...	--	--	--	--	--	--	--	--	--	--
JUN 14...	16	<1	<0.1	<10	2	<1	<1.0	670	<6	7
JUL 19...	--	--	--	--	--	--	--	--	--	--
AUG 10...	60	10	<0.1	8	2	<1	<1.0	2000	8	10

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1988 TO SEPTEMBER 1989

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	DIS- SOLVED SOLIDS (MG/L)	DIS- SOLVED SOLIDS (TONS)	DIS- SOLVED CHLORIDE (MG/L)	DIS- SOLVED CHLORIDE (TONS)	DIS- SOLVED SULFATE (MG/L)	DIS- SOLVED SULFATE (TONS)	HARDNESS (CA, MG/L)
OCT. 1988	2765	2980	1820	13600	620	4600	530	3960	660
NOV. 1988	2972	1990	1180	9440	350	2850	290	2300	550
DEC. 1988	3924	1640	957	10100	270	2900	210	2260	490
JAN. 1989	4268	1530	891	10300	250	2890	190	2220	470
FEB. 1989	9541	1420	824	21200	230	5920	180	4530	440
MAR. 1989	6180	1390	805	13400	220	3720	170	2830	430
APR. 1989	4597	1140	659	8180	180	2210	130	1650	360
MAY 1989	27136	817	465	34000	120	8640	84	6160	280
JUNE 1989	73002	784	454	89500	130	24800	96	18900	240
JULY 1989	9252	3650	2260	56600	820	20600	730	18300	680
AUG. 1989	2970	2330	1400	11200	450	3620	380	3040	570
SEPT 1989	2814.9	3240	2000	15200	720	5470	640	4850	620
TOTAL	149421.9	**	**	293000	**	88200	**	71100	**
WTD.AVG.	409	1230	726	**	220	**	180	**	340

COLORADO RIVER MAIN STEM

97

08147000 COLORADO RIVER NEAR SAN SABA, TX--Continued
(National stream-quality accounting network)

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
EQUIVALENT MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3590	2040	1430	1440	1500	1200	1200	1720	600	3460	2930	750
2	2770	2120	1600	1620	1540	1260	900	1610	600	3360	2900	767
3	2820	2200	1610	1550	1460	1210	800	1560	605	3200	2880	772
4	2730	2630	1560	e1550	1570	1140	810	1470	620	3160	2940	766
5	2960	2560	1510	1550	1710	1060	780	1240	651	3210	3070	e769
6	2930	2400	1570	1690	1550	1130	660	1090	e653	3640	3000	773
7	3640	2370	1580	1650	1520	1180	660	1180	e656	3700	2260	768
8	3580	2190	e1580	1590	1480	1230	690	1300	660	3900	2000	751
9	3490	2360	1570	1560	e1490	1230	727	1160	651	2640	3350	745
10	3350	2270	1520	1520	1500	1250	746	1060	796	3180	2800	e736
11	3300	2250	e1340	e1520	1500	1280	759	1110	395	3850	2480	728
12	3170	2190	1150	1520	1440	1350	780	924	294	3960	2090	700
13	3260	2050	1400	1530	1360	1390	805	360	e610	4230	1800	699
14	3170	2160	1570	1570	1350	e1390	841	1070	838	4360	2260	632
15	3020	2050	1690	1550	1400	1390	872	1100	789	4240	2050	678
16	3000	2040	1750	1490	1420	1360	995	1140	660	4180	2060	2500
17	2910	1850	1790	1470	e1780	1350	1050	940	e700	4180	2080	4730
18	2840	2070	1890	1520	2110	1320	1210	694	744	4180	2040	3610
19	e2820	1650	1850	1480	1320	1340	1310	704	1060	4100	1970	3500
20	2800	1470	1850	1480	1230	1360	1400	600	1800	4070	2340	3420
21	3040	1610	1770	1540	1320	1330	1700	605	2020	3820	1570	3120
22	2960	1760	1700	1480	1380	1340	e1650	607	2260	3780	1160	3100
23	2830	1680	1640	1530	1080	1390	1600	590	2340	3730	900	3010
24	2850	1610	1600	1550	1120	1360	1500	606	2520	3570	820	2840
25	2660	1650	1570	1600	1120	1380	1300	604	2700	3490	720	e2630
26	e2500	1630	1600	1600	1100	1370	1400	585	2890	3380	690	2420
27	2370	1550	1610	1580	1150	1400	1600	623	3000	3230	720	2300
28	2300	1480	1880	1180	1150	1350	1700	646	3160	3100	720	2150
29	2220	1660	1820	1580	---	2020	1700	635	3310	3180	730	2100
30	2220	1590	1720	1580	---	1480	1700	615	3380	3170	730	1870
31	2340	---	1570	1600	---	1350	---	615	---	3040	866	---
MEAN	2920	1970	1620	1540	1420	1330	1130	928	1400	3620	1900	1810
e Estimated												

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22.0	22.0	10.0	14.0	16.0	14.0	22.0	25.0	30.0	31.0	29.0	33.0
2	24.0	21.0	15.0	15.0	18.0	15.0	24.0	26.0	30.0	30.0	29.0	33.0
3	30.0	23.0	15.0	16.0	9.0	17.0	28.0	23.0	31.0	29.0	31.0	32.0
4	32.0	21.0	15.0	---	6.0	9.0	23.0	26.0	28.0	32.0	30.0	33.0
5	22.0	20.0	13.0	14.0	5.0	9.0	23.0	26.0	30.0	32.0	32.0	---
6	25.0	20.0	13.0	12.0	6.0	10.0	23.0	25.0	---	32.0	30.0	33.0
7	23.0	20.0	16.0	15.0	7.0	11.0	25.0	25.0	---	32.0	27.0	32.0
8	23.0	22.0	---	11.0	9.0	12.0	23.0	28.0	30.0	30.0	29.0	30.0
9	25.0	22.0	11.0	12.0	---	14.0	20.0	28.0	28.0	30.0	27.0	31.0
10	23.0	21.0	10.0	15.0	10.0	15.0	17.0	25.0	30.0	29.0	28.0	---
11	22.0	23.0	---	---	12.0	17.0	18.0	23.0	22.0	32.0	29.0	26.0
12	21.0	22.0	13.0	10.0	14.0	19.0	15.0	24.0	24.0	33.0	28.0	30.0
13	22.0	22.0	16.0	9.0	17.0	20.0	15.0	15.0	28.0	32.0	29.0	25.0
14	23.0	22.0	15.0	11.0	13.0	---	18.0	22.0	24.0	30.0	25.0	22.0
15	22.0	23.0	10.0	13.0	12.0	19.0	20.0	---	26.0	32.0	27.0	27.0
16	25.0	18.0	12.0	13.0	10.0	20.0	22.0	23.0	24.0	31.0	28.0	27.0
17	25.0	15.0	12.0	9.0	---	22.0	24.0	22.0	---	34.0	30.0	26.0
18	25.0	19.0	10.0	15.0	12.0	20.0	26.0	25.0	27.0	33.0	32.0	27.0
19	---	18.0	15.0	13.0	11.0	22.0	20.0	25.0	30.0	31.0	30.0	27.0
20	24.0	15.0	13.0	13.0	15.0	20.0	25.0	25.0	31.0	31.0	31.0	26.0
21	25.0	14.0	16.0	13.0	10.0	13.0	26.0	27.0	31.0	26.0	32.0	26.0
22	24.0	15.0	16.0	12.0	14.0	17.0	---	29.0	30.0	30.0	33.0	24.0
23	25.0	16.0	16.0	11.0	11.0	20.0	26.0	31.0	30.0	30.0	31.0	22.0
24	24.0	15.0	15.0	13.0	12.0	20.0	25.0	31.0	29.0	29.0	32.0	21.0
25	25.0	17.0	14.0	19.0	14.0	20.0	25.0	30.0	30.0	29.0	30.0	---
26	---	20.0	17.0	13.0	18.0	23.0	26.0	31.0	30.0	29.0	31.0	22.0
27	25.0	15.0	14.0	12.0	17.0	22.0	17.0	30.0	28.0	29.0	32.0	22.0
28	22.0	14.0	12.0	14.0	12.0	23.0	23.0	30.0	30.0	29.0	31.0	24.0
29	23.0	13.0	10.0	11.0	---	25.0	27.0	30.0	30.0	33.0	30.0	22.0
30	21.0	15.0	13.0	14.0	---	22.0	28.0	30.0	28.0	33.0	33.0	25.0
31	20.0	---	13.0	13.0	---	23.0	---	28.0	---	33.0	32.0	---
MEAN	24.0	19.0	13.5	13.0	12.0	18.0	22.5	26.5	28.5	31.0	30.0	27.0

COLORADO RIVER BASIN

08148000 LAKE BUCHANAN NEAR BURNET, TX

LOCATION.--Lat 30°45'04", long 98°25'06", Burnet County, Hydrologic Unit 12090201, in powerhouse at Buchanan Dam on Colorado River, 1.3 mi upstream from bridge on State Highway 29, 11 mi west of Burnet, and at mile 413.6.

DRAINAGE AREA.--31,910 mi², approximately, of which 11,398 mi² probably is noncontributing.

PERIOD OF RECORD.--May 1937 to current year. Prior to Oct. 1, 1968, published as Buchanan Reservoir.

REVISED RECORDS.--WSP 1118: Drainage area.

GAGE.--Nonrecording gage. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Lower Colorado River Authority). Prior to July 1938, temporary staff and float gages at same site and datum 0.48 ft higher.

REMARKS.--The lake is formed by two reinforced concrete multiple-arch sections, three banks of tainter gates, a 1,100-foot uncontrolled emergency concrete spillway, and natural ground. A net opening of 1,270 ft is controlled by thirty 33- by 15-foot and by seven 40- by 15-foot tainter gates. The dam was completed and storage began May 20, 1937. Water is used for power development and for irrigation below Columbus. The power generating features consist of three generating units, each with a 12,677 kilowatt capacity. A pump-back unit, with a capacity of 840 ft³/s, returns water from Inks Lake to Lake Buchanan during off-peak power demand periods. Inflow is largely regulated by twelve major reservoirs with a combined capacity of 2,438,000 acre-ft, of which 1,091,000 acre-ft is for flood control. For statement regarding regulation by Soil Conservation Service floodwater-retarding structures, see station 08147000. The capacity table is based on a 1987 survey. 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.....	1,025.5	-
Crest of gravity overflow spillway (top of conservation storage).....	1,020.0	910,800
Crest of spillway (15 ft gates).....	1,005.0	609,200
Crest of spillway (25 ft gates).....	995.0	454,100
Invert of three 12-foot-diameter penstocks.....	937.0	21,100

COOPERATION.--Capacity curve and gage-height record were furnished by the Lower Colorado River Authority.

EXTREMES (AT 2400) FOR PERIOD OF RECORD.--Maximum contents, 1,010,000 acre-ft Jan. 24, 1968 (gage height, 1,020.8 ft); minimum after initial filling of lake in July 1938, 340,800 acre-ft Sept. 8-10, 1952 (gage height, 983.4 ft).

EXTREMES (AT 2400) FOR CURRENT YEAR.--Maximum contents observed, 866,600 acre-ft June 5 (gage height, 1,018.02 ft); minimum, 668,400 acre-ft Dec. 9 (gage height, 1,008.29 ft).

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

1,008.0	663,000	1,014.0	780,800	1,017.0	844,300
1,010.0	700,800	1,015.0	801,600	1,018.0	866,100
1,012.0	740,100	1,016.0	822,800	1,019.0	888,300

RESERVOIR STORAGE (ACRE-Feet), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	725500	693600	669200	671800	682700	694900	703200	709000	771200	846900	829200	740500
2	722100	693200	669000	672200	684200	694900	704100	708200	771200	847100	827300	736600
3	719300	693200	669000	672300	683600	695300	704500	708600	771200	846700	825200	733000
4	715800	693400	669200	672200	681000	693900	704700	708400	771000	846900	823200	729600
5	713500	693200	669000	672700	680200	698700	704700	709800	771200	846000	821500	726600
6	709800	692800	669000	672700	677600	698700	704700	709600	771600	845400	820500	722900
7	706900	692800	669000	673100	676300	698700	704700	709400	771400	844900	819400	720300
8	704100	692600	669200	673100	676300	698900	705700	709200	775000	845600	817500	716400
9	702200	692400	668400	672700	676300	699100	705300	709600	774600	846500	814700	711500
10	698300	692400	669300	672500	676100	699300	704700	710600	774400	847300	812200	707400
11	695300	691800	669300	672700	676500	699500	704100	710600	778100	845600	810500	704100
12	695800	692200	669000	673300	676800	693200	704300	710600	781800	848200	808400	701400
13	695500	691800	669000	673100	676500	693600	704900	714300	814100	849100	806300	698300
14	694700	691600	669200	672900	677800	693900	704900	718600	840600	849500	804400	694300
15	694700	692400	669200	673300	678200	694100	704900	727600	859600	849700	802000	693700
16	694700	691600	668800	673100	679800	693900	704900	731200	866300	849500	799100	693400
17	694300	690900	669000	673100	681900	694300	705300	743200	866100	849500	795800	692800
18	694500	690700	668800	673500	682100	694900	705500	755000	866600	849100	792200	693200
19	694500	691600	669000	675300	684600	694900	706300	760300	866100	849300	788500	693600
20	694100	691100	669500	675300	688000	697600	706500	765000	865900	848900	785000	693700
21	694100	686300	670300	675200	689500	696200	706500	767900	864400	848200	781600	692800
22	693700	681000	670300	675200	691100	696200	706500	768700	862400	846000	777300	692800
23	694100	675700	670300	675300	691600	696200	706700	769500	858300	844100	774600	688000
24	693400	670600	670500	675700	692400	696200	707100	768700	855600	842600	771000	683800
25	693200	669700	670500	675300	693400	696600	707100	770300	852800	841500	767700	680000
26	693200	670800	670600	676600	694100	696800	707400	770700	851300	839800	762500	679400
27	692800	670500	671200	678000	695100	697000	707600	771200	847800	837800	759100	678900
28	693400	669500	670800	680400	695100	700200	707800	771000	845400	836300	756300	678700
29	693000	669300	671200	681500	---	701000	708800	771000	846700	834400	752000	678300
30	692800	669200	671400	681900	---	702600	708800	771000	847100	832700	748400	678100
31	693700	---	671800	682100	---	703400	---	771000	---	831000	744800	---
MAX	725500	693600	671800	682100	695100	703400	708800	771200	866600	849700	829200	740500
MIN	692800	669200	668400	671800	676100	693200	703200	708200	771000	831000	744800	678100
(+)	1009.63	1008.33	1008.47	1009.02	1009.70	1010.13	1010.41	1013.52	1017.13	1016.38	1012.23	1008.81
(φ)	-33900	-24500	+2600	+10300	+13000	+8300	+5400	+62200	+76100	-16100	-86200	-66700
CAL YR 1988	MAX	893500	MIN	668400	(φ)	-209600						
WTR YR 1989	MAX	866600	MIN	668400	(φ)	-49500						

(+)
(φ) Gage height, in feet, at end of month.
Change in contents, in acre-feet.

COLORADO RIVER BASIN

99

08150000 LLANO RIVER NEAR JUNCTION, TX

LOCATION.--Lat 30°30'15", long 99°44'03", Kimble County, Hydrologic Unit 12090204, on right bank 960 ft upstream from low-water crossing, 1.0 mi east of Junction, 2.6 mi downstream from bridge on Interstate Highway 10, 2.8 mi downstream from confluence of North and South Llano Rivers, 5.3 mi upstream from Johnson Fork, and 114.8 mi upstream from mouth.

DRAINAGE AREA.--1,854.14 mi², of which 5.14 mi² probably is noncontributing.

PERIOD OF RECORD.--September 1915 to current year.

REVISED RECORDS.--WSP 568: 1915-16, 1918-20, 1922. WDR TX-81-3: Drainage area. WSP 1922: 1920, 1923.

GAGE.--Water-stage recorder. Datum of gage is 1,636.32 ft above National Geodetic Vertical Datum of 1929. Prior to Aug. 14, 1925, nonrecording gage, and Aug. 14, 1925, to May 17, 1940, and Aug. 18, 1944, to Oct. 12, 1981, water-stage recorder at site 5,330 ft downstream at datum 6.0 ft lower, designated as regular gage (destroyed by flood of Oct. 13, 1981).

REMARKS.--No estimated daily discharges. Records good. There are diversions above station for irrigation. Several observations of water temperature were made during the year. Gage-height telemeter at station.

AVERAGE DISCHARGE.--74 years, 194 ft³/s (1.42 in/yr), 140,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 319,000 ft³/s June 14, 1935 (gage height, 43.3 ft at regular gage, 41.4 ft at former gage 5,330 ft downstream, from floodmarks), from rating curve extended above 54,000 ft³/s on basis of slope-area measurements of 154,000 and 319,000 ft³/s; minimum, 3.1 ft³/s Aug. 16, 17, 1956. Maximum stage since at least 1875, that of June 14, 1935.

EXTREMES OUTSIDE PERIOD OF RECORD.--There was a major flood in 1889 which was the highest known prior to June 14, 1935.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 17	1000	*324	*1.11				

Minimum daily discharge, 78 ft³/s Sept. 7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	141	149	142	143	142	162	148	144	103	93	85	80		
2	141	147	142	143	141	166	145	138	102	93	87	80		
3	140	140	142	143	140	163	143	132	97	93	93	80		
4	140	139	142	141	136	159	138	127	93	91	88	80		
5	140	137	145	140	136	153	136	124	97	91	84	80		
6	140	136	147	138	136	151	134	124	102	90	82	79		
7	140	136	146	138	136	151	131	123	99	87	91	78		
8	140	136	146	136	136	150	131	120	91	87	94	81		
9	139	137	148	136	136	149	131	120	108	87	92	80		
10	138	138	154	135	136	148	130	166	111	86	87	80		
11	138	138	150	135	136	148	130	131	158	85	87	90		
12	138	138	149	135	136	148	131	143	133	84	86	94		
13	138	138	149	137	136	145	137	137	121	84	86	93		
14	138	138	148	142	137	145	140	131	121	84	86	96		
15	138	141	146	142	142	143	139	125	119	84	86	95		
16	136	140	144	138	186	142	138	120	112	85	88	92		
17	136	138	142	136	229	146	137	261	109	86	96	89		
18	135	139	143	135	223	147	133	213	107	86	93	91		
19	135	140	143	139	207	145	133	165	104	86	87	87		
20	134	140	144	148	195	146	133	144	101	86	86	86		
21	131	140	145	143	187	140	131	135	97	86	84	86		
22	135	141	145	142	181	145	126	131	95	86	84	86		
23	135	144	142	140	178	145	122	131	94	86	84	86		
24	136	145	143	139	175	145	122	129	95	87	83	86		
25	136	146	142	140	174	145	122	124	98	87	84	84		
26	136	148	144	139	170	145	121	120	99	89	84	84		
27	135	147	144	158	167	145	118	118	99	97	84	84		
28	133	143	139	175	163	172	123	117	98	93	85	84		
29	135	142	138	158	---	169	137	110	93	92	84	84		
30	136	142	140	148	---	156	158	103	93	89	84	84		
31	149	---	143	143	---	150	---	103	---	86	80	---		
TOTAL	4262	4223	4477	4405	4497	4664	3998	4209	3149	2726	2684	2559		
MEAN	137	141	144	142	161	150	133	136	105	87.9	86.6	85.3		
MAX	149	149	154	175	229	172	158	261	158	97	96	96		
MIN	131	136	138	135	136	140	118	103	91	84	80	78		
AC-FT	8450	8380	8880	8740	8920	9250	7930	8350	6250	5410	5320	5080		
CFSM	.07	.08	.08	.08	.09	.08	.07	.07	.06	.05	.05	.05		
IN.	.09	.08	.09	.09	.09	.09	.08	.08	.06	.05	.05	.05		
CAL YR 1988	TOTAL	92530	MEAN	253	MAX	24100	MIN	126	AC-FT	183500	CFSM	.14	IN.	1.85
WTR YR 1989	TOTAL	45853	MEAN	126	MAX	261	MIN	78	AC-FT	90950	CFSM	.07	IN.	.92

COLORADO RIVER BASIN

08150700 LLANO RIVER NEAR MASON, TX

LOCATION.--Lat 30°39'38", long 99°06'32", Mason County, Hydrologic Unit 12090204, on right bank 98 ft downstream from downstream bridge on U.S. Highway 87, 1.0 mi upstream from Beaver Creek, 9.1 mi southeast of Mason, 10.2 mi downstream from James River, and 61.1 mi upstream from mouth.

DRAINAGE AREA.--3,247.14 mi², of which 5.14 mi² probably is noncontributing.

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

REVISED RECORD.--WDR TX-75-3: 1968(P). WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,230.36 ft above National Geodetic Vertical Datum of 1929. Prior to Jan. 19, 1971, at site 190 ft upstream at same datum.

REMARKS.--No estimated daily discharges. Records good. Several observations of water temperatures were made during the year. Gage-height telemeter at station.

AVERAGE DISCHARGE.--21 years (water years 1969-89), 328 ft³/s (1.37 in/yr), 237,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 260,000 ft³/s Sept. 8, 1980 (gage height, 37.00 ft, from floodmark), from rating curve extended above 151,000 ft³/s on basis of slope-area measurement and discharge measurement of 145,000 ft³/s; minimum, 16 ft³/s July 23, 1971.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1875, about 46 ft June 14, 1935 (discharge, about 380,000 ft³/s), from information by State Department of Highways and Public Transportation; at site 17.0 mi downstream discharge was 388,000 ft³/s by slope-area measurement.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 17	1400	*1,800	*4.34				

Minimum daily discharge, 72 ft³/s Aug. 26.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	182	190	e186	179	196	204	175	196	140	125	85	74
2	179	186	e186	179	193	204	169	200	140	120	83	74
3	177	182	e182	179	191	208	166	157	130	116	88	76
4	174	177	e179	179	186	205	160	148	121	114	88	78
5	171	176	e176	179	186	199	156	141	126	112	92	77
6	170	175	176	178	183	194	153	135	138	110	90	79
7	169	174	176	179	182	192	152	132	131	108	93	78
8	167	173	176	178	184	192	150	127	124	105	94	78
9	165	179	183	176	186	192	147	125	124	105	87	77
10	166	177	185	176	185	192	151	194	129	105	90	82
11	166	175	189	176	182	192	146	256	334	102	87	92
12	166	176	189	176	182	191	146	173	251	99	85	219
13	164	177	186	179	182	189	151	151	187	98	85	108
14	162	176	182	185	185	186	157	150	162	98	85	105
15	159	175	181	186	189	182	161	233	149	94	87	96
16	162	174	179	186	213	182	156	212	156	94	85	95
17	162	175	177	185	330	180	150	707	149	93	100	97
18	166	177	176	182	421	179	146	496	142	93	100	94
19	164	180	177	184	315	179	140	312	140	93	90	92
20	164	177	179	186	271	179	137	211	140	92	88	91
21	162	179	178	186	245	177	134	305	134	90	85	90
22	162	182	174	186	231	173	132	248	129	90	83	90
23	164	184	178	185	224	173	126	178	125	93	82	87
24	167	184	179	182	218	174	125	162	125	94	81	88
25	168	184	177	182	216	173	127	155	127	105	76	88
26	167	202	178	182	213	173	127	147	128	95	72	88
27	166	197	179	204	209	171	125	142	129	90	75	89
28	168	184	175	240	208	197	124	139	129	90	76	90
29	169	185	173	244	---	221	126	137	125	95	76	90
30	170	185	174	225	---	205	132	137	125	93	76	91
31	179	---	179	205	---	186	---	139	---	89	74	---
TOTAL	5197	5417	5564	5828	6106	5844	4347	6345	4389	3100	2638	2753
MEAN	168	181	179	188	218	189	145	205	146	100	85.1	91.8
MAX	182	202	189	244	421	221	175	707	334	125	100	219
MIN	159	173	173	176	182	171	124	125	121	89	72	74
AC-FT	10310	10740	11040	11560	12110	11590	8620	12590	8710	6150	5230	5460
CFSM	.05	.06	.06	.06	.07	.06	.04	.06	.05	.03	.03	.03
IN.	.06	.06	.06	.07	.07	.07	.05	.07	.05	.04	.03	.03

CAL YR 1988	TOTAL	113797	MEAN	311	MAX	29900	MIN	144	AC-FT	225700	CFSM	.10	IN.	1.30
WTR YR 1989	TOTAL	57528	MEAN	158	MAX	707	MIN	72	AC-FT	114100	CFSM	.05	IN.	.66

e Estimated.

COLORADO RIVER BASIN

101

08150800 BEAVER CREEK NEAR MASON, TX

LOCATION.--Lat 30°38'36", long 99°05'44", Mason County, Hydrologic Unit 12090204, on left bank at downstream side of downstream bridge on U.S. Highway 87, 1.8 mi upstream from Llano River, 6.4 mi downstream from Spring Creek, and 11.1 mi southeast of Mason.

DRAINAGE AREA.--215 mi².

PERIOD OF RECORD.--July 1963 to current year.

REVISED RECORDS.--WSP 2122: 1964-65. WRD TX-81-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,253.24 ft above National Geodetic Vertical Datum of 1929. Prior to Aug. 3, 1978, at site 300 ft upstream at same datum.

REMARKS.--Records good. There is no known regulation or diversion above station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--26 years, 17.2 ft³/s (1.09 in/yr), 12,460 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 66,900 ft³/s Aug. 3, 1978 (gage height, 24.0 ft, from floodmarks), from rating curve extended above 7,400 ft³/s on basis of slope-area measurements of 20,100 and 66,900 ft³/s; no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 16	0130	1,610	4.45	Sept. 12	0130	1,130	4.04
May 17	1300	*1,950	*4.70				

Minimum discharge, no flow Aug. 26, and Aug. 29 to Sept. 9.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.1	2.8	1.8	2.1	5.3	5.5	4.7	13	1.5	.44	.11	.00
2	4.9	4.1	1.8	2.1	4.8	5.5	3.8	17	1.2	.31	.11	.00
3	3.1	3.6	1.8	2.1	7.6	5.5	3.5	7.5	1.0	.22	.12	.00
4	2.3	2.5	1.8	2.1	5.8	5.4	3.3	3.8	.76	.18	.11	.00
5	1.5	1.8	1.8	2.1	4.9	5.1	2.9	2.3	1.0	.17	.11	.00
6	1.5	1.6	1.8	2.1	4.0	4.6	2.7	1.8	1.7	.17	.11	.00
7	1.5	1.4	1.8	2.3	3.6	4.3	2.6	1.7	2.0	.17	.11	.00
8	1.3	1.3	2.6	2.2	3.2	4.3	2.4	1.5	.99	.17	.07	.00
9	1.2	1.3	4.3	2.1	3.0	4.2	2.3	1.2	.63	.17	.04	.00
10	1.2	1.3	4.3	2.0	2.8	3.9	2.3	6.8	1.4	.15	.04	.44
11	1.1	1.2	4.3	1.9	2.7	3.7	2.3	19	61	.15	.04	.23
12	.96	1.2	4.2	1.9	2.6	3.4	2.4	10	25	.15	.04	164
13	.88	1.2	3.9	2.0	2.8	3.2	3.1	7.4	12	.15	.04	19
14	.85	1.2	3.3	2.1	3.0	3.0	4.3	6.0	20	.15	.06	22
15	.79	1.3	2.7	2.2	3.1	2.9	4.8	101	33	.15	.05	10
16	.79	1.3	2.5	2.3	8.2	2.8	4.3	295	15	.15	.03	5.0
17	.83	1.3	2.4	2.3	31	2.8	3.2	426	9.2	.15	.04	2.8
18	.88	1.3	2.3	2.2	40	2.8	2.7	82	6.2	.14	.04	1.9
19	.88	1.3	2.3	2.2	20	2.8	2.4	31	4.2	.13	.03	1.4
20	.88	1.3	2.3	3.3	16	3.0	2.4	21	3.4	.13	.02	1.1
21	.88	1.3	2.3	5.1	13	3.0	2.4	17	2.6	.13	.02	.84
22	.88	1.4	2.3	3.9	10	3.0	2.1	14	1.7	.12	.01	.72
23	.88	1.5	2.3	2.8	9.2	3.6	1.8	11	1.4	.11	.01	.59
24	.88	1.6	2.3	2.6	8.3	3.4	1.4	9.6	1.2	.11	.01	.53
25	.85	1.7	2.3	2.4	6.7	3.2	1.3	7.5	1.6	.11	.01	.48
26	.79	3.2	2.3	2.5	6.9	3.0	1.2	5.9	1.8	.11	.00	.44
27	.79	2.4	2.1	7.9	6.1	3.0	1.2	4.8	1.6	.11	.01	.44
28	.79	1.9	2.1	22	5.6	7.0	1.3	4.0	1.2	.11	.01	.44
29	.83	1.9	2.1	18	---	16	1.3	3.2	.83	.11	.00	.44
30	.98	1.8	2.1	10	---	10	4.2	2.3	.58	.11	.00	.44
31	2.1	---	2.1	7.7	---	6.4	---	1.7	---	.11	.00	---
TOTAL	46.09	53.0	78.3	128.5	240.2	140.3	80.6	1136.0	215.69	4.84	1.40	233.23
MEAN	1.49	1.77	2.53	4.15	8.58	4.53	2.69	36.6	7.19	.16	.045	7.77
MAX	8.1	4.1	4.3	22	40	16	4.8	426	61	.44	.12	164
MIN	.79	1.2	1.8	1.9	2.6	2.8	1.2	1.2	.58	.11	.00	.00
AC-FT	91	105	155	255	476	278	160	2250	428	9.6	2.8	463
CFSM	.01	.01	.01	.02	.04	.02	.01	.17	.03	.00	.00	.04
IN.	.01	.01	.01	.02	.04	.02	.01	.20	.04	.00	.00	.04
CAL YR 1988	TOTAL	1157.54	MEAN	3.16	MAX	43	MIN	.04	AC-FT	2300	CFSM	.01
WTR YR 1989	TOTAL	2358.15	MEAN	6.46	MAX	426	MIN	.00	AC-FT	4680	CFSM	.03
										IN.	.20	
										IN.	.41	

08151500 LLANO RIVER AT LLANO, TX

LOCATION.--Lat 30°45'04", long 98°40'10", Llano County, Hydrologic Unit 12090204, on right bank in Llano, 0.4 mi downstream from bridge on State Highway 16, 7 mi upstream from Little Llano River, and 29.3 mi upstream from mouth.

DRAINAGE AREA.--4,197.14 mi², of which 5.14 mi² probably is noncontributing.

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

Water-quality records.--Chemical analyses: April 1948 to October 1967. Chemical and Biochemical analyses: April 1979 to September 1986. Sediment analyses: September 1964, April 1979 to September 1986.

REVISED RECORDS.--WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 970.01 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. There are many small diversions above station. Part of low flow of Llano River disappears into various formations, many of which are faulted, between stations near Junction and Llano. Gage-height telemeter and rain gage at station.

AVERAGE DISCHARGE.--50 years, 361 ft³/s (1.17 in/yr), 261,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 232,000 ft³/s Sept. 10, 1952 (gage height, 32.6 ft), from rating curve extended above 129,000 ft³/s on basis of slope-area measurement of peak flow; no flow at times in 1952-56, 1964. 1984.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1879, 41.5 ft June 14, 1935 (discharge, 380,000 ft³/s), from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 7,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 11	0945	*3,310	*5.33				

Minimum daily discharge, 37 ft³/s Sept. 23.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	183	193	178	179	304	279	288	150	114	90	99	139
2	196	211	170	188	267	277	260	293	108	86	101	108
3	199	205	169	194	302	275	236	375	88	82	101	76
4	193	196	171	189	255	295	205	287	81	79	100	65
5	183	177	174	186	225	270	185	240	83	79	101	113
6	173	165	174	174	213	242	179	214	88	80	101	5
7	168	157	194	173	202	228	170	177	112	88	101	88
8	164	144	199	164	189	224	165	155	121	174	106	84
9	163	152	242	164	189	225	155	131	93	105	113	50
10	158	155	233	164	191	225	155	151	94	104	102	86
11	155	155	232	167	194	224	155	221	1500	105	95	322
12	155	155	223	163	196	217	158	476	846	105	105	102
13	155	155	218	188	199	208	184	355	550	105	94	444
14	154	155	214	184	196	202	215	278	398	105	96	364
15	150	162	199	189	194	190	225	1060	339	105	117	197
16	150	159	188	194	284	187	240	984	306	106	137	109
17	152	150	179	194	678	184	239	977	240	105	214	205
18	155	149	174	192	1050	185	226	1500	197	105	157	150
19	155	176	174	221	738	186	227	774	155	108	132	183
20	153	149	176	208	593	205	212	611	146	105	149	112
21	147	155	180	196	490	195	197	527	144	106	144	95
22	140	155	186	194	415	190	182	569	125	108	135	83
23	140	156	183	204	364	184	169	491	105	105	124	37
24	131	161	179	200	340	188	159	358	92	107	92	82
25	134	172	176	194	327	194	150	298	95	104	85	82
26	135	232	176	199	314	201	150	262	90	101	98	75
27	137	239	181	247	299	204	142	224	89	103	95	74
28	140	229	175	532	280	366	132	203	90	100	124	81
29	136	196	171	532	---	472	133	176	88	98	112	86
30	136	179	169	459	---	409	150	155	89	101	66	90
31	183	---	179	367	---	345	---	125	---	101	67	---
TOTAL	4873	5194	5836	6999	9488	7476	5643	12797	6666	3155	3463	3839
MEAN	157	173	188	226	339	241	188	413	222	102	112	128
MAX	199	239	242	532	1050	472	288	1500	1500	174	214	444
MIN	131	144	169	163	189	184	132	125	81	79	66	37
AC-FT	9670	10300	11580	13880	18820	14830	11190	25380	13220	6260	6870	7610
CFSM	.04	.04	.04	.05	.08	.06	.04	.10	.05	.02	.03	.03
IN.	.04	.05	.05	.06	.08	.07	.05	.11	.06	.03	.03	.03
CAL YR 1988												
WTR YR 1989	TOTAL	127379	75429	MEAN	348	MAX	37	AC-FT	.08	IN.	1.13	
	TOTAL	375000	207	MEAN	1500	MAX	96	AC-FT	.05	IN.	.67	

COLORADO RIVER BASIN

103

08152000 SANDY CREEK NEAR KINGSLAND, TX

LOCATION.--Lat 30°33'27", long 98°28'18", Llano County, Hydrologic Unit 12090201, at right downstream end of bridge on State Highway 71, 6.6 mi upstream from mouth, and 7.3 mi south of Kingsland.

DRAINAGE AREA.--346 mi².

PERIOD OF RECORD.--October 1966 to current year.

Water-quality records.--Sediment records: January 1968 to September 1975.

REVISED RECORDS.--WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 862.31 ft above National Geodetic Vertical Datum of 1929. October 1966 to September 1986, at site 522 ft to the left and at same datum. October 1986 to May 19, 1988, at site 168 ft to the right and at same datum.

REMARKS.--No estimated daily discharges. Records fair. Some diversions above station for irrigation (amount unknown). Several observations of water temperature were made during the year. Gage-height telemeter at station.

AVERAGE DISCHARGE.--23 years, 61.8 ft³/s (2.43 in/yr), 44,770 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 27,500 ft³/s June 16, 1981 (gage height, 17.63 ft); no flow at times most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--The flood of Sept. 11, 1952, the highest since at least 1881, reached a stage of 34.2 ft (discharge, 163,000 ft³/s), from slope-area measurement at gage site.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 17	1400	*7,370	*9.90	No other peak greater than base discharge.			

Minimum daily discharge, no flow on many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	.68	.07	.20	5.6	40	25	34	4.9	32	4.9	.00	.00		
2	.32	.04	.16	5.5	34	32	29	4.7	33	3.3	.00	.00		
3	.19	.02	.19	5.5	38	28	26	4.4	31	2.8	.00	.00		
4	.16	.01	.20	5.5	31	34	22	4.2	31	2.4	.00	.00		
5	.13	.0	.26	5.8	28	33	18	7.9	39	1.5	.00	.00		
6	.09	.00	.32	5.5	26	29	15	6.9	42	1.3	.00	.00		
7	.05	.00	.46	5.4	24	26	13	4.5	43	1.1	.00	.00		
8	.02	.00	.68	4.4	20	26	11	3.5	36	.65	.00	.00		
9	.01	.00	2.5	4.0	17	25	9.6	2.3	33	1.1	.00	.00		
10	.00	.00	6.3	4.4	15	23	9.4	8.2	31	1.1	.00	.00		
11	.00	.00	7.4	5.3	13	18	9.4	8.8	662	.55	.00	.00		
12	.00	.00	6.4	6.1	15	16	9.8	14	400	.28	.00	.00		
13	.00	.00	6.3	15	15	14	16	26	184	.10	.00	.00		
14	.00	.00	6.2	10	13	11	27	26	632	.02	.00	.00		
15	.00	.00	5.2	8.2	14	10	26	466	329	.0	.00	.00		
16	.00	.00	3.9	7.4	295	10	24	981	107	.00	.00	.00		
17	.00	.00	2.9	7.3	311	10	23	2540	75	.00	.00	.00		
18	.00	.00	2.6	7.5	407	9.6	19	1140	38	.00	.00	.00		
19	.00	.00	2.5	17	243	9.6	44	505	30	.00	.00	.00		
20	.00	.00	2.7	27	127	12	31	324	24	.00	.00	.00		
21	.00	.00	2.9	24	88	17	23	390	16	.00	.00	.00		
22	.00	.00	3.1	20	50	15	14	268	10	.00	.00	.00		
23	.00	.00	3.4	18	36	13	9.7	120	8.4	.00	.00	.00		
24	.00	.0	3.4	16	34	12	8.0	76	8.2	.00	.00	.00		
25	.00	.01	3.4	12	32	11	7.3	59	7.2	.00	.00	.00		
26	.00	.06	4.3	10	28	11	7.3	51	7.0	.00	.00	.00		
27	.00	.22	5.6	38	26	10	7.0	45	7.6	.00	.00	.00		
28	.00	.28	4.8	243	24	233	6.4	40	6.5	.00	.00	.00		
29	.00	.34	3.5	153	---	210	6.0	38	5.7	.00	.00	.00		
30	.00	.31	4.5	82	---	71	6.1	35	5.1	.00	.00	.00		
31	.06	---	5.9	57	---	43	---	34	---	.00	.00	---		
TOTAL	1.71	1.36	102.17	835.4	2044	1047.2	511.0	7238.3	2913.7	21.10	0.00	0.00		
MEAN	.055	.045	3.30	26.9	73.0	33.8	17.0	233	97.1	.68	.00	.00		
MAX	.68	.34	7.4	243	407	233	44	2540	662	4.9	.00	.00		
MIN	.00	.00	.16	4.0	13	9.6	6.0	2.3	5.1	.00	.00	.00		
AC-FT	3.4	2.7	203	1660	4050	2080	1010	14360	5780	42	.0	.0		
CFSM	.00	.00	.01	.08	.21	.10	.05	.67	.28	.00	.00	.00		
IN.	.00	.00	.01	.09	.22	.11	.05	.78	.31	.00	.00	.00		
CAL YR 1988	TOTAL	6193.32	MEAN	16.9	MAX	728	MIN	.00	AC-FT	12280	CFSM	.05	IN.	.67
WTR YR 1989	TOTAL	14715.94	MEAN	40.3	MAX	2540	MIN	.00	AC-FT	29190	CFSM	.12	IN.	1.58

COLORADO RIVER BASIN

08152900 PEDERNALES RIVER NEAR FREDERICKSBURG, TX

LOCATION.--Lat 30°13'13", long 98°52'10", Gillespie County, Hydrologic Unit 12090206, on left bank at downstream side of bridge on U.S. Highway 87, 2.0 mi upstream from Mueseback Creek, 3.8 mi south of Fredericksburg, and 88.7 mi upstream from mouth.

DRAINAGE AREA.--369 mi².

PERIOD OF RECORD.--July 1979 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,564.96 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are fair. No known regulation or diversion above station. Several observations of water temperature were made during the year. Gage-height telemeter at station.

AVERAGE DISCHARGE.--10 years, 51.6 ft³/s (37,380 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,400 ft³/s June 4, 1981 (gage height, 23.23 ft); no flow July 13-18, 1984.

EXTREMES OUTSIDE PERIOD OF RECORD.--The flood of Aug. 2, 1978, which is the highest since 1907, reached a stage of 41.6 ft (discharge not determined). The highest known discharge was 64,000 ft³/s June 1, 1979 (gage height, 34.4 ft, from floodmark), from rating curve extended above a discharge measurement of 42,300 ft³/s June 1, 1979.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 15	0530	2,330	10.16	June 14	0400	*4,080	*12.84
May 17	0900	1,830	9.28				

Minimum daily discharge, 2.7 ft³/s Aug. 8, 9.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	e11	e11	e18	33	32	33	35	15	22	4.7	2.9
2	15	e10	e11	e18	28	32	32	30	15	20	4.1	2.9
3	14	e10	e11	e19	27	32	31	27	15	17	4.0	3.1
4	14	e10	e11	e19	23	31	29	26	15	16	3.6	2.9
5	13	e10	e12	e18	19	29	27	26	28	15	3.6	2.9
6	12	e10	12	e18	17	27	26	25	30	14	3.2	2.9
7	12	e10	e13	e18	17	27	26	24	23	14	3.3	3.1
8	12	e10	12	e19	16	27	25	23	19	13	2.7	3.2
9	11	e10	13	e20	15	27	25	22	16	12	2.7	3.1
10	11	e10	14	e21	15	27	24	66	16	12	3.0	3.5
11	11	e10	16	e20	14	26	24	37	271	11	3.0	4.4
12	11	e10	17	e19	14	26	25	29	56	11	3.1	177
13	11	e10	15	e22	14	26	27	28	36	10	3.3	18
14	11	e11	15	e20	13	26	31	27	981	9.9	3.2	11
15	11	e11	16	e18	14	25	31	317	122	9.4	3.4	7.4
16	10	e10	15	e16	149	24	28	56	66	9.0	3.3	5.5
17	10	e9.4	14	e15	e119	24	27	518	51	8.3	3.6	4.5
18	9.4	e8.8	14	14	e76	24	26	132	44	7.6	3.6	4.0
19	8.8	e11	13	16	e60	25	36	62	40	7.2	3.6	4.0
20	8.8	e10	13	20	54	26	44	45	35	6.7	3.2	4.0
21	9.4	e10	13	20	47	26	35	39	32	6.5	3.2	3.6
22	e9.4	e11	14	18	42	26	30	45	29	5.8	3.1	3.6
23	e10	e11	14	17	39	25	28	36	27	5.6	2.9	3.2
24	e11	e11	14	16	37	24	26	30	27	5.5	2.9	3.2
25	e11	e11	e15	16	36	24	26	26	30	5.4	2.9	3.2
26	e11	e11	e16	16	35	24	26	25	29	4.9	2.9	3.5
27	e10	e11	e16	73	34	26	26	22	25	4.9	3.0	3.6
28	e10	e11	e15	287	32	72	29	20	24	4.9	3.1	3.3
29	e9.4	e11	e16	96	---	67	56	18	23	4.9	2.9	3.2
30	e9.4	e11	e17	55	---	44	57	18	22	4.7	3.0	3.5
31	e12	---	e18	41	---	37	---	16	---	4.6	2.9	---
TOTAL	344.6	311.2	436	1023	1039	938	916	1850	2162	302.8	101.0	304.2
MEAN	11.1	10.4	14.1	33.0	37.1	30.3	30.5	59.7	72.1	9.77	3.26	10.1
MAX	16	11	18	287	149	72	57	518	981	22	4.7	177
MIN	8.8	8.8	11	14	13	24	24	16	15	4.6	2.7	2.9
AC-FT	684	617	865	2030	2060	1860	1820	3670	4290	601	200	603

CAL YR 1988 TOTAL 16462.2 MEAN 45.0 MAX 1730 MIN 8.8 AC-FT 32650
WTR YR 1989 TOTAL 9727.8 MEAN 26.7 MAX 981 MIN 2.7 AC-FT 19300

e Estimated.

08153500 PEDERNALES RIVER NEAR JOHNSON CITY, TX

LOCATION.--Lat 30°17'30", long 98°23'57", Blanco County, Hydrologic Unit 12090206, near left downstream end of bridge on U.S. Highway 281, 0.2 mi downstream from Towhead Creek, 1.1 mi northeast of Johnson City, 3.4 mi downstream from Buffalo Creek, and 48.0 mi upstream from mouth.

DRAINAGE AREA.--901 mi².

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

Water-quality records.--Chemical analyses: April 1948 to September 1950, October 1971 to September 1985.

REVISED RECORDS.--WSP 1632: 1953(M), 1957, 1958(M). WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,096.70 ft above National Geodetic Vertical Datum of 1929. May 4 to Sept. 13, 1939, nonrecording gage, and Sept. 14, 1939, to Sept. 10, 1952, water-stage recorder at upstream side of bridge at same datum. Sept. 11, 1952, to June 29, 1953, nonrecording gage, and June 30, 1953, to Oct. 7, 1954, water-stage recorder at site 360 ft downstream at same datum.

REMARKS.--No estimated daily discharges. Records good. There are diversions above station for irrigation. During the year, the city of Fredericksburg discharged varying amounts of sewage effluent into the river upstream from station. The city of Johnson City diverts varying amounts of water from the pool at gage and discharge sewage effluent into river below the gage. Flow is affected at times by discharge from the flood-detention pools of four floodwater-retarding structures with a combined detention capacity of 4,580 acre-ft. These structures control runoff from 15.6 mi² in the Williamson Creek drainage basin. Several observations of water temperature were made during the year. Gage-height telemeter at station.

AVERAGE DISCHARGE.--50 years (water years 1940-89), 184 ft³/s (133,300 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 441,000 ft³/s Sept. 11, 1952 (gage height, 42.5 ft, from floodmark), from rating curve extended above 116,000 ft³/s on basis of slope-area measurement of 441,000 ft³/s; no flow at times in 1951-52, 1954, 1956-57, 1963-64, 1967-68, 1971, and 1984-85.
Maximum stage since at least 1859, 42.5 ft Sept. 11, 1952.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 1869 reached a stage of 33 ft from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,100 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 15	0530	7,480	12.93	June 14	0630	9,090	13.30
May 17	0930	*23,700	*15.63				

Minimum daily discharge, 0.35 ft³/s Sept. 10.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	35	27	18	29	121	84	115	198	109	85	29	4.1
2	30	27	19	33	96	96	106	141	109	87	34	3.2
3	27	27	20	35	70	96	101	120	97	90	33	3.2
4	27	21	18	38	70	65	89	107	57	90	28	2.9
5	26	20	19	39	72	40	88	109	231	91	17	1.9
6	21	20	20	38	64	59	87	103	144	84	16	1.2
7	21	21	20	35	63	64	85	101	91	85	26	.85
8	21	22	19	36	59	64	75	97	110	119	18	.53
9	20	21	17	40	57	64	72	90	106	135	17	.41
10	17	21	25	43	57	64	66	692	98	98	12	.35
11	18	21	27	44	51	64	68	181	350	78	7.3	.59
12	20	19	27	36	53	67	72	157	384	76	4.9	.83
13	17	20	28	45	58	74	72	126	175	59	6.8	47
14	16	22	29	48	57	75	88	109	4140	46	5.1	43
15	16	23	25	40	57	75	92	2030	894	39	3.8	29
16	18	15	24	35	198	81	96	512	320	34	2.4	27
17	17	19	22	35	402	88	95	5480	206	32	1.8	21
18	18	22	22	35	271	88	92	1600	127	32	1.3	21
19	19	15	24	37	197	88	98	703	114	26	1.2	21
20	20	12	24	41	156	86	125	476	100	27	.90	17
21	20	21	24	42	131	57	114	571	87	25	1.4	16
22	17	21	27	43	122	79	112	417	95	29	2.4	9.1
23	18	21	27	37	109	88	95	275	91	32	2.9	3.1
24	19	22	27	35	96	83	88	168	99	31	2.9	4.2
25	21	24	29	35	91	80	87	131	112	29	3.1	5.1
26	21	21	32	31	87	80	91	119	100	27	2.7	5.2
27	22	16	28	44	79	78	91	132	110	25	2.3	5.4
28	22	21	27	320	80	152	92	129	95	29	1.9	6.1
29	20	23	27	622	---	221	221	99	88	31	1.8	5.5
30	21	19	27	222	---	153	525	119	86	33	1.6	4.5
31	25	---	30	152	---	132	---	89	---	34	3.1	---
TOTAL	650	624	752	2345	3024	2685	3298	15381	8925	1738	291.60	310.26
MEAN	21.0	20.8	24.3	75.6	108	86.6	110	496	297	56.1	9.41	10.3
MAX	35	27	32	622	402	221	525	5480	4140	135	34	47
MIN	16	12	17	29	51	40	66	89	57	25	.90	.35
AC-FT	1290	1240	1490	4650	6000	5330	6540	30510	17700	3450	578	615
CAL YR 1988	TOTAL	37283	MEAN	102	MAX	5960	MIN	12	AC-FT	73950		
WTR YR 1989	TOTAL	40023.86	MEAN	110	MAX	5480	MIN	.35	AC-FT	79390		

COLORADO RIVER MAIN STEM

08154500 LAKE TRAVIS NEAR AUSTIN, TX

LOCATION.--Lat 30°23'29", long 97°54'24", Travis County, Hydrologic Unit 12090205, in powerhouse at Mansfield Dam on Colorado River, 7.3 mi downstream from Sandy Creek, 12 mi northwest of Austin, and at mile 318.0.

DRAINAGE AREA.--38,755 mi², approximately, of which 11,403 mi² probably is noncontributing.

PERIOD OF RECORD.--September 1940 to current year. Prior to October 1948, published as Marshall Ford Reservoir near Austin.

REVISED RECORDS.--WSP 1342: Drainage area. WDR TX-83-3: 1982.

GAGE.--Nonrecording gage. Datum of gage is 0.12 ft above National Geodetic Vertical Datum of 1929 (levels by Bureau of Reclamation). Prior to Dec. 26, 1940, staff gages on left bank near dam, datum is National Geodetic Vertical Datum of 1929, unadjusted. Dec. 26, 1940 to February 1942, mercury manometer in powerhouse, datum is National Geodetic Vertical Datum of 1929, unadjusted.

REMARKS.--The lake is formed by a 7,098-foot-long concrete gravity, earth, and rockfill dam. Storage began Sept. 9, 1940, and dam was completed in early 1942. Capacity curve is based on an October 1939 survey. Capacity between gage heights 681.0 and 714.0 ft is 778,000 acre-ft and is reserved for flood control. Water is used for power development and for irrigation below Columbus. For statement regarding regulation by Soil Conservation Service floodwater-retarding structures, see station 08153500. Diversion for municipal and irrigation purposes are pumped from lake, and minor amounts of sewage effluent are discharged into the lake. 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 (roadway).....	750.1	
Design flood.....	748.9	3,223,000
Crest of spillway.....	714.0	1,950,000
Top of power storage.....	681.0	1,172,000
Lowest gated outlet (invert).....	535.8	27,900

COOPERATION.--Records of daily gage heights and capacity curve furnished by Lower Colorado River Authority.

EXTREMES (at 2400) FOR PERIOD OF RECORD.--Maximum contents, 1,770,000 acre-ft May 18, 1957 (gage height, 707.4 ft); minimum, 332,600 acre-ft Aug. 13, 14, 1951 (gage height, 614.2 ft).

EXTREMES (at 2400) FOR CURRENT YEAR.--Maximum contents, 985,400 acre-ft Mar. 15; maximum gage height, 670.53 ft Mar. 15; minimum contents, 792,000 acre-ft Sept. 30 (gage height, 657.75 ft).

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

657.0	781,500	663.0	869,700	669.0	961,400
660.0	824,700	666.0	914,900	671.0	993,000

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	950100	963900	952700	945600	956400	977900	976000	931500	946200	947100	859500	839200
2	949000	964000	951500	946400	958900	979300	974600	928200	942000	942800	861000	838400
3	948200	963900	951300	947000	959500	980300	974700	928200	938000	939500	859500	838100
4	947600	963900	951800	945900	958800	985300	974300	922200	934100	935400	858800	837400
5	946400	963100	950900	946800	959100	985300	973600	927000	932600	931300	857300	837300
6	946800	960900	951200	945900	960200	985100	972100	923300	927900	927900	857100	834000
7	947300	962600	952100	946400	959500	984800	970900	920300	924000	925100	855300	832800
8	946700	962200	953800	945000	959400	984300	969000	917200	919400	921900	852900	832500
9	946800	961400	952900	944000	958800	984500	968400	914100	915200	917400	852000	833400
10	946500	961200	953200	944500	960000	984600	965700	916800	912100	913600	852900	831600
11	948400	960500	952700	943300	958900	984100	963600	914400	914100	909500	852700	833500
12	947000	960500	951900	944400	958600	984500	961700	912100	915200	905300	849800	834600
13	945400	961200	951200	945700	958500	984100	962800	915500	923700	901700	848400	834900
14	945400	961200	950400	945100	959900	984500	962600	914700	946200	897900	848500	835000
15	945000	961200	949600	944400	960200	985400	960200	922000	946200	894700	846600	831600
16	944400	960500	949900	944500	962600	985100	957500	925100	951800	894700	847200	828000
17	944400	959700	950100	943900	966500	984000	955200	960800	953300	888700	846400	824400
18	943900	959500	949300	943600	970900	984300	953300	971500	954700	885200	846000	821000
19	943600	961900	950200	943600	971600	981600	960900	972900	955700	882000	845200	817500
20	943100	959700	949800	943600	974000	981200	960300	976000	955200	878700	843300	815400
21	942800	959700	949200	944700	973600	981700	958500	977900	955700	876200	844600	812100
22	945900	958500	949800	943600	974400	980000	956000	977400	956100	873300	842300	809400
23	951000	957800	948700	943000	975500	977700	954100	976400	956400	872100	842300	808100
24	957100	957100	948100	943400	974900	975400	951800	973600	957100	871500	842000	807700
25	963700	956700	947600	945100	975200	973600	948000	971200	956900	869200	842300	807500
26	963300	955800	948100	946500	975000	973500	945000	968800	958000	867900	841500	805800
27	962600	955200	949200	948100	978000	974100	942200	965700	957200	867400	841500	802100
28	962800	954400	947900	950400	977700	976600	939900	962000	958000	866400	841000	798500
29	962000	953800	947100	954900	---	977200	936300	958000	951900	863700	840500	794800
30	962300	953300	946700	956600	---	976400	934300	954600	947900	863400	839900	792000
31	964000	---	945900	957100	---	975800	---	950200	---	860700	840000	---
MAX	964000	964000	953800	957100	978000	985400	976000	977900	958000	947100	861000	839200
MIN	942800	953300	945900	943000	956400	973500	934300	912100	912100	860700	839900	792000
(↑)	669.17	668.48	668.00	668.72	670.05	669.93	667.25	668.28	668.13	662.40	661.02	657.75
(Φ)	+14700	-10700	-7400	+11200	+20600	-1900	-41500	+15900	-2300	-87200	-20700	-48000

CAL YR 1988 MAX 1135000 MIN 941200 (Φ) -130100
WTR YR 1989 MAX 985400 MIN 792000 (Φ) -157300

(↑) Gage height, in feet, at end of month.
(Φ) Change in contents, in acre-feet.

COLORADO RIVER MAIN STEM

107

08154510 COLORADO RIVER BELOW MANSFIELD DAM, AUSTIN, TX

LOCATION.--Lat 30°23'30", long 97°54'28", Travis County, Hydrologic Unit 12090205, at the downstream side of Mansfield Dam, 12.9 mi northwest of the State Capitol at Austin, and at mile 318.0.

DRAINAGE AREA.--38,755 mi², approximately, of which 11,403 mi² probably is noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1974 to current year.

GAGE.--None. Daily discharge record is based on daily releases from Lake Travis.

REMARKS.--No estimated daily discharges. Records fair. Discharge records prior to October 1988 do not include leakage through turbine gates when gates were closed. In 1988, low-flow discharge measurements, made by the Lower Colorado River Authority, indicated a leakage rate of 60 ft³/s.

COOPERATION.--All records of releases were furnished by the Lower Colorado River Authority.

AVERAGE DISCHARGE.--15 years, 1,499 ft³/s (1,086,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 25,300 ft³/s Apr. 17-19, 1977; minimum daily, 60 ft³/s at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 2,320 ft³/s June 4; minimum daily, 60 ft³/s on several days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1510	60	301	289	276	100	769	1590	2100	1960	1200	1660
2	1860	254	360	311	221	60	677	1590	2070	1900	550	1800
3	1600	60	189	412	673	60	651	1620	2020	1810	1040	1590
4	1590	60	60	389	1100	1120	303	1650	2320	2110	1230	1710
5	1580	60	415	369	600	60	613	767	1990	1960	1100	1780
6	1300	771	312	418	1650	143	269	1700	2190	1890	1350	1600
7	1440	186	201	319	265	174	736	1500	2060	1890	1260	1750
8	1310	60	270	347	344	201	1180	1600	2220	1970	1200	1640
9	1370	418	189	346	297	60	1100	1580	2130	1930	1240	1730
10	1390	60	350	515	406	305	993	459	2100	1990	1200	1610
11	889	202	259	383	514	195	999	1530	1590	1900	1230	1610
12	615	60	254	289	236	60	1170	1480	2230	1850	1170	1620
13	517	183	355	363	289	368	1120	1300	1900	1770	1190	1360
14	60	185	360	213	207	60	1030	859	60	1780	1120	1540
15	199	60	419	464	266	218	1290	60	2070	1490	1340	1460
16	201	424	189	530	287	60	1110	1240	1780	1360	1670	1580
17	218	60	218	402	216	944	1300	193	1830	1560	1640	1420
18	204	60	254	289	260	767	1220	60	1710	1460	1510	1480
19	60	60	369	412	289	1330	525	60	1730	1480	1710	1490
20	185	60	227	488	280	615	374	60	1850	1510	1640	1380
21	185	223	250	289	366	1320	1110	816	1720	1230	1760	1440
22	787	200	292	305	254	805	1210	1640	1840	1220	1800	1330
23	441	199	360	315	60	1320	1190	1560	1930	1330	1670	1560
24	123	344	273	283	192	1000	1210	1580	1870	1220	1440	1460
25	158	180	273	394	219	1210	1260	1890	2040	1230	2030	1430
26	301	189	275	281	218	848	1330	1850	1720	1260	1710	1410
27	177	229	249	291	60	1510	1630	1910	2010	1220	1510	1460
28	60	371	353	268	60	242	1430	2030	1810	1060	1720	1400
29	60	317	360	179	---	1000	1460	1880	2130	1370	1500	1510
30	60	250	233	322	---	689	1790	1880	1980	1190	1640	1440
31	348	---	236	325	---	777	---	2190	---	1280	1740	---
TOTAL	20798	5845	8705	10800	10105	17621	31049	40124	57000	49180	44110	46250
MEAN	671	195	281	348	361	568	1035	1294	1900	1586	1423	1542
MAX	1860	771	419	530	1650	1510	1790	2190	2320	2110	2030	1800
MIN	60	60	60	179	60	60	269	60	60	1060	550	1330
AC-FT	41250	11590	17270	21420	20040	34950	61590	79590	113100	97550	87490	91740
CAL YR 1988	TOTAL	378766	MEAN	1035	MAX	3610	MIN	60	AC-FT	751300		
WTR YR 1989	TOTAL	341587	MEAN	936	MAX	2320	MIN	60	AC-FT	677500		

COLORADO RIVER MAIN STEM

08154510 COLORADO RIVER BELOW MANSFIELD DAM, AUSTIN, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: June 1980 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS TOTAL (MG/L AS CACO3)
MAR 01...	0900	840	720	8.00	12.0	9.8	92	1.0	240
APR 19...	1115	1200	722	8.10	13.0	9.0	86	--	220
MAY 17...	1530	138	621	8.00	15.0	7.7	78	1.1	200
JUL 12...	1015	1700	720	7.80	16.0	5.7	59	0.6	230
AUG 04...	1130	1520	730	7.70	18.0	3.4	37	0.5	220
SEP 06...	0830	2460	748	7.60	21.0	3.8	43	0.2	220
DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
MAR 01...	50	27	61	2	4.8	150	72	99	0.30
APR 19...	47	26	57	2	4.7	148	72	100	0.20
MAY 17...	42	22	47	1	4.2	130	60	81	0.30
JUL 12...	49	26	59	2	4.8	150	70	99	0.30
AUG 04...	47	26	58	2	4.7	151	72	98	0.30
SEP 06...	47	26	59	2	4.6	146	73	100	0.30
DATE	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (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- PHOROUS TOTAL (MG/L AS P)
MAR 01...	8.5	413	0.080	0.020	0.100	0.030	0.27	0.30	0.010
APR 19...	8.3	404	--	<0.010	0.200	<0.010	--	0.40	<0.010
MAY 17...	7.4	342	--	<0.010	0.200	0.050	0.45	0.50	0.010
JUL 12...	8.7	407	--	<0.010	0.200	0.030	0.27	0.30	<0.010
AUG 04...	8.3	405	--	<0.010	0.100	<0.010	--	0.30	<0.010
SEP 06...	8.1	406	--	0.010	<0.100	0.060	0.14	0.20	<0.010

COLORADO RIVER BASIN

109

08154700 BULL CREEK AT LOOP 360 NEAR AUSTIN, TX

LOCATION.--Lat 30°22'19", long 97°47'04", Travis County, Hydrologic Unit 12090205, on right bank at downstream side of bridge at Loop 360, 1.0 mi upstream from West Fork Bull Creek and Farm Road 2222, and 7.1 mi northwest of the State Capitol Building in Austin.

DRAINAGE AREA.--22.3 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1976 to July 1978 (operated as a flood-hydrograph partial-record station only), July 1978 to current year.

GAGE.--Water-stage recorder, concrete control, and crest-stage gage. Datum of gage is 534.08 ft above National Geodetic Vertical Datum of 1929 (levels from city of Austin bench mark).

REMARKS.--Records good except those for estimated daily discharges, which are fair. No known regulation or diversion above station. There are two recording rain gages in the watershed (discontinued). Gage-height telemeter at station.

AVERAGE DISCHARGE.--11 years, 12.0 ft³/s (7.31 in/yr), 8,690 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,700 ft³/s May 13, 1982 (gage height, 11.96 ft); no flow for several days in 1984.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 17	1145	*4,030	*7.64	No other peak greater than base discharge.			

Minimum daily discharge, 0.01 ft³/s Sept. 26, 29.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	.70	.85	.29	1.0	5.6	4.5	6.1	4.0	5.1	2.4	.16	.34		
2	1.6	.49	.35	1.0	5.3	6.1	5.6	3.6	4.8	2.1	14	.36		
3	.82	.24	.29	1.0	5.4	5.0	5.6	3.5	4.7	1.8	2.2	.15		
4	.71	.29	.32	1.0	4.6	5.8	5.6	3.7	4.4	1.6	1.4	.13		
5	.69	.78	.56	1.0	3.9	5.3	5.6	11	5.1	1.5	.99	.13		
6	.69	.78	.44	1.0	3.9	4.9	5.5	6.7	5.5	2.4	.84	.16		
7	.63	.85	.49	1.0	3.5	4.7	5.2	5.7	4.9	2.4	.68	.16		
8	.52	.78	.63	1.0	3.8	4.6	4.9	5.6	4.2	1.4	.62	.08		
9	.68	.75	1.5	1.1	3.2	4.5	4.8	5.3	3.6	1.0	.63	.07		
10	.78	.69	2.0	1.2	3.2	4.5	4.5	32	3.3	.92	.53	.23		
11	.67	.69	1.9	1.2	3.2	4.1	4.5	12	7.9	.82	.58	.20		
12	.44	.69	1.2	1.2	3.9	3.7	4.7	11	4.2	.67	.59	.27		
13	.56	.69	1.2	2.4	3.4	3.7	4.8	22	9.6	.57	.46	.31		
14	.69	.62	1.2	1.8	3.2	3.7	9.7	27	31	.52	.44	.17		
15	.69	.57	1.2	e1.9	3.2	3.7	6.0	61	8.8	.51	1.3	.13		
16	.62	.74	1.2	e1.9	3.2	3.7	5.8	24	5.7	.42	1.7	.18		
17	.52	.69	1.2	e1.6	4.4	4.0	5.4	619	4.2	.36	1.1	.16		
18	.52	.69	1.1	1.3	5.3	4.2	5.6	66	4.0	.33	.85	.10		
19	.52	.69	1.0	3.2	4.9	4.2	14	33	3.6	.22	.88	.20		
20	.52	.69	1.0	4.7	4.7	6.6	8.0	23	3.6	.22	.46	.12		
21	.62	.69	1.0	2.8	4.4	7.1	6.6	24	3.1	.22	.49	.08		
22	.72	.69	1.1	2.3	3.8	6.0	6.0	15	2.7	.22	.59	.19		
23	.64	.69	1.2	1.9	3.6	5.4	5.2	12	2.6	.22	.41	.10		
24	.22	.47	1.0	1.8	3.1	5.2	4.7	10	2.8	.26	.74	.09		
25	.16	.44	1.0	1.9	3.0	5.3	4.2	8.4	2.6	.21	.40	.05		
26	.16	.42	1.0	15	3.1	5.5	4.2	7.6	2.3	.16	.36	.01		
27	.16	.36	1.0	5.5	3.2	5.5	2.5	6.7	2.1	.22	.40	.12		
28	.18	.31	1.0	8.9	3.2	14	1.9	6.4	2.2	.22	.41	.05		
29	.22	.29	1.0	21	---	9.6	2.9	5.6	2.3	.15	.30	.01		
30	.22	.29	1.0	9.2	---	7.0	4.2	5.6	2.2	.10	.41	.03		
31	1.1	---	1.0	6.5	---	6.4	---	5.6	---	.10	.35	---		
TOTAL	17.97	17.91	30.37	108.3	109.2	168.5	164.3	1086.0	153.1	24.24	35.27	4.38		
MEAN	.58	.60	.98	3.49	3.90	5.44	5.48	35.0	5.10	.78	1.14	.15		
MAX	1.6	.85	2.0	21	5.6	14	14	619	31	2.4	1.4	.36		
MIN	.16	.24	.29	1.0	3.0	3.7	1.9	3.5	2.1	.10	.16	.01		
AC-FT	36	36	60	215	217	334	326	2150	304	48	70	8.7		
CFSM	.03	.03	.04	.16	.17	.24	.25	1.57	.23	.04	.05	.01		
IN.	.03	.03	.05	.18	.18	.28	.27	1.81	.26	.04	.06	.01		
CAL YR 1988	TOTAL	1103.54	MEAN	3.02	MAX	28	MIN	.16	AC-FT	2190	CFSM	.14	IN.	1.84
WTR YR 1989	TOTAL	1919.54	MEAN	5.26	MAX	619	MIN	.01	AC-FT	3810	CFSM	.24	IN.	3.20

e Estimated.

COLORADO RIVER BASIN

08154700 BULL CREEK AT LOOP 360 NEAR AUSTIN, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: April 1978 to current year. Pesticide analyses: June 1978 to September 1986. Radiochemical analyses: January to April 1980.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD 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, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI, KF AGAR (COLS. PER 100 ML)
DEC 21...	1020	0.40	770	7.80	14.5	1	0.40	9.2	91	--	35	130
FEB 14...	1020	2.8	756	8.20	14.5	1	0.40	10.3	103	0.5	K15	84
MAY 13...	1905	56	450	--	--	25	22	--	--	4.1	K7200	20000
13...	1935	48	439	--	--	--	--	--	--	--	--	--
13...	2005	35	435	--	--	--	--	--	--	--	--	--
13...	2035	42	431	7.50	--	--	--	--	--	--	--	--
13...	2105	52	429	--	--	30	21	--	--	2.2	10000	22000
13...	2135	44	424	--	--	30	22	--	--	2.1	13000	23000
JUN 05...	1025	6.7	650	7.80	27.0	5	0.40	8.5	109	0.6	180	160
AUG 14...	1220	0.44	752	7.90	27.0	22	0.30	10.0	128	0.8	140	110

DATE	HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB WH TOT FLD MG/L AS CAC03	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT WH TOT FET FIELD (MG/L AS CAC03)	SULFATE DIS-SOLVED (MG/L AS S04)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS S102)
DEC 21...	--	--	--	--	--	--	--	--	--	--	--	--
FEB 14...	300	110	84	23	38	1	2.0	192	91	70	0.20	4.3
MAY 13...	--	--	--	--	--	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--	--	--	--	--	--
13...	180	40	52	13	17	0.6	2.5	144	33	26	0.20	7.5
13...	--	--	--	--	--	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--	--	--	--	--	--
JUN 05...	--	--	--	--	--	--	--	--	--	--	--	--
AUG 14...	290	110	77	24	39	1	2.5	183	100	64	0.20	11

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L)	RESIDUE 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-PHOUS TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS-SOLVED (UG/L AS AS)
DEC 21...	--	8	5	--	<0.010	<0.100	0.010	--	<0.20	<0.010	2.3	--
FEB 14...	428	7	<1	--	<0.010	0.200	<0.010	--	0.20	<0.010	2.4	1
MAY 13...	--	38	9	0.090	0.010	0.100	0.040	0.26	0.30	0.040	5.1	--
13...	--	--	--	--	--	--	--	--	--	--	--	2
13...	--	--	--	0.090	0.010	0.100	0.020	0.58	0.60	0.030	5.1	--
13...	238	--	--	--	--	--	--	--	--	--	--	--
13...	--	31	8	0.090	0.010	0.100	0.030	0.27	0.30	0.020	4.8	--
13...	--	115	38	0.090	0.010	0.100	0.030	0.67	0.70	0.030	5.0	--
JUN 05...	--	1	<1	--	<0.010	0.200	0.010	--	<0.20	<0.010	2.0	--
AUG 14...	428	6	<1	--	<0.010	<0.100	<0.010	--	0.20	<0.010	2.5	<1

DATE	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)	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 21...	--	--	--	--	--	--	--	--	--	--	--
FEB 14...	57	<1	<1	1	5	<5	4	<0.1	<1	<1.0	<3
MAY 13...	--	--	--	--	--	--	--	--	--	--	--
13...	43	<1	<1	<4	11	<1	<1	<0.1	<1	<1.0	13
13...	--	--	--	--	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--	--	--	--	--
JUN 05...	--	--	--	--	--	--	--	--	--	--	--
AUG 14...	59	<1	<1	1	8	1	5	<0.1	<1	<1.0	<3

COLORADO RIVER BASIN

111

08154900 LAKE AUSTIN AT AUSTIN, TX

LOCATION.--Lat 30°18'53", long 97°47'10", Travis County, Hydrologic Unit 12090205, at city of Austin Waterplant No. 2 and 1.5 mi upstream from Tom Miller Dam on the Colorado River at Austin.

DRAINAGE AREA.--38,846 mi², of which 11,403 mi² probably is noncontributing.

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: October 1978 to current year.

301739097471601 - LAKE AUSTIN SITE AR

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JAN							
29...	1330	1.00	640	8.20	13.0	9.5	91
29...	1332	10.0	640	8.20	13.0	9.5	91
29...	1334	22.0	640	8.20	13.0	9.5	91
MAR							
01...	1105	1.00	687	8.20	12.5	10.4	99
01...	1107	10.0	687	8.20	12.5	10.3	98
01...	1109	20.0	687	8.20	12.5	10.2	97
01...	1111	25.0	687	8.20	12.5	10.2	97
APR							
19...	1430	1.00	706	8.20	19.5	9.4	104
19...	1432	10.0	706	8.20	18.5	9.4	101
19...	1434	20.0	715	8.10	16.5	9.2	95
19...	1436	25.0	715	8.10	16.0	8.9	91
MAY							
17...	1840	1.00	648	8.00	21.5	8.0	93
17...	1842	10.0	666	8.00	21.0	7.9	91
17...	1844	20.0	681	8.00	19.0	7.9	87
17...	1846	25.0	697	8.00	18.0	7.8	85
AUG							
04...	1330	1.00	735	8.00	25.5	6.2	77
04...	1332	10.0	734	7.80	22.5	5.4	64
04...	1334	20.0	733	7.80	21.5	5.0	58
04...	1336	25.0	734	7.80	21.5	4.8	55

301739097471201 - LAKE AUSTIN SITE AC

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CAC03
JAN												
29...	1305	1.00	640	8.20	13.0	1.70	2.8	9.5	91	0.6	K390	140
29...	1307	10.0	640	8.20	13.0	--	--	9.5	91	--	--	--
29...	1309	20.0	640	8.20	13.0	--	--	9.4	90	--	--	--
29...	1311	30.0	640	8.20	13.0	--	--	9.4	90	--	--	--
29...	1313	40.0	641	8.20	13.0	--	--	9.4	90	--	--	--
29...	1315	54.0	648	8.10	13.0	--	6.0	8.6	82	0.6	--	148
MAR												
01...	1115	1.00	687	8.30	12.5	2.60	2.3	10.4	99	0.2	K3	148
01...	1117	10.0	687	8.30	12.5	--	--	10.5	100	--	--	--
01...	1119	20.0	687	8.30	12.5	--	--	10.4	99	--	--	--
01...	1121	30.0	687	8.30	12.5	--	--	10.4	99	--	--	--
01...	1123	40.0	687	8.20	12.5	--	--	10.3	98	--	--	--
01...	1125	52.0	687	8.10	11.5	--	7.9	9.0	83	0.4	--	148
APR												
19...	1415	1.00	708	8.20	19.5	2.00	1.5	9.3	102	0.9	K5	145
19...	1417	10.0	708	8.20	18.5	--	--	9.3	100	--	--	--
19...	1419	20.0	716	8.20	16.5	--	--	9.1	94	--	--	--
19...	1421	30.0	713	8.10	14.5	--	--	8.9	88	--	--	--
19...	1423	40.0	715	8.20	14.0	--	--	8.7	85	--	--	--
19...	1425	52.0	715	8.10	14.0	--	4.0	8.6	84	0.5	--	146
MAY												
17...	1820	1.00	644	8.00	21.5	0.49	11	8.1	94	1.3	2500	144
17...	1822	10.0	666	8.00	20.0	--	--	7.9	89	--	--	--
17...	1824	20.0	688	8.00	18.5	--	--	7.9	87	--	--	--
17...	1826	30.0	713	8.00	16.5	--	--	7.6	80	--	--	--
17...	1828	40.0	713	7.90	16.5	--	--	7.5	79	--	--	--
17...	1830	52.0	713	7.90	16.5	--	38	7.3	77	0.4	--	151
AUG												
04...	1345	1.00	735	8.00	25.0	1.80	2.3	6.3	78	0.6	--	151
04...	1347	10.0	735	7.80	22.5	--	--	5.4	64	--	--	--
04...	1349	20.0	735	7.80	21.5	--	--	5.0	58	--	--	--
04...	1351	30.0	736	7.70	21.0	--	--	4.6	53	--	--	--
04...	1353	40.0	735	7.70	20.0	--	--	4.0	45	--	--	--
04...	1355	50.0	735	7.60	20.0	--	9.8	2.8	31	0.5	--	153

COLORADO RIVER BASIN

08154900 LAKE AUSTIN AT AUSTIN, TX--Continued

301739097471201 - LAKE AUSTIN SITE AC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	COPPER, DIS- SOLVED (UG/L AS CU)	LEAD, DIS- SOLVED (UG/L AS PB)
JAN											
29...	368	6	<0.010	<0.100	0.020	0.48	0.50	<0.010	3.0	3	<5
29...	--	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--	--
29...	371	3	<0.010	<0.100	0.040	0.36	0.40	0.010	3.2	<1	<5
MAR											
01...	410	<1	<0.010	<0.100	<0.010	--	<0.20	<0.010	3.3	<1	<5
01...	--	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--	--
01...	400	12	<0.010	<0.100	0.040	0.26	0.30	0.010	3.5	1	<5
APR											
19...	409	<1	<0.010	<0.100	0.010	0.29	0.30	<0.010	3.2	<1	<5
19...	--	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--	--
19...	419	5	<0.010	<0.100	0.030	1.2	1.2	<0.010	3.0	<1	<5
MAY											
17...	371	9	<0.010	0.200	0.040	0.66	0.70	0.020	3.7	2	<1
17...	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--
17...	410	66	<0.010	0.200	0.040	0.66	0.70	0.010	3.3	2	3
AUG											
04...	412	<1	<0.010	<0.100	<0.010	--	0.30	0.010	3.1	2	16
04...	--	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--	--
04...	435	<1	<0.010	<0.100	0.060	0.54	0.60	0.020	3.0	2	<1

301739097470901 - LAKE AUSTIN SITE AL

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JAN							
29...	1340	1.00	646	8.20	13.0	9.4	90
29...	1342	10.0	646	8.20	13.0	9.5	91
29...	1344	23.0	646	8.20	13.0	9.5	91
MAR							
01...	1133	1.00	687	8.30	12.5	10.3	98
01...	1135	10.0	687	8.30	12.5	10.3	98
01...	1137	23.0	687	8.30	12.5	10.2	97
APR							
19...	1440	1.00	708	8.30	19.5	9.4	104
19...	1442	10.0	711	8.20	18.5	9.3	100
19...	1444	23.0	715	8.10	16.0	9.0	92
MAY							
17...	1850	1.00	648	8.00	21.0	8.0	92
17...	1852	10.0	675	8.00	20.0	8.0	90
17...	1854	22.0	690	8.00	18.5	7.8	85
AUG							
04...	1405	1.00	735	8.00	26.0	6.4	80
04...	1407	10.0	734	7.80	22.5	5.4	64
04...	1409	23.0	735	7.80	21.0	4.8	55

COLORADO RIVER BASIN

113

08154900 LAKE AUSTIN AT AUSTIN, TX--Continued

302043097472401 - LAKE AUSTIN SITE BC

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
JAN											
29...	1135	1.00	658	8.20	13.0	1.20	4.9	9.5	91	0.7	260
29...	1137	10.0	680	8.20	13.0	--	--	9.8	94	--	--
29...	1139	20.0	682	8.20	13.0	--	--	9.8	94	--	--
29...	1141	28.0	694	8.10	13.0	--	2.7	9.1	87	0.5	--
MAR											
01...	1025	1.00	690	8.20	12.5	2.70	1.4	10.4	99	0.3	K1
01...	1027	10.0	690	8.20	12.5	--	--	10.4	99	--	--
01...	1029	20.0	690	8.20	12.5	--	--	10.3	98	--	--
01...	1031	29.0	687	8.20	12.0	--	1.7	9.6	90	0.0	--
APR											
19...	1320	1.00	703	8.20	19.0	2.10	1.2	9.2	100	1.3	K5
19...	1322	10.0	720	8.20	17.0	--	--	9.5	99	--	--
19...	1324	20.0	717	8.10	15.5	--	--	9.1	92	--	--
19...	1326	29.0	717	8.10	15.0	--	1.2	8.9	89	1.1	--
MAY											
17...	1720	1.00	515	7.90	23.0	0.12	72	7.6	91	2.4	5000
17...	1722	10.0	493	8.00	22.0	--	--	7.7	91	--	--
17...	1724	20.0	455	7.90	21.0	--	--	7.1	82	--	--
17...	1726	30.0	700	7.90	17.0	--	81	7.0	74	1.0	--
AUG											
04...	1240	1.00	733	8.00	26.0	1.80	1.8	6.4	80	0.9	K10
04...	1242	10.0	733	8.00	25.5	--	--	6.4	80	--	--
04...	1244	20.0	730	7.80	21.5	--	--	5.3	61	--	--
04...	1246	28.0	730	7.80	21.5	--	3.7	5.1	59	0.7	--

DATE	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CAC03	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, 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- PHOROUS TOTAL (MG/L AS P)
JAN										
29...	141	372	5	--	0.010	<0.100	0.020	0.48	0.50	0.010
29...	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--
29...	145	378	3	--	<0.010	<0.100	0.020	0.48	0.50	<0.010
MAR										
01...	148	407	<1	--	<0.010	<0.100	<0.010	--	0.30	<0.010
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
01...	148	398	<1	--	<0.010	<0.100	0.030	0.27	0.30	0.010
APR										
19...	146	405	3	--	<0.010	<0.100	0.010	0.19	0.20	0.010
19...	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--
19...	147	418	<1	--	<0.010	0.100	0.020	0.38	0.40	<0.010
MAY										
17...	139	292	87	0.290	0.010	0.300	0.060	0.44	0.50	0.040
17...	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--
17...	148	405	125	--	<0.010	0.200	0.040	0.36	0.40	0.010
AUG										
04...	151	405	<1	--	<0.010	<0.100	<0.010	--	0.40	<0.010
04...	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--
04...	150	410	<1	--	<0.010	<0.100	0.040	0.26	0.30	<0.010

COLORADO RIVER BASIN

08154900 LAKE AUSTIN AT AUSTIN, TX--Continued

302043097472401 - LAKE AUSTIN SITE BC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	ARSENIC TOTAL IN BOT- TOM MA- TERIAL (UG/G AS AS)	CADMIUM DIS- SOLVED (UG/L AS CD)	CADMIUM RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CD)	CHRO- MIUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	COPPER, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CU)
JAN										
29...	3.1	1	1	--	--	--	--	1	1	--
29...	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--
29...	2.8	1	1	6	--	2	10	4	1	10
MAR										
01...	3.3	--	1	--	--	--	--	--	<1	--
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
01...	3.3	--	1	11	--	<10	10	--	<1	10
APR										
19...	2.9	--	1	--	--	--	--	--	1	--
19...	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--
19...	2.9	--	1	4	--	2	8	--	1	10
MAY										
17...	6.7	1	1	--	--	--	--	3	3	--
17...	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--
17...	4.6	<1	<1	3	--	2	10	2	3	10
AUG										
04...	3.2	--	1	--	<1	--	--	--	4	--
04...	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--
04...	3.0	--	1	5	<1	<10	10	--	2	10
DATE	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	IRON, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LEAD, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS PB)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MANGA- NESE, RECOV. FM BOT- TOM MA- TERIAL (UG/G)	MERCURY RECOV. FM BOT- TOM MA- TERIAL (UG/G AS HG)
JAN										
29...	140	5	--	<5	<5	--	10	1	--	--
29...	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--
29...	40	25	5900	<5	<5	20	10	10	470	0.05
MAR										
01...	--	<3	--	--	<5	--	--	<1	--	--
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
01...	--	4	6800	--	<5	<100	--	3	620	0.04
APR										
19...	--	<3	--	--	<5	--	--	<1	--	--
19...	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--
19...	--	<3	5500	--	<5	20	--	2	710	0.08
MAY										
17...	1300	17	--	5	<1	--	40	5	--	--
17...	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--
17...	500	13	6300	4	1	20	40	13	490	0.05
AUG										
04...	--	<3	--	--	10	--	--	<1	--	--
04...	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--
04...	--	<3	4700	--	<1	<100	--	4	520	0.03

08154900 LAKE AUSTIN AT AUSTIN, TX--Continued

302043097472401 - LAKE AUSTIN SITE BC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)	ZINC, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS ZN)	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)
JAN										
29...	<10	<3	--	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010
29...	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--
29...	<10	<3	40	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010
MAR										
01...	--	<3	--	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
01...	--	4	30	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010
APR										
19...	--	<3	--	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010
19...	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--
19...	--	<3	40	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010
MAY										
17...	10	<3	--	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010
17...	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--
17...	<30	8	30	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010
AUG										
04...	--	3	--	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010
04...	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--
04...	--	4	30	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010

DATE	DI- ELDRIN TOTAL (UG/L)	ENDO- SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR- EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)
JAN										
29...	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.01	<0.01	<0.1	<1
29...	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--
29...	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.01	<0.01	<0.1	<1
MAR										
01...	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.01	<0.01	<0.1	<1
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
01...	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.01	<0.01	<0.1	<1
APR										
19...	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.01	<0.01	<0.1	<1
19...	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--
19...	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.01	<0.01	<0.1	<1
MAY										
17...	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.01	<0.01	<0.1	<1
17...	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--
17...	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.01	<0.01	<0.1	<1
AUG										
04...	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.01	<0.01	<0.1	<1
04...	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--
04...	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.01	<0.01	<0.1	<1

302044097472301 - LAKE AUSTIN SITE BL

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JAN							
29...	1215	1.00	608	8.10	13.0	8.8	84
29...	1217	10.0	670	8.20	13.0	9.6	92
29...	1219	17.0	679	8.20	13.0	9.5	91
MAR							
01...	1050	1.00	691	8.20	12.5	10.4	99
01...	1052	10.0	691	8.20	12.5	10.4	99
01...	1054	15.0	691	8.20	12.5	10.2	97
APR							
19...	1350	1.00	701	8.20	19.0	9.5	104
19...	1352	10.0	717	8.20	17.5	9.6	102
19...	1354	15.0	717	8.10	16.0	9.3	95
MAY							
17...	1755	1.00	520	7.90	24.0	7.6	93
17...	1757	10.0	424	7.90	22.0	7.3	86
17...	1759	15.0	438	7.80	21.5	7.0	82
AUG							
04...	1310	1.00	732	8.10	26.5	6.4	81
04...	1312	15.0	732	7.90	25.0	5.9	73

COLORADO RIVER BASIN

08154900 LAKE AUSTIN AT AUSTIN, TX--Continued

301926097502201 - LAKE AUSTIN SITE CC

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3
JAN												
29...	1410	1.00	677	8.30	13.5	3.70	1.6	9.6	93	0.4	28	144
29...	1412	10.0	678	8.30	13.5	--	--	9.6	93	--	--	--
29...	1414	20.0	685	8.30	13.5	--	--	9.6	93	--	--	--
29...	1416	25.0	685	8.30	13.5	--	1.6	9.5	92	0.4	--	144
MAR												
01...	0955	1.00	692	8.20	13.5	3.50	1.2	10.3	100	0.1	K6	145
01...	0957	10.0	692	8.20	13.5	--	--	10.3	100	--	--	--
01...	0959	23.0	692	8.20	13.0	--	1.4	9.6	92	0.3	--	146
APR												
19...	1250	1.00	713	8.20	18.0	4.20	0.50	9.4	100	1.0	K7	148
19...	1252	10.0	720	8.20	16.0	--	--	9.5	97	--	--	--
19...	1254	24.0	720	8.20	16.0	--	1.4	9.4	96	0.9	--	148
MAY												
17...	1650	1.00	630	8.00	24.0	0.82	2.7	7.8	95	1.0	250	141
17...	1652	10.0	669	8.00	19.0	--	--	7.4	82	--	--	--
17...	1654	24.0	693	7.90	17.5	--	6.3	7.1	76	0.5	--	148
AUG												
04...	1000	1.00	729	7.90	23.5	3.00	1.2	6.4	77	0.7	K17	149
04...	1002	10.0	731	7.80	21.5	--	--	5.9	68	--	--	--
04...	1004	23.0	731	7.80	20.5	--	1.7	5.2	59	0.5	--	149

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	COPPER, DIS- SOLVED (UG/L AS CU)	LEAD, DIS- SOLVED (UG/L AS PB)
JAN											
29...	395	1	0.010	<0.100	0.010	0.49	0.50	<0.010	2.7	3	<5
29...	--	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--	--
29...	382	5	0.010	<0.100	0.020	0.28	0.30	<0.010	2.7	2	<5
MAR											
01...	400	1	<0.010	<0.100	<0.010	--	0.20	<0.010	3.1	1	<5
01...	--	--	--	--	--	--	--	--	--	--	--
01...	399	1	<0.010	<0.100	0.020	0.28	0.30	<0.010	3.1	1	<5
APR											
19...	412	<1	<0.010	0.100	0.020	--	<0.20	<0.010	2.9	<1	<5
19...	--	--	--	--	--	--	--	--	--	--	--
19...	414	5	<0.010	0.100	0.020	0.38	0.40	<0.010	2.9	2	<5
MAY											
17...	368	6	<0.010	0.100	0.030	0.37	0.40	0.010	3.5	5	3
17...	--	--	--	--	--	--	--	--	--	--	--
17...	407	7	<0.010	0.200	0.040	0.16	0.20	0.010	3.3	3	<1
AUG											
04...	407	<1	<0.010	<0.100	0.010	0.29	0.30	<0.010	3.0	3	1
04...	--	--	--	--	--	--	--	--	--	--	--
04...	415	13	<0.010	<0.100	0.030	0.27	0.30	<0.010	2.9	2	<1

302021097540001 - LAKE AUSTIN SITE DC

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3
JAN												
29...	1440	1.00	670	8.20	14.0	4.60	1.4	9.0	88	0.4	56	144
29...	1442	10.0	670	8.20	14.0	--	--	9.0	88	--	--	--
29...	1444	16.0	670	8.20	14.0	--	1.5	9.0	88	0.3	--	144
MAR												
01...	0930	1.00	697	8.30	13.5	4.60	1.0	10.6	103	0.2	K1	147
01...	0932	10.0	697	8.30	13.5	--	--	10.5	102	--	--	--
01...	0934	16.0	697	8.30	13.5	--	1.7	10.5	102	0.2	--	146
APR												
19...	1215	1.00	716	8.10	15.5	4.60	0.50	8.7	88	1.3	K4	148
19...	1217	10.0	716	8.10	15.0	--	--	8.7	87	--	--	--
19...	1219	15.0	716	8.10	15.0	--	0.60	8.7	87	1.1	--	148
MAY												
17...	1630	1.00	506	8.00	22.5	0.21	30	7.5	89	1.2	1000	154
17...	1632	10.0	698	7.90	17.5	--	--	7.4	79	--	--	--
17...	1634	15.0	698	7.90	17.5	--	6.7	7.2	77	0.6	--	144
AUG												
04...	0920	1.00	730	7.90	21.0	4.30	1.2	6.1	70	0.6	K19	149
04...	0922	15.0	730	7.90	20.5	--	1.4	6.0	68	0.6	--	148

COLORADO RIVER BASIN

117

08154900 LAKE AUSTIN AT AUSTIN, TX--Continued

302021097540001 - LAKE AUSTIN SITE DC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	COPPER, DIS- SOLVED (UG/L AS CU)	LEAD, DIS- SOLVED (UG/L AS PB)
JAN											
29...	384	2	0.020	<0.100	0.020	0.38	0.40	<0.010	2.6	3	<5
29...	--	--	--	--	--	--	--	--	--	--	--
29...	389	3	<0.010	<0.100	0.020	0.38	0.40	<0.010	2.4	2	<5
MAR											
01...	404	<1	<0.010	<0.100	0.020	0.18	0.20	<0.010	3.2	<1	<5
01...	--	--	--	--	--	--	--	--	--	--	--
01...	402	3	<0.010	<0.100	0.020	--	<0.20	<0.010	4.0	1	<5
APR											
19...	421	<1	<0.010	0.100	0.020	--	<0.20	<0.010	2.6	<1	<5
19...	--	--	--	--	--	--	--	--	--	--	--
19...	417	<1	<0.010	0.100	0.020	0.18	0.20	<0.010	2.9	<1	<5
MAY											
17...	303	42	<0.010	0.100	0.040	0.66	0.70	0.020	6.7	3	2
17...	--	--	--	--	--	--	--	--	--	--	--
17...	408	8	<0.010	0.200	0.050	0.35	0.40	0.010	3.3	4	1
AUG											
04...	408	<1	<0.010	<0.100	0.020	0.18	0.20	<0.010	2.9	2	3
04...	411	<1	<0.010	<0.100	0.030	0.47	0.50	<0.010	3.2	4	1

COLORADO RIVER BASIN

08155200 BARTON CREEK AT STATE HIGHWAY 71 NEAR OAK HILL, TX

LOCATION.--Lat 30°17'46", long 97°55'31", Travis County, Hydrologic Unit 12090205, at upstream side of bridge on State Highway 71, 0.1 mi downstream from Little Barton Creek, and 5.8 mi northwest of Oak Hill.

DRAINAGE AREA.--89.7 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1975 to February 1978 (operated as a flood-hydrograph partial-record station only), February 1978 to September 1982, January 1989 to September 1989.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 737.04 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair above 15 ft³/s and poor below. No known regulation or diversions above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,120 ft³/s June 11, 1981 (gage height, 15.64 ft); no flow for many days each year except 1981.

EXTREMES FOR PERIOD JANUARY TO SEPTEMBER 1989.--Peak discharges greater than base discharge of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 10	0800	3,380	9.68	May 17	1600	*7,830	*15.32
May 13	2015	1,180	6.27				

Minimum daily discharge, no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	e.00	.24	4.9	4.6	8.3	15	22	.67	.32
2	---	---	---	e.00	.19	8.6	4.6	7.5	14	19	1.4	.30
3	---	---	---	e.00	.16	8.5	4.6	7.3	13	17	1.2	.29
4	---	---	---	e.00	.15	7.5	4.1	7.1	13	15	1.1	.27
5	---	---	---	e.00	.14	5.5	3.6	17	12	14	.94	.27
6	---	---	---	e.00	.14	4.3	3.6	13	12	10	.80	.25
7	---	---	---	e.00	.14	2.5	3.5	9.9	12	9.6	.77	.28
8	---	---	---	e.00	.14	2.9	3.3	8.4	12	8.0	.72	.28
9	---	---	---	e.00	.14	3.1	3.1	7.6	12	6.9	.64	.25
10	---	---	---	e.00	.14	3.0	2.9	677	22	5.8	.63	.24
11	---	---	---	e.00	.14	3.0	2.8	56	41	3.6	.57	7.3
12	---	---	---	e.00	.16	2.9	3.5	30	29	3.3	.53	2.6
13	---	---	---	e.00	.17	3.0	3.1	146	44	2.4	.50	.30
14	---	---	---	e.00	.17	3.3	7.7	118	123	2.0	.48	.23
15	---	---	---	e.00	.30	2.9	7.2	146	53	1.8	.48	.17
16	---	---	---	e.00	.92	2.8	5.0	78	32	2.4	.47	.15
17	---	---	---	e.00	1.4	2.9	4.0	1680	30	2.2	.45	.12
18	---	---	---	e.00	2.5	2.9	3.6	306	32	1.8	.41	.10
19	---	---	---	e.00	2.8	3.0	25	168	32	1.4	.39	.08
20	---	---	---	e.00	3.1	4.5	19	115	30	1.2	.39	.07
21	---	---	---	e.00	4.2	3.9	14	94	28	.98	.39	.06
22	---	---	---	e.00	4.3	4.0	12	72	26	.96	.39	.05
23	---	---	---	e.00	4.2	3.9	11	55	26	.80	.39	.04
24	---	---	---	e.00	3.8	3.6	11	44	27	.86	.37	.04
25	---	---	---	e.00	4.2	3.6	11	33	30	.90	.37	.04
26	---	---	---	.00	5.1	3.7	10	26	32	.85	.38	.03
27	---	---	---	.00	5.5	3.8	9.8	23	35	.82	.36	.03
28	---	---	---	.00	4.6	6.8	9.3	21	30	.78	.34	.03
29	---	---	---	3.0	4.6	23	8.9	20	25	.76	.34	.02
30	---	---	---	.83	---	8.7	8.7	18	23	.74	.34	.01
31	---	---	---	.25	---	5.3	---	16	---	.74	.32	---
TOTAL	---	---	---	4.08	49.14	152.3	224.5	4028.1	865	158.59	17.53	14.22
MEAN	---	---	---	.13	1.75	4.91	7.48	130	28.8	5.12	.57	.47
MAX	---	---	---	3.0	5.5	23	25	1680	123	22	1.4	7.3
MIN	---	---	---	.00	.14	2.5	2.8	7.1	12	.74	.32	.01
AC-FT	---	---	---	8.1	.97	302	445	7990	1720	315	35	28
CFSM	---	---	---	.00	.02	.05	.08	1.45	.32	.06	.01	.01
IN.	---	---	---	.00	.02	.06	.09	1.67	.36	.07	.01	.01

CAL YR 1988	TOTAL	--	MEAN	--	MAX	--	MIN	--	AC-FT	--
WTR YR 1989	TOTAL	--	MEAN	--	MAX	--	MIN	--	AC-FT	--

e Estimated.

COLORADO RIVER BASIN

119

08155200 BARTON CREEK AT STATE HIGHWAY 71 NEAR OAK HILL, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: April 1987 to September 1982, February 1989 to current year.
Pesticide analyses: April 1978 to September 1982. Radiochemical analyses: October 1979 to September 1980.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

		DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD 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, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI, FECAL, KF AGAR (COLS. PER 100 ML)
FEB 21...	1155	1.5	425	7.40	12.5	2	0.20	10.0	95	0.4	K18	66
MAY 11...	0920	76	413	8.30	19.5	25	25	8.3	92	1.0	K1200	3100
JUN 07...	1012	40	487	7.90	27.0	13	0.30	7.8	101	0	44	24
JUN 14...	1005	165	336	7.80	24.0	20	58	7.6	93	1.6	48000	49000
AUG 14...	1030	0.59	464	7.90	26.0	22	0.30	7.9	100	0.3	57	K6900
DATE	HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB WH WAT TOT FLD MG/L AS CAC03	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT WH TOT FET FIELD (MG/L AS CAC03)	SULFATE DIS-SOLVED (MG/L AS S04)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS S102)
FEB 21...	220	56	59	17	7.9	0.2	1.1	162	41	14	0.20	7.1
MAY 11...	200	36	58	13	6.8	0.2	1.9	163	25	12	0.20	8.4
JUN 07...	--	--	--	--	--	--	--	--	--	--	--	--
JUN 14...	170	22	48	11	5.9	0.2	1.7	143	17	11	0.20	7.3
AUG 14...	200	36	55	16	10	0.3	1.1	168	24	18	0.20	10
DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L)	RESIDUE 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,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHOROUS TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS-SOLVED (MG/L AS AS)	
FEB 21...	244	<1	<1	--	<0.010	0.400	<0.010	<0.20	<0.010	1.2	<1	
MAY 11...	223	36	<1	0.290	0.010	0.300	0.030	<0.20	0.030	4.7	<1	
JUN 07...	--	<1	<1	--	<0.010	<0.100	<0.010	0.90	<0.010	1.1	--	
JUN 14...	188	84	<1	0.190	0.010	0.200	<0.010	0.60	0.010	5.9	<1	
AUG 14...	235	3	<1	--	<0.010	<0.100	0.010	<0.20	<0.010	1.1	<1	
DATE	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)	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)	
FEB 21...	22	<1	<1	<1	6	<5	1	<0.1	1	2.0	<3	
MAY 11...	31	<1	<1	1	13	<1	1	<0.1	<1	<1.0	4	
JUN 07...	--	--	--	--	--	--	--	--	--	--	--	
JUN 14...	19	<1	<1	1	33	2	1	<0.1	<1	<1.0	7	
AUG 14...	25	<1	<1	<1	<3	<1	2	<0.1	<1	<1.0	4	

COLORADO RIVER BASIN

08155240 BARTON CREEK AT LOST CREEK BOULEVARD, AUSTIN, TX

LOCATION.--Lat 30°16'26", long 97°50'40", Travis County, Hydrologic Unit 12090205, 1.4 mi southwest of intersection of Lost Creek Boulevard and Loop 360, and 6.2 mi west of State Capitol Building in Austin.

DRAINAGE AREA.--107 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1979 to September 1980 (periodic gage heights and discharge measurements only). December 1988 to September 1989.

GAGE.--Water-stage recorder. Altitude of gage is 600 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records fair. No known regulation or diversions. One recording rain gage in the watershed above station.

EXTREMES.--Maximum discharge, 6,090 ft³/s May 17, 1989 (gage height, 8.90 ft); minimum daily .09 ft³/s Sept. 29, 30, 1989.

EXTREMES OUTSIDE PERIOD OF RECORD.--The flood of May 28, 1929 was probably the highest since that date (discharge 39,400 ft³/s), based on a slope-area measurement of peak flow at a site about 2.1 mi downstream.

EXTREMES FOR JANUARY TO SEPTEMBER 1989.--Peak discharges greater than base discharge of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 10	1130	2,900	6.53	May 17	1900	*6,090	*8.90

Minimum daily discharge, .09 ft³/s Sept. 29, 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	.36	1.3	1.4	12	11	50	19	.75	.19
2	---	---	---	.35	1.3	6.9	11	9.9	47	17	1.5	.15
3	---	---	---	.35	1.5	6.9	11	9.1	44	15	1.4	.15
4	---	---	---	.34	1.1	7.1	11	8.6	40	13	1.2	.15
5	---	---	---	.34	1.0	6.6	9.9	27	38	12	.99	.16
6	---	---	---	.33	.98	6.1	9.4	21	35	11	.90	.16
7	---	---	---	.34	.95	5.6	9.1	15	33	9.5	.85	.17
8	---	---	---	.30	.94	5.1	8.8	12	31	8.9	.77	.14
9	---	---	---	.31	.97	4.0	8.0	9.9	28	8.1	.75	.13
10	---	---	---	.32	.90	3.9	7.4	814	28	7.3	.72	.13
11	---	---	---	.32	.86	4.5	7.5	200	41	6.7	.65	.14
12	---	---	---	.35	.88	4.5	7.7	120	34	5.8	.62	.15
13	---	---	---	.42	.90	4.3	9.0	180	30	4.9	.53	.68
14	---	---	---	.35	.85	4.4	15	349	159	4.3	.53	.22
15	---	---	---	.33	.84	4.7	16	278	92	3.7	.53	.19
16	---	---	---	.32	.81	4.5	14	184	53	3.1	.51	.19
17	---	---	---	.33	.89	4.3	11	1790	43	2.5	.43	.19
18	---	---	---	.36	.93	4.3	10	699	39	1.9	.37	.19
19	---	---	---	.51	.94	4.3	26	356	36	1.6	.40	.19
20	---	---	---	.44	.91	6.1	33	246	34	1.3	.39	.19
21	---	---	---	.41	.89	6.9	23	188	31	1.2	.34	.19
22	---	---	---	.44	.89	7.3	19	158	28	1.1	.33	.16
23	---	---	---	.43	.88	6.9	16	140	26	.92	.27	.15
24	---	---	---	.49	.93	6.4	15	128	27	.93	.35	.15
25	---	---	---	.53	.96	6.2	14	117	26	.91	.30	.15
26	---	---	---	3.2	.97	6.3	14	108	27	.88	.23	.13
27	---	---	---	1.2	.96	7.5	14	94	29	.86	.23	.11
28	---	---	.31	2.2	1.0	14	13	80	27	.81	.23	.10
29	---	---	.31	7.5	---	24	12	69	23	.81	.23	.09
30	---	---	.32	3.0	---	24	11	62	20	.78	.22	.09
31	---	---	.34	1.6	---	15	---	54	---	.72	.19	---
TOTAL	---	---	---	28.07	27.23	224.0	397.8	6537.5	1199	166.52	17.71	5.18
MEAN	---	---	---	.91	.97	7.23	13.3	211	40.0	5.37	.57	.17
MAX	---	---	---	7.5	1.5	24	33	1790	159	19	1.5	.68
MIN	---	---	---	.30	.81	1.4	7.4	8.6	20	.72	.19	.09
AC-FT	---	---	---	56	54	444	789	12970	2380	330	35	10
CFSM	---	---	---	.01	.01	.07	.12	1.97	.37	.05	.01	.00
IN.	---	---	---	.01	.01	.08	.14	2.27	.42	.06	.01	.00

CAL YR 1988	TOTAL	--	MEAN	--	MAX	--	MIN	--	AC-FT	--
WTR YR 1989	TOTAL	--	MEAN	--	MAX	--	MIN	--	AC-FT	--

08155240 BARTON CREEK AT LOST CREEK BOULEVARD, AUSTIN, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: December 1988 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	COLOR (PLAT- NUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
DEC 20...	1025	0.37	1580	7.90	14.5	2	1.3	9.2	93	--	33	59
FEB 21...	1325	3.8	910	7.80	15.0	--	--	10.8	109	0.5	K15	K9
MAY 10...	0300	74	321	--	--	55	77	--	--	6.6	16000	44000
10...	0330	90	409	7.80	--	--	--	--	--	--	--	--
10...	0400	185	340	--	--	20	90	--	--	3.8	12000	33000
10...	0430	185	345	--	--	--	--	--	--	--	--	--
10...	0500	170	404	--	--	--	--	--	--	--	--	--
10...	0530	150	408	--	--	30	110	--	--	3.0	5100	21000
11...	1050	170	380	7.90	20.0	25	44	7.7	86	1.0	K1500	3200
17...	1147	920	414	--	--	25	500	--	--	--	9600	29000
17...	1247	1130	418	--	--	--	--	--	--	5.4	--	--
17...	1347	1850	402	--	--	--	--	--	--	3.5	K5200	11000
17...	1447	3020	331	--	--	--	--	--	--	--	--	--
17...	1547	3810	272	--	--	--	--	--	--	--	--	--
17...	1647	4300	276	--	--	90	490	--	--	--	36000	52000
JUN 07...	1128	31	487	7.90	27.5	5	0.70	6.7	87	0.1	37	28
AUG 14...	1115	0.64	873	7.70	26.0	22	0.60	8.7	109	0.6	33	100

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
DEC 20...	760	520	210	58	85	1	2.6	241	620	60	0.20	12
FEB 21...	390	200	110	29	51	1	1.8	197	190	70	0.20	6.2
MAY 10...	--	--	--	--	--	--	--	--	--	--	--	--
10...	180	31	49	14	13	0.4	2.6	149	36	19	0.20	8.4
10...	--	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--	--	--
11...	190	44	55	13	7.8	0.3	2.0	147	26	12	0.20	8.6
17...	--	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--	--
17...	130	12	39	7.3	3.9	0.2	2.3	116	13	6.7	0.20	7.6
17...	--	--	--	--	--	--	--	--	--	--	--	--
JUN 07...	--	--	--	--	--	--	--	--	--	--	--	--
AUG 14...	350	120	99	26	39	0.9	2.9	236	130	50	0.20	12

DATE	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	RESIDUE TILE, SUS- PENDE (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- PHOROUS TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS- SOLVED (UG/L AS AS)
DEC 20...	1190	<1	<1	--	0.010	<0.100	0.070	0.43	0.50	<0.010	2.2	--
FEB 21...	576	--	--	0.590	0.010	0.600	0.010	--	<0.20	<0.010	1.8	<1
MAY 10...	--	173	27	0.670	0.030	0.700	0.260	0.54	0.80	0.720	13	--
10...	232	--	--	--	--	--	--	--	--	--	--	--
10...	--	195	34	0.180	0.020	0.200	0.080	0.42	0.50	0.140	8.5	--
10...	--	--	--	--	--	--	--	--	--	--	--	5
10...	--	--	--	0.180	0.020	0.200	0.050	0.65	0.70	0.100	7.1	--
10...	--	193	18	0.180	0.020	0.200	0.050	0.45	0.50	0.140	7.4	--
11...	213	62	9	0.390	0.010	0.400	0.030	0.57	0.60	0.020	5.6	<1
17...	--	615	153	0.280	0.020	0.300	0.080	0.32	0.40	0.070	19	--
17...	--	--	--	0.280	0.020	0.300	0.060	0.44	0.50	0.030	21	--
17...	--	--	--	0.190	0.010	0.200	0.060	0.34	0.40	0.030	39	--
17...	--	--	--	--	--	--	--	--	--	--	--	<1
17...	150	--	--	--	--	--	--	--	--	--	--	--
17...	--	592	166	0.060	0.040	0.100	0.060	1.0	1.1	0.080	36	--
JUN 07...	--	<1	<1	--	<0.010	0.200	<0.010	--	0.20	<0.010	1.3	--
AUG 14...	501	4	<1	0.480	0.020	0.500	0.050	0.25	0.30	<0.010	2.1	<1

COLORADO RIVER BASIN

08155240 BARTON CREEK AT LOST CREEK BOULEVARD, AUSTIN, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	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)	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 20...	--	--	--	--	--	--	--	--	--	--	--
FEB 21...	42	<1	<1	<1	9	<5	9	<0.1	<1	2.0	<3
MAY 10...	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--	--
10...	24	<1	<1	1	26	1	1	<0.1	<1	<1.0	4
10...	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--	--
11...	26	<1	<1	1	13	<1	<1	<0.1	<1	2.0	6
17...	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--
17...	22	<1	<1	1	30	1	3	<0.1	<1	<1.0	11
17...	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--
JUN 07...	--	--	--	--	--	--	--	--	--	--	--
AUG 14...	45	<1	<1	<1	<3	<1	4	<0.1	<1	<1.0	5

COLORADO RIVER BASIN

123

08155300 BARTON CREEK AT LOOP 360, AUSTIN, TX

LOCATION.--Lat 30°14'40", Long 97°48'07", Travis County, Hydrologic Unit 12090205, on Loop 360, 0.9 mi west of the intersection of Ben White and Lamar Boulevards, and 4.3 mi southwest of the State Capitol Building in Austin.

DRAINAGE AREA.--116 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1975 to January 1977 (operated as a flood-hydrograph partial-record station only), February 1977 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 510.32 ft above National Geodetic Vertical Datum of 1929 (State Department of Highways and Public Transportation bench mark).

REMARKS.--No estimated daily discharges. Records fair except those below 3 ft³/s, which are poor. No known regulation or diversions. One recording rain gage in the watershed above station.

AVERAGE DISCHARGE.--12 years, 43.6 ft³/s (5.10 in/yr), 31,590 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,100 ft³/s May 25, 1981 (gage height, 15.03 ft); no flow for many days each year.

EXTREMES OUTSIDE PERIOD OF RECORD.--The flood of May 28, 1929, was probably the highest since that date (discharge 39,400 ft³/s), based on a slope-area measurement of peak flow at a site about 2 mi upstream.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 10	1215	4,470	8.14	May 17	1930	*9,060	*10.54
May 14	0045	1,100	5.97				

Minimum daily discharge, no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	4.3	.00	.00	.00	36	.00	.00	.00
2	.00	.00	.00	.00	5.1	.00	.00	.00	33	.00	.00	.00
3	.00	.00	.00	.00	.10	.00	.00	.00	27	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	23	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	3.1	21	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	20	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	13	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	5.7	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	1.9	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	884	.87	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	155	22	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	93	11	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	130	3.1	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.44	342	163	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	209	93	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	.00	155	44	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	2600	27	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	586	18	.00	.00	.00
19	.00	.00	.00	.66	.00	.00	.92	264	12	.00	.00	.00
20	.00	.00	.00	.01	.00	.00	.00	192	8.1	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	166	4.3	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	148	2.0	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	126	.81	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	111	.96	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	100	1.1	.00	.00	.00
26	.00	.00	.00	21	.00	.00	.00	95	1.2	.00	.00	.00
27	.00	.00	.00	.05	.00	.00	.00	95	4.0	.00	.00	.00
28	.00	.00	.00	.00	.00	1.3	.00	69	1.8	.00	.00	.00
29	.00	.00	.00	.98	---	.00	.00	57	.75	.00	.00	.00
30	.00	.00	.00	.00	---	.00	.00	50	.0	.00	.00	.00
31	.48	---	.00	.00	---	.00	---	44	---	.00	.00	---
TOTAL	0.48	0.00	0.00	22.70	9.50	1.30	1.36	6674.10	599.59	0.00	0.00	0.00
MEAN	.015	.00	.00	.73	.34	.042	.045	215	20.0	.00	.00	.00
MAX	.48	.00	.00	21	5.1	1.3	.92	2600	163	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	1.0	.0	.0	45	19	2.6	2.7	13240	1190	.0	.0	.0
CFSM	.00	.00	.00	.01	.00	.00	.00	1.86	.17	.00	.00	.00
IN.	.00	.00	.00	.01	.00	.00	.00	2.14	.19	.00	.00	.00
CAL YR 1988	TOTAL	184.79	MEAN	.50	MAX	53	MIN	.00	AC-FT	367	CFSM	.00
WTR YR 1989	TOTAL	7309.03	MEAN	20.0	MAX	2600	MIN	.00	AC-FT	14500	CFSM	.17
										IN.	.06	2.34

COLORADO RIVER BASIN

08155300 BARTON CREEK AT LOOP 360, AUSTIN, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: January 1979 to current year. Pesticide analyses: January 1979 to September 1986. Radiochemical analyses: April 1980.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD 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, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	
MAY													
11...	1020	177	348	8.10	20.0	25	78	8.2	91	1.3	2400	6800	
15...	0930	201	446	8.10	21.5	20	20	7.8	90	1.0	2100	5300	
17...	1410	2140	366	7.20	23.0	50	300	8.2	98	1.4	9600	31000	
17...	2015	9080	278	7.80	23.0	90	850	7.9	95	6.6	18000	64000	
JUN													
05...	0940	27	467	8.00	27.5	5	0.30	7.9	102	0.4	50	39	
DATE		HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB WH WAT TOT FLD MG/L AS CAC03	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT WH TOT FET FIELD MG/L AS CAC03	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)
MAY													
11...	170	34	49	11	6.9	0.2	2.3	134	24	11	0.20	8.3	
15...	230	44	67	15	9.7	0.3	1.6	185	31	16	0.20	8.6	
17...	180	28	54	11	7.3	0.2	2.1	152	24	12	0.20	8.2	
17...	130	13	39	7.6	4.0	0.2	2.5	116	14	7.9	0.10	8.5	
JUN													
05...	220	38	59	18	11	0.3	1.0	184	31	21	0.20	9.3	
DATE		SOLIDS, SUM OF CONSTITUENTS, DIS-SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L)	RESIDUE 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-PHOROUS TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS-SOLVED (UG/L AS AS)
MAY													
11...	193	32	10	0.480	0.020	0.500	0.040	0.26	0.30	0.030	7.3	<1	
15...	260	33	<1	--	<0.010	0.300	0.040	0.16	0.20	0.010	3.9	<1	
17...	210	293	68	0.280	0.020	0.300	0.070	0.33	0.40	0.040	14	1	
17...	153	143	22	0.060	0.040	0.100	0.050	0.35	0.40	0.070	41	--	
JUN													
05...	261	10	8	--	<0.010	<0.100	<0.010	--	<0.20	<0.010	1.3	<1	
DATE		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)	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)	
MAY													
11...	23	1	<1	1	13	<1	1	<0.1	<1	<1.0	<3		
15...	27	<1	<1	<3	5	<3	1	<0.1	<1	<1.0	<3		
17...	23	<1	<1	2	9	<1	<1	<0.1	<1	1.0	7		
17...	--	--	--	--	--	--	--	--	--	--	--	--	
JUN													
05...	29	<1	<1	1	35	1	<1	<0.1	<1	<1.0	<3		

COLORADO RIVER BASIN

125

08155500 BARTON SPRINGS AT AUSTIN, TX

LOCATION.--Lat 30°15'48", long 97°46'16", Travis County, Hydrologic Unit 12090205, at ground-water well (YD 58-42-903), on right bank 0.4 mi upstream from Barton Springs Road bridge over Barton Creek, 0.7 mi upstream from mouth, and 1.8 mi southwest of the State Capitol Building in Austin.

DRAINAGE AREA.--Not applicable. Only springflow is published for this station.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--November 1894 to April 1917, and October 1918 to February 1978 (discharge measurements only), May 1917 to September 1918 (published as "Barton Creek at Austin, Texas"), and March 1978 to current year.

GAGE.--Water-stage recorder. Datum of gage, at ground-water well (YD 58-42-903), is 462.34 ft above National Geodetic Vertical Datum of 1929. May 1917 to September 1918, nonrecording gage at site 1,000 ft downstream at different datum.

REMARKS.--Records poor. Only springflow from the Edwards and associated limestones in the Balcones Fault Zone is published for this station.

AVERAGE DISCHARGE.--12 years (water years 1918, 1979-89), 56.4 ft³/s (40,860 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD (DISCHARGE MEASUREMENTS ONLY).--Maximum measured discharge, 166 ft³/s May 10, 1941; minimum measured, 9.6 ft³/s Mar. 29, 1956.

EXTREMES FOR PERIOD OF RECORD (1917-18 AND SINCE MARCH 1978).--Maximum daily spring discharge, 115 ft³/s June 28, 1987; minimum daily spring, 12 ft³/s Feb. 25, 1918.

EXTREMES FOR CURRENT YEAR.--Maximum daily spring discharge, 88 ft³/s May 17; minimum daily, 23 ft³/s Nov. 9-11, Dec. 8, Mar. 16-18, Sept. 29, 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	31	e26	26	24	e32	e26	27	30	e65	e59	e40	e28
2	31	e26	26	24	e31	e27	27	30	e64	e58	e39	28
3	31	e25	26	24	e30	e26	27	30	64	e58	e39	29
4	30	25	26	24	29	25	26	e29	64	e57	e39	28
5	29	26	26	24	29	26	26	e33	e64	e57	e38	29
6	e28	27	26	24	29	e26	e26	e32	e63	e56	e38	28
7	e28	e25	e25	24	29	e26	e25	31	63	e56	e37	e28
8	28	e24	23	24	29	e25	25	30	e62	e55	e37	e27
9	28	23	25	24	29	e25	26	30	e62	e54	37	27
10	28	e23	25	24	29	e25	26	e46	61	e54	e37	27
11	28	23	26	e24	28	e25	26	e45	63	e53	e36	27
12	28	24	25	e24	28	e24	26	e43	e63	e52	36	27
13	e28	24	25	24	e28	e24	e26	e41	e70	e51	35	27
14	e27	24	25	25	e28	e24	e26	e43	e75	e50	e35	e26
15	27	24	24	24	e28	e24	27	e41	e73	e49	e34	e26
16	27	25	24	24	e27	e23	27	e39	e71	e49	34	26
17	27	25	24	24	e27	e23	27	e88	e70	e48	e34	26
18	27	25	24	24	26	23	27	e84	e70	e48	e33	26
19	27	25	24	25	27	24	e28	e78	e69	e47	33	26
20	e27	26	24	e27	27	25	37	e75	e69	e46	33	26
21	e26	26	24	26	e27	27	38	e72	e68	e46	e32	e26
22	26	27	24	26	e26	27	36	e71	e67	e45	e32	e25
23	27	26	24	25	e26	e26	35	70	e66	e45	31	e25
24	27	26	24	25	e26	e25	33	70	e65	e45	e31	24
25	27	26	24	26	25	24	32	e70	e64	e44	e30	24
26	28	26	24	28	26	25	32	e69	e64	e44	30	24
27	e28	26	24	e30	e26	25	e31	69	e63	e43	30	24
28	e27	26	24	e32	e26	27	e30	68	e62	e42	e29	e24
29	27	26	24	e34	---	e27	29	68	e61	e42	e29	e23
30	27	26	24	e36	---	27	30	e67	e60	e41	29	23
31	e27	---	24	e34	---	27	---	e66	---	e41	e29	---
TOTAL	862	756	763	807	778	783	864	1658	1965	1535	1056	784
MEAN	27.8	25.2	24.6	26.0	27.8	25.3	28.8	53.5	65.5	49.5	34.1	26.1
MAX	31	27	26	36	32	27	38	88	75	59	40	29
MIN	26	23	23	24	25	23	25	29	60	41	29	23
AC-FT	1710	1500	1510	1600	1540	1550	1710	3290	3900	3040	2090	1560
CAL YR 1988	TOTAL	16422	MEAN	44.9	MAX	74	MIN	23	AC-FT	32570		
WTR YR 1989	TOTAL	12611	MEAN	34.6	MAX	88	MIN	23	AC-FT	25010		

e Estimated.

COLORADO RIVER BASIN

08155500 BARTON SPRINGS AT AUSTIN, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: October 1903, June 1941 to February 1959. Chemical, biochemical, and pesticide analyses: December 1978 to current year. Radiochemical analyses: January to September 1980.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD 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, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI, KF AGAR (COLS. PER 100 ML)	
DEC 21...	0855	36	721	7.10	21.5	<1	0.60	5.3	61	--	K13	110	
FEB 14...	0840	30	776	7.30	21.0	<1	0.40	5.9	67	0.3	140	49	
MAY 11...	1125	45	593	7.10	21.0	5	7.3	6.5	74	0.2	K360	2200	
19...	0855	78	536	6.80	21.5	25	7.0	7.2	83	0.9	480	3100	
JUN 07...	0830	63	622	7.10	22.0	5	0.60	6.2	73	0.4	K6	K5	
AUG 16...	0820	34	706	7.20	22.0	22	0.30	6.0	70	0.2	21	K3	
DATE		HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB WH WAT TOT FLD MG/L AS CAC03	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT WH TOT FET MG/L AS CAC03	SULFATE DIS-SOLVED (MG/L AS S04)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SiO2)
DEC 21...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB 14...	320	58	88	25	36	0.9	1.8	265	49	56	0.30	12	
MAY 11...	310	47	89	21	12	0.3	1.7	262	33	18	0.20	12	
19...	270	35	85	15	11	0.3	1.6	239	27	16	0.20	11	
JUN 07...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 16...	300	36	84	23	22	0.6	1.5	269	31	29	0.30	12	
DATE		SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE (MG/L AS N)	NITRO-GEN, NITRITE (MG/L AS N)	NITRO-GEN, NO2+NO3 (MG/L AS N)	NITRO-GEN, AMMONIA (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHOROUS TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS-SOLVED (UG/L AS AS)
DEC 21...	--	5	3	--	<0.010	1.50	0.010	--	<0.20	0.010	<0.1	--	--
FEB 14...	427	5	<1	--	<0.010	1.50	<0.010	--	<0.20	<0.010	0.4	<1	<1
MAY 11...	344	<1	<1	--	<0.010	1.40	0.030	0.37	0.40	0.020	1.3	<1	<1
19...	310	6	<1	0.880	0.020	0.900	0.030	0.57	0.60	0.020	2.4	<1	<1
JUN 07...	--	<1	<1	--	<0.010	0.900	<0.010	--	0.30	<0.010	0.6	--	--
AUG 16...	364	4	<1	--	<0.010	1.50	0.020	0.28	0.30	0.020	0.3	1	
DATE		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)	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)	BENZENE TOTAL (UG/L)
DEC 21...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB 14...	65	<1	<1	<1	<3	<5	<1	<0.1	<1	<1.0	14	<0.20	
MAY 11...	60	<1	<1	1	11	<1	1	<0.1	<1	<1.0	6	--	--
19...	45	<1	<1	12	6	1	1	<0.1	<1	<1.0	5	<0.20	<0.20
JUN 07...	--	--	--	--	--	--	--	--	--	--	--	--	<0.20
AUG 16...	59	<1	<1	<1	<3	<1	<1	<0.1	<1	<1.0	<3	<0.20	

08155500 BARTON SPRINGS AT AUSTIN, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

[illegible]

COLORADO RIVER BASIN

08155505 BARTON CREEK BELOW BARTON SPRINGS AT AUSTIN, TX.

LOCATION (REVISED).--Lat 30°15'54", long 97°45'54", Travis County, Hydrologic Unit 12090205, at bridge on Barton Springs Road and 1.6 miles southwest of the State Capitol Building in Austin.

DRAINAGE AREA.--125 mi²

GAGE.--Prior to January 1989, discharge measurements were made and water-quality samples were collected at a site 800 ft upstream.

PERIOD OF RECORD.--Chemical analyses: June 1965. Chemical and biochemical analyses: January 1975 to September 1983. May 1989 to current year. Pesticide analyses: January 1975 to September 1983. Radiochemical analyses: January 1980.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD 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, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI, FECAL, KF AGAR (COLS. PER 100 ML)
MAY 17...	1525	1830	388	7.30	23.5	50	120	8.5	102	2.4	14000	27000
DATE	HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB WH WAT TOT FLD MG/L AS CAC03	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT WH TOT FET FIELD MG/L AS CAC03	SULFATE DIS-SOLVED (MG/L AS S04)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SiO2)
MAY 17...	200	31	59	13	7.4	0.2	2.0	170	25	13	0.10	9.1
DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L)	RESIDUE 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-PHOROUS TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS-SOLVED (UG/L AS AS)
MAY 17...	231	262	58	0.280	0.020	0.300	0.060	0.34	0.40	0.060	9.9	<1
DATE	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)	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)	
MAY 17...	25	<1	2	2	16	1	1	<0.1	<1	2.0	7	

COLORADO RIVER BASIN

129

08156800 SHOAL CREEK AT 12TH STREET, AUSTIN, TX

LOCATION.--Lat 30°16'35", Long 97°45'00", Travis County, Hydrologic Unit 12090205, on left bank at downstream side of bridge at 12th Street, and 0.6 mi west of the State Capitol Building in Austin.

DRAINAGE AREA.--12.3 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1984 to current year. Periodic discharge measurements, periodic QW sample collection and associated peak discharges along with annual maximum, November 1974 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 455.33 ft above National Geodetic Vertical Datum of 1929 (city of Austin bench mark). Apr. 2, 1975 to Nov. 14, 1984, operated as a Flood-hydrograph partial-record site at same location and datum.

REMARKS.--No estimated daily discharges. Records fair. There is no known regulation or diversion. The station is equipped with an automatic water-quality sampler.

AVERAGE DISCHARGE.--5 years, 7.43 ft³/s (8.20 in/yr), 5,380 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.-- Maximum discharge, 16,000 ft³/s May 24, 1981 (gage height, 23.22 ft); no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 26	0945	1,750	9.47	May 15	0515	2,830	11.69
Apr. 19	1000	1,090	7.79	May 17	1200	*3,950	*13.59
May 13	1930	1,410	8.65				

Minimum daily discharge, no flow at times.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.3	.00	.00	.00	1.5	26	.03	.02	.00	.00	.00	.00
2	2.5	.00	.00	.00	7.1	18	.00	.00	.00	.00	55	.00
3	.00	.00	.00	.00	13	1.6	.00	.00	.00	.00	.55	.00
4	.00	.00	.00	.00	1.5	10	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.79	2.0	.00	124	.00	.00	.00	.00
6	.00	.00	.00	.00	.23	.21	.00	9.9	.00	.00	.00	.00
7	.00	.00	.00	.00	.37	.00	.00	3.8	.00	.00	.00	12
8	.00	.00	.01	.00	.32	.00	.00	1.6	.00	.00	.00	2.3
9	.00	.00	11	.00	.04	.00	.00	.81	.00	.00	.00	.00
10	.00	.00	2.5	.00	.03	.00	.00	98	.00	.00	.00	.00
11	.00	.00	.39	.00	.00	.00	.00	10	32	.00	.00	.23
12	.00	.00	.00	.0	.11	.00	.00	13	.81	.00	.00	.00
13	.00	.00	.00	13	.0	.00	.08	94	2.7	.00	.00	15
14	.00	.00	.00	.27	.01	.10	48	39	94	.00	.00	.72
15	.00	.01	.00	.00	.00	.00	2.3	176	2.4	.00	4.2	.00
16	.00	.00	.00	.00	.00	.00	.45	16	.66	.00	3.1	.00
17	.00	.00	.00	.00	6.9	.00	.01	300	.26	.00	.02	.00
18	.00	.00	.00	.00	5.4	.00	.02	8.0	.14	.00	.00	.00
19	.00	.00	.00	18	.48	.00	77	4.0	.10	.00	.00	.00
20	.00	.00	.00	3.4	.03	9.1	7.2	2.8	.00	.00	.00	.00
21	.00	.00	.00	.21	.00	16	2.5	10	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	2.4	.75	2.2	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	.21	.06	1.4	.00	.00	.00	.00
24	.00	.00	.00	1.0	.00	.02	.02	.67	1.1	.00	52	.00
25	.00	.0	.00	1.8	.00	.00	.00	.07	.51	.00	3.5	.00
26	.00	.00	.00	121	.00	3.4	.00	.00	.99	.00	.02	.00
27	.00	.00	.00	9.8	.00	1.3	.00	.00	1.3	.00	.00	.00
28	.00	.00	.00	19	.00	56	.00	.00	.03	.00	.00	.00
29	.00	.00	.00	60	---	5.8	.35	.00	.00	.00	.00	.00
30	.00	.00	.00	8.7	---	1.2	2.3	.00	.00	.00	.00	.00
31	5.9	---	.00	3.2	---	.18	---	.00	---	.00	.00	---
TOTAL	11.70	0.01	13.90	259.38	37.81	153.52	141.07	915.27	137.00	0.00	118.39	30.25
MEAN	.38	.000	.45	8.37	1.35	4.95	4.70	29.5	4.57	.00	3.82	1.01
MAX	5.9	.01	11	121	13	56	77	300	94	.00	55	15
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	23	.02	28	514	75	305	280	1820	272	.0	235	60
CFSM	.03	.00	.04	.68	.11	.40	.38	2.40	.37	.00	.31	.08
IN.	.04	.00	.04	.78	.11	.46	.43	2.77	.41	.00	.36	.09

CAL YR 1988	TOTAL	831.15	MEAN	2.27	MAX	85	MIN	.00	AC-FT	1650	CFSM	.18	IN.	2.51
WTR YR 1989	TOTAL	1818.30	MEAN	4.98	MAX	300	MIN	.00	AC-FT	3610	CFSM	.41	IN.	5.50

08156800 SHOAL CREEK AT 12TH STREET, AUSTIN, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.-- Chemical and biochemical analyses: February 1943, January 1975 to current year. Pesticide analyses: January 1975 to September 1985. Water temperature: January 1975 to current year. Radiochemical analyses: April 1980.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	COLOR (PLAT-INUM- COBALT UNITS)	TUR-BID- ITY (NTU)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03
MAR											
01...	2140	192	663	--	25	1700	--	290000	470000	--	--
01...	2155	483	498	--	--	--	--	--	--	--	--
01...	2210	585	454	--	35	1500	--	>8.2	200000	250000	--
01...	2225	474	418	7.20	--	--	--	--	--	--	--
01...	2240	398	392	--	--	--	--	>8.1	--	130	55
01...	2255	329	369	--	40	1400	--	--	82000	220000	--
APR											
19...	0845	116	289	--	60	400	20	88000	290000	--	--
19...	0915	130	269	7.50	--	--	--	--	--	110	45
19...	0930	149	312	--	50	240	14	--	--	--	--
19...	0945	316	302	--	--	--	--	--	--	--	--
19...	1000	1200	180	--	60	1700	25	68000	K180000	--	--
19...	1116	211	132	--	120	760	11	K18000	K16000	--	--

[illegible]

DATE	RESIDUE TOTAL AT 105 DEG. C. SUS- PENDED (MG/L)	RESIDUE 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- PHOROUS TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS- SOLVED (UG/L AS AS)
MAR											
01...	5100	470	0.960	0.240	1.20	1.00	15	16	1.20	91	--
01...	--	--	--	--	--	--	--	--	--	--	2
01...	3360	304	0.810	0.090	0.900	0.420	4.7	5.1	1.00	47	--
01...	--	--	--	--	--	--	--	--	--	--	--
01...	--	--	0.590	0.110	0.700	0.460	4.1	4.6	0.810	40	--
01...	3290	364	0.630	0.070	0.700	0.360	3.5	3.9	1.10	45	--
APR											
19...	640	122	0.630	0.070	0.700	0.280	0.62	0.90	0.170	19	--
19...	--	--	--	--	--	--	--	--	--	--	--
19...	456	94	0.550	0.050	0.600	0.220	0.68	0.90	0.160	18	--
19...	--	--	--	--	--	--	--	--	--	--	2
19...	4010	464	0.420	0.080	0.500	0.250	0.45	0.70	0.280	58	--
19...	1400	214	0.440	0.060	0.500	0.190	0.31	0.50	0.190	34	--

[illegible]

COLORADO RIVER BASIN

131

08157900 TOWN LAKE AT AUSTIN, TX

LOCATION.--Lat 30°14'56", Long 97°43'03", Travis County, Hydrologic Unit 12090205, at Longhorn Dam on the Colorado River at Austin, 1.5 mi downstream from Interstate Highway 35, and 2.3 mi southeast of the State Capitol in Austin.

DRAINAGE AREA.--39,003 mi², approximately, of which 11,403 mi² probably is noncontributing.

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: February 1975 to current year.

301559097424801 - TOWN LAKE AR

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JAN							
26...	1140	1.00	630	8.00	14.5	9.0	89
26...	1142	10.0	630	8.00	14.5	9.0	89
26...	1144	22.0	630	8.00	14.5	8.8	87
FEB							
27...	0838	1.00	695	8.30	17.0	10.4	110
27...	0840	10.0	695	8.20	16.0	10.7	111
27...	0842	22.0	690	7.80	13.5	8.4	83
APR							
12...	0945	1.00	725	8.00	18.0	8.4	89
12...	0947	10.0	725	8.00	18.0	8.4	89
12...	0949	22.0	725	8.00	18.0	8.3	88
14...	1150	1.00	713	8.10	17.0	8.5	89
14...	1152	10.0	713	8.10	17.0	8.5	89
14...	1154	22.0	713	8.10	16.5	8.4	87
MAY							
05...	1330	1.00	708	8.00	20.0	8.8	98
05...	1332	10.0	708	8.00	19.5	8.9	98
05...	1334	20.0	718	7.80	19.0	8.1	88
AUG							
21...	0925	1.00	710	7.90	24.5	5.1	62
21...	0927	10.0	709	7.70	24.0	4.3	52
21...	0929	22.0	709	7.70	23.5	4.2	50

301500097424801 - TOWN LAKE AC

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JAN									
26...	1200	1.00	629	8.00	14.0	1.20	2.9	8.8	86
26...	1202	10.0	629	8.00	14.0	--	--	8.8	86
26...	1204	20.0	631	7.90	13.5	--	--	8.2	79
26...	1206	28.0	631	7.90	13.0	--	2.5	8.0	76
FEB									
27...	0852	1.00	695	8.20	17.5	1.70	2.3	10.0	107
27...	0854	10.0	695	8.30	17.0	--	--	10.2	108
27...	0856	15.0	695	8.10	14.5	--	--	9.9	100
27...	0858	20.0	690	7.90	13.0	--	--	8.6	84
27...	0900	28.0	690	7.80	12.5	--	2.6	7.5	72
APR									
12...	0900	1.00	725	8.00	17.5	1.50	2.3	8.4	89
12...	0902	10.0	725	8.00	17.5	--	--	8.4	89
12...	0904	20.0	725	8.00	18.0	--	--	8.3	88
12...	0906	28.0	725	8.00	17.5	--	5.0	8.1	85
14...	1200	1.00	717	8.10	17.0	1.50	2.5	8.5	89
14...	1202	10.0	717	8.10	17.0	--	--	8.5	89
14...	1204	20.0	713	8.10	17.0	--	--	8.4	88
14...	1206	28.0	713	8.10	16.5	--	9.0	8.2	85
MAY									
05...	1335	1.00	705	8.00	21.0	1.20	2.9	8.4	95
05...	1337	10.0	714	7.90	19.5	--	--	8.1	89
05...	1339	20.0	718	7.80	19.0	--	--	7.3	80
05...	1341	28.0	714	7.60	18.5	--	8.9	5.2	56
AUG									
21...	0945	1.00	710	7.90	24.5	1.80	1.6	5.5	67
21...	0947	10.0	710	7.80	24.0	--	--	5.2	63
21...	0949	20.0	710	7.80	23.5	--	--	4.8	58
21...	0951	28.0	710	7.70	23.5	--	5.1	4.3	52

COLORADO RIVER BASIN

08157900 TOWN LAKE AT AUSTIN, TX--Continued

301500097424801 - TOWN LAKE AC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CAC03	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, 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)
JAN									
26...	1.2	350	156	356	6	--	<0.010	0.200	0.030
26...	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--
26...	1.2	--	157	357	10	--	<0.010	0.200	0.040
FEB									
27...	1.0	K13	164	390	6	--	<0.010	0.200	0.010
27...	--	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--
27...	0.5	--	161	389	7	--	<0.010	0.200	0.050
APR									
12...	0.5	61	154	402	<1	--	<0.010	<0.100	0.030
12...	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--
12...	0.4	--	154	405	<1	--	<0.010	<0.100	0.040
14...	0.3	49	154	403	11	--	<0.010	<0.100	0.050
14...	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--
14...	0.6	--	151	414	17	--	<0.010	<0.100	0.050
MAY									
05...	1.1	620	151	397	14	0.090	0.010	0.100	0.040
05...	--	--	--	--	--	--	--	--	--
05...	--	--	--	--	--	--	--	--	--
05...	1.2	--	151	412	25	0.090	0.010	0.100	0.100
AUG									
21...	0.8	130	154	413	8	--	<0.010	<0.100	0.020
21...	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--
21...	0.8	--	153	419	4	--	<0.010	<0.100	0.040
DATE	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	COPPER, DIS- SOLVED (UG/L AS CU)	LEAD, DIS- SOLVED (UG/L AS PB)
JAN									
26...	0.37	0.40	0.020	--	2.8	--	--	1	<5
26...	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--
26...	0.36	0.40	0.020	--	2.5	--	--	2	<5
FEB									
27...	0.19	0.20	0.010	--	3.2	--	--	4	<5
27...	--	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--
27...	0.25	0.30	0.020	--	3.4	--	--	3	<5
APR									
12...	0.37	0.40	0.010	--	2.9	--	--	2	<5
12...	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--
12...	0.26	0.30	0.020	--	3.4	--	--	1	<5
14...	0.35	0.40	0.010	--	3.1	--	--	2	<5
14...	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--
14...	0.25	0.30	0.010	--	3.5	--	--	1	<5
MAY									
05...	--	<0.20	0.020	--	3.1	--	--	3	1
05...	--	--	--	--	--	--	--	--	--
05...	--	--	--	--	--	--	--	--	--
05...	0.20	0.30	0.020	--	3.5	--	--	2	2
AUG									
21...	0.38	0.40	0.010	<0.010	3.0	0.300	<0.100	9	<1
21...	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--
21...	0.86	0.90	0.210	<0.010	2.9	0.200	<0.100	2	<1

COLORADO RIVER BASIN

133

08157900 TOWN LAKE AT AUSTIN, TX--Continued

301503097424701 - TOWN LAKE AL

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JAN							
26...	1230	1.00	626	8.00	14.0	8.7	85
26...	1232	10.0	628	8.00	14.0	8.6	84
26...	1234	17.0	638	7.90	13.5	8.4	81
FEB							
27...	0915	1.00	700	8.20	19.0	9.6	106
27...	0917	10.0	697	8.20	17.5	9.8	105
27...	0919	18.0	695	8.00	14.5	8.9	90
APR							
12...	0955	1.00	725	8.00	17.5	8.1	85
12...	0957	10.0	725	8.00	17.5	8.1	85
12...	0959	18.0	725	8.00	17.5	8.1	85
14...	1215	1.00	713	8.10	17.0	8.4	88
14...	1217	10.0	713	8.10	16.5	8.3	86
14...	1219	18.0	713	8.10	16.5	8.2	85
MAY							
05...	1405	1.00	701	7.90	20.0	8.2	91
05...	1409	10.0	704	7.90	19.5	8.2	90
05...	1411	18.0	713	7.90	19.5	8.2	90
AUG							
21...	1025	1.00	711	7.90	25.0	5.1	63
21...	1027	10.0	711	7.80	24.5	4.9	60
21...	1029	18.0	710	7.80	24.0	4.5	54

301500097440801 - TOWN LAKE BR

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JAN							
26...	1245	1.00	558	7.90	14.5	8.4	83
26...	1247	10.0	542	7.90	14.5	8.4	83
26...	1249	15.0	545	8.00	14.5	8.4	83
FEB							
27...	0942	1.00	695	8.30	17.5	10.4	111
27...	0944	10.0	695	8.10	15.5	10.1	104
27...	0946	15.0	695	8.00	14.0	8.8	87
APR							
12...	1000	1.00	727	8.00	17.5	8.5	90
12...	1002	10.0	727	8.00	17.5	8.5	90
12...	1004	15.0	727	8.00	17.5	8.5	90
14...	1120	1.00	673	8.00	16.5	8.3	86
14...	1122	14.0	678	8.00	16.5	8.3	86
MAY							
05...	1300	1.00	459	7.90	19.0	8.2	89
05...	1302	10.0	577	7.90	19.0	8.3	90
05...	1304	17.0	615	7.90	18.5	8.0	86
AUG							
21...	1040	1.00	711	7.90	25.0	6.1	75
21...	1042	10.0	711	7.90	24.5	6.1	74
21...	1044	15.0	711	7.90	24.5	6.1	74

COLORADO RIVER BASIN
08157900 TOWN LAKE AT AUSTIN, TX--Continued

301504097440901 - TOWN LAKE BC
WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JAN								
26...	1255	1.00	570	8.00	14.5	--	8.5	84
26...	1257	10.0	558	8.00	14.5	--	8.5	84
26...	1259	20.0	546	8.00	14.5	--	8.4	83
26...	1301	30.0	534	8.00	14.5	--	8.5	83
FEB								
27...	0930	1.00	695	8.30	17.5	--	10.5	112
27...	0932	10.0	695	8.20	16.0	--	10.2	106
27...	0934	20.0	695	8.00	14.0	--	9.0	89
27...	0936	29.0	695	7.80	13.5	--	7.5	74
APR								
12...	1030	1.00	727	8.00	17.5	--	8.5	90
12...	1032	10.0	727	8.00	17.5	--	8.5	90
12...	1034	20.0	727	8.00	17.5	--	8.5	90
12...	1036	30.0	727	8.00	17.5	--	8.4	89
14...	1130	1.00	671	8.00	16.5	--	8.4	87
14...	1132	10.0	660	8.00	16.0	--	8.4	86
14...	1134	20.0	643	8.00	16.0	--	8.3	85
14...	1136	30.0	638	8.00	16.0	--	8.3	85
MAY								
05...	1307	1.00	497	7.90	19.0	0.20	8.0	87
05...	1309	10.0	594	7.90	18.5	--	8.0	86
05...	1311	20.0	624	7.90	18.5	--	8.2	89
05...	1313	29.0	652	7.90	18.5	--	8.0	86
AUG								
21...	1050	1.00	711	7.90	25.0	--	6.1	75
21...	1052	10.0	711	7.90	24.5	--	6.0	73
21...	1054	20.0	711	7.90	24.0	--	6.0	72
21...	1056	29.0	711	7.80	24.0	--	6.0	72

301544097445201 - TOWN LAKE CR
WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JAN							
26...	1415	1.00	592	7.90	14.0	8.6	84
26...	1417	14.0	383	8.00	13.5	9.0	87
FEB							
27...	0955	1.00	697	8.30	17.0	10.4	110
27...	0957	13.0	695	8.00	14.0	9.8	97
APR							
12...	1045	1.00	727	8.00	17.5	8.5	90
12...	1047	12.0	727	8.00	17.5	8.5	90
14...	0955	1.00	680	8.00	16.5	8.6	89
14...	0957	13.0	450	8.10	14.5	9.0	89
MAY							
05...	1125	1.00	555	7.90	19.0	8.3	90
05...	1127	14.0	647	7.90	18.5	8.3	90
AUG							
21...	1100	1.00	710	7.80	24.0	6.0	73
21...	1102	13.0	710	7.80	24.0	6.0	73

COLORADO RIVER BASIN

135

08157900 TOWN LAKE AT AUSTIN, TX--Continued

301546097445101 - TOWN LAKE CC

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

	DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	
JAN													
	26...	1315	1.00	575	7.90	14.0	0.12	66	8.9	87	1.6	5500	
	26...	1317	10.0	410	8.00	13.5	--	--	9.0	87	--	--	
	26...	1319	18.0	360	8.10	13.5	--	490	9.0	87	3.5	--	
FEB													
	27...	1003	1.00	695	8.30	17.0	1.20	2.1	10.5	111	2.4	380	
	27...	1005	10.0	693	8.10	15.5	--	--	10.2	105	--	--	
	27...	1007	18.0	698	7.80	14.0	--	5.5	8.8	87	0.4	--	
APR													
	12...	1052	1.00	700	8.00	17.5	1.50	2.5	8.9	94	0.5	100	
	12...	1054	10.0	714	8.00	17.5	--	--	8.9	94	--	--	
	12...	1056	18.0	722	8.00	17.5	--	--	8.6	91	0.3	--	
	14...	0910	1.00	692	8.00	16.5	0.80	11	8.9	92	0.7	600	
	14...	0912	10.0	605	8.00	16.0	--	--	8.9	91	--	--	
	14...	0914	18.0	415	8.00	14.0	--	240	8.8	86	4.6	--	
MAY													
	05...	1045	1.00	452	7.90	19.5	0.20	76	8.3	91	3.7	24000	
	05...	1047	10.0	671	7.90	18.5	--	--	8.3	90	--	--	
	05...	1049	18.0	675	7.90	18.5	--	7.4	8.2	89	1.2	--	
AUG													
	21...	1110	1.00	711	7.80	23.5	3.20	1.2	5.7	68	0.4	100	
	21...	1112	10.0	711	7.80	23.5	--	--	5.6	67	--	--	
	21...	1114	18.0	711	7.80	23.5	--	1.3	5.6	67	0.6	--	
	DATE		ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, 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- PHOROUS TOTAL (MG/L AS P)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P)
JAN													
	26...	144	320	80	0.190	0.010	0.200	0.050	0.45	0.50	0.030	--	--
	26...	--	--	--	--	--	--	--	--	--	--	--	--
	26...	82	214	684	0.170	0.030	0.200	0.090	0.71	0.80	0.050	--	--
FEB													
	27...	166	393	5	--	<0.010	0.100	0.020	0.38	0.40	0.030	--	--
	27...	--	--	--	--	--	--	--	--	--	--	--	--
	27...	167	396	18	--	<0.010	0.200	0.070	--	<0.20	0.040	--	--
APR													
	12...	152	399	5	--	<0.010	0.100	0.040	0.36	0.40	0.010	--	--
	12...	--	--	--	--	--	--	--	--	--	--	--	--
	12...	151	396	--	--	<0.010	<0.100	0.040	0.26	0.30	0.010	--	--
	14...	146	--	18	--	<0.010	0.100	0.050	0.25	0.30	0.020	--	--
	14...	--	--	--	--	--	--	--	--	--	--	--	--
	14...	90	243	351	0.270	0.030	0.300	0.180	0.62	0.80	0.110	--	--
MAY													
	05...	86	265	124	0.360	0.040	0.400	0.120	0.28	0.40	0.290	--	--
	05...	--	--	--	--	--	--	--	--	--	--	--	--
	05...	125	401	16	0.190	0.010	0.200	0.040	0.16	0.20	0.020	--	--
AUG													
	21...	153	416	4	--	<0.010	<0.100	0.030	0.17	0.20	0.010	0.010	--
	21...	--	--	--	--	--	--	--	--	--	--	--	--
	21...	153	403	6	--	<0.010	<0.100	0.030	0.97	1.0	0.020	<0.010	--

COLORADO RIVER BASIN

08157900 TOWN LAKE AT AUSTIN, TX--Continued

301546097445101 - TOWN LAKE CC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)	CARBON, ORGANIC TOTAL (MG/L AS C)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	ARSENIC IN BOT- TOM MA- TERIAL (UG/G AS AS)	CADMIUM DIS- SOLVED (UG/L AS CD)	CADMIUM RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CD)	CHRO- MIUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)
JAN											
26...	--	4.3	--	--	1	1	--	--	--	--	3
26...	--	--	--	--	--	--	--	--	--	--	--
26...	--	11	--	--	3	1	5	--	3	10	14
FEB											
27...	--	3.5	--	--	--	1	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--	--	--
27...	--	3.9	--	--	--	1	3	--	<10	20	--
APR											
12...	--	3.1	--	--	--	1	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--	--	--
12...	--	3.6	--	--	--	1	16	--	2	10	--
14...	--	3.5	--	--	1	1	--	--	--	--	2
14...	--	--	--	--	--	--	--	--	--	--	--
14...	--	8.8	--	--	2	1	9	--	3	9	9
MAY											
05...	--	6.9	--	--	2	2	--	--	--	--	9
05...	--	--	--	--	--	--	--	--	--	--	--
05...	--	3.5	--	--	1	1	6	--	2	20	3
AUG											
21...	0.03	2.8	0.100	<0.100	--	<1	--	<1	--	--	--
21...	--	--	--	--	--	--	--	--	--	--	--
21...	--	2.9	0.300	<0.100	--	<1	10	--	<10	20	--
DATE	COPPER, DIS- SOLVED (UG/L AS CU)	COPPER, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	IRON, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LEAD, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS PB)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MANGA- NESE, RECOV. FM BOT- TOM MA- TERIAL (UG/G)
JAN											
26...	2	--	1000	34	--	<5	<5	--	30	7	--
26...	--	--	--	--	--	--	--	--	--	--	--
26...	2	30	5100	64	6700	21	<5	70	230	6	420
FEB											
27...	3	--	--	4	--	--	<5	--	--	2	--
27...	--	--	--	--	--	--	--	--	--	--	--
27...	2	30	--	12	11000	--	<5	<100	--	29	510
APR											
12...	1	--	--	6	--	--	<5	--	--	5	--
12...	--	--	--	--	--	--	--	--	--	--	--
12...	1	30	--	6	4400	--	<5	70	--	6	480
14...	<1	--	150	21	--	<5	<5	--	20	6	--
14...	--	--	--	--	--	--	--	--	--	--	--
14...	1	50	6100	26	6000	11	<5	50	180	6	280
MAY											
05...	<1	--	2200	33	--	17	2	--	80	7	--
05...	--	--	--	--	--	--	--	--	--	--	--
05...	3	30	240	16	8000	3	<1	70	20	6	380
AUG											
21...	3	--	--	<3	--	--	1	--	--	5	--
21...	--	--	--	--	--	--	--	--	--	--	--
21...	3	30	--	33	8200	--	<1	40	--	6	370

COLORADO RIVER BASIN

137

08157900 TOWN LAKE AT AUSTIN, TX--Continued

301546097445101 - TOWN LAKE CC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	MERCURY RECOV. FM BOT- TOM MA- TERIAL (UG/G AS HG)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)	ZINC, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS ZN)	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)
JAN											
26...	--	20	13	--	<0.1	<0.10	<0.010	<0.1	<0.010	0.010	0.010
26...	--	--	--	--	--	--	--	--	--	--	--
26...	0.13	50	7	110	<0.1	<0.10	<0.010	0.1	<0.010	0.010	0.010
FEB											
27...	--	--	<3	--	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010
27...	--	--	--	--	--	--	--	--	--	--	--
27...	0.16	--	<3	150	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010
APR											
12...	--	--	4	--	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010
12...	--	--	--	--	--	--	--	--	--	--	--
12...	0.12	--	4	100	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010
14...	--	<10	5	--	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010
14...	--	--	--	--	--	--	--	--	--	--	--
14...	0.22	40	5	170	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010
MAY											
05...	--	30	4	--	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010
05...	--	--	--	--	--	--	--	--	--	--	--
05...	0.11	<10	4	120	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010
AUG											
21...	--	--	10	--	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010
21...	--	--	--	--	--	--	--	--	--	--	--
21...	0.09	--	4	120	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010

DATE	DI- ELDRIN TOTAL (UG/L)	ENDO- SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)
JAN										
26...	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.01	<0.01	<0.1	<1
26...	--	--	--	--	--	--	--	--	--	--
26...	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.01	<0.01	<0.1	<1
FEB										
27...	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.01	<0.01	<0.1	<1
27...	--	--	--	--	--	--	--	--	--	--
27...	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.01	<0.01	<0.1	<1
APR										
12...	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.01	<0.01	<0.1	<1
12...	--	--	--	--	--	--	--	--	--	--
12...	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.01	<0.01	<0.1	<1
14...	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.01	<0.01	<0.1	<1
14...	--	--	--	--	--	--	--	--	--	--
14...	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	<0.01	<0.01	<0.1	<1
MAY										
05...	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.01	<0.01	<0.1	<1
05...	--	--	--	--	--	--	--	--	--	--
05...	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.01	<0.01	<0.1	<1
AUG										
21...	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.01	<0.01	<0.1	<1
21...	--	--	--	--	--	--	--	--	--	--
21...	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.01	<0.01	<0.1	<1

301556097452301 - TOWN LAKE DR

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
FEB							
27...	1032	1.00	695	8.20	16.0	10.1	105
27...	1034	12.0	705	7.80	13.5	9.3	91
APR							
12...	1125	1.00	703	8.00	17.5	8.5	90
12...	1127	13.0	703	8.00	17.5	8.5	90
14...	1010	1.00	715	8.00	16.5	8.4	87
14...	1012	13.0	715	8.00	16.5	8.3	86
MAY							
05...	1140	1.00	685	7.80	18.5	8.4	91
05...	1142	13.0	685	7.90	18.5	8.3	90
AUG							
21...	1145	1.00	705	7.70	24.0	4.6	56
21...	1147	13.0	705	7.70	23.5	4.6	55

COLORADO RIVER BASIN

08157900 TOWN LAKE AT AUSTIN, TX--Continued

301558097452201 - TOWN LAKE DC

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	SAMPLING DEPTH (FEET)	SPECIFIC CONDUCTANCE (US/CM)	PH (STANDARD UNITS)	TEMPERATURE WATER (DEG C)	TRANSPARENCY (SECCHI DISK) (M)	TURBIDITY (NTU)	OXYGEN, DISSOLVED (MG/L)	OXYGEN, DISSOLVED (PERCENT SATURATION)	
FEB										
27...	1038	1.00	695	8.20	16.0	1.80	2.2	10.0	104	
27...	1040	10.0	690	8.00	13.5	--	--	10.3	101	
27...	1042	20.0	695	7.90	13.0	--	1.7	9.6	93	
APR										
12...	1130	1.00	712	7.90	17.5	1.30	3.1	8.6	91	
12...	1132	10.0	712	8.00	17.5	--	--	8.6	91	
12...	1134	20.0	708	8.00	17.5	--	4.6	8.6	91	
14...	1015	1.00	718	8.10	16.5	1.60	2.4	8.7	90	
14...	1017	10.0	713	8.10	16.5	--	--	8.7	90	
14...	1019	20.0	710	8.10	16.5	--	5.9	8.5	88	
MAY										
05...	1150	1.00	683	7.80	18.5	0.90	5.0	8.5	92	
05...	1152	10.0	677	7.90	18.5	--	--	8.3	90	
05...	1154	19.0	677	8.00	18.5	--	7.0	8.5	92	
AUG										
21...	1200	1.00	709	7.80	24.0	2.60	1.5	4.8	58	
21...	1202	10.0	709	7.80	23.5	--	--	4.8	58	
21...	1204	19.0	709	7.80	23.5	--	1.3	4.7	56	
DATE		OXYGEN DEMAND, BIO-CHEMICAL, 5 DAY (MG/L)	COLIFORM, FECA, UM-MF (COLS./100 ML)	ALKALINITY, WAT WH TOT FET FIELD (MG/L AS CAC03)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L)	NITROGEN, NITRATE TOTAL (MG/L AS N)	NITROGEN, NITRITE TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)
FEB										
27...		0.8	170	172	392	6	--	<0.010	0.200	0.010
27...		--	--	--	--	--	--	--	--	--
27...		0.1	--	164	393	5	--	<0.010	0.200	0.070
APR										
12...		0.3	96	154	403	<1	--	<0.010	0.100	0.030
12...		--	--	--	--	--	--	--	--	--
12...		0.3	--	153	408	10	--	<0.010	<0.100	0.030
14...		0.5	280	153	410	9	--	<0.010	<0.100	0.040
14...		--	--	--	--	--	--	--	--	--
14...		0.5	--	149	404	14	--	<0.010	<0.100	0.050
MAY										
05...		1.0	10000	151	395	<1	0.190	0.010	0.200	0.040
05...		--	--	--	--	--	--	--	--	--
05...		0.9	--	140	386	16	--	<0.010	0.100	0.040
AUG										
21...		0.5	54	157	412	<1	--	<0.010	0.100	0.020
21...		--	--	--	--	--	--	--	--	--
21...		0.5	--	158	407	20	--	<0.010	0.100	0.020
DATE		NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHOROUS, TOTAL (MG/L AS P)	PHOSPHOROUS, ORTHO, DIS-SOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CHLOROPHYLL-A, PLANKTON CHROMO FLUOROM (UG/L)	CHLOROPHYLL-B, PLANKTON CHROMO FLUOROM (UG/L)	COPPER, DIS-SOLVED (UG/L AS CU)	LEAD, DIS-SOLVED (UG/L AS PB)
FEB										
27...		0.29	0.30	0.020	--	3.9	--	--	2	<5
27...		--	--	--	--	--	--	--	--	--
27...		0.13	0.20	0.010	--	3.1	--	--	1	<5
APR										
12...		0.17	0.20	0.010	--	3.1	--	--	1	<5
12...		--	--	--	--	--	--	--	--	--
12...		0.27	0.30	0.010	--	3.2	--	--	1	<5
14...		0.26	0.30	<0.010	--	3.0	--	--	1	<5
14...		--	--	--	--	--	--	--	--	--
14...		0.35	0.40	0.010	--	3.2	--	--	1	<5
MAY										
05...		0.26	0.30	0.020	--	3.3	--	--	<1	6
05...		--	--	--	--	--	--	--	--	--
05...		0.26	0.30	0.120	--	3.5	--	--	2	<1
AUG										
21...		0.28	0.30	0.010	<0.010	2.8	0.200	<0.100	2	<1
21...		--	--	--	--	--	--	--	--	--
21...		0.48	0.50	0.010	<0.010	2.6	0.200	<0.100	1	<1

COLORADO RIVER BASIN

139

08157900 TOWN LAKE AT AUSTIN, TX--Continued

301712097470701 - TOWN LAKE EC

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

									OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	
FEB									
27...	1102	1.00	689	7.70	15.5	4.00	1.4	9.8	101
27...	1104	10.0	689	7.90	14.0	--	--	10.5	104
27...	1106	17.0	687	7.90	13.5	--	1.1	10.1	99
APR									
12...	1200	1.00	716	8.10	17.5	1.80	2.5	8.9	94
12...	1202	10.0	718	8.10	17.5	--	--	8.8	93
12...	1204	18.0	720	8.10	17.5	--	9.5	8.7	92
14...	1050	1.00	720	8.20	16.5	1.20	3.5	8.7	90
14...	1052	10.0	720	8.20	16.5	--	--	8.7	90
14...	1054	18.0	720	8.20	16.5	--	3.5	8.6	89
MAY									
05...	1220	1.00	695	7.70	19.5	1.80	2.5	8.4	93
05...	1222	10.0	702	7.90	19.0	--	--	8.7	95
05...	1224	16.0	690	7.80	19.0	--	9.7	8.4	92
AUG									
21...	1245	1.00	711	7.90	24.5	2.10	1.9	5.0	61
21...	1247	10.0	711	7.90	24.5	--	--	5.0	61
21...	1249	17.0	711	7.90	24.0	--	5.0	5.0	60
DATE	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CAC03	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
FEB									
27...	0.2	K4	173	384	2	<0.010	0.300	0.020	0.28
27...	--	--	--	--	--	--	--	--	--
27...	0	--	157	386	5	<0.010	0.200	0.030	0.37
APR									
12...	0.3	88	150	409	2	<0.010	<0.100	0.010	0.19
12...	--	--	--	--	--	--	--	--	--
12...	0.8	--	149	408	12	<0.010	<0.100	0.020	--
14...	0.5	96	148	413	8	<0.010	<0.100	0.020	0.48
14...	--	--	--	--	--	--	--	--	--
14...	0.4	--	149	404	11	<0.010	<0.100	0.030	0.47
MAY									
05...	0.7	160	154	406	11	<0.010	0.200	0.030	--
05...	--	--	--	--	--	--	--	--	--
05...	0.8	--	148	390	21	<0.010	0.200	0.030	--
AUG									
21...	0.6	K3	156	408	15	<0.010	<0.100	0.020	0.38
21...	--	--	--	--	--	--	--	--	--
21...	0.5	--	154	407	46	<0.010	<0.100	0.020	0.68
DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	COPPER, DIS- SOLVED (UG/L AS CU)	LEAD, DIS- SOLVED (UG/L AS PB)	
FEB									
27...	0.30	0.020	--	2.5	--	--	3	<5	
27...	--	--	--	--	--	--	--	--	
27...	0.40	0.010	--	2.7	--	--	2	<5	
APR									
12...	0.20	0.010	--	3.0	--	--	1	<5	
12...	--	--	--	--	--	--	--	--	
12...	<0.20	0.010	--	35	--	--	1	<5	
14...	0.50	<0.010	--	3.3	--	--	1	<5	
14...	--	--	--	--	--	--	--	--	
14...	0.50	<0.010	--	3.0	--	--	1	<5	
MAY									
05...	<0.20	0.020	--	2.9	--	--	3	1	
05...	--	--	--	--	--	--	--	--	
05...	<0.20	0.010	--	3.4	--	--	1	<1	
AUG									
21...	0.40	0.010	<0.010	2.9	1.00	<0.100	1	1	
21...	--	--	--	--	--	--	--	--	
21...	0.70	0.010	<0.010	3.2	1.00	<0.100	1	<1	

COLORADO RIVER BASIN

08157900 TOWN LAKE AT AUSTIN, TX--Continued

301601097454001 - TOWN LAKE FC

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
FEB 27...	1121	2.00	707	7.30	20.5	6.3	72
APR 12...	1145	1.50	708	7.20	19.5	5.8	64
14...	1040	1.50	650	7.20	19.0	5.1	55
MAY 05...	1210	1.50	582	7.10	20.5	5.5	62
AUG 21...	1230	2.00	655	7.20	24.0	5.7	69

COLORADO RIVER MAIN STEM

141

08158000 COLORADO RIVER AT AUSTIN, TX
(National stream-quality accounting network)

LOCATION.--Lat 30°14'40", long 97°41'39", Travis County, Hydrologic Unit 12090205, on right bank 1,000 ft upstream from upstream bridge on U.S. Highway 183 in Austin, 1.4 mi downstream from Longhorn Dam, and at mile 290.3.

DRAINAGE AREA.--39,009 mi², approximately, of which 11,403 mi² probably is noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February 1898 to current year. Records of daily discharge for Dec. 13-26, 1914, and Feb. 9-17, 1915, published in WSP 408, have been found unreliable and should not be used.

REVISED RECORDS.--WSP 508: 1915(m). WSP 528: 1900(M), 1918(m). WSP 548: 1901-16. WSP 1342: Drainage area. WSP 1562: 1908, 1929(M), 1936.

GAGE.--Water-stage recorder. Datum of gage is 402.27 ft above National Geodetic Vertical Datum of 1929. Prior to June 19, 1939, all records collected at or near Congress Avenue bridge 3.9 mi upstream at datum 19.6 ft higher; prior to June 18, 1915, nonrecording gages, recording gages thereafter; June 20, 1939, to Oct. 16, 1963, at site 1,000 ft downstream from present site at datum 5.0 ft higher.

REMARKS.--No estimated daily discharges. Records fair. Since 1937, at least 10 percent of drainage area has been regulated by upstream reservoirs. Flow largely regulated by Lake Travis (station 08154500). The city of Austin diverts water for municipal use upstream from station and returns sewage effluent downstream. There are many other diversions above Lake Buchanan for irrigation, municipal supplies, and oil field operations. Gage-height telemeter at station.

AVERAGE DISCHARGE.--38 years (water years 1899-1936) unregulated, 2,711 ft³/s (1,964,000 acre-ft/yr); 53 years (water years 1937-89) regulated, 1,950 ft³/s (1,413,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 481,000 ft³/s June 15, 1935 (gage height, 50 ft, present site and datum, from floodmark); minimum daily, 2.4 ft³/s Feb. 28, 1984.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1833, 51 ft July 7, 1869, present site and datum (adjusted to present site on basis of record for flood of June 15, 1935), determined from information concerning stage at former site furnished by Dean T. U. Taylor.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 11,400 ft³/s May 17 at 1330 hours (gage height, 11.91 ft); minimum daily, 7.6 ft³/s Mar. 11.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2120	84	147	201	204	55	718	1720	2180	1930	1130	1650
2	1710	16	155	216	250	119	715	1670	2150	1960	947	1650
3	1640	18	143	207	552	39	534	1720	2150	1480	1100	1660
4	1640	30	144	276	961	840	191	1700	2150	2040	1110	1650
5	1620	35	144	274	591	339	832	1620	2140	2280	1250	1630
6	1490	365	152	274	1080	43	613	1700	2110	1920	1020	1650
7	1240	25	167	265	693	38	704	1700	2310	1870	1140	1680
8	1410	36	374	286	196	49	903	1690	2200	1920	1100	1670
9	1360	356	286	258	208	54	919	1680	2220	1880	959	1630
10	1380	18	174	279	172	39	927	1920	2210	1910	927	1650
11	975	15	200	247	215	7.6	920	1780	2220	1870	1160	1650
12	611	15	196	275	166	13	1120	1760	2230	1700	1270	1620
13	475	18	246	363	268	111	1190	2350	2300	1640	1350	1700
14	86	28	264	269	193	156	1150	1540	1320	1690	976	1030
15	16	55	260	270	211	84	1200	1430	1690	1460	1170	1370
16	25	47	209	268	195	66	1180	1660	1750	1330	1560	1390
17	40	27	196	270	212	616	1150	4150	1730	1340	1650	1390
18	48	49	202	269	206	954	1190	1180	1750	1330	1690	1370
19	55	55	177	393	191	970	1510	564	1740	1310	1710	1380
20	47	50	196	338	323	991	80	661	1770	1370	1700	1300
21	13	14	199	293	197	1020	947	1160	1750	994	1790	1310
22	413	12	282	250	190	922	1220	1840	1950	1390	1750	1290
23	447	11	202	267	31	929	1220	1820	1940	1120	1740	1350
24	22	150	205	241	42	915	1220	1790	1980	1170	2180	1360
25	14	187	210	278	39	935	1230	2020	1980	1110	1780	1350
26	15	180	210	687	40	942	1570	2030	1970	1130	1690	1340
27	24	149	205	195	48	914	1570	2020	1960	1120	1650	1350
28	35	147	205	231	49	1170	1470	2050	1990	1120	1650	1350
29	41	152	197	531	---	854	1610	2020	1960	1120	1630	1350
30	55	152	205	206	---	704	1690	2170	1970	1100	1630	1360
31	107	---	208	191	---	692	---	2140	---	1230	1670	---
TOTAL	19174	2496	6360	8868	7723	15580.6	31493	55255	59770	46834	44079	44130
MEAN	619	83.2	205	286	276	503	1050	1782	1992	1511	1422	1471
MAX	2120	365	374	687	1080	1170	1690	4150	2310	2280	2180	1700
MIN	13	11	143	191	31	7.6	80	564	1320	994	927	1030
AC-FT	38030	4950	12620	17590	15320	30900	62470	109600	118600	92900	87430	87530
CAL YR 1988	TOTAL	382275	MEAN	1044	MAX	3670	MIN	11	AC-FT	758200		
WTR YR 1989	TOTAL	341762.6	MEAN	936	MAX	4150	MIN	7.6	AC-FT	677900		

COLORADO RIVER MAIN STEM

08158000 COLORADO RIVER AT AUSTIN, TX--Continued
(National stream-quality accounting network)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: September 1932 to March 1944, October 1947 to October 1973. Chemical and biochemical analyses: February to August 1968, January 1974 to current year. Sediment analyses: March 1974 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1947 to current year.

WATER TEMPERATURE: October 1947 to current year.

REMARKS.--Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 795 microsiemens Mar. 10, 1984; minimum daily, 243 microsiemens Dec. 2, 1953.

WATER TEMPERATURE: Maximum daily, 33.0°C July 25, 1979; minimum daily, 5.0°C Jan. 3, 1984.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 779 microsiemens July 31; minimum daily, 431 microsiemens May 18.

WATER TEMPERATURE: Maximum daily, 27.0°C Sept. 12; minimum daily, 6.5°C Feb. 6.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CAC03)
OCT												
17...	1050	41	622	7.30	23.5	0.70	6.7	80	0.4	24	180	220
DEC												
19...	0815	54	633	7.80	12.0	--	--	--	--	--	--	230
FEB												
27...	1015	23	700	7.30	18.0	0.40	7.7	83	--	43	400	250
JUN												
05...	1245	1840	735	8.00	24.0	7.8	10.2	123	0.5	42	K30	230
AUG												
07...	1050	1600	750	7.20	26.0	1.2	10.3	129	0.6	60	84	230

DATE	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CAC03	SULFATE DIS- SOLVED (MG/L AS S04)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SI02)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)
OCT												
17...	59	50	24	39	1	3.7	166	47	64	0.20	8.1	341
DEC												
19...	52	53	24	38	1	3.9	179	49	64	0.30	8.1	--
FEB												
27...	84	56	26	51	1	3.8	164	73	84	0.30	3.8	394
JUN												
05...	80	50	25	54	2	4.5	149	70	93	0.20	8.0	404
AUG												
07...	78	50	26	58	2	4.5	155	76	93	0.30	7.9	411

DATE	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)	SEDI- MENT, SUS- PENDED (MG/L)
OCT												
17...	336	<0.010	<0.100	0.030	<0.010	0.17	0.20	0.020	0.020	<0.010	--	4
DEC												
19...	348	--	--	--	--	--	--	--	--	--	--	--
FEB												
27...	397	0.010	<0.100	0.040	0.010	0.26	0.30	0.010	0.010	<0.010	--	9
JUN												
05...	395	<0.010	0.140	0.020	0.020	0.38	0.40	0.010	<0.010	<0.010	--	8
AUG												
07...	410	<0.010	0.140	0.040	0.030	0.26	0.30	<0.010	<0.010	0.010	0.03	50

DATE	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
OCT											
17...	0.44	88	<10	1	86	<0.5	<1	1	<3	5	9
DEC											
19...	--	--	--	--	--	--	--	--	--	--	--
FEB											
27...	0.56	80	<10	1	88	<0.5	<1	1	<3	3	6
JUN											
05...	40	82	<10	1	82	<0.5	<1	1	<3	2	8
AUG											
07...	216	47	<10	1	87	<0.5	1	<1	<3	3	6

08158000 COLORADO RIVER AT AUSTIN, TX--Continued
(National stream-quality accounting network)

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 17...	<5	11	47	<0.1	<10	<1	<1	<1.0	550	<6	8
DEC 19...	--	--	--	--	--	--	--	--	--	--	--
FEB 27...	<5	15	13	<0.1	<10	<1	<1	1.0	780	<6	8
JUN 05...	<1	15	6	<0.1	10	<1	<1	<1.0	560	<6	13
AUG 07...	1	14	5	<0.1	<10	1	<1	<1.0	610	<6	11

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1988 TO SEPTEMBER 1989

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	DIS- SOLVED SOLIDS (MG/L)	DIS- SOLVED SOLIDS (TONS)	DIS- SOLVED CHLORIDE (MG/L)	DIS- SOLVED CHLORIDE (TONS)	DIS- SOLVED SULFATE (MG/L)	DIS- SOLVED SULFATE (TONS)	HARDNESS (CA, MG) (MG/L)
OCT. 1988	19174	597	326	16900	51	2620	40	2060	240
NOV. 1988	2496	644	351	2370	54	362	43	291	260
DEC. 1988	6360	639	348	5980	53	918	43	734	260
JAN. 1989	8868	653	356	8520	54	1300	44	1050	260
FEB. 1989	7723	690	376	7840	57	1180	46	969	280
MAR. 1989	15580.6	712	388	16300	58	2450	48	2020	290
APR. 1989	31493	735	400	34000	60	5060	50	4230	300
MAY 1989	55255	696	379	56500	57	8500	47	6990	280
JUNE 1989	59770	732	398	64300	59	9580	50	7990	300
JULY 1989	46834	743	404	51100	60	7590	50	6370	300
AUG. 1989	44079	747	406	48400	60	7170	51	6030	300
SEPT 1989	44130	747	406	48400	60	7180	51	6030	300
TOTAL	341762.6	**	**	361000	**	53900	**	44800	**
WTD.AVG.	936	718	391	**	58	**	49	**	290

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
EQUIVALENT MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	585	644	630	663	655	e710	715	762	e727	732	744	748
2	574	651	635	654	664	e705	727	747	726	733	737	746
3	598	646	633	655	640	699	726	744	729	743	738	747
4	588	635	634	668	675	691	718	749	727	739	745	748
5	600	637	641	654	690	702	722	729	730	746	740	752
6	600	640	632	666	689	715	720	732	740	734	744	750
7	594	624	636	658	704	692	732	738	741	744	749	747
8	591	633	638	e662	702	715	735	755	741	744	735	744
9	607	637	617	667	703	699	735	741	729	741	735	749
10	608	629	618	667	702	699	771	726	735	737	741	748
11	604	630	e628	665	703	700	731	732	713	742	740	754
12	607	640	639	666	703	696	733	720	731	738	746	745
13	599	643	e634	666	705	695	743	721	743	744	746	744
14	597	644	630	637	709	703	e742	582	e735	749	764	746
15	610	645	643	659	712	695	741	667	e725	741	748	746
16	616	647	637	664	705	738	753	648	719	748	742	743
17	611	653	636	664	707	694	744	714	721	743	748	758
18	618	649	636	667	703	704	734	431	728	756	765	743
19	610	654	635	664	703	712	732	519	722	744	752	739
20	631	660	637	652	702	706	735	563	727	743	751	749
21	628	662	641	e655	697	712	e728	595	730	737	748	745
22	620	659	638	659	699	718	724	672	752	743	751	750
23	615	663	645	661	707	711	730	659	736	755	752	751
24	609	664	646	699	705	715	725	650	737	749	748	748
25	617	647	643	649	706	716	730	662	737	743	744	e746
26	618	643	644	662	711	718	729	676	737	734	747	744
27	633	641	651	594	706	719	730	692	735	746	746	746
28	633	645	656	577	716	725	734	702	736	747	747	746
29	627	644	657	608	---	718	735	718	739	743	749	748
30	638	641	656	599	---	717	e748	719	738	746	752	751
31	639	---	656	627	---	716	---	727	---	779	751	---
MEAN	610	645	639	652	697	708	733	684	732	744	747	747

e Estimated

COLORADO RIVER MAIN STEM

08158000 COLORADO RIVER AT AUSTIN, TX--Continued
(National stream-quality accounting network)

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24.0	20.5	14.0	13.0	14.5	15.0	18.5	20.5	---	21.0	24.0	23.5
2	21.5	20.5	14.0	14.5	15.5	14.5	19.0	19.5	20.0	21.0	24.0	24.5
3	22.0	20.5	14.0	16.0	13.0	15.0	19.0	19.0	20.5	20.0	23.5	25.0
4	21.0	21.0	15.0	15.0	11.0	15.0	20.0	20.0	20.5	21.5	23.5	25.0
5	21.0	20.5	15.5	15.5	---	10.0	19.0	18.0	21.0	23.0	23.5	25.0
6	21.5	19.5	15.5	15.0	6.5	9.5	19.0	19.5	23.0	21.5	24.0	25.5
7	20.5	20.0	15.5	16.5	8.5	10.5	19.0	19.5	21.5	---	24.5	24.0
8	21.5	20.0	15.5	---	8.5	11.0	20.0	19.5	19.0	22.0	24.0	24.0
9	21.0	21.0	13.0	13.5	9.5	13.0	19.0	19.5	23.0	21.0	24.5	---
10	21.0	21.0	13.0	13.0	9.5	13.5	18.5	19.5	20.5	21.0	23.5	24.5
11	21.5	21.0	---	13.5	---	14.5	16.5	20.0	20.5	21.0	23.5	25.0
12	21.5	21.0	17.0	14.5	---	15.5	17.0	19.5	21.5	21.0	23.5	27.0
13	20.5	20.0	---	12.0	---	16.0	16.5	20.5	20.5	21.5	23.0	24.5
14	20.0	21.5	13.0	11.0	14.0	20.0	15.5	19.5	20.0	22.0	23.5	22.0
15	21.0	22.0	14.0	11.5	13.5	16.5	16.0	19.5	21.0	22.0	23.0	23.0
16	21.5	20.0	13.0	12.0	13.0	19.5	17.0	21.5	21.5	22.0	23.5	---
17	---	18.5	12.0	10.0	12.0	19.0	17.0	20.5	20.5	23.0	22.0	---
18	23.0	19.0	11.0	13.0	11.5	---	18.0	---	20.5	21.5	---	23.0
19	23.5	20.0	12.0	13.5	11.5	18.0	18.0	23.0	21.5	---	22.0	21.0
20	24.0	---	---	14.0	12.0	18.5	18.0	24.0	20.5	23.5	22.0	23.0
21	---	16.5	---	---	12.0	---	20.0	23.5	21.0	24.0	23.0	22.0
22	24.0	15.5	15.5	11.5	12.0	14.5	---	21.5	20.0	24.0	23.0	22.0
23	23.0	15.5	15.0	12.0	11.5	---	---	22.0	20.5	23.5	23.5	22.0
24	---	---	15.0	13.5	11.5	16.5	20.5	23.5	20.5	23.5	24.0	21.0
25	23.0	16.5	14.0	---	13.0	16.5	20.0	---	21.0	23.0	24.0	25.0
26	23.5	18.0	15.5	15.0	13.5	17.0	20.5	23.0	22.0	23.5	23.5	---
27	23.5	17.0	---	14.0	15.5	18.5	19.5	23.0	22.0	21.5	24.5	21.0
28	24.0	16.0	---	14.5	15.0	17.0	---	23.0	21.0	21.5	---	21.0
29	23.0	15.0	13.0	---	---	17.0	19.5	20.5	21.5	23.0	24.5	21.0
30	22.0	15.5	13.0	13.5	---	18.5	---	22.0	21.0	23.5	24.5	21.5
31	22.0	---	13.0	13.5	---	18.0	---	---	---	23.0	24.0	---
MEAN	22.0	19.0	14.0	13.5	12.0	15.5	18.5	21.0	20.9	22.0	23.5	23.5

COLORADO RIVER BASIN

145

08158600 WALNUT CREEK AT WEBBERVILLE ROAD, AUSTIN, TX

LOCATION.--Lat 30°16'59", long 97°39'17", Travis County, Hydrologic Unit 12090205, on left bank 190 ft downstream from bridge on Farm Road 969, 0.8 mi downstream from Little Walnut Creek, 2.8 mi upstream from Colorado River, 5.2 mi east of the State Capitol Building in Austin, and 2.8 mi upstream from mouth.

DRAINAGE AREA.--51.3 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1966 to current year.

GAGE.--Water-stage recorder. Datum of gage is 425.96 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. No known regulation or diversion. An automatic water-quality sampler was installed Feb. 22, 1989.

AVERAGE DISCHARGE.--23 years, 25.7 ft³/s (6.80 in/yr), 18,620 acres-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,300 ft³/s May 25, 1981 (gage height, 27.24 ft); no flow at times in 1967, 1971, and 1982-84.
Maximum stage since at least 1891, that of May 25, 1981.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 15, 1935, reached a stage of 24 ft, backwater from Colorado River. A flood in 1919 reached a stage of 22 ft, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 26	1100	1,930	12.67	May 17	1330	*5,410	*20.26
May 15	0600	3,180	15.94	Aug. 24	2000	2,740	14.87

Minimum daily discharge, 0.29 ft³/s Oct. 4-6.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.9	2.6	2.5	3.8	8.7	40	10	7.6	7.0	3.7	2.8	1.1
2	19	1.4	2.4	3.3	10	62	10	7.5	6.9	3.3	96	1.1
3	4.3	.43	2.7	3.3	28	12	10	6.4	5.8	2.7	7.4	1.3
4	2.8	.29	2.2	3.1	7.3	22	9.1	6.9	5.3	2.6	3.6	2.2
5	2.9	.29	2.0	2.9	6.9	10	8.0	225	5.1	2.6	2.4	1.4
6	2.0	.29	1.8	2.9	6.0	8.0	8.0	18	4.8	2.1	2.1	1.4
7	2.8	.43	1.8	2.9	5.2	6.6	8.2	10	4.4	1.8	2.1	1.4
8	2.2	.43	3.1	2.9	4.8	5.9	6.7	8.5	4.9	1.5	2.1	1.4
9	2.1	.43	48	2.8	4.9	5.5	6.4	7.5	e7.0	1.4	1.6	1.4
10	2.3	1.1	26	2.9	5.1	5.8	6.2	80	e10	1.4	1.1	1.4
11	1.6	1.1	19	3.7	5.3	5.7	6.1	12	e7.0	1.4	1.1	1.5
12	1.2	1.4	6.1	12	7.8	5.3	7.2	14	e18	1.4	1.1	1.5
13	.96	1.4	4.0	55	6.9	5.3	8.8	143	e40	1.2	1.1	23
14	1.1	1.1	3.7	17	5.1	5.1	88	62	e21	1.1	.90	3.8
15	1.3	1.8	3.4	7.0	4.9	4.9	14	475	e15	1.5	9.7	2.2
16	1.1	2.2	2.7	5.3	4.5	4.9	9.1	49	e12	1.4	7.2	2.0
17	1.1	1.8	3.0	6.2	16	5.3	8.4	1230	e10	1.4	1.8	1.5
18	1.1	4.1	2.3	4.9	18	5.3	8.2	95	e8.7	1.3	1.2	1.4
19	1.1	1.8	2.5	45	8.1	5.3	175	50	8.0	.92	1.3	1.4
20	1.7	1.1	3.2	50	7.5	30	26	36	7.7	.92	1.4	1.4
21	.82	.85	3.3	11	6.3	55	15	73	6.1	1.1	1.4	1.3
22	.62	1.1	3.4	7.2	5.0	17	12	27	5.3	1.1	1.4	1.1
23	.62	.62	4.1	5.8	4.9	9.2	9.5	23	5.4	1.1	2.2	1.1
24	.62	.85	3.7	9.2	4.9	8.4	8.7	19	6.8	1.4	262	1.1
25	.99	1.4	3.1	22	5.7	7.0	8.6	16	6.3	1.4	54	1.3
26	1.1	1.8	2.9	173	5.0	11	8.5	14	11	1.6	5.5	1.4
27	1.3	1.4	2.9	17	4.6	9.8	7.4	13	8.2	1.8	3.5	1.4
28	1.6	1.4	2.9	20	4.2	156	7.1	11	5.1	2.0	2.8	1.4
29	2.1	1.1	2.9	120	---	25	7.2	9.3	5.5	1.5	2.2	1.2
30	2.3	1.1	3.4	22	---	17	11	9.2	4.1	1.4	1.8	.85
31	37	---	4.4	11	---	12	---	8.4	---	1.4	1.1	---
TOTAL	109.63	37.11	179.4	655.1	211.6	582.3	528.4	2766.3	272.4	51.44	485.90	65.95
MEAN	3.54	1.24	5.79	21.1	7.56	18.8	17.6	89.2	9.08	1.66	15.7	2.20
MAX	37	4.1	48	173	28	156	175	1230	40	3.7	262	23
MIN	.62	.29	1.8	2.8	4.2	4.9	6.1	6.4	4.1	.92	.90	.85
AC-FT	217	74	356	1300	420	1150	1050	5490	540	102	964	131
CFSM	.07	.02	.11	.41	.15	.37	.34	1.74	.18	.03	.31	.04
IN.	.08	.03	.13	.48	.15	.42	.38	2.01	.20	.04	.35	.05

CAL YR 1988	TOTAL	3502.36	MEAN	9.57	MAX	505	MIN	.29	AC-FT	6950	CFSM	.19	IN.	2.54
WTR YR 1989	TOTAL	5945.53	MEAN	16.3	MAX	1230	MIN	.29	AC-FT	11790	CFSM	.32	IN.	4.31

e Estimated.

COLORADO RIVER BASIN

08158600 WALNUT CREEK AT WEBBERVILLE ROAD, AUSTIN, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD---Chemical and biochemical analyses: April 1976 to current year. Pesticide analyses: November 1976 to September 1986. Sediment analyses: December 1977 to July 1982. Radiochemical analyses: January 1980.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD 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, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCCI KF AGAR (COLS. PER 100 ML)	
DEC 20...	1120	2.2	630	8.20	13.5	1	1.7	9.5	94	--	120	160	
FEB 14...	1105	5.4	649	8.20	15.5	2	3.2	9.6	98	0.9	400	120	
MAR 01...	2208	96	695	--	--	17	1200	--	--	>8.9	K5000	K5000	
01...	2238	619	292	--	--	25	1900	--	--	>8.5	K14000	100000	
01...	2308	480	228	--	--	--	--	--	--	--	--	--	
01...	2338	368	366	--	--	15	850	--	--	>8.1	--	--	
02...	0008	277	390	--	--	--	--	--	--	--	--	--	
02...	0038	269	294	--	--	26	490	--	--	--	K16000	60000	
21...	1340	117	352	--	--	--	--	--	--	10	K6800	25000	
21...	1410	142	349	--	--	28	130	--	--	7.9	--	--	
21...	1440	142	348	--	--	--	--	--	--	7.9	8000	26000	
21...	1510	136	346	7.50	--	--	--	--	--	--	--	--	
21...	1540	126	345	--	--	30	130	--	--	8.2	8400	17000	
JUN 05...	1200	5.8	584	7.90	27.5	10	0.60	7.9	102	0.5	K76	120	
AUG 16...	1210	3.3	399	7.80	26.5	55	2.2	6.4	81	6.8	K70000	21000	
DATE		HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB WH WAT TOT FLD (MG/L AS CAC03)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT WH TOT FET FIELD (MG/L AS CAC03)	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 SI02)
DEC 20...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB 14...	260	79	89	8.2	32	0.9	3.3	177	67	51	0.40	4.4	
MAR 01...	--	--	--	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--	--	--	--
02...	130	33	48	3.6	17	0.7	2.4	102	32	22	0.30	1.9	
02...	--	--	--	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--	--	--	--
21...	150	33	53	3.3	12	0.5	2.6	113	30	18	0.20	3.5	
21...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 05...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 16...	150	44	51	4.7	19	0.7	3.4	103	37	29	0.30	4.7	
DATE		SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L)	RESIDUE 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-PHOROUS TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS-SOLVED (UG/L AS AS)
DEC 20...	--	3	<1	--	<0.010	0.200	0.020	--	<0.20	0.030	4.3	--	
FEB 14...	362	3	2	--	<0.010	0.300	0.020	0.28	0.30	0.050	2.8	1	
MAR 01...	--	2600	236	0.270	0.030	0.300	0.130	8.2	8.3	2.10	39	--	
01...	--	4570	336	5.12	0.080	5.20	2.80	0.70	3.5	1.10	45	--	
01...	--	--	--	--	--	--	--	--	--	--	--	1	
01...	--	2120	216	0.390	0.010	0.400	0.080	2.8	2.9	0.810	33	--	
02...	188	--	--	--	--	--	--	--	--	--	--	--	--
02...	--	980	124	0.580	0.020	0.600	0.090	2.2	2.3	0.820	20	--	
21...	--	--	--	--	--	--	--	--	--	--	--	2	
21...	--	253	76	0.560	0.040	0.600	0.150	0.95	1.1	0.350	13	--	
21...	--	--	--	--	--	--	--	--	--	--	--	--	--
21...	190	--	--	--	--	--	--	--	--	--	--	--	--
21...	--	239	70	0.560	0.040	0.600	0.150	0.75	0.90	0.270	12	--	
JUN 05...	--	3	2	--	<0.010	0.200	0.010	0.69	0.70	0.010	2.0	--	
AUG 16...	211	6	<1	0.470	0.030	0.500	0.050	0.45	0.50	0.040	14	<1	

COLORADO RIVER BASIN

147

08158600 WALNUT CREEK AT WEBBERVILLE ROAD, AUSTIN, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	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)	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 20...	--	--	--	--	--	--	--	--	--	--	--
FEB 14...	72	<1	<1	1	7	<5	9	<0.1	<1	<1.0	<3
MAR 01...	--	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--	--
01...	100	<1	<1	1	<10	<5	<10	<0.1	<1	1.0	<10
01...	--	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--	--
21...	100	1	<1	3	20	<5	<10	<0.1	<1	<1.0	<10
21...	--	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--	--
JUN 05...	--	--	--	--	--	--	--	--	--	--	--
AUG 16...	48	<1	<1	1	17	<1	6	<0.1	<1	<1.0	11

COLORADO RIVER MAIN STEM

08158650 COLORADO RIVER BELOW AUSTIN, TX
(Low-Flow partial-record station)

LOCATION.--Lat 30°12'28", long 97°38'15", Travis County, Hydrologic Unit 12090205, at bridge on Farm Road 973, 0.3 mi northeast of intersection of State Highway 71 and Farm Road 973, 8.8 mi downstream from Govalle Sewage Treatment Plant outfall, and 9.6 mi downstream from gaging station at Austin.

PERIOD OF RECORD.--Chemical and biochemical analyses: February 1968 to current year. Pesticide analyses: February 1975 to September 1986.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD 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, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CAC03)
OCT 17...	1325	757	8.00	26.0	2	3.0	11.8	147	0.5	K14	250	230
DEC 06...	1330	688	7.90	18.0	2	2.0	11.5	123	1.7	K8	K10	230
FEB 27...	1225	840	7.80	19.0	4	5.9	10.4	115	--	K10	K17	230
APR 17...	1505	736	7.90	20.5	15	15	8.9	100	0.9	53	1300	220
JUN 05...	1602	730	8.00	24.5	5	5.0	11.0	134	0.5	<4	92	230
AUG 07...	1430	777	7.40	27.0	12	5.2	7.6	97	0.7	K32	580	230
DATE	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CAC03	SULFATE DIS- SOLVED (MG/L AS S04)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SI02)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)
OCT 17...	84	53	23	66	2	6.9	143	67	94	0.60	9.8	406
DEC 06...	66	55	23	65	2	5.6	166	56	82	0.40	9.4	396
FEB 27...	91	55	23	76	2	7.9	141	90	110	0.80	6.1	453
APR 17...	79	48	25	56	2	4.8	144	71	100	0.30	6.9	398
JUN 05...	84	50	25	56	2	4.0	144	68	96	0.30	7.8	394
AUG 07...	80	50	25	62	2	5.2	148	76	98	0.30	8.1	413
DATE	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	RESIDUE VOLATILE, SUS- PENDE (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- PHOROUS TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS- SOLVED (UG/L AS AS)	
OCT 17...	<1	<1	6.42	0.080	6.50	0.280	0.42	0.70	1.90	4.1	3	
DEC 06...	9	<1	3.39	0.010	3.40	0.050	1.2	1.3	1.40	3.4	--	
FEB 27...	12	7	6.95	0.050	7.00	0.170	0.93	1.1	1.90	4.5	2	
APR 17...	31	12	--	<0.010	0.700	0.050	0.45	0.50	0.270	3.6	--	
JUN 05...	16	6	--	<0.010	0.600	0.010	0.29	0.30	0.150	3.3	<1	
AUG 07...	8	<1	1.38	0.020	1.40	0.050	0.75	0.80	0.480	3.1	1	
DATE	BARIIUM, 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)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)	
OCT 17...	68	<1	<1	2	5	8	18	<0.1	<1	<1.0	14	
DEC 06...	--	--	--	--	--	--	--	--	--	--	--	
FEB 27...	67	<1	<1	3	10	<5	26	<0.1	<1	<1.0	22	
APR 17...	--	--	--	--	--	--	--	--	--	--	--	
JUN 05...	83	<1	1	2	5	1	5	<0.1	<1	1.0	11	
AUG 07...	82	<1	1	2	6	<1	7	<0.1	<1	<1.0	10	

COLORADO RIVER BASIN

149

08158700 UNION CREEK NEAR DRIFTWOOD, TX

LOCATION.--Lat 30 04'59", long 98 00'29", Hays County, Hydrologic Unit 12090205, on left bank at upstream side of low-water crossing on Farm Road 150, 3.2 mi southeast of Driftwood, and 10 mi west of Buda.

DRAINAGE AREA.--124 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1958, November 1961 to June 1979 (periodic discharge measurements only), July 1979 to current year.

GAGE.--Water-stage recorder. Datum of gage is 878.13 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records fair. One recording rain gage in the watershed.

AVERAGE DISCHARGE.--10 years, 46.8 ft³/s (5.13 in/yr), 33,910 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,990 ft³/s June 6, 1985 (gage height, 16.38 ft); no flow for several days in August and September 1984 and Oct. 1-10, 1984. Flood of Mar. 20, 1979, reached a stage of 11.48 ft (discharge, 4,980 ft³/s), on basis of peak flow over dam, 1.5 mi downstream.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 10	0745	2,640	8.21	May 17	1615	*7,260	*14.37

Minimum daily discharge, 0.07 ft³/s Nov. 13.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	.28	.18	.09	.12	2.7	1.8	5.1	3.6	45	17	2.8	.41		
2	.32	.15	.09	.12	2.7	2.2	4.8	4.2	42	16	9.5	.32		
3	.32	.15	.09	.11	6.3	2.3	4.5	3.0	38	15	3.8	.31		
4	.32	.12	.09	.10	5.4	2.7	4.3	3.0	34	15	3.0	.27		
5	.32	.10	.09	.11	5.0	2.3	4.1	8.5	32	14	2.5	.29		
6	.32	.10	.09	.12	4.3	1.4	3.8	4.7	29	13	2.2	.40		
7	.32	.10	.09	.12	3.6	1.9	3.7	4.1	25	13	1.8	.25		
8	.32	.10	.10	.12	3.1	1.1	3.7	2.9	22	12	2.5	.19		
9	.32	.10	.10	.14	2.6	1.2	3.7	3.0	19	11	2.2	.18		
10	.32	.08	.10	.15	2.2	1.4	3.6	480	18	10	1.4	.16		
11	.32	.08	.10	.15	1.8	1.4	3.4	85	24	9.1	1.6	.12		
12	.32	.08	.10	.15	1.6	1.2	3.4	47	23	7.7	1.5	.12		
13	.32	.07	.10	.15	2.4	1.2	3.4	37	19	6.7	1.1	.14		
14	.32	.08	.10	.15	1.2	1.5	4.4	36	115	6.0	.98	.19		
15	.32	.09	.10	.15	.89	1.8	3.8	102	56	5.0	1.1	.26		
16	.31	.10	.10	.15	.89	1.5	3.7	83	32	5.0	1.5	.32		
17	.24	.10	.10	.15	1.1	1.4	3.7	1430	27	5.0	2.4	.40		
18	.22	.11	.10	.15	1.4	1.4	3.7	297	24	4.2	3.1	.44		
19	.22	.11	.10	.18	1.4	1.4	11	186	24	3.8	3.5	.44		
20	.22	.10	.10	.17	1.3	2.7	8.7	147	23	3.0	2.7	.52		
21	.22	.10	.10	.15	1.1	2.0	8.4	251	21	2.9	2.7	.43		
22	.22	.10	.10	.15	1.1	1.4	7.3	157	20	3.4	2.4	.32		
23	.20	.10	.10	.15	1.1	1.1	5.6	137	20	3.5	2.0	.30		
24	.18	.10	.12	.15	1.3	1.3	4.6	120	19	5.0	1.6	.27		
25	.13	.10	.12	.16	1.9	1.8	4.9	105	20	5.5	1.5	.27		
26	.12	.09	.12	1.6	2.4	2.2	5.4	88	20	4.3	1.1	.27		
27	.12	.09	.12	2.5	2.2	2.2	5.1	74	19	4.0	.58	.27		
28	.12	.09	.12	1.2	1.6	6.7	4.6	69	19	4.2	.52	.25		
29	.12	.09	.12	8.0	---	6.1	4.6	61	18	3.3	.49	.22		
30	.11	.09	.12	7.4	---	6.8	4.2	56	17	3.0	.43	.22		
31	.19	---	.12	3.8	---	5.6	---	50	---	3.0	.37	---		
TOTAL	7.70	3.05	3.19	28.02	64.58	71.0	145.2	4135.0	864	233.6	64.87	8.55		
MEAN	.25	.10	.10	.90	2.31	2.29	4.84	133	28.8	7.54	2.09	.28		
MAX	.32	.18	.12	8.0	6.3	6.8	11	1430	115	17	9.5	.52		
MIN	.11	.07	.09	.10	.89	1.1	3.4	2.9	17	2.9	.37	.12		
AC-FT	15	6.0	6.3	56	128	141	288	8200	1710	463	129	17		
CFSM	.00	.00	.00	.01	.02	.02	.04	1.08	.23	.06	.02	.00		
IN.	.00	.00	.00	.01	.02	.02	.04	1.24	.26	.07	.02	.00		
CAL YR 1988	TOTAL	1228.76	MEAN	3.36	MAX	18	MIN	.07	AC-FT	2440	CFSM	.03	IN.	.37
WTR YR 1989	TOTAL	5628.76	MEAN	15.4	MAX	1430	MIN	.07	AC-FT	11160	CFSM	.12	IN.	1.69

COLORADO RIVER BASIN

08158700 ONION CREEK NEAR DRIFTWOOD, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: January 1974 to current year. Pesticide analyses: January 1978 to September 1986. Radiochemical analyses: January 1980.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD 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, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI, KF AGAR (COLS. PER 100 ML)	
DEC 20...	0915	0.09	552	8.20	15.5	1	0.70	7.2	74	--	51	100	
FEB 13...	1025	1.4	544	8.20	14.5	1	0.50	10.5	106	0.6	30	57	
MAY 15...	0830	48	469	8.00	21.5	5	3.0	7.9	92	1.0	K340	960	
MAY 17...	1206	268	397	8.00	22.0	25	53	7.5	89	2.3	2800	12000	
JUN 06...	1000	26	492	8.00	26.0	5	0.60	7.4	94	0.6	35	53	
AUG 16...	1000	0.89	483	7.90	26.5	25	0.40	6.7	85	0.1	K17	100	
DATE		HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB WH TOT FLD (MG/L AS CAC03)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT WH TOT FET FIELD (MG/L AS CAC03)	SULFATE DIS-SOLVED (MG/L AS S04)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SI02)
DEC 20...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB 13...	270	61	76	19	8.3	0.2	1.3	207	47	13	0.20	7.6	
MAY 15...	250	41	76	15	6.5	0.2	1.5	211	28	9.9	0.20	9.7	
MAY 17...	220	34	68	13	5.7	0.2	1.5	190	21	8.5	0.20	9.4	
JUN 06...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 16...	230	50	64	17	8.7	0.3	1.4	180	46	12	0.20	11	
DATE		SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHOROUS TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS-SOLVED (UG/L AS AS)	
DEC 20...	--	11	<1	<0.010	<0.100	0.010	0.29	0.30	<0.010	1.4	--		
FEB 13...	297	5	<1	<0.010	<0.100	<0.010	--	0.40	<0.010	2.5	<1		
MAY 15...	273	4	<1	<0.010	0.400	0.030	--	<0.20	<0.010	2.1	<1		
MAY 17...	241	100	19	<0.010	0.300	0.040	0.26	0.30	0.030	7.8	<1		
JUN 06...	--	<1	<1	<0.010	0.100	<0.010	--	<0.20	0.010	1.1	--		
AUG 16...	268	2	<1	<0.010	<0.100	0.010	--	<0.20	<0.010	1.5	<1		
DATE		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)	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 20...	--	--	--	--	--	--	--	--	--	--	--	--	
FEB 13...	30	1	<1	<1	4	<5	2	<0.1	<1	2.0	5		
MAY 15...	30	<1	<1	<1	5	<1	5	<0.1	<1	<1.0	<3		
MAY 17...	25	<1	<1	1	7	<1	1	<0.1	<1	<1.0	6		
JUN 06...	--	--	--	--	--	--	--	--	--	--	--	--	
AUG 16...	30	<1	<1	3	5	<1	2	<0.1	<1	<1.0	3		

COLORADO RIVER BASIN

151

08158810 BEAR CREEK BELOW FARM ROAD 1826 NEAR DRIFTWOOD, TX

LOCATION.--Lat 30°09'19", Long 97°56'23", Hays County, Hydrologic Unit 12090205, 0.8 mi southeast of Farm Road 1826 and 5.9 mi northeast of Driftwood.

DRAINAGE AREA.--12.2 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1978 to July 1979 (periodic discharge measurements only), October 1978 to June 1979 (peak discharges above base only), July 1979 to current year.

GAGE.--Water-stage recorder. Datum of gage is 860 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good. One rain gage in the watershed.

AVERAGE DISCHARGE.--10 years, 5.89 ft³/s (6.56 in/yr), 4,270 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,330 ft³/s June 11, 1981 (gage height, 13.05 ft, from floodmarks), from slope-area measurements of peak flow; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 9, 1919, reached a stage of 16.2 ft (discharge unknown) and was the highest since at least 1924, from information by local resident. A flood in 1915 was 2 ft higher than the 1939 flood, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Apr. 19	0915	514	5.17	May 10	0430	*1,410	*7.06

Minimum daily discharge, no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.07	1.3	2.8	5.2	4.0	.19	.00
2	.00	.00	.00	.00	.00	.22	1.4	2.6	4.6	3.7	.86	.00
3	.00	.00	.00	.00	.00	.29	1.4	2.4	4.5	3.7	.48	.00
4	.00	.00	.00	.00	.00	.39	1.3	2.4	4.2	3.4	.20	.00
5	.00	.00	.00	.00	.00	.15	1.3	4.1	4.0	3.4	.08	.00
6	.00	.00	.00	.00	.00	.15	1.1	2.9	3.5	2.9	.07	.00
7	.00	.00	.00	.00	.00	.26	1.1	2.6	3.3	3.0	.06	.00
8	.00	.00	.00	.00	.00	.30	1.1	2.5	2.8	2.9	.08	.00
9	.00	.00	.00	.00	.00	.30	1.1	2.4	2.6	2.7	.07	.00
10	.00	.00	.00	.00	.00	.30	.97	137	2.5	2.4	.06	.00
11	.00	.00	.00	.00	.00	.30	.93	18	3.9	2.3	.05	.00
12	.00	.00	.00	.00	.00	.34	.93	16	2.5	2.1	.04	.00
13	.00	.00	.00	.00	.00	.42	.86	17	2.2	2.0	.04	.00
14	.00	.00	.00	.00	.00	.34	2.2	16	13	2.0	.04	.00
15	.00	.00	.00	.00	.00	.25	1.3	17	7.4	1.7	.03	.00
16	.00	.00	.00	.00	.00	.15	1.1	16	6.6	1.6	.03	.00
17	.00	.00	.00	.00	.00	.05	.28	.93	6.1	1.2	.02	.00
18	.00	.00	.00	.00	.00	.09	.33	.93	27	5.8	1.1	.01
19	.00	.00	.00	.00	.00	.09	.32	40	23	5.3	.92	.01
20	.00	.00	.00	.00	.00	.09	.41	5.0	19	5.0	.76	.00
21	.00	.00	.00	.00	.07	.21	4.3	19	4.8	.73	.00	.00
22	.00	.00	.00	.00	.06	.23	3.7	16	4.7	1.1	.00	.00
23	.00	.00	.00	.00	.07	.22	3.5	14	4.7	1.6	.00	.00
24	.00	.00	.00	.00	.07	.24	3.4	13	5.0	.85	.00	.00
25	.00	.00	.00	.00	.14	.42	3.2	11	5.3	.72	.00	.00
26	.00	.00	.00	.00	.10	.48	3.2	9.5	5.0	.75	.00	.00
27	.00	.00	.00	.00	.08	.48	3.0	8.1	4.5	.74	.00	.00
28	.00	.00	.00	.00	.07	1.3	3.0	7.7	4.1	.71	.00	.00
29	.00	.00	.00	.00	.00	1.5	3.0	6.9	4.1	.58	.00	.00
30	.00	.00	.00	.00	.00	1.2	3.0	6.4	4.2	.34	.00	.00
31	.00	.00	.00	.00	.00	1.1	.00	5.7	.00	.17	.00	.00
TOTAL	0.00	0.00	0.00	0.00	0.98	12.95	99.55	496.0	141.4	56.07	2.42	0.00
MEAN	.00	.00	.00	.00	.035	.42	3.32	16.0	4.71	1.81	.078	.00
MAX	.00	.00	.00	.00	.14	1.5	40	137	13	4.0	.86	.00
MIN	.00	.00	.00	.00	.00	.07	.86	2.4	2.2	.17	.00	.00
AC-FT	.0	.0	.0	.0	1.9	26	197	984	280	111	4.8	.0
CFSM	.00	.00	.00	.00	.00	.03	.27	1.31	.39	.15	.01	.00
IN.	.00	.00	.00	.00	.00	.04	.30	1.51	.43	.17	.01	.00

CAL YR 1988	TOTAL	120.75	MEAN	.33	MAX	1.5	MIN	.00	AC-FT	240	CFSM	.03	IN.	.37
WTR YR 1989	TOTAL	809.37	MEAN	2.22	MAX	137	MIN	.00	AC-FT	1610	CFSM	.18	IN.	2.47

COLORADO RIVER BASIN

08158810 BEAR CREEK BELOW FARM ROAD 1826 NEAR DRIFTWOOD, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: March 1978 to current year. Pesticide analyses: June 1978 to September 1986. Radiochemical analyses: January 1980.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD 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, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI, FECAL, KF AGAR (COLS. PER 100 ML)	
		HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB WH TOT FLD (MG/L AS CAC03)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT WH TOT FET FIELD (MG/L AS CAC03)	SULFATE DIS-SOLVED (MG/L AS S04)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SI02)
MAY													
17...	1050	29	557	7.80	22.0	5	--	8.2	97	0.6	K340	1700	
17...	1127	49	510	7.90	22.0	20	34	7.3	87	1.0	2800	11000	
17...	1248	186	529	7.90	22.5	18	18	4.7	56	1.2	2800	7200	
JUN													
06...	1040	8.5	542	7.90	27.0	5	0.80	8.5	109	0.6	400	38	
AUG													
16...	1045	0.02	521	7.90	27.5	18	0.30	7.3	94	0.3	K62	1000	
DATE		SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L)	RESIDUE 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-PHOROUS TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS-SOLVED (UG/L AS AS)
MAY													
17...	--	--	--	--	--	--	--	--	--	--	--	--	--
17...	260	34	81	14	7.8	0.2	1.2	226	30	14	0.20	8.5	--
17...	280	45	89	15	8.4	0.2	1.3	239	31	15	0.20	9.5	--
JUN													
06...	270	25	82	16	10	0.3	0.90	246	34	17	0.20	8.7	--
AUG													
16...	240	46	68	17	12	0.3	0.90	194	35	21	0.20	13	--
DATE		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)	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)	
MAY													
17...	--	--	--	--	--	--	--	--	--	--	--	--	
17...	30	<1	<1	<1	2	15	1	10	<0.1	<1	2.0	11	
17...													
JUN													
06...	33	<1	<1	<1	<1	61	<1	11	<0.1	<1	<1.0	<3	
AUG													
16...	34	<1	<1	<1	<1	5	<1	1	<0.1	<1	<1.0	<3	

08158840 SLAUGHTER CREEK AT FARM ROAD 1826 NEAR AUSTIN, TX

LOCATION.--Lat 30°12'32", long 97°54'11", Travis County, Hydrologic Unit 12090205, 1.7 mi south of the intersection on U.S. Highway 290 and Farm Road 1826, and 11.9 mi southwest of the State Capitol Building in Austin.

DRAINAGE AREA.--8.24 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1978 to current year.

GAGE.--Water-stage recorder. Datum of gage is 876.14 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair except for estimated daily discharges, which are poor. No known regulation or diversion. Recording rain gage in the watershed.

AVERAGE DISCHARGE.--11 years (water years 1979-89), 5.61 ft³/s (9.25 in/yr), 4,060 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,080 ft³/s June 11, 1981 (gage height, 10.79 ft); no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 17	1245	*340	*5.42				

Minimum discharge, no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	e.00	.00	.88	.26	.00	.00
2	.00	.00	.00	.00	.05	.00	e.00	.00	.67	.17	.00	.00
3	.00	.00	.00	.00	.02	.00	e.00	.00	.70	.17	.00	.00
4	.00	.00	.00	.00	.00	.00	e.00	.00	.74	.17	.00	.00
5	.00	.00	.00	.00	.00	.00	e.00	.25	.61	.17	.00	.00
6	.00	.00	.00	.00	.00	.00	e.00	.00	.44	.13	.00	.00
7	.00	.00	.00	.00	.00	.00	e.00	.00	.42	.15	.00	.00
8	.00	.00	.00	.00	.00	e.00	e.00	.01	.38	.15	.00	.00
9	.00	.00	.00	.00	.00	e.00	e.00	.04	.40	.10	.00	.00
10	.00	.00	.00	.00	.00	e.00	e.00	23	.43	.14	.00	.00
11	.00	.00	.00	.00	.00	e.00	e.00	4.3	1.1	.08	.00	.03
12	.00	.00	.00	.00	.00	e.00	e.00	3.9	.53	.08	.00	.00
13	.00	.00	.00	.00	.00	e.00	e.00	19	.45	.11	.00	.00
14	.00	.00	.00	.00	.00	e.00	e.00	13	7.6	.08	.00	.00
15	.00	.00	.00	.00	.00	e.00	e.00	11	1.7	.08	.00	.00
16	.00	.00	.00	.00	.00	e.00	e.00	9.7	1.2	.08	.00	.00
17	.00	.00	.00	.00	.00	e.00	e.00	76	.93	.04	.00	.00
18	.00	.00	.00	.00	.00	e.00	e.00	24	.87	.04	.00	.00
19	.00	.00	.00	.09	.00	e.00	e.92	10	.86	.04	.00	.00
20	.00	.00	.00	.00	.00	e.00	e.00	7.0	.71	.04	.00	.00
21	.00	.00	.00	.00	.00	e.00	e.00	5.5	.34	.04	.00	.00
22	.00	.00	.00	.00	.00	e.00	e.00	4.1	.30	.04	.00	.00
23	.00	.00	.00	.00	.00	e.00	e.00	3.1	.28	.03	.00	.00
24	.00	.00	.00	.04	.00	e.00	e.00	2.6	.31	.01	.00	.00
25	.00	.00	.00	.02	.00	e.00	.00	2.2	.40	.01	.00	.00
26	.00	.00	.00	.30	.00	e.00	.00	1.7	.39	.01	.00	.00
27	.00	.00	.00	.00	.00	e.00	.00	1.6	.39	.01	.00	.00
28	.00	.00	.00	.10	.00	e.00	.00	1.4	.31	.01	.00	.00
29	.00	.00	.00	.17	---	e.00	.00	1.3	.28	.01	.00	.00
30	.00	.00	.00	.00	---	e.00	.00	1.2	.28	.01	.00	.00
31	.00	---	.00	.00	---	e.00	---	1.1	---	.00	.00	---
TOTAL	0.00	0.00	0.00	0.72	0.07	0.00	0.92	227.00	24.90	2.46	0.00	0.03
MEAN	.00	.00	.00	.023	.002	.00	.031	7.32	.83	.079	.00	.001
MAX	.00	.00	.00	.30	.05	.00	.92	76	7.6	.26	.00	.03
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.28	.00	.00	.00
AC-FT	.0	.0	.0	1.4	.1	.0	1.8	450	49	4.9	.0	.06
CAL YR 1988	TOTAL	57.32	MEAN	.16	MAX	.74	MIN	.00	AC-FT	114		
WTR YR 1989	TOTAL	256.10	MEAN	.70	MAX	76	MIN	.00	AC-FT	508		

e Estimated

COLORADO RIVER BASIN

08158840 SLAUGHTER CREEK AT FARM ROAD 1826 NEAR AUSTIN, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: June 1983 to current year. Pesticide analyses: June 1983 to September 1986.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-A-TURE 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, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI, FECAL, KF AGAR (COLS. PER 100 ML)	
MAY 17...	1327	--	506	7.90	23.0	55	150	5.2	63	1.9	32000	67000	
JUN 06...	1115	0.44	780	7.70	28.0	10	0.90	8.0	105	0.4	53	76	
DATE		HARD-NESS TOTAL (MG/L AS CaCO3)	HARD-NESS NONCARB WH WAT TOT FLD MG/L AS CaCO3	CALCIUM DIS-SOLVED (MG/L AS Ca)	MAGNE-SIUM, DIS-SOLVED (MG/L AS Mg)	SODIUM, DIS-SOLVED (MG/L AS Na)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT WH TOT FET FIELD MG/L AS CaCO3	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS Cl)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SiO2)
MAY 17...	240	72	68	16	17	0.5	2.7	164	52	32	0.10	9.2	
JUN 06...	380	83	110	25	29	0.7	1.1	295	85	57	0.20	8.3	
DATE		SOLIDS, SUM OF CON-S-TITU-ENTS, DIS-SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L)	RESIDUE 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-PHOROUS TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS-SOLVED (UG/L AS AS)
MAY 17...	295	313	53	0.170	0.030	0.200	0.090	0.41	0.50	0.040	14	<1	
JUN 06...	493	4	3	--	<0.010	0.200	0.020	0.18	0.20	0.020	2.2	<1	
DATE		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)	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)	
MAY 17...	34	<1	<1	<1	1	15	1	7	<0.1	<1	<1.0	6	
JUN 06...	50	<1	<1	<1	<1	<3	<1	10	<0.1	<1	<1.0	4	

COLORADO RIVER BASIN

155

08158920 WILLIAMSON CREEK AT OAK HILL, TX

LOCATION.--Lat 30°06'06", long 97°51'36", Travis County, Hydrologic Unit 12090205, at downstream side of bridge on U.S. Highway 290 in Oak Hill, 0.8 mi east of the intersection of U.S. Highway 290 and State Highway 71, and 7.7 mi southwest of the State Capitol Building in Austin.

DRAINAGE AREA.--6.30 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1974 to February 1977 (periodic discharge measurements only), January 1978 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 798.68 ft above National Geodetic Vertical Datum of 1929 (levels from city of Austin bench mark).

REMARKS.--No estimated daily discharges. Records fair. Station is equipped with an automatic water-quality sampler. Recording rain gage in the watershed above this station (discontinued Sept. 30, 1989).

AVERAGE DISCHARGE.--11 years, 4.41 ft³/s (9.51 in/yr), 3,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,170 ft³/s June 11, 1981 (gage height, 8.55 ft), from rating curve extended above 105 ft³/s on basis of slope-area measurement of peak flow; no flow for many days each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 10	0300	*1,010	*5.14	May 17	1145	957	5.06
May 13	1900	780	4.77				

Minimum daily discharge, no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.17	.12	.11	.03	1.9	.51	.00	.00
2	.00	.00	.00	.00	.68	.14	.09	.00	2.3	.36	3.4	.00
3	.00	.00	.00	.00	.51	.0	.06	.00	2.7	.23	.00	.00
4	.00	.00	.00	.00	.14	.47	.03	.00	2.7	.16	.00	.00
5	.00	.00	.00	.00	.16	.03	.01	15	2.8	.09	.00	.00
6	.00	.00	.00	.00	.15	.01	.01	.34	2.5	.03	.00	.00
7	.00	.00	.00	.09	.09	.01	.00	.13	2.4	.00	.00	.00
8	.00	.00	.00	.00	.09	.00	.00	.07	1.8	.00	.00	.00
9	.00	.00	.00	.00	.07	.00	.00	.05	1.4	.00	.00	.00
10	.00	.00	.00	.00	.07	.00	.00	87	1.3	.00	.00	.00
11	.00	.00	.00	.00	.07	.00	.00	12	11	.00	.00	.00
12	.00	.00	.00	.00	.12	.00	.00	7.5	.98	.00	.00	.00
13	.00	.00	.00	.66	.07	.00	.14	72	2.9	.00	.00	.01
14	.00	.00	.00	.07	.04	.00	3.2	40	48	2.0	.00	.00
15	.00	.00	.00	.00	.04	.00	.10	34	1.7	.0	.00	.00
16	.00	.00	.00	.00	.01	.00	.02	20	1.3	.00	.00	.00
17	.00	.00	.00	.00	.16	.00	.00	134	1.3	.00	.00	.00
18	.00	.00	.00	.00	.11	.00	.00	44	1.3	.00	.00	.00
19	.00	.00	.00	1.9	.05	.00	20	25	1.2	.00	.00	.00
20	.00	.00	.00	.54	.04	.22	.68	16	1.0	.00	.00	.00
21	.00	.00	.00	.00	.15	.98	.38	11	1.1	.00	.00	.00
22	.00	.00	.00	.00	.26	.06	.29	8.5	.97	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.25	6.4	1.1	.00	.00	.00
24	.00	.00	.00	.44	.00	.00	.22	4.8	2.7	.00	.00	.00
25	.00	.00	.00	.51	.00	.00	.14	4.1	1.4	.00	.00	.00
26	.00	.00	.00	22	.00	.00	.12	3.3	1.8	.26	.00	.00
27	.00	.00	.00	.23	.00	.00	.07	3.0	1.2	.0	.00	.00
28	.00	.00	.00	2.8	.00	9.1	.04	2.5	.85	.00	.00	.00
29	.00	.00	.01	9.4	---	.43	.12	2.2	.71	.00	.00	.00
30	.00	.00	.00	.71	---	.24	.17	2.0	.56	.00	.00	.00
31	2.0	---	.00	.30	---	.15	---	1.9	---	.00	.00	---
TOTAL	2.00	0.00	0.01	39.65	3.25	11.96	26.25	556.82	104.87	3.64	3.40	0.01
MEAN	.065	.00	.000	1.28	.12	.39	.87	18.0	3.50	.12	.11	.000
MAX	2.0	.00	.01	22	.68	9.1	20	134	48	2.0	3.4	.01
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.56	.00	.00	.00
AC-FT	4.0	.0	.02	79	6.4	24	52	1100	208	7.2	6.7	.02
CFSM	.01	.00	.00	.20	.02	.06	.14	2.85	.55	.02	.02	.00
IN.	.01	.00	.00	.23	.02	.07	.15	3.29	.62	.02	.02	.00

CAL YR 1988	TOTAL	62.50	MEAN	.17	MAX	8.8	MIN	.00	AC-FT	124	CFSM	.03	IN.	.37
WTR YR 1989	TOTAL	751.86	MEAN	2.06	MAX	134	MIN	.00	AC-FT	1490	CFSM	.33	IN.	4.44

COLORADO RIVER BASIN

08158920 WILLIAMSON CREEK AT OAK HILL, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: January 1974 to current year. Pesticide analyses: June 1978 to September 1986. Radiochemical analyses: April 1980.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD 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, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI, FECAL, KF AGAR (COLS. PER 100 ML)	
JAN													
26...	0830	45	240	--	--	23	300	--	--	12	K2400	18000	
26...	0900	347	--	--	--	--	--	--	--	--	--	--	
26...	0930	267	108	--	--	65	300	--	--	8.5	8400	76000	
26...	1000	100	127	--	--	70	270	--	--	5.7	10000	60000	
26...	1030	49	--	--	--	--	--	--	--	--	--	--	
26...	1100	29	146	--	--	80	220	--	--	6.4	K6000	59000	
FEB													
13...	0920	0.04	898	7.60	17.0	1	0.40	8.5	91	0.8	28	40	
MAR													
28...	0610	92	402	--	--	--	--	--	--	--	14000	20000	
28...	0625	150	259	--	--	30	170	--	--	11	--	--	
28...	0640	177	148	7.40	--	--	--	--	--	--	K5600	23000	
28...	0655	169	173	--	--	40	110	--	--	9.4	--	--	
28...	0710	136	199	--	--	--	--	--	--	--	--	--	
28...	0725	95	191	--	--	55	89	--	--	5.9	K24000	30000	
JUN													
06...	1150	2.7	813	8.30	26.0	5	0.20	12.7	161	0.4	80	60	
DATE		HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB WH WAT TOT FLD MG/L AS CAC03	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT WH TOT FET FIELD MG/L AS CAC03	SULFATE DIS-SOLVED (MG/L AS S04)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SI02)
JAN													
26...	--	--	--	--	--	--	--	--	--	--	--	--	--
26...	61	61	19	3.2	3.4	0.2	2.1	--	15	6.2	0.10	2.9	--
26...	--	--	--	--	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--	--	--	--	--
26...	58	58	18	3.1	3.0	0.2	2.5	--	14	5.2	0.10	3.2	--
26...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB													
13...	430	140	120	31	29	0.6	1.9	287	110	57	0.20	1.4	--
MAR													
28...	--	--	--	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--	--	--	--
28...	62	12	19	3.5	4.9	0.3	1.8	50	13	7.7	0.10	1.9	--
28...	--	--	--	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN													
06...	--	--	--	--	--	--	--	--	--	--	--	--	--
DATE		SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L)	RESIDUE 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-PHOROUS TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS-SOLVED (UG/L AS AS)
JAN													
26...	--	848	236	--	0.030	<0.100	0.020	1.7	1.7	0.440	22	--	--
26...	52	--	--	--	--	--	--	--	--	--	--	--	4
26...	--	648	156	0.150	0.050	0.200	0.040	1.6	1.6	0.290	19	--	--
26...	--	292	60	0.160	0.040	0.200	0.040	1.1	1.1	0.290	17	--	--
26...	49	--	--	--	--	--	--	--	--	--	--	--	1
26...	--	344	68	0.150	0.050	0.200	0.050	1.0	1.1	0.220	14	--	--
FEB													
13...	523	7	<1	--	<0.010	<0.100	0.010	0.49	0.50	0.020	2.9	1	--
MAR													
28...	--	--	--	--	--	--	--	--	--	--	--	--	1
28...	--	495	114	0.180	0.020	0.200	0.060	1.7	1.8	0.500	25	--	--
28...	82	--	--	--	--	--	--	--	--	--	--	--	--
28...	--	332	105	0.180	0.020	0.200	0.050	2.0	2.0	0.410	21	--	--
28...	--	--	--	0.270	0.030	0.300	0.060	1.1	1.2	0.360	17	--	--
28...	--	192	55	--	--	--	--	--	--	--	--	--	--
JUN													
06...	--	<1	<1	--	<0.010	<0.100	0.010	--	<0.20	0.050	2.1	--	--

157

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

[illegible]

COLORADO RIVER BASIN

08159000 ONION CREEK AT U.S. HIGHWAY 183 NEAR AUSTIN, TX

LOCATION.--Lat 30°10'40", long 97°41'18", Travis County, Hydrologic Unit 12090205, on right bank at downstream side of downstream bridge on U.S. Highway 183, 2.4 mi downstream from Williamson Creek, 3.2 mi southwest of Del Valle, and 7.5 mi southeast of the State Capitol Building in Austin.

DRAINAGE AREA.--321 mi².

PERIOD OF RECORD.--May 1924 to March 1930, March 1976 to current year. In 1924-30 station was published as "near Del Valle."

Water-quality records.--Chemical and biochemical analyses: October 1976 to September 1988. Pesticide analyses: October 1976 to September 1986. Sediment analyses: October 1976 to September 1982. Radiochemical analyses: January 1980.

GAGE.--Water-stage recorder. Datum of gage is 442.85 ft State Department of Highways and Public Transportation datum. May 15, 1924, to Mar. 15, 1930, nonrecording gage at highway bridge 1,700 ft upstream at 6.42-foot higher datum.

REMARKS.--No estimated daily discharges. Records good. Flow is slightly regulated by several small ponds on main channel and tributaries above station. One recording rain gage in the watershed. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--18 years (water years 1925-29, 1977-89), 80.2 ft³/s (3.39 in/yr), 58,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 76,000 ft³/s May 28, 1929 (gage height, 30.5 ft), present datum; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1869 occurred about July 3, 1869, stage about 38 ft from newspaper accounts, and Sept. 9, 1921, stage 38.0 ft, from floodmark, present site and datum.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 2,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 18	0230	*5,370	*15.16	No other peak greater than base discharge.			

Minimum daily discharge, no flow at times.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	15	.00	.00	3.9	1.4	3.8	2.2	1.2	.00	.00	.00
2	.00	3.1	.00	.00	3.4	1.7	3.1	3.1	.60	.00	.00	.00
3	.00	.00	.00	.00	35	1.8	2.0	2.1	.28	.00	.00	.00
4	.00	.02	.00	.00	6.6	2.0	1.4	1.0	.06	.00	.00	.00
5	.00	.00	.00	.00	3.6	2.5	1.1	33	.0	.00	.00	.00
6	.00	.00	.00	.00	2.8	1.6	.98	14	.00	.00	.00	.00
7	.00	.00	.00	.00	2.6	1.4	.62	7.4	.00	.00	.00	.00
8	.00	.00	.00	.00	2.3	1.1	.52	3.9	.00	.00	.00	.00
9	.00	.00	.00	.00	2.2	1.1	.28	2.5	.00	.00	.00	.00
10	.00	.00	.00	.00	2.1	.93	.17	396	.00	.00	.00	.00
11	.00	.00	20	.00	2.1	.88	.10	182	31	.00	.00	.00
12	.00	.00	13	.00	2.1	1.5	.15	31	4.6	.00	.00	.00
13	.00	.00	5.5	7.7	2.3	2.7	.08	139	1.2	.00	.00	.00
14	.00	.0	.48	20	2.1	2.8	35	174	184	.00	.00	.00
15	.00	.00	.00	15	2.1	2.9	7.1	21	25	.00	.00	.00
16	.00	.00	.00	9.0	2.0	2.6	3.2	16	5.3	.00	.00	.00
17	.00	.00	.00	3.9	1.9	2.6	2.0	441	2.7	.00	.00	.00
18	.00	.00	.00	.77	3.4	2.6	1.3	1390	2.0	.00	.00	.00
19	.00	.00	.00	5.8	2.9	2.7	82	179	1.1	.00	.00	.00
20	.00	.00	.00	32	2.6	7.2	21	88	.38	.00	.00	.00
21	.00	.00	.00	7.7	2.1	7.6	6.8	88	.08	.00	.00	.00
22	.00	.00	.00	3.2	1.8	10	3.9	124	.0	.00	.00	.00
23	.00	.00	.00	1.6	1.6	5.0	2.8	51	.00	.00	.00	.00
24	.00	.00	.00	.48	1.4	4.3	2.1	28	.00	.00	.89	.00
25	.00	.00	.00	3.3	1.4	3.8	1.6	14	.00	.00	16	.00
26	.00	.00	.00	71	1.3	3.6	1.1	6.8	.00	.00	.19	.00
27	.00	.00	.00	27	1.1	3.8	.65	4.4	.00	.00	.00	.00
28	.00	.00	.00	7.9	1.1	31	.52	3.7	.00	.00	.00	.00
29	.00	.00	.00	139	---	15	.26	2.6	.00	.00	.00	.00
30	.00	.00	.00	22	---	6.2	2.8	2.1	.00	.00	.00	.00
31	19	---	.00	7.1	---	4.4	---	1.6	---	.00	.00	---
TOTAL	19.00	18.12	38.98	384.45	99.8	138.71	188.43	3452.4	259.50	0.00	17.08	0.00
MEAN	.61	.60	1.26	12.4	3.56	4.47	6.28	111	8.65	.00	.55	.00
MAX	19	15	20	139	35	31	82	1390	184	.00	16	.00
MIN	.00	.00	.00	.00	1.1	.88	.08	1.0	.00	.00	.00	.00
AC-FT	38	36	77	763	198	275	374	6850	515	.0	34	.0
CFSM	.00	.00	.00	.04	.01	.01	.02	.35	.03	.00	.00	.00
IN.	.00	.00	.00	.04	.01	.02	.02	.40	.03	.00	.00	.00

CAL YR 1988 TOTAL 1837.17 MEAN 5.02 MAX 170 MIN .00 AC-FT 3640 CFSM .02 IN. .21
WTR YR 1989 TOTAL 4616.47 MEAN 12.6 MAX 1390 MIN .00 AC-FT 9160 CFSM .04 IN. .53

COLORADO RIVER MAIN STEM

159

08159200 COLORADO RIVER AT BASTROP, TX

LOCATION.--Lat 30°06'16", long 97°19'09", Bastrop County, Hydrologic Unit 12090301, at the downstream side of bridge on State Highway 71 bridge, at Bastrop, 0.3 mi upstream from Gills Branch, 1.2 mi downstream from Piney Creek, and at mile 236.6.

DRAINAGE AREA.--39,979 mi², approximately, of which 11,403 mi² probably is noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1960 to current year. October 1973 to September 1975, daily discharges estimated by hydrographic comparison with streamflow stations 08158000 and 08159500.

REVISED RECORDS.--WRD TX-81-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 307.38 ft above National Geodetic Vertical Datum of 1929. Prior to May 10, 1960, nonrecording gage at a site 400 ft upstream from present site and at same datum. May 10, 1960, to Sept. 30, 1973, and Oct. 1, 1975, to Oct. 28, 1986, at a site 400 ft upstream from present site and at same datum.

REMARKS.--No estimated daily discharges. Records good. There are many diversions above station for irrigation and for municipal supply. Regulation is the same as that for Colorado River at Austin (station 08158000). The city of Austin diverts water into Decker Lake (by pumpage) upstream from this station. The Lower Colorado River Authority also diverts water from the Colorado into Lake Bastrop by pumping upstream from this station. Gage-height telemeter at station.

AVERAGE DISCHARGE.--29 years, 2,126 ft³/s (1,540,000 acre-ft yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 79,600 ft³/s Oct. 29, 1960 (gage height, 34.45 ft); minimum daily, 75 ft³/s Apr. 1, 1964.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1845, 60.3 ft July 7 or 8, 1869. Flood of June 16, 1935, reached a stage of 57.0 ft, and flood of Dec. 4, 1913, reached a stage of 53.3 ft, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 11,700 ft³/s May 18 at 1200 hours (gage height, 11.73 ft); minimum daily, 165 ft³/s Nov. 25.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2160	202	288	377	479	211	922	1930	2100	2150	1480	1940
2	2310	265	298	357	472	228	923	1900	2120	2120	1330	1950
3	2130	262	297	344	418	316	960	1860	2110	2140	1270	1940
4	1910	224	307	370	683	311	883	1890	2080	1760	1230	1940
5	1890	199	309	380	1140	575	517	1980	2100	2150	1280	1930
6	1880	195	301	340	1200	906	798	2240	2060	2430	1500	1910
7	1830	198	307	351	1180	340	840	1920	2050	2180	1100	1910
8	1430	433	323	458	1280	251	950	1950	2160	2120	1280	1930
9	1650	268	377	398	493	233	1080	1920	2100	2150	1260	1960
10	1610	217	640	396	447	231	1130	2030	2130	2130	1290	1950
11	1610	429	456	395	439	222	1160	2570	2350	2070	1100	1960
12	1250	266	400	419	395	213	1160	2150	2180	2040	1210	1960
13	982	209	367	452	430	189	1340	2120	2090	1960	1350	1970
14	797	192	360	552	424	182	1510	3190	2650	1850	1450	2090
15	672	186	408	514	460	234	1630	2740	1910	1890	1130	1630
16	364	185	374	430	343	270	1490	2700	1750	1710	1300	1750
17	266	199	400	412	449	229	1440	2090	1900	1540	1730	1770
18	225	225	370	414	411	336	1440	8780	1860	1540	1820	1760
19	214	196	356	460	420	1100	1490	2770	1880	1550	1870	1750
20	207	189	362	556	406	1230	2190	1290	1850	1520	1920	1700
21	206	190	316	597	433	1480	870	1110	1850	1570	1920	1600
22	198	189	335	616	441	1450	844	1390	1840	1250	1970	1600
23	193	182	355	481	384	1290	1440	2050	1960	1550	1990	1580
24	420	169	386	465	326	1230	1450	1970	1970	1300	1970	1630
25	555	165	346	437	227	1190	1460	1920	2060	1350	2540	1660
26	283	225	338	523	223	1240	1440	2040	2070	1330	2330	1650
27	201	245	340	1180	221	1240	1740	2070	2100	1290	2020	1650
28	184	288	330	708	207	1250	1770	2050	2090	1340	1950	1660
29	205	278	304	516	---	1790	1690	2040	2140	1320	1930	1650
30	202	269	336	1050	---	1300	1890	2030	2130	1300	1930	1650
31	205	---	404	711	---	990	---	2100	---	1110	1930	---
TOTAL	28239	6939	11090	15659	14431	22257	38402	70790	61640	53710	50380	54030
MEAN	911	231	358	505	515	718	1280	2284	2055	1733	1625	1801
MAX	2310	433	640	1180	1280	1790	2190	8780	2650	2430	2540	2090
MIN	184	165	288	340	207	182	517	1110	1750	1110	1100	1580
AC-FT	56010	13760	22000	31060	28620	44150	76170	140400	122300	106500	99930	107200
CAL YR 1988	TOTAL	465495	MEAN	1272	MAX	3630	MIN	165	AC-FT	923300		
WTR YR 1989	TOTAL	427567	MEAN	1171	MAX	8780	MIN	165	AC-FT	848100		

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: March 1944. Chemical and biochemical analyses: February 1968 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: November 1986 to current year.

pH: November 1986 to current year.

WATER TEMPERATURE: November 1986 to current year.

DISSOLVED OXYGEN: November 1986 to current year.

INSTRUMENTATION.--Beginning November 1986, a four-parameter water-quality monitor continuously records specific conductance, pH, water temperature, and dissolved oxygen at this station.

REMARKS.--Interruptions in the record were due to malfunction of the instrument and probe fouling. Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request. Where there is only a mean value for conductance, it is a value estimated from available field values, flow, past data and regression relationships.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 840 microsiemens Mar. 5, 1989; minimum, 265 microsiemens Dec. 23, 1986.

pH: Maximum, 9.2 units Feb. 13, 14, 1988, Mar. 13, 1989; minimum, 7.2 July 15, 1989.

WATER TEMPERATURE: Maximum, 33.5°C Aug. 12, 1987; minimum, 5.0°C Jan. 10, 11, 1988, Feb. 6, 7, 1989.

DISSOLVED OXYGEN: Maximum, 19.5 mg/L Feb. 23, 1989; minimum, 3.8 mg/L May 18, 1989.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 840 microsiemens Mar. 5; minimum, 393 microsiemens May 19.

pH: Maximum, 9.2 units Mar. 13; minimum, 7.2 units July 15.

WATER TEMPERATURE: Maximum, 31.5°C July 31; minimum, 5.0°C Feb. 6, 7.

DISSOLVED OXYGEN: Maximum, 19.5 mg/L Feb. 23; minimum, 3.8 mg/L May 18.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB WH WAT TOT FLD (MG/L AS CAC03)
NOV 03...	1120	256	738	8.00	20.0	8.4	94	0.2	240	58
JAN 31...	1000	623	664	7.90	13.5	8.3	80	1.2	210	68
MAR 16...	1120	275	790	8.10	19.0	6.6	72	1.8	230	79
MAY 12...	1215	2300	635	7.90	22.0	7.1	82	1.2	200	68
JUL 10...	1115	1850	753	8.10	27.5	8.1	104	0.6	230	49
AUG 07...	1415	788	760	8.20	29.5	7.2	96	1.7	230	76

DATE	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT WH TOT FET (MG/L AS CAC03)	SULFATE DIS-SOLVED (MG/L AS S04)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)
NOV 03...	58	23	54	2	5.4	182	64	78	0.60
JAN 31...	50	20	51	2	5.1	139	64	78	0.40
MAR 16...	55	22	65	2	6.6	149	87	100	0.70
MAY 12...	49	20	46	1	4.6	137	64	70	0.30
JUL 10...	49	25	58	2	4.7	177	73	95	0.30
AUG 07...	51	25	61	2	5.5	155	77	100	0.40

DATE	SILICA, DIS-SOLVED (MG/L AS SI02)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (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-PHOROUS TOTAL (MG/L AS P)
NOV 03...	10	402	3.86	0.040	3.90	0.020	0.48	0.50	1.50
JAN 31...	8.8	361	2.97	0.030	3.00	0.150	1.1	1.3	0.990
MAR 16...	2.4	428	4.25	0.150	4.40	0.120	0.68	0.80	1.80
MAY 12...	8.5	345	0.780	0.020	0.800	0.100	0.40	0.50	0.370
JUL 10...	7.1	418	--	<0.010	0.700	0.020	0.28	0.30	0.200
AUG 07...	7.9	421	0.890	0.010	0.900	0.020	0.68	0.70	0.380

COLORADO RIVER MAIN STEM

161

08159200 COLORADO RIVER AT BASTROP, TX--Continued

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1988 TO SEPTEMBER 1989

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	DIS- SOLVED SOLIDS (MG/L)	DIS- SOLVED SOLIDS (TONS)	DIS- SOLVED CHLORIDE (MG/L)	DIS- SOLVED CHLORIDE (TONS)	DIS- SOLVED SULFATE (MG/L)	DIS- SOLVED SULFATE (TONS)	HARDNESS (CA, MG) (MG/L)
OCT. 1988	28239	612	334	25500	56	4290	48	3680	220
NOV. 1988	6939	757	407	7630	71	1330	62	1170	260
DEC. 1988	11090	708	383	11500	66	1980	58	1720	250
JAN. 1989	15659	673	365	15400	62	2640	54	2290	240
FEB. 1989	14431	675	366	14300	63	2440	54	2120	240
MAR. 1989	22257	718	388	23300	67	4030	59	3520	250
APR. 1989	38402	717	387	40200	67	6930	58	6050	250
MAY 1989	70790	611	333	63700	56	10700	48	9240	220
JUNE 1989	61640	718	388	64600	67	11100	58	9730	250
JULY 1989	53710	764	411	59500	72	10400	63	9150	260
AUG. 1989	50380	748	403	54800	70	9540	62	8370	260
SEPT 1989	54030	755	406	59300	71	10300	62	9080	260
TOTAL	427567	**	**	440000	**	75800	**	66100	**
WTD.AVG.	1171	705	381	**	66	**	57	**	250

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	---	---	572	686	670	676	798	772	789	704	698	701
2	---	---	570	714	686	701	770	730	752	702	694	698
3	---	---	577	744	716	732	730	714	722	698	692	694
4	588	569	580	774	744	755	728	714	717	698	678	690
5	587	575	580	804	766	771	722	712	716	690	672	685
6	597	588	593	782	774	777	734	718	727	704	672	689
7	605	598	602	784	774	779	740	726	731	696	688	693
8	612	606	609	772	732	748	730	702	722	698	690	694
9	621	609	615	764	738	753	738	720	727	716	700	706
10	613	608	610	772	762	765	722	708	717	718	714	716
11	616	610	613	772	766	768	712	706	709	718	708	713
12	616	610	613	770	750	760	706	692	698	706	698	703
13	626	610	618	750	734	743	692	670	681	702	692	697
14	634	628	629	734	730	731	670	656	663	698	688	693
15	654	634	641	738	730	734	692	664	681	706	698	701
16	660	654	657	740	736	738	686	674	681	706	700	703
17	664	658	659	738	730	734	710	680	686	702	666	692
18	672	664	668	732	724	728	694	684	689	674	660	666
19	680	672	676	740	730	735	696	684	690	690	662	682
20	684	680	683	740	734	736	742	694	701	684	658	673
21	694	686	689	756	740	745	736	698	705	692	670	680
22	710	694	702	774	756	762	732	706	712	698	690	695
23	720	710	715	784	774	779	728	706	715	702	642	684
24	766	722	740	794	776	782	718	706	710	638	630	634
25	788	768	782	790	778	783	716	710	712	666	642	658
26	784	766	778	790	782	786	714	710	713	712	656	672
27	766	736	752	802	788	795	714	708	712	722	670	691
28	734	710	722	812	798	803	710	702	705	692	558	631
29	710	630	682	798	788	793	710	704	707	560	546	556
30	674	648	666	798	784	790	708	700	704	664	560	600
31	674	644	663	---	---	---	706	702	704	668	576	640
MONTH	788	569	653	812	670	756	798	656	710	722	546	678

COLORADO RIVER MAIN STEM

08159200 COLORADO RIVER AT BASTROP, TX--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	572	536	549	772	760	766	706	698	702	733	711	724
2	556	532	539	770	760	765	715	700	709	735	724	732
3	610	558	584	806	772	790	723	715	720	735	727	732
4	662	612	639	830	806	817	730	724	727	738	732	736
5	666	598	651	840	822	832	734	727	730	739	720	728
6	608	596	602	820	732	759	742	725	730	730	612	691
7	648	596	606	750	714	729	761	740	754	697	609	644
8	666	654	659	716	702	710	746	728	736	700	633	662
9	678	656	658	714	700	706	749	738	744	718	674	701
10	682	660	668	712	704	707	747	736	742	719	689	706
11	698	678	688	722	712	716	742	730	735	721	631	687
12	732	700	713	736	718	726	735	729	732	654	624	635
13	750	722	732	754	734	740	734	731	732	652	573	617
14	744	738	740	---	---	757	735	719	727	651	569	623
15	748	738	743	---	---	760	728	722	725	557	498	536
16	762	748	752	---	---	801	724	661	690	552	439	482
17	760	746	751	822	810	815	720	703	713	589	473	512
18	752	746	748	829	814	818	724	702	711	582	395	448
19	756	748	751	836	751	808	729	724	727	499	393	447
20	758	742	751	742	689	706	729	631	705	548	501	529
21	750	740	744	699	636	668	626	603	610	571	546	559
22	754	740	748	708	684	694	677	618	640	578	560	571
23	742	736	739	712	676	698	736	678	711	561	522	542
24	742	734	736	707	677	696	---	---	695	633	557	592
25	744	728	737	710	701	706	715	699	709	660	634	647
26	734	726	730	711	688	703	727	713	722	661	655	658
27	750	736	740	716	711	713	732	721	728	671	656	662
28	758	742	748	716	706	713	737	723	731	684	666	673
29	---	---	---	718	701	710	735	715	729	691	678	683
30	---	---	---	698	596	634	723	706	717	699	681	689
31	---	---	---	707	660	690	---	---	---	713	697	703
MONTH	762	532	694	840	596	737	761	603	716	739	393	631
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	722	707	713	766	746	755	788	766	771	766	758	761
2	730	717	722	770	722	749	764	756	759	766	760	763
3	738	723	729	754	744	749	758	750	754	770	762	766
4	735	725	729	768	742	750	760	706	747	770	760	766
5	736	727	732	780	700	755	762	706	740	768	760	764
6	---	---	729	778	734	759	758	746	752	766	758	762
7	729	721	725	776	726	759	760	750	755	762	758	760
8	731	721	726	784	744	764	764	750	756	762	756	760
9	732	721	725	788	720	766	762	752	758	762	760	761
10	732	724	727	---	---	757	764	756	760	762	754	759
11	729	706	714	788	756	774	770	752	761	758	750	755
12	721	662	705	790	750	768	768	760	763	760	746	754
13	718	663	698	796	752	774	768	762	766	758	748	754
14	703	679	690	796	748	773	764	760	761	754	736	747
15	---	---	673	796	760	777	764	756	760	758	750	753
16	686	586	628	800	762	781	762	750	759	756	746	750
17	680	630	645	810	766	789	766	744	756	750	742	745
18	710	648	678	814	764	773	762	744	754	754	746	750
19	724	708	715	768	766	766	760	752	757	758	752	754
20	734	722	726	766	760	764	760	754	757	758	750	754
21	736	728	733	760	758	760	756	752	754	758	754	756
22	738	724	731	766	760	763	764	754	759	758	754	755
23	744	722	735	770	760	764	766	760	763	758	750	755
24	748	738	742	766	758	761	766	762	764	756	750	753
25	746	740	741	772	760	764	768	758	764	754	748	752
26	754	736	743	766	760	762	762	570	642	752	746	749
27	750	734	742	760	744	757	702	650	687	750	746	748
28	762	736	743	766	756	759	742	706	723	750	746	748
29	752	736	745	770	758	763	756	742	752	750	744	748
30	760	740	746	772	760	765	758	752	756	756	748	752
31	---	---	---	772	766	768	762	752	758	---	---	---
MONTH	762	586	718	814	700	764	788	570	751	770	736	755

COLORADO RIVER MAIN STEM

163

08159200 COLORADO RIVER AT BASTROP, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	8.1	8.0	8.1	8.4	8.2	8.3	8.7	8.6	8.7	8.5	8.2	8.3
2	8.1	8.0	8.0	8.5	8.3	8.4	8.8	8.6	8.7	8.4	8.1	8.3
3	8.2	8.0	8.1	8.4	7.9	8.2	8.8	8.6	8.7	8.5	8.1	8.2
4	8.4	8.1	8.2	8.2	8.1	8.2	8.7	8.5	8.6	8.5	8.1	8.3
5	8.5	8.3	8.3	8.3	8.1	8.2	8.6	8.4	8.5	8.4	8.1	8.2
6	8.4	8.2	8.3	8.4	8.1	8.3	8.6	8.5	8.6	8.4	8.0	8.2
7	8.4	8.3	8.3	8.4	8.1	8.3	---	---	---	8.3	8.0	8.1
8	8.3	8.2	8.2	8.4	8.2	8.3	8.6	8.4	8.5	8.2	7.9	8.0
9	8.3	8.1	8.2	8.4	8.2	8.3	8.4	8.1	8.3	8.0	7.9	7.9
10	8.3	8.2	8.3	8.3	8.1	8.2	8.2	8.1	8.1	8.1	7.9	8.0
11	8.3	8.1	8.2	8.4	8.1	8.3	8.2	8.0	8.1	8.1	8.0	8.1
12	---	---	---	8.4	8.2	8.3	8.3	8.0	8.1	8.1	8.0	8.0
13	---	---	---	8.3	8.2	8.3	8.5	8.2	8.3	8.0	8.0	8.0
14	---	---	---	8.4	8.2	8.3	8.6	8.2	8.4	8.3	8.0	8.1
15	---	---	---	8.4	8.1	8.3	8.6	8.4	8.5	8.4	8.1	8.3
16	---	---	---	8.5	8.2	8.3	8.7	8.4	8.5	8.5	8.3	8.4
17	---	---	---	8.5	8.3	8.4	8.8	8.5	8.7	8.6	8.4	8.5
18	---	---	---	8.5	8.1	8.4	8.9	8.6	8.7	8.5	8.4	8.4
19	8.4	8.3	8.4	8.6	8.4	8.5	9.0	8.6	8.8	8.4	8.0	8.3
20	8.3	8.2	8.3	8.7	8.5	8.6	8.9	8.6	8.8	8.4	7.9	8.1
21	8.4	8.2	8.3	8.7	8.5	8.6	8.9	8.5	8.7	8.5	8.0	8.3
22	8.3	8.2	8.2	8.7	8.5	8.6	8.7	8.4	8.6	8.7	8.3	8.5
23	---	---	---	8.8	8.5	8.6	8.6	8.2	8.4	8.7	8.4	8.6
24	8.6	8.3	8.5	8.8	8.4	8.6	8.5	8.1	8.2	8.7	8.4	8.6
25	8.5	8.2	8.4	8.7	8.4	8.5	8.4	8.0	8.2	8.6	8.3	8.5
26	8.5	8.2	8.3	8.5	8.3	8.4	8.3	7.9	8.1	8.3	7.9	8.2
27	8.4	8.1	8.3	8.6	8.4	8.5	8.1	7.9	8.0	7.9	7.7	7.8
28	8.4	8.2	8.4	8.7	8.5	8.6	8.2	7.9	8.0	7.7	7.7	7.7
29	8.4	8.2	8.3	8.7	8.4	8.6	8.3	8.0	8.1	7.8	7.6	7.7
30	8.3	8.2	8.2	8.7	8.6	8.7	8.3	8.0	8.1	7.8	7.7	7.8
31	8.3	8.1	8.2	---	---	---	8.4	8.0	8.2	8.0	7.8	7.9
MONTH	8.6	8.0	8.3	8.8	7.9	8.4	9.0	7.9	8.4	8.7	7.6	8.2
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	8.0	7.8	7.9	8.6	8.4	8.5	8.4	8.1	8.2	8.0	8.0	8.0
2	7.9	7.7	7.8	8.4	8.2	8.3	8.3	8.0	8.2	8.1	8.0	8.0
3	8.2	7.8	8.0	8.2	7.8	8.0	8.3	8.0	8.2	8.1	8.0	8.1
4	8.2	8.1	8.1	8.1	7.6	7.9	---	---	---	8.1	8.0	8.0
5	8.3	8.1	8.2	8.3	7.9	8.1	8.5	8.1	8.3	8.1	8.0	8.0
6	8.2	8.1	8.1	8.3	7.9	8.1	8.6	8.3	8.5	8.0	7.7	7.9
7	8.4	8.1	8.2	8.9	8.1	8.6	8.8	7.9	8.4	7.9	7.8	7.8
8	8.3	8.1	8.2	9.0	8.7	8.8	8.8	8.1	8.5	7.9	7.9	7.9
9	8.5	8.2	8.3	9.0	8.8	8.9	8.6	8.1	8.4	8.0	7.9	8.0
10	8.6	8.3	8.4	9.1	8.9	9.0	8.4	7.8	8.1	8.0	8.0	8.0
11	8.5	8.3	8.4	9.1	9.0	9.0	8.7	8.1	8.4	8.0	7.8	7.9
12	8.5	8.1	8.3	9.1	8.9	9.0	8.5	8.1	8.4	7.9	7.8	7.9
13	8.6	8.2	8.4	9.2	8.9	9.0	8.1	8.0	8.0	7.9	7.9	7.9
14	8.4	8.2	8.3	---	---	---	8.1	7.9	8.0	7.9	7.8	7.9
15	8.4	8.1	8.3	---	---	---	8.3	8.0	8.1	7.9	7.8	7.8
16	8.3	8.1	8.2	---	---	---	8.2	7.8	8.0	7.9	7.8	7.8
17	8.2	8.0	8.1	8.4	7.9	8.2	8.1	7.9	8.0	7.9	7.8	7.9
18	8.4	8.0	8.2	8.3	7.8	8.0	8.1	7.8	7.9	7.9	7.7	7.8
19	8.5	8.1	8.3	8.0	7.8	7.8	8.0	7.8	7.9	7.8	7.8	7.8
20	8.7	8.4	8.5	8.3	7.9	8.1	7.9	7.8	7.9	7.9	7.8	7.9
21	8.9	8.6	8.7	8.1	8.0	8.0	7.9	7.7	7.8	8.0	7.9	7.9
22	9.0	8.7	8.9	8.3	8.0	8.1	7.9	7.7	7.8	7.9	7.8	7.9
23	9.1	8.8	9.0	8.5	8.2	8.4	7.9	7.8	7.9	7.9	7.8	7.9
24	9.1	8.9	9.0	8.6	8.1	8.4	---	---	---	7.9	7.9	7.9
25	9.1	8.8	8.9	8.6	8.1	8.4	8.1	8.0	8.0	7.9	7.9	7.9
26	9.0	8.9	9.0	8.3	8.0	8.1	8.1	8.0	8.0	8.0	7.7	7.9
27	9.0	8.8	8.9	8.1	7.9	8.0	8.1	8.0	8.0	7.7	7.4	7.5
28	8.8	8.6	8.8	8.1	7.9	8.0	8.1	8.0	8.0	8.1	7.3	7.8
29	---	---	---	8.0	7.9	8.0	8.1	8.0	8.0	8.1	7.8	7.9
30	---	---	---	7.9	7.7	7.8	8.0	8.0	8.0	7.8	7.7	7.8
31	---	---	---	8.3	7.9	8.0	---	---	---	7.9	7.7	7.8
MONTH	9.1	7.7	8.4	9.2	7.6	8.3	8.8	7.7	8.1	8.1	7.3	7.9

COLORADO RIVER MAIN STEM
08159200 COLORADO RIVER AT BASTROP, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	8.1	7.9	8.0	7.9	7.9	7.9	8.4	8.2	8.3	8.1	8.0	8.1
2	8.2	8.0	8.1	8.0	7.9	7.9	8.3	8.2	8.2	8.1	8.1	8.1
3	8.3	8.2	8.3	8.0	7.9	7.9	8.3	8.2	8.2	8.2	8.1	8.1
4	8.3	8.1	8.3	8.1	7.9	8.0	8.3	8.2	8.3	8.2	8.1	8.2
5	8.2	8.1	8.1	8.1	7.9	8.0	8.3	8.1	8.2	8.3	8.2	8.2
6	---	---	---	8.1	8.0	8.0	8.3	8.2	8.3	8.3	8.2	8.2
7	8.3	8.2	8.3	8.1	7.9	8.0	8.3	8.2	8.3	8.3	8.2	8.2
8	8.3	8.0	8.2	8.1	8.0	8.0	8.3	8.1	8.2	8.3	8.2	8.2
9	8.1	7.8	7.9	8.1	7.9	8.0	8.3	8.2	8.2	8.3	8.2	8.3
10	7.9	7.7	7.8	---	---	---	8.3	8.2	8.3	8.3	8.2	8.3
11	8.2	7.7	7.9	8.2	8.0	8.1	8.4	8.2	8.3	8.3	8.2	8.2
12	8.0	7.8	8.0	8.1	7.9	8.0	8.4	8.2	8.3	8.3	8.2	8.2
13	8.1	7.8	7.9	8.1	7.9	8.0	8.4	8.2	8.3	8.3	8.2	8.3
14	8.0	7.9	8.0	8.0	7.7	7.9	8.3	8.2	8.3	8.3	8.2	8.3
15	---	---	---	7.6	7.2	7.4	8.4	8.2	8.3	8.3	8.2	8.2
16	7.9	7.8	7.9	---	---	---	8.4	8.2	8.3	8.4	8.3	8.3
17	8.0	7.9	8.0	---	---	---	8.3	8.2	8.2	8.4	8.3	8.4
18	8.1	8.0	8.0	8.5	7.9	8.2	8.2	8.1	8.2	8.5	8.4	8.4
19	8.1	8.0	8.0	8.5	8.3	8.4	8.2	8.1	8.1	8.6	8.4	8.5
20	8.1	8.0	8.0	8.6	8.3	8.5	8.2	8.1	8.1	8.6	8.4	8.5
21	8.2	8.0	8.1	8.6	8.4	8.5	8.2	8.1	8.1	8.6	8.4	8.5
22	8.2	8.0	8.1	8.6	8.4	8.5	8.3	8.0	8.2	8.6	8.5	8.5
23	8.1	8.0	8.0	8.5	8.4	8.4	8.3	8.2	8.2	8.6	8.4	8.5
24	8.0	7.9	7.9	8.7	8.3	8.4	8.3	8.2	8.2	8.7	8.5	8.6
25	7.9	7.8	7.9	8.6	8.3	8.4	8.2	8.0	8.2	8.7	8.5	8.6
26	8.0	7.9	7.9	8.5	8.3	8.3	8.0	7.8	7.9	8.8	8.5	8.6
27	8.0	7.9	7.9	8.5	8.3	8.3	8.0	7.9	7.9	8.8	8.5	8.6
28	8.0	7.9	7.9	8.5	8.2	8.3	8.1	8.0	8.0	8.8	8.5	8.6
29	7.9	7.9	7.9	8.6	8.3	8.3	8.1	7.9	8.0	8.7	8.5	8.6
30	7.9	7.9	7.9	8.5	8.3	8.4	8.0	8.0	8.0	8.7	8.4	8.6
31	---	---	---	8.5	8.3	8.4	8.1	8.0	8.0	---	---	---
MONTH	8.3	7.7	8.0	8.7	7.2	8.2	8.4	7.8	8.2	8.8	8.0	8.4

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	24.5	23.0	24.0	20.5	19.5	20.0	14.5	12.5	13.5	14.0	12.5	13.5
2	24.0	23.0	23.5	20.5	19.0	19.5	14.5	12.0	13.5	15.0	14.0	14.5
3	24.5	22.5	23.5	22.5	19.5	21.0	14.5	12.5	13.5	17.5	15.0	16.0
4	24.0	22.5	23.0	23.0	20.5	21.5	15.0	12.5	14.0	16.5	15.0	16.0
5	24.0	21.5	23.0	22.0	20.0	21.0	15.0	13.0	14.0	17.5	16.0	16.5
6	23.5	21.5	22.5	20.0	18.5	19.5	15.5	14.0	14.5	18.5	16.0	17.5
7	24.0	21.0	22.5	22.0	18.5	20.0	17.0	14.0	15.5	19.0	18.0	18.0
8	24.0	22.0	23.0	21.5	20.0	21.0	16.5	14.0	16.0	18.0	15.5	17.0
9	24.0	22.5	23.5	23.5	21.5	22.5	14.0	12.0	12.5	15.5	13.0	14.0
10	23.5	22.0	23.0	24.0	22.5	23.0	12.0	11.5	12.0	13.5	12.0	13.0
11	23.5	21.5	22.5	23.0	21.5	22.5	12.0	11.5	11.5	14.0	13.0	13.5
12	22.5	21.5	22.0	23.5	22.0	22.5	11.5	11.0	11.5	14.5	12.0	13.5
13	23.0	20.5	21.5	23.0	20.0	21.5	12.0	10.0	11.0	12.0	10.0	11.0
14	23.0	20.5	21.5	23.5	21.5	22.5	13.5	11.0	12.0	11.0	9.5	10.0
15	23.5	21.0	22.0	23.5	22.5	22.5	13.0	12.0	12.5	11.5	9.5	10.5
16	25.0	22.0	23.0	22.5	19.0	20.5	12.5	11.0	12.0	12.0	9.5	11.0
17	25.5	23.0	24.0	19.0	17.0	17.5	12.0	10.5	11.0	12.5	11.0	11.5
18	25.5	23.0	24.5	19.5	17.5	18.5	12.0	10.0	11.0	13.5	12.5	13.0
19	26.0	24.0	25.0	20.5	18.5	20.0	13.5	10.5	12.0	14.0	13.5	14.0
20	25.5	23.5	24.5	18.5	16.5	17.0	15.0	13.5	14.0	15.5	14.0	14.5
21	26.0	23.5	24.5	16.5	15.0	16.0	16.5	14.0	15.5	14.0	12.5	13.5
22	25.5	24.0	24.5	16.5	14.0	15.5	18.0	16.5	17.0	13.0	10.0	12.5
23	26.0	23.5	24.5	16.0	13.5	14.5	17.5	16.0	17.0	---	---	---
24	24.5	23.5	24.0	15.5	13.5	14.5	18.0	16.5	17.0	15.0	12.0	13.5
25	25.0	23.5	24.0	18.0	15.5	17.0	16.5	15.5	16.0	17.0	13.0	15.5
26	26.0	24.0	24.5	20.0	18.0	19.0	18.5	16.0	17.0	17.0	15.0	16.5
27	26.0	23.5	24.5	18.5	17.0	18.0	18.5	17.0	18.0	15.0	14.5	15.0
28	26.5	23.0	25.0	16.5	15.0	16.0	17.0	14.0	15.5	15.5	14.5	15.0
29	24.5	22.0	23.0	16.0	13.5	15.0	14.0	12.5	13.0	15.0	14.0	14.5
30	22.5	21.5	22.0	15.5	14.0	14.5	13.0	12.5	12.5	15.0	13.5	14.0
31	22.0	20.5	21.5	---	---	---	14.5	12.5	13.5	16.0	14.0	15.0
MONTH	26.5	20.5	23.5	24.0	13.5	19.0	18.5	10.0	14.0	19.0	9.5	14.0

COLORADO RIVER MAIN STEM

165

08159200 COLORADO RIVER AT BASTROP, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	17.0	15.0	16.0	14.5	14.0	14.0	21.5	19.0	20.5	25.0	23.0	24.0
2	18.5	17.0	17.5	15.0	12.5	14.0	22.5	20.0	21.0	25.0	23.0	23.5
3	17.5	11.0	14.0	16.5	14.5	15.5	24.5	20.5	22.5	23.5	23.0	23.5
4	11.0	7.0	9.0	16.5	11.0	14.5	25.5	23.0	24.0	25.0	23.0	24.0
5	7.0	5.5	6.0	10.5	8.0	9.0	24.0	21.5	23.0	---	---	---
6	6.0	5.0	5.5	10.5	7.5	9.0	22.5	20.5	21.5	24.5	22.0	23.0
7	6.5	5.0	6.0	11.5	8.5	10.0	24.0	20.5	22.5	---	---	---
8	9.5	6.0	8.0	13.0	9.5	11.0	25.5	22.0	23.5	---	---	---
9	10.5	8.0	9.5	14.5	11.0	13.0	23.5	20.5	22.0	---	---	---
10	10.5	9.0	9.5	16.0	12.5	14.5	20.0	17.0	18.5	---	---	---
11	11.0	10.5	10.5	18.0	14.5	16.0	17.5	16.0	16.5	---	---	---
12	14.5	11.0	12.5	19.5	16.0	18.0	17.0	16.0	16.5	22.5	21.0	21.5
13	17.0	14.5	16.0	22.0	17.5	19.5	16.0	15.5	16.0	24.0	21.5	22.5
14	17.0	16.5	17.0	---	---	---	---	---	---	23.5	22.5	23.0
15	17.0	15.5	16.5	---	---	---	19.0	12.0	17.0	24.0	21.5	23.0
16	15.0	13.5	14.0	---	---	---	21.0	17.5	19.5	---	---	---
17	13.5	12.0	13.0	22.0	19.5	21.0	---	---	---	---	---	---
18	12.0	11.0	11.5	22.5	21.0	21.5	23.5	19.0	21.5	24.0	21.5	23.5
19	11.5	11.0	11.0	21.0	20.0	20.5	23.5	20.5	22.5	26.5	24.0	25.0
20	14.0	11.5	12.5	22.0	19.0	20.5	23.5	20.5	22.5	28.5	26.0	27.0
21	14.0	12.5	13.5	19.0	14.0	15.5	---	---	---	---	---	---
22	14.0	12.0	13.0	15.5	13.5	14.5	---	---	---	---	---	---
23	14.5	12.0	13.0	16.5	13.5	15.5	---	---	---	29.5	27.5	28.5
24	12.5	12.0	12.0	19.0	15.5	17.5	---	---	---	29.0	27.5	28.5
25	15.0	12.0	13.5	19.5	18.0	19.0	---	---	---	29.0	27.0	28.0
26	18.0	14.5	16.0	20.0	19.0	19.5	---	---	---	29.0	27.0	28.0
27	18.5	17.0	17.5	20.5	19.5	20.0	25.0	23.5	24.0	29.0	27.5	28.5
28	17.0	14.5	16.0	21.5	19.0	20.5	25.0	23.5	24.0	---	---	---
29	---	---	---	22.5	20.0	21.5	25.0	22.5	24.0	28.0	26.5	27.5
30	---	---	---	23.0	20.0	21.5	25.0	22.5	23.5	---	---	---
31	---	---	---	22.5	20.0	21.0	---	---	---	---	---	---
MONTH	18.5	5.0	12.5	23.0	7.5	16.5	25.5	12.0	21.0	29.5	21.0	25.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	---	---	---	28.0	25.0	26.5	30.0	27.5	28.5	30.0	28.5	29.0
2	---	---	---	29.0	26.5	27.5	28.5	27.0	27.5	30.5	28.5	29.5
3	---	---	---	28.5	26.5	27.5	29.0	27.0	28.0	31.0	29.0	30.0
4	---	---	---	29.5	27.0	28.0	29.5	27.5	28.5	30.5	29.0	30.0
5	---	---	---	28.5	27.0	28.0	30.0	27.5	29.0	30.5	29.0	29.5
6	---	---	---	27.5	26.0	27.0	30.5	28.0	29.5	30.0	29.0	29.5
7	28.0	27.0	27.0	28.5	26.0	27.0	29.5	28.5	29.0	29.5	28.0	29.0
8	27.5	26.0	27.0	28.5	27.0	27.5	28.5	27.0	27.5	29.5	28.0	29.0
9	26.5	25.5	26.0	29.0	27.0	28.0	28.0	26.0	27.0	29.5	28.0	28.5
10	26.0	25.0	25.5	29.0	26.5	28.0	27.5	25.5	26.5	29.5	28.5	29.0
11	27.0	25.0	26.0	28.0	26.5	27.5	28.0	25.5	27.0	29.0	28.0	28.5
12	27.0	25.0	26.0	28.0	26.0	27.0	28.5	26.0	27.0	29.0	27.0	28.0
13	28.0	26.0	27.0	28.0	26.0	27.0	28.5	26.0	27.0	28.5	27.0	28.0
14	26.5	24.5	26.0	28.5	26.5	27.5	28.5	26.5	27.5	27.0	24.5	25.5
15	26.0	23.5	24.5	28.5	26.5	27.5	29.0	26.5	27.5	25.5	23.5	24.5
16	26.0	23.5	24.5	29.5	27.0	28.0	29.5	27.0	28.0	25.5	23.5	24.5
17	26.5	24.0	25.5	30.5	27.5	29.0	29.0	27.0	28.0	26.0	24.0	25.0
18	27.5	25.0	26.5	30.5	28.5	29.0	29.0	27.5	28.0	26.5	24.5	25.5
19	29.0	26.5	27.5	30.0	28.5	29.0	29.0	27.5	28.0	26.5	24.5	25.5
20	29.0	27.0	28.0	29.5	27.5	28.5	29.0	27.5	28.0	26.5	24.5	25.5
21	29.5	27.0	28.0	28.5	26.5	27.5	29.0	27.5	28.0	27.0	25.0	26.0
22	29.0	27.0	28.0	28.5	26.0	27.0	29.0	27.0	28.0	26.0	25.0	25.5
23	27.5	27.0	27.5	29.0	26.5	27.5	29.0	27.0	28.0	25.0	23.5	24.5
24	26.5	25.5	26.0	28.5	27.5	28.0	29.0	27.5	28.5	23.5	22.0	22.5
25	25.5	25.0	25.0	27.5	26.5	27.0	28.5	27.5	28.0	22.5	21.0	22.0
26	25.5	24.5	25.0	27.5	26.5	27.0	29.0	27.0	28.0	22.5	20.5	21.5
27	26.0	24.5	25.0	28.0	26.5	27.0	29.5	27.5	28.5	23.0	21.0	22.0
28	26.5	25.0	26.0	29.0	26.5	27.5	29.5	27.5	28.5	23.5	21.5	22.5
29	26.0	25.5	25.5	30.0	27.0	28.5	29.5	28.0	29.0	23.5	21.5	22.5
30	26.5	25.5	26.0	30.5	28.0	29.0	30.0	28.0	29.0	24.5	22.5	23.5
31	---	---	---	31.5	28.5	29.5	30.0	28.5	29.0	---	---	---
MONTH	29.5	23.5	26.0	31.5	25.0	28.0	30.5	25.5	28.0	31.0	20.5	26.0

COLORADO RIVER MAIN STEM
08159200 COLORADO RIVER AT BASTROP, TX--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	7.6	7.0	7.2	8.7	7.2	7.9	13.3	10.8	12.0	12.8	9.9	11.0
2	7.3	7.0	7.1	9.4	7.8	8.4	14.0	11.1	12.6	11.6	9.8	10.6
3	8.0	6.9	7.4	9.4	7.8	8.6	14.5	11.4	13.1	12.6	9.0	10.6
4	8.5	7.5	7.9	9.2	7.3	8.2	15.4	11.8	13.7	13.1	9.1	10.9
5	8.7	7.7	8.1	9.3	7.1	8.2	16.0	11.8	14.0	11.5	9.2	10.1
6	9.0	7.8	8.3	9.9	7.4	8.5	14.9	11.9	13.7	12.4	8.6	10.3
7	9.0	7.9	8.4	10.0	7.6	8.6	15.4	10.4	12.9	10.8	8.2	9.5
8	9.3	7.8	8.4	9.5	7.4	8.5	13.1	9.2	10.6	9.9	7.9	9.0
9	9.0	7.7	8.3	9.8	7.3	8.4	11.0	8.4	9.6	9.1	8.4	8.7
10	9.5	7.7	8.5	10.2	7.2	8.5	10.0	9.4	9.7	11.2	8.8	9.9
11	9.8	7.9	8.7	9.0	7.0	8.0	11.0	9.1	9.9	10.8	9.8	10.2
12	10.3	8.0	8.9	9.0	6.9	7.8	12.0	9.6	10.6	10.1	9.4	9.7
13	10.8	8.1	9.3	9.8	7.0	8.2	13.6	10.3	11.8	10.2	9.4	9.8
14	11.2	8.1	9.5	9.6	7.3	8.2	14.8	10.8	12.6	12.1	9.9	10.9
15	11.3	8.1	9.5	9.0	7.1	7.9	13.8	11.1	12.4	12.8	10.7	11.8
16	11.8	7.9	9.6	9.6	7.1	8.2	15.1	10.6	12.6	13.7	11.2	12.4
17	11.6	7.8	9.6	10.6	8.2	9.3	16.5	11.8	14.0	13.8	11.8	12.8
18	11.2	7.9	9.4	10.6	9.0	9.6	17.3	12.3	14.7	13.1	11.4	12.2
19	11.6	7.9	9.6	10.3	8.3	9.3	15.6	12.6	14.2	12.2	9.5	10.7
20	11.3	8.0	9.5	11.6	8.4	9.9	13.8	10.4	12.1	12.5	8.7	10.4
21	11.6	7.9	9.5	12.8	10.0	11.2	15.5	9.8	12.4	13.8	9.4	11.6
22	12.0	8.0	9.7	---	---	---	12.6	9.5	11.0	15.6	10.8	13.1
23	11.9	8.0	9.7	---	---	---	11.6	8.0	9.6	14.9	11.6	13.3
24	10.7	7.4	9.4	---	---	---	11.4	7.8	9.4	15.3	11.4	13.2
25	9.8	7.0	8.5	---	---	---	10.4	8.2	9.2	13.2	10.7	11.8
26	9.4	6.7	8.1	---	---	---	10.7	7.8	9.0	10.6	8.7	9.4
27	9.2	6.6	7.9	---	---	---	9.0	7.2	8.1	8.6	7.8	8.2
28	8.9	6.6	7.8	---	---	---	10.4	7.3	8.7	8.3	7.6	7.9
29	7.8	6.6	7.2	12.6	9.0	10.8	11.4	8.8	9.8	8.6	7.5	8.0
30	7.5	6.5	7.0	12.8	10.4	11.5	10.6	9.0	9.8	8.9	8.2	8.5
31	7.7	6.9	7.3	---	---	---	12.2	8.9	10.4	10.0	8.3	9.0
MONTH	12.0	6.5	8.6	12.8	6.9	8.9	17.3	7.2	11.4	15.6	7.5	10.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	10.0	8.3	9.0	11.1	8.5	9.4	10.2	6.9	8.4	7.7	7.1	7.4
2	9.5	8.0	8.7	12.4	8.8	10.2	9.9	6.9	8.3	8.0	7.4	7.6
3	11.0	8.2	9.5	11.4	9.2	10.0	11.4	6.8	8.8	7.8	7.5	7.6
4	11.7	10.2	10.9	10.2	8.2	9.2	11.9	6.5	9.0	7.8	7.4	7.5
5	12.6	11.2	11.7	13.5	9.6	11.2	13.7	7.6	10.4	7.8	7.4	7.6
6	11.6	11.3	11.4	13.5	10.3	11.8	12.4	8.5	10.6	7.7	6.8	7.3
7	13.5	11.6	12.3	15.8	11.4	13.6	14.8	7.3	10.8	7.3	6.9	7.0
8	12.2	10.9	11.6	17.4	12.7	14.7	14.6	7.5	10.9	7.8	7.3	7.5
9	14.4	11.2	12.6	18.6	13.4	15.6	10.0	7.0	8.6	7.9	7.5	7.6
10	15.1	11.6	13.2	18.5	13.8	15.9	11.0	7.0	8.7	7.7	7.5	7.6
11	13.6	11.4	12.5	17.7	13.5	15.3	13.6	8.5	10.6	7.8	7.4	7.6
12	14.2	10.7	12.1	16.4	11.8	13.7	10.5	8.5	9.6	7.5	7.1	7.3
13	14.4	10.3	12.2	15.4	9.6	12.2	8.8	7.8	8.3	7.3	7.1	7.2
14	12.2	10.0	11.2	---	---	---	9.1	7.8	8.4	7.1	6.3	6.8
15	12.3	9.3	10.7	---	---	---	10.1	8.0	8.8	6.5	6.2	6.3
16	11.4	9.2	10.2	---	---	---	9.6	7.2	8.4	6.5	6.1	6.2
17	10.5	9.1	9.9	10.9	6.2	8.4	8.9	7.0	7.8	6.6	6.0	6.2
18	12.7	9.4	10.9	10.5	6.0	7.9	8.6	6.7	7.5	6.5	3.8	5.2
19	14.0	10.5	12.1	7.6	5.6	6.6	7.9	6.5	7.1	5.7	5.1	5.6
20	16.0	11.2	13.3	9.3	6.3	7.5	6.9	6.3	6.7	5.9	5.6	5.7
21	16.8	11.7	14.1	8.0	7.1	7.7	7.5	5.9	6.6	6.0	5.8	5.9
22	18.2	11.8	14.9	9.7	7.8	8.8	7.3	5.3	6.4	6.4	5.8	6.0
23	19.5	12.9	16.0	11.5	8.4	9.9	6.9	5.9	6.4	6.5	6.0	6.3
24	16.6	13.5	15.1	11.9	8.2	10.0	7.6	6.6	7.1	6.8	6.5	6.6
25	17.3	12.5	14.6	10.8	7.7	9.2	7.4	6.9	7.2	7.1	6.7	6.9
26	17.6	12.8	14.8	8.8	7.0	7.8	7.8	7.0	7.3	7.1	6.7	6.9
27	15.7	11.0	12.9	8.3	6.7	7.5	7.4	7.1	7.2	7.2	6.7	7.0
28	11.4	9.1	10.3	8.7	6.7	7.5	7.4	7.1	7.1	7.5	6.9	7.1
29	---	---	---	7.4	6.8	7.1	7.8	7.1	7.4	7.8	7.2	7.5
30	---	---	---	8.0	5.8	6.9	7.7	7.1	7.4	8.0	7.3	7.6
31	---	---	---	9.5	6.4	7.7	---	---	---	8.2	7.6	7.8
MONTH	19.5	8.0	12.1	18.6	5.6	10.1	14.8	5.3	8.3	8.2	3.8	6.9

COLORADO RIVER MAIN STEM

167

08159200 COLORADO RIVER AT BASTROP, TX--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	8.2	7.6	7.9	8.1	7.3	7.6	7.0	6.2	6.5	6.8	5.7	6.3
2	8.4	7.7	8.0	8.2	7.3	7.7	7.8	6.3	6.9	7.0	5.7	6.4
3	8.5	7.7	8.0	8.3	7.3	7.7	8.1	6.6	7.2	7.2	5.6	6.3
4	8.7	7.9	8.2	8.7	7.2	7.9	7.9	6.4	7.1	6.8	5.7	6.3
5	8.8	8.0	8.4	8.4	7.1	7.8	7.9	6.1	6.9	7.3	5.8	6.4
6	8.9	7.8	8.5	8.4	7.5	7.9	7.6	6.3	6.9	6.7	5.8	6.2
7	8.5	7.7	8.0	8.7	7.5	8.0	7.9	6.2	6.9	7.1	5.8	6.3
8	8.5	7.5	7.9	8.9	7.4	8.1	7.9	6.4	7.1	7.0	5.8	6.3
9	8.5	7.6	7.9	8.9	7.4	8.0	8.6	6.8	7.5	7.2	6.0	6.5
10	8.3	7.6	7.9	9.0	7.4	8.1	8.6	7.0	7.7	7.2	5.9	6.5
11	8.1	7.2	7.6	8.9	7.4	8.1	9.0	7.0	7.9	7.2	6.5	6.7
12	8.0	6.7	7.3	9.3	7.5	8.2	9.0	7.1	7.9	7.6	6.5	6.9
13	8.1	6.7	7.2	9.1	7.4	8.1	8.8	7.0	7.8	7.2	6.6	6.9
14	7.7	7.4	7.5	9.3	7.4	8.2	8.6	7.0	7.7	7.1	6.6	6.8
15	7.5	6.8	7.3	9.5	7.4	8.2	9.0	6.9	7.7	8.0	6.6	7.2
16	7.1	6.7	6.9	10.0	7.3	8.4	9.0	6.8	7.7	8.1	7.0	7.5
17	7.6	7.1	7.3	10.2	7.1	8.4	8.4	6.8	7.5	8.3	7.1	7.6
18	7.7	7.2	7.4	10.3	6.9	8.3	8.3	6.9	7.5	8.5	7.1	7.7
19	7.8	7.1	7.4	10.0	6.8	8.1	8.1	6.9	7.5	8.6	7.1	7.7
20	7.9	7.0	7.5	9.9	6.7	8.1	8.0	7.0	7.5	8.4	7.2	7.7
21	8.0	7.1	7.5	9.6	6.8	8.0	8.3	7.1	7.6	8.6	6.8	7.6
22	8.2	7.1	7.6	9.6	6.8	8.1	8.1	7.0	7.5	8.7	6.9	7.7
23	7.8	7.1	7.4	8.9	6.8	7.7	8.2	7.0	7.5	9.1	6.9	7.9
24	7.6	7.1	7.3	8.7	6.5	7.4	7.8	7.0	7.3	9.6	7.3	8.3
25	7.9	7.3	7.5	8.3	6.6	7.3	7.4	6.4	6.9	10.1	7.6	8.7
26	7.9	7.5	7.6	8.2	6.6	7.3	6.4	5.6	5.9	10.5	7.7	8.9
27	8.0	7.4	7.6	7.9	6.7	7.3	6.7	6.2	6.4	10.9	7.7	9.0
28	8.0	7.4	7.7	8.4	6.6	7.4	7.2	6.5	6.8	11.1	7.7	9.1
29	7.8	7.3	7.5	8.4	6.6	7.4	6.9	6.2	6.6	10.8	7.6	9.0
30	7.7	7.3	7.4	8.5	6.5	7.4	6.8	6.2	6.4	10.8	7.5	8.9
31	---	---	---	8.5	6.4	7.4	6.8	6.2	6.4	---	---	---
MONTH	8.9	6.7	7.6	10.3	6.4	7.9	9.0	5.6	7.2	11.1	5.6	7.4

COLORADO RIVER MAIN STEM

08160400 COLORADO RIVER ABOVE LAGRANGE, TX

LOCATION.--Lat 29°54'44", long 96°54'13", Fayette County, Hydrologic Unit 12090301, at right downstream end of bridge on new State Highway 71, 1.4 mi upstream from Buckners Creek, and at mile 177.

DRAINAGE AREA.--40,874 mi², of which 11,403 mi² is noncontributing.

PERIOD OF RECORD.--1979-82 (discharge measurements only), April 1988 to current year.

GAGE.--Water-stage recorder. Datum of gage is 210.04 ft above National Geodetic Vertical Datum of 1929. Dec. 12, 1979, to Sept. 30, 1982, discharge measurements only were made at old State Highway 71 bridge, 1.0 mi downstream and at different datum.

REMARKS.--Estimated daily discharges Nov. 21-29. Records good. At times, low-flow releases from Lake Travis (station 08154500) are made for generation of electric power and/or to fulfill downstream water contracts. There are many diversions above station for irrigation and for municipal supply. Regulation is the same as that for Colorado River at Austin (08158000), and Colorado River at Bastrop (08159200). Several observations of water temperature were made during the year. Gage-height telemeter located at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,500 ft³/s May 19, 1989 (gage height 13.47 ft); minimum daily, 182 ft³/s on Nov. 27, 1988.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1869, about 56.7 ft on July 9, 1869 (from marble high-water marker in LaGrange). Stages of other floods are as follows: Dec. 5, 1913, 56.4 ft, from floodmark; June 17, 1935, 50.84 ft, from floodmarks (discharge 255,000 ft³/s from rating curve extended above 200,000 ft³/s); July 27, 1938, 42.95 ft (discharge, 200,000 ft³/s). This data was collected at a site 2.6 mi downstream at streamflow station Colorado River at LaGrange (discontinued) at different datum than at present (1988) site.

EXTREMES FOR CURRENT YEAR.--Maximum discharge 19,500 ft³/s May 19 at 0800 hours (gage height, 13.47 ft); minimum daily, 182 ft³/s Nov. 27.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1900	302	257	359	855	272	1020	2010	2410	2300	1170	1910
2	2090	271	250	436	629	272	925	2230	2400	2260	1300	1920
3	2290	257	270	397	506	275	898	2060	2420	2290	1270	1930
4	2070	315	283	383	511	279	899	2030	2390	2420	1250	1920
5	1860	291	280	369	526	367	906	2180	2380	1840	1150	1920
6	1840	255	286	399	882	349	720	2320	2410	2100	1220	1920
7	1820	224	292	416	1170	911	657	2330	2370	2460	1330	1910
8	1770	216	297	335	965	587	878	2060	2420	2170	1220	1900
9	1500	256	328	373	1250	399	850	2100	2440	2080	1210	1930
10	1600	407	370	483	655	328	1010	2150	2390	2110	1260	1950
11	1570	295	476	428	524	297	1140	2310	3400	2090	1270	1930
12	1570	279	569	434	504	282	1190	2930	3260	2050	1230	1960
13	1370	404	418	465	481	277	1250	2510	2530	2050	1170	1970
14	1210	285	403	533	459	267	1340	7460	6550	1970	1300	2000
15	964	226	375	520	453	236	1440	5180	4730	1820	1370	2000
16	823	196	394	589	455	215	1530	4710	2300	1800	1270	1680
17	638	197	419	517	476	271	1470	3470	2010	1640	1190	1670
18	461	198	385	472	388	311	1440	6270	2180	1510	1480	1690
19	363	212	399	550	493	269	1440	15400	2110	1490	1620	1670
20	313	231	367	2550	456	737	1500	3710	2120	1480	1660	1640
21	285	e198	360	945	460	1170	2060	1790	2070	1460	1710	1630
22	276	e196	347	679	434	2190	1170	1490	2060	1470	1730	1570
23	270	e195	313	599	486	1400	843	1740	2100	1350	1760	1540
24	259	e190	346	563	446	1280	1420	2380	2190	1400	1800	1530
25	269	e186	376	522	419	1200	1460	2300	2220	1340	1800	1560
26	583	e183	391	503	352	1220	1490	2220	2330	1320	2430	1590
27	492	e182	381	542	287	1710	1490	2390	2310	1320	2450	1590
28	331	e190	374	1120	269	1400	1750	2400	2300	1290	2060	1590
29	273	e220	353	1360	---	2820	1830	2350	2270	1280	1960	1610
30	309	264	329	1140	---	1710	1830	2330	2320	1260	1950	1610
31	343	---	332	930	---	1330	---	2300	---	1240	1920	---
TOTAL	31712	7321	11020	19911	15791	24631	37846	99110	77390	54660	47510	53240
MEAN	1023	244	355	642	564	795	1262	3197	2580	1763	1533	1775
MAX	2290	407	569	2550	1250	2820	2060	15400	6550	2460	2450	2000
MIN	259	182	250	335	269	215	657	1490	2010	1240	1150	1530
AC-FT	62900	14520	21860	39490	31320	48860	75070	196600	153500	108400	94240	105600

CAL YR 1988 TOTAL - MEAN - MAX - MIN - AC-FT -
WTR YR 1989 TOTAL 480142 MEAN 1315 MAX 15400 MIN 182 AC-FT 952400

e Estimated.

COLORADO RIVER BASIN

169

08160800 REDGATE CREEK NEAR COLUMBUS, TX

LOCATION.--Lat 29°47'56", long 96°31'55", Colorado County, Hydrologic Unit 12090301, on left bank at downstream side of bridge on Farm Road 109, 1.9 mi upstream from Cummins Creek, and 7.0 mi north of Columbus.

DRAINAGE AREA.--17.3 mi².

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

REVISED RECORDS.--WSP 2122: Drainage area.

GAGE.--Water-stage recorder and crest-stage gages. Datum of gage is 210.82 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1975, at datum 10.00 ft higher.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. There was beaver activity in the vicinity of station during the year. There are no known diversions above station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--27 years, 5.32 ft³/s (4.18 in/yr), 3,850 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,360 ft³/s May 22, 1979 (gage height, 27.19 ft), from rating curve extended above 2,170 ft³/s on basis of slope-area measurement of peak flow of Jan. 22, 1965; no flow for many days.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1860, about 33.4 ft in late June or early July 1940, from information by State Department of Highways and Public Transportation and local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Aug. 1	1800	*1,620	*18.24	No other peak greater than base discharge.			

Minimum discharge, no flow Oct. 7-10.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.04	e.63	e.22	e1.1	1.1	e.82	.88	1.1	e.35	e.45	210	e.09
2	.04	e.45	e.22	e1.0	1.2	e.90	e.87	.93	e.33	e.40	12	e.09
3	.03	e.38	e.22	e1.0	1.9	e.95	e.87	.90	e.31	e2.0	e1.0	e.09
4	.02	e.34	e.22	e.95	1.1	e.90	e.86	.88	e.29	e1.5	e.50	e.09
5	.02	e.32	e.22	e.95	1.1	.86	e.86	10	.27	e.80	e.33	e.09
6	.01	e.30	e.22	e.92	.96	.85	e.85	2.2	.25	e.60	e.25	e.09
7	.0	e.28	e.22	e.92	.93	.84	e.85	1.4	.30	e.50	e.30	e.09
8	.00	e.27	e.60	e.90	.93	.83	e.84	1.4	.74	e.45	e.25	e.09
9	.0	e.26	e.90	e.90	.93	.82	e.84	1.3	.33	e1.0	e.22	e.09
10	.03	e.25	e.95	e1.0	e.90	.82	e.84	1.9	.27	e.80	e.20	e.08
11	.03	e.24	e1.0	1.0	1.1	.82	e.83	1.2	1.1	e.50	e.17	e.08
12	.02	e.24	e.90	3.5	1.5	.82	.90	1.1	.38	e.45	e.15	e.08
13	.02	e.23	e.80	1.3	e1.3	.82	2.2	8.6	.37	e.40	e.14	1.8
14	.02	e.23	e.75	.91	e1.1	.81	1.1	7.6	3.0	e.37	e.13	.96
15	.02	e.22	e.72	.83	e1.0	.80	.96	1.2	.88	e.34	e.12	.37
16	.02	e.25	e.70	e.80	e.95	.80	e.90	1.0	.42	e.32	e.12	.30
17	.02	e.27	e.68	e.80	e.92	.79	e.88	4.3	.37	e.30	e.12	e.27
18	.02	e.25	e.67	110	e.90	.79	e.87	2.7	e.35	e.28	e.11	e.24
19	.02	e.26	e.66	48	e.90	.78	e.86	.95	e.33	e.26	e.11	e.22
20	.02	e.25	e.65	111	e1.1	.78	e.85	.90	e.31	e.25	e.11	e.20
21	.02	.24	e.64	3.1	e.95	.95	e.84	e.80	e.29	e.24	e.10	e.18
22	.25	e.30	e.63	1.5	e.90	1.2	e.83	e.72	e.27	e.23	e.10	e.16
23	.04	e.25	e.62	1.0	e.88	1.0	e.82	e.65	e.26	e.22	e.10	e.14
24	.04	e.24	e.61	e.95	e.86	.93	e.82	e.60	e.26	e.22	e.10	e.12
25	.08	e.23	e.60	e.90	e.86	.93	.85	e.56	e.25	e.40	e.09	e.10
26	.05	e.25	e.60	3.7	e.85	1.4	.82	e.52	e1.0	e1.0	e.09	e.10
27	.05	e.24	e.60	21	e.85	1.5	.82	e.48	e1.5	.56	e.09	e.09
28	.05	e.23	e1.0	42	.84	4.5	.82	e.45	e1.0	.45	e.09	e.09
29	.16	e.23	e1.2	121	---	1.8	1.0	e.42	e.60	.31	e.09	e.08
30	.41	e.22	e1.2	4.9	---	.94	1.7	e.39	e.50	e.25	e.09	e.08
31	2.0	---	e1.1	1.6	---	.89	---	e.37	---	e.20	e.09	---
TOTAL	3.55	8.35	20.32	489.43	28.81	32.64	28.23	57.52	16.88	16.05	227.36	6.55
MEAN	.11	.28	.66	15.8	1.03	1.05	.94	1.86	.56	.52	7.33	.22
MAX	2.0	.63	1.2	121	1.9	4.5	2.2	10	3.0	2.0	210	1.8
MIN	.00	.22	.22	.80	.84	.78	.82	.37	.25	.20	.09	.08
AC-FT	7.0	17	40	971	57	65	56	114	33	32	451	13
CFSM	.01	.02	.04	.91	.06	.06	.05	.11	.03	.03	.42	.01
IN.	.01	.02	.04	1.05	.06	.07	.06	.12	.04	.03	.49	.01

CAL YR 1988	TOTAL	354.40	MEAN	.97	MAX	69	MIN	.00	AC-FT	703	CFSM	.06	IN.	.76
WTR YR 1989	TOTAL	935.69	MEAN	2.56	MAX	210	MIN	.00	AC-FT	1860	CFSM	.15	IN.	2.01

e Estimated.

08161000 COLORADO RIVER AT COLUMBUS, TX

LOCATION.--Lat 29°42'22", long 96°32'12", Colorado County, Hydrologic Unit 12090302, near right bank at downstream side of pier of bridge on U.S. Highway 90 at eastern edge of Columbus, 340 ft downstream from Texas and New Orleans Railroad Co. bridge, 2.6 mi downstream from Cummins Creek, and at mile 135.1.

DRAINAGE AREA.--41,640 mi², approximately, of which 11,403 mi² probably is noncontributing; 41,730 mi², approximately, at site "near Eagle Lake".

PERIOD OF RECORD.--January 1903 to December 1911 (gage heights only), May 1916 to current year. Discharge records for 1902-11, published in WSP 84, 99, 132, 174, 210, 288, and 308, have been found to be unreliable and should not be used. Records collected at site 23 mi downstream October 1930 to May 1939, published as "near Eagle Lake". Gage-height records collected in this vicinity since 1903 are contained in reports of the National Weather Service. Water-quality records.--Chemical analyses: October 1967 to September 1971. Chemical and biochemical analyses: February 1968 to September 1981. Sediment records: March 1957 to September 1973.

REVISED RECORDS.-- WSP 1562: 1920-21(M), 1922. WDR TX-81-3: Drainage area. See also PERIOD OF RECORD.

GAGE.--Water-stage recorder. Datum of gage is 145.52 ft above National Geodetic Vertical Datum of 1929. Prior to May 1, 1919, various nonrecording gages at sites in the immediate vicinity at datum 7.00 ft higher. May 1, 1919, to Nov. 23, 1930, water-stage recorder at site about 300 ft downstream at datum 7.00 ft higher. Sept. 17, 1930, to June 12, 1939 (Oct. 1, 1930, to May 31, 1939, used herein), water-stage recorder at site 23 mi downstream at different datum. May 17 to Nov. 14, 1939, nonrecording gage at present site and datum 10.00 ft higher; Nov. 15, 1939 to Dec. 31, 1988, water stage recorder at present site and at datum 10.00 ft higher.

REMARKS.--No estimated daily discharges. Records good. At times, low-flow releases from Lake Travis (station 08154500) are made for generation of electric power and (or) to fulfill downstream water contracts. The Lower Colorado River Authority reported that 19,310 acre-ft was diverted from the river to Cedar Creek Reservoir during the current year. This reservoir is located 10 mi north of the river and 3.5 mi west of Fayetteville. Flow is also affected at times by discharge from flood-detention pools of 20 floodwater-retarding structures with a combined detention capacity of 25,570 acre-ft. These structures control runoff from 73.1 mi² in the Cummins Creek watershed. There are many other diversions above station for irrigation and for municipal supply. Several observations of water temperature were made during the year. Gage-height telemeter at station.

AVERAGE DISCHARGE.--20 years (water years 1917-36) unregulated, 3,809 ft³/s (2,760,000 acre-ft/yr); 53 years (water years 1937-89) regulated, 2,859 ft³/s (2,071,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 190,000 ft³/s June 18, 1935 (gage height, 48.5 ft), present site and datum, computed on basis of records for station near Eagle Lake; minimum, 93 ft³/s Sept. 1, 1918.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1852, 51.6 ft, present datum, in July 1869 and Dec. 6, 1913, from information by local resident. River divided each time and left Columbus on an island.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 9,310 ft³/s May 19 at 2200 hours (gage height, 18.76 ft); minimum daily, 182 ft³/s Nov. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1580	402	188	336	1160	287	1320	1520	1910	2020	1200	1700
2	1650	395	211	311	982	288	1090	1640	2010	1960	1590	1700
3	1760	353	208	326	755	285	1000	1710	2000	1980	1390	1710
4	1970	322	203	348	601	275	955	1640	2010	2020	1270	1710
5	1770	311	217	351	568	268	941	1680	1980	2020	1220	1700
6	1670	330	226	333	571	299	891	1790	1990	1710	1130	1720
7	1670	311	233	312	888	335	740	1910	2000	1930	1150	1720
8	1650	289	243	315	1060	705	638	1740	2060	2090	1250	1710
9	1590	271	263	315	1060	582	814	1650	2010	1930	1170	1710
10	1420	262	270	290	1150	421	796	1660	2020	1880	1110	1710
11	1490	334	283	322	735	339	911	1700	3060	1900	1140	1730
12	1470	363	313	385	584	312	1010	1990	3500	1880	1140	1740
13	1470	306	388	399	561	296	1090	2150	2720	1850	1120	1780
14	1270	347	431	394	516	291	1110	3620	3920	1850	1070	1880
15	1140	367	410	423	478	281	1210	5010	6040	1770	1160	1840
16	978	306	390	422	461	265	1320	3980	3800	1700	1240	1860
17	885	247	357	466	459	249	1390	3900	2050	1690	1170	1660
18	751	235	358	688	477	247	1320	3130	1930	1600	1090	1650
19	648	235	364	777	453	285	1290	6820	1930	1490	1370	1670
20	540	227	366	4440	486	279	1290	6490	1910	1450	1490	1650
21	476	235	390	3210	458	531	1430	2510	1860	1430	1520	1640
22	450	238	403	1110	445	1190	1660	1590	1840	1410	1550	1620
23	404	226	415	756	419	1720	1040	1380	1850	1420	1560	1580
24	364	221	407	622	443	1310	807	1640	1870	1310	1580	1550
25	342	224	386	565	453	1160	1210	1990	1910	1360	1600	1550
26	331	224	369	524	417	1120	1260	1880	1940	1260	1600	1580
27	405	216	381	937	373	1610	1270	1810	1990	1220	2070	1600
28	555	201	393	683	305	1830	1280	1950	1960	1220	1980	1610
29	475	193	406	2680	---	3260	1460	1960	1950	1200	1790	1600
30	404	182	418	2570	---	2530	1560	1940	1950	1180	1730	1550
31	379	---	396	1460	---	1720	---	1930	---	1160	1720	---
TOTAL	31957	8373	10286	27070	17318	24570	34103	76310	69970	50890	43170	50430
MEAN	1031	279	332	873	618	793	1137	2462	2332	1642	1393	1681
MAX	1970	402	431	4440	1160	3260	1660	6820	6040	2090	2070	1880
MIN	331	182	188	290	305	247	638	1380	1840	1160	1070	1550
AC-FT	63390	16610	20400	53690	34350	48730	67640	151400	138800	100900	85630	100000
CAL YR 1988	TOTAL	484739	MEAN	1324	MAX	14000	MIN	182	AC-FT	961500		
WTR YR 1989	TOTAL	444447	MEAN	1218	MAX	6820	MIN	182	AC-FT	881600		

08162000 COLORADO RIVER AT WHARTON, TX
(National stream-quality accounting and radiochemical network)

LOCATION.--Lat 29°18'32", Long 96°06'13", Wharton County, Hydrologic Unit 12090302, near left bank at downstream side of downstream bridge on U.S. Highway 59 in Wharton, 1,100 ft downstream from Texas and New Orleans Railroad Co. bridge, 12 mi upstream from Jones Creek, and at mile 66.6.

DRAINAGE AREA.--42,003 mi², approximately, of which 11,403 mi² probably is noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1916 to August 1918 (intermittent periods), March 1919 to September 1925, July and August 1938 (flood discharge measurements only), October 1938 to current year. June to November 1901 and May to September 1902, daily records published in U.S. Department of Agriculture, Office of Experiment Stations, Bulletin Nos. 119 and 133. Gage-height records collected in this vicinity since 1935 are contained in reports of the National Weather Service.

REVISED RECORDS.--WSP 878: 1938(M). WDR TX-81-3: Drainage area. WDR TX-88-3: 1985.

GAGE.--Water-stage recorder. Datum of gage is 52.42 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1938, various types of recording and nonrecording gages 800 ft upstream at different datum. Oct. 1, 1938, to June 1, 1966, nonrecording gage 100 ft upstream at datum 13.00 ft higher. June 1, 1966, to Sept. 30, 1975, water-stage recorder at present site at datum 13 ft higher. Oct. 1, 1975, to Mar. 1, 1983, water-stage recorder at present site at datum 10 ft higher.

REMARKS.--No estimated daily discharges. Records good. There are many diversions above station for irrigation, municipal supply, cooling water for thermal-electric powerplant, and oil field operations. For statement regarding upstream regulation, see station 08161000. Gage-height telemeter at station.

AVERAGE DISCHARGE.--5 years (water years 1920-25) unregulated, 3,680 ft³/s (2,666,000 acre-ft/yr); 50 years (water years 1939-89) regulated, 2,643 ft³/s (1,915,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 100,000 ft³/s July 3, 1940 (gage height, 38.99 ft); no flow Aug. 6, 1925 (result of pumping). Flood of July 30, 1938, reached a stage of 50.4 ft, present datum, observed by Geological Survey engineers (discharge, 145,000 ft³/s).

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1869, 51.9 ft Dec. 8, 1913, present datum, from information by local residents; below Wharton floodwater combined with that of the Brazos River. Flood of about July 12, 1869, reached about same height. Flood of June 20, 1935, reached a stage of 51.2 ft, present datum, furnished by National Weather Service (discharge, 159,000 ft³/s), from rating curve defined by current-meter measurements below 145,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7,410 ft³/s May 20 at 2100 hours (gage height, 18.44 ft); minimum daily, 237 ft³/s Dec. 7 (result of regulation and pumping).

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	999	445	261	391	2150	497	2040	937	922	1830	1110	745
2	1100	445	243	374	1450	460	1600	1010	929	1690	1180	677
3	1130	445	246	330	1330	440	1210	1070	964	1500	1600	666
4	1200	424	259	315	1140	425	1010	1180	980	1380	1420	672
5	1310	400	262	335	937	425	791	1150	1000	1240	1370	661
6	1300	378	258	347	823	414	661	1380	1010	1180	1300	672
7	1030	373	237	348	770	400	584	1620	1010	913	1180	692
8	897	378	287	331	814	418	526	1530	1080	891	1000	780
9	859	373	358	325	1120	480	397	1540	1120	1180	910	748
10	845	364	347	330	1030	687	434	1090	1230	1080	898	738
11	883	352	339	332	1260	595	636	936	1280	967	762	805
12	881	339	339	319	1010	500	634	948	1800	960	749	889
13	856	382	347	377	806	441	736	1180	2730	998	709	926
14	804	382	385	425	730	406	1000	1870	2110	1030	675	945
15	738	356	450	424	684	384	1140	3270	3370	1080	533	1040
16	621	376	420	416	639	380	1200	4770	5390	1100	344	1070
17	771	383	389	426	608	375	1320	4080	3660	1010	330	1050
18	742	352	345	475	590	360	1410	4040	2070	1010	390	971
19	669	339	356	731	593	324	1320	3420	1540	914	310	731
20	562	331	357	1790	594	276	1180	5830	1330	777	264	672
21	496	301	326	3920	569	266	1070	5590	1110	672	429	636
22	590	244	328	3520	589	281	1030	2560	967	659	511	591
23	478	243	354	1690	568	604	1270	1400	895	677	561	564
24	440	243	384	1070	560	1430	928	871	1000	699	607	553
25	440	242	384	877	550	1250	580	677	1160	802	649	511
26	416	248	372	763	563	1190	473	1050	1330	896	616	497
27	391	281	358	704	548	1140	669	974	1450	1210	611	501
28	373	282	352	944	526	1420	677	960	1570	1130	831	556
29	461	274	352	1280	---	1770	589	975	1600	1110	1050	651
30	500	271	359	3500	---	2820	663	956	1700	1080	853	649
31	466	---	390	3770	---	2760	---	937	---	1050	810	---
TOTAL	23248	10246	10444	31179	23551	23618	27778	59801	48307	32715	24562	21859
MEAN	750	342	337	1006	841	762	926	1929	1610	1055	792	729
MAX	1310	445	450	3920	2150	2820	2040	5830	5390	1830	1600	1070
MIN	373	242	237	315	526	266	397	677	895	659	264	497
AC-FT	46110	20320	20720	61840	46710	46850	55100	118600	95820	64890	48720	43360

CAL YR 1988 TOTAL 359836 MEAN 983 MAX 13300 MIN 237 AC-FT 713700
WTR YR 1989 TOTAL 337308 MEAN 924 MAX 5830 MIN 237 AC-FT 669100

COLORADO RIVER MAIN STEM

08162000 COLORADO RIVER AT WHARTON, TX--Continued
(National stream-quality accounting and radiochemical network)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: April 1944 to current year. Chemical and biochemical analyses: January 1968 to current year. Pesticide analyses: October 1967 to June 1982. Sediment analyses: October 1974 to current year. Radiochemical analyses: December 1973 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: April 1944 to current year.

WATER TEMPERATURE: October 1945 to September 1948, March 1950 to current year.

REMARKS.--Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 904 microsiemens Oct. 29, 1963; minimum daily, 139 microsiemens Nov. 12, 1985.

WATER TEMPERATURE: Maximum daily, 35.0°C July 26, 1954; minimum daily, 0.0°C Dec. 26, 1983.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 810 microsiemens Mar. 19; minimum daily, 299 microsiemens Jan. 31.

WATER TEMPERATURE: Maximum daily, 30.5°C July 8, 18; minimum daily, 3.0°C Feb. 7, 8.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED SATUR-ATION	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI, FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS TOTAL (MG/L AS CaCO3)
NOV 16...	1435	386	697	8.50	20.5	14	9.6	106	1.0	40	84	270
JAN 10...	0920	331	726	8.30	12.0	14	10.8	99	0.8	48	150	250
FEB 28...	0915	527	728	8.60	16.5	4.2	9.2	95	0.7	32	44	250
APR 19...	1215	1280	735	8.10	23.0	39	8.0	93	1.9	140	150	230
JUN 06...	0900	993	700	8.90	29.5	87	7.4	97	5.5	210	120	230
JUL 25...	1510	873	748	8.50	28.0	23	9.8	124	1.8	88	340	240
DATE	HARD-NESS NONCARB WH WAT TOT FLD MG/L AS CaCO3	CALCIUM DIS-SOLVED (MG/L AS Ca)	MAGNE-SIUM, DIS-SOLVED (MG/L AS Mg)	SODIUM, DIS-SOLVED (MG/L AS Na)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT WH TOT FET FIELD (MG/L AS CaCO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS Cl)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)
NOV 16...	48	73	22	47	1	4.6	226	51	61	0.40	10	413
JAN 10...	47	66	21	52	1	5.5	205	57	73	0.40	6.1	424
FEB 28...	66	67	21	56	2	4.9	189	62	82	0.50	1.1	407
APR 19...	73	52	24	62	2	4.7	156	70	94	0.30	4.2	418
JUN 06...	66	56	22	52	2	4.4	165	64	85	0.30	4.9	394
JUL 25...	78	53	25	62	2	4.6	158	72	100	0.40	5.2	421
DATE	SOLIDS, SUM OF CON-SITUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRATE SOLVED (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA SOLVED (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHOUS TOTAL (MG/L AS P)
NOV 16...	410	--	--	0.010	<0.010	<0.100	0.910	0.020	0.020	0.58	0.60	0.150
JAN 10...	414	1.88	1.89	0.020	0.010	1.90	1.90	0.040	0.050	0.26	0.30	0.750
FEB 28...	415	1.09	1.19	0.010	0.010	1.10	1.20	0.030	0.030	0.27	0.30	0.470
APR 19...	410	0.870	0.980	0.030	0.010	0.900	0.990	0.040	0.030	0.86	0.90	0.540
JUN 06...	389	--	--	0.010	<0.010	<0.100	<0.100	0.010	0.010	2.1	2.1	0.170
JUL 25...	419	--	--	<0.010	<0.010	0.100	0.100	<0.010	<0.010	--	0.40	0.260

08162000 COLORADO RIVER AT WHARTON, TX--Continued
(National stream-quality accounting and radiochemical network)

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	PHOS- PHOROUS DIS- SOLVED (MG/L AS P)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)	SEDI- MENT, DIS- SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)
NOV 16...	0.400	0.390	1.2	24	25	74	<10	3	120	<0.5	4	<1
JAN 10...	0.750	0.690	2.1	21	19	89	--	--	--	--	--	--
FEB 28...	0.470	0.400	1.2	12	17	60	<10	2	110	<0.5	<1	1
APR 19...	0.490	0.440	1.3	70	242	99	--	--	--	--	--	--
JUN 06...	0.130	0.100	0.31	93	249	77	20	2	84	<0.5	<1	<1
JUL 25...	0.200	0.180	0.55	40	94	99	10	<1	93	<0.5	<1	<1

DATE	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)
NOV 16...	<3	2	11	<5	20	6	0.3	10	<1	<1	<1.0
JAN 10...	--	--	--	--	--	--	--	--	--	--	--
FEB 28...	<3	2	9	<5	15	8	<0.1	10	2	<1	<1.0
APR 19...	--	--	--	--	--	--	--	--	--	--	--
JUN 06...	<3	5	7	<1	15	<1	<0.1	<10	1	<1	<1.0
JUL 25...	<3	3	5	<1	16	5	<0.1	<10	1	<1	<1.0

DATE	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	GROSS ALPHA, DIS- SOLVED (UG/L AS U-NAT)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT)	GROSS BETA, DIS- SOLVED (PCI/L AS CS-137)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137)	GROSS BETA, DIS- SOLVED (PCI/L AS SR/ YT-90)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/ YT-90)	RADIUM 226, DIS- SOLVED, RADON METHOD (PCI/L)	URANIUM NATURAL DIS- SOLVED (UG/L AS U)
NOV 16...	540	<6	8	3.8	0.4	8.1	0.8	5.9	0.8	0.11	1.1
JAN 10...	--	--	--	--	--	--	--	--	--	--	--
FEB 28...	570	<6	5	--	--	--	--	--	--	--	--
APR 19...	--	--	--	--	--	--	--	--	--	--	--
JUN 06...	530	<6	6	--	--	--	--	--	--	--	--
JUL 25...	560	<6	9	1.9	1.5	9.7	1.6	7.6	1.3	0.12	1.9

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1988 TO SEPTEMBER 1989

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	DIS- SOLVED SOLIDS (MG/L)	DIS- SOLVED SOLIDS (TONS)	DIS- SOLVED CHLORIDE (MG/L)	DIS- SOLVED CHLORIDE (TONS)	DIS- SOLVED SULFATE (MG/L)	DIS- SOLVED SULFATE (TONS)	HARDNESS (CA, MG) (MG/L)
OCT. 1988	23248	617	343	21500	54	3400	43	2710	230
NOV. 1988	10246	721	398	11000	64	1780	50	1390	270
DEC. 1988	10444	750	413	11700	67	1900	52	1480	280
JAN. 1989	31179	486	272	22900	42	3550	34	2880	190
FEB. 1989	23551	546	305	19400	48	3030	38	2440	210
MAR. 1989	23618	667	369	23500	59	3780	47	2970	250
APR. 1989	27778	676	374	28100	60	4510	47	3550	250
MAY 1989	59801	553	308	49800	48	7780	39	6270	210
JUNE 1989	48307	604	336	43800	53	6930	42	5530	230
JULY 1989	32715	746	411	36300	67	5920	52	4600	280
AUG. 1989	24562	746	411	27300	67	4440	52	3450	280
SEPT 1989	21859	769	423	25000	69	4090	54	3160	280
TOTAL	337308	**	**	320000	**	51100	**	40400	**
WTD. AVG.	924	634	352	**	56	**	44	**	240

COLORADO RIVER MAIN STEM

08162000 COLORADO RIVER AT WHARTON, TX--Continued
(National stream-quality accounting and radiochemical network)

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
EQUIVALENT MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	550	653	791	725	340	742	557	716	653	725	755	781
2	580	673	797	730	341	746	377	709	656	730	748	661
3	594	676	795	732	341	750	517	724	665	735	750	712
4	597	668	785	733	364	741	618	738	685	726	696	739
5	601	662	784	727	430	750	649	744	675	725	660	765
6	599	680	780	731	500	759	667	734	699	729	711	780
7	604	687	774	731	527	762	684	698	712	730	737	791
8	609	697	750	740	537	754	647	722	702	727	744	779
9	603	717	592	744	566	757	685	708	715	737	755	777
10	592	729	681	747	643	757	721	724	721	746	766	777
11	600	735	723	747	578	766	716	745	719	751	768	779
12	599	745	742	748	631	767	729	749	728	748	770	771
13	613	738	746	733	648	771	712	650	694	746	781	780
14	623	734	771	718	617	774	720	635	541	751	764	771
15	629	728	776	733	613	779	731	691	540	765	765	786
16	637	714	790	727	614	782	737	570	425	758	782	765
17	633	708	790	690	626	792	744	328	385	760	781	745
18	635	721	775	699	646	804	739	480	451	761	776	767
19	641	722	760	539	662	810	735	489	565	762	754	764
20	646	727	751	426	663	806	736	440	608	754	789	777
21	655	741	754	741	667	806	742	471	656	762	767	778
22	648	766	750	312	671	782	738	394	611	769	778	785
23	641	772	747	356	685	761	707	405	651	769	777	783
24	657	776	748	323	691	737	727	427	636	769	776	784
25	658	777	753	332	705	690	731	449	655	768	658	785
26	657	779	752	365	715	595	755	488	688	743	710	786
27	654	772	745	378	728	543	745	553	702	745	745	784
28	660	775	728	449	730	642	744	576	715	749	773	781
29	666	782	725	493	---	671	701	551	721	756	774	777
30	654	785	721	345	---	607	671	577	720	753	775	776
31	667	---	730	299	---	417	---	640	---	765	773	---
MEAN	626	728	752	597	589	730	689	598	643	749	753	769

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	19.0	11.0	13.0	17.0	14.0	19.0	24.0	28.0	26.0	29.0	29.5
2	---	17.0	12.0	13.0	19.0	13.0	26.5	24.0	29.0	27.0	27.0	30.0
3	23.0	20.0	13.0	19.0	14.0	16.0	22.0	24.5	---	28.0	28.0	30.0
4	21.5	22.0	13.0	15.5	6.0	19.5	23.0	24.0	---	28.0	28.0	30.0
5	21.0	20.0	13.0	18.0	---	---	20.5	24.0	---	29.5	29.0	29.0
6	20.5	17.0	13.5	19.0	---	6.0	19.0	23.0	29.5	30.0	29.0	---
7	20.0	20.0	16.0	20.0	3.0	7.0	21.0	25.0	---	29.5	30.0	---
8	21.0	22.0	17.5	17.0	3.0	9.0	22.0	25.5	---	30.5	28.0	29.0
9	22.0	23.0	13.0	12.0	5.0	11.0	22.0	26.0	---	---	25.0	29.0
10	22.0	23.0	11.0	10.5	6.0	13.0	15.0	25.0	28.0	29.5	26.5	29.0
11	20.0	24.0	11.0	14.0	8.0	14.5	14.0	23.0	28.0	29.5	26.0	29.0
12	20.0	23.5	10.0	18.0	12.0	17.0	16.0	23.0	28.5	29.5	---	29.0
13	20.0	21.0	9.0	12.0	16.0	19.0	14.5	24.0	28.5	29.0	---	28.0
14	19.0	23.0	10.0	9.0	18.0	20.0	16.0	24.0	26.0	30.0	27.0	26.0
15	21.0	23.0	14.0	8.0	20.0	21.5	15.0	26.0	26.0	---	27.0	23.0
16	21.0	20.0	11.0	10.0	17.5	19.0	18.0	25.0	25.0	30.0	27.0	23.0
17	22.0	14.5	9.0	10.0	15.0	20.0	20.0	25.0	25.0	24.5	27.5	24.0
18	23.0	14.5	9.0	12.0	13.0	21.5	21.5	25.0	26.0	30.5	28.0	23.0
19	23.0	21.5	11.0	14.0	12.0	22.0	23.0	26.0	28.0	30.0	28.0	24.0
20	23.0	15.0	15.0	14.5	14.5	21.0	22.0	27.0	29.0	29.0	28.0	24.5
21	23.0	13.0	17.0	11.0	13.5	16.0	23.5	27.0	30.0	---	28.0	24.0
22	---	13.0	18.0	11.0	12.0	11.0	24.0	27.0	26.0	28.0	28.0	24.0
23	23.0	12.5	17.0	12.0	11.0	13.0	24.0	28.0	28.0	28.0	29.0	23.0
24	23.0	13.5	14.0	14.0	11.0	15.0	24.0	28.0	26.0	27.0	29.5	19.0
25	24.0	---	15.0	17.0	12.0	---	25.0	28.0	---	26.5	27.5	19.0
26	23.0	21.5	18.0	18.0	---	---	25.0	28.0	26.0	26.0	---	19.0
27	24.0	17.5	19.5	15.5	---	21.0	25.0	29.0	26.0	27.0	---	21.0
28	---	12.0	14.0	17.0	15.5	21.0	25.0	28.5	26.0	27.0	29.0	21.0
29	24.0	12.0	11.0	17.0	---	20.5	26.0	28.5	27.0	29.0	29.5	22.0
30	22.0	12.5	12.0	14.0	---	21.0	24.0	28.5	26.0	29.0	29.5	21.5
31	22.0	---	13.0	14.5	---	20.0	---	28.0	---	29.0	28.5	---
MEAN	22.0	18.5	13.0	14.0	12.0	16.5	21.0	26.0	27.0	28.5	28.0	25.0

COLORADO RIVER MAIN STEM

175

08162500 COLORADO RIVER NEAR BAY CITY, TX

LOCATION.--Lat 28°58'26", Long 96°00'44", Matagorda County, Hydrologic Unit 12090302, on right bank, 6,300 ft downstream from bridge on State Highway 35, 7,100 ft downstream from Texas and New Orleans Railroad Co. bridge, 2.8 mi west of Bay City, and at mile 32.5.

DRAINAGE AREA.--42,240 mi², approximately, of which 11,403 mi² probably is noncontributing.

PERIOD OF RECORD.--July 1940 (WSP 1046), April 1948 to current year. Records of elevation collected in this vicinity since 1946 are contained in reports of the National Weather Service.

Water-quality records.--Chemical and biochemical analyses: October 1974 to September 1975.

REVISED RECORDS.--WDR TX-81-3: Drainage area. TX-88-3: 1985.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. July 2-6, 1940, nonrecording gage at highway bridge, 6,300 ft upstream at datum 30.60 ft lower.

REMARKS.--No estimated daily discharges. Records good. There are diversions above station for irrigation and municipal supply. For statement regarding regulation by Soil Conservation Service floodwater-retarding structures, see station 08161000. Gage-height telemeter at station.

AVERAGE DISCHARGE.--41 years (water years 1949-89), 2,363 ft³/s (1,712,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 84,100 ft³/s June 26, 1960; maximum elevation, 48.2 ft, present datum, July 4, 1940, at site 6,300 ft upstream at bridge on State Highway 35, observed by U.S. Army Corps of Engineers (elevation 46.6 ft) adjusted to present site; no flow at times in 1951-53 and 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum elevation since 1869, 56.1 ft Dec. 10, 1913. Flood in July 1869 probably reached about same elevation. Elevation of other floods are as follows: May 8, 1922, 55.4 ft; June 1929, 55.0 ft; June 22, 1935, 54.6 ft; Oct. 5, 1936, 52.2 ft; Aug. 2, 1938, 53.4 ft; Nov. 27, 1940, 47.6 ft. All above flood data from information by Texas and New Orleans Railroad Co. and adjusted to present site.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7,740 ft³/s May 16 at 1330 hours (elevation, 14.60 ft); minimum daily, 33.0 ft³/s June 3.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1380	558	291	428	3450	546	2170	517	42	1130	866	332
2	968	563	283	428	2070	521	1620	725	36	1190	1260	243
3	796	512	296	408	1640	487	1110	766	33	964	1260	187
4	669	487	302	368	1520	464	743	838	34	764	1290	155
5	775	446	292	367	1310	440	611	841	43	631	1060	168
6	947	415	289	387	1080	446	432	886	114	521	995	212
7	799	404	292	398	920	435	309	1080	177	470	931	210
8	598	403	308	395	832	428	274	1120	298	263	783	185
9	515	402	384	357	985	448	234	1050	374	298	678	277
10	512	384	453	358	1230	521	186	831	448	443	625	252
11	528	385	434	369	1220	659	170	534	539	365	586	250
12	560	368	398	369	1350	585	311	445	552	275	483	320
13	579	363	388	359	1060	493	490	590	1580	293	449	457
14	560	408	396	449	830	227	736	1560	1690	330	405	475
15	567	398	437	486	751	125	939	3060	1610	355	381	508
16	498	353	483	450	704	312	962	6970	4470	406	247	576
17	454	387	452	449	668	378	1050	5170	3970	386	181	523
18	570	381	419	538	641	396	1110	4470	2370	379	96	525
19	536	367	392	1170	629	394	1090	4870	978	382	91	427
20	486	351	404	5780	641	380	927	4150	741	341	86	310
21	425	345	393	6140	626	350	795	6990	483	264	67	274
22	398	323	374	5440	601	361	663	3610	364	173	60	244
23	831	290	436	3040	606	396	606	1500	266	148	64	158
24	504	293	408	1700	589	695	682	519	537	207	64	137
25	473	310	424	1260	584	1340	377	170	1250	475	241	122
26	485	328	424	1030	573	1070	191	55	3030	905	376	94
27	470	337	417	864	584	1140	157	84	2540	1010	246	89
28	260	351	394	804	558	1130	157	67	1330	1120	188	77
29	506	335	392	1910	---	1560	225	60	1030	979	394	99
30	561	302	401	3200	---	2000	344	54	1000	861	505	213
31	601	---	407	5120	---	2710	---	48	---	825	407	---
TOTAL	18811	11549	11863	44821	28252	21437	19671	53630	31929	17153	15365	8099
MEAN	607	385	383	1446	1009	692	656	1730	1064	553	496	270
MAX	1380	563	483	6140	3450	2710	2170	6990	4470	1190	1290	576
MIN	260	290	283	357	558	125	157	48	33	148	60	77
AC-FT	37310	22910	23530	88900	56040	42520	39020	106400	63330	34020	30480	16060
CAL YR 1988	TOTAL	263399.8	MEAN	720	MAX	8680	MIN	6.8	AC-FT	522500		
WTR YR 1989	TOTAL	282580	MEAN	774	MAX	6990	MIN	33	AC-FT	560500		

TRES PALACIOS RIVER MAIN STEM

08162600 TRES PALACIOS RIVER NEAR MIDFIELD, TX

LOCATION.--Lat 28°55'40", long 96°10'15", Matagorda County, Hydrologic Unit 12100401, at right downstream end of bridge on Farm Road 456, 1.0 mi downstream from Juanita Creek, and 2.4 mi southeast of Midfield.

DRAINAGE AREA.--145 mi².

PERIOD OF RECORD.--June 1970 to current year. Prior to October 1973, published as Tres Palacios Creek near Midfield. Water-quality records.--Chemical, biochemical, and pesticide analyses: October 1968 to September 1981.

GAGE.--Water-stage recorder. Datum of gage is 5.38 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Ten known diversions above station (amount unknown). An undetermined amount of water from irrigated ricefields enters river upstream at various points. Extensive channel cleaning upstream and downstream from gage was begun in the 1983 water year and completed during the 1984 water year.

AVERAGE DISCHARGE.--19 years, 147 ft³/s (106,500 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,000 ft³/s Oct. 17, 1984 (gage height, 32.43 ft, from floodmark); minimum daily, 1.0 ft³/s Nov. 3-5, 1978.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1885, 37 ft in June 1960 and 35 ft in August 1945, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,600 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 20	1300	*4,020	*25.07	No other peak greater than base discharge.			
Minimum daily discharge, 5.1 ft ³ /s Mar. 17.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	255	37	8.4	12	128	6.1	8.8	14	10	140	45	12
2	78	35	8.1	12	39	7.0	8.1	12	9.2	182	264	17
3	44	32	8.1	12	50	7.1	7.7	13	8.7	76	242	16
4	30	25	8.1	13	35	7.7	7.7	14	11	50	81	15
5	26	19	8.2	12	22	8.1	7.4	14	12	33	41	13
6	23	18	8.4	11	18	7.1	6.9	16	15	26	30	12
7	22	18	8.1	10	e15	5.5	7.1	10	8.1	23	24	12
8	21	18	39	9.3	e13	5.6	9.8	12	60	27	23	12
9	21	18	115	11	e11	5.8	8.5	10	41	33	25	11
10	21	20	121	9.1	e10	6.7	8.7	e9.0	27	31	22	12
11	21	20	48	11	e9.0	6.5	11	e9.0	19	31	17	15
12	21	20	25	11	e10	6.6	13	e9.0	16	24	14	19
13	20	15	17	11	e9.0	6.0	14	e100	13	20	13	39
14	20	13	15	11	e8.0	6.1	18	e800	89	21	12	37
15	20	13	12	9.5	e7.5	6.0	16	e600	76	23	14	24
16	20	12	11	10	e7.5	5.2	15	e500	33	19	14	18
17	19	11	9.9	12	e7.5	5.1	12	e400	21	18	20	15
18	19	11	9.8	13	e7.5	5.3	7.6	e300	16	18	28	13
19	18	12	9.5	859	e7.0	5.3	7.4	e350	13	22	21	11
20	18	11	11	3440	e7.5	7.6	7.1	e150	12	18	16	12
21	18	9.8	12	1330	7.3	13	8.3	e70	12	18	14	12
22	18	9.8	11	396	6.9	97	11	e40	11	25	16	11
23	17	9.4	14	169	7.7	25	12	e25	12	28	16	11
24	27	10	15	75	6.6	14	11	e18	83	26	14	10
25	28	10	13	38	6.9	10	10	e15	380	82	41	11
26	23	9.5	12	25	7.8	9.4	13	e13	1020	157	83	10
27	24	9.0	12	24	7.4	9.7	13	e12	587	331	31	11
28	36	8.6	12	23	6.5	10	11	e12	262	207	16	12
29	51	8.4	12	340	---	72	9.8	e11	113	99	13	12
30	39	8.3	12	855	---	21	10	e11	75	68	12	12
31	34	---	12	435	---	11	---	e11	---	71	11	---
TOTAL	1052	470.8	637.6	8208.9	478.6	418.5	310.9	3580.0	3065.0	1947	1233	447
MEAN	33.9	15.7	20.6	265	17.1	13.5	10.4	115	102	62.8	39.8	14.9
MAX	255	37	121	3440	128	97	18	800	1020	331	264	39
MIN	17	8.3	8.1	9.1	6.5	5.1	6.9	9.0	8.1	18	11	10
AC-FT	2090	934	1260	16280	949	830	617	7100	6080	3860	2450	887

CAL YR 1988 TOTAL 10422.7 MEAN 28.5 MAX 510 MIN 7.8 AC-FT 20670
WTR YR 1989 TOTAL 21849.3 MEAN 59.9 MAX 3440 MIN 5.1 AC-FT 43340

e Estimated.

08163500 LAVACA RIVER AT HALLETTSVILLE, TX

LOCATION.--Lat 29°26'35", Long 96°56'39", Lavaca County, Hydrologic Unit 12100101, on left bank 75 ft downstream from bridge on U.S. Highway 77 in Hallettsville and 0.7 mi downstream from Campbell Branch.

DRAINAGE AREA.--108 mi².

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

REVISED RECORDS.--WSP 1312: 1942(M), 1944(M). WSP 1732: 1952(M). WSP 2123: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 186.72 ft above National Geodetic Vertical Datum of 1929. Prior to Apr. 19, 1960, water-stage recorder for high stages and movable nonrecording gage for stages below about 6.2 ft. Apr. 20, 1960, to June 2, 1961, movable nonrecording gage. All gages at same site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. No diversion above station. The Lavaca County Flood Control District No. 3 began channel rectification 1.6 mi downstream from gage in August 1983. This rectification reached the gage Jan. 26, 1984, and was completed in June 1984. The channel was previously rectified in 1959-60.

AVERAGE DISCHARGE.--50 years, 49.6 ft³/s (6.23 in/yr), 35,940 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 99,500 ft³/s Aug. 31, 1981 (gage height, 41.1 ft, from floodmark), from rating curve extended above 23,000 ft³/s on basis of slope-area measurement of peak flow; no flow at times in 1953 and 1956.

Maximum stage since at least 1840, that of Aug. 31, 1981.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage from about 1870 to 1940, 32.8 ft July 16, 1936, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 15	1130	*3,420	*15.67	No other peak greater than base discharge.			
Minimum daily discharge, 0.04 ft ³ /s Sept. 28, 29.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	e.30	e1.5	e.50	e.80	4.4	2.1	3.7	3.7	1.3	1.9	.34	.20		
2	e.30	e1.3	e.50	e.80	5.0	2.0	3.0	2.5	1.1	1.6	.30	.15		
3	.30	e1.2	e.50	e.80	25	1.9	2.3	1.9	1.1	1.4	.23	.13		
4	e.30	e1.1	e.50	e.80	8.8	2.0	2.3	1.8	.96	1.2	.17	.12		
5	e.30	e1.0	e.50	e.90	e6.0	1.7	1.9	4.5	.92	1.0	.13	.10		
6	e.30	e.98	e.50	e.90	e5.0	1.7	1.7	99	.80	.83	.10	.10		
7	e.30	e.93	e.50	e.90	e4.7	1.6	1.8	12	5.3	.88	.32	.57		
8	e.30	e.87	e3.5	e.90	e4.3	1.6	1.8	4.3	1.8	.80	.55	.28		
9	e.27	e.86	e2.0	e.90	e4.1	1.4	1.7	2.5	.78	.73	.30	.25		
10	e.25	e1.0	e1.3	e.90	e3.8	1.2	1.6	1.7	.79	.68	.20	.24		
11	e.25	e.85	e1.1	e.90	e3.7	1.2	1.6	1.3	96	.98	.14	.93		
12	e.25	e.75	.90	7.0	e3.5	1.3	1.7	1.7	47	.70	.11	.55		
13	e.25	e.68	e.80	2.3	e3.4	1.3	2.3	12	4.8	.67	.10	.63		
14	e.25	e.62	e.73	1.6	e3.2	1.4	2.4	31	595	.69	.08	.49		
15	e.25	e.58	e.72	1.3	e3.1	1.5	2.3	1400	176	.68	.11	.41		
16	e.23	e.56	e.69	e1.1	e2.9	1.4	2.1	270	35	.58	.11	.35		
17	e.22	e.54	e.67	e1.0	e2.9	1.4	2.0	230	17	.52	.12	.35		
18	e.21	e.53	e.65	7.7	e2.9	1.2	1.8	442	10	.48	.10	.35		
19	e.20	e.52	e.63	106	e2.9	1.2	1.7	85	7.0	.50	.10	.33		
20	e.20	e.51	e.62	295	e2.7	1.8	1.6	22	5.0	.44	.08	.28		
21	e.20	e.50	e.62	21	e2.4	2.8	1.6	12	3.8	.39	.08	.21		
22	e2.0	e.50	e.61	3.2	e2.2	3.8	1.5	8.4	3.2	.34	.08	.18		
23	e.70	e.50	e.60	1.6	e2.0	4.0	1.4	6.7	5.9	.31	.07	.15		
24	e.45	e.50	e.60	1.6	1.9	3.8	1.4	5.4	4.4	2.5	.07	.13		
25	e.35	e.50	e.60	1.9	1.9	3.8	1.3	4.3	3.6	.63	.09	.09		
26	e.32	e.50	e.60	29	2.2	8.9	1.3	3.4	3.4	.45	.09	.08		
27	e.30	e.50	e2.0	310	1.9	4.1	1.2	2.8	2.7	.96	.25	.07		
28	e.29	e.50	e1.5	108	1.9	4.1	1.2	2.4	2.4	.66	.19	.04		
29	e5.0	e.50	e1.2	183	---	3.9	3.1	2.1	2.1	.53	.18	.04		
30	e2.5	e.50	e.90	60	---	4.7	11	1.6	2.1	.43	.20	.06		
31	e3.0	---	e.80	7.6	---	4.9	---	1.3	---	.34	.24	---		
TOTAL	20.34	21.88	27.84	1159.40	118.7	79.7	66.3	2679.3	1041.25	24.80	5.23	7.86		
MEAN	.66	.73	.90	37.4	4.24	2.57	2.21	86.4	34.7	.80	.17	.26		
MAX	5.0	1.5	3.5	310	25	8.9	11	1400	595	2.5	.55	.93		
MIN	.20	.50	.50	.80	1.9	1.2	1.2	1.3	.78	.31	.07	.04		
AC-FT	40	43	55	2300	235	158	132	5310	2070	49	10	16		
CFSM	.01	.01	.01	.35	.04	.02	.02	.80	.32	.01	.00	.00		
IN.	.01	.01	.01	.40	.04	.03	.02	.92	.36	.01	.00	.00		
CAL YR 1988	TOTAL	2750.68	MEAN	7.52	MAX	372	MIN	.20	AC-FT	5460	CFSM	.07	IN.	.95
WTR YR 1989	TOTAL	5252.60	MEAN	14.4	MAX	1400	MIN	.04	AC-FT	10420	CFSM	.13	IN.	1.81

e Estimated.

LAVACA RIVER MAIN STEM

08164000 LAVACA RIVER NEAR EDNA, TX
(National stream-quality accounting network)

LOCATION.--Lat 28°57'35", long 96°41'10", Jackson County, Hydrologic Unit 12100101, at downstream side near center of upstream bridge of two bridges on U.S. Highway 59, 660 ft upstream from Texas and New Orleans Railroad Co. bridge, and 2.8 mi southwest of Edna.

DRAINAGE AREA.--817 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1938 to current year.

REVISED RECORDS.--WSP 1923: 1955. WRD TX-73-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 14.10 ft above National Geodetic Vertical Datum of 1929. Prior to June 6, 1939, nonrecording gage (property of U.S. Army Corps of Engineers); June 6, 1939, to Apr. 3, 1957, nonrecording gage at site 110 ft downstream; Apr. 4, 1957, to Mar. 21, 1961, nonrecording gage; all at same datum.

REMARKS.--Records good. Small diversions above station for irrigation.

AVERAGE DISCHARGE.--51 years, 323 ft³/s (5.37 in/yr), 234,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 73,000 ft³/s July 1, 1940 (gage height, 32.51 ft); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1880, 33.8 ft May 25, 1936 (discharge, 83,400 ft³/s), from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,100 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 30	0400	*1,480	*11.68				

Minimum daily discharge, 0.04 ft³/s Sept. 20.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e3.6	12	3.3	8.2	250	18	47	28	7.7	7.7	3.3	.39
2	e3.6	6.4	3.5	8.9	150	19	34	21	6.6	6.8	2.2	.19
3	e3.3	5.8	3.6	9.6	147	19	28	32	5.4	5.8	1.6	.09
4	e3.3	5.7	3.3	10	427	19	25	25	4.4	6.0	1.6	.06
5	e3.3	5.6	3.2	11	245	19	22	20	3.3	5.8	1.6	.06
6	e3.0	5.6	3.5	11	129	18	19	18	2.9	6.6	1.6	.10
7	e3.0	5.6	3.8	11	88	18	18	15	2.2	7.6	1.5	.09
8	e3.0	5.1	17	11	65	17	17	15	2.9	5.5	1.1	.09
9	e2.7	5.1	49	11	52	16	16	33	5.4	6.8	.90	.08
10	e2.7	5.0	23	11	41	16	16	22	2.7	5.2	.63	.06
11	e2.7	4.7	18	11	33	16	17	17	3.7	7.0	.40	.11
12	e2.7	5.9	16	11	32	17	18	15	5.4	5.8	.20	.80
13	e2.7	7.4	14	11	31	17	22	19	4.4	5.1	.14	.32
14	2.7	5.2	12	14	30	17	19	97	42	5.1	.11	.18
15	2.2	4.3	11	14	28	17	21	337	328	4.3	.11	.16
16	2.1	3.5	11	14	26	16	22	576	394	3.7	.14	.21
17	1.9	3.0	11	15	24	16	18	1050	111	2.6	.20	.16
18	1.8	3.2	9.0	26	23	17	16	799	65	1.8	.38	.09
19	1.8	3.3	8.7	268	21	16	15	927	45	1.4	1.3	.05
20	1.8	3.3	8.4	691	21	17	15	368	29	1.2	.80	.04
21	1.6	3.2	7.7	687	21	18	15	156	20	1.1	.33	.05
22	1.6	3.0	8.1	298	20	18	15	100	14	1.3	.16	.06
23	1.6	3.0	8.1	122	17	19	14	72	11	1.3	.11	.07
24	1.6	3.0	8.1	77	16	22	12	55	17	.87	.13	.07
25	1.5	3.2	8.1	58	16	23	14	44	20	1.1	1.8	.07
26	3.0	3.6	8.1	48	16	21	15	36	20	3.2	1.4	.07
27	6.6	3.6	8.5	43	15	57	12	26	20	13	.40	.05
28	4.5	3.6	8.8	183	18	157	13	20	21	14	.13	.05
29	3.6	3.6	8.1	759	---	132	15	15	12	9.2	.09	.06
30	3.3	3.5	7.8	1230	---	195	19	13	6.6	8.6	5.8	.05
31	7.9	---	7.7	513	---	82	---	10	---	5.3	1.7	---
TOTAL	90.7	139.0	321.4	5195.7	2002	1089	569	4981	1232.6	160.77	31.86	3.93
MEAN	2.93	4.63	10.4	168	71.5	35.1	19.0	161	41.1	5.19	1.03	.13
MAX	7.9	12	49	1230	427	195	47	1050	394	14	5.8	.80
MIN	1.5	3.0	3.2	8.2	15	16	12	10	2.2	.87	.09	.04
AC-FT	180	276	637	10310	3970	2160	1130	9880	2440	319	63	7.8
CFSM	.00	.01	.01	.21	.09	.04	.02	.20	.05	.01	.00	.00
IN.	.00	.01	.01	.24	.09	.05	.03	.23	.06	.01	.00	.00

CAL YR 1988	TOTAL	13242.4	MEAN	36.2	MAX	837	MIN	1.5	AC-FT	26270	CFSM	.04	IN.	.60
WTR YR 1989	TOTAL	15816.96	MEAN	43.3	MAX	1230	MIN	.04	AC-FT	31370	CFSM	.05	IN.	.72

e Estimated.

08164000 LAVACA RIVER NEAR EDNA, TX--Continued
(National stream-quality accounting network)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: August 1945 to September 1977. Chemical and biochemical analyses: February 1971 to current year. Pesticide analyses: January 1968 to August 1981. Sediment analyses: November 1977 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: November 1977 to September 1981.
WATER TEMPERATURE: November 1977 to September 1981.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 899 microsiemens April 22, 1978; minimum daily, 100 microsiemens May 5, 1979, and May 20, 1980.
WATER TEMPERATURE: Maximum daily, 33.0°C July 16, 1978; minimum daily, 5.0°C January 22, 1978.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
NOV 09...	1430	5.6	668	7.80	25.0	5.0	7.6	92	2.1	97	160
JAN 26...	1645	47	357	7.30	19.0	--	7.6	81	2.8	--	--
MAR 08...	1250	17	778	8.30	13.0	0.70	11.7	109	0.9	K32	K40
MAY 11...	1430	17	846	7.80	25.0	--	8.3	100	1.1	--	--
JUN 15...	0935	158	377	7.40	25.0	470	6.8	81	4.0	4000	7500
AUG 16...	1225	0.17	782	8.10	28.0	4.0	9.1	117	2.5	700	740

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
NOV 09...	220	5	78	7.0	54	2	4.6	219	14	85	0.30
JAN 26...	93	0	32	3.2	26	1	5.9	94	17	33	0.20
MAR 08...	250	0	92	5.8	64	2	4.3	254	37	81	0.40
MAY 11...	230	0	82	5.5	85	3	6.3	244	28	100	0.50
JUN 15...	99	0	35	2.8	35	2	5.1	101	13	41	0.30
AUG 16...	220	0	75	7.8	76	2	4.6	276	9.0	81	0.30

DATE	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)
NOV 09...	19	409	394	--	--	<0.010	<0.010	<0.100	<0.100	0.020
JAN 26...	14	--	188	0.280	--	0.020	--	0.300	--	0.070
MAR 08...	11	457	449	--	--	<0.010	<0.010	<0.100	<0.100	<0.010
MAY 11...	20	--	474	0.270	--	0.030	--	0.300	--	0.060
JUN 15...	12	220	208	0.460	0.430	0.040	0.020	0.500	0.450	0.030
AUG 16...	16	416	436	--	--	<0.010	<0.010	<0.100	<0.100	0.030

DATE	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P)	PHOS- PHOROUS ORTHOPHOS- PHATE, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHOPHOS- PHATE, DIS- SOLVED (MG/L AS P04)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (MG/L)	SED. SUSP. STEEVE DIAM. % FINER THAN .062 MM
NOV 09...	0.030	0.48	0.50	0.100	0.080	0.080	0.25	27	0.41
JAN 26...	--	0.93	1.0	0.230	--	--	--	--	--
MAR 08...	0.010	--	0.60	0.140	0.130	0.120	0.37	3	0.14
MAY 11...	--	0.24	0.30	0.530	--	--	--	--	--
JUN 15...	0.030	0.47	0.50	0.200	0.190	0.140	0.43	745	318
AUG 16...	0.030	0.47	0.50	0.140	0.090	0.060	0.18	16	0.01

LAVACA RIVER MAIN STEM

08164000 LAVACA RIVER NEAR EDNA, TX--Continued
(National stream-quality accounting network)

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)
NOV 09...	<10	4	320	<0.5	3	<1	<3	3	7	<5
JAN 26...	--	--	--	--	--	--	--	--	--	--
MAR 08...	20	3	290	<0.5	<1	<1	<3	<1	6	<5
MAY 11...	--	--	--	--	--	--	--	--	--	--
JUN 15...	60	3	130	<0.5	<1	<1	<3	10	38	1
AUG 16...	<10	2	300	<0.5	<1	<1	<3	1	13	1
DATE	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
NOV 09...	11	29	0.1	<10	4	<1	<1.0	270	<6	6
JAN 26...	--	--	--	--	--	--	--	--	--	--
MAR 08...	15	24	<0.1	<10	3	<1	<1.0	330	<6	<3
MAY 11...	--	--	--	--	--	--	--	--	--	--
JUN 15...	7	36	0.1	<10	<1	<1	<1.0	150	<6	6
AUG 16...	11	210	0.2	<10	1	<1	<1.0	410	<6	<3

LAVACA RIVER BASIN

181

08164300 NAVIDAD RIVER NEAR HALLETTSVILLE, TX

LOCATION.--Lat 29°28'00", long 96°48'45", Lavaca County, Hydrologic Unit 12100102, on right bank 28 ft downstream from bridge on U.S. Highway 90-A, 0.8 mi downstream from Mixons Creek, 1.2 mi southwest of Sublime, and 8 mi northeast of Hallettsville.

DRAINAGE AREA.--332 mi².

PERIOD OF RECORD.--October 1961 to current year.

REVISED RECORDS.--WSP 2123: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 159.28 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. No known diversion above station.

AVERAGE DISCHARGE.--28 years, 141 ft³/s (5.77 in/yr), 102,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 53,500 ft³/s Sept. 13, 1974 (gage height, 36.05 ft); no flow Aug. 5-7, 22, Sept. 2-16, 1964.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1860, 40 ft in June 1940; flood in July 1936 reached a stage of 39 ft, from information by local residents and Southern Pacific Railroad Co.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 14	0800	2,750	20.02	May 18	0600	2,930	20.35
May 15	1800	*4,690	*22.71				

Minimum daily discharge, 0.04 ft³/s Sept. 26, 29, 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.27	1.5	.78	3.8	33	11	23	24	13	15	1.4	.15
2	.17	1.5	.78	3.7	23	11	20	13	12	13	1.7	.13
3	.15	1.2	.96	3.7	27	11	18	10	12	8.9	1.9	.13
4	.17	.78	1.1	3.7	20	12	16	10	11	7.8	1.7	.13
5	.17	.63	1.3	3.7	17	11	15	279	10	7.0	1.1	.11
6	.17	.45	1.3	3.7	16	10	14	141	9.6	6.5	.86	.10
7	.17	.45	2.1	3.7	14	10	13	32	9.1	6.2	.69	.15
8	.17	.40	3.5	3.6	14	10	14	20	12	6.1	.70	.24
9	.17	.40	4.6	3.4	14	10	13	15	12	5.3	.78	.15
10	.17	.40	4.3	3.3	13	10	13	12	10	4.7	.70	.11
11	.15	.45	3.9	3.3	13	10	13	11	120	4.8	.64	.20
12	.13	.45	3.1	4.7	13	10	13	11	126	4.9	.54	.18
13	.13	.45	3.1	6.1	14	10	18	44	24	4.0	.45	.32
14	.13	.45	3.1	7.1	14	11	20	1740	679	3.5	.45	.41
15	.13	.57	3.1	9.3	13	11	17	2000	402	2.9	.41	.18
16	.13	.57	3.0	7.2	12	11	15	2840	54	2.7	.40	.13
17	.13	.57	2.9	5.4	12	11	14	309	27	2.7	.70	.11
18	.13	.57	2.9	15	12	11	14	1360	19	2.7	.62	.09
19	.13	.70	3.0	226	12	11	13	168	15	2.6	.45	.09
20	.13	.70	3.1	1510	12	12	13	92	13	2.2	.39	.08
21	.13	.63	3.1	207	13	13	12	68	11	1.9	.31	.07
22	.13	.51	3.4	38	11	15	12	54	9.5	1.6	.28	.06
23	.13	.51	5.4	24	11	15	11	45	9.2	1.5	.19	.05
24	.13	.45	4.0	18	11	14	11	39	10	1.5	.19	.05
25	.11	.57	3.6	16	11	13	10	33	12	4.7	.20	.05
26	.11	.87	3.5	19	11	236	9.6	28	12	7.7	.20	.04
27	.13	.87	3.6	592	11	203	9.3	25	11	3.7	.17	.05
28	.13	.87	4.3	153	11	145	9.2	22	9.6	3.0	.17	.05
29	.17	.87	4.2	712	---	270	8.7	19	8.8	2.7	.17	.04
30	.63	.87	3.9	242	---	57	16	17	8.7	2.6	.15	.04
31	.87	---	3.9	64	---	30	---	15	---	1.8	.15	---
TOTAL	5.77	20.21	94.82	3915.4	408	1225	417.8	9496	1691.5	146.2	18.76	3.69
MEAN	.19	.67	3.06	126	14.6	39.5	13.9	306	56.4	4.72	.61	.12
MAX	.87	1.5	5.4	1510	33	270	23	2840	679	15	1.9	.41
MIN	.11	.40	.78	3.3	11	10	8.7	10	8.7	1.5	.15	.04
AC-FT	11	40	188	7770	809	2430	829	18840	3360	290	37	7.3
CFSM	.00	.00	.01	.38	.04	.12	.04	.92	.17	.01	.00	.00
IN.	.00	.00	.01	.44	.05	.14	.05	1.06	.19	.02	.00	.00

CAL YR 1988	TOTAL	6280.67	MEAN	17.2	MAX	1010	MIN	.05	AC-FT	12460	CFSM	.05	IN.	.70
WTR YR 1989	TOTAL	17443.15	MEAN	47.8	MAX	2840	MIN	.04	AC-FT	34600	CFSM	.14	IN.	1.95

LAVACA RIVER BASIN

08164350 NAVIDAD RIVER NEAR SPEAKS, TX

LOCATION.--Lat 29°19'18", long 96°42'32", Lavaca County, Hydrologic Unit 12100102, at right downstream end of bridge on Farm Road 530, 100 ft downstream from Ragsdale Creek, and 4.6 mi north of Speaks.

DRAINAGE AREA.--437 mi².

PERIOD OF RECORD.--October 1981 to September 1989 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 120.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those below 1.0 ft³/s, which are poor. There are no known diversions above this station.

AVERAGE DISCHARGE.--8 years, 131 ft³/s (4.07 in/yr), 94,910 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,300 ft³/s May 14, 1982 (gage height, 27.89 ft, from floodmark); minimum daily, no flow Sept. 1-10, 25-30, 1989.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 15	1500	*4,800	a*20.60	May 18	2400	2,600	a16.28

a From floodmark.

Minimum daily discharge, no flow Sept. 1-10, 25-30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	2.7	3.2	1.6	3.4	77	12	33	16	17	16	3.0	.00		
2	1.9	2.6	1.5	3.3	48	12	26	22	14	23	2.4	.00		
3	1.3	2.4	1.6	3.3	117	11	23	11	12	21	1.7	.00		
4	1.2	2.2	1.4	3.0	71	11	22	7.2	11	16	1.2	.00		
5	1.1	2.0	1.4	3.0	e35	11	20	52	9.1	14	1.1	.00		
6	.85	1.9	1.4	3.1	e25	11	16	459	7.9	14	.83	.00		
7	.76	1.8	1.4	3.0	e20	10	14	67	6.8	11	.72	.00		
8	.73	1.7	6.7	3.0	e18	9.8	14	32	6.5	8.2	.81	.00		
9	.76	1.6	6.1	3.0	e17	9.7	13	19	6.9	7.7	.55	.00		
10	.76	1.6	5.7	2.7	e17	9.5	12	12	7.3	6.8	.47	.00		
11	.60	1.6	5.9	2.7	e15	9.3	10	9.1	9.1	6.4	.38	2.5		
12	.52	1.6	5.9	2.7	e15	9.3	9.8	13	214	6.0	.35	7.0		
13	.52	1.6	5.4	3.2	e15	9.3	11	35	68	5.7	.30	5.0		
14	.45	1.5	4.7	4.3	e16	9.3	16	1760	265	5.0	.27	3.3		
15	.42	1.4	4.3	4.5	e16	9.8	18	3810	986	4.3	.51	1.1		
16	.34	1.4	4.0	5.8	e15	10	15	4580	130	4.1	.35	.49		
17	.34	1.4	3.8	5.5	e14	9.5	12	2430	65	3.6	.19	.34		
18	.34	1.4	3.6	8.7	e14	8.9	10	1960	43	3.3	.31	.34		
19	.38	1.3	3.6	67	e14	8.8	9.1	1020	32	3.2	.25	.31		
20	.41	1.4	3.5	1010	e14	8.9	8.2	156	26	4.0	.48	.23		
21	.34	1.4	3.3	976	14	9.1	7.5	102	23	3.2	.29	.15		
22	1.8	1.4	3.3	104	14	11	6.6	79	20	2.6	e.20	e.10		
23	1.4	1.4	3.2	58	13	13	5.9	66	18	2.4	e.15	e.06		
24	.80	1.3	3.0	40	13	13	5.1	56	17	2.0	e.15	e.03		
25	.61	1.2	4.7	30	12	12	4.5	47	18	1.8	e.15	.00		
26	.52	1.2	4.2	27	12	10	4.1	39	20	1.6	e.10	.00		
27	.65	1.2	3.6	567	12	461	3.8	33	21	8.8	e.05	.00		
28	.92	1.2	3.5	290	12	110	3.5	28	19	6.1	e.05	.00		
29	1.7	1.3	3.1	1220	---	520	3.1	25	17	5.2	e.05	.00		
30	2.7	1.5	3.5	879	---	120	7.8	21	16	4.6	e.02	.00		
31	3.5	---	3.6	162	---	52	---	19	---	3.5	e.02	---		
TOTAL	31.32	48.7	112.5	5498.2	695	1531.2	364.0	16985.3	2125.6	225.1	17.40	20.95		
MEAN	1.01	1.62	3.63	177	24.8	49.4	12.1	548	70.9	7.26	.56	.70		
MAX	3.5	3.2	6.7	1220	117	520	33	4580	986	23	3.0	7.0		
MIN	.34	1.2	1.4	2.7	12	8.8	3.1	7.2	6.5	1.6	.02	.00		
AC-FT	62	97	223	10910	1380	3040	722	33690	4220	446	35	42		
CFSM	.00	.00	.01	.41	.06	.11	.03	1.25	.16	.02	.00	.00		
IN.	.00	.00	.01	.47	.06	.13	.03	1.45	.18	.02	.00	.00		
CAL YR 1988	TOTAL	7951.84	MEAN	21.7	MAX	642	MIN	.10	AC-FT	15770	CFSM	.05	IN.	.68
WTR YR 1989	TOTAL	27655.27	MEAN	75.8	MAX	4580	MIN	.00	AC-FT	54850	CFSM	.17	IN.	2.35

e Estimated.

LAVACA RIVER BASIN

183

08164450 SANDY CREEK NEAR LOUISE, TX

LOCATION.--Lat 29°09'36", long 96°32'46", Jackson County, Hydrologic Unit 12100102, on left bank at downstream end of bridge on Farm Road 710, 0.9 mi upstream from Goldenrod Creek, and 9.1 mi northwest of Louise.

DRAINAGE AREA.--289 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1977 to current year.

GAGE.--Water-stage recorder. Datum of gage is 59.72 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for discharges below 10 ft³/s, which are poor. Much of the low flow during the irrigation season (April to September) is drainage from rice fields irrigated by water originally diverted from the Colorado River. No known diversion above station.

AVERAGE DISCHARGE.--12 years, 171 ft³/s (8.04 in/yr), 123,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,000 ft³/s Sept. 14, 1978 (gage height, 23.03 ft), from rating curve extended above 7,800 ft³/s; no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 21	0400	2,850	14.21	May 16	1100	*2,980	*14.42
Jan. 30	1200	2,060	12.63	May 18	2400	2,380	13.34
May 15	0300	1,720	11.80				

Minimum daily discharge, no flow for several days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	232	230	e.15	e.10	740	e.08	e3.0	57	.09	98	70	e3.0		
2	224	249	e.10	e.05	367	e.08	e.10	44	e.20	128	54	e.50		
3	159	169	e.10	e.02	314	e.08	e.08	30	e.10	88	40	e.20		
4	127	133	e.10	e.02	591	e.08	.06	19	e.10	55	24	e.00		
5	109	107	e.10	.02	427	e.06	e.05	12	e.05	42	14	e.00		
6	95	78	e.10	e.02	146	e.06	e.05	89	e.05	26	e6.0	e.00		
7	72	50	e.10	e.02	79	e.06	e.05	111	e.05	19	e1.0	e1.0		
8	62	39	31	e.02	47	.06	e.05	51	e.30	24	e2.0	13		
9	60	26	440	e.02	37	e.06	e.05	20	e.10	28	e1.0	21		
10	52	20	503	e.02	31	e.06	e.05	e1.0	e.05	26	e8.0	18		
11	51	9.9	225	e.02	36	e.06	e.05	.02	e.05	23	e1.0	23		
12	58	7.8	132	e.50	30	e.06	e.05	33	e.05	34	e.20	30		
13	46	6.3	83	e.50	31	e.06	e.50	120	e.05	36	e.00	33		
14	29	15	46	e.20	36	e.06	34	841	103	35	e.00	46		
15	25	15	30	e.15	28	e.06	45	2030	556	44	e.00	44		
16	26	9.2	19	e.10	21	e.06	27	2710	402	46	e1.0	33		
17	23	10	14	e.05	e1.0	e.06	14	1460	204	37	7.6	34		
18	15	5.1	8.8	165	e4.0	e.06	6.9	1890	61	46	12	38		
19	12	6.8	5.3	694	e1.5	e.06	e1.0	1680	24	43	25	36		
20	9.7	7.2	e2.5	2210	e.60	e.06	e.40	680	5.5	49	19	19		
21	10	5.0	e1.0	2550	e.30	e.06	e.20	291	e1.0	52	12	8.3		
22	103	e2.5	e.50	1640	e.20	e.06	e1.0	114	e.20	57	6.3	8.3		
23	232	e1.0	e4.0	777	e.15	e.06	e3.0	38	e.50	99	e1.0	e2.0		
24	157	e.50	e1.5	392	e.12	e.06	e2.0	10	9.3	130	e2.0	e.50		
25	100	e.30	e.60	199	e.10	e.06	e7.0	e1.0	74	164	e1.0	e.00		
26	75	e.25	e.30	103	e.10	e.06	e8.0	e.20	141	216	24	e.00		
27	217	e.22	e1.0	143	e.10	e.06	e2.0	e.15	163	209	22	e.00		
28	188	e.20	e.40	533	e.10	e.06	e2.0	e.10	128	176	18	e.00		
29	136	e.15	e.20	804	---	83	e1.0	e.10	74	159	13	7.2		
30	134	e.15	e.15	1730	---	146	e5.0	e.10	54	119	e1.0	13		
31	173	---	e.10	1080	---	39	---	e.09	---	83	e.20	---		
TOTAL	3011.7	1203.57	1550.10	13021.83	2978.27	269.76	163.64	12332.76	2001.74	2391	395.30	432.00		
MEAN	97.2	40.1	50.0	420	106	8.70	5.45	398	66.7	77.1	12.8	14.4		
MAX	232	249	503	2550	740	146	45	2710	556	216	70	46		
MIN	9.7	.15	.10	.02	.10	.06	.05	.02	.05	19	.00	.00		
AC-FT	5970	2390	3070	25830	5910	535	325	24460	3970	4740	784	857		
CFSM	.34	.14	.17	1.45	.37	.03	.02	1.38	.23	.27	.04	.05		
IN.	.39	.15	.20	1.68	.38	.03	.02	1.59	.26	.31	.05	.06		
CAL YR 1988	TOTAL	17470.94	MEAN	47.7	MAX	700	MIN	.00	AC-FT	34650	CFSM	.17	IN.	2.25
WTR YR 1989	TOTAL	39751.67	MEAN	109	MAX	2710	MIN	.00	AC-FT	78850	CFSM	.38	IN.	5.12

e Estimated.

LAVACA RIVER BASIN

08164450 SANDY CREEK NEAR LOUISE, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: October 1977 to current year. Pesticide analyses: November 1977 to July 1981. Sediment analyses: September 1978 to April 1979.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB WH WAT TOT FLD (MG/L AS CAC03)
NOV 10...	1015	23	437	7.40	23.5	7.6	89	2.1	140	18
JAN 26...	1530	95	189	7.30	18.5	8.2	87	4.2	53	5
MAR 08...	1015	1.3	406	7.40	9.0	10.3	87	2.8	120	23
MAY 11...	1130	8.8	562	7.30	23.0	7.2	83	3.6	160	41
JUN 14...	1222	94	407	7.40	25.0	7.4	89	6.6	120	35
DATE	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT WH TOT FET FIELD (MG/L AS CAC03)	SULFATE DIS-SOLVED (MG/L AS S04)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SI02)
NOV 10...	31	14	36	1	6.5	117	22	64	0.30	36
JAN 26...	14	4.4	12	0.7	8.0	48	15	17	0.20	13
MAR 08...	32	9.8	29	1	5.8	97	17	55	0.20	18
MAY 11...	41	13	45	2	7.3	115	28	83	0.40	14
JUN 14...	33	8.8	34	1	3.7	84	26	55	0.30	12
DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (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-PHOROUS TOTAL (MG/L AS P)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)
NOV 10...	280	0.190	0.010	0.200	0.040	0.96	1.0	0.200	--	--
JAN 26...	113	0.050	0.050	0.100	0.110	1.4	1.5	0.220	2	60
MAR 08...	225	--	<0.010	<0.100	0.100	0.50	0.60	0.200	--	--
MAY 11...	301	--	0.020	<0.100	0.320	0.98	1.3	0.280	--	--
JUN 14...	223	0.840	0.260	1.10	0.270	1.0	1.3	0.140	2	100
DATE	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)	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)
NOV 10...	--	--	--	--	--	--	--	--	--	--
JAN 26...	<1	<1	4	260	<5	4	0.4	<1	<1.0	14
MAR 08...	--	--	--	--	--	--	--	--	--	--
MAY 11...	--	--	--	--	--	--	--	--	--	--
JUN 14...	<1	<1	2	63	1	9	0.2	<1	<1.0	4

LAVACA RIVER BASIN

185

08164503 WEST MUSTANG CREEK NEAR GANADO, TX

LOCATION.--Lat 29°04'17", long 96°28'01", Jackson County, Hydrologic Unit 12100102, on right bank at downstream end of downstream bridge on U.S. Highway 59, 2.1 mi upstream from Middle Mustang Creek, and 3.6 mi east of Ganado.

DRAINAGE AREA.--178 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1977 to current year.

GAGE.--Water-stage recorder. Datum of gage is 40.12 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Much of low flow during the irrigation season (April to September) comes from drainage from ricefields irrigated by diversions originating from the Colorado River.

AVERAGE DISCHARGE.--12 years, 141 ft³/s (10.8 in/yr), 102,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,400 ft³/s Jan. 21, 1980 (gage height, 24.49 ft, from floodmark), from rating curve extended above 8,800 ft³/s; minimum daily, 0.03 ft³/s Jan. 18, 19, 1981.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 21	0500	2,500	15.81	May 16	1600	*2,750	*16.15

Minimum daily discharge, 0.06 ft³/s Dec. 3.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	106	192	.08	.60	208	1.4	2.5	22	5.2	147	65	6.4		
2	130	143	.07	.70	105	1.8	1.9	24	3.5	180	48	5.2		
3	123	85	.06	.86	88	1.9	2.2	14	3.5	93	43	4.5		
4	91	52	.07	.75	183	1.6	2.9	11	8.1	40	47	3.3		
5	53	28	.07	.56	112	1.3	3.9	11	5.7	23	50	3.7		
6	31	14	.13	.48	57	1.2	9.4	36	6.0	17	38	3.1		
7	16	8.7	.16	.38	33	1.1	10	59	9.6	13	27	4.0		
8	13	6.7	.28	.26	23	1.1	5.4	34	8.0	20	20	14		
9	13	4.5	406	.18	16	1.0	9.0	21	12	19	15	21		
10	13	6.0	301	.17	12	.73	5.4	13	8.9	19	16	21		
11	7.7	4.5	135	.15	9.0	.79	3.7	5.8	5.6	30	13	20		
12	7.6	7.3	76	.16	7.7	1.2	3.2	96	3.4	47	7.5	20		
13	6.4	4.4	44	.14	7.2	1.0	8.2	436	4.0	52	5.7	21		
14	8.8	4.0	27	.13	7.1	.95	27	1020	47	45	4.6	20		
15	11	7.1	18	.14	7.2	1.2	50	1490	194	49	4.8	21		
16	11	7.0	11	.12	6.2	.91	61	2480	148	28	3.3	23		
17	17	4.8	7.6	.10	4.9	.85	25	1730	82	31	2.6	19		
18	16	3.0	4.4	.77	4.7	.95	18	823	44	32	5.5	14		
19	9.8	2.9	3.5	.810	4.1	.85	14	924	26	32	7.2	11		
20	14	1.6	3.2	1780	4.0	.73	6.4	406	14	27	12	9.0		
21	18	1.4	3.0	2280	4.1	.65	7.6	143	7.1	25	18	7.2		
22	38	1.4	2.5	1330	3.9	.67	5.4	70	3.7	28	15	4.4		
23	289	3.5	2.1	533	3.1	.60	6.2	35	3.8	29	14	7.8		
24	197	2.2	1.8	245	2.7	1.4	5.6	20	31	41	19	8.7		
25	120	1.1	1.3	144	2.2	1.9	5.7	12	127	76	165	5.9		
26	81	.86	1.1	99	1.9	2.8	4.9	7.8	213	114	111	6.9		
27	120	.19	.99	70	1.7	4.7	10	4.6	209	125	60	6.9		
28	151	.08	.77	55	1.5	5.7	26	3.6	113	138	38	2.7		
29	81	.07	.68	182	---	3.7	21	3.2	58	130	23	3.9		
30	52	.07	.63	814	---	5.4	12	4.8	35	113	19	9.0		
31	68	---	.60	538	---	4.0	---	5.1	---	80	9.8	---		
TOTAL	1913.3	597.37	1080.81	8962.89	920.2	54.08	373.5	9964.9	1439.1	1843	927.0	327.6		
MEAN	61.7	19.9	34.9	289	32.9	1.74	12.4	321	48.0	59.5	29.9	10.9		
MAX	289	192	406	2280	208	5.7	61	2480	213	180	165	23		
MIN	6.4	.07	.06	.10	1.5	.60	1.9	3.2	3.4	13	2.6	2.7		
AC-FT	3800	1180	2140	17780	1830	107	741	19770	2850	3660	1840	650		
CFSM	.35	.11	.20	1.62	.18	.01	.07	1.81	.27	.33	.17	.06		
IN.	.40	.12	.23	1.87	.19	.01	.08	2.08	.30	.39	.19	.07		
CAL YR 1988	TOTAL	11558.09	MEAN	31.6	MAX	434	MIN	.06	AC-FT	22930	CFSM	.18	IN.	2.42
WTR YR 1989	TOTAL	28403.75	MEAN	77.8	MAX	2480	MIN	.06	AC-FT	56340	CFSM	.44	IN.	5.94

08164503 WEST MUSTANG CREEK NEAR GANADO, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: October 1977 to current year. Pesticide analyses: November 1977 to July 1981. Sediment analyses: September 1978 to April 1979.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03
NOV 10...	0900	5.2	729	7.50	23.0	6.0	69	2.7	190	23
JAN 26...	1400	94	239	6.90	18.5	7.9	83	5.0	70	9
MAR 08...	1100	1.1	619	7.60	9.0	10.5	89	4.4	190	56
MAY 11...	0910	6.5	847	7.80	22.5	6.2	71	2.2	230	100
JUN 14...	1036	28	650	7.40	25.5	6.2	76	2.9	190	39
AUG 16...	0945	3.6	922	7.90	25.0	4.7	57	6.2	260	23

DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CAC03	SULFATE DIS- SOLVED (MG/L AS S04)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SI02)
NOV 10...	52	14	77	3	10	165	20	130	0.40	45
JAN 26...	21	4.2	15	0.8	6.2	61	19	27	0.10	15
MAR 08...	57	12	54	2	6.6	136	38	96	0.30	19
MAY 11...	70	13	69	2	7.2	125	47	150	0.50	19
JUN 14...	63	9.0	50	2	3.5	156	19	100	0.30	29
AUG 16...	76	16	65	2	25	233	16	130	0.30	56

DATE	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (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- PHOROUS TOTAL (MG/L AS P)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)
NOV 10...	447	--	0.010	<0.100	0.020	1.2	1.2	0.160	--	--
JAN 26...	144	0.240	0.060	0.300	0.120	1.4	1.5	0.170	2	95
MAR 08...	364	0.780	0.020	0.800	0.050	0.85	0.90	0.310	--	--
MAY 11...	451	1.44	0.060	1.50	0.090	0.81	0.90	0.230	--	--
JUN 14...	368	0.570	0.030	0.600	0.030	0.77	0.80	0.110	<1	170
AUG 16...	524	0.300	0.100	0.400	0.870	0.0	0.80	0.250	--	--

[illegible]

LAVACA RIVER BASIN

187

08164525 LAKE TEXANA NEAR EDNA, TX

LOCATION.--Lat 28°53'30", long 96°34'00", Jackson County, Hydrologic Unit 12100102, at upstream side of dam at old river channel on the Navidad River, 4.9 mi upstream from confluence with Lavaca River, 4.0 mi north of Lolita, and 7.2 mi southeast of Edna.

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: January 1988 to current year.

285331096343501 - LAKE TEXANA SITE AC

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS TOTAL (MG/L AS CACO3)	
FEB												
10...	0910	1.00	258	8.00	9.0	0.20	110	65	9.8	83	81	
10...	0912	10.0	258	8.00	9.0	--	--	--	9.8	83	--	
10...	0914	20.0	258	8.00	9.0	--	--	--	9.8	83	--	
10...	0916	30.0	258	8.00	9.0	--	--	--	9.9	84	--	
10...	0918	40.0	261	8.00	9.0	--	--	--	9.9	84	--	
10...	0920	50.0	263	8.00	9.0	--	--	--	9.9	84	--	
10...	0922	60.0	258	8.00	9.0	--	110	67	9.9	84	82	
MAY												
03...	0840	1.00	256	7.30	19.0	0.11	100	67	4.9	53	80	
03...	0842	10.0	255	7.80	24.5	--	--	--	7.2	86	--	
03...	0844	20.0	255	7.80	24.0	--	--	--	7.1	84	--	
03...	0846	30.0	254	7.50	21.0	--	--	--	6.0	67	--	
03...	0848	40.0	254	7.40	19.5	--	--	--	5.5	60	--	
03...	0850	50.0	254	7.40	19.0	--	--	--	5.8	62	--	
03...	0852	60.0	256	7.40	19.0	--	--	--	5.7	61	--	
03...	0854	69.0	256	7.30	19.0	--	100	75	4.9	53	81	
AUG												
17...	0905	1.00	238	8.00	28.5	0.60	110	61	5.7	73	79	
17...	0907	10.0	238	7.90	28.0	--	--	--	5.7	73	--	
17...	0909	20.0	237	7.70	27.5	--	--	--	5.2	66	--	
17...	0911	30.0	238	7.50	27.5	--	--	--	4.3	54	--	
17...	0913	40.0	238	7.50	27.0	--	--	--	4.4	55	--	
17...	0915	50.0	238	7.50	27.0	--	--	--	4.2	53	--	
17...	0917	55.0	238	7.40	26.5	--	--	--	3.0	37	--	
17...	0919	60.0	240	7.10	25.5	--	--	--	0	0	--	
17...	0921	67.0	252	7.20	24.5	--	110	60	0	0	80	
DATE		HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
FEB												
10...	12	26	4.0	20	1	4.5	70	14	29	0.20	12	--
10...	--	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--	--	--
10...	12	26	4.2	20	1	4.5	70	16	28	0.20	12	--
MAY												
03...	9	26	3.7	18	0.9	4.4	71	11	25	0.20	13	--
03...	--	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--	--
03...	9	26	3.8	18	0.9	4.2	72	11	26	0.20	13	--
AUG												
17...	11	26	3.5	16	0.8	4.1	68	10	21	0.20	14	--
17...	--	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--	--
17...	0	26	3.6	16	0.8	4.1	82	10	21	0.20	14	--

LAVACA RIVER BASIN

08164525 LAKE TEXANA NEAR EDNA, TX--Continued

285331096343501 - LAKE TEXANA SITE AC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L)	RESIDUE VOLATILE, SUS- PENDED (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)
FEB											
10...	152	14	<1	0.600	0.80	0.120	1.80	<0.100	2	88	<1
10...	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	0.600	0.70	0.140	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--	--
10...	153	20	<1	0.600	0.70	0.130	--	--	2	90	<1
MAY											
03...	144	7	<1	0.800	0.40	0.130	0.900	<0.100	2	90	<1
03...	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	0.800	0.40	0.140	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--
03...	146	<1	<1	0.800	0.50	0.210	--	--	2	91	1
AUG											
17...	136	13	3	<0.500	1.0	0.150	3.20	0.200	10	87	<1
17...	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	<0.100	0.40	0.150	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	0.300	0.20	0.130	--	--	--	--	--
17...	144	35	<1	<0.100	0.50	0.180	--	--	3	81	<1
DATE	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)	BENZENE TOTAL (UG/L)	BROMO- FORM TOTAL (UG/L)
FEB											
10...	1	4	51	<5	<1	<0.1	<1	<1.0	5	<3.0	<3.0
10...	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	60	--	<10	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--	--
10...	1	3	38	<5	1	<0.1	<1	2.0	4	<3.0	<3.0
MAY											
03...	2	<3	32	<7	1	<0.1	<1	<1.0	<3	--	--
03...	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	40	--	<10	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--
03...	2	<3	89	<2	44	<0.1	<1	<1.0	6	--	--
AUG											
17...	<1	8	11	2	1	0.2	<1	1.0	4	<0.20	<0.20
17...	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	10	--	20	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	10	--	600	--	--	--	--	--	--
17...	<1	7	20	<1	2	0.1	<1	<1.0	5	<0.20	<0.20

LAVACA RIVER BASIN

189

08164525 LAKE TEXANA NEAR EDNA, TX--Continued

285331096343501 - LAKE TEXANA SITE AC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	CARBON- TETRA- CHLO- RIDE TOTAL (UG/L)	CHLORO- BENZENE TOTAL (UG/L)	CHLORO- DI- BROMO- METHANE TOTAL (UG/L)	CHLORO- ETHANE TOTAL (UG/L)	CHLORO- FORM TOTAL (UG/L)	METHYL- CHLO- RIDE TOTAL (UG/L)	CIS 1,3-DI- CHLORO- PROPENE TOTAL (UG/L)	DI- CHLORO- BROMO- METHANE TOTAL (UG/L)	DI- CHLORO- DI- FLUORO- METHANE TOTAL (UG/L)	ETHYL- BENZENE TOTAL (UG/L)	METHYL- BROMIDE TOTAL (UG/L)
FEB											
10...	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
10...	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--	--
10...	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
MAY											
03...	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--
AUG											
17...	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
17...	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--
17...	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
DATE	METHYL- ENE CHLO- RIDE TOTAL (UG/L)	STYRENE TOTAL (UG/L)	TETRA- CHLORO- ETHYL- ENE TOTAL (UG/L)	TOLUENE TOTAL (UG/L)	TRANS- 1,3-DI- CHLORO- PROPENE TOTAL (UG/L)	TRI- CHLORO- ETHYL- ENE TOTAL (UG/L)	TRI- CHLORO- FLUORO- METHANE TOTAL (UG/L)	VINYL CHLO- RIDE TOTAL (UG/L)	1,1-DI- CHLORO- ETHYL- ENE TOTAL (UG/L)	1,1-DI- CHLORO- ETHANE TOTAL (UG/L)	1,1,1- TRI- CHLORO- ETHANE TOTAL (UG/L)
FEB											
10...	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<1.0	<3.0	<3.0	<3.0
10...	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--	--
10...	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<1.0	<3.0	<3.0	<3.0
MAY											
03...	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--
AUG											
17...	<0.20	<0.2	<0.20	<0.20	<0.20	<0.2	<0.20	<0.20	<0.20	<0.20	<0.20
17...	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--
17...	<0.20	<0.2	<0.20	<0.20	<0.20	<0.2	<0.20	<0.20	<0.20	<0.20	<0.20

LAVACA RIVER BASIN

08164525 LAKE TEXANA NEAR EDNA, TX--Continued

285331096343501 - LAKE TEXANA SITE AC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	1,1,2- TRI- CHLORO- ETHANE (UG/L)	1,1,2,2 TETRA- CHLORO- ETHANE (UG/L)	1,2-DI- CHLORO- BENZENE (UG/L)	1,2-DI- CHLORO- ETHANE (UG/L)	1,2-DI- CHLORO- PROPANE (UG/L)	1,3-DI- CHLORO- BENZENE (UG/L)	1,3-DI- CHLORO- PROPENE (UG/L)	1,4-DI- CHLORO- BENZENE (UG/L)	1,2- TRANS DI- CHLORO- ETHENE (UG/L)	2- CHLORO- ETHYL- VINYL- ETHER (UG/L)	XYLENE TOTAL WATER WHOLE TOT REC (UG/L)
FEB											
10...	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
10...	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--	--
10...	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
MAY											
03...	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--
AUG											
17...	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.2
17...	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--
17...	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.2

285326096342101 - LAKE TEXANA SITE AL

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
FEB							
10...	1038	1.00	259	8.00	9.5	10.2	87
10...	1040	10.0	259	8.00	9.0	10.2	87
10...	1042	20.0	259	8.00	9.0	10.2	87
10...	1044	30.0	259	8.00	9.0	10.1	86
MAY							
03...	1350	1.00	260	7.80	24.5	7.6	91
03...	1352	10.0	260	7.80	24.5	7.5	90
03...	1354	20.0	260	7.50	21.5	6.7	76
03...	1356	34.0	260	7.30	19.5	5.2	57
AUG							
17...	1000	1.00	237	8.00	28.0	5.9	75
17...	1002	10.0	237	7.90	27.5	5.7	72
17...	1004	20.0	238	7.80	27.5	5.6	71
17...	1006	29.0	238	7.60	27.5	4.8	61

285534096322301 - LAKE TEXANA SITE BC

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
FEB							
10...	1100	1.00	258	7.90	9.0	10.1	86
10...	1102	10.0	258	7.90	9.0	10.0	85
10...	1104	20.0	260	7.90	9.0	10.0	85
10...	1106	30.0	260	7.90	9.0	10.1	85
10...	1108	40.0	260	7.90	9.0	10.3	87
10...	1110	45.0	259	7.90	9.0	10.3	87
MAY							
03...	1015	1.00	253	7.80	24.0	7.6	90
03...	1017	10.0	253	7.80	24.0	7.6	90
03...	1019	20.0	253	7.70	23.5	7.5	88
03...	1021	30.0	253	7.40	21.5	6.2	70
03...	1023	42.0	253	7.30	21.0	5.4	60
AUG							
17...	0840	1.00	243	7.80	28.0	6.0	77
17...	0842	10.0	243	7.80	27.5	5.7	72
17...	0844	20.0	260	7.60	27.5	4.8	61
17...	0846	30.0	260	7.60	27.0	4.7	59
17...	0848	39.0	258	7.50	27.0	4.6	58

LAVACA RIVER BASIN

191

08164525 LAKE TEXANA NEAR EDNA, TX--Continued

285816096320201 - LAKE TEXANA SITE CC

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, (PER- CENT SATUR- ATION)	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03
FEB										
10...	1135	1.00	152	7.60	8.0	0.10	10.0	83	51	8
10...	1137	10.0	150	7.60	8.0	--	10.0	82	--	--
10...	1139	20.0	150	7.60	8.0	--	10.1	83	--	--
10...	1141	30.0	148	7.60	8.0	--	10.0	82	--	--
10...	1145	40.0	147	7.50	8.0	--	9.8	80	47	3
MAY										
03...	1045	1.00	253	7.60	24.0	0.11	7.1	84	83	14
03...	1047	10.0	253	7.60	24.0	--	7.1	84	--	--
03...	1049	20.0	253	7.60	24.0	--	7.0	83	--	--
03...	1051	30.0	253	7.20	23.0	--	4.8	56	--	--
03...	1053	40.0	253	7.20	22.0	--	4.5	51	83	12
AUG										
17...	1025	1.00	267	7.80	28.5	0.60	5.4	70	78	4
17...	1027	10.0	268	7.80	28.0	--	5.3	68	--	--
17...	1029	20.0	308	7.50	27.5	--	4.1	52	--	--
17...	1031	30.0	335	7.40	27.5	--	3.3	42	--	--
17...	1033	41.0	332	7.40	27.5	--	3.1	39	100	12

DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CAC03	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
FEB									
10...	16	2.6	10	0.6	4.3	43	18	12	0.10
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	15	2.4	9.8	0.6	4.2	44	19	11	0.10
MAY									
03...	27	3.9	18	0.9	4.5	70	11	25	0.20
03...	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--
03...	27	3.9	17	0.8	4.5	72	11	24	0.20
AUG									
17...	25	3.7	18	0.9	4.1	74	10	23	0.20
17...	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--
17...	31	5.4	25	1	4.1	88	13	37	0.20

DATE	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
FEB									
10...	11	100	0.600	1.1	0.180	1.20	<0.100	95	2
10...	--	--	--	--	--	--	--	--	--
10...	--	--	0.600	1.3	0.170	--	--	100	<10
10...	--	--	--	--	--	--	--	--	--
10...	11	99	0.500	1.8	0.250	--	--	120	4
MAY									
03...	13	145	0.800	0.50	0.140	0.800	<0.100	110	3
03...	--	--	--	--	--	--	--	--	--
03...	--	--	0.800	0.50	0.150	--	--	60	<10
03...	--	--	--	--	--	--	--	--	--
03...	14	145	0.800	0.50	0.180	--	--	160	12
AUG									
17...	14	142	0.100	0.70	0.160	4.30	0.200	36	2
17...	--	--	--	--	--	--	--	--	--
17...	--	--	0.300	<0.20	0.140	--	--	30	<10
17...	--	--	--	--	--	--	--	--	--
17...	16	184	0.100	0.90	0.130	--	--	11	13

LAVACA RIVER BASIN

08164525 LAKE TEXANA NEAR EDNA, TX--Continued

290042096331401 - LAKE TEXANA SITE DC

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLO MG/L AS CAC03
FEB										
10...	1305	1.00	141	7.60	6.5	0.10	10.6	84	49	1
10...	1307	10.0	141	7.60	6.5	--	10.6	84	--	--
10...	1309	20.0	141	7.50	6.0	--	10.4	82	49	5
MAY										
03...	1230	1.00	283	7.50	25.0	0.11	6.2	75	93	10
03...	1232	10.0	283	7.50	25.0	--	6.2	75	--	--
03...	1234	23.0	283	7.50	25.0	--	6.2	75	93	11
AUG										
17...	1130	1.00	364	7.60	29.0	0.60	4.4	57	100	5
17...	1132	10.0	373	7.50	28.5	--	4.0	52	--	--
17...	1134	15.0	434	7.20	27.5	--	0.8	10	--	--
17...	1136	23.0	438	7.20	27.5	--	0	0	120	15

DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CAC03	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
FEB									
10...	15	2.7	9.2	0.6	4.3	48	18	10	0.10
10...	--	--	--	--	--	--	--	--	--
10...	15	2.7	9.2	0.6	4.2	44	18	12	0.10
MAY									
03...	30	4.4	19	0.9	4.9	83	11	24	0.20
03...	--	--	--	--	--	--	--	--	--
03...	30	4.3	19	0.9	4.9	82	12	26	0.20
AUG									
17...	31	5.9	28	1	3.8	97	13	43	0.20
17...	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--
17...	35	7.9	39	2	3.3	105	17	56	0.30

DATE	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
FEB									
10...	12	100	0.100	1.3	0.180	2.60	0.200	210	4
10...	--	--	0.100	1.2	0.180	--	--	240	<10
10...	11	99	0.100	1.4	0.190	--	--	200	8
MAY									
03...	11	154	0.500	0.60	0.140	1.60	0.100	75	2
03...	--	--	0.500	0.50	0.120	--	--	70	10
03...	11	157	0.500	0.70	0.140	--	--	76	6
AUG									
17...	15	198	0.400	0.80	0.080	7.60	0.300	37	4
17...	--	--	0.600	0.80	0.110	--	--	50	20
17...	--	--	--	--	--	--	--	--	--
17...	16	238	<0.100	1.3	0.120	--	--	23	240

285940096312101 - LAKE TEXANA SITE EC

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
FEB							
10...	1240	1.00	163	7.60	8.0	9.8	81
10...	1242	10.0	163	7.60	8.0	9.9	81
10...	1244	21.0	166	7.60	7.5	10.3	84
MAY							
03...	1140	1.00	264	7.50	24.5	7.2	86
03...	1142	10.0	264	7.50	24.5	7.2	86
03...	1144	20.0	264	7.40	24.5	6.8	81
03...	1146	29.0	280	7.00	23.5	1.8	21
AUG							
17...	1100	1.00	317	8.00	29.5	5.8	76
17...	1102	10.0	384	7.70	27.5	5.0	63
17...	1104	20.0	385	7.50	27.0	3.8	48
17...	1106	28.0	391	7.40	27.0	3.0	38

GARCITAS CREEK MAIN STEM

193

08164600 GARCITAS CREEK NEAR INEZ, TX

LOCATION.--Lat 28°53'28", long 96°49'08", Victoria County, Hydrologic Unit 12100402, at right downstream end of bridge on U.S. Highway 59 access road, 0.3 mi upstream from Southern Pacific Railroad bridge, 2.0 mi southwest of Inez, and 3.6 mi upstream from Casa Blanca Creek.

DRAINAGE AREA.--91.7 mi².

PERIOD OF RECORD.--June 1970 to current year.

Chemical and biochemical analyses: April 1965 to Aug. 1988. Pesticide analyses: July 1970 to July 1981.

GAGE.--Water-stage recorder. Datum of gage is 29.16 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. No known diversion above station. An undetermined amount of return water from irrigation enters stream above station. Recording rain gage discontinued Oct. 14, 1987.

AVERAGE DISCHARGE.--19 years, 50.8 ft³/s (7.52 in/yr), 36,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,700 ft³/s June 12, 1981 (gage height, 29.00 ft); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage during period 1903-70, 24.5 ft Oct. 26, 1960. In 1929, a flood nearly as high as the 1960 flood occurred, and a flood in September 1967 reached a stage of 23.4 ft, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 29	1300	*192	*8.70				

Minimum daily discharge, no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.39	.06	.29	27	.47	1.1	.27	.00	2.4	1.4	.00
2	.00	.57	.06	.29	18	.46	.72	.30	.00	1.8	1.3	.00
3	.00	.88	.06	.30	47	.54	.53	.32	.00	1.5	.82	.00
4	.00	.70	.06	.32	74	.59	.48	.31	.00	1.6	.51	.00
5	.00	.39	.06	.32	29	.52	.42	.29	.00	1.7	.27	.00
6	.00	.26	.06	.32	15	.48	.33	.26	.00	.77	.14	.00
7	.00	.22	.06	.32	8.8	.36	.34	.27	.00	.52	.05	.00
8	.00	.21	1.4	.33	5.6	.36	.35	.26	.10	.33	.00	.00
9	.00	.19	1.2	.32	4.0	.35	.34	.24	.03	.23	.00	.00
10	.00	.17	3.2	.32	2.9	.37	.34	.23	.00	.15	.00	.00
11	.00	.17	1.9	.33	2.2	.40	.38	.24	.00	.14	.00	.00
12	.00	.17	1.1	.38	1.8	.43	.38	.22	.00	.09	.00	.00
13	.00	.16	.78	.42	1.6	.45	.43	.24	.00	.03	.00	.00
14	.00	.15	.61	.45	1.4	.47	1.3	.33	.32	.00	.00	.00
15	.00	.13	.45	.47	1.2	.45	1.3	.32	.13	.00	.00	.00
16	.00	.12	.37	.51	.94	.45	.95	.29	.02	.00	.00	.00
17	.00	.12	.32	.47	.83	.43	.85	.30	.00	.00	.00	.00
18	.00	.12	.29	.66	.70	.39	.67	.29	.00	.00	.00	.00
19	.00	.13	.27	30	.63	.40	.52	.25	.00	.00	.00	.00
20	.00	.12	.24	152	.63	.51	.50	.22	.00	.00	.00	.00
21	.00	.10	.24	90	.62	.54	.42	.21	.00	.00	.00	.00
22	.00	.10	.24	37	.57	.63	.39	.15	.00	.00	.00	.00
23	.00	.09	.25	20	.48	.50	.35	.13	.00	.00	.00	.00
24	.00	.09	.29	11	.45	.57	.34	.10	1.9	.00	.00	.00
25	.22	.10	.29	8.0	.45	.57	.31	.07	1.1	2.4	.00	.00
26	2.9	.10	.32	7.3	.50	.57	.29	.05	1.4	.31	.00	.00
27	1.1	.09	.32	5.5	.54	.62	.29	.02	.28	.87	.00	.00
28	.75	.07	.31	4.0	.51	.71	.27	.00	.42	.34	.00	.00
29	.57	.07	.29	86	---	1.3	.27	.00	2.3	.15	.00	.00
30	.38	.07	.29	111	---	3.3	.27	.00	2.6	.09	.00	.00
31	.50	---	.29	50	---	2.2	---	.00	---	.32	.00	---
TOTAL	6.42	6.25	15.68	618.62	247.35	20.39	15.43	6.18	10.60	15.74	4.49	0.00
MEAN	.21	.21	.51	20.0	8.83	.66	.51	.20	.35	.51	.14	.00
MAX	2.9	.88	3.2	152	74	3.3	1.3	.33	2.6	2.4	1.4	.00
MIN	.00	.07	.06	.29	.45	.35	.27	.00	.00	.00	.00	.00
AC-FT	13	12	31	1230	491	40	31	12	21	31	8.9	.0
CFSM	.00	.00	.01	.22	.10	.01	.01	.00	.00	.01	.00	.00
IN.	.00	.00	.01	.25	.10	.01	.01	.00	.00	.01	.00	.00
CAL YR 1988	TOTAL	598.05	MEAN	1.63	MAX	24	MIN	.00	AC-FT	1190	CFSM	.02
WTR YR 1989	TOTAL	967.15	MEAN	2.65	MAX	152	MIN	.00	AC-FT	1920	CFSM	.03
										IN.	.24	.39

PLACEDO CREEK MAIN STEM

08164800 PLACEDO CREEK NEAR PLACEDO, TX

LOCATION.--Lat 28°43'30", long 96°46'07", Victoria County, Hydrologic Unit 12100401, on right bank at downstream end of bridge on Farm Road 616, 0.1 mi downstream from confluence of Lone Tree Creek and Arroyo Palo Alto, 1.2 mi upstream from Ninemile Creek, and 4.4 mi northeast of Placedo.

DRAINAGE AREA.--68.3 mi².

PERIOD OF RECORD.--June 1970 to current year.

GAGE.--Water-stage recorder. Datum of gage is 5.58 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. No known diversion above station.

AVERAGE DISCHARGE.--19 years, 62.4 ft³/s (45,210 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,300 ft³/s Oct. 31, 1981 (gage height, 30.8 ft); no flow at times in 1971, 1981-84, 1988, and 1989.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1930, 31.9 ft in September 1967 and 30.4 ft in 1960 (probably October), from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
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Jan. 29	2200	*309	*11.93				
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Minimum daily discharge, no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.02	.02	.02	.54	6.1	.24	e.10	.05	.00	.00	.12	.03
2	.02	.02	.02	.54	3.1	e.20	e.08	.05	.00	.00	.16	.03
3	.02	.02	.03	.54	1.6	e.20	e.06	.04	.00	.00	.19	.03
4	.02	.02	.03	.57	.84	e.15	.04	.04	.00	.00	.15	.03
5	.02	.02	.03	.60	4.8	e.10	.02	.02	.00	.00	.15	.03
6	.02	.02	.03	.60	2.7	e.08	.01	.02	.00	.00	.15	.04
7	.02	.02	.04	.60	1.4	e.06	.01	.02	.00	.00	.18	.05
8	.02	.02	.05	.62	.59	e.04	.02	.01	.00	.00	.17	.03
9	.02	.02	.03	.65	.22	e.02	.00	.00	.00	.00	.19	.03
10	.02	.02	.05	.65	.16	.00	.00	.00	.00	.00	.17	.03
11	.01	.02	.10	.68	.15	.00	.00	.00	.00	.00	.12	.03
12	.01	.03	.12	.74	.15	.00	.00	.00	.00	.00	.12	.07
13	.01	.03	.13	.77	.15	.00	.00	.00	.00	.00	.12	.05
14	.01	.03	.14	.80	.22	.00	.03	.01	.00	.00	.14	.04
15	.01	.03	.17	.83	.32	.00	.04	1.9	.00	.00	.23	.04
16	.01	.02	.18	.87	.39	.00	.03	4.8	.00	.00	.15	.03
17	.01	.02	.18	.90	.39	.00	.02	12	.00	.00	.15	.03
18	.01	.03	.18	1.0	.38	.00	.02	4.2	.00	.00	.18	.04
19	.02	.02	.19	10	.36	.00	.00	1.8	.00	.00	.19	.04
20	.02	.02	.20	73	.42	.00	.00	.53	.00	.00	.19	.04
21	.01	.02	.22	51	.47	.00	.00	.10	.00	.00	.15	.03
22	.01	.02	.23	8.1	.50	.00	.00	.03	.00	.00	.12	.03
23	.01	.02	.27	3.1	.39	.00	.00	.01	.00	.00	.11	.03
24	.01	.02	.31	2.0	.34	.00	.01	.00	.00	.00	.09	.02
25	.01	.02	.33	1.3	.50	.00	.01	.00	.00	.00	.09	.02
26	.02	.02	.33	1.0	.57	.00	.01	.00	.00	.00	.07	.02
27	.02	.01	.40	.93	.39	e.20	.00	.00	.00	.25	.07	.02
28	.02	.02	.49	.93	.39	e.40	.01	.00	.00	.19	.07	.02
29	.02	.02	.45	69	---	.48	.01	.00	.00	.19	.07	.02
30	.02	.02	.47	111	---	e.30	.03	.00	.00	.19	.07	.03
31	.02	---	.52	24	---	e.20	---	.00	---	.13	.06	---
TOTAL	0.49	0.64	5.94	367.86	27.99	2.67	0.56	25.63	0.00	0.95	4.19	0.98
MEAN	.016	.021	.19	11.9	1.00	.086	.019	.83	.00	.031	.14	.033
MAX	.02	.03	.52	111	6.1	.48	.10	.12	.00	.25	.23	.07
MIN	.01	.01	.02	.54	.15	.00	.00	.00	.00	.00	.06	.02
AC-FT	1.0	1.3	12	730	56	5.3	1.1	51	.0	1.9	8.3	1.9
CAL YR 1988	TOTAL	154.62	MEAN	.42	MAX	9.1	MIN	.00	AC-FT	307		
WTR YR 1989	TOTAL	437.90	MEAN	1.20	MAX	111	MIN	.00	AC-FT	869		

e Estimated.

GUADALUPE RIVER BASIN

195

08165300 NORTH FORK GUADALUPE RIVER NEAR HUNT, TX

LOCATION (REVISED).--Lat 30°03'50", long 99°23'12", Kerr County, Hydrologic Unit 12100201, on right bank 1000 ft upstream from Ranch Road 1340, 1.9 mi downstream from Bear Creek, 3.1 mi west of Hunt, and 3.5 mi upstream from Honey Creek. Prior to June 7, 1989 at site 0.58 mi upstream at same datum.

DRAINAGE AREA (revised).--169.0 mi².

PERIOD OF RECORD.--August 1967 to current year. Low-flow records not equivalent prior to June 7, 1989, because of undetermined channel flow loss between sites.

REVISED RECORDS.--WRD TX-74-1: 1971(P).

GAGE.--Water-stage recorder. Datum of gage is 1,800.10 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--22 years, 42.9 ft³/s (3.47 in/yr), 31,180 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 57,000 ft³/s Oct. 19, 1985 (gage height, 29.81 ft, from rating curve extended above 170 ft³/s on basis of slope-area measurements of 7,460 and 38,400 ft³/s); minimum, 0.47 ft³/s May 10, 1988, result of dam upstream.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1900 occurred July 1, 1932 (gage height, 37.3 ft), discharge 140,000 ft³/s, by slope-area measurements, combined flow of North Fork Guadalupe River 5 mi upstream and Bear Creek 2 mi upstream from mouth, and adjusted for difference in drainage area.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 28	0945	*50	*4.67				

Minimum discharge, 12 ft³/s for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27	26	22	23	27	29	e26	25	18	13	13	13
2	27	26	22	23	26	29	e26	24	18	13	13	12
3	26	25	22	23	25	29	e26	23	18	13	13	12
4	25	25	22	23	25	28	e26	23	18	13	13	12
5	24	24	22	23	24	27	e26	23	18	13	13	12
6	25	24	24	23	24	27	e26	22	18	13	13	12
7	25	24	24	24	24	27	e26	22	14	13	13	12
8	26	23	23	23	23	27	e25	21	13	13	12	12
9	26	23	23	22	24	27	e25	20	13	13	13	12
10	26	23	23	22	23	27	e25	20	13	13	13	12
11	25	23	23	22	23	30	e24	20	16	13	13	13
12	25	23	23	22	23	29	e24	20	16	13	13	14
13	25	23	23	22	24	27	e24	22	15	13	13	13
14	25	23	24	22	24	27	e24	22	14	13	12	13
15	26	23	23	22	24	27	e24	21	15	13	12	13
16	26	22	23	22	33	27	e24	21	15	13	12	13
17	26	22	23	22	39	27	e24	30	14	13	12	13
18	26	22	23	22	38	26	e24	30	14	13	12	13
19	26	23	23	23	36	26	e24	25	14	13	12	13
20	25	24	23	27	35	26	e24	24	14	12	12	13
21	25	23	23	26	33	26	e23	23	13	12	12	13
22	25	23	23	24	32	25	e23	22	13	12	12	13
23	25	23	23	23	30	24	e22	21	13	12	12	12
24	25	23	23	23	30	24	e22	21	13	13	12	12
25	25	23	23	23	30	25	22	20	13	13	12	12
26	25	24	23	24	29	25	22	20	13	13	12	12
27	25	24	23	29	29	25	22	19	13	13	13	12
28	25	23	23	40	29	32	22	19	13	13	13	12
29	25	23	24	34	---	33	23	19	13	13	12	12
30	25	23	24	30	---	29	26	19	13	13	12	12
31	26	---	23	28	---	26	---	18	---	13	12	---
TOTAL	788	703	713	759	786	843	724	679	438	399	386	374
MEAN	25.4	23.4	23.0	24.5	28.1	27.2	24.1	21.9	14.6	12.9	12.5	12.5
MAX	27	26	24	40	39	33	26	30	18	13	13	14
MIN	24	22	22	22	23	24	22	18	13	12	12	12
AC-FT	1560	1390	1410	1510	1560	1670	1440	1350	869	791	766	742
CFSM	.15	.14	.14	.15	.17	.16	.14	.13	.09	.08	.07	.07
IN.	.17	.16	.16	.17	.17	.19	.16	.15	.10	.09	.09	.08
CAL YR 1988	TOTAL	12702	MEAN	34.7	MAX	1130	MIN	22	AC-FT	25190	CFSM	.21
WTR YR 1989	TOTAL	7592	MEAN	20.8	MAX	40	MIN	12	AC-FT	15060	CFSM	.12
											IN.	2.81
												1.68

e Estimated.

LOCATION (REVISED).--Lat 30°04'11", long 99°19'17", Kerr County, Hydrologic Unit 12100201, on left bank 56 ft upstream and 252 ft left of left end of bridge on State Highway 39, 0.6 mi downstream from confluence of North and South Forks, 0.8 mi east of Hunt, and at mile 430.9.

PERIOD OF RECORD.--October 1941 to September 1949, discharge not computed above 600 ft³/s, and April 1965 to current year. Occasional discharge measurements made 1950-64.

GAGE.--Water-stage recorder and crest-stage gages. Datum of gage is 1,722.7 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. There are numerous diversions for irrigation above station, but amounts are unknown. Several observations of water temperature were made during the year. Gage-height telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 107,800 ft³/s July 17, 1987 (gage height, 28.38 ft) from rating curve extended above 3,700 ft³/s on basis of channel geometry and flow-over-dam measurement of peak flow; minimum, 6.9 ft³/s June 17, 1948.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1900, 36.6 ft July 2, 1932, from information by local resident (discharge, 206,000 ft³/s, determined by slope-area measurement 4.5 mi downstream from gage).

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 28	1330	*126	*8.20				

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	59	58	60	55	68	69	49	52	35	29	25	23
2	56	55	61	55	67	67	47	47	28	29	24	23
3	54	54	62	57	62	67	51	45	26	27	25	23
4	53	54	62	57	58	63	53	46	30	28	24	22
5	52	53	62	55	58	58	58	45	29	26	25	21
6	52	51	62	54	58	58	57	43	28	26	25	20
7	51	52	63	53	58	58	55	42	30	26	25	20
8	51	53	62	53	58	58	54	41	29	31	26	22
9	53	53	64	51	56	58	53	39	30	28	26	22
10	53	53	64	51	55	58	45	37	31	27	25	21
11	53	53	65	51	55	58	47	33	45	26	23	23
12	53	53	67	50	55	58	48	38	36	25	24	24
13	53	54	63	49	55	58	55	41	33	25	24	25
14	53	56	62	49	55	57	63	41	32	24	24	25
15	53	58	62	49	55	53	55	39	33	26	24	25
16	54	59	62	49	84	51	55	53	33	25	24	25
17	54	58	60	49	107	51	53	61	32	23	25	25
18	54	59	60	49	106	49	61	56	31	24	26	23
19	54	60	59	51	94	47	55	45	31	24	26	23
20	54	58	58	65	88	51	52	39	31	24	25	23
21	54	58	58	64	81	51	52	35	29	24	25	23
22	53	58	58	57	76	49	49	43	28	27	24	23
23	53	59	58	55	72	49	47	42	28	32	24	23
24	53	60	58	55	70	47	47	38	29	29	24	23
25	53	60	56	55	69	45	47	36	32	29	24	23
26	53	62	55	57	69	45	46	35	33	29	26	23
27	54	62	55	99	69	45	46	35	30	27	25	23
28	54	60	55	119	69	53	45	34	29	26	25	23
29	53	60	55	107	---	60	46	33	29	27	32	23
30	54	61	55	85	---	58	51	40	29	26	24	23
31	56	---	55	73	---	53	---	36	---	26	23	---
TOTAL	1659	1704	1858	1878	1927	1702	1542	1290	929	825	771	688
MEAN	53.5	56.8	59.9	60.6	68.8	54.9	51.4	41.6	31.0	26.6	24.9	22.9
MAX	59	62	67	119	107	69	63	61	45	32	32	25
MIN	51	51	55	49	55	45	45	33	26	23	23	20
AC-FT	3290	3380	3690	3730	3820	3380	3060	2560	1840	1640	1530	1360
CFSM	.19	.20	.21	.21	.24	.19	.18	.14	.11	.09	.09	.08
IN.	.21	.22	.24	.24	.25	.22	.20	.17	.12	.11	.10	.09
CAL YR 1988	TOTAL 31218	MEAN 85.3	MAX 5100	MIN 45	AC-FT 61920	CFSM .30	IN. 4.03					
WTR YR 1989	TOTAL 16773	MEAN 46.0	MAX 119	MIN 20	AC-FT 33270	CFSM .16	IN. 2.17					

GUADALUPE RIVER BASIN

197

08166000 JOHNSON CREEK NEAR INGRAM, TX

LOCATION.--Lat 30°06'00", long 99°16'58", Kerr County, Hydrologic Unit 12100201, on right bank 1.6 mi upstream from Henderson Branch, 3.4 mi northwest of Ingram, 3.8 mi upstream from mouth, and 9.2 mi northwest of Kerrville.

DRAINAGE AREA.--114 mi².

PERIOD OF RECORD.--September 1941 to November 1959, October 1961 to current year.

REVISED RECORDS.--WSP 1058: 1942-45. WSP 2123: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,721.30 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. There are numerous small diversions above station for irrigation. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--46 years (water years 1942-59, 1962-89), 22.4 ft³/s (2.67 in/yr), 16,230 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 95,900 ft³/s Oct. 4, 1959 (gage height, 24.25 ft), from rating curve extended above 4,400 ft³/s on basis of slope-area measurements of 9,100 and 16,000 ft³/s and conveyance study; minimum daily, 0.4 ft³/s July 26, 27, 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1852, 35 ft July 2, 1932, from information by local resident; discharge, 138,000 ft³/s, by slope-area measurement at point 0.5 mi downstream from State fish hatchery and 6 or 7 mi upstream from gage. Flood of June 14, 1935, reached a stage of 31 or 32 ft, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 17	1315	*119	*1.05				

Minimum daily discharge, 12 ft³/s several days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	33	32	26	24	30	32	22	22	18	17	13	13		
2	30	27	25	24	27	31	22	22	17	15	13	12		
3	28	28	24	25	27	31	22	21	17	15	14	12		
4	28	26	22	26	23	30	22	19	17	15	14	13		
5	28	25	24	26	22	27	24	19	17	15	13	14		
6	28	24	24	25	22	27	28	20	18	15	12	14		
7	30	24	24	24	22	30	25	21	18	15	14	14		
8	29	24	25	25	22	29	23	19	21	18	14	14		
9	31	26	26	26	22	28	22	19	19	16	14	14		
10	29	26	27	26	22	26	22	20	19	15	14	14		
11	26	26	28	26	21	26	22	21	35	15	14	14		
12	26	26	28	26	22	26	22	22	24	14	14	14		
13	26	26	28	24	22	27	26	24	21	14	14	14		
14	26	26	27	24	22	33	27	28	29	14	14	14		
15	26	26	26	24	22	30	25	25	21	14	14	14		
16	26	25	26	24	59	27	23	26	19	14	14	14		
17	26	24	26	24	60	26	22	64	21	14	22	14		
18	26	24	28	24	54	26	22	39	21	14	19	14		
19	26	24	28	24	48	29	22	29	20	12	17	14		
20	26	24	30	27	44	27	22	27	19	12	17	14		
21	26	24	33	24	40	25	22	25	18	12	15	14		
22	26	24	31	22	37	22	22	24	16	13	22	14		
23	26	24	28	22	35	26	22	23	17	15	17	12		
24	26	24	26	22	35	25	22	22	17	15	13	12		
25	24	26	26	22	35	24	22	21	17	16	12	12		
26	24	26	26	23	34	25	22	21	17	16	12	14		
27	24	26	26	46	33	30	22	19	19	15	13	13		
28	24	27	26	59	33	50	23	19	18	15	15	12		
29	24	29	24	44	---	32	27	19	17	14	14	14		
30	24	26	24	35	---	26	24	19	17	14	14	14		
31	35	---	24	31	---	23	---	19	---	14	14	---		
TOTAL	837	769	816	848	895	876	693	738	584	452	455	405		
MEAN	27.0	25.6	26.3	27.4	32.0	28.3	23.1	23.8	19.5	14.6	14.7	13.5		
MAX	35	32	33	59	60	50	28	64	35	18	22	14		
MIN	24	24	22	22	21	22	22	19	16	12	12	12		
AC-FT	1660	1530	1620	1680	1780	1740	1370	1460	1160	897	902	803		
CFSM	.24	.22	.23	.24	.28	.25	.20	.21	.17	.13	.13	.12		
IN.	.27	.25	.27	.28	.29	.29	.23	.24	.19	.15	.15	.13		
CAL YR 1988	TOTAL	12715	MEAN	34.7	MAX	224	MIN	22	AC-FT	25220	CFSM	.30	IN.	4.15
WTR YR 1989	TOTAL	8368	MEAN	22.9	MAX	64	MIN	12	AC-FT	16600	CFSM	.20	IN.	2.73

GUADALUPE RIVER MAIN STEM

08166200 GUADALUPE RIVER AT KERRVILLE, TX

LOCATION (REVISED).--Lat 30°03'11", Long 99°09'47", Kerr County, Hydrologic Unit 12100201, on left bank 300 ft below left end of Kerrville Dam, 1.0 mi upstream from mouth of Town Creek, and 1.4 mi upstream from State Highway 16 on Guadalupe Street at Guadalupe Park in Kerrville, Texas.

DRAINAGE AREA.--510 mi².

PERIOD OF RECORD.--July 1986 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,601.00 ft above National Geodetic Vertical Datum of 1929. Prior to Apr. 4, 1989, at site 300 ft upstream, and on opposite bank at datum 1.0 ft lower.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Numerous diversions for irrigation above station, amounts unknown. Several observations of water temperature were made during the year.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 141,000 ft³/s July 17, 1987 (gage height, 28.42 ft, from floodmark), from rating curve extended above 30,000 ft³/s on basis of indirect measurement of flow over dam; minimum 7.3 ft³/s May 2, 1989, result of dam upstream.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum estimated discharge, 196,000 ft³/s July 2, 1932 (estimated gage height, 39 ft).

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 28	0700	*421	*21.88				

Minimum discharge, 7.3 ft³/s May 2, result of dam upstream.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	117	e102	e70	68	111	80	116	101	57	44	36	34
2	104	e105	e72	77	93	84	108	97	55	41	38	33
3	99	e100	e72	76	76	84	111	90	48	44	37	34
4	96	e95	e72	89	69	84	106	75	46	41	36	33
5	93	e92	e72	87	66	69	102	83	46	40	47	30
6	92	e90	e72	84	66	84	102	81	46	34	42	32
7	92	e88	e75	e84	63	84	101	79	45	31	55	32
8	91	e85	85	e84	66	93	98	78	42	38	38	36
9	91	e80	81	e83	66	97	98	75	43	43	36	36
10	98	e80	116	e83	73	97	96	77	47	40	39	37
11	92	e82	97	e82	73	97	90	72	89	36	38	58
12	88	e88	96	e82	76	106	93	71	79	34	38	48
13	88	e88	84	e82	80	106	104	75	70	36	39	44
14	90	e85	84	e81	80	106	117	86	67	34	38	44
15	90	e85	84	e81	80	106	109	119	62	35	39	42
16	90	e85	72	e81	115	102	104	86	60	36	39	42
17	89	e82	67	e80	198	101	102	117	55	34	42	42
18	86	e82	68	76	198	100	100	126	55	33	43	40
19	e130	e82	74	76	168	98	128	98	55	33	40	40
20	e160	e82	87	88	163	109	106	86	52	33	39	40
21	e170	e90	82	88	136	107	98	85	49	35	36	40
22	e160	e85	82	76	120	128	92	82	46	34	36	38
23	e120	e82	82	73	111	123	90	131	45	36	38	37
24	e65	e80	78	80	106	149	90	73	46	40	37	37
25	e50	e80	77	76	106	159	86	57	49	39	41	38
26	e75	e80	80	93	102	166	86	51	53	40	37	37
27	e80	e80	79	177	93	173	88	49	54	39	38	38
28	e82	e80	80	286	88	240	91	48	48	41	37	39
29	e85	e70	72	209	---	209	108	48	44	39	37	38
30	e88	e65	67	158	---	169	125	51	44	38	43	36
31	e90	---	68	120	---	133	---	60	---	36	36	---
TOTAL	3041	2550	2447	3060	2842	3643	3045	2507	1597	1157	1215	1155
MEAN	98.1	85.0	78.9	98.7	101	118	101	80.9	53.2	37.3	39.2	38.5
MAX	170	105	116	286	198	240	128	131	89	44	55	58
MIN	50	65	67	68	63	69	86	48	42	31	36	30
AC-FT	6030	5060	4850	6070	5640	7230	6040	4970	3170	2290	2410	2290
CFSM	.19	.17	.15	.19	.20	.23	.20	.16	.10	.07	.08	.08
IN.	.22	.19	.18	.22	.21	.27	.22	.18	.12	.08	.09	.08
CAL YR 1988	TOTAL	57776	MEAN	158	MAX	10800	MIN	50	AC-FT	114600	CFSM	.31
WTR YR 1989	TOTAL	28259	MEAN	77.4	MAX	286	MIN	30	AC-FT	56050	CFSM	.15
											IN.	4.21
												2.06

e Estimated.

GUADALUPE RIVER MAIN STEM

199

08167000 GUADALUPE RIVER AT COMFORT, TX

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

DRAINAGE AREA.--839 mi².

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

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

GAGE.--Water-stage recorder. Datum of gage is 1,369.83 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 27, 1939, nonrecording gage. Nov. 27, 1939, to June 2, 1980, water-stage recorder at site 0.4 mi upstream at datum 2.22 ft higher. June 2, 1980, to Sept. 30, 1986, at present site at datum 2.00 ft higher.

REMARKS.--No estimated daily discharges. Records good. Many small diversions above station for irrigation. Several observations of water temperature were made during the year. Satellite telemeter at station.

AVERAGE DISCHARGE.--50 years (water years 1940-89), 203 ft³/s (147,100 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 240,000 ft³/s Aug. 2, 1978 (gage height, 40.90 ft), from high-water mark in well, from rating curve extended above 74,000 ft³/s on basis of current-meter measurement of 124,000 ft³/s (at gage height 32.47 ft) and slope-area measurement of 182,000 ft³/s (at gage height 38.4 ft), made at former gaging station "near Comfort" 5 mi 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 42.3 ft, present datum, from report by U.S. Army Corps of Engineers. Flood of July 1, 1932, reached a stage of 38.4 ft, 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 greater than base discharge of 2,600 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 28	1600	*1,020	*5.27				

Minimum daily discharge, 22 ft³/s June 10.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	198	154	113	118	237	193	192	217	100	58	44	38
2	188	154	114	119	217	193	187	190	98	56	43	37
3	169	149	118	118	207	193	182	188	97	51	46	33
4	160	141	119	115	185	193	180	171	95	55	45	29
5	154	131	117	117	176	187	174	151	90	53	42	29
6	152	123	115	117	171	175	162	149	85	48	45	30
7	148	122	115	117	169	179	162	148	80	45	48	31
8	148	123	116	116	160	180	168	148	47	38	55	32
9	149	123	121	113	154	181	163	142	25	41	47	38
10	148	123	123	113	150	180	152	139	22	45	45	41
11	151	123	126	113	150	179	148	135	26	46	47	73
12	144	124	127	113	150	175	146	144	24	43	49	146
13	141	126	124	122	150	175	158	158	62	43	47	78
14	141	124	125	120	153	174	196	143	218	39	47	65
15	141	123	123	117	153	174	193	141	124	37	44	60
16	139	120	121	116	201	169	182	140	103	36	46	55
17	137	116	121	115	291	166	172	264	91	35	43	53
18	139	116	123	115	350	165	168	191	85	32	46	52
19	137	118	124	122	318	164	241	173	81	29	46	48
20	177	113	123	130	292	177	231	147	76	28	47	44
21	185	113	123	123	264	179	192	142	71	28	43	45
22	171	132	125	123	238	169	179	134	64	30	38	46
23	139	121	123	123	224	165	168	129	61	33	36	43
24	118	123	123	126	213	165	161	152	62	38	36	40
25	129	124	123	127	212	164	156	127	69	45	36	37
26	128	124	123	125	209	163	154	122	68	45	39	38
27	131	121	121	272	204	163	153	117	71	54	45	36
28	131	122	119	680	197	283	151	115	70	59	49	35
29	133	119	118	548	---	295	168	109	63	56	44	37
30	133	117	118	372	---	239	182	105	59	52	39	38
31	141	---	120	278	---	211	---	102	---	50	44	---
TOTAL	4600	3762	3744	5243	5795	5768	5221	4633	2287	1348	1371	1407
MEAN	148	125	121	169	207	186	174	149	76.2	43.5	44.2	46.9
MAX	198	154	127	680	350	295	241	264	218	59	55	146
MIN	118	113	113	113	150	163	146	102	22	28	36	29
AC-FT	9120	7460	7430	10400	11490	11440	10360	9190	4540	2670	2720	2790
CAL YR 1988	TOTAL	95769	MEAN	262	MAX	16500	MIN	73	AC-FT	190000		
WTR YR 1989	TOTAL	45179	MEAN	124	MAX	680	MIN	22	AC-FT	89610		

GUADALUPE RIVER MAIN STEM

08167500 GUADALUPE RIVER NEAR SPRING BRANCH, TX

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

DRAINAGE AREA.--1,315 mi².

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

Water-quality records.--Chemical and biochemical analyses: October 1980 to September 1982.

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

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

REMARKS.--No estimated daily discharges. Records good. Several small diversions above station for irrigation. Several observations of water temperature were made during the year. Satellite telemeter at station.

AVERAGE DISCHARGE.--67 years, 330 ft³/s (239,100 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 160,000 ft³/s Aug. 3, 1978 (gage height, 45.25 ft, from floodmark), from rating curve extended above 55,600 ft³/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 in 1869; flood in July 1900 reached a stage of about 49 ft, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 17	2400	*1,620	*5.63				

Minimum daily discharge, 26 ft³/s Sept. 10.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	214	144	127	131	300	209	223	167	107	72	48	32
2	221	150	124	131	260	209	205	186	104	69	47	32
3	199	155	124	132	237	207	196	183	102	67	43	31
4	184	153	127	133	219	207	189	171	99	66	41	30
5	171	143	130	133	209	207	179	160	101	61	40	28
6	163	140	131	133	196	204	179	149	113	60	41	27
7	158	137	131	133	188	189	170	144	100	59	39	28
8	155	133	130	131	188	181	167	142	91	55	40	29
9	153	133	127	130	180	182	163	139	84	53	41	28
10	153	133	132	130	175	182	166	141	67	47	42	26
11	152	131	135	129	173	181	156	135	53	46	42	85
12	153	132	135	129	173	181	156	134	48	48	38	72
13	149	131	133	130	173	180	158	134	46	50	36	70
14	147	133	133	135	173	181	171	135	68	49	38	96
15	145	133	133	137	172	182	190	133	274	47	40	67
16	144	131	131	134	170	178	195	133	170	44	40	59
17	144	127	131	133	191	175	185	322	127	43	41	53
18	140	128	131	133	272	173	176	679	114	43	41	51
19	141	129	132	137	323	172	177	249	104	41	42	50
20	141	127	134	148	311	180	228	206	95	40	39	48
21	151	125	134	142	288	176	230	171	89	38	39	47
22	185	124	134	139	268	183	192	156	83	36	40	44
23	169	131	131	140	247	179	174	150	78	36	39	43
24	153	138	131	140	235	171	164	138	74	41	37	42
25	133	135	131	146	227	173	157	146	74	50	36	42
26	131	135	131	147	223	173	156	139	77	46	35	41
27	133	134	132	152	222	174	152	128	83	51	33	39
28	134	127	131	241	215	206	151	121	80	52	33	38
29	140	130	129	626	---	264	153	119	79	50	34	38
30	138	130	129	510	---	303	160	115	77	49	35	37
31	141	---	130	378	---	252	---	111	---	51	35	---
TOTAL	4835	4032	4054	5423	6208	6014	5318	5336	2861	1560	1215	1353
MEAN	156	134	131	175	222	194	177	172	95.4	50.3	39.2	45.1
MAX	221	155	135	626	323	303	230	679	274	72	48	96
MIN	131	124	124	129	170	171	151	111	46	36	33	26
AC-FT	9590	8000	8040	10760	12310	11930	10550	10580	5670	3090	2410	2680
CAL YR 1988	TOTAL	104150	MEAN	285	MAX	17000	MIN	103	AC-FT	206600		
WTR YR 1989	TOTAL	48209	MEAN	132	MAX	679	MIN	26	AC-FT	95620		

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 northwest of New Braunfels, and at mile 303.0.

DRAINAGE AREA.--1,432 mi².

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 U.S. Army Corps of Engineers). Prior to Sept. 24, 1964, nonrecording gage at present site and datum.

REMARKS.--The lake is formed by a rolled earthfill dam 6,830 ft long, consisting of the main dam 4,410 ft long, an earthen dike 210 ft long, a 1,260-foot-long uncontrolled broad-crested-type spillway, and a 950-foot 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 conduit controlled by two 5.7 by 10.0-foot hydraulically operated slide gates. The lake was built for water conservation and flood control. Capacity table beginning Oct. 1, 1974, is based on a sedimentation survey of August 1972. Small diversions above the lake for irrigation. Gage-height telemeter at station. Figures given herein represent total contents. Data regarding the dam and lake are given in the following table:

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

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

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 732,600 acre-ft June 19, 1987 (elevation, 942.68 ft); minimum observed since conservation pool first reached in April 1968, 311,200 acre-ft Nov. 24, 1984 (elevation, 899.85 ft).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 381,900 acre-ft Oct. 2 at 0200 hours (elevation, 908.99 ft); minimum, 348,800 acre-ft Sept. 30 (elevation, 904.86 ft).

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

904.0	342,200	908.0	373,800
906.0	357,800	909.0	382,000

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	381700	378600	376000	375600	381300	379400	377200	375400	372000	368500	360300	354500
2	381500	378600	375900	375700	381500	379400	376900	375300	372000	368200	360100	354200
3	381300	378600	375900	375800	381300	379400	376800	375300	371700	367900	359900	354000
4	381100	378600	375900	375700	380800	379400	376700	375500	371600	367900	359600	353900
5	380800	378500	375900	375800	380600	378900	376300	375600	371500	367800	359400	353600
6	380500	378300	375900	375800	380400	378600	376100	375500	371300	367500	359200	353500
7	380400	378300	376100	375800	380000	378300	375800	375300	371200	367400	359100	353300
8	380200	378300	375900	375700	379700	378200	375700	375100	371000	366900	359100	353000
9	380000	378200	375900	375600	379500	378000	375200	375000	370700	366600	358800	352800
10	379900	378200	376000	375500	379100	377900	375000	375200	370600	366200	358500	352600
11	379600	378100	376000	375500	378900	377600	374500	375000	370600	365800	358300	352300
12	379500	378100	375900	375600	378600	377500	374300	374800	370300	365600	358100	352300
13	379300	378000	375900	375800	378600	377300	374300	374800	370300	365300	357900	353100
14	379200	378000	375900	375500	378700	377200	374400	374600	371700	365000	357700	352700
15	379000	378100	375900	375400	378800	377100	374300	374600	371800	364600	357600	352400
16	379000	377800	375700	375300	379000	376900	374300	374400	371500	364300	357400	352300
17	378900	377600	375600	375300	379000	376900	374400	375500	371100	364000	357300	352000
18	378900	377600	375500	375100	379100	376800	374600	376400	370700	363700	357200	351800
19	378800	377500	375500	375700	379200	376900	375000	376600	370500	363400	357100	351600
20	378700	377200	375600	375700	379400	377200	375200	376500	370300	363000	356700	351300
21	378600	376900	375700	375600	379400	376900	375300	376300	369900	362600	356600	351200
22	378600	376800	375700	375500	379600	376700	375300	375900	369800	362200	356500	351000
23	378600	376700	375800	375400	379700	376400	375300	375500	369700	362000	356400	350500
24	378600	376700	375700	375600	379700	376300	375300	375000	369500	361900	356100	350200
25	378600	376800	375900	376700	379600	376300	375200	374600	369500	361500	356000	349900
26	378600	376800	375600	377600	379500	376100	375100	374200	369500	361300	355700	349700
27	378600	376600	375800	377600	379500	376100	375000	373800	369300	361100	355700	349400
28	378600	376300	375600	378000	379500	377400	375100	373300	369100	360900	355400	349200
29	378500	376300	375600	379900	---	377400	375400	373000	368800	360700	355300	349000
30	378400	376100	375600	380700	---	377500	375500	372400	368700	360500	355100	348800
31	378700	---	375600	381200	---	377300	---	372100	---	360400	354800	---
MAX	381700	378600	376100	381200	381500	379400	377200	376600	372000	368500	360300	354500
MIN	378400	376100	375500	375100	378600	376100	374300	372100	368700	360400	354800	348800
(↑)	908.60	908.28	908.22	908.90	908.70	908.43	908.20	907.79	907.36	906.33	905.62	904.86
(Φ)	-3000	-2600	-500	+5600	-1700	-2200	-1800	-3400	-3400	-8300	-5600	-6000

CAL YR 1988 MAX 414000 MIN 346900 (Φ) +29200
WTR YR 1989 MAX 381700 MIN 348800 (Φ) -32900

(↑) Elevation, in feet, at end of month.
(Φ) Change in contents, in acre-feet.

GUADALUPE RIVER MAIN STEM

08167800 GUADALUPE RIVER AT SATTLE, TX

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

DRAINAGE AREA.--1,436 mi², of which 1,432 mi² is above Canyon Dam.

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

Water-quality records.--Water temperature: June 1984 to September 1987.

REVISED RECORDS.--WSP 2123: Drainage area.

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

REMARKS.--No estimated daily discharges. Records good. Flow completely regulated since July 21, 1962, by Canyon Lake (station 08167700) 1.8 mi upstream. Small diversions above station for irrigation. Satellite telemeter at station.

AVERAGE DISCHARGE.--27 years (water years 1962-89) since regulation began at Canyon Lake, 424 ft³/s (307,200 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,800 ft³/s Oct. 29, 1960 (gage height, 12.20 ft). Maximum discharge since closure of Canyon Dam on July 21, 1962, 5,850 ft³/s Aug. 5, 1978 (gage height, 8.31 ft); 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; maximum stage since at least 1904, 39 ft in July 1932 and June 1935, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 345 ft³/s Feb. 9 at 1700 hours (gage height, 5.26 ft); minimum daily, 53 ft³/s Aug. 16-27, Sept. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	203	113	99	110	302	236	283	155	112	114	62	88
2	203	114	99	110	303	237	287	156	115	115	63	81
3	203	114	97	111	309	243	277	152	112	117	58	80
4	203	113	97	113	302	244	257	151	112	118	61	79
5	203	108	97	114	304	244	261	156	114	116	62	71
6	203	107	95	112	302	238	257	157	114	116	62	74
7	191	107	96	127	309	242	244	157	114	116	62	74
8	159	108	105	102	303	220	244	161	110	116	64	74
9	157	110	100	107	302	226	239	155	106	116	64	74
10	160	110	93	134	279	234	220	155	107	118	64	74
11	161	108	93	133	317	239	243	155	109	121	64	70
12	161	108	97	126	320	248	207	155	108	118	64	67
13	156	108	104	125	300	246	216	155	108	119	64	68
14	127	108	105	166	218	242	186	153	113	116	64	68
15	145	109	106	131	143	226	178	150	106	115	54	68
16	145	106	106	141	153	210	148	148	195	114	53	68
17	145	106	110	137	161	209	151	150	224	116	53	68
18	141	106	111	177	159	180	152	150	224	116	53	70
19	141	106	110	133	159	196	149	199	224	114	53	77
20	122	106	110	131	160	217	136	271	154	113	53	72
21	132	106	110	140	179	205	142	271	114	110	53	63
22	143	106	110	141	162	218	148	266	114	110	53	60
23	131	86	110	147	163	213	148	274	114	110	53	60
24	110	118	110	149	196	219	145	290	114	130	53	60
25	108	79	110	148	239	210	146	276	114	112	53	60
26	108	114	112	149	241	216	150	272	112	117	53	60
27	109	114	112	142	240	219	150	265	108	98	53	59
28	110	114	112	148	237	171	150	264	108	63	58	63
29	112	85	112	153	---	196	152	264	111	62	61	57
30	114	131	110	141	---	243	155	208	114	62	60	53
31	113	---	110	210	---	253	---	113	---	62	79	---
TOTAL	4619	3228	3248	4208	6762	6940	5821	6004	3804	3360	1826	2060
MEAN	149	108	105	136	241	224	194	194	127	108	58.9	68.7
MAX	203	131	112	210	320	253	287	290	224	130	79	88
MIN	108	79	93	102	143	171	136	113	106	62	53	53
AC-FT	9160	6400	6440	8350	13410	13770	11550	11910	7550	6660	3620	4090
CAL YR 1988	TOTAL	78218	MEAN	214	MAX	791	MIN	61	AC-FT	155100		
WTR YR 1989	TOTAL	51880	MEAN	142	MAX	320	MIN	53	AC-FT	102900		

GUADALUPE RIVER MAIN STEM

203

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 upstream from Comal River, 21.9 mi downstream from Canyon Lake, and at mile 281.1.

DRAINAGE AREA.--1,518 mi².

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 above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. 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 upstream. Several observations of water temperature were made during the year. Satellite telemeter at station.

AVERAGE DISCHARGE.--34 years (water years 1929-62) prior to regulation by Canyon Lake, 372 ft³/s (269,500 acre-ft/yr); 27 years (water years 1963-89) regulated, 512 ft³/s (370,900 acre-ft/yr).

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

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 334 ft³/s May 24 at 2000 hours (gage height, 2.39 ft); minimum daily, 51 ft³/s Aug. 23, 28.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	220	130	119	133	305	267	286	185	120	121	64	87
2	221	130	106	136	315	267	300	181	120	121	67	85
3	220	130	105	135	319	271	295	176	122	120	65	84
4	219	129	103	133	314	268	284	173	120	122	60	82
5	219	126	103	135	320	264	286	175	120	120	63	82
6	220	125	106	133	313	262	278	176	118	119	63	74
7	220	127	107	135	312	262	262	174	118	120	64	79
8	186	127	111	143	311	255	266	176	117	120	69	79
9	178	131	136	100	305	251	253	173	111	121	66	78
10	176	131	111	142	306	248	246	180	111	121	64	78
11	176	132	112	150	306	258	250	174	125	122	64	79
12	176	133	111	140	320	275	249	174	112	126	64	75
13	177	129	123	141	318	274	254	173	111	121	64	72
14	166	125	130	137	286	266	218	167	164	121	64	78
15	144	126	130	180	185	261	215	165	128	118	62	71
16	157	124	131	148	178	248	180	165	148	118	55	71
17	155	124	133	155	200	236	170	168	232	118	53	70
18	155	129	133	166	196	194	170	165	231	118	53	72
19	155	124	134	182	196	227	205	162	230	117	54	74
20	155	117	136	156	198	246	176	278	213	116	52	82
21	134	118	136	155	211	234	162	288	125	116	53	73
22	157	121	136	158	196	244	171	286	122	114	52	63
23	157	120	136	163	195	241	168	284	123	117	51	58
24	136	101	136	175	211	237	169	293	125	124	52	58
25	125	123	135	177	267	241	165	284	128	130	55	60
26	124	90	136	173	270	231	169	277	126	120	52	60
27	124	119	136	173	268	241	169	271	119	123	52	60
28	124	120	133	174	267	223	166	269	115	92	51	60
29	124	120	133	204	---	228	186	266	114	65	56	64
30	126	108	136	205	---	234	199	265	120	65	61	58
31	135	---	135	176	---	285	---	141	---	65	61	---
TOTAL	5161	3689	3868	4813	7388	7739	6567	6484	4088	3531	1826	2166
MEAN	166	123	125	155	264	250	219	209	136	114	58.9	72.2
MAX	221	133	136	205	320	285	300	293	232	130	69	87
MIN	124	90	103	100	178	194	162	141	111	65	51	58
AC-FT	10240	7320	7670	9550	14650	15350	13030	12860	8110	7000	3620	4300
CAL YR 1988	TOTAL	90010	MEAN	246	MAX	806	MIN	90	AC-FT	178500		
WTR YR 1989	TOTAL	57320	MEAN	157	MAX	320	MIN	51	AC-FT	113700		

GUADALUPE RIVER BASIN

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 upstream from San Antonio Street viaduct in New Braunfels and 1.1 mi upstream from mouth.

DRAINAGE AREA.--130 mi². 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 above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. 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 upstream. Flow is affected at times by cleanup operations by the city of New Braunfels at Landa Park Lake and at times by discharge from the flood-detention pools of five floodwater-retarding structures with a combined detention capacity of 17,580 acre-ft. These structures control runoff from 74.6 mi² above station. Several observations of water temperature were made during the year. Satellite telemeter at station.

AVERAGE DISCHARGE.--57 years (water years 1933-89), 294 ft³/s (213,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 60,800 ft³/s May 11, 1972 (gage height, 36.55 ft, from floodmark), from rating curve extended above 13,000 ft³/s on basis of contracted-opening measurements on Bliders 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, from painted and dated marks in old Remmert Brewery 0.5 mi downstream; the flood of Oct. 17, 1870, reached a stage of 37.65 ft at same site (probably some backwater from Guadalupe River).

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,100 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Apr. 19	0900	*924	*5.38				

Minimum daily discharge, 62 ft³/s Sept. 2, 5.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	232	232	233	247	251	257	244	235	127	117	82	67
2	235	233	234	248	257	258	246	231	115	115	87	62
3	229	234	234	246	256	258	242	235	116	106	83	66
4	232	234	235	245	255	258	239	233	117	107	77	66
5	228	233	234	244	256	258	236	225	117	111	77	62
6	230	233	235	243	251	258	234	222	107	107	75	66
7	233	233	236	242	253	260	233	222	103	102	75	72
8	233	231	236	246	252	257	225	222	99	100	77	75
9	231	232	239	243	252	258	226	215	91	99	83	77
10	230	231	238	246	253	256	226	321	93	95	87	78
11	231	233	241	245	253	251	227	219	99	93	82	83
12	232	233	239	248	255	246	229	211	110	90	83	78
13	230	232	239	246	256	250	252	211	108	90	83	82
14	230	232	239	247	254	243	251	208	164	86	84	87
15	229	231	239	245	254	240	238	204	129	89	79	88
16	229	232	241	245	253	238	237	208	133	86	80	88
17	226	233	242	247	255	234	239	219	131	86	80	90
18	227	236	244	247	256	236	234	204	133	80	75	89
19	225	236	243	251	258	237	330	201	135	72	79	86
20	224	236	245	247	261	244	248	194	127	71	79	85
21	225	236	245	245	258	238	240	191	125	67	78	84
22	225	236	243	249	255	248	239	177	124	69	70	84
23	226	234	245	249	259	239	241	159	117	75	70	84
24	226	234	246	253	259	239	238	166	124	80	72	86
25	226	236	248	250	261	241	238	156	127	85	72	87
26	224	235	248	248	260	243	242	150	128	88	75	85
27	224	234	249	250	260	247	230	142	126	91	73	85
28	225	237	246	250	260	261	229	146	126	91	71	83
29	226	233	245	253	---	252	234	143	120	92	67	83
30	227	231	245	259	---	248	237	130	115	91	65	82
31	234	---	243	254	---	245	---	128	---	86	66	---
TOTAL	7084	7006	7469	7678	7163	7698	7204	6128	3586	2817	2386	2390
MEAN	229	234	241	248	256	248	240	198	120	90.9	77.0	79.7
MAX	235	237	249	259	261	261	330	321	164	117	87	90
MIN	224	231	233	242	251	234	225	128	91	67	65	62
AC-FT	14050	13900	14810	15230	14210	15270	14290	12150	7110	5590	4730	4740
CAL YR 1988	TOTAL	101349	MEAN	277	MAX	371	MIN	209	AC-FT	201000		
WTR YR 1989	TOTAL	68609	MEAN	188	MAX	330	MIN	62	AC-FT	136100		

LOCATION.--Lat 29°40'00", long 98°04'14", Comal County, Hydrologic Unit 12100202, in Lake Dunlap, 8 mi southeast of New Braunfels, and 15 mi downstream from Interstate Highway 35 bridge.

PERIOD OF RECORD.--Chemical and biochemical analyses: January 1968 to current year. Pesticide analyses: June 1986 to current year.

[illegible]

08169580 GUADALUPE RIVER BELOW NEW BRAUNFELS, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

[illegible]

GUADALUPE RIVER BASIN

207

08170000 SAN MARCOS RIVER SPRINGFLOW AT SAN MARCOS, TX

LOCATION (REVISED).--Lat 29°50'35", long 97°58'55", Hays County, Hydrologic Unit 12100203, at ground-water well No. LR-67-09-110, 1250 ft southwest of the intersection of FM 2439 and McCarty Lane, and 3.7 mi south of San Marcos.

DRAINAGE AREA.--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 springflow were made at this location outside period of records since Nov. 14, 1894, and are published as miscellaneous measurements. October 1956 to September 1988, at site 0.7 mi downstream from bridge on Interstate Highway 35, and 2.1 mi upstream from Blanco River.

REVISED RECORDS.--WSP 1923: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 678.50 ft, which is mean land surface, above National Geodetic Vertical Datum of 1929. June 10, 1915, to Jan. 19, 1916, nonrecording gage at site 0.5 mi upstream from Interstate Highway 35, and Mar. 13, 1916, to Sept. 7, 1921, water-stage recorder about 0.7 mi downstream from Interstate Highway 35, datum relations unknown. May 1956 to September 1988, water-stage recorder, 0.7 mi downstream from Interstate Highway 35, and 2.1 mi upstream from Blanco River, datum 536.82 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records fair. Springflow is computed from a regression equation developed using water-level data from a water well LR-67-09-110, and measurements of springflow. Entire flow of river is from San Marcos Springs, located about 1.1 mi upstream from Interstate Highway 35, except during periods of local runoff. San Marcos Springs emerge from the Edwards and associated limestones in the Balcones Fault Zone. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--33 years (water years 1957-89), 166 ft³/s (120,300 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily spring discharge (estimated), 427 ft³/s June 14, 1987; minimum daily, 46 ft³/s Aug. 15, 16, 1956.

EXTREMES FOR CURRENT YEAR.--Maximum daily spring discharge, 121 ft³/s Oct. 1-7; minimum daily spring, 83 ft³/s Sept. 28.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	121	118	116	114	115	112	109	113	109	108	101	91
2	121	119	115	114	114	112	109	113	108	108	101	91
3	121	119	115	114	113	112	109	113	108	107	101	90
4	121	119	115	114	113	111	108	113	108	107	101	90
5	121	119	115	114	113	112	107	113	108	107	101	89
6	121	119	115	114	113	112	108	113	108	106	100	89
7	121	119	115	113	112	111	108	113	107	106	100	89
8	120	119	114	113	112	111	107	113	107	106	100	88
9	120	119	114	113	112	111	107	112	107	106	100	88
10	120	118	114	113	112	111	106	112	107	105	100	87
11	120	118	114	113	112	111	106	113	108	105	100	87
12	120	118	114	113	112	111	106	113	108	105	100	87
13	120	118	115	113	112	111	106	113	108	105	100	86
14	119	118	116	113	111	111	107	113	109	105	99	86
15	119	118	115	113	111	110	108	113	109	104	99	86
16	119	118	114	113	111	110	108	113	110	103	99	86
17	119	118	115	113	111	109	108	113	110	103	98	86
18	119	118	115	113	111	108	108	113	111	103	98	86
19	119	118	115	113	112	109	109	113	111	103	98	86
20	119	117	115	113	113	109	113	112	111	103	97	85
21	118	117	114	113	112	108	113	112	110	102	97	85
22	118	117	114	113	112	109	114	112	110	102	96	85
23	118	117	114	113	112	108	114	113	110	102	95	84
24	119	117	113	113	112	108	114	112	110	102	95	85
25	119	117	114	114	112	108	114	112	110	102	95	84
26	118	117	114	113	112	108	114	111	110	102	94	84
27	118	117	114	113	113	109	113	110	110	102	94	84
28	118	117	113	114	112	109	113	111	110	102	93	83
29	118	117	114	114	---	110	113	110	110	101	93	84
30	118	116	114	114	---	109	114	110	109	101	92	84
31	118	---	114	115	---	109	---	110	---	101	92	---
TOTAL	3700	3536	3548	3515	3142	3409	3293	3480	3271	3224	3029	2595
MEAN	119	118	114	113	112	110	110	112	109	104	97.7	86.5
MAX	121	119	116	115	115	112	114	113	111	108	101	91
MIN	118	116	113	113	111	108	106	110	107	101	92	83
AC-FT	7340	7010	7040	6970	6230	6760	6530	6900	6490	6390	6010	5150
CAL YR 1988	TOTAL	51439	MEAN	141	MAX	190	MIN	113	AC-FT	102000		
WTR YR 1989	TOTAL	39742	MEAN	109	MAX	121	MIN	83	AC-FT	78830		

08171000 BLANCO RIVER AT WIMBERLEY, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: April 1962 to December 1973. Chemical, biochemical, and pesticide analyses: January 1974 to September 1979, February 1988 to current year. Sediment analyses: November 1965 to April 1966.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: December 1976 to September 1978.

INSTRUMENTATION.--From December 1976 to September 1978 water temperature was recorded continuously at this station.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum daily, 36.0°C July 16, 1978, minimum daily, 2.5°C Jan. 20, 1978.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

		DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD 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, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)
OCT 19...	1350	26	442	7.70	25.5	<1	1.3	8.9	111	0.3	K16
MAR 01...	1330	42	460	7.70	13.0	3	0.30	10.3	100	--	K19
JUN 08...	1550	62	423	7.80	30.5	10	1.7	8.1	112	0.5	21
DATE	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB WH WAT TOT FLD (MG/L AS CAC03)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT WH TOT FET FIELD (MG/L AS CAC03)	SULFATE DIS-SOLVED (MG/L AS S04)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
OCT 19...	K15	220	43	58	19	8.6	0.3	1.8	180	32	12
MAR 01...	22	240	43	66	19	8.9	0.3	1.8	200	45	13
JUN 08...	K11	210	32	58	16	7.3	0.2	1.6	179	25	11
DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SI02)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L)	RESIDUE 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)
OCT 19...	0.20	8.8	248	3	<1	--	<0.010	0.200	0.020	--	<0.20
MAR 01...	0.20	6.5	280	3	3	--	<0.010	0.300	0.040	0.26	0.30
JUN 08...	0.20	9.0	235	5	<1	0.190	0.010	0.200	0.030	0.97	1.0
DATE	PHOS-PHOROUS TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	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)	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)
OCT 19...	0.020	1.3	<1	31	<1	<1	1	4	<5	1	<0.1
MAR 01...	<0.010	1.0	<1	32	<1	<1	1	7	<5	1	<0.1
JUN 08...	<0.010	1.5	<1	29	2	1	1	12	<1	2	<0.1
DATE	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)	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)
OCT 19...	<1	<1.0	8	--	--	--	--	--	--	--	--
MAR 01...	<1	<1.0	6	--	--	--	--	--	--	--	--
JUN 08...	<1	<1.0	4	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01
DATE	DI-ELDRIN TOTAL (UG/L)	ENDO-SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA-CHLOR, TOTAL (UG/L)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA-THION, TOTAL (UG/L)	METH-OXY-CHLOR, TOTAL (UG/L)	METHYL PARA-THION, TOTAL (UG/L)	
OCT 19...	--	--	--	--	--	--	--	--	--	--	--
MAR 01...	--	--	--	--	--	--	--	--	--	--	--
JUN 08...	<0.010	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01	<0.01

GUADALUPE RIVER BASIN

08171000 BLANCO RIVER AT WIMBERLEY, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	SILVEX, TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2,4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)
OCT 19...	--	--	--	--	--	--	--	--	--	--
MAR 01...	--	--	--	--	--	--	--	--	--	--
JUN 08...	<0.01	<0.01	<0.01	<0.1	<0.01	<1	<0.01	<0.01	<0.01	<0.01

GUADALUPE RIVER BASIN

211

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 downstream from Tarbuton Ranch House (Hatchett Ranch), 2.2 mi southwest of Kyle, 4.2 mi downstream from Halifax Creek, and 6.3 mi upstream from bridge on U.S. Highway 81.

DRAINAGE AREA.--412 mi².

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 above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--No estimated daily discharges. 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. Several observations of water temperature were made during the year. Recording rain gage at this station.

AVERAGE DISCHARGE.--33 years, 152 ft³/s (5.01 in/yr), 110,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 98,000 ft³/s May 2, 1958 (gage height, 36.3 ft, from floodmark), from rating curve extended above 37,000 ft³/s on basis of slope-area measurement of 139,000 ft³/s and slope-conveyance study; no flow at times.

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

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 17	1830	*6,590	*14.66	No other peak greater than base discharge.			

Minimum daily discharge, no flow Aug. 24 to Sept. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	21	9.5	6.3	9.3	35	15	26	19	59	43	2.8	.00		
2	12	6.9	6.6	9.0	32	20	24	21	57	39	8.2	.00		
3	8.4	5.7	6.8	8.5	29	19	22	19	53	35	5.9	.00		
4	8.8	5.5	7.0	8.0	21	17	20	20	51	34	3.6	.00		
5	9.1	5.8	7.8	7.7	21	16	17	41	51	31	2.2	.00		
6	8.8	5.4	7.6	7.0	22	15	14	41	47	29	1.8	.00		
7	9.3	5.2	7.7	6.5	20	15	14	24	45	26	1.6	.00		
8	8.9	5.5	9.1	6.0	19	15	14	21	46	24	1.9	.00		
9	8.1	5.7	12	5.8	17	15	13	18	42	22	2.7	.00		
10	7.1	5.8	13	6.0	16	15	12	37	40	20	2.2	.00		
11	6.3	4.9	13	6.3	16	14	13	30	47	19	1.5	.00		
12	5.7	4.9	12	7.2	18	15	13	25	39	17	1.3	.00		
13	5.5	4.9	11	9.5	18	14	15	24	34	16	1.1	.00		
14	5.5	5.2	10	11	17	14	19	20	307	14	.79	.00		
15	5.6	5.5	10	9.1	16	13	19	768	351	13	.74	.00		
16	5.5	6.3	9.3	7.8	15	12	18	244	139	12	.85	.00		
17	5.4	5.6	9.3	7.2	15	12	19	1530	94	10	1.0	.00		
18	5.3	5.5	8.9	7.3	17	12	18	1150	74	9.0	1.5	.00		
19	5.0	6.3	9.0	8.4	16	11	73	300	65	7.5	1.1	.00		
20	4.9	7.0	10	14	16	16	56	184	57	6.7	.38	.00		
21	5.0	6.6	10	11	16	18	35	167	54	6.2	.19	.00		
22	4.8	6.2	11	7.7	16	13	30	139	53	6.6	.08	.00		
23	5.0	6.1	9.7	6.6	15	12	26	117	52	7.5	.02	.00		
24	4.8	6.6	9.6	7.2	16	12	24	102	53	8.5	.00	.00		
25	5.0	7.4	8.6	10	16	13	23	93	57	20	.00	.00		
26	5.4	8.6	8.0	19	16	13	22	85	52	12	.00	.00		
27	5.2	7.4	8.8	31	16	13	20	79	52	7.2	.00	.00		
28	5.2	6.2	8.3	18	15	27	20	74	49	6.5	.00	.00		
29	5.0	5.9	8.2	24	---	38	21	70	47	4.7	.00	.00		
30	5.2	6.3	9.0	58	---	25	25	66	46	3.7	.00	.00		
31	8.8	---	9.3	45	---	26	---	63	---	3.1	.00	---		
TOTAL	215.6	184.4	286.9	399.1	522	505	685	5591	2213	513.2	43.45	0.00		
MEAN	6.95	6.15	9.25	12.9	18.6	16.3	22.8	180	73.8	16.6	1.40	.00		
MAX	21	9.5	13	58	35	38	73	1530	351	43	8.2	.00		
MIN	4.8	4.9	6.3	5.8	15	11	12	18	34	3.1	.00	.00		
AC-FT	428	366	569	792	1040	1000	1360	11090	4390	1020	86	.0		
CFSM	.02	.01	.02	.03	.05	.04	.06	.44	.18	.04	.00	.00		
IN.	.02	.02	.03	.04	.05	.05	.06	.50	.20	.05	.00	.00		
CAL YR 1988	TOTAL	15689.9	MEAN	42.9	MAX	1540	MIN	4.8	AC-FT	31120	CFSM	.10	IN.	1.42
WTR YR 1989	TOTAL	11158.65	MEAN	30.6	MAX	1530	MIN	.00	AC-FT	22130	CFSM	.07	IN.	1.01

GUADALUPE RIVER BASIN

08172000 SAN MARCOS RIVER AT LULING, TX

LOCATION (REVISED).--Lat 29°39'58", long 97°39'02", Caldwell County line, Hydrologic Unit 12100203, at downstream side of bridge on State Highway 80, 0.9 mi south of U.S. Post Office at Luling, and 9.5 mi upstream from Plum Creek.

DRAINAGE AREA.--838 mi².

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 958: 1940. WSP 1312: 1940(M), 1945(M), 1947(M). WSP 2123: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 322.05 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 21, 1988, at site 390 ft downstream at same datum.

REMARKS.--No estimated daily discharges. Records good. Flow is affected at times by discharge from the flood-detention pools of 18 floodwater-retarding structures with a combined detention capacity of 26,830 acre-ft. These structures control runoff from 105 mi² in the Town and York Creeks drainage basins. Satellite and LARC telemeter at station.

AVERAGE DISCHARGE.--50 years, 375 ft³/s (271,700 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 57,000 ft³/s Sept. 12, 1952 (gage height, 34.95 ft); minimum daily, 43 ft³/s Aug. 12, 1951.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1859, 40.4 ft in 1869 or 1870, from information by State Department of Highways and Public Transportation. Flood of May 29, 1929, reached a stage of 37.1 ft and is the second highest known.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 18	1900	*3,010	*17.00				

Minimum daily discharge, 61 ft³/s Oct. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	140	109	100	109	151	113	118	169	171	135	91	77
2	123	99	99	111	144	111	115	129	165	132	94	75
3	113	98	98	111	150	111	118	122	157	127	129	77
4	107	97	101	107	152	117	117	119	153	123	96	79
5	108	93	104	108	129	113	110	142	151	119	92	81
6	107	93	102	109	125	109	107	224	147	115	89	77
7	106	95	102	107	121	110	107	159	143	113	88	79
8	103	99	105	107	121	109	106	140	137	106	92	81
9	102	96	108	105	118	106	104	129	130	104	102	82
10	99	96	115	104	114	111	101	564	132	104	92	80
11	99	96	115	102	113	108	101	461	213	102	90	80
12	99	98	111	105	121	105	104	177	150	101	88	78
13	99	99	109	122	125	109	108	159	148	94	88	80
14	99	99	108	127	122	114	152	142	246	89	90	77
15	100	98	108	116	119	108	160	134	370	90	86	81
16	101	92	101	111	116	103	123	633	490	89	85	76
17	100	94	104	110	112	104	118	481	326	87	83	73
18	98	98	107	111	113	103	115	1680	258	87	86	77
19	98	104	107	135	114	104	211	1140	223	84	85	76
20	98	100	109	143	117	110	371	550	193	83	84	76
21	101	101	110	128	117	157	203	430	182	79	84	77
22	100	103	108	114	111	125	162	385	171	79	84	78
23	103	103	106	112	110	118	143	327	165	82	86	75
24	100	102	106	113	112	109	132	288	160	89	88	84
25	98	105	106	118	113	108	130	256	155	99	86	69
26	99	105	108	140	112	125	126	236	156	96	85	74
27	100	102	109	225	112	112	119	221	156	91	85	73
28	99	98	107	134	116	136	116	208	149	94	87	71
29	100	100	104	130	---	142	115	196	145	95	83	68
30	61	101	106	137	---	127	131	190	139	93	82	71
31	91	---	112	133	---	126	---	180	---	90	79	---
TOTAL	3151	2973	3295	3744	3400	3563	4043	10371	5681	3071	2759	2302
MEAN	102	99.1	106	121	121	115	135	335	189	99.1	89.0	76.7
MAX	140	109	115	225	152	157	371	1680	490	135	129	84
MIN	61	92	98	102	110	103	101	119	130	79	79	68
AC-FT	6250	5900	6540	7430	6740	7070	8020	20570	11270	6090	5470	4570
CAL YR 1988	TOTAL	65957	MEAN	180	MAX	1100	MIN	61	AC-FT	130800		
WTR YR 1989	TOTAL	48353	MEAN	132	MAX	1680	MIN	61	AC-FT	95910		

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 upstream from bridge on U.S. Highway 183, 2.7 mi north of Lockhart, 3.7 mi upstream from Town Creek, 5.0 mi downstream from Brushy Creek, and 30.4 mi upstream from mouth.

DRAINAGE AREA.--112 mi².

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 above National Geodetic Vertical Datum of 1929. Apr. 30, 1959, to July 25, 1968, at site 548 ft downstream at present datum.

REMARKS.--Records good except those for estimated daily discharges, which are fair. No known diversion above station. Flow is affected at times by discharge from the flood-detention pools of 17 floodwater-retarding structures with a combined capacity of 24,850 acre-ft. These structures control runoff from 67.8 mi² above this station. One observation of water temperature was made during the year.

AVERAGE DISCHARGE.--30 years, 46.9 ft³/s (33,980 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 27,700 ft³/s Nov. 24, 1985 (gage height, 20.89 ft); no flow at times each year.

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

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 15	1600	*696	*11.33				

Minimum daily discharge, no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e.00	.00	.00	.00	.00	.00	.09	.74	.00	.00	.00	.00
2	e.00	.00	.00	.00	.00	.00	.02	.24	.00	.00	.00	.00
3	e.00	.00	.00	.00	.00	.00	.00	.06	.00	.00	.00	.00
4	e.00	.00	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00
5	e.00	.00	.00	.00	.00	.00	.00	5.1	.00	.00	.00	.00
6	e.00	.00	.00	.00	.00	.00	.00	16	.00	.00	.00	.00
7	e.00	.00	.00	.00	.00	.00	.00	6.3	.00	.00	.00	.00
8	e.00	.00	.00	.00	.00	.00	.00	4.2	.00	.00	.00	.00
9	e.00	.00	.00	.00	.00	.00	.00	2.8	.00	.00	.00	.00
10	e.00	.00	.00	.00	.00	.00	.00	206	.00	.00	.00	.00
11	e.00	.00	.00	.00	.00	.00	.00	131	.00	.00	.00	.00
12	e.00	.00	.00	.00	.00	.00	.00	71	.00	.00	.00	.00
13	e.00	.00	.00	.00	.00	.00	.00	40	.00	.00	.00	.00
14	e.00	.00	.00	.00	.00	.00	.00	115	.05	.00	.00	.00
15	e.00	.00	.00	.00	.00	.00	.00	364	.00	.00	.00	.00
16	e.00	.00	.00	.00	.00	.00	.00	307	.00	.00	.00	.00
17	e.00	.00	.00	.00	.00	.00	.00	301	.00	.00	.00	.00
18	e.00	.00	.00	.00	.00	.00	.00	213	.00	.00	.00	.00
19	e.00	.00	.00	.00	.00	.00	.00	120	.00	.00	.00	.00
20	e.00	.00	.00	.00	.00	.00	.96	67	.00	.00	.00	.00
21	e.00	.00	.00	.00	.00	.00	1.2	41	.00	.00	.00	.00
22	e.00	.00	.00	.00	.00	.00	.27	27	.00	.00	.00	.00
23	e.00	.00	.00	.00	.00	.00	.08	18	.00	.00	.00	.00
24	e.00	.00	.00	.00	.00	.00	.02	14	.00	.00	.00	.00
25	e.00	.00	.00	.00	.00	.00	.00	10	.00	.00	.00	.00
26	e.00	.00	.00	.00	.00	.00	.00	7.7	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	4.2	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	3.9	.00	1.2	.00	.00	.00	.00
29	.00	.00	.00	.00	---	5.3	.00	.57	.00	.00	.00	.00
30	.00	.00	.00	.00	---	3.9	.00	.17	.00	.00	.00	.00
31	.00	---	.00	.00	---	.98	---	.01	---	.00	.00	---
TOTAL	0.00	0.00	0.00	0.00	0.00	14.08	2.64	2094.30	0.05	0.00	0.00	0.00
MEAN	.00	.00	.00	.00	.00	.45	.088	67.6	.002	.00	.00	.00
MAX	.00	.00	.00	.00	.00	5.3	1.2	364	.05	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00
AC-FT	.0	.0	.0	.0	.0	28	5.2	4150	.1	.0	.0	.0

CAL YR 1988	TOTAL	367.79	MEAN	1.00	MAX	57	MIN	.00	AC-FT	730
WTR YR 1989	TOTAL	2111.07	MEAN	5.78	MAX	364	MIN	.00	AC-FT	4190

e Estimated.

08173000 PLUM CREEK NEAR LULING, TX

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

DRAINAGE AREA.--309 mi².

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

Water-quality records.--Chemical analysis: February 1944, April 1961 to September 1986. Sediment analysis: November 1965 to June 1966. Specific conductance: October 1967 to September 1986. Water temperatures: October 1967 to September 1986.

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

GAGE.--Water-stage recorder. Datum of gage is 321.57 ft above National Geodetic Vertical Datum of 1929. Prior to Aug. 18, 1976, at datum 5.0 ft higher. Prior to Nov. 29, 1988, at same datum, 15 ft upstream and 48 ft to the right of present gage.

REMARKS.--No estimated daily discharges. Records good. Low flow is slightly regulated by oil field operations above station. At end of year, flow from 119 mi above this station was partly controlled by 27 floodwater-retarding structures with a combined detention capacity of 41,840 acre-ft. No other known diversion above station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--59 years, 104 ft³/s (75,350 acre-ft/yr).

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in December 1913 reached about same stage as that of July 1, 1936, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 10	2100	*2,910	*19.47	No other peak greater than base discharge.			
Minimum daily discharge, 0.43 ft ³ /s July 21, 23.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	14	2.9	5.7	7.8	6.2	11	57	21	4.1	1.5	1.0
2	12	8.8	3.7	6.0	7.6	6.1	7.2	16	20	4.0	2.3	.81
3	13	4.9	4.0	6.5	7.4	5.8	6.1	7.9	18	3.6	11	.97
4	6.1	3.7	4.0	6.5	15	5.7	5.0	6.4	17	3.2	4.5	.95
5	3.3	3.1	4.2	6.4	8.9	5.1	4.3	310	16	3.1	3.0	1.0
6	2.2	2.5	4.2	5.4	7.5	4.4	3.9	289	15	2.9	2.1	.96
7	1.6	2.3	4.3	5.3	6.9	4.5	3.9	74	15	2.5	1.7	.99
8	1.7	2.4	3.4	5.2	6.9	5.0	4.2	33	14	2.0	1.9	1.3
9	2.1	2.7	4.2	4.7	6.6	5.4	3.3	21	12	1.9	5.0	1.1
10	2.0	2.6	10	4.6	6.5	6.2	2.7	1260	12	1.6	5.8	1.1
11	2.0	2.1	8.1	4.6	6.2	6.6	2.6	1020	14	1.5	2.2	1.2
12	2.0	2.1	8.9	5.1	6.4	6.6	2.8	253	16	1.6	2.2	.90
13	2.0	2.5	6.0	8.9	7.1	6.3	3.9	128	9.3	1.6	2.2	2.0
14	2.2	3.0	5.1	14	7.7	6.1	24	560	97	1.4	1.9	2.1
15	2.2	2.7	4.5	9.9	7.8	6.1	18	997	59	1.2	1.7	1.3
16	2.2	2.6	4.3	7.3	6.7	6.0	7.7	1200	19	.98	1.5	1.6
17	2.2	2.9	4.3	5.7	6.4	5.7	5.1	553	12	.67	1.2	1.4
18	2.2	4.2	4.4	5.4	6.1	5.7	4.5	1530	9.0	.68	1.1	1.2
19	2.5	3.8	4.8	7.3	6.5	5.4	35	459	7.9	.51	.94	1.2
20	2.8	3.0	4.9	31	7.4	5.3	26	208	6.6	.48	.91	1.1
21	2.2	3.0	5.3	21	7.4	11	10	141	6.0	.43	.69	1.2
22	2.5	3.8	5.7	10	6.6	30	5.8	109	5.4	.45	.85	.97
23	2.8	4.2	5.9	7.4	6.4	16	4.3	85	5.3	.43	.73	.74
24	2.5	4.4	5.9	6.5	6.1	7.9	4.2	69	5.1	.76	.68	.68
25	2.7	4.7	5.5	7.0	5.9	6.1	3.8	58	5.7	6.4	.82	.76
26	2.7	4.7	5.5	8.6	6.2	7.9	3.3	49	5.8	7.0	1.5	.82
27	2.2	4.2	5.4	28	6.5	20	3.0	44	5.7	3.2	2.1	1.3
28	1.5	4.3	5.3	24	6.5	29	3.0	38	5.4	3.1	1.6	1.7
29	1.5	3.1	5.2	16	---	95	3.0	29	4.8	2.7	1.2	1.8
30	1.9	2.5	4.9	13	---	25	126	25	3.9	1.8	1.2	1.7
31	4.0	---	5.3	8.6	---	14	---	23	---	1.7	1.2	---
TOTAL	113.8	114.8	160.1	305.6	201.0	376.1	347.6	9652.3	462.9	67.49	67.22	35.85
MEAN	3.67	3.83	5.16	9.86	7.18	12.1	11.6	311	15.4	2.18	2.17	1.19
MAX	21	14	10	31	15	95	126	1530	97	7.0	11	2.1
MIN	1.5	2.1	2.9	4.6	5.9	4.4	2.6	6.4	3.9	.43	.68	.68
AC-FT	226	228	318	606	399	746	689	19150	918	134	133	71
CAL YR 1988	TOTAL	4077.11	MEAN	11.1	MAX	412	MIN	.43	AC-FT	8090		
WTR YR 1989	TOTAL	11904.76	MEAN	32.6	MAX	1530	MIN	.43	AC-FT	23610		

08175000 SANDIES CREEK NEAR WESTHOFF, TX

LOCATION.--Lat 29°12'54", long 97°26'57", De Witt County, Hydrologic Unit 12100202, on left bank 100 ft downstream from bridge on county highway, 1.9 mi upstream from Birds Creek, 2.0 mi northeast of Westhoff, and 20.4 mi upstream from mouth.

DRAINAGE AREA.--549 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1930 to November 1934, August 1959 to current year.

REVISED RECORDS.--WSP 2123: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 178.27 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 9, 1934, water-stage recorder at site 150 ft upstream at datum 0.86 ft higher. Aug. 10, 1959, to Feb. 2, 1960, non-recording gage at present site and datum.

REMARKS.--No estimated daily discharges. Records good. No known diversion above station.

AVERAGE DISCHARGE.--34 years (water years 1931-34, 1960-89), 122 ft³/s (3.02 in/yr), 88,390 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 79,700 ft³/s Sept. 22, 1967 (gage height, 32.34 ft), from rating curve extended above 21,000 ft³/s on basis of slope-area measurement of 92,700 ft³/s; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge since at least 1864, 92,700 ft³/s July 2, 1936 (gage height, 33.1 ft, from floodmarks), on basis of computation of peak flow, at present site and datum.
Flood in October 1913 reached a stage of 26.0 ft, present site and datum, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 12	1100	*427	*8.20				

Minimum daily discharge, 0.05 ft³/s July 22, 23.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	.78	.94	2.3	2.1	9.2	5.4	31	268	3.5	2.6	1.1	1.3		
2	.78	1.0	2.3	2.1	7.5	5.4	17	238	3.5	2.6	1.1	1.3		
3	.78	1.4	1.7	2.1	229	5.4	10	78	3.5	2.5	1.1	1.3		
4	.62	2.3	1.1	2.1	268	5.4	7.3	25	3.2	2.1	1.1	1.1		
5	.71	2.1	.78	2.2	133	5.8	5.2	12	2.9	1.7	1.1	1.1		
6	.94	1.1	.78	2.3	54	6.1	3.8	16	2.9	1.7	.94	1.4		
7	.94	1.1	1.3	2.3	21	6.1	3.5	36	2.8	1.5	.94	1.5		
8	.94	1.4	2.2	2.3	11	5.8	2.9	48	5.6	1.5	.94	1.5		
9	.94	1.6	2.3	2.1	7.4	5.8	2.4	21	3.9	1.1	.94	1.5		
10	.82	1.8	1.9	2.1	6.0	5.8	2.1	9.4	5.0	.86	.94	.83		
11	.78	1.7	1.4	2.1	5.4	5.6	2.1	50	5.5	.87	.80	.68		
12	.78	1.7	2.9	2.0	5.4	4.7	2.1	350	14	1.2	.78	.58		
13	.78	1.4	3.0	2.3	5.9	4.7	2.1	116	25	1.4	.78	.46		
14	.78	1.3	3.2	2.3	6.3	4.9	2.1	216	22	1.7	.78	.46		
15	.96	1.3	3.1	2.7	7.0	5.0	2.2	221	20	1.9	.94	.46		
16	1.5	1.3	2.1	2.9	7.4	5.0	2.3	149	35	1.9	1.6	.46		
17	2.1	1.0	1.5	2.9	6.8	5.0	2.5	87	20	1.7	1.7	.46		
18	3.9	1.0	1.1	3.1	6.3	5.0	2.6	39	11	1.3	1.7	.51		
19	5.7	1.3	1.1	22	5.8	5.0	2.7	23	7.1	.42	1.7	.60		
20	6.5	1.2	1.2	80	5.8	9.8	212	17	5.6	.25	1.6	.79		
21	7.0	1.1	1.9	144	5.8	6.9	341	13	4.7	.09	1.1	1.0		
22	4.5	1.1	2.1	71	5.9	12	172	10	4.0	.05	1.1	1.1		
23	1.2	1.1	1.7	34	6.1	14	54	7.9	3.5	.05	1.2	1.1		
24	2.3	1.1	1.8	18	6.1	17	22	6.8	3.7	.31	1.6	1.1		
25	3.4	1.1	1.9	13	6.0	14	12	6.0	3.8	.36	1.7	.94		
26	3.5	1.1	1.9	10	5.4	11	7.8	5.4	3.5	.33	1.5	1.0		
27	3.5	1.1	1.8	17	5.4	13	6.2	5.0	3.5	.26	1.3	1.3		
28	3.6	1.2	1.7	14	5.4	233	5.0	4.6	3.1	.51	1.3	1.6		
29	2.2	2.1	1.7	22	---	141	4.5	4.0	2.7	3.2	1.3	1.8		
30	1.7	2.2	1.7	18	---	108	61	4.0	2.6	2.1	1.3	1.8		
31	.94	---	2.0	12	---	75	---	3.9	---	1.4	1.3	---		
TOTAL	65.87	41.14	57.46	517.0	854.3	756.6	1003.4	2090.0	237.1	39.46	37.28	31.03		
MEAN	2.12	1.37	1.85	16.7	30.5	24.4	33.4	67.4	7.90	1.27	1.20	1.03		
MAX	7.0	2.3	3.2	144	268	233	341	350	35	3.2	1.7	1.8		
MIN	.62	.94	.78	2.0	5.4	4.7	2.1	3.9	2.6	.05	.78	.46		
AC-FT	131	82	114	1030	1690	1500	1990	4150	470	78	74	62		
CFSM	.00	.00	.00	.03	.06	.04	.06	.12	.01	.00	.00	.00		
IN.	.00	.00	.00	.04	.06	.05	.07	.14	.02	.00	.00	.00		
CAL YR 1988	TOTAL	2152.61	MEAN	5.88	MAX	130	MIN	.62	AC-FT	4270	CFSM	.01	IN.	.15
WTR YR 1989	TOTAL	5730.64	MEAN	15.7	MAX	350	MIN	.05	AC-FT	11370	CFSM	.03	IN.	.39

GUADALUPE RIVER BASIN

217

08175000 SANDIES CREEK NEAR WESTHOFF, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: April 1962 to current year. Sediment analyses: November 1965 to May 1966.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
NOV 10...	1225	1.7	2580	23.5	110	31	7.6	580
JAN 27...	1325	20	926	15.0	66	19	4.5	180
MAR 09...	1250	6.1	1380	12.5	130	41	7.2	230
MAY 09...	1230	20	596	26.0	61	18	3.8	93
JUN 16...	1155	38	1820	25.0	59	18	3.5	320
AUG 03...	0945	1.1	1120	27.5	130	39	7.6	190
DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)
NOV 10...	24	14	706	32	440	1.4	20	1550
JAN 27...	10	8.7	199	42	110	0.40	13	497
MAR 09...	9	12	309	58	210	0.80	14	758
MAY 09...	5	8.4	154	19	75	0.30	18	328
JUN 16...	18	8.4	278	16	380	1.2	14	931
AUG 03...	7	14	300	44	140	0.40	15	630

GUADALUPE RIVER MAIN STEM

08175800 GUADALUPE RIVER AT CUERO, TX

LOCATION.--Lat 29°03'57", long 97°19'16", De Witt County, Hydrologic Unit 12100204, on left bank at downstream side of bridge on U.S. Highways 77A, 87, and 183, 2.1 mi upstream from Gohlke Creek, 2.4 mi southwest of Cuero, 4.2 mi downstream from Sandies Creek, and at mile 100.6.

DRAINAGE AREA.--4,934 mi², of which 1,432 mi² is above Canyon Dam.

PERIOD OF RECORD.--December 1902 to December 1906, August 1916 to December 1935, and January 1964 to current year. Published as "near Cuero" 1902-6, and as "below Cuero" 1916-35. Gage-height records collected at site 7.1 mi upstream from Sandies Creek from 1941 to 1966 (published in reports of the National Weather Service) and at present site since June 12, 1968.

Water-quality records.--Chemical analyses: March 1968 to September 1985.

REVISED RECORDS.--WRD TX-68-1, TX-69-1: Drainage areas at all sites.

GAGE.--Water-stage recorder. Datum of gage is 128.64 ft above National Geodetic Vertical Datum of 1929. From Dec. 26, 1902, to June 1903, nonrecording gage at site 7.1 mi upstream at different datum, gage heights moved to site 3.3 mi upstream from present site before computation; from July 1903 to December 1906 nonrecording gage 3.3 mi upstream at different datum; and Aug. 19, 1916, to Dec. 16, 1935, water-stage recorder at site 5.0 mi downstream at datum 3.19 ft lower.

REMARKS.--Records good. Since July 21, 1962, flow regulated by Canyon Lake (station 08167700) 202.4 mi upstream. Flow below New Braunfels is partly regulated by a series of small power dams, combined capacity of six largest dams 33,550 acre-ft. Flow is affected at times by discharge from the flood-detention pools of 53 floodwater-retarding structures with a combined detention capacity of 87,200 acre-ft. These structures control runoff from 302 mi² in the Comal, San Marcos, and Plum Creek drainage basins. Many small diversions above station. Satellite telemeter at station.

AVERAGE DISCHARGE.--20 years (water years 1904-6, 1917, 1918, 1921-35) prior to regulation by Canyon Lake, 1,303 ft³/s (944,000 acre-ft/yr); 25 years (water years 1965-89) regulated, 1,981 ft³/s (1,435,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 132,000 ft³/s Sept. 1, 1981 (gage height, 41.83 ft); minimum daily, 28 ft³/s July 22, 1984.

Floods at this station since at least 1900 occurred Mar. 1, 1903, 43.0 ft, at different site and datum; Oct. 20, 1919, 32.2 ft, site and datum then in use; May 30, 1929, 35.2 ft, site and datum then in use; all from information by local residents.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1900, probably occurred July 2, 1936, 44.33 ft, present site and datum, from information by State Department of Highways and Public Transportation. Other floods at this station occurred Oct. 4, 1913, 37.57 ft, at different site and datum; Dec. 6, 1913, 34.57 ft, at different site and datum; June 21, 1961, 37.0 ft, present site and datum; all from information by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,270 ft³/s May 20 at 1500 hours (gage height, 11.12 ft); minimum daily, 76 ft³/s Aug. 24.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	597	479	518	540	628	670	663	627	603	462	262	160
2	569	480	456	522	648	743	638	867	588	441	240	e77
3	572	483	491	524	666	617	624	837	514	444	199	e79
4	602	481	470	539	882	619	639	613	487	393	182	e80
5	609	491	432	526	960	661	604	559	508	440	180	96
6	576	470	484	527	761	672	626	735	463	374	154	106
7	531	549	497	527	766	634	607	782	486	421	170	303
8	608	465	470	523	675	763	585	905	451	408	164	131
9	562	413	473	525	652	703	592	689	470	360	143	131
10	512	479	532	534	728	641	594	585	473	377	108	165
11	540	505	486	503	699	642	599	651	458	392	149	149
12	506	432	525	511	709	664	476	2400	646	329	167	147
13	513	463	528	537	677	664	517	2040	1280	308	175	122
14	483	470	521	523	739	634	562	1560	892	294	183	136
15	482	509	471	604	742	691	630	2310	828	302	182	274
16	490	441	520	554	711	644	713	1680	1190	306	173	155
17	485	544	501	541	677	636	607	2070	1230	300	173	167
18	483	414	518	539	595	589	585	3280	851	295	171	122
19	507	383	470	645	587	623	570	2610	666	301	146	179
20	512	471	514	673	593	575	579	3970	626	305	146	188
21	478	481	561	993	592	587	1160	2700	612	306	153	184
22	487	487	532	978	609	638	1220	1300	588	288	205	160
23	488	504	666	685	640	658	789	1030	530	278	166	137
24	472	432	530	544	571	611	589	966	557	191	e76	235
25	503	480	487	590	585	641	587	835	440	169	246	159
26	452	465	464	607	578	605	596	792	472	197	201	155
27	444	484	534	672	595	647	541	721	471	298	e82	154
28	497	464	519	923	651	870	537	714	502	307	83	137
29	460	459	532	1000	---	935	534	659	471	225	118	129
30	471	457	511	757	---	786	540	638	460	260	104	128
31	470	---	531	637	---	799	---	623	---	238	182	---
TOTAL	15961	14135	15744	19303	18916	20862	19103	40748	18813	10009	5083	4545
MEAN	515	471	508	623	676	673	637	1314	627	323	164	151
MAX	609	549	666	1000	960	935	1220	3970	1280	462	262	303
MIN	444	383	432	503	571	575	476	559	440	169	76	77
AC-FT	31660	28040	31230	38290	37520	41380	37890	80820	37320	19850	10080	9020
CAL YR 1988	TOTAL	289038	MEAN	790	MAX	2900	MIN	383	AC-FT	573300		
WTR YR 1989	TOTAL	203222	MEAN	557	MAX	3970	MIN	76	AC-FT	403100		

e Estimated.

GUADALUPE RIVER MAIN STEM

219

08176500 GUADALUPE RIVER AT VICTORIA, TX
(National stream-quality accounting network)

LOCATION.--Lat 28°47'34", long 97°00'46", Victoria County, Hydrologic Unit 12100204, on left bank just upstream from pier of upstream bridge of two bridges on U.S. Highway 59 in Victoria, 1,300 ft upstream from Southern Pacific Railroad Co. bridge, 15 mi upstream from Coletto Creek, and at mile 50.7.

DRAINAGE AREA.--5,198 mi², of which 1,432 mi² is above Canyon Dam.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--November 1934 to current year. Gage-height records collected in this vicinity since 1904 are contained in reports of the National Weather Service.

REVISED RECORDS.--WSP 2123: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 29.15 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Since July 21, 1962, flow regulated by Canyon Lake (station 08167700) 252.3 mi upstream. There are many diversions above station. Records provided by the city of Victoria show that during the year about 6,180 acre-ft (sewage effluent) was released into the river below station. For statement regarding regulation by Soil Conservation Service floodwater-retarding structures, see station 08175800. A satellite telemeter at station.

AVERAGE DISCHARGE.--27 years (water years 1936-62) prior to regulation by Canyon Lake, 1,626 ft³/s (1,178,000 acre-ft/yr); 27 years (water years 1963-89) regulated, 1,982 ft³/s (1,436,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 179,000 ft³/s July 3, 1936 (gage height, 31.22 ft); minimum daily, 14 ft³/s Aug. 20, 1956.

Maximum stage since at least 1833, that of July 3, 1936.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 1, 1929, reached a stage of 30.2 ft, present site and datum.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,280 ft³/s May 21 at 0800 hours (gage height, 13.89 ft); minimum daily, 66 ft³/s Sept. 5.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	703	492	474	565	733	746	931	605	633	410	261	122
2	617	486	540	577	710	753	781	711	595	414	280	209
3	587	488	495	555	875	829	761	1020	573	390	269	133
4	595	501	498	555	771	688	751	898	490	415	223	80
5	635	486	503	577	1050	688	767	686	446	358	225	66
6	621	492	446	557	1020	750	698	627	474	448	197	110
7	582	485	502	563	906	755	731	851	421	341	184	119
8	533	564	594	556	862	723	711	910	467	367	190	209
9	623	488	529	559	762	862	685	980	397	370	206	185
10	576	419	500	563	731	773	684	754	410	319	201	120
11	524	479	568	577	808	712	720	645	428	336	168	121
12	569	507	521	553	793	704	681	942	439	366	146	169
13	534	445	565	558	772	720	555	2740	732	302	176	132
14	542	463	567	579	758	725	619	1790	1660	284	192	127
15	507	474	567	561	832	699	677	2190	902	283	199	110
16	500	521	506	656	816	761	740	2260	944	291	203	149
17	510	469	550	604	790	737	828	1780	1300	293	196	204
18	503	567	537	600	777	731	718	2810	1190	290	184	133
19	499	469	554	712	683	676	688	3160	823	275	195	142
20	529	372	513	965	667	726	672	3110	656	294	173	119
21	543	468	541	889	672	678	731	4000	616	274	159	158
22	500	499	605	1150	677	699	1400	2260	605	290	159	161
23	504	505	574	1070	687	776	1250	1270	593	267	163	159
24	509	525	728	739	728	766	853	1100	586	285	223	137
25	490	447	565	611	645	737	717	1020	591	242	152	142
26	536	501	517	654	661	757	672	874	444	188	105	189
27	463	485	483	678	648	727	658	835	445	216	254	146
28	465	506	566	817	666	876	600	750	445	290	157	142
29	515	492	554	1200	---	1050	627	747	466	315	98	135
30	474	478	574	1160	---	1070	621	675	430	298	98	120
31	509	---	547	879	---	916	---	646	---	241	134	---
TOTAL	16797	14573	16783	21839	21500	23810	22527	43646	19201	9752	5770	4248
MEAN	542	486	541	704	768	768	751	1408	640	315	186	142
MAX	703	567	728	1200	1050	1070	1400	4000	1660	448	280	209
MIN	463	372	446	553	645	676	555	605	397	188	98	66
AC-FT	33320	28910	33290	43320	42650	47230	44680	86570	38090	19340	11440	8430
CAL YR 1988	TOTAL	295673	MEAN	808	MAX	3020	MIN	372	AC-FT	586500		
WTR YR 1989	TOTAL	220446	MEAN	604	MAX	4000	MIN	66	AC-FT	437300		

GUADALUPE RIVER MAIN STEM

08176500 GUADALUPE RIVER AT VICTORIA, TX--Continued
(National stream-quality accounting network)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: August 1945 to current year. Chemical and biochemical analyses: January 1968 to current year. Pesticide analyses: February 1974 to August 1981. Sediment analyses: April 1959, August 1973 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1945 to September 1981.

WATER TEMPERATURE: November 1950 to September 1981.

INSTRUMENTATION.--From March to May 1973, specific conductance and water temperature were continuously recorded at this station.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,950 microsiemens on several days during January 1946; minimum daily, 135 microsiemens Sept. 3, 1981.

WATER TEMPERATURE: Maximum daily, 32.0°C Aug. 4, 27, 1952; minimum daily, 2.0°C Jan. 11, 12, 1962, Jan. 24, 1963.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI, FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS TOTAL (MG/L AS CaCO3)
NOV 09...	1630	784	546	8.10	23.5	9.3	8.8	104	1.1	K34	K6500	230
MAR 08...	1625	711	569	8.30	13.5	20	11.0	104	1.4	K32	K40	240
JUN 15...	1255	818	452	7.80	28.0	60	6.5	82	1.2	220	320	180
AUG 16...	1430	200	578	8.30	29.0	13	7.6	99	1.4	K56	K44	210

DATE	HARD-NESS NONCARB WH WAT TOT FLD MG/L AS CaCO3	CALCIUM DIS-SOLVED (MG/L AS Ca)	MAGNE-SIUM, DIS-SOLVED (MG/L AS Mg)	SODIUM, DIS-SOLVED (MG/L AS Na)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT WH TOT FET FIELD MG/L AS CaCO3	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS Cl)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)
NOV 09...	24	64	18	27	0.8	2.4	211	35	34	0.30	13	309
MAR 08...	29	66	17	27	0.8	2.3	207	36	41	0.30	8.2	348
JUN 15...	23	51	12	24	0.8	3.0	154	26	28	0.30	10	265
AUG 16...	14	57	16	39	1	2.9	195	31	44	0.30	16	320

DATE	SOLIDS, SUM OF CONSTITUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHOROUS DIS-SOLVED (MG/L AS P)	PHOS-PHOROUS ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHOROUS ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
NOV 09...	323	0.520	0.010	0.530	<0.010	0.020	--	0.40	0.060	0.050	0.040	0.12
MAR 08...	327	0.990	0.010	1.00	<0.010	0.010	--	0.30	0.080	0.060	0.060	0.18
JUN 15...	249	--	<0.010	0.420	0.030	0.040	0.37	0.40	0.100	0.090	0.080	0.25
AUG 16...	324	--	<0.010	<0.100	0.210	0.020	0.19	0.40	0.080	0.050	0.030	0.09

DATE	SEDI-MENT, DIS-SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)	SED. SIEVE DIAM. % FINER THAN .062 MM	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)
NOV 09...	15	32	90	<10	2	73	0.7	3	<1	<3	2	6
MAR 08...	21	40	89	<10	1	65	<0.5	<1	<1	<3	1	9
JUN 15...	96	212	92	20	3	74	<0.5	<1	<1	<3	3	9
AUG 16...	37	20	74	10	3	97	<0.5	<1	<1	<3	15	7

GUADALUPE RIVER MAIN STEM

221

08176500 GUADALUPE RIVER AT VICTORIA, TX--Continued
(National stream-quality accounting network)

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
NOV 09...	<5	12	2	<0.1	<10	1	<1	<1.0	520	<6	8
MAR 08...	<5	13	3	<0.1	<10	2	<1	<1.0	520	<6	5
JUN 15...	<1	10	2	<0.1	<10	<1	<1	<1.0	390	6	4
AUG 16...	3	14	10	<0.1	<10	2	1	<1.0	470	<6	7

GUADALUPE RIVER BASIN

08176550 FIFTEENMILE CREEK NEAR WESER, TX

LOCATION.--Lat 28°53'51", long 97°21'17", De Witt County, Hydrologic Unit 12100204, at DeWitt-Goliad County line, on left downstream end of bridge on U.S. Highway 183, and 2.4 mi northeast of Weser.

DRAINAGE AREA.--167 mi².

PERIOD OF RECORD.--October 1984 to current year.

GAGE.--Water-stage recorder. Datum of gage is 158.40 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good except those below 0.50 ft³/s, which are poor. No known diversions above station. Guadalupe-Blanco River Authority gage-height telemeter at station.

AVERAGE DISCHARGE.--5 years, 18.7 ft³/s (13,550 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,380 ft³/s June 11, 1987 (gage height, 15.07 ft), from rating curve extended above 530 ft³/s; minimum daily, no flow for several days in 1989.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 1	0500	*79	*6.20				

Minimum daily discharge, no flow for several days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.6	1.3	1.3	2.7	4.0	3.4	2.9	52	.88	.41	.06	.01
2	4.5	1.4	1.3	2.7	4.0	3.4	2.8	14	.87	.34	.06	.00
3	2.8	1.5	1.3	2.8	6.6	3.4	2.9	6.8	.75	.26	.05	.00
4	2.0	1.4	1.3	2.8	5.6	3.5	2.9	4.9	.68	.29	.04	.01
5	1.5	1.3	1.3	2.8	4.4	3.3	2.9	4.1	.67	.37	.04	.00
6	1.2	1.1	1.3	2.8	4.0	3.1	2.8	3.6	.66	.29	.04	.02
7	1.0	1.1	1.4	2.8	3.9	3.0	2.6	3.2	.63	.22	.04	.05
8	.94	1.0	1.8	2.8	3.8	3.0	2.6	2.9	.87	.18	.06	.04
9	.94	1.1	1.9	2.8	3.7	3.0	2.6	2.7	.68	.16	.07	.04
10	.94	1.1	2.1	2.8	3.5	3.0	2.5	2.6	.63	.14	.05	.03
11	.91	1.1	2.2	2.8	3.5	3.0	2.4	2.4	1.1	.14	.05	.03
12	.94	1.1	2.2	2.9	3.6	3.0	2.3	2.5	.80	.13	.04	.03
13	.94	1.1	2.2	3.4	3.7	3.0	2.7	2.5	.66	.12	.03	.03
14	.97	1.1	2.2	3.5	3.7	3.0	3.5	11	1.7	.10	.03	.03
15	1.0	1.1	2.2	3.5	3.8	3.0	3.6	7.3	3.7	.09	.04	.03
16	1.0	1.0	2.2	3.5	3.8	3.0	3.7	4.3	2.7	.09	.03	.01
17	1.0	1.0	2.1	3.4	3.7	3.0	3.4	3.6	1.5	.09	.03	.01
18	1.0	1.1	2.1	3.4	3.7	3.0	3.0	3.6	1.1	.08	.03	.01
19	1.0	1.2	2.2	4.2	3.6	3.1	2.9	2.8	.79	.07	.02	.01
20	1.0	1.1	2.2	6.5	3.6	3.1	3.0	2.6	.65	.07	.01	.01
21	.99	1.1	2.3	8.1	3.6	3.1	4.1	2.4	.53	.06	.01	.00
22	.94	1.1	2.4	5.3	3.6	3.1	3.5	2.2	.43	.06	.01	.00
23	.97	1.1	2.4	4.4	3.4	3.3	2.9	2.0	.43	.06	.01	.00
24	.97	1.2	2.5	4.2	3.3	3.3	2.6	1.9	.57	.07	.01	.00
25	.88	1.3	2.5	4.3	3.3	3.3	2.4	1.7	.65	.07	.01	.00
26	.88	1.4	2.5	4.3	3.3	3.3	2.3	1.6	.64	.08	.01	.00
27	.82	1.4	2.6	4.3	3.3	3.3	2.3	1.4	.62	.08	.00	.00
28	.82	1.4	2.6	4.2	3.4	3.3	2.3	1.3	.62	.08	.00	.00
29	.82	1.4	2.6	4.2	---	3.3	32	1.2	.55	.07	.01	.00
30	.82	1.3	2.6	4.3	---	3.1	15	1.1	.51	.07	.01	.00
31	1.1	---	2.6	4.1	---	3.0	---	.99	---	.06	.01	---
TOTAL	43.19	35.9	64.4	116.6	107.4	97.7	127.4	157.19	27.57	4.40	0.91	0.40
MEAN	1.39	1.20	2.08	3.76	3.84	3.15	4.25	5.07	.92	.14	.029	.013
MAX	7.6	1.5	2.6	8.1	6.6	3.5	32	52	3.7	.41	.07	.05
MIN	.82	1.0	1.3	2.7	3.3	3.0	2.3	.99	.43	.06	.00	.00
AC-FT	86	71	128	231	213	194	253	312	55	8.7	1.8	.8
CAL YR 1988	TOTAL	1272.08	MEAN	3.48	MAX	9.2	MIN	.28	AC-FT	2520		
WTR YR 1989	TOTAL	783.06	MEAN	2.15	MAX	52	MIN	.00	AC-FT	1550		

GUADALUPE RIVER BASIN

223

08176900 COLETO CREEK AT ARNOLD ROAD CROSSING NEAR SCHROEDER, TX

LOCATION.--Lat 28°51'41", Long 97°13'34", Goliad County, Hydrologic Unit 12100204, on right bank at downstream side of Arnold Road Crossing, 0.7 mi downstream from confluence of Twelvemile and Fifteenmile Creeks, 3.2 mi north of Schroeder, 12.8 mi upstream from Coletto Creek Reservoir, and 26.0 mi upstream from mouth.

DRAINAGE AREA.--357 mi².

PERIOD OF RECORD.--October 1978 to current year. Records equivalent for January 1930 to December 1933 and October 1952 to September 1979, published as "near Schroeder".

GAGE.--Water-stage recorder. Datum of gage is 100.43 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good except those for discharges below 0.50 ft³/s, which are poor. No known diversion above station. Wireless telemeter at station.

AVERAGE DISCHARGE.--11 years, 69.2 ft³/s (50,140 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 32,500 ft³/s Aug. 31, 1981 (gage height, 17.78 ft); minimum daily, no flow Aug. 20 to Sept. 30, 1989.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharges since at least 1872 at site 3.5 mi downstream, 122,000 ft³/s Sept. 21, 1967 (slope-area measurement of peak flow), 63,700 ft³/s Oct. 16, 1946, and 46,700 ft³/s in October 1925, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 14	1600	*44	*4.76				

Minimum daily discharge, no flow Aug. 20 to Sept. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.02	.28	1.2	3.2	6.3	4.9	4.1	12	.54	.69	.02	.00
2	.02	.49	1.2	3.2	6.1	4.8	4.0	23	.53	.50	.02	.00
3	.01	.80	1.2	3.3	16	4.8	4.0	13	.48	.29	.02	.00
4	.01	.86	1.3	3.4	8.0	5.0	3.8	8.3	.43	.24	.01	.00
5	.01	.88	1.3	3.4	7.5	4.9	3.8	6.3	.33	.15	.01	.00
6	.03	.88	1.3	3.5	6.6	4.7	3.5	5.2	.29	.14	.01	.00
7	.14	.88	1.3	3.6	5.9	4.6	3.5	4.2	.26	.17	.01	.00
8	.16	.88	9.6	3.6	5.5	4.7	3.4	3.7	.55	.14	.01	.00
9	.17	.88	6.8	3.5	5.3	4.8	3.3	3.2	.53	.11	.02	.00
10	.13	.84	5.0	3.5	5.2	4.9	3.3	2.8	.43	.10	.01	.00
11	.08	.94	3.9	3.6	5.1	4.9	3.2	2.6	.33	.15	.01	.00
12	.07	.93	3.3	3.8	5.0	4.9	3.2	2.3	.31	.30	.01	.00
13	.05	.91	3.1	4.1	5.1	4.9	3.3	2.2	.31	.21	.01	.0
14	.04	.91	3.1	4.1	5.1	4.8	4.6	3.7	14	.12	.01	.00
15	.04	.91	3.1	4.3	5.1	4.7	4.7	4.2	7.9	.10	.01	.00
16	.04	.91	3.0	4.4	5.0	4.6	4.6	6.3	3.0	.09	.01	.00
17	.03	.88	2.8	4.5	4.9	4.6	4.3	4.9	2.9	.09	.01	.00
18	.02	1.0	2.7	4.8	4.9	4.7	4.2	4.9	3.0	.08	.01	.00
19	.02	1.0	2.7	7.4	4.9	4.8	3.8	4.2	2.4	.07	.01	.00
20	.02	1.0	2.7	9.7	4.9	4.9	3.8	3.0	1.7	.06	.0	.00
21	.02	1.0	2.8	7.8	4.8	4.8	3.6	2.2	1.2	.05	.00	.00
22	.02	1.0	2.9	7.9	4.8	4.8	3.4	1.9	.82	.05	.00	.00
23	.02	1.0	3.0	7.5	4.8	4.7	3.7	1.6	.72	.04	.00	.00
24	.02	1.0	3.1	6.8	4.8	4.7	3.5	1.4	1.8	.04	.00	.00
25	.02	1.1	3.0	6.6	4.7	4.6	3.2	1.2	2.6	.04	.00	.00
26	.02	1.2	3.1	6.5	4.7	4.7	3.0	1.0	2.6	.05	.00	.00
27	.02	1.2	3.2	6.4	4.8	4.8	2.8	.95	2.1	.04	.00	.00
28	.02	1.2	3.0	6.9	4.9	4.9	2.7	.92	1.5	.04	.00	.00
29	.02	1.2	2.9	7.0	---	4.9	2.8	.87	1.1	.04	.00	.00
30	.02	1.2	3.0	6.7	---	4.6	9.5	.70	.88	.03	.00	.00
31	.12	---	3.1	6.6	---	4.3	---	.59	---	.03	.00	---
TOTAL	1.43	28.16	93.7	161.6	160.7	147.7	114.6	133.33	55.54	4.25	0.23	0.00
MEAN	.046	.94	3.02	5.21	5.74	4.76	3.82	4.30	1.85	.14	.007	.00
MAX	.17	1.2	9.6	9.7	16	5.0	9.5	23	14	.69	.02	.00
MIN	.01	.28	1.2	3.2	4.7	4.3	2.7	.59	.26	.03	.00	.00
AC-FT	2.8	56	186	321	319	293	227	264	110	8.4	.5	.0
CAL YR 1988	TOTAL	1914.03	MEAN	5.23	MAX	16	MIN	.01	AC-FT	3800		
WTR YR 1989	TOTAL	901.24	MEAN	2.47	MAX	23	MIN	.00	AC-FT	1790		

GUADALUPE RIVER BASIN

08176990 COLETO CREEK RESERVOIR INFLOW (GUADALUPE DIVERSION) NEAR SCHROEDER, TX

LOCATION.--Lat 28°50'21", long 97°11'20", Victoria County, Hydrologic Unit 12100204, on right bank of small tributary 1,200 ft upstream from Coleta Creek and 2.6 mi northeast of Schroeder.

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

GAGE.--Water-stage recorder and concrete control. Datum of gage is 100.52 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Discharge represents flow diverted by pumping from the Guadalupe River to be used as makeup water for the Central Power and Light Co. generating plant on Coleta Creek Reservoir.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 36 ft³/s Apr. 2, 11, Sept. 11, 1980; no flow most of time.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 34 ft³/s Apr. 27; no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29	26	25	26	32	.00	.00	32	31	30	30	31
2	29	26	25	26	32	.00	.00	32	31	31	30	30
3	28	25	30	26	20	.00	.00	32	31	31	30	29
4	27	20	29	26	32	.00	.00	31	31	31	28	29
5	29	29	29	28	29	.00	.00	31	31	14	26	29
6	32	29	28	30	2.9	.00	.00	31	29	13	31	29
7	32	28	26	30	.00	.00	.00	31	31	32	30	29
8	32	26	24	29	19	.00	.00	31	23	31	31	28
9	31	24	24	28	32	.00	.00	31	33	31	31	28
10	31	25	24	29	33	.00	.00	31	33	31	31	29
11	30	27	24	29	33	.00	.00	31	32	31	31	17
12	30	26	24	28	33	.00	.00	29	32	30	31	22
13	30	26	24	27	32	.00	.00	33	32	30	31	30
14	30	26	25	29	32	.00	.00	30	25	32	31	29
15	31	23	26	29	31	.00	.00	32	32	32	31	29
16	31	17	28	29	30	.00	.00	31	32	32	31	29
17	30	23	27	29	13	.00	.00	25	32	32	31	29
18	30	28	26	29	.00	.00	.00	20	32	32	30	29
19	30	27	26	13	.00	.00	.00	33	32	27	30	28
20	23	29	25	.00	.00	8.2	.00	33	32	25	29	28
21	21	28	27	.00	.00	.16	.00	32	32	32	29	28
22	31	28	24	.00	.00	.00	.00	32	31	32	29	27
23	30	28	23	19	.00	.00	.00	31	31	25	29	28
24	30	28	26	32	.00	.00	.00	31	31	21	26	27
25	29	27	25	32	.00	.00	.00	31	2.4	32	31	27
26	28	25	29	32	.00	.00	19	30	17	31	30	27
27	27	24	26	32	.00	.00	34	30	32	31	30	27
28	26	24	24	32	.00	.00	32	30	32	31	30	29
29	26	26	27	31	---	.00	33	30	31	31	30	31
30	25	25	27	32	---	.00	32	30	31	30	30	31
31	23	---	27	33	---	.00	---	30	---	30	30	---
TOTAL	891	773	804	795.00	435.90	8.36	150.00	947	887.4	904	928	843
MEAN	28.7	25.8	25.9	25.6	15.6	.27	5.00	30.5	29.6	29.2	29.9	28.1
MAX	32	29	30	33	33	8.2	34	33	33	32	31	31
MIN	21	17	23	.00	.00	.00	.00	20	2.4	13	26	17
AC-FT	1770	1530	1590	1580	865	17	298	1880	1760	1790	1840	1670
CAL YR 1988	TOTAL	5263.16	MEAN	14.4	MAX	32	MIN	.00	AC-FT	10440		
WTR YR 1989	TOTAL	8366.66	MEAN	22.9	MAX	34	MIN	.00	AC-FT	16600		

225

LOCATION.--Lat 28°45'05", long 97°19'01", Goliad County, Hydrologic Unit 12100204, at right downstream end of bridge on Farm Road 622, 1.2 mi downstream from Farmer Creek, 3.1 mi upstream from Kilgore Creek, and 6.1 mi northwest of Fannin.

PERIOD OF RECORD.--June 1978 to current year.

REMARKS.--No estimated daily discharges. Records good. No known diversion above gage. Gage-height telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,600 ft³/s May 29, 1981 (gage height, 13.80 ft. from floodmark), from rating curve extended above 1,160 ft³/s; maximum gage height, 14.60 ft Oct. 31, 1981; no flow for many days in 1986 and 1988.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 400 ft³/s and maximum (*):

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.0	.00	.06	.11	.40	.22	.38	.00	.03	.00	.00
2	.00	.00	.00	.07	.11	.43	.25	.22	.00	.01	.00	.00
3	.00	.00	.00	.08	34 .53	.26	.18	.00	.00	.00	.00	.00
4	.00	.00	.00	.05	1.5 .46	.23	.17	.00	.00	.00	.00	.00
5	.00	.00	.00	.06	.66	.28	.16	.10	.00	.00	.00	.00
6	.00	.00	.0	.06	.55	.27	.15	.09	.00	.00	.00	.00
7	.00	.00	.02	.06	.45	.31	.18	.07	.00	.00	.00	.00
8	.00	.00	3.9 .05	.43	.35	.18	.06	.01	.00	36 .00	.00	.00
9	.00	.00	.58 .04	.40	.36	.11	.05	.00	.00	.00	.10	.00
10	.00	.00	.18 .05	.38	.40	.23	.04	.00	.00	.00	.00	.00
11	.00	.00	.17 .05	.45	.39	.32	.05	.00	.00	.02	.00	.00
12	.00	.00	.11 .08	.60	.38	.22	.06	.00	.00	.01	.00	.00
13	.00	.00	.08 .09	.61	.35	.33	.06	.00	.00	.00	.00	.00
14	.00	.00	.07 .08	.56	.34	.63	.05	13 .00	.00	.00	.00	.00
15	.00	.00	.07 .06	.52	.31	.47	.58	.29	.00	.00	.00	.00
16	.00	.00	.05 .06	.38	.30	.29	.20	.04	.00	.00	.00	.00
17	.00	.00	.06 .06	.41	.36	.26	.35	.01	.00	.00	.00	.00
18	.00	.08	.06 .18	.43	.32	.24	.47	.00	.00	.00	.00	.00
19	.00	.03	.06 2.1	.43	.31	.47	.10	.00	.00	.00	.00	.00
20	.00	.00	.07 .90	.49	.63	.40	.05	.00	.00	.00	.00	.00
21	.00	.00	.06 .21	.44	.43	.24	.05	.00	.00	.00	.00	.00
22	.00	.00	.07 .14	.35	.42	.17	.03	.00	.00	.00	.00	.00
23	.00	.00	.07 .14	.36	.30	.13	.01	.00	.00	.00	.00	.00
24	.00	.01	.06 .17	.39	.31	.12	.00	.71	.00	.00	.00	.00
25	.00	.02	.05 .21	.46	.35	.13	.00	.42	.00	.00	.00	.00
26	.00	.02	.06 .15	.43	.38	.14	.00	.31	.00	.00	.00	.00
27	.00	.0	.06 .17	.42	.38	.10	.00	.19	.00	.00	.00	.00
28	.00	.00	.05 .34	.38	.60	.12	.00	.06	.00	.00	.00	.00
29	.00	.00	.05 .30	---	.45	.39	.00	.03	.00	.00	.00	.00
30	.00	.00	.06 .15	---	.24	2.5	.00	.02	.00	.00	.00	.00
31	.06	---	.07 .11	---	.17	---	.00	---	.00	.00	.00	---
TOTAL	0.06	0.16	6.14	6.33	46.70	11.51	9.64	3.42	15.09	0.07	36.10	0.00
MEAN	.002	.005	.20	.20	1.67	.37	.32	.11	.50	.002	1.16	.00
MAX	.06	.08	3.9	2.1	34	.63	2.5	.58	13	.03	36	.00
MIN	.00	.00	0.4	.11	.17	.10	.00	.00	.00	.00	.00	.00
AC-FT	.1	.3	12	13	93	23	19	6.8	30	.1	72	.0
CFSM	.00	.00	.01	.01	.06	.01	.01	.00	.02	.00	.04	.00
IN.	.00	.00	.01	.01	.06	.02	.01	.00	.02	.00	.05	.00
CAL YR 1988	TOTAL	59.56	MEAN	.16	MAX	3.9	MIN	.00	AC-FT	118	CFSM	.01
WTR YR 1989	TOTAL	135.22	MEAN	.37	MAX	36	MIN	.00	AC-FT	268	CFSM	.01
										IN.	.08	
										IN.	.18	

08177360 COLETO CREEK RESERVOIR (CONDENSER NO. 1) NEAR FANNIN, TX

LOCATION.--Lat 28°43'24", long 97°12'16", Goliad County, Hydrologic Unit 12100204, on right bank of discharge canal 4,000 ft below Central Power and Light powerplant, 2.7 mi northeast of Fannin, and 13.3 mi southwest of Victoria.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: June 1980 to current year.

INSTRUMENTATION.--Beginning May 1980, water temperature is recorded continuously at this station.

REMARKS: Prior to Feb. 19, 1982, water temperature recording site was 4,000 ft upstream at Condenser No. 1 cooling water outlet.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 41.0°C Aug. 10, 11, 1987; minimum, 4.5°C Dec. 26, 1983.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 40.0°C July 7, 10, Sept. 1; minimum, 12.0°C Mar. 7.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	37.0	35.0	36.5	32.5	28.0	30.5	26.5	22.5	25.5	25.5	20.5	22.5
2	37.0	34.0	36.0	31.5	26.5	29.5	26.5	25.5	26.0	26.5	21.0	24.5
3	36.0	32.5	35.0	32.0	26.5	30.0	27.0	26.0	26.5	27.0	22.5	25.5
4	35.5	32.5	34.5	32.5	27.5	31.0	27.0	26.0	26.5	27.0	25.5	26.5
5	35.0	31.0	34.0	31.5	26.5	30.0	27.0	25.5	26.5	27.5	26.0	27.0
6	35.0	32.0	34.0	31.0	26.0	29.0	27.0	24.5	26.5	27.5	26.0	27.0
7	34.5	32.5	34.0	32.0	26.0	29.5	28.0	24.0	26.5	28.5	24.5	27.0
8	34.5	33.0	34.0	32.5	28.0	31.0	27.5	23.0	26.0	27.5	22.5	25.5
9	35.0	34.0	34.5	33.0	28.5	31.5	25.0	22.5	24.5	25.0	22.0	24.0
10	34.5	33.0	34.0	33.0	30.0	32.0	24.5	24.0	24.0	24.5	22.0	24.0
11	34.0	28.5	32.5	33.0	30.5	32.5	23.5	21.0	22.5	25.5	21.5	24.0
12	33.5	29.0	32.5	33.0	30.5	32.0	23.0	21.0	22.5	26.0	22.0	24.5
13	33.5	27.5	32.0	33.0	28.5	31.5	23.0	20.5	22.5	27.0	20.5	24.0
14	33.5	28.5	32.0	33.5	31.0	32.5	24.0	22.0	23.0	23.0	22.5	23.0
15	33.5	28.5	32.0	33.0	31.0	32.5	24.5	19.5	23.0	23.0	20.5	22.0
16	34.0	29.5	32.0	31.5	28.5	30.5	24.0	20.0	22.5	23.0	20.5	22.0
17	34.5	27.5	32.5	29.5	25.5	28.0	23.5	20.5	22.5	23.0	20.5	22.0
18	34.5	30.0	33.0	30.0	26.0	29.0	23.5	22.0	23.0	23.5	19.5	21.5
19	34.5	29.5	33.0	31.0	30.0	30.5	24.0	19.0	22.5	24.0	20.5	22.5
20	34.5	29.5	33.0	29.0	25.5	26.5	25.0	20.0	23.5	25.0	20.5	23.5
21	34.5	31.5	33.5	27.5	22.5	26.0	26.0	22.0	24.5	24.5	22.5	23.5
22	35.0	29.5	33.0	27.5	22.5	26.0	26.5	22.0	25.0	24.0	22.0	23.0
23	35.0	29.5	33.0	27.5	24.5	26.5	26.0	18.0	23.0	24.0	22.5	23.5
24	35.0	30.5	33.5	28.0	23.0	25.5	23.5	22.5	23.0	25.0	23.0	24.5
25	35.5	30.5	33.5	29.0	25.0	27.5	23.0	17.5	19.5	25.5	24.5	25.0
26	35.0	30.5	34.0	30.0	26.5	28.5	19.0	18.0	18.5	26.0	25.0	25.5
27	35.5	30.5	34.0	28.0	25.0	26.0	28.0	19.5	25.0	25.5	24.5	25.0
28	35.5	31.0	34.5	27.0	23.0	26.0	26.0	22.0	25.0	26.0	24.5	25.5
29	36.0	31.5	34.0	27.0	23.5	25.5	25.5	24.0	24.5	26.0	22.5	24.5
30	35.0	29.5	32.5	26.5	25.0	26.0	24.5	21.0	23.5	25.5	24.5	25.0
31	36.0	29.5	33.0	---	---	---	25.0	20.5	23.5	29.5	25.0	26.0
MONTH	37.0	27.5	33.5	33.5	22.5	29.0	28.0	17.5	24.0	29.5	19.5	24.5

GUADALUPE RIVER BASIN

227

08177360 COLETO CREEK RESERVOIR (CONDENSER NO. 1) NEAR FANNIN, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	27.0	25.0	26.5	16.5	16.5	16.5	22.0	20.5	21.5	---	---	---
2	27.5	25.0	27.0	17.0	16.0	16.5	22.5	21.0	21.5	---	---	---
3	27.5	23.5	25.5	18.0	16.5	17.0	23.0	21.5	22.0	---	---	---
4	23.5	21.0	22.0	18.0	15.0	17.0	25.0	22.5	23.5	---	---	---
5	20.5	19.5	20.0	14.5	13.0	13.5	23.0	22.0	22.5	---	---	---
6	19.5	17.5	18.5	13.5	12.5	13.0	22.5	21.5	22.0	---	---	---
7	17.5	17.0	17.5	13.5	12.0	13.0	25.0	21.5	22.5	---	---	---
8	18.0	17.0	17.5	15.0	12.5	13.5	25.0	22.5	23.5	---	---	---
9	19.0	17.5	18.0	15.5	13.0	14.0	24.0	21.0	22.5	---	---	---
10	19.0	17.0	18.5	18.5	14.5	16.0	21.0	18.5	19.5	34.0	26.0	29.0
11	20.0	19.0	19.5	17.0	15.5	16.0	19.0	17.5	18.5	34.5	31.0	33.0
12	22.0	18.0	20.0	18.0	16.0	17.0	18.5	17.5	18.0	32.5	32.0	32.0
13	24.0	20.0	22.5	19.5	17.0	18.0	17.5	17.0	17.0	34.0	32.0	33.0
14	25.0	22.0	24.0	20.5	17.5	19.0	17.5	17.0	17.0	34.5	32.0	33.0
15	26.0	24.0	25.0	21.0	19.5	20.0	20.0	17.0	18.5	34.5	34.0	34.0
16	25.0	21.0	24.0	20.5	19.5	20.0	22.5	19.0	20.5	34.5	34.0	34.0
17	24.5	22.5	24.5	20.5	19.5	20.0	21.5	20.5	21.0	34.5	32.0	33.0
18	21.5	15.0	16.0	22.5	20.0	21.5	23.5	21.0	22.5	35.0	32.0	33.5
19	15.0	15.0	15.0	22.0	21.5	21.5	23.0	22.5	22.5	36.5	31.0	35.0
20	17.0	15.0	16.0	22.5	21.0	22.0	25.0	22.5	23.5	36.0	30.5	34.0
21	17.0	16.0	16.5	22.0	17.0	19.5	26.0	23.5	24.5	36.5	35.0	36.0
22	17.0	16.0	16.5	18.0	16.5	17.5	25.5	23.5	24.5	36.5	35.5	36.0
23	17.0	15.5	16.0	21.0	17.0	18.5	25.0	24.0	24.5	37.0	35.0	36.0
24	16.0	15.5	15.5	18.5	16.5	17.5	25.0	23.5	24.5	36.5	29.5	35.0
25	17.0	15.5	16.0	19.5	17.5	18.5	25.0	24.0	24.5	36.5	35.0	36.0
26	18.0	16.5	17.0	20.5	19.0	19.5	26.0	24.5	25.0	36.0	35.0	35.5
27	19.5	17.5	18.5	20.5	20.5	20.5	26.0	24.5	25.0	36.5	35.5	36.0
28	18.0	17.0	17.5	23.0	20.5	21.0	25.5	24.5	25.0	37.0	33.0	35.5
29	---	---	---	23.5	20.5	21.5	29.0	24.5	26.0	37.0	33.5	36.0
30	---	---	---	22.5	21.0	21.5	---	---	---	37.0	33.0	35.5
31	---	---	---	---	---	---	---	---	---	36.5	33.0	35.5
MONTH	27.5	15.0	19.5	23.5	12.0	18.0	29.0	17.0	22.0	37.0	26.0	34.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	37.0	33.0	35.0	38.5	33.5	36.5	39.0	36.0	38.0	40.0	38.0	39.0
2	37.0	33.0	36.0	38.5	35.5	37.5	38.5	36.5	37.5	39.5	38.5	39.0
3	37.0	35.5	36.5	38.0	35.5	37.5	38.0	34.5	37.0	39.5	38.5	39.0
4	36.5	33.5	35.0	38.5	34.5	36.5	38.5	35.0	37.5	39.5	39.0	39.0
5	37.0	34.0	36.0	39.0	38.0	38.5	38.5	37.5	38.0	39.5	39.0	39.0
6	37.5	35.0	36.5	39.5	35.5	38.5	39.0	37.5	38.0	39.0	38.5	38.5
7	37.5	36.0	37.0	40.0	38.0	39.0	39.0	37.5	38.0	38.5	38.0	38.5
8	36.5	33.5	35.0	39.5	36.0	38.5	38.5	36.5	37.5	39.0	37.5	38.0
9	36.0	33.5	35.5	39.5	34.5	38.0	37.0	36.0	36.5	---	---	---
10	36.5	34.5	35.5	40.0	36.0	38.5	37.0	35.0	36.5	---	---	---
11	37.0	34.0	36.0	39.5	35.0	37.5	37.5	35.0	37.0	---	---	---
12	37.0	34.0	35.5	39.5	34.5	37.5	38.0	34.5	37.0	39.0	38.0	38.5
13	36.5	34.5	35.5	39.5	33.5	37.5	37.5	34.5	37.0	38.5	38.0	38.5
14	36.0	31.5	34.5	39.5	38.0	38.5	38.0	36.0	37.0	37.5	34.5	36.0
15	35.5	31.5	34.0	39.5	38.0	38.5	38.0	36.5	37.5	35.5	32.0	34.5
16	36.5	31.0	34.5	39.5	38.0	38.5	38.0	37.0	37.5	36.0	32.5	34.5
17	36.5	32.5	35.5	39.5	38.5	39.0	38.0	37.0	37.5	36.0	32.5	35.0
18	37.5	33.5	36.0	39.5	38.0	39.0	38.5	37.0	37.5	36.0	34.5	35.5
19	38.0	33.5	36.5	39.5	38.5	39.0	38.5	37.5	38.0	36.0	33.5	35.5
20	38.0	34.0	36.5	39.5	36.0	38.0	38.5	37.5	38.0	36.0	35.0	35.5
21	38.0	33.5	36.5	39.5	34.5	38.5	38.5	37.5	38.0	35.5	35.0	35.5
22	37.0	33.5	36.5	39.5	35.5	38.5	39.0	37.5	38.0	35.5	35.0	35.5
23	36.5	33.0	36.0	39.5	34.5	37.5	39.0	37.5	38.5	35.0	31.5	34.0
24	34.5	31.5	32.5	39.0	35.0	38.0	39.0	38.0	38.5	32.5	29.0	31.0
25	33.0	31.0	32.0	37.5	33.5	36.0	39.0	38.0	38.5	32.5	28.5	31.0
26	35.0	31.0	33.5	37.5	32.0	35.5	39.0	38.0	38.5	32.0	28.5	31.0
27	35.5	31.5	34.0	36.5	29.5	33.0	39.0	38.0	38.5	32.5	29.5	31.5
28	37.5	33.0	35.5	30.5	29.0	30.0	39.5	38.5	39.0	33.0	30.5	32.5
29	37.5	34.5	37.0	31.0	30.0	30.5	39.5	38.0	39.0	33.5	28.5	31.5
30	37.5	35.0	37.0	31.5	30.0	30.5	39.0	38.5	39.0	33.5	29.0	32.0
31	---	---	---	39.5	31.0	36.0	39.5	38.5	39.0	---	---	---
MONTH	38.0	31.0	35.5	40.0	29.0	37.0	39.5	34.5	38.0	40.0	28.5	35.5

08177400 COLETO CREEK RESERVOIR NEAR VICTORIA, TX

LOCATION.--Lat 28°43'51", long 97°09'53", Victoria County, Hydrologic Unit 12100204, on right bank 175 ft upstream from right end of spillway of dam on Coletto Creek, 1.6 mi upstream from U.S. Highway 59, 11.6 mi west of Victoria, and 12.8 mi upstream from mouth.

DRAINAGE AREA.--494 mi².

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

GAGE.--Water-stage recorder. Datum of gage is 80.00 ft above National Geodetic Vertical Datum of 1929.

Supplementary gage (Turkey Creek Arm).--Water-stage recorder 2.7 mi upstream at datum 90.00 ft above National Geodetic Vertical Datum of 1929. Coletto Creek Reservoir (Turkey Creek Arm) near Schroeder (station 08177240) is locally known as Dike No. 2.

Supplementary gage (Sulphur Creek Arm).--Water-stage recorder 2.8 mi upstream at datum 90.00 ft above National Geodetic Vertical Datum of 1929. Coletto Creek Reservoir (Sulphur Creek Arm) near Fannin (station 08177380) is known locally as Dike No. 1.

REMARKS.--The reservoir system consists of the main reservoir (station 08177400), Turkey Creek Arm (station 08177240), and Sulphur Creek Arm (station 08177380). Figures shown below are the combined contents of the three stations. Cooling water is diverted from the main reservoir through a Central Power and Light coal-fired generating plant, through a canal to the Sulphur Creek Arm, and then through a canal to Turkey Creek Arm where it is released back into the main reservoir. The system was built for the Guadalupe-Blanco River Authority, and storage began in February 1980.

The main reservoir is formed by a compacted earthfill dam 20,800 ft long, including a 2,000-foot uncontrolled spillway and a 403-foot wide concrete outlet structure with seven 40- x 28-foot spillway gates. Low-flow releases are made through the dam by a controlled 8-inch pipe. Turkey Creek Arm is formed by a compacted earthfill dam 2,250 ft long, including a 186-foot wide concrete outlet structure with two 40- x 11-foot spillway gates. Sulphur Creek Arm is formed by a compacted earthfill dam 1,030 ft long, including a 186-foot wide concrete outlet structure with two 40- by 11-foot spillway gates. Data regarding the dams and reservoirs are given in the following table:

	Coletto Creek Reservoir		Turkey Creek Arm		Sulphur Creek Arm	
	Gage height (feet)	Contents (acre-feet)	Gage height (feet)	Contents (acre-feet)	Gage height (feet)	Contents (acre-feet)
Top of dam.....	39.0	140,200	17.0	7,330	17.0	2,550
Spillway.....	27.3	63,560	--	--	--	--
Top of spillway gates...	19.0	34,000	12.9	4,950	12.9	1,640
Crest of spillway.....	-9.0	954	1.89	1,400	1.91	306

COOPERATION.--Elevations and capacity tables were provided by Forrest and Cotton Engineers, Consulting Engineers for the Guadalupe-Blanco River Authority.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily contents, 40,330 acre-ft Feb. 25, 1982; minimum since reservoir was first filled in May 1980, 29,580 acre-ft Oct. 25, 27, 28, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum daily contents, 33,930 acre-ft June 26, 27; minimum, 29,580 acre-ft Oct. 25, 27, 28.

RESERVOIR STORAGE (ACRE-Feet), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30090	29920	29680	30830	33180	33230	32820	33490	33220	33840	32920	31590
2	30020	29940	29680	30890	33260	33230	32810	33510	33190	33780	32820	31530
3	29990	29920	29690	30920	33420	33270	32810	33540	33120	33780	32770	31510
4	29910	29910	29710	30920	33400	33260	32810	33570	33060	33770	32750	31470
5	29880	29840	29730	30950	33420	33090	32660	33570	33100	33750	32680	31430
6	29810	29840	29730	31030	33330	33050	32640	33570	33040	33680	32660	31500
7	29790	29840	29780	31050	33270	33020	32590	33550	33410	33670	32600	31530
8	29770	29880	30440	30990	33240	33000	32600	33550	33230	33610	32640	31500
9	29790	29880	30410	30990	33290	33000	32480	33550	33190	33570	32580	31450
10	29730	29930	30470	30990	33300	32970	32420	33550	33150	33540	32520	31450
11	29700	29920	30440	31080	33410	32970	32340	33500	33100	33700	32470	31470
12	29690	29920	30460	31200	33490	32970	32340	33500	33060	33660	32440	31400
13	29640	29920	30470	31140	33630	32970	32390	33510	32990	33590	32380	31470
14	29610	29920	30520	31170	33690	32970	32360	33530	33590	33540	32340	31350
15	29640	29900	30510	31260	33770	32960	32360	33560	33490	33490	32320	31280
16	29640	29790	30470	31260	33760	32940	32340	33560	33490	33460	32280	31240
17	29630	29790	30490	31300	33800	32940	32390	33740	33430	33390	32260	31210
18	29600	29840	30490	31430	33760	32910	32340	33730	33430	33330	32210	31160
19	29630	29830	30520	31990	33530	32940	32390	33740	33430	33300	32170	31120
20	29600	29770	30570	32070	33480	33050	32360	33740	33390	33250	32110	31030
21	29600	29720	30630	32010	33420	32940	32340	33700	33330	33170	32070	31010
22	29590	29720	30660	32010	33390	32880	32280	33690	33300	33100	32020	30970
23	29620	29740	30710	32040	33330	32850	32220	33690	33440	33050	32000	30820
24	29610	29770	30710	32110	33300	32860	32220	33610	33790	32990	31930	30760
25	29580	29800	30710	32200	33300	32860	32180	33570	33900	33000	31900	30670
26	29610	29830	30760	32300	33320	32880	32180	33490	33930	33000	31850	30660
27	29580	29760	30790	32350	33310	32880	32330	33460	33930	32980	31810	30580
28	29580	29710	30730	32950	33260	33030	32360	33380	33900	32960	31740	30510
29	29850	29730	30730	33070	---	33000	33380	33360	33890	32930	31720	30510
30	29880	29710	30770	33100	---	32940	33450	33300	33870	32920	31690	30520
31	29930	---	30830	33120	---	32880	---	33240	---	32930	31630	---
MAX	30090	29940	30830	33120	33800	33270	33450	33740	33930	33840	32920	31590
MIN	29580	29710	29680	30830	33180	32850	32180	33240	32990	32920	31630	30510
(Φ)	-160	-220	+1120	+2290	+140	-380	+570	-210	+630	-940	-1300	-1110

CAL YR 1988 MAX 40150 MIN 29580 (Φ) -9400
WTR YR 1989 MAX 33930 MIN 29580 (Φ) +430

(Φ) Change in contents, in acre-feet.

08177410 COLETO CREEK RESERVOIR (OUTFLOW) NEAR VICTORIA, TX

LOCATION.--Lat 28°43'54", long 97°09'50", Victoria County, Hydrologic Unit 12100204, on top of Coleta Creek Dam at Pier No. 4, 1.6 mi upstream from U.S. Highway 59, and 11.6 mi west of Victoria.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: May 1980 to current year.

INSTRUMENTATION: Beginning May 1980, water temperature is recorded continuously at this station.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 32.5°C July 16, 1983; minimum, 7.5°C Dec. 31, 1983, Jan. 1, 2, 1984.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 28.5°C Sept. 14, 15; minimum, 11.5°C Feb. 12-14.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	---	---	---	25.0	24.5	25.0	20.0	20.0	20.0	17.5	17.5	17.5
2	---	---	---	---	---	---	20.0	19.5	20.0	17.5	17.5	17.5
3	---	---	---	---	---	---	19.5	19.0	19.5	17.5	17.0	17.5
4	---	---	---	---	---	---	19.0	19.0	19.0	17.0	17.0	17.0
5	---	---	---	---	---	---	19.0	18.5	18.5	17.0	17.0	17.0
6	---	---	---	---	---	---	18.5	18.5	18.5	17.0	17.0	17.0
7	27.5	27.0	27.5	---	---	---	18.5	18.5	18.5	17.0	17.0	17.0
8	27.0	27.0	27.0	---	---	---	18.5	18.5	18.5	17.5	17.0	17.5
9	27.0	26.5	26.5	---	---	---	19.0	18.5	18.5	17.5	17.5	17.5
10	26.5	26.5	26.5	23.0	23.0	23.0	19.0	18.5	18.5	18.0	17.5	18.0
11	26.5	26.5	26.5	23.5	23.0	23.5	18.5	18.0	18.5	18.0	17.5	17.5
12	26.5	26.0	26.0	23.5	23.5	23.5	18.0	18.0	18.0	17.5	17.5	17.5
13	26.5	26.0	26.0	23.5	23.5	23.5	18.0	17.5	17.5	17.5	17.0	17.0
14	26.0	26.0	26.0	23.5	21.5	23.5	17.5	16.5	17.0	17.0	16.5	17.0
15	26.0	25.5	26.0	23.5	23.5	23.5	16.0	16.0	16.0	16.5	16.5	16.5
16	25.5	25.5	25.5	24.0	24.0	24.0	17.0	16.0	16.5	16.5	16.5	16.5
17	25.5	24.5	25.0	24.0	23.0	23.5	17.0	16.5	16.5	16.5	16.0	16.0
18	25.0	25.0	25.0	23.0	22.5	22.5	16.5	16.5	16.5	16.0	16.0	16.0
19	25.0	25.0	25.0	22.5	22.5	22.5	16.5	16.5	16.5	16.0	15.5	16.0
20	25.0	25.0	25.0	22.5	22.5	22.5	16.5	16.0	16.0	16.0	15.5	15.5
21	25.0	25.0	25.0	22.5	22.0	22.0	16.0	16.0	16.0	16.5	16.0	16.0
22	25.0	24.5	25.0	22.0	21.5	21.5	16.0	16.0	16.0	16.5	16.0	16.0
23	25.0	24.5	25.0	21.5	21.0	21.0	16.5	16.0	16.0	16.0	16.0	16.0
24	25.0	25.0	25.0	21.0	20.5	21.0	16.5	16.5	16.5	16.0	15.0	15.5
25	25.0	25.0	25.0	20.5	20.0	20.0	16.5	16.5	16.5	15.0	15.0	15.0
26	25.0	25.0	25.0	20.0	20.0	20.0	16.5	16.5	16.5	15.0	15.0	15.0
27	25.0	24.5	25.0	20.0	20.0	20.0	17.0	16.5	16.5	15.0	15.0	15.0
28	25.0	25.0	25.0	20.5	20.0	20.0	18.0	17.0	17.5	15.5	15.0	15.5
29	25.0	24.5	25.0	20.5	20.0	20.5	18.0	17.5	18.0	15.5	15.5	15.5
30	25.0	24.5	24.5	20.5	20.0	20.0	17.5	17.5	17.5	15.5	15.5	15.5
31	25.0	24.5	24.5	---	---	---	17.5	17.5	17.5	15.5	15.5	15.5
MONTH	27.5	24.5	25.5	25.0	20.0	22.0	20.0	16.0	17.5	18.0	15.0	16.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	16.0	15.5	15.5	16.0	16.0	16.0	17.5	17.5	17.5	18.5	18.5	18.5
2	16.0	15.5	16.0	16.0	16.0	16.0	18.5	17.5	18.0	18.5	18.5	18.5
3	17.0	16.0	16.5	16.0	16.0	16.0	18.5	18.0	18.0	18.5	18.5	18.5
4	17.0	16.5	17.0	16.0	16.0	16.0	19.0	18.0	18.5	18.5	18.5	18.5
5	16.5	15.5	16.0	16.0	15.0	15.5	19.0	18.5	19.0	19.0	18.5	18.5
6	15.5	14.5	15.0	15.0	14.5	14.5	20.5	19.0	19.5	19.0	19.0	19.0
7	14.5	13.5	14.0	14.5	14.0	14.0	20.5	20.0	20.0	19.0	19.0	19.0
8	13.5	13.0	13.5	14.0	14.0	14.0	20.5	20.0	20.0	19.0	19.0	19.0
9	13.0	13.0	13.0	14.0	13.5	14.0	21.0	20.5	21.0	19.5	19.0	19.0
10	13.0	12.5	13.0	14.0	13.5	13.5	21.0	20.0	20.5	19.5	19.5	19.5
11	12.5	12.0	12.5	14.0	13.5	13.5	20.0	19.0	19.5	19.5	19.5	19.5
12	12.0	11.5	12.0	13.5	13.5	13.5	19.0	19.0	19.0	19.5	19.5	19.5
13	11.5	11.5	11.5	13.5	13.5	13.5	19.0	18.0	18.5	19.5	19.5	19.5
14	12.0	11.5	12.0	13.5	13.5	13.5	18.5	18.0	18.0	20.0	19.5	20.0
15	12.0	12.0	12.0	14.0	13.5	14.0	18.0	18.0	18.0	20.0	20.0	20.0
16	12.5	12.0	12.5	14.0	14.0	14.0	18.0	18.0	18.0	20.0	20.0	20.0
17	13.0	12.5	12.5	14.5	14.0	14.5	18.0	18.0	18.0	20.5	20.0	20.0
18	13.0	13.0	13.0	14.5	14.5	14.5	18.0	18.0	18.0	20.5	20.0	20.0
19	13.5	13.0	13.0	15.0	14.5	14.5	18.0	18.0	18.0	20.5	20.0	20.5
20	13.5	13.5	13.5	15.0	15.0	15.0	18.0	18.0	18.0	20.5	20.0	20.5
21	13.5	13.5	13.5	16.0	15.0	15.5	18.0	18.0	18.0	20.5	20.5	20.5
22	14.0	13.5	14.0	16.5	16.0	16.5	18.0	18.0	18.0	20.5	20.5	20.5
23	14.5	14.0	14.0	16.5	16.5	16.5	18.0	18.0	18.0	20.5	20.5	20.5
24	14.5	14.5	14.5	16.5	16.5	16.5	18.0	18.0	18.0	21.0	20.5	20.5
25	15.0	14.5	15.0	16.5	16.5	16.5	18.0	18.0	18.0	21.0	20.5	21.0
26	15.5	15.0	15.5	16.5	16.5	16.5	18.0	18.0	18.0	21.5	21.0	21.0
27	16.0	15.5	15.5	17.0	16.5	16.5	18.0	18.0	18.0	21.5	21.0	21.5
28	16.0	16.0	16.0	17.0	16.5	17.0	18.0	18.0	18.0	21.5	21.5	21.5
29	---	---	---	17.0	17.0	17.0	18.5	18.0	18.0	22.0	21.5	21.5
30	---	---	---	17.0	17.0	17.0	18.5	18.5	18.5	22.0	21.5	22.0
31	---	---	---	17.5	17.0	17.5	---	---	---	22.0	21.5	22.0
MONTH	17.0	11.5	14.0	17.5	13.5	15.5	21.0	17.5	18.5	22.0	18.5	20.0

GUADALUPE RIVER BASIN

08177410 COLETO CREEK RESERVOIR (OUTFLOW) NEAR VICTORIA, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	22.0	21.5	22.0	27.0	26.5	27.0	26.5	26.0	26.5	27.5	27.5	27.5
2	22.0	22.0	22.0	26.5	26.5	26.5	26.5	26.0	26.5	27.5	27.5	27.5
3	22.0	22.0	22.0	26.5	26.5	26.5	26.5	26.0	26.5	27.5	27.5	27.5
4	22.5	22.0	22.5	26.5	26.5	26.5	26.5	26.5	26.5	28.0	27.5	27.5
5	22.5	22.5	22.5	26.5	26.5	26.5	27.0	26.5	26.5	28.0	28.0	28.0
6	22.5	22.5	22.5	26.5	26.5	26.5	27.0	27.0	27.0	28.0	28.0	28.0
7	23.0	22.5	22.5	26.5	26.0	26.0	27.5	27.0	27.0	28.0	27.5	28.0
8	23.5	23.0	23.5	26.0	26.0	26.0	27.5	27.0	27.5	28.0	28.0	28.0
9	23.5	23.5	23.5	26.0	26.0	26.0	27.5	27.5	27.5	28.0	28.0	28.0
10	23.5	23.5	23.5	26.0	26.0	26.0	27.5	27.5	27.5	28.0	28.0	28.0
11	24.0	23.5	23.5	26.5	26.0	26.5	27.5	27.5	27.5	28.0	28.0	28.0
12	24.5	24.0	24.0	26.5	26.0	26.5	27.5	27.5	27.5	28.0	28.0	28.0
13	25.0	24.5	24.5	26.5	26.0	26.0	27.5	27.5	27.5	28.0	28.0	28.0
14	26.5	24.5	25.5	26.0	26.0	26.0	27.5	27.5	27.5	28.5	28.0	28.5
15	26.5	26.5	26.5	26.0	26.0	26.0	27.5	27.5	27.5	28.5	28.0	28.5
16	26.5	26.5	26.5	26.0	26.0	26.0	27.5	27.5	27.5	28.0	28.0	28.0
17	26.5	26.5	26.5	26.0	26.0	26.0	27.5	27.5	27.5	28.0	27.5	27.5
18	26.5	26.5	26.5	26.0	26.0	26.0	27.5	27.5	27.5	27.5	27.0	27.5
19	26.5	26.5	26.5	26.5	26.0	26.0	27.5	27.5	27.5	27.0	27.0	27.0
20	26.5	26.0	26.5	26.5	26.0	26.5	27.5	27.5	27.5	27.0	27.0	27.0
21	26.5	26.0	26.0	26.5	26.0	26.0	27.5	27.5	27.5	27.0	27.0	27.0
22	26.0	26.0	26.0	26.0	26.0	26.0	27.5	27.5	27.5	27.0	26.5	26.5
23	26.5	26.0	26.5	26.0	26.0	26.0	27.5	27.5	27.5	27.0	26.5	27.0
24	26.5	26.5	26.5	26.0	26.0	26.0	27.5	27.5	27.5	27.0	26.0	26.5
25	26.5	26.0	26.5	26.5	26.0	26.0	27.5	27.5	27.5	26.0	26.0	26.0
26	28.0	26.5	27.5	26.5	26.0	26.0	27.5	27.5	27.5	26.0	25.5	25.5
27	27.5	27.5	27.5	26.5	26.0	26.0	27.5	27.5	27.5	25.5	25.0	25.5
28	27.5	27.0	27.5	26.5	26.0	26.0	27.5	27.5	27.5	25.0	25.0	25.0
29	27.5	27.0	27.0	26.0	26.0	26.0	27.5	27.5	27.5	25.0	24.5	25.0
30	27.0	27.0	27.0	26.0	26.0	26.0	27.5	27.5	27.5	24.5	24.5	24.5
31	---	---	---	26.5	26.0	26.5	27.5	27.5	27.5	---	---	---
MONTH	28.0	21.5	25.0	27.0	26.0	26.5	27.5	26.0	27.5	28.5	24.5	27.0

GUADALUPE RIVER BASIN

231

08177500 COLETO CREEK NEAR VICTORIA, TX

LOCATION.--Lat 28°43'51", long 97°08'18", Victoria County, Hydrologic Unit 12100204, on left bank at downstream side of westbound bridge on U.S. Highway 59, 1.6 mi downstream from Coletto Creek dam, 9.0 mi southwest of Victoria, and 11.2 mi upstream from mouth.

DRAINAGE AREA.--514 mi².

PERIOD OF RECORD.--June 1939 to September 1954, June 1978 to current year.

REVISED RECORDS.--WSP 1562: 1939-40. WSP 1732: 1941.

GAGE.--Water-stage recorder. Datum of gage is 44.18 ft above National Geodetic Vertical Datum of 1929. Prior to Jan. 17, 1955, at datum 5.0 ft higher.

REMARKS.--No estimated daily discharges. Records good except those below 4 ft³/s, which are fair. Since Feb. 21, 1980, flow is completely regulated by Coletto Creek Reservoir, 1.6 mi upstream. Diversions from the Guadalupe River basin to the Coletto Creek basin upstream from Coletto Creek Reservoir began Mar. 6, 1980 (see station 08176990). There are no other large diversions above station. Gage-height telemeter at station.

AVERAGE DISCHARGE.--16 years (water years 1940-54, 1979) prior to regulation by Coletto Creek Reservoir, 92.7 ft³/s (67,160 acre-ft/yr); 9 years (water years 1981-89) regulated, 81.7 ft³/s (59,190 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 89,000 ft³/s Oct. 16, 1946 (gage height, 36.64 ft, present datum, from floodmark), on basis of slope-area measurement of peak flow; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge since at least 1875, 236,000 ft³/s Sept. 22, 1967 (gage height, 42.0 ft, from floodmark), present site and datum, on basis of slope-area measurement of peak flow. Flood of Apr. 20, 1976, reached a stage of 37.85 ft, at site 0.2 mi upstream at present datum. Flood of July 1, 1936, reached a stage of 32.2 ft, present site and datum, from information by railroad company.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 37 ft³/s Apr. 30 at 0600 hours (gage height, 4.23 ft); minimum daily, 0.88 ft³/s Sept. 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.9	5.0	2.1	2.2	3.2	4.0	2.0	10	1.9	1.8	1.6	.93
2	2.1	4.4	2.1	2.2	2.4	3.6	2.1	5.8	1.7	1.8	1.6	.88
3	1.8	4.1	2.1	2.2	2.4	3.2	2.2	4.2	1.7	1.8	1.4	1.0
4	1.7	3.8	2.1	2.1	2.4	2.6	2.1	3.6	1.8	1.8	1.3	1.0
5	1.7	3.7	2.1	2.1	2.5	2.8	2.0	3.0	1.8	1.9	1.3	1.1
6	1.6	3.5	2.1	2.1	2.7	2.7	1.9	2.9	2.7	1.9	1.2	1.9
7	1.6	3.7	2.1	2.1	2.7	2.2	1.9	2.8	2.4	1.8	1.0	3.2
8	1.6	3.8	5.0	1.9	2.7	2.2	2.0	2.7	4.7	1.8	1.0	4.0
9	1.6	3.9	5.2	1.6	2.7	2.2	2.1	2.6	2.9	1.7	1.1	2.9
10	2.5	3.9	3.5	1.8	2.6	2.2	2.2	2.2	1.9	1.5	1.0	2.2
11	3.6	3.9	2.9	2.0	2.4	2.3	2.9	2.2	1.2	3.7	1.0	2.0
12	2.7	3.8	2.5	2.6	2.4	2.2	2.9	2.2	1.2	3.7	.95	1.7
13	2.2	3.9	2.3	2.9	2.4	2.2	3.3	2.3	1.6	2.7	.97	1.5
14	2.0	4.1	2.2	2.7	2.4	2.2	3.9	2.5	6.0	2.0	.98	1.5
15	1.9	4.2	2.2	2.3	2.4	2.2	3.9	2.6	4.5	1.8	.98	1.5
16	2.0	4.0	2.0	2.2	2.0	2.8	3.6	2.7	2.4	1.7	.98	1.4
17	1.9	3.9	1.9	2.2	1.9	5.6	3.5	3.2	1.7	1.7	.99	1.3
18	2.0	5.0	2.0	2.7	1.9	3.8	3.5	4.5	1.4	1.8	1.0	1.4
19	2.1	4.8	2.1	5.6	1.9	3.5	3.6	2.9	1.3	1.8	1.1	1.3
20	2.2	4.4	2.1	7.3	2.0	3.6	3.7	2.4	1.2	1.8	1.1	1.3
21	2.3	3.8	2.1	4.2	1.9	3.4	3.7	2.2	1.2	1.7	.98	1.4
22	2.5	3.1	2.2	3.0	1.6	3.7	3.5	2.1	1.2	1.6	.93	1.3
23	2.6	3.1	2.2	2.9	1.6	3.2	3.4	2.1	1.4	1.6	.90	1.3
24	2.5	3.1	2.2	2.6	1.8	3.0	3.3	2.1	5.0	1.7	.90	1.2
25	2.5	3.0	2.2	2.7	2.1	2.7	3.3	2.1	5.9	2.0	.93	1.2
26	2.7	2.7	2.2	2.7	2.2	2.6	3.3	2.1	4.7	2.2	.94	1.2
27	2.9	2.5	2.2	2.6	7.1	2.3	3.3	2.0	3.3	2.2	.99	1.2
28	3.0	2.2	2.0	2.6	6.6	4.5	3.4	2.0	2.6	2.2	.95	1.3
29	5.2	2.3	1.9	3.7	---	4.6	4.0	2.0	2.0	1.9	.94	1.3
30	5.1	2.3	2.2	8.2	---	3.1	26	2.1	1.8	1.7	.96	1.3
31	5.5	---	2.2	5.3	---	2.2	---	2.1	---	1.7	1.0	---
TOTAL	78.5	109.9	74.2	93.3	72.9	93.4	112.5	90.2	75.1	61.0	32.97	46.71
MEAN	2.53	3.66	2.39	3.01	2.60	3.01	3.75	2.91	2.50	1.97	1.06	1.56
MAX	5.5	5.0	5.2	8.2	7.1	5.6	26	10	6.0	3.7	1.6	4.0
MIN	1.6	2.2	1.9	1.6	1.6	2.2	1.9	2.0	1.2	1.5	.90	.88
AC-FT	156	218	147	185	145	185	223	179	149	121	65	93
CAL YR 1988	TOTAL	1536.8	MEAN	4.20	MAS	11	MIN	1.2	AC-FT	3050		
WTR YR 1989	TOTAL	940.68	MEAN	2.58	MAX	26	MIN	.88	AC-FT	1870		

GUADALUPE RIVER BASIN

08177700 OLMOS CREEK AT DRESDEN DRIVE, SAN ANTONIO, TX
(Flood-hydrograph partial-record station)

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

DRAINAGE AREA.--21.2 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1968 to September 1981 (as a continuous-record station), October 1982 to current year.

GAGE.--Water-stage recorder. Datum of gage is 726.10 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records poor. Recording rain gage at station, with one additional recording rain gage in the watershed. Rain gage and gage-height telemeters at station.

AVERAGE DISCHARGE.--13 years (water years 1968-81), 4.34 ft³/s (2.78 in/yr), 3,140 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,000 ft³/s June 4, 1986 (gage height, 9.85 ft); maximum gage height, 14.82 ft (from floodmark) Sept. 13, 1978; 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, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 700 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Apr. 19	0830	1,120	5.30	June 14	0130	*2,550	*6.64
June 11	0315	1,550	5.75				

Minimum discharge, no flow most of year.

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 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD 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, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	
MAR 28...	0915	25	169	7.40	18.0	80	63	8.8	96	6.8	11000	
APR 19...	1150	148	124	7.90	19.5	60	100	8.3	93	7.1	170000	
AUG 08...	0925	391	122	7.40	23.5	110	220	7.9	96	7.4	3400	
08...	0945	152	98	7.40	23.5	110	280	7.9	96	6.1	4200	
08...	1016	71	103	7.30	23.5	110	170	7.9	96	6.4	10000	
DATE	TIME	STREP- TOCOCCI FECAL KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CAC03	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
MAR 28...	54000	64	7	23	1.6	6.4	0.4	3.7	57	19	7.1	
APR 19...	K230000	53	1	19	1.4	3.2	0.2	3.3	52	7.5	3.2	
AUG 08...	K31000	39	5	14	0.99	3.8	0.3	2.1	34	7.0	3.7	
08...	K27000	38	2	14	0.85	2.8	0.2	2.1	37	6.0	3.2	
08...	K26000	41	6	15	0.84	2.8	0.2	2.1	35	9.8	3.2	
DATE	TIME	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L)	RESIDUE 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)
MAR 28...	0.20	4.8	100	104	26	0.760	0.040	0.800	0.200	0.70	0.90	
APR 19...	0.10	4.4	73	<1	<1	0.550	0.050	0.600	0.180	0.72	0.90	
AUG 08...	0.20	2.6	55	454	31	0.550	0.050	0.600	0.140	0.86	1.0	
08...	0.20	2.8	54	3	3	0.350	0.050	0.400	0.070	0.53	0.60	
08...	0.20	3.1	58	<1	<1	0.360	0.040	0.400	0.070	0.53	0.60	

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

[illegible]

08177800 OLMOS RESERVOIR AT SAN ANTONIO, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: April to September 1989. Sediment Analyses: April to September 1989.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

[illegible]

GUADALUPE RIVER BASIN

08177820 SAN ANTONIO RIVER AT HILDEBRAND AVENUE, SAN ANTONIO, TX
(Crest-stage partial-record station)

LOCATION.--Lat 29°27'56", long 98°28'01", Bexar County, Hydrologic Unit 12100301, at downstream side of bridge on Hildebrand Avenue, 0.8 mi downstream from Olmos Dam in San Antonio.

DRAINAGE AREA.--34.8 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February 1980 to current year. Prior to October 1988, published as Olmos Creek at Hildebrand Street, San Antonio.

GAGE.--Water-stage recorder. Datum of gage is 664.75 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Discharge records poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,210 ft³/s June 4, 1986 (gage height, 11.31 ft); no flow most of time.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 659 ft³/s June 14 at 0430 hours (gage height, 6.09 ft); no flow most of time.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: April to September 1989. Sediment Analyses: April to September 1989.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD 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, BIO-CHEM-ICAL, 5 DAY (MG/L)	HARD-NESS TOTAL (MG/L AS CaCO3)	
APR 04...	1300	2.9	494	7.40	25.0	2	1.2	7.8	97	1.2	220	
25...	1020	2.7	487	7.40	24.0	--	--	7.0	85	--	--	
JUN 27...	1200	2.6	480	7.30	25.0	5	2.6	7.8	96	0.6	250	
JUL 25...	1115	2.5	446	7.30	25.0	--	--	6.5	80	--	--	
AUG 29...	1130	1.9	475	7.30	24.5	<1	0.60	7.4	91	1.6	230	
DATE		CALCIUM DIS-SOLVED (MG/L AS Ca)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS Na)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT WH TOT FET FIELD (MG/L AS CaCO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)
APR 04...	65	15	8.8	0.3	1.3	204	21	16	0.20	11	269	
25...	--	--	--	--	--	--	--	--	--	--	--	
JUN 27...	72	16	9.8	0.3	1.7	191	21	17	0.20	13	273	
JUL 25...	--	--	--	--	--	--	--	--	--	--	--	
AUG 29...	66	15	9.2	0.3	1.1	196	16	15	0.20	12	260	
DATE		RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	PHOS- PHOROUS ORTHO, DIS-SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
APR 04...	8	<1	1.79	0.005	2.50	1.80	0.008	<0.20	0.020	0.011	0.03	
25...	--	--	--	--	--	--	--	--	--	--	--	
JUN 27...	9	<1	1.70	0.005	1.80	1.70	0.024	0.30	<0.010	<0.001	--	
JUL 25...	--	--	--	--	--	--	--	--	--	--	--	
AUG 29...	<1	<1	1.80	0.002	1.70	1.80	0.008	<0.20	<0.010	0.008	0.02	
DATE		CARBON, ORGANIC TOTAL (MG/L AS C)	CYANIDE TOTAL (MG/L AS CN)	ALUM-INUM, TOTAL RECOV-ERABLE (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC TOTAL IN BOT-TOM MA-TERIAL (UG/G AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	BARIUM, RECOV. FM BOT-TOM MA-TERIAL (UG/G AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CADMIUM RECOV. FM BOT-TOM MA-TERIAL (UG/G AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	CHRO-MIUM, RECOV. FM BOT-TOM MA-TERIAL (UG/G)
APR 04...	0.8	<0.010	70	<1	3	100	40	1	2	1	7	
25...	--	--	--	--	--	--	--	--	--	--	--	
JUN 27...	0.6	<0.010	150	1	3	100	20	<1	3	2	8	
JUL 25...	--	--	--	--	--	--	--	--	--	--	--	
AUG 29...	0.6	<0.010	140	<1	3	<100	<100	<1	2	1	10	

GUADALUPE RIVER BASIN

237

08177820 SAN ANTONIO RIVER AT HILDEBRAND AVENUE, SAN ANTONIO, TX--Continued
(Crest-stage partial-record station)

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS PB)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	MERCURY RECOV. FM BOT- TOM MA- TERIAL (UG/G AS HG)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	SELE- NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)
APR 04...	2	7	70	<5	50 ₁	<0.10	0.04	4	<1	<1	10
25...	--	--	--	--	--	--	--	--	--	--	--
JUN 27...	2	7	120	2	40	0.10	0.03	<1	<1	<1	10
JUL 25...	--	--	--	--	--	--	--	--	--	--	--
AUG 29...	5	9	80	3	70	0.10	0.06	3	<1	<1	<10

GUADALUPE RIVER BASIN

08177860 SAN ANTONIO RIVER AT WOODLAWN AVENUE, SAN ANTONIO, TX

WATER-QUALITY RECORDS

PERIOD OF RECORD,--Chemical and biochemical analyses: April to September 1989. Sediment Analyses: April to September 1989.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD 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, BIO-CHEM-ICAL, 5 DAY (MG/L)	HARD-NESS TOTAL (MG/L AS CaCO3)	CALCIUM DIS-SOLVED (MG/L AS CA)
APR 07...	1400	10	500	7.90	23.5	3	3.0	8.0	96	0.9	240	68
24...	1215	9.7	502	7.60	24.0	--	--	6.6	80	--	--	--
JUN 26...	1230	6.4	492	7.50	25.0	5	3.3	6.5	80	0.9	230	69
JUL 24...	1145	8.1	485	7.50	26.0	--	--	6.8	85	--	--	--
AUG 28...	1400	7.3	485	7.60	27.0	<1	2.6	6.5	84	1.9	230	69
DATE	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT WH TOT FET FIELD (MG/L AS CaCO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L)	
APR 07...	16	9.0	0.3	1.7	208	--	16	0.20	12	--	3	
24...	--	--	--	--	--	--	--	--	--	--	--	
JUN 26...	15	9.0	0.3	1.1	216	17	16	0.20	12	276	3	
JUL 24...	--	--	--	--	--	--	--	--	--	--	--	
AUG 28...	15	10	0.3	2.1	211	20	15	0.20	12	277	6	
DATE	RESIDUE VOLA-TILE, SUS-PENDED (MG/L)	RESIDUE FIXED NON FILTER-ABLE (MG/L)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHOROUS TOTAL (MG/L AS P)	PHOS-PHOROUS ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)	
APR 07...	2	1	1.47	0.029	1.40	1.50	0.006	0.40	0.030	0.020	0.06	
24...	--	--	--	--	--	--	--	--	--	--	--	
JUN 26...	<1	--	1.67	0.035	1.60	1.70	0.062	0.50	0.033	0.023	0.07	
JUL 24...	--	--	--	--	--	--	--	--	--	--	--	
AUG 28...	5	1	1.57	0.027	1.50	1.60	0.057	0.40	0.030	0.016	0.05	
DATE	CARBON, ORGANIC TOTAL (MG/L AS C)	CYANIDE TOTAL (MG/L AS CN)	ALUM-INUM, TOTAL RECOV-ERABLE (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC TOTAL IN BOT-TOM MA-TERIAL (UG/G AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	BARIUM, RECOV. FM BOT-TOM MA-TERIAL (UG/G AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CADMIUM RECOV. FM BOT-TOM MA-TERIAL (UG/G AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	CHRO-MIUM, RECOV. FM BOT-TOM MA-TERIAL (UG/G)	
APR 07...	1.1	<0.010	100	<1	3	100	80	<1	2	2	10	
24...	--	--	--	--	--	--	--	--	--	--	--	
JUN 26...	1.7	<0.010	160	<1	3	100	70	<1	3	2	10	
JUL 24...	--	--	--	--	--	--	--	--	--	--	--	
AUG 28...	1.3	<0.010	180	<1	2	<100	100	<1	2	1	7	
DATE	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	COPPER, RECOV. FM BOT-TOM MA-TERIAL (UG/G AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	LEAD, RECOV. FM BOT-TOM MA-TERIAL (UG/G AS PB)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	MERCURY RECOV. FM BOT-TOM MA-TERIAL (UG/G AS HG)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	
APR 07...	2	30	120	<5	230	<0.10	0.05	<1	<1	<1	20	
24...	--	--	--	--	--	--	--	--	--	--	--	
JUN 26...	2	10	150	3	230	0.10	0.02	1	<1	<1	30	
JUL 24...	--	--	--	--	--	--	--	--	--	--	--	
AUG 28...	4	10	120	3	220	0.10	0.05	1	<1	<1	<10	

08178000 SAN ANTONIO RIVER AT SAN ANTONIO, TX

LOCATION.--Lat 29°24'34", long 98°29'41", Bexar County, Hydrologic Unit 12100301, on left bank 193 ft downstream from South Alamo Street Bridge in San Antonio, 2.1 mi upstream from San Pedro Creek, and 230.6 mi upstream from mouth.

DRAINAGE AREA.--41.8 mi². Flow of river comes from intermittent spring flow and from artesian wells; drainage area of streams not applicable.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--December 1895 to June 1906 (periodic discharge measurements only), January 1915 to November 1929, February 1939 to current year. Ground-water discharge into river is discussed by Petit and George, Texas Board of Water Engineers Bull. 5608, vol. 1 (1956, p. 45).

REVISED RECORDS.--WSP 1312: 1917. WSP 1923: Drainage area. WRD TX-72-1: 1971(m).

GAGE.--Water-stage recorder and concrete control. Datum of gage is 605.26 ft above National Geodetic Vertical Datum of 1929. Jan. 26, 1915, to Feb. 27, 1916, nonrecording gage at site 1.3 mi upstream at different datum. Feb. 28, 1916, to Apr. 7, 1920, nonrecording gage at site 1.1 mi upstream at different datum. Apr. 8, 1920, to Nov. 16, 1929, and Feb. 15, 1939, to Apr. 25, 1967, water-stage recorder in vicinity of South Alamo Street Bridge at 7.00-foot higher datum. Apr. 25, 1967, to May 13, 1969, water-stage recorder at site 307 ft downstream at same datum.

REMARKS.--Records good. Floodflow is regulated by Olmos flood-control reservoir (capacity, 14,240 acre-ft), about 8.5 mi upstream. Olmos Dam was completed in 1926 and rebuilt in 1980. Springs emerge intermittently from the Edwards and associated limestones along the Balcones Fault Zone upstream from station.

AVERAGE DISCHARGE.--64 years, 54.4 ft³/s (17.67 in/yr), 39,410 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,300 ft³/s Sept. 10, 1921 (gage height, 20.14 ft, from floodmark), at former site and datum, from rating curve extended above 2,000 ft³/s on basis of slope-area measurement of peak flow; no flow at times due to regulation.
Maximum stage since 1819, that of Sept. 10, 1921.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 5, 1819, equaled or exceeded that of Sept. 10, 1921.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,720 ft³/s June 14 at 0130 hours (gage height, 12.07 ft); minimum daily, 0.36 ft³/s July 26.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	21	20	e18	59	17	e18	16	6.5	13	13	12	14		
2	28	20	e18	7.7	18	e18	17	9.5	13	12	14	14		
3	21	20	e18	13	17	29	18	19	13	12	13	14		
4	21	20	e18	6.2	17	5.7	16	19	12	15	12	13		
5	20	20	e18	3.0	17	16	15	19	13	13	13	14		
6	20	20	e18	19	16	18	16	18	12	13	13	104		
7	19	20	e18	20	17	17	17	18	12	12	14	9.1		
8	19	20	e18	20	19	18	16	17	10	12	78	2.3		
9	43	20	e18	20	18	17	16	17	14	12	15	13		
10	26	20	e20	20	18	16	16	17	7.7	12	15	14		
11	20	20	e19	21	18	17	17	17	285	12	16	15		
12	12	19	19	22	18	16	18	20	7.8	13	14	14		
13	6.6	18	19	20	18	16	111	14	3.5	12	14	52		
14	22	18	19	20	18	15	37	17	529	13	14	10		
15	21	18	19	21	18	14	16	17	5.4	11	14	3.4		
16	22	18	19	20	26	15	16	17	3.8	11	14	14		
17	24	18	19	20	18	15	16	39	13	12	15	14		
18	36	18	19	19	18	14	18	18	13	11	15	15		
19	21	18	19	28	18	29	213	17	12	11	13	15		
20	21	e18	19	27	19	50	13	17	12	11	14	14		
21	20	e18	20	19	19	15	9.5	17	12	11	15	14		
22	20	e18	19	19	18	6.9	18	17	12	11	14	16		
23	30	e18	19	19	e18	5.8	18	17	12	12	15	13		
24	42	e18	19	23	e18	12	17	16	13	54	15	13		
25	19	e18	19	86	e18	13	17	16	19	22	16	13		
26	2.0	e18	19	55	e18	11	18	16	21	.36	14	13		
27	16	e18	19	13	e18	15	17	16	13	12	14	15		
28	13	e18	19	41	e18	101	28	15	13	12	13	15		
29	6.4	e18	20	243	---	8.8	55	13	13	12	14	17		
30	18	e18	19	14	---	5.2	62	12	13	11	14	14		
31	28	---	18	12	---	16	---	13	---	12	14	---		
TOTAL	658.0	563	582	949.9	508	583.4	897.5	521.0	1145.2	412.36	500	520.8		
MEAN	21.2	18.8	18.8	30.6	18.1	18.8	29.9	16.8	38.2	13.3	16.1	17.4		
MAX	43	20	20	243	26	101	213	39	529	54	78	104		
MIN	2.0	18	18	3.0	16	5.2	9.5	6.5	3.5	.36	12	2.3		
AC-FT	1310	1120	1150	1880	1010	1160	1780	1030	2270	818	992	1030		
CFSM	.51	.45	.45	.73	.43	.45	.72	.40	.91	.32	.39	.42		
IN.	.59	.50	.52	.85	.45	.52	.80	.46	1.02	.37	.44	.46		
CAL YR 1988	TOTAL	13079.43	MEAN	35.7	MAX	511	MIN	.11	AC-FT	25940	CFSM	.85	IN.	11.64
WTR YR 1989	TOTAL	7841.16	MEAN	21.5	MAX	529	MIN	.36	AC-FT	15550	CFSM	.51	IN.	6.98

e Estimated.

GUADALUPE RIVER BASIN

08178000 SAN ANTONIO RIVER AT SAN ANTONIO, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: June 1965 to current year. Sediment analyses: October 1968 to September 1973.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

[illegible]

241

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

[illegible]

GUADALUPE RIVER BASIN

08178565 SAN ANTONIO RIVER AT LOOP 410 AT SAN ANTONIO, TX

LOCATION.--Lat 29°19'18", long 98°26'57", Bexar County, Hydrologic Unit 12100301, on left bank, 0.2 mi downstream from Loop 410, at Camino Coahuilteca crossing.

PERIOD OF RECORD.--Chemical and biochemical analyses: March 1987 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: December 1986 to August 1988.

pH: December 1986 to August 1988.

WATER TEMPERATURE: December 1986 to August 1988.

DISSOLVED OXYGEN: December 1986 to August 1988.

INSTRUMENTATION.--From December 1986 to August 1988 specific conductance, pH, water temperature, and dissolved oxygen were recorded continuously at this station.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 980 microsiemens Apr. 22, 1987; minimum, 130 microsiemens Dec. 22, 1986.

pH: Maximum, 8.7 units on several days during 1988; minimum, 7.1 units June 12, 1987.

WATER TEMPERATURE: Maximum, 36.0°C Aug. 6, 9, 10, 1988; minimum, 11.5°C Dec. 15, 1987, Jan. 9, 1988.

DISSOLVED OXYGEN: Maximum, 15.3 mg/L May 25, 1988; minimum, 0.5 mg/L May 21, July 21, 1988.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	HARD-NESS TOTAL (MG/L AS CaCO3)	
NOV 01...	1410	24	544	8.20	23.5	11.0	130	6.5	210	
DEC 14...	1350	25	614	8.30	16.0	15.8	163	1.5	250	
MAR 02...	1130	28	628	8.60	15.5	15.5	158	2.4	250	
JUN 08...	1245	14	647	8.40	29.0	10.4	138	2.7	220	
JUL 25...	1245	26	542	7.90	28.5	8.0	104	6.6	200	
SEP 05...	1030	25	563	7.80	29.5	8.5	113	2.2	200	
DATE		CALCIUM DIS-SOLVED (MG/L AS Ca)	MAGNE-SIUM, DIS-SOLVED (MG/L AS Mg)	SODIUM, DIS-SOLVED (MG/L AS Na)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT WH TOT FET FIELD (MG/L AS CaCO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS Cl)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)
NOV 01...	60	14	33	1	3.7	158	59	40	0.30	
DEC 14...	71	18	33	0.9	2.5	202	54	45	0.30	
MAR 02...	68	19	36	1	2.7	193	58	51	0.40	
JUN 08...	59	17	45	1	3.3	164	61	62	0.30	
JUL 25...	60	13	28	0.9	4.1	156	52	36	0.30	
SEP 05...	51	18	37	1	3.2	161	50	51	0.30	
DATE		SILICA, DIS-SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (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-PHOROUS TOTAL (MG/L AS P)
NOV 01...	9.8	315	1.06	0.040	1.10	0.060	0.74	0.80	0.090	
DEC 14...	9.5	354	1.87	0.030	1.90	0.030	0.47	0.50	0.040	
MAR 02...	3.6	354	1.16	0.040	1.20	0.030	0.57	0.60	0.020	
JUN 08...	13	359	--	<0.010	<0.100	0.030	0.57	0.60	0.220	
JUL 25...	11	298	0.840	0.060	0.900	0.060	0.94	1.0	0.100	
SEP 05...	11	318	0.180	0.020	0.200	0.050	0.25	0.30	<0.010	

GUADALUPE RIVER BASIN

243

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

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

DRAINAGE AREA.--137 mi².

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder with concrete control. Datum of gage is 684.60 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records poor to Mar. 2 and fair thereafter. Some diversions upstream from gage for irrigation. Flow is affected at times by discharge from the flood-detention pools of eleven floodwater-retarding structures with a combined detention capacity of 26,770 acre-ft. These structures control runoff from 74.6 mi² above this station. Recording rain gage at station with three additional recording rain gages in the watershed.

AVERAGE DISCHARGE.--29 years, 9.49 ft³/s (6,880 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,900 ft³/s May 12, 1972 (gage height, 15.22 ft), from rating curve extended above 8,000 ft³/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 in October 1913. Flood in September 1921 reached a stage of 18 ft, and flood of Sept. 27, 1946, reached a stage of 18.2 ft, and are the second and third highest since 1899.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 250 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 14	0630	*433	*4.64	No other peak greater than base discharge.			
Minimum daily discharge, no flow for many days.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e.13	e.50	.00	.00	e.20	.00	.04	.29	.00	.00	.00	.00
2	e.13	e.30	.00	.00	e.10	.00	.01	.12	.00	.00	.00	.00
3	e.13	e.10	.00	.00	e.06	1.7	.00	.07	.00	.00	.00	.00
4	e.13	e.03	.00	.00	e.05	.86	.00	.02	.00	1.9	.00	.00
5	e.13	.00	.00	.00	e.03	.15	.00	.00	.00	2.0	.00	.00
6	e.13	.00	.00	.00	e.02	.15	.00	.00	.00	.20	.02	4.0
7	e.13	.00	.00	.00	.00	3.1	.00	.00	.00	.08	.00	.50
8	e.13	.00	e.20	.00	.00	3.5	.00	.00	.00	.03	.06	.01
9	e.35	.00	e.10	.00	.00	2.7	.00	.00	.00	.00	.06	.07
10	2.1	.00	e.20	.00	.00	.22	.00	.00	.00	.00	.00	.07
11	e.75	.00	e.10	.00	.00	.09	.00	.00	17	.00	.00	.06
12	.30	.00	.00	e.30	.00	.02	.08	.00	3.4	.00	.00	.00
13	e.10	.00	.00	e.20	.00	.00	11	.00	.38	.00	.00	4.3
14	e.03	.00	.00	e.10	.00	.02	11	.00	123	.00	.00	1.6
15	.00	.00	.00	.00	.00	.00	1.5	.00	10	.00	.00	.06
16	.00	.00	.00	.00	e.10	.00	.16	.00	.84	.00	.00	.0
17	.00	.00	.00	.00	e.20	.00	.12	.49	.29	.00	.00	.00
18	.00	.00	.00	.00	e.10	.00	.07	.38	.16	.00	.00	.00
19	.00	.00	.00	e.50	.00	.02	12	.04	.11	.00	.00	.00
20	.00	.00	.00	e.10	.00	.19	6.4	.00	.05	.00	.00	.00
21	.00	.00	.00	.00	.00	.08	.42	.00	.01	.00	.00	.00
22	.00	.00	.00	.00	.00	.28	.13	.00	.00	.43	.00	.00
23	.00	.00	.00	.00	.00	.23	.09	.00	.00	.05	.00	.00
24	.00	.00	.00	e.20	.00	.09	.06	.00	.00	6.4	.00	.00
25	.00	.00	.00	e8.0	.00	.03	.01	.00	.05	5.8	.00	.00
26	.00	.00	.00	e2.0	.00	.00	.00	.00	.08	.19	.00	.00
27	.00	.00	.00	e1.0	.00	.04	.03	.00	.02	.00	.00	.00
28	.00	.00	.00	e.60	.00	7.4	.04	.00	.00	.00	.00	.00
29	e.10	.00	.00	e15	---	.29	.25	.00	.00	.00	.00	.00
30	e.10	.00	.00	e2.0	---	.09	9.3	.00	.00	.00	.00	.00
31	.97	---	.00	e.50	---	.05	---	.00	---	.00	.00	---
TOTAL	5.84	0.93	0.60	30.50	0.86	21.30	52.71	1.41	155.39	17.08	0.14	10.67
MEAN	.19	.031	.019	.98	.031	.69	1.76	.045	5.18	.55	.005	.36
MAX	2.1	.50	.20	15	.20	7.4	12	.49	123	6.4	.06	4.3
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	12	1.8	1.2	60	1.7	42	105	2.8	308	34	.3	21
CAL YR 1988	TOTAL	1360.34	MEAN	3.72	MAX	659	MIN	.00	AC-FT	2700		
WTR YR 1989	TOTAL	297.43	MEAN	.81	MAX	123	MIN	.00	AC-FT	590		

e Estimated.

GUADALUPE RIVER BASIN

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

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

[illegible]

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

[illegible]

08178800 SALADO CREEK (LOWER STATION) AT SAN ANTONIO, TX

LOCATION.--Lat 29°21'25", long 98°24'45", Bexar County, Hydrologic Unit 12100301, on right bank at upstream side of bridge on Loop 13 at San Antonio, 1.4 mi east of Brooks Air Force Base, and 3.3 mi upstream from Rosillo Creek.

DRAINAGE AREA.--189 mi².

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 526.95 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Small diversions above station. Recording rain gages in watershed above station. Most of low flow comes from artesian wells and springs in the city of San Antonio. For statement regarding regulation by Soil Conservation Service floodwater-retarding structures, see station 08178700. Satellite telemeter at station.

AVERAGE DISCHARGE.--29 years, 42.4 ft³/s (3.05 in/yr), 30,720 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,100 ft³/s Sept. 27, 1973 (gage height, 28.83 ft); no flow Aug. 13, 1967.

Maximum stage since at least 1941, that of Sept. 27, 1973.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods of Sept. 27, 1946, and Aug. 15, 1960, were about equal magnitude. Flood of Aug. 15, 1960, reached a stage of 26.8 ft, from floodmarks.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 722 ft³/s June 14 at 1400 hours (gage height, 12.05 ft); minimum daily, 2.3 ft³/s July 23.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	15	24	12	20	18	14	13	24	5.3	5.3	3.3	2.9		
2	22	17	12	20	16	13	12	15	5.7	5.3	3.2	3.2		
3	16	16	12	20	13	14	12	13	5.9	4.9	2.9	2.4		
4	14	15	12	19	13	14	12	12	6.3	4.4	3.2	3.8		
5	14	13	13	19	13	14	12	12	6.7	5.7	3.7	3.2		
6	13	14	12	18	13	13	11	11	6.2	7.8	3.7	8.3		
7	13	13	13	18	13	13	11	12	6.3	5.1	4.6	23		
8	14	13	14	16	14	14	11	12	6.3	4.3	7.6	12		
9	14	13	15	16	14	15	11	10	4.2	4.1	12	7.7		
10	19	14	17	18	13	16	12	11	4.6	3.8	5.2	7.3		
11	14	13	19	16	13	16	12	10	174	3.6	4.5	7.1		
12	13	16	17	17	13	15	12	10	37	3.6	4.8	8.1		
13	12	14	16	21	14	15	14	11	11	3.0	5.2	26		
14	13	10	17	19	14	14	79	12	439	2.8	5.3	29		
15	13	11	16	18	13	14	32	12	71	3.1	5.5	14		
16	14	9.9	15	18	17	13	19	10	17	3.2	5.4	7.3		
17	14	9.9	17	17	14	13	15	13	10	3.6	4.3	6.6		
18	13	11	17	18	16	13	14	19	8.7	3.5	4.8	6.0		
19	13	11	17	18	14	14	68	10	7.5	3.7	4.8	6.4		
20	15	10	17	23	14	28	72	9.3	6.8	3.4	4.7	5.1		
21	14	12	19	19	13	16	23	9.0	6.5	2.7	4.4	7.6		
22	14	11	19	17	13	13	17	8.6	5.8	2.6	4.2	6.1		
23	15	11	18	16	14	12	15	7.9	5.6	2.3	4.6	5.6		
24	14	11	19	17	13	13	13	7.6	5.7	3.7	5.2	5.7		
25	15	13	19	50	13	13	13	7.2	6.8	18	7.3	5.2		
26	16	13	20	58	14	13	13	6.9	12	9.4	5.7	5.2		
27	15	12	20	55	14	14	12	7.0	7.3	5.5	5.6	5.1		
28	15	12	19	24	13	34	13	6.6	5.9	7.3	6.4	6.0		
29	16	13	18	75	---	36	23	7.7	5.9	4.8	6.8	5.5		
30	21	12	19	87	---	16	65	6.9	5.5	4.5	6.4	6.5		
31	26	---	20	25	---	13	---	5.5	---	4.3	4.8	---		
TOTAL	469	387.8	510	812	389	488	661	329.2	906.5	149.3	160.1	247.9		
MEAN	15.1	12.9	16.5	26.2	13.9	15.7	22.0	10.6	30.2	4.82	5.16	8.26		
MAX	26	24	20	87	18	36	79	24	439	18	12	29		
MIN	12	9.9	12	16	13	12	11	5.5	4.2	2.3	2.9	2.4		
AC-FT	930	769	1010	1610	772	968	1310	653	1800	296	318	492		
CFSM	.08	.07	.09	.14	.07	.08	.12	.06	.16	.03	.03	.04		
IN.	.09	.08	.10	.16	.08	.10	.13	.06	.18	.03	.03	.05		
CAL YR 1988	TOTAL	8812.8	MEAN	24.1	MAX	709	MIN	9.9	AC-FT	17480	CFSM	.13	IN.	1.73
WTR YR 1989	TOTAL	5509.8	MEAN	15.1	MAX	439	MIN	2.3	AC-FT	10930	CFSM	.08	IN.	1.08

08178800 SALADO CREEK (LOWER STATION) AT SAN ANTONIO, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: November 1968 to current year. Sediment analyses: October 1968 to September 1973.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: January 1987 to current year.

pH: January 1987 to current year.

WATER TEMPERATURE: January 1987 to current year.

DISSOLVED OXYGEN: January 1987 to current year.

INSTRUMENTATION.--Beginning January 1987, a four-parameter water-quality monitor continuously records specific conductance, pH, water temperature, and dissolved oxygen at this station.

REMARKS.--Interruptions in the record were due to malfunction of the instrument. Where maximum or minimum specific conductance values are not shown, mean value is estimated. Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 1030 microsiemens Sept. 7, 1989; minimum, 177 microsiemens June 3, 1988.

pH: Maximum, 8.6 units on several days during February, 1989; minimum, 7.3 units Dec. 13, 1988.

WATER TEMPERATURE: Maximum, 31.0°C July 17-20, 1988; minimum, 6.5°C Feb. 6, 7, 1989.

DISSOLVED OXYGEN: Maximum, 16.7 mg/L Jan. 27, 1988; minimum, 2.9 mg/L Sept. 7, 1989.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 1030 microsiemens Sept. 7; minimum, 240 microsiemens Apr. 29, June 11.

pH: Maximum, 8.6 units on several days during February; minimum, 7.3 units Dec. 13.

WATER TEMPERATURE: Maximum, 30.0°C Aug. 28, 29; minimum, 6.5°C Feb. 6, 7.

DISSOLVED OXYGEN: Maximum, 13.2 mg/L Mar. 11; minimum, 2.9 mg/L Sept. 7.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

		DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPECIFIC CONDUCTANCE (US/CM)	PH (STANDARD UNITS)	TEMPERATURE WATER (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PERCENT SATURATION)	OXYGEN DEMAND, BIO-CHEMICAL, 5 DAY (MG/L)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)
NOV 17...	1345	11	740	8.10	17.5	4	10	6.9	73	1.4	K130
MAR 15...	1445	11	700	8.10	21.0	5	6.0	8.2	92	1.8	560
MAY 18...	0740	18	673	7.90	25.0	55	26	6.0	75	2.5	560
JUL 26...	0820	9.7	658	8.20	25.0	25	8.0	5.6	68	0.1	160
SEP 05...	1055	2.8	887	8.00	27.5	10	3.1	4.6	59	1.2	4000
DATE	STREPTOCOCCI, KF AGAR (COLS. PER 100 ML)	HARDNESS TOTAL (MG/L AS CaCO3)	HARDNESS NONCARB WH WAT TOT FLD (MG/L AS CaCO3)	CALCIUM DIS-SOLVED (MG/L AS Ca)	MAGNESIUM, DIS-SOLVED (MG/L AS Mg)	SODIUM, DIS-SOLVED (MG/L AS Na)	SODIUM ADSORPTION RATIO	POTASSIUM, DIS-SOLVED (MG/L AS K)	ALKALINITY TOT FET FIELD (MG/L AS CaCO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLORIDE, DIS-SOLVED (MG/L AS Cl)
NOV 17...	210	290	40	90	17	44	1	2.5	255	44	62
MAR 15...	1200	260	39	75	18	45	1	2.4	223	53	63
MAY 18...	440	260	44	80	15	35	1	2.7	218	38	47
JUL 26...	K500	250	37	73	16	38	1	3.4	212	47	50
SEP 05...	50	290	81	90	17	68	2	3.2	214	59	110
DATE	FLUORIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS-SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUSPENDED (MG/L)	RESIDUE VOLATILE, SUSPENDED (MG/L)	NITROGEN, NITRATE TOTAL (MG/L AS N)	NITROGEN, NITRITE TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)
NOV 17...	0.30	15	428	20	4	0.790	0.010	0.800	0.020	0.68	0.70
MAR 15...	0.20	4.7	395	12	9	0.490	0.010	0.500	0.040	0.36	0.40
MAY 18...	0.30	14	363	46	1	0.680	0.020	0.700	0.050	0.55	0.60
JUL 26...	0.30	14	369	9	<1	--	<0.010	0.200	0.050	0.25	0.30
SEP 05...	0.40	16	492	<1	<1	0.190	0.010	0.200	0.060	0.24	0.30

GUADALUPE RIVER BASIN

249

08178800 SALADO CREEK (LOWER STATION) AT SAN ANTONIO, TX--Continued

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1988 TO SEPTEMBER 1989

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	DIS- SOLVED SOLIDS (MG/L)	DIS- SOLVED SOLIDS (TONS)	DIS- SOLVED CHLORIDE (MG/L)	DIS- SOLVED CHLORIDE (TONS)	DIS- SOLVED SULFATE (MG/L)	DIS- SOLVED SULFATE (TONS)	HARDNESS (CA, MG) (MG/L)
OCT. 1988	469	710	408	517	55	70	59	74	270
NOV. 1988	387.8	708	407	426	55	57	58	61	270
DEC. 1988	510	758	433	596	62	85	61	84	290
JAN. 1989	812	593	345	756	42	93	50	111	230
FEB. 1989	389	692	398	419	53	56	57	60	270
MAR. 1989	488	697	401	529	53	70	58	76	270
APR. 1989	661	543	320	570	36	63	48	85	220
MAY 1989	329.2	698	401	357	54	48	58	51	270
JUNE 1989	906.5	431	256	626	26	63	39	95	180
JULY 1989	149.3	760	433	175	62	25	61	25	290
AUG. 1989	160.1	772	439	190	65	28	61	27	290
SEPT 1989	247.9	674	388	260	51	34	56	37	260
TOTAL	5509.8	**	**	5400	**	693	**	786	**
WTD.AVG.	15	630	364	**	47	**	53	**	250

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	730	710	723	710	610	641	---	---	720	747	726	737
2	720	560	680	660	620	637	---	---	725	747	737	739
3	710	660	680	660	630	645	---	---	765	748	726	736
4	720	680	704	670	650	662	---	---	800	748	726	733
5	720	710	715	700	660	678	---	---	820	749	737	743
6	730	710	721	730	700	713	---	---	840	749	727	739
7	720	710	718	740	710	724	946	851	881	749	727	735
8	720	710	714	750	720	735	915	851	885	749	728	735
9	730	710	717	760	720	745	893	734	770	749	738	740
10	720	680	708	740	720	730	755	734	744	749	717	734
11	690	650	671	730	710	721	745	723	735	739	706	721
12	720	680	702	740	710	725	745	713	729	749	728	739
13	720	700	706	740	710	717	777	724	742	749	707	732
14	730	710	715	760	740	747	756	713	739	739	707	723
15	720	700	710	750	730	737	756	628	725	739	728	733
16	720	700	712	740	720	728	767	724	750	739	728	731
17	720	710	716	---	---	737	799	746	772	750	728	743
18	720	710	715	---	---	735	789	725	757	761	729	741
19	720	710	713	---	---	730	757	682	729	739	718	730
20	740	710	725	---	---	735	757	672	731	739	686	719
21	720	710	717	---	---	730	757	746	752	707	675	690
22	730	710	717	---	---	725	747	725	739	718	697	710
23	730	710	720	---	---	730	747	736	742	729	707	719
24	730	710	717	---	---	725	768	747	753	718	665	710
25	730	710	719	---	---	720	779	747	762	698	472	638
26	740	710	722	---	---	710	768	747	753	580	397	483
27	730	710	721	---	---	700	758	736	748	526	322	400
28	720	710	716	---	---	700	758	747	750	408	365	390
29	730	710	721	---	---	710	758	736	748	462	376	427
30	750	710	726	---	---	715	758	737	749	398	269	327
31	750	580	684	---	---	---	758	737	742	441	355	412
MONTH	750	560	711	760	610	713	946	628	761	761	269	664

GUADALUPE RIVER BASIN

08178800 SALADO CREEK (LOWER STATION) AT SAN ANTONIO, TX--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	473	441	456	---	---	762	700	620	666	540	360	437
2	494	462	479	757	735	748	630	600	618	540	520	530
3	570	494	536	757	670	737	---	---	615	620	540	579
4	624	570	600	800	746	778	---	---	660	680	610	655
5	656	624	636	800	768	789	---	---	669	690	650	668
6	688	656	674	801	747	776	---	---	689	670	650	664
7	710	678	687	801	737	768	---	---	698	690	660	677
8	721	699	709	780	737	757	---	---	678	710	690	696
9	732	710	714	769	704	740	---	---	677	740	700	716
10	732	710	717	759	715	736	---	---	697	750	720	739
11	732	710	721	726	683	701	---	---	687	760	720	743
12	732	721	727	726	672	697	---	---	721	780	750	763
13	744	721	733	716	672	691	---	---	701	780	740	761
14	765	733	744	716	683	694	670	420	535	770	740	755
15	776	744	760	716	661	704	500	410	444	760	740	753
16	766	701	744	720	690	705	440	410	418	770	750	760
17	723	680	695	710	690	706	500	440	459	780	750	769
18	734	690	720	720	700	707	---	---	480	740	640	678
19	755	712	732	720	700	711	---	---	465	720	660	689
20	766	734	747	700	530	628	---	---	448	760	730	746
21	766	734	747	690	570	647	450	430	442	760	700	726
22	777	734	754	700	670	679	500	450	471	730	710	723
23	767	734	749	---	---	700	550	500	523	760	730	744
24	777	713	740	---	---	690	580	540	562	780	750	770
25	734	713	729	710	670	687	620	580	600	790	760	776
26	756	724	734	730	700	717	660	610	643	820	780	794
27	756	724	737	750	730	740	700	660	674	830	790	809
28	---	---	751	740	580	694	700	690	695	840	810	819
29	---	---	---	610	500	570	720	240	671	860	800	829
30	---	---	---	610	570	588	580	340	468	860	810	825
31	---	---	---	690	610	655	---	---	---	830	810	817
MONTH	777	441	695	801	500	707	750	240	592	860	360	723
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	830	800	816	---	---	850	---	---	750	840	760	787
2	860	800	829	---	---	850	---	---	764	830	790	812
3	850	820	830	---	---	850	---	---	702	830	810	823
4	860	830	838	---	---	850	---	---	780	900	830	856
5	870	830	856	---	---	800	---	---	851	930	890	906
6	900	860	875	---	---	600	---	---	887	1000	910	938
7	860	830	837	---	---	650	---	---	868	1030	530	638
8	890	840	865	---	---	700	---	---	860	670	640	652
9	860	840	854	---	---	750	---	---	584	670	650	658
10	860	840	848	---	---	800	---	---	405	730	670	698
11	860	240	464	---	---	800	---	---	481	770	730	753
12	560	450	499	---	---	800	---	---	641	770	750	761
13	790	480	559	---	---	850	---	---	761	760	370	694
14	550	250	303	---	---	850	---	---	791	550	390	482
15	560	300	383	---	---	850	---	---	827	560	440	482
16	700	470	568	---	---	800	---	---	801	470	440	448
17	570	450	525	---	---	800	---	---	802	570	480	516
18	700	510	600	---	---	800	---	---	782	670	580	618
19	770	620	696	---	---	850	---	---	804	740	670	706
20	910	590	666	---	---	850	---	---	804	750	740	748
21	652	611	630	---	---	898	---	---	832	760	710	728
22	834	632	687	---	---	900	---	---	851	760	710	725
23	955	724	863	---	---	900	---	---	860	770	660	699
24	---	---	800	---	---	850	---	---	880	720	650	692
25	---	---	750	---	---	700	---	---	893	780	720	754
26	---	---	500	---	---	660	---	---	875	800	780	786
27	---	---	550	---	---	700	---	---	742	810	780	798
28	---	---	750	---	---	700	---	---	769	830	800	814
29	---	---	800	---	---	700	---	---	704	820	800	810
30	---	---	850	---	---	700	---	---	884	830	800	813
31	---	---	---	---	---	700	930	840	885	---	---	---
MONTH	955	240	696	---	---	786	930	802	778	1030	370	720

GUADALUPE RIVER BASIN

251

08178800 SALADO CREEK (LOWER STATION) AT SAN ANTONIO, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	8.3	8.2	8.3	8.3	8.1	8.2	8.4	8.2	8.3	8.3	8.1	8.2
2	8.3	8.1	8.2	8.2	8.1	8.2	8.3	8.2	8.2	8.3	8.1	8.2
3	8.3	8.2	8.2	8.2	8.1	8.2	8.3	8.2	8.3	8.3	8.2	8.3
4	8.3	8.2	8.2	8.2	8.1	8.2	8.4	8.3	8.3	8.4	8.2	8.3
5	8.3	8.2	8.3	8.2	8.2	8.2	8.4	8.2	8.3	8.3	8.3	8.3
6	8.4	8.3	8.3	8.3	8.2	8.2	8.3	8.0	8.2	8.4	8.2	8.3
7	8.3	8.2	8.3	8.3	8.2	8.3	8.2	8.1	8.2	8.4	8.3	8.4
8	8.4	8.3	8.3	8.4	8.3	8.3	8.2	8.0	8.1	8.4	8.2	8.3
9	8.4	8.3	8.4	8.5	8.3	8.4	8.1	7.8	7.9	8.4	8.2	8.2
10	8.4	8.3	8.4	8.5	8.3	8.4	7.8	7.6	7.7	8.4	8.2	8.2
11	8.4	8.3	8.3	8.4	8.3	8.4	7.7	7.5	7.6	8.4	8.3	8.4
12	8.4	8.3	8.4	8.3	8.3	8.3	7.7	7.5	7.7	8.4	8.3	8.4
13	8.4	8.4	8.4	8.3	8.2	8.3	7.6	7.3	7.5	8.4	8.2	8.3
14	8.5	8.3	8.4	8.3	8.2	8.3	7.8	7.6	7.7	8.3	8.2	8.2
15	8.4	8.3	8.4	8.3	8.2	8.3	8.0	7.7	7.9	8.5	8.1	8.2
16	8.4	8.4	8.4	8.3	8.2	8.2	8.0	7.8	7.9	8.4	8.2	8.3
17	8.5	8.4	8.4	8.4	8.2	8.3	8.0	7.8	7.8	8.3	8.2	8.3
18	8.5	8.4	8.4	8.5	8.4	8.4	7.9	7.8	7.9	8.4	8.3	8.3
19	8.5	8.4	8.4	8.5	8.4	8.4	8.0	7.8	7.9	8.4	8.3	8.4
20	8.4	8.4	8.4	8.5	8.4	8.4	8.2	8.0	8.1	8.4	8.3	8.4
21	8.4	8.3	8.4	8.4	8.4	8.4	8.3	8.1	8.2	8.4	8.1	8.3
22	8.4	8.3	8.4	8.4	8.3	8.4	8.3	8.2	8.3	8.3	8.1	8.2
23	8.4	8.3	8.4	8.4	8.3	8.3	8.3	8.2	8.3	8.3	8.1	8.2
24	8.4	8.3	8.3	8.4	8.3	8.4	8.3	8.1	8.2	8.3	8.2	8.2
25	8.4	8.3	8.3	8.4	8.4	8.4	8.2	8.1	8.1	8.3	8.2	8.3
26	8.4	8.2	8.3	8.4	8.4	8.4	8.3	8.1	8.2	8.3	8.2	8.2
27	8.3	8.3	8.3	8.4	8.3	8.3	8.3	8.2	8.3	8.2	7.9	8.0
28	8.3	8.3	8.3	8.4	8.2	8.3	8.3	8.1	8.2	8.0	7.9	7.9
29	8.3	8.3	8.3	8.3	8.2	8.3	8.3	8.0	8.1	8.0	7.9	8.0
30	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.1	8.2	8.0	7.9	8.0
31	8.3	8.2	8.3	---	---	---	8.4	8.1	8.2	8.0	7.8	7.9
MONTH	8.5	8.1	8.3	8.5	8.1	8.3	8.4	7.3	8.1	8.5	7.8	8.2
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	8.0	7.9	8.0	8.4	8.3	8.3	7.9	7.8	7.8	7.8	7.6	7.7
2	8.1	8.0	8.0	8.4	8.3	8.4	7.8	7.7	7.8	8.1	7.6	7.9
3	8.1	8.0	8.0	8.4	8.3	8.4	7.8	7.7	7.8	8.1	8.0	8.1
4	8.1	7.9	8.1	8.4	8.2	8.4	7.9	7.8	7.8	8.1	8.0	8.0
5	8.0	7.9	7.9	8.2	8.1	8.2	8.0	7.9	7.9	8.1	8.0	8.0
6	8.0	7.8	7.9	8.2	8.0	8.2	8.0	7.9	8.0	8.1	7.9	8.0
7	8.3	7.9	8.0	8.3	8.1	8.2	8.0	8.0	8.0	8.0	7.9	8.0
8	8.0	7.9	8.0	8.3	8.1	8.3	8.1	8.0	8.0	8.0	8.0	8.0
9	8.2	8.0	8.1	8.4	8.2	8.3	8.1	8.0	8.0	8.1	8.0	8.0
10	8.3	8.1	8.2	8.5	8.2	8.3	8.0	7.9	8.0	8.0	7.9	8.0
11	8.3	8.2	8.2	8.5	8.2	8.4	8.0	7.9	7.9	8.0	7.9	8.0
12	8.4	8.2	8.3	8.5	8.1	8.3	8.0	7.9	8.0	8.0	8.0	8.0
13	8.6	8.4	8.5	8.5	8.2	8.3	8.0	7.9	7.9	8.0	8.0	8.0
14	8.6	8.5	8.5	8.4	8.2	8.3	7.9	7.7	7.8	8.0	8.0	8.0
15	8.5	8.4	8.5	8.3	8.1	8.2	7.8	7.6	7.7	8.1	8.0	8.0
16	8.6	8.3	8.4	8.2	7.9	8.1	7.7	7.6	7.6	8.1	8.0	8.1
17	8.4	8.1	8.2	8.2	8.0	8.1	7.8	7.7	7.7	8.0	7.9	8.0
18	8.3	8.1	8.2	8.2	8.1	8.1	7.9	7.6	7.8	8.0	7.8	7.9
19	8.3	8.2	8.3	8.1	8.0	8.1	8.1	7.8	7.9	8.0	7.9	7.9
20	8.5	8.3	8.3	8.1	7.8	7.9	7.8	7.5	7.8	8.0	7.9	8.0
21	8.5	8.4	8.5	7.9	7.8	7.9	7.7	7.6	7.7	8.0	7.8	7.9
22	8.5	8.4	8.5	7.9	7.7	7.8	7.7	7.6	7.6	7.9	7.9	7.9
23	8.6	8.4	8.5	7.9	7.8	7.9	7.7	7.6	7.7	7.9	7.9	7.9
24	8.5	8.3	8.4	8.0	7.8	7.9	7.8	7.7	7.7	8.0	7.9	8.0
25	8.6	8.4	8.5	8.0	7.9	7.9	7.9	7.8	7.8	8.0	7.9	8.0
26	8.6	8.3	8.5	8.0	7.9	8.0	7.9	7.9	7.9	8.0	7.9	8.0
27	8.6	8.4	8.5	8.0	8.0	8.0	8.0	7.9	7.9	8.0	7.9	8.0
28	8.5	8.3	8.4	8.1	7.9	8.0	8.0	8.0	8.0	7.9	7.8	7.9
29	---	---	---	8.0	7.8	7.9	8.3	8.0	8.0	7.9	7.9	7.9
30	---	---	---	7.9	7.8	7.9	7.9	7.7	7.8	7.9	7.9	7.9
31	---	---	---	7.9	7.8	7.9	---	---	---	7.9	7.9	7.9
MONTH	8.6	7.8	8.3	8.5	7.7	8.1	8.3	7.5	7.8	8.1	7.6	8.0

08178800 SALADO CREEK (LOWER STATION) AT SAN ANTONIO, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST ^P			SEPTEMBER		
1	7.9	7.8	7.9	8.1	8.0	8.0	8.0	7.8	7.9	8.1	8.0	8.1
2	8.1	7.8	8.0	8.1	8.0	8.1	8.1	7.8	8.0	8.2	8.1	8.1
3	8.1	8.0	8.1	8.1	8.0	8.0	8.0	7.9	8.0	8.2	8.1	8.1
4	8.0	8.0	8.0	8.1	8.0	8.1	8.0	7.9	8.0	8.1	8.1	8.1
5	8.1	8.0	8.0	8.1	8.0	8.1	8.0	7.9	8.0	8.2	8.1	8.1
6	8.1	8.0	8.1	8.0	8.0	8.0	8.0	7.9	8.0	8.2	8.1	8.2
7	8.1	8.0	8.1	8.1	8.0	8.0	8.1	7.9	8.0	8.2	7.9	8.1
8	8.1	8.0	8.1	8.0	8.0	8.0	8.0	7.8	8.0	8.2	8.2	8.2
9	8.1	8.0	8.1	8.0	8.0	8.0	8.1	7.9	8.0	8.2	8.2	8.2
10	8.1	8.0	8.0	8.0	8.0	8.0	8.0	7.9	7.9	8.3	8.2	8.2
11	8.5	7.6	7.9	8.0	8.0	8.0	8.1	7.8	7.9	8.3	8.2	8.2
12	7.7	7.6	7.6	8.0	8.0	8.0	8.1	7.9	8.0	8.2	8.2	8.2
13	7.6	7.6	7.6	8.0	8.0	8.0	8.1	7.9	8.0	8.2	7.9	8.2
14	8.1	7.6	7.7	8.0	7.9	8.0	8.1	8.0	8.0	8.1	7.9	8.0
15	7.7	7.6	7.6	8.0	7.9	8.0	8.1	8.0	8.0	8.1	7.9	8.0
16	7.6	7.5	7.6	8.0	7.8	7.9	8.1	7.9	8.0	8.0	7.9	7.9
17	7.7	7.6	7.6	7.9	7.8	7.9	8.0	7.9	8.0	8.1	7.9	8.0
18	7.7	7.7	7.7	7.9	7.8	7.9	8.0	7.9	8.0	8.3	8.0	8.2
19	7.7	7.7	7.7	7.9	7.8	7.9	8.0	7.8	7.9	8.3	8.2	8.3
20	7.9	7.7	7.8	7.9	7.8	7.9	8.0	7.9	8.0	8.4	8.3	8.3
21	7.9	7.9	7.9	8.1	7.9	8.0	8.0	7.9	8.0	8.4	8.3	8.3
22	7.9	7.9	7.9	8.1	8.0	8.1	8.0	7.9	8.0	8.4	8.3	8.3
23	8.0	7.9	8.0	8.1	7.9	8.0	8.0	7.9	8.0	8.4	8.2	8.3
24	8.0	7.9	8.0	8.0	7.9	8.0	8.0	7.9	8.0	8.3	8.1	8.2
25	8.0	7.9	8.0	8.1	7.9	8.0	8.0	7.9	8.0	8.3	8.2	8.3
26	8.0	8.0	8.0	8.1	7.9	8.0	8.0	7.9	8.0	8.4	8.2	8.3
27	8.0	7.9	7.9	8.0	7.9	8.0	8.0	7.9	8.0	8.4	8.3	8.3
28	8.0	7.9	8.0	8.0	7.9	8.0	8.1	7.9	8.0	8.4	8.3	8.4
29	8.0	8.0	8.0	8.0	7.9	8.0	8.0	7.9	8.0	8.5	8.3	8.4
30	8.0	8.0	8.0	8.0	7.9	8.0	8.2	8.0	8.1	8.5	8.4	8.4
31	---	---	---	8.0	7.8	7.9	8.1	8.1	8.1	---	---	---
MONTH	8.5	7.5	7.9	8.1	7.8	8.0	8.2	7.8	8.0	8.5	7.9	8.2

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	23.5	22.5	23.0	22.0	20.5	21.0	12.5	11.5	12.5	14.0	13.5	13.5
2	23.5	22.5	23.0	20.5	19.5	20.0	12.0	11.0	11.5	15.5	14.0	14.5
3	22.5	21.0	21.5	20.0	19.0	19.5	12.5	11.5	12.0	17.5	15.5	16.5
4	22.0	20.5	21.0	20.0	19.0	19.5	13.5	12.0	12.5	16.5	15.5	16.0
5	21.0	19.5	20.5	20.0	18.5	19.5	14.0	13.5	13.5	17.0	15.5	16.0
6	20.5	19.5	20.5	18.5	17.5	18.0	14.0	13.0	13.5	17.0	16.0	16.5
7	20.5	19.5	20.5	18.5	17.5	18.0	15.5	14.0	14.5	18.5	17.0	18.0
8	20.5	19.5	20.0	19.5	18.5	19.0	16.0	14.0	15.0	18.0	15.0	17.0
9	21.0	20.0	20.5	21.5	19.5	20.5	14.0	12.0	13.0	15.0	12.5	14.0
10	21.5	20.0	21.0	22.0	21.0	21.5	12.0	11.5	11.5	13.0	12.0	12.5
11	20.5	19.0	19.5	21.5	21.0	21.5	12.5	11.5	12.0	14.5	13.0	14.0
12	20.0	19.0	19.5	22.0	21.0	21.5	12.5	11.5	12.0	15.0	13.5	14.5
13	19.0	18.5	19.0	21.5	20.5	21.0	11.5	10.5	11.0	13.5	11.0	12.0
14	20.0	19.0	19.5	21.5	20.5	21.0	12.0	10.5	11.0	11.0	10.0	10.5
15	20.5	19.5	20.0	22.5	21.5	22.0	13.0	11.5	12.0	11.0	9.5	10.5
16	21.0	20.5	21.0	22.5	19.5	21.5	12.5	11.0	12.0	11.5	10.5	11.0
17	21.5	21.0	21.5	19.0	17.0	18.0	11.0	10.5	11.0	12.5	11.5	12.0
18	22.0	21.5	22.0	18.0	17.0	17.5	11.0	10.0	10.5	14.0	12.5	13.0
19	22.5	22.0	22.0	19.5	18.0	19.0	12.5	10.5	11.5	14.5	14.0	14.0
20	22.5	21.5	22.0	18.5	15.5	17.0	14.5	12.5	14.0	14.5	13.5	14.5
21	23.0	22.0	22.5	15.5	13.5	14.5	16.0	14.5	15.5	13.5	12.0	12.5
22	23.0	22.5	22.5	13.5	12.5	13.0	17.5	16.0	17.0	12.0	10.5	11.5
23	23.0	22.5	23.0	13.0	12.0	12.5	17.0	16.5	17.0	13.0	11.5	12.0
24	23.5	21.5	22.5	13.5	12.5	13.0	17.0	16.0	16.5	15.5	13.0	14.0
25	22.5	21.5	22.0	16.5	14.0	15.0	16.0	15.5	16.0	17.5	15.5	16.5
26	23.5	22.5	23.0	18.0	16.5	17.0	18.0	16.0	17.0	19.0	17.5	18.5
27	23.5	23.0	23.5	17.0	15.0	16.5	18.5	17.5	18.0	16.5	15.0	16.0
28	24.0	23.0	23.5	15.0	12.5	14.0	17.0	13.5	15.5	15.5	14.5	15.0
29	23.5	22.5	23.0	13.0	12.0	12.5	13.5	12.0	12.5	15.5	14.5	15.0
30	23.0	22.5	22.5	13.5	12.5	13.0	13.5	12.5	13.0	15.0	13.5	14.5
31	22.5	21.5	22.0	---	---	---	14.5	13.5	14.0	15.0	13.0	14.0
MONTH	24.0	18.5	21.5	22.5	12.0	18.0	18.5	10.0	13.5	19.0	9.5	14.0

GUADALUPE RIVER BASIN

253

08178800 SALADO CREEK (LOWER STATION) AT SAN ANTONIO, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	16.0	15.0	15.5	15.0	14.5	14.5	21.0	18.5	20.0	24.5	22.5	23.5
2	17.5	16.0	17.0	16.0	14.5	15.0	22.5	20.0	21.0	24.5	22.5	23.5
3	17.5	13.0	15.5	17.5	16.0	16.5	24.0	21.0	22.5	24.0	22.5	23.0
4	13.0	9.0	11.0	17.5	14.5	17.0	24.0	22.5	23.5	25.5	23.5	24.5
5	9.0	8.0	8.5	14.0	11.0	12.0	23.0	20.5	21.5	26.0	24.0	24.5
6	8.0	6.5	7.0	12.0	10.0	11.0	21.0	19.0	20.0	24.5	23.0	24.0
7	7.5	6.5	7.0	12.5	10.5	11.5	22.0	19.5	20.5	25.5	24.0	24.5
8	8.5	7.0	7.5	13.0	11.0	12.0	23.0	21.0	22.0	25.5	24.5	25.0
9	9.5	8.0	8.5	14.0	12.0	13.0	23.0	19.5	21.0	26.0	25.0	25.5
10	9.5	8.5	9.0	15.0	12.5	13.5	19.5	16.5	17.5	26.0	23.5	25.0
11	11.0	9.5	10.5	16.0	13.5	15.0	16.0	15.0	16.0	23.5	23.0	23.5
12	14.0	11.5	12.5	18.0	15.0	16.5	16.5	15.5	16.0	23.5	23.0	23.5
13	16.5	14.5	15.5	19.5	17.0	18.0	16.0	15.0	15.5	23.5	23.0	23.5
14	18.0	16.5	17.0	21.0	18.5	20.0	17.5	15.0	16.0	24.0	23.0	23.5
15	19.0	18.0	18.5	21.5	20.5	21.0	17.5	16.0	17.0	---	---	---
16	18.5	15.5	17.0	20.5	19.5	20.0	19.0	16.5	17.5	---	---	---
17	15.5	14.0	15.0	22.0	20.0	21.0	20.5	18.5	19.0	26.5	22.5	25.0
18	14.0	13.5	14.0	23.0	21.5	22.0	22.0	20.0	20.5	26.5	25.5	26.0
19	13.5	13.0	13.5	22.5	21.0	21.5	22.0	20.5	21.5	27.0	25.5	26.0
20	15.5	13.5	14.5	22.5	19.5	21.5	23.0	21.0	22.0	27.5	27.0	27.0
21	15.5	15.0	15.5	21.5	16.0	19.0	23.0	21.5	22.0	27.5	27.0	27.0
22	14.5	13.0	14.0	16.5	14.0	15.5	23.5	21.5	22.5	27.5	27.0	27.0
23	14.0	13.0	13.5	18.0	15.0	16.5	24.0	22.0	23.0	28.0	27.0	27.5
24	13.5	12.5	13.0	19.0	17.0	18.0	24.0	22.5	23.5	28.0	26.5	27.5
25	16.5	13.5	15.0	19.5	19.0	19.0	24.0	23.0	23.5	28.0	27.0	27.5
26	18.0	15.5	16.5	20.5	19.0	20.0	24.5	23.5	24.0	28.5	27.0	27.5
27	19.0	17.0	18.0	22.0	20.5	21.0	24.5	23.5	24.0	28.0	27.0	27.5
28	18.5	15.5	16.5	23.0	21.0	22.0	25.0	24.0	24.5	28.0	26.5	27.5
29	---	---	---	23.0	20.5	21.5	25.0	21.5	24.0	27.0	25.5	26.5
30	---	---	---	22.5	20.5	22.0	24.5	22.0	23.5	---	---	---
31	---	---	---	22.5	20.0	21.0	---	---	---	---	---	---
MONTH	19.0	6.5	13.5	23.0	10.0	17.5	25.0	15.0	21.0	28.5	22.5	25.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	---	---	---	28.0	26.5	27.0	28.0	27.0	27.5	28.5	27.5	28.0
2	---	---	---	29.0	27.5	28.0	27.0	27.0	27.0	29.0	27.5	28.0
3	27.5	26.0	27.0	29.5	28.5	29.0	28.0	27.0	27.5	29.0	27.5	28.0
4	27.0	26.0	26.5	29.0	28.5	29.0	28.5	27.5	28.0	28.0	27.0	27.5
5	27.5	26.0	26.5	29.5	27.5	28.5	29.0	27.5	28.0	28.0	26.5	27.5
6	28.0	26.0	27.0	29.0	28.5	29.0	29.0	27.5	28.5	28.5	26.5	27.0
7	28.5	27.0	27.5	29.5	28.5	29.0	28.5	27.5	28.5	27.5	27.0	27.0
8	28.0	26.5	27.0	29.5	28.5	29.0	28.0	26.0	27.0	27.5	26.5	27.0
9	27.0	26.0	26.5	29.0	28.0	28.5	26.5	25.0	26.0	27.5	27.0	27.5
10	27.0	26.0	26.5	29.0	27.5	28.5	26.0	25.0	25.5	28.0	27.0	27.5
11	27.0	22.5	24.5	28.5	27.5	28.0	26.0	24.5	25.5	27.5	26.5	27.5
12	26.0	24.5	25.0	29.0	27.5	28.0	26.5	25.0	25.5	27.0	26.5	27.0
13	26.5	25.0	26.0	28.5	27.5	28.0	26.5	25.0	26.0	27.0	25.5	26.5
14	26.5	23.0	24.0	28.5	27.5	28.0	26.5	25.5	26.0	25.0	24.0	24.5
15	24.5	22.5	24.0	29.0	28.0	28.5	27.0	25.5	26.0	24.0	22.5	23.0
16	24.5	22.5	23.5	29.5	28.0	28.5	27.5	26.0	26.5	23.0	21.5	22.5
17	25.0	23.0	24.0	29.5	28.0	29.0	28.0	26.5	27.5	22.5	21.5	22.0
18	26.5	25.0	25.5	29.5	28.0	29.0	28.0	27.0	27.5	23.0	21.5	22.5
19	27.0	26.5	26.5	29.5	28.0	29.0	28.0	26.5	27.5	23.5	22.0	23.0
20	28.0	27.0	27.5	29.5	28.0	29.0	28.5	27.0	28.0	23.5	22.5	23.0
21	28.0	27.0	27.5	27.0	26.0	27.5	29.0	27.5	28.5	24.0	23.0	23.5
22	27.5	27.0	27.5	27.0	26.5	27.0	29.0	28.0	28.5	23.5	23.0	23.5
23	27.5	26.5	27.0	26.5	25.5	26.0	29.5	28.0	29.0	23.5	22.0	22.5
24	26.5	26.0	26.0	26.5	26.0	26.0	29.0	28.5	29.0	21.5	19.5	20.5
25	25.5	25.5	25.5	27.5	25.0	26.0	29.0	28.0	28.5	20.0	18.5	19.5
26	26.0	25.0	25.5	27.0	25.5	26.5	29.0	28.0	28.5	19.5	18.0	19.0
27	26.5	25.5	26.0	27.0	26.5	26.5	29.5	28.5	29.0	19.5	18.0	18.5
28	27.5	26.0	26.5	26.5	25.5	26.0	30.0	28.5	29.0	20.0	18.0	19.0
29	27.5	26.5	27.0	28.0	26.5	27.0	30.0	29.0	29.5	20.0	18.5	19.0
30	27.5	26.5	27.0	28.5	27.0	27.5	29.5	27.5	28.5	20.5	18.5	19.5
31	---	---	---	28.5	27.0	27.5	28.5	27.5	28.0	---	---	---
MONTH	28.5	22.5	26.0	29.5	25.0	28.0	30.0	24.5	27.5	29.0	18.0	24.0

GUADALUPE RIVER BASIN

08178800 SALADO CREEK (LOWER STATION) AT SAN ANTONIO, TX--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	7.0	6.5	6.7	6.5	5.8	6.2	8.7	8.1	8.3	9.0	8.1	8.4
2	7.0	5.1	6.4	6.5	6.1	6.3	8.9	8.4	8.6	8.8	7.9	8.3
3	7.0	6.5	6.7	6.4	6.1	6.3	8.9	8.3	8.6	8.9	7.6	8.0
4	7.1	6.5	6.8	6.5	6.0	6.2	8.7	8.0	8.4	8.8	7.5	7.9
5	7.3	6.9	7.1	6.6	6.0	6.3	8.4	7.6	8.0	8.5	7.6	7.9
6	7.4	7.1	7.2	7.3	6.5	6.9	9.5	7.6	8.2	8.7	7.5	7.9
7	7.4	6.7	7.0	7.4	7.0	7.2	9.4	8.3	8.8	8.4	7.3	7.7
8	7.5	7.0	7.3	7.6	6.8	7.1	8.3	7.4	7.8	8.0	7.3	7.6
9	7.6	7.0	7.3	8.2	6.7	7.4	8.6	7.5	8.1	8.8	7.9	8.4
10	7.5	6.9	7.2	8.0	6.3	7.0	9.0	8.6	8.8	9.7	8.9	9.2
11	7.5	6.9	7.1	7.6	6.4	6.9	9.6	8.9	9.1	9.4	8.6	9.1
12	7.5	7.1	7.3	6.6	6.1	6.4	9.7	8.9	9.1	8.6	8.2	8.4
13	7.7	7.3	7.5	6.7	6.1	6.3	10.5	9.1	9.6	9.4	8.3	9.0
14	7.8	7.2	7.4	6.5	6.1	6.4	10.8	9.3	9.9	9.9	9.4	9.6
15	7.5	6.8	7.1	6.1	5.5	5.8	10.8	8.8	9.6	10.5	9.8	10.0
16	7.4	6.7	7.0	6.3	5.5	5.8	10.8	8.7	9.5	10.4	9.7	10.0
17	7.3	6.6	6.9	7.2	6.1	6.7	10.4	9.2	9.7	9.8	9.2	9.5
18	7.1	6.5	6.7	7.1	6.7	7.0	10.4	9.5	9.9	9.4	8.8	9.1
19	6.8	6.4	6.6	6.9	6.3	6.6	10.3	9.1	9.7	9.0	8.4	8.7
20	6.8	6.3	6.5	7.4	6.4	6.9	9.1	7.9	8.6	9.2	8.1	8.6
21	6.7	6.2	6.4	8.3	7.3	7.8	8.7	7.5	8.0	9.8	8.7	9.3
22	6.5	6.0	6.3	8.5	8.1	8.2	8.0	7.0	7.5	10.3	9.4	9.8
23	6.4	6.0	6.2	8.6	8.2	8.4	7.4	6.7	7.0	10.1	9.2	9.6
24	6.4	6.0	6.3	8.5	8.1	8.3	8.4	6.6	7.2	9.3	8.4	8.8
25	6.7	6.2	6.4	8.2	7.3	7.8	8.6	7.2	7.6	8.4	7.1	7.9
26	6.5	5.5	6.1	7.5	6.9	7.1	8.4	7.0	7.5	7.9	6.8	7.3
27	6.2	5.8	6.0	7.6	6.9	7.2	7.0	6.5	6.7	8.3	7.3	7.8
28	6.2	5.8	6.0	8.3	7.3	7.8	8.5	6.5	7.4	7.5	7.3	7.4
29	6.3	5.7	6.0	8.8	8.0	8.4	9.8	8.0	8.7	8.6	7.5	8.0
30	6.4	6.0	6.2	8.5	8.0	8.2	8.8	8.2	8.6	9.4	8.7	9.0
31	6.7	5.9	6.3	---	---	---	9.2	8.0	8.4	8.8	8.2	8.6
MONTH	7.8	5.1	6.7	8.8	5.5	7.0	10.8	6.5	8.5	10.5	6.8	8.6
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	8.2	7.9	8.0	9.5	8.2	8.7	6.8	5.8	6.1	5.3	4.9	5.2
2	7.9	7.2	7.5	10.2	8.4	9.1	6.2	5.6	5.8	5.5	5.2	5.3
3	8.3	7.2	7.6	9.5	8.0	8.7	6.0	5.3	5.5	5.5	5.3	5.4
4	9.6	8.4	9.0	8.9	7.4	8.2	5.9	4.9	5.3	5.5	5.3	5.5
5	10.2	9.7	10.0	11.7	8.7	9.9	6.5	5.3	5.8	5.3	4.9	5.1
6	10.9	10.2	10.5	12.1	10.0	10.9	6.9	6.0	6.3	5.6	5.2	5.4
7	11.1	10.9	11.0	12.4	9.7	11.0	6.7	6.0	6.2	5.5	5.3	5.4
8	11.1	10.8	10.9	12.7	9.6	11.0	6.5	5.6	5.9	5.5	5.2	5.4
9	10.9	10.7	10.9	13.0	9.4	11.0	6.3	5.4	5.9	5.5	5.1	5.3
10	10.8	10.5	10.7	13.1	9.2	11.0	7.2	6.3	6.7	5.7	5.1	5.4
11	10.7	9.9	10.3	13.2	8.9	10.8	8.0	7.2	7.5	5.9	5.7	5.8
12	10.1	9.3	9.6	12.9	8.3	10.3	7.6	7.1	7.4	6.0	5.8	5.9
13	9.4	8.4	8.9	11.9	7.8	9.6	7.5	7.0	7.4	6.1	5.8	5.9
14	9.0	8.0	8.4	10.7	7.1	8.7	7.9	6.9	7.4	6.1	5.9	6.0
15	9.0	7.5	8.3	9.1	6.6	7.7	7.0	6.4	6.9	6.1	5.7	5.9
16	9.1	7.3	8.4	9.2	6.8	7.8	6.4	6.0	6.3	5.9	5.5	5.6
17	8.8	7.8	8.2	9.1	6.6	7.7	6.0	5.7	5.9	6.3	5.4	5.6
18	9.6	8.4	8.8	8.4	6.3	7.2	5.9	5.4	5.6	6.1	4.9	5.5
19	9.9	8.8	9.4	7.9	6.3	6.9	6.8	5.2	5.9	5.5	4.9	5.1
20	10.1	8.7	9.4	7.0	4.7	6.2	6.5	5.8	6.2	5.5	4.9	5.1
21	10.5	8.5	9.5	7.2	4.7	6.1	5.8	5.2	5.6	5.2	4.5	4.8
22	11.5	9.2	10.3	9.2	7.0	7.8	5.3	5.1	5.2	5.3	4.7	5.0
23	11.7	9.3	10.4	8.7	7.0	7.8	5.2	5.1	5.1	5.3	4.9	5.1
24	11.3	9.4	10.3	8.1	6.7	7.2	5.2	5.0	5.1	5.4	5.0	5.2
25	11.5	9.2	10.2	7.2	6.4	6.7	5.3	5.1	5.2	5.3	4.9	5.2
26	11.4	8.5	9.7	7.5	6.3	6.7	5.3	5.3	5.3	5.4	4.8	5.1
27	11.1	8.0	9.2	6.9	6.0	6.4	5.5	5.2	5.3	5.4	4.7	5.1
28	8.9	7.7	8.4	6.9	5.0	6.1	5.6	5.3	5.4	5.7	4.7	5.2
29	---	---	---	6.5	5.5	5.9	7.1	5.4	5.8	6.0	5.1	5.6
30	---	---	---	5.8	5.2	5.5	6.6	5.0	5.7	6.0	5.2	5.6
31	---	---	---	6.5	5.5	5.9	---	---	---	6.1	4.7	5.4
MONTH	11.7	7.2	9.4	13.2	4.7	8.2	8.0	4.9	6.0	6.3	4.5	5.4

GUADALUPE RIVER BASIN

255

08178800 SALADO CREEK (LOWER STATION) AT SAN ANTONIO, TX--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	5.7	4.5	5.2	5.8	5.1	5.5	5.2	4.2	4.8	4.8	4.2	4.5
2	6.0	4.3	5.2	5.6	4.9	5.3	4.9	4.0	4.6	4.9	3.9	4.3
3	6.0	4.5	5.2	5.5	4.7	5.1	---	---	---	5.1	3.7	4.3
4	5.9	4.4	5.2	5.6	4.6	5.1	---	---	---	4.7	3.5	4.1
5	6.1	4.6	5.4	6.0	4.5	5.2	---	---	---	5.4	3.9	4.5
6	6.3	4.4	5.4	6.5	5.4	5.9	---	---	---	4.9	3.4	4.2
7	6.0	4.4	5.3	6.3	5.6	5.8	---	---	---	5.0	2.9	4.0
8	6.1	4.1	5.3	6.2	5.0	5.6	---	---	---	4.8	4.1	4.4
9	5.8	4.7	5.2	6.1	4.8	5.5	---	---	---	4.7	4.0	4.3
10	5.9	4.5	5.2	5.9	4.7	5.4	---	---	---	4.7	3.9	4.3
11	7.4	4.5	5.4	6.1	4.6	5.4	---	---	---	4.5	3.5	4.0
12	5.5	4.6	5.1	6.2	4.7	5.5	---	---	---	4.4	3.5	4.1
13	4.6	4.3	4.5	6.0	4.5	5.4	---	---	---	5.1	3.5	4.1
14	7.2	4.6	5.3	6.3	4.4	5.4	---	---	---	5.3	4.5	4.9
15	6.6	6.0	6.4	6.7	4.4	5.6	---	---	---	5.4	5.0	5.1
16	6.3	5.7	6.1	6.4	4.4	5.5	---	---	---	5.3	4.7	4.9
17	5.9	5.4	5.7	6.5	4.2	5.5	---	---	---	5.6	4.8	5.2
18	5.4	5.2	5.4	6.5	4.3	5.6	---	---	---	5.8	5.0	5.3
19	5.1	4.8	5.0	6.5	4.3	5.6	---	---	---	6.0	4.8	5.4
20	5.0	4.7	4.9	6.3	4.3	5.5	---	---	---	6.0	5.0	5.4
21	5.1	4.9	5.0	8.1	4.6	5.5	---	---	---	5.9	4.6	5.4
22	5.1	4.8	5.0	6.0	4.9	5.5	---	---	---	5.9	5.1	5.5
23	5.2	4.8	5.0	5.8	5.1	5.6	---	---	---	5.9	4.9	5.4
24	5.3	5.0	5.2	5.9	5.4	5.6	---	---	---	6.3	5.0	5.7
25	5.8	5.2	5.5	6.1	4.8	5.7	---	---	---	6.7	5.5	6.1
26	6.1	5.6	5.9	6.1	5.4	5.6	---	---	---	6.8	5.6	6.3
27	5.7	5.1	5.3	5.7	4.9	5.3	---	---	---	7.1	5.8	6.5
28	5.5	5.2	5.3	5.8	4.8	5.5	---	---	---	7.0	5.9	6.6
29	5.5	5.0	5.4	5.7	4.9	5.5	---	---	---	7.0	5.8	6.5
30	5.6	5.1	5.4	5.6	4.4	5.0	---	---	---	7.0	5.7	6.5
31	---	---	---	5.2	4.2	4.9	5.2	4.1	4.7	---	---	---
MONTH	7.4	4.1	5.3	8.1	4.2	5.5	5.2	4.0	4.8	7.1	2.9	5.1

GUADALUPE RIVER BASIN

08178880 MEDINA RIVER AT BANDERA, TX

LOCATION.--Lat 29°43'25", long 99°04'11", Bandera County, Hydrologic Unit 12100302, on left bank, 40 ft downstream from centerline of State Highway 173 at Bandera, 1.9 mi upstream from Bandera Creek, and 5.6 mi downstream from Indian Creek.

DRAINAGE AREA.--427 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1982 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,189.46 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good except those below 10 ft³/s, which are poor. Several small diversions upstream from station.

AVERAGE DISCHARGE.--7 years, 151 ft³/s (109,400 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 55,800 ft³/s June 3, 1987 (gage height, 24.90 ft), from rating curve extended above 27,000 ft³/s; minimum daily, 2.2 ft³/s Aug. 7, 11, 13, 14, 1984.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1880, 46.62 ft Aug. 2, 1978.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 785 ft³/s June 14 at 0300 hours (gage height, 7.34 ft); minimum daily, 3.5 ft³/s Sept. 26.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	58	47	36	35	106	72	67	58	23	16	6.9	5.4
2	59	45	35	37	96	71	66	62	22	17	7.7	5.4
3	53	44	35	38	90	71	65	56	21	14	7.7	4.0
4	50	43	35	37	81	69	63	52	20	15	8.1	4.3
5	48	41	35	38	77	66	60	50	21	15	8.4	4.6
6	46	40	36	38	73	65	59	48	20	13	6.7	5.7
7	45	40	37	39	71	64	58	46	19	11	5.5	5.8
8	44	40	36	38	68	63	58	44	20	13	8.5	7.0
9	43	40	37	37	66	63	55	43	19	16	14	8.4
10	43	39	37	38	64	62	54	41	19	14	12	7.4
11	41	39	39	38	63	61	53	39	19	11	10	14
12	40	39	39	38	64	61	53	40	20	11	9.7	38
13	40	38	39	40	64	61	58	40	19	11	9.3	18
14	39	39	39	40	63	61	64	41	124	11	8.6	12
15	39	39	39	40	63	60	63	40	22	11	8.3	9.4
16	39	37	38	40	68	60	62	40	23	11	7.5	8.5
17	39	36	38	40	73	58	60	104	24	9.8	6.6	8.1
18	39	37	38	40	89	57	58	45	24	8.3	6.4	8.4
19	39	37	38	43	100	58	57	40	22	9.7	6.6	8.0
20	38	34	39	45	99	62	55	38	20	9.1	6.0	8.0
21	38	33	38	48	93	61	55	36	18	8.2	7.8	7.7
22	39	34	39	53	87	60	53	35	17	7.7	6.6	6.9
23	38	34	38	52	81	59	52	34	16	9.4	6.5	5.0
24	38	34	38	51	78	60	50	33	17	8.5	7.7	3.6
25	37	36	37	50	77	60	50	32	17	9.4	8.8	3.7
26	37	38	38	52	77	61	50	31	17	10	8.3	3.5
27	38	36	37	69	74	59	49	30	17	11	8.3	4.3
28	37	35	35	216	71	79	48	28	17	11	7.7	4.6
29	40	36	35	225	---	81	47	25	16	9.7	7.9	5.1
30	41	37	36	160	---	79	48	24	16	9.1	7.3	5.7
31	48	---	37	126	---	72	---	24	---	7.2	6.4	---
TOTAL	1313	1147	1153	1881	2176	1996	1690	1299	689	348.1	247.8	240.5
MEAN	42.4	38.2	37.2	60.7	77.7	64.4	56.3	41.9	23.0	11.2	7.99	8.02
MAX	59	47	39	225	106	81	67	104	124	17	14	38
MIN	37	33	35	35	63	57	47	24	16	7.2	5.5	3.5
AC-FT	2600	2280	2290	3730	4320	3960	3350	2580	1370	690	492	477
CAL YR 1988	TOTAL	30251	MEAN	82.7	MAX	6770	MIN	20	AC-FT	60000		
WTR YR 1989	TOTAL	14180.4	MEAN	38.9	MAX	225	MIN	3.5	AC-FT	28130		

08178880 MEDINA RIVER AT BANDERA, TX--Continued

LOCATION.--Lat 29°43'25", long 99°04'11", Bandera County, Hydrologic Unit 12100302, on left bank 40 ft downstream from centerline of State Highway 173, 1.9 mi upstream from Bandera Creek, and 5.6 mi downstream from Indian Creek.

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: January 1983 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD 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, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	
JAN 09...	1651	37	537	8.00	13.0	1	0.60	9.6	94	0.6	20	
MAY 12...	1003	40	535	8.00	22.5	5	0.50	7.5	91	0.9	47	
AUG 31...	1227	6.4	554	8.10	29.0	7	1.0	7.2	98	1.5	21	
DATE		STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB WH WAT TOT FLD (MG/L AS CAC03)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT WH TOT FET FIELD (MG/L AS CAC03)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	
JAN 09...	24	290	110	85	20	7.4	0.2	1.4	187	96	11	
MAY 12...	84	270	97	76	19	7.0	0.2	1.6	171	97	12	
AUG 31...	41	290	130	79	22	9.0	0.2	1.6	157	130	13	
DATE		FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SI02)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHOUS TOTAL (MG/L AS P)
JAN 09...	0.20	9.7	343	8	<1	<0.010	0.200	0.030	0.17	0.20	<0.010	
MAY 12...	0.20	12	327	<1	<1	<0.010	0.200	0.030	--	<0.20	0.020	
AUG 31...	0.30	14	363	9	<1	<0.010	<0.100	0.030	0.27	0.30	<0.010	
DATE		CARBON, ORGANIC TOTAL (MG/L AS C)	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)	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)
JAN 09...	1.3	<1	40	<1	2	<1	4	<5	4	<0.1	<1	
MAY 12...	1.3	--	--	--	--	--	--	--	--	--	--	
AUG 31...	1.8	<1	36	<1	<1	<1	<3	<1	2	<0.1	<1	
DATE		SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)	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)	DI-ELDRIN TOTAL (UG/L)
JAN 09...	<1.0	5	--	--	--	--	--	--	--	--	--	--
MAY 12...	--	--	--	--	--	--	--	--	--	--	--	--
AUG 31...	<1.0	<3	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.010	<0.01	<0.010
DATE		DI-SYSTON 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)	METHYL PARA-THION, TOTAL (UG/L)	METHYL TRI-THION, TOTAL (UG/L)
JAN 09...	--	--	--	--	--	--	--	--	--	--	--	--
MAY 12...	--	--	--	--	--	--	--	--	--	--	--	--
AUG 31...	<0.01	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01	<0.01

GUADALUPE RIVER BASIN

08178880 MEDINA RIVER AT BANDERA, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	PHORATE OTAL (UG/L)	SILVEX, TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)
JAN 09...	--	--	--	--	--	--	--	--	--	--
MAY 12...	--	--	--	--	--	--	--	--	--	--
AUG 31...	<0.01	<0.01	<0.1	<0.01	<0.01	<1	<0.01	<0.01	<0.01	<0.01

08179500 MEDINA LAKE NEAR SAN ANTONIO, TX

LOCATION.--Lat 29°32'24", long 98°56'01", Medina County, Hydrologic Unit 12100302, at gate-operating platform, 576 ft from left end of Medina Dam on Medina River, 4.2 mi upstream from Medina diversion dam, 13 mi north of Castroville, 28 mi west of San Antonio, and 70.4 mi upstream from mouth.

DRAINAGE AREA.--634 mi².

PERIOD OF RECORD.--May 1913 to current year. Prior to October 1965, monthend contents only.
Water-quality records.--Chemical analyses: October 1969 to September 1984.

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 below National Geodetic Vertical Datum of 1929.

REMARKS.--The lake is formed by a gravity-type concrete dam, 1,580 ft long. The dam was completed and storage began May 7, 1913. The uncontrolled spillway is a cut through natural rock 880 ft long, with a 3-foot-wide cutoff wall, located near right end of dam. The dam and lake are owned and operated by 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 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 provided by the Bexar-Medina-Atascosa Counties Water Improvement District No. 1.

EXTREMES (at 0800) FOR PERIOD OF RECORD.--Maximum contents observed, 289,900 acre-ft May 29, 1987 (gage height, 1,078.2 ft); minimum observed since lake first filled, 780 acre-ft about Apr. 11, 1948 (gage height, 944.0 ft).

EXTREMES (at 0800) FOR CURRENT YEAR.--Maximum contents, 202,100 acre-ft Oct. 1-3 (gage height, 1,062.0 ft); minimum, 98,180 acre-ft Sept. 30 (gage height, 1,034.3 ft).

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

1,034.0	97,320	1,042.0	121,600	1,054.0	166,800
1,036.0	103,100	1,046.0	135,800	1,058.0	183,600
1,039.0	111,700	1,050.0	150,000	1,062.0	202,100

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
OBSERVATION AT 08:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	202100	192000	184900	178100	175200	174800	171400	165100	151600	138300	122700	108800
2	202100	191600	184400	177700	175600	174800	171000	165100	150800	137900	122300	108500
3	202100	191600	184400	177700	175600	174800	171000	164700	150400	137200	121600	107900
4	201600	191200	184000	177700	175600	174300	171000	164200	150000	137200	120900	107400
5	201100	191200	183600	177300	175600	174300	171000	164200	149600	136500	120500	107100
6	200600	190700	183200	177300	175200	174300	170600	164200	149200	135800	119800	106500
7	200100	190300	183200	177300	175200	174300	170600	163800	148200	135400	119500	105900
8	200100	190300	182700	176900	175200	174300	170100	163400	147800	135100	119500	105600
9	199600	190300	182700	176900	175200	173900	170100	162600	147500	134400	118800	105300
10	199100	189900	182700	176900	175200	173900	169700	161700	146800	133700	118400	104800
11	199100	189900	182300	176000	175200	173500	169300	161700	146400	133300	118100	104500
12	199100	189900	181900	176000	175200	173500	168900	160900	145700	132900	117700	104800
13	198100	189500	181900	176000	174800	173100	168900	160900	145300	132200	117400	104500
14	197500	189100	181500	176000	174800	173100	168900	160500	145300	131900	116300	104200
15	197000	189100	181100	175600	174800	172700	168500	160000	145700	131500	115900	103900
16	197000	188600	181100	175200	175200	172700	168000	159200	145000	130800	115600	103300
17	196500	188200	180600	175200	175200	172700	168000	158800	144300	130500	114900	103100
18	196000	188200	180600	174800	175200	172700	167600	159200	143600	130100	114500	102800
19	195500	187800	180200	174800	175200	172200	167200	158400	143200	129400	114200	102200
20	195500	187800	179800	174800	174800	172200	167200	158400	143200	129400	113900	101900
21	195000	187800	179800	174800	175200	172200	166800	157900	142900	128700	113400	101900
22	195000	187400	179800	174800	175200	172200	166800	157500	142200	128000	112800	101300
23	195000	186500	179400	174800	175200	171800	166800	157100	141800	127600	112200	101000
24	194500	186500	179400	174300	175200	171800	166800	156700	141400	126600	111900	100800
25	194000	186100	179400	174300	175200	171800	166300	156300	141100	126600	111700	100200
26	193500	186100	179000	174300	175200	171400	165900	155400	140700	125900	111400	99900
27	193000	185700	179000	174300	174800	171000	165900	155000	140400	125100	110800	99620
28	192500	185700	179000	174800	174800	171800	165900	154200	139300	124400	110500	99040
29	192500	185300	178500	175200	---	171400	165500	153700	139000	124400	109900	98470
30	192500	184900	178500	175600	---	171800	165500	152900	138600	123700	109400	98180
31	192500	---	178100	175600	---	171800	---	152100	---	123000	109100	---
MAX	202100	192000	184900	178100	175600	174800	171400	165100	151600	138300	122700	108800
MIN	192500	184900	178100	174300	174800	171000	165500	152100	138600	123000	109100	98180
(+)	1060.1	1058.3	1056.7	1056.1	1055.9	1055.2	1053.7	1050.5	1046.8	1042.4	1038.1	1034.3
(-)	-9600	-7600	-6800	-2500	-800	-3000	-6300	-13400	-13500	-15600	-13900	-10920

CAL YR 1988 MAX 242400 MIN 178100 (Φ) -64300
WTR YR 1989 MAX 202100 MIN 98180 (Φ) -103920

(+) Gage height, in feet, at end of month.
(-) Change in contents, in acre-feet.

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, 350 ft downstream from county highway bridge, 1,900 ft downstream from head of canal and diversion dam, 4.6 mi downstream from Medina Dam, 4.7 mi north of Riomedina, and 25 mi 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. Elevation of gage is 910 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good except those above 125 cfs, which are fair. Station is above all diversions from canal. Canal diverts water from right end of Medina Diversion Dam 1,900 ft upstream from gage. Water is used for irrigation downstream near La Coste and Natalia. Prior to November 1984, double-barrel flume in canal 54 ft downstream from gage.

AVERAGE DISCHARGE.--43 years (water years 1923-33, 1958-89), 44.5 ft³/s (32,240 acre-ft/yr).

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

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	92	27	77	50	1.1	31	54	83	154	151	157	145
2	92	42	74	49	1.1	31	53	97	157	149	156	145
3	91	51	76	48	.57	32	66	102	154	150	154	147
4	90	56	77	46	.09	32	78	119	153	155	150	149
5	102	56	78	45	.00	32	78	141	153	155	146	149
6	117	59	79	51	.00	32	76	142	152	153	141	139
7	114	75	80	62	11	32	85	138	153	154	131	139
8	113	74	81	61	29	38	87	142	155	154	140	144
9	111	73	70	60	27	42	83	147	151	154	143	146
10	108	73	53	60	27	50	87	146	151	154	139	143
11	114	54	45	60	26	56	95	146	152	153	145	136
12	118	46	71	52	26	56	89	147	152	153	147	138
13	113	47	84	34	26	62	83	149	150	154	147	127
14	111	65	76	26	25	70	81	147	149	157	146	115
15	112	73	65	42	25	70	76	148	146	160	144	124
16	112	74	60	58	25	72	76	148	149	158	145	131
17	112	73	57	52	9.9	78	77	134	154	157	146	126
18	112	72	57	44	.80	82	80	145	155	156	143	125
19	110	72	56	39	.47	79	46	145	154	162	143	123
20	107	71	55	9.3	16	48	16	146	149	170	144	129
21	106	71	55	12	36	26	24	146	151	169	168	134
22	104	71	51	27	35	28	37	150	152	175	199	130
23	105	71	46	53	34	31	38	148	152	177	165	126
24	104	70	46	68	33	43	37	146	150	170	149	126
25	106	70	45	73	32	44	43	149	152	166	148	124
26	107	70	45	70	31	45	53	150	152	170	147	121
27	98	70	41	62	31	46	57	153	149	165	146	120
28	84	76	54	36	31	18	59	151	150	161	146	118
29	85	79	52	10	---	41	58	152	154	158	148	118
30	86	78	51	.86	---	30	57	154	152	159	149	118
31	47	---	51	1.1	---	55	---	155	---	160	148	---
TOTAL	3183	1959	1908	1361.26	540.03	1432	1929	4366	4557	4939	4620	3955
MEAN	103	65.3	61.5	43.9	19.3	46.2	64.3	141	152	159	149	132
MAX	118	79	84	73	36	82	95	155	157	177	199	149
MIN	47	27	41	.86	.00	18	16	83	146	149	131	115
AC-FT	6310	3890	3780	2700	1070	2840	3830	8660	9040	9800	9160	7840
CAL YR 1988	TOTAL	30483.33	MEAN	83.3	MAX	203	MIN	.00	AC-FT	60460		
WTR YR 1989	TOTAL	34749.29	MEAN	95.2	MAX	199	MIN	.00	AC-FT	68930		

GUADALUPE RIVER BASIN

261

08180640 MEDINA RIVER AT LA COSTE, TX

LOCATION.--Lat 29°19'26", long 98°48'46", Medina County, Hydrologic Unit 12100302, at downstream side of bridge on Farm Road 471, 1.0 mi north of La Coste, 5.0 mi upstream from Sherer Creek, and 27.4 mi upstream from mouth.

DRAINAGE AREA.--805 mi², of which 634 mi² is above dam forming Medina Lake.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--December 1986 to current year.

GAGE.--Water-stage recorder. Datum of gage is 667.15 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Flow is regulated by Medina Lake (station 08179500) and by Medina Diversion Lake (capacity, 4,500 acre-ft) 35 mi upstream. For diversion of canal records, see Medina Canal near Riomedina (station 08180000). A large part of the streamflow is lost into the Edwards and associated limestones where the Balcones Fault crosses the basin between the upstream end of Medina Lake and about 5 mi downstream from Medina Dam, or 0.9 mi downstream from the diversion dam. There are several small diversions below Medina Diversion Dam. Satellite telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,600 ft³/s May 30, 1987 (gage height, 24.05 ft); minimum daily, 16 ft³/s Sept. 4, 1989.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 253 ft³/s Jan. 29 at 1400 hours (gage height, 7.64 ft); minimum daily, 16 ft³/s Sept. 4.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	37	37	32	38	38	29	29	e30	21	23	25	18
2	38	34	30	38	38	29	29	e29	21	22	25	18
3	37	35	30	38	38	29	29	28	22	20	25	17
4	34	37	31	38	36	29	29	28	21	21	25	16
5	33	35	33	36	36	28	26	28	22	25	24	17
6	32	34	32	35	36	27	26	28	21	26	21	17
7	33	34	33	34	36	27	26	27	20	28	22	18
8	34	33	32	34	36	28	26	27	22	25	25	18
9	36	35	33	32	35	29	26	27	23	23	28	18
10	36	34	36	32	36	29	24	27	23	22	26	18
11	33	32	38	32	36	29	24	27	27	22	23	18
12	33	30	38	32	36	29	24	27	28	22	22	19
13	33	31	35	32	36	29	24	27	24	21	21	29
14	34	32	38	32	36	29	28	27	39	20	20	24
15	34	32	37	32	35	29	28	28	42	20	20	21
16	34	32	38	32	35	29	28	28	31	20	21	20
17	35	31	36	32	36	28	28	30	30	20	20	20
18	33	31	36	33	36	29	28	29	30	20	19	21
19	32	32	37	36	34	29	32	27	29	18	24	21
20	32	33	39	44	35	38	33	25	28	19	20	20
21	34	32	37	38	34	29	29	27	28	19	21	20
22	34	31	38	35	34	26	28	26	27	20	22	19
23	33	33	35	35	32	26	28	26	27	22	23	18
24	32	33	36	35	31	26	28	26	26	24	22	17
25	31	35	37	35	31	27	28	25	26	25	22	17
26	32	36	38	50	31	28	28	24	28	25	21	17
27	32	33	39	57	30	29	28	24	28	26	19	17
28	33	32	38	38	29	33	28	22	27	27	19	17
29	40	31	37	98	---	34	e28	21	24	28	18	17
30	37	31	37	48	---	31	e27	21	24	26	18	18
31	38	---	38	39	---	30	---	21	---	25	18	---
TOTAL	1059	991	1104	1200	972	901	827	817	789	704	679	565
MEAN	34.2	33.0	35.6	38.7	34.7	29.1	27.6	26.4	26.3	22.7	21.9	18.8
MAX	40	37	39	98	38	38	33	30	42	28	28	29
MIN	31	30	30	32	29	26	24	21	20	18	18	16
AC-FT	2100	1970	2190	2380	1930	1790	1640	1620	1560	1400	1350	1120
CAL YR 1988	TOTAL	16138	MEAN	44.1	MAX	121	MIN	24	AC-FT	32010		
WTR YR 1989	TOTAL	10608	MEAN	29.1	MAX	98	MIN	16	AC-FT	21040		

e Estimated.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: February 1987 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: January 1987 to current year.

pH: January 1987 to current year.

WATER TEMPERATURE: January 1987 to current year.

DISSOLVED OXYGEN: January 1987 to current year.

INSTRUMENTATION.--Beginning January 1987, a four-parameter water-quality monitor continuously records specific conductance, pH, water temperature, and dissolved oxygen at this station.

REMARKS.--Interruptions in the record were due to malfunctions of the instrument or probe fouling, and these days were deleted from the record. Where maximum or minimum specific conductance values are not shown, mean value is estimated. Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 720 microsiemens Sept. 3, 4, 1987; minimum, 340 microsiemens May 29, 1987.

pH: Maximum, 8.7 units June 17, 1989; minimum, 6.8 units Aug. 4, 5, 1988.

WATER TEMPERATURE: Maximum, 30.0°C July 17-19, 1989; minimum, 7.5°C Feb. 7, 1989.

DISSOLVED OXYGEN: Maximum, 13.1 mg/L Jan. 10, 11, 1988; minimum, 4.8 mg/L Sept. 19, 1987.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 560 microsiemens Oct. 27; minimum, 400 microsiemens Jan. 29.

pH: Maximum, 8.7 units June 17; minimum, 7.0 units Oct. 16.

WATER TEMPERATURE: Maximum, 30.0°C July 17-19; minimum, 7.5°C Feb. 7.

DISSOLVED OXYGEN: Maximum, 12.0 mg/L Feb. 9, 10; minimum, 5.0 mg/L July 21.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB WH WAT TOT FLD (MG/L AS CAC03)
OCT 18...	1100	32	533	7.90	21.0	7.9	90	1.5	240	54
DEC 16...	1015	37	540	8.00	11.5	9.8	90	0.9	250	46
FEB 27...	1445	30	504	8.20	17.0	10.2	109	0.6	240	49
JUN 01...	1115	21	500	7.90	27.0	6.4	82	0.7	220	42
JUL 19...	1340	18	485	7.50	29.0	6.4	85	0.5	220	48
SEP 07...	1115	15	514	8.00	28.0	6.9	91	0.8	220	39

DATE	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT WH TOT FET FIELD (MG/L AS CAC03)	SULFATE DIS-SOLVED (MG/L AS S04)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)
OCT 18...	67	17	18	0.5	2.3	184	40	16	0.20
DEC 16...	72	17	19	0.5	1.8	204	46	17	0.20
FEB 27...	67	17	19	0.6	2.0	189	52	20	0.30
JUN 01...	63	16	15	0.5	2.1	182	49	16	0.20
JUL 19...	60	16	15	0.5	1.8	168	49	14	0.20
SEP 07...	62	16	16	0.5	2.8	182	49	16	0.30

DATE	SILICA, DIS-SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (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-PHOUS TOTAL (MG/L AS P)
OCT 18...	12	283	--	<0.010	3.80	0.010	0.29	0.30	0.010
DEC 16...	12	307	--	<0.010	3.70	0.020	0.78	0.80	0.020
FEB 27...	9.3	300	--	<0.010	3.10	0.030	0.37	0.40	0.020
JUN 01...	12	282	--	<0.010	1.50	<0.010	--	<0.20	0.030
JUL 19...	14	271	1.48	0.020	1.50	0.030	0.47	0.50	0.010
SEP 07...	13	284	1.29	0.010	1.30	0.030	0.27	0.30	0.030

GUADALUPE RIVER BASIN

263

08180640 MEDINA RIVER AT LA COSTE, TX--Continued

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1988 TO SEPTEMBER 1989

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	DIS- SOLVED SOLIDS (MG/L)	DIS- SOLVED SOLIDS (TONS)	DIS- SOLVED CHLORIDE (MG/L)	DIS- SOLVED CHLORIDE (TONS)	DIS- SOLVED SULFATE (MG/L)	DIS- SOLVED SULFATE (TONS)	HARDNESS (CA,MG) (MG/L)
OCT. 1988	1059	532	288	824	19	55	47	135	230
NOV. 1988	991	537	291	780	19	52	48	128	230
DEC. 1988	1104	542	295	878	20	59	48	144	230
JAN. 1989	1200	523	283	916	19	60	46	151	220
FEB. 1989	972	533	289	758	19	50	47	125	230
MAR. 1989	901	515	278	677	18	44	46	111	220
APR. 1989	827	529	287	640	19	42	47	105	220
MAY 1989	817	510	275	606	18	39	45	100	220
JUNE 1989	789	484	259	552	16	34	43	91	200
JULY 1989	704	483	258	490	16	31	43	81	200
AUG. 1989	679	477	254	466	16	29	42	77	200
SEPT 1989	565	481	257	392	16	24	43	65	200
TOTAL	10608	**	**	8000	**	520	**	1310	**
WTD.AVG.	29	516	279	**	18	**	46	**	220

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	550	530	543	530	520	530	540	530	536	550	530	536
2	550	530	540	540	520	530	540	530	538	540	530	543
3	550	530	540	540	520	532	540	530	540	550	540	540
4	550	530	541	540	520	532	540	530	540	550	540	545
5	550	530	540	540	530	533	550	540	544	550	540	541
6	550	530	538	540	530	534	550	540	544	550	540	542
7	550	530	540	540	520	534	550	540	545	550	540	542
8	550	520	538	540	530	538	550	540	547	550	540	543
9	550	530	538	550	530	540	550	540	544	550	530	540
10	550	530	538	550	530	541	550	540	543	550	530	540
11	550	530	538	550	530	540	550	540	544	550	540	543
12	550	500	530	550	540	541	550	540	543	550	530	541
13	530	520	524	550	540	542	550	540	543	540	530	536
14	530	520	528	550	530	541	550	540	546	550	530	537
15	530	520	526	550	540	542	550	540	545	550	530	539
16	530	520	524	550	540	545	550	540	545	540	530	539
17	530	520	522	550	530	542	550	540	546	550	540	541
18	530	520	523	550	540	544	550	540	546	550	540	543
19	540	520	528	550	540	544	550	540	546	550	540	545
20	530	520	527	550	540	543	550	540	550	550	530	539
21	540	520	527	540	530	530	550	540	549	540	520	533
22	540	520	527	540	510	529	550	530	544	540	520	529
23	530	520	527	540	520	532	550	540	542	540	520	533
24	530	520	527	550	530	534	550	540	541	550	530	539
25	540	500	529	540	530	535	550	540	541	540	530	537
26	540	520	530	540	530	536	550	530	539	540	450	527
27	560	520	533	540	530	537	550	540	541	510	460	482
28	540	520	532	540	530	536	540	520	530	520	470	507
29	540	520	528	540	530	536	540	520	530	490	400	453
30	540	520	530	540	530	536	540	530	534	490	430	469
31	540	520	527	---	---	---	540	530	536	510	420	456
MONTH	560	500	532	550	510	537	550	520	542	550	400	528

GUADALUPE RIVER BASIN

08180640 MEDINA RIVER AT LA COSTE, TX--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	520	490	507	542	530	533	550	520	531	---	---	520
2	510	490	495	540	529	533	540	520	531	---	---	520
3	520	510	514	539	527	534	540	520	529	---	---	520
4	530	520	526	537	516	529	540	520	529	540	530	532
5	540	520	528	525	514	523	540	460	529	530	520	526
6	530	520	525	524	513	522	540	520	530	530	520	525
7	540	520	526	531	511	521	540	520	528	530	520	524
8	530	520	529	521	500	514	540	520	529	530	520	526
9	540	520	526	510	500	506	540	530	531	530	520	525
10	540	520	527	510	500	508	530	510	523	530	520	528
11	540	530	532	520	500	510	530	510	525	530	520	529
12	540	530	532	520	500	509	530	520	526	530	---	520
13	547	530	539	510	500	508	550	510	524	---	---	520
14	556	545	550	510	500	508	540	520	529	---	---	520
15	555	542	551	520	500	510	540	530	531	---	---	510
16	553	541	544	520	500	509	540	530	531	---	---	510
17	552	539	543	520	510	511	540	520	533	---	---	510
18	550	537	542	520	510	511	540	530	532	---	---	510
19	548	536	541	520	500	513	540	520	529	---	---	500
20	547	535	544	510	490	502	540	520	530	---	---	500
21	555	544	545	510	480	494	530	520	529	---	---	500
22	543	532	541	500	490	497	530	520	525	---	---	500
23	541	531	540	510	490	503	540	520	530	---	---	500
24	540	529	538	510	500	503	540	520	530	---	---	490
25	549	536	540	510	500	503	540	530	532	---	480	490
26	547	535	537	510	500	506	540	530	531	500	490	490
27	545	533	537	540	500	520	540	530	532	500	480	490
28	543	522	534	540	530	534	---	---	530	490	480	489
29	---	---	---	540	530	535	---	---	530	490	480	485
30	---	---	---	540	520	529	---	---	530	490	480	488
31	---	---	---	540	520	531	---	---	---	490	480	486
MONTH	556	490	533	542	480	515	550	460	529	540	480	509
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	490	480	487	500	480	487	490	480	483	480	470	478
2	490	480	486	490	480	486	490	480	482	480	470	479
3	490	480	486	490	480	484	490	480	481	480	470	477
4	490	470	483	490	480	485	490	470	481	480	470	477
5	490	480	484	490	480	487	490	480	481	480	470	477
6	490	470	484	490	480	487	490	480	482	480	470	474
7	510	480	491	490	480	486	490	470	482	480	470	477
8	500	490	497	490	480	483	490	480	481	490	470	482
9	500	490	495	490	480	484	480	470	478	490	480	486
10	500	490	494	490	470	482	480	460	474	490	480	485
11	500	480	490	490	480	483	470	460	463	490	480	485
12	500	480	493	490	480	482	470	460	468	490	480	484
13	500	480	496	490	480	481	480	470	471	490	480	482
14	500	480	489	490	480	483	480	470	472	490	450	473
15	500	490	491	490	480	482	480	470	473	470	450	460
16	490	470	484	490	480	484	480	470	473	470	440	457
17	500	480	490	490	470	482	480	470	475	480	450	466
18	500	480	492	490	480	481	480	470	476	490	470	482
19	500	480	489	490	480	482	480	470	476	500	480	489
20	500	490	492	490	480	481	480	470	476	490	480	488
21	490	470	482	490	470	481	480	470	475	490	480	487
22	480	460	470	480	470	480	480	470	475	490	480	487
23	480	460	470	480	480	480	480	470	477	490	480	487
24	480	460	470	480	470	478	480	470	476	490	480	486
25	470	460	469	480	470	479	480	470	475	490	480	488
26	480	460	471	490	480	481	480	470	475	490	480	488
27	480	470	472	490	470	479	480	470	478	490	480	487
28	480	470	475	490	480	480	480	480	480	490	480	489
29	480	470	476	490	470	480	480	470	478	490	480	489
30	490	480	485	490	480	483	480	470	478	500	490	491
31	---	---	---	490	480	485	480	470	478	---	---	---
MONTH	510	460	484	500	470	483	490	460	477	500	440	481

GUADALUPE RIVER BASIN

265

08180640 MEDINA RIVER AT LA COSTE, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	8.2	8.0	8.1	7.8	7.7	7.8	8.1	8.0	8.1	8.0	8.0	8.0
2	7.9	7.8	7.9	7.8	7.6	7.7	8.1	8.0	8.1	8.0	8.0	8.0
3	7.9	7.7	7.8	7.9	7.8	7.9	8.1	8.0	8.1	8.0	7.9	8.0
4	7.8	7.8	7.8	8.0	7.9	7.9	8.1	8.0	8.1	8.1	8.0	8.1
5	7.8	7.8	7.8	8.0	7.9	8.0	8.1	8.0	8.0	8.1	8.0	8.1
6	7.9	7.8	7.8	8.0	7.9	8.0	8.0	8.0	8.0	8.1	8.0	8.0
7	7.9	7.9	7.9	8.1	7.9	8.1	8.0	8.0	8.0	8.1	8.0	8.0
8	8.0	7.9	7.9	8.1	8.1	8.1	8.0	8.0	8.0	8.1	8.0	8.1
9	8.0	7.8	7.9	8.2	8.1	8.1	8.0	8.0	8.0	8.1	8.0	8.1
10	8.0	7.9	8.0	8.2	8.1	8.2	8.0	8.0	8.0	8.1	8.0	8.1
11	8.0	8.0	8.0	8.2	8.2	8.2	8.0	8.0	8.0	8.1	8.0	8.1
12	8.1	8.0	8.0	8.2	8.2	8.2	8.0	8.0	8.0	8.0	7.9	8.0
13	8.1	7.9	8.0	8.2	8.1	8.2	8.0	7.9	8.0	8.0	7.9	8.0
14	8.0	7.8	7.9	8.2	8.1	8.2	8.0	7.9	8.0	8.0	7.9	8.0
15	7.8	7.3	7.5	8.1	8.1	8.1	7.9	7.9	7.9	8.0	7.9	8.0
16	7.3	7.0	7.2	8.1	8.1	8.1	7.9	7.9	7.9	8.0	7.9	8.0
17	---	---	---	8.1	8.1	8.1	7.9	7.9	7.9	8.0	8.0	8.0
18	---	---	---	8.1	8.1	8.1	7.9	7.8	7.9	8.0	7.9	8.0
19	---	---	---	8.1	8.1	8.1	7.9	7.9	7.9	8.0	8.0	8.0
20	---	---	---	8.2	8.1	8.1	7.9	7.9	7.9	8.1	8.0	8.0
21	---	---	---	8.4	8.1	8.2	7.9	7.8	7.9	8.1	8.0	8.0
22	---	---	---	8.2	8.1	8.2	8.0	7.8	7.9	8.1	7.9	8.0
23	7.2	7.1	7.1	---	---	---	8.0	8.0	8.0	8.1	8.0	8.1
24	7.4	7.1	7.3	---	---	---	8.0	8.0	8.0	8.1	8.0	8.1
25	7.6	7.3	7.4	---	---	---	8.0	8.0	8.0	8.1	8.0	8.0
26	7.5	7.3	7.4	---	---	---	8.0	8.0	8.0	8.1	8.0	8.1
27	7.6	7.4	7.6	---	---	---	8.0	8.0	8.0	8.1	8.0	8.0
28	7.7	7.5	7.6	8.2	8.1	8.2	8.0	8.0	8.0	8.0	8.0	8.0
29	7.7	7.6	7.6	8.2	8.0	8.1	8.1	8.0	8.0	8.1	8.0	8.0
30	7.8	7.6	7.7	8.1	8.0	8.1	8.0	8.0	8.0	8.0	8.0	8.0
31	7.8	7.8	7.8	---	---	---	8.0	8.0	8.0	8.0	7.9	8.0
MONTH	8.2	7.0	7.7	8.4	7.6	8.1	8.1	7.8	8.0	8.1	7.9	8.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	8.0	8.0	8.0	8.2	8.2	8.2	8.0	7.9	8.0	---	---	---
2	8.0	7.9	8.0	8.2	8.2	8.2	8.0	7.9	7.9	---	---	---
3	8.1	8.0	8.0	8.2	8.2	8.2	8.0	7.9	7.9	---	---	---
4	8.1	8.0	8.1	8.2	8.2	8.2	8.0	7.9	7.9	8.2	8.2	8.2
5	8.1	8.1	8.1	8.3	8.2	8.2	8.1	7.9	7.9	8.2	8.1	8.2
6	8.2	8.1	8.1	8.3	8.2	8.3	8.0	7.9	8.0	8.2	8.1	8.1
7	8.2	8.0	8.1	8.3	8.2	8.3	8.0	7.9	8.0	8.2	8.1	8.2
8	8.2	8.0	8.1	8.3	8.2	8.3	8.0	7.9	8.0	8.1	8.0	8.1
9	8.2	8.0	8.1	8.4	8.3	8.4	8.0	7.9	8.0	8.1	8.0	8.1
10	8.2	8.1	8.2	8.4	8.3	8.4	8.1	8.0	8.0	8.1	8.0	8.1
11	8.2	8.1	8.2	8.4	8.2	8.3	8.0	8.0	8.0	8.1	8.0	8.1
12	8.2	8.1	8.1	8.3	8.2	8.2	8.0	8.0	8.0	8.1	8.0	8.1
13	8.2	8.1	8.2	8.2	8.1	8.2	8.0	8.0	8.0	8.1	8.0	8.1
14	8.3	8.2	8.3	8.2	8.1	8.2	8.0	8.0	8.0	8.1	8.0	8.1
15	8.3	8.2	8.2	8.2	8.1	8.2	8.0	8.0	8.0	8.1	8.0	8.1
16	8.3	8.2	8.3	8.1	8.0	8.1	8.0	7.9	8.0	8.1	8.0	8.1
17	8.3	8.2	8.2	8.2	8.0	8.1	8.3	7.9	8.1	8.1	8.1	8.1
18	8.2	8.2	8.2	8.1	8.0	8.0	8.4	8.3	8.4	8.1	8.0	8.1
19	8.2	8.2	8.2	8.1	8.0	8.0	8.4	8.3	8.4	8.1	8.0	8.0
20	8.2	8.2	8.2	8.0	8.0	8.0	8.4	8.3	8.3	8.1	7.9	8.0
21	8.2	8.1	8.2	8.0	8.0	8.0	8.4	8.3	8.3	8.0	7.9	7.9
22	8.2	8.1	8.2	8.0	8.0	8.0	8.4	8.3	8.3	8.0	7.8	7.9
23	8.2	8.1	8.2	8.1	8.0	8.1	8.4	8.3	8.3	8.1	7.9	8.0
24	8.2	8.2	8.2	8.0	7.9	8.0	8.4	8.3	8.3	8.1	8.0	8.0
25	8.2	8.1	8.2	8.0	7.9	7.9	8.4	8.3	8.3	8.1	7.9	8.0
26	8.2	8.1	8.2	8.0	7.9	7.9	8.3	8.3	8.3	8.2	8.0	8.1
27	8.2	8.1	8.2	8.0	7.9	7.9	8.3	8.3	8.3	8.1	7.9	8.1
28	8.2	8.2	8.2	8.0	8.0	8.0	---	---	---	8.2	8.1	8.1
29	---	---	---	8.0	8.0	8.0	---	---	---	8.2	8.1	8.1
30	---	---	---	8.0	7.9	8.0	---	---	---	8.2	8.1	8.2
31	---	---	---	8.0	7.9	7.9	---	---	---	8.2	8.1	8.2
MONTH	8.3	7.9	8.2	8.4	7.9	8.1	8.4	7.9	8.1	8.2	7.8	8.1

GUADALUPE RIVER BASIN

08180640 MEDINA RIVER AT LA COSTE, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	8.3	8.2	8.2	---	---	---	---	---	---	8.3	8.1	8.2
2	8.2	8.1	8.2	---	---	---	---	---	---	8.3	8.1	8.2
3	8.2	8.1	8.2	---	---	---	7.7	7.3	7.6	8.3	8.1	8.2
4	8.2	8.1	8.2	---	---	---	7.7	7.5	7.6	8.3	7.9	8.2
5	8.2	8.1	8.1	---	---	---	7.8	7.6	7.7	8.0	7.7	7.9
6	8.1	8.0	8.1	---	---	---	8.0	7.7	7.9	8.2	7.9	8.1
7	8.1	8.0	8.1	8.1	7.9	8.0	8.0	7.6	7.8	8.3	7.9	8.1
8	8.2	8.0	8.1	---	---	---	7.8	7.4	7.6	8.3	8.0	8.1
9	8.2	8.1	8.2	---	---	---	8.0	7.6	7.8	8.2	7.7	7.9
10	8.3	8.1	8.2	---	---	---	8.0	7.7	7.9	7.9	7.7	7.8
11	8.3	8.2	8.3	---	---	---	---	---	---	8.0	7.8	7.9
12	8.4	8.2	8.3	---	---	---	---	---	---	---	---	---
13	8.5	8.3	8.3	---	---	---	---	---	---	---	---	---
14	8.5	8.3	8.4	---	---	---	---	---	---	---	---	---
15	8.6	8.4	8.5	---	---	---	---	---	---	---	---	---
16	8.6	8.5	8.5	---	---	---	---	---	---	---	---	---
17	8.7	8.5	8.6	7.4	7.1	7.3	---	---	---	---	---	---
18	8.6	8.3	8.5	7.6	7.1	7.4	---	---	---	---	---	---
19	8.4	7.9	8.2	7.5	7.2	7.4	7.7	7.3	7.5	---	---	---
20	7.9	7.4	7.7	---	---	---	7.6	7.4	7.5	---	---	---
21	8.1	7.4	7.9	---	---	---	7.7	7.5	7.6	---	---	---
22	8.1	8.0	8.1	---	---	---	7.8	7.5	7.7	---	---	---
23	8.1	7.9	8.0	---	---	---	7.9	7.7	7.8	8.3	8.2	8.2
24	8.0	7.8	7.9	---	---	---	8.0	7.8	7.9	8.3	8.2	8.3
25	7.8	7.5	7.7	---	---	---	8.0	7.7	7.9	8.3	8.2	8.3
26	---	---	---	---	---	---	7.9	7.7	7.8	8.3	8.2	8.3
27	---	---	---	---	---	---	8.0	7.7	7.8	8.3	8.2	8.2
28	---	---	---	---	---	---	8.1	7.8	7.9	8.3	8.2	8.2
29	---	---	---	---	---	---	8.1	7.8	8.0	8.3	8.2	8.2
30	---	---	---	---	---	---	8.1	7.9	8.0	8.2	8.2	8.2
31	---	---	---	7.5	7.3	7.4	8.2	8.0	8.1	---	---	---
MONTH	8.7	7.4	8.2	8.1	7.1	7.5	8.2	7.3	7.8	8.3	7.7	8.1

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	24.5	23.0	24.0	21.5	21.0	21.5	13.0	12.0	12.5	14.0	13.0	13.5
2	24.0	23.0	23.5	21.0	20.0	20.5	13.0	11.5	12.5	14.5	13.5	14.0
3	23.5	22.0	23.0	21.0	19.5	20.0	12.5	11.5	12.5	16.0	14.5	15.0
4	22.5	21.5	22.0	21.0	19.5	20.5	13.0	12.0	12.5	15.5	14.5	15.0
5	22.0	21.0	21.5	20.5	19.5	20.0	13.5	13.0	13.5	16.0	14.5	15.0
6	21.5	20.5	21.0	19.5	18.5	19.0	13.5	13.0	13.5	16.0	15.0	15.5
7	21.5	20.0	21.0	19.5	18.0	18.5	14.5	13.5	14.0	17.0	15.5	16.5
8	21.5	20.0	21.0	19.5	18.5	19.0	14.5	13.5	14.0	16.5	15.0	16.0
9	22.0	20.5	21.0	20.5	19.0	20.0	13.5	12.0	12.5	15.0	13.5	14.0
10	21.5	20.5	21.0	20.5	20.0	20.5	12.0	12.0	12.0	13.5	13.0	13.5
11	21.0	20.0	20.5	20.5	20.0	20.0	12.5	11.5	12.0	14.5	13.5	14.0
12	20.5	19.5	20.0	21.0	20.0	20.5	12.5	11.5	12.0	14.0	13.5	14.0
13	20.0	18.5	19.5	20.5	19.5	20.0	12.0	11.0	11.5	13.5	12.0	12.5
14	20.5	19.0	19.5	20.5	19.5	20.0	12.0	11.0	11.5	12.0	11.0	11.5
15	20.5	19.0	20.0	21.5	20.5	21.0	12.5	11.5	12.0	12.0	10.5	11.5
16	21.0	19.5	20.5	21.0	19.5	20.5	12.5	11.5	12.0	12.0	10.5	11.5
17	21.5	20.0	21.0	19.5	18.0	18.5	11.5	11.0	11.5	12.0	11.0	11.5
18	22.0	20.5	21.0	18.5	17.5	18.0	11.5	10.5	11.0	12.5	12.0	12.5
19	22.0	21.0	21.5	19.0	18.0	18.5	12.0	10.5	11.0	13.0	12.5	13.0
20	22.0	21.0	21.5	18.0	16.5	17.5	13.0	12.0	12.5	13.0	12.5	13.0
21	22.5	21.5	22.0	16.5	15.0	16.0	14.0	12.5	13.5	12.5	11.5	12.0
22	22.5	21.5	22.0	15.0	14.0	14.5	15.0	14.0	14.5	12.0	10.5	11.5
23	22.5	21.5	22.0	14.5	13.5	14.0	15.0	14.5	15.0	12.0	10.5	11.5
24	22.5	21.5	22.0	14.5	13.5	14.0	15.0	14.0	14.5	13.5	12.0	12.5
25	22.0	21.5	22.0	16.0	14.5	15.0	15.0	14.0	14.5	15.0	13.5	14.0
26	23.0	22.0	22.5	16.5	15.5	16.0	16.5	15.0	15.5	15.5	14.0	15.0
27	23.0	22.0	22.5	16.0	15.0	15.5	16.5	16.0	16.5	14.0	13.5	13.5
28	23.0	22.5	22.5	15.0	13.5	14.0	15.5	14.0	15.0	15.0	13.5	14.0
29	23.0	22.0	22.5	13.5	12.5	13.5	13.5	12.5	13.0	14.5	13.0	14.0
30	22.5	22.0	22.0	13.5	12.5	13.0	13.5	13.0	13.0	14.5	13.5	14.0
31	22.5	21.5	22.0	---	---	---	14.0	13.0	13.5	15.0	13.5	14.0
MONTH	24.5	18.5	21.5	21.5	12.5	18.0	16.5	10.5	13.0	17.0	10.5	13.5

GUADALUPE RIVER BASIN

267

08180640 MEDINA RIVER AT LA COSTE, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	15.5	14.5	15.0	15.5	14.5	14.5	21.5	19.5	20.5	---	---	---
2	16.5	15.0	16.0	15.5	14.5	15.0	22.0	20.0	21.0	---	---	---
3	16.5	14.0	15.5	16.5	15.0	15.5	23.0	20.5	21.5	---	---	---
4	14.0	11.5	12.5	16.0	14.5	16.0	23.5	21.5	22.5	25.5	23.5	24.5
5	11.5	9.5	10.5	14.5	12.0	13.0	22.5	21.0	21.5	25.0	24.0	24.5
6	9.5	8.0	9.0	12.5	11.0	12.0	22.0	20.0	21.0	25.5	24.0	24.5
7	9.0	7.5	8.5	12.5	10.5	11.5	22.5	20.0	21.0	26.0	24.0	25.0
8	9.5	8.0	9.0	13.0	10.5	12.0	23.5	21.0	22.0	26.5	24.5	25.5
9	10.0	8.0	9.0	13.5	11.5	12.5	22.0	21.0	21.5	26.5	25.0	26.0
10	9.5	8.5	9.0	14.5	12.0	13.0	20.5	18.0	19.0	26.0	25.0	25.5
11	10.0	9.5	10.0	15.5	13.0	14.0	18.0	17.5	18.0	25.5	24.5	25.0
12	12.0	10.0	11.0	16.5	14.0	15.0	17.5	17.0	17.5	25.0	24.0	24.5
13	13.5	12.0	13.0	17.5	15.0	16.0	17.0	16.0	16.5	24.5	24.0	24.0
14	14.5	13.5	14.0	19.0	16.0	17.5	16.5	16.0	16.5	25.0	23.5	24.5
15	15.5	14.0	15.0	19.0	17.5	18.0	18.0	16.5	17.0	25.0	24.0	24.5
16	15.0	14.5	15.0	19.0	17.5	18.0	19.0	17.0	18.0	25.0	24.5	25.0
17	14.5	13.5	14.0	20.0	18.0	19.0	20.0	18.0	19.0	26.0	24.5	25.5
18	13.5	13.0	13.5	21.0	19.5	20.5	21.5	19.0	20.0	26.5	25.0	25.5
19	13.5	13.0	13.0	20.5	20.0	20.5	21.5	20.0	21.0	27.0	25.0	26.0
20	14.5	13.0	13.5	21.5	19.5	20.5	22.0	20.5	21.0	28.0	26.0	26.5
21	15.5	14.0	14.5	20.0	17.5	19.0	23.0	21.0	22.0	28.0	26.5	27.0
22	15.0	13.5	14.0	17.5	16.0	17.0	23.5	21.5	22.5	28.0	26.5	27.0
23	14.5	13.0	14.0	18.0	16.0	17.0	24.0	22.0	23.0	28.5	26.5	27.5
24	14.0	12.5	13.0	18.5	16.5	17.5	24.0	22.5	23.0	28.5	27.0	27.5
25	15.5	13.0	14.0	19.0	18.0	18.5	23.5	22.5	23.0	28.5	27.0	28.0
26	16.5	14.5	15.5	19.5	18.5	19.0	24.0	23.0	23.5	29.0	27.0	28.0
27	17.5	15.0	16.0	21.0	19.0	20.0	24.5	23.0	23.5	28.5	27.5	28.0
28	16.5	15.5	16.0	22.0	20.0	21.0	---	---	---	28.5	27.0	27.5
29	---	---	---	22.0	20.0	21.0	---	---	---	28.0	27.0	27.5
30	---	---	---	22.0	20.0	21.0	---	---	---	28.0	26.5	27.0
31	---	---	---	21.5	20.0	21.0	---	---	---	28.0	26.5	27.0
MONTH	17.5	7.5	13.0	22.0	10.5	17.0	24.5	16.0	20.5	29.0	23.5	26.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	28.0	26.5	27.5	29.0	27.0	28.0	28.0	27.5	28.0	29.0	28.0	28.5
2	28.5	27.0	27.5	29.5	27.5	28.5	28.5	27.0	28.0	29.5	28.0	28.5
3	28.5	27.0	27.5	29.5	28.0	28.5	28.5	27.5	28.0	29.5	28.0	28.5
4	28.0	27.0	27.5	29.5	28.0	29.0	28.5	27.5	28.0	29.0	28.0	28.5
5	28.5	27.0	27.5	29.5	28.0	29.0	29.0	27.5	28.0	29.0	28.0	28.5
6	29.0	27.0	28.0	28.5	28.0	28.5	29.0	27.5	28.5	28.5	27.5	28.0
7	29.0	27.5	28.0	29.0	27.5	28.0	29.0	27.5	28.0	28.5	27.5	28.0
8	28.5	27.0	28.0	29.0	27.5	28.5	28.0	27.0	27.5	28.5	27.5	28.0
9	28.0	27.0	27.5	29.0	28.0	28.5	27.0	26.0	26.5	28.0	27.0	28.0
10	28.0	27.0	27.5	29.0	28.0	28.5	26.5	25.5	26.0	28.0	27.5	28.0
11	28.5	26.5	27.5	29.0	28.0	28.5	26.5	25.5	26.0	28.5	27.5	28.0
12	28.5	27.0	27.5	29.0	28.0	28.5	26.5	25.5	26.0	28.5	27.0	27.5
13	28.5	27.0	28.0	29.0	28.0	28.5	26.5	25.5	26.0	28.0	27.0	27.5
14	27.5	26.5	27.0	29.0	28.0	28.5	26.0	25.5	26.0	27.0	25.5	26.0
15	27.5	26.0	26.5	29.5	28.0	28.5	27.0	25.5	26.5	25.5	24.5	25.0
16	27.5	25.5	26.5	29.5	28.0	29.0	27.5	26.0	26.5	25.0	24.0	24.5
17	27.5	25.5	26.5	30.0	28.5	29.0	27.5	26.5	27.0	24.5	23.5	24.0
18	28.0	26.0	27.0	30.0	28.5	29.0	27.5	26.5	27.0	24.5	23.5	24.0
19	28.5	26.5	27.5	30.0	28.5	29.0	28.0	26.5	27.0	24.5	23.5	24.0
20	28.5	27.0	28.0	29.5	28.5	29.0	28.0	26.5	27.5	25.0	23.5	24.0
21	29.0	27.0	28.0	28.5	27.5	28.0	28.5	27.0	27.5	25.0	24.0	24.5
22	28.5	27.0	27.5	28.0	27.0	27.5	28.5	27.0	28.0	24.5	24.0	24.5
23	28.0	27.0	27.5	27.5	26.5	27.0	28.5	27.5	28.0	24.0	23.0	23.5
24	27.5	26.5	27.0	27.0	26.0	27.0	28.0	27.5	27.5	23.0	22.0	22.5
25	27.0	26.0	26.5	27.5	26.0	26.5	28.5	27.0	27.5	21.5	21.0	21.5
26	26.5	26.0	26.0	27.5	26.0	26.5	28.5	27.5	28.0	21.5	20.5	21.0
27	27.5	25.5	26.5	27.0	26.5	26.5	29.0	27.5	28.0	21.0	20.0	20.5
28	28.0	26.0	27.0	28.0	26.5	27.0	28.5	27.5	28.0	21.0	20.0	20.5
29	28.0	26.5	27.5	28.0	26.5	27.5	29.0	28.0	28.0	21.0	20.0	20.5
30	28.0	27.0	27.5	28.5	27.0	27.5	29.0	27.5	28.5	21.5	20.0	21.0
31	---	---	---	28.5	27.0	28.0	29.0	27.5	28.5	---	---	---
MONTH	29.0	25.5	27.5	30.0	26.0	28.0	29.0	25.5	27.5	29.5	20.0	25.0

GUADALUPE RIVER BASIN
08180640 MEDINA RIVER AT LA COSTE, TX--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	8.4	6.8	7.4	7.8	6.9	7.2	---	---	---	9.0	8.6	8.8
2	7.8	6.7	7.2	8.0	7.2	7.4	---	---	---	9.1	8.7	8.8
3	8.7	7.4	8.0	8.1	7.3	7.6	---	---	---	8.8	8.3	8.6
4	9.1	7.9	8.3	8.1	7.4	7.6	---	---	---	8.5	8.1	8.3
5	10.0	7.5	8.9	8.1	7.4	7.6	---	---	---	8.5	8.0	8.2
6	9.6	8.2	8.9	8.3	7.5	7.9	---	---	---	8.5	7.9	8.1
7	9.8	8.0	8.7	8.4	7.7	8.0	---	---	---	8.6	7.9	8.2
8	9.3	8.2	8.8	8.7	7.7	8.1	---	---	---	8.3	7.8	8.0
9	8.6	7.5	8.2	8.6	8.0	8.2	---	---	---	8.5	8.0	8.2
10	8.3	7.4	7.8	8.5	7.8	8.1	---	---	---	9.0	8.3	8.6
11	8.4	7.4	7.8	8.4	7.7	8.0	9.5	9.0	9.3	9.2	8.6	8.8
12	8.9	7.7	8.2	8.3	7.7	7.9	9.5	9.1	9.3	8.9	8.5	8.6
13	9.0	8.2	8.5	8.5	7.7	7.9	9.7	9.2	9.4	8.8	8.4	8.6
14	9.3	8.6	8.9	8.4	7.7	8.0	9.7	9.3	9.4	9.5	8.8	9.1
15	9.2	8.4	8.8	8.1	7.6	7.8	9.5	9.2	9.3	9.8	9.2	9.4
16	8.8	8.1	8.4	8.2	7.6	7.8	9.4	9.1	9.2	9.9	9.3	9.6
17	8.6	7.9	8.2	8.6	7.8	8.2	9.7	9.1	9.4	9.8	9.2	9.5
18	8.5	7.8	8.0	8.6	8.0	8.3	9.9	9.4	9.6	9.5	9.1	9.3
19	8.3	7.6	7.9	8.6	8.0	8.2	9.9	9.3	9.7	9.4	8.9	9.1
20	8.2	7.5	7.8	8.7	8.1	8.4	9.4	8.8	9.1	9.7	8.8	9.2
21	7.9	7.3	7.5	9.2	8.3	8.7	9.1	8.7	8.9	10.1	9.3	9.6
22	7.9	7.2	7.5	9.0	8.6	8.8	9.0	8.5	8.7	10.3	9.6	9.9
23	7.8	7.1	7.4	9.2	8.7	8.9	8.5	8.2	8.4	10.4	9.8	10.0
24	7.7	7.0	7.2	9.3	8.9	9.1	8.6	8.2	8.3	10.1	9.4	9.7
25	7.7	7.0	7.2	9.4	8.8	9.1	8.5	8.1	8.3	9.7	9.1	9.4
26	7.6	6.9	7.1	9.7	8.7	9.0	8.5	8.0	8.2	9.4	8.9	9.1
27	7.6	6.9	7.1	---	---	---	8.0	7.7	7.9	9.2	8.8	9.0
28	7.7	6.9	7.1	---	---	---	8.5	7.7	8.1	9.0	8.6	8.8
29	7.5	6.8	7.1	---	---	---	9.0	8.4	8.7	9.2	8.5	8.9
30	7.5	6.8	7.0	---	---	---	8.9	8.5	8.7	9.0	8.8	8.9
31	7.4	6.8	7.0	---	---	---	9.0	8.5	8.7	9.2	8.8	9.0
MONTH	10.0	6.7	7.9	9.7	6.9	8.1	9.9	7.7	8.9	10.4	7.8	8.9
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	9.1	8.6	8.9	8.9	8.0	8.4	8.9	7.7	8.1	---	---	---
2	9.0	8.4	8.7	9.0	8.1	8.5	8.6	7.6	8.0	---	---	---
3	9.3	8.4	8.8	9.1	8.2	8.5	8.5	7.5	7.9	---	---	---
4	9.9	8.9	9.4	8.8	8.0	8.4	8.6	7.4	7.8	7.3	6.0	6.6
5	10.3	9.5	9.9	9.6	8.2	8.9	8.7	7.3	7.9	7.0	6.1	6.4
6	11.0	10.0	10.5	10.2	9.2	9.6	8.9	7.6	8.1	7.2	5.9	6.5
7	11.5	10.6	11.0	10.4	9.4	9.8	8.8	7.6	8.1	7.4	6.1	6.6
8	11.8	10.9	11.2	11.0	9.5	10.1	8.6	7.5	7.9	7.4	6.1	6.6
9	12.0	11.1	11.4	10.9	10.0	10.3	8.4	7.3	7.7	7.2	6.0	6.5
10	12.0	11.0	11.4	10.8	9.8	10.2	8.4	7.4	7.9	7.3	5.9	6.5
11	11.6	10.7	11.1	10.7	9.7	10.1	9.1	7.9	8.4	7.2	5.9	6.5
12	11.4	10.5	10.8	10.4	9.4	9.8	8.7	8.2	8.4	7.1	6.0	6.5
13	10.9	9.6	10.4	10.0	9.1	9.5	8.7	8.2	8.4	6.8	6.0	6.3
14	9.9	9.0	9.5	9.7	8.7	9.1	8.9	8.3	8.6	7.2	6.0	6.4
15	9.8	8.9	9.2	9.3	8.3	8.7	9.2	8.4	8.7	7.1	6.2	6.5
16	9.5	8.6	8.9	9.3	8.1	8.5	9.4	8.5	8.9	6.8	6.0	6.3
17	9.1	8.5	8.8	9.2	8.0	8.5	8.9	7.9	8.5	7.1	5.9	6.4
18	9.2	8.4	8.7	8.9	7.8	8.2	8.8	7.7	8.2	7.4	6.1	6.6
19	9.5	8.7	9.0	8.6	7.6	8.0	8.4	7.4	7.9	7.6	6.1	6.7
20	9.5	8.7	9.0	8.2	7.1	7.6	8.4	7.3	7.7	7.6	6.1	6.6
21	9.4	8.6	9.0	8.2	7.0	7.5	8.4	7.3	7.8	7.3	6.0	6.5
22	9.7	8.7	9.1	9.0	7.6	8.2	8.3	7.0	7.5	7.4	5.9	6.5
23	9.8	8.9	9.2	9.6	8.3	8.8	8.2	7.0	7.5	7.3	5.7	6.4
24	9.9	9.0	9.3	9.8	8.4	8.9	8.2	6.9	7.4	7.1	5.4	6.1
25	9.8	8.9	9.2	8.7	7.9	8.4	7.6	6.8	7.1	7.1	5.5	6.1
26	9.6	8.7	9.0	8.7	7.7	8.1	7.4	6.6	6.8	7.4	5.4	6.3
27	9.3	8.4	8.8	9.0	7.6	8.2	7.4	6.4	6.8	7.2	5.6	6.3
28	8.8	8.1	8.4	8.8	7.7	8.1	---	---	---	7.2	5.6	6.3
29	---	---	---	8.7	7.5	8.0	---	---	---	7.4	5.7	6.5
30	---	---	---	8.6	7.7	8.0	---	---	---	7.3	5.8	6.5
31	---	---	---	8.8	7.6	8.0	---	---	---	7.4	5.8	6.6
MONTH	12.0	8.1	9.6	11.0	7.0	8.7	9.4	6.4	7.9	7.6	5.4	6.4

GUADALUPE RIVER BASIN

269

08180640 MEDINA RIVER AT LA COSTE, TX--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	7.5	5.9	6.6	7.3	5.8	6.5	6.4	5.4	5.8	---	---	---
2	7.2	5.9	6.5	7.3	5.8	6.4	6.4	5.2	5.7	---	---	---
3	7.2	5.8	6.4	7.0	5.7	6.2	6.2	5.3	5.7	---	---	---
4	7.3	5.7	6.5	7.1	5.7	6.3	6.4	5.2	5.7	---	---	---
5	7.3	5.7	6.4	7.2	5.8	6.4	6.4	5.3	5.8	---	---	---
6	7.3	5.8	6.5	7.1	5.7	6.3	6.3	5.3	5.8	---	---	---
7	6.9	5.8	6.3	7.6	5.6	6.4	7.0	5.3	6.0	---	---	---
8	7.1	5.7	6.4	7.1	6.0	6.5	5.9	5.4	5.6	---	---	---
9	6.7	5.7	6.2	7.2	6.0	6.3	6.8	5.4	5.8	7.0	5.8	6.3
10	7.0	5.6	6.2	7.4	5.8	6.3	7.6	5.6	6.4	7.1	5.8	6.3
11	6.8	5.6	6.1	7.0	5.7	6.3	7.1	5.9	6.4	7.0	5.8	6.2
12	7.0	5.5	6.1	6.9	5.7	6.3	7.3	5.9	6.5	7.0	5.8	6.2
13	7.0	5.5	6.2	7.2	5.7	6.2	7.4	6.0	6.6	7.0	5.8	6.2
14	6.6	5.5	6.0	7.0	5.6	6.1	7.2	6.0	6.5	6.5	5.4	6.0
15	7.2	5.7	6.2	7.2	5.7	6.2	7.0	5.9	6.4	7.0	5.5	6.3
16	7.3	5.7	6.4	7.0	5.5	6.1	7.2	6.0	6.5	7.6	6.1	6.6
17	7.4	5.8	6.5	6.3	5.4	5.8	7.3	6.0	6.5	7.9	6.2	6.8
18	7.4	5.8	6.5	6.7	5.2	5.8	7.4	6.0	6.4	7.9	6.4	7.0
19	7.4	5.8	6.4	6.4	5.3	5.7	6.9	5.8	6.3	7.9	6.5	7.1
20	7.2	5.8	6.4	6.0	5.1	5.5	6.8	5.7	6.1	8.3	6.8	7.3
21	7.3	5.6	6.4	6.4	5.0	5.5	6.5	5.4	5.8	8.0	6.7	7.3
22	7.0	5.6	6.3	6.1	5.1	5.6	6.2	5.2	5.7	7.8	6.7	7.2
23	7.0	5.7	6.3	6.4	5.2	5.7	6.5	5.4	5.8	7.8	7.0	7.3
24	6.8	5.7	6.1	6.5	5.2	5.7	---	---	---	8.1	7.1	7.5
25	6.6	5.7	6.1	7.0	5.2	5.8	---	---	---	8.4	7.3	7.7
26	7.0	5.8	6.3	6.6	5.3	5.9	---	---	---	8.4	7.6	7.9
27	7.2	5.8	6.4	6.3	5.3	5.7	---	---	---	8.6	7.7	8.1
28	7.1	5.9	6.5	6.5	5.2	5.8	---	---	---	8.8	7.8	8.2
29	7.2	5.8	6.5	6.5	5.4	5.9	---	---	---	8.7	7.9	8.3
30	7.4	5.8	6.5	6.5	5.4	5.9	---	---	---	8.8	8.0	8.3
31	---	---	---	6.7	5.4	5.9	---	---	---	---	---	---
MONTH	7.5	5.5	6.3	7.6	5.0	6.0	7.6	5.2	6.1	8.8	5.4	7.1

GUADALUPE RIVER BASIN

08180700 MEDINA RIVER NEAR MACDONA, TX

LOCATION.--Lat 29°20'05", long 98°41'22", Bexar County, Hydrologic Unit 12100302, at downstream side of Loop 1604 bridge, 0.1 mi downstream from Polecat Creek, 0.7 mi north of Macdonna, 2.2 mi downstream from Potranca Creek, and 21.2 mi upstream from mouth.

DRAINAGE AREA.--885 mi², of which 634 mi² is above dam forming Medina Lake.

PERIOD OF RECORD.--January 1981 to current year.

GAGE.--Water-stage recorder. Datum of gage is 589.86 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Flow is regulated by Medina Lake (station 08179500) and by Medina Diversion Lake (capacity, 4,500 acre-ft) 41 mi upstream. For diversion of canal records, see Medina Canal near Riomedina (station 08180000). A large part of the streamflow is lost into the Edwards and associated limestones where the Balcones Fault crosses the basin between the upstream end of Medina Lake and about 5 mi downstream from Medina Dam, or 0.9 mi downstream from the diversion dam. There are several small diversions below Medina Diversion Dam. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--8 years, 164 ft³/s (118,800 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 36,800 ft³/s May 30, 1987 (gage height, 20.58 ft); minimum daily, 14 ft³/s Jan. 11, 12, 1985.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 667 ft³/s Jan. 29 at 1700 hours (gage height, 6.33 ft); minimum daily, 17 ft³/s May 11.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34	44	42	47	57	39	41	42	24	36	28	24
2	27	44	41	47	54	40	43	40	24	34	27	24
3	37	42	40	47	48	40	45	30	21	31	27	25
4	35	42	37	46	47	40	39	30	24	30	26	27
5	35	41	39	46	45	38	38	32	27	29	25	25
6	34	41	41	45	45	37	37	35	27	28	24	26
7	33	42	41	45	44	38	39	35	26	29	26	27
8	35	43	41	43	43	39	39	34	25	29	28	27
9	34	44	40	43	43	40	37	31	68	26	34	28
10	36	39	43	42	44	41	35	25	35	27	29	28
11	39	40	45	40	45	42	33	17	66	27	27	29
12	39	39	45	43	45	43	34	27	38	26	25	29
13	39	38	44	43	45	45	36	28	33	26	25	32
14	38	40	43	43	44	47	41	28	72	26	24	38
15	37	41	45	42	43	48	45	29	55	26	23	32
16	37	38	41	41	45	46	43	30	46	25	25	30
17	39	36	44	37	43	46	42	33	41	26	24	31
18	36	37	43	39	43	45	41	36	39	24	21	31
19	35	39	45	42	42	45	55	32	38	22	22	30
20	35	39	44	47	41	55	49	28	37	21	24	30
21	37	38	44	48	41	47	44	27	37	21	23	29
22	39	38	46	45	42	43	41	30	34	22	23	28
23	38	42	48	42	42	43	39	33	36	24	24	26
24	37	39	47	42	41	43	39	31	32	25	23	25
25	38	43	49	45	41	44	38	26	32	28	24	25
26	38	44	49	54	41	46	39	25	37	29	24	25
27	38	43	49	202	40	44	39	25	43	30	25	25
28	38	41	47	59	39	43	38	26	42	32	25	26
29	41	41	46	274	---	47	31	24	37	32	24	26
30	45	41	46	140	---	44	38	25	35	29	24	26
31	45	---	47	69	---	41	---	24	---	28	24	---
TOTAL	1148	1219	1362	1888	1233	1339	1198	918	1131	848	777	834
MEAN	37.0	40.6	43.9	60.9	44.0	43.2	39.9	29.6	37.7	27.4	25.1	27.8
MAX	45	44	49	274	57	55	55	42	72	36	34	38
MIN	27	36	37	37	39	37	31	17	21	21	21	24
AC-FT	2280	2420	2700	3740	2450	2660	2380	1820	2240	1680	1540	1650
CAL YR 1988	TOTAL	20585	MEAN	56.2	MAX	193	MIN	27	AC-FT	40830		
WTR YR 1989	TOTAL	13895	MEAN	38.1	MAX	274	MIN	17	AC-FT	27560		

GUADALUPE RIVER BASIN

271

08180750 MEDIO CREEK AT PEARSALL ROAD AT SAN ANTONIO, TX

LOCATION.--Lat 29°19'40", long 98°38'19", Bexar County, Hydrologic Unit 12100302, on right bank 37 ft downstream from centerline of Pearsall Road and 31 ft shoreward from right abutment of culvert, 1.2 mi southwest of Loop 410, and 5.0 mi upstream from mouth.

DRAINAGE AREA.--47.9 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--December 1986 to current year.

GAGE.--Water-stage recorder. Datum of gage is 596.52 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Satellite telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,140 ft³/s June 13, 1987 (gage height, 10.09 ft); minimum daily, 2.6 ft³/s June 10, 1989.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 368 ft³/s Jan. 29 at 1200 hours (gage height, 6.06 ft); minimum daily, 2.6 ft³/s June 10.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.0	5.8	4.9	5.7	7.4	6.0	5.8	5.1	15	7.1	3.7	4.3
2	5.9	5.4	4.6	5.3	6.6	5.2	6.1	4.8	14	6.6	3.4	3.9
3	6.0	5.8	4.5	5.7	5.5	5.7	6.1	4.6	17	6.5	3.5	4.8
4	5.6	5.0	6.4	5.9	5.4	5.2	5.2	5.1	20	6.0	3.5	3.9
5	5.6	4.2	6.0	6.1	6.2	5.6	4.7	4.0	15	5.0	3.7	3.9
6	5.4	4.9	4.6	4.6	6.6	6.2	4.6	3.8	9.6	7.0	4.1	e3.9
7	5.3	5.0	4.8	5.0	6.2	6.4	6.0	4.4	8.9	6.9	3.9	e4.2
8	5.2	4.7	5.9	6.1	6.1	6.4	4.6	5.4	6.7	6.7	4.4	4.4
9	5.8	5.7	4.6	6.3	6.0	5.1	4.6	4.5	9.3	6.1	4.9	3.9
10	5.7	5.2	6.3	6.1	6.1	5.1	4.9	7.1	2.6	6.0	4.1	3.9
11	5.8	4.5	5.8	6.5	5.3	5.3	4.7	4.9	50	5.5	4.3	4.9
12	5.4	5.7	6.1	6.7	6.0	6.1	5.1	4.1	8.3	5.4	4.4	4.3
13	4.8	5.1	5.1	7.1	6.3	6.1	5.5	3.7	4.4	5.7	4.2	5.3
14	5.2	5.5	3.8	6.4	6.3	6.3	9.6	4.4	49	5.5	4.1	8.8
15	5.1	4.6	3.8	5.8	5.1	6.7	6.3	5.2	11	6.2	3.9	4.4
16	5.7	4.3	3.9	5.5	6.0	6.2	6.1	4.5	4.1	5.3	3.7	3.7
17	6.7	4.6	4.0	5.9	5.6	7.9	5.9	4.4	3.7	4.7	3.5	4.2
18	5.6	4.9	4.5	6.0	5.3	7.3	5.4	3.8	4.5	5.1	3.8	5.6
19	5.3	5.2	4.4	5.3	5.8	7.5	94	3.3	7.4	4.9	3.9	5.3
20	5.1	4.3	5.4	5.9	6.2	11	13	4.2	7.3	3.7	4.3	4.6
21	5.3	4.6	4.9	5.0	7.0	7.1	7.2	3.7	5.4	3.5	4.6	3.7
22	4.2	4.0	5.4	6.6	6.3	5.8	5.9	4.1	6.3	3.7	4.2	4.1
23	4.7	4.2	5.4	5.4	5.1	6.8	5.3	5.2	7.2	4.5	4.3	3.6
24	8.3	4.6	5.2	5.7	5.2	5.6	4.9	4.1	8.5	4.4	4.0	3.8
25	5.5	5.1	5.2	5.5	6.0	4.7	4.4	3.9	9.3	3.9	4.0	3.7
26	5.5	5.3	5.1	9.3	6.1	5.0	4.7	3.4	11	4.4	3.9	3.3
27	5.0	4.3	5.2	42	5.7	4.6	4.6	3.1	10	4.5	4.3	3.2
28	5.3	4.8	4.9	11	5.2	14	4.4	4.6	8.2	4.5	4.3	3.2
29	4.6	4.2	5.0	89	---	7.7	3.6	5.8	7.6	3.9	4.5	3.3
30	5.1	4.3	5.2	15	---	6.1	5.8	5.8	7.6	5.0	4.4	3.7
31	6.4	---	5.7	8.1	---	5.6	---	7.7	---	4.0	3.9	---
TOTAL	171.1	145.8	156.6	320.5	166.6	200.3	259.0	142.7	348.9	162.2	125.7	127.8
MEAN	5.52	4.86	5.05	10.3	5.95	6.46	8.63	4.60	11.6	5.23	4.05	4.26
MAX	8.3	5.8	6.4	89	7.4	14	94	7.7	50	7.1	4.9	8.8
MIN	4.2	4.0	3.8	4.6	5.1	4.6	3.6	3.1	2.6	3.5	3.4	3.2
AC-FT	339	289	311	636	330	397	514	283	692	322	249	253
CAL YR 1988	TOTAL	2355.3	MEAN	6.44	MAX	316	MIN	3.1	AC-FT	4670		
WTR YR 1989	TOTAL	2327.2	MEAN	6.38	MAX	94	MIN	2.6	AC-FT	4620		

e Estimated.

08180750 MEDIO CREEK AT PEARSALL ROAD AT SAN ANTONIO, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: February 1987 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: January 1987 to current year.

pH: January 1987 to current year.

WATER TEMPERATURE: January 1987 to current year.

DISSOLVED OXYGEN: January 1987 to current year.

INSTRUMENTATION.--Beginning January 1987, a four-parameter water-quality monitor continuously records specific conductance, pH, water temperature, and dissolved oxygen at this station.

REMARKS.--Interruptions in the record were due to malfunctions of the instrument. Where maximum or minimum specific conductance values are not shown, mean value is estimated. Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request. Any pH data below 7.0 units were deleted. There are no present or historical field measurements to support pH values less than 7.0 units. Values for pH between 7.5 and 7.0 units are suspect since past and present field data indicate that the pH does not drop below 7.5. There is a problem at this site with one or more probes being at least partially out of the water when the flow is low. This is due to the nature of the site and installation.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 1,160 microsiemens Mar. 5-8, 1987; minimum, 206 microsiemens June 13, 1987.

pH: Maximum, 8.8 units Jan. 30, Feb. 15, 1988, Mar. 9, 1989; minimum, 7.0 units on several days during period of record.

WATER TEMPERATURE: Maximum, 30.5°C on several days during summer months; minimum, 5.0°C Jan. 10, 11, 1988, Feb. 7, 1989.

DISSOLVED OXYGEN: Maximum, 17.1 mg/L Mar. 11, 1989; minimum, 3.2 mg/L Apr. 13, 1987.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 1,000 microsiemens May 9; minimum, 267 microsiemens Jan. 29.

pH: Maximum, 8.8 units Mar. 9; minimum, 7.0 units on several days during the water year (see remarks).

WATER TEMPERATURE: Maximum, 30.5°C July 2, 4, 16, 17, 19; minimum, 5.0°C Feb. 7.

DISSOLVED OXYGEN: Maximum, 17.1 mg/L Mar. 11; minimum, 3.8 mg/L Aug. 25.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS TOTAL (MG/L AS CaCO3)
OCT 18...	1155	5.8	842	7.90	23.0	8.2	97	2.3	260
DEC 16...	1120	4.3	837	8.00	11.0	10.6	96	1.2	260
FEB 27...	1330	5.8	842	8.40	19.5	13.4	151	1.7	260
JUN 01...	1305	17	850	8.20	28.0	7.2	94	1.6	250
JUL 20...	1310	4.1	890	7.90	29.0	7.9	105	1.9	250
SEP 07...	1230	5.0	897	8.00	28.5	8.0	107	1.3	240

DATE	CALCIUM DIS- SOLVED (MG/L AS Ca)	MAGNE- SIUM, DIS- SOLVED (MG/L AS Mg)	SODIUM, DIS- SOLVED (MG/L AS Na)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD (MG/L AS CaCO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS Cl)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
OCT 18...	75	17	65	2	6.9	190	53	88	0.30
DEC 16...	78	16	77	2	7.8	220	60	89	0.30
FEB 27...	77	16	71	2	7.2	225	59	83	0.40
JUN 01...	72	16	77	2	8.0	218	50	94	0.30
JUL 20...	72	16	86	2	8.2	226	52	95	0.20
SEP 07...	71	15	83	2	9.2	231	50	97	0.30

DATE	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (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- PHOROUS TOTAL (MG/L AS P)
OCT 18...	14	433	10.9	0.120	11.0	0.040	0.96	1.0	5.00
DEC 16...	13	473	8.03	0.270	8.30	0.080	1.3	1.4	6.20
FEB 27...	12	461	5.75	0.050	5.80	0.040	1.1	1.1	4.40
JUN 01...	14	462	4.58	0.020	4.60	0.030	0.77	0.80	0.020
JUL 20...	14	479	5.76	0.040	5.80	0.050	1.2	1.3	1.90
SEP 07...	16	480	5.77	0.030	5.80	0.040	0.86	0.90	6.70

GUADALUPE RIVER BASIN

273

08180750 MEDIO CREEK AT PEARSALL ROAD AT SAN ANTONIO, TX--Continued

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1988 TO SEPTEMBER 1989

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	DIS- SOLVED SOLIDS (MG/L)	DIS- SOLVED SOLIDS (TONS)	DIS- SOLVED CHLORIDE (MG/L)	DIS- SOLVED CHLORIDE (TONS)	DIS- SOLVED SULFATE (MG/L)	DIS- SOLVED SULFATE (TONS)	HARDNESS (CA.MG) (MG/L)
OCT. 1988	171.1	813	455	210	84	39	76	35	250
NOV. 1988	145.8	814	455	179	84	33	76	30	250
DEC. 1988	156.6	826	462	195	85	36	77	32	260
JAN. 1989	320.5	656	367	317	64	56	63	55	200
FEB. 1989	166.6	831	465	209	86	39	77	35	260
MAR. 1989	200.3	826	462	250	85	46	77	41	260
APR. 1989	259.0	727	407	285	73	51	69	48	230
MAY 1989	142.7	895	501	193	95	37	82	31	280
JUNE 1989	348.9	731	409	385	74	70	69	65	230
JULY 1989	162.2	852	477	209	89	39	79	34	260
AUG. 1989	125.7	846	473	161	88	30	78	27	260
SEPT 1989	127.8	826	462	160	86	30	77	26	260
TOTAL	2327.2	**	**	2800	**	504	**	460	**
WTD.AVG.	6.4	783	438	**	80	**	73	**	240

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	820	790	812	850	780	802	850	830	839	860	840	850
2	830	820	822	840	790	806	840	810	824	850	840	846
3	820	780	799	840	780	813	820	800	809	860	840	847
4	840	790	810	790	770	782	850	790	820	870	830	852
5	840	810	824	800	770	787	850	780	818	870	780	824
6	820	810	816	850	800	825	790	760	774	800	770	787
7	820	800	808	860	830	844	850	790	824	830	760	790
8	820	800	813	860	800	831	870	850	855	870	840	856
9	820	810	817	860	830	847	850	820	840	880	850	869
10	830	810	821	850	810	841	830	770	793	840	810	820
11	830	800	817	810	750	777	860	790	837	810	790	799
12	830	810	821	820	750	790	790	740	763	810	780	791
13	830	810	816	820	780	798	850	800	833	790	760	774
14	810	800	807	800	750	774	840	790	814	760	750	757
15	820	810	818	830	790	812	810	780	800	760	750	753
16	820	800	811	830	790	814	870	810	842	760	690	716
17	830	790	812	820	790	813	870	860	868	830	730	784
18	850	820	832	830	820	828	870	860	863	860	830	843
19	850	800	824	830	780	811	880	860	866	850	760	802
20	800	780	792	800	770	782	880	870	876	840	760	801
21	810	790	798	790	750	773	890	870	880	850	830	837
22	810	790	799	850	760	808	890	830	858	850	830	837
23	810	770	800	860	820	848	840	790	811	830	790	817
24	840	800	828	860	820	840	810	800	806	819	760	782
25	800	730	753	860	840	852	800	790	793	877	819	856
26	850	800	832	850	800	821	800	780	788	867	805	838
27	830	780	800	850	790	826	810	790	797	646	398	535
28	840	790	817	820	790	804	800	790	793	624	536	581
29	840	810	833	850	810	832	860	790	839	643	267	478
30	850	810	825	850	800	833	860	850	852	582	395	477
31	840	790	821	---	---	---	860	850	856	718	582	646
MONTH	850	730	813	860	750	814	890	740	827	880	267	769

GUADALUPE RIVER BASIN

08180750 MEDIO CREEK AT PEARSALL ROAD AT SAN ANTONIO, TX--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	795	718	759	859	841	850	890	810	847	853	843	848
2	862	784	812	848	828	840	910	840	876	856	842	852
3	862	822	846	828	817	821	930	850	899	870	833	848
4	869	821	844	835	815	826	930	900	920	880	860	864
5	877	857	868	823	805	815	940	920	929	900	860	881
6	867	835	854	822	804	816	940	920	932	900	870	894
7	845	824	838	820	810	814	950	930	939	930	880	904
8	833	812	826	818	808	810	960	920	944	940	920	924
9	822	810	817	810	770	795	910	850	877	1000	950	981
10	810	800	807	870	810	851	950	900	937	980	900	946
11	818	798	810	900	870	885	960	920	938	890	840	870
12	834	797	813	910	880	896	927	904	916	850	820	830
13	842	823	830	910	860	887	912	857	887	860	840	854
14	859	831	843	920	890	903	882	837	863	910	860	885
15	859	848	856	940	890	919	891	846	876	940	920	929
16	857	827	842	920	870	894	846	736	773	950	930	938
17	845	843	844	900	850	874	808	735	763	930	890	907
18	843	824	839	910	860	889	870	816	841	910	880	897
19	850	832	841	890	710	846	877	295	559	900	870	882
20	848	830	839	810	750	780	528	370	448	920	890	904
21	856	837	848	770	710	734	684	528	605	930	910	918
22	855	825	841	790	690	735	756	684	723	920	880	904
23	834	813	823	830	740	797	824	753	787	920	880	899
24	823	803	813	820	770	804	874	823	849	920	890	908
25	838	821	829	770	750	759	879	862	870	890	860	874
26	847	827	835	810	750	772	891	874	883	860	830	851
27	844	834	838	910	820	870	894	877	885	840	830	835
28	852	832	842	950	640	851	892	869	882	910	840	882
29	---	---	---	850	640	762	877	817	851	920	910	914
30	---	---	---	840	680	739	849	799	826	920	900	911
31	---	---	---	810	690	741	---	---	---	920	900	910
MONTH	877	718	832	950	640	825	960	295	837	1000	820	892
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	920	860	900	810	770	796	830	760	788	860	830	844
2	910	860	880	890	810	859	840	800	825	860	840	847
3	900	870	884	890	850	876	840	800	821	860	830	841
4	900	860	872	880	830	852	870	800	843	870	840	851
5	910	870	901	900	870	882	870	850	858	---	---	853
6	880	840	861	910	880	894	860	830	844	---	---	855
7	850	800	829	900	820	864	850	820	840	---	---	857
8	820	800	806	820	760	787	850	790	828	---	---	858
9	830	800	810	870	780	828	840	800	828	---	---	860
10	830	800	814	870	840	858	850	800	832	---	---	863
11	830	370	557	870	850	860	830	790	814	---	---	868
12	540	440	503	890	870	880	830	800	808	880	860	872
13	680	550	607	900	880	886	850	830	844	860	820	831
14	700	360	461	890	860	876	850	830	844	850	810	825
15	540	410	484	880	810	847	860	840	848	870	770	836
16	---	---	580	870	830	854	860	850	854	---	---	693
17	---	---	700	880	800	833	860	850	855	---	---	717
18	---	---	760	880	840	858	890	860	871	840	780	810
19	880	760	831	890	880	885	890	870	877	826	769	799
20	920	820	883	900	840	867	870	850	861	---	---	818
21	940	880	907	860	850	851	860	850	857	---	---	765
22	900	850	874	880	840	857	860	840	856	---	---	789
23	880	840	867	880	860	870	880	830	853	---	---	759
24	880	850	868	880	840	862	870	850	864	---	---	822
25	900	850	876	840	790	818	860	830	845	---	---	855
26	890	800	845	870	830	852	860	840	851	---	---	848
27	890	820	874	890	710	795	860	840	852	---	---	824
28	820	800	804	910	820	870	860	820	849	---	---	824
29	810	780	793	890	750	815	880	820	852	---	---	817
30	810	790	799	870	750	835	890	870	881	---	---	883
31	---	---	---	860	840	852	890	850	879	---	---	---
MONTH	940	360	781	910	710	852	890	760	846	880	769	826

GUADALUPE RIVER BASIN

275

08180750 MEDIO CREEK AT PEARSALL ROAD AT SAN ANTONIO, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	8.2	8.1	8.1	8.1	8.0	8.1	8.2	8.1	8.1	---	---	---
2	8.2	8.1	8.2	8.1	8.0	8.1	8.2	8.1	8.1	---	---	---
3	8.2	8.1	8.2	8.1	8.0	8.1	8.2	8.1	8.1	---	---	---
4	8.2	8.1	8.2	8.1	8.0	8.1	8.1	8.0	8.1	---	---	---
5	8.2	8.1	8.2	8.2	8.1	8.1	8.1	8.0	8.1	7.9	7.6	7.8
6	8.2	8.2	8.2	8.2	8.1	8.2	8.1	8.0	8.0	7.8	7.7	7.8
7	8.3	8.2	8.2	8.2	8.1	8.2	8.1	7.9	8.0	7.9	7.8	7.8
8	8.3	8.3	8.3	8.3	8.1	8.2	8.3	7.9	8.1	7.8	7.7	7.8
9	8.3	8.2	8.3	8.2	8.1	8.2	8.3	8.3	8.3	7.8	7.7	7.8
10	8.3	8.2	8.2	8.2	8.1	8.1	8.3	8.2	8.2	7.9	7.7	7.8
11	8.2	8.2	8.2	8.2	8.0	8.1	8.2	8.1	8.2	7.8	7.7	7.7
12	8.2	8.1	8.2	8.2	8.1	8.1	8.1	8.1	8.1	7.9	7.7	7.8
13	8.2	8.1	8.2	8.3	8.1	8.2	8.1	8.0	8.1	7.9	7.8	7.8
14	8.3	8.2	8.2	8.3	8.1	8.2	8.1	8.0	8.1	8.0	7.8	7.9
15	8.3	8.1	8.2	8.3	8.1	8.2	8.0	7.9	8.0	8.0	7.9	8.0
16	8.3	8.1	8.2	8.3	8.1	8.2	8.0	7.9	8.0	8.1	7.9	8.0
17	8.2	8.1	8.2	8.3	8.2	8.3	8.1	8.0	8.0	8.1	7.9	8.0
18	8.2	7.9	8.1	8.3	8.2	8.2	8.2	8.0	8.1	8.0	7.8	7.9
19	8.3	8.1	8.2	8.3	8.1	8.2	8.2	8.0	8.2	7.9	7.8	7.9
20	8.3	8.1	8.2	8.4	8.3	8.3	8.0	7.9	8.0	8.0	7.8	7.9
21	8.3	8.1	8.2	8.3	8.3	8.3	---	---	---	8.1	7.9	8.0
22	8.3	8.1	8.2	8.3	8.2	8.3	---	---	---	8.1	8.0	8.1
23	8.3	8.1	8.2	8.3	8.2	8.2	---	---	---	8.1	7.9	8.0
24	8.2	8.0	8.1	8.3	8.2	8.2	---	---	---	8.0	7.9	8.0
25	8.0	7.9	8.0	8.2	8.1	8.2	---	---	---	8.0	7.8	7.9
26	8.0	7.9	8.0	8.3	8.1	8.2	---	---	---	8.0	7.7	7.9
27	8.1	7.9	8.0	8.3	8.1	8.2	---	---	---	7.8	7.6	7.7
28	8.2	8.0	8.1	8.3	8.2	8.2	---	---	---	7.7	7.5	7.6
29	8.2	8.1	8.1	8.3	8.1	8.2	---	---	---	7.6	7.1	7.4
30	8.1	8.0	8.1	8.3	8.2	8.2	---	---	---	7.4	7.0	7.2
31	8.1	8.0	8.1	---	---	---	---	---	---	7.5	7.3	7.4
MONTH	8.3	7.9	8.2	8.4	8.0	8.2	8.3	7.9	8.1	8.1	7.0	7.8
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	7.6	7.4	7.5	8.0	7.8	7.9	8.5	8.1	8.3	---	---	---
2	7.6	7.3	7.4	8.0	7.8	7.9	8.4	8.1	8.3	---	---	---
3	8.2	7.3	7.8	8.1	7.8	8.0	8.5	8.1	8.3	8.1	7.7	7.9
4	8.2	8.1	8.2	8.3	7.9	8.1	8.6	8.0	8.3	8.0	7.8	8.0
5	8.2	8.1	8.2	8.4	8.2	8.3	8.7	7.9	8.2	8.1	7.8	7.9
6	8.3	8.2	8.3	8.6	8.2	8.3	8.2	7.8	8.0	8.0	7.7	7.8
7	8.3	8.2	8.3	8.5	8.1	8.3	8.1	7.9	8.0	7.8	7.1	7.5
8	8.3	8.2	8.2	8.5	8.3	8.4	8.1	7.5	7.8	---	---	---
9	8.2	8.1	8.2	8.8	8.2	8.4	8.2	7.5	7.9	---	---	---
10	8.2	8.1	8.1	8.7	8.1	8.4	8.4	8.2	8.3	---	---	---
11	8.1	7.9	8.0	8.7	8.0	8.3	8.4	8.1	8.3	---	---	---
12	8.0	7.9	8.0	8.6	8.1	8.3	8.1	8.0	8.1	7.8	7.1	7.4
13	8.0	7.9	7.9	8.5	8.0	8.3	8.1	7.9	8.0	8.0	7.7	7.8
14	8.0	7.8	7.9	8.2	7.9	8.0	8.0	7.9	7.9	8.3	8.0	8.1
15	8.1	7.8	7.9	8.1	7.6	7.9	8.1	7.8	7.9	8.3	8.1	8.2
16	8.2	7.9	8.1	8.0	7.7	7.8	8.1	7.8	7.9	8.2	8.0	8.1
17	8.1	7.8	8.0	7.7	7.2	7.5	8.0	7.7	7.8	8.2	8.0	8.1
18	8.2	7.9	8.0	7.6	7.1	7.4	8.1	7.7	7.9	8.3	8.1	8.2
19	8.2	7.9	8.1	7.7	7.1	7.5	8.1	7.6	7.8	8.3	8.1	8.2
20	8.2	7.9	8.1	7.5	7.3	7.4	---	---	---	8.3	8.2	8.2
21	8.3	8.0	8.1	7.7	7.2	7.5	---	---	---	8.3	8.1	8.2
22	8.4	8.0	8.2	8.2	7.6	7.8	---	---	---	8.3	8.1	8.2
23	8.5	8.0	8.2	8.3	8.1	8.2	---	---	---	8.2	8.1	8.2
24	8.5	8.2	8.3	8.3	8.1	8.2	---	---	---	8.2	7.9	8.0
25	8.4	7.9	8.1	8.2	8.0	8.1	---	---	---	8.2	8.0	8.1
26	7.9	7.6	7.8	8.3	8.0	8.1	---	---	---	8.3	8.1	8.2
27	7.8	7.6	7.7	8.2	8.0	8.1	---	---	---	8.3	8.0	8.1
28	7.9	7.5	7.8	8.1	7.8	8.0	---	---	---	8.3	8.0	8.1
29	---	---	---	8.1	7.7	7.9	---	---	---	8.1	7.9	8.0
30	---	---	---	8.0	7.8	7.9	---	---	---	8.0	7.8	7.9
31	---	---	---	8.2	7.9	8.1	---	---	---	8.2	7.9	8.0
MONTH	8.5	7.3	8.0	8.8	7.1	8.0	8.7	7.5	8.1	8.3	7.1	8.0

GUADALUPE RIVER BASIN

08180750 MEDIO CREEK AT PEARSALL ROAD AT SAN ANTONIO, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	8.2	8.0	8.1	---	---	---	8.1	7.6	7.9	8.0	7.3	7.7
2	8.2	8.0	8.1	---	---	---	8.0	7.7	7.8	7.9	7.5	7.7
3	8.1	7.9	8.0	---	---	---	8.1	7.8	7.9	7.9	7.0	7.4
4	8.2	8.0	8.1	---	---	---	8.2	7.8	8.0	---	---	---
5	8.2	7.9	8.1	---	---	---	8.1	7.7	7.9	---	---	---
6	8.3	7.9	8.1	---	---	---	7.9	7.6	7.8	---	---	---
7	8.2	7.7	8.0	---	---	---	8.0	7.8	7.9	---	---	---
8	7.9	7.5	7.8	8.3	7.7	8.1	8.0	7.7	7.9	---	---	---
9	7.6	7.3	7.5	7.7	7.0	7.5	7.8	7.6	7.7	8.2	8.1	8.2
10	7.4	7.2	7.3	---	---	---	7.9	7.7	7.8	8.2	8.1	8.2
11	7.5	7.0	7.2	---	---	---	7.9	7.0	7.5	8.1	7.1	7.6
12	---	---	---	8.1	7.8	7.9	7.2	7.0	7.1	8.1	7.8	8.0
13	---	---	---	8.2	8.0	8.1	7.6	7.1	7.4	8.2	7.9	8.1
14	7.8	7.5	7.7	8.2	7.9	8.1	7.7	7.3	7.5	8.1	7.9	8.0
15	7.8	7.6	7.7	8.2	8.0	8.1	7.9	7.4	7.7	8.2	8.0	8.1
16	7.8	7.6	7.6	8.1	7.9	8.0	8.0	7.8	7.9	8.2	8.0	8.1
17	7.6	7.3	7.5	8.0	7.8	7.9	8.0	7.7	7.9	8.4	8.0	8.2
18	7.4	7.2	7.3	8.0	7.6	7.9	8.1	7.9	8.0	8.3	8.0	8.1
19	7.9	7.4	7.6	8.1	7.8	8.0	8.0	7.9	8.0	8.3	7.9	8.1
20	8.0	7.8	7.9	8.1	7.9	8.0	8.0	7.9	8.0	8.3	8.1	8.2
21	8.1	7.8	8.0	8.1	7.8	7.9	8.1	7.8	8.0	8.3	8.0	8.2
22	8.1	7.8	7.9	7.8	7.6	7.7	8.1	7.9	8.0	8.2	8.0	8.0
23	---	---	---	7.6	7.1	7.3	8.1	7.8	8.0	8.1	7.9	8.0
24	---	---	---	---	---	---	7.9	7.8	7.9	8.2	8.0	8.1
25	---	---	---	---	---	---	8.0	7.7	7.9	8.2	8.0	8.1
26	---	---	---	8.0	7.0	7.5	8.0	7.8	7.9	8.1	8.1	8.1
27	---	---	---	7.9	7.4	7.7	8.1	8.0	8.0	8.1	8.0	8.0
28	---	---	---	7.8	7.4	7.6	8.2	7.9	8.0	8.1	7.9	8.0
29	---	---	---	7.8	7.5	7.6	8.1	7.6	8.0	8.1	7.9	8.0
30	---	---	---	7.9	7.4	7.6	8.2	8.0	8.1	8.1	7.9	8.0
31	---	---	---	7.9	7.6	7.7	8.1	8.0	8.0	---	---	---
MONTH	8.3	7.0	7.8	8.3	7.0	7.8	8.2	7.0	7.9	8.4	7.0	8.0

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	24.0	22.5	23.5	21.5	20.5	21.0	12.5	11.0	12.0	14.0	12.5	13.0
2	23.5	22.0	23.0	20.5	19.5	20.0	12.0	10.5	11.5	15.5	14.0	15.0
3	22.5	21.0	22.0	20.0	18.5	19.5	12.5	10.5	11.5	17.5	15.5	16.5
4	21.5	20.5	21.5	20.0	18.5	19.5	14.0	11.5	13.0	16.5	15.5	16.0
5	21.0	19.5	20.5	19.5	18.5	19.0	15.0	13.5	14.0	18.0	16.5	17.0
6	21.0	19.5	20.5	18.0	17.0	17.5	15.5	14.0	14.5	18.0	15.5	17.0
7	21.0	19.5	20.5	19.0	17.0	18.0	16.5	15.0	16.0	19.0	17.5	18.5
8	21.0	19.5	20.5	19.5	18.0	19.0	16.5	13.5	15.0	17.5	14.0	15.5
9	22.0	20.0	21.0	21.5	19.5	20.5	13.5	12.5	12.5	14.0	12.0	13.5
10	21.5	20.5	21.0	22.0	21.0	21.5	12.5	12.0	12.0	13.0	11.5	12.5
11	21.0	19.0	20.5	22.0	20.5	21.5	13.0	11.5	12.0	14.5	12.5	13.5
12	20.0	19.0	19.5	22.5	21.5	22.0	12.5	11.5	12.0	14.5	12.0	13.5
13	20.0	18.5	19.5	21.5	20.0	21.0	11.5	10.0	11.0	12.0	10.5	11.0
14	20.5	19.0	20.0	22.0	21.0	21.5	12.0	10.0	11.0	11.5	9.5	10.5
15	21.0	19.5	20.5	23.0	22.0	22.5	13.0	11.0	12.0	11.0	8.5	10.0
16	22.0	20.5	21.5	22.0	18.0	20.0	11.5	10.5	11.0	11.5	9.5	11.0
17	22.5	21.0	22.0	18.0	16.5	17.5	11.0	9.5	10.5	12.0	11.0	11.5
18	23.0	21.5	22.5	18.5	17.5	18.0	11.0	9.5	10.5	14.0	12.0	13.0
19	23.0	22.0	23.0	19.0	17.0	18.5	13.0	9.5	11.5	15.0	14.0	14.5
20	23.0	22.0	22.5	16.5	15.0	15.5	14.5	13.0	14.0	15.0	13.0	14.5
21	24.0	22.5	23.0	14.5	13.5	14.0	16.5	14.0	15.5	13.0	11.0	12.0
22	24.0	22.5	23.5	13.0	12.0	12.5	18.5	17.0	17.5	12.0	10.0	11.0
23	24.0	22.5	23.5	12.5	11.0	12.0	17.5	16.5	17.0	12.5	10.5	11.5
24	23.5	21.5	22.5	13.5	11.5	12.5	17.0	15.5	16.5	15.0	12.5	13.5
25	23.5	22.5	23.0	16.0	13.5	15.0	16.5	15.0	15.5	17.5	15.0	16.5
26	24.0	23.0	23.5	18.0	16.5	17.0	18.5	16.5	17.5	18.0	16.0	17.5
27	24.0	23.0	23.5	17.0	15.0	16.5	18.0	16.0	17.5	15.0	12.5	13.0
28	24.5	23.5	24.0	15.0	13.5	14.0	15.5	13.0	14.0	15.0	13.0	14.0
29	23.5	22.5	23.5	13.5	12.0	13.0	13.0	11.5	12.5	15.0	12.0	13.5
30	23.0	22.5	23.0	13.5	12.0	12.5	13.0	12.5	12.5	14.5	12.0	13.5
31	22.5	21.5	22.0	---	---	---	14.0	12.5	13.5	16.0	13.5	15.0
MONTH	24.5	18.5	22.0	23.0	11.0	18.0	18.5	9.5	13.5	19.0	8.5	14.0

GUADALUPE RIVER BASIN

277

08180750 MEDIO CREEK AT PEARSALL ROAD AT SAN ANTONIO, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	17.0	15.0	16.0	15.0	14.5	14.5	21.0	18.5	20.0	24.5	23.0	24.0
2	19.0	17.0	18.0	16.0	14.5	15.0	22.5	20.0	21.0	25.0	23.0	24.0
3	18.0	12.5	15.0	17.5	15.5	16.5	24.0	21.0	22.5	24.5	23.5	24.0
4	12.0	9.0	10.5	17.5	12.5	16.0	24.0	21.5	23.0	26.0	24.0	25.0
5	8.5	6.5	7.5	12.5	10.0	11.5	21.5	20.0	20.5	26.0	24.0	25.0
6	6.5	5.5	6.0	12.5	9.5	11.0	21.5	18.5	20.0	26.0	23.5	25.0
7	7.5	5.0	6.5	12.5	9.0	11.0	22.0	19.5	21.0	26.5	25.0	25.5
8	9.0	6.5	7.5	14.0	10.0	12.0	24.0	21.0	22.5	27.0	25.0	26.0
9	10.0	7.5	9.0	15.0	11.0	13.5	21.5	18.0	20.0	27.0	25.5	26.5
10	10.5	9.0	10.0	16.0	12.0	14.5	18.0	15.5	16.5	26.5	24.0	25.0
11	12.0	10.5	11.0	17.0	13.0	15.5	16.5	14.5	15.5	24.5	23.0	24.0
12	15.5	12.0	13.5	19.0	14.5	17.0	16.0	15.0	15.5	24.0	23.0	23.5
13	18.0	15.5	16.5	20.5	16.5	18.5	14.5	14.5	14.5	24.0	23.5	23.5
14	19.0	17.5	18.5	22.0	18.5	20.5	16.0	14.5	15.5	25.0	23.0	24.0
15	20.5	18.5	19.5	22.0	20.0	21.0	18.0	15.5	16.5	25.5	24.5	25.0
16	18.5	15.5	17.0	21.0	19.0	20.0	19.5	17.0	18.5	26.0	25.0	25.5
17	15.5	14.0	15.0	22.5	20.0	21.5	21.5	19.5	20.5	27.0	25.0	26.0
18	14.0	12.5	13.5	23.0	21.0	22.0	23.5	21.0	22.5	27.5	25.5	26.5
19	13.5	12.5	13.0	22.0	20.5	21.5	23.0	20.0	22.0	28.5	25.5	27.0
20	15.5	13.0	14.0	23.0	20.5	21.5	23.0	21.0	22.0	28.5	27.0	27.5
21	16.0	14.0	15.0	20.5	15.0	17.5	24.5	22.0	23.0	29.0	27.0	28.0
22	16.0	13.5	14.5	17.0	14.0	15.5	24.5	22.5	23.5	29.0	27.0	28.0
23	14.5	12.5	13.5	18.0	14.5	16.5	25.0	23.0	24.0	29.5	27.5	28.5
24	14.0	12.5	13.5	19.0	16.0	17.5	25.0	23.0	24.0	29.5	27.5	28.5
25	17.0	13.5	15.0	20.0	18.5	19.0	24.5	23.5	24.0	29.0	27.0	28.0
26	19.0	15.0	17.0	21.5	19.5	20.5	25.5	23.5	24.5	29.5	27.0	28.5
27	20.0	17.0	18.5	23.0	20.5	21.5	25.0	23.5	24.5	29.0	27.5	28.0
28	18.0	15.0	16.0	23.0	20.5	22.0	26.0	24.0	24.5	29.0	26.5	27.5
29	---	---	---	22.5	19.5	21.0	25.5	22.5	24.0	28.5	26.0	27.0
30	---	---	---	22.5	20.0	21.5	24.5	22.5	23.5	28.0	26.0	27.0
31	---	---	---	21.0	19.0	20.0	---	---	---	28.0	26.0	27.0
MONTH	20.5	5.0	13.5	23.0	9.0	17.5	26.0	14.5	21.0	29.5	23.0	26.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	28.5	26.0	27.0	29.5	27.0	28.0	28.5	27.5	28.0	29.5	28.0	28.5
2	29.0	26.5	27.5	30.5	27.5	29.0	29.0	27.5	28.0	30.0	28.0	29.0
3	29.0	27.0	28.0	30.0	28.0	29.0	29.0	27.0	28.0	29.5	28.0	29.0
4	28.5	26.5	27.5	30.5	28.0	29.0	29.5	27.5	28.0	29.5	27.5	28.5
5	29.0	27.0	28.0	29.5	27.5	28.5	29.5	27.5	28.5	---	---	---
6	29.5	27.5	28.5	29.5	27.5	28.5	30.0	28.0	29.0	---	---	---
7	29.5	27.5	28.5	29.5	27.5	28.5	29.5	27.5	28.5	---	---	---
8	29.0	26.5	27.5	29.5	27.5	28.5	27.5	26.0	26.5	---	---	---
9	27.5	25.5	26.5	29.5	27.5	28.5	26.5	25.0	26.0	29.0	27.0	28.0
10	28.5	26.0	27.5	29.5	27.5	28.5	26.0	24.5	25.5	29.0	27.5	28.0
11	27.5	23.5	25.5	29.5	27.5	28.5	26.0	24.5	25.5	28.5	27.0	28.0
12	28.0	25.0	26.5	30.0	27.5	28.5	26.5	24.5	25.5	28.5	27.0	28.0
13	28.5	26.5	27.5	29.5	27.5	28.5	26.5	24.5	26.0	28.5	26.0	27.5
14	26.5	23.5	25.0	30.0	27.5	28.5	26.0	25.5	26.0	26.0	24.5	25.0
15	26.0	23.5	25.0	30.0	27.5	28.5	27.5	25.5	26.5	24.5	23.0	24.0
16	26.5	24.0	25.5	30.5	28.0	29.0	28.0	25.5	27.0	24.0	22.0	23.0
17	27.0	24.5	26.0	30.5	28.0	29.0	28.0	26.0	27.0	23.5	22.0	23.0
18	28.5	26.0	27.0	30.0	28.0	29.0	28.5	27.0	27.5	24.0	22.5	23.5
19	29.5	27.5	28.5	30.5	28.0	29.5	28.5	26.5	27.5	24.5	23.0	24.0
20	30.0	27.5	28.5	29.5	27.5	28.5	28.5	27.0	27.5	25.0	23.0	24.5
21	29.5	27.5	28.5	28.5	26.0	27.5	29.0	27.5	28.0	25.0	24.0	24.5
22	29.0	27.0	28.0	28.0	25.5	26.5	29.5	27.5	28.5	24.5	23.5	24.0
23	28.5	27.0	27.5	28.0	25.5	26.5	29.5	27.5	28.5	23.5	21.0	22.5
24	27.0	26.0	26.5	27.5	25.5	26.5	29.0	27.5	28.0	21.5	19.5	20.5
25	26.0	25.5	26.0	27.0	25.0	26.0	29.0	27.0	28.0	21.0	19.0	20.0
26	26.5	25.5	26.0	27.0	25.0	26.0	29.0	27.0	28.0	20.5	18.5	19.5
27	27.5	25.5	26.5	27.0	26.0	26.5	29.0	28.0	28.5	20.5	18.5	19.5
28	28.5	26.0	27.0	28.0	25.5	27.0	29.5	27.5	28.5	21.0	19.0	20.0
29	28.5	26.5	27.5	29.0	26.5	28.0	29.5	27.5	28.5	21.0	18.5	20.0
30	28.0	26.5	27.5	29.0	27.0	28.0	29.5	28.0	28.5	21.5	19.5	20.5
31	---	---	---	29.0	27.0	28.0	29.5	28.0	28.5	---	---	---
MONTH	30.0	23.5	27.0	30.5	25.0	28.0	30.0	24.5	27.5	30.0	18.5	24.5

GUADALUPE RIVER BASIN

08180750 MEDIO CREEK AT PEARSALL ROAD AT SAN ANTONIO, TX--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	7.8	6.4	6.9	7.7	6.2	6.8	10.1	8.2	9.1	8.6	6.7	7.6
2	7.9	6.6	7.1	7.7	6.3	6.8	10.5	8.4	9.3	8.9	6.5	7.5
3	8.1	6.8	7.2	7.8	6.3	6.9	10.7	8.4	9.4	8.9	6.3	7.4
4	8.4	7.0	7.5	8.0	6.4	7.1	10.4	8.2	9.1	8.5	6.4	7.3
5	8.5	7.1	7.7	8.5	6.7	7.4	10.5	7.6	8.8	8.5	6.1	7.0
6	8.6	7.4	7.8	8.6	7.0	7.6	9.9	7.3	8.4	8.6	6.1	7.1
7	8.9	7.4	7.9	8.9	7.2	7.9	9.6	6.8	7.9	8.4	5.8	6.9
8	9.0	7.4	8.0	9.2	7.1	7.8	7.7	6.4	7.0	8.0	6.1	7.0
9	8.9	7.2	7.8	8.4	6.7	7.4	8.9	6.9	7.8	8.3	6.9	7.5
10	8.9	7.1	7.7	8.1	6.3	7.0	8.5	7.5	7.9	9.6	7.6	8.5
11	8.8	7.2	7.7	8.3	6.2	7.0	10.0	7.5	8.5	9.6	7.7	8.4
12	8.9	7.0	7.7	7.9	6.2	6.9	9.6	7.5	8.4	8.2	7.1	7.6
13	9.3	7.2	8.0	8.3	6.4	7.2	9.9	7.8	8.7	8.7	7.7	8.1
14	9.4	7.0	7.9	8.1	6.4	7.0	10.4	7.9	8.9	10.0	8.1	9.0
15	9.4	6.6	7.6	8.0	6.0	6.7	10.4	7.7	8.9	10.5	8.8	9.5
16	8.9	6.2	7.3	8.5	6.0	7.1	10.6	7.8	9.1	10.7	8.7	9.6
17	8.5	6.3	7.2	8.9	7.0	7.8	10.9	8.3	9.5	10.1	8.2	9.0
18	8.4	6.0	7.0	8.8	7.2	7.6	11.3	8.5	9.7	9.7	7.6	8.5
19	8.5	5.9	6.9	8.9	6.9	7.7	11.6	8.6	9.7	8.4	6.9	7.5
20	8.3	6.1	6.9	9.4	7.5	8.4	10.4	7.4	8.6	9.3	6.7	7.8
21	8.1	6.0	6.7	10.1	8.1	9.1	10.6	6.7	8.1	10.4	7.6	8.8
22	8.4	5.8	6.7	10.5	8.8	9.5	9.8	5.7	7.1	11.0	8.3	9.5
23	8.0	5.8	6.6	10.6	9.1	9.8	7.9	5.1	6.3	10.7	8.3	9.3
24	7.2	5.9	6.3	10.4	8.9	9.4	8.9	5.1	6.7	9.8	7.7	8.6
25	6.7	5.2	5.8	9.9	8.2	8.8	9.2	5.6	6.8	9.6	6.7	7.7
26	6.7	5.2	5.7	9.5	7.5	8.2	8.9	5.3	6.7	7.5	5.9	6.7
27	6.9	5.0	5.8	9.2	7.0	8.0	6.5	5.1	5.7	8.6	7.5	8.2
28	7.2	5.4	6.1	9.4	7.7	8.5	8.7	5.6	7.1	8.5	7.5	8.0
29	7.4	5.6	6.3	9.9	8.0	8.9	9.8	7.3	8.4	9.3	7.2	8.3
30	6.9	5.4	6.0	10.1	8.0	9.0	8.7	7.0	7.7	8.9	7.7	8.5
31	7.2	5.6	6.4	---	---	---	8.7	6.4	7.4	8.1	6.9	7.6
MONTH	9.4	5.0	7.0	10.6	6.0	7.8	11.6	5.1	8.2	11.0	5.8	8.1
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	7.4	6.3	6.8	10.7	6.7	8.1	9.8	5.6	7.2	8.9	5.8	7.0
2	6.7	5.6	6.1	12.2	6.7	9.0	9.7	5.6	7.0	9.5	5.8	7.1
3	8.1	5.6	7.0	12.1	6.8	8.6	9.6	5.3	6.9	8.2	5.4	6.3
4	9.0	7.5	8.3	11.2	6.2	8.3	9.6	4.8	6.6	8.9	5.5	6.7
5	9.8	8.5	9.2	13.4	8.1	10.5	10.2	5.2	7.2	9.0	5.7	6.7
6	10.9	9.5	10.2	14.1	8.8	11.2	10.5	5.7	7.4	10.2	5.7	7.2
7	11.0	10.0	10.6	14.9	9.1	11.6	9.7	5.6	7.1	8.9	5.3	6.9
8	10.4	9.4	9.9	15.4	8.9	11.5	10.7	5.2	7.2	8.6	5.3	6.6
9	10.2	8.6	9.4	16.6	8.3	11.7	9.9	5.5	6.9	9.5	5.5	6.9
10	9.8	8.0	8.8	16.6	7.6	11.6	9.9	6.1	7.7	7.4	5.5	6.1
11	8.7	7.4	8.0	17.1	7.4	11.6	11.3	7.2	9.0	7.8	5.3	6.2
12	8.7	6.4	7.3	16.5	7.0	11.0	8.8	6.8	7.5	8.7	5.3	6.3
13	8.6	5.5	6.6	15.5	6.4	10.2	8.8	6.4	7.1	7.9	5.4	6.2
14	7.7	4.8	5.8	14.1	5.7	9.2	8.4	6.6	7.2	8.4	5.4	6.5
15	9.3	4.6	6.3	12.2	5.2	8.0	9.9	6.2	7.5	7.9	5.8	6.5
16	8.8	5.3	6.6	11.7	5.3	7.8	10.4	5.9	7.6	7.4	5.2	5.9
17	8.0	6.1	6.9	10.6	5.1	7.3	9.2	5.4	6.6	7.7	5.2	6.1
18	10.2	6.8	8.3	10.7	4.9	7.0	10.0	4.9	6.6	8.4	5.4	6.4
19	10.5	7.5	8.7	9.2	5.3	6.6	6.3	4.3	5.2	8.6	5.2	6.4
20	11.2	7.3	8.8	8.7	5.6	6.7	5.6	4.6	5.2	7.7	5.2	6.1
21	11.2	7.2	8.8	9.3	5.3	6.7	5.5	4.3	4.8	8.2	5.1	6.2
22	12.0	7.2	9.1	10.0	6.4	8.0	5.6	4.0	4.6	8.2	5.1	6.3
23	13.3	7.5	10.0	10.5	6.7	8.4	6.0	4.2	4.9	7.3	5.3	6.1
24	13.6	7.8	10.1	11.5	6.7	8.5	7.0	4.5	5.4	7.8	5.2	6.1
25	14.0	7.7	10.0	8.9	6.0	7.2	6.7	4.7	5.4	7.7	5.1	6.0
26	14.0	7.1	9.7	9.9	5.5	6.9	7.0	4.5	5.4	7.8	5.2	6.1
27	13.7	6.6	9.3	8.9	5.0	6.4	7.5	4.4	5.5	7.5	5.2	6.1
28	10.7	6.3	8.1	6.7	4.8	5.5	8.4	5.2	6.3	8.0	5.2	6.3
29	---	---	---	7.5	4.5	5.7	9.5	5.4	6.8	8.0	5.3	6.4
30	---	---	---	7.8	4.2	5.7	8.4	5.6	6.7	7.8	5.4	6.3
31	---	---	---	9.2	4.9	6.6	---	---	---	7.8	5.3	6.3
MONTH	14.0	4.6	8.4	17.1	4.2	8.5	11.3	4.0	6.5	10.2	5.1	6.4

GUADALUPE RIVER BASIN

279

08180750 MEDIO CREEK AT PEARSALL ROAD AT SAN ANTONIO, TX--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	7.5	5.2	6.1	9.1	5.4	6.8	9.0	5.2	6.8	7.7	5.2	6.2
2	7.6	5.3	6.1	9.4	4.4	6.5	9.4	4.8	6.5	7.9	5.2	6.4
3	7.5	5.1	6.0	10.2	4.2	6.3	9.3	4.8	6.5	7.7	5.3	6.3
4	7.3	5.1	5.9	11.3	4.5	6.8	9.3	4.8	6.6	---	---	---
5	7.3	5.2	5.9	11.7	4.7	7.4	9.0	4.9	6.3	---	---	---
6	7.4	5.3	6.1	11.0	5.4	7.4	8.7	4.9	6.1	---	---	---
7	7.3	5.1	5.9	12.1	5.3	7.8	8.2	4.9	6.3	---	---	---
8	7.8	4.9	6.0	11.5	5.3	7.6	6.9	4.9	5.6	---	---	---
9	7.6	4.7	6.1	10.6	5.1	7.0	7.7	5.3	6.2	8.6	5.7	7.0
10	8.0	5.3	6.4	10.0	5.0	6.9	8.5	5.4	6.7	8.4	5.8	7.2
11	6.3	5.1	5.6	10.1	5.1	7.0	9.2	5.9	7.1	8.1	5.8	6.8
12	5.6	4.4	5.0	10.1	5.1	7.0	9.5	6.1	7.3	8.3	6.0	6.8
13	5.8	4.2	4.7	9.6	4.9	6.7	9.6	6.0	7.3	8.1	5.9	6.7
14	6.6	4.5	5.7	10.0	4.9	6.9	8.6	5.5	6.7	8.0	6.0	6.7
15	6.3	5.6	6.0	9.4	5.1	6.8	9.0	5.4	6.7	8.4	5.7	6.9
16	9.2	6.5	8.2	9.3	5.1	6.7	9.3	5.4	6.7	9.3	6.3	7.8
17	8.8	7.1	8.0	9.0	5.1	6.6	8.5	5.2	6.3	9.6	6.7	7.9
18	8.1	5.3	7.4	8.6	5.1	6.5	8.3	5.1	6.2	9.6	7.1	8.0
19	7.4	5.2	6.2	8.5	5.2	6.4	7.8	4.2	5.9	8.9	6.5	7.4
20	7.5	5.1	6.1	7.9	5.3	6.4	7.9	4.3	5.5	9.1	5.9	7.6
21	7.1	4.8	5.8	8.1	5.0	6.2	7.7	4.5	5.6	9.6	6.1	7.9
22	7.2	4.8	5.7	8.4	5.1	6.4	7.9	4.4	5.9	9.8	6.2	8.0
23	7.5	5.1	6.0	8.6	5.3	6.5	7.7	4.4	5.8	10.0	6.5	8.4
24	7.0	5.3	5.9	8.5	5.4	6.5	7.4	4.1	5.2	10.2	7.0	8.8
25	6.9	5.4	6.0	8.8	5.3	6.7	7.8	3.8	5.3	10.4	7.3	9.1
26	7.1	5.6	6.2	9.2	5.4	6.8	8.0	4.3	5.6	10.8	7.8	9.4
27	7.0	5.5	6.1	8.5	5.0	6.4	7.4	4.4	5.5	11.0	8.4	9.9
28	7.4	5.2	6.1	9.5	4.8	6.5	7.7	4.4	5.8	10.9	8.0	9.7
29	8.1	5.2	6.3	10.5	4.9	6.9	7.9	5.2	6.1	10.9	8.1	9.8
30	8.3	5.4	6.4	9.8	4.8	6.4	7.6	5.2	6.1	10.8	7.4	9.2
31	---	---	---	9.2	5.0	6.6	7.8	5.2	6.1	---	---	---
MONTH	9.2	4.2	6.1	12.1	4.2	6.8	9.6	3.8	6.2	11.0	5.2	7.8

GUADALUPE RIVER BASIN

08180800 MEDINA RIVER NEAR SOMERSET, TX

LOCATION.--Lat 29°15'45", long 98°34'56", Bexar County, Hydrologic Unit 12100302, on left bank 300 ft upstream from bridge on State Highway 16, 2.1 mi upstream from Elm Creek, 4.9 mi downstream from Medio Creek, 5.2 mi northeast of Somerset, and 14.1 mi upstream from mouth.

DRAINAGE AREA.--967 mi², of which 634 mi² is above dam forming Medina Lake.

PERIOD OF RECORD.--October 1970 to current year.

GAGE.--Water-stage recorder. Datum of gage is 493.56 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Medina Lake (station 08179500) 56 mi upstream and by Medina Diversion Lake (capacity, 4,500 acre-ft). For diversion of canal records, see Medina Canal near Rio-medina (station 08180000). A large part of the streamflow is lost into the Edwards and associated limestones in the Balcones Fault Zone that crosses the basin between the upstream end of Medina Lake and about 5 mi downstream from Medina Dam, or 0.9 mi downstream from the diversion dam. There are several small diversions below Medina Diversion Dam. One observation of water temperature was made during the year. Satellite telemeter at station.

AVERAGE DISCHARGE.--19 years, 240 ft³/s (173,900 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,500 ft³/s July 17, 1973 (gage height, 29.39 ft); minimum daily, 16 ft³/s Sept. 19, 20, 1984.
Maximum stage since about 1890, that of July 17, 1973.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 433 ft³/s Jan. 30 at 0100 hours (gage height, 7.91 ft, from floodmark); minimum daily, 23 ft³/s July 21.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	46	48	44	55	85	62	60	53	28	34	28	28
2	41	47	45	55	79	63	60	52	28	34	28	28
3	42	46	45	55	73	65	62	49	27	32	28	28
4	44	46	43	55	69	65	59	45	25	31	27	28
5	41	45	47	55	68	64	56	43	27	31	26	28
6	41	44	50	55	68	62	55	45	28	30	27	26
7	39	46	50	54	68	61	55	45	28	29	26	27
8	40	47	48	53	67	62	55	43	26	28	27	27
9	40	49	48	52	67	62	53	43	31	28	30	27
10	40	49	49	52	67	62	51	42	41	28	31	27
11	42	46	52	51	67	62	50	40	75	28	29	28
12	41	46	52	51	67	63	50	40	65	39	27	30
13	41	45	51	52	68	62	51	40	43	32	25	31
14	40	46	50	54	68	63	54	40	108	28	28	33
15	41	45	52	54	68	62	56	39	75	28	27	35
16	39	45	53	54	68	61	55	39	56	27	26	32
17	40	43	53	52	67	63	54	41	44	26	26	30
18	40	43	53	52	67	62	54	42	42	27	26	30
19	40	43	54	54	67	61	151	41	39	26	25	30
20	39	40	54	56	66	70	114	37	38	25	26	30
21	40	40	54	57	66	72	69	35	36	23	26	30
22	41	40	52	56	65	65	60	35	34	24	25	30
23	42	40	54	56	65	62	57	36	35	25	25	28
24	42	41	54	54	64	63	55	36	37	27	25	27
25	40	43	55	55	65	63	53	34	33	27	27	27
26	39	45	56	56	64	63	52	32	37	27	29	27
27	40	44	55	133	64	65	52	32	37	27	28	27
28	42	43	55	99	64	62	51	32	40	28	29	27
29	42	44	54	141	---	67	48	30	37	29	28	27
30	45	44	54	236	---	66	50	29	35	29	27	27
31	47	---	55	104	---	62	---	28	---	29	28	---
TOTAL	1277	1333	1591	2118	1901	1967	1802	1218	1235	886	840	860
MEAN	41.2	44.4	51.3	68.3	67.9	63.5	60.1	39.3	41.2	28.6	27.1	28.7
MAX	47	49	56	236	85	72	151	53	108	39	31	35
MIN	39	40	43	51	64	61	48	28	25	23	25	26
AC-FT	2530	2640	3160	4200	3770	3900	3570	2420	2450	1760	1670	1710
CAL YR 1988	TOTAL	24504	MEAN	67.0	MAX	163	MIN	38	AC-FT	48600		
WTR YR 1989	TOTAL	17028	MEAN	46.7	MAX	236	MIN	23	AC-FT	33780		

281

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

WATER-DISCHARGE RECORDS

GAGE.--Water-stage recorder. Datum of gage is 1,014.82 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. An undetermined amount of flow is diverted for domestic use above station, and some streamflow enters the Edwards and associated limestones through the Balcones Fault Zone in the vicinity of the gage. Recording rain gage at station.

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

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

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 140 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 29	1000	*60	*2.24				

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
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	.03	.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	.01
14	.00	.00	.00	.00	.00	.00	.00	.00	.19	.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	.05	.35	.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	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.04	.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	.33	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	5.7	---	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	3.2	---	.00	.00	.00	.00	.00	.00	.00
31	.00	---	.00	.16	---	.00	---	.00	---	.00	.00	---
TOTAL	0.01	0.00	0.00	9.06	0.00	0.38	0.35	0.00	0.22	0.04	0.00	0.01
MEAN	.000	.00	.00	.29	.00	.012	.012	.00	.007	.001	.00	.000
MAX	.01	.00	.00	5.7	.00	.33	.35	.00	.19	.04	.00	.01
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.02	.0	.0	.18	.0	.8	.7	.0	.4	.08	.0	.02
CFSM	.00	.00	.00	.02	.00	.00	.00	.00	.00	.00	.00	.00
IN.	.00	.00	.00	.02	.00	.00	.00	.00	.00	.00	.00	.00
CAL YR 1988	TOTAL	2.59	MEAN	.007	MAX	1.2	MIN	.00	AC-FT	5.1	CFSM	.00
WTR YR 1989	TOTAL	10.07	MEAN	.028	MAX	5.7	MIN	.00	AC-FT	20	CFSM	.00

GUADALUPE RIVER BASIN

08181400 HELOTES CREEK AT HELOTES, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: May 1969 to current year. Pesticide analyses: May 1969 to June 1981, October 1984 to current year. Sediment analyses: October 1968 to September 1973.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT- ANCE (US/CM)	PH (STAND- ARD 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, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
MAR 28...	0830	0.02	113	7.00	16.0	60	12	7.2	75	4.6	K27000
APR 19...	1110	0.02	101	7.90	20.0	60	4.8	6.8	77	5.5	50000
AUG 08...	0910	0.02	113	7.40	22.5	100	2.2	6.3	75	5.1	12000

DATE	STREP- TOCOCCI FECAL KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CAC03	SULFATE DIS- SOLVED (MG/L AS S04)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
MAR 28...	54000	53	9	18	2.0	2.1	0.1	2.5	44	26	10
APR 19...	190000	49	0	17	1.6	0.80	0.0	2.8	49	<1.0	1.3
AUG 08...	15000	52	8	19	1.2	1.6	0.1	2.3	44	4.0	8.8

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C. SUS- PENDED (MG/L)	RESIDUE 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)
MAR 28...	0.10	6.1	93	25	11	0.480	0.020	0.500	0.070	1.1	1.2
APR 19...	0.10	6.7	--	200	35	0.280	0.020	0.300	0.070	0.63	0.70
AUG 08...	0.10	3.5	67	1	<1	0.950	0.050	1.00	0.070	0.83	0.90

[illegible][illegible][illegible]

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

[illegible]

GUADALUPE RIVER BASIN

08181480 LEON CREEK AT INTERSTATE HIGHWAY 35 AT SAN ANTONIO, TX

LOCATION.--Lat 29°19'47", long 98°35'02", Bexar County, Hydrologic Unit 12100302, on left bank between bridges on Interstate Highway 35 in San Antonio, 1.7 mi northeast of the intersection of Interstate Highway 35 and Loop 410, and 11.8 mi upstream from mouth.

DRAINAGE AREA.--219 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1984 to current year.

GAGE.--Water-stage recorder. Datum of gage is 573.49 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records poor. Satellite telemeter at station.

AVERAGE DISCHARGE.--5 years, 40.3 ft³/s (29,200 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,100 ft³/s June 11, 1987 (gage height, 22.30 ft), from rating curve extended above 11,000 ft³/s; minimum daily, 1.1 ft³/s Sept. 4, 5, 1989.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,360 ft³/s Apr. 19 at 1400 hours (gage height, 8.62 ft); minimum daily, 1.1 ft³/s Sept. 4, 5.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.3	7.5	4.3	5.2	10	e5.0	6.6	8.3	4.6	2.6	1.9	1.6
2	5.3	4.9	3.4	e5.0	7.8	e4.8	4.2	7.7	4.6	2.2	2.1	1.5
3	5.0	5.4	4.1	e4.7	7.2	e5.3	3.9	7.2	4.0	3.0	2.2	1.2
4	5.6	5.7	3.3	e4.3	5.6	e5.1	5.4	7.1	3.9	2.3	2.1	1.1
5	5.8	5.4	2.5	e4.7	4.8	e4.5	6.0	6.4	3.5	2.9	2.0	1.1
6	6.0	4.4	3.5	e4.9	e4.6	e5.2	6.3	5.7	4.8	4.0	1.9	3.3
7	6.3	4.0	4.2	e4.8	e4.3	e5.2	6.2	5.0	3.2	1.9	1.9	2.3
8	6.2	5.3	7.4	e4.7	e4.7	e5.0	5.6	4.9	2.8	3.2	7.1	1.9
9	5.5	5.5	5.9	e4.2	e4.7	e4.5	4.4	5.6	2.8	2.3	2.5	1.7
10	5.6	5.1	6.1	e4.7	e4.2	e5.2	4.5	11	2.4	1.7	2.2	1.7
11	6.2	4.1	5.2	e4.9	e4.2	e5.0	5.4	7.2	361	2.9	1.8	2.7
12	6.3	3.6	4.0	e4.9	e4.5	e4.8	6.2	6.2	54	4.2	1.8	2.7
13	6.2	3.4	4.4	e5.0	e4.2	e4.5	17	6.2	13	3.2	1.5	3.2
14	6.2	3.2	4.9	e4.9	e3.9	e5.0	27	5.1	169	2.4	1.4	2.8
15	5.7	4.1	5.1	e4.8	e4.2	e5.0	11	5.0	39	2.3	1.7	2.3
16	5.2	5.2	5.1	e4.5	19	e5.0	7.5	5.9	12	2.3	1.7	2.2
17	5.1	4.4	5.5	e5.0	7.9	e4.6	8.3	10	7.4	2.3	1.9	1.9
18	5.3	5.3	5.0	e7.0	6.8	e4.2	8.4	8.3	5.1	2.3	1.7	1.7
19	6.1	7.4	4.8	13	5.6	e4.8	471	6.7	4.4	2.4	1.6	1.8
20	5.9	21	5.7	16	5.2	20	133	6.0	4.3	2.6	1.4	1.9
21	5.9	5.1	6.1	10	5.0	7.7	22	5.3	4.1	2.3	1.3	2.2
22	5.5	6.4	6.6	e6.8	5.4	6.4	13	4.4	4.2	2.5	1.6	2.1
23	5.2	6.0	6.5	e5.4	5.7	6.2	9.1	5.4	4.3	2.2	1.5	e1.7
24	11	5.3	5.3	e4.9	5.8	6.0	7.6	5.0	3.6	2.9	1.5	e1.5
25	7.3	3.1	4.9	e6.0	5.5	6.1	8.0	5.0	6.0	2.7	2.3	1.4
26	6.5	2.5	5.0	17	4.5	5.1	8.2	4.8	6.7	2.4	1.7	1.6
27	6.1	2.1	5.1	72	5.3	5.2	7.6	4.2	4.2	2.7	1.3	1.9
28	5.9	2.2	5.5	19	e5.4	18	7.0	3.0	3.7	2.3	1.4	2.0
29	8.2	3.1	5.7	237	---	11	9.2	2.7	3.1	2.3	1.7	2.1
30	5.4	4.0	5.9	50	---	7.9	35	3.0	3.6	2.2	1.7	2.1
31	7.5	---	5.4	15	---	8.0	---	4.3	---	1.9	1.7	---
TOTAL	190.3	154.7	156.4	560.3	166.0	200.3	874.6	182.6	749.3	79.4	60.1	59.2
MEAN	6.14	5.16	5.05	18.1	5.93	6.46	29.2	5.89	25.0	2.56	1.94	1.97
MAX	11	21	7.4	237	19	20	471	11	361	4.2	7.1	3.3
MIN	5.0	2.1	2.5	4.2	3.9	4.2	3.9	2.7	2.4	1.7	1.3	1.1
AC-FT	377	307	310	1110	329	397	1730	362	1490	157	119	117
CAL YR 1988	TOTAL	4144.2	MEAN	11.3	MAX	879	MIN	2.1	AC-FT	8220		
WTR YR 1989	TOTAL	3433.2	MEAN	9.41	MAX	471	MIN	1.1	AC-FT	6810		

e Estimated.

08181480 LEON CREEK AT INTERSTATE HIGHWAY 35 AT SAN ANTONIO, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: July 1984 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: September 1984 to current year.

pH: April 1989 to September 1989.

WATER TEMPERATURE: September 1984 to current year.

DISSOLVED OXYGEN: April 1989 to September 1989.

INSTRUMENTATION.--Since September 1984, specific conductance and water temperature are recorded continuously at this station. Beginning April 1989, pH and dissolved oxygen are recorded continuously.

REMARKS.--Interruptions in the record were due to malfunctions of the instrument. Where maximum or minimum specific conductance values are not shown, mean value is estimated. Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 1,260 microsiemens Nov. 19, 1988; minimum, 94 microsiemens, Oct. 11, 1985.

pH: Maximum, 8.2 units June 2, 7, 1989; minimum, 7.1 units on several days during July and August, 1989.

WATER TEMPERATURE: Maximum, 32.5°C July 16, 17, 1989; minimum, 5.5°C Jan. 12, 13, 1985.

DISSOLVED OXYGEN: Maximum, 14.3 mg/L Sept. 29, 1989; minimum, 2.0 mg/L Sept. 11, 1989.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum recorded, 1,260 microsiemens Nov. 19; minimum recorded, 140 microsiemens Apr. 19.

pH: Maximum, 8.2 units June 2, 7; minimum, 7.1 units on several days during July and August.

WATER TEMPERATURE: Maximum, 32.5°C July 16, 17.

DISSOLVED OXYGEN: Maximum, 14.3 mg/L Sept. 29; minimum, 2.0 mg/L Sept. 11.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD 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, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3
OCT												
18...	1230	5.5	906	7.70	22.5	3	2.3	7.2	85	1.4	310	63
DEC												
16...	1225	5.1	834	7.70	13.0	5	5.9	8.6	81	1.3	300	43
FEB												
27...	1215	6.2	891	7.70	19.0	3	4.1	9.8	109	1.4	300	46
APR												
20...	1415	87	330	--	21.0	--	--	--	--	--	120	18
21...	1300	20	470	7.70	21.5	30	35	6.3	73	3.2	170	22
JUN												
08...	1400	3.3	989	7.90	28.0	15	2.0	7.0	92	1.2	300	56
AUG												
18...	1130	1.8	835	7.70	26.5	25	2.4	4.8	62	1.0	260	15

DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)
OCT											
18...	93	18	75	2	3.3	244	120	58	0.40	15	529
DEC											
16...	94	17	67	2	3.5	262	100	62	0.40	14	515
FEB											
27...	92	17	73	2	3.5	254	110	68	0.50	8.6	525
APR											
20...	40	4.3	20	0.8	4.8	100	34	16	0.20	8.2	187
21...	56	7.3	31	1	4.7	148	48	27	0.20	11	274
JUN											
08...	91	18	98	3	3.4	246	170	66	0.80	14	609
AUG											
18...	77	16	85	2	3.8	244	130	54	0.70	12	525

DATE	RESIDUE TOTAL AT 105 DEG. C. SUS- PENDED (MG/L)	RESIDUE 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- PHOROUS TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS- SOLVED (UG/L AS AS)
OCT											
18...	<1	<1	--	<0.010	1.20	0.030	0.57	0.60	0.270	2.7	--
DEC											
16...	9	19	2.28	0.020	2.30	0.060	0.44	0.50	0.530	4.3	--
FEB											
27...	7	5	--	<0.010	0.800	0.060	0.64	0.70	0.350	4.0	1
APR											
20...	--	--	--	--	--	--	--	--	--	--	--
21...	51	8	0.560	0.040	0.600	0.120	0.58	0.70	0.230	6.6	2
JUN											
08...	5	5	1.28	0.020	1.30	0.050	0.55	0.60	0.670	4.0	3
AUG											
18...	8	8	0.590	0.010	0.600	0.040	0.26	0.30	0.500	3.6	2

08181480 LEON CREEK AT INTERSTATE HIGHWAY 35 AT SAN ANTONIO, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	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)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 18...	--	--	--	--	--	--	--	--	--	--	--
DEC 16...	--	--	--	--	--	--	--	--	--	--	--
FEB 27...	79	4	3	1	20	<5	40	<0.1	<1	<1.0	32
APR 20...	--	--	--	--	--	--	--	--	--	--	--
JUN 21...	48	1	2	3	63	<5	24	<0.1	<1	<1.0	28
AUG 08...	68	5	5	8	25	8	32	<0.1	<1	<1.0	61
AUG 18...	56	2	3	2	13	1	17	0.1	<1	<1.0	30

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	886	859	872	833	682	786	829	759	804	---	---	---
2	912	885	894	810	682	753	817	747	802	---	---	---
3	971	858	946	902	728	788	876	724	806	---	---	---
4	949	907	926	972	787	888	1020	888	941	---	---	---
5	909	865	885	856	741	800	1000	842	928	---	---	---
6	1010	867	950	949	741	833	913	831	890	---	---	---
7	1030	941	991	996	880	956	878	807	853	---	---	---
8	942	898	920	950	765	871	831	737	785	---	---	---
9	959	922	940	857	764	829	854	761	788	---	---	---
10	1020	937	969	893	834	863	820	773	788	---	---	---
11	1030	917	996	858	777	843	833	750	798	---	---	---
12	932	898	916	869	800	850	856	773	829	---	---	---
13	921	898	909	858	789	832	856	762	824	---	---	---
14	991	910	945	929	835	890	---	---	---	---	---	---
15	991	933	970	906	813	873	---	---	---	---	---	---
16	945	910	929	871	812	838	---	---	---	---	---	---
17	910	887	895	860	732	808	---	---	---	---	---	---
18	922	888	907	883	802	859	---	---	---	---	---	---
19	888	854	875	1260	779	948	---	---	---	---	---	---
20	865	807	834	1030	837	916	---	---	---	---	---	---
21	865	807	832	919	814	875	---	---	---	---	---	---
22	888	865	876	907	768	842	---	---	---	---	---	---
23	911	877	889	919	815	846	---	---	---	---	---	---
24	935	854	895	861	803	840	---	---	---	---	---	---
25	843	542	665	886	792	861	---	---	---	---	---	---
26	831	762	791	885	792	860	---	---	---	---	---	---
27	855	831	845	851	769	828	---	---	---	---	---	---
28	959	843	896	874	793	852	---	---	---	---	---	---
29	959	855	913	875	793	825	---	---	---	---	---	---
30	1020	855	944	863	770	806	---	---	---	---	---	---
31	948	809	878	---	---	---	---	---	---	---	---	---
MONTH	1030	542	900	1260	682	849	1020	724	834	---	---	---

GUADALUPE RIVER BASIN

287

08181480 LEON CREEK AT INTERSTATE HIGHWAY 35 AT SAN ANTONIO, TX--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	---	---	---	---	---	---	---	---	---	730	430	571
2	---	---	---	---	---	---	---	---	---	800	740	777
3	---	---	---	---	---	---	---	---	---	920	780	818
4	---	---	---	---	---	---	---	---	---	930	850	886
5	---	---	---	---	---	---	790	750	782	900	860	878
6	---	---	---	---	---	---	790	750	771	910	880	902
7	---	---	---	---	---	---	910	730	818	880	860	871
8	---	---	---	---	---	---	910	860	889	---	---	870
9	---	---	---	---	---	---	950	860	889	---	---	865
10	---	---	---	---	---	---	970	820	943	---	---	750
11	---	---	---	---	---	---	870	800	836	---	---	775
12	---	---	---	---	---	---	850	820	832	870	770	802
13	---	---	---	---	---	---	930	810	859	900	800	864
14	---	---	---	---	---	---	710	310	504	920	880	897
15	---	---	---	---	---	---	720	690	709	950	910	921
16	---	---	---	---	---	---	750	680	717	1000	950	972
17	---	---	---	---	---	---	850	760	808	940	890	904
18	---	---	---	---	---	---	860	820	845	910	840	872
19	---	---	---	---	---	---	810	140	484	862	833	851
20	---	---	---	---	---	---	420	200	309	855	816	831
21	---	---	---	---	---	---	550	430	477	900	827	854
22	---	---	---	---	---	---	680	550	604	944	891	916
23	---	---	---	---	---	---	790	690	748	946	906	933
24	---	---	---	---	---	---	800	760	788	896	856	873
25	---	---	---	---	---	---	790	750	765	961	889	928
26	---	---	---	---	---	---	870	790	843	922	821	872
27	---	---	---	---	---	---	860	840	848	855	821	834
28	---	---	---	---	---	---	920	860	890	920	856	884
29	---	---	---	---	---	---	920	660	880	909	871	894
30	---	---	---	---	---	---	960	370	485	871	809	839
31	---	---	---	---	---	---	---	---	---	855	822	836
MONTH	---	---	---	---	---	---	970	140	743	1000	430	856
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	867	855	859	890	870	876	975	955	966	970	920	945
2	880	847	861	900	870	890	965	944	956	920	900	905
3	967	880	919	940	890	916	944	932	939	900	890	895
4	1010	957	977	940	910	929	952	871	933	900	890	894
5	1070	1020	1050	910	870	887	961	941	951	900	890	893
6	1130	1020	1070	860	820	839	960	949	958	900	530	871
7	1130	1030	1090	820	800	808	949	938	947	970	890	944
8	1020	989	1000	810	800	805	---	---	600	960	920	947
9	1010	980	998	830	800	811	---	---	650	910	870	879
10	990	920	961	890	820	862	---	---	675	900	870	890
11	---	---	925	920	890	900	---	---	700	920	900	910
12	---	---	900	1010	920	975	---	---	725	940	910	921
13	---	---	875	1010	970	990	---	---	750	950	920	938
14	---	---	850	960	900	927	791	780	786	984	940	963
15	---	---	825	900	880	889	810	780	798	1020	974	995
16	---	---	800	880	870	877	820	790	806	1010	893	982
17	---	---	775	890	870	882	830	810	819	949	925	939
18	---	---	750	940	900	919	850	820	837	926	871	897
19	---	---	725	960	940	952	890	840	868	872	843	853
20	---	---	700	960	930	942	920	890	905	897	848	869
21	719	673	696	930	890	905	920	910	914	936	907	921
22	735	709	718	900	880	889	910	890	902	954	926	943
23	784	726	755	940	900	914	900	880	892	972	936	953
24	797	760	783	940	740	901	910	890	897	1000	963	985
25	924	760	836	920	880	902	910	890	894	995	875	982
26	904	721	843	893	882	891	950	900	926	974	952	964
27	700	669	685	921	892	912	970	950	960	974	952	963
28	714	633	668	950	920	933	970	940	955	985	963	976
29	939	714	812	959	939	950	930	920	922	974	930	948
30	963	890	929	958	938	947	960	920	937	941	919	932
31	---	---	---	966	947	954	980	960	970	---	---	---
MONTH	1130	633	854	1010	740	902	980	780	863	1020	530	930

GUADALUPE RIVER BASIN

08181480 LEON CREEK AT INTERSTATE HIGHWAY 35 AT SAN ANTONIO, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	---	---	---
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	---	---	---	---	---	---	---	---	---	7.7	7.2	7.3
2	---	---	---	---	---	---	---	---	---	7.6	7.4	7.5
3	---	---	---	---	---	---	---	---	---	7.7	7.4	7.6
4	---	---	---	---	---	---	---	---	---	7.5	7.4	7.4
5	---	---	---	---	---	---	---	---	7.6	7.9	7.4	7.6
6	---	---	---	---	---	---	---	---	7.6	7.8	7.6	7.7
7	---	---	---	---	---	---	---	---	7.5	7.8	7.5	7.7
8	---	---	---	---	---	---	---	---	8.0	7.8	7.5	7.7
9	---	---	---	---	---	---	---	---	7.7	8.0	7.5	7.7
10	---	---	---	---	---	---	---	---	7.8	7.7	7.6	7.6
11	---	---	---	---	---	---	---	---	---	7.6	7.5	7.5
12	---	---	---	---	---	---	---	---	---	7.7	7.5	7.6
13	---	---	---	---	---	---	---	---	---	7.9	7.5	7.7
14	---	---	---	---	---	---	---	---	7.9	7.9	7.5	7.7
15	---	---	---	---	---	---	---	---	7.8	7.7	7.5	7.6
16	---	---	---	---	---	---	---	---	7.6	8.1	7.6	7.8
17	---	---	---	---	---	---	---	---	7.7	8.0	7.8	7.9
18	---	---	---	---	---	---	7.8	7.7	7.8	7.8	7.6	7.7
19	---	---	---	---	---	---	7.8	7.8	7.8	7.7	7.4	7.5
20	---	---	---	---	---	---	7.8	7.6	7.8	7.7	7.4	7.5
21	---	---	---	---	---	---	7.8	7.5	7.6	7.8	7.4	7.7
22	---	---	---	---	---	---	7.8	7.7	7.7	7.6	7.2	7.4
23	---	---	---	---	---	---	7.8	7.5	7.6	7.5	7.2	7.3
24	---	---	---	---	---	---	7.7	7.4	7.5	7.8	7.3	7.5
25	---	---	---	---	---	---	7.6	7.3	7.4	7.8	7.3	7.5
26	---	---	---	---	---	---	7.6	7.5	7.6	7.7	7.4	7.5
27	---	---	---	---	---	---	7.6	7.5	7.6	7.6	7.4	7.5
28	---	---	---	---	---	---	7.8	7.6	7.8	7.6	7.4	7.5
29	---	---	---	---	---	---	7.8	7.6	7.7	7.6	7.4	7.7
30	---	---	---	---	---	---	7.9	7.2	7.4	7.9	7.6	7.8
31	---	---	---	---	---	---	---	---	---	8.0	7.7	7.8
MONTH	---	---	---	---	---	---	7.9	7.2	7.7	8.1	7.2	7.6

GUADALUPE RIVER BASIN

289

08181480 LEON CREEK AT INTERSTATE HIGHWAY 35 AT SAN ANTONIO, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	8.0	7.6	7.8	7.6	7.2	7.3	7.5	7.2	7.3	---	---	7.3
2	8.2	7.8	8.0	7.4	7.1	7.2	7.6	7.2	7.4	---	---	7.4
3	8.1	7.7	7.9	7.3	7.1	7.2	7.7	7.4	7.5	---	---	7.3
4	8.1	7.9	7.9	7.4	7.1	7.3	7.7	7.4	7.5	---	---	7.3
5	8.1	7.9	8.0	7.4	7.1	7.3	7.7	7.3	7.5	---	---	7.2
6	8.1	7.8	8.0	7.5	7.2	7.4	7.7	7.4	7.5	---	---	7.1
7	8.2	7.8	8.0	7.5	7.2	7.3	7.8	7.1	7.4	---	---	7.1
8	8.1	7.8	8.0	7.4	7.1	7.3	7.7	7.1	7.4	---	---	7.1
9	8.1	7.8	7.9	7.7	7.3	7.4	7.5	7.1	7.4	---	---	7.0
10	7.7	7.4	7.5	7.5	7.2	7.4	7.5	7.1	7.3	---	---	7.2
11	---	---	7.7	7.4	7.2	7.3	7.5	7.3	7.4	7.6	7.3	7.5
12	---	---	---	7.5	7.1	7.3	7.8	7.2	7.5	7.6	7.3	7.4
13	---	---	---	7.7	7.2	7.4	7.8	7.3	7.5	7.7	7.4	7.6
14	---	---	---	7.5	7.1	7.3	7.9	7.1	7.5	7.6	7.3	7.5
15	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	7.3	7.1	7.1	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	7.2	---	---	---
21	7.8	7.4	7.7	7.4	7.2	7.3	---	---	7.2	---	---	---
22	7.8	7.4	7.6	7.5	7.2	7.3	---	---	7.1	---	---	---
23	7.8	7.4	7.6	7.4	7.2	7.3	---	---	7.3	---	---	---
24	7.8	7.4	7.6	7.4	7.2	7.3	---	---	7.3	---	---	7.4
25	7.8	7.4	7.6	7.4	7.2	7.3	---	---	7.3	---	---	7.5
26	7.8	7.5	7.7	7.3	7.1	7.2	---	---	7.3	---	---	7.6
27	7.6	7.4	7.5	---	---	7.4	---	---	7.3	---	---	7.4
28	7.5	7.4	7.5	---	---	7.3	---	---	7.3	---	---	7.3
29	7.7	7.4	7.6	---	---	7.3	---	---	7.3	---	---	7.2
30	7.7	7.4	7.6	---	---	7.4	---	---	7.4	---	---	7.2
31	---	---	---	7.7	7.3	7.4	---	---	7.3	---	---	---
MONTH	8.2	7.4	7.7	7.7	7.1	7.3	7.9	7.1	7.4	7.7	7.3	7.3

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	24.0	22.5	23.0	22.0	20.5	21.5	14.5	12.5	13.5	---	---	---
2	23.5	22.0	22.5	21.0	20.0	20.5	15.0	12.5	14.0	---	---	---
3	22.5	21.0	22.0	21.0	19.5	20.5	15.0	13.0	14.0	---	---	---
4	22.0	20.5	21.0	21.0	19.5	20.5	16.0	14.0	15.0	---	---	---
5	21.5	20.0	20.5	20.5	18.5	20.0	16.5	14.5	15.5	---	---	---
6	21.5	20.0	20.5	19.5	18.0	19.0	16.0	15.0	16.0	---	---	---
7	21.5	20.0	21.0	21.0	18.5	19.5	18.0	16.5	17.5	---	---	---
8	21.5	20.0	21.0	20.5	19.5	20.0	17.0	14.0	15.5	---	---	---
9	22.5	20.5	21.5	22.0	20.5	21.5	14.5	14.0	14.0	---	---	---
10	22.0	20.5	21.5	23.0	22.0	22.0	14.0	14.0	14.0	---	---	---
11	21.5	19.5	20.5	22.5	21.5	22.0	15.0	13.5	14.0	---	---	---
12	21.0	19.5	20.5	23.5	21.0	22.5	14.5	13.5	14.0	---	---	---
13	20.5	19.0	20.0	22.0	20.5	21.5	14.0	12.0	13.0	---	---	---
14	21.0	19.5	20.5	23.0	21.5	22.5	---	---	---	---	---	---
15	22.0	20.0	21.0	23.0	21.5	22.5	---	---	---	---	---	---
16	22.5	21.0	21.5	21.5	18.5	20.0	---	---	---	---	---	---
17	23.0	21.5	22.0	19.0	18.0	18.5	---	---	---	---	---	---
18	23.5	22.0	22.5	19.5	19.0	19.0	---	---	---	---	---	---
19	23.0	22.0	22.5	21.0	17.0	19.5	---	---	---	---	---	---
20	23.0	22.0	22.5	18.0	15.0	17.0	---	---	---	---	---	---
21	23.5	23.0	23.0	16.5	14.0	15.5	---	---	---	---	---	---
22	23.5	23.0	23.0	16.0	14.0	15.0	---	---	---	---	---	---
23	24.0	22.5	23.5	15.5	13.5	14.5	---	---	---	---	---	---
24	23.5	22.0	22.5	16.0	14.0	15.0	---	---	---	---	---	---
25	23.5	22.5	23.0	18.0	16.0	17.5	---	---	---	---	---	---
26	24.0	23.0	23.5	19.5	18.0	18.5	---	---	---	---	---	---
27	24.5	23.0	24.0	18.5	15.0	17.0	---	---	---	---	---	---
28	24.5	23.5	24.0	16.0	14.0	15.0	---	---	---	---	---	---
29	24.0	23.0	23.5	16.0	14.0	15.0	---	---	---	---	---	---
30	23.5	23.0	23.0	16.0	13.0	14.5	---	---	---	---	---	---
31	23.0	21.5	22.5	---	---	---	---	---	---	---	---	---
MONTH	24.5	19.0	22.0	23.5	13.0	19.0	18.0	12.0	14.5	---	---	---

GUADALUPE RIVER BASIN

08181480 LEON CREEK AT INTERSTATE HIGHWAY 35 AT SAN ANTONIO, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	---	---	---	---	---	---	---	---	---	24.0	21.5	23.0
2	---	---	---	---	---	---	---	---	---	24.5	22.0	23.5
3	---	---	---	---	---	---	---	---	---	24.5	22.5	23.5
4	---	---	---	---	---	---	---	---	---	26.0	23.5	24.5
5	---	---	---	---	---	---	22.5	20.0	21.5	25.5	24.0	24.5
6	---	---	---	---	---	---	21.5	19.0	20.5	25.5	23.5	24.5
7	---	---	---	---	---	---	22.5	19.5	21.5	26.0	24.0	25.0
8	---	---	---	---	---	---	24.0	21.0	22.5	26.5	24.0	25.0
9	---	---	---	---	---	---	22.5	19.0	21.0	27.0	24.5	25.5
10	---	---	---	---	---	---	19.0	16.5	18.0	26.0	24.0	25.0
11	---	---	---	---	---	---	18.0	16.0	17.0	24.5	23.0	23.5
12	---	---	---	---	---	---	17.0	15.5	16.5	24.0	23.0	23.5
13	---	---	---	---	---	---	16.5	15.0	15.5	24.0	23.0	23.5
14	---	---	---	---	---	---	17.0	16.0	16.5	25.0	23.0	24.0
15	---	---	---	---	---	---	19.0	16.0	17.5	25.0	24.0	24.5
16	---	---	---	---	---	---	20.5	17.0	19.0	25.0	24.0	24.5
17	---	---	---	---	---	---	21.5	19.5	20.5	26.0	24.5	25.5
18	---	---	---	---	---	---	24.0	21.0	22.0	27.0	24.5	25.5
19	---	---	---	---	---	---	23.0	19.5	21.5	27.5	25.0	26.0
20	---	---	---	---	---	---	21.5	19.5	20.5	28.0	26.0	27.0
21	---	---	---	---	---	---	23.5	21.5	22.5	28.0	26.0	27.0
22	---	---	---	---	---	---	24.5	22.0	23.5	28.5	26.0	27.0
23	---	---	---	---	---	---	25.0	22.0	23.5	28.5	26.5	27.0
24	---	---	---	---	---	---	24.0	22.0	23.5	28.5	26.5	27.0
25	---	---	---	---	---	---	23.5	22.5	23.0	28.5	26.5	27.0
26	---	---	---	---	---	---	24.5	23.0	23.5	28.5	26.5	27.5
27	---	---	---	---	---	---	24.5	22.5	23.5	28.0	27.0	27.5
28	---	---	---	---	---	---	25.0	23.0	24.0	28.5	26.0	27.0
29	---	---	---	---	---	---	25.0	20.5	23.5	27.5	25.0	26.5
30	---	---	---	---	---	---	23.5	21.5	22.5	27.5	25.0	26.0
31	---	---	---	---	---	---	---	---	---	27.0	25.0	26.0
MONTH	---	---	---	---	---	---	25.0	15.0	21.0	28.5	21.5	25.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	27.5	25.5	26.5	30.0	27.0	28.0	29.0	27.0	28.0	30.0	27.5	28.5
2	28.0	26.0	26.5	31.0	28.0	29.0	29.5	27.0	28.0	30.0	27.5	28.5
3	28.0	26.0	27.0	31.0	28.5	29.5	29.5	27.0	28.0	30.5	27.5	29.0
4	27.5	25.5	26.5	31.0	28.0	29.5	30.0	27.0	28.5	29.5	27.0	28.5
5	28.0	25.5	27.0	30.5	28.0	29.0	30.0	27.0	28.5	29.0	27.0	28.0
6	28.5	26.0	27.0	30.5	28.0	29.0	30.5	27.5	29.0	28.5	26.5	27.5
7	29.0	26.5	27.5	31.5	28.0	29.5	30.0	27.5	28.5	28.5	27.0	27.5
8	28.5	26.0	27.0	31.0	28.5	29.5	28.0	26.0	27.0	28.5	26.5	27.5
9	27.0	25.5	26.0	31.0	28.5	29.5	27.5	25.5	26.5	29.0	26.5	27.5
10	28.0	25.5	26.5	31.5	28.0	29.5	27.5	25.0	26.0	28.5	27.0	28.0
11	27.0	22.5	24.0	31.0	28.5	29.5	27.5	25.0	26.0	29.0	26.5	28.0
12	26.5	25.0	25.5	31.5	28.5	30.0	27.5	25.0	26.0	29.0	27.0	27.5
13	27.5	25.5	26.5	31.0	28.5	29.5	28.0	24.5	26.0	27.5	26.0	27.0
14	26.5	23.5	24.5	31.5	28.5	30.0	27.0	25.5	26.0	26.0	24.0	25.0
15	26.0	24.5	25.0	32.0	28.5	30.0	27.5	24.5	26.0	25.0	23.0	24.0
16	26.5	24.0	25.5	32.5	28.5	30.5	28.0	25.5	26.5	24.5	22.0	23.5
17	27.0	24.0	25.5	32.5	29.0	30.5	28.5	26.0	27.0	24.5	21.5	23.0
18	27.5	25.5	26.5	32.0	29.0	30.5	28.0	26.0	27.0	25.0	22.0	23.5
19	28.5	26.5	27.5	32.0	29.0	30.5	28.5	26.0	27.0	25.0	22.5	23.5
20	29.0	26.5	28.0	31.5	29.0	30.0	29.0	26.0	27.5	25.0	22.5	24.0
21	29.0	26.5	27.5	30.0	27.5	29.0	29.5	26.5	28.0	25.5	23.5	24.5
22	28.5	26.5	27.5	29.5	27.0	28.0	29.5	26.5	28.0	25.0	23.5	24.0
23	28.0	26.5	27.5	30.0	26.5	28.0	29.0	27.0	28.0	24.0	22.0	23.0
24	26.5	25.5	26.5	29.0	26.5	27.5	29.0	27.0	28.0	22.5	20.0	21.0
25	26.0	25.5	25.5	29.0	26.5	27.5	29.0	26.5	27.5	21.5	19.0	20.5
26	26.5	25.0	25.5	29.0	26.0	27.0	29.0	27.0	28.0	21.5	18.5	20.0
27	27.0	25.0	26.0	28.0	27.0	27.5	29.5	27.0	28.5	21.5	18.5	20.0
28	28.0	25.5	26.5	29.0	25.5	27.0	29.5	27.0	28.0	21.5	19.0	20.5
29	28.0	26.0	27.0	29.5	26.5	28.0	29.0	27.0	28.0	22.0	19.0	20.5
30	28.0	26.0	27.0	30.0	26.5	28.0	29.0	27.0	28.0	22.0	19.5	21.0
31	---	---	---	30.0	27.0	28.5	29.5	27.5	28.5	---	---	---
MONTH	29.0	22.5	26.5	32.5	25.5	29.0	30.5	24.5	27.5	30.5	18.5	25.0

GUADALUPE RIVER BASIN

291

08181480 LEON CREEK AT INTERSTATE HIGHWAY 35 AT SAN ANTONIO, TX--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	---	---	---
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	7.9	4.2	5.8	---	---	---
6	---	---	---	---	---	---	8.2	4.5	6.2	---	---	---
7	---	---	---	---	---	---	8.6	4.6	6.3	---	---	---
8	---	---	---	---	---	---	8.3	4.1	5.9	---	---	---
9	---	---	---	---	---	---	6.8	4.1	5.1	---	---	---
10	---	---	---	---	---	---	6.7	4.7	5.4	7.3	3.8	5.3
11	---	---	---	---	---	---	9.3	5.2	7.0	6.6	3.4	4.6
12	---	---	---	---	---	---	7.4	6.2	6.8	7.2	3.1	4.7
13	---	---	---	---	---	---	7.6	6.2	6.9	6.9	4.0	5.1
14	---	---	---	---	---	---	7.3	6.7	7.0	8.8	4.3	5.9
15	---	---	---	---	---	---	8.9	6.3	7.2	7.3	4.4	5.4
16	---	---	---	---	---	---	9.6	5.5	7.2	6.6	4.2	5.0
17	---	---	---	---	---	---	9.0	5.1	6.4	8.6	4.0	5.6
18	---	---	---	---	---	---	9.5	4.9	6.6	8.9	4.0	5.7
19	---	---	---	---	---	---	9.9	4.3	7.3	8.9	3.2	5.2
20	---	---	---	---	---	---	10.3	8.2	8.7	9.9	3.3	5.6
21	---	---	---	---	---	---	9.7	8.0	8.6	10.1	3.7	6.1
22	---	---	---	---	---	---	8.5	7.2	7.6	10.9	3.5	6.1
23	---	---	---	---	---	---	7.8	7.0	7.4	11.0	3.4	6.1
24	---	---	---	---	---	---	8.4	7.4	7.8	11.0	3.7	6.4
25	---	---	---	---	---	---	8.5	7.8	8.1	11.1	3.7	6.3
26	---	---	---	---	---	---	9.3	5.9	8.1	11.2	3.6	6.4
27	---	---	---	---	---	---	11.0	5.2	7.6	9.8	3.5	6.0
28	---	---	---	---	---	---	---	---	---	10.7	3.2	6.6
29	---	---	---	---	---	---	---	---	---	11.5	3.2	7.0
30	---	---	---	---	---	---	---	---	---	11.5	3.4	7.0
31	---	---	---	---	---	---	---	---	---	10.8	3.9	6.6
MONTH	---	---	---	---	---	---	11.0	4.1	7.0	11.5	3.1	5.8

GUADALUPE RIVER BASIN

08181480 LEON CREEK AT INTERSTATE HIGHWAY 35 AT SAN ANTONIO, TX--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	11.3	3.8	6.8	10.3	5.7	7.3	---	---	---	7.6	3.2	5.0
2	10.6	3.9	6.5	10.4	5.6	7.3	---	---	---	7.8	3.2	5.1
3	10.5	3.5	6.5	9.4	5.3	6.7	9.9	3.3	6.3	8.3	3.2	5.3
4	10.1	3.6	6.4	8.9	4.3	6.1	9.3	3.3	6.0	8.4	3.3	5.5
5	10.9	3.4	6.5	9.6	4.4	6.2	9.0	3.3	6.0	9.0	3.3	5.8
6	10.8	3.6	6.5	9.0	4.9	6.5	9.1	3.2	6.0	7.4	2.7	4.7
7	10.2	3.7	6.5	10.2	4.4	6.6	9.0	3.2	5.9	6.2	2.2	3.8
8	10.7	3.1	6.4	8.9	4.6	6.3	5.7	3.3	4.3	6.9	2.3	4.1
9	9.7	3.7	6.1	8.5	4.3	6.0	6.0	3.0	4.1	7.7	2.5	4.6
10	11.1	3.9	6.9	9.4	4.0	6.2	6.9	3.4	4.6	6.5	2.3	4.3
11	8.5	4.7	6.0	9.1	4.5	6.3	8.0	3.5	5.3	7.9	2.0	4.5
12	---	---	---	9.1	4.8	6.4	8.7	3.9	5.9	8.6	3.0	5.1
13	---	---	---	9.7	4.3	6.5	10.0	4.1	6.5	7.2	3.3	4.7
14	---	---	---	10.3	4.3	6.9	7.7	4.2	5.9	9.4	3.7	5.7
15	---	---	---	10.9	4.4	7.2	8.9	3.3	5.7	9.8	4.3	6.4
16	---	---	---	11.1	4.4	7.2	8.5	3.7	5.8	10.6	4.9	7.0
17	---	---	---	11.3	4.3	7.4	7.9	3.9	5.6	11.1	4.5	7.2
18	---	---	---	11.6	4.3	7.5	7.1	3.5	5.2	11.7	4.5	7.4
19	---	---	---	11.8	4.2	7.5	7.9	3.7	5.4	11.9	4.6	7.4
20	---	---	---	11.2	4.4	7.3	8.3	3.4	5.6	11.8	4.7	7.4
21	7.0	4.3	5.4	11.4	4.2	7.4	8.3	3.5	5.6	11.2	5.1	7.2
22	7.2	4.4	5.6	11.6	4.7	7.6	7.9	3.4	5.4	11.7	4.9	7.3
23	7.3	4.3	5.6	12.5	4.5	7.9	7.6	3.4	5.3	12.0	4.8	7.5
24	6.4	4.7	5.4	11.2	4.5	7.0	7.4	3.5	5.1	13.0	4.6	8.0
25	6.4	5.0	5.5	11.9	5.0	7.6	6.7	3.6	5.0	13.4	5.2	8.6
26	7.2	4.8	5.7	13.0	4.9	8.2	6.9	3.6	4.9	13.6	5.6	8.9
27	7.6	4.3	5.7	12.6	6.2	8.5	7.2	3.1	4.9	13.8	5.8	9.0
28	8.3	4.4	6.0	---	---	---	6.9	3.0	4.7	14.0	6.0	9.1
29	8.2	4.9	6.2	---	---	---	6.9	3.2	4.7	14.3	6.0	9.1
30	9.0	5.0	6.6	---	---	---	6.8	3.3	4.7	14.1	6.0	9.1
31	---	---	---	---	---	---	7.1	3.4	4.9	---	---	---
MONTH	11.3	3.1	6.1	13.0	4.0	7.0	10.0	3.0	5.4	14.3	2.0	6.5

GUADALUPE RIVER BASIN

293

08181500 MEDINA RIVER AT SAN ANTONIO, TX

LOCATION.--Lat 29°15'14", long 98°28'20", Bexar County, Hydrologic Unit 12100302, near right bank at upstream side of pier of upstream bridge of two bridges on U.S. Highway 281 in San Antonio and 6.8 mi upstream from mouth.

DRAINAGE AREA.--1,317 mi², of which 634 mi² is above dam forming Medina Lake.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1929 to December 1930, and July 1939 to current year. October 1929 to December 1930, records below about 50 ft³/s in connection with seepage investigation (published as "at Losoya"). Published as "near San Antonio" July 1939 to September 1970.

REVISED RECORDS.--WSP 1562: 1957. WSP 1923: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 439.0 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). October 1929 to December 1930, nonrecording gage at Losoya 1.5 mi downstream at different datum. July 27, 1939, to Sept. 30, 1987, at site near left bank at downstream side of pier of upstream bridge of two bridges at same datum.

REMARKS.--No estimated daily discharges. Records good. Flow is slightly regulated by Medina Lake (station 08179500) 60 mi upstream, and by diversion dam reservoir, capacity 4,500 acre-ft. For diversion of canal records, see Medina Canal near Riomedina (station 08180000). For statement concerning losses into the Edwards and associated limestones formation, see Medina River near Somerset (station 08180800). Several small diversions below diversion dam reservoir. Records furnished by the city of San Antonio show that during the current year 24,790 acre-ft of sewage effluent was discharged from the Leon Creek plant and no sewage effluent was discharged from the Mitchell Lake plant into the Medina River above this station. Satellite telemeter at station.

AVERAGE DISCHARGE.--50 years (water years 1940-89), 187 ft³/s (135,500 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 31,900 ft³/s July 17, 1973 (gage height, 43.59 ft); minimum daily, 3.3 ft³/s Apr. 18, Nov. 1, 1956, and Jan. 24, 1957.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage, 55 ft sometime prior to construction of Medina Dam in 1913, from information by State Department of Highways and Public Transportation.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 861 ft³/s Apr. 19 at 2100 hours (gage height, 9.09 ft); minimum daily, 58 ft³/s June 9.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	73	95	76	96	140	92	90	101	71	69	69	61
2	68	94	79	96	127	93	89	88	71	68	70	60
3	70	90	81	100	115	93	92	85	67	69	69	59
4	71	90	81	98	110	95	90	87	63	64	68	59
5	67	87	81	95	107	94	86	85	68	63	67	62
6	71	86	86	92	106	93	83	88	61	66	70	61
7	66	90	90	93	105	90	83	87	63	68	70	64
8	64	90	88	93	104	91	82	88	60	68	71	63
9	64	91	88	92	102	92	77	86	58	68	74	63
10	68	93	92	92	101	92	75	87	66	68	71	62
11	74	87	94	91	99	94	76	86	386	69	68	63
12	78	86	94	89	99	92	76	83	156	75	67	62
13	78	81	90	92	99	89	78	83	87	73	66	62
14	78	83	90	95	99	89	100	82	272	70	67	66
15	80	83	88	93	100	87	90	84	167	68	67	66
16	78	82	97	94	102	86	90	84	103	66	66	65
17	79	83	94	88	103	89	89	87	89	68	66	64
18	80	80	98	89	95	90	86	88	84	68	66	64
19	79	81	101	92	96	85	315	83	84	67	64	63
20	81	75	99	102	100	103	434	80	82	65	64	63
21	82	76	98	100	92	105	165	77	79	64	65	65
22	83	75	94	101	91	96	133	76	77	63	64	63
23	83	78	94	94	90	90	118	77	76	63	64	61
24	91	79	94	91	90	90	113	77	75	69	63	59
25	85	76	90	92	90	90	104	77	74	67	65	61
26	83	80	92	94	89	89	95	73	80	71	64	61
27	83	80	91	185	92	92	95	73	80	71	63	61
28	85	79	92	183	91	105	96	71	80	72	64	59
29	87	79	91	248	---	113	104	70	78	72	63	61
30	90	80	89	414	---	105	124	71	72	71	62	60
31	93	---	97	182	---	94	---	69	---	72	62	---
TOTAL	2412	2509	2809	3656	2834	2898	3428	2533	2929	2115	2059	1863
MEAN	77.8	83.6	90.6	118	101	93.5	114	81.7	97.6	68.2	66.4	62.1
MAX	93	95	101	414	140	113	434	101	386	75	74	66
MIN	64	75	76	88	89	85	75	69	58	63	62	59
AC-FT	4780	4980	5570	7250	5620	5750	6800	5020	5810	4200	4080	3700
CAL YR 1988	TOTAL	43532	MEAN	119	MAX	690	MIN	64	AC-FT	86350		
WTR YR 1989	TOTAL	32045	MEAN	87.8	MAX	434	MIN	58	AC-FT	63560		

GUADALUPE RIVER BASIN

08181500 MEDINA RIVER AT SAN ANTONIO, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: June 1965 to current year. Pesticide analyses: April 1971 to September 1981.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: January 1987 to current year.

pH: January 1987 to current year.

WATER TEMPERATURE: January 1987 to current year.

DISSOLVED OXYGEN: January 1987 to current year.

INSTRUMENTATION.--Beginning January 1987, a four-parameter water-quality monitor continuously records specific conductance, pH, water temperature, and dissolved oxygen at this station.

REMARKS.--Interruptions in the record were due to malfunction of the instrument. Where maximum or minimum specific conductance values are not shown, mean value is estimated. Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 1,150 microsiemens June 26, 1988; minimum, 230 microsiemens Sept. 17, 1988.

pH: Maximum, 8.8 units Dec. 4, 5, 1988, Mar. 22, 1989; minimum, 7.0 units Apr. 1-3, 1989.

WATER TEMPERATURE: Maximum, 32.0°C June 11, 1989; minimum, 9.0°C Jan. 11, 1988.

DISSOLVED OXYGEN: Maximum, 12.7 mg/L Jan. 16, 1989; minimum, 1.8 mg/L Oct. 17, Nov. 8, 1987.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 1,080 microsiemens July 29; minimum, 370 microsiemens June 11.

pH: Maximum, 8.8 units Dec. 4, 5, Mar. 22; minimum, 7.0 units Apr. 1-3.

WATER TEMPERATURE: Maximum, 32.0°C June 11; minimum, 11.0°C Feb. 6, 7.

DISSOLVED OXYGEN: Maximum, 12.7 mg/L Jan. 16; minimum, 5.3 mg/L June 11.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

		DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	
DEC 06...	1430	82	989	8.20	17.5	8.1	86	1.9	330	100	
MAR 28...	1520	119	930	8.20	23.0	8.2	98	2.2	300	79	
JUN 06...	1025	52	1010	7.80	27.5	6.7	86	3.7	320	110	
JUL 25...	1150	59	1010	8.00	27.0	7.0	89	1.1	300	96	
AUG 02...	1145	66	949	7.90	28.5	7.0	92	0.9	300	99	
SEP 05...	1005	57	1020	8.00	28.5	6.4	84	1.1	300	82	
DATE		CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
DEC 06...	95	23	73	2	7.5	230	99	91	0.50	14	
MAR 28...	87	21	70	2	5.6	225	98	90	0.50	12	
JUN 06...	93	21	80	2	7.3	210	85	100	0.70	16	
JUL 25...	88	20	81	2	8.1	207	82	110	0.70	15	
AUG 02...	87	20	77	2	7.7	201	82	93	0.60	15	
SEP 05...	87	20	84	2	7.5	218	74	110	0.30	15	
DATE		SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (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- PHOROUS TOTAL (MG/L AS P)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)
DEC 06...	541	11.0	0.040	11.0	0.210	1.1	1.3	2.70	--	--	
MAR 28...	519	7.08	0.120	7.20	0.370	1.6	2.0	2.10	1	54	
JUN 06...	529	12.8	0.150	13.0	0.640	1.1	1.7	0.030	2	61	
JUL 25...	529	11.0	0.030	11.0	0.060	0.94	1.0	3.70	--	--	
AUG 02...	503	11.0	0.020	11.0	0.020	0.58	0.60	3.90	--	--	
SEP 05...	529	9.68	0.020	9.70	0.040	0.76	0.80	5.40	--	--	

08181500 MEDINA RIVER AT SAN ANTONIO, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	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)	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 06...	--	--	--	--	--	--	--	--	--	--
MAR 28...	<1	1	2	6	<5	3	<0.1	1	<1.0	26
JUN 06...	<1	<1	2	9	<1	10	0.1	1	<1.0	16
JUL 25...	--	--	--	--	--	--	--	--	--	--
AUG 02...	--	--	--	--	--	--	--	--	--	--
SEP 05...	--	--	--	--	--	--	--	--	--	--

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1988 TO SEPTEMBER 1989

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	DIS- SOLVED SOLIDS (MG/L)	DIS- SOLVED SOLIDS (TONS)	DIS- SOLVED CHLORIDE (MG/L)	DIS- SOLVED CHLORIDE (TONS)	DIS- SOLVED SULFATE (MG/L)	DIS- SOLVED SULFATE (TONS)	HARDNESS (CA, MG) (MG/L)
OCT. 1988	2412	915	519	3380	80	518	98	636	320
NOV. 1988	2509	963	543	3680	86	583	100	693	330
DEC. 1988	2809	949	536	4070	84	638	100	766	330
JAN. 1989	3656	883	502	4950	76	751	94	931	310
FEB. 1989	2834	944	534	4080	83	639	100	769	330
MAR. 1989	2898	964	544	4250	86	674	100	801	330
APR. 1989	3428	874	497	4600	75	695	93	864	310
MAY 1989	2533	969	546	3740	87	594	100	704	330
JUNE 1989	2929	820	469	3710	68	542	88	695	290
JULY 1989	2115	979	551	3150	88	505	100	593	340
AUG. 1989	2059	968	546	3030	87	483	100	572	330
SEPT 1989	1863	979	551	2770	88	445	100	523	340
TOTAL	32045	**	**	45400	**	7070	**	8550	**
WTD.AVG.	88	928	525	**	82	**	99	**	320

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	910	790	864	1010	915	962	---	---	949	---	---	949
2	900	870	887	999	947	976	---	---	952	---	---	961
3	920	810	889	1010	938	984	---	---	956	---	---	956
4	940	870	895	1010	919	981	---	---	956	---	---	956
5	980	890	937	1010	920	980	---	---	963	---	---	958
6	1000	850	927	1010	922	955	---	---	984	---	---	959
7	950	900	920	1020	924	977	960	930	942	---	---	959
8	930	800	881	1020	925	979	960	930	943	---	---	961
9	920	800	896	1020	927	952	950	930	941	---	---	956
10	960	790	870	1020	928	952	940	920	930	---	---	956
11	930	810	874	1020	929	966	940	900	920	---	---	961
12	930	830	882	1020	931	962	960	910	932	---	---	958
13	940	820	897	1020	933	963	940	910	927	---	---	949
14	990	870	914	1030	934	963	930	910	920	---	---	950
15	950	900	919	1030	946	972	940	910	924	---	---	954
16	940	860	911	1030	937	967	980	910	945	---	---	954
17	920	790	867	---	---	959	---	---	951	---	---	957
18	990	800	908	---	---	963	---	---	963	---	---	961
19	940	840	901	---	---	959	---	---	959	---	---	966
20	990	900	934	---	---	974	---	---	974	---	---	954
21	960	900	915	---	---	972	---	---	972	---	---	943
22	972	872	915	---	---	963	---	---	963	---	---	936
23	984	883	910	---	---	959	---	---	959	---	---	943
24	995	894	936	---	---	959	---	---	958	---	---	954
25	966	905	930	---	---	958	---	---	959	---	---	950
26	998	877	921	---	---	954	---	---	954	---	---	933
27	999	960	982	---	---	958	---	---	958	---	---	853
28	1000	900	945	---	---	938	---	---	938	---	---	897
29	1000	911	950	---	---	938	---	---	938	---	---	802
30	1000	913	966	---	---	945	---	---	945	---	---	560
31	1000	915	966	---	---	---	---	---	949	---	---	807
MONTH	1000	790	913	1030	915	963	980	900	949	---	---	926

GUADALUPE RIVER BASIN

08181500 MEDINA RIVER AT SAN ANTONIO, TX--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	---	---	897	990	950	970	960	920	941	910	890	898
2	---	---	876	980	950	964	970	930	950	960	900	935
3	---	---	910	990	950	966	980	940	959	960	930	946
4	---	---	931	980	950	971	980	950	968	960	940	950
5	---	---	935	980	940	962	1000	970	981	960	920	945
6	---	---	929	970	930	948	1010	970	992	980	940	958
7	---	---	931	980	930	955	1000	970	988	1010	960	987
8	---	---	936	980	940	962	1010	970	990	990	960	979
9	---	---	931	990	940	968	1000	960	979	1020	960	989
10	---	---	937	990	940	963	990	960	977	1000	950	975
11	---	---	942	980	950	967	1010	980	996	990	950	978
12	---	---	942	990	940	963	1030	990	1010	990	960	978
13	---	---	954	970	940	953	1040	990	1020	1000	960	981
14	---	---	954	1000	940	974	1040	970	1010	990	950	973
15	---	---	975	1000	960	981	970	940	962	1000	960	976
16	---	---	963	1010	980	991	980	960	967	1000	960	983
17	---	---	961	1010	960	989	990	950	962	990	970	984
18	---	---	959	1010	970	991	980	950	966	990	970	980
19	---	---	958	990	950	971	980	430	812	980	960	967
20	---	---	963	990	940	970	640	500	566	980	960	971
21	---	---	965	970	930	958	750	650	693	1010	960	982
22	---	---	958	970	930	955	830	760	798	980	940	967
23	1010	950	978	980	950	965	880	830	845	1010	940	985
24	980	950	965	1000	960	975	920	870	896	990	960	981
25	980	940	962	970	940	957	930	900	918	1000	950	975
26	980	940	959	960	930	945	930	910	917	1000	950	974
27	970	930	951	940	920	932	960	920	937	990	950	970
28	1010	950	983	990	930	961	950	930	940	990	950	975
29	---	---	---	1010	930	974	970	930	954	990	960	974
30	---	---	---	960	930	943	950	870	914	990	940	969
31	---	---	---	960	920	942	---	---	---	1010	940	979
MONTH	1010	930	947	1010	920	964	1040	430	927	1020	890	970
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	1010	970	991	960	920	940	990	940	969	1000	960	980
2	1000	970	981	950	920	935	970	920	946	1020	960	995
3	1010	970	993	940	920	927	970	920	942	1020	990	1010
4	1000	960	981	950	920	931	970	920	944	1010	980	995
5	1020	960	989	940	920	936	970	920	952	1020	970	996
6	1030	980	1000	980	930	959	990	950	971	1010	970	993
7	1010	990	996	980	940	969	980	950	960	1020	980	1000
8	1020	980	1000	980	950	961	1000	960	978	1000	970	992
9	1010	980	993	970	940	959	990	950	972	1000	960	979
10	1000	970	984	990	950	971	980	950	965	980	950	966
11	990	370	573	1000	960	985	960	940	951	1000	960	973
12	770	540	657	990	960	975	980	930	962	1000	960	983
13	870	780	830	980	950	966	960	920	945	990	960	972
14	850	420	602	1010	960	985	980	930	951	990	960	978
15	670	510	644	980	960	970	1010	950	988	1010	960	981
16	820	680	758	980	960	973	980	950	969	970	920	944
17	890	830	858	1010	970	985	970	930	954	970	920	944
18	900	860	884	1010	960	990	960	920	936	960	930	943
19	900	870	888	1010	980	996	990	930	960	990	930	964
20	930	890	906	1010	970	994	970	930	950	980	950	967
21	900	860	886	1010	980	995	980	940	953	970	940	959
22	940	890	915	1040	980	1010	1000	930	971	970	940	955
23	960	920	940	1000	970	992	1010	960	982	980	950	966
24	950	920	941	1010	960	989	1010	950	986	980	950	965
25	950	920	933	1020	960	1000	1010	970	989	1000	960	973
26	960	920	942	1000	980	992	1020	970	999	1050	970	1020
27	940	910	925	1010	960	990	1050	1000	1020	1020	990	1010
28	940	910	926	1050	970	1010	1030	960	1000	1020	980	1000
29	950	900	931	1080	1040	1060	1010	950	989	1020	980	1000
30	960	910	936	1040	1000	1020	1010	980	992	1010	960	990
31	---	---	---	1000	960	984	1000	970	989	---	---	---
MONTH	1030	370	893	1080	920	979	1050	920	969	1050	920	980

GUADALUPE RIVER BASIN

297

08181500 MEDINA RIVER AT SAN ANTONIO, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	8.2	8.2	8.2	8.2	8.1	8.1	8.7	8.6	8.6	7.9	7.8	7.9
2	8.2	8.2	8.2	8.3	8.2	8.3	8.7	8.6	8.6	7.9	7.7	7.8
3	8.2	8.1	8.2	8.3	8.2	8.2	8.7	8.6	8.7	7.9	7.8	7.8
4	8.2	8.1	8.2	8.3	8.2	8.2	8.8	8.7	8.7	7.9	7.7	7.8
5	8.2	8.1	8.2	8.3	8.2	8.3	8.8	8.6	8.7	7.8	7.5	7.6
6	8.2	8.1	8.2	8.3	8.2	8.3	8.7	8.1	8.4	7.5	7.3	7.4
7	8.2	8.1	8.2	8.3	8.2	8.3	8.2	8.1	8.2	7.6	7.2	7.3
8	8.2	8.1	8.2	8.3	8.2	8.3	8.3	8.2	8.3	7.6	7.4	7.5
9	8.2	8.1	8.2	8.3	8.2	8.3	8.3	8.2	8.3	7.7	7.5	7.6
10	8.2	8.1	8.2	8.3	8.2	8.3	8.3	8.1	8.2	7.7	7.5	7.6
11	8.2	8.1	8.1	8.3	8.2	8.3	8.3	8.1	8.2	7.6	7.5	7.5
12	8.2	8.1	8.1	8.3	8.2	8.3	8.3	8.2	8.2	7.7	7.5	7.6
13	8.2	8.1	8.1	8.3	8.2	8.2	8.3	8.2	8.3	7.7	7.6	7.6
14	8.2	8.1	8.1	8.3	8.2	8.2	8.3	8.2	8.3	7.7	7.5	7.6
15	8.2	8.1	8.1	8.3	8.2	8.2	8.3	8.2	8.2	7.8	7.6	7.7
16	8.2	8.1	8.2	8.2	8.2	8.2	8.3	8.2	8.3	7.7	7.5	7.6
17	8.2	8.1	8.1	8.5	8.2	8.3	8.2	8.1	8.2	7.6	7.5	7.5
18	8.2	8.1	8.1	8.6	8.5	8.5	8.3	8.1	8.2	7.5	7.4	7.5
19	8.2	8.1	8.1	8.6	8.5	8.5	8.2	8.1	8.2	7.6	7.5	7.5
20	8.2	8.1	8.1	8.6	8.5	8.5	8.2	8.0	8.1	7.7	7.2	7.5
21	8.2	8.1	8.1	8.5	8.5	8.5	8.2	8.1	8.1	7.7	7.6	7.7
22	8.2	8.1	8.1	8.5	8.5	8.5	8.1	8.0	8.1	7.9	7.6	7.7
23	8.2	8.1	8.1	8.6	8.5	8.5	8.1	8.0	8.1	7.8	7.5	7.7
24	8.2	8.1	8.1	8.7	8.5	8.6	8.1	8.0	8.1	7.9	7.6	7.8
25	8.2	8.1	8.1	8.7	8.7	8.7	8.2	8.0	8.2	8.0	7.5	7.8
26	8.2	8.1	8.1	8.7	8.7	8.7	8.2	8.0	8.1	7.9	7.8	7.9
27	8.2	8.1	8.1	8.7	8.6	8.6	8.1	8.0	8.0	8.1	7.8	8.0
28	8.2	8.1	8.1	8.7	8.5	8.6	8.1	8.0	8.0	8.1	7.8	8.0
29	8.2	8.1	8.2	8.6	8.5	8.6	8.1	7.9	8.0	7.8	7.6	7.7
30	8.2	8.1	8.2	8.6	8.6	8.6	8.0	7.8	7.9	7.7	7.4	7.6
31	8.2	8.1	8.2	---	---	---	7.9	7.8	7.8	7.6	7.3	7.5
MONTH	8.2	8.1	8.1	8.7	8.1	8.4	8.8	7.8	8.2	8.1	7.2	7.7
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	7.3	7.2	7.3	8.6	8.4	8.5	7.2	7.0	7.1	8.0	7.6	7.7
2	7.7	7.2	7.4	8.6	8.4	8.5	7.2	7.0	7.1	7.9	7.6	7.7
3	8.0	7.6	7.9	8.7	8.5	8.6	8.0	7.0	7.4	7.9	7.8	7.8
4	8.1	8.0	8.0	8.6	8.5	8.5	7.9	7.8	7.8	7.8	7.7	7.8
5	8.0	7.9	8.0	8.6	8.4	8.5	7.8	7.6	7.7	8.0	7.7	7.8
6	8.0	7.9	8.0	8.5	8.4	8.5	7.6	7.4	7.5	8.2	7.7	7.9
7	8.0	8.0	8.0	8.6	8.4	8.5	7.5	7.3	7.4	8.1	8.0	8.0
8	8.0	7.9	8.0	8.6	8.4	8.5	7.5	7.3	7.4	8.0	7.8	7.9
9	7.9	7.8	7.9	8.6	8.4	8.5	7.5	7.4	7.5	8.3	7.9	8.1
10	8.0	7.8	7.9	8.5	8.4	8.5	7.7	7.6	7.6	8.3	8.1	8.2
11	7.8	7.7	7.8	8.4	8.3	8.4	7.7	7.6	7.7	8.2	7.8	8.0
12	7.7	7.5	7.6	8.3	8.1	8.2	7.8	7.6	7.7	7.9	7.7	7.8
13	7.5	7.3	7.4	8.5	8.2	8.3	7.8	7.7	7.7	7.7	7.5	7.6
14	8.4	7.3	7.6	8.7	8.3	8.6	8.0	7.7	7.9	7.9	7.7	7.8
15	8.4	8.3	8.4	8.6	8.5	8.5	8.0	7.9	7.9	8.1	7.8	7.9
16	8.3	8.2	8.3	8.5	8.4	8.4	7.9	7.8	7.8	8.0	7.8	7.9
17	8.4	8.2	8.3	8.4	8.3	8.3	8.3	7.8	8.0	8.0	7.8	7.9
18	8.5	8.2	8.3	8.4	8.3	8.3	8.2	8.0	8.1	8.0	7.8	7.9
19	8.5	8.4	8.4	8.4	8.2	8.3	8.2	7.9	8.0	8.1	7.9	8.0
20	8.4	8.2	8.3	8.4	8.2	8.3	8.2	7.9	8.1	8.2	7.9	8.0
21	8.4	8.2	8.3	8.7	8.2	8.4	8.1	7.9	8.0	8.1	7.9	8.0
22	8.4	8.2	8.3	8.8	8.6	8.7	8.0	8.0	8.0	8.1	7.9	8.0
23	8.3	8.2	8.2	8.6	8.5	8.6	8.0	8.0	8.0	8.0	7.8	7.9
24	8.3	8.2	8.2	8.5	8.4	8.5	8.0	7.9	8.0	7.8	7.6	7.8
25	8.5	8.2	8.3	8.6	8.2	8.4	7.9	7.7	7.8	8.0	7.8	7.9
26	8.5	8.4	8.4	8.5	8.4	8.5	---	---	---	8.0	7.9	8.0
27	8.5	8.4	8.5	8.4	8.2	8.4	---	---	---	8.2	7.9	8.0
28	8.6	8.4	8.5	8.3	8.0	8.2	---	---	---	8.1	7.8	8.0
29	---	---	---	8.2	7.9	8.1	8.1	7.5	7.7	8.0	7.7	7.8
30	---	---	---	8.0	7.4	7.7	8.1	7.9	8.0	8.1	7.8	8.0
31	---	---	---	7.4	7.2	7.3	---	---	---	8.1	7.9	8.0
MONTH	8.6	7.2	8.1	8.8	7.2	8.4	8.3	7.0	7.7	8.3	7.5	7.9

GUADALUPE RIVER BASIN
08181500 MEDINA RIVER AT SAN ANTONIO, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	8.2	7.8	8.0	8.3	8.0	8.1	8.1	7.8	8.0	8.3	7.9	8.1
2	8.1	8.0	8.0	8.2	8.0	8.2	8.2	8.0	8.1	8.3	8.0	8.2
3	8.2	8.0	8.1	8.2	8.0	8.1	8.3	7.9	8.1	8.2	7.9	8.1
4	8.1	8.0	8.1	8.2	8.0	8.1	8.1	7.8	8.0	8.2	7.9	8.1
5	8.3	7.9	8.1	8.2	8.0	8.1	8.1	7.8	8.0	8.1	8.0	8.1
6	8.2	7.8	8.0	8.2	8.0	8.1	7.9	7.7	7.9	8.1	8.0	8.1
7	---	---	---	8.1	7.9	8.0	8.2	7.8	8.0	8.1	8.0	8.1
8	---	---	---	8.1	7.9	8.0	8.2	7.9	8.1	8.2	8.0	8.1
9	---	---	---	8.2	7.9	8.1	8.2	8.0	8.1	8.2	7.9	8.0
10	---	---	---	8.2	8.0	8.1	8.2	8.0	8.1	8.2	8.0	8.1
11	---	---	---	8.2	8.0	8.1	8.2	8.1	8.1	8.2	7.8	8.0
12	7.9	7.5	7.7	8.2	8.1	8.2	8.2	7.9	8.1	8.0	7.9	8.0
13	7.9	7.9	7.9	8.2	8.1	8.2	8.2	7.9	8.1	8.1	7.9	8.0
14	8.0	7.9	7.9	8.2	8.0	8.1	8.4	7.8	8.1	8.1	8.0	8.1
15	8.0	7.9	8.0	8.2	8.0	8.1	8.4	7.6	8.0	8.2	8.1	8.1
16	8.4	8.0	8.2	8.2	7.9	8.1	8.2	7.8	8.0	8.2	8.0	8.1
17	8.4	8.0	8.2	8.3	8.0	8.2	8.4	8.1	8.2	8.2	8.0	8.1
18	8.2	7.9	8.0	8.3	8.0	8.1	8.4	8.1	8.2	8.1	8.0	8.1
19	8.3	8.1	8.2	8.2	8.0	8.1	8.3	8.1	8.3	8.1	7.9	8.0
20	8.3	8.0	8.1	8.2	8.1	8.1	8.3	8.1	8.2	8.1	8.0	8.1
21	7.9	7.8	7.9	8.2	8.1	8.1	8.4	8.1	8.3	8.1	8.0	8.0
22	8.0	7.8	7.9	8.2	8.0	8.1	8.3	8.0	8.2	8.1	7.9	8.0
23	8.2	7.8	8.1	8.2	8.0	8.1	8.3	8.1	8.2	8.1	7.8	7.9
24	8.2	8.0	8.1	8.3	8.1	8.2	8.4	8.2	8.3	7.9	7.8	7.9
25	8.2	8.0	8.1	8.3	8.0	8.2	8.4	8.2	8.2	8.1	7.8	7.9
26	8.2	8.1	8.2	8.2	8.0	8.1	8.3	8.1	8.2	8.2	7.9	8.0
27	8.2	8.1	8.2	8.1	7.7	8.0	8.3	8.1	8.2	8.0	7.5	7.7
28	8.3	8.1	8.2	8.1	7.9	8.0	8.4	8.2	8.3	7.6	7.2	7.4
29	8.3	8.0	8.2	8.3	8.0	8.1	8.4	8.2	8.3	7.9	7.3	7.6
30	8.3	8.0	8.2	8.3	8.0	8.2	8.4	8.1	8.3	8.0	7.8	7.9
31	---	---	---	8.2	7.9	8.1	8.3	8.0	8.1	---	---	---
MONTH	8.4	7.5	8.1	8.3	7.7	8.1	8.4	7.6	8.1	8.3	7.2	8.0

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	25.5	24.0	25.0	23.5	22.5	23.0	13.0	12.0	12.5	18.0	16.0	17.0
2	25.0	24.0	24.5	23.0	22.0	22.5	12.5	11.5	12.0	19.5	17.5	18.0
3	24.5	23.0	24.0	23.5	22.0	22.5	12.5	11.5	12.0	20.0	18.5	19.0
4	24.0	22.5	23.0	23.5	22.0	22.5	13.5	12.5	13.0	19.0	17.5	18.5
5	23.5	21.5	22.5	22.5	21.5	22.0	14.5	13.5	14.0	20.0	18.5	19.0
6	24.0	22.0	23.0	22.0	20.0	21.0	19.0	13.5	16.0	20.5	18.5	19.5
7	23.5	22.0	22.5	23.0	21.0	22.0	20.5	18.5	19.0	21.5	20.0	20.5
8	23.5	21.5	22.5	23.0	21.5	22.5	20.0	18.0	19.0	21.0	17.5	19.0
9	24.0	22.5	23.0	24.0	22.5	23.0	18.0	16.0	17.0	18.5	16.0	17.0
10	23.5	22.5	23.0	24.0	23.0	23.5	17.5	15.5	16.5	17.5	15.5	16.5
11	24.0	22.0	22.5	24.0	23.0	23.5	17.5	15.5	17.0	19.0	17.0	17.5
12	23.0	21.5	22.5	24.5	23.5	24.0	17.5	15.5	16.5	19.0	17.0	18.0
13	23.5	21.5	22.5	24.0	22.5	23.0	16.5	14.5	15.5	16.5	14.5	16.0
14	24.0	22.0	23.0	24.5	23.0	23.5	17.5	15.0	16.0	16.0	14.0	15.0
15	24.0	22.5	23.0	24.5	24.0	24.0	17.5	16.0	17.0	16.5	13.5	14.5
16	24.5	23.0	23.5	24.0	21.5	23.0	17.0	14.5	16.0	16.0	14.0	15.0
17	25.0	23.5	24.0	21.5	17.0	19.5	16.5	14.0	15.0	17.0	14.5	16.0
18	25.5	24.0	24.5	18.0	17.0	17.5	16.5	13.5	15.0	18.0	16.0	17.0
19	25.5	24.0	24.5	19.5	18.0	19.0	17.5	14.5	15.5	18.0	16.5	17.5
20	25.5	24.0	24.5	18.5	15.5	17.0	18.5	16.5	17.5	18.0	16.5	17.5
21	26.0	24.5	25.0	15.5	13.5	14.5	19.5	17.5	18.5	16.5	15.0	16.0
22	25.5	24.5	25.0	13.5	13.0	13.5	20.5	19.0	20.0	16.5	14.0	15.0
23	26.0	24.0	25.0	13.0	12.5	13.0	20.0	19.0	19.5	17.0	15.0	16.0
24	25.5	23.5	24.5	14.0	12.5	13.0	20.0	18.5	19.5	18.5	16.5	17.5
25	25.5	24.0	24.5	16.5	14.0	15.5	19.5	18.0	18.5	20.0	18.5	19.0
26	25.5	25.0	25.0	18.0	16.5	17.5	21.0	19.0	19.5	20.0	19.0	19.5
27	26.0	25.0	25.5	17.5	15.5	17.0	20.5	19.5	20.0	19.0	16.0	17.5
28	26.0	25.0	25.5	15.5	13.0	14.0	19.5	17.0	18.0	18.0	16.5	17.0
29	25.5	24.5	25.0	13.0	12.0	12.5	17.5	15.5	16.5	18.0	14.5	16.5
30	25.0	24.0	24.5	13.5	13.0	13.5	18.0	16.0	17.0	15.5	14.0	14.5
31	25.0	23.5	24.5	---	---	---	18.5	16.5	17.5	17.0	15.0	16.0
MONTH	26.0	21.5	24.0	24.5	12.0	19.5	21.0	11.5	16.5	21.5	13.5	17.0

GUADALUPE RIVER BASIN

299

08181500 MEDINA RIVER AT SAN ANTONIO, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	18.0	16.5	17.0	22.5	18.0	20.5	23.5	21.5	22.5	25.0	24.0	24.5
2	19.5	18.0	19.0	19.0	17.5	18.5	23.5	21.5	22.5	25.5	24.0	24.5
3	19.0	16.0	17.5	19.0	17.5	18.5	24.5	22.5	23.5	25.0	24.0	24.5
4	16.0	13.5	14.5	---	---	---	24.5	23.5	24.0	26.5	24.5	25.5
5	14.0	12.0	13.0	---	---	---	23.0	22.5	23.0	26.0	25.0	25.5
6	13.0	11.0	12.0	---	---	---	23.5	21.5	22.5	26.5	25.0	25.5
7	13.0	11.0	12.0	---	---	---	24.0	22.0	23.0	27.0	25.5	26.0
8	13.5	11.5	12.5	---	---	---	25.0	23.0	23.5	27.5	25.5	26.5
9	14.0	12.0	13.0	---	---	---	23.5	22.0	22.5	28.0	26.0	27.0
10	14.5	12.5	13.5	---	---	---	22.0	20.5	21.5	27.0	26.0	26.5
11	16.5	14.0	14.5	21.0	17.0	18.0	23.5	20.0	21.5	26.0	25.5	25.5
12	18.0	15.5	16.5	19.5	18.0	18.5	21.0	19.5	20.5	26.0	25.0	25.5
13	19.5	17.5	18.5	21.0	19.5	19.5	21.5	19.0	20.5	26.0	25.0	25.5
14	20.0	18.5	19.0	21.5	20.0	20.5	21.0	18.5	20.0	26.5	25.0	26.0
15	21.0	19.5	20.0	21.5	20.5	21.0	21.0	19.5	20.0	27.0	26.0	26.5
16	20.0	17.5	19.0	21.0	20.0	20.5	22.0	20.5	21.0	27.0	26.5	26.5
17	17.5	16.5	17.0	22.0	20.5	21.0	23.0	21.0	22.0	28.0	26.5	27.0
18	17.0	15.5	16.5	22.5	21.5	21.5	24.5	22.5	23.0	28.5	26.5	27.5
19	17.0	15.5	16.0	22.0	21.0	21.5	23.5	21.5	23.0	28.5	26.5	27.5
20	18.5	16.5	17.0	22.5	21.0	21.5	23.0	21.5	22.0	29.0	27.5	28.0
21	18.0	17.0	17.5	---	---	---	24.0	23.0	23.5	29.0	27.5	28.0
22	18.0	16.0	17.0	---	---	---	25.0	23.5	24.0	29.5	27.5	28.5
23	---	---	---	---	---	---	25.0	23.5	24.5	29.5	27.5	28.5
24	---	---	---	20.0	19.0	19.5	25.0	24.0	24.5	29.5	27.5	28.5
25	18.5	16.5	17.5	20.5	19.5	20.0	24.5	24.0	24.5	29.5	27.5	28.5
26	19.5	18.0	18.5	21.5	20.0	20.5	25.0	24.0	24.5	29.5	27.5	28.5
27	20.0	19.0	19.5	22.0	21.0	21.5	25.0	24.0	24.5	29.0	28.0	28.5
28	23.0	19.5	21.0	23.5	22.0	22.5	25.5	24.5	25.0	29.0	27.5	28.5
29	---	---	---	23.5	22.0	22.5	25.5	24.5	25.0	29.0	27.0	28.0
30	---	---	---	23.5	22.0	22.5	25.0	24.0	24.5	29.0	27.0	28.0
31	---	---	---	23.0	22.0	22.5	---	---	---	28.5	27.0	28.0
MONTH	23.0	11.0	16.5	23.5	17.0	20.5	25.5	18.5	23.0	29.5	24.0	27.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	29.0	27.5	28.0	29.5	27.0	28.5	29.5	28.5	29.0	30.0	28.5	29.5
2	29.0	27.5	28.5	30.0	28.0	29.0	30.0	28.0	29.0	30.0	28.5	29.5
3	29.5	28.0	28.5	30.0	28.5	29.0	30.0	29.0	29.5	30.0	28.5	29.5
4	29.0	27.5	28.5	30.0	28.0	29.0	30.5	29.0	29.5	29.5	28.0	29.0
5	29.5	27.5	28.5	29.5	27.5	29.0	30.5	29.0	29.5	29.0	28.0	29.0
6	29.5	27.5	28.5	30.0	28.0	29.0	30.5	29.0	29.5	29.0	28.0	28.5
7	29.5	28.0	28.5	30.0	28.0	29.0	30.0	29.0	29.5	29.0	28.0	28.5
8	29.0	27.5	28.5	30.0	28.0	29.0	29.0	28.0	28.5	29.0	28.0	28.5
9	28.0	27.0	27.5	30.0	28.0	29.0	28.5	27.5	28.0	28.5	27.5	28.0
10	28.0	26.5	27.5	29.5	28.5	29.0	28.0	27.0	27.5	29.0	28.0	28.5
11	32.0	24.0	27.5	30.0	28.5	29.0	27.5	27.0	27.0	28.5	27.5	28.0
12	29.5	27.5	28.5	30.0	28.5	29.0	28.0	27.0	27.5	28.5	27.5	28.0
13	29.5	28.0	29.0	30.0	28.5	29.0	28.0	26.5	27.5	28.0	27.0	27.5
14	28.5	25.0	26.5	30.0	28.5	29.0	27.5	27.0	27.5	27.0	26.0	26.5
15	28.5	25.0	26.5	30.5	27.5	29.0	28.5	27.0	28.0	25.5	25.0	25.5
16	27.5	26.0	27.0	30.5	28.5	30.0	29.0	27.5	28.0	25.0	24.5	25.0
17	28.0	26.0	27.0	---	---	---	29.0	28.0	28.5	25.0	24.5	25.0
18	28.5	26.5	27.5	---	---	---	29.0	28.0	28.5	25.5	24.5	25.0
19	31.0	27.0	29.0	---	---	---	29.0	28.0	28.5	25.5	24.5	25.0
20	30.5	29.0	30.0	---	---	---	29.5	28.0	29.0	25.5	24.5	25.0
21	30.0	28.0	29.0	---	---	---	29.5	28.5	29.0	25.5	24.5	25.0
22	29.5	28.0	28.5	---	---	---	30.0	28.5	29.0	25.0	24.5	25.0
23	29.0	27.5	28.0	---	---	---	29.5	28.5	29.0	24.5	23.5	24.0
24	28.0	27.0	27.5	---	---	---	29.5	28.5	29.0	23.5	22.5	23.0
25	27.5	26.5	27.0	---	---	---	29.5	28.5	29.0	23.5	22.0	23.0
26	27.5	26.5	27.0	29.5	28.0	28.5	29.5	28.5	29.0	23.0	21.5	22.5
27	28.0	26.5	27.0	29.5	28.5	29.0	29.5	29.0	29.0	23.0	22.0	22.5
28	28.5	27.0	27.5	29.5	28.0	29.0	30.0	28.5	29.5	23.0	21.5	22.5
29	29.0	27.0	28.0	30.0	28.0	29.0	30.0	28.5	29.5	23.0	21.5	22.0
30	28.5	27.5	28.0	30.0	28.5	29.0	30.0	28.5	29.5	23.0	21.5	22.0
31	---	---	---	30.5	28.5	29.5	30.0	28.5	29.5	---	---	---
MONTH	32.0	24.0	28.0	30.5	27.0	29.0	30.5	26.5	28.5	30.0	21.5	26.0

GUADALUPE RIVER BASIN

08181500 MEDINA RIVER AT SAN ANTONIO, TX--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	6.5	6.2	6.4	7.6	7.2	7.4	8.7	8.1	8.3	9.3	8.6	8.9
2	6.7	6.2	6.5	7.7	7.0	7.4	8.9	8.4	8.6	9.1	8.5	8.8
3	6.9	6.4	6.6	7.3	7.0	7.1	8.9	8.3	8.6	9.0	8.4	8.7
4	7.1	6.6	6.8	7.3	7.0	7.1	8.7	8.0	8.4	9.3	8.6	8.9
5	7.3	6.8	7.0	7.4	7.0	7.2	8.4	7.6	8.0	8.9	8.1	8.5
6	7.3	6.8	7.0	7.8	7.2	7.5	8.9	7.6	8.1	9.4	8.2	8.9
7	7.3	6.9	7.1	7.8	7.3	7.5	8.7	8.2	8.5	8.9	7.9	8.4
8	7.4	6.9	7.1	7.6	7.2	7.4	8.2	8.0	8.1	8.6	7.9	8.2
9	7.3	6.8	7.0	7.4	7.0	7.2	8.6	8.1	8.3	9.4	8.4	9.0
10	7.5	6.9	7.1	7.2	6.9	7.0	8.8	8.4	8.5	10.1	9.3	9.6
11	7.6	7.0	7.2	7.2	6.8	7.0	9.0	8.4	8.6	9.9	9.0	9.5
12	7.5	6.9	7.1	7.0	6.7	6.8	9.1	8.6	8.8	9.0	8.4	8.7
13	7.6	7.1	7.3	7.2	6.7	6.9	9.2	8.9	9.0	9.6	9.0	9.3
14	7.5	7.0	7.2	7.0	6.6	6.8	9.8	8.7	9.0	10.5	9.5	9.9
15	7.3	6.9	7.0	6.8	6.5	6.6	9.1	8.6	8.8	11.1	9.8	10.3
16	7.1	6.8	6.9	7.0	6.5	6.7	9.4	8.7	9.0	12.7	9.8	10.9
17	7.0	6.7	6.8	7.4	6.9	7.1	9.6	8.9	9.1	11.1	9.5	10.2
18	6.8	6.7	6.8	7.1	6.7	7.0	10.1	9.0	9.3	9.9	9.3	9.6
19	6.9	6.7	6.8	6.9	6.3	6.6	9.4	8.8	9.1	10.0	9.2	9.5
20	7.0	6.7	6.9	7.4	6.4	6.9	8.7	8.3	8.5	10.3	9.3	9.8
21	7.0	6.7	6.8	8.3	7.3	7.8	8.6	8.1	8.3	11.2	10.2	10.6
22	7.1	6.8	6.9	8.5	8.1	8.2	8.3	7.9	8.1	11.6	10.5	11.0
23	7.1	6.8	6.9	8.6	8.2	8.4	8.1	7.7	7.9	11.1	10.3	10.6
24	7.2	6.8	7.0	8.5	8.1	8.3	8.4	7.7	8.0	10.4	9.8	10.1
25	7.2	7.0	7.0	8.2	7.3	7.8	8.6	8.0	8.2	9.9	9.4	9.6
26	7.0	6.9	6.9	7.5	6.9	7.1	8.4	7.8	8.1	9.5	9.2	9.3
27	7.0	6.8	6.9	7.6	6.9	7.2	7.8	7.6	7.7	10.5	9.5	10.1
28	7.1	6.8	6.9	8.3	7.3	7.8	8.8	7.8	8.3	10.6	9.7	9.9
29	7.2	6.9	7.0	8.8	8.0	8.4	9.4	8.5	8.8	10.7	9.7	10.0
30	7.3	7.0	7.1	8.5	8.0	8.2	8.9	8.4	8.7	10.8	9.2	9.8
31	7.3	7.0	7.2	---	---	---	9.3	8.5	8.8	9.2	8.9	9.1
MONTH	7.6	6.2	6.9	8.8	6.3	7.3	10.1	7.6	8.5	12.7	7.9	9.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	8.9	8.6	8.8	9.4	8.9	9.1	8.7	8.3	8.4	---	---	---
2	8.6	8.4	8.5	9.8	9.0	9.3	8.4	8.0	8.2	---	---	---
3	9.0	8.4	8.7	9.5	8.8	9.1	8.1	7.6	7.9	---	---	---
4	9.6	9.1	9.4	9.3	8.6	8.9	7.9	7.5	7.7	---	---	---
5	10.3	9.5	9.9	10.7	9.1	9.8	8.3	7.6	7.9	---	---	---
6	10.9	9.9	10.3	11.0	9.9	10.3	8.5	8.0	8.2	---	---	---
7	10.9	10.4	10.5	11.2	10.0	10.5	8.3	7.6	8.0	---	---	---
8	10.8	10.3	10.5	11.3	10.1	10.6	8.1	7.5	7.7	---	---	---
9	10.7	10.3	10.5	11.4	10.1	10.7	8.1	7.5	7.7	---	---	---
10	10.5	10.1	10.2	11.3	9.9	10.6	8.5	7.8	8.2	---	---	---
11	10.0	9.5	9.8	11.2	9.7	10.4	9.0	8.3	8.6	---	---	---
12	9.6	9.1	9.4	10.7	9.4	10.1	8.6	8.2	8.4	---	---	---
13	9.1	8.8	8.9	10.3	8.9	9.7	9.1	8.2	8.5	---	---	---
14	8.8	8.6	8.7	10.0	8.7	9.4	8.7	8.2	8.4	---	---	---
15	8.8	8.4	8.6	9.3	8.3	8.9	8.9	8.1	8.4	---	---	---
16	9.0	8.6	8.8	9.5	8.4	8.9	8.5	7.8	8.1	---	---	---
17	9.1	8.9	9.0	9.4	8.3	8.8	7.9	7.5	7.7	---	---	---
18	9.5	9.0	9.2	9.2	8.1	8.6	7.9	7.4	7.6	---	---	---
19	9.7	9.2	9.4	8.8	8.0	8.3	---	---	---	---	---	---
20	9.5	9.0	9.2	8.7	8.0	8.3	---	---	---	---	---	---
21	9.4	8.9	9.2	8.7	8.0	8.3	---	---	---	---	---	---
22	9.9	9.2	9.5	9.6	8.7	9.1	---	---	---	---	---	---
23	10.3	9.7	10.0	9.8	8.9	9.3	---	---	---	---	---	---
24	10.2	9.7	9.9	9.6	8.8	9.1	---	---	---	---	---	---
25	10.3	9.6	9.9	8.9	8.4	8.7	---	---	---	---	---	---
26	10.0	9.3	9.6	8.8	8.2	8.4	---	---	---	---	---	---
27	9.6	8.9	9.3	8.5	8.0	8.2	---	---	---	---	---	---
28	9.2	8.7	9.0	8.4	7.9	8.0	---	---	---	---	---	---
29	---	---	---	8.5	8.0	8.2	---	---	---	---	---	---
30	---	---	---	8.4	8.0	8.2	---	---	---	---	---	---
31	---	---	---	8.6	8.1	8.3	---	---	---	---	---	---
MONTH	10.9	8.4	9.5	11.4	7.9	9.2	9.1	7.4	8.1	---	---	---

GUADALUPE RIVER BASIN

301

08181500 MEDINA RIVER AT SAN ANTONIO, TX--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	---	---	---	6.6	6.4	6.5	7.1	6.8	6.9	6.9	6.4	6.7
2	---	---	---	6.5	6.2	6.4	7.2	6.8	7.0	7.0	6.4	6.7
3	---	---	---	6.5	6.3	6.4	7.2	6.7	6.9	7.1	6.4	6.7
4	---	---	---	6.3	5.9	6.1	7.2	6.6	6.8	7.1	6.4	6.7
5	---	---	---	6.5	6.1	6.3	7.1	6.5	6.8	7.2	6.5	6.8
6	6.6	6.4	6.5	7.0	5.9	6.5	7.1	6.5	6.7	7.1	6.5	6.8
7	6.7	6.3	6.5	7.2	6.6	6.8	7.0	6.5	6.7	7.1	6.5	6.8
8	6.9	6.3	6.5	7.1	6.5	6.7	7.0	6.6	6.8	7.2	6.6	6.8
9	6.9	6.3	6.6	6.9	6.4	6.7	7.3	6.7	7.0	7.3	6.5	6.8
10	6.9	6.3	6.6	6.9	6.5	6.7	7.3	6.8	7.0	7.2	6.6	6.8
11	7.0	5.3	6.0	6.8	6.4	6.6	7.4	6.9	7.1	7.2	6.6	6.8
12	6.3	6.0	6.1	6.6	6.3	6.5	7.4	6.9	7.1	7.3	6.6	6.9
13	6.3	6.1	6.2	7.0	6.6	6.8	7.3	6.8	7.0	7.2	6.7	6.9
14	6.4	5.6	6.2	7.1	6.6	6.8	7.3	6.8	7.0	7.5	6.8	7.2
15	6.6	6.3	6.5	7.1	6.5	6.8	7.2	6.8	6.9	7.7	7.1	7.4
16	6.6	6.5	6.6	7.1	6.6	6.8	7.1	6.7	6.9	7.8	7.3	7.5
17	6.6	6.5	6.6	7.2	6.5	6.8	7.0	6.6	6.8	7.8	7.3	7.5
18	6.6	6.4	6.5	7.0	6.6	6.7	7.0	6.6	6.7	7.8	7.2	7.4
19	6.5	6.4	6.5	7.2	6.6	6.8	6.8	6.6	6.7	7.7	7.2	7.4
20	6.5	6.3	6.4	7.3	6.6	6.9	6.9	6.5	6.6	7.7	7.2	7.4
21	6.5	6.3	6.4	7.4	6.7	7.0	6.7	6.4	6.5	7.7	7.2	7.4
22	6.5	6.3	6.4	7.5	6.8	7.0	6.6	6.4	6.5	7.7	7.2	7.4
23	6.6	6.4	6.5	7.6	6.9	7.1	6.7	6.5	6.6	7.8	7.3	7.5
24	6.7	6.4	6.5	7.5	6.9	7.1	6.7	6.4	6.6	8.0	7.4	7.7
25	6.8	6.6	6.7	7.5	7.0	7.2	6.7	6.4	6.6	7.9	7.5	7.6
26	6.8	6.6	6.7	7.6	7.0	7.2	6.7	6.4	6.6	7.9	7.4	7.6
27	6.8	6.6	6.7	7.6	7.0	7.2	6.7	6.4	6.5	8.0	7.4	7.6
28	6.8	6.6	6.7	7.6	6.9	7.1	6.7	6.5	6.6	7.9	7.4	7.6
29	6.7	6.5	6.6	7.5	6.9	7.1	6.8	6.5	6.6	7.9	7.4	7.6
30	6.6	6.4	6.5	7.5	6.8	7.0	6.8	6.4	6.6	7.9	7.4	7.6
31	---	---	---	7.4	6.8	7.0	6.9	6.4	6.6	---	---	---
MONTH	7.0	5.3	6.5	7.6	5.9	6.8	7.4	6.4	6.8	8.0	6.4	7.2

GUADALUPE RIVER BASIN

08181800 SAN ANTONIO RIVER NEAR ELMENDORF, TX

LOCATION.--Lat 29°14'16", long 98°22'00", Bexar County, Hydrologic Unit 12100301, on left bank at pump station to Braunig Plant Lake, 2.4 mi southwest of Elmendorf, 4.8 mi downstream from Medina River, and 208 mi upstream from mouth.

DRAINAGE AREA.--1,743 mi².

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 393.00 ft above National Geodetic Vertical Datum of 1929. Sept. 12, 1962, to Dec. 19, 1980, at site 0.3 mi downstream at different datum. Dec. 19, 1980, to Dec. 23, 1986, at site 2.4 mi downstream at different datum.

REMARKS.--Records good. Flow slightly regulated by Medina Lake (station 08179500) and by Olmos flood-control reservoir (combined capacity, 269,500 acre-ft). Storage began in Medina Lake in 1913, and Olmos Dam was completed in 1926. Water is diverted above station from Medina River for irrigation in the vicinity of Devine and Lytle, with some water diverted for irrigation near San Antonio. During the current year, the city of San Antonio discharged 139,400 acre-ft of sewage effluent into the San Antonio River from the Leon Creek, Salado Creek, and Dos Rios plants, and no sewage effluent was discharged from the Mitchell Lake plant upstream from this station. The San Antonio City Public Service Board pumped 7,460 acre-ft into Braunig Lake and 25,510 acre-ft into Calaveras Lake upstream from this station and released 120 acre-ft from Braunig Lake and 12 acre-ft from Calaveras Lake downstream from this station. For additional information relative to sewage effluent, see station 08181500. For statement regarding regulation by Soil Conservation Service floodwater-retarding structures, see station 08178700. Satellite telemeter at station.

AVERAGE DISCHARGE.--27 years, 536 ft³/s (388,300 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 40,000 ft³/s Sept. 27, 1973 (gage height, 47.60 ft), site and datum then in use; maximum gage height, 53.06 ft June 5, 1986; minimum discharge, 12 ft³/s Aug. 24-26, 1963.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1900, 61 ft in 1946. Second highest stage was 53 ft in 1913, from information by local residents. At site and datum in use prior to Dec. 19, 1980.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 7,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 11	1100	*4,240	*22.59				

Minimum daily discharge, 86 ft³/s Sept. 24.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	218	312	203	280	343	286	264	324	118	109	155	138
2	230	262	200	312	332	292	265	271	114	104	147	134
3	228	223	197	296	313	287	277	256	102	108	149	127
4	219	221	196	286	298	299	239	261	100	132	146	125
5	181	207	208	286	298	269	207	257	113	145	137	106
6	173	201	207	279	306	285	205	251	116	123	169	138
7	175	216	213	278	309	282	207	249	110	116	201	212
8	171	216	214	277	282	283	203	253	104	97	226	117
9	179	217	209	287	216	286	194	250	126	99	206	96
10	236	219	210	292	201	286	196	248	155	108	168	99
11	221	213	229	291	191	279	193	245	1930	137	153	111
12	218	204	228	288	194	284	196	240	568	112	142	131
13	210	196	226	297	209	283	216	241	292	115	132	206
14	206	208	223	288	206	284	587	236	1840	107	142	235
15	206	209	208	289	201	285	329	251	789	98	148	128
16	204	202	221	288	236	277	295	247	316	91	144	96
17	213	200	220	291	245	287	289	263	269	96	145	98
18	225	220	222	284	242	279	278	300	258	103	146	107
19	218	253	233	296	236	273	1050	252	221	97	138	111
20	212	244	234	341	245	387	1030	237	235	95	133	106
21	217	253	266	297	240	311	374	234	227	125	144	107
22	208	256	288	292	261	290	312	241	207	127	143	108
23	211	259	274	292	286	279	289	202	162	130	145	94
24	284	257	279	293	285	272	286	181	189	137	141	86
25	233	253	269	370	285	271	278	187	124	221	176	97
26	221	260	271	389	276	271	268	176	177	172	150	98
27	218	252	285	567	e273	275	263	168	163	156	143	100
28	221	235	281	417	276	407	265	164	149	162	150	100
29	213	201	282	1030	---	366	293	164	143	155	146	97
30	210	204	279	873	---	300	558	148	128	147	145	89
31	279	---	281	400	---	272	---	119	---	154	144	---
TOTAL	6658	6873	7356	11046	7285	9087	9906	7116	9545	3878	4754	3597
MEAN	215	229	237	356	260	293	330	230	318	125	153	120
MAX	284	312	288	1030	343	407	1050	324	1930	221	226	235
MIN	171	196	196	277	191	269	193	119	100	91	132	86
AC-FT	13210	13630	14590	21910	14450	18020	19650	14110	18930	7690	9430	7130
CAL YR 1988	TOTAL	112844	MEAN	308	MAX	2200	MIN	106	AC-FT	223800		
WTR YR 1989	TOTAL	87101	MEAN	239	MAX	1930	MIN	86	AC-FT	172800		

e Estimated.

08181800 SAN ANTONIO RIVER NEAR ELMENDORF, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: September 1964 to current year. Chemical and biochemical analyses: January 1968 to current year. Pesticide analyses: January 1968 to September 1981.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1966 to current year.

pH: June 1984 to current year.

WATER TEMPERATURE: October 1966 to current year.

DISSOLVED OXYGEN: June 1984 to current year.

INSTRUMENTATION.--Beginning June 1984, a four-parameter water-quality monitor continuously records specific conductance, pH, water temperature, and dissolved oxygen at this station.

REMARKS.--Interruptions in the record were due to malfunctions of the instruments. Where maximum or minimum specific conductance values are not shown, mean value is estimated. Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request. Any pH data below 7.0 units were deleted. There are no present or historical field measurements to support pH values less than 7.0 units.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 1,240 microsiemens Jan. 29, 1973, Aug. 8, 1975; minimum, 200 microsiemens May 19, 1987, July 21, 1988.

pH: Maximum, 8.4 units Oct. 6, 1988, Apr. 10, May 26, 27, 1989; minimum, 7.0 units Oct. 25, 28, 1988, Jan. 11, 1989.

WATER TEMPERATURE: Maximum, 32.5°C Sept. 3, 1989; minimum, 5.5°C Jan. 10, 1973.

DISSOLVED OXYGEN: Maximum, 10.0 mg/L Feb. 6-8, 1989; minimum, 0.0 mg/L Mar. 2, Apr. 14, 15, 1985.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 1,020 microsiemens on several days during April and May; minimum, 220 microsiemens Apr. 19.

pH: Maximum, 8.4 units Oct. 6, Apr. 10, May 26, 27; minimum, 7.0 units Oct. 25, 28, Jan. 11.

WATER TEMPERATURE: Maximum, 32.5°C Sept. 3; minimum, 11.5°C Feb. 6.

DISSOLVED OXYGEN: Maximum, 10.0 mg/L Feb. 6-8; minimum, 2.1 mg/L June 11.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3
NOV 03...	1330	183	945	8.00	24.0	7.5	90	8.1	280	73
DEC 15...	1420	191	934	8.10	18.0	8.8	93	3.8	310	87
MAR 02...	1050	278	935	8.10	18.5	8.3	90	5.7	300	95
JUL 25...	1600	202	859	7.90	30.0	7.6	102	1.8	260	69
JUL 26...	1645	150	941	8.00	30.0	7.8	105	1.9	280	85
SEP 07...	1030	155	736	7.00	29.0	4.6	61	5.8	230	50
DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS S04)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
NOV 03...	80	19	78	2	7.1	205	83	98	0.50	14
DEC 15...	90	20	77	2	7.5	221	73	97	0.50	14
MAR 02...	86	20	79	2	7.6	203	88	97	0.60	12
JUL 25...	73	19	66	2	7.2	192	74	91	0.50	14
JUL 26...	82	19	82	2	8.8	198	72	110	0.60	16
SEP 07...	66	15	57	2	7.0	177	51	70	0.30	13
DATE	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (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- PHOROUS TOTAL (MG/L AS P)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)
NOV 03...	503	8.66	0.040	8.70	0.180	0.72	0.90	3.40	--	--
DEC 15...	512	12.0	0.020	12.0	0.110	1.9	2.0	4.00	1	56
MAR 02...	512	11.0	0.030	11.0	0.100	1.7	1.8	3.90	--	--
JUL 25...	460	6.58	0.020	6.60	0.050	0.75	0.80	3.40	2	53
JUL 26...	509	9.98	0.020	10.0	0.040	0.86	0.90	4.60	--	--
SEP 07...	385	5.47	0.030	5.50	0.080	1.1	1.2	3.30	--	--

GUADALUPE RIVER BASIN

08181800 SAN ANTONIO RIVER NEAR ELMENDORF, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	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)	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)
NOV 03...	--	--	--	--	--	--	--	--	--	--
DEC 15...	<1	4	5	13	<5	8	--	<1	<1.0	42
MAR 02...	--	--	--	--	--	--	--	--	--	--
JUL 25...	<1	<1	2	4	<1	2	<0.1	<1	<1.0	16
SEP 26...	--	--	--	--	--	--	--	--	--	--
SEP 07...	--	--	--	--	--	--	--	--	--	--

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1988 TO SEPTEMBER 1989

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	DIS- SOLVED SOLIDS (MG/L)	DIS- SOLVED SOLIDS (TONS)	DIS- SOLVED CHLORIDE (MG/L)	DIS- SOLVED CHLORIDE (TONS)	DIS- SOLVED SULFATE (MG/L)	DIS- SOLVED SULFATE (TONS)	HARDNESS (CA, MG) (MG/L)
OCT. 1988	6658	921	515	9260	88	1580	76	1370	290
NOV. 1988	6873	938	524	9720	91	1680	77	1420	290
DEC. 1988	7356	931	521	10300	90	1780	77	1520	290
JAN. 1989	11046	820	463	13800	74	2210	70	2100	270
FEB. 1989	7285	888	498	9800	83	1630	74	1460	290
MAR. 1989	9087	916	513	12600	87	2140	76	1860	290
APR. 1989	9906	763	434	11600	66	1760	67	1800	260
MAY 1989	7116	932	520	10000	90	1720	76	1470	290
JUNE 1989	9545	650	373	9620	52	1340	60	1540	230
JULY 1989	3878	907	508	5320	86	898	75	790	290
AUG. 1989	4754	857	483	6200	78	1000	73	937	280
SEPT 1989	3597	833	471	4570	75	726	72	696	280
TOTAL	87101	**	**	113000	**	18500	**	17000	**
WTD.AVG.	239	853	480	**	79	**	72	**	280

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	970	940	950	910	860	881	970	930	957	940	910	927
2	960	910	944	930	900	917	980	940	965	910	820	870
3	910	890	901	970	920	952	970	940	955	880	820	860
4	950	900	921	960	930	948	940	920	933	920	870	900
5	960	930	943	960	930	943	930	900	920	960	910	933
6	970	960	963	940	910	922	960	910	944	960	940	948
7	970	940	953	---	---	910	960	920	940	980	950	964
8	970	950	956	---	---	959	960	930	948	950	910	930
9	960	930	946	950	930	942	950	930	941	910	890	904
10	930	870	908	970	930	953	950	930	941	920	900	906
11	920	870	883	960	940	953	950	890	923	940	910	921
12	930	890	908	970	930	950	910	890	902	930	910	920
13	940	900	921	950	940	946	950	910	942	930	900	912
14	940	910	927	940	910	925	970	930	953	940	900	921
15	950	930	942	950	910	941	960	920	946	930	910	921
16	930	910	921	960	930	949	960	920	944	910	880	898
17	910	880	895	970	930	953	970	920	947	930	890	912
18	910	880	896	970	940	962	940	900	923	930	910	922
19	920	890	902	1000	950	982	910	890	901	930	910	922
20	960	910	928	960	920	944	930	910	925	920	870	896
21	950	930	941	940	910	920	940	920	930	950	890	930
22	950	930	935	950	910	931	950	930	939	940	900	916
23	940	910	923	950	920	938	970	920	955	900	880	895
24	---	---	869	950	930	945	950	930	941	930	900	912
25	940	820	876	940	910	930	940	910	922	940	790	894
26	---	---	932	950	910	937	910	870	894	810	770	787
27	950	920	925	950	880	927	900	870	892	820	530	662
28	950	910	930	940	900	919	920	880	902	820	690	773
29	940	910	930	970	900	950	940	910	926	710	320	587
30	---	---	---	960	930	947	940	920	925	580	480	530
31	930	890	904	---	---	---	950	920	936	740	580	654
MONTH	970	820	922	1000	860	939	980	870	933	980	320	865

GUADALUPE RIVER BASIN

305

08181800 SAN ANTONIO RIVER NEAR ELMENDORF, TX--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	780	690	728	940	920	935	920	890	904	824	706	760
2	820	760	788	960	930	947	1020	880	891	941	784	841
3	850	780	806	950	930	941	900	880	886	941	863	891
4	890	840	858	940	920	927	900	800	831	980	902	919
5	880	860	874	950	920	930	850	810	824	980	902	925
6	870	850	854	940	900	919	860	820	836	941	863	920
7	870	850	861	930	910	919	850	830	845	941	863	900
8	870	860	864	940	920	927	860	840	849	941	863	901
9	920	860	887	960	930	943	900	810	836	980	863	923
10	920	900	907	960	930	949	820	790	805	1020	941	968
11	930	900	919	950	930	942	870	800	841	980	941	972
12	950	910	935	950	930	939	860	830	854	1020	941	977
13	940	900	916	930	900	916	850	830	842	950	930	941
14	950	920	933	950	910	932	810	560	631	930	800	900
15	960	920	938	970	940	959	810	670	769	940	800	896
16	940	850	908	970	940	956	860	770	820	---	---	936
17	910	860	899	980	950	968	860	830	846	1020	902	967
18	920	890	906	990	970	978	920	860	887	980	863	940
19	910	880	896	980	920	965	910	220	692	980	902	956
20	910	870	894	920	780	844	580	410	497	1020	902	961
21	940	910	919	890	780	850	710	560	624	980	902	956
22	940	910	929	910	880	898	800	690	736	980	902	947
23	960	930	941	930	900	911	800	760	776	1020	902	972
24	940	920	933	950	910	924	810	780	792	1020	941	994
25	940	920	927	950	930	941	---	---	865	1020	941	974
26	---	---	920	930	900	911	941	863	911	1020	980	992
27	---	---	930	900	870	886	941	902	926	1020	980	993
28	---	---	936	910	780	861	980	902	917	1020	902	975
29	---	---	---	850	750	801	941	706	901	980	902	949
30	---	---	---	910	850	876	824	588	680	---	902	945
31	---	---	---	930	880	899	---	---	---	1020	902	974
MONTH	960	690	893	990	750	919	1020	220	810	1020	706	938
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	1000	950	976	880	820	855	910	850	879	910	860	882
2	1000	970	984	870	860	864	930	860	897	900	840	870
3	1010	970	988	860	820	849	920	860	890	890	840	858
4	980	940	971	---	---	880	910	850	875	870	810	838
5	950	910	935	---	---	883	900	840	867	870	800	833
6	970	910	944	---	---	895	870	820	839	870	680	830
7	990	940	966	---	---	911	840	790	818	830	630	746
8	980	960	969	---	---	920	830	690	798	950	800	894
9	980	960	972	---	---	908	810	720	761	1000	910	954
10	990	960	975	---	---	877	890	790	839	960	890	931
11	960	230	545	---	---	911	900	840	866	920	870	894
12	590	420	505	---	---	925	900	840	870	940	860	906
13	770	610	695	---	---	928	880	840	858	---	---	874
14	770	270	471	---	---	914	870	810	841	760	580	681
15	600	370	476	940	910	922	910	850	874	860	750	806
16	740	620	669	---	---	908	940	860	892	890	770	832
17	810	740	764	---	---	900	900	860	879	870	810	840
18	810	790	799	---	---	909	900	850	876	850	770	808
19	800	780	789	---	---	930	900	860	878	880	780	829
20	820	790	802	---	---	934	890	840	862	890	810	851
21	830	800	819	---	---	932	870	820	839	870	810	847
22	840	810	820	---	---	937	890	810	848	860	800	836
23	840	810	824	---	---	922	910	840	871	840	800	827
24	810	700	738	---	---	915	910	860	878	840	780	812
25	770	750	761	---	---	910	880	840	863	820	760	790
26	760	690	722	---	---	900	910	810	864	850	770	809
27	790	740	768	940	890	910	920	850	879	860	800	829
28	820	770	794	950	880	920	890	830	858	864	792	826
29	830	790	812	970	900	928	890	830	856	868	785	822
30	850	820	828	960	890	924	910	830	872	862	789	822
31	---	---	---	930	850	892	900	850	877	---	---	---
MONTH	1010	230	803	970	820	907	940	690	860	1000	580	839

GUADALUPE RIVER BASIN

08181800 SAN ANTONIO RIVER NEAR ELMENDORF, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	8.3	8.2	8.3	8.2	8.1	8.2	8.2	8.1	8.2	---	---	---
2	8.3	8.2	8.3	8.2	8.1	8.1	8.2	8.1	8.2	---	---	---
3	8.3	8.2	8.2	8.1	7.9	8.0	8.2	8.1	8.2	7.9	7.7	7.8
4	8.3	8.1	8.2	7.9	7.9	7.9	8.1	7.9	8.1	7.9	7.7	7.9
5	8.3	8.2	8.3	7.9	7.9	7.9	8.1	7.9	8.0	8.1	7.8	7.9
6	8.4	8.3	8.3	7.9	7.7	7.8	8.1	8.0	8.0	8.1	7.9	8.0
7	8.3	8.3	8.3	7.8	7.7	7.8	8.1	8.0	8.0	7.9	7.8	7.9
8	8.3	8.3	8.3	8.0	7.8	7.9	8.1	8.0	8.0	7.9	7.7	7.8
9	8.3	8.3	8.3	8.0	8.0	8.0	8.0	7.9	8.0	7.7	7.3	7.6
10	8.3	8.2	8.3	8.0	7.9	8.0	8.0	7.9	8.0	7.5	7.2	7.4
11	8.2	8.0	8.2	8.0	8.0	8.0	8.0	7.8	7.9	7.3	7.0	7.2
12	8.2	8.1	8.1	8.0	7.9	8.0	7.9	7.7	7.8	---	---	---
13	8.1	8.1	8.1	8.0	7.9	8.0	---	---	---	7.3	7.2	7.3
14	8.2	8.1	8.1	8.0	7.9	7.9	---	---	---	7.3	7.1	7.2
15	8.2	8.1	8.1	8.1	7.8	8.0	---	---	---	7.6	7.4	7.5
16	8.2	8.1	8.1	8.1	8.0	8.1	---	---	---	7.7	7.6	7.7
17	8.1	8.1	8.1	8.2	8.1	8.1	---	---	---	7.6	7.4	7.5
18	8.1	8.1	8.1	8.2	8.1	8.2	---	---	---	7.5	7.4	7.5
19	8.1	8.1	8.1	8.3	8.2	8.2	---	---	---	7.5	7.4	7.4
20	8.1	8.0	8.1	8.3	8.2	8.3	---	---	---	7.7	7.4	7.5
21	8.2	8.1	8.1	8.3	8.1	8.2	---	---	---	7.8	7.7	7.7
22	8.1	7.8	8.0	8.3	8.1	8.2	---	---	---	7.8	7.6	7.7
23	7.8	7.4	7.6	8.3	8.1	8.2	---	---	---	7.6	7.2	7.4
24	7.4	7.1	7.3	8.3	8.1	8.2	---	---	---	---	---	---
25	7.1	7.0	7.1	8.3	8.1	8.2	---	---	---	---	---	---
26	---	---	---	8.3	8.1	8.2	---	---	---	7.7	7.5	7.6
27	---	---	---	8.2	8.1	8.2	---	---	---	8.3	7.6	8.1
28	8.3	7.0	7.8	8.2	8.1	8.2	---	---	---	8.3	8.2	8.2
29	8.2	8.1	8.2	8.2	8.1	8.2	---	---	---	8.3	8.1	8.2
30	8.1	7.9	8.0	8.2	8.1	8.2	---	---	---	8.3	8.1	8.2
31	8.1	7.9	8.0	---	---	---	---	---	---	8.3	8.1	8.2
MONTH	8.4	7.0	8.1	8.3	7.7	8.1	8.2	7.7	8.0	8.3	7.0	7.7
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	8.1	7.9	8.0	8.0	7.9	7.9	8.0	7.9	8.0	8.2	8.0	8.1
2	7.8	7.5	7.7	8.0	7.9	8.0	8.0	7.9	8.0	8.1	7.8	8.0
3	7.7	7.5	7.6	7.9	7.8	7.9	8.0	7.9	7.9	8.0	7.7	7.9
4	7.8	7.7	7.8	8.0	7.8	7.9	7.9	7.9	7.9	8.0	7.6	7.8
5	7.9	7.8	7.9	8.0	8.0	8.0	8.0	7.9	8.0	8.2	7.9	8.2
6	8.0	7.8	7.9	8.0	7.9	8.0	8.0	8.0	8.0	8.2	8.0	8.1
7	8.0	7.9	8.0	8.0	7.9	8.0	8.1	8.0	8.0	8.0	7.9	8.0
8	8.2	8.1	8.1	7.9	7.6	7.8	8.1	8.0	8.1	8.0	7.8	7.9
9	8.3	8.2	8.2	7.7	7.4	7.6	8.3	8.1	8.2	7.9	7.7	7.8
10	8.3	8.1	8.2	7.5	7.2	7.3	8.4	8.2	8.3	8.2	7.9	8.1
11	8.2	8.0	8.2	7.3	7.1	7.2	8.3	8.2	8.2	8.3	8.2	8.3
12	8.1	8.0	8.1	7.5	7.2	7.3	8.3	8.1	8.2	8.3	8.2	8.3
13	8.1	7.9	8.0	7.5	7.4	7.5	8.3	8.1	8.2	8.3	8.2	8.2
14	8.0	7.9	8.0	---	---	---	8.2	8.0	8.1	8.3	8.3	8.2
15	7.9	7.8	7.9	---	---	---	8.1	8.0	8.1	8.3	8.2	8.2
16	8.0	7.8	7.9	---	---	---	8.0	7.9	8.0	8.2	8.2	8.1
17	7.9	7.7	7.8	---	---	---	8.0	7.9	7.9	8.2	8.0	8.2
18	7.8	7.7	7.8	---	---	---	7.9	7.9	7.9	8.2	7.8	8.1
19	7.8	7.7	7.8	---	---	---	8.2	7.8	8.0	8.2	8.0	8.1
20	7.7	7.6	7.7	---	---	---	8.0	7.8	8.0	8.3	8.2	8.2
21	7.7	7.6	7.7	8.2	8.0	8.1	8.0	7.9	8.0	8.2	8.1	8.2
22	7.7	7.6	7.7	8.1	7.9	8.1	8.0	7.9	8.0	8.3	8.0	8.2
23	7.8	7.6	7.8	8.1	8.0	8.0	8.0	7.9	8.0	8.3	8.2	8.2
24	7.7	7.6	7.7	8.0	7.7	7.9	8.1	8.0	8.0	8.3	8.2	8.2
25	7.6	7.4	7.5	7.7	7.4	7.5	8.3	7.8	8.1	8.3	8.2	8.3
26	---	---	---	7.9	7.3	7.6	8.2	8.2	8.2	8.4	8.0	8.3
27	---	---	---	8.0	7.8	7.9	8.2	8.1	8.2	8.4	8.0	8.3
28	---	---	---	8.1	7.8	8.0	8.2	8.0	8.2	8.3	8.2	8.2
29	---	---	---	8.0	8.0	8.0	8.2	8.1	8.2	8.3	8.2	8.3
30	---	---	---	8.0	7.8	7.9	8.3	8.0	8.1	8.2	8.2	8.2
31	---	---	---	7.9	7.8	7.9	---	---	---	8.2	8.1	8.2
MONTH	8.3	7.4	7.9	8.2	7.1	7.8	8.4	7.8	8.1	8.4	7.6	8.1

GUADALUPE RIVER BASIN

307

08181800 SAN ANTONIO RIVER NEAR ELMENDORF, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	8.1	8.0	8.0	7.8	7.7	7.8	8.0	7.7	7.9	7.9	7.8	7.9
2	8.0	8.0	8.0	7.8	7.7	7.8	8.0	7.8	7.9	8.0	7.8	7.9
3	8.0	7.9	7.9	7.9	7.8	7.9	8.0	7.9	8.0	7.9	7.8	7.9
4	8.1	8.0	8.0	7.9	7.7	7.8	8.0	7.8	7.9	7.9	7.8	7.9
5	8.1	8.0	8.0	7.9	7.7	7.8	8.1	7.8	8.0	7.8	7.7	7.8
6	8.0	8.0	8.0	8.0	7.8	7.9	8.1	7.7	7.9	7.8	7.5	7.7
7	8.0	8.0	8.0	8.0	7.9	8.0	8.0	7.9	8.0	7.6	7.1	7.4
8	8.1	8.0	8.0	8.0	7.9	8.0	8.2	7.9	8.1	7.8	7.6	7.7
9	8.2	8.0	8.1	8.0	7.9	8.0	8.2	8.0	8.1	7.9	7.8	7.9
10	8.1	8.0	8.0	8.0	7.9	8.0	8.2	8.1	8.2	8.0	7.9	7.9
11	8.0	7.5	7.8	8.0	7.9	7.9	8.1	8.0	8.1	8.0	7.9	7.9
12	7.6	7.5	7.6	8.0	7.9	8.0	8.3	8.1	8.2	8.0	7.8	7.9
13	7.8	7.6	7.7	8.0	7.9	7.9	8.3	8.1	8.2	7.9	7.8	7.8
14	7.8	7.5	7.7	8.0	7.9	8.0	8.2	8.0	8.1	7.8	7.6	7.7
15	7.6	7.5	7.6	8.0	8.0	8.0	8.0	8.0	8.0	7.8	7.7	7.8
16	7.8	7.6	7.7	8.0	7.9	8.0	8.0	7.9	8.0	7.8	7.6	7.7
17	7.9	7.8	7.9	8.0	7.9	8.0	8.0	7.8	7.9	7.7	7.6	7.7
18	8.0	7.9	7.9	8.0	7.9	8.0	7.8	7.7	7.8	8.2	7.6	7.9
19	8.0	7.7	7.9	8.0	7.9	8.0	8.2	7.6	7.9	8.1	8.0	8.0
20	7.8	7.7	7.7	8.1	7.9	8.0	8.2	7.8	8.1	8.1	7.8	7.9
21	7.8	7.7	7.8	8.1	8.0	8.0	8.2	8.0	8.1	8.2	7.7	7.9
22	7.9	7.8	7.9	8.1	8.0	8.0	8.2	8.0	8.1	8.1	8.0	8.1
23	7.9	7.8	7.9	8.0	7.9	8.0	8.2	8.1	8.1	8.1	7.9	8.0
24	7.9	7.8	7.9	8.0	7.9	7.9	8.1	8.0	8.1	8.0	7.7	7.8
25	7.9	7.8	7.9	8.1	7.9	7.9	8.1	8.0	8.0	7.7	7.5	7.6
26	7.9	7.8	7.8	8.1	7.8	8.0	8.1	8.0	8.1	8.1	7.5	7.7
27	7.9	7.8	7.8	7.9	7.8	7.8	8.1	7.7	8.1	8.1	7.7	8.0
28	7.9	7.8	7.9	7.9	7.8	7.8	8.0	7.8	7.9	7.9	7.7	7.8
29	7.9	7.8	7.9	7.9	7.8	7.9	7.9	7.8	7.9	7.9	7.8	7.8
30	7.9	7.8	7.8	7.9	7.6	7.8	8.0	7.8	7.9	7.9	7.8	7.9
31	---	---	---	7.8	7.6	7.7	7.9	7.8	7.9	---	---	---
MONTH	8.2	7.5	7.9	8.1	7.6	7.9	8.3	7.6	8.0	8.2	7.1	7.8

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	27.5	25.5	26.5	24.5	23.0	24.0	20.0	18.5	19.0	19.5	17.5	18.5
2	27.0	25.5	26.5	24.0	22.5	23.5	20.0	18.0	19.0	20.0	18.5	19.0
3	26.5	24.5	25.5	25.0	23.0	23.5	20.5	18.0	19.0	21.5	20.0	20.5
4	26.5	25.0	25.5	25.0	23.0	24.0	21.0	18.5	19.5	21.0	19.5	20.0
5	26.0	24.5	25.5	24.0	23.0	23.5	21.0	19.0	20.0	21.5	20.0	20.5
6	26.0	24.5	25.5	23.5	21.5	22.5	21.0	19.0	20.0	22.0	20.0	21.0
7	26.5	24.5	25.5	24.5	22.5	23.0	22.0	20.5	21.0	22.0	21.5	22.0
8	26.0	24.5	25.5	25.0	23.5	24.0	22.0	19.0	20.5	22.0	19.0	20.0
9	26.5	25.0	25.5	25.5	24.5	25.0	19.5	17.5	18.5	19.0	17.0	18.0
10	26.5	24.5	25.5	25.5	25.0	25.5	19.0	17.0	18.0	19.0	17.0	17.5
11	25.5	23.5	24.5	25.5	24.5	25.0	19.0	17.5	18.0	20.0	18.0	19.0
12	24.5	23.0	24.0	26.0	24.5	25.0	19.0	17.0	17.5	19.5	18.5	19.0
13	25.0	23.0	23.5	25.0	23.5	24.5	19.0	16.5	17.5	18.0	16.0	17.0
14	25.0	23.5	24.0	25.5	24.5	25.0	19.5	17.0	18.0	17.5	15.5	16.5
15	25.5	24.0	24.5	26.0	25.0	25.5	19.0	17.5	18.5	17.5	15.5	16.5
16	26.0	24.0	25.0	25.5	23.0	24.0	18.0	17.0	17.5	18.0	15.5	16.5
17	26.0	24.5	25.5	23.0	21.5	22.0	18.5	16.5	17.0	18.5	16.5	17.5
18	26.5	25.0	25.5	24.0	22.5	23.0	18.5	16.0	17.0	19.5	17.5	18.0
19	26.0	25.5	25.5	23.5	23.0	23.5	19.5	16.0	17.5	19.5	18.0	19.0
20	26.5	25.0	26.0	22.5	20.5	21.0	21.0	19.0	19.5	19.5	18.0	18.5
21	26.5	25.5	26.0	21.0	19.0	20.0	21.5	19.5	20.5	18.0	16.5	17.0
22	26.0	25.5	26.0	20.5	18.5	19.5	22.5	21.0	21.5	18.0	15.5	16.5
23	26.5	25.0	25.5	21.0	18.5	19.5	22.0	19.5	21.0	19.0	16.0	17.0
24	26.0	24.5	25.0	21.5	19.0	20.0	21.0	20.5	21.0	20.0	18.0	19.0
25	26.0	24.5	25.0	23.0	20.5	21.5	21.0	19.0	20.0	20.5	19.5	20.0
26	27.0	25.5	26.0	23.0	22.0	22.5	21.5	20.5	21.0	20.5	19.5	20.0
27	26.5	25.5	26.0	23.0	20.5	21.5	21.5	21.0	21.0	19.5	16.0	17.5
28	27.0	26.0	26.0	21.0	19.0	19.5	21.0	18.5	19.0	18.5	17.5	18.0
29	26.0	25.0	25.5	21.0	19.0	19.5	19.0	17.0	18.0	18.0	14.5	16.5
30	25.5	25.0	25.5	20.5	18.5	19.5	19.0	17.5	18.0	16.0	14.5	15.5
31	25.5	24.5	25.0	---	---	---	20.0	18.0	19.0	18.5	16.0	17.0
MONTH	27.5	23.0	25.5	26.0	18.5	22.5	22.5	16.0	19.0	22.0	14.5	18.5

GUADALUPE RIVER BASIN

08181800 SAN ANTONIO RIVER NEAR ELMENDORF, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	20.0	18.0	18.5	18.5	18.0	18.5	24.0	21.5	22.5	27.5	24.5	25.5
2	21.0	19.5	20.0	19.5	18.5	19.0	24.5	22.5	23.5	27.5	25.0	26.0
3	21.0	17.5	18.5	21.0	19.0	20.0	26.0	23.0	24.5	27.0	25.5	26.0
4	17.0	14.5	15.5	20.5	18.0	19.5	26.0	24.5	25.0	29.0	26.0	27.0
5	15.0	13.0	14.0	18.0	15.5	16.5	24.5	22.5	23.5	27.5	26.0	27.0
6	14.0	11.5	13.0	17.5	15.0	16.0	24.5	22.0	23.5	29.0	26.0	27.0
7	14.5	12.0	13.0	17.5	15.5	16.5	25.5	23.0	24.0	29.0	26.5	27.5
8	15.5	13.0	14.0	18.5	15.5	17.0	27.0	24.0	25.0	29.0	26.5	28.0
9	16.0	13.5	14.5	19.0	16.5	17.5	25.0	22.0	23.0	29.5	27.0	28.0
10	16.5	14.5	15.0	20.0	17.0	18.5	22.0	19.5	20.5	28.0	26.5	27.5
11	17.5	15.5	16.0	21.0	18.0	19.5	21.5	19.5	20.0	27.5	26.0	26.5
12	19.5	16.5	17.5	22.0	19.0	20.5	21.0	19.5	20.0	27.0	26.5	26.5
13	20.5	18.5	19.5	23.0	20.0	21.5	20.0	18.5	19.5	27.0	25.5	26.0
14	21.5	20.0	20.5	24.0	21.5	22.5	19.0	17.0	18.0	28.0	26.0	27.0
15	22.0	21.0	21.5	23.0	22.5	23.0	22.0	19.0	20.0	28.0	26.5	27.5
16	21.0	18.5	19.5	22.5	21.0	22.0	24.0	20.5	22.0	28.0	27.0	27.5
17	18.5	17.5	18.0	24.0	22.0	23.0	24.5	22.0	23.0	29.5	27.0	28.0
18	18.0	17.0	17.5	24.5	23.0	23.5	26.0	23.5	24.5	30.5	27.5	29.0
19	18.0	17.0	17.0	23.5	22.5	23.0	25.5	21.0	23.5	30.5	28.0	29.0
20	19.5	17.5	18.5	24.0	22.0	22.5	24.0	21.5	22.5	31.0	28.5	29.5
21	19.5	18.0	18.5	22.5	19.0	20.5	26.0	23.0	24.0	31.0	28.0	29.5
22	19.5	17.5	18.5	20.5	18.5	19.5	26.5	24.0	25.0	31.0	28.5	29.5
23	18.5	16.5	18.0	21.5	19.0	20.0	26.5	24.0	25.5	31.0	28.5	29.5
24	18.5	16.5	17.5	22.0	20.5	21.0	26.0	24.5	25.5	31.0	28.5	29.5
25	20.0	18.0	19.0	22.0	21.0	21.5	26.5	25.0	25.5	31.0	28.5	29.5
26	---	---	---	23.0	21.5	22.0	27.0	25.5	26.0	31.5	28.5	29.5
27	---	---	---	24.0	22.5	23.0	27.0	25.5	26.0	31.0	29.0	29.5
28	---	---	---	24.5	23.0	23.5	28.0	26.0	26.5	31.0	28.5	29.5
29	---	---	---	24.5	22.0	23.5	27.5	24.5	26.0	30.5	28.0	29.0
30	---	---	---	25.0	22.5	23.5	25.5	23.5	24.5	31.0	27.5	28.5
31	---	---	---	24.0	22.0	23.0	---	---	---	30.0	27.5	28.5
MONTH	22.0	11.5	17.5	25.0	15.0	20.5	28.0	17.0	23.5	31.5	24.5	28.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	30.0	28.0	28.5	31.5	28.5	29.5	30.5	29.5	30.0	32.0	30.0	30.5
2	30.5	28.0	29.0	32.0	29.0	30.5	31.5	29.0	30.0	32.0	30.0	31.0
3	30.5	28.5	29.5	31.0	29.5	30.0	31.5	29.0	30.0	32.5	30.0	31.0
4	29.5	28.0	28.5	32.0	29.0	30.5	31.5	29.5	30.5	32.0	29.5	30.5
5	30.5	28.0	29.0	31.5	29.5	30.0	32.0	29.5	30.5	31.5	29.5	30.5
6	31.0	28.5	29.5	31.5	29.0	30.0	32.0	29.5	30.5	30.5	29.5	30.0
7	31.0	28.5	29.5	31.5	29.0	30.0	31.0	29.5	30.0	30.5	29.0	29.5
8	31.0	28.0	29.5	31.5	29.0	30.0	29.5	28.0	29.0	31.0	29.0	30.0
9	29.0	28.0	28.5	31.0	29.0	30.0	29.5	27.0	28.0	31.5	29.0	30.0
10	30.0	28.0	29.0	31.0	29.0	30.0	29.0	27.5	28.5	31.0	29.5	30.0
11	29.0	22.5	25.5	31.0	29.0	30.0	29.5	27.5	28.5	31.0	29.5	30.0
12	27.5	25.5	26.0	31.5	29.0	30.0	30.0	28.0	29.0	31.0	29.5	30.0
13	29.0	27.0	28.0	31.0	29.0	30.0	30.0	28.0	29.0	30.0	29.0	29.5
14	28.5	24.0	25.5	31.5	29.0	30.0	29.5	28.0	29.0	28.5	26.5	27.5
15	27.0	24.0	25.5	31.5	29.0	30.0	30.5	28.0	29.0	28.5	26.5	27.5
16	28.5	25.5	26.5	32.0	29.0	30.5	31.0	28.5	29.5	28.0	26.0	27.0
17	29.0	26.0	27.5	32.0	29.5	30.5	30.5	29.0	29.5	28.0	26.0	27.0
18	30.0	27.0	28.5	32.0	29.5	30.5	31.0	29.0	29.5	28.5	26.5	27.5
19	31.0	28.0	29.5	32.0	29.5	30.5	31.0	29.0	30.0	28.5	27.0	27.5
20	31.0	28.5	29.5	31.5	29.5	30.5	31.0	29.0	30.0	29.0	27.0	28.0
21	31.0	29.0	30.0	30.5	28.5	29.5	31.0	29.0	30.0	28.5	27.5	28.0
22	30.5	28.5	29.0	30.0	28.5	29.0	31.5	29.0	30.0	28.5	27.5	28.0
23	29.5	28.5	29.0	30.5	28.0	29.0	31.5	29.5	30.5	27.5	26.0	26.5
24	28.5	27.5	28.0	29.5	28.5	29.0	31.0	29.5	30.0	26.0	24.5	25.5
25	28.0	27.0	27.5	30.0	27.5	28.5	31.5	29.5	30.0	26.0	24.5	25.0
26	28.5	27.0	27.5	30.5	27.5	29.0	31.0	29.5	30.0	26.0	24.0	25.0
27	29.0	27.0	28.0	30.0	28.5	29.0	31.5	29.5	30.5	26.0	24.5	25.0
28	30.5	27.5	29.0	30.5	28.5	29.5	31.0	29.5	30.0	26.5	24.5	25.5
29	30.0	28.5	29.0	31.5	29.0	30.0	31.0	29.5	30.5	26.5	24.5	25.5
30	30.5	28.5	29.5	31.5	29.0	30.0	31.5	29.5	30.5	27.0	25.0	26.0
31	---	---	---	31.5	29.5	30.5	31.5	29.5	30.5	---	---	---
MONTH	31.0	22.5	28.5	32.0	27.5	30.0	32.0	27.0	30.0	32.5	24.0	28.0

GUADALUPE RIVER BASIN

309

08181800 SAN ANTONIO RIVER NEAR ELMENDORF, TX--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	7.4	6.9	7.1	7.4	6.9	7.1	8.9	8.1	8.4	7.8	7.3	7.5
2	7.6	6.9	7.2	7.4	6.9	7.1	8.9	8.1	8.4	8.0	7.3	7.5
3	7.7	7.1	7.3	7.5	6.2	7.0	8.9	8.0	8.4	7.7	7.0	7.4
4	7.9	7.2	7.5	7.3	6.9	7.0	8.9	8.0	8.4	7.6	7.1	7.3
5	7.9	7.3	7.5	7.6	7.0	7.3	8.8	8.0	8.3	8.4	7.0	7.5
6	8.1	7.4	7.7	7.9	7.3	7.5	8.6	8.0	8.2	8.6	7.8	8.1
7	8.1	7.3	7.7	7.9	7.3	7.5	8.3	7.4	7.9	8.2	7.6	7.9
8	8.0	7.4	7.6	7.4	7.0	7.2	7.6	7.2	7.4	8.5	7.7	8.1
9	8.1	7.4	7.7	7.5	7.1	7.2	8.0	7.1	7.6	8.6	7.3	8.2
10	8.3	7.4	7.8	7.5	7.0	7.2	8.0	7.5	7.7	9.1	8.4	8.7
11	---	---	---	7.6	7.1	7.3	8.3	7.6	7.9	9.0	8.3	8.6
12	---	---	---	7.5	7.0	7.2	8.2	7.7	7.9	8.5	8.1	8.3
13	---	---	---	7.7	7.1	7.4	8.3	7.7	7.9	8.9	8.4	8.6
14	---	---	---	7.6	7.1	7.3	8.2	7.5	7.8	9.5	8.8	9.0
15	---	---	---	8.1	6.5	7.4	8.3	7.5	7.7	9.5	8.7	9.1
16	---	---	---	8.0	7.5	7.7	8.3	7.5	7.8	9.6	8.7	9.1
17	---	---	---	8.2	7.5	7.8	8.4	7.7	7.9	9.1	8.5	8.8
18	---	---	---	7.9	7.5	7.6	8.5	7.7	8.0	9.0	8.3	8.6
19	---	---	---	7.7	7.3	7.5	8.3	7.5	7.9	8.5	8.3	8.4
20	---	---	---	8.3	7.5	7.9	7.8	7.2	7.5	9.0	8.3	8.6
21	7.3	6.8	7.0	8.6	7.9	8.2	7.7	7.1	7.3	9.4	8.7	9.0
22	7.3	6.7	6.9	8.7	8.0	8.3	7.4	6.8	7.0	9.4	8.8	9.1
23	7.3	6.7	6.9	8.8	7.9	8.3	7.3	6.6	6.9	9.3	8.6	8.9
24	7.4	6.7	7.0	8.5	7.8	8.1	7.3	6.4	6.8	8.9	8.3	8.6
25	7.2	6.7	6.9	8.1	7.6	7.9	7.5	6.8	7.1	8.6	8.1	8.4
26	6.9	6.6	6.8	8.0	7.3	7.6	7.4	6.9	7.1	8.4	8.2	8.3
27	7.2	6.6	6.8	8.2	7.4	7.7	7.0	6.7	6.8	8.9	8.2	8.7
28	7.1	6.6	6.8	8.6	7.8	8.1	7.8	6.8	7.3	8.8	8.7	8.8
29	7.2	6.7	6.9	8.7	8.0	8.2	8.2	7.3	7.7	9.3	8.4	8.8
30	7.2	6.7	6.9	8.8	8.0	8.3	7.8	7.4	7.6	9.3	9.1	9.2
31	7.2	6.8	7.0	---	---	---	8.0	7.3	7.6	9.1	8.6	8.9
MONTH	8.3	6.6	7.2	8.8	6.2	7.6	8.9	6.4	7.7	9.6	7.0	8.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	8.7	8.4	8.6	8.3	7.8	8.0	7.8	6.6	7.2	---	---	---
2	8.5	8.2	8.4	8.6	7.5	8.1	7.4	6.7	7.0	---	---	---
3	8.8	8.2	8.6	8.2	7.7	7.9	7.7	6.6	7.0	---	---	---
4	9.4	8.3	8.9	8.2	7.4	7.8	7.4	6.2	6.7	---	---	---
5	9.6	8.7	9.4	9.1	7.9	8.5	7.5	6.5	6.9	---	---	---
6	10.0	8.1	9.5	9.2	8.4	8.7	7.7	6.6	7.0	---	---	---
7	10.0	9.5	9.8	9.4	8.4	8.7	8.0	6.1	7.0	---	---	---
8	10.0	9.5	9.7	9.4	8.4	8.8	7.4	6.3	6.9	---	---	---
9	9.9	9.4	9.7	9.5	8.3	8.7	7.6	6.4	6.8	---	---	---
10	9.7	9.3	9.5	9.4	8.2	8.6	7.9	6.9	7.2	---	---	---
11	9.3	8.9	9.2	9.4	8.0	8.5	8.2	7.0	7.5	---	---	---
12	9.1	7.9	8.7	9.2	7.8	8.3	7.6	6.7	7.1	---	---	---
13	8.6	8.3	8.5	9.0	7.4	8.0	8.0	6.8	7.2	---	---	---
14	8.4	7.9	8.2	8.7	7.1	7.7	7.7	7.1	7.4	---	---	---
15	8.4	8.1	8.2	8.2	7.0	7.4	7.7	6.2	7.0	---	---	---
16	8.8	8.2	8.5	8.2	7.2	7.6	---	---	---	---	---	---
17	8.8	8.6	8.7	8.3	7.3	7.6	---	---	---	---	---	---
18	9.1	8.8	8.9	8.1	6.9	7.4	---	---	---	---	---	---
19	9.2	8.6	8.9	7.8	6.5	7.1	---	---	---	---	---	---
20	9.0	8.5	8.8	7.8	6.8	7.3	---	---	---	---	---	---
21	9.0	8.4	8.6	7.8	6.9	7.3	---	---	---	---	---	---
22	9.3	8.5	8.8	8.2	7.4	7.7	---	---	---	---	---	---
23	9.6	8.8	9.1	8.2	7.5	7.8	---	---	---	---	---	---
24	9.4	8.8	9.0	8.0	7.4	7.6	---	---	---	---	---	---
25	9.4	8.6	8.9	7.5	7.2	7.4	---	---	---	---	---	---
26	---	---	---	7.5	7.1	7.3	---	---	---	---	---	---
27	---	---	---	7.4	6.8	7.1	---	---	---	---	---	---
28	---	---	---	7.3	6.8	7.0	---	---	---	---	---	---
29	---	---	---	7.3	6.8	7.0	---	---	---	---	---	---
30	---	---	---	7.4	6.8	7.0	---	---	---	---	---	---
31	---	---	---	7.5	6.7	7.1	---	---	---	---	---	---
MONTH	10.0	7.9	8.9	9.5	6.5	7.8	8.2	6.1	7.1	---	---	---

GUADALUPE RIVER BASIN

08181800 SAN ANTONIO RIVER NEAR ELMENDORF, TX--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	7.5	6.4	6.9	7.2	6.3	6.7	7.1	6.3	6.6	---	---	---
2	7.5	6.3	6.7	7.5	6.0	6.6	7.1	6.2	6.5	---	---	---
3	7.6	6.1	6.6	8.4	6.4	7.2	7.3	6.1	6.6	---	---	---
4	7.7	6.2	6.8	8.6	6.5	7.4	7.5	6.1	6.7	---	---	---
5	7.9	6.3	7.0	8.4	6.6	7.3	7.7	6.1	6.8	---	---	---
6	7.8	6.3	6.9	8.5	6.7	7.4	7.6	6.1	6.7	---	---	---
7	7.7	6.2	6.8	8.5	6.7	7.4	7.3	6.1	6.6	---	---	---
8	8.1	6.2	7.0	8.7	6.7	7.5	7.0	6.2	6.4	---	---	---
9	7.9	6.3	7.0	8.6	6.8	7.5	7.2	6.2	6.6	---	---	---
10	8.1	6.4	7.1	8.3	6.8	7.5	7.3	6.3	6.7	---	---	---
11	6.7	2.1	5.5	7.7	6.8	7.2	7.3	6.4	6.7	---	---	---
12	6.4	5.6	6.1	8.1	6.9	7.4	7.4	6.3	6.8	---	---	---
13	6.5	6.4	6.4	8.3	6.9	7.5	7.4	6.3	6.8	---	---	---
14	6.7	4.7	6.2	8.6	6.9	7.6	7.6	6.3	6.9	6.9	5.9	6.3
15	6.8	6.7	6.7	8.7	6.9	7.6	7.7	6.6	7.0	7.1	6.3	6.6
16	6.8	6.7	6.8	8.9	6.9	7.7	7.6	6.5	7.0	7.2	6.3	6.6
17	6.8	6.7	6.8	8.8	6.9	7.6	7.7	6.4	6.9	7.4	6.4	6.8
18	6.8	6.7	6.7	8.7	6.9	7.6	7.6	6.4	6.9	7.3	6.4	6.7
19	6.9	6.6	6.7	8.5	6.9	7.5	7.7	6.4	6.9	7.3	6.3	6.7
20	7.3	6.6	6.8	8.5	6.8	7.5	7.7	6.3	6.9	7.2	6.3	6.7
21	7.5	6.5	6.9	8.6	6.9	7.6	7.6	6.3	6.8	7.3	6.3	6.7
22	7.5	6.6	7.0	8.9	7.0	7.8	7.5	6.3	6.8	7.4	6.2	6.7
23	7.4	6.7	7.0	8.8	7.1	7.8	7.3	6.3	6.7	7.6	6.4	6.9
24	7.3	6.7	7.0	8.3	7.1	7.5	7.2	6.3	6.7	8.0	6.7	7.2
25	7.3	6.7	7.0	7.9	6.9	7.4	7.4	6.3	6.7	8.0	6.8	7.2
26	7.6	6.8	7.1	7.9	6.9	7.3	7.3	6.2	6.6	8.1	6.8	7.3
27	7.4	6.7	7.0	7.0	6.5	6.7	7.3	6.3	6.7	8.5	6.9	7.5
28	7.5	6.6	6.9	7.1	6.5	6.8	7.2	6.3	6.7	8.4	7.3	7.7
29	7.4	6.5	6.9	7.4	6.4	6.8	7.1	6.3	6.6	8.4	7.2	7.7
30	7.5	6.4	6.9	7.4	6.4	6.8	---	---	---	8.5	7.3	7.7
31	---	---	---	7.4	6.3	6.8	---	---	---	---	---	---
MONTH	8.1	2.1	6.8	8.9	6.0	7.3	7.7	6.1	6.7	8.5	5.9	7.0

08183500 SAN ANTONIO RIVER NEAR FALLS CITY, TX

LOCATION.--Lat 28°57'05", long 98°03'50", Karnes County, Hydrologic Unit 12100303, on left bank 23 ft downstream from bridge on Farm Road 791, 0.9 mi upstream from Scared Dog Creek, 3.6 mi southwest of Falls City, and 150.5 mi upstream from mouth.

DRAINAGE AREA.--2,113 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1925 to current year.

REVISED RECORDS.--WSP 1732: 1947(M). WSP 1923: Drainage area. WDR TX-87-3: 1983-84.

GAGE.--Water-stage recorder. Datum of gage is 285.49 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. For diversions and regulation above station, see REMARKS for Salado Creek (upper station) at San Antonio (station 08178700), Medina River at San Antonio (station 08181500), and San Antonio River near Elmendorf (station 08181800). Flow slightly regulated by Calaveras Lake on Calaveras Creek and by Braunig Lake. Both enter the San Antonio River downstream from the station near Elmendorf. Flow is affected at times by discharge from the flood-detention pools of ten floodwater-retarding structures with a combined detention capacity of 26,130 acre-ft. These structures control runoff from 73.8 mi². Records provided by the San Antonio City Public Service Board show that during the current year, 11.6 acre-ft of water was released into Calaveras Creek from Calaveras Lake and 120 acre-ft was released from Braunig Lake. Satellite telemeter at station.

AVERAGE DISCHARGE.--64 years (water years 1926-89), 426 ft³/s (308,600 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 47,400 ft³/s Sept. 29, 1946 (gage height, 33.80 ft, from floodmark); minimum daily, 19 ft³/s June 27, 1956.
Maximum stage since at least 1875, that of Sept. 29, 1946.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in October 1913 reached a stage of 28.4 ft, from floodmark, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 15	1800	*2,400	*4.38				

Minimum daily discharge, 69 ft³/s June 6.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	211	237	230	325	664	286	295	620	122	144	168	149
2	245	350	235	333	453	280	272	500	94	132	175	148
3	267	343	228	333	400	283	271	362	88	113	178	146
4	280	272	226	364	368	280	265	313	87	103	167	139
5	270	250	224	338	330	296	269	300	77	105	167	124
6	262	244	217	337	317	275	210	309	69	133	165	118
7	204	230	229	333	316	268	187	297	79	146	159	104
8	201	226	237	324	319	288	187	294	83	118	185	200
9	201	241	241	323	319	281	187	287	71	115	229	192
10	191	240	248	320	266	289	184	289	74	100	296	114
11	198	245	246	329	201	287	170	282	e155	94	221	91
12	237	246	253	339	190	290	174	281	e1950	101	181	88
13	216	242	268	335	183	289	179	284	1110	126	167	101
14	215	231	263	340	178	283	188	274	489	105	154	132
15	204	221	256	342	179	280	477	268	1680	e105	143	314
16	207	229	253	340	175	272	477	261	1370	e104	155	208
17	209	229	235	e340	174	266	340	275	644	106	157	125
18	205	226	245	339	224	256	307	269	358	102	149	94
19	217	228	252	354	232	266	306	320	314	102	147	92
20	232	260	252	357	227	270	775	298	283	105	155	96
21	220	290	270	392	220	325	1440	260	238	94	144	105
22	220	275	276	403	227	378	611	249	269	92	130	98
23	220	292	330	357	222	298	427	239	257	132	139	96
24	209	299	337	358	265	285	375	251	213	151	141	98
25	228	308	320	361	282	269	347	192	223	153	144	89
26	300	303	327	372	283	298	339	171	167	187	148	74
27	243	299	312	520	284	297	326	174	139	253	190	77
28	236	295	317	623	272	273	316	161	183	197	157	82
29	225	290	324	575	---	306	312	151	166	180	141	87
30	233	260	326	833	---	472	346	142	153	189	147	85
31	230	---	330	1240	---	351	---	144	---	178	149	---
TOTAL	7036	7901	8307	12779	7770	9137	10559	8517	11205	4065	5148	3666
MEAN	227	263	268	412	277	295	352	275	373	131	166	122
MAX	300	350	337	1240	664	472	1440	620	1950	253	296	314
MIN	191	221	217	320	174	256	170	142	69	92	130	74
AC-FT	13960	15670	16480	25350	15410	18120	20940	16890	22230	8060	10210	7270
CAL YR 1988	TOTAL	123277	MEAN	337	MAX	1830	MIN	94	AC-FT	244500		
WTR YR 1989	TOTAL	96090	MEAN	263	MAX	1950	MIN	69	AC-FT	190600		

e Estimated.

08183500 SAN ANTONIO RIVER NEAR FALLS CITY, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: April 1959. Chemical and biochemical analyses: May 1965 to September 1981, October 1986 to current year. Sediment analyses: November 1958 to February 1975.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: January 1987 to current year.

pH: January 1987 to current year.

WATER TEMPERATURE: January 1987 to current year.

DISSOLVED OXYGEN: January 1987 to current year.

INSTRUMENTATION.--Beginning January 1987, a four-parameter water-quality monitor continuously records specific conductance, pH, water temperature, and dissolved oxygen at this station.

REMARKS.--Interruptions in the record were due to malfunction of the instrument or probe fouling, and these days were deleted from the record. Where maximum or minimum specific conductance values are not shown, mean value is estimated. Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request. Any pH data below 7.0 units were deleted. There are no present or historical field measurements to support pH values less than 7.0 units. Due to probe fouling, the pH record is rated fair. Much of the specific conductance record for the year had to be estimated due to a malfunction of the minimonitor instrument. During periods of monitor malfunction, the daily mean conductances were estimated based on field readings and discharge. The 1989 specific conductance record is rated fair.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 1,180 microsiemens Jan. 27, 1989; minimum, 100 microsiemens June 15, 1989.

WATER TEMPERATURE: Maximum, 32.5°C June 7, July 5, 16, Sept. 3, 1989; minimum, 8.5°C Feb. 8, 1989.

pH: Maximum, 8.9 units Jan. 19, 20, 1989; minimum, 7.0 units on many days during period of record.

DISSOLVED OXYGEN: Maximum, 15.6 mg/L July 12, 1988; minimum, 0.0 mg/L May 16, 1987.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 1,180 microsiemens Jan. 27; minimum, 100 microsiemens June 15.

WATER TEMPERATURE: Maximum, 32.5°C June 7, July 5, 16, Sept. 3; minimum, 8.5°C Feb. 8.

pH: Maximum, 8.9 units Jan. 19, 20; minimum, 7.0 units on many days throughout the year.

DISSOLVED OXYGEN: Maximum, 11.3 mg/L June 1; minimum, 0.1 mg/L June 12.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3
NOV 02...	1325	382	971	8.10	21.5	7.2	82	2.8	280	62
DEC 15...	1300	256	976	8.10	14.0	9.1	89	2.2	320	100
MAR 01...	1605	292	936	8.20	17.0	7.9	83	3.3	300	89
JUN 12...	1600	2210	640	8.20	27.0	1.2	15	--	190	57
JUL 25...	1050	149	1090	8.00	28.0	5.0	65	1.4	290	72
SEP 07...	0830	116	1060	7.10	29.0	4.4	58	1.2	300	77

DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
NOV 02...	81	19	79	2	7.6	219	87	100	0.50
DEC 15...	92	21	84	2	7.6	214	87	110	0.50
MAR 01...	88	20	84	2	7.6	214	91	97	0.50
JUN 12...	56	12	53	2	7.3	133	57	66	0.40
JUL 25...	83	20	96	3	9.1	218	89	120	0.50
SEP 07...	86	20	99	3	9.8	221	88	120	0.60

DATE	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (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- PHOROUS TOTAL (MG/L AS P)
NOV 02...	14	519	9.28	0.020	9.30	0.040	0.76	0.80	3.50
DEC 15...	13	543	12.0	0.020	12.0	0.090	1.4	1.5	3.80
MAR 01...	12	528	9.86	0.040	9.90	0.110	1.8	1.9	3.70
JUN 12...	12	343	4.36	0.340	4.70	0.610	1.2	1.8	2.80
JUL 25...	14	562	8.46	0.040	8.50	0.090	0.81	0.90	3.40
SEP 07...	16	572	8.66	0.040	8.70	0.090	0.71	0.80	4.30

GUADALUPE RIVER BASIN

313

08183500 SAN ANTONIO RIVER NEAR FALLS CITY, TX--Continued

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1988 TO SEPTEMBER 1989

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	DIS- SOLVED SOLIDS (MG/L)	DIS- SOLVED SOLIDS (TONS)	DIS- SOLVED CHLORIDE (MG/L)	DIS- SOLVED CHLORIDE (TONS)	DIS- SOLVED SULFATE (MG/L)	DIS- SOLVED SULFATE (TONS)	HARDNESS (CA, MG) (MG/L)
OCT. 1988	7036	954	536	10200	94	1790	96	1820	300
NOV. 1988	7901	961	539	11500	95	2040	97	2060	310
DEC. 1988	8307	978	548	12300	98	2200	98	2200	310
JAN. 1989	12779	994	556	19200	100	3490	100	3440	310
FEB. 1989	7770	888	501	10500	84	1770	89	1880	290
MAR. 1989	9137	958	538	13300	95	2340	96	2380	300
APR. 1989	10559	826	467	13300	77	2190	83	2370	280
MAY 1989	8517	972	544	12500	98	2250	98	2240	310
JUNE 1989	11205	682	388	11700	60	1830	69	2090	240
JULY 1989	4065	1070	596	6540	110	1260	110	1180	320
AUG. 1989	5148	1060	587	8160	110	1550	110	1470	320
SEPT 1989	3666	1050	584	5780	110	1100	110	1040	320
TOTAL	96090	**	**	135000	**	23800	**	24200	**
WTD.AVG.	263	927	520	**	92	**	93	**	300

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	1000	890	945	930	900	912	---	---	975	960	940	949
2	1010	990	1000	980	900	921	1020	941	974	980	940	969
3	1010	980	992	930	900	915	1060	941	979	980	970	972
4	980	830	910	930	900	924	---	---	967	980	960	975
5	980	920	949	980	900	929	1060	980	1010	970	910	947
6	930	900	919	990	930	978	1060	980	1020	---	---	899
7	930	900	914	1030	990	1010	---	---	1010	---	---	929
8	1010	920	961	1030	1000	1010	1060	980	1000	---	---	971
9	1010	990	1000	1020	1000	1010	990	970	977	1000	970	986
10	1030	1000	1020	1000	930	985	1000	960	985	1010	980	986
11	1030	1000	1010	930	900	924	1000	980	991	---	---	987
12	1030	990	1010	1020	920	984	1010	970	992	---	---	956
13	1000	980	993	1000	990	997	1000	980	991	950	930	940
14	990	900	942	1020	990	1010	1000	980	989	960	890	943
15	930	900	921	1030	990	1010	1000	950	981	---	---	950
16	1010	930	993	1030	1000	1020	970	950	957	---	---	950
17	1030	990	1010	1010	980	992	1010	960	990	---	---	950
18	1030	1010	1020	1000	980	984	1030	1000	1020	---	---	962
19	1030	1000	1010	1010	930	973	1010	990	1000	979	907	964
20	---	---	1020	1010	980	999	1010	990	1000	---	---	958
21	930	---	903	990	930	967	1020	950	1010	---	---	1030
22	930	900	912	1010	980	984	990	950	981	1060	1000	1030
23	930	---	913	1010	980	1000	970	920	951	---	---	1050
24	---	---	924	990	900	936	970	910	954	1120	1020	1070
25	---	---	966	930	900	908	970	910	955	---	---	1100
26	980	---	916	930	900	921	1000	900	961	---	---	1130
27	930	900	923	980	910	940	1000	940	981	1180	1060	1150
28	---	---	907	980	910	955	990	970	981	---	---	1100
29	---	---	890	930	900	914	970	930	951	---	---	1020
30	930	910	923	980	910	928	950	900	922	---	---	1020
31	930	---	913	---	---	---	950	900	928	---	---	919
MONTH	1030	830	956	1030	900	965	1060	900	980	1180	890	992

GUADALUPE RIVER BASIN

08183500 SAN ANTONIO RIVER NEAR FALLS CITY, TX--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	---	---	872	970	950	963	900	820	850	---	---	916
2	---	---	637	970	950	956	960	900	931	870	720	782
3	760	640	682	980	940	957	980	950	972	---	---	665
4	770	720	734	990	940	974	1000	960	987	840	750	807
5	850	760	782	990	970	976	990	960	975	920	680	867
6	870	810	833	990	970	976	990	960	972	---	---	954
7	890	830	873	980	960	972	1030	990	1010	---	---	973
8	900	870	888	990	960	974	1070	1020	1050	---	---	991
9	900	870	882	990	960	974	1060	1040	1050	---	---	999
10	920	880	893	970	950	957	1070	1040	1050	---	---	975
11	940	910	921	980	960	964	1070	1050	1060	---	---	984
12	980	940	959	990	970	978	1070	1050	1060	1000	890	1030
13	1000	960	974	1010	980	997	1070	1030	1040	---	---	1020
14	1010	960	992	1000	970	990	1020	990	1000	1080	1030	1040
15	1020	950	990	1000	990	993	1030	950	994	1090	950	1030
16	1020	990	1010	990	940	973	970	670	839	1090	1010	1040
17	1030	960	999	1000	950	965	780	660	700	1070	1010	1040
18	1000	970	988	1020	960	984	880	770	830	---	---	1030
19	990	940	975	1020	990	1000	890	850	874	---	---	1010
20	990	920	958	1010	990	1000	920	890	904	1050	990	1030
21	970	920	957	1020	990	1010	840	290	500	---	---	1020
22	980	950	964	990	920	951	590	480	529	1080	1000	1020
23	1000	930	953	920	830	878	650	590	612	1040	1010	1030
24	950	940	947	930	840	889	810	670	720	1080	960	1030
25	960	950	956	980	930	953	870	790	822	1080	990	1030
26	980	940	964	---	---	970	900	870	881	---	---	1050
27	990	970	978	---	---	783	910	890	897	---	---	1040
28	980	960	971	1020	990	1010	950	910	932	---	---	1060
29	---	---	---	1020	970	998	980	950	969	---	---	1100
30	---	---	---	970	900	927	970	930	952	---	---	1110
31	---	---	---	940	830	875	---	---	---	1130	---	1110
MONTH	1030	640	912	1020	830	960	1070	290	899	1130	680	993
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	---	---	1090	---	---	971	1120	840	1070	---	---	1100
2	---	---	1000	---	---	1050	1130	820	1010	---	---	1100
3	---	---	1130	---	---	1080	---	---	1040	---	---	1100
4	---	---	1150	---	---	1110	1120	970	1090	---	---	1130
5	---	---	1160	---	---	1150	1110	850	1070	---	---	1120
6	---	---	1070	---	---	1110	---	---	1050	---	---	1100
7	---	---	1130	---	---	1100	1130	950	1070	---	---	1070
8	---	---	1160	---	---	945	---	---	1080	1120	1020	1060
9	---	---	1120	---	---	996	---	---	1040	1020	956	993
10	---	---	1000	---	---	1090	---	---	999	1060	989	1020
11	---	---	1090	---	---	1090	---	---	1010	1060	882	977
12	---	---	892	---	---	1080	---	---	1040	920	862	889
13	---	---	350	---	---	1120	---	---	1000	1040	920	989
14	---	---	464	---	---	1100	---	---	1000	1130	1030	1100
15	700	100	411	---	---	1100	---	---	1000	1110	960	1050
16	---	---	390	---	---	1090	---	---	1100	1010	950	994
17	480	400	432	---	---	1090	---	---	1000	1050	990	1030
18	---	---	575	---	---	1080	---	---	1000	980	880	915
19	---	---	732	---	---	1110	---	---	1040	890	830	851
20	---	---	853	---	---	1110	---	---	1000	1040	840	955
21	---	---	925	---	---	1100	---	---	1100	1100	1000	1060
22	950	900	940	---	---	1100	---	---	1100	1120	1070	1090
23	960	920	940	---	---	1090	---	---	1120	1120	1050	1100
24	990	950	974	---	---	1050	---	---	1100	1080	1050	1060
25	1030	990	1000	---	---	1100	---	---	1100	1090	1050	1070
26	1020	930	986	1140	980	1100	---	---	1100	1120	1030	1080
27	---	---	1030	1130	960	1080	---	---	1100	1130	1100	1120
28	---	---	1070	1070	930	1040	---	---	1100	1140	1110	1130
29	---	---	948	---	---	1030	---	---	1100	1130	1100	1110
30	---	---	998	1070	930	1010	---	---	1100	1110	1090	1100
31	---	---	---	1120	1000	1090	---	---	1100	---	---	---
MONTH	1030	100	900	1140	930	1080	1130	820	1060	1140	830	1050

GUADALUPE RIVER BASIN

315

08183500 SAN ANTONIO RIVER NEAR FALLS CITY, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	8.0	7.6	7.8	7.8	7.6	7.7	---	---	---	7.9	7.8	7.8
2	8.1	7.7	7.9	8.1	7.3	7.7	7.5	7.1	7.3	7.9	7.7	7.8
3	---	---	---	7.4	7.0	7.2	7.6	7.4	7.5	7.8	7.7	7.7
4	---	---	---	---	---	---	7.5	7.3	7.3	7.8	7.5	7.7
5	---	---	---	---	---	---	7.4	7.3	7.3	7.9	7.4	7.6
6	---	---	---	7.3	7.0	7.2	7.4	7.2	7.3	7.8	7.4	7.6
7	7.6	7.2	7.4	---	---	---	7.5	7.1	7.3	7.9	7.5	7.7
8	7.9	7.1	7.4	7.2	7.0	7.1	7.9	7.3	7.5	7.9	7.7	7.8
9	7.6	7.1	7.3	7.7	7.0	7.3	7.8	7.4	7.6	7.9	7.8	7.8
10	7.8	7.4	7.5	7.4	7.0	7.2	7.6	7.2	7.4	7.8	7.7	7.8
11	7.8	7.6	7.6	7.3	7.0	7.1	7.4	7.0	7.2	---	---	---
12	7.8	7.6	7.7	7.6	7.0	7.3	7.1	7.0	7.0	---	---	---
13	7.7	7.3	7.5	7.8	7.3	7.6	---	---	---	---	---	---
14	7.7	7.1	7.4	7.8	7.3	7.5	---	---	---	---	---	---
15	7.7	7.2	7.5	7.8	7.2	7.5	7.2	7.0	7.2	---	---	---
16	7.9	7.2	7.5	8.0	7.3	7.7	7.0	7.0	7.0	---	---	---
17	7.9	7.0	7.5	7.8	7.4	7.7	---	---	---	---	---	---
18	7.8	7.0	7.5	7.5	7.2	7.4	---	---	---	---	---	---
19	---	---	---	7.6	7.0	7.3	7.1	7.0	7.0	8.9	8.2	8.5
20	---	---	---	7.8	7.3	7.5	---	---	---	8.9	8.4	8.7
21	---	---	---	7.8	7.5	7.7	---	---	---	8.8	8.5	8.6
22	7.7	7.0	7.2	7.9	7.5	7.7	7.1	7.0	7.0	8.7	8.3	8.5
23	7.6	7.1	7.3	7.9	7.6	7.8	7.0	7.0	7.0	8.4	8.2	8.3
24	7.5	7.1	7.3	7.8	7.6	7.7	7.2	7.0	7.1	8.3	8.1	8.3
25	7.3	7.0	7.2	7.6	7.2	7.4	7.3	7.0	7.2	8.8	8.1	8.4
26	7.3	7.0	7.1	7.2	7.0	7.0	7.6	7.2	7.4	---	---	---
27	7.4	7.0	7.2	7.2	7.0	7.1	7.5	7.4	7.5	---	---	---
28	7.2	7.0	7.0	7.2	7.1	7.2	7.6	7.4	7.5	---	---	---
29	7.6	7.0	7.3	7.2	7.0	7.1	7.7	7.5	7.6	---	---	---
30	7.4	7.1	7.3	7.3	7.1	7.2	7.7	7.6	7.6	---	---	---
31	7.6	7.0	7.3	---	---	---	7.9	7.6	7.8	---	---	---
MONTH	8.1	7.0	7.4	8.1	7.0	7.4	7.9	7.0	7.3	8.9	7.4	8.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	---	---	---	---	---	---	7.4	7.2	7.3	8.0	7.9	8.0
2	---	---	---	7.7	7.2	7.4	7.5	7.2	7.4	7.9	7.7	7.8
3	7.8	7.7	7.8	7.4	7.0	7.1	7.6	7.5	7.6	7.8	7.6	7.7
4	7.7	7.4	7.6	7.7	7.1	7.5	8.0	7.5	7.7	7.9	7.8	7.8
5	7.7	7.5	7.6	7.8	7.4	7.6	8.0	7.8	7.9	7.9	7.7	7.9
6	7.7	7.3	7.5	7.7	7.4	7.5	7.9	7.8	7.9	8.0	7.9	8.0
7	7.5	7.3	7.4	7.7	7.4	7.5	8.0	7.6	7.9	8.1	7.9	8.0
8	7.5	7.3	7.4	7.5	7.2	7.3	7.9	7.7	7.8	8.1	7.9	8.0
9	7.4	7.2	7.3	7.2	7.0	7.1	8.0	7.8	7.9	8.1	8.0	8.1
10	7.3	7.1	7.2	7.3	7.0	7.1	8.1	7.9	8.0	8.2	8.1	8.1
11	7.3	7.1	7.2	7.4	7.1	7.2	8.1	7.9	8.0	8.3	8.1	8.2
12	7.5	7.2	7.3	7.4	7.1	7.3	8.2	8.0	8.1	8.3	8.1	8.2
13	7.4	7.2	7.3	7.4	7.2	7.3	8.1	8.1	8.1	8.3	8.0	8.2
14	7.7	7.3	7.4	7.3	7.0	7.2	8.1	8.0	8.0	8.4	8.2	8.3
15	7.3	7.0	7.2	7.4	7.0	7.3	8.1	8.0	8.0	8.3	8.0	8.2
16	7.3	7.1	7.2	---	---	---	8.0	7.4	7.8	---	---	---
17	---	---	---	---	---	---	7.7	7.3	7.5	8.2	8.0	8.1
18	---	---	---	---	---	---	7.8	7.6	7.7	8.3	8.1	8.2
19	---	---	---	---	---	---	8.0	7.8	7.9	8.4	8.2	8.3
20	---	---	---	---	---	---	8.1	7.8	8.0	8.4	8.2	8.3
21	---	---	---	---	---	---	8.0	7.7	7.8	8.3	8.1	8.2
22	---	---	---	---	---	---	7.7	7.6	7.7	8.3	8.2	8.2
23	---	---	---	---	---	---	7.8	7.7	7.7	8.3	8.2	8.3
24	---	---	---	---	---	---	8.1	7.7	7.9	8.4	8.3	8.3
25	---	---	---	---	---	---	7.9	7.4	7.7	8.4	8.3	8.3
26	---	---	---	---	---	---	7.4	7.1	7.3	8.4	8.3	8.4
27	---	---	---	---	---	---	7.6	7.0	7.3	8.4	8.3	8.3
28	---	---	---	8.0	7.4	7.7	7.8	7.3	7.6	8.4	8.2	8.3
29	---	---	---	7.6	7.2	7.4	7.9	7.6	7.7	8.4	8.2	8.3
30	---	---	---	7.3	7.1	7.2	7.9	7.8	7.8	8.4	8.3	8.3
31	---	---	---	7.4	7.1	7.3	---	---	---	8.4	8.3	8.4
MONTH	7.8	7.0	7.4	8.0	7.0	7.3	8.2	7.0	7.8	8.4	7.6	8.2

GUADALUPE RIVER BASIN

08183500 SAN ANTONIO RIVER NEAR FALLS CITY, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	8.7	8.3	8.4	8.2	7.7	8.0	7.6	7.4	7.5	7.2	7.1	7.2
2	8.4	8.2	8.3	8.1	8.0	8.1	7.7	7.5	7.6	7.3	7.1	7.2
3	8.2	8.1	8.2	8.1	8.0	8.1	7.7	7.6	7.6	7.3	7.1	7.2
4	8.3	8.1	8.2	8.3	8.0	8.1	7.8	7.5	7.6	7.3	7.0	7.1
5	8.4	8.2	8.3	8.2	8.1	8.2	7.8	7.6	7.7	7.1	7.0	7.0
6	8.4	8.1	8.3	8.3	8.2	8.2	7.8	7.6	7.7	7.1	7.0	7.0
7	8.5	8.2	8.3	8.3	8.2	8.3	7.7	7.5	7.6	7.5	7.0	7.2
8	8.4	8.3	8.4	8.4	8.2	8.3	7.7	7.6	7.7	7.3	7.0	7.2
9	8.5	8.4	8.5	8.4	8.3	8.3	7.7	7.6	7.6	7.7	7.2	7.5
10	8.6	8.4	8.5	8.3	8.3	8.3	7.7	7.6	7.6	7.8	7.6	7.7
11	8.6	8.5	8.6	8.3	8.1	8.3	7.7	7.5	7.6	7.8	7.6	7.7
12	8.5	8.0	8.3	8.2	8.0	8.1	7.7	7.4	7.6	8.1	7.6	7.8
13	8.1	7.9	8.0	8.2	8.0	8.1	7.5	7.3	7.4	8.0	7.5	7.8
14	8.1	7.8	8.0	8.2	7.9	8.1	7.5	7.2	7.4	8.1	7.8	8.0
15	8.2	8.0	8.1	8.2	8.1	8.2	7.5	7.4	7.5	8.2	8.1	8.1
16	8.0	7.7	7.8	8.1	8.0	8.1	7.6	7.4	7.5	8.2	7.9	8.1
17	7.8	7.6	7.8	8.4	7.8	8.2	7.6	7.4	7.5	8.1	7.9	8.0
18	7.9	7.7	7.8	8.1	7.8	8.0	7.5	7.3	7.4	8.1	7.9	8.0
19	7.9	7.7	7.8	7.7	7.4	7.6	7.5	7.3	7.4	8.0	7.8	7.9
20	8.1	7.6	7.9	7.6	7.1	7.4	7.5	7.2	7.4	8.0	7.8	7.9
21	8.2	8.0	8.1	7.8	7.4	7.5	7.5	7.3	7.4	8.1	7.9	8.0
22	8.2	8.1	8.1	7.7	7.5	7.6	7.5	7.3	7.4	8.2	8.0	8.1
23	8.2	8.0	8.1	7.6	7.3	7.5	7.5	7.3	7.4	8.3	8.1	8.2
24	8.2	8.1	8.1	7.5	7.0	7.2	7.4	7.2	7.3	8.3	8.1	8.2
25	8.3	8.1	8.2	8.0	7.0	7.6	7.4	7.2	7.3	8.2	8.0	8.1
26	8.2	8.0	8.2	7.7	7.3	7.5	7.4	7.2	7.3	8.3	8.0	8.2
27	8.3	8.0	8.2	7.6	7.3	7.5	7.4	7.2	7.3	8.1	7.8	7.9
28	8.3	8.1	8.2	7.5	7.3	7.4	7.4	7.3	7.4	8.2	7.9	8.0
29	8.2	8.2	8.2	7.5	7.3	7.4	7.4	7.1	7.3	8.2	8.0	8.1
30	8.2	8.1	8.2	7.7	7.3	7.5	7.3	7.2	7.2	8.2	8.0	8.1
31	---	---	---	7.7	7.6	7.6	7.3	7.2	7.2	---	---	---
MONTH	8.7	7.6	8.2	8.4	7.0	7.9	7.8	7.1	7.5	8.3	7.0	7.7

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	27.5	26.5	27.0	23.0	21.5	22.5	15.5	14.5	15.0	16.0	15.0	15.5
2	27.0	26.0	26.5	22.0	21.0	21.5	15.0	14.0	14.5	17.0	15.5	16.5
3	26.5	25.5	26.0	22.5	21.0	22.0	15.0	13.5	14.5	18.0	17.0	17.5
4	26.5	25.0	26.0	22.0	21.5	22.0	15.5	14.0	15.0	18.0	17.5	18.0
5	26.0	24.0	25.0	22.0	21.0	21.5	15.5	14.5	15.0	19.0	17.5	18.0
6	24.0	23.0	23.5	21.0	20.0	20.5	16.0	15.0	15.5	19.0	18.0	18.5
7	23.5	23.0	23.5	21.0	20.0	20.5	17.0	15.5	16.0	20.0	19.0	19.5
8	23.5	23.0	23.0	21.5	20.5	21.5	17.0	16.0	16.5	19.5	17.5	18.5
9	23.5	23.0	23.5	23.0	21.0	22.0	16.0	14.5	15.0	17.5	16.0	17.0
10	24.0	23.0	23.5	23.5	22.5	23.0	14.5	14.0	14.5	16.0	15.5	15.5
11	23.5	22.0	23.0	23.5	22.5	23.5	14.5	14.0	14.5	16.0	15.5	16.0
12	23.0	22.0	22.5	24.0	23.5	23.5	14.5	13.5	14.0	16.0	15.0	15.5
13	22.5	21.0	22.0	23.5	22.5	23.0	13.5	13.0	13.0	15.0	13.5	14.0
14	22.5	21.5	22.0	24.0	22.5	23.5	14.0	13.0	13.5	14.0	13.0	13.5
15	23.0	22.0	22.5	24.0	23.5	24.0	14.5	13.5	14.0	14.0	13.0	13.5
16	23.5	22.0	23.0	24.0	21.0	22.5	14.0	13.0	13.5	---	---	---
17	24.0	23.0	23.5	21.0	19.5	20.5	13.5	12.5	13.0	---	---	---
18	24.5	23.0	24.0	20.5	19.5	20.0	13.0	12.5	13.0	---	---	---
19	25.0	24.0	24.5	21.0	20.0	20.5	14.0	13.0	13.5	15.0	14.5	15.0
20	25.0	24.0	24.5	20.0	18.0	19.0	15.0	14.0	14.5	15.5	15.0	15.5
21	25.0	24.0	24.5	18.0	17.0	17.5	16.5	15.0	15.5	15.0	14.5	14.5
22	24.5	24.0	24.5	17.0	16.0	16.5	18.0	16.5	17.0	14.5	14.0	14.5
23	25.0	24.0	24.5	16.0	15.0	15.5	18.5	18.0	18.0	15.0	14.5	14.5
24	24.5	24.0	24.5	16.0	15.0	15.5	19.0	18.5	19.0	15.5	14.5	15.0
25	24.5	24.0	24.5	17.5	16.0	16.5	19.0	18.0	18.5	17.0	15.5	16.5
26	24.5	24.0	24.5	18.5	17.5	18.0	19.5	18.5	19.0	17.5	17.0	17.5
27	25.0	24.5	24.5	19.0	18.0	18.5	19.5	19.0	19.5	17.5	17.0	17.0
28	25.0	24.5	25.0	18.0	16.5	17.5	19.0	17.0	18.0	18.0	17.5	17.5
29	25.0	24.0	24.5	16.5	16.0	16.0	16.5	15.5	16.0	17.5	16.0	17.0
30	24.0	24.0	24.0	16.5	15.0	16.0	16.0	15.5	15.5	16.5	15.5	16.0
31	24.0	23.0	23.5	---	---	---	16.0	15.5	15.5	16.5	14.5	15.5
MONTH	27.5	21.0	24.0	24.0	15.0	20.0	19.5	12.5	15.5	20.0	13.0	16.0

GUADALUPE RIVER BASIN

317

08183500 SAN ANTONIO RIVER NEAR FALLS CITY, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	16.0	15.5	15.5	17.5	17.0	17.0	23.0	22.0	22.5	26.0	25.0	25.5
2	18.0	16.0	17.0	17.5	17.0	17.5	23.5	22.5	23.0	25.5	24.5	25.5
3	18.0	16.0	17.0	18.0	17.5	18.0	24.5	23.0	24.0	26.0	24.5	25.0
4	15.5	13.0	14.5	18.5	16.5	18.0	25.0	24.0	24.5	27.0	25.0	26.0
5	13.5	11.0	12.0	16.5	15.0	15.5	24.0	23.0	24.0	26.5	26.0	26.5
6	11.0	9.5	10.0	15.0	14.0	14.5	23.5	22.5	23.0	27.0	25.5	26.5
7	9.5	9.0	9.0	14.5	13.5	14.0	24.5	23.0	23.5	27.5	26.5	27.0
8	9.5	8.5	9.0	14.5	13.0	14.0	25.0	23.5	24.5	28.0	27.0	27.5
9	10.5	9.5	10.0	15.0	13.5	14.5	24.5	22.5	23.5	28.5	27.0	27.5
10	11.0	10.5	11.0	16.0	14.5	15.0	22.5	20.0	21.0	28.0	27.0	27.5
11	12.5	11.0	12.0	17.0	15.5	16.5	20.0	19.0	19.5	27.5	26.5	27.0
12	14.5	12.5	13.5	18.5	17.0	18.0	19.5	18.5	19.0	27.0	26.0	26.5
13	16.5	14.5	15.5	20.0	18.5	19.5	18.5	17.5	18.0	26.5	26.0	26.0
14	18.0	16.5	17.5	21.5	20.0	20.5	17.5	17.0	17.5	27.0	26.0	26.5
15	19.0	18.0	18.5	22.0	21.0	21.5	19.0	17.5	18.0	27.5	26.5	27.0
16	19.0	17.5	18.5	21.5	21.0	21.0	20.0	19.0	19.5	27.5	27.0	27.5
17	17.5	16.5	17.0	22.0	21.0	21.5	22.0	20.0	20.5	28.0	27.0	27.5
18	16.5	15.5	16.0	23.0	22.0	22.5	24.0	22.0	22.5	29.5	28.0	28.5
19	15.5	15.0	15.5	23.0	22.5	23.0	24.0	23.5	24.0	30.0	28.5	29.0
20	16.0	15.0	15.5	23.5	22.5	23.0	25.5	23.5	24.0	30.0	29.0	29.5
21	16.5	15.5	16.0	23.0	19.0	21.0	25.0	22.5	23.5	30.0	29.5	30.0
22	16.0	15.0	15.5	19.5	18.5	19.0	24.5	23.0	24.0	30.5	29.5	30.0
23	16.0	15.0	15.5	19.0	18.0	18.5	25.5	24.0	25.0	30.5	29.5	30.0
24	15.5	14.5	15.0	19.5	18.5	19.0	26.0	24.5	25.0	30.5	29.5	30.0
25	16.5	15.0	16.0	20.0	19.0	19.5	25.5	25.0	25.5	31.0	29.5	30.0
26	18.0	16.5	17.0	21.0	20.0	20.5	25.5	25.5	25.5	31.0	29.5	30.5
27	19.0	17.5	18.5	22.5	21.0	21.5	26.0	25.0	25.5	31.0	30.0	30.5
28	18.5	17.5	18.0	23.5	22.5	23.0	26.5	25.0	26.0	31.0	29.5	30.0
29	---	---	---	24.0	22.5	23.0	26.5	25.5	26.0	30.5	29.5	30.0
30	---	---	---	24.5	23.0	23.5	26.5	25.0	25.5	30.5	29.0	29.5
31	---	---	---	24.0	23.0	23.5	---	---	---	30.0	29.0	29.5
MONTH	19.0	8.5	15.0	24.5	13.0	19.5	26.5	17.0	23.0	31.0	24.5	28.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	31.0	29.0	29.5	30.5	28.5	29.5	30.0	29.5	30.0	31.5	29.5	30.5
2	31.5	29.0	30.0	31.0	29.0	30.0	30.5	29.0	29.5	32.0	30.0	30.5
3	31.5	29.0	30.0	31.5	29.5	30.0	30.5	29.5	30.0	32.5	30.0	30.5
4	31.0	29.0	30.0	32.0	29.5	30.5	31.0	29.0	30.0	32.0	30.0	31.0
5	32.0	29.0	30.0	32.5	30.0	31.0	31.0	29.5	30.0	32.0	30.0	30.5
6	32.0	29.5	30.5	32.0	30.5	31.0	31.5	29.5	30.5	30.5	29.5	30.0
7	32.5	29.5	31.0	31.5	30.0	30.5	31.5	30.0	30.5	30.5	29.0	29.5
8	32.0	30.0	31.0	31.5	30.0	30.5	30.0	28.5	29.5	29.5	28.5	29.0
9	30.5	29.5	30.0	31.0	30.0	30.5	29.0	27.5	28.5	29.5	28.5	29.0
10	31.0	29.0	30.0	31.5	30.0	30.5	28.5	28.0	28.0	30.0	28.5	29.0
11	31.0	29.0	30.0	31.0	29.5	30.0	28.0	27.0	27.5	30.5	28.5	29.0
12	29.5	25.5	28.0	31.5	29.5	30.0	28.5	27.0	28.0	31.0	28.0	29.0
13	27.5	25.5	26.5	31.0	29.5	30.0	29.0	27.5	28.0	29.0	28.0	28.5
14	28.0	27.0	27.5	31.5	29.5	30.5	29.0	27.5	28.0	27.5	25.5	27.0
15	28.0	25.5	26.5	32.0	29.5	30.5	30.5	28.0	29.0	25.5	24.5	25.0
16	25.5	25.5	25.5	32.5	30.0	30.5	30.5	28.5	29.0	26.0	24.5	25.0
17	26.5	25.0	25.5	32.0	30.0	30.5	30.0	28.5	29.0	27.0	24.5	25.5
18	27.5	26.0	26.5	32.0	29.5	30.5	30.0	29.0	29.5	27.0	24.5	25.5
19	29.0	27.5	28.0	32.0	29.5	30.5	30.5	29.0	29.5	27.0	24.5	25.5
20	30.0	28.5	29.0	31.0	30.0	30.5	30.5	29.0	29.5	27.0	24.5	25.5
21	30.0	29.0	29.5	31.0	29.0	30.0	31.0	29.0	30.0	26.5	25.0	25.5
22	29.5	29.0	29.0	30.0	28.5	29.0	32.0	29.0	30.0	27.0	25.0	26.0
23	29.0	28.5	28.5	29.5	28.0	28.5	31.5	29.5	30.0	26.0	24.5	25.0
24	28.5	27.5	28.0	29.0	27.5	28.0	31.0	29.5	30.0	25.0	23.5	24.0
25	27.5	27.0	27.0	29.0	27.0	28.0	31.5	29.5	30.0	24.0	22.5	23.0
26	27.0	26.5	27.0	28.5	27.5	28.0	31.5	29.5	30.0	24.0	21.5	22.5
27	28.0	26.5	27.0	28.5	28.0	28.5	30.5	29.5	30.0	23.5	21.5	22.0
28	28.5	27.0	27.5	29.5	28.0	28.5	31.5	29.5	30.0	24.0	21.5	22.5
29	28.5	27.5	28.0	30.5	28.5	29.5	32.0	30.0	30.5	23.5	21.5	22.0
30	29.5	28.0	28.5	30.5	29.0	29.5	31.5	29.5	30.5	24.0	21.5	22.5
31	---	---	---	31.0	29.5	30.0	31.5	29.5	30.0	---	---	---
MONTH	32.5	25.0	28.5	32.5	27.0	30.0	32.0	27.0	29.5	32.5	21.5	26.5

GUADALUPE RIVER BASIN

08183500 SAN ANTONIO RIVER NEAR FALLS CITY, TX--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	6.7	6.1	6.3	7.2	6.4	6.7	---	---	---	8.5	7.9	8.1
2	7.0	6.3	6.5	7.6	6.5	6.9	10.7	10.0	10.2	8.8	7.5	8.0
3	6.9	6.3	6.5	7.5	6.4	6.7	11.2	10.0	10.4	9.7	7.3	8.3
4	7.2	6.5	6.8	7.2	6.1	6.5	11.2	9.9	10.3	8.9	7.7	8.1
5	7.4	6.8	6.9	7.4	6.3	5.7	11.2	9.9	10.4	9.5	7.4	8.4
6	7.6	6.4	6.9	7.4	6.6	5.5	10.9	9.6	10.2	---	---	---
7	7.1	6.0	6.3	7.7	6.3	6.9	10.9	9.5	10.0	---	---	---
8	7.1	5.8	6.3	7.5	6.1	6.7	10.0	7.8	9.0	---	---	---
9	7.0	5.6	6.2	7.6	6.3	6.7	8.0	7.6	7.7	---	---	---
10	7.1	5.8	6.2	8.1	6.4	6.7	8.0	7.8	7.9	---	---	---
11	7.5	6.2	6.6	7.2	6.4	6.7	8.9	7.8	8.2	---	---	---
12	7.3	6.5	6.7	7.4	5.8	6.4	9.2	8.2	8.5	---	---	---
13	7.7	6.3	6.8	7.5	6.2	6.6	9.2	8.3	8.7	---	---	---
14	8.4	6.9	7.2	7.5	6.2	6.8	9.4	8.5	8.9	---	---	---
15	8.3	7.1	7.4	7.5	6.3	6.8	9.6	8.4	8.9	---	---	---
16	8.4	7.0	7.5	7.3	6.4	6.8	10.1	8.5	9.0	---	---	---
17	---	---	---	9.0	7.4	8.0	9.6	8.7	9.1	---	---	---
18	---	---	---	8.9	7.9	8.3	9.7	8.8	9.1	8.8	8.4	8.5
19	---	---	---	9.3	7.9	8.4	9.6	8.7	9.0	8.2	7.4	7.8
20	---	---	---	9.1	8.1	8.4	9.2	8.1	8.6	7.5	6.5	7.1
21	---	---	---	9.5	8.6	8.9	9.4	7.8	8.4	6.7	6.4	6.5
22	7.6	6.4	6.9	10.3	9.0	9.2	8.9	7.6	8.2	6.8	6.3	6.4
23	7.6	6.4	6.7	10.0	9.1	9.5	8.4	7.0	7.5	6.5	6.1	6.2
24	7.4	6.2	6.7	10.6	9.3	9.7	8.3	6.5	7.2	6.6	5.9	6.2
25	7.7	6.4	6.7	10.4	8.8	9.4	8.3	6.8	7.3	8.4	6.8	7.6
26	6.9	6.4	6.6	10.1	8.5	9.0	8.0	6.7	7.3	9.4	8.4	8.9
27	6.9	6.0	6.4	9.9	8.4	8.8	7.9	6.5	7.1	9.5	9.1	9.3
28	7.2	6.0	6.5	9.9	8.4	8.9	8.5	6.7	7.5	9.4	8.6	9.0
29	7.2	6.0	6.4	10.0	8.7	9.2	9.0	7.5	8.2	8.9	8.2	8.6
30	6.9	6.2	6.4	10.4	9.0	9.5	8.4	7.9	8.1	9.2	8.3	8.7
31	7.4	6.3	6.6	---	---	---	9.0	7.6	8.3	8.7	7.0	7.9
MONTH	8.4	5.6	6.7	10.6	5.8	7.8	11.2	6.5	8.6	9.7	5.9	7.9
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	8.6	8.4	8.5	---	---	---	5.4	4.6	5.0	5.5	5.1	5.3
2	8.3	7.6	8.0	9.1	7.5	8.0	5.9	4.8	5.3	5.5	4.9	5.3
3	7.9	7.6	7.8	8.4	7.3	7.8	5.9	5.0	5.4	4.8	4.0	4.5
4	8.7	7.9	8.4	9.1	7.2	7.9	5.9	4.9	5.2	5.4	4.8	5.1
5	10.0	8.7	9.2	10.4	9.2	9.6	5.8	5.0	5.4	5.6	5.1	5.3
6	---	---	---	---	---	---	6.4	5.4	5.6	5.9	5.4	5.6
7	---	---	---	---	---	---	6.2	5.4	5.6	6.0	5.2	5.5
8	---	---	---	---	---	---	5.9	4.9	5.2	5.8	5.2	5.4
9	---	---	---	---	---	---	5.6	4.9	5.2	5.9	5.3	5.5
10	---	---	---	---	---	---	6.3	5.5	5.8	5.8	5.4	5.6
11	---	---	---	---	---	---	7.6	5.9	6.5	6.0	5.6	5.8
12	---	---	---	---	---	---	---	---	---	6.2	5.8	6.0
13	---	---	---	---	---	---	---	---	---	6.2	5.9	6.0
14	---	---	---	---	---	---	---	---	---	6.4	6.0	6.1
15	---	---	---	---	---	---	---	---	---	6.5	6.0	6.2
16	---	---	---	---	---	---	---	---	---	6.3	6.0	6.1
17	---	---	---	---	---	---	---	---	---	6.6	6.0	6.2
18	---	---	---	---	---	---	---	---	---	6.9	6.0	6.2
19	---	---	---	---	---	---	---	---	---	6.6	5.9	6.2
20	---	---	---	---	---	---	---	---	---	6.4	5.8	6.0
21	---	---	---	---	---	---	---	---	---	6.4	5.2	5.9
22	---	---	---	---	---	---	---	---	---	6.6	5.2	5.7
23	---	---	---	---	---	---	---	---	---	6.9	5.7	6.1
24	---	---	---	---	---	---	---	---	---	7.0	5.9	6.3
25	---	---	---	---	---	---	5.3	5.2	5.3	7.3	6.0	6.4
26	---	---	---	---	---	---	5.3	4.9	5.1	7.6	6.2	6.7
27	---	---	---	---	---	---	5.4	5.2	5.3	7.2	6.3	6.6
28	---	---	---	5.9	5.2	5.4	5.8	5.2	5.4	7.6	6.4	6.7
29	---	---	---	6.0	5.2	5.4	5.3	4.9	5.1	7.8	6.5	7.0
30	---	---	---	5.6	5.0	5.2	5.2	4.8	5.0	8.0	6.8	7.2
31	---	---	---	5.7	4.7	5.1	---	---	---	9.2	7.0	7.6
MONTH	10.0	7.6	8.4	10.4	4.7	6.8	7.6	4.6	5.4	9.2	4.0	6.0

GUADALUPE RIVER BASIN

319

08183500 SAN ANTONIO RIVER NEAR FALLS CITY, TX--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	11.3	7.1	8.4	8.1	6.6	7.2	5.1	4.2	4.5	5.8	4.2	4.7
2	8.9	6.5	7.3	8.4	6.8	7.2	5.5	4.3	4.7	5.9	4.2	4.7
3	8.8	6.4	7.2	8.8	6.6	7.4	5.6	4.5	4.8	6.0	4.1	4.7
4	9.4	6.9	7.8	9.5	6.6	7.8	5.6	4.4	4.8	5.8	4.0	4.6
5	9.9	7.3	8.4	10.1	6.8	7.9	5.6	4.4	4.8	5.6	4.0	4.6
6	10.5	6.9	8.1	9.6	6.8	7.9	5.8	4.4	4.8	5.3	4.1	4.5
7	10.0	6.7	7.8	9.0	7.2	7.9	5.6	4.3	4.7	6.6	4.1	5.2
8	10.0	7.0	8.0	9.6	7.5	8.3	5.0	4.3	4.7	6.1	5.0	5.4
9	9.9	7.5	8.3	9.7	7.6	8.4	5.1	4.5	4.7	6.4	5.4	5.6
10	9.7	6.7	7.8	10.2	7.6	8.7	5.3	4.8	5.0	7.1	5.2	5.7
11	9.8	7.3	8.1	---	---	---	5.5	4.8	5.0	7.2	5.1	5.7
12	7.3	.1	4.1	---	---	---	5.8	4.8	5.1	6.7	4.8	5.4
13	3.1	1.9	2.6	---	---	---	5.6	4.5	5.0	5.7	4.6	5.1
14	4.3	3.0	3.7	---	---	---	5.6	4.5	5.0	9.7	5.8	8.2
15	5.1	2.3	3.8	---	---	---	6.2	4.6	5.1	---	---	---
16	4.6	4.0	4.3	---	---	---	6.4	4.7	5.1	---	---	---
17	5.2	4.7	4.9	---	---	---	5.8	4.5	5.0	---	---	---
18	5.4	5.2	5.3	8.9	5.7	6.6	5.8	4.6	5.0	---	---	---
19	5.6	5.3	5.4	8.1	5.5	6.3	5.7	4.6	5.0	7.1	5.6	6.2
20	5.8	5.4	5.5	8.1	5.3	6.2	5.7	4.6	4.9	7.7	5.5	6.2
21	5.8	5.4	5.6	7.9	5.3	6.3	6.2	4.4	5.0	7.6	5.7	6.4
22	6.1	5.6	5.7	7.7	5.0	6.1	6.3	4.4	5.0	8.0	6.1	6.7
23	6.2	5.7	5.9	7.9	5.1	6.1	6.4	4.4	5.0	7.9	6.2	6.8
24	6.4	5.9	6.1	6.6	4.8	5.7	5.9	4.2	4.9	8.6	6.4	7.0
25	6.7	6.1	6.4	6.4	4.7	5.3	6.0	4.3	4.8	9.2	6.6	7.5
26	7.0	6.2	6.5	6.2	4.7	5.2	5.8	4.2	4.8	9.0	7.1	7.7
27	7.3	6.2	6.6	5.7	4.8	5.2	5.4	4.3	4.8	9.6	7.2	8.0
28	8.1	6.4	7.0	5.6	4.7	4.9	5.7	4.3	4.7	10.0	7.6	8.4
29	7.6	6.6	7.0	6.2	4.7	5.2	5.9	4.1	4.8	10.1	7.6	8.5
30	7.9	6.6	7.1	5.7	4.5	4.9	5.9	4.2	4.8	10.1	7.5	8.5
31	---	---	---	5.8	4.3	4.8	5.6	4.3	4.7	---	---	---
MONTH	11.3	.1	6.4	10.2	4.3	6.6	6.4	4.1	4.9	10.1	4.0	6.2

GUADALUPE RIVER BASIN

08183900 CIBOLO CREEK NEAR BOERNE, TX

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

DRAINAGE AREA.--68.4 mi².

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 above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. No known diversion above station. Flow is affected at times by discharge from the flood-detention pools of four floodwater-retarding structures with a combined detention capacity of 8,850 acre-ft. These structures control runoff from 34.0 mi². Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--27 years, 28.1 ft³/s (5.58 in/yr), 20,360 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 36,400 ft³/s Sept. 27, 1964 (gage height, 19.15 ft, from floodmark), from rating curve extended above 2,500 ft³/s on basis of slope-area measurement at 12,000 ft³/s and contracted-opening measurement of 36,400 ft³/s; no flow at times in 1962-64, 1966-67, 1971, and 1984. Maximum stage since at least 1892, that of Sept. 27, 1964.

EXTREMES OUTSIDE PERIOD OF RECORD.--The second highest flood occurred in 1952, and reached a stage of 16.3 ft (discharge, 25,600 ft³/s), from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 900 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 14	0215	*90	*2.66				

Minimum daily discharge, 0.07 ft³/s July 21.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.2	1.1	1.1	.91	2.4	1.7	1.1	3.2	.65	.99	.23	.18
2	1.3	.98	1.3	.90	2.4	3.0	1.2	3.0	.46	.70	.28	.25
3	1.1	1.0	1.3	1.0	2.9	1.9	1.3	3.4	.50	.46	.35	.34
4	1.2	1.2	1.1	.98	2.1	1.7	1.3	3.6	.50	.49	.34	.25
5	1.1	1.5	1.1	1.0	1.8	1.5	1.3	3.3	.37	.47	.51	.35
6	1.0	1.3	1.1	.92	1.7	1.5	1.5	3.4	.52	.45	.42	3.5
7	1.2	1.3	1.1	1.1	1.6	1.5	1.6	3.1	.62	.46	.88	.81
8	.89	1.1	1.2	1.0	1.5	1.5	1.9	2.5	.48	.47	2.3	.23
9	1.3	1.2	1.3	.79	1.6	1.6	1.7	2.2	.67	.43	1.0	.11
10	2.0	1.1	1.4	.83	1.5	1.5	1.6	1.9	.73	.47	.65	.12
11	.90	1.0	1.3	.97	1.5	1.6	1.6	2.2	.66	.23	.69	9.7
12	.81	1.0	1.1	1.1	1.6	1.7	1.6	2.3	.60	.29	.70	1.6
13	.83	.89	.99	1.5	1.6	1.6	2.8	2.1	.49	.26	1.0	.69
14	.94	.95	1.1	1.3	1.5	1.5	3.5	1.9	12	.19	1.0	.42
15	.88	.88	1.2	1.2	1.8	1.4	2.4	1.7	.49	.23	1.0	.59
16	.83	.71	1.2	1.3	2.4	1.2	2.4	1.7	.21	.22	.85	.82
17	.83	.71	1.2	1.5	2.0	1.3	2.0	12	.14	.20	.75	1.4
18	.68	.87	1.1	1.7	2.0	1.3	1.7	2.6	.12	.25	.54	.96
19	.73	.84	1.1	3.7	1.7	1.3	3.4	1.8	.14	.19	.42	.65
20	.79	1.2	1.2	3.0	1.7	2.2	2.5	1.5	.14	.10	.57	.86
21	.79	1.2	1.3	1.6	1.7	1.4	2.0	1.5	.17	.07	.53	1.1
22	.69	1.2	1.3	1.3	1.6	1.2	1.7	1.6	.22	.21	.45	1.0
23	.65	1.0	1.4	1.3	1.6	1.2	1.6	1.5	.27	.32	.31	.95
24	.75	1.1	1.5	1.3	1.6	1.4	1.2	1.4	.39	.49	.23	1.1
25	.81	1.2	2.3	1.8	1.7	1.6	1.3	1.4	.47	.59	.29	1.1
26	.90	1.1	2.1	3.0	1.8	1.6	1.3	1.1	.52	.51	.35	1.0
27	1.0	.97	1.9	3.8	1.7	1.4	1.3	1.2	.68	.57	.42	1.0
28	1.1	1.1	1.4	10	1.6	11	1.6	.91	.63	.54	.41	.92
29	1.2	1.2	1.2	15	---	2.4	2.3	.86	.70	.47	.34	.68
30	1.2	1.0	1.3	5.2	---	1.4	3.2	.81	.70	.39	.28	1.3
31	1.3	---	1.1	3.0	---	1.2	---	.73	---	.28	.28	---
TOTAL	31.90	31.90	40.29	74.00	50.6	58.3	55.9	72.41	25.24	11.99	18.37	33.98
MEAN	1.03	1.06	1.30	2.39	1.81	1.88	1.86	2.34	.84	.39	.59	1.13
MAX	2.2	1.5	2.3	15	2.9	11	3.5	12	.99	.99	2.3	9.7
MIN	.65	.71	.99	.79	1.5	1.2	1.1	.73	.12	.07	.23	.11
AC-FT	63	63	80	147	100	116	111	144	50	24	36	67
CFSM	.02	.02	.02	.03	.03	.03	.03	.03	.01	.01	.01	.02
IN.	.02	.02	.02	.04	.03	.03	.03	.04	.01	.01	.01	.02
CAL YR 1988	TOTAL	1345.92	MEAN	3.68	MAX	50	MIN	.38	AC-FT	2670	CFSM	.05
WTR YR 1989	TOTAL	504.88	MEAN	1.38	MAX	15	MIN	.07	AC-FT	1000	CFSM	.02
										IN.	.73	.27

GUADALUPE RIVER BASIN

321

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 downstream from Missouri-Kansas-Texas Railroad Co. bridge and 0.9 mi upstream from bridge on Interstate Highway 35 at Selma.

DRAINAGE AREA.--274 mi².

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 above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. 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, that crosses basin between this station and the station near Boerne (station 08183900).

AVERAGE DISCHARGE.--43 years, 15.7 ft³/s (11,370 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 65,000 ft³/s July 16, 1973 (gage height, 26.2 ft, from floodmark), from rating curve extended above 16,000 ft³/s on basis of field estimate of 54,000 ft³/s and contracted-opening measurement of 65,000 ft³/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 occurred in 1889, but stage for flood in 1913 is unknown, from information by local residents.

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

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
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
30	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MEAN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
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
AC-FT	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
CAL YR 1988	TOTAL	0.00	MEAN	.00	MAX	.00	MIN	.00	AC-FT	.00		
WTR YR 1989	TOTAL	0.00	MEAN	.00	MAX	.00	MIN	.00	AC-FT	.00		

GUADALUPE RIVER BASIN

08186000 CIBOLO CREEK NEAR FALLS CITY, TX

LOCATION.--Lat 29°00'50", long 97°55'48", Karnes County, Hydrologic Unit 12100304, on right bank at downstream side of pier of bridge on State Highway 123, 5.7 mi northeast of Falls City, and 10.4 mi upstream from mouth.

DRAINAGE AREA.--827 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1930 to current year. Monthly discharge only for some periods, published in WSP 1312.

REVISED RECORDS.--WSP 733: 1931. WSP 1058: 1935. WSP 1562: 1931(M), 1933. WSP 1923: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 264.28 ft above National Geodetic Vertical Datum of 1929. Nov. 4, 1930, to Aug. 4, 1940, water-stage recorder at site 1,600 ft upstream at datum 0.56 ft higher. Aug. 5 to Sept. 13, 1940, nonrecording gage at present site and datum.

REMARKS.--Records good. There are several diversions for irrigation above station. Much of the base flow is effluent from the Carrizo Sands in the vicinity of Sutherland Springs. Flow is affected at times by discharge from the flood-detention pools of ten floodwater-retarding structures with a combined detention capacity of 16,620 acre-ft. These structures control runoff from 62.9 mi². Satellite telemeter at station.

AVERAGE DISCHARGE.--59 years, 121 ft³/s (87,660 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 33,600 ft³/s July 6, 1942 (gage height, 34.45 ft); maximum gage height, 35.44 ft Sept. 28, 1973; no flow July 30, 31, Aug. 4-22, 1956, and Aug. 1, 1971.
Maximum stage since at least 1890, that of Sept. 28, 1973.

EXTREMES OUTSIDE PERIOD OF RECORD.--In October 1913, a stage of 35 ft occurred (discharge, about 35,000 ft³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,600 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Aug. 24	2300	*915	*6.59				

Minimum daily discharge, 4.2 ft³/s Sept. 4.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	17	17	29	59	24	28	261	9.1	11	8.4	5.2
2	13	17	15	27	50	24	28	75	9.3	e11	8.0	5.0
3	14	17	13	29	169	23	27	42	8.3	e10	8.5	4.3
4	14	18	14	28	34	24	26	34	6.3	e10	7.9	4.2
5	13	16	16	27	27	23	24	31	6.0	e9.6	7.2	4.4
6	12	15	16	26	26	23	24	28	7.3	9.3	7.1	4.5
7	12	15	16	25	24	23	24	26	7.5	9.0	6.9	36
8	11	15	20	24	23	24	23	24	8.0	7.3	9.3	46
9	9.9	15	26	22	24	24	23	22	7.5	7.2	8.8	8.5
10	11	15	23	22	24	24	22	23	6.3	8.2	8.6	7.5
11	9.7	15	23	21	24	23	21	23	9.1	9.5	6.7	7.6
12	9.6	15	25	23	26	24	20	22	14	8.3	5.1	7.6
13	12	15	25	29	27	24	22	23	26	8.2	4.4	10
14	13	14	25	30	27	25	22	31	88	7.6	5.5	17
15	13	14	27	28	27	25	22	26	311	6.6	6.0	11
16	13	14	27	27	27	24	38	23	139	6.2	6.2	8.5
17	13	13	26	27	26	24	41	22	74	7.2	6.6	8.3
18	12	13	26	27	25	23	34	21	50	6.7	7.4	8.3
19	12	14	26	36	25	23	38	17	38	6.8	5.7	6.9
20	12	13	27	83	25	26	44	15	29	6.8	5.5	5.9
21	13	13	28	42	26	34	86	16	24	6.0	5.9	5.3
22	14	14	29	33	25	36	62	15	20	5.2	6.3	6.0
23	12	14	30	29	25	31	46	14	18	4.9	5.5	6.3
24	12	14	30	32	25	29	37	13	16	50	89	5.9
25	12	15	29	45	25	28	32	12	15	107	138	5.6
26	15	17	29	31	24	47	29	11	16	11	8.5	5.1
27	14	17	29	30	24	64	27	10	15	12	6.3	4.8
28	13	16	28	165	24	32	25	10	12	12	5.7	4.6
29	13	17	28	84	---	30	25	11	12	12	5.4	5.4
30	14	17	28	53	---	28	76	9.2	12	11	5.2	4.8
31	17	---	29	47	---	27	---	9.0	---	9.1	5.2	---
TOTAL	391.2	454	750	1181	917	863	996	919.2	1013.7	406.7	420.8	270.5
MEAN	12.6	15.1	24.2	38.1	32.7	27.8	33.2	29.7	33.8	13.1	13.6	9.02
MAX	17	18	30	165	169	64	86	261	311	107	138	46
MIN	9.6	13	13	21	23	23	20	9.0	6.0	4.9	4.4	4.2
AC-FT	776	901	1490	2340	1820	1710	1980	1820	2010	807	835	537

CAL YR 1988 TOTAL 9990.2 MEAN 27.3 MAX 159 MIN 9.6 AC-FT 19820
WTR YR 1989 TOTAL 8583.1 MEAN 23.5 MAX 311 MIN 4.2 AC-FT 17020

e Estimated.

08186000 CIBOLO CREEK NEAR FALLS CITY, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: October 1961 to current year. Chemical and biochemical analyses: December 1969 to current year. Sediment analyses: 1960, November 1965 to May 1975.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1968 to current year.

WATER TEMPERATURE: October 1968 to current year.

INSTRUMENTATION.--Beginning March 1981, specific conductance and water temperature are recorded continuously at this station.

REMARKS.--Interruptions in the record were due to malfunctions of the instrument. Where maximum or minimum specific conductance values are not shown, mean value is estimated. Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 2,270 microsiemens May 20, 21, 1971; minimum, 115 microsiemens Dec. 22, 23, 1986.

WATER TEMPERATURE: Maximum daily, 34.0°C July 31, Aug. 8, 9, 1980; minimum, 0.0°C Dec. 25, 26, 1983.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 1,710 microsiemens June 8-11; minimum, 260 microsiemens Aug. 24, 25.

WATER TEMPERATURE: Maximum, 33.0°C July 17, 19; minimum, 4.5°C Feb. 6-8.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3
OCT 27...	1100	16	1350	8.00	24.0	6.4	77	1.6	350	160
DEC 15...	1030	27	1310	8.00	11.5	10.0	92	0.9	340	120
FEB 21...	1230	26	1320	8.40	15.0	11.8	117	0.9	370	170
APR 24...	1310	39	1070	7.90	24.0	6.8	81	2.3	290	92
JUN 30...	1210	12	1100	7.80	27.0	8.0	103	1.5	280	110
AUG 28...	0920	6.0	654	7.80	27.5	5.0	64	2.5	140	48

DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
OCT 27...	100	24	140	3	8.2	188	250	160	0.30
DEC 15...	100	22	140	3	8.3	222	230	160	0.30
FEB 21...	110	23	140	3	8.3	197	230	160	0.30
APR 24...	83	19	120	3	8.1	194	150	140	0.30
JUN 30...	84	17	120	3	8.7	172	180	140	0.30
AUG 28...	46	7.2	68	3	9.2	97	93	73	0.30

DATE	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSI- TUENTS, DIS- SOLVED (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- PHOROUS TOTAL (MG/L AS P)
OCT 27...	15	812	--	<0.010	0.300	0.030	0.47	0.50	0.180
DEC 15...	11	805	--	<0.010	0.700	0.030	0.47	0.50	0.110
FEB 21...	4.9	795	--	<0.010	1.30	0.040	0.36	0.40	0.210
APR 24...	14	651	0.840	0.060	0.900	0.130	0.87	1.0	0.470
JUN 30...	14	667	0.780	0.020	0.800	0.050	0.95	1.0	0.340
AUG 28...	10	365	0.610	0.090	0.700	0.200	0.60	0.80	0.320

GUADALUPE RIVER BASIN
08186000 CIBOLO CREEK NEAR FALLS CITY, TX--Continued

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1988 TO SEPTEMBER 1989

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	DIS- SOLVED SOLIDS (MG/L)	DIS- SOLVED SOLIDS (TONS)	DIS- SOLVED CHLORIDE (MG/L)	DIS- SOLVED CHLORIDE (TONS)	DIS- SOLVED SULFATE (MG/L)	DIS- SOLVED SULFATE (TONS)	HARDNESS (CA, MG) (MG/L)
OCT. 1988	391.2	1350	841	888	160	173	230	247	390
NOV. 1988	454	1330	828	1010	160	196	230	281	380
DEC. 1988	750	1330	830	1680	160	325	230	466	380
JAN. 1989	1181	1250	774	2470	150	465	210	674	360
FEB. 1989	917	1150	708	1750	130	324	190	473	340
MAR. 1989	863	1290	804	1870	150	360	220	517	370
APR. 1989	996	1150	709	1910	130	348	190	511	340
MAY 1989	919.2	948	580	1440	99	246	150	372	290
JUNE 1989	1013.7	760	463	1270	78	213	120	325	230
JULY 1989	406.7	877	537	590	93	102	140	154	270
AUG. 1989	420.8	1100	684	777	130	151	190	216	310
SEPT 1989	270.5	1180	729	532	140	100	200	145	340
TOTAL	8583.1	**	**	16200	**	3000	**	4380	**
WTD.AVG.	24	1130	699	**	130	**	190	**	330

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	1300	1270	1280	1330	1310	1320	1310	1300	1310	1340	1330	1340
2	1310	1290	1290	1330	1310	1320	1320	1290	1310	1350	1330	1340
3	1340	1300	1310	1340	1300	1320	1320	1310	1320	1340	1320	1330
4	1350	1330	1340	1310	1300	1310	1350	1320	1340	1340	1320	1330
5	1340	1320	1330	1310	1290	1310	1380	1340	1370	1330	1310	1320
6	1340	1320	1330	1310	1290	1290	1400	1370	1390	1330	1300	1310
7	1330	1320	1320	1310	1290	1290	1390	1230	1380	1330	1320	1330
8	1360	1330	1350	1310	1290	1300	1390	1270	1370	1330	1320	1330
9	1360	1340	1350	1320	1310	1310	1400	1230	1370	1340	1310	1320
10	1370	1340	1360	1320	1310	1310	1400	1330	1360	1360	1330	1340
11	1390	1350	1370	1330	1310	1320	1370	1280	1340	1380	1360	1370
12	1410	1390	1400	1330	1310	1320	1350	1340	1340	1390	1370	1380
13	1430	1400	1420	1340	1320	1320	1350	1310	1330	1400	1380	1390
14	1470	1410	1440	1340	1330	1330	1320	1280	1310	1400	1340	1370
15	1450	1390	1420	1360	1340	1340	1320	1300	1300	1400	1300	1350
16	1390	1370	1370	1360	1340	1350	1320	1280	1300	1360	1330	1340
17	1370	1320	1350	1370	1350	1360	1320	1290	1300	1340	1320	1330
18	1370	1350	1350	1370	1350	1360	1320	1280	1300	1330	1300	1320
19	1370	1360	1370	1370	1350	1360	1330	1280	1310	1320	1250	1300
20	1370	1360	1360	1360	1340	1350	1340	1320	1330	1290	1160	1250
21	1370	1360	1360	1360	1350	1350	1350	1240	1330	1150	1040	1080
22	1370	1360	1360	1360	1340	1350	1360	1290	1340	1210	1130	1170
23	1360	1350	1360	1380	1350	1360	1360	1310	1340	1290	1210	1250
24	1360	1330	1350	1370	1360	1370	1360	1330	1340	1310	1190	1290
25	1350	1340	1350	1360	1350	1360	1360	1330	1340	1370	1000	1270
26	1360	1350	1360	1360	1340	1350	1360	1330	1340	1240	1030	1160
27	1370	1350	1360	1350	1330	1340	1360	1340	1350	1310	1250	1290
28	1370	1310	1340	1330	1320	1330	1350	1320	1330	1330	1080	1200
29	1320	1290	1300	1320	1310	1320	1340	1320	1330	1080	1020	1050
30	1350	1320	1330	1320	1310	1320	1340	1330	1330	1120	1020	1070
31	1350	1280	1320	---	---	---	1340	1320	1330	1220	1130	1180
MONTH	1470	1270	1350	1380	1290	1330	1400	1230	1330	1400	1000	1280

GUADALUPE RIVER BASIN

325

08186000 CIBOLO CREEK NEAR FALLS CITY, TX--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	1280	1230	1260	1380	1370	1380	1270	1230	1250	1050	689	770
2	1250	1210	1240	1390	1370	1380	1230	1210	1220	899	779	861
3	1230	428	690	1390	1380	1390	1230	1200	1210	879	849	867
4	1040	647	851	1400	1390	1400	1220	1210	1210	979	879	919
5	1060	1010	1050	1410	1400	1400	1230	1200	1210	1060	979	1020
6	1090	1020	1070	1420	1390	1400	1230	1200	1210	1040	939	996
7	1110	1070	1090	1410	1390	1400	1250	1220	1230	929	909	916
8	1210	1110	1170	1410	1400	1400	1280	1240	1260	929	899	915
9	1220	1200	1220	1410	1380	1390	1280	1260	1270	959	919	935
10	1210	1190	1210	1390	1370	1380	1280	1260	1270	979	949	962
11	1230	1200	1220	1390	1370	1370	1270	1260	1260	1020	979	1000
12	1260	1230	1250	1390	1360	1370	1280	1270	1270	1030	950	993
13	1270	1260	1270	1400	1370	1380	1320	1280	1290	1030	980	1020
14	1290	1270	1290	1410	1380	1390	1330	1310	1320	1050	970	1020
15	1310	1290	1300	1410	1400	1400	1320	1310	1310	1050	950	994
16	1310	1300	1310	1430	1400	1410	1340	1300	1320	990	950	965
17	1310	1300	1310	1430	1420	1420	1310	1150	1220	1030	990	1010
18	1320	1300	1310	1430	1410	1420	1160	1140	1150	1050	1020	1030
19	1330	1310	1320	1440	1420	1420	1170	1110	1140	1070	1040	1050
20	1330	1320	1330	1440	1390	1420	1140	1080	1100	1080	1050	1060
21	1340	1330	1340	1440	1380	1410	1160	999	1070	1140	1070	1110
22	1340	1320	1340	1400	1190	1260	1090	999	1040	1200	1110	1170
23	1340	1320	1340	1220	1150	1180	1020	979	995	1220	1190	1210
24	1340	1330	1340	1200	1170	1190	1060	989	1020	1240	1200	1220
25	1350	1340	1340	1460	1350	1370	1110	1040	1080	1270	1220	1240
26	1360	1340	1350	1360	1170	1280	1110	1100	1110	1300	1260	1280
27	1360	1350	1350	1210	639	846	1120	1100	1110	1340	1290	1320
28	1370	1350	1360	1090	918	1050	1150	1120	1130	1380	1340	1360
29	---	---	---	1180	1080	1130	1160	1100	1140	1400	1370	1380
30	---	---	---	1200	1180	1190	1290	779	986	1410	1390	1400
31	---	---	---	1270	1190	1220	---	---	---	1420	1400	1410
MONTH	1370	428	1230	1460	639	1320	1340	779	1180	1420	689	1080
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	1450	1400	1410	---	---	1130	---	---	1370	1390	1280	1310
2	1500	1440	1460	---	---	1160	---	---	1430	1480	1400	1430
3	1540	1490	1510	---	---	1170	---	---	1480	1530	1480	1500
4	1570	1530	1540	---	---	1150	1530	1510	1520	1560	1520	1540
5	1570	1550	1560	---	---	1130	1540	1510	1530	1590	1540	1570
6	1580	1550	1570	---	---	1110	1520	1490	1500	1600	1480	1550
7	1630	1570	1590	1140	1110	1130	1510	1480	1490	1580	305	1290
8	1710	1610	1640	1170	1120	1140	1500	1410	1460	1280	394	625
9	1710	1670	1700	1170	1140	1150	1450	1410	1430	653	424	535
10	1710	1650	1680	1170	1150	1160	1450	1410	1430	832	613	750
11	1710	1420	1520	1190	1150	1170	1450	1420	1440	1320	861	1060
12	1500	1440	1470	1200	1180	1190	1430	1410	1420	1390	1220	1300
13	1520	1470	1500	1200	1170	1180	1450	1420	1430	1380	607	1160
14	1460	632	909	1200	1150	1170	1470	1430	1460	1430	1050	1290
15	963	562	776	1200	1160	1180	1510	1450	1470	1430	1270	1400
16	522	331	385	1240	1180	1210	1560	1460	1510	1420	1140	1280
17	351	311	325	1240	1210	1220	1670	1570	1610	1310	1200	1240
18	412	352	376	---	---	1250	1700	1620	1680	1390	1270	1310
19	472	412	442	---	---	1260	1670	1630	1660	1390	1310	1340
20	533	472	502	---	---	1280	1640	1600	1630	1430	1280	1360
21	604	533	567	1320	1290	1300	1630	1580	1610	1430	1220	1330
22	694	422	640	---	---	1310	1620	1540	1590	1420	1250	1360
23	765	694	724	---	---	1320	1640	1580	1620	1380	1290	1350
24	816	755	782	---	---	420	1700	260	1570	1370	1310	1350
25	856	816	830	---	---	500	501	260	405	1450	1350	1380
26	917	826	873	---	---	650	569	501	529	1470	1290	1430
27	938	827	911	---	---	800	667	560	606	1490	1360	1440
28	968	817	1000	---	---	930	824	610	704	1530	1350	1470
29	979	838	1060	---	---	1080	1050	804	895	1570	1370	1490
30	---	---	1100	---	---	1200	1210	1040	1100	1590	1420	1500
31	---	---	---	---	---	1330	1280	1210	1230	---	---	---
MONTH	1710	311	1080	1320	1110	1110	1700	260	1350	1600	305	1300

GUADALUPE RIVER BASIN

08186000 CIBOLO CREEK NEAR FALLS CITY, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	27.0	23.5	25.0	21.5	20.0	20.5	14.5	11.0	12.5	15.0	13.0	14.0
2	26.0	23.0	24.5	21.5	18.5	20.0	14.5	11.0	12.5	17.0	15.0	16.0
3	25.0	21.5	23.0	23.0	19.5	21.0	14.5	10.5	12.5	19.0	16.0	17.5
4	24.5	20.5	22.5	23.0	20.0	21.5	15.5	12.0	13.5	17.5	15.5	16.5
5	24.0	19.5	22.0	21.5	19.0	20.0	15.5	12.5	14.0	19.0	17.0	18.0
6	23.5	20.5	22.0	20.5	17.0	19.0	15.5	12.5	14.0	19.5	16.0	18.0
7	23.5	19.5	21.5	22.5	18.5	20.5	18.0	14.0	16.0	21.0	18.5	19.5
8	24.0	19.5	22.0	23.0	20.5	21.5	17.0	13.0	15.0	18.5	15.0	16.5
9	24.5	21.0	22.5	24.5	21.5	23.0	13.0	12.0	12.5	14.5	13.0	14.0
10	23.0	20.5	22.0	25.0	23.0	23.5	12.0	11.5	12.0	13.5	12.5	13.0
11	23.0	19.0	21.0	24.5	22.0	23.0	13.0	11.0	12.0	15.0	13.0	14.0
12	21.5	19.5	20.5	24.5	22.0	23.0	12.0	10.5	11.5	15.5	12.0	14.0
13	22.5	18.5	20.5	24.0	20.5	22.0	12.5	9.5	11.0	12.0	11.0	11.0
14	23.0	19.0	21.0	25.0	22.0	23.5	14.0	10.0	12.0	12.5	10.0	11.0
15	23.0	19.5	21.5	24.5	23.0	23.5	14.0	11.5	12.5	12.5	9.0	10.5
16	24.5	20.5	22.5	23.0	18.0	20.0	12.5	11.0	11.5	12.5	9.5	11.0
17	25.0	21.5	23.0	19.0	16.0	17.5	12.5	9.5	11.0	12.5	11.5	12.0
18	25.5	22.0	24.0	21.5	18.5	20.0	12.5	9.0	11.0	13.5	12.0	13.0
19	26.0	22.5	24.0	22.0	18.0	20.5	14.5	10.0	12.0	14.5	13.5	14.0
20	25.5	22.5	24.0	17.5	15.0	16.5	16.0	13.5	14.5	15.0	13.5	14.5
21	26.0	23.5	24.5	16.5	14.0	15.0	17.5	14.5	16.0	14.0	11.5	12.5
22	25.5	23.0	24.5	15.5	12.5	14.0	19.5	17.0	18.0	13.0	10.5	12.0
23	26.5	23.0	24.5	15.5	11.5	13.5	18.5	17.5	18.0	14.0	11.5	12.5
24	25.0	22.5	24.0	16.5	12.0	14.5	18.5	17.0	17.5	16.0	13.0	14.5
25	26.0	23.5	24.5	18.5	16.0	17.5	18.0	15.5	17.0	18.0	15.0	16.5
26	26.5	23.5	25.0	20.0	18.0	18.5	20.5	18.0	19.0	18.0	15.5	17.5
27	26.5	23.5	25.0	18.0	16.0	17.5	20.0	17.5	19.0	15.5	15.0	15.5
28	26.5	24.0	25.0	16.0	13.5	14.5	17.0	14.0	15.5	17.0	15.0	16.0
29	25.0	23.0	23.5	16.5	12.0	14.5	15.5	12.0	14.0	16.0	15.0	16.0
30	24.0	22.5	23.5	15.0	13.0	14.0	14.0	13.0	13.5	16.5	14.5	15.5
31	23.5	21.5	22.5	---	---	---	16.0	13.0	14.0	18.0	14.5	16.0
MONTH	27.0	18.5	23.0	25.0	11.5	19.0	20.5	9.0	14.0	21.0	9.0	14.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	19.0	16.5	17.5	15.5	14.5	15.0	23.0	19.0	21.0	25.5	23.5	24.5
2	20.5	18.5	19.5	16.5	14.5	15.0	24.0	20.5	22.0	26.5	23.5	24.5
3	19.5	13.0	16.0	18.5	15.5	16.5	26.0	21.5	23.5	25.5	23.5	24.5
4	12.5	8.0	10.5	18.0	12.0	16.5	25.0	22.5	24.0	28.5	24.5	26.0
5	8.0	6.0	7.0	13.5	10.0	11.5	23.5	20.0	22.0	27.0	24.5	26.0
6	6.0	4.5	5.5	13.5	9.0	11.0	23.5	19.0	21.5	28.5	24.0	26.0
7	7.0	4.5	5.5	13.5	8.5	10.5	24.5	20.0	22.0	28.5	25.0	26.5
8	8.0	4.5	6.0	15.0	9.0	11.5	27.0	21.5	23.5	29.5	25.0	27.0
9	10.0	6.5	8.0	16.0	10.5	13.0	22.5	19.0	21.0	29.5	25.5	27.5
10	9.5	8.0	9.0	17.0	11.5	14.0	19.0	16.5	17.5	27.5	25.0	26.0
11	11.0	9.5	10.0	19.0	13.0	15.5	18.0	15.0	16.5	27.0	24.0	25.5
12	15.0	11.0	13.0	20.5	15.0	17.5	17.0	15.5	16.0	26.5	24.0	25.0
13	18.0	15.0	16.5	22.5	17.0	19.5	16.0	14.5	15.0	27.0	23.5	25.0
14	20.0	16.5	18.0	24.0	19.0	21.0	16.0	15.0	15.5	27.5	24.5	26.0
15	21.0	18.5	19.5	22.0	19.5	21.0	20.0	15.0	17.0	28.0	25.5	26.5
16	18.5	15.5	16.5	21.5	18.5	19.5	21.0	17.0	19.0	28.0	26.0	27.0
17	15.0	13.5	15.0	23.0	19.5	21.0	23.0	19.0	21.0	30.0	26.0	27.5
18	14.0	12.5	13.0	24.5	20.5	22.5	25.0	21.0	22.5	31.0	27.0	29.0
19	13.5	12.5	13.0	24.0	21.0	22.5	23.5	21.5	22.5	32.0	27.0	29.5
20	16.5	13.0	14.0	25.5	21.5	23.0	24.5	21.5	23.0	31.0	27.5	29.0
21	16.5	13.5	15.0	22.5	15.5	18.0	26.0	22.5	24.0	31.0	26.5	28.5
22	16.5	12.5	14.5	17.5	14.5	16.0	26.5	22.5	24.5	31.5	27.0	29.0
23	15.5	12.0	13.5	19.0	14.0	16.0	26.5	22.5	24.5	32.0	27.5	29.5
24	14.5	11.5	13.0	20.5	16.0	18.0	25.5	23.0	24.5	32.0	27.0	29.5
25	17.0	13.5	15.0	20.0	18.5	19.0	26.0	23.5	24.5	32.0	27.0	29.5
26	20.0	14.5	17.0	21.5	19.5	20.5	25.0	24.0	24.5	32.0	27.5	29.5
27	21.5	16.5	18.5	22.0	20.0	21.0	26.5	23.5	24.5	31.5	28.0	29.5
28	18.5	15.0	16.5	24.0	21.5	22.5	28.0	24.0	25.5	31.0	27.5	29.0
29	---	---	---	24.5	20.0	22.5	27.5	23.5	25.5	30.5	26.5	28.5
30	---	---	---	24.5	20.5	22.5	25.5	22.5	24.0	30.5	27.0	28.5
31	---	---	---	23.0	19.5	21.5	---	---	---	30.5	27.0	28.5
MONTH	21.5	4.5	13.5	25.5	8.5	18.0	28.0	14.5	21.5	32.0	23.5	27.5

GUADALUPE RIVER BASIN

327

08186000 CIBOLO CREEK NEAR FALLS CITY, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	30.5	27.0	28.5	---	---	---	30.0	28.0	28.5	31.0	27.5	29.5
2	31.5	27.5	29.0	---	---	---	30.5	27.0	28.5	31.5	28.0	29.5
3	31.0	27.5	29.0	---	---	---	30.5	27.0	28.5	32.0	28.0	30.0
4	30.0	26.5	28.5	---	---	---	31.5	27.5	29.0	31.5	27.5	29.5
5	31.0	27.0	29.0	---	---	---	31.0	27.5	29.5	30.5	27.5	29.0
6	31.5	28.0	30.0	---	---	---	31.5	27.5	29.5	29.0	27.5	28.5
7	32.0	28.0	30.0	32.5	28.5	30.0	30.5	28.0	29.5	29.0	25.5	27.5
8	31.5	27.0	29.0	32.0	28.5	30.0	28.0	25.5	27.0	29.0	26.0	27.5
9	29.0	26.5	28.0	32.0	28.0	29.5	29.0	25.0	27.0	30.5	26.5	28.0
10	31.0	27.0	29.0	31.5	28.0	29.5	28.0	25.0	26.5	31.0	27.0	28.5
11	31.0	26.5	28.5	31.5	28.0	29.5	28.5	25.0	26.5	30.5	27.5	28.5
12	31.0	27.5	29.0	32.0	28.0	29.5	28.5	25.0	27.0	30.5	27.0	28.5
13	30.5	27.5	29.0	32.0	28.0	30.0	29.0	25.0	27.0	28.5	25.5	27.0
14	28.5	24.5	26.5	32.0	28.0	30.0	28.5	25.5	27.5	26.0	23.0	24.5
15	27.5	25.5	26.5	32.5	27.5	30.0	29.0	26.0	27.5	26.5	22.5	24.5
16	26.5	24.5	25.5	32.5	28.0	30.5	29.5	26.0	28.0	26.5	21.5	24.0
17	27.5	24.0	25.5	33.0	28.5	30.5	30.0	26.5	28.0	27.0	22.0	24.5
18	29.0	25.0	27.0	32.5	28.5	30.5	29.5	27.0	28.5	27.5	23.0	25.0
19	30.5	26.5	28.5	33.0	28.5	30.5	30.0	26.5	28.5	27.0	23.5	25.0
20	31.5	27.5	29.0	31.5	29.0	30.5	30.0	26.5	28.5	27.0	23.5	25.5
21	31.0	28.0	29.0	30.0	26.5	28.5	30.0	26.5	28.5	27.0	24.5	25.5
22	31.0	27.5	29.0	30.0	26.5	28.5	30.5	27.0	29.0	26.5	24.0	25.0
23	29.0	27.5	28.0	30.0	26.0	28.0	30.5	27.0	29.0	24.5	21.5	23.0
24	27.5	26.0	27.0	29.0	24.0	27.5	30.5	24.5	28.5	22.5	19.0	20.5
25	27.5	25.5	26.5	26.0	23.5	24.5	28.5	24.5	26.0	22.0	18.5	20.5
26	27.5	25.0	26.5	28.5	24.0	26.0	30.0	26.0	27.5	22.0	18.0	20.0
27	29.0	25.0	27.0	27.5	26.0	26.5	30.5	27.0	28.5	22.5	18.5	20.5
28	30.5	25.0	28.0	31.0	25.5	28.0	31.5	27.5	29.0	23.0	19.0	21.0
29	29.5	26.5	28.0	31.5	27.0	29.0	30.5	27.5	29.0	23.0	19.0	21.0
30	---	---	---	31.5	27.0	29.5	31.0	27.5	29.0	23.5	19.5	22.0
31	---	---	---	31.5	27.5	29.5	31.5	27.5	29.5	---	---	---
MONTH	32.0	24.0	28.0	33.0	23.5	29.0	31.5	24.5	28.0	32.0	18.0	25.5

GUADALUPE RIVER BASIN

329

08188500 SAN ANTONIO RIVER AT GOLIAD, TX
(National stream-quality accounting network)

LOCATION.--Lat 28°38'58", long 97°23'04", Goliad County, Hydrologic Unit 12100303, on right bank at upstream side of bridge on U.S. Highway 183, 1.2 mi southeast of courthouse in Goliad, 11.7 mi upstream from Manahuilla Creek, and 66.5 mi upstream from mouth.

DRAINAGE AREA.--3,921 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1924 to March 1929, February 1939 to current year.

REVISED RECORDS.--WSP 1923: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 91.08 ft above National Geodetic Vertical Datum of 1929. Prior to Mar. 31, 1929, nonrecording gage at Texas and New Orleans Railroad Co. bridge 1.1 mi upstream at same datum.

REMARKS.--No estimated daily discharges. Records good. Many diversions and regulations above station (see station 08181800). Flow is affected at times by discharge from the flood-detention pools of 36 floodwater-retarding structures with a combined detention capacity of 66,730 acre-ft. These structures control runoff from 213 mi².

AVERAGE DISCHARGE.--54 years (water years 1925-28, 1940-89), 685 ft³/s (496,300 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 138,000 ft³/s Sept. 23, 1967 (gage height, 53.7 ft, from floodmark), from rating curve extended above 26,000 ft³/s on basis of slope-area measurement of peak flow; minimum observed, 1.2 ft³/s June 16, 1956.

Maximum stage since 1869, that of Sept. 23, 1967. Flood of July 9, 1942, reached a stage of 44.9 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods in October 1913 and June 15, 1935, reached about the same stage as flood in 1942. Maximum stage since about 1800 occurred in 1869 and was several feet higher than flood of Sept. 23, 1967.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 6,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 17	0800	*1,920	*11.30				

Minimum daily discharge, 93 ft³/s Sept. 29, 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	359	256	277	321	899	320	485	664	181	211	182	148
2	260	255	260	325	939	315	393	634	178	186	177	149
3	250	254	230	322	638	328	344	789	170	176	165	149
4	265	336	228	324	511	326	325	577	143	167	164	145
5	286	334	227	323	536	320	317	447	133	151	169	145
6	298	279	220	348	427	313	309	394	127	137	161	145
7	293	254	222	330	377	327	310	375	120	128	165	136
8	282	252	260	325	364	314	268	373	119	139	259	128
9	242	245	255	317	362	304	240	359	108	158	181	146
10	229	237	270	308	365	318	228	349	116	149	205	207
11	226	244	254	311	364	313	229	341	119	133	236	229
12	218	246	254	315	323	319	226	340	122	132	281	155
13	215	248	249	321	275	318	217	334	148	122	240	125
14	247	250	251	327	261	319	216	350	1320	120	200	114
15	237	245	264	329	251	319	222	401	819	131	182	141
16	234	235	261	331	250	314	230	342	795	133	170	151
17	227	223	258	332	253	317	482	322	1730	123	162	266
18	225	233	254	331	250	314	471	323	897	124	159	235
19	229	238	245	347	249	307	376	320	523	121	166	157
20	226	229	244	381	282	305	351	313	417	117	159	130
21	230	225	255	457	290	314	366	345	368	109	154	115
22	241	248	256	426	284	315	993	331	327	111	156	112
23	238	275	264	392	276	377	1040	297	288	110	159	111
24	232	270	272	388	279	415	648	283	313	104	144	111
25	230	279	308	363	277	351	509	273	303	110	140	109
26	222	288	325	424	312	339	459	276	267	196	255	108
27	230	294	315	372	327	322	427	238	257	225	252	108
28	291	286	316	372	322	373	415	205	227	179	165	102
29	258	281	304	513	---	387	419	202	189	235	184	93
30	253	280	307	666	---	334	777	191	208	202	173	93
31	256	---	319	573	---	377	---	186	---	185	151	---
TOTAL	7729	7819	8224	11514	10543	10234	12292	11174	11032	4624	5716	4263
MEAN	249	261	265	371	377	330	410	360	368	149	184	142
MAX	359	336	325	666	939	415	1040	789	1730	235	281	266
MIN	215	223	220	308	249	304	216	186	108	104	140	93
AC-FT	15330	15510	16310	22840	20910	20300	24380	22160	21880	9170	11340	8460
CAL YR 1988	TOTAL	136922	MEAN	374	MAX	1450	MIN	143	AC-FT	271600		
WTR YR 1989	TOTAL	105164	MEAN	288	MAX	1730	MIN	93	AC-FT	208600		

GUADALUPE RIVER BASIN

08188500 SAN ANTONIO RIVER AT GOLIAD, TX--Continued
(National stream-quality accounting network)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: December 1941 to December 1942, November 1944 to September 1946, September 1958 to current year. Chemical and biochemical analyses: January 1968 to current year. Pesticide analyses: January 1968 to May 1982. Sediment analyses: April 1959, October 1974 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: January 1942 to September 1946, September 1958 to current year.

WATER TEMPERATURE: September 1958 to current year.

REMARKS.--Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,580 microsiemens July 22, 1978; minimum daily, 138 microsiemens Oct. 27, 1960.

WATER TEMPERATURE: Maximum daily, 36.0°C June 5, 1969; minimum daily, 0.0°C on many days during winter months.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,500 microsiemens June 12, 13; minimum daily, 435 microsiemens June 18, 19.

WATER TEMPERATURE: Maximum daily, 35.0°C July 6, 16, 19; minimum daily, 6.5°C Feb. 6, 8.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI, FECAL, KF AGAR (COLS. PER 100 ML)
NOV 08...	1455	252	1080	8.00	23.0	26	8.1	95	1.4	--	--
JAN 26...	1005	448	1050	7.80	18.0	94	8.2	86	1.7	720	380
MAR 07...	1500	332	1120	8.00	13.0	36	10.6	100	3.1	130	K60
MAY 10...	1442	354	1090	8.20	28.0	58	7.0	89	1.6	120	260
JUN 13...	1110	126	1500	8.20	29.0	30	7.5	98	1.7	120	110
AUG 15...	1020	181	1130	8.30	27.5	54	7.2	92	1.7	130	360

DATE	HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB WH TOT FLD (MG/L AS CAC03)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT WH TOT FET (MG/L AS CAC03)	SULFATE DIS-SOLVED (MG/L AS S04)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)
NOV 08...	330	100	97	22	99	2	7.5	232	110	140	0.40
JAN 26...	300	94	86	20	94	2	7.2	204	93	130	0.50
MAR 07...	330	110	97	22	110	3	6.8	220	110	140	0.50
MAY 10...	300	78	88	19	99	3	7.5	221	100	130	0.40
JUN 13...	380	140	110	25	150	3	8.9	239	170	210	0.60
AUG 15...	310	90	92	20	110	3	9.1	224	100	140	0.50

DATE	SILICA, DIS-SOLVED (MG/L AS SI02)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)
NOV 08...	18	677	679	8.09	8.18	0.010	0.020	8.10	8.20	0.050
JAN 26...	16	622	622	9.97	9.97	0.030	0.030	10.0	10.0	0.080
MAR 07...	13	686	684	9.58	9.58	0.020	0.020	9.60	9.60	<0.010
MAY 10...	18	640	628	6.77	5.79	0.030	0.010	6.80	5.80	0.070
JUN 13...	20	906	867	5.46	5.56	0.040	0.040	5.50	5.60	0.060
AUG 15...	19	668	673	8.67	8.68	0.030	0.020	8.70	8.70	0.040

08188500 SAN ANTONIO RIVER AT GOLIAD, TX--Continued
(National stream-quality accounting network)

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV 08...	0.050	1.2	1.3	3.20	3.10	3.00	9.2	63	43	96
JAN 26...	0.110	1.3	1.4	3.30	3.10	2.80	8.6	145	175	97
MAR 07...	0.020	--	1.1	3.70	3.50	3.20	9.8	71	64	95
MAY 10...	0.060	1.0	1.1	2.40	2.70	2.30	7.1	146	140	98
JUN 13...	0.050	0.64	0.70	2.00	1.90	1.10	3.4	66	22	96
AUG 15...	0.020	0.46	0.50	3.90	3.20	2.90	8.9	135	66	99

DATE	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)
NOV 08...	<10	3	75	<0.5	5	<1	<3	4	5	<5
JAN 26...	--	--	--	--	--	--	--	--	--	--
MAR 07...	<10	2	69	<0.5	<1	<1	<3	2	5	<5
MAY 10...	20	4	78	<0.5	<1	2	<3	<11	13	<3
JUN 13...	10	5	100	<0.5	<1	<1	<3	2	5	<1
AUG 15...	20	4	73	<0.5	<1	<1	<3	3	6	<1

DATE	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
NOV 08...	27	3	0.2	<10	4	1	<1.0	1000	<6	8
JAN 26...	--	--	--	--	--	--	--	--	--	--
MAR 07...	31	2	<0.1	<10	2	1	<1.0	1000	<6	12
MAY 10...	26	3	--	<10	7	1	<1.0	900	9	17
JUN 13...	44	4	0.2	<10	3	2	<1.0	1200	11	10
AUG 15...	24	2	0.2	<10	4	1	<1.0	980	9	11

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1988 TO SEPTEMBER 1989

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	DIS- SOLVED SOLIDS (MG/L)	DIS- SOLVED SOLIDS (TONS)	DIS- SOLVED CHLORIDE (MG/L)	DIS- SOLVED CHLORIDE (TONS)	DIS- SOLVED SULFATE (MG/L)	DIS- SOLVED SULFATE (TONS)	HARDNESS (CA, MG) (MG/L)
OCT. 1988	7729	1180	695	14500	150	3220	130	2630	360
NOV. 1988	7819	1170	688	14500	150	3200	120	2630	350
DEC. 1988	8224	1180	696	15500	150	3430	130	2810	360
JAN. 1989	11514	1030	604	18800	120	3860	110	3340	320
FEB. 1989	10543	967	567	16100	110	3260	100	2860	310
MAR. 1989	10234	1140	671	18500	150	4020	120	3350	350
APR. 1989	12292	953	559	18500	110	3730	99	3290	300
MAY 1989	11174	1010	592	17900	120	3650	110	3170	320
JUNE 1989	11032	823	481	14300	93	2770	84	2520	270
JULY 1989	4624	1250	742	9260	170	2140	140	1700	370
AUG. 1989	5716	1130	667	10300	140	2230	120	1860	350
SEPT 1989	4263	1190	703	8090	160	1810	130	1470	360
TOTAL	105164	**	**	176000	**	37300	**	31600	**
WTD.AVG.	288	1060	621	**	130	**	110	**	330

GUADALUPE RIVER BASIN

08188500 SAN ANTONIO RIVER AT GOLIAD, TX--Continued
(National stream-quality accounting network)

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
EQUIVALENT MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1080	1120	1140	1140	800	1140	1100	700	1280	1100	1100	1150
2	1120	1140	1190	1110	756	1150	1050	700	1300	1090	1080	1180
3	1160	1150	1150	1080	558	1160	1050	800	1320	1210	1080	1190
4	1170	1170	1170	1090	658	1140	1030	947	1360	1120	1100	1210
5	1150	1110	1190	1100	720	1140	1050	926	1420	1160	1140	1170
6	1150	1110	1210	1120	714	1140	1120	904	1390	1210	1150	1200
7	1140	1120	1200	1100	852	1140	1150	827	1460	1220	1180	1190
8	1130	1130	1140	1030	873	1140	1150	920	1460	1260	1120	1210
9	1140	1130	1150	1110	969	1160	1180	993	1460	1300	1190	1230
10	1170	1160	1200	1010	1000	1170	1210	1090	1460	1260	1170	1190
11	1190	1190	1180	1090	1040	1150	1210	1110	1470	1300	1140	1220
12	1160	1210	1220	1120	1070	1160	1230	1120	1500	1330	1110	1180
13	1200	1200	1200	1130	1100	1150	1280	1110	1500	1340	1070	1200
14	1240	1190	1190	1130	1150	1140	1270	1120	889	1310	1090	1280
15	1240	1170	1210	1140	1180	1140	1290	1040	490	1310	1100	1240
16	1240	1160	1190	1130	1210	1160	1310	1030	611	1330	1110	1200
17	1230	1200	1210	1110	1240	1170	1270	1050	760	1330	1140	991
18	1210	1190	1210	1110	1240	1160	1100	1080	435	1330	1070	1060
19	1210	1170	1200	1080	1260	1170	1090	1160	435	1340	1060	1150
20	1160	1210	1190	1080	1260	1150	928	1160	470	1330	1110	1160
21	1210	1240	1200	1080	1240	1150	904	1170	532	1340	1170	1190
22	1220	1220	1210	1040	1210	1160	988	1120	667	1350	1200	1220
23	1210	1200	1230	1040	1200	1160	449	1100	774	1350	1190	1270
24	1230	1180	1210	1030	1210	1120	710	1140	851	1340	1160	1300
25	1220	1160	1120	1070	1180	1120	626	1170	925	1370	1170	1230
26	1200	1160	1200	1060	1190	1110	737	1180	991	1400	1190	1190
27	1190	1180	1120	933	1150	1050	776	1160	1000	1260	1330	1200
28	1180	1170	1130	1020	1140	1070	865	1190	1060	1320	1140	1310
29	1160	1140	1210	700	---	1100	968	1250	1090	1110	1010	1350
30	1180	1160	1140	650	---	1190	800	1240	1150	1140	1110	1370
31	1150	---	1150	915	---	1100	---	1280	---	1160	1110	---
MEAN	1180	1170	1180	1050	1040	1140	1030	1060	1050	1270	1130	1210

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26.0	20.5	14.5	16.5	19.5	16.0	24.0	25.0	29.0	33.0	34.0	34.0
2	e25.0	19.5	16.0	19.0	20.0	16.5	24.5	23.5	25.5	29.0	32.0	27.5
3	24.0	22.5	12.0	19.5	14.5	19.5	24.5	24.5	27.0	34.0	33.5	28.0
4	22.5	24.0	15.5	17.0	10.5	20.0	25.5	26.5	29.5	34.0	33.0	26.5
5	22.0	21.5	16.0	20.5	8.0	13.5	23.5	27.5	29.0	34.0	33.0	31.5
6	24.5	20.5	14.0	21.0	6.5	13.5	22.0	28.0	29.0	35.0	34.0	32.0
7	25.5	23.5	18.0	20.0	7.5	14.0	24.0	27.0	30.5	34.0	33.5	31.5
8	22.5	23.0	17.0	18.5	6.5	12.5	23.5	27.5	30.0	33.0	---	32.0
9	24.0	23.0	13.0	15.0	12.0	15.5	22.5	27.0	30.5	34.0	31.0	33.0
10	24.5	25.0	12.5	14.0	10.0	17.5	18.5	28.0	30.5	34.0	30.0	31.0
11	24.5	25.5	13.0	15.0	11.0	16.5	16.0	25.0	30.5	32.0	31.0	30.0
12	20.5	25.0	12.0	17.5	15.5	20.0	16.5	23.0	30.0	31.0	30.5	32.5
13	23.0	22.0	10.5	13.0	19.0	21.0	17.0	23.0	30.0	34.0	31.0	32.0
14	23.5	25.0	13.0	11.0	20.0	23.0	16.5	25.0	30.0	33.0	32.0	28.5
15	22.0	24.0	14.5	10.5	22.5	22.0	15.5	25.5	29.0	31.5	31.0	28.5
16	21.0	22.0	13.0	11.0	18.0	21.0	22.0	25.5	28.0	35.0	33.0	28.0
17	22.5	20.5	13.0	12.5	16.5	22.5	21.5	24.5	30.0	34.0	31.0	29.5
18	23.0	22.0	13.5	15.5	14.5	23.0	22.5	26.5	32.0	33.5	32.5	29.0
19	23.0	22.0	14.0	16.0	15.0	22.0	22.5	27.5	30.5	35.0	31.0	29.5
20	23.0	17.5	16.5	16.0	17.0	24.5	24.0	26.0	30.5	34.0	32.0	29.0
21	25.5	17.0	15.5	12.0	16.0	18.0	24.0	28.0	30.0	32.0	33.0	28.5
22	24.5	15.0	20.0	14.5	14.5	16.0	23.5	27.5	30.0	31.0	33.0	30.0
23	24.0	14.0	19.0	15.5	15.5	19.0	23.0	28.5	28.0	33.0	34.0	27.0
24	26.0	14.5	19.5	16.0	16.0	19.5	24.5	29.0	28.0	30.0	32.0	25.0
25	26.0	19.0	19.0	18.0	17.0	20.5	24.0	28.0	29.0	29.0	32.0	21.0
26	23.5	21.0	21.0	19.0	21.0	21.0	26.5	27.0	30.0	30.5	32.5	24.0
27	25.5	18.5	22.0	16.5	17.5	22.0	25.5	29.5	32.0	30.0	33.0	26.5
28	26.5	15.5	18.0	18.0	18.0	21.5	25.0	28.5	30.0	31.0	32.0	27.0
29	24.0	14.5	17.0	17.0	---	23.5	26.5	28.5	30.0	30.5	33.0	27.0
30	24.5	17.0	15.0	18.0	---	23.0	22.0	27.5	28.5	32.0	30.5	28.0
31	23.5	---	16.5	19.0	---	23.5	---	26.5	---	34.0	30.5	---
MEAN	24.0	20.5	15.5	16.0	15.0	19.5	22.5	26.5	29.5	32.5	32.0	29.0

e Estimated

GUADALUPE RIVER BASIN

333

08188600 GUADALUPE-BLANCO RIVER AUTHORITY CALHOUN CANAL FLUME NO. 1 NEAR LONG MOTT, TX

LOCATION.--Lat 28°29'44", long 96°46'18", Calhoun County, Hydrologic Unit 12100204, on right bank at concrete Parshall flume No. 1, 518 ft upstream from State Highway 185, 1,900 ft downstream from pumping station on Goff Bayou, and 1.1 mi northwest of Long Mott.

PERIOD OF RECORD.--March 1968 to February 1970 (monthly discharge only), March 1970 to current year.

GAGE.--Water-stage and velocity recorders, duplex water-stage recorder, and Parshall flume. Datum of gage is 23.53 ft above National Geodetic Vertical Datum of 1929. Prior to Mar. 6, 1981, deflection-vane recorder.

REMARKS.--No estimated daily discharges. Records fair. Flow is diverted from Guadalupe River 550 ft upstream from Guadalupe River near Tivoli (station 08188800), and then through a system of canals, Hog Bayou, and Goff Bayou, a distance of 8.9 mi to the pumping station on Goff Bayou 1,900 ft upstream from Flume No. 1.

COOPERATION.--Log of pumping station on Goff Bayou provided by Guadalupe-Blanco River Authority.

AVERAGE DISCHARGE.--21 years (water years 1969-89), 94.3 ft³/s (68,320 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 311 ft³/s July 7, 1968; no flow at times in 1968-74 and 1977-89.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	229	64	40	36	64	32	96	36	192	160	72	181
2	224	64	37	28	55	32	96	58	202	149	44	176
3	234	64	16	35	31	32	96	74	219	144	35	176
4	240	54	16	65	12	32	114	80	224	153	48	176
5	229	48	16	96	.00	78	131	101	224	160	53	176
6	233	48	26	96	.00	86	162	144	224	165	71	176
7	240	48	51	96	9.0	87	169	144	222	168	73	176
8	240	48	45	78	25	65	153	150	216	198	64	159
9	240	48	39	64	32	68	144	171	202	224	82	144
10	219	39	48	64	34	64	144	191	155	105	80	144
11	199	32	48	64	32	64	133	208	154	160	85	144
12	203	32	48	64	32	61	91	189	163	168	96	144
13	184	32	48	55	32	32	80	134	182	183	96	134
14	185	41	48	48	32	26	80	112	191	192	119	134
15	192	48	48	67	32	16	74	107	194	185	144	164
16	183	48	29	80	32	16	53	129	198	167	148	168
17	151	29	16	80	32	16	73	134	192	154	156	160
18	144	16	16	90	32	16	67	141	192	152	133	150
19	144	16	25	74	32	16	75	168	192	154	149	144
20	144	16	43	33	52	37	76	176	192	125	155	144
21	125	25	48	8.0	64	58	106	169	192	101	118	154
22	112	32	48	16	45	60	128	186	199	90	131	165
23	112	32	37	16	32	64	143	208	208	99	160	176
24	112	32	16	5.3	32	64	160	226	187	112	168	185
25	103	32	16	.00	32	64	160	216	63	94	176	192
26	88	32	16	.00	32	64	169	202	6.7	80	181	201
27	88	32	23	.00	32	84	168	206	34	90	192	208
28	96	32	32	.00	32	96	118	201	77	96	192	199
29	96	32	32	.00	---	118	70	187	127	86	170	202
30	96	32	32	35	---	108	51	176	154	90	150	199
31	78	---	16	64	---	86	---	186	---	83	172	---
TOTAL	5163	1148	1019	1457.30	903.00	1742	3380	4810	5177.7	4287	3713	5051
MEAN	167	38.3	32.9	47.0	32.2	56.2	113	155	173	138	120	168
MAX	240	64	51	96	64	118	169	226	224	224	192	208
MIN	78	16	16	.00	.00	16	51	36	6.7	80	35	134
AC-FT	10240	2280	2020	2890	1790	3460	6700	9540	10270	8500	7360	10020
CAL YR 1988	TOTAL	41896.30	MEAN	114	MAX	296	MIN	.00	AC-FT	83100		
WTR YR 1989	TOTAL	37851.00	MEAN	104	MAX	240	MIN	.00	AC-FT	75080		

GUADALUPE RIVER MAIN STEM

08188800 GUADALUPE RIVER NEAR TIVOLI, TX

LOCATION.--Lat 28°30'20", long 96°53'04", Calhoun-Refugio County line, Hydrologic Unit 12100204, on right bank at diversion and saltwater barrier; one orifice located upstream and one downstream, 550 ft downstream from Calhoun County Irrigation Canal intake, 0.4 mi downstream from San Antonio River, 3.5 mi north of Tivoli, and at mile 10.2. Water-quality sampling site on left bank 474 ft upstream.

DRAINAGE AREA.--10,128 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1965 to current year.

REVISED RECORDS.--WRD TX-68-1: Drainage area.

GAGE.--Duplex water-stage recorder. Datum of gage is 0.04 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Many small diversions above station. Some regulation by powerplants. Upstream regulation same as that for Guadalupe River at Cuero (station 08175800) and San Antonio River at Goliad (station 08188500).

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height (upstream from barrier), 13.7 ft Sept. 22, 1967; minimum, 1.2 ft July 2, 1984. Maximum gage height (downstream from barrier), 13.6 ft Sept. 22, 1967; minimum, 0.5 ft July 12, 14, 1967.

Maximum stage since at least 1936, that of Sept. 22, 1967.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in July 1936 reached a stage of 11 ft, present site and datum. Levees along the Navigation Canal from San Antonio Bay to Victoria were built in 1961 thus decreasing the flood plain.

EXTREMES FOR CURRENT YEAR.--Maximum gage height (upstream from barrier), 6.1 ft May 22, 23; minimum, 1.5 ft Dec. 5; Maximum gage height (downstream from barrier), 6.1 ft May 22, 23; minimum, 0.7 ft July 20, 21.

DAY	GAGE HEIGHT, FEET, WATER YEAR		OCTOBER 1988		TO SEPTEMBER 1989							
	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN
OCTOBER			NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	4.1	---	2.4	2.3	2.0	1.9	2.4	2.3	4.0	3.8	2.5	2.3
2	4.1	---	2.5	2.4	1.8	1.7	2.4	2.3	3.9	3.7	3.0	2.8
3	4.0	---	2.5	2.4	1.8	1.7	2.4	2.3	4.0	3.9	3.2	3.1
4	3.8	---	2.4	2.3	1.9	1.7	2.2	2.1	4.0	3.8	3.4	3.2
5	3.9	2.5	1.9	1.8	1.7	1.5	3.5	2.5	3.8	3.6	2.7	2.3
6	4.1	2.7	2.2	2.0	1.8	1.7	2.6	2.4	3.6	3.5	2.3	1.9
7	4.0	2.8	2.2	2.0	1.8	1.7	2.8	2.7	3.7	3.5	2.3	2.0
8	4.0	2.7	2.1	2.0	2.1	2.1	2.4	2.2	3.5	3.3	2.4	2.1
9	3.9	2.6	2.3	2.2	1.9	1.8	2.2	2.1	3.3	3.0	2.5	2.2
10	3.9	2.4	2.3	2.2	2.0	1.9	2.4	2.3	3.1	2.9	2.7	2.4
11	3.7	2.2	2.3	2.2	1.9	1.8	2.6	2.6	3.1	2.9	2.6	2.4
12	3.7	1.9	2.5	2.5	1.9	1.8	2.7	2.6	3.2	3.1	2.6	2.4
13	3.8	2.2	2.3	2.2	1.9	1.8	2.1	2.0	3.3	3.2	3.0	2.8
14	3.8	2.3	2.4	2.3	2.1	2.0	2.2	2.0	3.4	3.3	3.1	2.9
15	3.8	2.6	2.9	2.9	2.0	1.9	2.2	2.1	3.2	3.1	3.1	2.9
16	3.7	2.4	2.5	2.4	1.8	1.7	2.2	2.1	3.0	2.8	2.9	2.7
17	3.8	2.5	2.5	2.4	1.8	1.7	2.2	2.1	2.9	2.8	3.1	2.9
18	3.8	2.5	2.8	2.7	1.8	1.7	2.3	---	2.6	2.4	3.2	3.0
19	3.8	2.3	2.9	2.9	2.0	2.0	3.0	---	2.6	2.5	3.4	3.2
20	3.9	2.5	2.6	2.5	2.1	2.1	2.9	---	2.6	2.5	3.5	3.3
21	4.0	2.4	1.9	1.8	2.1	2.0	3.0	---	2.6	2.4	3.2	3.0
22	4.0	2.5	1.8	1.7	2.0	1.9	3.3	---	2.3	2.1	2.3	2.1
23	4.0	2.6	1.9	1.8	2.4	2.3	3.7	---	2.2	2.0	2.7	2.5
24	3.9	2.8	2.0	1.9	2.4	2.3	3.8	---	2.5	2.3	2.8	2.6
25	4.0	2.8	2.5	2.4	2.6	2.5	3.6	---	2.6	2.4	3.1	2.8
26	2.8	2.6	2.6	2.5	2.6	2.6	3.1	---	2.6	2.4	3.3	3.1
27	2.9	2.8	2.2	2.2	2.9	2.8	2.9	2.8	2.7	2.5	3.6	3.4
28	2.8	2.7	2.0	1.9	2.3	2.2	3.1	3.0	2.5	2.2	3.5	3.4
29	2.6	2.5	2.0	1.9	2.3	2.2	3.3	3.2	---	---	3.4	3.4
30	2.6	2.5	2.0	1.9	2.4	2.4	3.9	3.7	---	---	3.4	3.4
31	2.6	2.6	---	---	2.4	2.3	4.0	3.8	---	---	3.3	3.3
MAX	4.1	---	2.9	2.9	2.9	2.8	4.0	---	4.0	3.9	3.6	3.4
MIN	2.6	---	1.8	1.7	1.7	1.5	2.1	---	2.2	2.0	2.3	1.9

GUADALUPE RIVER MAIN STEM

335

08188800 GUADALUPE RIVER NEAR TIVOLI, TX--Continued

DAY	GAGE HEIGHT, FEET, WATER YEAR		OCTOBER 1988		TO SEPTEMBER 1989							
	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	3.3	3.3	3.1	3.1	4.0	2.6	3.9	2.7	3.7	2.6	3.6	2.4
2	3.6	3.6	3.3	3.3	4.0	2.9	3.9	2.8	3.7	2.8	3.6	2.3
3	3.7	3.7	3.8	3.8	4.1	3.0	3.8	2.4	3.7	2.6	3.6	2.2
4	3.6	3.6	4.7	4.7	4.1	2.8	3.6	2.1	3.7	2.8	3.6	2.1
5	2.8	2.8	4.7	4.7	3.3	2.6	3.6	2.0	3.7	2.8	3.6	2.3
6	3.0	3.0	3.8	3.8	3.9	2.8	3.5	1.8	3.7	2.3	3.5	2.4
7	2.8	2.8	3.1	3.1	3.9	2.7	3.6	1.9	3.7	2.0	3.4	2.6
8	3.0	3.0	3.4	3.4	3.7	2.3	3.5	1.9	3.6	1.8	3.4	2.6
9	2.5	2.5	3.5	3.5	3.7	2.6	3.3	2.0	3.7	2.7	3.4	2.6
10	2.3	2.3	3.0	3.0	3.8	2.8	3.5	2.1	3.7	2.5	3.7	2.5
11	2.4	2.4	2.7	2.7	3.8	2.9	3.5	2.4	3.7	2.3	3.7	2.3
12	2.8	2.8	2.9	2.9	3.9	2.9	3.6	2.2	3.6	2.3	3.7	2.4
13	3.0	3.0	4.2	4.2	4.2	2.9	3.6	2.2	3.6	2.3	3.7	2.4
14	2.9	2.9	4.6	4.6	4.8	4.8	3.4	2.1	3.7	2.5	3.7	2.1
15	2.6	2.6	4.6	4.6	4.8	4.8	3.2	2.0	3.7	2.5	3.7	2.1
16	2.7	2.7	5.2	5.2	4.2	4.2	3.0	1.8	3.6	2.5	3.7	2.3
17	2.9	2.9	5.5	5.5	5.5	5.5	3.2	2.0	3.6	2.5	3.7	2.2
18	2.9	2.9	5.4	5.3	5.5	5.5	3.3	2.1	3.6	2.4	3.7	2.4
19	3.0	3.0	5.6	5.5	4.9	4.9	3.3	1.9	3.6	2.3	3.7	2.6
20	2.9	2.9	5.6	5.5	5.0	3.6	3.3	1.8	3.6	2.3	3.7	2.8
21	2.8	2.8	5.7	5.6	3.6	3.1	3.3	1.6	3.6	2.3	3.7	2.8
22	3.2	3.2	6.1	6.1	4.0	2.8	3.3	1.8	3.6	2.4	3.7	2.6
23	4.5	4.5	6.1	6.1	3.9	3.7	3.4	1.8	3.6	2.5	3.7	2.0
24	4.9	4.9	5.9	5.8	4.3	4.2	3.3	2.2	3.6	2.5	3.6	1.7
25	4.8	4.8	5.5	5.5	4.3	4.0	3.4	1.9	3.6	2.4	3.6	1.7
26	3.8	3.8	5.0	5.0	4.2	3.5	3.2	2.1	3.6	2.3	3.6	2.1
27	3.3	3.3	3.8	3.8	4.1	2.9	3.2	2.0	3.6	2.4	3.7	2.3
28	3.0	3.0	3.2	3.2	4.1	2.6	3.7	2.3	3.7	2.4	3.6	2.4
29	2.9	2.9	2.8	2.8	3.9	2.8	3.7	2.3	3.7	2.3	3.6	2.0
30	2.8	2.8	2.7	2.7	3.6	2.6	3.7	2.4	3.6	2.3	3.6	2.3
31	---	---	3.8	2.7	---	---	3.7	2.4	3.6	2.3	---	---
MAX	4.9	4.9	6.1	6.1	5.5	5.5	3.9	2.8	3.7	2.8	3.7	2.8
MIN	2.3	2.3	2.7	2.7	3.6	2.3	3.0	1.6	3.6	1.8	3.4	1.7

GUADALUPE RIVER MAIN STEM

08188800 GUADALUPE RIVER NEAR TIVOLI, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: August 1965 to current year. Chemical and biochemical analyses: January 1968 to current year. Pesticide analyses: October 1970 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: August 1965 to October 1982.

WATER TEMPERATURES: August 1965 to October 1982.

INSTRUMENTATION.--Beginning July 1965, specific conductance was recorded continuously at this station. Beginning March 1981, water temperature was recorded continuously at this station. Continuous recording of specific conductance and water temperature was discontinued October 1982.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,000 microsiemens June 1, 1971, Aug. 3, 1978; minimum daily, 159 microsiemens Apr. 28, 1980.

WATER TEMPERATURES (1966-69, 1981-82): Maximum daily, 32.0°C on many days during summer months; minimum daily, 8.0°C Jan. 15, 1968.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB TOT FLD (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
OCT 26...	1400	804	8.20	26.0	6.8	84	1.7	270	71	74	20	62
DEC 14...	1440	817	8.10	12.5	9.8	92	1.0	280	48	79	19	69
JAN 27...	0915	745	8.00	16.0	8.7	87	1.5	250	48	71	17	61
MAR 07...	1825	780	8.20	13.0	10.3	96	1.9	270	50	79	18	58
MAY 10...	0834	652	7.60	25.0	6.9	83	1.2	220	40	64	15	46
AUG 15...	1755	982	8.20	29.0	7.3	95	1.2	270	56	75	19	90

DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (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)
OCT 26...	2	4.2	197	62	76	0.30	15	432	3.48	0.020	3.50	0.030
DEC 14...	2	3.9	228	64	89	0.30	13	474	4.27	0.030	4.30	0.080
JAN 27...	2	4.5	200	56	76	0.30	13	419	3.37	0.030	3.40	0.080
MAR 07...	2	4.0	222	61	76	0.40	11	441	3.18	0.020	3.20	0.030
MAY 10...	1	4.3	182	45	58	0.30	14	356	1.57	0.030	1.60	0.070
AUG 15...	2	6.3	210	76	110	0.40	17	520	3.57	0.030	3.60	0.080

DATE	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	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)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)
OCT 26...	0.47	0.50	1.20	--	--	--	--	--	--	--	--	--
DEC 14...	0.52	0.60	1.20	--	--	--	--	--	--	--	--	--
JAN 27...	0.62	0.70	0.990	--	--	--	--	--	--	--	--	--
MAR 07...	0.77	0.80	1.10	2	78	<1	<1	1	11	<5	3	0.1
MAY 10...	0.23	0.30	0.690	--	--	--	--	--	--	--	--	--
AUG 15...	0.66	0.74	1.80	5	110	<1	<1	8	6	1	4	<0.1

GUADALUPE RIVER MAIN STEM

08188800 GUADALUPE RIVER NEAR TIVOLI, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	SELE- NITR- DIS- SOLVED (ug/L) AS SE)	SILVER, ZINC, DIS- SOLVED (ug/L) AS AG)	PCB, THA- LENES, IN BOT- TOTAL (ug/L) AS ZN)	PCB, THA- LENES, IN BOT- TOTAL (ug/L)	CHLOR, POLY- IN BOT- TOTAL (ug/L)	PCN, IN BOT- TOTAL (ug/L)	ALDRIN, IN BOT- TOTAL (ug/L)	ALDRIN, IN BOT- TOTAL (ug/L)	CHLOR- DANE, IN BOT- TOTAL (ug/L)	DDD, IN BOT- TOTAL (ug/L)
OCT 26...	--	--	--	--	--	--	--	--	--	--
DEC 14...	--	--	--	--	--	--	--	--	--	--
JAN 27...	--	--	--	--	--	--	--	--	--	--
MAR 07...	--	--	--	--	--	--	--	--	--	--
MAY 10...	--	--	--	--	--	--	--	--	--	--
AUG 15...	<1	<1.0	5	<0.1	<1	<0.10	<0.1	<0.1	<1.0	<0.010
OCT 26...	DDD, TOTAL (ug/kg)	DDE, TOTAL (ug/L)	DDE, TOTAL (ug/kg)	DDT, TOTAL (ug/L)	DDT, TOTAL (ug/kg)	DDT, TOTAL (ug/L)	DDT, TOTAL (ug/L)	DDT, TOTAL (ug/L)	DDT, TOTAL (ug/L)	DDT, TOTAL (ug/L)
DEC 26...	--	--	--	--	--	--	--	--	--	--
JAN 14...	--	--	--	--	--	--	--	--	--	--
MAR 27...	--	--	--	--	--	--	--	--	--	--
MAY 07...	--	--	--	--	--	--	--	--	--	--
AUG 15...	--	--	--	--	--	--	--	--	--	--
OCT 26...	<0.1	<0.010	0.2	<0.010	<0.1	0.01	<0.010	<0.1	<0.010	<0.1
DATE	ETHION, CHLOR, HEPTA- TOTAL (ug/L)	HEPTA- CHLOR, HEPTA- TOTAL (ug/L)	HEPTA- CHLOR, HEPTA- TOTAL (ug/L)	HEPTA- CHLOR, HEPTA- TOTAL (ug/L)	HEPTA- CHLOR, HEPTA- TOTAL (ug/L)	HEPTA- CHLOR, HEPTA- TOTAL (ug/L)	HEPTA- CHLOR, HEPTA- TOTAL (ug/L)	HEPTA- CHLOR, HEPTA- TOTAL (ug/L)	HEPTA- CHLOR, HEPTA- TOTAL (ug/L)	HEPTA- CHLOR, HEPTA- TOTAL (ug/L)
OCT 26...	--	--	--	--	--	--	--	--	--	--
DEC 14...	--	--	--	--	--	--	--	--	--	--
JAN 27...	--	--	--	--	--	--	--	--	--	--
MAR 07...	--	--	--	--	--	--	--	--	--	--
MAY 10...	--	--	--	--	--	--	--	--	--	--
AUG 15...	<0.01	<0.010	<0.1	<0.010	<0.1	<0.010	<0.1	<0.010	<0.1	<0.010
DATE	MIREX, THION, TOM MA- TOTAL (ug/L)	PARA- THION, TOM MA- TOTAL (ug/L)	PER- THANE, TOM MA- TOTAL (ug/L)	SILVEX, TOM MA- TOTAL (ug/L)	APHENE, TOM MA- TOTAL (ug/L)	TOX- TOM MA- TOTAL (ug/L)	TOX- TOM MA- TOTAL (ug/L)	TOX- TOM MA- TOTAL (ug/L)	TOX- TOM MA- TOTAL (ug/L)	TOX- TOM MA- TOTAL (ug/L)
OCT 26...	--	--	--	--	--	--	--	--	--	--
DEC 14...	--	--	--	--	--	--	--	--	--	--
JAN 27...	--	--	--	--	--	--	--	--	--	--
MAR 07...	--	--	--	--	--	--	--	--	--	--
MAY 10...	--	--	--	--	--	--	--	--	--	--
AUG 15...	<0.01	<0.010	<0.1	<0.010	<0.1	<0.010	<0.1	<0.010	<0.1	<0.010
DATE	MIREX, THION, TOM MA- TOTAL (ug/L)	PARA- THION, TOM MA- TOTAL (ug/L)	PER- THANE, TOM MA- TOTAL (ug/L)	SILVEX, TOM MA- TOTAL (ug/L)	APHENE, TOM MA- TOTAL (ug/L)	TOX- TOM MA- TOTAL (ug/L)	TOX- TOM MA- TOTAL (ug/L)	TOX- TOM MA- TOTAL (ug/L)	TOX- TOM MA- TOTAL (ug/L)	TOX- TOM MA- TOTAL (ug/L)
OCT 26...	--	--	--	--	--	--	--	--	--	--
DEC 14...	--	--	--	--	--	--	--	--	--	--
JAN 27...	--	--	--	--	--	--	--	--	--	--
MAR 07...	--	--	--	--	--	--	--	--	--	--
MAY 10...	--	--	--	--	--	--	--	--	--	--
AUG 15...	<0.01	<0.010	<0.1	<0.010	<0.1	<0.010	<0.1	<0.010	<0.1	<0.010

MISSION RIVER MAIN STEM

339

08189500 MISSION RIVER AT REFUGIO, TX
(National stream-quality accounting network)

LOCATION.--Lat 28°17'30", long 97°16'44", Refugio County, Hydrologic Unit 12100406, on left bank at upstream side of upstream bridge of two bridges on U.S. Highway 77, 560 ft upstream from Missouri Pacific Railroad Co. bridge, and 0.2 mi southwest of Refugio.

DRAINAGE AREA.--690 mi².

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 1923: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1.00 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 25, 1958, nonrecording gage at site 59 ft downstream at same datum. Nov. 26, 1958, to Apr. 18, 1963, nonrecording gage at present site and datum.

REMARKS.--No estimated daily discharges. Records good. There are several small diversions above station.

AVERAGE DISCHARGE.--50 years, 114 ft³/s (2.24 in/yr), 82,590 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 79,000 ft³/s Sept. 12, 1971 (gage height, 38.25 ft); minimum daily, no flow Sept. 1-4, 1989.
Maximum stage since about 1899, that of Sept. 12, 1971.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods in August 1914 and May 17, 1938, reached a stage of 32.3 ft, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Apr. 19	1300	*105	*3.99				

Minimum daily discharge, no flow Sept. 1-4.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	4.8	2.5	1.7	2.5	2.6	2.7	1.3	1.8	.03	1.9	.21	.00		
2	4.7	2.3	1.7	2.5	2.7	2.7	1.3	1.6	.04	.47	.16	.00		
3	15	2.3	1.7	2.5	2.9	2.7	1.3	1.3	.05	.32	.15	.00		
4	9.9	2.3	1.9	2.5	2.5	2.7	1.3	1.1	.05	.68	.11	.00		
5	5.8	2.3	2.1	2.5	2.5	2.7	1.1	.85	.06	.76	.11	.01		
6	3.7	2.1	2.0	2.5	2.5	2.7	.54	.61	.12	2.1	.10	.01		
7	3.1	2.1	2.0	2.5	2.5	2.7	.44	.45	.10	1.5	.07	.02		
8	2.4	1.9	2.3	2.4	2.5	2.7	.34	.34	.10	.58	.86	.03		
9	2.3	1.9	2.7	2.3	2.5	2.7	.34	.19	.08	.29	.30	.03		
10	2.3	1.9	2.7	2.3	2.5	2.7	.34	.16	.07	.15	.12	.03		
11	2.3	1.9	2.7	2.3	2.5	2.7	.29	.18	.07	.20	.11	.03		
12	2.1	1.9	2.5	2.3	2.7	2.5	.25	.11	.10	.81	.07	.09		
13	2.1	1.9	2.5	2.3	2.8	2.5	8.0	.11	.07	.34	.07	.18		
14	2.1	1.9	2.5	2.3	2.9	2.4	6.2	.20	2.9	.20	.07	.09		
15	2.1	1.9	2.5	2.3	2.9	2.1	2.5	.72	.45	.11	.06	.04		
16	2.0	1.9	2.5	2.3	2.7	2.0	1.8	.83	.10	.10	.03	.03		
17	1.9	1.7	2.4	2.3	2.7	1.9	1.3	.66	.07	.07	.03	.03		
18	1.9	1.8	2.3	2.4	2.7	1.9	1.3	.97	.07	.06	.04	.03		
19	1.9	1.9	2.3	7.7	2.7	1.7	30	.78	.09	.07	.03	.02		
20	1.9	1.9	2.3	4.3	2.8	1.7	18	.31	.14	.07	.03	.02		
21	1.9	1.9	2.3	4.0	2.9	1.9	12	.18	.14	.07	.03	.02		
22	1.8	1.9	2.3	2.9	2.9	1.9	6.7	.15	.08	.07	.03	.02		
23	1.7	1.9	2.3	2.9	2.9	2.1	4.2	.11	1.6	.07	.03	.02		
24	1.7	1.9	2.5	2.8	2.9	1.9	3.2	.14	6.7	.07	.03	.01		
25	1.7	1.7	2.7	2.7	3.0	1.9	2.5	.06	5.0	.10	.03	.01		
26	1.7	1.7	2.7	2.6	3.1	1.9	2.1	.04	1.5	.16	.02	.01		
27	1.7	1.7	2.7	2.5	3.1	1.9	2.0	.03	.67	.16	.02	.01		
28	1.6	1.7	2.6	2.5	2.7	1.8	2.3	.04	.34	.21	.02	.01		
29	1.6	1.7	2.5	2.5	---	1.7	1.9	.04	.32	.24	.02	.01		
30	1.8	1.8	2.5	2.5	---	1.7	2.5	.04	12	.24	.01	.01		
31	2.2	---	2.5	2.5	---	1.3	---	.03	---	.24	.01	---		
TOTAL	93.7	58.2	72.9	85.4	76.6	68.2	117.34	14.13	33.11	12.41	2.98	0.82		
MEAN	3.02	1.94	2.35	2.75	2.74	2.20	3.91	.46	1.10	.40	.096	.027		
MAX	15	2.5	2.7	7.7	3.1	2.7	30	1.8	12	2.1	.86	.18		
MIN	1.6	1.7	1.7	2.3	2.5	1.3	.25	.03	.03	.06	.01	.00		
AC-FT	186	115	145	169	152	135	233	28	66	25	5.9	1.6		
CFSM	.00	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00	.00		
IN.	.01	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00	.00		
CAL YR 1988	TOTAL	3373.38	MEAN	9.22	MAX	601	MIN	.01	AC-FT	6690	CFSM	.01	IN.	.18
WTR YR 1989	TOTAL	635.79	MEAN	1.74	MAX	30	MIN	.00	AC-FT	1260	CFSM	.00	IN.	.03

MISSION RIVER MAIN STEM

08189500 MISSION RIVER AT REFUGIO, TX--Continued
(National stream-quality accounting network)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: September 1961 to current year. Chemical and biochemical analyses: January 1968 to current year. Pesticide analyses: October 1970 to April 1979. Sediment analyses: January 1978 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: September 1961 to September 1981.
WATER TEMPERATURE: September 1961 to September 1981.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 100.000 microsiemens Nov. 28, 1965; minimum daily, 85 microsiemens Sept. 13, 1971.
WATER TEMPERATURE: Maximum daily, 39.0°C June 20, 1981; minimum daily, 0.0°C Jan. 18, 1977.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED SATUR-ATION	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI, FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS TOTAL (MG/L AS CAC03)	
NOV 08...	1700	2.4	3910	7.60	24.0	4.4	8.2	98	1.3	--	--	720	
MAR 07...	1720	2.6	3690	8.20	14.0	3.2	12.6	122	1.8	K20	K28	640	
JUN 13...	1420	0.13	8850	7.60	25.0	7.1	7.5	93	1.4	24	80	1100	
AUG 15...	1310	0.03	10100	7.70	27.0	6.9	7.3	95	3.0	K36	270	1400	
DATE		CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT WH TOT FET (MG/L AS CAC03)	SULFATE DIS-SOLVED (MG/L AS S04)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SI02)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)
NOV 08...	200	52	600	10	5.9	242	75	1200	0.30	26	2440	2310	
MAR 07...	180	46	510	9	4.5	246	93	1000	0.30	32	2160	2020	
JUN 13...	300	90	1500	20	7.2	179	78	3000	0.70	16	5320	5110	
AUG 15...	360	110	1600	19	8.1	144	77	3300	0.60	20	5820	5570	
DATE		NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHOROUS TOTAL (MG/L AS P)	PHOS-PHOROUS DIS-SOLVED (MG/L AS P)	PHOS-PHOROUS ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS P04)	SEDI-MENT, SUS-PENDED (MG/L)
NOV 08...	0.160	0.010	0.170	0.070	0.070	0.33	0.40	0.020	0.020	0.040	0.12	68	
MAR 07...	--	<0.010	<0.100	0.040	0.030	--	<0.20	0.010	0.010	0.010	0.03	6	
JUN 13...	--	<0.010	<0.100	0.120	0.110	0.48	0.60	0.030	0.220	0.040	0.12	17	
AUG 15...	--	<0.010	<0.100	0.090	0.070	0.41	0.50	0.090	0.040	0.020	0.06	26	
DATE		SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)	SED. SUSP. SIEVE % FINER THAN .062 MM	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	ARSENIC, DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM, DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)	
NOV 08...	0.44	68	20	4	800	<10	<1	<1	<1	1	20		
MAR 07...	0.04	81	<10	<1	700	<10	1	1	1	<1	20		
JUN 13...	0.01	88	10	2	1500	<10	<1	<1	<1	1	30		
AUG 15...	0.00	98	10	<1	1200	<10	<1	<2	1	4	40		
DATE		LEAD, DIS-SOLVED (UG/L AS PB)	LITHIUM, DIS-SOLVED (UG/L AS LI)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY, DIS-SOLVED (UG/L AS HG)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	STRON-TIUM, DIS-SOLVED (UG/L AS SR)	VANA-DIUM, DIS-SOLVED (UG/L AS V)	ZINC, DIS-SOLVED (UG/L AS ZN)	
NOV 08...	<5	90	50	0.7	<1	<1	<1	<1.0	4600	42	<10		
MAR 07...	<5	80	100	0.3	<1	<1	<1	<1.0	3700	33	<10		
JUN 13...	1	220	130	<0.1	4	<1	<1	<1.0	8800	70	10		
AUG 15...	<1	200	200	0.3	4	1	<1	<1.0	9000	88	20		

ARANSAS RIVER MAIN STEM

341

08189700 ARANSAS RIVER NEAR SKIDMORE, TX

LOCATION.--Lat 28°16'56", long 97°37'14", Bee County, Hydrologic Unit 12100407, on right bank 160 ft downstream from centerline of county road bridge, 3.8 mi downstream from confluence of West Aransas and Poesta Creeks, and 4.4 mi northeast of Skidmore.

DRAINAGE AREA.--247 mi².

PERIOD OF RECORD.--March 1964 to current year.

Water-quality records: Chemical analyses: October 1965 to September 1966. Sediment records: February 1966 to September 1975.

GAGE.--Water-stage recorder. Datum of gage is 72.37 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. No known diversion. Chase Field Naval Air Station and the city of Beeville discharge sewage effluent into the stream via Poesta Creek.

AVERAGE DISCHARGE.--25 years, 35.9 ft³/s (1.97 in/yr), 26,010 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 82,800 ft³/s Sept. 22, 1967 (gage height, 42.22 ft, from floodmark), from rating curve extended above 14,000 ft³/s on basis of slope-area measurements of 29,600 and 82,800 ft³/s; no flow at times.

Maximum stage since at least 1914, that of Sept. 22, 1967.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of September 1954 reached a stage of 33 ft (discharge, 19,600 ft³/s), from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 1	0100	a*551	*9.24	Oct. 2	2100	b349	7.46

a Stage falling; peak occurred Sept. 30, 1988.

b Maximum independent peak discharge.

Minimum daily discharge, no flow on many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	200	10	2.1	2.3	8.9	5.9	1.8	2.8	.06	2.2	.00	.00		
2	128	15	1.9	2.3	8.7	5.7	1.3	4.0	.02	1.7	.00	.00		
3	122	7.8	1.8	2.7	8.6	5.7	1.1	2.7	.00	1.3	.00	.00		
4	33	5.5	1.8	2.9	7.8	5.6	2.2	1.3	.00	2.5	.00	.00		
5	19	4.3	1.7	2.9	7.3	5.5	2.3	.85	.00	2.5	.00	.00		
6	13	3.5	1.7	2.9	7.1	4.7	1.5	.79	.00	2.0	.00	.00		
7	10	3.2	1.8	2.8	6.9	4.4	1.3	.93	.00	1.8	.00	.00		
8	8.7	3.1	2.4	2.7	7.8	4.3	1.2	.81	.00	1.8	.53	.00		
9	7.9	2.9	7.4	2.5	8.8	4.2	1.1	.58	.00	1.9	.07	.00		
10	7.1	2.7	8.2	2.5	8.0	4.1	1.1	.40	.00	2.0	2.4	.00		
11	6.9	2.7	4.3	2.5	7.7	4.3	1.5	.32	.00	1.9	3.7	.00		
12	6.1	2.6	3.1	2.6	7.5	4.4	1.5	.51	.00	1.8	2.3	.00		
13	5.7	2.8	2.8	3.8	7.4	4.1	1.5	.50	2.3	1.2	1.6	.00		
14	5.5	2.7	2.6	3.7	7.3	3.9	1.6	.40	4.3	.80	1.0	.00		
15	4.8	2.3	2.5	3.7	7.2	3.7	2.0	.45	2.2	.52	.74	.00		
16	4.7	2.2	2.4	3.2	7.1	3.9	2.0	.45	1.4	.21	.61	.00		
17	4.7	2.3	2.3	3.0	6.9	3.7	2.4	.76	.98	.02	.53	.00		
18	4.7	2.3	2.2	3.0	6.7	3.6	2.2	1.6	.92	.00	.37	.00		
19	4.6	2.3	2.1	4.3	6.4	3.5	1.6	3.5	.61	.00	.16	.00		
20	4.5	2.7	2.1	17	6.3	3.7	18	2.0	.35	.00	.06	.00		
21	4.4	2.7	2.2	10	6.2	5.0	11	1.4	.18	.00	.00	.00		
22	4.1	2.3	2.4	5.8	6.0	6.6	3.7	1.0	.02	.00	.00	.00		
23	3.8	2.1	2.5	4.2	5.6	4.1	2.2	.77	.00	.00	.00	.00		
24	3.8	2.1	2.2	3.9	5.6	3.1	1.4	.51	.00	.00	.00	.00		
25	3.8	2.1	2.2	29	5.4	2.8	.95	.43	.04	.00	.00	.00		
26	3.5	2.3	2.3	23	5.7	2.8	.89	.39	6.7	.00	.00	.00		
27	3.3	2.4	2.3	14	6.0	2.7	1.1	.34	6.8	.00	.00	.00		
28	3.2	2.0	2.4	11	6.0	2.7	1.4	.51	5.7	.00	.00	.00		
29	3.3	1.9	2.3	10	---	2.7	1.8	.52	4.1	.00	.00	.00		
30	16	3.1	2.3	9.8	---	2.6	2.5	.40	3.2	.00	.00	.00		
31	9.7	---	2.3	9.1	---	2.3	---	.17	---	.00	.00	---		
TOTAL	659.8	105.9	82.6	203.1	196.9	126.3	76.14	32.09	39.88	26.15	14.07	0.00		
MEAN	21.3	3.53	2.66	6.55	7.03	4.07	2.54	1.04	1.33	.84	.45	.00		
MAX	200	15	8.2	29	8.9	6.6	18	4.0	6.8	2.5	3.7	.00		
MIN	3.2	1.9	1.7	2.3	5.4	2.3	.89	.17	.00	.00	.00	.00		
AC-FT	1310	210	164	403	391	251	151	64	79	52	28	.0		
CFSM	.09	.01	.01	.03	.03	.02	.01	.00	.01	.00	.00	.00		
IN.	.10	.02	.01	.03	.03	.02	.01	.00	.01	.00	.00	.00		
CAL YR 1988	TOTAL	3710.19	MEAN	10.1	MAX	1140	MIN	.00	AC-FT	7360	CFSM	.04	IN.	.56
WTR YR 1989	TOTAL	1562.93	MEAN	4.28	MAX	200	MIN	.00	AC-FT	3100	CFSM	.02	IN.	.24

08189800 CHILTIPI CREEK AT SINTON, TX

LOCATION.--Lat 28°02'48", long 97°30'13", San Patricio County, Hydrologic Unit 12100407, on left bank at upstream end of bridge on U.S. Highway 77, 0.2 mi upstream from Missouri Pacific Railroad Co. bridge, and 0.8 mi northeast of Sinton.

DRAINAGE AREA.--128 mi².

PERIOD OF RECORD.--July 1970 to current year.

REVISED RECORDS.--WRD TX-72-1: 1971(P).

GAGE.--Water-stage recorder. Datum of gage is 16.74 ft above National Geodetic Vertical Datum of 1929. Prior to Jan. 23, 1985, at datum 2.00 ft higher.

REMARKS.--Records poor. No known diversions above station. An undetermined amount of water from oil field operations enters the stream upstream at various points.

AVERAGE DISCHARGE.--19 years, 43.9 ft³/s (4.66 in/yr), 31,810 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,800 ft³/s Apr. 11, 1985 (gage height, 29.45 ft); maximum gage height, 31.10 ft Sept. 12, 1971, present datum; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stages since 1910, 32.27 ft Sept. 22, 1967, and 30.8 ft in April 1930, present datum, from information by local residents.

EXTREMES FOR WATER YEAR 1987.--Peak discharges greater than base discharge of 600 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 26	1500	969	7.93	June 12	0400	3,320	13.77
June 1	Unknown	Unknown	Unknown	June 14	2000	*3,900	*14.68
June 4	--	Unknown	Unknown				

Minimum daily discharge, no flow Aug. 20, 22-24.

EXTREMES FOR WATER YEAR 1988.--Peak discharges greater than base discharge of 600 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Aug. 31	1600	*139	*3.59				

Minimum daily discharge, no flow for many days.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 600 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 31	0100	*224	*4.32				

Minimum daily discharge, no flow for many days.

ARANSAS RIVER BASIN

343

08189800 CHILTIPI CREEK AT SINTON, TX--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e.20	31	.02	.14	.23	.04	.06	.12	.00	.02	.14	.81
2	e7.0	11	.02	.18	.20	.04	.15	.05	.02	.01	.17	.80
3	e2.0	3.8	.02	.18	.17	.05	.01	.04	.03	.01	.16	.82
4	e.10	2.1	.03	.18	.15	.04	.00	.08	.02	3.1	.14	.85
5	.05	1.1	.03	.18	.52	.09	.00	.05	.02	.63	.15	.93
6	e.04	.57	.05	.15	.15	.02	.00	.02	.36	.10	.20	1.2
7	e.03	.39	.09	.14	.18	.00	.04	.01	.04	.05	.19	1.9
8	e.02	.34	.18	.10	.13	.13	.17	.03	.02	.05	.42	1.7
9	e.01	.25	.28	.13	.99	.00	.03	.02	.01	.05	.98	1.7
10	e.01	.19	.18	.20	.68	.00	.09	.02	.05	.05	.41	2.1
11	e.01	.18	.30	.36	.18	.00	.12	.03	.03	.13	.36	2.1
12	e.01	.11	.17	.24	.21	.00	.28	.05	.15	.11	.43	3.6
13	e.01	.12	.15	.57	.20	.00	.29	.06	.38	.03	.56	6.4
14	e.01	.12	.16	.34	.24	.00	1.1	.04	.31	.02	.66	10
15	e.01	.10	.16	.23	.21	.00	.31	.03	.06	.02	.54	4.0
16	e.01	.04	.11	.19	.16	.00	.19	.05	.01	.02	.54	1.9
17	e.01	.04	.11	.18	.23	.01	.13	.09	.01	.07	.57	1.0
18	e.01	1.0	.12	.25	.26	.00	.07	.09	.02	.03	2.7	1.1
19	.01	.27	.15	3.2	.18	.01	.07	.02	.01	.03	.84	.86
20	.00	.15	.14	1.4	.14	.02	.07	.01	.00	.06	.70	.60
21	.00	.07	.16	.55	.07	.03	.03	.01	.00	.05	.65	.92
22	.00	.05	.18	.32	.05	.05	.01	.02	.00	.03	.68	.65
23	.00	.05	.23	.29	.02	.01	.00	.02	3.4	.03	1.0	.46
24	.00	.06	.19	.36	.02	.00	.01	.02	4.5	.09	1.2	.44
25	.00	.11	.20	.33	.04	.01	.04	.04	1.8	.60	.97	.34
26	.00	.09	.23	.33	.02	.03	.03	.03	.67	.37	.71	.42
27	.00	.05	.14	.34	.04	.03	.02	.01	.30	1.0	.79	.29
28	.00	.05	.16	.38	.02	.04	.39	.01	.09	.39	.87	.00
29	1.3	.03	.11	.41	---	.07	.07	.01	.03	.21	.94	.00
30	39	.02	.12	.35	---	.03	.82	.01	.03	.18	.88	.00
31	107	---	.14	.26	---	.00	---	.01	---	.15	.81	---
TOTAL	176.65	53.45	4.33	12.46	5.99	0.75	4.60	1.10	12.37	7.69	20.36	47.89
MEAN	5.70	1.78	.14	.40	.21	.024	.15	.035	.41	.25	.66	1.60
MAX	107	31	.30	3.2	.99	.13	1.1	.12	4.5	3.1	2.7	10
MIN	.00	.02	.02	.10	.02	.00	.00	.01	.00	.01	.14	.00
AC-FT	350	106	8.6	25	12	1.5	9.1	2.2	25	15	40	95
CFSM	.04	.01	.00	.00	.00	.00	.00	.00	.00	.00	.01	.01
IN.	.05	.02	.00	.00	.00	.00	.00	.00	.00	.00	.01	.01
CAL YR 1988	TOTAL	911.77	MEAN	2.49	MAX	107	MIN	.00	AC-FT	1810	CFSM	.02
WTR YR 1989	TOTAL	347.64	MEAN	.95	MAX	107	MIN	.00	AC-FT	690	CFSM	.01
											IN.	.26
											IN.	.10

e Estimated.

NUECES RIVER MAIN STEM

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 downstream from Sycamore Creek, 1.0 mi northeast of Laguna, and at mile 370.8.

DRAINAGE AREA.--737 mi².

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 1562: 1930, 1931(M), 1932, 1939. WDR TX-83-3: Drainage area.

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

REMARKS.--Records good. Many small diversions above station for irrigation.

AVERAGE DISCHARGE.--66 years, 150 ft³/s (2.76 in/yr), 108,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 307,000 ft³/s Sept. 24, 1955 (gage height, 29.95 ft, in gage well, 32.7 ft, from outside floodmarks), from rating curve extended above 40,000 ft³/s on basis of float measurement of 110,000 ft³/s and slope-area measurements of 213,000 and 307,000 ft³/s; minimum, 2.6 ft³/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 (discharge, 210,000 ft³/s); flood of Sept. 21, 1923, reached a stage of about 26.5 ft (discharge, 160,000 ft³/s); from information by local residents. Discharges based on rating curve mentioned above.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 700 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 28	0330	*161	*2.93				

Minimum daily discharge, 16 ft³/s Sept. 23, 26-30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	87	78	66	e61	77	95	89	67	55	38	26	19
2	84	75	66	e61	76	95	88	65	53	37	27	18
3	82	75	e66	e61	75	94	87	64	52	37	25	18
4	80	73	e66	e61	75	93	87	63	51	36	24	18
5	79	73	e66	e61	74	91	85	62	50	36	24	18
6	77	71	e65	e61	74	90	83	61	48	36	24	18
7	78	71	e65	e60	73	89	82	60	47	39	26	19
8	78	68	e65	e60	72	88	81	58	45	38	32	19
9	77	68	e65	e60	70	87	80	57	43	36	27	18
10	77	68	e65	60	69	86	78	57	46	35	25	18
11	77	68	e65	60	69	85	78	55	56	34	24	18
12	76	68	e64	60	69	84	79	55	46	34	24	17
13	74	66	e64	58	69	83	83	55	45	33	23	18
14	73	68	e64	58	70	82	84	53	48	32	24	18
15	72	68	e64	58	72	81	82	53	49	32	24	17
16	72	66	e64	56	98	80	80	53	49	30	23	17
17	71	66	e64	56	116	80	78	70	50	30	23	17
18	71	68	e64	58	114	81	77	72	50	29	23	17
19	70	66	e63	60	109	83	76	74	48	28	23	17
20	71	66	e63	63	110	83	75	69	46	28	22	17
21	72	66	e63	64	108	82	73	65	44	28	22	17
22	72	68	e63	63	105	81	71	62	43	27	22	17
23	73	66	e63	63	102	81	70	61	43	26	21	16
24	72	66	e63	62	100	80	70	63	43	26	22	17
25	72	68	e62	62	98	80	70	63	44	26	21	17
26	71	68	e62	64	98	81	72	62	42	28	21	16
27	73	66	e62	87	96	80	79	61	41	28	21	16
28	73	66	e62	100	95	126	73	60	40	28	21	16
29	82	66	e62	93	---	115	71	59	39	27	20	16
30	75	66	e62	84	---	101	69	58	38	26	19	16
31	86	---	e62	79	---	93	---	56	---	25	19	---
TOTAL	2347	2056	1980	2014	2433	2730	2350	1893	1394	973	722	520
MEAN	75.7	68.5	63.9	65.0	86.9	88.1	78.3	61.1	46.5	31.4	23.3	17.3
MAX	87	78	66	100	116	126	89	74	56	39	32	19
MIN	70	66	62	56	69	80	69	53	38	25	19	16
AC-FT	4660	4080	3930	3990	4830	5410	4660	3750	2760	1930	1430	1030
CFSM	.10	.09	.09	.09	.12	.12	.11	.08	.06	.04	.03	.02
IN.	.12	.10	.10	.10	.12	.14	.12	.10	.07	.05	.04	.03

CAL YR 1988	TOTAL	36329	MEAN	99.3	MAX	502	MIN	62	AC-FT	72060	CFSM	.13	IN.	1.83
WTR YR 1989	TOTAL	21412	MEAN	58.7	MAX	126	MIN	16	AC-FT	42470	CFSM	.08	IN.	1.08

e Estimated.

NUECES RIVER MAIN STEM

345

08190000 NUECES RIVER AT LAGUNA, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: May 1949 to June 1952, September 1964 to current year. Chemical, biochemical, and pesticide analyses: February 1970 to current year. Sediment analyses: January 1966.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

		DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD 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, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)
JAN 12...	1220	60	403	8.00	16.5	1	0.30	9.1	96	0.4	43
MAY 03...	1625	66	385	8.10	26.0	3	0.20	8.6	111	1.1	K8
AUG 23...	1636	21	410	7.90	30.0	<1	0.30	7.8	108	1.1	K5
DATE	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB WH WAT TOT FLD (MG/L AS CAC03)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT WH TOT FET (MG/L AS CAC03)	SULFATE DIS-SOLVED (MG/L AS S04)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
JAN 12...	K17	200	22	57	13	8.0	0.3	0.90	174	13	13
MAY 03...	K3	190	19	53	14	7.8	0.3	1.0	171	11	13
AUG 23...	27	200	16	55	14	8.5	0.3	0.90	179	11	12
DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SI02)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHOROUS TOTAL (MG/L AS P)
JAN 12...	0.10	11	220	<1	<1	<0.010	0.700	0.020	0.18	0.20	<0.010
MAY 03...	0.20	12	215	<1	<1	<0.010	0.600	0.020	--	<0.20	<0.010
AUG 23...	0.10	14	223	<1	<1	<0.010	0.500	<0.010	--	0.40	<0.010
DATE	CARBON, ORGANIC TOTAL (MG/L AS C)	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)	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)
JAN 12...	0.8	<1	38	3	<1	<1	6	<5	<1	<0.1	<1
MAY 03...	0.9	--	--	--	--	--	--	--	--	--	--
AUG 23...	0.8	<1	41	<1	<1	<1	8	<1	<1	<0.1	<1
DATE	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)	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)	DI-ELDRIN, TOTAL (UG/L)
JAN 12...	<1.0	6	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01	<0.010
MAY 03...	--	--	--	--	--	--	--	--	--	--	--
AUG 23...	1.0	<3	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01	<0.010
DATE	DI-SYSTON 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)	METHYL PARA-THION, TOTAL (UG/L)	METHYL TRI-THION, TOTAL (UG/L)
JAN 12...	--	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01	<0.01
MAY 03...	--	--	--	--	--	--	--	--	--	--	--
AUG 23...	<0.01	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01	<0.01

NUECES RIVER MAIN STEM

08190000 NUECES RIVER AT LAGUNA, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	PHORATE OTAL (UG/L)	SILVEX, TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)
JAN 12...	<0.01	<0.01	<0.1	--	<0.01	<1	<0.01	<0.01	<0.01	<0.01
MAY 03...	--	--	--	--	--	--	--	--	--
AUG 23...	<0.01	<0.01	<0.	<0.01	<0.01	<1	<0.01	<0.01	<0.01	<0.01

NUECES RIVER BASIN

347

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 upstream from Miguel Canyon, 16.0 mi northeast of Brackettville, and 40.2 mi upstream from mouth.

DRAINAGE AREA.--694 mi².

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

REVISED RECORDS.--WSP 1312: 1949(M). WDR TX-83-3: Drainage area.

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

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

AVERAGE DISCHARGE.--44 years (water years 1940-50, 1957-89), 33.6 ft³/s (24,340 acre-ft/yr).

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

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

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 19	1030	*4.2	*1.50				

Minimum daily discharge, no flow May 16, Aug. 21 to Sept. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.70	.31	.16	.12	.21	.30	.11	.02	.53	.36	.01	.00
2	.64	.28	.16	.14	.19	.28	.10	.02	.42	.31	.02	.00
3	.56	.28	.15	.14	.18	.29	.09	.02	.36	.28	.02	.00
4	.56	.28	.14	.14	.16	.30	.09	.01	.36	.28	.01	.00
5	.52	.28	.14	.14	.16	.15	.09	.01	.33	.26	.01	.00
6	.50	.28	.16	.14	.14	.20	.10	.01	.31	.24	.01	.00
7	.50	.28	.16	.14	.12	.22	.10	.01	.27	.23	.01	.00
8	.48	.28	.16	.14	.12	.27	.09	.01	.24	.21	.10	.00
9	.45	.28	.15	.14	.13	.25	.07	.01	.24	.18	.07	.00
10	.45	.28	.14	.14	.14	.24	.07	.01	.38	.16	.05	.00
11	.43	.26	.14	.12	.14	.24	.07	.01	.69	.15	.05	.00
12	.40	.24	.14	.10	.16	.23	.07	.01	.44	.12	.04	.00
13	.40	.23	.15	.07	.18	.21	.09	.01	.71	.12	.04	.00
14	.40	.20	.14	.07	.18	.21	.09	.01	1.3	.12	.04	.00
15	.40	.22	.14	.07	.19	.21	.08	.01	1.8	.10	.03	.00
16	.44	.19	.14	.08	.34	.21	.07	.0	2.6	.10	.02	.00
17	.45	.18	.14	.09	.35	.21	.07	.35	2.0	.10	.01	.00
18	.45	.18	.14	.10	.66	.23	.07	1.1	1.5	.09	.01	.00
19	.42	.16	.16	.16	1.3	.24	.07	4.0	1.1	.09	.01	.00
20	.40	.15	.18	.17	1.2	.23	.06	3.8	1.0	.08	.01	.00
21	.40	.16	.18	.16	.87	.14	.06	2.5	.93	.06	.0	.00
22	.40	.16	.19	.16	.76	.13	.04	1.7	.87	.06	.0	.00
23	.37	.16	.18	.16	.71	.15	.05	1.4	.73	.04	.00	.00
24	.31	.16	.17	.18	.58	.16	.05	1.2	.63	.03	.00	.00
25	.31	.17	.14	.18	.53	.17	.05	1.1	.59	.03	.00	.00
26	.31	.18	.16	.18	.46	.17	.05	.98	.56	.03	.00	.00
27	.31	.16	.14	.35	.41	.16	.05	.89	.50	.03	.00	.00
28	.32	.15	.12	.24	.35	.24	.04	.74	.47	.03	.00	.00
29	.48	.16	.12	.21	---	.17	.03	.67	.38*	.03	.00	.00
30	.41	.16	.12	.21	---	.13	.03	.61	.36	.02	.00	.00
31	.42	---	.12	.21	---	.10	---	.56	---	.02	.00	---
TOTAL	13.59	6.46	4.63	4.65	10.92	6.44	2.10	21.78	22.60	3.96	0.57	0.00
MEAN	.44	.22	.15	.15	.39	.21	.070	.70	.75	.13	.018	.00
MAX	.70	.31	.19	.35	1.3	.30	.11	4.0	2.6	.36	.10	.00
MIN	.31	.15	.12	.07	.12	.10	.03	.00	.24	.02	.00	.00
AC-FT	27	13	9.2	9.2	22	13	4.2	43	45	7.9	1.1	.0
CAL YR 1988	TOTAL	858.24	MEAN	2.34	MAX	568	MIN	.06	AC-FT	1700		
WTR YR 1989	TOTAL	97.70	MEAN	.27	MAX	4.0	MIN	.00	AC-FT	194		

NUECES RIVER MAIN STEM

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 upstream from bridge on U.S. Highway 83, 8.8 mi southwest of Uvalde, 18.2 mi downstream from West Nueces River, and at mile 338.7.

DRAINAGE AREA.--1,861 mi².

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

REVISED RECORDS.--WSP 1732: 1956(M). WDR TX-83-3: Drainage area.

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

REMARKS.--No estimated daily discharges. Records good. Part of the flow of the Nueces River enters the Edwards and associated limestones in the Balcones Fault Zone that crosses the basin downstream from Laguna (station 08190000) and upstream from this station. At low stage, most of headwater flow enters this formation. There are many small diversions above station for irrigation.

AVERAGE DISCHARGE.--50 years, 125 ft³/s (90,560 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 189,000 ft³/s Sept. 24, 1955 (gage height, 24.61 ft, from floodmark), from rating curve extended above 34,000 ft³/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 June 14, 1935, from floodmark (discharge at former site, 616,000 ft³/s, by slope-area measurement). Large floods also occurred in 1901 and 1913, stages unknown.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 250 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Aug. 8	0530	*55	*3.23				

Minimum daily discharge, 8.7 ft³/s Sept. 24.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	36	30	29	29	29	27	25	22	18	13	10	9.3
2	36	30	29	29	29	27	25	22	18	12	10	9.1
3	36	30	29	29	29	26	25	22	17	12	10	9.0
4	35	29	29	28	29	25	25	21	17	12	10	9.0
5	34	30	29	28	29	24	24	21	17	11	10	8.9
6	35	30	28	28	29	25	24	21	17	12	10	8.9
7	35	30	28	28	27	25	25	21	16	12	10	9.0
8	34	30	29	28	27	25	24	21	16	11	33	9.0
9	34	30	29	28	27	25	24	21	16	11	16	8.8
10	34	30	30	28	27	25	24	25	17	11	13	9.1
11	33	30	29	29	28	25	24	22	16	11	12	9.8
12	33	30	29	29	28	25	25	23	15	11	12	9.0
13	33	29	29	29	28	25	26	22	16	10	11	9.0
14	32	29	29	29	28	25	25	22	18	10	11	8.8
15	32	29	29	29	29	26	25	22	15	10	11	9.0
16	32	29	29	30	29	26	25	22	15	10	11	9.0
17	32	29	29	30	29	26	24	25	14	10	11	9.0
18	31	29	29	30	28	26	24	21	14	10	11	9.0
19	31	28	29	32	27	26	24	21	14	10	10	9.0
20	31	28	29	34	27	25	24	20	14	10	10	9.5
21	31	29	29	31	26	24	24	20	14	10	10	9.5
22	31	29	29	30	26	24	23	20	14	10	10	9.5
23	30	29	28	30	26	25	23	20	14	10	10	8.8
24	30	29	28	30	27	26	22	19	14	10	11	8.7
25	30	30	29	31	26	27	22	19	14	10	11	9.0
26	30	29	30	31	27	27	23	19	14	10	10	9.0
27	30	28	29	34	27	24	27	19	14	10	10	9.0
28	31	29	28	32	27	27	23	19	13	10	10	9.0
29	35	29	28	30	---	25	22	18	13	10	9.8	9.0
30	30	29	27	30	---	24	22	18	13	10	9.5	9.0
31	31	---	29	29	---	25	---	18	---	10	9.5	---
TOTAL	1008	879	893	922	775	787	722	646	457	329	352.8	271.7
MEAN	32.5	29.3	28.8	29.7	27.7	25.4	24.1	20.8	15.2	10.6	11.4	9.06
MAX	36	30	30	34	29	27	27	25	18	13	33	9.8
MIN	30	28	27	28	26	24	22	18	13	10	9.5	8.7
AC-FT	2000	1740	1770	1830	1540	1560	1430	1280	906	653	700	539

CAL YR 1988	TOTAL	22659	MEAN	61.9	MAX	160	MIN	27	AC-FT	44940
WTR YR 1989	TOTAL	8042.5	MEAN	22.0	MAX	36	MIN	8.7	AC-FT	15950

NUECES RIVER MAIN STEM

349

08193000 NUECES RIVER NEAR ASHERTON, TX

LOCATION.--Lat 28°30'00", long 99°40'54", Dimmit County, Hydrologic Unit 12110103, on right bank 28 ft downstream from bridge on Farm Road 190, 0.1 mi downstream from El Moro Creek, 5.8 mi northeast of Asherton, and at mile 266.0.

DRAINAGE AREA.--4,082 mi².

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

REVISED RECORDS.--WSP 1118: 1944.

GAGE.--Water-stage recorder. Datum of gage is 470.92 ft above National Geodetic Vertical Datum of 1929. Prior to Feb. 2, 1940, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Records good. Part of flow of the Nueces River and its headwater tributaries enters the Edwards and associated limestones in the Balcones Fault Zone, that crosses basin between Laguna and Uvalde (stations 08190000 and 08192000, respectively). Considerable loss of flow into various permeable formations occurs downstream from the Balcones Fault Zone. Since March 1948, flow slightly regulated by Upper Nueces Reservoir (capacity, 7,590 acre-ft), 13 mi upstream. Many small diversions above station for irrigation.

AVERAGE DISCHARGE.--50 years, 182 ft³/s (131,900 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 28,500 ft³/s Oct. 6, 1959 (gage height, 30.88 ft); no flow for many days most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1900, 33 ft June 17, 1935; flood of June 30, 1913, reached about same stage, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 14	2400	*4.0	*1.89				

Minimum daily discharge, no flow for most of year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.0	.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	.0	.00	.08	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	.02	.00	.34	.00	.00	.00	.00
16	.00	.00	.00	.00	.00	.03	.00	.01	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	.03	.00	.0	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	.03	.00	.00	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	.03	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.04	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	.03	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.03	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	.03	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.03	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.03	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.03	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.03	.00	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.03	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	---	.03	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	---	.03	.00	.00	.00	.00	.00	.00
31	.00	---	.00	.00	---	.02	---	.00	---	.00	.00	---
TOTAL	0.00	0.00	0.00	0.00	0.00	0.50	0.01	0.43	0.00	0.00	0.00	0.00
MEAN	.00	.00	.00	.00	.00	.016	.000	.014	.00	.00	.00	.00
MAX	.00	.00	.00	.00	.00	.04	.01	.34	.00	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.0	.0	.0	.0	.0	1.0	.02	.9	.0	.0	.0	.0

CAL YR 1988	TOTAL	6283.91	MEAN	17.2	MAX	142	MIN	.00	AC-FT	12460
WTR YR 1989	TOTAL	0.94	MEAN	.003	MAX	.34	MIN	.00	AC-FT	1.9

NUECES RIVER MAIN STEM

08194000 NUECES RIVER AT COTULLA, TX

LOCATION.--Lat 28°25'34", long 99°14'23", La Salle County, Hydrologic Unit 12110105, on left bank at downstream side of bridge on U.S. Highway 81, 0.4 mi upstream from Missouri Pacific Railroad Co. bridge, 0.8 mi southwest of Cotulla, 1.0 mi upstream from Lind Dam, and at mile 216.9.

DRAINAGE AREA.--5,171 mi².

PERIOD OF RECORD.--November 1923 to current year. November 1923 to September 1926 monthly discharge only, published in WSP 1312; figures of daily discharge for Oct. 31, 1923, to Sept. 30, 1926, published in WSP 588, 608, and 628, have been found to be unreliable and should not be used. Gage-height records collected in this vicinity in 1914-17 and since 1922 are contained in reports of the National Weather Service.

REVISED RECORDS.--WSP 1732: 1957(M). WDR TX-83-3: Drainage area. See PERIOD OF RECORD.

GAGE.--Water-stage recorder. Datum of gage is 368.08 ft above National Geodetic Vertical Datum of 1929. From Oct. 31, 1923, to Aug. 3, 1924, nonrecording gage at approximate site of present gage at datum 7.28 ft higher. Aug. 4, 1924, to Nov. 19, 1934, nonrecording gage at site 5,000 ft downstream at datum 8.42 ft higher. From Nov. 20, 1934, to July 14, 1938, water-stage recorder, and July 15, 1938, to Apr. 30, 1963, nonrecording gage, at present site and datum.

REMARKS.--No estimated daily discharges. Records good. Part of the flow of the Nueces River and its headwater tributaries enters the Edwards and associated limestones in the Balcones Fault Zone, that crosses basin between Laguna and Uvalde (stations 08190000 and 08192000, respectively). Considerable loss of flow into various permeable formations occurs downstream from the Balcones Fault Zone. Low flow is slightly regulated by small storage reservoirs above station, with most diverted above station by pumping (see REMARKS for Nueces River near Asherton, station 08193000). Satellite telemeter at station.

AVERAGE DISCHARGE.--65 years (water years 1925-89), 267 ft³/s (193,400 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 82,600 ft³/s June 18, 1935 (gage height, 32.4 ft, from floodmark), from rating curve extended above 43,000 ft³/s on basis of slope-area measurement of peak flow; no flow at times each year.

Maximum stage since at least 1879, that of June 18, 1935.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 19, 1899, reached a stage of 29.7 ft, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Aug. 24	1400	*1,020	*10.76				

Minimum daily discharge, no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	17	.31	.00	.00	.00	.00	11	.00	.00	.00	.00
2	.00	6.8	.24	.00	.00	.00	.00	3.0	.00	.00	.00	.00
3	.00	2.4	.24	.00	.00	.00	.00	.96	.00	.00	.00	.00
4	.00	1.3	.24	.00	.00	.00	.00	.35	.00	.00	.00	.00
5	.00	1.1	.24	.00	.00	.00	.00	.14	.00	.00	.00	.00
6	.00	1.0	.22	.00	.00	.00	.00	.05	.00	.00	.00	.00
7	.00	1.1	.17	.00	.00	.00	.00	.02	.00	.00	.00	.00
8	.00	1.3	.11	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	1.3	.07	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	1.3	.06	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	1.3	.06	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	1.2	.03	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.93	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.93	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.93	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16	.00	.68	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	.00	.51	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
18	.00	.58	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
19	.00	.72	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
20	.00	.66	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
21	.00	.75	.00	.00	.00	.09	.00	.00	.00	.00	.00	.00
22	.00	.93	.00	.00	.00	.06	.00	.00	.00	.00	.00	.00
23	.00	1.0	.00	.00	.00	.04	.00	.00	.00	.00	.00	.00
24	.00	1.1	.00	.00	.00	.03	.00	.00	.00	.00	605	.00
25	.00	1.2	.00	.00	.00	.03	.00	.00	.00	.00	48	.00
26	.00	1.2	.00	.00	.00	.03	.00	.00	.00	.00	4.0	.00
27	.00	1.0	.00	.00	.00	.02	.00	.00	.00	.00	1.1	.00
28	.00	.63	.00	.00	.00	.01	.00	.00	.00	.00	.16	.00
29	.00	.52	.00	.00	---	.0	.10	.00	.00	.00	.0	.00
30	.00	.39	.00	.00	---	.00	30	.00	.00	.00	.00	.00
31	58	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	58.00	51.76	2.01	0.00	0.00	0.31	30.10	15.52	0.00	0.00	658.26	0.00
MEAN	1.87	1.73	.065	.00	.00	.010	1.00	.50	.00	.00	21.2	.00
MAX	58	17	.31	.00	.00	.09	30	11	.00	.00	605	.00
MIN	.00	.39	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	115	103	4.0	.0	.0	.6	60	31	.0	.0	1310	.0
CAL YR 1988	TOTAL	7047.46	MEAN	19.3	MAX	144	MIN	.00	AC-FT	13980		
WTR YR 1989	TOTAL	815.96	MEAN	2.24	MAX	605	MIN	.00	AC-FT	1620		

NUECES RIVER BASIN

351

08194200 SAN CASIMIRO CREEK NEAR FREER, TX

LOCATION.--Lat 27°57'53", long 98°58'00", Webb County, Hydrologic Unit 12110105, at downstream side of bridge on State Highway 44, 11.4 mi upstream from mouth, and 22 mi northwest of Freer.

DRAINAGE AREA.--469 mi².

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

GAGE.--Water-stage recorder. Datum of gage is 298 ft, from State Department of Highways and Public Transportation datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor.

AVERAGE DISCHARGE.--27 years, 59.3 ft³/s (42,960 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 82,000 ft³/s Oct. 17, 1971 (gage height, 26.87 ft), from rating curve extended above 21,000 ft³/s on basis of flow-through-culverts, contracted opening, and flow-over-road determination of 82,000 ft³/s; no flow for many days each year.
Maximum stage since at least 1946, that of Oct. 17, 1971.

EXTREMES OUTSIDE PERIOD OF RECORD.--Second highest stage, 26 ft (discharge 65,200 ft³/s), occurred in 1954, from information by State Department of Highways and Public Transportation.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 29	1800	*811	*15.02	May 1	1900	517	13.28
Nov. 1	0200	590	13.78				

Minimum daily discharge, no flow most of year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	451	.00	.00	.00	.00	.00	452	.00	.00	e.18	.00
2	35	354	.00	.00	.00	.00	.00	221	.00	.00	.08	.00
3	13	115	.00	.00	.00	.00	.00	43	.00	.00	.02	.00
4	2.7	38	.00	.00	.00	.00	.00	29	.00	.00	.06	.00
5	.84	17	.00	.00	.00	.00	.00	10	.00	.00	.03	.00
6	.40	7.3	.00	.00	.00	.00	.00	3.5	.00	.00	.01	.00
7	.23	3.2	.00	.00	.00	.00	.00	1.3	.00	.00	.00	.00
8	.15	1.9	.00	.00	.00	.00	.00	.61	.00	.00	.00	.00
9	.12	1.3	.00	.00	.00	.00	.00	.27	.00	.00	.00	.00
10	35	1.0	.00	.00	.00	.00	.00	.19	.00	.00	.00	.00
11	9.4	.83	.00	.00	.00	.00	.00	e.12	.00	.00	.00	.00
12	17	.71	.00	.00	.00	.00	.00	e.06	.00	.00	.00	.00
13	3.8	.64	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	.75	e.57	.00	.00	.00	.00	.00	.00	79	.00	.00	11
15	.38	e.52	.00	.00	.00	.00	.00	.00	99	.00	.00	2.0
16	e.26	e.47	.00	.00	.00	.00	.00	.00	37	.00	.00	.0
17	e.22	e.43	.00	.00	.00	.00	.00	.00	.00	4.7	.00	.00
18	e.16	e.37	.00	.00	.00	.00	.00	.00	.00	1.3	.00	.00
19	e.12	e.32	.00	.00	.00	.00	.00	.00	.00	1.0	.00	.00
20	e.08	e.28	.00	.00	.00	.00	.00	.00	.00	e.71	.00	.00
21	e.06	e.25	.00	.00	.00	.00	.00	.00	.00	e.42	.00	.00
22	e.04	e.22	.00	.00	.00	.00	.00	.00	.00	e.26	.00	.00
23	e.02	e.17	.00	.00	.00	.00	.00	.00	.00	e.15	.00	.00
24	e.00	e.10	.00	.00	.00	.00	.00	.00	.00	e.06	.00	.00
25	e.00	e.00	.00	.00	.00	.00	.00	.00	.00	e.01	.00	.00
26	e.00	e.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	e.00	e.00	.00	.00	.00	.00	.00	.00	.00	9.0	.00	.00
28	e.00	.00	.00	.00	.00	.00	.00	.00	.00	25	.00	.00
29	526	.00	.00	.00	---	.00	34	.00	.00	5.4	.00	.00
30	511	.00	.00	.00	---	.00	43	.00	.00	.00	.00	.00
31	410	---	.00	.00	---	.00	152	.00	.00	e.80	.00	.00
							---	.00	---	e.42	.00	---
TOTAL	1590.73	995.58	0.00	0.00	0.00	0.00	229.00	761.05	223.61	40.62	0.42	13.00
MEAN	51.3	33.2	.00	.00	.00	.00	7.63	24.5	7.45	1.31	.014	.43
MAX	526	451	.00	.00	.00	.00	152	452	.00	.00	.18	.11
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	3160	1970	.0	.0	.0	.0	454	1510	444	81	.8	26

CAL YR 1988	TOTAL	3942.12	MEAN	10.8	MAX	690	MIN	.00	AC-FT	7820
WTR YR 1989	TOTAL	3854.01	MEAN	10.6	MAX	526	MIN	.00	AC-FT	7640

e Estimated.

NUECES RIVER MAIN STEM

08194500 NUECES RIVER NEAR TILDEN, TX

LOCATION.--Lat 28°18'31", long 98°33'25", McMullen County, Hydrologic Unit 12110105, on right bank at downstream side of bridge on State Highway 16, 1.8 mi upstream from Kings Branch, 10.5 mi south of Tilden, and at mile 135.4.

DRAINAGE AREA.--8,093 mi².

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

REVISED RECORDS.--WSP 1512: 1947. WSP 1732: 1951(M). WDR TX-83-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 183.5 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Part of flow of Nueces River and its headwater tributaries enters the Edwards and associated limestones in the Balcones Fault Zone, which crosses basin between Laguna and Uvalde (stations 08190000 and 08192000, respectively). Some loss of flow into various permeable formations occurs downstream from the Balcones Fault Zone. Some diversions for irrigation above station. Satellite telemeter at station.

AVERAGE DISCHARGE.--46 years (water years 1944-89), 417 ft³/s (302,100 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 76,500 ft³/s Sept. 24, 1967 (gage height, 26.57 ft); no flow at times.
Maximum stage since about 1902, that of Sept. 24, 1967. Flood of Oct. 11, 1946, reached a stage of 26.46 ft (discharge, 70,000 ft³/s).

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods in June 1935 reached a stage of 23.7 ft and in July 1942 about 22 ft, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,800 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 3	2200	*666	*9.31				

Minimum daily discharge, no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.1	579	.05	.03	.04	.03	20	.00	.00	.00	.00	9.8
2	65	533	.04	.03	.04	.03	7.0	97	.00	.00	.00	4.3
3	45	635	.04	.04	.04	.03	2.7	413	.00	.00	.00	1.7
4	32	570	.04	.05	.04	.01	1.4	252	.00	.00	.00	.56
5	23	237	.03	.05	.04	.00	.70	84	.00	.00	.00	.14
6	9.8	94	.03	.05	.04	.00	.24	42	.00	.00	.00	.04
7	4.5	51	.03	.05	.04	.00	.06	19	.00	.00	.00	.02
8	2.5	31	.03	.05	.04	.00	.02	8.4	.00	.00	.00	.00
9	1.5	19	.03	.04	.04	.00	.00	3.8	.00	.00	.00	.00
10	1.2	12	.03	.03	.04	.00	.00	1.6	.00	.00	.00	.00
11	.96	8.0	.04	.02	.04	.00	.00	.71	.00	.00	.00	.00
12	1.1	5.4	.04	.02	.05	.00	.00	.44	.00	.00	.00	.00
13	17	3.9	.04	.02	.07	.00	.00	.14	.00	.00	.00	.00
14	17	2.9	.04	.02	.10	.00	.00	.06	.00	.00	.00	.00
15	14	2.2	.03	.02	.13	.00	.00	.01	.00	.00	.00	.00
16	7.2	1.8	.03	.02	.13	.00	.00	.00	1.8	.00	.00	.00
17	3.5	1.4	.03	.0	2.2	.00	.00	.00	117	.00	.00	.00
18	2.0	1.2	.03	.00	3.3	.00	.00	.00	71	.00	.00	27
19	1.4	.97	.03	.39	1.3	.00	.00	.00	21	.00	.00	13
20	.95	.75	.03	.60	.78	.00	.00	.00	7.0	.00	.00	4.9
21	.65	.51	.04	.39	.49	.00	.00	.00	2.5	.00	.00	1.9
22	.33	.28	.04	.14	.28	.00	.00	.00	.98	.00	.00	.74
23	.15	.19	.05	.07	.18	.00	.00	.00	.28	.00	.00	.21
24	.08	.18	.06	.05	.17	.00	.00	.00	.05	.00	.00	.03
25	.06	.18	.06	.05	.09	.00	.00	.00	.02	.00	.00	.00
26	.04	.13	.06	.05	.09	.00	.00	.00	.0	.00	.00	.00
27	.04	.13	.06	.04	.08	.00	.00	.00	.00	.00	.00	.00
28	.04	.06	.06	.04	.04	.00	.00	.00	.00	.00	169	.00
29	.57	.05	.05	.04	---	.00	.00	.00	.00	.00	88	.00
30	1.8	.05	.05	.04	---	29	.00	.00	.00	.00	41	.00
31	408	---	.04	.04	---	55	---	.00	---	.00	20	---
TOTAL	663.47	2791.28	1.26	2.48	9.92	84.10	32.12	922.16	221.63	0.00	318.00	64.34
MEAN	21.4	93.0	.080	.080	.35	2.71	1.07	29.7	7.39	.00	10.3	2.14
MAX	408	635	.06	.60	3.3	55	20	413	117	.00	169	27
MIN	.04	.05	.03	.00	.04	.00	.00	.00	.00	.00	.00	.00
AC-FT	1320	5540	2.5	4.9	20	167	64	1830	440	.0	631	128
CAL YR 1988	TOTAL	14460.32	MEAN	39.5	MAX	635	MIN	.03	AC-FT	28680		
WTR YR 1989	TOTAL	5110.76	MEAN	14.0	MAX	635	MIN	.00	AC-FT	10140		

NUECES RIVER BASIN

353

08195000 FRIIO RIVER AT CONCAN, TX

LOCATION.--Lat 29°29'18", long 99°42'16", Uvalde County, Hydrologic Unit 12110106, on left bank 0.7 mi southeast of Concan Post Office, 15 mi upstream from Dry Frio River, and 222.8 mi upstream from mouth.

DRAINAGE AREA.--389 mi².

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). WDR TX-83-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,203.71 ft above National Geodetic Vertical Datum of 1929. Oct. 26, 1923, to July 28, 1924, nonrecording gage at site 86 ft upstream at datum 5.08 ft 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 downstream at present datum.

REMARKS.--No estimated daily discharges. Records good. Many small diversions for irrigation above station.

AVERAGE DISCHARGE.--64 years (water years 1925-29, 1931-89), 117 ft³/s (4.08 in/yr), 84,770 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 162,000 ft³/s July 1, 1932 (gage height, 34.44 ft, from floodmarks), from rating curve extended above 44,000 ft³/s on basis of flow-over-dam measurement of 56,600 ft³/s and slope-area measurement of 162,000 ft³/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 greater than base discharge of 500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 19	1530	*129	*3.99				

Minimum daily discharge, 16 ft³/s Sept. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	79	66	58	63	88	92	83	62	41	30	23	24
2	74	66	58	63	86	92	80	64	40	29	25	24
3	72	66	58	63	83	92	80	65	41	29	24	24
4	73	64	58	63	79	88	79	63	40	28	22	23
5	70	63	58	63	77	86	77	60	40	27	21	22
6	71	63	61	61	76	86	76	61	40	27	21	21
7	69	63	60	62	75	86	75	58	38	27	21	24
8	69	62	64	61	74	84	75	57	37	28	49	26
9	69	63	64	60	72	83	74	55	37	27	37	24
10	70	62	67	61	72	82	73	53	38	26	30	24
11	67	62	65	60	70	81	74	53	51	25	29	23
12	67	62	65	60	72	80	74	55	44	25	28	22
13	66	62	66	61	70	80	78	54	43	25	27	21
14	67	62	65	61	70	79	78	55	54	24	27	22
15	66	62	64	60	72	78	77	55	46	24	27	22
16	67	60	62	60	80	78	74	55	42	24	25	22
17	66	60	63	60	100	78	73	61	41	22	25	21
18	65	62	63	60	118	78	72	58	39	22	24	21
19	65	61	62	62	126	76	72	56	38	22	24	21
20	65	59	62	68	121	78	71	53	36	20	24	21
21	68	60	63	66	112	75	69	51	35	21	25	20
22	66	60	63	67	107	76	67	49	34	21	24	17
23	67	60	63	66	104	76	66	49	34	23	24	17
24	65	60	62	67	101	77	64	48	36	23	25	17
25	64	62	63	67	99	78	64	47	37	23	39	17
26	64	60	63	66	97	76	65	47	35	23	33	17
27	65	58	63	98	94	76	68	46	35	24	30	17
28	65	59	63	97	92	91	63	45	33	26	28	17
29	76	60	63	94	---	89	64	43	31	24	28	17
30	66	58	63	96	---	84	64	41	30	23	27	16
31	66	---	63	92	---	84	---	41	---	22	25	---
TOTAL	2109	1847	1935	2108	2487	2539	2169	1660	1166	764	841	624
MEAN	68.0	61.6	62.4	68.0	88.8	81.9	72.3	53.5	38.9	24.6	27.1	20.8
MAX	79	66	67	98	126	92	83	65	54	30	49	26
MIN	64	58	58	60	70	75	63	41	30	20	21	16
AC-FT	4180	3660	3840	4180	4930	5040	4300	3290	2310	1520	1670	1240
CFSM	.17	.16	.16	.17	.23	.21	.19	.14	.10	.06	.07	.05
IN.	.20	.18	.19	.20	.24	.24	.21	.16	.11	.07	.08	.06

CAL YR 1988	TOTAL	51585	MEAN	141	MAX	3310	MIN	49	AC-FT	102300	CFSM	.36	IN.	4.93
WTR YR 1989	TOTAL	20249	MEAN	55.5	MAX	126	MIN	16	AC-FT	40160	CFSM	.14	IN.	1.94

NUECES RIVER BASIN

08195000 FRIO RIVER AT CONCAN, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: June 1952, December 1964 to July 1965. Chemical, biochemical, and pesticide analyses: August 1968 to current year. Pesticide analyses: August 1968 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD 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, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)
JAN 11...	1449	60	402	7.90	15.5	<1	0.40	10.3	107	0.5	K10
MAY 05...	1421	60	383	8.00	24.0	5	0.20	7.6	94	0.9	120
AUG 25...	1406	44	367	8.00	28.0	<1	0.40	7.8	105	0.8	240
DATE	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB WH WAT TOT FLD (MG/L AS CAC03)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT WH TOT FET FIELD (MG/L AS CAC03)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
JAN 11...	K9	200	20	57	14	7.2	0.2	0.90	180	13	12
MAY 05...	50	190	20	52	14	7.7	0.3	1.1	168	14	12
AUG 25...	69	180	19	48	14	7.9	0.3	1.0	159	13	12
DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SI02)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE (MG/L AS N)	NITRO-GEN, NITRITE (MG/L AS N)	NITRO-GEN, NO2+NO3 (MG/L AS N)	NITRO-GEN, AMMONIA (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)
JAN 11...	0.20	10	222	<1	<1	--	<0.010	0.600	0.020	0.28	0.30
MAY 05...	0.20	11	213	<1	<1	0.380	0.020	0.400	0.010	--	<0.20
AUG 25...	0.10	14	205	<1	<1	--	<0.010	0.200	0.010	0.49	0.50
DATE	PHOS-PHOROUS TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	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)	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY, DIS-SOLVED (UG/L AS HG)
JAN 11...	<0.010	1.4	<1	30	<1	1	5	16	<5	<1	<0.1
MAY 05...	<0.010	1.2	--	--	--	--	--	--	--	--	--
AUG 25...	<0.010	1.5	<1	31	<1	<1	1	7	<1	1	<0.1
DATE	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)	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 11...	<1	<1.0	9	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	0.01
MAY 05...	--	--	--	--	--	--	--	--	--	--	--
AUG 25...	<1	<1.0	6	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01
DATE	DI-ELDRIN TOTAL (UG/L)	DI-SYSTON 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)	METHYL PARA-THION, TOTAL (UG/L)
JAN 11...	<0.010	--	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01
MAY 05...	--	--	--	--	--	--	--	--	--	--	--
AUG 25...	<0.010	<0.01	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01

NUECES RIVER BASIN

355

08195000 FRIO RIVER AT CONCAN, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	PHORATE TOTAL (UG/L)	SILVEX, TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)
JAN 11...	<0.01	<0.01	<0.01	<0.1	--	<0.01	<1	<0.01	<0.01	<0.01	<0.01
MAY 05...	--	--	--	--	--	--	--	--	--	--	--
AUG 25...	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<1	<0.01	<0.01	<0.01	<0.01

NUECES RIVER BASIN

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 upstream from bridge on U.S. Highway 83, 3.1 mi upstream from Rocky Creek, 4.3 mi southeast of Reagan Wells, and 25.9 mi upstream from mouth.

DRAINAGE AREA.--126 mi².

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 1712: 1953. WSP 1923: 1955(M). WDR TX-83-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,335.2 ft above National Geodetic Vertical Datum of 1929, from State Department of Highways and Public Transportation datum.

REMARKS.--No estimated daily discharges. Records good. There are several small diversions above station.

AVERAGE DISCHARGE.--37 years, 35.3 ft³/s (3.80 in/yr), 25,570 acre-ft/yr.

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

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

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 17	2045	*30	*2.40				

Minimum daily discharge, 0.15 ft³/s Aug. 7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	8.8	8.0	6.6	6.6	13	14	13	6.2	2.5	1.3	.21	1.0		
2	8.5	7.9	6.8	6.6	12	14	12	5.9	2.4	1.3	.27	.99		
3	8.4	7.7	6.7	6.9	11	13	12	5.7	2.2	1.2	.24	.90		
4	8.2	7.4	6.6	6.7	10	13	12	5.6	2.2	1.1	.20	.83		
5	8.0	7.1	6.7	6.3	9.8	12	11	5.5	1.9	1.0	.16	.78		
6	7.5	6.8	6.7	6.3	9.7	12	10	5.4	1.8	.95	.17	.75		
7	7.4	6.1	6.9	6.3	9.2	12	10	5.2	1.7	.89	.15	.77		
8	7.1	5.8	6.9	6.2	8.9	12	10	5.0	1.6	.86	2.6	.77		
9	6.9	6.5	6.8	6.0	8.6	12	9.8	4.8	1.4	.82	3.7	.67		
10	6.9	6.8	7.1	6.0	8.2	11	9.6	4.5	1.5	.79	5.5	.61		
11	6.6	6.9	7.2	5.8	8.2	11	9.4	4.4	2.0	.72	5.0	.55		
12	6.5	6.9	7.2	5.7	8.4	11	9.6	4.4	2.2	.67	3.9	.52		
13	6.3	6.6	7.2	5.7	8.6	11	11	4.6	2.5	.60	3.2	.50		
14	6.6	6.3	7.2	5.7	8.6	11	11	4.7	3.0	.52	2.8	.49		
15	6.6	6.6	7.2	5.7	8.9	10	10	4.8	3.2	.44	2.5	.45		
16	6.6	6.5	7.0	5.5	12	10	9.9	5.0	3.0	.33	2.3	.41		
17	6.5	6.3	6.9	5.5	22	10	9.4	8.4	2.5	.31	2.2	.36		
18	6.3	6.3	6.8	5.5	29	10	9.4	9.0	2.2	.27	1.9	.33		
19	6.3	6.8	6.7	6.0	25	11	9.4	7.2	1.9	.25	1.9	.31		
20	6.4	6.5	6.9	7.6	23	11	9.3	6.0	1.7	.23	1.8	.32		
21	6.6	6.5	6.9	7.1	21	11	8.8	5.4	1.5	.22	1.8	.29		
22	7.0	6.6	7.1	6.4	19	11	8.0	4.9	1.5	.22	1.6	.30		
23	6.8	6.6	6.9	6.4	18	11	7.5	4.7	1.5	.22	1.5	.25		
24	6.7	6.7	6.8	6.6	16	11	7.2	4.4	1.6	.20	1.6	.24		
25	6.6	6.9	6.6	6.6	16	11	7.2	4.2	1.5	.21	1.6	.26		
26	6.7	7.1	6.6	6.9	15	11	7.3	4.0	1.7	.19	1.4	.26		
27	6.9	6.8	6.9	14	15	11	8.4	3.8	1.9	.24	1.4	.25		
28	6.9	6.7	6.7	20	14	17	7.7	3.5	1.8	.28	1.3	.25		
29	9.3	6.6	6.4	18	---	15	7.0	3.3	1.6	.23	1.2	.25		
30	8.9	6.6	6.4	15	---	14	6.4	3.1	1.5	.18	1.2	.21		
31	8.2	---	6.6	14	---	14	---	2.9	---	.17	1.1	---		
TOTAL	223.0	202.9	212.0	243.6	388.1	368	283.3	156.5	59.5	16.91	56.40	14.87		
MEAN	7.19	6.76	6.84	7.86	13.9	11.9	9.44	5.05	1.98	.55	1.82	.50		
MAX	9.3	8.0	7.2	20	29	17	13	9.0	3.2	1.3	5.5	1.0		
MIN	6.3	5.8	6.4	5.5	8.2	10	6.4	2.9	1.4	.17	.15	.21		
AC-FT	442	402	421	483	770	730	562	310	118	34	112	29		
CFSM	.06	.05	.05	.06	.11	.09	.07	.04	.02	.00	.01	.00		
IN.	.07	.06	.06	.07	.11	.11	.08	.05	.02	.00	.02	.00		
CAL YR 1988	TOTAL	4432.4	MEAN	12.1	MAX	266	MIN	3.2	AC-FT	8790	CFSM	.10	IN.	1.31
WTR YR 1989	TOTAL	2225.08	MEAN	6.10	MAX	29	MIN	.15	AC-FT	4410	CFSM	.05	IN.	.66

NUECES RIVER BASIN

357

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

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: January 1966 to current year. Pesticide analyses: January 1974 to current year. Sediment analyses: January 1966.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

		DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD 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, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)
JAN 12...	1645	5.7	359	8.20	14.0	1	0.30	10.4	105	0.6	K18
MAY 04...	1619	5.5	364	8.10	29.0	5	0.30	8.2	113	0.9	K320
AUG 24...	1541	1.5	413	8.50	30.5	<1	0.20	7.7	109	1.1	41
DATE	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB WH WAT TOT FLD (MG/L AS CAC03)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT WH TOT FET FIELD (MG/L AS CAC03)	SULFATE DIS-SOLVED (MG/L AS S04)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
JAN 12...	K4	180	19	54	12	6.2	0.2	0.60	166	17	11
MAY 04...	K18	180	21	51	12	6.4	0.2	0.60	156	15	12
AUG 24...	K18	220	25	63	14	7.5	0.2	0.60	190	16	13
DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SI02)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L)	RESIDUE 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)
JAN 12...	0.10	8.1	209	<1	<1	--	<0.010	0.400	0.020	0.28	0.30
MAY 04...	0.10	10	201	<1	<1	0.190	0.010	0.200	0.010	0.19	0.20
AUG 24...	0.10	13	241	27	4	--	<0.010	0.300	0.010	--	<0.20
DATE	PHOS-PHOROUS TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	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)	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)
JAN 12...	<0.010	1.3	<1	34	<1	1	<1	20	<5	<1	<0.1
MAY 04...	0.010	1.4	--	--	--	--	--	--	--	--	--
AUG 24...	<0.010	2.1	<1	48	<1	<1	2	6	<1	5	<0.1
DATE	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)	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 12...	<1	<1.0	12	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01
MAY 04...	--	--	--	--	--	--	--	--	--	--	--
AUG 24...	<1	<1.0	<3	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01
DATE	DI-ELDRIN TOTAL (UG/L)	DI-SYSTON 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)	METHYL PARA-THION, TOTAL (UG/L)
JAN 12...	<0.010	--	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01
MAY 04...	--	--	--	--	--	--	--	--	--	--	--
AUG 24...	<0.010	<0.01	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01

NUECES RIVER BASIN

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	PHORATE OTAL (UG/L)	SILVEX, TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)
JAN 12...	<0.01	<0.01	<0.01	<0.1	--	<0.01	<1	<0.01	<0.01	<0.01	<0.01
MAY 04...	--	--	--	--	--	--	--	--	--	--	--
AUG 24...	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<1	<0.01	<0.01	<0.01	<0.01

NUECES RIVER BASIN

359

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 upstream from Farm Road 1023, 5.7 mi downstream from Dry Frio River, 6.3 mi downstream from bridge on U.S. Highway 90, 7.2 mi northeast of Uvalde, and 194.5 mi upstream from mouth.

DRAINAGE AREA.--631 mi².

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.

REVISED RECORDS.--WDR TX-83-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 882.47 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Part of flow of Frio River enters the Edwards and associated limestones in the Balcones Fault Zone, that crosses the basin between Concan (station 08195000) and this station. Most of the low flow enters this formation. Many diversions for irrigation above station. Satellite telemeter at station.

AVERAGE DISCHARGE.--37 years, 33.7 ft³/s (24,420 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 99,600 ft³/s May 29, 1987 (gage height, 25.05 ft, from floodmark), from rating curve extended above 12,000 ft³/s on basis of slope-area measurements of 24,400, 53,000, and 88,500 ft³/s; no flow most of time each year.

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

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

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
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	.00
31	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
TOTAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MEAN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
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
AC-FT	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
CAL YR 1988	TOTAL	6945.24	MEAN	19.0	MAX	3520	MIN	.00	AC-FT	13780		
WTR YR 1989	TOTAL	0.00	MEAN	.00	MAX	.00	MIN	.00	AC-FT	.00		

NUECES RIVER BASIN

08198000 SABINAL RIVER NEAR SABINAL, TX

LOCATION.--Lat 29°29'27", long 99°29'33", Uvalde County, Hydrologic Unit 12110106, on right bank 108 ft upstream from concrete dam, 2.3 mi downstream from mouth of Onion Creek, 12.5 mi north of Sabinal, and 41.6 mi upstream from mouth.

DRAINAGE AREA.--206 mi².

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 above National Geodetic Vertical Datum of 1929. Prior to Apr. 9, 1971, at site 0.3 mi downstream at same datum.

REMARKS.--No estimated daily discharges. Records good. Several small diversions above station for irrigation.

AVERAGE DISCHARGE.--47 years, 59.3 ft³/s (3.91 in/yr), 42,960 acre-ft/yr.

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1892, about 33 ft 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, see flood history for station 08198500.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 28	0300	*85	*5.29				

Minimum daily discharge, 0.02 ft³/s Sept. 26-30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	13	16	11	13	33	26	25	22	5.6	2.8	.70	.30		
2	14	14	11	12	30	26	24	19	5.1	2.7	.70	e.26		
3	12	13	11	13	27	26	25	18	5.0	2.4	.70	.22		
4	12	13	11	12	24	25	25	18	4.5	2.2	.68	.20		
5	12	12	11	12	24	24	23	17	4.5	1.9	.52	.17		
6	12	11	11	12	23	24	23	17	4.5	1.8	.41	.13		
7	11	11	11	11	23	24	23	16	4.1	1.8	.41	.13		
8	11	11	11	10	22	24	23	14	4.1	1.8	.78	.13		
9	11	11	11	9.7	22	22	22	13	3.7	1.8	.41	.13		
10	11	11	11	9.6	21	23	21	13	3.4	1.8	.41	e.11		
11	8.8	11	13	10	20	23	21	12	3.7	1.6	e.40	e.09		
12	8.4	11	13	10	20	23	22	13	4.1	1.6	e.40	.08		
13	9.1	11	13	10	20	24	23	13	3.8	1.4	e.40	.07		
14	9.6	10	13	11	20	23	27	13	9.2	1.3	e.40	e.06		
15	9.6	10	13	11	20	23	25	13	21	1.3	e.39	e.05		
16	9.9	10	13	11	20	24	23	13	13	1.1	e.39	.04		
17	10	10	13	11	31	24	22	15	9.5	1.1	e.39	.04		
18	9.6	11	12	14	43	24	22	14	8.0	.88	e.39	.04		
19	9.6	11	12	16	45	26	21	12	7.3	.87	e.38	.04		
20	9.6	11	12	18	41	26	20	11	6.7	.70	e.38	.04		
21	9.9	11	12	19	36	25	19	10	5.5	.70	e.38	e.03		
22	11	12	12	18	33	24	18	9.6	4.5	.70	e.38	e.03		
23	9.9	13	12	17	31	24	18	8.8	4.1	.70	e.37	e.03		
24	9.6	13	12	17	29	24	18	8.8	4.3	.68	e.37	e.03		
25	9.6	13	12	17	29	24	17	8.0	4.8	.54	e.37	e.03		
26	9.6	12	12	17	28	24	17	7.3	5.0	.54	e.37	.02		
27	10	12	12	31	27	24	17	6.1	4.2	.54	e.36	.02		
28	11	9.7	12	77	27	29	18	5.9	3.8	.62	e.36	.02		
29	18	10	11	71	---	31	17	6.1	3.4	.70	.36	.02		
30	16	11	11	49	---	30	25	5.6	3.1	.70	e.36	.02		
31	18	---	12	37	---	27	---	5.6	---	.70	e.33	---		
TOTAL	345.8	345.7	367	606.3	769	770	644	377.8	173.5	39.97	13.65	2.58		
MEAN	11.2	11.5	11.8	19.6	27.5	24.8	21.5	12.2	5.78	1.29	.44	.086		
MAX	18	16	13	77	45	31	27	22	21	2.8	.78	.30		
MIN	8.4	9.7	11	9.6	20	22	17	5.6	3.1	.54	.33	.02		
AC-FT	686	686	728	1200	1530	1530	1280	749	344	79	27	5.1		
CFSM	.05	.06	.06	.09	.13	.12	.10	.06	.03	.01	.00	.00		
IN.	.06	.06	.07	.11	.14	.14	.12	.07	.03	.01	.00	.00		
CAL YR 1988	TOTAL	9731.1	MEAN	26.6	MAX	1490	MIN	4.1	AC-FT	19300	CFSM	.13	IN.	1.76
WTR YR 1989	TOTAL	4455.30	MEAN	12.2	MAX	77	MIN	.02	AC-FT	8840	CFSM	.06	IN.	.80

e Estimated.

NUECES RIVER BASIN

361

08198000 SABINAL RIVER NEAR SABINAL, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: November 1964 to July 1965. Chemical and biochemical analyses: February 1970 to current year. Pesticide analyses: August 1971 to current year. Sediment analyses: November 1965.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD 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, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)
JAN 11...	0941	8.8	443	7.90	14.0	1	0.40	9.4	94	0.7	20
MAY 09...	1617	13	440	8.00	27.0	5	0.30	7.7	102	0.6	33
AUG 29...	1614	0.41	442	8.00	31.5	3	0.30	8.1	115	1.6	70
DATE	STREP-TOCOC CI-FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB WH WAT TOT FLD (MG/L AS CAC03)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT WH TOT FET (MG/L AS CAC03)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
JAN 11...	31	240	35	72	14	8.7	0.3	1.1	203	33	13
MAY 09...	31	210	39	63	14	8.5	0.3	1.6	176	30	14
AUG 29...	120	220	38	64	14	11	0.3	1.3	180	35	16
DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SI02)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHOROUS TOTAL (MG/L AS P)
JAN 11...	0.20	11	275	8	<1	<0.010	0.200	0.020	0.28	0.30	<0.010
MAY 09...	0.20	13	250	<1	<1	<0.010	<0.100	0.020	--	<0.20	<0.010
AUG 29...	0.20	17	266	<1	<1	<0.010	<0.100	0.010	0.29	0.30	<0.010
DATE	CARBON, ORGANIC TOTAL (MG/L AS C)	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)	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)
JAN 11...	1.3	<1	34	<1	1	<1	7	<5	<1	<0.1	<1
MAY 09...	1.5	--	--	--	--	--	--	--	--	--	--
AUG 29...	2.4	<1	36	<1	1	1	6	<1	3	<0.1	<1
DATE	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)	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)	DI-ELDRIN TOTAL (UG/L)
JAN 11...	<1.0	<3	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01	<0.010
MAY 09...	--	--	--	--	--	--	--	--	--	--	--
AUG 29...	<1.0	8	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01	<0.010
DATE	DI-SYSTON 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)	METHYL PARA-THION, TOTAL (UG/L)	METHYL TRI-THION, TOTAL (UG/L)
JAN 11...	--	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01	<0.01
MAY 09...	--	--	--	--	--	--	--	--	--	--	--
AUG 29...	<0.01	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01	<0.01

NUECES RIVER BASIN

08198000 SABINAL RIVER NEAR SABINAL, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	PHORATE OTAL (UG/L)	SILVEX, TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)
JAN 11...	<0.01	<0.01	<0.1	--	<0.01	<1	<0.01	<0.01	<0.01	<0.01
MAY 09...	--	--	--	--	--	--	--	--	--	--
AUG 29...	<0.01	<0.01	<0.1	<0.01	<0.01	<1	<0.01	<0.01	<0.01	<0.01

08198500 SABINAL RIVER AT SABINAL, TX

LOCATION.--Lat 29°18'05", long 99°28'46", Uvalde County, Hydrologic Unit 12110106, on left bank 80 ft downstream from bridge on U.S. Highway 90, 1,100 ft downstream from Southern Pacific Lines railroad bridge, 0.8 mi west of Sabinal, 5.8 mi upstream from Rancho Creek, and 223 mi upstream from mouth.

DRAINAGE AREA.--241 mi².

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

REVISED RECORDS.--WDR TX-83-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 882.17 ft above 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 upstream at same datum.

REMARKS.--No estimated daily discharges. Records fair. Several small diversions for irrigation above station. Most of low flow of the Sabinal River enters the Edwards and associated limestones in the Balcones Fault Zone, that 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. Satellite telemeter at station.

AVERAGE DISCHARGE.--37 years, 33.6 ft³/s (24,340 acre-ft/yr).

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1890, 40 ft Aug. 24, 1919, from information by local residents. Flood of July 2, 1932, reached a stage of 31 ft (discharge, 60,000 ft³/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, 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 greater than base discharge of 100 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 31	0830	unknown	*4.38	Aug. 8	0600	*13	3.40

a Backwater from debris on control.

Minimum daily discharge, 0.12 ft³/s Aug. 5-7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.7	2.6	2.2	2.0	2.3	1.5	1.4	.85	.65	.40	.16	.58
2	2.5	2.6	2.1	2.0	2.2	1.4	1.4	.85	.65	.30	.16	.58
3	2.5	2.6	2.0	2.0	2.2	1.4	1.4	.85	.65	.30	.16	.58
4	2.5	2.5	2.0	2.0	2.2	1.4	1.4	.85	.65	.30	.15	.58
5	2.5	2.5	2.0	2.0	2.1	1.3	1.4	.85	.65	.30	.12	.58
6	2.5	2.4	2.0	1.9	2.0	1.3	1.4	.85	.65	.30	.12	.68
7	2.5	2.4	2.0	1.9	2.0	1.3	1.4	.85	.65	.30	.12	.71
8	2.5	2.4	2.0	1.9	2.0	1.3	1.4	.85	.64	.25	3.1	.75
9	2.5	2.4	2.0	1.9	1.9	1.3	1.4	.81	.71	.25	1.0	.77
10	2.5	2.4	2.0	1.9	1.9	1.3	1.4	.71	.71	.25	.99	.99
11	2.4	2.4	2.0	1.9	1.9	1.3	1.4	.71	.67	.25	.93	1.6
12	2.4	2.4	2.0	1.9	1.9	1.2	1.4	.71	.68	.25	.82	1.2
13	2.4	2.4	2.0	1.9	1.7	1.1	1.4	.71	.74	.22	.78	.95
14	2.4	2.4	2.0	1.9	1.7	1.1	1.4	.71	1.0	.20	.78	.92
15	2.3	2.4	2.0	2.0	1.7	1.1	1.3	.69	.65	.20	.78	.85
16	2.2	2.4	2.0	2.0	2.0	1.1	1.2	.65	.65	.20	.71	.85
17	2.0	2.4	2.0	2.0	1.8	1.1	1.2	.69	.65	.20	.71	.81
18	2.1	2.4	2.1	2.0	1.8	1.0	1.2	.71	.65	.20	.71	.78
19	2.2	2.5	2.0	2.3	1.7	1.0	1.2	.67	.65	.20	.71	.78
20	2.2	2.6	2.0	2.5	1.6	1.2	1.2	.65	.63	.20	.71	.78
21	2.3	2.6	2.0	2.0	1.6	1.2	1.2	.65	.57	.20	.71	.78
22	2.5	2.6	2.0	2.0	1.7	1.2	1.2	.65	.51	.20	.71	.78
23	2.5	2.6	2.0	2.0	1.7	1.2	1.2	.65	.46	.20	.71	.78
24	2.5	2.6	2.0	2.1	1.6	1.2	1.2	.65	.46	.18	.81	.78
25	2.6	2.6	2.0	2.1	1.6	1.2	1.1	.65	.51	.16	.85	.78
26	2.6	2.6	1.9	2.9	1.6	1.1	1.1	.65	.58	.16	.76	.78
27	2.7	2.6	1.9	2.8	1.5	1.1	1.0	.65	.52	.16	.71	.78
28	2.6	2.5	1.9	2.8	1.5	1.4	.99	.65	.42	.16	.71	.78
29	3.2	2.5	2.0	2.6	---	1.4	1.2	.65	.40	.16	.65	.78
30	2.6	2.4	2.0	2.5	---	1.4	1.0	.65	.40	.16	.62	.78
31	3.3	---	2.0	2.4	---	1.4	---	.65	---	.16	.58	---
TOTAL	77.2	74.7	62.1	66.1	51.4	38.5	38.09	22.37	18.41	6.97	21.54	24.12
MEAN	2.49	2.49	2.00	2.13	1.84	1.24	1.27	.72	.61	.22	.69	.80
MAX	3.3	2.6	2.2	2.9	2.3	1.5	1.4	.85	1.0	.40	3.1	1.6
MIN	2.0	2.4	1.9	1.9	1.5	1.0	.99	.65	.40	.16	.12	.58
AC-FT	153	148	123	131	102	76	76	44	37	14	43	48

CAL YR 1988	TOTAL	2420.0	MEAN	6.61	MAX	1290	MIN	1.5	AC-FT	4800
WTR YR 1989	TOTAL	501.50	MEAN	1.37	MAX	3.3	MIN	.12	AC-FT	995

NUECES RIVER BASIN

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 downstream from bridge on Ranch Road 462, 6.3 mi southeast of Tarpley, and 16.6 mi northwest of Hondo.

DRAINAGE AREA.--95.6 mi².

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 1712: 1957. WDR TX-83-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,169.1 ft, from Magnolia Oil Co. datum.

REMARKS.--Records good to June 29 and poor thereafter. There are several small diversions for irrigation above station.

AVERAGE DISCHARGE.--37 years, 40.0 ft³/s (5.68 in/yr), 28,980 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 69,800 ft³/s June 17, 1958 (gage height, 28.2 ft, from floodmark), from rating curve extended above 2,600 ft³/s on basis of slope-area measurements of 18,600 and 69,800 ft³/s; no flow at times in 1952-57, 1962-64, 1967, 1971, 1984, and 1989.
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 (discharge, 58,500 ft³/s), from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 17	0845	*208	*2.41				

Minimum daily discharge, no flow Aug. 24 to Sept. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.8	5.2	2.2	1.7	9.9	9.9	8.6	4.7	1.3	e.20	e.04	.00
2	6.0	5.0	2.1	1.7	9.6	10	8.6	4.4	1.3	e.15	e.05	.00
3	5.9	4.8	2.0	1.7	10	10	7.9	4.4	1.2	.19	e.04	.00
4	5.7	4.3	1.9	1.6	8.1	9.9	7.4	4.5	1.0	e.23	e.03	.00
5	5.4	3.8	2.0	1.6	8.0	8.8	6.9	4.0	1.0	e.23	e.03	.00
6	5.3	3.6	2.0	1.6	7.8	8.7	6.8	1.3	.94	e.20	e.03	.00
7	5.2	3.7	2.0	1.6	7.5	8.7	6.7	1.6	.88	e.19	e.03	.00
8	5.1	3.7	2.2	1.5	7.6	8.4	6.6	2.2	.68	e.19	e.16	.00
9	5.1	3.7	2.3	1.5	7.5	8.4	6.2	2.5	.61	e.19	e.05	.00
10	4.9	3.6	2.5	1.5	7.3	8.0	6.2	2.7	.60	e.18	e.02	.00
11	4.7	3.3	2.4	1.6	7.6	8.0	6.3	2.7	.61	e.13	e.02	.00
12	4.7	3.4	2.1	1.6	7.8	8.0	6.8	2.7	.58	e.13	e.02	.00
13	4.6	3.1	1.8	2.7	7.6	8.0	8.3	2.9	.50	e.13	e.02	.00
14	4.4	3.2	1.8	2.2	7.5	8.0	9.3	2.9	2.5	e.13	e.01	.00
15	4.4	3.3	1.8	1.7	8.3	8.0	7.9	2.9	2.2	e.12	e.01	.00
16	4.4	3.1	1.6	1.5	9.7	8.0	7.5	3.0	1.5	e.11	e.01	.00
17	4.3	2.9	1.7	1.6	10	8.0	7.3	18	1.2	e.11	e.01	.00
18	4.1	3.1	1.7	1.9	10	8.4	7.0	6.0	1.0	e.09	e.01	.00
19	4.1	3.2	1.7	3.2	10	8.4	7.0	4.4	.84	e.09	e.01	.00
20	4.0	2.7	1.8	5.9	10	10	6.6	4.0	.63	e.07	e.01	.00
21	4.3	2.6	1.9	3.2	10	8.7	6.3	3.9	.47	e.07	e.01	.00
22	3.9	2.8	1.9	2.5	10	8.1	6.0	3.7	.39	e.06	e.01	.00
23	4.1	2.8	1.9	2.7	9.9	7.7	5.7	3.2	.31	e.06	e.01	.00
24	4.4	2.6	1.8	2.9	10	7.6	5.5	2.8	.34	e.05	.00	.00
25	3.9	2.7	1.7	2.9	10	7.7	5.4	2.5	.37	e.05	.00	.00
26	4.1	2.7	1.7	7.5	10	8.4	5.4	2.0	.33	e.04	.00	.00
27	4.1	2.3	1.9	17	9.9	8.2	5.2	.61	.29	e.05	.00	.00
28	4.0	2.1	1.8	18	9.7	15	4.8	.43	.28	e.06	.00	.00
29	6.8	2.3	1.7	15	---	11	4.5	.97	.24	e.05	.00	.00
30	4.7	2.4	1.8	13	---	9.5	5.9	1.2	e.20	e.04	.00	.00
31	5.3	---	1.8	11	---	8.7	---	1.2	---	e.03	.00	---
TOTAL	148.7	98.0	59.5	135.6	251.3	274.2	200.6	104.31	24.29	3.63	0.64	0.00
MEAN	4.80	3.27	1.92	4.37	8.97	8.85	6.69	3.36	.81	.12	.021	.00
MAX	6.8	5.2	2.5	18	10	15	9.3	18	2.5	.23	.16	.00
MIN	3.9	2.1	1.6	1.5	7.3	7.6	4.5	.43	.20	.03	.00	.00
AC-FT	295	194	118	269	498	544	398	207	48	7.2	1.3	.0
CFSM	.05	.03	.02	.05	.09	.09	.07	.04	.01	.00	.00	.00
IN.	.06	.04	.02	.05	.10	.11	.08	.04	.01	.00	.00	.00
CAL YR 1988	TOTAL	2897.65	MEAN	7.92	MAX	469	MIN	.90	AC-FT	5750	CFSM	.08
WTR YR 1989	TOTAL	1300.77	MEAN	3.56	MAX	18	MIN	.00	AC-FT	2580	CFSM	.04
										IN.	1.13	.51

e Estimated.

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

[illegible]

NUECES RIVER MAIN STEM

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 downstream from county road low-water crossing, 3.1 mi north of Hondo, 7.8 mi upstream from Verde Creek, and 55.4 mi upstream from mouth.

DRAINAGE AREA.--149 mi².

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

REVISED RECORDS.--WDR TX-83-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 897.87 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Most of the low flow of Hondo Creek enters the Edwards and associated limestones in the Balcones Fault Zone, that crosses the basin between Tarpley (station 08200000) and this station. There are several small diversions above station for irrigation. Satellite telemeter at station.

AVERAGE DISCHARGE.--29 years, 15.9 ft³/s (11,520 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 51,800 ft³/s May 29, 1987 (gage height, 17.19 ft), from rating curve extended above 16.0 ft; no flow most of time.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1875, 21 ft in September 1919, from information by local resident. Other floods occurred in July 1932, stage 18 ft, and June 17, 1958, stage 17 ft.

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

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
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	.00
31	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
TOTAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MEAN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
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
AC-FT	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0

CAL YR 1988 TOTAL 79.90 MEAN .22 MAX 62 MIN .00 AC-FT 158
WTR YR 1989 TOTAL 0.00 MEAN .00 MAX .00 MIN .00 AC-FT .00

NUECES RIVER BASIN

367

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 upstream from county road crossing, 4.5 mi downstream from Cascade Creek, 7.9 mi southeast of Utopia, and 58.0 mi upstream from mouth.

DRAINAGE AREA.--45.0 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1961 to current year.

REVISED RECORDS.--WDR TX-83-3: Drainage area.

GAGE.--Water-stage recorder, crest-stage gages, and concrete control. Datum of gage is 1,265.8 ft, from Magnolia Oil Company datum, adjustment unknown.

REMARKS.--No estimated daily discharges. Records good. No known diversion above station.

AVERAGE DISCHARGE.--28 years, 19.0 ft³/s (5.73 in/yr), 13,770 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 38,500 ft³/s July 15, 1973 (gage height, 14.4 ft, from floodmark), from rating curve extended above 910 ft³/s on basis of field estimate of flow over and around the end of dam, 14,100 ft³/s, and slope-area measurement of 52,600 ft³/s; no flow for many days in 1963, 1964, and 1989.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1901, 16.4 ft June 17, 1958, from floodmarks (discharge, 52,600 ft³/s, by slope-area measurement of peak flow).

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 600 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 28	1300	*9.0	*1.83				

Minimum daily discharge, no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	1.1	1.2	.58	.54	2.6	2.8	1.9	1.6	.29	.04	.0	.00		
2	1.1	.98	.58	.50	2.4	2.8	1.9	1.3	.25	.03	.00	.00		
3	.99	.91	.58	.53	3.0	2.8	2.1	1.2	.23	.02	.00	.00		
4	.81	.74	.58	.58	2.3	2.8	2.1	1.2	.23	.02	.00	.00		
5	.73	.68	.58	.58	2.2	2.3	2.0	1.2	.15	.02	.00	.00		
6	.68	.63	.58	.58	2.3	2.4	1.8	1.2	.14	.02	.00	.00		
7	.68	.58	.58	.58	2.1	2.4	1.9	1.1	.15	.02	.00	.00		
8	.68	.58	.58	.52	2.2	2.4	1.9	1.1	.14	.02	.06	.00		
9	.68	.63	.58	.50	2.2	2.4	1.8	1.0	.11	.01	.01	.00		
10	.74	.68	.58	.53	2.2	2.4	1.5	.92	.11	.01	.01	.00		
11	.71	.62	.58	.58	2.2	2.4	1.6	.92	.12	.01	.01	.00		
12	.68	.62	.58	.62	2.2	2.4	1.6	.92	.11	.01	.01	.00		
13	.68	.63	.68	.97	2.4	2.4	2.6	.92	.20	.01	.01	.00		
14	.68	.58	.64	.76	2.2	2.4	3.8	.92	.95	.01	.01	.00		
15	.68	.58	.58	.68	2.7	2.4	2.1	.92	.21	.01	.01	.00		
16	.68	.58	.58	.68	4.1	2.3	1.9	.92	.15	.01	.01	.00		
17	.68	.54	.58	.68	3.8	2.2	1.7	2.2	.11	.0	.0	.00		
18	.68	.50	.54	.68	3.9	2.3	1.8	2.0	.09	.0	.00	.00		
19	.68	.57	.52	.96	3.6	2.3	1.8	1.2	.09	.01	.00	.00		
20	.68	.50	.58	2.7	3.6	2.5	1.7	1.0	.09	.0	.00	.00		
21	.89	.50	.58	2.2	3.5	2.2	1.6	.85	.09	.0	.00	.00		
22	.72	.50	.58	1.4	3.1	1.9	1.5	.62	.05	.0	.00	.00		
23	.68	.50	.58	1.3	3.1	1.8	1.4	.57	.05	.0	.00	.00		
24	.68	.53	.58	1.2	3.1	1.8	1.4	.53	.04	.0	.00	.00		
25	.68	.58	.58	1.1	3.1	1.9	1.4	.49	.05	.00	.00	.00		
26	.68	.58	.58	1.6	3.3	2.1	1.4	.43	.04	.00	.00	.00		
27	.68	.49	.60	5.6	3.1	2.2	1.4	.42	.04	.01	.00	.00		
28	.84	.46	.58	5.8	2.9	5.8	1.4	.39	.04	.01	.00	.00		
29	2.6	.52	.58	5.1	---	2.9	1.5	.29	.03	.00	.00	.00		
30	1.6	.58	.58	4.0	---	2.2	2.4	.29	.03	.00	.00	.00		
31	1.4	---	.58	3.0	---	2.0	---	.29	---	.00	.00	---		
TOTAL	26.47	18.57	18.06	47.05	79.4	75.9	54.9	28.91	4.38	0.30	0.14	0.00		
MEAN	.85	.62	.58	1.52	2.84	2.45	1.83	.93	.15	.010	.005	.00		
MAX	2.6	1.2	.68	5.8	4.1	5.8	3.8	2.2	.95	.04	.06	.00		
MIN	.68	.46	.52	.50	2.1	1.8	1.4	.29	.03	.00	.00	.00		
AC-FT	53	37	36	93	157	151	109	57	8.7	.6	.3	.0		
CFSM	.02	.01	.01	.03	.06	.05	.04	.02	.00	.00	.00	.00		
IN.	.02	.02	.01	.04	.07	.06	.05	.02	.00	.00	.00	.00		
CAL YR 1988	TOTAL	734.68	MEAN	2.01	MAX	29	MIN	.36	AC-FT	1460	CFSM	.04	IN.	.61
WTR YR 1989	TOTAL	354.08	MEAN	.97	MAX	5.8	MIN	.00	AC-FT	702	CFSM	.02	IN.	.29

08201500 SECO CREEK AT MILLER RANCH NEAR UTOPIA, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: November 1965 to September 1969. Chemical and biochemical analyses: March 1970 to current year. Pesticide analyses: January 1974 to current year. Sediment analyses: November 1965.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

[illegible]

NUECES RIVER BASIN

369

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 north of D'Hanis and 8.0 mi downstream from Rocky Creek.

DRAINAGE AREA.--168 mi².

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

GAGE.--Water-stage recorder. Datum of gage is 900.88 ft above National Geodetic Vertical Datum of 1929. Prior to October 1970, published as "at Crook Ranch, near D'Hanis".

REMARKS.--No estimated daily discharges. Records good. All of the low flow of Seco Creek enters the Edwards and associated limestones in the Balcones Fault Zone that crosses the basin between Miller Ranch (station 08201500) and this station. No known diversion above station.

AVERAGE DISCHARGE.--28 years (water years 1962-89), 8.77 ft³/s (6,350 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 35,800 ft³/s May 29, 1987 (gage height, 28.20 ft), from rating curve extended above 25,100 ft³/s on basis of slope-area measurement of 35,800 ft³/s; no flow most of time each year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1852, 35.7 ft May 31, 1935, from information by local resident. Other floods occurred Aug. 31, 1894, 33 ft; September 1919, 28 ft; July 2, 1932, 28.2 ft (discharge, 35,800 ft³/s), by slope-area measurement; and June 17, 1958, 32.4 ft.

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

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
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	.00
31	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
TOTAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MEAN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
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
AC-FT	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
CAL YR 1988	TOTAL	0.00	MEAN	.00	MAX	.00	MIN	.00	AC-FT	.00		
WTR YR 1989	TOTAL	0.00	MEAN	.00	MAX	.00	MIN	.00	AC-FT	.00		

NUECES RIVER BASIN

08205500 FRIO RIVER NEAR DERBY, TX

LOCATION.--Lat 28°44'11", long 99°08'40", Frio County, Hydrologic Unit 12110106, on right bank 17 ft downstream from centerline of railroad tracks, 35 ft right of the Missouri Pacific Railroad Co. bridge abutment, 167 ft downstream from Interstate Highway 35, 917 ft downstream from Leona River, 2.5 mi south of Derby, and 115.1 mi upstream from mouth.

DRAINAGE AREA.--3,429 mi².

PERIOD OF RECORD.--August 1915 to current year.

REVISED RECORDS.--WSP 568: 1915-16, 1918-22. WSP 1312: 1917-18(M). WSP 1923: 1954. WDR TX-83-3: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 449.11 ft above National Geodetic Vertical Datum of 1929. Aug. 1, 1915, to Apr. 21, 1931, nonrecording gage, and Apr. 22, 1931, to Mar. 6, 1940, water-stage recorder at same site and datum. Mar. 7, 1940, to May 4, 1972, water-stage recorder, and May 5 to Nov. 1, 1972, nonrecording gage at site 167 ft upstream at same datum.

REMARKS.--Records good. Part of flow of Frio River and its headwater tributaries enters the Edwards and associated limestones in the Balcones Fault Zone upstream from U.S. Highway 90 (see REMARKS for stations 08197500, 08198500, 08200700, and 08202700). There is considerable loss of flow into various permeable formations downstream from the Balcones Fault Zone. There are many small diversions for irrigation above station. Satellite telemeter at station.

AVERAGE DISCHARGE.--74 years, 143 ft³/s (103,600 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 230,000 ft³/s July 4, 1932 (gage height, 29.45 ft, from floodmarks), from rating curve extended above 76,000 ft³/s on basis of slope-area measurement of peak flow; no flow at times most years.

Maximum stage since at least 1860, that of July 4, 1932.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,100 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 30	0400	*105	*1.44				

Minimum daily discharge, no flow June 13 to Sept. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	35	e70	40	45	87	58	49	17	2.8	.00	.00	.00
2	35	e83	40	45	74	59	46	26	2.4	.00	.00	.00
3	34	e98	40	46	69	59	46	25	2.5	.00	.00	.00
4	35	83	40	48	62	54	44	23	1.8	.00	.00	.00
5	34	72	39	49	61	51	41	23	1.5	.00	.00	.00
6	e34	e65	39	51	59	51	39	23	.95	.00	.00	.00
7	e34	e80	39	50	58	51	37	23	.49	.00	.00	.00
8	e33	e58	39	48	58	51	36	23	.22	.00	.00	.00
9	e34	e50	39	48	58	50	35	22	.06	.00	.00	.00
10	e35	43	39	45	59	50	34	21	.02	.00	.00	.00
11	e35	43	39	45	60	50	31	24	.05	.00	.00	.00
12	e35	42	39	44	60	51	29	22	.02	.00	.00	.00
13	e35	42	41	43	62	51	28	22	.00	.00	.00	.00
14	e34	42	44	44	62	51	28	21	.00	.00	.00	.00
15	e35	42	44	45	62	51	28	20	.00	.00	.00	.00
16	e36	39	42	45	64	50	28	20	.00	.00	.00	.00
17	e36	39	44	45	62	49	28	20	.00	.00	.00	.00
18	e36	39	43	45	62	47	29	20	.00	.00	.00	.00
19	e35	39	42	47	62	47	32	18	.00	.00	.00	.00
20	e35	39	42	52	63	60	31	17	.00	.00	.00	.00
21	e34	39	43	52	64	49	28	18	.00	.00	.00	.00
22	e33	38	44	58	64	46	26	18	.00	.00	.00	.00
23	e32	37	45	59	64	46	26	14	.00	.00	.00	.00
24	e31	38	45	58	62	46	23	12	.00	.00	.00	.00
25	e30	42	43	56	60	45	20	8.3	.00	.00	.00	.00
26	e31	43	42	55	60	45	18	7.1	.00	.00	.00	.00
27	e35	39	43	55	60	45	16	5.4	.00	.00	.00	.00
28	e39	40	43	59	60	44	15	5.5	.00	.00	.00	.00
29	e36	40	44	88	---	41	15	5.3	.00	.00	.00	.00
30	e47	40	45	99	---	42	21	5.5	.00	.00	.00	.00
31	e57	---	45	80	---	48	---	4.0	---	.00	.00	---
TOTAL	1100	1504	1296	1649	1758	1538	907	533.1	12.81	0.00	0.00	0.00
MEAN	35.5	50.1	41.8	53.2	62.8	49.6	30.2	17.2	.43	.00	.00	.00
MAX	57	98	45	99	87	60	49	26	2.8	.00	.00	.00
MIN	30	37	39	43	58	41	15	4.0	.00	.00	.00	.00
AC-FT	2180	2980	2570	3270	3490	3050	1800	1060	25	.0	.0	.0

CAL YR 1988 TOTAL 28480 MEAN 77.8 MAX 1090 MIN 11 AC-FT 56490
WTR YR 1989 TOTAL 10297.91 MEAN 28.2 MAX 99 MIN .00 AC-FT 20430

e Estimated.

NUECES RIVER BASIN

371

08206600 FRIO RIVER AT TILDEN, TX

LOCATION.--Lat 28°28'02", long 98°32'50", McMullen County, Hydrologic Unit 12110108, on left end at downstream side of bridge on State Highway 16 in Tilden, 300 ft downstream from Leocita Creek, 1.3 mi upstream from Salt Branch, 1.8 mi downstream from Big Slough, and 44.2 mi upstream from mouth.

DRAINAGE AREA.--4,493 mi².

PERIOD OF RECORD.--July 1978 to current year.

GAGE.--Water-stage recorder. Datum of gage is 216.04 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Part of flow of Frio River and its headwater tributaries enters the Edwards and associated limestones in the Balcones Fault Zone that crosses basin upstream from U.S. Highway 90 (see REMARKS for station 08205500). Considerable loss of flow into various permeable formations also occurs downstream from the Balcones Fault Zone. There are many small diversions above station for irrigation. Satellite telemeter at station.

AVERAGE DISCHARGE.--11 years, 211 ft³/s (152,900 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,900 ft³/s June 9, 1987 at 1600 hours (gage height, 29.18 ft); no flow for many days in 1984, 1985, and 1989.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 1932 reached a stage of 38.44 ft, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 23	Unknown	*476	a*7.90				

a From floodmark.

Minimum daily discharge, no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28	42	e35	32	77	56	41	36	e4.0	.00	.24	e2.5
2	27	54	e35	32	86	56	39	38	e3.5	.00	e.20	e2.0
3	26	67	e35	33	74	57	40	48	e3.5	.00	e.10	e1.5
4	26	50	e35	33	75	56	46	45	e3.2	.00	e.05	e1.2
5	26	43	e35	36	69	56	44	34	e3.0	.00	e.02	e1.0
6	26	50	34	41	62	56	43	37	e3.0	.00	e.01	e.80
7	26	61	33	41	56	54	42	35	e2.5	.00	.00	e.70
8	26	52	31	42	54	52	40	28	e2.0	.00	.00	.60
9	25	46	30	42	53	51	38	25	e1.5	.00	.00	.49
10	25	42	29	42	52	51	36	24	e1.0	.00	.00	.43
11	24	41	30	41	52	49	35	23	e.70	.00	.00	.40
12	25	40	30	40	53	46	34	22	e.45	.00	.00	.36
13	26	40	30	40	54	46	34	22	e.30	.00	.00	.32
14	27	41	31	40	55	46	35	21	e.20	.00	.00	.33
15	27	41	31	40	56	48	32	21	e.10	.00	.00	.32
16	26	40	e31	40	56	49	30	20	e.05	.00	.00	.32
17	28	38	e31	40	56	47	29	19	e.02	.00	.00	.30
18	28	37	e32	40	58	45	28	19	e.01	.00	.00	.25
19	28	37	e33	43	59	43	28	18	e.01	.00	.00	.19
20	28	33	33	44	59	40	28	17	.00	.00	.00	.21
21	27	32	34	45	57	42	29	16	.00	.00	.00	.19
22	27	32	35	46	56	e163	30	16	.00	.00	.00	.15
23	26	e32	35	48	57	e284	33	15	.00	.00	.00	.12
24	26	e32	33	49	58	e61	31	14	.00	.00	.00	.16
25	24	e34	35	51	59	49	29	13	.00	.00	.00	.16
26	24	e35	37	55	59	46	27	12	.00	.00	e53	.12
27	22	e35	37	56	58	48	27	11	.00	e.10	e40	.11
28	22	e35	35	55	57	48	26	e7.0	.00	e.30	e15	.09
29	33	e35	33	54	---	45	25	e5.0	.00	e.50	e9.0	.08
30	29	e35	33	54	---	44	26	e4.4	.00	e.40	e5.0	.09
31	33	---	33	55	---	43	---	4.4	---	e.30	e3.5	---
TOTAL	821	1232	1024	1350	1677	1877	1005	669.8	29.04	1.60	126.12	15.49
MEAN	26.5	41.1	33.0	43.5	59.9	60.5	33.5	21.6	.97	.052	4.07	.52
MAX	33	67	37	56	86	284	46	48	4.0	.50	53	2.5
MIN	22	32	29	32	52	40	25	4.4	.00	.00	.00	.08
AC-FT	1630	2440	2030	2680	3330	3720	1990	1330	58	3.2	250	31

CAL YR 1988	TOTAL 31966	MEAN 87.3	MAX 887	MIN 22	AC-FT 63400
WTR YR 1989	TOTAL 9828.05	MEAN 26.9	MAX 284	MIN .00	AC-FT 19490

e Estimated.

NUECES RIVER BASIN

08206700 SAN MIGUEL CREEK NEAR TILDEN, TX

LOCATION.--Lat 28°35'14", long 98°32'44", McMullen County, Hydrologic Unit 12110109, on left bank 25 ft downstream from State Highway 16, 0.3 mi upstream from mouth of Bruce Branch, 0.9 mi downstream from mouth of Far Live Oak Creek, 3 mi upstream from San Patricio Creek, 7 mi downstream from Clear Creek, 8.7 mi north of Tilden, and 12.9 mi upstream from mouth.

DRAINAGE AREA.--783 mi².

PERIOD OF RECORD.--January 1964 to current year.

REVISED RECORDS.--WDR TX-83-3: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 242.95 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. There are five diversions above station (amounts unknown). At times, excess water from Bexar-Medina-Atascosa Counties Water Improvement District No. 1 system enters San Miguel Creek basin via Chacon Creek 52 mi upstream (amounts unknown). Satellite telemeter at station.

AVERAGE DISCHARGE.--25 years, 61.3 ft³/s (44,410 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,600 ft³/s May 16, 1980 (gage height, 27.31 ft); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1919, 32.6 ft in 1942; stage of 1919 flood not known, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 900 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Aug. 9	0100	*449	*8.07				

Minimum daily discharge, no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	12	.00	.00	.00	.00	.78	261	.00	.00	4.2	.01
2	.00	3.8	.00	.00	25	.00	.42	39	.00	.00	2.7	.00
3	.00	1.1	.00	.00	40	.00	.18	11	.00	.00	.02	.00
4	.00	.09	.00	.00	11	.00	.08	5.4	.00	.00	.00	.00
5	.00	.03	.00	.00	6.5	.00	.03	3.5	.00	.00	.00	.00
6	.00	.01	.00	.00	4.9	.01	.02	1.5	.00	.00	.00	.00
7	.00	.00	.00	.00	3.7	.01	.01	.52	.00	.00	.00	.00
8	.00	.00	.00	.00	2.6	.01	.00	.04	.00	.00	154	.00
9	.00	.00	.00	.00	2.0	.00	.00	.02	.00	.00	329	.00
10	.00	.00	.00	.00	1.4	.00	.00	.01	.00	.00	61	.00
11	.00	.00	.00	.00	.76	.00	.00	.00	.00	.00	11	.00
12	.00	.00	.00	.00	.41	.00	.00	.00	.00	.00	5.4	.00
13	.00	.00	.00	.00	.21	.00	.00	.00	.00	.00	2.5	.00
14	.00	.00	.00	.00	.09	.00	.00	.00	.00	.00	.62	.00
15	.00	.00	.00	.00	.04	.00	.00	.00	.00	.00	.06	.00
16	.00	.00	.00	.00	.03	.00	.00	.00	.00	.00	.02	.00
17	.00	.00	.00	.00	.02	.00	.00	.00	.00	.00	.01	.00
18	.00	.00	.00	.00	.02	.00	.00	.00	.00	.00	.03	.00
19	.00	.00	.00	.00	.01	.00	.00	.00	.00	.00	.02	.00
20	.00	.00	.00	.00	.00	14	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	54	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	10	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	16	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	11	.00	.00	.00	3.2	.00	.00
25	.00	.00	.00	.00	.00	6.7	.00	.00	.00	.13	265	.00
26	.00	.00	.00	.00	.00	13	.00	.00	.10	.00	53	.00
27	.00	.00	.00	.00	.00	9.3	.00	.00	7.0	.00	11	.00
28	.00	.00	.00	.00	.00	3.3	.06	.00	1.6	.00	4.3	.00
29	.00	.00	.00	.00	---	1.6	130	.00	.04	.00	1.6	.00
30	.00	.00	.00	.00	---	1.3	232	.00	.01	.00	.16	.00
31	44	---	.00	.00	---	1.2	---	.00	---	.00	.03	---
TOTAL	44.00	17.03	0.00	0.00	98.69	141.43	363.58	321.99	8.75	3.33	905.67	0.01
MEAN	1.42	.57	.00	.00	3.52	4.56	12.1	10.4	.29	.11	29.2	.000
MAX	44	12	.00	.00	40	54	232	261	7.0	3.2	329	.01
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	87	34	.0	.0	196	281	721	639	17	6.6	1800	.02
CAL YR 1988	TOTAL	3147.64	MEAN	8.60	MAX	1350	MIN	.00	AC-FT	6240		
WTR YR 1989	TOTAL	1904.48	MEAN	5.22	MAX	329	MIN	.00	AC-FT	3780		

08206900 CHOKE CANYON RESERVOIR NEAR THREE RIVERS, TX

LOCATION.--Lat 28°29'01", long 98°14'44", Live Oak County, Hydrologic Unit 12110108, at Choke Canyon Dam on Frio River, 3.9 mi upstream from Atascosa River, and 4.0 mi west of Three Rivers.

DRAINAGE AREA.--5,490 mi².

PERIOD OF RECORD.--October 1984 to current year.

GAGE.--Nonrecording gage read twice daily. Supplemental water-stage recorder operated by city of Corpus Christi. Datum of gage is National Geodetic Vertical Datum of 1929.

REMARKS.-- The reservoir is formed by a rolled earthfill dam, 3.5 mi long. The dam was completed and deliberate impoundment began on Oct. 12, 1982. The spillway has seven radial gates, each 50 ft long and 24 ft high. Water for municipal and industrial use to meet the needs of the Coastal Bend area is released downstream through a 5.0- x 5.0-foot square slide gate. Satellite telemeters at station. Figures given herein represent total contents. Data regarding the dam and lake are given in the following table:

	Elevation (feet)	Capacity (acre-feet)
Top of dam.....	241.1	-
Top of spillway gates.....	222.5	743,900
Crest of spillway.....	199.5	269,600
Lowest gated outlet (invert).....	136.3	52

COOPERATION.--Capacity table computed June 1, 1983, provided by the city of Corpus Christi. Elevation record provided by the city of Corpus Christi and reviewed by the Geological Survey.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 733,100 acre-ft June 21, 1987 (elevation, 222.1 ft); minimum, 4,500 acre-ft Oct. 1-9, 1984 (elevation, 156.9 ft).

EXTREMES (AT 0600 HOURS) FOR CURRENT YEAR.--Maximum contents, 660,700 acre-ft Oct. 1-3 (elevation, 219.3 ft); minimum, 398,400 acre-ft Sept. 28-30 (elevation, 207.2 ft).

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

207.0	394,700	213.0	515,100	218.0	628,700
210.0	452,600	216.0	581,400	220.0	678,300

RESERVOIR STORAGE (ACRE-Feet), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
OBSERVATION AT 06:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	660700	650700	636000	616600	604800	600000	588300	569900	543100	500000	454600	417300
2	660700	650700	636000	616600	602400	600000	586000	567700	540900	500000	454600	415400
3	660700	650700	633600	616600	602400	600000	586000	567700	540900	497900	452600	415400
4	658200	650700	633600	614300	602400	600000	586000	567700	538700	495800	450600	413500
5	658200	650700	633600	614300	602400	600000	583700	565400	538700	495800	448600	413500
6	658200	648300	633600	614300	602400	600000	583700	565400	536500	493700	446600	411600
7	658200	648300	631100	614300	602400	597700	583700	565400	536500	491600	446600	411600
8	655700	648300	631100	611900	602400	597700	581400	563100	534300	489500	446600	409700
9	655700	648300	631100	611900	602400	597700	581400	563100	532100	489500	446600	409700
10	655700	648300	628700	611900	600000	597700	579100	563100	532100	487400	444600	407800
11	655700	648300	628700	611900	600000	597700	579100	560900	532100	485300	442600	407800
12	655700	648300	628700	609500	600000	597700	576800	560900	529900	483200	440700	407800
13	653200	648300	628700	609500	602400	597700	576800	558600	527800	481200	440700	407800
14	653200	648300	626300	609500	602400	597700	579100	558600	525600	481200	438700	405900
15	653200	648300	626300	609500	602400	597700	579100	558600	523500	479100	436700	405900
16	653200	648300	626300	607100	600000	597700	576800	556400	521300	477000	436700	405900
17	653200	645800	626300	607100	602400	597700	576800	556400	519100	475000	434800	404000
18	650700	645800	623900	607100	602400	595300	576800	556400	519100	472900	432800	404000
19	650700	645800	623900	604800	600000	595300	576800	556400	517000	472900	432800	404000
20	650700	645800	623900	609500	602400	595300	574500	554200	514900	470900	430800	404000
21	650700	643300	623900	607100	602400	595300	574500	554200	514900	468800	428900	404000
22	650700	643300	621400	607100	600000	593000	574500	551900	512700	466800	428900	402200
23	650700	640900	621400	607100	600000	593000	572200	551900	510600	464700	427000	402200
24	648300	640900	621400	607100	600000	593000	572200	549700	510600	464700	425000	402200
25	650700	640900	621400	607100	600000	593000	572200	549700	508400	464700	425000	400300
26	648300	640900	619000	604800	600000	593000	569900	549700	508400	462700	423100	400300
27	648300	640900	619000	604800	600000	590700	569900	547500	506300	460700	423100	400300
28	648300	638400	619000	604800	600000	590700	569900	547500	504200	460700	421200	398400
29	650700	638400	619000	604800	---	590700	567700	545300	504200	458700	421200	398400
30	653200	636000	616600	604800	---	588300	569900	545300	502100	456600	419200	398400
31	653200	---	616600	604800	---	588300	---	543100	---	456600	419200	---
MAX	660700	650700	636000	616600	604800	600000	588300	569900	543100	500000	454600	417300
MIN	648300	636000	616600	604800	600000	588300	567700	543100	502100	456600	419200	398400
(+)	219.0	218.3	217.5	217.0	216.8	216.3	215.5	214.3	212.4	210.2	208.3	207.2
(Φ)	-7500	-17200	-19400	-11800	-4800	-11700	-18400	-26800	-41000	-45500	-37400	-20800

CAL YR 1988 MAX 691100 MIN 616600 (Φ) -69400
WTR YR 1989 MAX 660700 MIN 398400 (Φ) -262300

(+) Elevation, in feet, at end of month.
(Φ) Change in contents, in acre-feet.

NUECES RIVER BASIN

08208000 ATASCOSA RIVER AT WHITSETT, TX

LOCATION.--Lat 28°37'19", long 98°16'52", Live Oak County, Hydrologic Unit 12110110, on right bank at downstream side of bridge on Farm Road 99, 1.1 mi southwest of Whitsett, 4.2 mi downstream from La Parita Creek, and 12.9 mi upstream from mouth.

DRAINAGE AREA.--1,171 mi².

PERIOD OF RECORD.--September 1924 to May 1926, May 1932 to current year.

GAGE.--Water-stage recorder. Datum of gage is 159.04 ft above National Geodetic Vertical Datum of 1929. Prior to May 8, 1926, nonrecording gage at bridge at site 200 ft upstream at 1.38 ft higher datum. May 8, 1926, to Feb. 16, 1983, water-stage recorder at site 1,000 ft upstream at same datum.

REMARKS.--Records good. Considerable loss of flow into various permeable formations occurs upstream from this station. The Campbellton water wells discharge into the Atascosa River 12 mi upstream from this station to supplement stream-flow during dry periods; however, records furnished by the city of Corpus Christi indicate that during the current year, the Campbellton water wells did not discharge into the Atascosa River. There are several small diversions above station.

AVERAGE DISCHARGE.--58 years (water years 1925, 1933-89), 125 ft³/s (90,560 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 121,000 ft³/s Sept. 23, 1967 (gage height, 41.3 ft, from floodmark), from rating curve extended above 24,000 ft³/s on basis of slope-area measurement of peak flow; no flow at times. Maximum stage since at least 1881, that of Sept. 23, 1967.

EXTREMES OUTSIDE PERIOD OF RECORD.--Second highest stage, 41 ft (discharge 106,000 ft³/s), occurred in September 1919.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 27	2400	*123	*5.47				

Minimum daily discharge, no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.16	.45	.00	.46	4.1	1.8	6.3	.88	.00	.00	1.0	.00
2	.13	.48	.0	.46	3.8	1.8	5.3	8.2	.00	.00	.72	.00
3	.10	.35	.02	.46	7.9	1.8	4.2	51	.00	.00	.29	.00
4	.08	.54	.03	.46	40	1.9	3.6	16	.00	.00	.16	.00
5	.06	.55	.04	.43	16	1.9	3.1	10	.00	.00	.11	.00
6	.05	.81	.05	.40	9.1	1.8	2.1	6.0	.00	.00	.14	2.3
7	.04	.75	.05	.46	6.4	1.7	1.8	3.9	.00	.00	.10	1.0
8	.04	.57	.06	.41	4.7	1.7	1.5	3.1	.00	.00	1.5	.02
9	.04	.42	.07	.29	4.1	1.7	1.1	2.4	.00	.00	4.1	.00
10	.03	.28	.07	.23	3.4	1.7	1.1	1.5	.00	.00	3.9	.00
11	.03	.15	.08	.23	3.1	1.6	.91	1.0	.00	.00	1.0	.00
12	.01	.12	.11	.26	3.0	1.6	.73	.84	.00	.00	.82	.00
13	.00	.10	.11	.30	3.0	1.7	27	.63	.00	.00	1.0	.08
14	.00	.08	.11	.30	3.0	1.8	6.3	1.5	.00	.00	.54	.02
15	.00	.07	.11	.30	2.9	1.8	1.9	1.5	.00	.00	.25	.00
16	.00	.07	.11	.30	2.6	1.7	1.4	.60	.00	.00	.16	.08
17	.00	.07	.12	.46	2.5	1.7	1.2	.30	.00	.00	.12	.01
18	.00	.07	.14	.54	2.3	1.7	1.0	.19	.00	.00	.03	.00
19	.00	.06	.16	1.6	2.4	1.7	1.1	.14	.00	.00	.00	.00
20	.00	.04	.19	38	2.4	1.8	1.4	.12	.00	.00	.00	.00
21	.00	.03	.23	37	2.4	2.3	1.4	.01	.00	.00	.00	.00
22	.00	.01	.32	21	2.3	4.6	1.1	.00	.00	.00	.00	.00
23	.00	.00	.39	12	2.3	5.2	.87	.00	.00	.00	.00	.00
24	.00	.02	.39	8.0	2.1	5.6	.65	.00	.00	.00	.00	.00
25	.00	.05	.35	5.8	2.1	4.7	.47	.00	.00	e35	.00	.00
26	.00	.06	.41	4.6	2.1	4.4	.34	.00	.00	e20	.00	.00
27	.00	.05	.42	4.3	2.1	59	.26	.00	.00	e10	.00	.00
28	.00	.03	.41	5.1	1.9	70	.30	.00	.00	e6.0	.00	.00
29	.03	.01	.39	5.6	---	21	.89	.00	.00	e3.5	.00	.00
30	.27	.00	.40	5.2	---	12	1.9	.00	.00	e2.0	.00	.00
31	.41	---	.44	4.9	---	8.0	---	.00	---	e1.2	.00	---
TOTAL	1.48	6.29	5.78	159.85	144.0	231.7	81.22	109.81	0.00	77.70	15.94	3.51
MEAN	.048	.21	.19	5.16	5.14	7.47	2.71	3.54	.00	2.51	.51	.12
MAX	.41	.81	.44	38	40	70	27	51	.00	35	4.1	2.3
MIN	.00	.00	.00	.23	1.9	1.6	.26	.00	.00	.00	.00	.00
AC-FT	2.9	12	11	317	286	460	161	218	.0	154	32	7.0

CAL YR 1988 TOTAL 1936.06 MEAN 5.29 MAX 182 MIN .00 AC-FT 3840
WTR YR 1989 TOTAL 837.28 MEAN 2.29 MAX 70 MIN .00 AC-FT 1660

e Estimated.

NUECES RIVER MAIN STEM

375

08210000 NUECES RIVER NEAR THREE RIVERS, TX
(National stream-gaging accounting network)

LOCATION.--Lat 28°25'38", long 98°10'40", Live Oak County, Hydrologic Unit 12110111, on right bank at U.S. Highway 281, 1.0 mi downstream from Frio River, 2.2 mi south of Three Rivers, and at mile 100.2.

DRAINAGE AREA.--15,427 mi², of which 5,490 mi² is above Choke Canyon Dam. See Remarks.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1915 to current year. Monthly discharge only for November 1919 to January 1920, published in WSP 1312.

REVISED RECORDS.--WSP 548: 1920-21. WSP 1562: 1916, 1918-21, 1922(M), 1923, 1929. WDR TX-83-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 99.26 ft above National Geodetic Vertical Datum of 1929. Prior to Apr. 5, 1932, nonrecording gage at railroad bridge 0.8 mi upstream at datum 1.87 ft higher. Apr. 5, 1932, to Aug. 9, 1983, recording gage at a site 0.8 mi upstream at datum 1.87 ft higher.

REMARKS.--No estimated daily discharges. Records good. Flow of the Frio River is impounded in Choke Canyon Reservoir (conservation-pool storage of 696,800 acre-ft), about 11 mi upstream on the Frio River. Part of flow of the Nueces and Frio Rivers and their headwater tributaries enters the Edwards and associated limestones in the Balcones Fault Zone upstream from U.S. Highway 90 (see REMARKS for station 08205500). Considerable loss of flow into various permeable formations also occurs downstream from the Balcones Fault Zone. There are many small diversions for irrigation and municipal supply above station. There is minor upstream regulation by small reservoirs and by ground-water supplements (see station 08208000 Atascosa River at Whittsett). Satellite telemeter at station.

AVERAGE DISCHARGE.--67 years (water years 1916-82) prior to partial regulation by Choke Canyon Reservoir, 857 ft³/s (620,900 acre-ft/yr); 7 years (water years 1983-89) partly regulated, 419 ft³/s (303,600 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 141,000 ft³/s Sept. 23, 1967 (gage height, 49.21 ft), site and datum then in use; no flow at times. Maximum stage since about 1875, that of Sept. 23, 1967.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 980 ft³/s June 14 at 1400 hours (gage height, 8.85 ft); minimum daily, 35 ft³/s Feb. 22 to Mar. 15.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39	290	258	261	258	36	268	293	281	554	552	408
2	39	568	258	261	258	36	266	264	282	552	500	336
3	45	544	259	261	287	36	265	279	282	552	488	328
4	80	631	259	259	267	35	264	650	281	552	489	323
5	55	578	259	261	71	35	264	539	287	552	494	319
6	54	258	259	260	50	35	263	370	350	551	497	284
7	47	124	260	260	44	35	262	315	356	550	496	275
8	42	85	261	258	40	35	262	286	354	549	562	240
9	40	66	261	258	38	35	259	272	351	549	518	235
10	38	55	261	258	37	35	260	263	350	549	501	182
11	37	49	261	258	37	35	261	260	351	547	494	53
12	37	46	260	258	37	35	260	256	401	547	486	48
13	36	43	260	257	37	35	263	254	914	549	483	47
14	36	41	260	257	36	35	336	265	965	549	485	48
15	36	40	261	256	36	35	286	257	964	549	484	48
16	43	39	260	256	36	91	269	254	904	548	437	49
17	43	39	260	256	36	257	260	253	582	548	435	47
18	40	39	260	256	36	262	257	250	569	551	436	47
19	39	38	261	261	36	263	255	249	597	560	437	47
20	37	37	260	268	36	264	255	249	597	557	436	46
21	37	37	210	302	36	263	255	245	577	549	432	46
22	37	70	261	300	35	264	255	244	572	553	427	46
23	37	336	263	282	35	267	254	245	575	552	414	46
24	36	213	263	271	35	269	254	245	573	556	417	46
25	36	213	263	266	35	271	255	246	569	556	415	46
26	36	213	264	262	35	270	254	249	562	549	414	47
27	36	212	264	259	35	269	254	249	558	569	413	47
28	36	215	261	259	35	362	254	248	556	563	413	47
29	64	255	262	258	---	329	279	248	555	555	412	47
30	41	258	263	259	---	286	349	248	555	552	436	46
31	38	---	262	258	---	275	---	255	---	553	453	---
TOTAL	1297	5632	8034	8156	1994	4787	7998	8800	15670	17122	14356	3874
MEAN	41.8	188	259	263	71.2	154	267	284	522	552	463	129
MAX	80	631	264	302	287	362	349	650	965	569	562	408
MIN	36	37	210	256	35	35	254	244	281	547	412	46
AC-FT	2570	11170	15940	16180	3960	9500	15860	17450	31080	33960	28480	7680
CAL YR 1988	TOTAL	37468	MEAN	102	MAX	631	MIN	11	AC-FT	74320		
WTR YR 1989	TOTAL	97720	MEAN	268	MAX	965	MIN	35	AC-FT	193800		

NUECES RIVER MAIN STEM

08210000 NUECES RIVER NEAR THREE RIVERS, TX--Continued
(National stream-gaging accounting network)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: August 1941 to September 1952. Chemical and biochemical analyses: May 1965 to current year. Pesticide analyses: January 1968 to May 1982. Sediment analyses: October 1941 to August 1945, March 1951 to September 1952, October 1974 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1941 to September 1952, October 1974 to September 1981.

WATER TEMPERATURE: October 1950 to September 1952, October 1974 to September 1981.

SUSPENDED--SEDIMENT DISCHARGE: October 1950 to September 1951.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 4,310 microsiemens Jan. 17, 1977; minimum daily, 157 microsiemens May 26, 1975.

WATER TEMPERATURE: Maximum daily, 32.0°C on several days during summer of 1977-78 and 1981; minimum daily, 7.0°C Jan. 2, 3, 1979.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT 24...	1430	36	699	7.80	24.0	14	7.9	94	1.9	110	--
DEC 12...	1320	258	647	8.20	15.0	22	10.0	98	0.9	220	220
FEB 21...	1510	36	779	8.20	15.0	14	11.6	114	1.4	180	K48
APR 24...	1545	249	703	7.80	20.0	18	8.9	98	1.3	K40	120
JUN 26...	1320	568	644	8.00	27.0	17	8.4	107	3.1	K44	100
AUG 23...	1045	414	734	8.00	27.5	8.1	7.5	96	1.2	K40	170

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
OCT 24...	210	68	64	13	55	2	9.7	146	63	94	0.10
DEC 12...	200	54	60	12	49	2	11	146	60	83	0.20
FEB 21...	210	66	64	12	72	2	10	144	75	110	0.20
APR 24...	210	64	62	13	57	2	9.5	145	63	87	0.10
JUN 26...	200	67	59	13	57	2	9.8	135	68	94	0.10
AUG 23...	190	69	56	13	60	2	11	125	69	100	0.10

DATE	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)
OCT 24...	12	374	400	--	--	<0.010	<0.010	0.200	0.160	0.210
DEC 12...	11	381	375	0.280	0.240	0.020	0.010	0.300	0.250	0.050
FEB 21...	11	462	444	0.370	0.420	0.030	0.030	0.400	0.450	0.160
APR 24...	11	384	391	0.180	0.200	0.020	0.010	0.200	0.210	0.050
JUN 26...	12	425	394	--	--	<0.010	<0.010	<0.100	<0.100	0.040
AUG 23...	13	420	398	--	--	<0.010	<0.010	<0.100	<0.100	0.040

DATE	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 24...	0.030	0.29	0.50	0.070	0.070	0.060	0.18	26	2.5	95
DEC 12...	0.030	0.65	0.70	0.060	0.040	0.030	0.09	41	29	90
FEB 21...	0.140	0.84	1.0	0.100	0.090	0.070	0.21	22	2.1	93
APR 24...	0.060	0.65	0.70	0.040	0.020	0.020	0.06	80	54	55
JUN 26...	0.040	0.76	0.80	0.030	0.010	0.010	0.03	85	130	75
AUG 23...	0.040	0.56	0.60	0.030	0.020	0.030	0.09	33	37	82

NUECES RIVER MAIN STEM

377

08210000 NUECES RIVER NEAR THREE RIVERS, TX--Continued
(National stream-gaging accounting network)

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)
OCT 24...	20	3	110	<0.5	<1	<1	<3	<1	13	<5
DEC 12...	--	--	--	--	--	--	--	--	--	--
FEB 21...	20	2	110	<0.5	<1	<1	<3	<1	10	<5
APR 24...	--	--	--	--	--	--	--	--	--	--
JUN 26...	10	3	110	<0.5	1	<1	<3	4	4	1
AUG 23...	<10	2	100	<0.5	<1	2	<3	2	8	<1
DATE	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 24...	14	13	<0.1	<10	2	<1	<1.0	430	<6	6
DEC 12...	--	--	--	--	--	--	--	--	--	--
FEB 21...	21	19	<0.1	<10	1	<1	<1.0	430	<6	5
APR 24...	--	--	--	--	--	--	--	--	--	--
JUN 26...	14	3	0.2	<10	2	<1	<1.0	420	<6	10
AUG 23...	16	2	0.2	<10	<1	<1	<1.0	420	<6	9

NUECES RIVER BASIN

08210400 LAGARTO CREEK NEAR GEORGE WEST, TX

LOCATION.--Lat 28°03'34", long 98°05'48", Live Oak County, Hydrologic Unit 12110111, near right bank 75 ft downstream from bridge on U.S. Highway 281, 0.6 mi upstream from Dix Hollow, and 19.3 mi south of George West.

DRAINAGE AREA.--155 mi².

PERIOD OF RECORD.--April 1972 to September 1989 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 197.77 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. No known regulation or diversion.

AVERAGE DISCHARGE.--17 years, 1.66 ft³/s (1,200 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,350 ft³/s Aug. 11, 1980 (gage height, 16.50 ft); no flow most of time.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since about 1887, 25.1 ft Oct. 17, 1971 (discharge, 33,500 ft³/s). Second highest stage, 24.3 ft occurred Sept. 12, 1971 (discharge, 29,500 ft³/s). The third and fourth highest floods occurred in 1914 and September 1967 (stage and discharge unknown).

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

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
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
30	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MEAN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
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
AC-FT	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
CAL YR 1988	TOTAL	0.10	MEAN	.00	MAX	.10	MIN	.00	AC-FT	.20		
WTR YR 1989	TOTAL	0.00	MEAN	.00	MAX	.00	MIN	.00	AC-FT	.00		

08210500 LAKE CORPUS CHRISTI NEAR MATHIS, TX

LOCATION.--Lat 28°02'17", long 97°52'15", San Patricio-Jim Wells County line, Hydrologic Unit 12110111, on right upstream corner of outlet tower at right end of Wesley E. Seale Dam on Nueces River, 0.6 mi upstream from bridge on State Highway 359, and 4.5 mi southwest of Mathis.

DRAINAGE AREA.--16,656 mi².

PERIOD OF RECORD.--September 1948 to current year. Prior to October 1960, month end records only. The Soil Conservation Service, U.S. Department of Agriculture, in cooperation with the Texas Board of Water Engineers (now Texas Department of Water Resources), collected fragmentary gage-height records in connection with sedimentation studies from Feb. 2, 1942, to July 10, 1947.

REVISED RECORDS.--WSP 1923: 1953(M), 1957(M).

GAGE.--Nonrecording gage read twice daily. Supplemental water-stage recorder operated by city of Corpus Christi. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1957, nonrecording gage at various sites 0.2 mi upstream at datum 0.52 ft higher. Oct. 1, 1957, to Apr. 3, 1961, nonrecording gage near left end of Mathis Dam 0.2 mi upstream at present datum.

REMARKS.--Mathis Dam was completed and storage began July 24, 1934. The original capacity at spillway crest (elevation, 74.5 ft) was 54,000 acre-ft, but by March 1948 had decreased to 39,400 acre-ft because of sedimentation. Wesley E. Seale Dam was completed and deliberate impoundment began on Apr. 26, 1958, submerging the old Mathis Dam. Wesley E. Seale Dam is a rolled earthfill dam, 5,930 ft long, including two spillways. The 1,320-foot north spillway has 33 gates that are operated by movable hydraulic lifts. The 1,080-foot south spillway has 27 gates that are electrically operated from the control tower. The gates were repaired and modified in August 1966. All gates in both spillways are 37.5 by 8.75 ft wide. Water for municipal supply for the city of Corpus Christi is released downstream through a 4.0-foot-diameter cylinder valve and three 2.5- by 4.0-foot rectangular openings. The releases are diverted from the river at Calallen 35 mi downstream for domestic, municipal, irrigation, mining, and industrial uses in the Corpus Christi area. The city of Alice withdrew 5,790 acre-ft from the lake during the current year for municipal use. 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.....	106.0	-
Top of north spillway gates.....	94.46	281,300
Top of south spillway gates.....	94.0	272,000
Crest of spillways.....	88.0	170,200
Lowest gated outlet (invert).....	55.5	646

COOPERATION.--The capacity curve is from an October 1972 survey. Elevation record provided by the city of Corpus Christi and reviewed by the Geological Survey.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 320,000 acre-ft Sept. 22, 1967, and Sept. 12, 1971; maximum elevation, 94.82 ft Sept. 22, 1967; minimum contents, 14,740 acre-ft May 5, 1951 (elevation, 67.62 ft).

EXTREMES (AT 0600) FOR CURRENT YEAR.--Maximum contents, 191,800 acre-ft Sept. 6-11, 14 (elevation, 89.4 ft); minimum, 164,200 acre-ft June 13 (elevation, 87.6 ft).

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

87.0	155,400	89.0	185,500
88.0	170,200	90.0	201,400

NUECES RIVER MAIN STEM

08210500 LAKE CORPUS CHRISTI NEAR MATHIS, TX--Continued

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
OBSERVATION AT 06:00 VALUES

n

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	182400	174700	170200	176200	183900	177800	171700	173200	168700	176200	185500	190200
2	183900	173200	170200	176200	183900	176200	171700	173200	168700	176200	185500	190200
3	183900	174700	170200	176200	187100	176200	171700	173200	168700	176200	185500	190200
4	183900	174700	170200	176200	183900	176200	171700	171700	167200	176200	185500	190200
5	183900	176200	170200	176200	183900	179300	171700	171700	167200	176200	185500	190200
6	182400	176200	170200	176200	185500	174700	171700	173200	167200	176200	185500	191800
7	182400	176200	170200	176200	183900	174700	171700	173200	167200	177800	185500	191800
8	182400	176200	170200	177800	182400	174700	171700	173200	167200	177800	187100	191800
9	180800	174700	176200	177800	182400	173200	171700	173200	167200	177800	188600	191800
10	182400	176200	173200	177800	182400	173200	173200	173200	167200	177800	188600	191800
11	180800	174700	173200	177800	182400	173200	170200	173200	167200	179300	188600	191800
12	180800	174700	173200	177800	180800	173200	170200	173200	165700	179300	188600	190200
13	179300	174700	173200	177800	179300	171700	171700	173200	164200	177800	188600	190200
14	179300	174700	173200	177800	180800	171700	171700	173200	165700	177800	188600	191800
15	179300	173200	173200	177800	180800	171700	171700	173200	168700	179300	188600	188600
16	177800	173200	173200	177800	182400	171700	171700	171700	168700	179300	188600	188600
17	177800	173200	173200	177800	182400	170200	171700	171700	170200	179300	188600	187100
18	177800	171700	173200	177800	182400	170200	171700	173200	170200	179300	190200	187100
19	176200	171700	173200	179300	180800	170200	171700	173200	170200	179300	190200	187100
20	176200	171700	173200	180800	179300	171700	171700	173200	170200	179300	190200	185500
21	176200	171700	173200	180800	179300	173200	171700	173200	170200	179300	190200	185500
22	176200	170200	173200	180800	179300	173200	171700	173200	170200	179300	190200	183900
23	176200	170200	174700	180800	179300	171700	171700	173200	171700	179300	190200	183900
24	176200	170200	174700	180800	177800	171700	171700	171700	171700	179300	190200	183900
25	174700	168700	174700	180800	177800	171700	171700	170200	173200	180800	190200	182400
26	174700	170200	173200	180800	177800	171700	170200	170200	174700	180800	190200	180800
27	174700	170200	173200	182400	176200	170200	171700	170200	174700	182400	190200	180800
28	173200	171700	176200	182400	177800	170200	171700	170200	174700	183900	190200	179300
29	174700	170200	176200	182400	---	173200	171700	170200	174700	183900	190200	179300
30	174700	170200	176200	183900	---	171700	171700	170200	174700	183900	190200	179300
31	174700	---	176200	183900	---	173200	---	168700	---	185500	190200	---
MAX	183900	176200	176200	183900	187100	179300	173200	173200	174700	185500	190200	191800
MIN	173200	168700	170200	176200	176200	170200	170200	168700	164200	176200	185500	179300
(↑)	88.3	88.0	88.4	88.9	88.5	88.2	88.1	87.9	88.3	89.0	89.3	88.6
(Φ)	-7700	-4500	+6000	+7700	-6100	-4600	-1500	-3000	+6000	+10800	+4700	-10900
CAL YR 1988	MAX 266600	MIN 168700	(Φ) -88500									
WTR YR 1989	MAX 191800	MIN 164200	(Φ) -3100									

(↑) Elevation, in feet, at end of month.
(Φ) Change in contents, in acre-feet.

08211000 NUECES RIVER NEAR MATHIS, TX

LOCATION.--Lat 28°02'17", long 97°51'36", San Patricio-Jim Wells County line, Hydrologic Unit 12110111, at downstream side of bridge on State Highway 359, 0.6 mi downstream from Wesley E. Seale Dam, 4 mi southwest of Mathis, and at mile 46.7.

DRAINAGE AREA.--16,660 mi².

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 26.53 ft above National Geodetic Vertical Datum of 1929. Aug. 5, 1939, to Aug. 29, 1984, on left bank 9 ft upstream at datum 1.0 ft higher. Aug. 29 to Nov. 5, 1984, on left bank 9 ft upstream at present datum. Nov. 5, 1984, to Aug. 5, 1987, on left bank 154 ft downstream at present datum.

REMARKS.--No estimated daily discharges. Records good. Flow is regulated by Lake Corpus Christi (station 08210500) 0.6 mi upstream. Upstream from Lake Corpus Christi, flow is affected by recharge to permeable formations, small diversions, and minor regulation. Water for municipal and industrial uses at Corpus Christi is released from Lake Corpus Christi above gage and is diverted from river at Calallen 34 mi downstream. Satellite telemeter at station.

AVERAGE DISCHARGE.--50 years, 781 ft³/s (565,800 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 138,000 ft³/s Sept. 24, 1967 (gage height, 48.7 ft, from floodmark), present datum; minimum daily, 6.8 ft³/s Aug. 15, 1940. Maximum stage since at least 1888, that of Sept. 24, 1967.

EXTREMES OUTSIDE PERIOD OF RECORD.--A stage of about 41 ft, present datum, occurred Sept. 20, 1919, from information by Texas and New Orleans Railroad Co. and is the second highest known.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 276 ft³/s May 31 at 1500 hours (gage height, 2.99 ft); minimum daily, 32 ft³/s June 12.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	112	136	134	131	134	125	177	124	215	182	222	213
2	143	133	141	118	140	143	169	141	166	188	197	214
3	130	126	132	139	141	144	175	147	181	194	192	214
4	156	126	140	130	140	147	180	151	209	181	178	200
5	127	126	152	146	140	127	180	136	217	181	204	222
6	140	126	158	146	157	130	180	138	235	179	200	220
7	133	126	145	146	161	132	181	149	172	180	208	176
8	134	135	148	146	181	134	183	148	43	180	201	173
9	130	150	123	124	146	137	168	152	42	180	189	175
10	137	153	122	114	137	149	146	168	33	182	189	188
11	140	148	118	110	135	139	114	168	47	227	190	217
12	148	147	138	111	130	145	146	162	32	200	202	235
13	150	147	140	120	143	149	154	153	57	207	238	195
14	150	147	142	94	134	162	129	150	147	220	241	192
15	145	154	142	120	134	159	123	156	181	220	225	190
16	143	149	144	117	138	154	126	170	198	221	220	179
17	143	137	146	160	126	147	126	172	184	221	188	165
18	143	141	146	164	126	147	129	157	188	223	184	206
19	144	135	147	167	109	157	139	163	204	229	177	223
20	143	138	148	158	140	159	142	181	231	231	177	200
21	152	139	136	131	153	147	148	177	240	231	177	180
22	134	141	143	139	128	108	151	174	239	231	184	177
23	128	143	142	137	125	140	148	188	205	228	196	193
24	146	155	130	138	128	183	148	213	142	208	207	194
25	147	136	136	133	134	169	148	220	126	154	199	194
26	150	133	127	128	143	141	146	219	126	154	193	193
27	153	136	125	127	146	140	140	209	158	153	191	192
28	154	135	136	128	142	132	128	184	175	170	191	191
29	133	137	135	134	---	160	128	182	195	180	194	190
30	121	161	135	129	---	174	125	208	187	194	195	186
31	130	---	135	133	---	177	---	241	---	210	210	---
TOTAL	4339	4196	4286	4118	3891	4557	4477	5301	4775	6139	6159	5887
MEAN	140	140	138	133	139	147	149	171	159	198	199	196
MAX	156	161	158	167	181	183	183	241	240	231	241	235
MIN	112	126	118	94	109	108	114	124	32	153	177	165
AC-FT	8610	8320	8500	8170	7720	9040	8880	10510	9470	12180	12220	11680
CAL YR 1988	TOTAL	57763	MEAN	158	MAX	484	MIN	105	AC-FT	114600		
WTR YR 1989	TOTAL	58125	MEAN	159	MAX	241	MIN	32	AC-FT	115300		

NUECES RIVER MAIN STEM

08211000 NUECES RIVER NEAR MATHIS, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: October 1947 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1947 to current year.

WATER TEMPERATURE: October 1947 to current year.

REMARKS.--Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,580 microsiemens Apr. 19, 20, 1977; minimum daily, 216 microsiemens Sept. 19, 1971.

WATER TEMPERATURE: Maximum daily, 36.0°C Aug. 8, 1964; minimum daily, 3.0°C Jan. 19, 1968.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 742 microsiemens July 13; minimum daily, 530 microsiemens Mar. 3.

WATER TEMPERATURE: Maximum daily, 31.0°C on many days during summer months; minimum daily, 11.0°C Feb. 7, 8.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
OCT 24...	1700	151	580	25.0	180	44	53	11	44
DEC 12...	1600	139	601	15.0	180	27	55	10	49
FEB 23...	1150	125	645	15.0	200	61	61	12	57
APR 25...	0845	151	699	21.0	210	40	63	12	58
JUN 27...	0942	169	704	28.0	190	47	53	13	65
AUG 23...	1235	187	730	29.5	160	55	44	13	72

DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)
OCT 24...	1	8.8	134	40	74	0.20	17	328
DEC 12...	2	9.1	152	38	80	0.20	17	349
FEB 23...	2	8.9	141	43	89	0.20	16	372
APR 25...	2	9.2	167	48	96	0.20	16	403
JUN 27...	2	9.8	139	52	110	0.20	17	403
AUG 23...	3	12	109	56	120	0.20	20	403

NUECES RIVER MAIN STEM

383

08211000 NUECES RIVER NEAR MATHIS, TX--Continued

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1988 TO SEPTEMBER 1989

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	DIS- SOLVED SOLIDS (MG/L)	DIS- SOLVED SOLIDS (TONS)	DIS- SOLVED CHLORIDE (MG/L)	DIS- SOLVED CHLORIDE (TONS)	DIS- SOLVED SULFATE (MG/L)	DIS- SOLVED SULFATE (TONS)	HARDNESS (CA, MG) (MG/L)
OCT. 1988	4339	577	336	3940	69	812	39	458	180
NOV. 1988	4196	607	353	4000	76	861	42	474	190
DEC. 1988	4286	611	355	4110	77	889	42	488	190
JAN. 1989	4118	633	368	4090	82	914	44	492	190
FEB. 1989	3891	649	376	3950	86	902	46	481	190
MAR. 1989	4557	640	371	4570	84	1030	45	553	190
APR. 1989	4477	666	386	4660	90	1090	47	573	200
MAY 1989	5301	708	409	5850	100	1440	51	736	200
JUNE 1989	4775	692	400	5160	97	1250	50	644	200
JULY 1989	6139	706	408	6760	100	1660	51	849	200
AUG. 1989	5877	670	388	6160	91	1450	48	758	200
SEPT 1989	5628	690	399	6060	96	1460	50	755	200
TOTAL	57584	**	**	59300	**	13700	**	7260	**
WTD.AVG.	158	658	381	**	88	**	47	**	200

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
EQUIVALENT MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	573	573	618	650	621	548	620	692	654	684	647	663
2	578	579	586	538	637	542	616	688	641	673	640	670
3	573	585	571	618	622	530	634	688	639	658	648	651
4	546	582	598	573	631	577	626	671	628	662	684	658
5	581	592	605	577	640	598	616	653	660	657	675	736
6	555	597	627	630	625	624	626	683	668	660	675	668
7	572	588	582	618	627	622	645	655	658	703	626	660
8	573	605	594	608	627	595	611	674	664	709	632	673
9	576	610	628	620	640	602	660	669	697	698	647	667
10	570	610	595	620	628	616	654	678	696	690	645	666
11	562	611	625	624	651	608	667	705	704	698	638	700
12	577	614	617	626	649	578	666	703	698	687	641	687
13	568	613	590	658	643	611	659	713	704	742	644	698
14	563	612	579	640	645	647	662	710	711	715	655	684
15	574	607	587	625	659	662	659	698	709	721	647	676
16	578	601	626	630	653	639	660	713	708	721	656	685
17	578	612	629	638	691	649	665	715	708	710	694	683
18	584	611	605	669	651	661	666	714	714	712	669	687
19	584	620	609	666	648	669	675	716	705	712	673	687
20	580	618	600	621	657	670	681	718	701	729	686	694
21	605	615	609	624	649	676	689	718	700	719	677	699
22	591	615	609	631	671	677	699	717	709	725	681	694
23	583	613	603	641	667	673	713	717	702	726	691	703
24	577	601	602	653	668	673	716	723	697	720	688	705
25	572	614	629	653	661	680	719	728	702	719	697	714
26	568	618	605	651	676	683	716	729	716	714	695	711
27	590	618	620	653	683	687	714	728	724	706	699	719
28	587	618	645	650	678	681	712	730	733	718	712	717
29	585	626	646	660	---	691	711	731	722	716	711	718
30	584	624	648	664	---	699	712	731	725	718	714	716
31	596	---	650	688	---	701	---	740	---	721	714	---
MEAN	577	607	611	633	650	638	669	705	693	705	671	690

NUECES RIVER MAIN STEM

08211000 NUECES RIVER NEAR MATHIS, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29.0	25.0	19.0	17.0	16.0	15.0	18.5	27.5	29.0	31.0	31.0	28.0
2	29.0	25.0	18.5	17.0	15.5	17.5	19.5	28.0	29.0	30.0	31.0	29.0
3	28.0	25.0	18.5	18.0	14.5	18.0	21.0	27.5	29.0	30.0	30.0	29.0
4	28.5	25.0	18.5	18.0	14.5	17.0	21.5	26.5	29.0	31.0	31.0	30.0
5	27.0	25.0	18.5	18.0	14.0	17.0	22.0	26.5	29.5	31.0	31.0	29.0
6	27.0	24.0	18.0	18.0	12.0	16.0	23.0	27.0	29.5	31.0	31.0	30.0
7	27.5	24.0	18.5	18.0	11.0	15.5	24.0	27.5	29.5	31.0	31.0	29.0
8	27.5	24.0	17.0	17.5	11.0	15.5	24.0	28.0	30.0	31.0	29.5	29.0
9	28.0	24.0	17.0	16.5	12.0	15.5	23.0	28.0	30.0	31.0	31.0	29.0
10	28.0	26.0	16.0	16.0	12.0	16.5	22.0	28.0	30.0	30.0	31.0	29.5
11	28.0	26.0	16.5	16.0	12.5	17.0	21.0	26.5	30.0	30.0	31.0	30.0
12	28.0	26.0	15.5	16.5	13.0	17.5	20.0	27.0	30.0	31.0	31.0	30.5
13	27.0	26.0	15.5	14.5	14.0	17.0	20.0	27.0	30.0	31.0	31.0	30.5
14	27.0	25.0	15.0	15.0	14.0	17.0	20.0	27.0	29.0	31.0	30.5	29.0
15	27.5	24.5	16.5	15.0	15.5	18.0	21.0	27.0	30.0	31.0	30.0	29.0
16	26.5	22.5	16.0	15.5	15.5	18.0	21.5	27.0	30.0	31.0	29.5	30.0
17	26.5	22.0	16.0	15.5	15.0	18.0	21.0	27.5	30.0	31.0	30.0	30.0
18	26.5	22.5	16.0	16.0	14.5	18.5	22.0	28.0	30.0	31.0	30.0	31.0
19	26.5	22.5	16.0	16.0	14.0	18.5	22.0	28.5	30.0	31.0	30.0	31.0
20	26.5	21.0	16.0	15.0	15.5	19.0	22.0	28.5	30.0	31.0	30.5	31.0
21	25.5	21.0	16.0	15.5	16.0	17.0	23.0	28.5	30.5	31.0	29.0	28.0
22	25.0	21.0	17.0	15.0	16.0	17.0	23.0	29.0	29.0	31.0	30.0	29.0
23	25.0	21.0	17.0	15.0	15.5	17.5	23.0	29.0	29.5	31.0	30.0	29.0
24	25.5	21.0	17.0	15.5	15.5	18.0	23.0	30.0	28.5	30.0	31.0	28.0
25	25.5	21.0	17.0	15.0	15.5	18.0	23.0	29.0	29.5	30.0	31.0	26.5
26	26.0	21.0	16.0	15.0	15.5	18.0	23.0	29.0	30.5	31.0	31.0	26.5
27	26.0	22.0	18.5	15.0	15.5	18.0	25.0	29.0	30.5	31.0	31.0	26.5
28	26.0	19.0	17.0	15.0	15.5	18.0	25.5	29.0	31.0	30.0	31.0	26.5
29	26.0	20.0	17.0	15.0	---	18.5	26.0	29.0	30.5	31.0	31.0	26.5
30	26.0	18.5	17.0	15.0	---	18.5	26.0	29.0	30.0	31.0	29.0	26.5
31	25.0	---	17.0	16.0	---	18.5	---	29.0	---	31.0	31.0	---
MEAN	27.0	23.0	17.0	16.0	14.5	17.5	22.5	28.0	30.0	31.0	30.5	29.0

OSO CREEK MAIN STEM

385

08211520 OSO CREEK AT CORPUS CHRISTI, TX

LOCATION.--Lat 27°42'40", long 97°30'06", Nueces County, Hydrologic Unit 12110202, on left downstream end of bridge on Farm Road 763, 1.5 mi south of intersection of Farm Roads 763 and 665, 1.6 mi downstream from mouth of West Osó Creek, and 1.9 mi southwest of intersection of Farm Road 665 and State Highway 357.

DRAINAGE AREA.--90.3 mi².

PERIOD OF RECORD.--September 1972 to September 1989 (discontinued).

Water-quality records.--Chemical and biochemical analyses: July 1972 to August 1988. Pesticide analyses: July 1972 to July 1981.

GAGE.--Water-stage recorder. Datum of gage is 1.91 ft below National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. No known diversions above station. An undetermined amount of water from oil-field operations enters stream upstream at various points. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--17 years, 29.9 ft³/s (21,660 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,100 ft³/s Aug. 10, 1980 (gage height, 29.37 ft); minimum daily, 0.27 ft³/s Mar. 12, 1988.

EXTREMES OUTSIDE PERIOD OF RECORD.--A stage of 24.5 ft occurred in May 1968, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 1	0100	a*269	*10.37	Oct. 2	0700	b116	8.17

a Stage falling; peak occurred Sept. 30, 1988.

b Maximum independent peak discharge.

Minimum daily discharge, 0.88 ft³/s Apr. 8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	156	2.4	1.4	1.6	1.5	1.4	1.4	4.0	1.6	1.8	1.9	1.1
2	67	2.6	1.3	1.6	1.5	1.4	1.4	3.1	1.6	1.6	2.0	1.1
3	46	2.5	1.3	1.6	1.8	1.4	1.3	3.2	1.7	1.6	1.3	1.1
4	22	1.9	1.3	1.6	17	1.4	1.3	2.9	2.1	1.8	1.3	1.1
5	10	1.6	1.3	1.6	6.5	1.4	1.3	2.5	2.3	2.3	1.3	1.1
6	5.6	1.5	1.3	1.6	3.3	1.3	1.3	2.3	2.1	1.7	1.3	1.2
7	3.3	1.5	1.3	1.6	2.6	1.3	1.1	2.1	2.1	1.8	1.2	1.2
8	2.3	1.4	1.6	1.6	2.3	1.3	.88	2.1	1.7	1.8	1.2	1.2
9	1.9	1.3	1.7	1.6	2.1	1.3	.93	2.0	1.6	1.6	1.1	1.2
10	1.7	1.3	1.6	1.5	2.1	1.3	1.0	1.9	1.8	1.6	1.1	1.2
11	1.6	1.3	1.6	1.5	1.9	1.4	1.0	1.8	2.5	1.6	1.1	1.2
12	1.5	1.3	1.6	1.5	1.9	1.4	1.2	1.7	2.6	1.4	1.1	1.2
13	1.5	1.3	1.6	1.5	2.0	1.4	1.6	1.7	2.6	1.4	1.1	1.7
14	1.5	1.3	1.6	1.6	1.8	1.5	16	1.7	2.1	1.4	1.1	4.0
15	1.4	1.3	1.5	1.6	1.7	1.5	3.8	1.7	4.8	1.4	1.1	1.8
16	1.4	1.3	1.5	1.5	1.6	1.5	3.1	1.9	3.9	1.4	1.1	2.4
17	1.4	1.3	1.4	1.5	1.7	1.6	3.2	2.1	2.5	1.4	4.6	1.8
18	1.3	1.3	1.4	1.5	1.8	1.6	2.3	1.9	2.0	1.4	2.4	1.4
19	1.3	1.3	1.4	2.9	1.8	1.5	1.8	1.7	1.8	1.4	1.1	1.2
20	1.2	1.3	1.4	2.1	1.7	1.5	1.5	1.6	1.6	1.4	1.5	1.2
21	1.2	1.3	1.4	3.3	1.6	1.5	1.3	1.6	1.5	1.3	1.6	1.8
22	1.2	1.3	1.4	4.5	1.5	1.4	1.2	1.7	1.5	1.3	1.3	35
23	1.2	1.3	1.4	3.6	1.5	1.4	1.2	1.7	1.8	1.3	1.1	68
24	1.2	1.2	1.4	2.9	1.5	1.4	1.2	1.6	1.9	1.3	1.1	20
25	1.2	1.2	1.4	2.3	1.4	1.4	1.2	2.3	1.9	1.3	1.1	7.8
26	1.2	1.2	1.5	2.1	1.4	1.4	1.2	2.4	4.1	1.3	1.1	3.9
27	1.2	1.2	1.6	1.9	1.4	1.8	1.2	1.6	3.6	1.3	1.1	2.4
28	1.2	1.2	1.4	1.8	1.4	1.5	1.4	1.6	3.3	1.4	1.1	1.7
29	1.8	1.3	1.4	1.8	---	1.4	1.3	1.6	2.5	1.5	1.1	1.4
30	22	1.4	1.6	1.6	---	1.4	22	1.6	2.0	1.4	1.1	1.2
31	4.4	---	1.6	1.6	---	1.4	---	1.6	---	1.3	1.1	---
TOTAL	367.7	43.6	45.2	60.5	70.3	44.4	80.61	63.2	69.1	46.5	42.7	172.6
MEAN	11.9	1.45	1.46	1.95	2.51	1.43	2.69	2.04	2.30	1.50	1.38	5.75
MAX	156	2.6	1.7	4.5	17	1.8	22	4.0	4.8	2.3	4.6	68
MIN	1.2	1.2	1.3	1.5	1.4	1.3	.88	1.6	1.5	1.3	1.1	1.1
AC-FT	729	86	90	120	139	88	160	125	137	92	85	342
CAL YR 1988	TOTAL	1778.56	MEAN	4.86	MAX	364	MIN	.27	AC-FT	3530		
WTR YR 1989	TOTAL	1106.41	MEAN	3.03	MAX	156	MIN	.88	AC-FT	2190		

SAN FERNANDO CREEK MAIN STEM

08211800 SAN DIEGO CREEK AT ALICE, TX

LOCATION.--Lat 27°45'59", long 98°04'31", Jim Wells County, Hydrologic Unit 12110204, at bridge on Edith Drive in Alice, 540 ft downstream from Texas and New Orleans Railroad Co. bridge, and 3.2 mi upstream from confluence with Chiltipin Creek.

DRAINAGE AREA.--319 mi².

PERIOD OF RECORD.--September 1963 to September 1989 (discontinued).

REVISED RECORDS.--WDR TX-72-1: 1971.

GAGE.--Water-stage recorder. Datum of gage is 189.60 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Flow is affected at times by discharge from the flood-detention pools of ten floodwater-retarding structures with a combined detention capacity of 35,980 acre-ft. These structures control runoff from 170 mi² in the San Diego-Rosita drainage basins.

AVERAGE DISCHARGE.--26 years, 7.52 ft³/s (5,450 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,200 ft³/s Oct. 17, 1971 (gage height, 17.70 ft); no flow at times each year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1928, 18.2 ft April 1949, equivalent gage height in channel modified in 1955, 17.2 ft, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 250 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Apr. 30	2400	*21	*4.51				

Minimum daily discharge, no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.0	.00	.00	.00	.00	.00	.00	8.1	.00	.00	.00	.00
2	.82	.00	.00	.00	.00	.00	.00	.56	.00	.00	.00	.00
3	.04	.00	.00	.00	.00	.00	.00	.01	.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	.12
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.18
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	---	.00	2.6	.00	.00	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	8.86	0.00	0.00	0.00	0.00	0.00	2.60	8.67	0.00	0.00	0.00	0.30
MEAN	.29	.00	.00	.00	.00	.00	.087	.28	.00	.00	.00	.010
MAX	8.0	.00	.00	.00	.00	.00	2.6	8.1	.00	.00	.00	.18
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	18	.0	.0	.0	.0	.0	5.2	17	.0	.0	.0	.6
CAL YR 1988	TOTAL	52.92	MEAN	.14	MAX	42	MIN	.00	AC-FT	105		
WTR YR 1989	TOTAL	20.43	MEAN	.056	MAX	8.1	MIN	.00	AC-FT	41		

RIO GRANDE MAIN STEM

387

- 08364000 RIO GRANDE AT EL PASO, TX

LOCATION.--Lat 31°48'10", long 106°32'25", El Paso County, Hydrologic Unit 13030102, at gaging station on the downstream side of the Courchesne Bridge, 5.6 mi upstream from the Santa Fe Street-Juarez Avenue bridge between El Paso, Tex., and Cd. Juarez, Mex., and 1.7 mi upstream from the American Dam.

DRAINAGE AREA.--29,267 mi².

PERIOD OF RECORD.--Chemical analyses: February 1930 to current year.

REMARKS.--Records of specific conductance and discharge for water year 1989 are given in International Boundary and Water Commission Water Bulletins Nos. 58 and 59.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CAC03)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	
OCT 20...	0725	370	1790	8.00	15.5	420	120	28	
NOV 17...	0715	170	1980	8.20	1.0	450	130	30	
DEC 20...	1130	120	1960	8.10	12.0	440	130	28	
JAN 31...	0730	96	2020	8.30	4.5	430	120	31	
FEB 16...	0715	92	2070	8.00	10.0	430	120	31	
MAR 16...	0705	590	917	7.60	12.0	220	65	14	
APR 20...	0715	680	1250	7.90	19.0	290	84	19	
MAY 18...	0705	686	1080	7.90	14.5	250	72	16	
JUN 22...	0705	950	1010	8.00	22.0	240	71	16	
JUL 20...	0705	1600	1020	7.70	25.5	230	67	16	
AUG 17...	0715	1050	1030	7.70	24.5	240	70	15	
SEP 21...	0720	198	1540	7.90	19.0	330	96	22	
DATE		SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINIT WAT WH TOT FET FIELD MG/L AS CAC03	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	SILICA, DIS- SOLVED (MG/L AS SI02)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)
OCT 20...	240	5	10	246	420	190	24	1180	
NOV 17...	280	6	9.5	256	460	210	27	1300	
DEC 20...	260	5	11	262	460	210	22	1280	
JAN 31...	290	6	11	251	470	250	20	1340	
FEB 16...	310	7	10	255	480	250	23	1380	
MAR 16...	100	3	6.6	155	160	93	12	544	
APR 20...	150	4	8.0	203	260	120	13	776	
MAY 18...	120	3	6.7	172	210	91	12	631	
JUN 22...	120	3	6.6	185	200	84	12	621	
JUL 20...	120	3	7.5	172	210	88	13	625	
AUG 17...	120	3	7.6	172	210	84	16	626	
SEP 21...	200	5	8.7	236	340	150	22	980	

RIO GRANDE MAIN STEM

08377200 RIO GRANDE AT FOSTER RANCH NEAR LANGTRY, TX
(National stream-quality accounting network)

LOCATION.--Lat 29°46'50", long 101°45'20", Val Verde County, Hydrologic Unit 13040212, at gaging station 0.1 mi downstream from Terrell-Val Verde County line, 16.9 mi from Langtry, and 597.2 mi downstream from the American Dam at El Paso.

DRAINAGE AREA.--80,742 mi², United States and Mexico; from International Boundary and Water Commission Water Bulletin No. 44.

PERIOD OF RECORD.--Chemical analyses: April 1944 to current year. Chemical and biochemical analyses: October 1974 to current year. Pesticide analyses: July 1975 to June 1982. Sediment analyses: October 1974 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1974 to September 1981.

WATER TEMPERATURE: October 1974 to September 1981.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 2,110 microsiemens Dec. 4, 1974; minimum daily, 225 microsiemens May 2, 1981.

WATER TEMPERATURE: Maximum daily, 32.0°C June 13, 1977, July 25, 26 1979, July 4, 1980, and June 8, 1981; minimum daily, 9.0°C Jan. 12, 1975, Jan. 8, 1976, and Jan. 18, 1981.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI, KF AGAR (COLS. PER 100 ML)	HARD-NESS TOTAL (MG/L AS CAC03)
NOV 02...	1100	1560	1220	8.20	22.0	800	10.1	121	0.8	2200	860	270
FEB 08...	1525	903	1580	8.40	10.0	130	11.8	107	5.3	K6	K6	340
JUN 07...	1310	930	1500	7.70	28.5	360	9.6	131	1.7	2200	900	310
AUG 16...	1330	1130	1240	8.20	27.0	0.30	8.8	116	1.2	280	380	300
DATE	HARD-NESS NONCARB WH WAT TOT FLD (MG/L AS CAC03)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT WH TOT FET FIELD (MG/L AS CAC03)	SULFATE DIS-SOLVED (MG/L AS S04)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SI02)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)
NOV 02...	120	77	18	160	4	5.6	152	290	120	1.2	19	781
FEB 08...	180	94	26	200	5	6.2	166	360	180	1.3	18	1010
JUN 07...	150	89	20	200	5	7.6	153	400	150	1.7	20	999
AUG 16...	140	91	17	150	4	6.8	158	350	100	1.5	23	832
DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHOROUS TOTAL (MG/L AS P)	PHOS-PHOROUS ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS P04)	SEDI-MENT, SUS-PENDED (MG/L)	
NOV 02...	786	<0.010	0.800	0.050	0.040	2.0	2.1	0.060	0.030	0.030	0.09	1250
FEB 08...	989	<0.010	0.260	0.060	0.020	0.84	0.90	0.040	0.010	<0.010	--	78
JUN 07...	985	<0.010	0.730	0.030	0.030	0.37	0.40	0.020	<0.010	<0.010	--	526
AUG 16...	840	<0.010	1.10	0.020	0.020	1.2	1.2	0.430	0.020	<0.010	--	1580
DATE	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)	
NOV 02...	5260	100	20	10	85	<0.5	3	<1	<3	1	60	
FEB 08...	190	98	<10	9	85	<0.5	1	<1	<3	<1	4	
JUN 07...	1320	100	<10	8	120	<0.5	<1	1	<3	1	4	
AUG 16...	4820	100	10	9	91	<0.5	<1	1	<3	2	16	

RIO GRANDE MAIN STEM

389

08377200 RIO GRANDE AT FOSTER RANCH NEAR LANGTRY, TX--Continued
(National stream-quality accounting network)

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
NOV 02...	6	86	4	<0.1	<10	2	1	1.0	1500	11	10
FEB 08...	<5	110	8	<0.1	<10	2	1	<1.0	2000	6	4
JUN 07...	<1	110	2	<0.1	<10	<1	2	<1.0	1900	9	<3
AUG 16...	<1	87	<1	<0.1	<10	<1	2	<1.0	1700	13	11

RIO GRANDE BASIN

08407500 PECOS RIVER AT RED BLUFF, NM
(National stream-quality accounting network station)

LOCATION.--Lat 32°04'30", long 104°02'21", in SW1/4NW1/4NE1/4 sec.1, T.26 S., R.28 E., Eddy County, Hydrologic Unit 13060011, on right bank at Red Bluff, 0.2 mi downstream from Red Bluff Draw, 1.6 mi northwest of the El Paso Natural Gas (Pecos River) compressor station, 5.2 mi north of the New Mexico-Texas state line, 5.5 mi upstream from Delaware River, and at mile 411.2.

DRAINAGE AREA.--19,540 mi², approximately (contributing area).

PERIOD OF RECORD.--October 1937 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,850.05 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by many reservoirs and diversion dams. Diversions and ground-water withdrawals upstream from station for irrigation of about 202,000 acres, 1959 determination. Several observations of water temperatures were made during the year.

AVERAGE DISCHARGE.--51 years, 164 ft³/s (118,820 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 111,000 ft³/s Aug. 23, 1966 (gage height, 33.32 ft), from rating curve extended above 32,000 ft³/s on basis of slope-area measurement of peak flow; minimum, 0.19 ft³/s Aug. 1, 1966.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in October 1904 reached a stage of 28.0 ft, from information by Panhandle and Santa Fe Railway Co. (For dates of other historical floods see stations 08404000, 08406500).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 483 ft³/s Sept. 23 (gage height, 5.61 ft); minimum, 36 ft³/s part of each day June 21, 22.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	86	132	83	89	67	77	53	33	27	28	32	44
2	88	117	84	89	75	69	51	33	28	31	33	47
3	98	122	83	89	80	64	49	33	27	37	32	41
4	99	121	83	87	79	62	51	35	24	33	30	41
5	112	116	86	79	76	64	43	38	25	27	31	39
6	95	113	90	73	76	65	40	39	27	25	29	37
7	82	113	91	73	78	69	40	38	26	24	28	36
8	70	113	96	69	60	67	37	36	24	23	27	36
9	66	113	99	70	74	61	34	36	25	23	27	38
10	74	113	101	68	80	57	38	34	27	23	26	36
11	69	110	96	69	79	57	44	31	28	22	26	32
12	66	109	95	70	76	55	46	33	32	27	25	29
13	67	111	95	70	78	55	42	37	37	26	29	31
14	74	110	94	70	82	54	45	37	33	25	31	29
15	82	111	93	69	92	52	46	32	34	25	32	28
16	75	110	92	70	95	54	46	28	37	26	41	37
17	79	107	91	70	88	50	46	26	37	30	35	45
18	76	98	90	70	97	45	44	29	33	32	32	43
19	75	79	89	69	100	43	44	30	28	31	32	41
20	72	65	89	70	89	44	38	28	25	28	31	40
21	71	60	91	69	90	45	38	30	22	28	32	39
22	71	60	90	69	98	57	41	31	20	29	47	38
23	70	60	89	68	89	70	38	32	22	28	37	38
24	69	58	89	69	83	72	40	34	22	27	39	38
25	66	57	91	69	85	66	42	32	26	27	43	41
26	69	63	85	75	82	58	42	30	25	26	43	39
27	73	75	87	82	78	58	47	28	24	26	37	37
28	81	79	88	77	79	58	44	27	22	26	41	37
29	74	77	87	75	---	54	39	28	21	26	46	36
30	154	78	86	69	---	53	34	28	27	28	62	34
31	182	---	88	69	---	49	---	27	---	31	53	---
TOTAL	2585	2850	2791	2274	2305	1804	1282	993	815	848	1089	1127
MEAN	83.4	95.0	90.0	73.4	82.3	58.2	42.7	32.0	27.2	27.4	35.1	37.6
MAX	182	132	101	89	100	77	53	39	37	37	62	47
MIN	66	57	83	68	60	43	34	26	20	22	25	28
AC-FT	5130	5650	5540	4510	4570	3580	2540	1970	1620	1680	2160	2240
CAL YR 1988	TOTAL	29906	MEAN	81.7	MAX	308	MIN	38	AC-FT	59320		
WTR YR 1989	TOTAL	20763	MEAN	56.9	MAX	182	MIN	20	AC-FT	41180		

RIO GRANDE BASIN

391

08408500 DELAWARE RIVER NEAR RED BLUFF, NM

LOCATION.--Lat 32°01'23", long 104°03'15", in NE1/4SW1/4SE1/4 sec.23, T.26 S., R.28 E., Eddy County, Hydrologic Unit 13070002, near center of channel on downstream side of pier of bridge on U.S. Highway 285, 2.1 mi north of the New Mexico-Texas state line, 3.6 mi southwest of Red Bluff, 3.7 mi upstream from mouth, 14 mi south of Malaga, and at mouth at Pecos River mile 405.6.

DRAINAGE AREA.--689 mi².

PERIOD OF RECORD.--April 1912 to September 1913, May 1914 to June 1915, October 1937 to current year. Published as "near Malaga" 1912-13, and as "near Angeles, Tex." 1914-15.

GAGE.--Water-stage recorder. Elevation of gage is 2,900.66 ft above National Geodetic Vertical Datum of 1929 (U.S. Boundary Commission post). Prior to May 1914, at site 3.0 mi upstream at different datum. May 1914 to June 1915, at site 2.5 mi downstream at different datum.

REMARKS.--No estimated daily discharges. Records good. One small upstream diversion. Several observations of water temperatures were made during the year.

AVERAGE DISCHARGE.--51 years (water years 1938-88), 12.8 ft³/s (9,270 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 81,400 ft³/s Oct. 2, 1955 (gage height, 27.0 ft), from floodmarks, from rating curve extended above 6,500 ft³/s on basis of slope-area measurements at gage heights, 12.84 ft, 17.55 ft, and 27.0 ft; no flow for many days most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,700 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
July 21	1130	*102	3.85				

Minimum discharge, 1.4 ft³/s part or all of each day July 29 to Aug. 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.5	2.8	3.7	4.2	4.3	3.8	3.4	1.9	.05	.00	.00	6.8
2	2.5	2.8	3.7	4.3	4.3	3.9	3.4	1.9	.30	.00	.00	5.4
3	2.5	2.8	3.8	4.3	4.2	3.7	3.4	1.8	18	.00	.00	4.1
4	2.5	2.8	3.8	4.3	4.2	3.7	3.2	1.6	4.9	.00	.00	2.8
5	2.5	2.7	3.8	4.3	4.2	3.7	3.3	1.5	2.9	.00	.00	1.7
6	2.5	2.7	3.9	4.3	4.2	3.7	3.4	1.4	2.2	.00	.00	1.2
7	2.6	2.8	3.9	4.3	4.1	3.7	3.7	1.3	1.6	.00	.00	1.1
8	2.6	2.9	4.1	4.4	4.0	3.8	3.7	1.3	1.2	.00	.00	1.2
9	2.6	2.9	4.0	4.4	4.0	3.7	3.7	1.1	.80	.00	.00	1.0
10	2.6	2.9	4.0	4.3	4.0	3.7	3.5	19	1.1	.00	.00	1.1
11	2.7	2.9	4.0	4.3	4.2	3.7	3.7	29	1.3	.00	.00	1.0
12	2.7	2.9	4.0	4.3	4.2	3.7	3.8	9.6	1.1	.00	.00	1.7
13	2.6	3.0	4.0	4.3	4.2	3.6	3.9	3.5	.54	.00	.00	5.0
14	2.6	3.1	4.0	4.3	4.2	3.6	3.9	1.9	.40	.00	.00	6.8
15	2.6	3.0	4.0	4.3	4.2	3.5	3.8	1.7	.47	.00	.00	7.0
16	2.6	3.0	3.9	4.3	4.3	3.4	3.8	1.6	.56	.00	.00	4.1
17	2.6	3.1	4.0	4.3	4.6	3.5	3.5	1.5	.40	.00	.00	2.6
18	2.5	3.2	4.0	4.3	4.5	3.5	3.5	1.4	.15	.00	.00	1.9
19	2.6	3.2	4.0	4.3	4.4	3.5	3.5	1.4	.00	.00	.00	1.7
20	2.6	3.3	3.9	4.3	4.2	3.4	3.3	1.4	.00	.00	.00	1.4
21	2.7	3.4	3.9	4.3	4.1	3.5	3.0	1.2	.00	.00	.00	1.3
22	2.7	3.4	3.9	4.3	3.9	3.5	2.9	.96	.00	.00	.00	1.3
23	2.7	3.0	4.0	4.3	3.9	3.5	2.6	.92	.00	.00	.00	1.5
24	2.7	3.5	4.0	4.3	3.9	3.5	2.6	.64	.00	.00	.00	1.3
25	2.6	3.5	4.1	4.3	4.0	3.5	2.5	.47	.00	.00	.00	1.3
26	2.6	3.5	4.1	4.3	3.9	3.4	2.3	.38	.00	.00	.00	1.2
27	2.6	3.6	4.2	4.4	3.9	3.4	2.1	.36	.00	.00	.52	1.1
28	2.6	3.7	4.2	4.4	3.9	3.5	2.0	.46	.00	.00	11	1.0
29	2.7	3.7	4.2	4.3	---	3.5	1.9	.56	.00	.00	71	1.0
30	2.7	3.7	4.2	4.3	---	3.5	1.9	.34	.00	.00	17	1.0
31	2.8	---	4.2	4.3	---	3.5	---	.16	---	.00	6.2	---
TOTAL	80.9	93.8	123.5	133.6	116.0	111.1	95.2	92.25	37.97	0.00	105.72	71.6
MEAN	2.61	3.13	3.98	4.31	4.14	3.58	3.17	2.98	1.27	.00	3.41	2.39
MAX	2.8	3.7	4.2	4.4	4.6	3.9	3.9	.29	.18	.00	.71	7.0
MIN	2.5	2.7	3.7	4.2	3.9	3.4	1.9	.16	.00	.00	.00	1.0
AC-FT	160	186	245	265	230	220	189	183	75	.0	210	142
CAL YR 1988	TOTAL	1629.7	MEAN	4.45	MAX	21	MIN	1.4	AC-FT	3230		
WTR YR 1989	TOTAL	1061.64	MEAN	2.91	MAX	71	MIN	.00	AC-FT	2110		

RIO GRANDE BASIN

08410000 RED BLUFF RESERVOIR NEAR ORLA, TX

LOCATION.--Lat 31°54'04", long 103°54'35", Reeves County, Hydrologic Unit 13070001, at right end of Red Bluff Dam on the Pecos River, 2.8 mi upstream from Salt Creek, and 5.2 mi north of Orla.

DRAINAGE AREA.--20,720 mi², approximately (contributing area).

PERIOD OF RECORD.--February 1937 to current year. Monthly contents only for some periods, published in WSP 1312.

GAGE.--Nonrecording gage. Datum of gage is 0.43 ft below National Geodetic Vertical Datum of 1929.

REMARKS.--The reservoir is formed by a rock-faced earthfill dam 9,200 ft long. The dam was completed and storage began in September 1936. The dam and reservoir are owned and operated by the Red Bluff Water Power Control District. The water is used for power development and for irrigation from Mentone to Grandfalls. The uncontrolled emergency spillway, 790-foot wide, is a cut through natural ground located to the right of right end of dam. The controlled service spillway is equipped with 12 tainter gates that are 25- by 15-foot high. Inflow is regulated by many reservoirs and diversions dams. The capacity curve is based on Geological Survey topographic map and aerial photography, survey of 1986. Figures given herein represent total contents. Data regarding the dam and reservoir are given in the following table:

	Gage height (feet)	Capacity (acre-feet)
Top of dam.....	2,856.0	-
Crest of emergency spillway.....	2,845.0	324,000
Top of gates (top of conservation pool).....	2,842.0	289,700
Crest of service spillway and bottom of tainter gates.....	2,827.0	155,700
Lowest gated outlet (invert).....	2,764.0	2,800

COOPERATION.--Gage-height records and capacity curve were furnished by the Red Bluff Water Power and Control District.

EXTREMES (AT 0800) FOR PERIOD OF RECORD.--Maximum contents observed, 352,000 acre-ft Sept. 27, 28, 1941 (gage height, 2,846.2 ft), observed on nonrecording gage at service spillway (affected by variable drawdown due to flow through tainter gates); minimum observed, 11,080 acre-ft May 13, 1948 (gage height, 2,781.4 ft).

EXTREMES (AT 0800) FOR CURRENT YEAR.--Maximum contents observed, 186,200 acre-ft Mar. 2-11 (gage height, 2,831.1 ft); minimum observed, 97,200 acre-ft Sept. 28-30 (gage height, 2,817.1 ft).

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

2,817.0	96,680	2,824.0	135,800	2,830.0	177,700
2,820.0	112,200	2,826.0	148,900	2,831.0	185,400
2,822.0	123,600	2,828.0	162,800	2,832.0	193,500

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
OBSERVATION AT 08:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	180900	177300	177700	180900	182500	185400	176500	160600	150300	135800	109900	98700
2	180900	177300	177700	180900	182500	186200	175700	159900	149600	135000	108900	98700
3	180100	177300	177700	180900	182500	186200	174900	159900	149600	134400	107900	98200
4	180100	177300	177700	180900	183300	186200	174100	159200	149600	133200	107400	98200
5	180100	177300	177700	180900	183300	186200	173300	158500	148900	132600	106200	98200
6	180100	177300	177700	180900	183300	186200	172500	157800	148900	132000	105200	97700
7	180100	177300	177700	180900	183300	186200	171700	157100	148900	130800	104200	97700
8	180100	177700	177700	180900	183300	186200	170100	157100	148500	130200	103700	97700
9	180100	177700	178500	180900	183300	186200	169100	156400	148500	129600	102700	97700
10	180100	177700	178500	180900	183300	186200	168400	156400	147800	128400	102200	97700
11	180100	177700	178500	181700	183300	186200	167700	155700	147800	127800	101700	97700
12	179300	177700	178500	181700	183300	185400	167700	155700	147800	126600	101200	97700
13	179300	177700	178500	181700	183300	184900	167000	155700	147100	126000	100700	97700
14	179300	177700	179300	181700	183300	184100	167000	155200	147100	124800	101200	97700
15	179300	177700	179300	181700	183300	183300	167000	155200	146400	124200	101200	97700
16	179300	177700	179300	181700	183300	182500	167000	155200	146400	123600	100700	97700
17	179300	177700	179300	181700	184100	181700	166300	154500	145700	122600	100700	97700
18	179300	177700	179300	181700	184900	180900	166300	154500	145700	122000	100200	97700
19	179300	177700	179300	181700	184900	180900	166300	153800	145700	120800	100200	97700
20	179300	177700	179300	181700	184900	180900	165600	153800	145000	120200	100200	97700
21	179300	177700	179300	181700	184900	180100	165600	153800	145000	119600	99700	97700
22	179300	177700	179300	181700	185400	180100	164900	153100	144300	118400	101200	97700
23	179300	177700	180100	181700	185400	179300	164200	153100	142900	117800	100700	97700
24	178500	177700	180100	182500	185400	179300	164200	152400	142200	117000	100700	97700
25	178500	177700	180100	182500	185400	179300	163500	152400	140600	116400	100200	97700
26	177700	177700	180100	182500	185400	179300	162800	151700	140000	115800	99700	97700
27	177700	177700	180100	182500	185400	179300	162000	151700	139400	114600	99200	97700
28	177700	177700	180100	182500	185400	179300	162000	151000	138200	114000	99200	97200
29	177300	177700	180100	182500	---	178500	161300	151000	137600	112800	98700	97200
30	177300	177700	180100	182500	---	177700	161300	150300	136400	111400	98700	97200
31	177300	---	180100	182500	---	177300	---	150300	---	110900	98700	---
MAX	180900	177700	180100	182500	185400	186200	176500	160600	150300	135800	109900	98700
MIN	177300	177300	177700	180900	182500	177300	161300	150300	136400	110900	98700	97200
(+)	2829.9	2830.0	2830.3	2830.6	2831.0	2829.9	2827.8	2826.2	2824.1	2819.8	2817.4	2817.1
(Φ)	-3600	+400	+2400	+2400	+2900	-8100	-16000	-11000	-13900	-25500	-12200	-1500
CAL YR 1988	MAX	226500	MIN	177300	(Φ)	-41900						
WTR YR 1989	MAX	186200	MIN	97200	(Φ)	-83700						

(+) Gage height, in feet, at end of month.

(Φ) Change in contents, in acre-feet.

RIO GRANDE BASIN

393

08412500 PECOS RIVER NEAR ORLA, TX

LOCATION.--Lat 31°52'21", long 103°49'52", Reeves County, Hydrologic Unit 13070001, on right bank at bridge on Farm Road 652, 5.5 mi downstream from Salt Creek (Screw Bean Arroyo), 5.9 mi northeast of Orla, and 8.5 mi downstream from Red Bluff Reservoir.

DRAINAGE AREA.--21,210 mi², approximately (contributing area).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1937 to current year.

REVISED RECORDS.--WSP 928: 1937.

GAGE.--Water-stage recorder. Datum of gage is 2,730.86 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 16, 1969, at site 6.9 mi downstream at datum 12.81 ft lower.

REMARKS.--No estimated daily discharges. Records good. Most of flow is releases from storage in Red Bluff Reservoir (station 08410000) 8.5 mi upstream. Occasional runoff occurs from draws between dam and station. There are many diversions above Red Bluff Reservoir for irrigation.

AVERAGE DISCHARGE.--52 years (water years 1938-89), 155 ft³/s (112,300 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,700 ft³/s Sept. 29, 1941 (gage height, 20.74 ft), site and datum then in use; no flow at times in 1946 and 1965.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 463 ft³/s Aug. 14 at 0400 hours (gage height, 4.71 ft); minimum daily, 11 ft³/s on Sept. 28-30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	45	135	15	15	14	14	454	178	100	428	415	95
2	45	25	15	15	14	14	454	180	102	426	414	92
3	45	16	17	14	15	16	453	180	155	425	413	91
4	45	15	16	15	16	13	448	181	146	425	414	89
5	45	15	16	16	15	14	448	182	103	425	422	88
6	47	14	16	17	15	14	449	184	99	424	414	87
7	46	14	16	15	15	14	427	184	98	424	412	86
8	46	14	16	15	15	13	355	185	98	422	383	81
9	46	14	16	15	14	13	354	185	98	421	247	65
10	45	14	16	15	14	13	353	188	98	421	226	59
11	46	14	16	15	15	121	312	180	114	419	223	59
12	46	14	15	14	15	396	152	149	152	419	224	58
13	45	14	15	14	15	406	96	107	156	421	228	48
14	46	14	15	14	15	407	93	103	158	421	328	14
15	46	15	15	14	15	410	91	103	157	421	201	14
16	46	15	15	14	16	396	90	103	158	419	98	13
17	46	15	15	14	20	383	89	104	158	419	94	13
18	45	15	15	14	22	333	106	104	155	419	91	13
19	45	15	16	14	20	164	233	105	154	419	91	12
20	45	15	16	14	18	171	241	104	172	419	91	12
21	47	15	16	14	17	172	236	104	276	418	97	12
22	117	15	16	14	15	172	236	103	392	418	297	32
23	137	15	16	14	15	143	236	101	400	418	244	73
24	138	16	15	14	14	44	236	100	401	418	226	47
25	138	16	15	14	14	41	236	105	401	418	222	47
26	137	16	15	14	14	41	236	150	401	418	219	44
27	137	15	15	14	14	41	237	150	400	418	217	13
28	136	15	15	14	14	110	231	139	401	419	214	11
29	137	15	15	14	---	400	170	102	426	419	97	11
30	138	15	15	14	---	417	171	101	429	416	91	11
31	137	---	15	14	---	451	---	100	---	415	99	---
TOTAL	2310	575	480	447	435	5357	7923	4244	6558	13032	7452	1390
MEAN	74.5	19.2	15.5	14.4	15.5	173	264	137	219	420	240	46.3
MAX	138	135	17	17	22	451	454	188	429	428	422	95
MIN	45	14	15	14	14	13	89	100	98	415	91	11
AC-FT	4580	1140	952	887	863	10630	15720	8420	13010	25850	14780	2760
CAL YR 1988	TOTAL	32778	MEAN	89.6	MAX	500	MIN	14	AC-FT	65020		
WTR YR 1989	TOTAL	50203	MEAN	138	MAX	454	MIN	11	AC-FT	99580		

08412500 PECOS RIVER NEAR ORLA, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: July 1937 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: July 1937 to current year.

WATER TEMPERATURE: March 1953 to current year.

REMARKS.--October 1937 to September 1969, this station was published as 08410100 Pecos River below Red Bluff Dam, near Orla. Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 29,400 microsiemens May 16, 1978; minimum daily, 1,600 microsiemens June 19, 1984.

WATER TEMPERATURE: Maximum daily, 31.0°C Aug. 13, 1978, and Aug. 13, 1982; minimum daily, 0.0°C on many days during winter months.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 16,300 microsiemens Feb. 19; minimum daily, 7,280 microsiemens Feb. 5.

WATER TEMPERATURE: Maximum daily, 26.0°C July 15, 17; minimum daily, 2.0°C Feb. 6, 7.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
OCT 04...	1130	45	8330	19.5	1900	1800	490	170	1200
NOV 02...	1300	17	8170	18.0	1800	1700	460	170	1200
JAN 04...	1400	14	12900	11.0	2500	2400	640	230	2000
APR 04...	1200	447	8400	17.0	1800	1700	460	160	1200
JUN 07...	1030	99	8670	21.0	2000	1900	500	190	1200

DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SI02)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)
OCT 04...	12	15	112	1800	2000	0.70	12	5750
NOV 02...	13	25	102	1700	2000	0.70	12	5630
JAN 04...	18	26	130	2300	3500	1.0	12	8790
APR 04...	13	25	98	1700	1900	0.60	10	5510
JUN 07...	12	31	107	1800	2000	0.70	11	5800

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1988 TO SEPTEMBER 1989

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	DIS- SOLVED SOLIDS (MG/L)	DIS- SOLVED SOLIDS (TONS)	DIS- SOLVED CHLORIDE (MG/L)	DIS- SOLVED CHLORIDE (TONS)	DIS- SOLVED SULFATE (MG/L)	DIS- SOLVED SULFATE (TONS)	HARDNESS (CA, MG) (MG/L)
OCT. 1988	2310	8330	5630	35100	2200	13500	1500	9310	1700
NOV. 1988	575	11100	7560	11700	3000	4680	1900	2910	*
DEC. 1988	480	13600	9230	12000	3800	4890	2200	2830	*
JAN. 1989	447	12600	8580	10400	3500	4190	2100	2500	*
FEB. 1989	435	12400	8420	9890	3400	4000	2000	2380	*
MAR. 1989	5357	8520	5750	83200	2200	32000	1500	21900	1700
APR. 1989	7923	8460	5720	122000	2200	47000	1500	32300	1700
MAY 1989	4244	8630	5830	66800	2200	25700	1500	17600	1700
JUNE 1989	6558	8990	6070	108000	2400	41600	1600	28100	1800
JULY 1989	13032	9180	6200	218000	2400	84700	1600	56900	1800
AUG. 1989	7452	9720	6580	132000	2600	51700	1700	34000	1900
SEPT 1989	1390	9940	6730	25200	2600	9880	1700	6470	1900
TOTAL	50203	**	**	835000	**	324000	**	217000	**
WTD. AVG.	138	9110	6160	**	2400	**	1600	**	1800

RIO GRANDE BASIN

395

08412500 PECOS RIVER NEAR ORLA, TX--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
EQUIVALENT MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e8530	8060	13100	13000	10200	12300	8400	8490	8740	9050	9400	9630
2	8570	8270	13300	12900	10700	12200	8400	8530	8750	9060	9400	9880
3	8520	11200	13500	e12900	8580	12300	e8450	8540	10900	9110	9430	9720
4	8560	11800	12800	12800	8840	12200	8400	8550	8890	9040	9410	9700
5	8570	11900	12600	12800	7280	12100	8300	8590	8840	9060	9480	9700
6	8560	12000	13400	13200	10500	12500	8300	8580	8780	9050	9440	9680
7	e8630	11800	13400	12600	12100	12200	8400	8600	8780	9050	9480	9700
8	8700	11700	13400	12600	12200	12200	8400	8590	8810	e9060	9560	9720
9	8710	11600	13400	e12500	12200	12300	8400	8580	e8790	9060	9570	9680
10	8730	11700	13800	12400	12100	12400	8400	8510	e8740	9040	9590	9800
11	8760	11900	14200	12300	12400	12400	8400	8640	8720	9070	9600	9730
12	8770	11900	14200	12400	12500	8280	8500	8630	8780	9080	9610	9770
13	8760	12000	14300	12400	12500	8210	8800	8770	8790	9120	9500	9740
14	8780	11900	14200	12300	12500	8210	8800	8720	8900	9140	8700	9960
15	8800	12200	14100	12400	12400	8180	8800	8720	8910	9190	9600	10900
16	8850	12400	13900	12500	12500	8190	8800	8720	8910	9150	9960	11300
17	8850	12500	13800	12500	11900	8190	8900	8690	8920	9200	9840	11300
18	8860	12300	13700	12600	14900	8200	8900	8720	8950	9180	9720	11300
19	8850	12400	13600	12600	16300	8400	8500	8740	8910	9170	9710	11400
20	8830	12600	13700	e12600	15900	8400	8500	8720	8890	9180	9710	11300
21	e8570	12700	13800	12600	15000	8380	8500	8720	8940	9190	10000	11300
22	e8290	12600	13900	12500	13800	8430	8500	8710	8970	9220	12500	11200
23	8030	12700	13600	12600	13300	8430	8500	8740	9020	9250	10800	9860
24	e8040	12800	13600	12600	12900	9390	8500	8690	9040	9300	10000	10100
25	8040	12900	13700	e12500	12700	9530	8500	8690	9000	9330	9840	10100
26	8060	13100	13400	12500	12600	9500	8500	8660	9000	9320	9740	10100
27	8040	13100	13200	12500	12600	9500	8500	8670	9010	9340	9680	10200
28	8030	13000	13400	12500	12500	9460	8500	8620	9000	9380	9660	10600
29	8050	13000	13400	13000	---	8280	8600	8680	9010	e9370	9910	11300
30	8300	13000	13200	e13000	---	8290	8600	8700	9010	9380	10200	11300
31	7850	---	13000	12900	---	8230	---	8550	---	9390	11000	---
MEAN	8500	12000	13600	12600	12300	9900	8530	8650	8960	9180	9810	10300

e Estimated

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	11.0	---	5.0	11.0	11.0	13.0	15.0	21.0	24.0	25.0	24.5
2	20.0	17.0	8.0	6.5	12.5	11.0	14.0	---	21.0	24.0	25.0	24.0
3	19.5	17.5	7.5	---	9.0	12.5	---	16.5	22.0	24.5	25.0	24.0
4	20.0	16.0	8.0	9.5	4.5	9.0	14.0	17.0	21.0	24.0	25.0	24.0
5	19.5	15.5	10.0	10.0	4.5	5.0	15.0	16.5	20.5	24.0	25.5	24.0
6	19.0	14.0	10.0	10.0	2.0	5.0	14.0	18.0	22.5	24.0	24.5	23.0
7	---	16.5	9.0	9.0	2.0	9.0	13.0	17.5	20.0	24.0	25.0	24.0
8	20.0	17.5	6.5	7.5	3.5	13.0	14.0	18.0	21.0	---	25.0	25.0
9	20.0	17.0	5.0	---	5.5	13.0	13.5	18.0	---	24.0	24.0	24.0
10	18.5	15.5	6.0	4.0	5.5	15.0	12.5	18.0	---	24.0	23.0	23.0
11	19.5	16.0	7.0	5.0	10.0	17.0	12.5	17.5	21.5	25.0	23.0	24.0
12	18.5	16.0	6.0	6.0	10.5	13.0	13.0	19.0	20.0	24.5	23.5	23.5
13	19.0	15.5	7.5	5.0	11.0	10.0	13.5	21.0	21.0	24.0	24.0	21.0
14	19.0	15.0	7.0	3.0	11.0	11.0	14.0	17.0	20.5	25.0	23.0	20.0
15	21.0	12.0	7.0	5.0	11.0	11.0	13.5	18.0	21.5	26.0	24.0	22.0
16	20.0	12.0	5.0	4.0	10.0	10.0	14.0	18.5	22.0	25.0	23.5	22.0
17	20.0	10.5	6.0	5.0	8.0	10.5	14.0	18.0	23.0	26.0	23.5	22.0
18	19.0	10.5	6.0	6.0	9.0	10.0	15.0	17.0	22.0	25.5	23.5	22.0
19	19.5	11.0	7.5	8.0	9.0	12.0	16.5	19.5	22.5	25.5	24.0	25.0
20	19.0	8.5	8.0	---	12.0	11.0	16.0	18.5	23.0	25.0	25.0	24.0
21	---	8.5	7.0	6.5	11.0	10.0	16.0	20.0	23.0	24.5	24.0	23.5
22	---	8.0	6.0	7.0	11.0	15.0	16.5	19.0	23.0	25.0	25.0	22.5
23	19.0	8.5	6.5	8.0	11.0	11.0	17.0	20.0	22.5	25.0	24.0	20.0
24	---	---	6.0	9.0	11.0	15.5	17.0	19.0	23.0	24.5	24.0	19.0
25	21.5	12.0	5.5	---	12.0	14.0	16.0	20.0	23.0	25.0	24.0	18.0
26	18.0	11.0	6.0	9.5	13.5	16.5	16.0	19.0	23.0	24.5	24.0	19.0
27	20.0	9.5	8.0	8.0	15.0	15.5	---	19.5	23.0	24.5	25.0	19.0
28	17.0	7.0	5.0	8.0	14.0	14.0	15.5	20.0	23.5	24.0	24.5	19.0
29	18.0	7.5	5.0	7.0	---	15.5	14.0	20.5	24.0	---	24.5	18.0
30	19.0	6.0	4.0	---	---	13.0	16.5	21.0	23.0	25.0	24.5	19.0
31	17.5	---	5.0	8.5	---	13.0	---	21.0	---	24.0	25.0	---
MEAN	19.5	12.5	6.5	7.0	9.5	12.0	14.5	18.5	22.0	24.5	24.5	22.0

08414500 REEVES COUNTY WATER IMPROVEMENT DISTRICT NO. 2 CANAL NEAR MENTONE, TX

LOCATION.--Lat 31°37'57", long 103°34'30", Loving County, Hydrologic Unit 13070001, on right bank 173 ft downstream from headgate, 5.3 mi south of Mentone, and 15 mi northwest of Pecos.

PERIOD OF RECORD.--February 1922 to July 1925, August 1939 to May 1941, March 1942 to September 1957, and March 1964 to September 1986 (continuous-record station), October 1986 to current year (seasonal records only). Records from August 1939 to October 1940, not equivalent because diversion was not included. Published as "Farmers Independent Canal near Porterville" 1922-25.

GAGE.--Water-stage recorder. Concrete weir since Mar. 1, 1964. Elevation of gage is 2,640 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to July 22, 1925, at site 250 ft downstream at different datum. Mar. 10, 1939, to Oct. 4, 1940, at site 2.5 mi downstream at different datum. Oct. 5, 1940, to Feb. 19, 1943, at site 123 ft upstream at datum 1.10 ft higher. Feb. 20, 1943, to Mar. 1, 1954, at site 123 ft upstream at present datum.

REMARKS.--No estimated daily discharges. Records good. At times, runoff is deleted from daily discharge records. Water is diverted from right bank of Pecos River and is used for irrigation between Mentone and Pecos. Discharges for irrigation season only, after September 1986.

AVERAGE DISCHARGE.--40 years (water years 1923-24, 1940, 1943-57, 1965-86), 7.46 ft³/s (5,400 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 160 ft³/s June 14, 1922; no flow at times each year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.07	---	---	---	.00	18	10	25	8.8	15	9.8
2	.00	---	---	---	---	.00	3.8	14	25	8.9	16	4.5
3	.00	---	---	---	---	.00	6.0	6.2	23	8.8	16	.18
4	.00	---	---	---	---	.00	3.4	7.5	23	8.3	15	.16
5	.00	---	---	---	---	.00	.17	.17	23	12	.34	.14
6	.00	---	---	---	---	.00	.14	2.7	20	25	.25	.14
7	.00	---	---	---	---	.00	7.5	8.3	19	24	.19	.14
8	.00	---	---	---	---	.00	17	8.3	19	28	11	.12
9	.00	---	---	---	---	.00	16	8.1	19	29	16	5.4
10	.00	---	---	---	---	.00	20	8.0	19	29	15	2.3
11	.00	---	---	---	---	.00	24	7.8	15	29	17	1.5
12	.00	---	---	---	---	.00	24	7.4	13	29	26	.40
13	3.7	---	---	---	---	.00	23	6.3	15	29	32	.13
14	9.1	---	---	---	---	.00	23	4.3	15	29	31	.07
15	4.6	---	---	---	---	.00	24	5.5	14	29	27	.07
16	.18	---	---	---	---	.00	22	6.6	14	29	25	.04
17	.24	---	---	---	---	.00	21	6.8	10	29	29	.0
18	.18	---	---	---	---	.00	21	7.2	.33	29	35	.00
19	.14	---	---	---	---	.00	20	.42	.34	29	34	.00
20	.14	---	---	---	---	.00	24	.23	.30	29	35	.00
21	.14	---	---	---	---	.00	27	.14	.30	25	34	.00
22	.11	---	---	---	---	.00	31	.14	.29	24	40	.00
23	.14	---	---	---	---	.00	31	.14	.24	24	36	.0
24	.14	---	---	---	---	.00	35	.11	.15	24	27	.03
25	.14	---	---	---	---	.00	41	.11	.14	24	26	.01
26	.13	---	---	---	---	.00	39	.10	8.0	24	26	.01
27	.06	---	---	---	---	.00	26	.03	19	24	20	.02
28	.04	---	---	---	---	.00	15	11	21	23	11	.02
29	.02	---	---	---	---	.00	6.9	15	18	17	11	.01
30	.02	---	---	---	---	.00	.45	16	14	12	11	.00
31	.04	---	---	---	---	5.5	---	23	---	13	10	---
TOTAL	19.26	---	---	---	---	5.50	570.36	191.59	393.09	705.8	647.78	25.19
MEAN	.62	---	---	---	---	.18	19.0	6.18	13.1	22.8	20.9	.84
MAX	9.1	---	---	---	---	5.5	41	23	25	29	40	9.8
MIN	.00	---	---	---	---	.00	.14	.03	.14	8.3	.19	.00
AC-FT	38	---	---	---	---	11	1130	380	780	1400	1280	50
CAL YR 1988	TOTAL	--	MEAN	--	MAX	--	MIN	--	AC-FT	--		
WTR YR 1989	TOTAL	--	MEAN	--	MAX	--	MIN	--	AC-FT	--		

08418000 WARD COUNTY IRRIGATION DISTRICT NO. 1 CANAL NEAR BARSTOW, TX

LOCATION.--Lat 31°32'26", long 103°29'42", Ward County, Hydrologic Unit 13070001, on left bank 0.6 mi downstream from headgate and 7.9 mi northwest of Barstow.

PERIOD OF RECORD.--February 1922 to September 1925 (published as "Barstow Canal near Barstow"), August 1939 to May 1941, October 1941 to September 1957, and March 1964 to September 1986 (continuous-record station), October 1986 to current year (seasonal record only).

GAGE.--Water-stage recorder. Concrete weir since Nov. 20, 1968. Elevation of gage is 2,600 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Aug. 15, 1939, at site about 3,000 ft upstream at different datum.

REMARKS.--No estimated daily discharges. Records good prior to May 12 and poor thereafter. At times, local runoff is deleted from daily discharge record. Water is diverted from left bank of Pecos River and is used for irrigation in the vicinity of Barstow. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--42 years (water years 1923-25, 1940, 1942-57, 1965-86), 25.1 ft³/s (18,180 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 385 ft³/s Aug. 30, 1923; no flow at times each year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	77	---	---	---	.00	20	57	69	96	86	57
2	23	---	---	---	---	.00	28	56	70	85	101	63
3	17	---	---	---	---	.00	33	56	68	78	98	69
4	.20	---	---	---	---	.00	27	73	73	96	90	64
5	.20	---	---	---	---	.00	12	77	73	95	85	45
6	.20	---	---	---	---	.00	.26	77	70	96	72	27
7	.19	---	---	---	---	.00	.20	67	53	98	44	31
8	.20	---	---	---	---	.00	.15	66	35	95	7.5	21
9	.18	---	---	---	---	.00	.10	71	43	86	30	25
10	.20	---	---	---	---	.00	.10	73	62	79	33	71
11	9.6	---	---	---	---	.00	.08	90	42	53	78	31
12	26	---	---	---	---	.00	.09	67	32	53	71	35
13	27	---	---	---	---	.00	.02	57	33	83	60	11
14	25	---	---	---	---	.00	.00	60	35	100	60	10
15	21	---	---	---	---	.00	.00	68	51	108	84	16
16	21	---	---	---	---	.00	.00	52	56	101	96	9.3
17	24	---	---	---	---	.00	.01	55	22	104	83	12
18	25	---	---	---	---	.00	.02	80	21	114	65	11
19	25	---	---	---	---	.00	.00	73	64	94	53	11
20	26	---	---	---	---	.00	.00	53	79	88	53	9.6
21	25	---	---	---	---	.00	43	66	79	77	57	8.7
22	26	---	---	---	---	.00	59	70	89	87	59	5.9
23	28	---	---	---	---	.00	60	75	97	96	79	3.4
24	65	---	---	---	---	.00	60	75	108	66	90	3.0
25	71	---	---	---	---	.00	60	72	104	73	99	36
26	75	---	---	---	---	.00	60	53	106	69	99	31
27	79	---	---	---	---	.00	61	51	103	59	96	12
28	80	---	---	---	---	24	58	39	89	77	62	1.9
29	80	---	---	---	---	46	52	27	71	94	28	1.7
30	81	---	---	---	---	51	52	33	95	92	52	1.6
31	82	---	---	---	---	28	---	57	---	56	62	---
TOTAL	984.97	---	---	---	---	149.00	686.03	1946	1992	2648	2132.5	734.1
MEAN	31.8	---	---	---	---	4.81	22.9	62.8	66.4	85.4	68.8	24.5
MAX	82	---	---	---	---	51	61	90	108	114	101	71
MIN	.18	---	---	---	---	.00	.00	27	21	53	7.5	1.6
AC-FT	1950	---	---	---	---	296	1360	3860	3950	5250	4230	1460
CAL YR 1988	TOTAL	--	MEAN	--	MAX	--	MIN	--	AC-FT	--		
WTR YR 1989	TOTAL	--	MEAN	--	MAX	--	MIN	--	AC-FT	--		

08436500 PECOS COUNTY WATER IMPROVEMENT DISTRICT NO. 2 (UPPER DIVERSION) CANAL NEAR GRANDFALLS, TX

LOCATION.--Lat 31°18'43", long 102°55'10", Ward County, Hydrologic Unit 13070001, on left bank about 2.5 mi upstream from bridge on State Highway 18, 4.6 mi southwest of Grandfalls, and 12.5 mi downstream from headgate of canal.

PERIOD OF RECORD.--March 1922 to July 1925 (published as "Imperial Highline Canal near Grandfalls"), August 1939 to September 1957, and March 1964 to September 1986 (discontinued as a continuous-record station; converted to seasonal).

GAGE.--Water-stage recorder. Concrete weir since Dec. 8, 1947. Elevation of gage is 2,455 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Aug. 21, 1939, water-stage recorder at site 8.5 mi upstream at different datum. Aug. 21 to Oct. 3, 1939, and May 25 to Aug. 4, 1941, staff gage, Oct. 4, 1939, to May 21, 1941, and Aug. 5, 1941, to Sept. 30, 1957, water-stage recorder at site 2.5 mi downstream at different datum.

REMARKS.--No estimated daily discharges. Records good. At times, local runoff is deleted from daily discharge records. Water is diverted from right bank of Pecos River and is used for irrigation and to supply water for Imperial Reservoir. Water is released from Imperial Reservoir into Pecos County Water Improvement District No. 2 canal and into Pecos County Water Improvement District No. 3 canal for irrigation. Since September 1986, discharge records published for irrigation season only.

AVERAGE DISCHARGE.--41 years (water years 1924, 1940-57, 1965-86), 28.1 ft³/s (20,360 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 368 ft³/s Sept. 18, 1923; no flow at times each year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	---	---	---	---	.00	48	30	43	128	160	66
2	.00	---	---	---	---	.00	145	84	26	138	178	27
3	.00	---	---	---	---	.00	192	62	17	149	196	18
4	.00	---	---	---	---	.00	209	42	15	160	184	19
5	.00	---	---	---	---	.00	214	41	11	175	180	15
6	.00	---	---	---	---	.00	217	36	3.9	178	181	13
7	.00	---	---	---	---	.00	215	31	.03	185	170	2.2
8	.00	---	---	---	---	.00	218	28	.00	181	204	3.4
9	.00	---	---	---	---	.00	212	8.2	.00	171	215	5.0
10	.00	---	---	---	---	.00	213	10	.00	160	223	8.9
11	.00	---	---	---	---	.00	213	11	.00	154	222	8.6
12	.00	---	---	---	---	.00	204	14	.00	150	206	3.8
13	.00	---	---	---	---	.00	194	11	.00	160	128	25
14	.00	---	---	---	---	.00	191	9.3	.00	163	87	61
15	.00	---	---	---	---	.00	169	9.7	.00	163	90	28
16	.00	---	---	---	---	.00	127	7.7	.00	154	98	14
17	.00	---	---	---	---	.05	67	5.0	.00	112	110	5.7
18	.00	---	---	---	---	38	15	2.6	.00	115	106	1.2
19	.00	---	---	---	---	151	13	13	.00	108	54	.14
20	.00	---	---	---	---	171	11	11	.00	109	32	.0
21	.00	---	---	---	---	173	9.7	11	.00	114	28	.00
22	.00	---	---	---	---	172	10	16	.00	121	26	.00
23	.00	---	---	---	---	146	13	18	.00	135	23	.00
24	.00	---	---	---	---	119	13	14	.00	141	17	.00
25	.00	---	---	---	---	112	13	13	.00	147	28	.00
26	.00	---	---	---	---	109	12	11	.00	147	58	.00
27	.00	---	---	---	---	92	11	9.8	.00	147	29	.00
28	.00	---	---	---	---	52	11	10	84	147	19	.00
29	.00	---	---	---	---	39	11	20	97	147	25	.00
30	.00	---	---	---	---	28	12	38	110	147	49	.00
31	.00	---	---	---	---	14	---	48	---	160	79	---
TOTAL	0.00	---	---	---	---	1416.05	3202.7	675.3	406.93	4566	3405	324.94
MEAN	.00	---	---	---	---	45.7	107	21.8	13.6	147	110	10.8
MAX	.00	---	---	---	---	173	218	84	110	185	223	66
MIN	.00	---	---	---	---	.00	9.7	2.6	.00	108	17	.00
AC-FT	.00	---	---	---	---	2810	6350	1340	807	9060	6750	645
CAL YR 1988	TOTAL	--	MEAN	--	MAX	--	MIN	--	AC-FT	--		
WTR YR 1989	TOTAL	--	MEAN	--	MAX	--	MIN	--	AC-FT	--		

08437500 PECOS COUNTY WATER IMPROVEMENT DISTRICT NO. 2 CANAL NEAR IMPERIAL, TX

LOCATION.--Lat 31°16'38", long 102°43'54", Pecos County, Hydrologic Unit 13070001, on left bank about 2.4 mi west of Imperial and 7.7 mi downstream from Imperial Reservoir.

PERIOD OF RECORD.--April 1940 to May 1941, March 1942 to September 1957, and March 1964 to September 1986 (continuous-record station); October 1986 to current year (seasonal record only). Records since March 1942 are equivalent to earlier records if diversions to Pecos County Water Improvement District No. 3 canal near Imperial (station 08437600) are added to flow past this station.

GAGE.--Water-stage recorder. Wooden weir June 1, 1943, to Feb. 29, 1964, and concrete weir since Mar. 1, 1964. Elevation of gage is about 2,400 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to July 11, 1940, at site 1.5 mi upstream at different datum. July 12, 1940, to Mar. 23, 1942, at site 2.5 mi upstream at datum 3.36 ft higher. Mar. 24, 1942, to May 31, 1943, at site 0.5 mi upstream at datum 0.70 ft higher.

REMARKS.--No estimated daily discharges. Records good. At times, local runoff is deleted from daily discharge records. Water is diverted from Imperial Reservoir (on right bank of Pecos River) for irrigation in the vicinity of Imperial, and at times includes water diverted from the Pecos River through Cut Around Canal. The total flow at this station does not include water diverted from canal 75 ft upstream, or water diverted into Pecos County Improvement District No. 3 canal (see station 08437600), 0.6 mi upstream. Discharges are published for irrigation season only since September 1986.

AVERAGE DISCHARGE.--37 years (water years 1943-57, 1965-86), 10.7 ft³/s (7,750 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 144 ft³/s July 27, 28, 31, Aug. 1, 1945; no flow at times each year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	---	---	---	---	.00	.00	23	33	41	68	7.7
2	.00	---	---	---	---	.00	.00	25	17	42	63	2.0
3	.00	---	---	---	---	.00	.00	23	16	27	56	.90
4	.00	---	---	---	---	.00	.00	21	8.2	26	50	.90
5	.00	---	---	---	---	.00	11	21	3.1	48	51	.00
6	.00	---	---	---	---	.00	18	22	.00	54	52	1.8
7	.00	---	---	---	---	.00	17	18	.00	56	58	14
8	.00	---	---	---	---	.00	28	14	.00	60	25	24
9	.00	---	---	---	---	.00	58	.00	.00	62	22	24
10	.00	---	---	---	---	.00	34	.00	.00	63	23	24
11	.00	---	---	---	---	.00	35	.00	.00	64	23	20
12	.00	---	---	---	---	.00	36	.00	.00	64	24	.47
13	.00	---	---	---	---	.00	38	.00	.00	65	22	.00
14	.00	---	---	---	---	.00	38	.00	.00	66	.00	.00
15	.00	---	---	---	---	.00	39	.00	.00	68	.00	.00
16	.00	---	---	---	---	.00	39	.00	.00	62	.00	.00
17	.00	---	---	---	---	.00	39	.00	.00	45	.00	.00
18	.00	---	---	---	---	.00	38	.00	.00	42	.00	.00
19	.00	---	---	---	---	.00	39	.00	.00	42	17	.00
20	.00	---	---	---	---	.00	48	.00	12	38	38	.00
21	.00	---	---	---	---	.00	56	.00	24	25	22	.00
22	.00	---	---	---	---	.00	57	.00	11	24	41	.00
23	.00	---	---	---	---	.00	64	.65	21	19	72	.00
24	.00	---	---	---	---	.00	82	32	36	8.4	71	.00
25	.00	---	---	---	---	.00	83	34	40	16	72	.00
26	.00	---	---	---	---	.00	84	36	49	36	74	.00
27	.00	---	---	---	---	.00	72	34	47	41	75	.08
28	.00	---	---	---	---	.00	41	35	46	50	72	30
29	.00	---	---	---	---	.00	23	37	41	66	30	21
30	.00	---	---	---	---	.00	18	38	41	71	21	.25
31	.00	---	---	---	---	.00	---	39	---	72	17	---
TOTAL	0.00	---	---	---	---	0.00	1135.00	452.65	445.30	1463.4	1159.00	171.10
MEAN	.00	---	---	---	---	.00	37.8	14.6	14.8	47.2	37.4	5.70
MAX	.00	---	---	---	---	.00	84	39	49	72	75	30
MIN	.00	---	---	---	---	.00	.00	.00	.00	8.4	.00	.00
AC-FT	.0	---	---	---	---	.0	2250	898	883	2900	2300	339
CAL YR 1988	TOTAL	--	MEAN	--	MAX	--	MIN	--	AC-FT	--		
WTR YR 1989	TOTAL	--	MEAN	--	MAX	--	MIN	--	AC-FT	--		

RIO GRANDE BASIN

08437600 PECOS COUNTY WATER IMPROVEMENT DISTRICT NO. 3 CANAL NEAR IMPERIAL, TX

LOCATION.--Lat 31°16'51", long 102°44'26", Pecos County, Hydrologic Unit 13070001, on left bank about 220 ft upstream from bridge on Farm Road 11, 0.3 mi downstream from headgate (Pecos No. 2 canal), and 2.9 mi west of Imperial.

PERIOD OF RECORD.--March 1940 to September 1941, March 1942 to September 1957, and March 1964 to September 1986 (continuous-record station), October 1986 to current year (seasonal records only).

GAGE.--Water-stage recorder. Concrete weir since Mar. 7, 1944. Elevation of gage is 2,390 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Jan. 10, 1941, at site 350 ft downstream at datum 6.79 ft lower. Jan. 10, 1941, to Mar. 29, 1942, at site 200 ft downstream at datum 3.65 ft lower.

REMARKS.--No estimated daily discharges. Records good. At times local runoff is deleted from daily discharge record. Water is diverted from Imperial Reservoir (on right bank of Pecos River), 7.6 mi upstream, for irrigation in the vicinity of Imperial, and at times includes water diverted from the Pecos River by Cut Around Canal. After September 1986, discharges published from March to September (irrigation season) only.

AVERAGE DISCHARGE.--38 years (water years 1941, 1943-57, 1965-86), 7.97 ft³/s (5,770 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 175 ft³/s Aug. 11, 1940; no flow at times each year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	---	---	---	---	.00	.00	29	.00	54	14	.00
2	.00	---	---	---	---	.00	.00	34	.00	54	42	.00
3	.00	---	---	---	---	.00	.00	36	.00	60	53	.00
4	.00	---	---	---	---	.00	.00	30	.00	64	60	.00
5	.00	---	---	---	---	.00	.00	33	.00	51	60	18
6	.00	---	---	---	---	.00	.00	36	.00	50	61	59
7	.00	---	---	---	---	.00	.00	35	.00	54	63	50
8	.00	---	---	---	---	.00	.00	36	.00	52	54	52
9	.00	---	---	---	---	.00	.00	40	.00	53	53	55
10	.00	---	---	---	---	.00	.00	42	.00	53	53	55
11	.00	---	---	---	---	.00	.00	40	.00	53	53	60
12	.00	---	---	---	---	.00	.00	46	.00	53	54	73
13	.00	---	---	---	---	.00	.00	45	.00	53	53	47
14	.00	---	---	---	---	.00	.00	45	.00	53	8.1	2.3
15	.00	---	---	---	---	.00	.00	44	.00	53	1.2	.71
16	.00	---	---	---	---	.00	.00	44	.00	53	.52	.23
17	.00	---	---	---	---	.00	.00	43	.00	51	.00	.00
18	.00	---	---	---	---	.00	.00	43	.00	52	.00	.00
19	.00	---	---	---	---	.00	.00	40	.00	52	.07	.00
20	.00	---	---	---	---	.00	.00	35	.00	52	11	.00
21	.00	---	---	---	---	.00	.00	34	.00	54	30	.00
22	.00	---	---	---	---	.00	.00	17	.00	54	14	.00
23	.00	---	---	---	---	.00	.00	3.7	7.2	52	.01	.00
24	.00	---	---	---	---	.00	.00	.32	18	57	.00	.00
25	.00	---	---	---	---	.00	.00	.24	24	66	.00	.00
26	.00	---	---	---	---	.00	.00	.16	28	62	.00	.00
27	.00	---	---	---	---	.00	.00	.12	31	59	.00	.00
28	.00	---	---	---	---	.00	.00	.12	31	36	.00	.00
29	.00	---	---	---	---	.00	25	.01	37	.45	.00	.00
30	.00	---	---	---	---	.00	31	.00	44	.43	.00	.00
31	.00	---	---	---	---	.00	---	.00	---	.40	.00	---
TOTAL	0.00	---	---	---	---	0.00	56.00	831.67	220.20	1511.28	737.90	472.24
MEAN	.00	---	---	---	---	.00	1.87	26.8	7.34	48.8	23.8	15.7
MAX	.00	---	---	---	---	.00	31	46	44	66	63	73
MIN	.00	---	---	---	---	.00	.00	.00	.00	.40	.00	.00
AC-FT	.00	---	---	---	---	.00	111	1650	437	3000	1460	937
CAL YR 1988	TOTAL	--	MEAN	--	MAX	--	MIN	--	AC-FT	--		
WTR YR 1989	TOTAL	--	MEAN	--	MAX	--	MIN	--	AC-FT	--		

08446500 PECOS RIVER NEAR GIRVIN, TX

LOCATION.--Lat 31°06'47", long 102°25'02", Pecos County, Hydrologic Unit 13070008, on right bank 2.1 mi upstream from Comanche Creek, 3.8 mi northwest of Girvin, and 7.2 mi upstream from bridge on U.S. Highway 67.

DRAINAGE AREA.--29,560 mi² approximately, for contributing area of supplementary gage 7.2 mi downstream.

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

Water-quality records.--Chemical analyses: October 1939 to June 1941, October 1946 to September 1947, October 1953 to September 1982. Pesticide analyses: October 1968 to September 1974.

GAGE.--Water-stage recorder with concrete control and measuring flume. Datum of gage not determined. Supplementary water-stage recorder, used as regular gage prior to July 17, 1951, is now used only for peaks exceeding about 400 ft³/s, 7.2 mi downstream at datum 2,269.65 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Flow is largely regulated by Red Bluff Reservoir (station 08410000). Numerous diversions above station for irrigation.

AVERAGE DISCHARGE.--50 years, 80.6 ft³/s (58,390 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,000 ft³/s Oct. 5, 1941 (gage height, 20.49 ft, at supplementary gage); minimum daily, 1.9 ft³/s June 19, July 14, 1982.
Maximum stage since at least 1932, that of Oct. 5, 1941.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 110 ft³/s Mar. 20 at 2100 hours (gage height, 1.90 ft); minimum daily, 9.4 ft³/s on several days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	28	31	33	36	36	24	27	14	58	9.4	12
2	28	42	25	33	36	37	24	27	20	40	9.4	27
3	25	46	25	33	35	37	24	27	21	23	9.4	24
4	23	49	27	33	35	37	22	31	15	18	9.4	17
5	22	53	28	34	36	36	20	32	14	14	9.4	16
6	21	58	35	34	38	36	19	30	13	12	10	14
7	21	60	50	34	39	36	19	29	12	11	15	14
8	21	62	40	34	40	35	18	27	11	10	14	14
9	21	57	36	33	39	34	18	26	11	10	18	14
10	22	46	37	34	39	33	18	34	12	10	30	14
11	36	42	39	34	39	32	17	47	12	10	30	14
12	41	42	38	34	39	31	17	32	13	9.4	22	18
13	43	40	38	34	39	32	18	30	13	9.4	17	37
14	43	38	37	32	38	31	18	38	15	10	17	60
15	43	37	36	32	41	31	17	56	27	10	16	58
16	44	36	36	32	45	30	16	74	26	10	18	61
17	43	35	36	32	51	30	15	56	25	10	24	86
18	38	34	37	33	53	31	15	46	23	10	22	84
19	31	34	36	32	50	50	18	46	21	11	19	59
20	28	34	37	33	46	102	19	37	24	10	17	48
21	26	33	36	32	43	90	20	31	26	10	17	45
22	25	33	36	31	41	56	18	29	26	10	16	43
23	25	33	36	31	40	43	16	27	26	10	18	39
24	24	33	36	35	38	40	18	25	24	10	19	36
25	24	34	35	37	37	38	20	23	25	9.4	17	34
26	25	34	35	37	36	36	20	20	26	9.4	15	33
27	26	34	36	36	36	33	20	18	25	10	14	32
28	26	33	36	37	36	30	24	15	21	10	14	32
29	25	33	35	36	---	27	27	13	17	10	13	32
30	25	33	34	36	---	26	27	12	22	9.4	13	32
31	26	---	34	36	---	25	---	12	---	9.4	12	---
TOTAL	901	1206	1093	1047	1121	1201	586	977	580	413.4	504.0	1049
MEAN	29.1	40.2	35.3	33.8	40.0	38.7	19.5	31.5	19.3	13.3	16.3	35.0
MAX	44	62	50	37	53	102	27	74	27	58	30	86
MIN	21	28	25	31	35	25	15	12	11	9.4	9.4	12
AC-FT	1790	2390	2170	2080	2220	2380	1160	1940	1150	820	1000	2080
CAL YR 1988	TOTAL	18043	MEAN	49.3	MAX	227	MIN	18	AC-FT	35790		
WTR YR 1989	TOTAL	10678.4	MEAN	29.3	MAX	102	MIN	9.4	AC-FT	21180		

RIO GRANDE BASIN

08447410 PECOS RIVER NEAR LANGTRY, TX
(National stream-quality accounting network)

LOCATION.--Lat 29°48'10", long 101°26'45", Val Verde County, Hydrologic Unit 13040212, at gaging station 7.4 mi east of Langtry, 15.0 mi upstream from confluence with the Rio Grande.

DRAINAGE AREA.--35,179 mi².

PERIOD OF RECORD.--Chemical analyses: October 1954 to current year. Chemical and biochemical analyses: October 1974 to current year. Pesticide analyses: July 1975 to June 1982. Sediment analyses: October 1974 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1970 to September 1976, October 1980 to September 1985.

WATER TEMPERATURE: October 1970 to September 1985.

INSTRUMENTATION.--Specific conductance and water temperature were recorded continuously from November 1980 to September 1985.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 6,000 microsiemens Mar. 21, 22, 1981; minimum daily, 230 microsiemens Oct. 11, 1981.

WATER TEMPERATURE: Maximum daily, 32.5°C June 8, 1981; minimum daily, 1.5°C Dec. 26, 27, 1983.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

		DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI, KF AGAR (COLS. PER 100 ML)	HARD-NESS TOTAL (MG/L AS CaCO3)	
NOV 02...	1515	208	3500	8.20	21.5	2.8	8.7	104	0.4	48	K14	700	
FEB 08...	1100	178	4530	8.40	6.0	1.5	12.1	101	0.3	<1	K1	900	
MAR 14...	1240	180	4770	8.20	20.5	7.6	13.0	154	0.2	K12	K8	880	
JUN 07...	0930	123	3460	7.60	28.0	3.7	11.9	162	1.5	21	35	650	
JUL 18...	1255	89	3450	8.30	29.0	1.5	7.8	108	1.0	K4	K6	620	
AUG 16...	1000	109	3010	8.00	26.0	7.5	8.4	110	1.1	K8	33	570	
DATE		HARD-NESS NONCARB WH WAT TOT FLD (MG/L AS CaCO3)	CALCIUM DIS-SOLVED (MG/L AS Ca)	MAGNE-SIUM, DIS-SOLVED (MG/L AS Mg)	SODIUM, DIS-SOLVED (MG/L AS Na)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT WH TOT FET FIELD (MG/L AS CaCO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS Cl)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)
NOV 02...	550	150	79	480	8	7.8	153	510	800	0.80	16		2230
FEB 08...	730	200	96	640	10	11	172	650	1000	0.80	15		2860
MAR 14...	730	190	98	670	10	10	154	720	1100	0.90	13		3040
JUN 07...	520	140	71	480	8	8.3	122	480	790	0.80	16		2240
JUL 18...	510	130	72	440	8	8.2	109	450	750	0.90	14		2130
AUG 16...	460	120	65	410	8	7.6	112	410	700	0.80	14		1800
DATE		SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHOROUS TOTAL (MG/L AS P)	PHOS-PHOROUS DIS-SOLVED (MG/L AS P)	PHOS-PHOROUS ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
NOV 02...	2140	--	<0.010	0.750	0.050	0.050	0.15	0.20	0.010	0.010	0.010		0.03
FEB 08...	2730	--	<0.010	0.920	0.070	0.040	0.43	0.50	<0.010	<0.010	<0.010		--
MAR 14...	2900	0.710	0.020	0.730	0.070	0.060	0.43	0.50	0.010	0.010	0.020		0.06
JUN 07...	2060	--	<0.010	0.370	0.040	0.050	0.36	0.40	0.010	<0.010	<0.010		--
JUL 18...	1930	--	<0.010	<0.100	0.060	0.040	1.0	1.1	0.010	<0.010	<0.010		--
AUG 16...	1800	--	<0.010	0.120	0.080	0.070	1.1	1.2	0.010	<0.010	<0.010		--

RIO GRANDE BASIN

403

08447410 PECOS RIVER NEAR LANGTRY, TX--Continued
(National stream-quality accounting network)

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
NOV 02...	14	7.9	84	<10	<1	<100	<10	<1	<1	<1	1	<10
FEB 08...	17	8.2	42	<10	1	<100	<10	1	1	<1	<1	30
MAR 14...	16	7.8	87	--	--	--	--	--	--	--	--	--
JUN 07...	28	9.3	67	<10	1	77	<1	<2	1	<6	1	36
JUL 18...	9	2.2	88	--	--	--	--	--	--	--	--	--
AUG 16...	12	3.5	97	<10	1	100	<10	<1	1	<1	1	20
DATE	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	
NOV 02...	<5	70	10	<0.1	6	2	<1	1.0	2900	13	<10	
FEB 08...	<5	100	<10	<0.1	6	1	<1	<1.0	3700	22	10	
MAR 14...	--	--	--	--	--	--	--	--	--	--	--	
JUN 07...	<1	77	2	0.1	<20	<1	<1	<1.0	2700	<12	11	
JUL 18...	--	--	--	--	--	--	--	--	--	--	--	
AUG 16...	<1	80	<10	<0.1	5	<1	<1	<1.0	2200	9	<10	

08449400 DEVILS RIVER AT PAFFORD CROSSING NEAR COMSTOCK, TX

LOCATION.--Lat 29°40'35", long 101°00'00", Val Verde County, Hydrologic Unit 13040302, on left bank 10 mi east of Comstock, and 25.5 mi upstream from mouth.

DRAINAGE AREA.--3,961 mi².

PERIOD OF RECORD.--Chemical and biochemical analyses: January 1967 to current year. Sediment analyses: January 1978 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: February 1978 to September 1985.

WATER TEMPERATURE: February 1978 to September 1985.

INSTRUMENTATION.--From August 1980 to September 1985, specific conductance and water temperature were continuously recorded at this station.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 763 microsiemens Oct. 18, 1984; minimum daily, 105 micromhos Oct. 20, 1983.

WATER TEMPERATURE: Maximum daily, 38.0°C May 6, 1984; minimum daily, 0.0 °C Feb. 1, 2, 1985.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

		DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI, KF AGAR (COLS. PER 100 ML)
NOV 01...	1450	381	392	8.30	23.0	0.50	10.2	123	0.1	K1	K1
FEB 07...	1420	305	430	8.40	10.0	2.7	11.9	108	1.1	<1	K1
JUN 06...	1115	263	380	7.80	28.0	0.40	10.2	136	1.1	21	25
AUG 15...	1200	229	370	8.20	26.0	920	9.8	125	0.8	25	28
DATE	HARD-NESS TOTAL (MG/L AS CaCO3)	HARD-NESS NONCARB WH WAT TOT FLD (MG/L AS CaCO3)	CALCIUM DIS-SOLVED (MG/L AS Ca)	MAGNE-SIUM, DIS-SOLVED (MG/L AS Mg)	SODIUM, DIS-SOLVED (MG/L AS Na)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT WH TOT FET FIELD (MG/L AS CaCO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS Cl)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)
NOV 01...	190	20	56	13	7.9	0.3	1.3	174	8.7	13	0.30
FEB 07...	210	22	62	14	8.6	0.3	1.5	191	9.5	13	0.30
JUN 06...	180	16	49	13	8.3	0.3	1.3	161	8.0	13	0.30
AUG 15...	180	16	49	14	8.8	0.3	1.3	165	9.0	14	0.30
DATE	SILICA, DIS-SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHOROUS TOTAL (MG/L AS P)
NOV 01...	15	214	227	1.49	0.010	1.50	0.010	<0.010	0.29	0.30	<0.010
FEB 07...	14	246	253	--	<0.010	1.90	0.040	0.010	0.26	0.30	0.020
JUN 06...	16	193	212	1.18	0.020	1.20	0.020	0.030	0.38	0.40	<0.010
AUG 15...	16	--	217	1.08	0.020	1.10	0.030	0.030	0.47	0.50	<0.010
DATE	PHOS-PHOROUS DIS-SOLVED (MG/L AS P)	PHOS-PHOROUS ORTHO, DIS-SOLVED (MG/L AS P)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)	SED. SIEVE DIAM. % FINER THAN .062 MM	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)
NOV 01...	<0.010	<0.010	8	8.2	89	<10	1	110	<0.5	4	<1
FEB 07...	0.010	<0.010	14	12	72	<10	1	120	<0.5	<1	<1
JUN 06...	<0.010	<0.010	9	6.4	78	<10	1	110	<0.5	1	<1
AUG 15...	<0.010	<0.010	5	3.1	85	<10	1	110	<0.5	<1	<1
DATE	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	LITHIUM DIS-SOLVED (UG/L AS LI)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)
NOV 01...	<3	1	5	<5	9	4	0.1	<10	2	<1	1.0
FEB 07...	<3	1	11	<5	12	2	<0.1	<10	2	1	<1.0
JUN 06...	<3	1	<3	1	9	1	<0.1	<10	<1	<1	<1.0
AUG 15...	<3	<1	7	1	9	<1	<0.1	<10	<1	<1	<1.0

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

[illegible]

RIO GRANDE MAIN STEM

08450900 RIO GRANDE BELOW AMISTAD DAM NEAR DEL RIO, TX

LOCATION.--Lat 29°25'30", long 101°27'00", Val Verde County, Hydrologic Unit 13080001, 2.2 mi downstream from Amistad Dam and 10 mi northwest of Del Rio.

DRAINAGE AREA.--123,143 mi².

PERIOD OF RECORD.--Chemical analyses: July 1968 to current year.

REMARKS.--The flow is controlled largely by releases from Amistad Reservoir. Records of daily mean discharge for water year 1989 are given in International Boundary and Water Commission Water Bulletins Nos. 58 and 59.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)
OCT								
21...	1100	1830	1380	7.70	22.0	290	78	24
NOV								
16...	0805	120	1360	8.00	18.0	290	77	23
DEC								
21...	0800	1540	1380	7.90	13.0	290	78	23
JAN								
31...	0800	2430	1330	7.90	9.0	290	77	23
FEB								
27...	0750	1650	1340	7.90	10.0	290	78	23
MAR								
16...	0800	1470	1340	7.90	12.0	290	79	22
APR								
21...	0700	8790	1340	7.80	24.0	300	81	23
MAY								
17...	0745	250	1350	7.90	--	290	80	22
JUN								
21...	0700	918	1350	7.70	19.0	290	81	22
JUL								
26...	0700	1650	1370	7.90	17.0	300	82	23
AUG								
23...	0700	967	1360	7.90	23.0	300	82	22
SEP								
20...	0700	1440	1360	8.10	22.0	300	84	23

DATE	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)
OCT								
21...	170	4	5.6	121	290	190	16	846
NOV								
16...	170	4	5.9	120	280	190	15	833
DEC								
21...	170	4	6.3	121	290	180	15	835
JAN								
31...	170	4	5.8	125	270	180	15	816
FEB								
27...	170	4	5.8	130	280	180	15	830
MAR								
16...	170	4	6.1	134	270	180	15	822
APR								
21...	160	4	6.0	130	270	180	15	813
MAY								
17...	160	4	5.9	138	270	180	15	816
JUN								
21...	160	4	6.0	140	270	180	15	818
JUL								
26...	170	4	6.2	141	270	180	16	832
AUG								
23...	170	4	6.4	136	270	170	15	817
SEP								
20...	170	4	6.0	138	270	170	16	822

RIO GRANDE MAIN STEM

407

08461300 RIO GRANDE BELOW FALCON DAM, TX

LOCATION.--Lat 26°33'25", long 99°10'05", Starr County, Hydrologic Unit 13090001, U.S. Tailrace at Falcon Dam.

DRAINAGE AREA.--159,270 mi², United States and Mexico; from International Boundary and Water Commission Water Bulletin No. 44.

PERIOD OF RECORD.--Chemical analyses: July 1955 to current year.

REMARKS.--Records of specific conductance and discharge for water year 1989 are given in International Boundary and Water Commission Water Bulletins Nos. 58 and 59.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	HARD-NESS TOTAL (MG/L AS CAC03)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	
OCT 17...	1300	2000	1230	7.60	26.0	270	71	23	
NOV 14...	1130	4000	1210	8.00	25.5	270	72	22	
DEC 22...	1100	900	1200	8.00	16.0	270	72	22	
JAN 20...	1100	8890	1170	7.70	15.5	270	73	22	
FEB 14...	1100	1600	1140	7.70	15.0	270	74	21	
MAR 14...	1115	3350	1140	7.70	16.5	270	75	21	
APR 19...	0900	6270	1160	7.60	20.0	280	77	22	
MAY 15...	0945	3400	1180	7.80	22.0	270	75	21	
JUN 23...	0945	2950	1230	7.70	26.5	280	74	23	
JUL 17...	1400	3330	1270	7.80	27.0	280	74	23	
AUG 16...	1120	3260	1290	7.60	27.0	280	74	24	
SEP 18...	0945	2000	1310	7.70	26.5	290	74	25	
DATE		SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT WH TOT FET FIELD MG/L AS CAC03	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	SILICA, DIS-SOLVED (MG/L AS SI02)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)
OCT 17...	140	4	5.4	112	260	160	14	741	
NOV 14...	140	4	5.5	115	250	160	14	732	
DEC 22...	140	4	5.8	118	250	150	14	725	
JAN 20...	140	4	5.5	121	240	150	13	716	
FEB 14...	130	3	5.3	125	230	150	13	698	
MAR 14...	130	3	5.3	123	240	150	12	707	
APR 19...	130	3	5.2	119	240	150	12	708	
MAY 15...	130	3	5.3	128	240	150	12	710	
JUN 23...	150	4	5.9	115	260	160	13	755	
JUL 17...	150	4	6.0	113	270	170	13	774	
AUG 16...	160	4	6.2	107	280	160	13	781	
SEP 18...	170	4	6.3	105	290	170	13	811	

RIO GRANDE MAIN STEM

08464700 RIO GRANDE AT FORT RINGGOLD, RIO GRANDE CITY, TX

LOCATION.--Lat 26°22'05", long 98°48'20", Starr County, Hydrologic Unit 13090001, at gaging station about 1 mi downstream from Rio Grande City, 3.9 mi downstream from mouth of Rio San Juan, and 1,014.3 mi downstream from the American Dam at El Paso.

DRAINAGE AREA.--174,362 mi², United States and Mexico; from International Boundary and Water Commission Water Bulletin No. 44.

PERIOD OF RECORD.--Chemical analyses: January 1959 to current year.

REMARKS.--Records of specific conductance and discharge for water year 1989 are given in International Boundary and Water Commission Water Bulletins Nos. 58 and 59.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CAC03)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)
OCT								
17...	1215	5890	1160	7.70	24.0	270	73	22
NOV								
15...	1115	4890	1180	7.90	25.0	270	74	21
DEC								
15...	1108	2490	1230	7.70	18.5	280	75	22
JAN								
24...	0930	8970	1180	7.50	18.0	280	75	22
FEB								
13...	1114	3380	1170	7.70	19.0	280	76	22
MAR								
15...	1055	3420	1170	7.80	19.0	280	76	21
APR								
19...	1040	5670	1170	7.60	23.0	280	77	21
MAY								
15...	0900	10400	1180	7.80	26.0	280	75	22
JUN								
15...	0930	4860	1300	7.80	28.5	290	75	24
JUL								
14...	0930	2620	1310	7.90	28.5	290	75	24
AUG								
16...	0930	3560	1310	7.80	28.5	290	75	24
SEP								
18...	0800	2070	1360	7.70	30.0	300	78	25

DATE	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CAC03	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)
OCT								
17...	130	3	5.0	116	240	150	13	703
NOV								
15...	140	4	6.0	115	230	150	13	703
DEC								
15...	140	4	5.9	128	250	160	13	743
JAN								
24...	140	4	5.6	120	240	160	13	728
FEB								
13...	130	3	5.3	126	240	150	13	712
MAR								
15...	130	3	5.3	126	240	150	11	709
APR								
19...	130	3	5.5	123	240	150	12	709
MAY								
15...	130	3	5.4	135	250	140	12	715
JUN								
15...	160	4	5.8	116	280	170	13	797
JUL								
14...	160	4	6.1	112	280	180	10	802
AUG								
16...	160	4	6.5	108	280	160	13	783
SEP								
18...	170	4	6.4	110	300	180	13	838

RIO GRANDE MAIN STEM

409

08466300 RIO GRANDE NEAR LOS EBANOS, TX

LOCATION.--Lat 26°14'15", long 98°33'49", Hidalgo County, Hydrologic Unit 13090001, on Farm Road 886 at U.S. Border Port of Entry near Los Ebanos and at mile 204.37.

PERIOD OF RECORD.--Chemical analyses: June 1977 to current year.

REMARKS.--Records of specific conductance and discharge for water year 1989 are given in International Boundary and Water Commission Water Bulletins Nos. 58 and 59.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	
OCT 19...	1130	6110	1150	7.60	26.0	290	79	22	
NOV 15...	1404	4820	1200	7.90	27.0	280	77	22	
DEC 15...	1210	2800	1340	7.80	18.0	300	81	24	
JAN 24...	1047	8910	1190	7.70	18.5	280	75	22	
FEB 13...	1352	3650	1270	7.70	19.0	300	81	23	
MAR 17...	1215	3580	1240	7.90	22.0	290	80	22	
APR 19...	1215	5750	1220	7.70	24.0	300	81	23	
MAY 15...	1250	9640	1210	7.70	26.0	280	77	22	
JUN 16...	1300	5920	1330	7.60	29.5	290	77	24	
JUL 14...	1245	1620	1420	7.90	29.5	320	84	26	
AUG 16...	1215	2680	1360	7.90	29.5	300	78	25	
SEP 18...	1200	1390	1310	7.70	30.0	300	82	23	
DATE		SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)
OCT 19...	130	3	5.0	118	240	150	13	710	
NOV 15...	140	4	5.4	120	240	150	13	719	
DEC 15...	150	4	6.0	133	270	180	14	805	
JAN 24...	140	4	5.5	125	240	160	14	731	
FEB 13...	150	4	5.5	135	260	170	14	784	
MAR 17...	150	4	5.6	136	260	160	11	770	
APR 19...	140	4	5.4	126	250	160	13	748	
MAY 15...	140	4	5.9	130	250	150	13	736	
JUN 16...	160	4	5.8	123	280	170	13	804	
JUL 14...	170	4	6.2	125	300	190	12	863	
AUG 16...	170	4	6.2	110	300	170	14	829	
SEP 18...	160	4	6.7	118	270	170	13	795	

RIO GRANDE MAIN STEM

08469200 RIO GRANDE BELOW ANZALDUAS DAM, TX

LOCATION.--Lat 26°08'00", long 98°20'05", Hidalgo County, Hydrologic Unit 13090002, at gaging station 0.5 mi downstream from Anzalduas Dam, 12.2 mi from Hidalgo, and 1,077.1 mi downstream from the American Dam at El Paso.

DRAINAGE AREA.--176,112 mi², United States and Mexico; from International Boundary and Water Commission Water Bulletin No. 44.

PERIOD OF RECORD.--Chemical analyses: March 1959 to current year. Pesticide analyses: October 1967 to July 1972.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1977 to current year.

REMARKS.--Records of specific conductance and discharge for water year 1989 are given in International Boundary and Water Commission Water Bulletins Nos. 58 and 59. Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations for this station may be obtained from the Geological Survey District office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 3,310 microsiemens Feb. 12, 1984; minimum daily, 368 microsiemens Sept. 6, 1987.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,790 microsiemens July 4, Aug. 4; minimum daily, 687 microsiemens Oct. 3.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CAC03)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	
OCT									
19...	0850	4340	1230	7.70	26.0	300	83	22	
NOV									
14...	0930	4670	1210	8.00	27.0	280	78	21	
DEC									
21...	0900	1390	1410	8.00	19.0	330	91	25	
JAN									
25...	0900	1820	1260	7.80	19.0	300	82	24	
FEB									
15...	0900	890	1360	7.70	21.0	310	86	24	
MAR									
13...	0840	2280	1410	7.80	19.0	320	87	25	
APR									
19...	0910	25	1320	7.70	24.0	310	85	24	
MAY									
17...	0905	2620	1280	7.70	27.0	290	79	23	
JUN									
21...	0745	2500	1420	7.70	30.0	310	83	26	
JUL									
17...	0845	2180	1480	7.90	29.0	320	85	27	
AUG									
18...	0745	1050	1400	7.90	29.0	300	80	25	
SEP									
18...	0900	1210	1090	7.60	22.0	240	65	18	
DATE		SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CAC03	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	SILICA, DIS- SOLVED (MG/L AS SI02)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)
OCT									
19...	140	4	5.1	120	260	160	13	755	
NOV									
14...	140	4	5.0	125	240	160	13	732	
DEC									
21...	160	4	5.8	141	280	190	13	849	
JAN									
25...	160	4	6.2	125	260	170	15	792	
FEB									
15...	160	4	5.5	138	270	180	14	822	
MAR									
13...	170	4	5.7	139	290	190	12	863	
APR									
19...	160	4	5.4	130	270	180	13	815	
MAY									
17...	150	4	5.5	128	260	160	13	767	
JUN									
21...	170	4	6.0	125	300	190	14	864	
JUL									
17...	180	4	6.4	125	310	200	12	895	
AUG									
18...	170	4	6.3	113	300	180	14	843	
SEP									
18...	140	4	6.3	97	220	140	11	658	

RIO GRANDE MAIN STEM

411

08469200 RIO GRANDE BELOW ANZALDUAS DAM, TX--Continued

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1988 TO SEPTEMBER 1989

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	DIS- SOLVED SOLIDS (MG/L)	DIS- SOLVED SOLIDS (TONS)	DIS- SOLVED CHLORIDE (MG/L)	DIS- SOLVED CHLORIDE (TONS)	DIS- SOLVED SULFATE (MG/L)	DIS- SOLVED SULFATE (TONS)	HARDNESS (CA, MG) (MG/L)
OCT. 1988	149979	1060	647	262000	130	53000	230	93900	250
NOV. 1988	150080	1230	752	305000	160	64200	270	107600	290
DEC. 1988	40433	1350	828	90400	180	19600	290	31500	310
JAN. 1989	65540	1240	763	135000	160	28500	270	47600	290
FEB. 1989	30714	1310	807	66900	170	14400	280	23400	310
MAR. 1989	59170	1310	807	129000	170	27700	280	45100	310
APR. 1989	62690	1240	762	129000	160	27200	270	45500	290
MAY 1989	80175	1260	775	168000	160	35600	270	59000	300
JUNE 1989	93750	1320	812	205000	180	44300	280	71900	310
JULY 1989	50516	1440	887	121000	200	27000	310	41800	330
AUG. 1989	36122	1400	863	84200	190	18600	300	29200	330
SEPT 1989	46786	1380	847	107000	190	23500	290	37200	320
TOTAL	865955	**	**	1802000	**	384000	**	634000	**
WTD.AVG.	2372	1260	771	**	160	**	270	**	290

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
EQUIVALENT MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1040	1320	1330	1350	1220	1350	1300	1320	1240	1600	1600	1410
2	989	1320	1340	1320	1220	1410	1300	1230	1240	1610	1610	1460
3	687	1150	1340	1250	1240	1430	1280	1180	1240	1710	1710	1480
4	741	1150	1350	1220	1230	1390	1310	1310	1260	1790	1790	1460
5	778	1160	1360	1200	1230	1340	1270	1360	1280	1680	1680	1420
6	813	1160	1370	1230	1270	1300	1220	1360	1260	1550	1550	1430
7	983	1160	1460	1270	1320	1310	1220	1350	1290	1470	1470	1420
8	1050	1160	1480	1250	1280	1350	1230	1400	1290	1430	1430	1400
9	1070	1170	1460	1250	1290	1370	1230	1440	1280	1400	1400	1370
10	1090	1150	1460	1250	1370	1350	1230	1410	1290	1330	1330	1410
11	1130	1160	1480	1240	1420	1310	1240	1400	1290	1290	1290	1480
12	1140	1770	1410	1240	1560	1330	1230	1320	1300	1290	1290	1440
13	1170	1170	1280	1240	1490	1350	1230	1320	1300	1430	1430	1380
14	1170	1180	1230	1230	1450	1330	1200	1280	1320	1300	1300	1360
15	1170	1200	1290	1220	1340	1300	1240	1260	1350	1300	1300	1430
16	1180	1470	1300	1210	1310	1300	1290	1270	1330	1340	1340	1390
17	1180	1220	1310	1210	1310	1270	1290	1250	1360	1360	1360	1360
18	1190	1200	1320	1210	1290	1270	1410	1250	1420	1340	1340	1180
19	1200	1200	1330	1220	1270	1250	1330	1250	1370	1410	1410	830
20	1220	1210	1340	1250	1240	1290	1330	1240	1390	1400	1400	1230
21	1230	1210	1330	1360	1230	1320	1250	1240	1350	1400	1400	1470
22	1230	1220	1340	1250	1240	1310	1250	1240	1360	1440	1440	1360
23	1220	1210	1340	1240	1230	1290	1220	1270	1390	1470	1470	1320
24	1260	1220	1340	1270	1280	1270	1210	1240	1410	1510	1510	1360
25	1290	1230	1340	1230	1340	1270	1210	1230	1430	1550	1550	1370
26	1350	1250	1350	1230	1390	1260	1210	1240	1460	1490	1490	1380
27	1360	1330	1350	1230	1470	1320	1210	1240	1550	1450	1450	1360
28	1380	1340	1340	1230	1410	1340	1210	1220	1490	1450	1450	1340
29	1350	1330	1340	1220	---	1210	1230	1220	1550	1320	1320	1340
30	1360	1380	1370	1230	---	1190	1160	1240	1550	1210	1210	1400
31	1390	---	1360	1230	---	1230	---	1250	---	1330	1330	---
MEAN	1140	1250	1360	1240	1320	1310	1250	1280	1350	1440	1440	1370

RIO GRANDE BASIN

08470400 ARROYO COLORADO AT HARLINGEN, TX

LOCATION.--Lat 26°10'24", long 97°42'01", Cameron County, Hydrologic Unit 13090002, on downstream side of northbound service road on U.S. Highways 83 & 77, about 18 mi from point of main floodway that divides into North Floodway and Arroyo Colorado.

PERIOD OF RECORD.--Chemical and biochemical analyses: November 1986 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI, KF AGAR (COLS. PER 100 ML)	HARD-NESS TOTAL (MG/L AS CaCO3)
OCT 25...	1148	248	4000	7.80	25.5	93	7.3	90	5.5	210	--	880
DEC 13...	1220	171	4720	7.90	14.0	95	10.0	97	2.5	310	140	1000
FEB 22...	1130	205	4350	8.00	18.5	88	8.2	87	7.0	300	88	930
APR 26...	1200	258	4530	8.00	26.0	130	6.8	85	4.4	420	220	1000
JUN 28...	1115	232	3740	8.10	31.0	--	10.0	138	3.9	370	210	750
AUG 21...	1255	188	4160	8.00	30.5	110	7.6	103	4.1	500	480	860
DATE	HARD-NESS NONCARB WH WAT TOT FLD MG/L AS CaCO3	CALCIUM DIS-SOLVED (MG/L AS Ca)	MAGNE-SIUM, DIS-SOLVED (MG/L AS Mg)	SODIUM, DIS-SOLVED (MG/L AS Na)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT WH TOT FET MG/L AS CaCO3	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS Cl)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)
OCT 25...	680	220	81	560	8	9.7	200	810	840	0.70	25	2800
DEC 13...	790	250	100	670	9	10	244	890	940	0.80	29	3130
FEB 22...	690	220	90	590	9	10	235	780	840	0.90	24	2730
APR 26...	790	250	97	680	10	10	239	880	950	0.80	27	3120
JUN 28...	540	170	77	550	9	9.8	203	750	740	0.80	25	2620
AUG 21...	660	210	80	560	9	12	201	780	810	0.90	25	2710
DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHOROUS TOTAL (MG/L AS P)	PHOS-PHOROUS DIS-SOLVED (MG/L AS P)	PHOS-PHOROUS ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS P04)
OCT 25...	2680	3.08	0.120	3.20	0.090	0.070	0.71	0.80	0.270	0.240	0.210	0.64
DEC 13...	3060	4.92	0.180	5.10	0.230	0.030	1.2	1.4	0.510	0.440	0.040	0.12
FEB 22...	2720	3.29	0.210	3.50	0.110	0.080	1.9	2.0	0.400	0.400	0.350	1.1
APR 26...	3060	3.47	0.130	3.60	0.080	0.070	1.7	1.8	0.730	0.430	0.390	1.2
JUN 28...	2460	2.53	0.070	2.60	0.110	0.150	0.79	0.90	0.420	0.350	0.330	1.0
AUG 21...	2610	1.95	0.050	2.00	0.010	0.040	1.1	1.1	0.520	0.460	0.440	1.3
DATE	SEDI-MENT, DIS-SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)	SED. SUSP. STIEVE DIAM. % FINER THAN .062 MM	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)
OCT 25...	157	144	99	--	--	--	--	--	--	--	--	--
DEC 13...	124	90	88	--	--	--	--	--	--	--	--	--
FEB 22...	140	118	99	20	5	100	<10	<1	<1	<1	<1	20
APR 26...	214	188	98	--	--	--	--	--	--	--	--	--
JUN 28...	231	667	94	40	9	200	<10	<1	1	<1	2	20
AUG 21...	209	155	97	10	6	100	<10	<1	2	<1	3	30

RIO GRANDE BASIN

413

08470400 ARROYO COLORADO AT HARLINGEN, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 25...	--	--	--	--	--	--	--	--	--	--	--
DEC 13...	--	--	--	--	--	--	--	--	--	--	--
FEB 22...	<5	140	20	<0.1	18	1	1	<1.0	4700	27	10
APR 26...	--	--	--	--	--	--	--	--	--	--	--
JUN 28...	<1	140	<10	0.3	15	<1	1	<1.0	4000	25	10
AUG 21...	<1	120	10	1.0	17	2	1	<1.0	3800	22	20

RIO GRANDE MAIN STEM

08475000 RIO GRANDE NEAR BROWNSVILLE, TX
(National stream-quality accounting network)

LOCATION.--Lat 25°52'35", long 97°27'15", Cameron County, Hydrologic Unit 13090002, at International Boundary and Water Commission gaging station, 1,000 ft downstream from El Jardin pumping plant, 6.8 mi below International Bridge between Brownsville and Matamoros, Tamps., Mex., and 48.8 mi above the Gulf of Mexico.

DRAINAGE AREA.--176,333 mi².

PERIOD OF RECORD.--Chemical analyses: January 1932, March 1943 to February 1944, February 1966 to September 1974.
Chemical and biochemical analyses: October 1974 to current year. Pesticide analyses: May 1975 to May 1982.
Sediment analyses: February 1966 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: March 1943 to February 1944, April 1967 to September 1983.

WATER TEMPERATURE: October 1966 to September 1983.

SUSPENDED-SEDIMENT DISCHARGE: February 1966 to September 1983.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 4,130 microsiemens May 29, 1972; minimum daily, 337 microsiemens Sept. 3, 1967.

WATER TEMPERATURE (1966-69, 1970-75, 1977-83): Maximum daily, 35.0°C on several days during summer months of 1982 and 1983; minimum daily, 8.0°C Jan. 10, 1967.

SEDIMENT CONCENTRATION: Maximum daily mean, 6,000 mg/L Feb. 28, 1983; minimum daily mean, 4 mg/L Apr. 26, 1970, Aug. 16, 18, 24, 27, 1977.

SEDIMENT LOAD: Maximum daily, 181,000 tons Feb. 28, 1983; minimum daily, 0.12 tons Aug. 26, 1983.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS TOTAL (MG/L AS CAC03)	
OCT 25...	1430	1860	1240	7.80	26.0	200	7.2	89	2.5	--	--	300	
DEC 13...	1515	641	1430	8.30	16.0	59	11.2	112	2.8	350	K75	390	
FEB 22...	1430	127	1620	8.30	20.5	24	10.8	118	4.4	290	K40	400	
APR 26...	0810	116	1330	8.10	26.0	26	7.4	91	2.4	140	190	320	
JUN 29...	0750	298	1420	8.20	30.5	21	7.4	100	2.6	K1300	370	320	
AUG 21...	1040	196	1400	8.20	30.0	25	7.0	93	2.8	560	270	310	
DATE		HARD-NESS NONCARB WH WAT TOT FLD MG/L AS CAC03	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT WH TOT FET FIELD MG/L AS CAC03	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, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)
OCT 25...	190	82	23	140	4	5.5	115	250	160	0.50	13		771
DEC 13...	200	110	28	160	4	6.0	186	290	190	0.60	16		915
FEB 22...	220	110	31	170	4	6.1	184	320	220	0.70	18		1030
APR 26...	180	86	26	150	4	6.2	141	270	180	0.60	14		853
JUN 29...	190	83	27	180	5	5.7	130	300	200	0.70	14		919
AUG 21...	190	83	25	160	4	6.4	118	290	190	0.70	14		869
DATE		SOLIDS, SUM OF CONSTITUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHOROUS TOTAL (MG/L AS P)	PHOS-PHOROUS DIS-SOLVED (MG/L AS P)	PHOS-PHOROUS ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS P04)
OCT 25...	747	--	<0.010	0.490	0.020	0.040	0.38	0.40	0.030	0.030	0.020		0.06
DEC 13...	914	0.280	0.010	0.290	0.040	0.050	0.66	0.70	0.080	0.020	0.020		0.06
FEB 22...	986	0.130	0.020	0.150	0.050	0.020	0.85	0.90	0.020	0.020	0.020		0.06
APR 26...	817	--	<0.010	<0.100	0.030	0.040	0.87	0.90	0.080	<0.010	0.010		0.03
JUN 29...	890	--	<0.010	<0.100	0.020	0.020	0.38	0.40	0.030	<0.010	<0.010		--
AUG 21...	842	--	<0.010	<0.100	0.010	0.020	0.69	0.70	0.050	0.020	0.020		0.06

RIO GRANDE MAIN STEM

415

08475000 RIO GRANDE NEAR BROWNSVILLE, TX--Continued
(National stream-quality accounting network)

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 25...	414	2690	100	<10	3	140	<0.5	2	<1	<3	<1	9
DEC 13...	79	171	94	--	--	--	--	--	--	--	--	--
FEB 22...	60	21	89	20	3	140	<0.5	<1	<1	<3	1	4
APR 26...	33	2.2	96	--	--	--	--	--	--	--	--	--
JUN 29...	45	32	88	90	4	120	<0.5	1	1	<3	2	52
AUG 21...	41	6.3	98	<10	4	100	<0.5	<1	1	<3	<1	6
DATE	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	
OCT 25...	<5	44	3	<0.1	<10	2	<1	<1.0	1400	7	5	
DEC 13...	--	--	--	--	--	--	--	--	--	--	--	
FEB 22...	<5	59	2	<0.1	<10	2	<1	1.0	1900	<6	6	
APR 26...	--	--	--	--	--	--	--	--	--	--	--	
JUN 29...	<1	57	8	0.2	<10	<1	<1	<1.0	1600	<6	22	
AUG 21...	<1	58	2	0.2	<10	1	<1	<1.0	1600	<6	11	

Because the number of streams on which streamflow information is likely to be desired far exceeds the number of stream-gaging stations feasible to operate at one time, the Geological Survey collects limited streamflow data at sites other than continuous stream-gaging stations. When limited streamflow data are collected on a systematic basis over a period of years for use in hydrologic analyses, the site at which the data are collected is called a partial-record station. In addition, discharge measurements are made at other sites not included in the partial-record program. These measurements are generally made in times of drought or flood to give better areal coverage of those events. The data collected for special reasons are called measurements at miscellaneous sites.

Streamflow data collected at partial-record stations where water-quality data other than observations of water temperature are not obtained are presented in two tables. The first is a table of discharge measurements at low-flow partial-record stations; the second is a table of annual maximum stage and (or) discharge at crest-stage stations. Discharge measurements made at miscellaneous sites for both low and high flows are given in a third table. Discharge measurements and water-quality data collected at partial-record stations are presented in downstream order in the section of this report entitled "Gaging-station records."

Low-flow partial-record stations

Measurements of streamflow at low-flow partial-record stations that are not published in the gaging-station section are given in the following table. Most of the measurements of low flow were made during periods when streamflow was sustained primarily by ground-water discharge. These measurements, when correlated with the simultaneous discharge of a nearby stream where continuous records are available, will indicate the low-flow potential of the stream. The years listed in the column headed "Period of record" identifies the water years in which measurements were made at the same or at practically the same site.

Discharge measurements made at low-flow partial-record station during water year 1989						
Station no.	Station name	Location	Drainage area (mi ²)	Period of record	Measurements	
					Date	Discharge (ft ³ /s)
Colorado River basin						
08129500	Dove Creek Spring near Knickerbocker, Tex.	Lat 31°11'06", long 100°43'51", Irion County, at headquarters ranchhouse, 500 ft upstream from Dove Creek, 1.8 mi upstream from Stilson Dam on Dove Creek, and 8.5 mi southwest of Knickerbocker.	(a)	1944-58†, 1959-89	10-11-88 11-28-88 2- 2-89 3- 9-89 4-25-89 6-20-89 8-15-89	24.6 15.1 14.4 14.0 13.4 11.8 14.0
08143900	Springs at Fort McKavett, Tex.	Lat 30°50'03", long 100°05'37", Menard County, at Fort McKavett.	(a)	1902, 1905, 1922, 1942, 1948-49, 1951-52, 1955-56, 1958-89	1-20-89 8- 9-89	21.5 16.9
08146500	San Saba Springs, at San Saba, Tex.	Lat 31°11'44", long 98°42'42", San Saba County, 150 ft upstream from bridge on U.S. Highway 190 at San Saba and 0.8 mi east of courthouse.	(a)	1939, 1952, 1957, 1959-89	1-30-89 8- 9-89	8.22 6.46
08149400	South Llano River near Telegraph, Tex.	Lat 30°15'43", long 99°56'01", Edwards County, 3.7 mi upstream from Paint Creek, 5.7 mi south of Telegraph, and 18.7 mi southwest of Junction.	(a)	1939, 1952, 1956, 1959-89	1-19-89 8- 9-89	26.2 21.5
08149500	Seven Hundred Springs near Telegraph, Tex.	Lat 30°16'12", long 99°55'22", Edwards County, about 3 mi upstream from Paint Creek, about 5 mi south of Telegraph, and about 18 mi southwest of Junction.	(a)	1939, 1952, 1955-56, 1959-89	1-19-89 8- 9-89	20.6 18.0
08155400	Barton Creek above Barton Springs at Austin, Tex.	Lat 30°15'48", long 97°46'19", Travis County, just upstream from upper dam of Barton Creek swimming pool in Zilker Park and upstream from all springs known as Barton Springs at Austin.	125	1919-89	10-11-88 11-28-88 1-18-89 3- 8-89 4-24-89 6-19-89 8- 7-89 9-18-89	0 0 0 0 0 3.04 0 0
Guadalupe River basin						
08168000	Hueco Springs near New Braunfels, Tex.	Lat 29°45'33", long 98°08'23", Comal County, two springs located 400 and 500 ft west of the Guadalupe River, 600 ft downstream from the mouth of Elm Creek, and 4.2 mi north of New Braunfels.	(a)	1944-89	10- 7-88 12- 7-88 2- 8-89 4- 7-89 6-16-89 8-23-89	8.78 6.39 7.76 6.58 5.41 .62
08168600	Blieiders Creek at New Braunfels, Tex.	Lat 29°43'14", long 98°07'23", Comal County, at Grove Avenue crossing in northwest New Braunfels and 0.25 mi upstream from mouth.	-	1962-89	2- 8-89 6-16-89	0 0
08168700	Panther Canyon at New Braunfels, Tex.	Lat 29°42'47", long 98°08'14", Comal County, at Landa Park Drive crossing in Landa Park at New Braunfels.	-	1962-89	2- 8-89 6-16-89	0 0
08168800	Dry Comal Creek at New Braunfels, Tex.	Lat 29°41'52", long 98°08'11", Comal County, at Floral Avenue crossing in New Braunfels, 0.6 mi upstream from Missouri Pacific Railroad Co. bridge, and 0.9 mi upstream from mouth.	-	1962-89	2- 8-89 6-16-89 8-23-89	.76 .56 .05

† Operated as a continuous-record station.

a Not applicable.

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at low-flow partial-record stations during water year 1989--Continued						
Station no.	Station name	Location	Drainage area (mi ²)	Period of record	Measurements	
					Date	Discharge (ft ³ /s)
Nueces River basin						
08204000	Leona River spring flow near Uvalde, Tex.	Lat 29°09'15", long 99°44'35", Uvalde County, at old road crossing on White's Ranch, 2.0 mi downstream from Cooks Slough, and 4.7 mi south- east of Uvalde.	(a)	1935-65†, 1966-89	10-28-88	36.4
					1-23-89	40.2
					3-10-89	34.8
					5- 4-89	23.9
					6-29-89	4.41
					8-22-89	5.09
Rio Grande Basin						
08456300	Las Moras Springs at Brackettville, Tex. b/	Lat 29°18'33", long 100°25'13", Kinney County, in springflow pool at Brackettville, 160 ft south of U.S. Highway 90, and 1,550 ft upstream from bridge on Brackettville-Fort Clark Road.	(a)	1896, 1899- 1900, 1902, 1904-06, 1910, 1912, 1925, 1928, 1951-89	10-11-88	16.3
					11- 8-88	10.3
					12-13-88	12.0
					1-10-89	10.6
					2-14-89	12.8
					3-14-89	14.5
					4-11-89	12.8
					5-11-89	6.08
					6-15-89	14.8
					7-12-89	13.6
					8- 8-89	4.56
					9-12-89	5.67

† Operated as a continuous-record station.

a Not applicable.

b Records were furnished by the International Boundary and Water Commission.

Crest-stage partial-record stations

The following table contains annual maximum stage and (or) discharge at partial-record stations operated primarily for the purpose of defining the flooding characteristics of the streams. At stations where discharge is given, or is footnoted "to be determined", a stage-discharge relation has been, or will be, defined by discharge measurements obtained by current meter or by indirect procedures. Water-stage recorders are located at these flood-hydrograph stations to facilitate complete hydrograph definition. At stations where only the maximum stage is given (discharge column is dashed), data are generally collected for use in stage-frequency studies of flood-profile definition. Gages at these stations usually consist of a device that will register the peak stage occurring between inspections of the gage. The years used in the column "Period of record" identify the years in which the annual maximum has been determined.

Annual maximum stage and (or) discharge during water year 1989							
Station no.	Station name	Location	Drainage area (mi ²)	Period of record	Annual Date	Annual maximum Gage height (feet)	Discharge (ft ³ /s)
Colorado River basin							
08133500	North Concho River at Sterling City, Tex.	Lat 31°49'48", long 100°59'36", Sterling County, on right bank 100 ft upstream from bridge on State Highway 163, 0.5 mi south of Sterling City, 4.0 mi upstream from Sterling Creek, 5.1 mi downstream from Lacy Creek, and at mile 57.2.	588	1939-89	6-11-89	8.10	291
08142000	Hords Creek at Coleman, Tex.	Lat 31°50'50", long 99°25'25", Coleman County, on right bank in city park, 1,250 ft downstream from bridge on U.S. Highways 84 and 283 and State Highway 206, 1 mi north of courthouse in Coleman, 3.9 mi downstream from Bachelor Creek, 12 mi downstream from Hords Creek Dam, and at mile 14.3.	107	1941-70† 1971-89	5-17-89	5.17	1,250
08158050	Boggy Creek at U.S. Highway 183, Austin, Tex.	Lat 30°15'47", long 97°40'20", Travis County, on U.S. Highway 183, 1.6 mi south of intersection at Webberville Road and U.S. Highway, 183, 4.1 mi east of State Capitol Building in Austin, and 0.7 mi upstream from mouth.	13.1	1975-86† 1987-89	5-17-89	14.79	4,370
Guadalupe River basin							
08169500	Guadalupe River at New Braunfels, Tex.	Lat 29°41'52", long 98°06'23", Comal County, Comal Mills in New Braunfels and 0.4 mi upstream from Interstate Highway 35.	1,652	1898-1902, 1915-27† 1974-89	4-19-89	10.41	1,250
08173900	Guadalupe River at Gonzales, Tex.	Lat 29°29'49", long 97°27'17", Gonzales County, at Gonzales Hydro Station in Gonzales and 1.4 mi upstream from U.S. Highway 183.	-	1977-89	5-11-89	19.41	-
08177900	San Antonio River at Navarro Street, San Antonio, Tex.	Lat 29°25'50", long 98°29'24", Bexar County, at bridge on Navarro Street in San Antonio.	-	1973-89	6-14-89	*636.09	-
08177920	San Antonio River at Dolorosa Street, San Antonio, Tex.	Lat 29°25'24", long 98°29'32", Bexar County, just downstream from Dolorosa Street in San Antonio.	-	1980-89	6-11-89	22.29	-
08178100	San Pedro Creek at Santa Rosa Street, San Antonio, Tex.	Lat 29°25'51", long 98°29'49", Bexar County, at bridge on Santa Rosa Street in San Antonio.	-	1973-89	6-14-89	*643.59	-
08178350	Martinez Creek at Fredericksburg Road, San Antonio, Tex.	Lat 29°27'22", long 98°31'04", Bexar County, at bridge on Fredericksburg Road in San Antonio.	-	1973-89	4-19-89	*680.44	-
08178400	Alazan Creek at West Martin Street, San Antonio, Tex.	Lat 29°25'51", long 98°30'51", Bexar County, at bridge on West Martin Street in San Antonio.	-	1973-89	6-14-89	*637.61	-
08178450	Apache Creek at South Zarzamora Street, San Antonio, Tex.	Lat 29°24'47", long 98°31'42", Bexar County, at bridge on South Zarzamora Street in San Antonio.	-	1973-89	1-29-89	*627.85	-
08178500	San Pedro Creek at Furnish Street, San Antonio, Tex.	Lat 29°24'22", long 98°30'38", Bexar County, at bridge on Furnish Street in San Antonio.	-	1973-89	6-14-89	*606.04	-
08178550	San Antonio River at Ashley Street (Berg's Mill), San Antonio, Tex.	Lat 29°20'04", long 98°27'20", Bexar County, at bridge on Ashley Street in San Antonio.	-	1973-89	6-14-89	*516.20	-
Nueces River basin							
08207220	Rutledge Hollow at 7th Street, Poteet, Tex.	Lat 29°02'07", long 98°34'18", Atascosa County, in city of Poteet at 7th Street and 2.0 mi above Atascosa River.	9.74	1979-89	4-30-89	*419.06	-
08207300	Atascosa River at U.S. Highway 281, Pleasanton, Tex.	Lat 28°57'44", long 98°28'51", Atascosa County, at bridge on U.S. Highway 281 in Pleasanton.	-	1973-89	2- 4-89	*339.17	-

* Elevation, in feet.

† Operated as a continuous-record station.

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Annual maximum stage and (or) discharge during water year 1989--Continued							
Station no.	Station name	Location	Drainage area (mi ²)	Period of record	Annual maximum		
					Date	Gage height (feet)	Dis-charge (ft ³ /s)
Nueces River basin--Continued							
08211500	Nueces River at Calallen, Tex.	Lat 27°52'34", long 97°37'32", Nueces County, at the Cunningham pumping station in Corpus Christi, and 0.4 mi upstream from Calallen dam.	16,920	1915-50, 1983-89	10- 1-88	g5.34	305
San Fernando Creek basin							
08212300	Tranquitas Creek at Kingsville, Tex.	Lat 27°31'33", long 97°52'02", Kleberg County, at bridge on U.S. Highway 77 Business Route in Kingsville, 4.9 mi above San Fernando Creek, and 5.9 mi downstream from Tranquitas Dam.	48.5	1965-82, 1984-89	8-17-89	2.49	-

f Gage heights only during 1918-50.

g Was not independent of the same peak stage that occurred Sept. 30, 1988; maximum independent peak discharge, 251 ft³/s Dec. 9, gage height, 5.26 ft.

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

421

Measurements of streamflow at points other than gaging stations or partial-record stations are given in the following table:

Discharge measurements made at miscellaneous sites during water year 1989						
Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurement Date	Dis-charge (ft ³ /s)
Colorado River basin						
Clear Creek near Menard	San Saba River	Lat 30°54'13", long 99°55'27", Menard County, at bridge on U.S. Highway 190, about 9 mi west of Menard.	-	1984-89	01-24-84 01-25-85 07-11-85 02-21-86 08-15-86 02-12-87 09-11-87 01-20-89 08-09-89	15.3 16.4 6.20 12.0 14.0 20.1 21.7 17.2 11.7
Tanner Spring near Telegraph	South Llano River	Lat 30°15'45", long 99°56'03", Edwards County, about 5.6 mi south of Telegraph, Kimble County, and 18.6 mi southwest of Junction, at mouth.	-	1939, 1962, 1989	02-12-87 09-16-87 01-19-89 08-09-89	15.6 16.1 10.7 10.0
Garwood Irr. Co. Canal near Garwood	Colorado River	Lat 29°30'55", long 96°24'33", Colorado County, on right bank of Colorado River, 1.8 mi east of State Highway 71, 5.7 mi downstream from U.S. Highway 90A crossing, and 4.7 mi north of Garwood.	-		09-13-89 09-14-89 09-15-89	432 424 320 307 310 318 313 315 373 369 393 400 424
Guadalupe River basin						
San Antonio Springs	San Antonio River	Lat 29°27'56", long 98°28'04", Bexar County, just below Hildebrandt Street in San Antonio, Tex.	-	1951-52, 1959-62, 1972, 1974-77, 1979-89	3- 1-89 8-23-89	0 0
San Pedro Springs	San Pedro Creek	Lat 29°26'42", long 98°30'06", Bexar County, at San Pedro Park in San Antonio, Tex.	-	1933-35, 1951-52, 1958-61, 1966, 1971, 1974-77, 1979-89	10-12-88 8-23-89	1.80 0
Nueces River basin						
Nueces River	Gulf of Mexico	Lat 27°56'15", long 97°46'32", Nueces County, at Bluntzer bridge on Farm Road 666, 1.2 mi south of San Patricio, 5.5 mi upstream from Cayamon Creek, and 10.3 mi northwest of Calallen.	a16,772	1966, 67 [†] 1989	8-29-89	183
Rio Grande basin						
Mud Springs 1/	Mud Creek	Lat 29°27'10", long 100°37'30", Kinney County, on Mays Ranch and about 16 mi northwest of Brackettville, Tex.	-	1939-41, 1952-53, 1962, 1965-87	10-11-88 11- 8-88 12-13-88 1-10-89 2-14-89 3-14-89 4-11-89 5-10-89 6-15-89 7-12-89 8- 8-89 9-13-89	21.3 18.2 17.6 15.7 13.3 14.0 12.1 16.7 6.60 6.34 5.91 6.42
Pinto Springs 1/	Pinto Creek	Lat 29°24'10", long 100°27'15", Kinney County, on C.C. Belcher Ranch and 7.5 mi northwest of Brackettville, Tex.	-	1939-41, 1952-53, 1965-87	10-11-88 11- 8-88 12-13-88 1-10-89 4-11-89 5-10-89 6-15-89 7-12-89 8- 8-89 9-13-89	0 0 0 0 0 0 0 0 0 0

[†] Operated as a continuous-record station.

1/ Measurements by International Boundary and Water Commission.

a Of which 16,665 mi² is above Wesley E. Seale dam.

INDEX

	Page		Page
Access to WATSTORE data.....	18	Delaware River near Red Bluff, NM.....	391
Accuracy of the records.....	13	Devils River at Pafford Crossing near Comstock.....	404-405
Acre-foot, definition of.....	19	Diatoms, definition of.....	25
Adenosine triphosphate (ATP), definition of.....	19	Discharge, at partial-record stations and miscellaneous sites.....	417-421
Alazan Creek at West Martin Street, San Antonio.....	419	definition of.....	21
Algae, definition of.....	19	measurements at miscellaneous sites.....	421
growth potential (AGP), definition of.....	19	Dissolved, definition of.....	21
Apache Creek at South Zarzamora Street, San Antonio.....	419	Dissolved-solids concentration, definition of.....	21
Aransas River near Skidmore.....	341	Diversity index, definition of.....	21
Arrangement of records.....	15	Dove Creek at Knickerbocker.....	70
Arroyo Colorado at Harlingen.....	412-413	Dove Creek Spring near Knickerbocker.....	417
Artificial substrate, definition of.....	27	Downstream order numbering.....	8
Ash mass, definition of.....	20	Drainage area, definition of.....	11,22
Atascosa River, at Whitsett.....	374	Drainage basin, definition of.....	22
at U.S. Highway 281 at Pleasanton.....	420	Dry Comal Creek at New Braunfels.....	417
Bacteria, definition of.....	19	Dry Frio River near Reagan Wells.....	356-358
Barton Creek, above Barton Springs at Austin.....	417	Dry mass, definition of.....	20
at Loop 360, Austin.....	123-124	Ecito Creek near Runge.....	328
at Lost Creek Boulevard, Austin.....	120	Elm Creek at Ballinger.....	64-66
at State Highway 71 near Oak Hill.....	118	Estimated daily discharge, identification of.....	13
below Barton Springs at Austin.....	128	E.V. Spence Reservoir near Robert Lee.....	58
Barton Springs at Austin.....	125-128	Explanation of the records.....	8
Beals Creek near Westbrook.....	52-57	Fecal coliform bacteria, definition of.....	19
Bear Creek below Farm Road 1826 near Driftwood.....	151-152	Fecal streptococcal bacteria, definition of.....	20
Beaver Creek near Mason.....	101	Fifteenmile Creek near Weser.....	222
Bed load, definition of.....	26	Frio River, at Concan.....	353-356
discharge, definition of.....	26	at Tilden.....	371
Bed material, definition of.....	20	below Dry Frio River near Uvalde.....	359
Biochemical oxygen demand (BOD), definition of.....	20	near Derby.....	370
Biomass, definition of.....	20	Gage height, definition of.....	22
Blanco River, at Wimberley.....	208-210	Gaging station, definition of.....	22
near Kyle.....	211	Gaging-station records.....	33-415
Blieiders Creek at New Braunfels.....	417	Garcitas Creek near Inez.....	193
Blue-green algae, definition of.....	25	Green algae, definition of.....	25
Boggy Creek at U.S. Highway 183, Austin.....	419	Guadalupe-Blanco River Authority Calhoun Canal Flume No. 1 near Long Mott.....	333
Bottom material, definition of.....	20	Guadalupe River, above Comal River at New Braunfels... at Comfort.....	203 199
Bull Creek at Loop 360 near Austin.....	109-110	at Cuero.....	218
Canyon Lake near New Braunfels.....	201	at Gonzales.....	419
Cells/volume, definition of.....	20	at Hunt.....	196
Chemical oxygen demand (COD), definition of.....	20	at Kerrville.....	198
Chilipin Creek at Sinton.....	342-343	at New Braunfels.....	419
Chlorophyll, definition of.....	20	at Sattler.....	202
Choke Canyon Reservoir near Three Rivers.....	373	at Victoria.....	219-221
Cibola Creek, at Selma.....	321	below New Braunfels.....	205-206
near Boerne.....	320	near Spring Branch.....	200
near Falls City.....	322-327	near Tivoli.....	334-337
Classification of records.....	14	Guadalupe River basin, crest-stage partial-record stations in.....	419
Coleta Creek, at Arnold Road Crossing near Schroeder..	223	discharge measurements at miscellaneous sites.....	421
inflow (Guadalupe Diversion) near Schroeder.....	224	gaging-station records in.....	195-337
near Victoria.....	231	low-flow partial-record stations in.....	417
Coleta Creek Reservoir, (Condenser No. 1) near Fannin.....	226-227	Hardness, definition of.....	22
near Victoria.....	228	Helotes Creek at Helotes.....	281-283
(Outflow) near Victoria.....	229-230	Hondo Creek, at King Waterhole near Hondo.....	366
Color unit, definition of.....	21	near Tarpley.....	364-365
Colorado River, above LaGrande.....	168	Hords Creek, at Coleman.....	419
above Silver.....	52-57	near Valera.....	87
at Austin.....	141-144	Hords Creek Lake near Valera.....	86
at Bastrop.....	159-167	Hueco Springs near New Braunfels.....	417
at Colorado City.....	39-42	Hydrologic bench-mark network.....	22
at Columbus.....	170	Hydrologic conditions.....	3
at Robert Lee.....	59	Hydrologic unit.....	22
at Wharton.....	171-174	Identifying estimated daily discharge.....	13
at Winchell.....	85	Illustrations.....	4,6
below Austin.....	148	Index.....	425
below Mansfield Dam, Austin.....	107-108	Instantaneous discharge, definition of.....	21
near Ballinger.....	60-63	Introduction.....	1
near Bay City.....	175	Johnson Creek near Ingram.....	197
near Cuthbert.....	35-38	Laboratory measurements.....	16
near Gail.....	33	Lagarto Creek near George West.....	378
near Ira.....	34	Lake Austin at Austin.....	111-117
near San Saba.....	94-97	Lake Buchanan near Burnet.....	98
near Stacy.....	81-84	Lake Colorado City near Colorado City.....	43
Colorado River basin, crest-stage partial-record stations in.....	419	Lake Corpus Christi near Mathis.....	379-380
discharge measurements at miscellaneous sites.....	421	Lake Nasworthy near San Angelo.....	72
gaging-station records in.....	33-175	Lake Texana near Edna.....	187-192
low-flow partial-record stations in.....	417	Lake Travis near Austin.....	106
Comal River at New Braunfels.....	204	Lake Surveys (Water Quality): Lake Austin at Austin.....	112-117
Computation, data collection and.....	9	Texana, Lake, near Edna.....	187-192
Concho River, at San Angelo.....	76	Town Lake at Austin.....	131-140
at Paint Rock.....	77-80	Lakes and reservoirs: Austin, Lake, at Austin.....	111-117
Contents, definition of.....	21	Buchanan, Lake, near Burnet.....	98
Continuous-record station, definition of.....	14	Canyon Lake near New Braunfels.....	201
Control, definition of.....	21	Choke Canyon Reservoir near Three Rivers.....	373
structure.....	21	Colorado City, Lake, near Colorado City.....	43
Cooperation.....	2	Corpus Christi, Lake, near Mathis.....	379-380
Copano Creek near Refugio.....	338	E.V. Spence Reservoir near Robert Lee.....	58
Crest-stage partial-record measurements.....	419-420		
Crest-stage partial-record station, definition of.....	9		
Cubic foot-per-second day, definition of.....	20		
Cubic foot per second (Ft ³ /s, ft ³ /s), definition of.....	21		
Cubic foot per second per square mile, definition of.....	21		
Data collection and computation.....	9		
presentation.....	11,17		
Definition of terms.....	19-30		

	Page		Page
Lakes and reservoirs:		Pecos River, near Langtry.....	402-403
Hords Creek Lake near Valera.....	86	near Orla.....	393-395
Medina Lake near San Antonio.....	259	Pedernales River, near Fredericksburg.....	104
Nasworthy, Lake, near San Angelo.....	72	near Johnson City.....	105
O.C. Fisher Lake at San Angelo.....	74	Percent composition, definition of.....	24
Olmos Reservoir at San Antonio.....	234-235	Periphyton, definition of.....	24
Red Bluff Reservoir near Orla.....	392	Perdido Creek at Farm Road 622 near Fannin.....	225
Texana, Lake, near Edna.....	187-192	Pesticides, definition of.....	24
Town Lake at Austin.....	131-140	Phytoplankton, definition of.....	24
Travis, Lake, near Austin.....	106	Picocurie, definition of.....	24
Twin Buttes Reservoir near San Angelo.....	71	Placedo Creek near Placedo.....	194
Las Moras Springs at Brackettville.....	418	Plankton, definition of.....	24
Lavaca River, at Hallettsville.....	177	Plum Creek, at Lockhart.....	214
near Edna.....	178-180	near Luling.....	215
Lavaca River basin, gaging-station records in.....	177-192	Polychlorinated biphenyls (PCBs), definition of.....	25
Leona River spring flow near Uvalde.....	418	Primary productivity, definition of.....	25
Leon Creek at I.H. 35 at San Antonio.....	284-292	Programs, special networks and.....	
Llano River, at Llano.....	102	Publications of techniques of water-resources	
near Junction.....	99	investigations.....	31,33
near Mason.....	100	Radiochemical program.....	25
Low-flow partial-record measurements.....	417-418	Records, accuracy of.....	13
Low-flow partial-record station, definition of.....	9	arrangement of.....	15
Martinez Creek at Fredericksburg Road, San Antonio....	419	classification of.....	13
Mean concentration, definition of.....	26	explanation of.....	8
Mean discharge, definition of.....	21	of stage and water discharge.....	9
Medina Canal near Riomedina.....	260	of surface-water quality.....	14
Medina Lake near San Antonio.....	259	other available.....	14
Medina River, at Bandera.....	256-258	Recoverable from bottom material, definition of.....	26
at La Coste.....	261-269	Red Bluff Reservoir near Orla.....	392
at San Antonio.....	293-301	Redgate Creek near Columbus.....	169
near Macdona.....	270	Reeves County Water Improvement District No. 2	
near Somerset.....	280	canal near Mentone.....	396
Medio Creek at Pearsall Road at San Antonio.....	271-279	Remark codes.....	18
Metamorphic stage, definition of.....	22	Reservoirs. See Lakes and reservoirs.	
Methylene blue active substance (MBAS),		Return period, definition of.....	26
definition of.....	22	Rio Grande, at El Paso.....	387
Micrograms per gram, definition of.....	22	at Fort Ringgold, Rio Grande City.....	408
Micrograms per liter, definition of.....	22	at Foster Ranch near Langtry.....	388-389
Middle Concho River above Tankersley.....	68	below Amistad Dam near Del Rio.....	406
Milligrams of carbon per area or volume per unit time.....	25	below Anzalduas Dam.....	410-411
Milligrams of oxygen per area or volume per unit time.....	25	below Falcon Dam.....	407
Milligrams per liter, definition of.....	23	near Brownsville.....	414-415
Miscellaneous sampling sites.....	14	near Los Ebanos.....	409
Miscellaneous sites.....	421	Rio Grande basin, discharge measurements at	
Mission River at Refugio.....	339-340	miscellaneous sites.....	421
National Geodetic Vertical Datum of 1929 (NGVD),		gaging-station records in.....	387-415
definition of.....	23	low-flow partial-record stations in.....	418
National stream-quality accounting network (NASQAN),		Runoff in inches, definition of.....	26
definition of.....	23	Rutledge Hollow at 7th Street, Poteet.....	420
National Trends Network (NTN), definition of.....	23	Sabinal River, at Sabinal.....	363
Natural substrates, definition of.....	27	near Sabinal.....	360-362
Navidad River, near Hallettsville.....	181	Salado Creek, at lower station at San Antonio.....	246-255
near Speaks.....	182	at upper station at San Antonio.....	243-245
Networks and programs, special.....	7	Sample collection, and on site measurements.....	15
North Concho River, at San Angelo.....	75	San Antonio River, at Ashley Street (Berg's Mill),	
at Sterling City.....	419	San Antonio.....	419
near Carlsbad.....	73	at Dolorosa Street, San Antonio.....	419
North Fork Guadalupe River near Hunt.....	195	at Goliad.....	329-332
Nueces River, at Calallen.....	420	at Hildebrand Avenue, San Antonio.....	236
at Cotulla.....	350	at Loop 410 at San Antonio.....	242
at Laguna.....	344-346	at Navarro Street, San Antonio.....	419
below Uvalde.....	348	at San Antonio.....	239-241
near Asherton.....	349	at Woodlawn Avenue, San Antonio.....	238
near Mathis.....	381-384	near Elmdorf.....	302-310
near Three Rivers.....	375-377	near Falls City.....	311-319
near Tilden.....	352	San Casimiro Creek near Freer.....	351
Nueces River basin, crest-stage partial-record		San Diego Creek at Alice.....	386
station in.....	420	Sandies Creek near Westhoff.....	216-217
discharge measurement at miscellaneous site.....	421	Sandy Creek, near Kingsland.....	103
gaging-station records in.....	344-384	near Louise.....	183-184
low-flow partial-record station in.....	418	San Fernando Creek basin, crest-stage partial-	
O.C. Fisher Lake at San Angelo.....	74	records in.....	420
Olmos Creek, at Dresden Drive, San Antonio.....	232-233	gaging-station records in.....	386
Olmos Reservoir at San Antonio.....	234-235	San Marcos River at Luling.....	212-213
Onion Creek, at U.S. Highway 183 near Austin.....	158	San Marcos River spring flow at San Marcos.....	207
near Driftwood.....	149-150	San Miguel Creek near Tilden.....	372
On-site measurements and sample collection.....	15	San Pedro Creek, at Furnish Street, San Antonio.....	419
Organic mass, definition of.....	20	at Santa Rosa Street, San Antonio.....	419
Organism, definition of.....	23	San Saba River, at Menard.....	91
Organism count/area, definition of.....	23	at San Saba.....	93
Organisms count/volume, definition of.....	23	near Brady.....	92
Oso Creek at Corpus Christi.....	385	San Saba Springs at San Saba.....	417
Other records available.....	14	Seco Creek, at Rowe Ranch near D'Hanis.....	369
Panther Canyon at New Braunfels.....	417	at Miller Ranch near Utopia.....	367-368
Parameter code, definition of.....	23	Sediment, collection and examination.....	16
Partial-record station, definition of.....	14,24	definition of.....	26
Partial-record stations, crest-stage.....	419-420	Seven Hundred Springs near Telegraph.....	417
low-flow.....	417-418	Shoal Creek at 12th Street, Austin.....	129-130
Particle size, definition of.....	24	Slaughter Creek at Farm Road 1826 near Austin.....	153-154
Particle-size classification, definition of.....	24	Sodium adsorption ratio (SAR), definition of.....	27
Pecan Bayou near Mullin.....	88-90	Solute, definition of.....	27
Pecos County Water Improvement District No. 2		South Concho River at Christoval.....	67
canal near Imperial.....	399	South Llano River near Telegraph.....	417
Pecos County Water Improvement District No. 2 (upper		Special networks and programs.....	7
diversion) canal near Grandfalls.....	398	Specific conductance, definition of.....	27
Pecos County Water Improvement District No. 3		Spring Creek above Tankersley.....	69
canal near Imperial.....	400	Springs at Fort McKavett.....	417
Pecos River, at Red Bluff, NM.....	390	Stage, records of.....	9
near Girvin.....	401	Stage-discharge relation, definition of.....	27
		Station identification numbers.....	8
		Streamflow definition of.....	27

	Page		Page
Streamflow yearly summary.....	3	Total sediment load, definition of.....	27
Substrate, definition of.....	27	Town Lake at Austin.....	131-140
Surface area, definition of.....	27	Tranquitas Creek at Kingsville.....	420
Surficial bed material, definition of.....	28	Tres Palacios River near Midfield.....	176
Suspended (as used in tables of chemical analyses), definition of.....	28	Tritium network.....	29
Suspended, recoverable, definition of.....	28	Twin Buttes Reservoir near San Angelo.....	71
Suspended-sediment concentration, definition of.....	26	Walnut Creek at Webberville Road, Austin.....	145-147
Suspended sediment, definition of.....	26	Ward County Irrigation District No. 1 canal near Barstow.....	397
Suspended-sediment discharge, definition of.....	26	Water discharge, records of stage and.....	9
Suspended-sediment load, definition of.....	28	Water quality.....	5
Suspended, total, definition of.....	28	Water temperature, explanation of.....	16
Taxonomy, definition of.....	28	Water year, definition of.....	30
Temperature, collection and examination.....	16	WATSTORE data, access to.....	18
Terms, definition of.....	19-30	WDR, definition of.....	30
Thermograph, definition of.....	29	Weighted average, definition of.....	30
Time-weighted average, definition of.....	29	West Mustang Creek near Ganado.....	185-186
Tons per acre-foot, definition of.....	29	West Nueces River near Brackettville.....	347
Tons per day, definition of.....	29	Wet mass, definition of.....	20
Total coliform bacteria, definition of.....	19	Whatstore data, access to.....	18
Total (in tables of chemical analyses), definition of.....	29	Williamson Creek at Oak Hill.....	155-157
Total discharge.....	29	WSP, definition of.....	30
Total organism count, definition of.....	23		
Total, recoverable, definition of.....	29		
Total sediment discharge.....	27	Zooplankton, definition of.....	25

FACTORS FOR CONVERTING INCH-POUND UNITS TO INTERNATIONAL SYSTEM UNITS (SI)

The following factors may be used to convert the inch-pound units published herein to the International System of Units (SI).

Multiply inch-pound units	By	To obtain SI units
<i>Length</i>		
inches (in)	2.54×10^1	millimeters (mm)
	2.54×10^{-2}	meters (m)
feet (ft)	3.048×10^{-1}	meters (m)
miles (mi)	1.609×10^0	kilometers (km)
<i>Area</i>		
acres	4.047×10^3	square meters (m ²)
	4.047×10^{-1}	square hectometers (hm ²)
	4.047×10^{-3}	square kilometers (km ²)
square miles (mi ²)	2.590×10^0	square kilometers (km ²)
<i>Volume</i>		
gallons (gal)	3.785×10^0	liters (L)
	3.785×10^0	cubic decimeters (dm ³)
	3.785×10^{-3}	cubic meters (m ³)
million gallons	3.785×10^3	cubic meters (m ³)
	3.785×10^{-3}	cubic hectometers (hm ³)
cubic feet (ft ³)	2.832×10^1	cubic decimeters (dm ³)
	2.832×10^{-2}	cubic meters (m ³)
cfs-days	2.447×10^3	cubic meters (m ³)
	2.447×10^{-3}	cubic hectometers (hm ³)
acre-feet (acre-ft)	1.233×10^3	cubic meters (m ³)
	1.233×10^{-3}	cubic hectometers (hm ³)
	1.233×10^{-6}	cubic kilometers (km ³)
<i>Flow</i>		
cubic feet per second (ft ³ /s)	2.832×10^1	liters per second (L/s)
	2.832×10^1	cubic decimeters per second (dm ³ /s)
	2.832×10^{-2}	cubic meters per second (m ³ /s)
gallons per minute (gal/min)	6.309×10^{-2}	liters per second (L/s)
	6.309×10^{-2}	cubic decimeters per second (dm ³ /s)
	6.309×10^{-5}	cubic meters per second (m ³ /s)
million gallons per day	4.381×10^1	cubic decimeters per second (dm ³ /s)
	4.381×10^{-2}	cubic meters per second (m ³ /s)
<i>Mass</i>		
tons (short)	9.072×10^{-1}	megagrams (Mg) or metric tons

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