

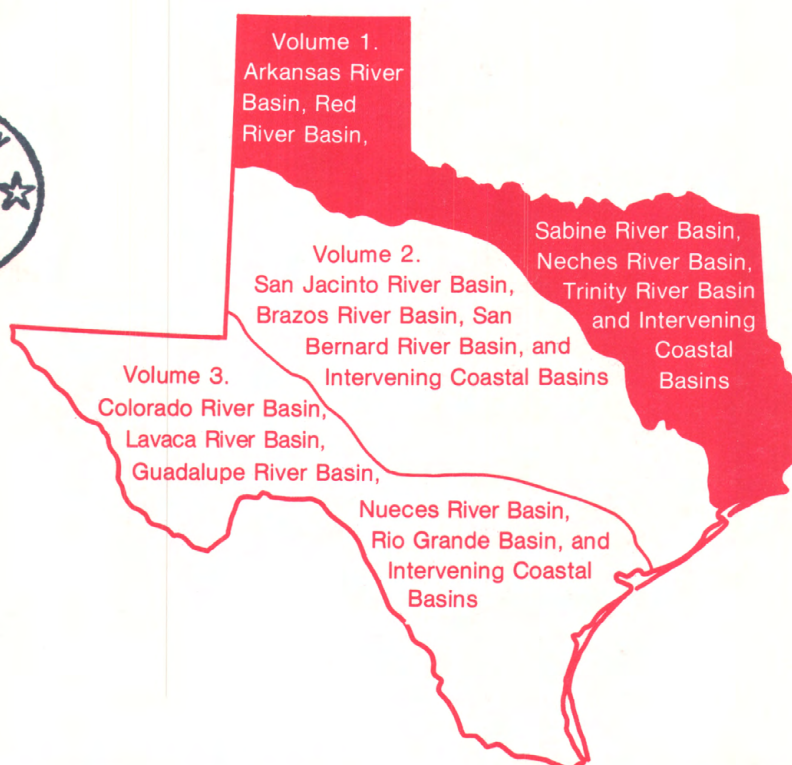
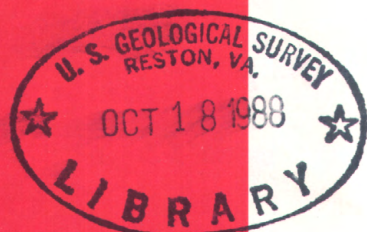


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# Water Resources Data Texas

## Water Year 1987

Volume 1. Arkansas River Basin, Red River Basin, Sabine River Basin, Neches River Basin, Trinity River Basin and Intervening Coastal Basins



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT TX-87-1  
Prepared in cooperation with the State of Texas  
and with other agencies

## 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)	$2.54 \times 10^1$	millimeters (mm)
	$2.54 \times 10^{-2}$	meters (m)
feet (ft)	$3.048 \times 10^{-1}$	meters (m)
miles (mi)	$1.609 \times 10^0$	kilometers (km)
<i>Area</i>		
acres	$4.047 \times 10^3$	square meters (m <sup>2</sup> )
	$4.047 \times 10^{-1}$	square hectometers (hm <sup>2</sup> )
	$4.047 \times 10^{-3}$	square kilometers (km <sup>2</sup> )
square miles (mi <sup>2</sup> )	$2.590 \times 10^0$	square kilometers (km <sup>2</sup> )
<i>Volume</i>		
gallons (gal)	$3.785 \times 10^0$	liters (L)
	$3.785 \times 10^0$	cubic decimeters (dm <sup>3</sup> )
	$3.785 \times 10^{-3}$	cubic meters (m <sup>3</sup> )
million gallons	$3.785 \times 10^3$	cubic meters (m <sup>3</sup> )
	$3.785 \times 10^{-3}$	cubic hectometers (hm <sup>3</sup> )
cubic feet (ft <sup>3</sup> )	$2.832 \times 10^1$	cubic decimeters (dm <sup>3</sup> )
	$2.832 \times 10^{-2}$	cubic meters (m <sup>3</sup> )
cfs-days	$2.447 \times 10^3$	cubic meters (m <sup>3</sup> )
	$2.447 \times 10^{-3}$	cubic hectometers (hm <sup>3</sup> )
acre-feet (acre-ft)	$1.233 \times 10^3$	cubic meters (m <sup>3</sup> )
	$1.233 \times 10^{-3}$	cubic hectometers (hm <sup>3</sup> )
	$1.233 \times 10^{-6}$	cubic kilometers (km <sup>3</sup> )
<i>Flow</i>		
cubic feet per second (ft <sup>3</sup> /s)	$2.832 \times 10^1$	liters per second (L/s)
	$2.832 \times 10^1$	cubic decimeters per second (dm <sup>3</sup> /s)
	$2.832 \times 10^{-2}$	cubic meters per second (m <sup>3</sup> /s)
gallons per minute (gal/min)	$6.309 \times 10^{-2}$	liters per second (L/s)
	$6.309 \times 10^{-2}$	cubic decimeters per second (dm <sup>3</sup> /s)
	$6.309 \times 10^{-5}$	cubic meters per second (m <sup>3</sup> /s)
million gallons per day	$4.381 \times 10^1$	cubic decimeters per second (dm <sup>3</sup> /s)
	$4.381 \times 10^{-2}$	cubic meters per second (m <sup>3</sup> /s)
<i>Mass</i>		
tons (short)	$9.072 \times 10^{-1}$	megagrams (Mg) or metric tons

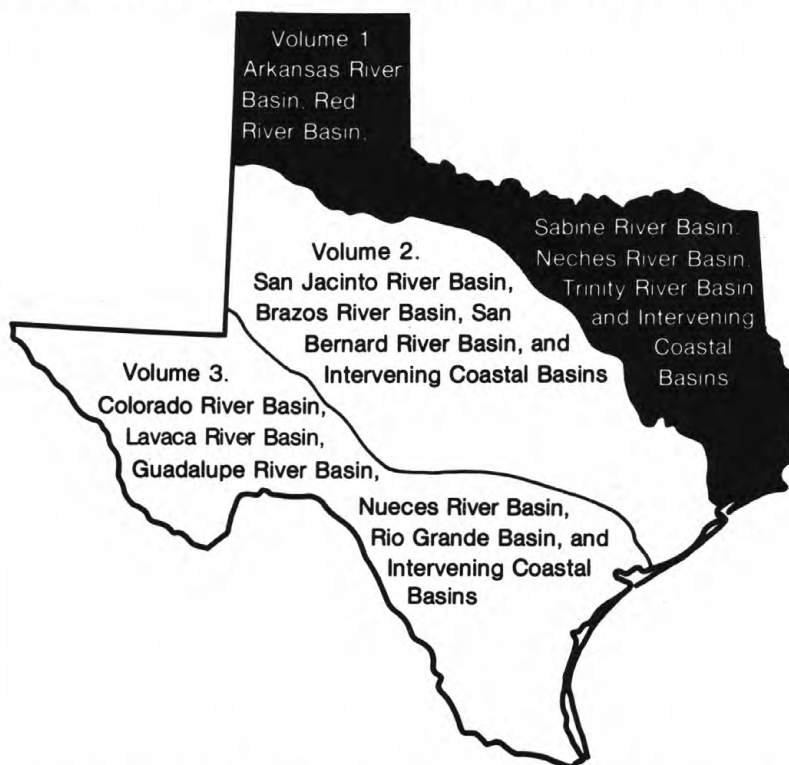


# Water Resources Data Texas

## Water Year 1987

**Volume 1. Arkansas River Basin, Red River Basin, Sabine  
River Basin, Neches River Basin, Trinity River  
Basin and Intervening Coastal Basins**

by H.D. Buckner, E.R. Carrillo, and H.J. Davidson



**U.S. GEOLOGICAL SURVEY WATER-DATA REPORT TX-87-1**

Prepared in cooperation with the State of Texas  
and with other agencies

UNITED STATES DEPARTMENT OF THE INTERIOR

DONALD PAUL HODEL, Secretary

GEOLOGICAL SURVEY

Dallas L. Peck, Director

For additional information write to  
District Chief, Water Resources Division  
U.S. Geological Survey  
300 East 8th Street  
Austin, Texas 78701

1988

#### 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,



## CONTENTS

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	Page
Preface.....	iii
List of gaging stations, in downstream order, for which records are published.....	v
Introduction.....	1
Cooperation.....	1
Hydrologic conditions.....	2
Streamflow.....	4
Water quality.....	4
Special networks and programs.....	6
Explanation of the records.....	7
Station identification numbers.....	7
Downstream order numbering.....	7
Records of stage and water discharge.....	7
Data collection and computation.....	8
Data presentation.....	9
Identifying estimated daily discharge.....	10
Accuracy of the records.....	10
Other records available.....	11
Records of surface-water quality.....	11
Classification of records.....	11
Arrangement of records.....	11
On-site measurements and sample collection.....	11
Water temperature.....	12
Sediment.....	12
Laboratory measurements.....	13
Data presentation.....	13
Remark codes.....	13
Access to WATSTORE data.....	14
Definition of terms.....	14
Publications of techniques of water-resources investigations.....	23
Gaging-station records.....	25
Discharge at partial-record stations and miscellaneous sites.....	436
Low-flow partial-record stations.....	436
Crest-stage partial-record stations.....	437
Discharge measurements at miscellaneous sites.....	439
Index.....	441

## ILLUSTRATION

---

Figure 1. Area of Texas covered by volume 1 and location of selected streamflow and water-quality stations in volume 1.....	3
2. Comparison of monthly mean discharge at four long-term representative gaging stations during the 1987 water year with median of the monthly mean discharge for the period 1951-80.....	5

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

	Page
<b>LOWER MISSISSIPPI RIVER BASIN</b>	
<b>ARKANSAS RIVER BASIN</b>	
Arkansas River:	
Canadian River at Logan, NM.....	25
Revuelto Creek near Logan, NM.....	26
Canadian River near Amarillo.....	27
Lake Meredith near Sanford.....	31
Dixon Creek near Borger.....	32
Canadian River near Canadian.....	33
North Canadian River:	
Wolf Creek at Lipscomb.....	36
<b>RED RIVER BASIN</b>	
Prairie Dog Town Fork Red River near Wayside.....	37
Prairie Dog Town Fork Red River near Childress.....	40
Red River near Quanah.....	41
Groesbeck Creek at State Highway 6 near Quanah.....	42
Salt Fork Red River:	
Greenbelt Lake near Clarendon.....	43
Salt Fork Red River near Wellington.....	44
Salt Fork Red River at Mangum, OK.....	48
North Fork Red River near Shamrock.....	49
Sweetwater Creek near Kelton.....	50
Pease River near Childress.....	51
Red River near Burkburnett.....	52
North Wichita River (head of Wichita River):	
Bluff Creek:	
Truscott Brine Lake near Truscott.....	55
North Wichita River near Truscott.....	60
South Wichita River at low-flow dam near Guthrie.....	66
South Wichita River below dam near Guthrie.....	71
South Wichita River near Benjamin.....	76
Wichita River:	
Lake Kemp near Mabelle.....	82
Wichita River near Mabelle.....	83
Diversion Lake:	
South Side Canal near Dundee.....	86
Beaver Creek near Electra.....	87
Wichita River at Wichita Falls.....	88
Wichita River near Charlie.....	92
North Fork Little Wichita River:	
Lake Kickapoo near Archer City.....	93
Little Wichita River near Archer City.....	94
Lake Arrowhead near Henrietta.....	95
Little Wichita River above Henrietta.....	96
East Fork Little Wichita River near Henrietta.....	97
Red River near Terral, OK.....	98
Moss Lake near Gainesville.....	101
Red River near Gainesville.....	102
Lake Texoma near Denison.....	105
Red River at Denison Dam Near Denison.....	106
Pat Mayse Lake near Chicota.....	109
Red River at Arthur City.....	110
Red River near De Kalb.....	111
Red River at Index, AR.....	115
South Sulphur River (head of Sulphur River) near Commerce.....	116
South Sulphur River near Cooper.....	117
North Sulphur River near Cooper.....	121
Sulphur River near Talco.....	124
White Oak Creek near Talco.....	128
Wright Patman Lake near Texarkana.....	132
Sulphur River near Texarkana.....	133
Big Cypress Creek near Winnsboro.....	134
Lake Cypress Springs near Mount Vernon.....	135
Brushy Creek at Scroggins.....	136
Lake Bob Sandlin near Mount Pleasant.....	137
Big Cypress Creek near Pittsburg.....	138
Ellison Creek Reservoir near Lone Star.....	141
Lake O' the Pines near Jefferson.....	142
Big Cypress Creek near Jefferson.....	143
Black Cypress Bayou at Jefferson.....	144
Little Cypress Creek near Ore City.....	145
Little Cypress Creek near Jefferson.....	146
Frazier Creek near Linden.....	152

GAGING STATIONS IN DOWNSTREAM ORDER,  
FOR WHICH RECORDS ARE PUBLISHED

vii

	Page
WESTERN GULF OF MEXICO BASINS	
SABINE RIVER BASIN	
Sabine River:	
Cowleech Fork Sabine River at Greenville.....	153
South Fork Sabine River near Quinlan.....	154
Lake Tawakoni near Wills Point.....	155
Sabine River near Wills Point.....	156
Sabine River near Mineola.....	157
Lake Fork Creek:	
Burke Creek near Yantis.....	161
Lake Fork Reservoir near Quitman.....	162
Lake Fork Creek near Quitman.....	163
Big Sandy Creek near Big Sandy.....	166
Sabine River near Gladewater.....	167
Sabine River above Longview.....	168
Sabine River near Beckville.....	169
Martin Lake near Tatum.....	173
Martin Creek near Tatum.....	174
Sabine River at Logansport, LA.....	175
Toledo Bend Reservoir near Burkeville.....	176
Sabine River at Toledo Bend Reservoir near Burkeville.....	177
Sabine River near Burkeville.....	178
Sabine River near Bon Wier.....	179
Big Cow Creek near Newton.....	181
Sabine River near Ruliff.....	182
NECHES RIVER BASIN	
Neches River:	
Kickapoo Creek near Brownsboro.....	186
Lake Athens near Athens.....	187
Lake Palestine near Frankston.....	188
Neches River near Neches.....	189
Piney Creek near Groveton.....	195
Neches River near Rockland.....	196
Angelina River:	
East Fork Angelina River near Cushing.....	198
Angelina River near Alto.....	199
Lake Nacogdoches near Nacogdoches.....	200
Sam Rayburn Reservoir near Jasper.....	201
B. A. Steinhagen Lake at Town Bluff.....	202
Neches River at Town Bluff.....	203
Neches River at Evadale.....	205
Village Creek near Kountze.....	209
Pine Island Bayou near Sour Lake.....	210
TAYLOR BAYOU BASIN	
Taylor Bayou near LaBelle.....	216
Hillebrandt Bayou near Lovell Lake.....	217
TRINITY RIVER BASIN	
West Fork Trinity River (head of Trinity River) near Jacksboro.....	218
West Fork Trinity River at Bridgeport.....	219
Big Sandy Creek near Bridgeport.....	220
West Fork Trinity River near Boyd.....	221
Lake Worth above Fort Worth.....	222
West Fork Trinity River:	
Benbrook Lake near Benbrook.....	223
Clear Fork Trinity River near Benbrook.....	224
Clear Fork Trinity River at Fort Worth.....	225
West Fork Trinity River at Fort Worth.....	226
West Fork Trinity River at Beach Street, Fort Worth.....	227
West Fork Trinity River:	
Village Creek at Kennedale.....	236
Lake Arlington at Arlington.....	245
West Fork Trinity River at Grand Prairie.....	251
Big Bear Creek:	
Trigg Branch at Dallas-Fort Worth Airport near Euless.....	260
Mountain Creek at Venus.....	261
Walnut Creek near Mansfield.....	262
Joe Pool Lake near Duncanville.....	264
Mountain Creek above Duncanville.....	268
Mountain Creek near Duncanville.....	269
Mountain Creek Lake near Grand Prairie.....	270

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

	Page
WESTERN GULF OF MEXICO BASINS--Continued	
TRINITY RIVER BASIN--Continued	
West Fork Trinity River:	
Mountain Creek at Grand Prairie.....	271
Elm Fork Trinity River at Gainesville.....	272
Isle du Bois Creek:	
Jordan Creek:	
Timber Creek near Collinsville.....	274
Elm Fork Trinity River near Pilot Point.....	275
Clear Creek near Sanger.....	277
Little Elm Creek near Aubrey.....	280
Pecan Creek near Aubrey.....	283
Hickory Creek at Denton.....	284
Lewisville Lake near Lewisville.....	286
Elm Fork Trinity River near Lewisville.....	287
Denton Creek near Justin.....	291
Grapevine Lake near Grapevine.....	292
Denton Creek near Grapevine.....	293
Elm Fork Trinity River near Carrollton.....	294
Trinity River:	
Turtle Creek at Dallas.....	295
Trinity River at Dallas.....	296
Trinity River at Cedar Crest Boulevard, Dallas.....	297
White Rock Creek at Greenville Avenue, Dallas.....	305
Trinity River below Dallas.....	306
Prairie Creek at U.S. Highway 175, Dallas.....	315
East Fork Trinity River at McKinney.....	316
Pilot Grove Creek near Blue Ridge.....	318
Sister Grove Creek near Blue Ridge.....	319
Wilson Creek at McKinney.....	321
Lavon Lake near Lavon.....	322
East Fork Trinity River near Lavon.....	323
Rowlett Creek near Sachse.....	324
Lake Ray Hubbard near Forney.....	325
Duck Creek near Garland.....	326
East Fork Trinity River near Forney.....	327
East Fork Trinity River above Seagoville.....	336
East Fork Trinity River at Seagoville.....	342
East Fork Trinity River near Crandall.....	348
Trinity River near Rosser.....	357
Trinity River at Trinidad.....	366
Cedar Creek near Kemp.....	375
Kings Creek near Kaufman.....	376
Cedar Creek Reservoir near Trinidad.....	377
Navarro Mills Lake near Dawson.....	378
Richland Creek near Dawson.....	379
Richland Creek near Richland.....	380
Chambers Creek:	
Waxahachie Creek near Waxahachie.....	384
Mustang Creek near Ennis.....	385
Lake Clark Outflow near Ennis.....	386
Bardwell Lake near Ennis.....	387
Waxahachie Creek near Bardwell.....	388
Chambers Creek near Rice.....	389
Tehuacana Creek near Streetman.....	393
Catfish Creek near Tennessee Colony.....	394
Trinity River near Oakwood.....	395
Upper Keechi Creek near Oakwood.....	396
Trinity River near Crockett.....	397
Bedias Creek near Madisonville.....	406
Kickapoo Creek near Onalaska.....	413
Livingston Reservoir near Goodrich.....	414
Livingston Reservoir at outflow weir near Goodrich.....	421
Trinity River:	
Long King Creek at Livingston.....	422
Trinity River near Goodrich.....	423
Menard Creek near Rye.....	424
Big Creek near Shepherd.....	426
Trinity River at Romayor.....	428

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

ix

	Page
WESTERN GULF OF MEXICO BASINS--Continued	
TRINITY RIVER BASIN--Continued	
Trinity River at Liberty.....	433
CIWA Canal near Dayton.....	434
CEDAR BAYOU BASIN	
Cedar Bayou near Crosby.....	435



## WATER RESOURCES DATA - TEXAS, 1987

### VOLUME 1 ARKANSAS RIVER BASIN, RED RIVER BASIN, SABINE RIVER BASIN, NECHES RIVER BASIN, TRINITY RIVER BASIN, AND INTERVENING AND ADJACENT 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 1 contains records for water discharge at 139 gaging stations; stage only at 5 gaging stations; stage and contents at 40 lakes and reservoirs; and water quality at 72 gaging stations. Also included are data for 13 partial-record stations. Additional water data were collected at 2 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 City, 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-87-1." 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) 482-5571.

#### COOPERATION

Federal agencies that assisted the Geological Survey in the collection of data in this report in the form of funds or services in 1987 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 Water Development Board or through direct joint-funding agreements with the Geological Survey are:

Texas Water Development Board, C. E. Nemir, Executive Administrator; the cities of Abilene, Alice, Arlington, Austin, Carrollton, Corpus Christi, Dallas, Gainesville, Garland, Georgetown, 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 County; Dallas Public Works Department; Dallas/Fort Worth Airport; 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; Lower Colorado River Authority; Lower Neches Valley Authority; North Central Texas Municipal Water Authority; Northeast Texas Municipal Water District; Pecos River Commission; Red Bluff Water Power Control District; 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; Titus County Fresh Water Supply District No. 1; Trinity River Authority; Upper Guadalupe River Authority; Upper Neches River Municipal Water Authority; Upper Trinity Basin Water Quality Compact; 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 generally are deep with wide alluvial flood plains, and streamflow is perennial. In the western part of the State, streams generally flow through arroyos, and streamflow principally is ephemeral.

Precipitation for the first half of the 1987 water year was generally above normal over the entire State. For the second half of the year, the western two-thirds of the State received normal to above-normal precipitation, with an extremely wet period occurring during May and June. For eastern Texas, precipitation during the latter half of the 1987 water year ranged from normal to below normal.

As a result of the above-normal precipitation which occurred during the year, record or near-record runoff volumes were recorded at a number of gaging sites. Streamflow stations on the Guadalupe River near Spring Branch and at Victoria and on the Red River near Burkburnett had the largest yearly runoff totals since those stations were established. The lower station on the Colorado, which was established in 1948, had the second highest recorded runoff total while the lower station on the Brazos River experienced the third largest runoff total since that station was established in 1922. Although runoff in Texas streams was extremely large during the year, no outstanding floods occurred except for the upper Guadalupe River basin where severe flooding occurred during July.

Conservation storage in 71 selected reservoirs throughout the State, with a combined conservation capacity of 31,903,700 acre-feet, increased from 85 percent at the end of September 1986, to 88 percent at the end of September 1987. Records from these 71 reservoirs indicate that contents increased in 28, decreased in 36, and remained the same in 7.

The area for which water-resources data are presented in volume 1 includes the Texas Panhandle and extends across south-central and eastern Texas to southeastern Texas. Normal annual precipitation in this area ranges from about 17 inches in the western part of the Texas Panhandle to more than 56 inches in the extreme southeastern part of the State. Annual runoff ranges from less than 1.0 inch in parts of the Panhandle to as much as 15 inches in southeastern Texas. A map of Texas indicating the area covered by volume 1 and the location of selected streamflow and water-quality stations in the area is shown in figure 1.

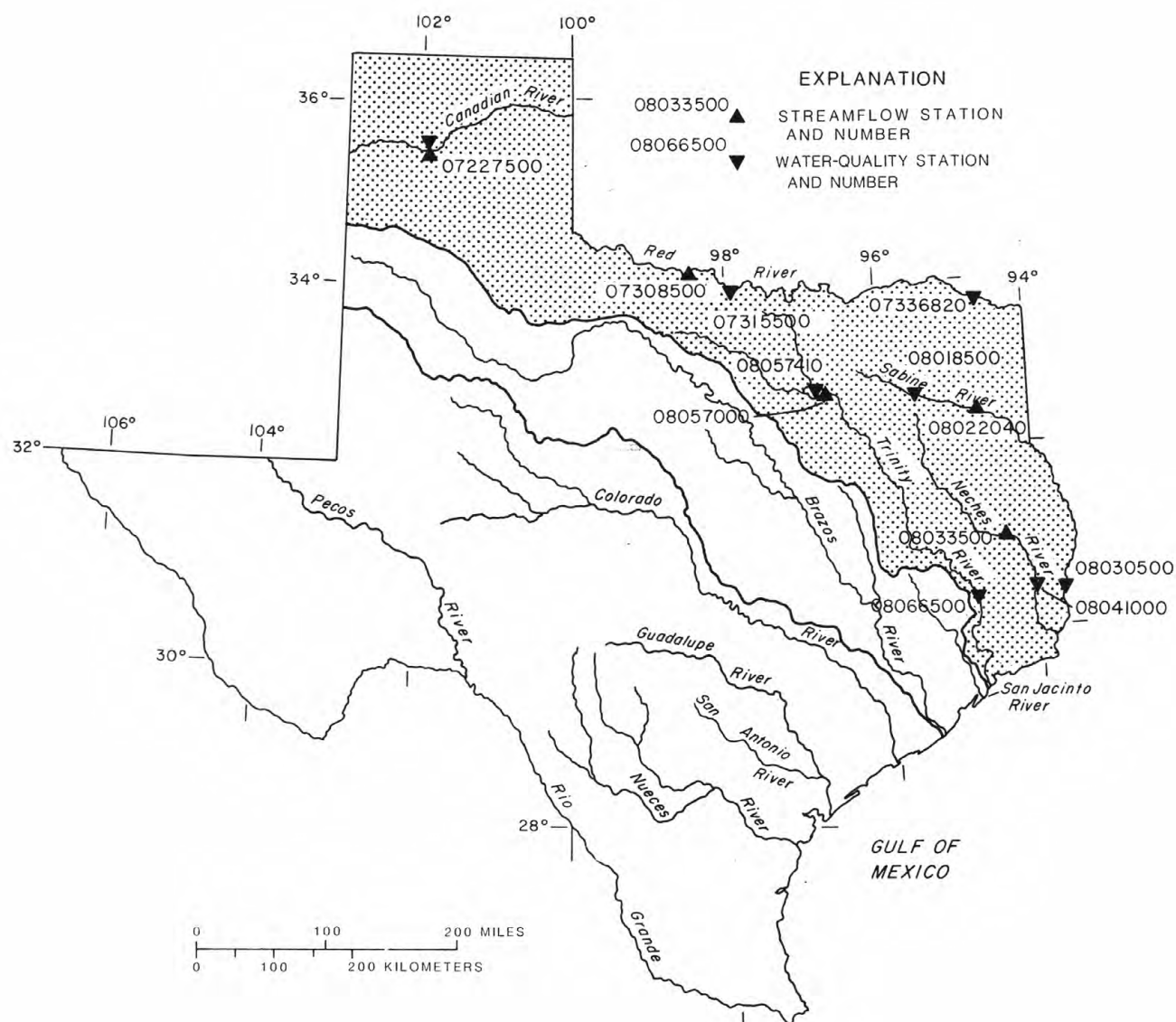


Figure 1.--Area of Texas covered by volume 1 (shaded) and location of selected streamflow and water-quality stations in volume 1.

## Streamflow

At the beginning of the 1987 water year, streamflow was near normal over the entire State with the exception of the middle portion of the Brazos River basin, where streamflow was greater than normal. Above-normal rainfall during the first half of the water year produced excessive runoff in most of the State's streams. By early April, streamflow in east Texas had returned to the normal range. Except for short periods of deficient flow in northeast Texas, streamflow across east Texas was near normal for the remainder of the year. For central and west Texas, including the Texas Panhandle, excessive streamflow continued through the second half of the year. The streamflow station on the Red River near Burkburnett (07308500) recorded almost three times as much runoff during the 1987 water year than for any previous water year since the station was established in 1959.

Streamflow at the hydrologic index station Neches River near Rockland was excessive (within the highest 25 percent of record) during November, December, and during March, deficient (within the lowest 25 percent of record) during May, and normal for the remainder of the year. A comparison of streamflow for the 1987 water year with streamflow for the period of record at five selected stations (fig. 1) for which data are included in volume 1 is presented in the following table:

Station no. and name	Discharge during 1987 water year (cubic feet per second)			Discharge during period of record (cubic feet per second)		
	Max.	Min.	Avg.	Max.	Min.	Avg.
07227500 Canadian River near Amarillo, Tex.	4,750	0.08	246	135,000	0 (1925, 1939-87)	314
07308500 Red River near Burkburnett, Tex.	98,700	350	4,424	166,000	0 (1959-87)	1,014
08022040 Sabine River near Beckville, Tex.	9,160	32	1,955	123,000	2.4 (1961-87)	2,219
08033500 Neches River near Rockland, Tex. <sup>1/</sup>	15,400	97	2,413	49,800	1.6 (1962-87)	1,999
08057000 Trinity River at Dallas, Tex.	12,400	255	2,217	184,000	1.2 (1904-87)	1,536
<sup>1/</sup> Hydrologic index station.						

At the other three index stations in the State, streamflow during the 1987 water year ranged from normal to above normal. Monthly mean discharges for the four hydrologic index stations in the State are plotted against the median of the long-term monthly means in figure 2. For the North Bosque River near Clifton, streamflow was excessive during the periods December through March and June and July, and normal for the remainder of the year. The North Concho River near Carlsbad had excessive streamflow from October through April and in July, and normal streamflow for the remaining four months. Excessive streamflow occurred at the Guadalupe River near Spring Branch during the entire water year.

Conservation storage in 31 selected reservoirs in this area (volume 1) of the State, with a total combined conservation capacity of 19,109,750 acre-feet, decreased from 92 percent at the end of September 1986 to 86 percent at the end of September 1987. Records from the 31 reservoirs indicate that contents increased in 7, decreased in 21, and remained the same in 3 during the 1987 water year.

## Water Quality

Dissolved-solids concentrations in most streams in the State are inversely related to water discharge. During years when rainfall and runoff are deficient, streamflow commonly is much more mineralized than in years when rainfall and runoff are normal or excessive. However, for streams where discharge is controlled by reservoirs, the mineralization of the water may remain relatively constant despite large fluctuations in rainfall and runoff.

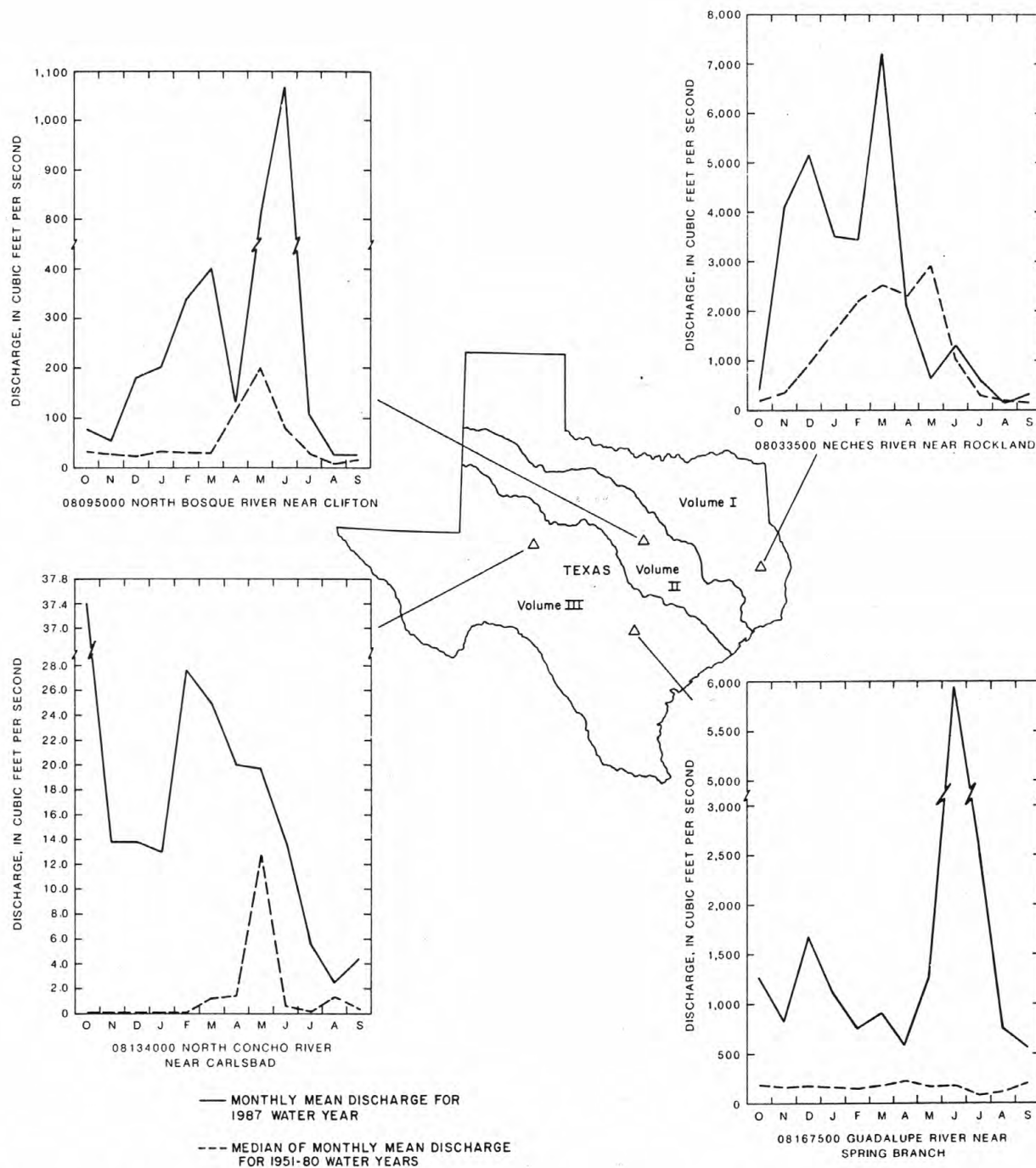


Figure 2.--Comparison of monthly mean discharges at four long-term hydrologic index gaging stations during the 1987 water year with median of the monthly mean discharges for 1951-80 water years.

Records of discharge-weighted-average concentrations of dissolved solids for the 1987 water year are compared with those for the 1983-87 water years for selected long-term daily or continuous-record stations (fig. 1) in the Arkansas, Red, Sabine, Neches, and Trinity River basins in the following table:

Station no. and name	Mean discharge (cubic feet per second)		Discharge-weighted-average concentration of dissolved solids (milligrams per liter)	
	1987	83-87	1987	1983-87
<u>Arkansas River basin</u>				
07227500 Canadian River near Amarillo, Tex.	246	121	899	939
<u>Red River basin</u>				
07315500 Red River near Terral, Okla.	8,925	3,706	1,260	1,300
07336820 Red River near DeKalb, Tex.	24,370	15,750	707	482
<u>Sabine River basin</u>				
08018500 Sabine River near Mineola, Tex.	503	713	149	126
08030500 Sabine River near Ruliff, Tex.	9,627	3,585	74	72
<u>Neches River basin</u>				
08041000 Neches River at Evadale, Tex.	7,317	6,520	85	84
<u>Trinity River basin</u>				
08057410 Trinity River below Dallas, Tex.	2,633	1,828	284	300
08066500 Trinity River at Romayor, Tex.	8,879	7,494	194	189

#### 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.

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.

#### EXPLANATION OF THE RECORDS

The surface-water records published in this report are for the 1987 water year that began October 1, 1986, and ended September 30, 1987. 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 indentation in the "List of Stations" in the front of this report. Each indentation represents one rank. This downstream order and system of indentation 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 otherwise 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 ft<sup>3</sup>/s; to the nearest tenth between 1.0 and 10 ft<sup>3</sup>/s; to whole numbers between 10 and 1,000 ft<sup>3</sup>/s; and to 3 significant figures for more than 1,000 ft<sup>3</sup>/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, radiochemical 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. The 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:

PRINTED OUTPUTREMARK

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 ( $\text{g}/\text{m}^3$ ), and periphyton and benthic organisms in grams per square meter ( $\text{g}/\text{m}^2$ ).

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 ( $\text{ft}^3/\text{s}$ ) 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 [ $(\text{ft}^3/\text{s})/\text{mi}^2$ ] 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  $\mu\text{m}$  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 ( $\text{CaCO}_3$ ).

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 ( $\mu\text{g/L}$ ,  $\mu\text{g/L}$ ) 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 ( $\text{mg/L}$ ,  $\text{mg/L}$ ) 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  $\text{mg/L}$  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 ( $\text{m}^2$ ), 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 ( $1 \times 10^{-12}$ ) of the amount of radioactivity represented by a curie (Ci). A curie is the amount of radioactivity that yields  $3.7 \times 10^{10}$  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 quality 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/(m<sup>2</sup>.time)] for periphyton and macrophytes and [mg C/(m<sup>3</sup>.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/(m<sup>2</sup>.time)] for periphyton and macrophytes and [mg O/(m<sup>3</sup>.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 stream-bed.

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 (ft<sup>3</sup>/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  $\mu$ 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  $\mu\text{m}$  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, 1987, is called the "1987 water year."

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 OF 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 p.
- 3-A1. "General field and office procedures for indirect measurements," by M. A. Benson and Tate Dalrymple: USGS--TWRI Book 3, Chapter A1. 1967. 30 p.
- 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 p.
- 3-A3. "Measurement of peak discharge at culverts by indirect methods," by G. L. Bodhaine: USGS--TWRI Book 3, Chapter A3. 1968. 60 p.
- 3-A4. "Measurement of peak discharge at width contractions by indirect methods," by H. F. Matthai: USGS--TWRI Book 3, Chapter A4. 1967. 44 p.
- 3-A5. "Measurement of peak discharge at dams by indirect methods," by Harry Hulsing: USGS--TWRI Book 3, Chapter A5. 1967. 29 p.
- 3-A6. "General procedure for gaging streams," by R. W. Carter and Jacob Davidian: USGS--TWRI Book 3, Chapter A6. 1968. 13 p.
- 3-A7. "Stage measurements at gaging stations," by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A7. 1968. 28 p.
- 3-A8. "Discharge measurements at gaging stations," by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A8. 1969. 65 p.
- 3-A9. "Measurement of time of travel and dispersion in streams by dye tracing," by E. F. Hubbard, F. A. Kilpatrick, L. A. Martens, and J. F. Wilson, Jr.: USGS--TWRI Book 3, Chapter A9. 1982. 44 p.
- 3-A10. "Discharge ratings at gaging stations," by E. J. Kennedy: USGS--TWRI Book 3, Chapter A10. 1984. 59 p.
- 3-A11. "Measurement of discharge by moving-boat method," by G. F. Smoot and C. E. Novak: USGS--TWRI Book 3, Chapter A11. 1969. 22 p.
- 3-A13. "Computations of continuous records of streamflow," by E. J. Kennedy: USGS--TWRI Book 3, Chapter A13. 1983. 53 p.
- 3-A14. "Use of flumes in measuring discharge," by F. A. Kilpatrick and V. R. Schneider: USGS--TWRI Book 3, Chapter A14. 1983. 46 p.
- 3-A15. "Computation of water-surface profiles in open channels," by Jacob Davidian: USGS--TWRI Book 3, Chapter A15. 1984. 48 p.
- 3-C1. "Fluvial sediment concepts," by H. P. Guy: USGS--TWRI Book 3, Chapter C1. 1970. 55 p.
- 3-C2. "Field methods for measurement of fluvial sediment," by H. P. Guy and V. W. Norman: USGS--TWRI Book 3, Chapter C2. 1970. 59 p.
- 3-C3. "Computation of fluvial-sediment discharge," by George Porterfield: USGS--TWRI Book 3, Chapter C3. 1972. 66 p.
- 4-A1. "Some statistical tools in hydrology," by H. C. Riggs: USGS--TWRI Book 4, Chapter A1. 1968. 39 p.
- 4-A2. "Frequency curves," by H. C. Riggs: USGS--TWRI Book 4, Chapter A2. 1968. 15 p.
- 4-B1. "Low-flow investigations," by H. C. Riggs: USGS--TWRI Book 4, Chapter B1. 1972. 18 p.
- 4-B2. "Storage analyses for water supply," by H. C. Riggs and C. H. Hardison: USGS--TWRI Book 4, Chapter B2. 1973. 20 p.
- 4-B3. "Regional analyses of streamflow characteristics," by H. C. Riggs: USGS--TWRI Book 4, Chapter B3. 1973. 15 p.
- 5-A1. "Methods for determination of inorganic substances in water and fluvial sediments," by M. W. Skougstad and others: USGS--TWRI Book 5, Chapter A1. 1979. 626 p.
- 5-A2. "Determination of minor elements in water by emission spectroscopy," by P. R. Barnett and E. C. Mallory, Jr.: USGS--TWRI Book 5, Chapter A2. 1971. 31 p.
- 5-A3. "Methods for analysis of organic substances in water," by D. F. Goerlitz and Eugene Brown: USGS--TWRI Book 5, Chapter A3. 1972. 40 p.
- 5-A4. "Methods for collection and analysis of aquatic biological and microbiological samples," edited by P. E. Greeson, T. A. Ehlke, G. A. Irwin, B. W. Lium, and K. V. Slack: USGS--TWRI Book 5, Chapter A4. 1977. 332 p.

- 5-A5. "Methods for determination of radioactive substances in water and fluvial sediments," by L. L. Thatcher, V. J. Janzer, and K. W. Edwards: USGS--TWRI Book 5, Chapter A5. 1977. 95 p.
- 5-A6. "Quality assurance practices for the chemical and biological analyses of water and fluvial sediments," by L. C. Friedman and D. E. Erdmann: USGS--TWRI Book 5, Chapter A6. 1982. 181 p.
- 5-C1. "Laboratory theory and methods for sediment analysis," by H. P. Guy: USGS--TWRI Book 5, Chapter C1. 1969. 58 p.
- 7-C3. "A model for simulation of flow in singular and interconnected channels," by R. W. Schaffranek, R. A. Baltzer, and D. E. Goldberg: USGS--TWRI Book 7, Chapter C3. 1983. 110 p.
- 8-A2. "Installation and service manual for U.S. Geological Survey manometers," by J. D. Craig: USGS--TWRI Book 8, Chapter A2. 1983. 57 p.
- 8-B2. "Calibration and maintenance of vertical-axis type current meters," by G. F. Smoot and C. E. Novak: USGS--TWRI Book 8, Chapter B2. 1968. 15 p.

LOWER MISSISSIPPI RIVER BASIN

25

ARKANSAS RIVER BASIN

07227000 CANADIAN RIVER AT LOGAN, NM

LOCATION.--Lat 35°21'25", long 103°25'03", in NE1/4NE1/4 sec.15, T.13 N., R.33 E., Quay County, Hydrologic Unit 11080006, on left bank 1,100 ft upstream from bridge on U.S. Highway 54, 0.7 mi south of Logan, 1.4 mi upstream from Chicago, Rock Island & Pacific Railroad Co. bridge, 2.0 mi downstream from Ute Dam, 4.3 mi upstream from Revuelto Creek, and at mile 672.0.

DRAINAGE AREA.--11,141 mi<sup>2</sup>, of which 1,100 mi<sup>2</sup> is probably noncontributing.

PERIOD OF RECORD.--June 1904 to November 1905 (gage heights and discharge measurements only), December 1908 to September 1909, February 1910, April to July 1910, August 1910 to September 1911 (gage heights and discharge measurements only), October 1911 to May 1914, January to May 1924, September 1924 to July 1925, January 1927 to April 1934, August 1934 to current year. Monthly discharge only for some periods, published in WSP 1311. Records for December 1909, January 1910, and May to July 1934, published in WSP 267, 287, and 762 are unreliable and should not be used. Published as South Canadian River June to September 1904.

REVISED RECORDS.--WSP 1087: 1935-36. WSP 1117: Drainage area. WSP 1281: 1912, 1932(M), 1934, 1945-47, 1949-50. WSP 1311: 1931(M). See also PERIOD OF RECORD.

GAGE.--Water-stage recorder. Datum of gage is 3,667.1 ft above National Geodetic Vertical Datum of 1929. Prior to Jan. 1, 1987 same site at datum 1 ft higher. See WSP 1311 or 1731 for history of changes prior to Oct. 1, 1934.

REMARKS.--Estimated daily discharges: Apr. 8-29, July 22 to Aug. 6 and Aug. 12 to Sept. 17. Records poor. Flow regulated by Conchas Lake, 45 mi upstream (station 07223500) and Ute Reservoir, 2 mi upstream (station 07226800). Diversions for irrigation of about 90,000 acres upstream from station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--15 years (water years 1909, 1912-13, 1927-38) prior to completion of Conchas dam, 392 ft<sup>3</sup>/s (284,000 acre-ft/yr); 24 years (water years 1939-62) prior to completion of Ute Dam, 257 ft<sup>3</sup>/s (186,200 acre-ft/yr); 25 years (water years 1963-87), 39.1 ft<sup>3</sup>/s, 28,330 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD (SINCE 1925).--Maximum discharge, 219,000 ft<sup>3</sup>/s Sept. 22, 1941 (gage height, 29.3 ft), from floodmarks, from rating curve extended above 75,000 ft<sup>3</sup>/s; no flow at times prior to completion of Ute Dam.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge, 278,000 ft<sup>3</sup>/s Sept. 30, 1904 (gage height, about 36.5 ft), site and datum used in 1909, from rating curve extended above 14,000 ft<sup>3</sup>/s, from Ninth Biennial Report of New Mexico State Engineer.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,460 ft<sup>3</sup>/s May 20 (gage height, 7.82); minimum daily, 0.46 ft<sup>3</sup>/s Apr. 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.3	2.3	2.3	2.6	1.3	1.0	.47	353	540	336	3.5	3.3
2	2.0	2.5	2.3	2.8	1.3	1.0	.48	354	537	337	3.5	3.3
3	2.2	2.5	2.3	2.7	1.2	1.0	.48	357	328	337	3.5	3.3
4	2.2	2.7	2.3	2.7	1.2	1.0	.46	356	334	337	3.5	3.3
5	2.2	2.4	2.3	2.7	1.2	2.4	.51	359	482	339	3.5	3.3
6	2.3	2.4	2.3	2.5	1.2	.70	.53	361	453	338	3.5	9.0
7	2.3	2.3	2.4	2.5	1.2	.58	.53	363	383	338	3.3	4.0
8	2.3	2.3	2.4	2.6	1.2	.56	170	364	296	338	3.3	3.2
9	2.3	2.3	2.4	2.6	1.2	.56	310	367	246	337	3.5	3.3
10	2.4	2.4	2.3	2.5	1.2	.57	310	371	208	336	3.4	3.3
11	2.3	2.3	2.3	2.5	1.2	.56	310	374	331	334	3.3	3.5
12	2.3	2.3	2.3	2.5	1.2	.57	310	376	629	335	10	3.5
13	2.3	2.3	2.3	2.4	1.2	.58	310	377	805	333	4.5	3.5
14	2.3	2.3	2.2	2.3	1.1	.56	310	255	479	331	3.3	3.5
15	2.3	2.3	2.2	2.3	1.1	.56	310	24	451	330	3.3	3.5
16	3.0	2.3	2.3	2.3	1.1	.57	315	222	338	320	3.3	3.5
17	2.4	2.3	2.3	2.3	1.1	.58	315	931	388	344	3.3	6.7
18	2.3	2.3	2.2	2.3	1.1	.57	315	899	421	326	3.3	3.2
19	2.3	2.4	2.1	2.2	1.2	.56	315	1100	359	324	3.4	3.0
20	2.3	2.3	2.1	2.2	1.1	.55	315	1890	336	324	3.4	3.2
21	2.4	2.3	2.1	1.8	1.1	.53	315	1590	345	323	3.4	3.9
22	2.3	2.2	2.2	1.9	.99	.49	320	1310	330	137	3.4	3.1
23	2.3	2.4	2.2	1.8	.99	.47	320	1430	329	10	3.4	3.1
24	2.3	2.3	2.2	1.7	.99	.47	320	1450	328	8.5	3.4	3.1
25	2.3	2.3	2.2	1.6	.98	.47	320	1340	330	5.5	3.4	3.1
26	2.3	2.3	2.2	1.6	1.1	.48	320	1420	334	3.5	8.0	3.1
27	2.3	2.3	2.1	1.4	1.0	.47	325	1220	331	3.4	4.3	3.1
28	2.3	2.2	2.1	1.1	.98	.47	330	1170	332	3.4	3.5	3.1
29	2.3	2.2	2.1	1.1	---	.48	330	1230	335	3.4	2.7	3.7
30	2.3	2.4	2.0	.99	---	.50	353	924	335	3.4	3.3	3.4
31	2.3	---	2.0	.95	---	.50	---	653	---	3.4	3.4	---
TOTAL	70.7	70.1	69.0	65.44	31.73	20.36	7171.46	23790	11673	7178.5	117.8	109.1
MEAN	2.28	2.34	2.23	2.11	1.13	.66	239	767	389	232	3.80	3.64
MAX	3.0	2.7	2.4	2.8	1.3	2.4	353	1890	805	344	10	9.0
MIN	1.3	2.2	2.0	.95	.98	.47	.46	24	208	3.4	2.7	3.0
AC-FT	140	139	137	130	63	40	14220	47190	23150	14240	234	216
CAL YR 1986	TOTAL	839.50	MEAN	2.30	MAX	30	MIN	1.3	AC-FT	1670		
WTR YR 1987	TOTAL	50367.19	MEAN	138	MAX	1890	MIN	.46	AC-FT	99900		

## ARKANSAS RIVER BASIN

07227100 REVUELTO CREEK NEAR LOGAN, NM

LOCATION.--Lat 35°20'29", long 103°23'37", in SW1/4NW1/4 sec.24, T.13 N., R.33 E., Quay County, Hydrologic Unit 11080008, on right bank 0.3 mi upstream from bridge on State Highway 39, 1.9 mi southeast of Logan, and at mile 2.3.

DRAINAGE AREA.--786 mi<sup>2</sup>.

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

GAGE.--Water-stage recorder. Elevation of gage is 3,670 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Jan. 16, 1981, at site 320 ft upstream at datum 0.56 ft higher.

REMARKS.--Estimated daily discharges: Oct. 12 to Nov. 18, Jan. 17-25, and Feb. 20-23. Water-discharge records poor. Low flows supplemented by surface and ground-water return from irrigation in vicinity of Tucumcari. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--28 years, 43.5 ft<sup>3</sup>/s (31,520 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,700 ft<sup>3</sup>/s, July 9, 1960 (gage height, 14.3 ft), site and datum then in use; no flow at times most years.

EXTREMES OUTSIDE PERIOD OF RECORD (1941-47).--Maximum discharge determined, about 13,400 ft<sup>3</sup>/s Sept. 18, 1946, gage height, 9.04 ft, at site 180 ft downstream at different datum, from unpublished records collected by U.S. Bureau of Reclamation.  
A peak of 26,100 ft<sup>3</sup>/s, date unknown (gage height, 12.9 ft at former site and datum), was measured by slope-area method in May 1957.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Aug. 9	0445	*4,980	*6.97	Aug. 27	0145	3,610	6.05

Minimum discharge, 0.21 ft<sup>3</sup>/s Aug. 21, 22.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.6	14	8.3	15	14	45	6.1	42	14	18	4.1	6.8
2	8.8	20	8.3	14	7.6	26	3.7	43	21	7.9	15	3.0
3	11	30	7.8	13	13	21	5.3	110	30	7.0	25	1.1
4	10	150	7.7	9.8	15	27	2.5	133	33	2.2	20	.57
5	13	110	7.4	8.4	22	32	6.3	93	21	2.4	24	27
6	15	40	9.0	6.7	15	31	8.8	86	13	2.1	27	59
7	11	20	21	6.3	9.1	26	6.4	82	9.5	1.2	25	72
8	11	12	21	7.1	10	21	5.7	72	14	.62	13	15
9	9.6	8.0	32	8.7	11	21	4.8	71	51	.85	1290	30
10	240	7.0	23	13	11	23	3.6	70	33	.72	565	11
11	258	8.0	30	14	6.8	20	3.1	63	15	1.8	347	5.9
12	150	10	25	9.3	6.1	14	2.5	60	132	1.2	172	4.0
13	35	12	25	8.8	4.2	12	16	60	31	3.8	49	238
14	20	9.0	27	7.7	7.0	13	21	66	13	3.1	24	71
15	15	8.0	24	5.5	3.9	12	5.8	78	8.2	69	21	53
16	14	8.0	23	4.8	7.0	11	5.6	88	4.0	12	5.6	24
17	13	8.0	22	4.0	8.6	20	3.6	113	4.0	6.1	.97	13
18	14	7.4	26	3.0	11	57	4.5	82	3.3	4.6	.49	105
19	60	7.3	42	2.5	56	93	2.3	230	2.1	3.9	.47	57
20	100	6.8	30	2.4	60	21	4.3	195	5.6	2.8	.66	143
21	50	6.6	24	2.6	45	7.7	1.4	70	7.0	2.4	.60	254
22	35	6.5	30	2.8	35	6.5	1.6	74	9.4	1.5	44	75
23	20	13	58	3.0	66	5.2	52	358	11	1.4	244	44
24	15	41	28	7.0	39	8.9	13	349	13	2.6	109	16
25	14	23	22	20	37	9.5	105	120	357	2.4	78	9.2
26	12	20	18	145	41	8.9	70	87	78	2.3	95	9.3
27	10	17	15	154	66	5.2	41	38	26	3.7	787	10
28	10	12	21	48	38	3.4	27	48	39	3.4	225	9.7
29	11	11	15	27	---	3.4	24	49	24	5.6	58	10
30	9.0	9.6	17	21	---	4.4	29	31	25	6.6	16	24
31	10	---	17	22	---	6.5	---	20	---	4.9	5.0	---
TOTAL	1211.0	655.2	684.5	616.4	665.3	615.6	485.9	3081	1047.1	188.09	4290.89	1400.57
MEAN	39.1	21.8	22.1	19.9	23.8	19.9	16.2	99.4	34.9	6.07	138	46.7
MAX	258	150	58	154	66	93	105	358	357	69	1290	254
MIN	6.6	6.5	7.4	2.4	3.9	3.4	1.4	20	2.1	.62	.47	.57
AC-FT	2400	1300	1360	1220	1320	1220	964	6110	2080	373	8510	2780
CAL YR 1986	TOTAL	11009.65	MEAN	30.2	MAX	900	MIN	.00	AC-FT	21840		
WTR YR 1987	TOTAL	14941.55	MEAN	40.9	MAX	1290	MIN	.47	AC-FT	29640		

## 07227500 CANADIAN RIVER NEAR AMARILLO, TX

LOCATION.--Lat 35°28'13", long 101°52'45", Potter County, Hydrologic Unit 11090105, on left bank at downstream side of southbound lane of bridge on U.S. Highways 87 and 287, 1,500 ft downstream from Pitcher Creek, 1.4 mi downstream from East Amarillo Creek, 1.7 mi downstream from Panhandle and Santa Fe Railway Co. bridge, 19 mi north of Amarillo, and 537.7 mi upstream from mouth.

DRAINAGE AREA.--19,445 mi<sup>2</sup>, of which 4,069 mi<sup>2</sup> probably is noncontributing.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1924 to December 1925, January 1938 to current year. Monthly discharge only for some periods published in WSP 1311.

REVISED RECORDS.--WSP 1341: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,989.16 ft above National Geodetic Vertical Datum of 1929. Jan. 16, 1924, to Dec. 31, 1925, and Apr. 3 to June 1, 1938, nonrecording gage at site of old bridge 20 ft upstream at same datum. June 2 to Dec. 5, 1938, nonrecording gage at present site and datum.

REMARKS.--Records fair except those for periods computed from wire-weight gage readings, which are poor. At times, low flow is maintained by release of sewage effluent from the Amarillo disposal plant into East Amarillo Creek, a tributary to the Canadian River. Some regulation by Conchas and Ute Reservoirs in New Mexico, total capacity 439,700 acre feet. Conchas Canal and Bell Ranch Canal divert water from Conchas Reservoir for irrigation.

AVERAGE DISCHARGE.--50 years (water years 1925, 1939-87), 314 ft<sup>3</sup>/s (227,500 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 135,000 ft<sup>3</sup>/s July 25, 1941 (gage height, 15.7 ft), from rating curve extended above 100,000 ft<sup>3</sup>/s; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in May 1914 reached a stage of 24 ft; a higher stage probably occurred during flood in October 1904, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 14,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
May 3	2130	*4,750	*4.90	No peak greater than base discharge.			
Minimum discharge, 0.08 ft <sup>3</sup> /s Aug. 8.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	122	28	39	20	75	90	43	464	589	410	4.6	267
2	102	30	36	20	65	127	39	458	506	388	2.8	171
3	91	44	34	20	57	114	37	1050	543	303	1.4	128
4	66	814	30	19	50	109	33	626	719	292	1.1	112
5	52	1700	29	18	47	95	34	453	274	250	1.2	97
6	45	524	33	19	40	82	36	403	285	237	.54	617
7	40	330	42	18	37	70	39	428	640	227	.21	917
8	33	236	42	23	32	60	39	424	606	233	.08	262
9	185	185	40	25	29	59	37	454	575	216	1220	216
10	172	161	40	21	28	64	36	413	560	201	584	197
11	284	141	42	22	25	58	31	433	360	200	1200	513
12	191	141	49	23	22	52	68	432	455	199	1540	386
13	101	116	49	21	25	50	220	420	300	192	578	156
14	116	113	45	21	25	44	277	452	1710	198	783	106
15	110	106	36	20	23	39	266	454	1060	209	532	75
16	104	93	31	17	25	33	266	448	465	222	334	59
17	94	84	29	13	30	41	266	447	373	269	161	89
18	69	87	30	40	30	56	262	323	374	342	87	159
19	57	76	27	26	29	71	289	1230	349	246	37	179
20	45	68	26	26	39	62	274	1730	194	192	11	143
21	262	59	25	31	44	45	311	2430	440	219	5.0	123
22	218	53	25	29	58	42	328	1790	389	216	17	117
23	133	53	24	29	51	64	368	1400	298	229	19	204
24	117	53	23	28	47	107	370	1810	243	229	134	158
25	106	53	27	29	54	113	355	2010	495	212	145	185
26	99	49	24	34	75	70	368	1780	956	136	79	129
27	77	40	26	62	89	63	424	2020	409	55	495	111
28	66	44	25	131	100	55	451	1470	506	34	1050	119
29	53	42	26	107	---	47	484	1390	254	22	933	90
30	44	40	25	90	---	51	462	1480	549	17	383	72
31	34	---	23	84	---	51	---	1090	---	10	325	---
TOTAL	3288	5563	1002	1086	1251	2084	6513	30212	15476	6405	10663.93	6157
MEAN	106	185	32.3	35.0	44.7	67.2	217	975	516	207	344	205
MAX	284	1700	49	131	100	127	484	2430	1710	410	1540	917
MIN	33	28	23	13	22	33	31	323	194	10	.08	59
AC-FT	6520	11030	1990	2150	2480	4130	12920	59930	30700	12700	21150	12210

CAL YR 1986 TOTAL 40659.63 MEAN 111 MAX 6570 MIN .00 AC-FT 80650  
WTR YR 1987 TOTAL 89700.87 MEAN 246 MAX 2430 MIN .08 AC-FT 177900

## ARKANSAS RIVER BASIN

07227500 CANADIAN RIVER NEAR AMARILLO, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: July 1948 to October 1949, February 1950 to current year. Chemical and biochemical analyses: March 1968 to current year. Pesticide analyses: March 1968 to June 1981.

## PERIOD OF RECORD.--

SPECIFIC CONDUCTANCE: October 1950 to current year.

WATER TEMPERATURE: August 1949 to current year.

SUSPENDED SEDIMENT DISCHARGE: August 1949 to September 1952.

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, 6,870 microsiemens July 11, 1983; minimum daily, 346 microsiemens Oct. 29, 1964. WATER TEMPERATURE (1949-76): Maximum daily, 39.0°C July 7, 1973; minimum daily, 0.0°C on many days during winter months.

## EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 4,330 microsiemens Apr. 11; minimum daily, 600 microsiemens Aug. 13.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	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 (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	
NOV 11...	0845	141	1670	8.30	0.5	12.0	93	1.2	230	100	
JAN 06...	0940	17	3900	8.20	3.0	11.5	98	1.2	570	310	
MAR 03...	1055	118	3330	8.10	10.0	10.8	107	1.5	430	180	
APR 22...	1140	324	1550	8.30	13.0	--	--	--	--	--	
MAY 12...	1800	425	1400	7.90	27.0	7.2	102	1.4	250	60	
JUN 11...	0930	333	1260	8.60	23.0	--	--	--	280	140	
JUL 07...	1730	260	1250	8.10	30.5	6.4	97	0.2	250	120	
AUG 25...	0805	123	1150	7.90	21.0	7.4	94	1.1	99	0	
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 WH WAT TOTAL 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 11...	56	22	250	7	3.5	127	180	300		0.60	9.7
JAN 06...	130	59	640	12	6.1	254	510	890		0.90	16
MAR 03...	94	47	590	13	6.0	248	410	770		1.0	12
APR 22...	--	--	--	--	--	184	--	--		--	--
MAY 12...	54	29	220	6	6.2	194	280	190		0.50	6.6
JUN 11...	66	29	150	4	6.5	148	240	140		0.50	7.4
JUL 07...	54	28	170	5	6.2	126	260	160		0.60	7.0
AUG 25...	23	10	200	9	3.6	132	100	220		0.40	9.1
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- PHORUS, TOTAL (MG/L AS P)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)
NOV 11...	900	--	<0.010	0.300	0.020	0.58	0.60	1.80		3	200
JAN 06...	2400	0.780	0.020	0.800	0.060	0.24	0.30	0.380		--	--
MAR 03...	2100	0.250	0.150	0.400	1.10	1.0	2.1	1.00		--	--
APR 22...	--	--	--	--	--	--	--	--		--	--
MAY 12...	900	0.020	0.180	0.200	0.020	0.28	0.30	0.970		--	--
JUN 11...	730	--	--	--	--	--	--	--		--	--
JUL 07...	760	--	0.100	<0.100	0.050	0.85	0.90	0.540		2	120
AUG 25...	650	--	<0.010	0.600	0.030	1.1	1.1	0.100		--	--

## ARKANSAS RIVER BASIN

29

07227500 CANADIAN RIVER NEAR AMARILLO, TX--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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 11...	1	<10	4	8	<5	9	<0.1	<1	<1	10
JAN 06...	--	--	--	--	--	--	--	--	--	--
MAR 03...	--	--	--	--	--	--	--	--	--	--
APR 22...	--	--	--	--	--	--	--	--	--	--
MAY 12...	--	--	--	--	--	--	--	--	--	--
JUN 11...	--	--	--	--	--	--	--	--	--	--
JUL 07...	<1	<10	<1	9	<5	1	0.2	<1	<1	5
AUG 25...	--	--	--	--	--	--	--	--	--	--

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1986 TO SEPTEMBER 1987

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. 1986	3288	1950	1160	10300	390	3500	250	2210	310
NOV. 1986	5563	1670	993	14900	340	5050	210	3190	260
DEC. 1986	1002	3680	2230	6040	810	2180	500	1360	580
JAN. 1987	1086	3560	2160	6350	780	2290	490	1430	570
FEB. 1987	1251	3880	2360	7980	860	2900	540	1810	620
MAR. 1987	2084	3330	2010	11300	720	4030	450	2530	530
APR. 1987	6513	1920	1140	20000	390	6780	240	4280	300
MAY 1987	30212	1330	786	64100	260	21000	160	13300	210
JUNE 1987	15476	1230	721	30100	240	9840	150	6250	190
JULY 1987	6405	1270	744	12900	240	4190	150	2660	200
AUG. 1987	10663.93	1130	665	19200	220	6220	140	3960	180
SEPT 1987	6157	1470	866	14400	290	4750	180	3020	230
TOTAL	89700.93	**	**	218000	**	72800	**	46100	**
WTD.AVG.	246	1520	899	**	300	**	190	**	240

## ARKANSAS RIVER BASIN

07227500 CANADIAN RIVER NEAR AMARILLO, TX--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
EQUIVALENT MEAN

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1040	3360	3520	3680	4190	3560	3840	1510	2050	1120	2670	920
2	1530	3340	3540	3790	4210	3180	3970	1590	2160	1150	3250	1120
3	2090	3210	3550	3810	4200	3330	3990	1050	2100	1210	3710	1370
4	2330	2050	3670	3900	4060	3290	4080	870	1220	1240	3710	1670
5	2590	800	3740	3910	4010	3120	4050	990	1550	1250	3520	1920
6	2850	950	3650	3970	4000	3060	3980	1120	1530	1260	3510	1140
7	3070	1110	3500	4050	3960	2990	3850	1080	1080	1270	3520	880
8	3310	1280	3460	3960	3920	3350	3970	1160	1090	1320	3630	1220
9	1490	1350	3490	3940	3900	3440	4050	1100	1150	1280	1010	1460
10	1560	1450	3550	3970	3930	3600	4140	1230	1170	1300	1790	1610
11	1120	1600	3500	3890	3910	3590	4330	1180	1260	1340	1240	1220
12	1160	1990	3390	4070	3860	3870	4000	1200	1200	1360	1150	1490
13	1970	2350	3680	4130	3800	4260	2460	1440	1440	1430	600	1830
14	3160	2320	3660	4080	3880	4170	1820	1380	780	1390	940	2000
15	2950	2620	3800	4100	3940	4240	1810	1370	860	1330	870	2190
16	2730	2880	3970	4230	3900	4270	1670	1450	1000	1260	850	2300
17	2500	3010	3960	4310	3840	3920	1680	1510	1110	1200	1000	2210
18	2480	2950	3800	4260	3780	3890	1710	1740	1130	1110	1230	2040
19	2660	3280	3660	4290	3920	3270	1650	1160	1170	1170	1610	1710
20	2920	3560	3590	4320	3850	3280	1740	890	1240	1280	2070	1850
21	1070	3530	3720	4200	3800	3450	1480	700	1100	1310	2440	1920
22	1150	3500	3690	4250	3690	3720	1490	1340	1220	1340	2760	1980
23	1570	3490	3680	4300	3880	3590	1610	1770	1190	1300	2930	1620
24	1980	3300	3670	4320	3970	3410	1830	1500	1320	1280	2000	1940
25	2390	3470	3540	4300	3820	2770	2010	1320	1100	1280	1210	1770
26	2850	3360	3810	4190	3690	2440	2120	1600	1290	1300	1640	1960
27	3310	3370	3890	3240	3650	2250	2000	1260	1300	1420	1360	1950
28	2940	3480	3960	2060	3510	2540	1740	1550	1320	1600	990	1940
29	2680	3500	4070	2310	---	2930	1500	1770	1120	1830	1350	2120
30	3000	3510	4100	3170	---	3300	1520	1660	1100	2040	1050	2320
31	3110	---	4140	4180	---	3400	---	1940	---	2250	810	---
MEAN	2310	2670	3710	3910	3900	3400	2670	1340	1280	1360	1950	1720

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18.0	---	---	6.0	---	---	12.0	---	---	21.0	20.0	20.0
2	---	---	---	9.0	---	---	13.0	---	---	---	21.0	20.0
3	19.0	---	9.0	10.0	---	---	12.0	---	---	---	21.0	20.0
4	---	---	8.0	11.0	---	---	---	---	---	---	21.0	19.0
5	---	---	10.0	11.0	---	---	---	---	---	23.0	21.0	---
6	---	---	10.0	9.0	---	---	9.0	---	---	24.0	22.0	---
7	---	---	9.0	---	---	13.0	---	---	---	22.0	22.0	---
8	26.0	---	7.0	---	---	---	---	---	---	21.0	---	---
9	17.0	---	---	8.0	---	12.0	18.0	---	---	23.0	---	---
10	15.0	6.0	---	8.0	---	10.0	17.0	---	---	22.0	---	---
11	10.0	---	---	9.0	---	12.0	---	---	---	---	---	---
12	10.0	---	10.0	13.0	---	12.0	---	---	---	---	26.0	---
13	15.0	4.0	10.0	13.0	---	12.0	---	---	---	---	28.0	---
14	17.0	10.0	10.0	10.0	---	---	18.0	---	---	---	30.0	---
15	---	10.0	3.0	---	---	---	17.0	---	---	---	29.0	26.0
16	---	13.0	7.0	---	---	13.0	18.0	---	---	---	29.0	---
17	20.0	14.0	6.0	---	---	8.0	18.0	---	30.0	---	31.0	---
18	21.0	12.0	---	---	---	13.0	---	---	---	---	31.0	20.0
19	14.0	16.0	---	---	---	16.0	---	---	30.0	---	---	24.0
20	17.0	8.0	4.0	---	---	18.0	17.0	---	30.0	29.0	---	19.0
21	---	---	4.0	---	---	---	16.0	---	---	29.0	20.0	17.0
22	19.0	---	6.0	---	---	---	17.0	---	29.0	---	20.0	25.0
23	---	7.0	---	---	---	---	---	---	31.0	---	17.0	25.0
24	---	3.0	5.0	---	---	11.0	---	---	---	23.0	18.0	---
25	11.0	3.0	5.0	---	---	---	---	---	---	22.0	22.0	---
26	11.0	3.0	2.0	---	---	15.0	---	---	26.0	22.0	---	17.0
27	10.0	3.0	---	---	---	---	---	---	21.0	21.0	---	18.0
28	---	3.0	---	6.0	---	---	---	---	21.0	21.0	---	16.0
29	11.0	3.0	---	11.0	---	---	22.0	---	22.0	21.0	17.0	16.0
30	12.0	3.0	---	11.0	---	11.0	23.0	---	21.0	---	20.0	17.0
31	11.0	---	8.0	8.0	---	16.0	---	---	---	---	19.0	---
MEAN	15.0	7.0	7.0	9.5	---	13.0	16.5	---	26.0	23.0	23.0	20.0

## 07227900 LAKE MEREDITH NEAR SANFORD, TX

LOCATION.--Lat 35°42'38", long 101°33'03", Hutchinson County, Hydrologic Unit 11090106, in outlet tower near right end of dam on Canadian River, 1.2 mi northwest of Sanford, and 508.5 mi upstream from mouth.

DRAINAGE AREA.--20,220 mi<sup>2</sup>, of which 4,172 mi<sup>2</sup> probably is noncontributing.

PERIOD OF RECORD.--October 1964 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Bureau of Reclamation). Prior to Aug. 16, 1965, nonrecording gage read daily at same site and datum.

REMARKS.--The lake is formed by a rolled earthfill dam 6,410 ft long. The dam was completed and storage began in October 1964. The service spillway is an uncontrolled concrete drop inlet located near the left end of dam. The spillway discharges into a 22-foot-diameter conduit that is designed to discharge 19,300 ft<sup>3</sup>/s at an elevation of 3,004.9 ft. The flood-control outlet works consist of three 12- by 15-foot gates that open into three 15.5-foot concrete conduits. The flood-control works are located just to the left of the service spillway near the left end of dam. The dam was built by the U.S. Bureau of Reclamation for the Canadian River Municipal Water Authority for flood control, municipal, and industrial supply for the cities of Amarillo, Borger, Brownfield, Lamesa, Levelland, Lubbock, O'Donnell, Pampa, Plainview, Slaton, and Tahoka. The area-capacity curves are based on sediment resurvey in May 1980 by U.S. Bureau of Reclamation. 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.....	3,011.0	-
Design flood.....	3,004.9	2,409,900
Crest of drop inlet.....	2,965.0	1,382,500
Top of conservation pool.....	2,936.5	839,200
Crest of flood-control outlet works (invert).....	2,894.0	300,400
Lowest gated outlet (invert).....	2,850.0	42,320

COOPERATION.--Record of elevations and diversions provided by the Canadian River Municipal Water Authority. The area-capacity curves were provided by the U.S. Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 546,100 acre-ft Apr. 28, 1973 (elevation, 2,914.91 ft); minimum since first appreciable storage, 165,500 acre-ft May 27, 1981 (elevation, 2,876.17 ft).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 347,500 acre-ft Sept. 22 at 2400 hours (elevation, 2,899.11 ft); minimum, 260,700 acre-ft Oct. 9 (elevation, 2,889.34 ft).

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

2,888.0	249,800	2,896.0	318,400
2,890.0	266,100	2,898.0	337,000
2,892.0	282,900	2,900.0	356,100
2,894.0	300,400		

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	261100	262000	274900	273900	273900	274900	275500	279700	325900	342300	339700	342300
2	261500	262000	274900	273900	273900	275100	275900	280500	327300	342500	339200	342200
3	261700	262000	274900	273900	274000	275100	275700	281300	328600	342700	338700	342000
4	261500	264400	274900	274000	274100	275100	275500	283600	329100	342900	338200	341700
5	261400	268100	274900	274100	274100	275200	275500	284900	330700	342900	337900	342600
6	261200	271800	274700	273800	274400	275200	275300	285700	330900	343300	337300	342700
7	261200	273800	274600	273800	274400	275300	275200	286300	331200	343400	336700	344900
8	261100	274000	274700	273800	274300	275200	275100	286900	331900	343500	335900	344600
9	260700	274100	274800	273800	274400	275200	274900	286900	332600	343800	337300	344600
10	261600	274200	275000	273800	274100	275300	274900	287600	333500	343600	337800	344200
11	261200	274200	275000	273800	274000	275500	274600	287900	334300	343400	339000	345100
12	261300	274000	274900	273700	274000	275400	274600	288300	334800	342800	339800	e345900
13	261400	274600	274800	273700	274200	275500	274600	289100	335200	342800	340700	e346900
14	261400	274900	274700	273700	274400	275000	274800	289700	335600	343100	341300	347300
15	261400	275000	274500	273700	274400	274900	275000	290300	336800	343000	341900	346900
16	261400	275000	274500	273800	274400	274900	275300	290600	337300	343000	341700	346200
17	261200	275000	274500	273800	274400	275800	275900	290800	337600	343000	342000	346200
18	261200	275200	274800	273700	274400	275500	276100	291100	337800	342900	341400	347000
19	261000	275300	274700	273500	274400	275700	276400	291100	338000	343000	341200	347000
20	261000	275500	274600	273800	274400	275600	276500	293900	338200	343000	340700	347300
21	261300	275600	274500	273800	274700	275600	276700	296700	338400	342900	340100	347400
22	262000	275100	274400	273800	274700	275700	277000	300200	338400	342800	339400	347500
23	262200	275100	274400	273300	274700	276100	277100	303000	339100	342800	339700	347400
24	262400	275200	274400	273200	274600	276600	277500	306300	339300	342600	340000	347300
25	262500	275000	274300	273000	274500	276600	277700	310200	339600	342400	339500	347300
26	262500	275100	274300	272900	274600	276600	278000	312700	340800	342400	339600	347100
27	262500	275000	274300	273000	274700	276500	278200	315500	341200	342300	339500	347200
28	262200	275000	274300	273400	274900	276500	278600	317200	341600	341900	340500	346900
29	262400	275000	274300	273600	---	276100	279100	320300	341600	341400	341200	346900
30	262600	275000	274100	273800	---	276100	279400	322300	341900	340700	342000	346900
31	262100	---	273200	273800	---	276100	---	324500	---	340200	342300	---
MAX	262600	275600	275000	274100	274900	276600	279400	324500	341900	343800	342300	347500
MIN	260700	262000	273200	272900	273900	274900	274600	279700	325900	340200	335900	341700
(+)	2889.52	2891.07	2890.86	2890.92	2891.05	2891.20	2891.58	2896.67	2898.52	2898.34	2898.56	2899.04
(Φ)	+1000	+12900	-1800	+600	+1100	+1200	+3300	+45100	+17400	-1700	+2100	+4600
(++)	4390	3604	4170	3455	4063	4419	6758	6643	6179	7900	7443	4642
CAL YR 1986	MAX 276300	MIN 238800	(Φ) -3300	(++) 67525								
WTR YR 1987	MAX 347500	MIN 260700	(Φ) +85800	(++) 63666								

(+) Elevation, in feet, at end of month.

(Φ) Change in contents, in acre-feet.

(++) Diversions, in acre-feet, for municipal and industrial uses by the Canadian River Authority.

e Estimated.

## ARKANSAS RIVER BASIN

07227920 DIXON CREEK NEAR BORGER, TX

LOCATION.--Lat 35°39'53", Long 101°21'02", Hutchinson County, Hydrologic Unit 11090106, on right bank at downstream side of bridge on State Highway 152, 2.4 mi east of Borger, and 7.6 mi upstream from mouth.

DRAINAGE AREA.--134 mi<sup>2</sup>

PERIOD OF RECORD.--March 1974 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,834.84 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. There are no known diversions upstream from station.

AVERAGE DISCHARGE.--13 years, 2.27 ft<sup>3</sup>/s (1,640 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,640 ft<sup>3</sup>/s May 26, 1977 (gage height, 8.99 ft), from rating curve extended above 25 ft<sup>3</sup>/s on basis of slope-conveyance studies; maximum gage height 9.50 ft May 26, 1987; no flow for many days each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
May 26	2130	*2,250	*9.50	June 24	1730	1,330	8.67
June 22	0400	763	7.94	July 14	2200	1,210	8.54

Minimum discharge, no flow for several days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.02	.01	.70	e.74	.99	.82	1.7	.00	5.5	11	.59	.01
2	25	.01	.66	e.74	.91	.70	1.4	.00	4.4	3.9	.54	.01
3	12	.32	.66	e.74	.74	.71	1.4	.00	9.7	2.8	.52	.01
4	3.0	16	1.1	e.74	.57	.71	1.3	2.2	8.7	2.3	.49	.01
5	1.6	7.9	.94	e.74	.55	.73	1.4	3.6	4.5	1.8	.52	.03
6	1.2	3.2	.90	e.73	.54	.79	1.5	2.4	3.1	1.6	.54	1.6
7	.91	2.0	.94	e.73	.54	.65	1.3	1.4	2.5	1.4	.54	3.9
8	.74	1.4	.94	e.73	.54	.63	1.5	.89	2.2	3.0	.53	2.7
9	.56	1.1	.98	e.73	.54	.70	1.4	.62	3.9	2.0	12	.96
10	.97	.98	.98	e.73	.56	.82	1.2	.30	4.6	1.4	3.1	.51
11	2.0	.86	1.0	e.72	.54	.90	1.2	.03	3.3	1.1	.82	.18
12	1.1	.94	.86	e.72	.52	.95	1.1	.00	2.5	.96	.36	18
13	.90	.94	.90	e.72	.80	.88	1.2	.00	2.0	.86	.72	4.7
14	.66	.94	.86	e.72	.80	.85	1.3	.00	1.6	160	.54	1.8
15	.30	.94	.74	e.72	1.6	.66	1.3	.00	1.4	332	.06	1.1
16	.37	.94	.74	e.70	1.9	.71	1.1	.00	1.2	33	.01	.69
17	.24	.90	.79	e.70	1.6	3.4	.95	.00	1.0	8.6	.01	.40
18	.11	.80	.86	e.70	1.4	5.7	.81	.00	.87	3.4	.01	3.9
19	.08	.91	.90	e.70	1.3	3.2	.62	.00	.78	2.1	.01	2.0
20	.06	.86	.86	e.73	1.1	2.1	.42	.00	.69	1.6	.01	9.1
21	.10	.94	.79	e.82	1.0	1.5	.11	.00	7.9	1.3	.0	6.4
22	.52	1.1	.79	e1.0	.90	1.4	.33	.00	236	1.1	.0	1.3
23	.31	.86	.86	e1.3	.82	12	.44	.00	13	.91	21	1.0
24	.11	.74	.83	e1.4	.84	11	.36	.21	441	.80	3.7	.78
25	.06	.90	.83	e1.5	.77	5.4	.20	.14	101	.67	2.3	.63
26	.02	.74	.70	1.6	.74	3.7	.10	394	16	.56	1.5	.53
27	.02	.74	.70	1.6	.94	3.1	.04	480	7.6	.48	2.2	.45
28	.02	.83	e.74	1.5	.90	2.2	.02	38	4.6	.48	1.9	.39
29	.02	.98	e.74	1.3	---	2.0	.01	17	3.5	.58	.89	.83
30	.02	.94	e.74	1.2	---	1.9	.00	13	14	.62	.48	.88
31	.02	---	e.74	1.1	---	1.8	---	7.5	---	.62	.08	---
TOTAL	53.04	50.72	25.77	28.80	24.95	72.61	25.71	961.29	909.04	582.94	55.97	64.80
MEAN	1.71	1.69	.83	.93	.89	2.34	.86	31.0	30.3	18.8	1.81	2.16
MAX	25	16	1.1	1.6	1.9	12	1.7	480	441	332	21	18
MIN	.02	.01	.66	.70	.52	.63	.00	.00	.69	.48	.00	.01
AC-FT	105	101	51	57	49	144	51	1910	1800	1160	111	129

CAL YR 1986 TOTAL 782.34 MEAN 2.14 MAX 132 MIN .00 AC-FT 1550  
WTR YR 1987 TOTAL 2855.61 MEAN 7.82 MAX 480 MIN .00 AC-FT 5660

e Estimated.

## ARKANSAS RIVER BASIN

33

07228000 CANADIAN RIVER NEAR CANADIAN, TX  
(National stream-quality accounting network)

LOCATION.--Lat 35°56'06", long 100°22'13", Hemphill County, Hydrologic Unit 11090106, on left abutment at downstream side of upstream of bridge on U.S. Highways 60 and 83, 600 ft downstream from Panhandle and Santa Fe Railway Co. bridge, 1.2 mi downstream from Red Deer Creek, 1.6 mi northeast of Canadian, and 433.9 mi upstream from mouth.

DRAINAGE AREA.--22,866 mi<sup>2</sup>, of which 4,688 mi<sup>2</sup> probably is noncontributing.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1924 to August 1925 (gage heights only), January 1938 to current year. Prior to April 1938, monthly discharge only, published in WSP 1311.

REVISED RECORDS.--WSP 1341: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,301.50 ft above National Geodetic Vertical Datum of 1929. July 1, 1924, to Aug. 31, 1925, and Apr. 21 to Dec. 15, 1938, nonrecording gage; Dec. 16, 1938, to Sept. 30, 1953, water-stage recorder and nonrecording gages; all at site 300 ft upstream at same datum.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Extreme low flow is maintained by springs that enter the river about 600 ft upstream from the gage. There is some regulation and diversions from Lake Meredith (07227900) 75 mi upstream. Gage-height telemeter at station via Sutron data collection platform.

AVERAGE DISCHARGE.--26 years (water years 1939-64) prior to completion of Lake Meredith, 549 ft<sup>3</sup>/s (397,800 acre-ft/yr); 23 years (water years 1965-87) regulated, 87.3 ft<sup>3</sup>/s (63,250 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 122,000 ft<sup>3</sup>/s Sept. 23, 1941 (gage height, 9.8 ft), from graph based on gage readings, and from rating curves for two channels extended above 8,000 and 54,000 ft<sup>3</sup>/s; no flow at times most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage, 20.0 ft Oct. 2, 1904. Floods of May 2, 1914, and Oct. 5, 1923, reached stages of 12 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,840 ft<sup>3</sup>/s June 24 at 1545 hours (gage height, 5.22 ft); minimum, 5.3 ft<sup>3</sup>/s Aug. 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e47	57	74	75	123	142	85	64	185	254	15	28
2	55	58	76	78	117	133	80	63	117	277	11	25
3	75	61	73	76	109	120	80	60	113	184	11	21
4	92	377	73	76	106	115	79	63	133	122	8.6	18
5	104	744	72	80	102	108	77	120	207	88	9.4	15
6	87	307	72	71	101	100	79	168	241	69	8.7	28
7	69	168	76	70	98	97	79	145	163	59	7.2	30
8	63	83	95	79	89	95	80	109	119	56	6.8	34
9	58	70	129	87	84	95	80	96	110	55	9.3	38
10	57	64	122	93	84	104	80	91	107	54	16	40
11	67	63	113	65	76	104	77	87	97	53	20	39
12	69	74	106	90	74	105	74	84	94	52	21	112
13	69	84	103	95	93	104	78	81	93	50	21	137
14	65	78	99	87	89	103	89	77	93	50	22	98
15	62	79	102	85	136	102	86	74	87	51	20	79
16	61	79	96	94	199	97	82	74	81	53	16	73
17	59	76	95	96	193	140	80	73	75	134	14	59
18	57	74	93	239	161	318	79	69	74	151	11	118
19	57	72	88	158	135	261	74	69	73	311	18	126
20	55	72	88	213	140	151	70	69	78	134	13	164
21	63	76	91	95	135	117	69	69	98	73	8.3	332
22	72	75	88	136	136	123	69	70	176	55	6.4	169
23	71	70	87	101	128	509	67	77	228	45	10	143
24	67	69	86	135	118	342	67	81	889	37	13	107
25	66	69	89	104	109	408	68	86	444	32	20	86
26	61	71	88	140	116	330	68	111	350	29	20	65
27	59	73	84	154	179	268	67	616	287	26	30	57
28	57	73	82	147	196	151	67	735	402	25	27	167
29	57	74	88	125	---	97	67	476	561	23	26	116
30	58	76	81	111	---	87	67	385	379	20	23	84
31	59	---	81	110	---	85	---	394	---	17	27	---
TOTAL	2018	3466	2790	3365	3426	5111	2264	4836	6154	2639	489.7	2608
MEAN	65.1	116	90.0	109	122	165	75.5	156	205	85.1	15.8	86.9
MAX	104	744	129	239	199	509	89	735	889	311	30	332
MIN	47	57	72	65	74	85	67	60	73	17	6.4	15
AC-FT	4000	6870	5530	6670	6800	10140	4490	9590	12210	5230	971	5170

CAL YR 1986 TOTAL 22669.8 MEAN 62.1 MAX 744 MIN 4.9 AC-FT 44970  
WTR YR 1987 TOTAL 39166.7 MEAN 107 MAX 889 MIN 6.4 AC-FT 77690

e Estimated.

## ARKANSAS RIVER BASIN

07228000 CANADIAN RIVER NEAR CANADIAN, TX--Continued  
(National stream-quality accounting network)

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: August 1966 to current year. Pesticide analyses: October 1970 to June 1982.

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, 4,480 microsiemens Aug. 12, 1979; minimum daily, 461 microsiemens Sept. 8, 1980.

WATER TEMPERATURE: Maximum daily, 39.0°C June 28, 1979; minimum daily, 0.0°C on many days during winter months.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	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 (MG/L AS CACO3)
NOV 11...	1500	67	2800	8.20	7.0	42	11.9	96	1.6	50	290	510
JAN 07...	0900	70	2950	8.10	3.5	5.1	12.0	99	1.3	K72	510	580
MAR 04...	1130	111	2900	8.30	14.0	8.5	10.3	109	0.4	--	--	550
MAY 13...	1000	84	3580	7.80	20.0	11	7.7	94	1.4	130	K64	670
JUL 08...	1000	53	4030	7.90	25.0	3.3	6.9	93	0.4	230	900	770
AUG 25...	1400	22	2770	8.10	31.0	0.20	7.8	116	0.8	340	280	460
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 WH WAT TOTAL 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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)
NOV 11...	240	120	50	450	9	7.5	267	220	700	2.0	24	1770
JAN 07...	320	140	57	420	8	6.3	268	230	700	2.0	24	1760
MAR 04...	280	130	55	400	8	7.1	272	210	660	2.1	23	1690
MAY 13...	450	160	65	500	9	8.0	220	290	880	2.4	14	2050
JUL 08...	580	180	78	560	9	8.6	196	300	1100	3.6	19	2430
AUG 25...	320	100	51	400	8	8.4	145	230	640	2.4	13	1590
DATE	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	NITRO- GEN, DIS- SOLVED 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)	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- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)
NOV 11...	1700	<0.010	<0.010	0.300	0.340	0.080	0.080	0.52	0.60	0.050	0.050	0.030
JAN 07...	1700	<0.010	<0.010	0.400	0.360	0.070	0.060	0.63	0.70	0.050	0.040	0.050
MAR 04...	1700	<0.010	<0.010	0.200	0.250	0.050	0.040	0.75	0.80	0.120	0.020	0.050
MAY 13...	2100	--	<0.010	--	<0.100	0.060	0.050	0.64	0.70	0.070	0.020	0.030
JUL 08...	2400	--	<0.010	--	<0.100	0.060	0.070	0.54	0.60	0.070	0.020	0.020
AUG 25...	1500	--	<0.010	--	<0.100	0.020	<0.010	--	<0.20	0.060	0.020	<0.010
DATE	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)	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)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)
NOV 11...	0.09	156	28	51	20	2	300	10	1	<1	<1	4
JAN 07...	0.15	61	12	47	--	--	--	--	--	--	--	--
MAR 04...	0.15	81	24	40	50	2	200	<10	<1	<1	2	2
MAY 13...	0.09	61	14	46	--	--	--	--	--	--	--	--
JUL 08...	0.06	133	19	12	20	3	400	<10	<1	3	<1	<1
AUG 25...	--	15	0.91	92	20	3	200	<10	1	<1	<1	1

## ARKANSAS RIVER BASIN

35

07228000 CANADIAN RIVER NEAR CANADIAN, TX--Continued  
(National stream-quality accounting network)

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	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)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
NOV 11...	<10	<5	90	40	<0.1	7	3	1	<1	2100	7	20
JAN 07...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 04...	10	<5	90	20	<0.1	3	5	<1	<1	2000	<70	10
MAY 13...	--	--	--	--	--	--	--	--	--	--	--	--
JUL 08...	30	<5	110	20	0.2	3	2	1	<1	3100	<25	20
AUG 25...	30	<5	90	10	0.3	3	<1	<1	<1	1900	12	20

## ARKANSAS RIVER BASIN

07235000 WOLF CREEK AT LIPSCOMB, TX

LOCATION.--Lat 36°14'19", long 100°16'31", Lipscomb County, Hydrologic Unit 11100203, on right bank at downstream side of State Highway 305, 0.3 mi north of Lipscomb, 0.6 mi downstream from Sand Creek, 2 mi upstream from Plum Creek, and 61.2 mi upstream from mouth.

DRAINAGE AREA.--697 mi<sup>2</sup>, of which 222 mi<sup>2</sup> probably is noncontributing.

PERIOD OF RECORD.--October 1937 to September 1942, October 1961 to current year. Prior to 1941, monthly discharges only, published in WSP 1311.

Water-quality records.--Chemical and biochemical analyses: May 1980.

REVISED RECORDS.--WSP 1311: 1938-39, drainage area.

GAGE.--Water-stage recorder and crest-stage gages. Datum of gage is 2,371.29 ft above National Geodetic Vertical Datum of 1929. Prior to Feb. 25, 1938, nonrecording gage, Feb. 25, 1938, to Sept. 30, 1942, water-stage recorder at present site at datum 5.77 ft higher.

REMARKS.--No estimated daily discharge. Records fair. Small diversions upstream from station for irrigation and recreation.

AVERAGE DISCHARGE.--31 years (water years 1938-42, 1962-87), 14.3 ft<sup>3</sup>/s (0.41 in/yr), 10,360 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,000 ft<sup>3</sup>/s Oct. 21, 1941 (gage height, 11.57 ft, present datum), from rating curve extended above 14,000 ft<sup>3</sup>/s on basis of velocity-area studies; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1890, 15.5 ft June 23, 1957, present site and datum, from flood-marks. A flood in May 1955 reached a stage of 12.1 ft, present site and datum, from information by State Department of Highways and Public Transportation.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
May 27	0830	*39	*3.93				
Minimum discharge, 0.44 ft <sup>3</sup> /s Aug. 21 and 22.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.4	1.3	3.1	4.4	5.5	6.0	13	7.6	9.6	15	1.0	4.4
2	4.8	1.1	3.0	4.5	5.6	5.9	12	7.8	8.7	12	.96	3.5
3	6.3	1.3	2.8	4.5	5.3	5.7	11	8.0	9.6	10	.84	2.8
4	6.1	5.4	2.8	4.7	5.0	5.6	11	8.8	10	10	.80	2.2
5	6.1	7.1	3.0	5.0	4.7	5.5	9.8	12	9.5	9.6	.85	2.1
6	5.5	6.7	3.0	5.3	4.6	5.3	9.6	11	9.3	8.8	.78	2.4
7	4.9	6.0	3.1	5.1	4.5	5.2	9.3	11	8.4	8.1	.69	2.9
8	4.5	5.3	3.3	5.1	4.3	5.0	9.2	11	7.4	7.4	.66	3.0
9	4.3	4.8	3.4	5.2	4.2	5.0	9.0	11	6.9	7.0	.81	3.1
10	4.2	4.5	3.5	5.2	4.4	5.1	8.9	9.8	7.2	6.5	.92	2.2
11	4.8	4.3	3.5	5.2	4.4	5.2	8.9	9.1	6.9	6.1	.83	1.9
12	4.6	3.9	3.6	5.5	4.2	5.4	8.9	8.8	6.4	5.8	.85	3.3
13	4.4	3.7	3.6	5.7	4.3	5.3	9.1	8.6	5.9	5.6	.88	3.5
14	4.3	3.6	3.7	5.4	4.5	5.2	11	8.8	5.6	5.4	.90	2.8
15	3.9	3.7	3.7	5.2	5.6	4.9	11	8.8	5.4	5.3	.75	2.1
16	3.5	3.5	3.5	5.1	6.1	5.0	9.9	8.9	4.9	4.9	.66	2.7
17	3.5	3.1	3.5	5.5	5.8	7.4	9.5	9.3	4.5	6.8	.65	3.6
18	3.9	2.9	3.4	5.5	5.4	11	9.3	9.5	4.1	6.4	.65	4.6
19	4.0	2.9	3.5	5.5	5.3	10	8.7	9.6	5.0	5.4	.68	4.7
20	4.4	3.0	3.6	5.5	5.2	9.4	8.4	10	6.2	4.7	.58	4.4
21	5.2	3.0	3.7	5.6	5.2	8.6	8.0	11	8.1	4.1	.52	4.7
22	5.7	3.0	3.7	5.6	5.3	8.3	7.7	11	18	3.7	.55	4.1
23	5.2	2.7	3.7	5.6	5.0	17	7.7	11	14	3.5	.54	3.2
24	4.4	2.5	3.8	5.7	4.8	24	7.6	11	7.9	3.1	1.2	2.6
25	3.8	2.6	3.8	5.8	4.7	25	7.5	12	6.9	2.8	1.2	2.2
26	3.2	2.6	3.9	5.8	4.9	21	7.4	18	6.1	2.5	4.4	2.0
27	3.3	2.7	3.9	5.8	6.1	21	7.5	32	16	2.1	5.8	1.7
28	3.2	2.9	4.1	5.8	6.3	19	7.4	28	27	2.0	4.9	1.7
29	2.3	2.9	4.1	5.8	---	15	7.5	21	19	1.8	3.8	1.6
30	2.2	2.9	4.2	5.6	---	14	7.6	14	19	1.5	3.8	1.6
31	2.2	---	4.3	5.5	---	14	---	11	---	1.2	5.5	---
TOTAL	133.1	105.9	109.8	165.7	141.2	310.0	273.4	369.4	283.5	179.1	47.95	87.6
MEAN	4.29	3.53	3.54	5.35	5.04	10.0	9.11	11.9	9.45	5.78	1.55	2.92
MAX	6.3	7.1	4.3	5.8	6.3	25	13	32	27	15	5.8	4.7
MIN	2.2	1.1	2.8	4.4	4.2	4.9	7.4	7.6	4.1	1.2	.52	1.6
AC-FT	264	210	218	329	280	615	542	733	562	355	95	174

CAL YR 1986 TOTAL 758.65 MEAN 2.08 MAX 40 MIN .15 AC-FT 1500  
WTR YR 1987 TOTAL 2206.62 MEAN 6.05 MAX 32 MIN .52 AC-FT 4380

## RED RIVER MAIN STEM

37

07297910 PRAIRIE DOG TOWN FORK RED RIVER NEAR WAYSIDE, TX  
(National stream-quality accounting network)

LOCATION.--Lat 34°50'15", long 101°24'49", Armstrong County, Hydrologic Unit 11120103, on left bank at downstream side of bridge on Farm Road 284, 13 mi northeast of Wayside, 26 mi south of Claude, and at mile 1,145.

DRAINAGE AREA.--4,211 mi<sup>2</sup>, of which 3,281 mi<sup>2</sup> probably is noncontributing.

## WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 2,463.74 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharge. Records fair. There are several small diversions upstream from station.

AVERAGE DISCHARGE.--20 years, 27.8 ft<sup>3</sup>/s (20,140 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 58,000 ft<sup>3</sup>/s Aug. 28, 1968 (gage height, 13.0 ft, from floodmark); no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 6,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 9	1000	6,200	9.84	May 30	0100	*11,100	*10.38
May 26	1700	10,500	10.33	July 14	2130	9,360	10.21
May 27	0730	6,130	9.87				

Minimum discharge, 1.2 ft<sup>3</sup>/s May 7, 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.9	1.8	1.4	1.6	4.2	6.9	5.0	3.2	204	22	1.6	5.6
2	92	1.7	1.6	1.8	4.2	6.3	4.5	3.1	148	11	1.6	3.6
3	76	3.3	1.6	2.0	4.2	6.7	4.7	3.0	119	11	1.6	2.5
4	20	355	1.6	2.3	4.5	6.4	4.7	3.3	134	12	1.8	2.0
5	17	34	1.4	2.5	4.5	6.1	5.6	3.5	83	11	8.7	2.0
6	6.9	4.1	1.4	2.3	4.3	6.0	5.8	3.6	65	11	5.2	275
7	5.2	2.4	1.4	2.5	4.0	5.7	5.5	3.6	57	8.1	1.8	35
8	4.5	2.1	1.4	2.5	4.1	5.7	5.0	3.6	48	7.9	3.1	697
9	547	2.2	1.4	2.5	3.9	5.6	4.4	3.6	175	6.8	323	103
10	133	2.3	1.4	2.6	3.9	5.6	4.0	3.4	113	5.8	86	38
11	1740	2.4	1.4	2.6	4.3	5.8	3.9	3.3	33	5.1	51	316
12	168	2.5	1.4	2.7	4.4	6.8	3.8	3.3	30	4.7	56	74
13	10	2.7	1.4	2.7	4.8	5.9	4.0	3.3	32	6.5	837	33
14	4.9	2.7	1.4	2.8	4.6	5.5	3.6	4.5	28	413	260	39
15	3.9	2.5	1.6	2.7	5.7	5.4	3.7	4.7	21	69	169	28
16	3.6	2.5	1.6	3.1	5.6	5.6	3.7	3.6	17	3.6	128	19
17	3.4	2.3	1.6	3.1	5.6	6.1	3.6	3.3	14	3.1	86	16
18	2.5	2.0	1.6	3.7	5.7	5.9	3.4	3.4	20	2.5	56	37
19	2.1	1.8	1.6	4.2	6.6	5.4	3.2	3.5	13	2.1	39	27
20	1.8	1.8	1.6	4.5	7.3	5.2	3.1	3.4	11	1.9	22	21
21	50	1.8	1.6	5.5	6.2	5.0	3.1	3.0	9.0	2.3	14	66
22	1160	1.5	1.6	4.3	6.6	5.0	3.2	6.9	10	2.2	9.9	24
23	52	1.5	1.6	4.2	6.2	7.7	3.3	9.3	7.6	1.9	6.1	15
24	10	1.6	1.8	4.1	7.6	6.9	3.2	9.5	7.5	1.7	5.3	11
25	5.2	1.3	2.0	5.0	7.7	5.6	3.1	20	63	1.7	5.3	11
26	3.6	1.3	2.0	5.1	7.9	5.8	3.1	2110	36	1.6	23	9.8
27	2.9	1.2	1.8	4.6	14	5.6	3.2	2500	18	1.6	33	9.6
28	2.6	1.3	1.7	4.9	7.4	4.6	3.0	1080	12	1.7	13	9.4
29	2.2	1.3	1.6	4.3	---	5.8	3.0	741	465	1.7	7.8	8.2
30	1.9	1.3	1.6	4.1	---	6.7	3.1	1330	38	1.6	8.5	7.6
31	1.8	---	1.6	4.0	---	5.2	---	317	---	1.6	10	---
TOTAL	4137.9	446.2	48.7	104.8	160.0	182.5	116.5	8196.9	2031.1	637.7	2274.3	1945.3
MEAN	133	14.9	1.57	3.38	5.71	5.89	3.88	264	67.7	20.6	73.4	64.8
MAX	1740	355	2.0	5.5	14	7.7	5.8	2500	465	413	837	697
MIN	1.8	1.2	1.4	1.6	3.9	4.6	3.0	3.0	7.5	1.6	1.6	2.0
AC-FT	8210	885	97	208	317	362	231	16260	4030	1260	4510	3860

CAL YR 1986 TOTAL 10167.9 MEAN 27.9 MAX 2430 MIN .39 AC-FT 20170  
WTR YR 1987 TOTAL 20281.8 MEAN 55.6 MAX 2500 MIN 1.2 AC-FT 40230

07297910 PRAIRIE DOG TOWN FORK RED RIVER NEAR WAYSIDE, TX--Continued  
(National stream-quality accounting network)

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: October 1967 to current year. Chemical and biochemical analyses: October 1974 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1968 to September 1981.

WATER TEMPERATURE: October 1968 to September 1981.

INSTRUMENTATION.--Specific conductance was recorded continuously at this station from April 1968 to September 1976.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 51,100 microsiemens July 30, 1978; minimum daily, 417 microsiemens July 10, 1975

WATER TEMPERATURE: Maximum daily, 38.0°C Oct. 14, 1968, June 13, 1975; minimum daily, 0.0°C on many days during winter months.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	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 (MG/L AS CACO3)
NOV 10...	1445	2.3	7900	7.90	8.0	12	11.6	98	0.9	80	130	1600
JAN 05...	1415	2.8	10700	8.30	9.5	0.10	10.1	103	1.3	--	--	1600
MAR 02...	1500	7.0	8550	7.80	19.0	2.2	8.7	106	0.2	12	340	1500
MAY 12...	1330	2.1	15600	7.80	31.0	0.30	8.0	125	0.7	210	1100	2000
JUL 07...	1340	8.8	13400	7.80	35.0	78	5.9	98	--	540	70	2100
AUG 24...	1450	5.3	9150	7.90	34.0	31	5.9	94	0.2	470	100	1600

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 WH WAT TOTAL 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 10...	1400	460	96	1200	14	20	125	1500	1800	1.0	26	5530
JAN 05...	1400	460	100	1900	22	30	148	1800	2800	1.1	27	7530
MAR 02...	1300	440	96	1400	16	23	158	1600	2000	1.4	27	5950
MAY 12...	1800	550	140	3200	33	49	122	2300	4700	1.0	30	11200
JUL 07...	2100	640	130	2500	24	39	82	2100	3500	1.2	29	9450
AUG 24...	1500	470	97	1500	17	32	105	1800	2100	1.3	28	6350

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- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)	SEDI- MENT, SUS- PENDED (MG/L)
NOV 10...	5200	<0.010	0.150	0.160	0.160	0.84	1.0	0.020	0.020	0.020	0.06	44
JAN 05...	7200	<0.010	<0.100	0.180	0.180	0.12	0.30	<0.010	<0.010	0.010	0.03	5
MAR 02...	5700	<0.010	<0.100	0.200	0.160	0.20	0.40	0.010	<0.010	<0.010	--	12
MAY 12...	11000	<0.010	<0.100	0.230	0.180	0.57	0.80	0.010	0.010	0.010	0.03	28
JUL 07...	9000	<0.010	<0.100	0.230	0.230	0.97	1.2	0.030	0.010	0.020	0.06	93
AUG 24...	6100	<0.010	<0.100	0.120	0.100	0.38	0.50	0.010	0.030	0.021	0.06	190

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 10...	0.27	85	40	3	200	<10	<1	<1	<1	3	20
JAN 05...	0.04	44	--	--	--	--	--	--	--	--	--
MAR 02...	0.23	93	50	2	<100	<10	<1	<1	<1	<1	30
MAY 12...	0.16	84	--	--	--	--	--	--	--	--	--
JUL 07...	2.2	82	10	5	200	<10	<1	4	<1	<1	60
AUG 24...	2.7	45	1100	4	<100	<10	<1	2	2	2	710

## RED RIVER MAIN STEM

39

07297910 PRAIRIE DOG TOWN FORK RED RIVER NEAR WAYSIDE, TX--Continued  
(National stream-quality accounting network)

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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 10...	<5	120	90	<0.1	3	5	2	<1	8800	20	20
JAN 05...	--	--	--	--	--	--	--	--	--	--	--
MAR 02...	<5	140	50	<0.1	<1	<1	2	<1	10000	<25	20
MAY 12...	--	--	--	--	--	--	--	--	--	--	--
JUL 07...	<5	140	120	9.2	5	1	1	<1	12000	<50	40
AUG 24...	<5	140	120	0.3	4	3	1	<1	7600	31	20

## RED RIVER MAIN STEM

07299540 PRAIRIE DOG TOWN FORK RED RIVER NEAR CHILDRESS, TX  
(National stream-quality accounting network station)

LOCATION.--Lat 34°34'09", long 100°11'37", Childress County, Hydrologic Unit 11120105, on left bank at downstream side of bridge on U.S. Highways 62 and 83, 3.1 mi downstream from Salt Creek, 10.0 mi north of Childress, and at mile 1,061.

DRAINAGE AREA.--7,725 mi<sup>2</sup>, of which 4,769 mi<sup>2</sup> probably is noncontributing.

PERIOD OF RECORD.--December 1964 to March 1965 (gage heights only), April 1965 to current year.

Water-quality records: September 1948 to April 1963, January 1969 to September 1986. Chemical and biochemical analyses: January 1978 to September 1986.

GAGE.--Water-stage recorder. Datum of gage is 1,628.4 ft above National Geodetic Vertical Datum of 1929 (from Texas State Department of Highways and Public Transportation bench mark).

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Many small diversions upstream from station. Flow is affected at times by discharge from the flood-detention pools of 23 floodwater-retarding structures with a combined detention capacity of 20,010 acre-ft. These structures control runoff from 95.2 mi<sup>2</sup> in the drainage basin.

AVERAGE DISCHARGE.--22 years (water years 1966-87), 114 ft<sup>3</sup>/s (82,590 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 86,400 ft<sup>3</sup>/s May 28, 1978 (gage height, 13.47 ft, from floodmark), from rating curve extended above 33,000 ft<sup>3</sup>/s; maximum gage height, 13.94 ft May 21, 1977; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1899, 16.9 ft in May or June 1957, from information by local residents and State Department of Highways and Public Transportation.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 7,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 3	0600	*48,500	12.10	May 27	2400	8,500	10.07
Oct. 10	0400	8,760	10.10	May 30	1900	7,740	9.98
Nov. 4	1430	13,800	10.55	June 30	0800	7,740	9.98
Jan. 19	1400	13,100	10.50				

Minimum daily discharge, 2.2 ft<sup>3</sup>/s Sept. 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e653	65	35	51	102	e128	20	6.4	373	751	4.3	45
2	3430	76	32	44	93	e110	16	6.4	172	303	4.3	19
3	21600	94	30	50	76	e87	16	6.4	148	214	4.3	9.6
4	1070	6530	27	42	74	e60	15	6.4	110	622	4.3	5.4
5	80	2260	26	41	92	e48	16	6.4	83	246	246	3.5
6	35	484	31	47	74	e41	26	6.0	77	68	185	55
7	48	246	52	49	62	e37	23	5.7	68	17	107	361
8	44	98	77	53	69	e36	20	5.7	41	291	23	158
9	1000	87	110	67	71	e33	19	5.4	445	154	8.0	621
10	3610	56	94	66	73	e32	16	4.8	177	128	4.0	881
11	968	56	85	58	79	e31	15	4.8	182	30	92	867
12	915	60	57	52	68	e30	15	4.5	1720	11	91	947
13	445	60	40	40	66	e30	14	4.5	172	170	188	681
14	56	77	35	45	64	e29	11	4.3	90	148	1580	370
15	32	60	40	43	342	e29	9.4	4.0	48	405	839	199
16	14	94	43	43	109	e29	8.9	4.3	56	510	65	74
17	14	102	57	28	139	e28	10	4.5	41	265	29	26
18	19	110	123	62	101	e28	10	6.4	12	330	12	13
19	11	135	129	3990	123	e28	8.9	8.4	187	246	8.0	10
20	10	140	108	563	250	e28	8.4	11	230	77	14	24
21	723	93	78	105	141	e28	8.0	5.7	148	26	19	382
22	2980	73	68	351	177	e28	8.4	20	63	15	7.8	149
23	1430	48	86	176	115	e30	8.9	740	23	11	5.1	98
24	152	35	99	75	125	e32	8.4	109	86	7.5	4.6	27
25	42	23	114	63	211	e31	8.0	717	370	6.7	6.1	15
26	40	23	87	135	311	e30	7.5	456	48	6.0	21	8.9
27	50	19	70	215	e1120	e29	7.1	2580	32	5.4	103	6.7
28	27	26	57	172	e214	e28	7.1	4570	17	5.1	243	251
29	33	35	45	91	---	e28	6.7	2530	10	4.5	86	187
30	62	35	59	152	---	e28	6.4	2540	2000	4.3	41	58
31	57	---	59	109	---	e23	---	759	---	4.3	67	---
TOTAL	39650	11300	2053	7078	4541	1217	374.1	15143.0	7229	5081.8	4111.8	6552.1
MEAN	1279	377	66.2	228	162	39.3	12.5	488	241	164	133	218
MAX	21600	6530	129	3990	1120	128	26	4570	2000	751	1580	947
MIN	10	19	26	28	62	23	6.4	4.0	10	4.3	4.0	3.5
AC-FT	78650	22410	4070	14040	9010	2410	742	30040	14340	10080	8160	13000

CAL YR 1986 TOTAL 88799.9 MEAN 243 MAX 21600 MIN 1.1 AC-FT 176100  
WTR YR 1987 TOTAL 104330.5 MEAN 286 MAX 21600 MIN 3.5 AC-FT 206900

e Estimated.

## RED RIVER MAIN STEM

41

07299570 RED RIVER NEAR QUANAH, TEX.  
(Flood-hydrograph partial-record station)

LOCATION.--Lat 34°24'47", long 99°44'03", Hardeman County, on right bank at downstream side of bridge on State Highway 6  
8 mi north of Quanah, 30 mi upstream from Salt Fork Red River, and at mile 1,030.

DRAINAGE AREA.--8,321 mi<sup>2</sup>, of which 4,769 mi<sup>2</sup> is probably noncontributing.

PERIOD OF RECORD.--November 1959 to September 1982 (continuous-record station), October 1983 to current year.

REMARKS.--Gage-height telemeter at station.

EXTREMES.--Maximum discharge, 49,600 ft<sup>3</sup>/s Oct. 3 (gage height, 13.73 ft).

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: December 1969 to August 1978. Pesticide analyses: March 1968 to  
September 1973. Sediment records: May 1978 to current year.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	TEMPER- ATURE WATER (DEG C)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM	SED. SUSP. FALL DIAM. % FINER THAN .004 MM
OCT 07...	1230	125	12800	6.5	2300	776	--	--
NOV 19...	0735	80	18800	8.5	495	107	--	--
MAY 28...	1450	13000	4680	--	14100	495000	32	40
29...	1545	4000	7530	22.0	14000	151000	23	33
JUN 03...	1600	300	10300	--	2030	1640	--	--
23...	1630	100	--	33.0	668	180	--	--
AUG 06...	1310	550	--	31.0	2700	4010	--	--
SEP 16...	1220	100	--	24.0	3140	848	--	--

DATE	SED. SUSP. FALL DIAM. % FINER THAN .008 MM	SED. SUSP. FALL DIAM. % FINER THAN .016 MM	SED. SUSP. FALL DIAM. % FINER THAN .031 MM	SED. SUSP. FALL DIAM. % FINER THAN .062 MM	SED. SUSP. FALL DIAM. % FINER THAN .125 MM	SED. SUSP. FALL DIAM. % FINER THAN .250 MM	SED. SUSP. FALL DIAM. % FINER THAN .500 MM
OCT 07...	--	--	--	53	--	--	--
NOV 19...	--	--	--	93	--	--	--
MAY 28...	50	58	69	81	90	97	100
29...	41	47	54	66	83	89	100
JUN 03...	--	--	--	87	--	--	--
23...	--	--	--	53	--	--	--
AUG 06...	--	--	--	99	--	--	--
SEP 16...	--	--	--	83	--	--	--

## RED RIVER BASIN

## 07299670 GROESBECK CREEK AT STATE HIGHWAY 6 NEAR QUANAH, TX

LOCATION.--Lat 34°21'16", long 99°44'24", Hardeman County, Hydrologic Unit 11130101, near left bank at downstream side of bridge on State Highway 6, 2 mi downstream from confluence of North and South Groesbeck Creeks, 4 mi north of Quanah, and 9 mi upstream from mouth.

DRAINAGE AREA.--303 mi<sup>2</sup>.

PERIOD OF RECORD.--November 1961 to current year. Prior to October 1974, published as "at State Highway 283".

GAGE.--Water-stage recorder. Datum of gage is 1,425.69 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. There are several diversions upstream from station for farm and ranch use and for a gypsum plant. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--25 years (water years 1963-86), 15.2 ft<sup>3</sup>/s (0.68 in/yr), 11,010 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,000 ft<sup>3</sup>/s Oct. 20, 1983 (gage height, 24.78 ft), from rating curve extended above 7,970 ft<sup>3</sup>/s; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--The highest stage known occurred in June 1891; and the highest stage since 1891 occurred in September 1929, stages unknown. Other large floods are reported to have occurred in 1912, 1936, 1946, 1951, 1955, and 1957, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
May 28	2330	*4,090	*18.80	No other peak greater than base discharge.			
Minimum discharge, 7.7 ft <sup>3</sup> /s Sept. 14.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	272	12	12	9.2	13	33	11	9.6	44	15	9.7	8.9
2	365	12	12	9.3	12	18	11	9.5	35	13	9.9	8.7
3	672	12	12	9.1	10	14	11	9.5	31	12	10	8.7
4	219	48	12	9.0	10	12	11	9.3	26	12	10	8.5
5	40	33	12	9.0	10	12	11	9.8	22	12	20	8.6
6	23	19	12	8.9	14	12	11	9.7	21	12	20	8.5
7	19	15	12	8.6	13	12	11	9.7	20	12	29	8.3
8	19	14	12	9.2	11	11	11	9.3	18	12	25	8.2
9	17	13	12	11	11	11	11	9.5	18	12	14	8.7
10	16	12	12	9.9	10	11	11	10	19	12	11	8.7
11	73	12	12	9.6	10	11	11	11	18	12	11	8.5
12	437	12	11	9.3	10	11	9.6	9.4	27	11	10	9.5
13	85	12	11	9.1	11	11	10	9.6	18	12	11	9.6
14	27	12	11	8.9	11	11	11	9.5	16	12	11	8.3
15	22	12	11	8.9	13	12	12	9.7	15	12	13	8.5
16	18	12	11	9.0	13	12	11	9.9	15	10	12	8.6
17	15	12	11	9.1	16	13	11	10	14	12	11	8.5
18	14	12	12	9.3	17	15	10	9.3	14	12	11	8.8
19	12	12	11	9.3	14	14	11	9.1	14	11	10	8.6
20	11	12	10	9.2	13	13	10	11	14	12	10	8.7
21	175	12	10	9.1	12	12	10	9.7	14	11	9.7	9.4
22	480	13	10	9.0	12	12	9.9	9.8	14	10	9.5	9.3
23	100	12	10	9.0	12	13	10	16	13	9.8	9.5	9.0
24	29	12	9.9	9.3	12	13	10	17	13	10	9.0	8.9
25	22	13	9.6	9.3	12	12	10	191	13	10	9.0	8.8
26	19	13	11	9.3	13	12	9.8	91	13	10	9.6	8.8
27	17	13	10	9.1	55	12	9.9	360	13	10	10	9.2
28	15	12	9.7	9.4	86	12	10	1420	14	10	9.7	9.4
29	13	12	9.3	9.3	---	11	9.8	2130	17	9.8	9.6	9.3
30	13	13	9.3	9.3	---	11	9.7	536	15	10	9.2	9.2
31	12	---	9.3	10	---	12	---	76	---	10	9.1	---
TOTAL	3271	435	339.1	287.0	456	401	315.7	5050.9	558	350.6	372.5	264.7
MEAN	106	14.5	10.9	9.26	16.3	12.9	10.5	163	18.6	11.3	12.0	8.82
MAX	672	48	12	11	86	33	12	2130	44	15	29	9.6
MIN	11	12	9.3	8.6	10	11	9.6	9.1	13	9.8	9.0	8.2
AC-FT	6490	863	673	569	904	795	626	10020	1110	695	739	525

CAL YR 1986 TOTAL 9385.1 MEAN 25.7 MAX 1460 MIN 2.9 AC-FT 18620  
WTR YR 1987 TOTAL 12101.4 MEAN 33.2 MAX 2130 MIN 8.2 AC-FT 24000

## 07299840 GREENBELT LAKE NEAR CLARENDON, TX

LOCATION.--Lat 35°00'02", long 100°53'40", Donley County, Hydrologic Unit 11120201, on upstream side near right end of dam on Salt Fork Red River and 4.3 mi north of Clarendon.

DRAINAGE AREA.--457 mi<sup>2</sup>, of which 191 mi<sup>2</sup> probably is noncontributing.

PERIOD OF RECORD.--August 1967 to current year. Prior to October 1973, published as Greenbelt Reservoir.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (Freese and Nichols, Inc., Consulting Engineers bench mark).

REMARKS.--The lake is formed by a rolled earthfill dam 5,800 ft long. Deliberate impoundment began Dec. 5, 1966, and the dam was completed in August 1967. The dam is the property of Greenbelt Municipal and Industrial Water Authority and was built to impound water for municipal and industrial uses by the cities of Childress, Clarendon, Crowell, Hedley, and Quanah. The spillway is an uncontrolled open cut through natural ground, 1,450 ft wide and located at the left end of dam, designed to discharge 184,000 ft<sup>3</sup>/s at an elevation of 2,684.0 ft. A morning-glory-type drop inlet with a 26-foot 8.5-inch-diameter opening at crest discharges into a 7- by 7-foot concrete conduit. The outlet works consists of a 36-inch pipe that is controlled by two 20-inch valves that control the discharge into a stilling basin and to a water treatment plant. The capacity table, dated April 1964, is based on Geological Survey topographic maps dated 1962. 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.....	2,686.0	-
Design flood.....	2,683.0	105,600
Crest of spillway.....	2,674.0	81,760
Crest of morning-glory-type drop inlet.....	2,663.65	59,110
Lowest gated outlet (invert).....	2,597.0	900

COOPERATION.--Records of diversion and capacity table provided by Greenbelt Municipal and Industrial Water Authority.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 44,650 acre-ft June 26-28, 1975 (elevation, 2,655.71 ft); minimum, 2,950 acre-ft Aug. 29, 30, 1967 (elevation, 2,607.37 ft).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 36,910 acre-ft June 2 at 1700 hours (elevation, 2,650.78 ft); minimum, 29,730 acre-ft Oct. 1 (elevation, 2,645.49 ft).

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

2,645.0	29,120	2,649.0	34,360
2,646.0	30,370	2,650.0	35,770
2,647.0	31,660	2,651.0	37,230
2,648.0	32,990		

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29790	32350	33820	34260	34680	35290	35670	35530	36850	36430	35300	34880
2	30240	32350	33840	34290	34700	35350	35660	35500	36840	36410	35260	34850
3	30130	32400	33830	34260	34730	35350	35670	35450	36790	36400	35220	34800
4	30120	33260	33870	34290	34740	35380	35670	35450	36790	36400	35150	34750
5	30160	33570	33890	34310	34730	35380	35660	35430	36760	36380	35180	34710
6	30220	33690	33920	34290	34740	35380	35700	35450	36730	36340	35150	34850
7	30230	33740	33940	34290	34750	35390	35710	35450	36700	36270	35120	34850
8	30250	33770	33980	34320	34740	35390	35740	35430	36700	36270	35050	34950
9	30260	33760	33960	34330	34770	35360	35730	35420	36750	36220	35050	34940
10	30270	33650	33980	34310	34780	35380	35730	35420	36750	36160	35060	34920
11	30850	33700	34000	34350	34780	35400	35770	35380	36730	36150	35120	34920
12	30920	33660	34030	34370	34810	35430	35710	35330	36720	36060	35110	34970
13	31020	33650	34040	34360	34810	35460	35700	35330	36730	36020	35290	35020
14	31090	33720	34040	34360	34840	35460	35700	35290	36700	36030	35280	35040
15	31110	33760	34060	34350	34900	35490	35700	35300	36680	36030	35280	35040
16	31110	33770	34070	34330	34910	35500	35710	35300	36660	35960	35230	35020
17	31140	33800	34090	34360	34900	35500	35730	35290	36600	36030	35180	35010
18	31160	33780	34100	34400	34900	35520	35730	35280	36560	35990	35150	34970
19	31170	33830	34140	34440	34940	35530	35710	35230	36560	35960	35140	34950
20	31170	33810	34150	34440	35010	35530	35660	35250	36510	35930	35080	34990
21	31660	33830	34150	34470	35020	35530	35640	35230	36570	35860	35040	35020
22	32010	33850	34200	34470	35020	35570	35630	35220	36620	35810	34980	35010
23	32140	33800	34210	34490	35050	35610	35630	35290	36610	35770	34880	35010
24	32210	33810	34210	34530	35110	35660	35630	35380	36530	35710	34900	34990
25	32270	33850	34240	34560	35110	35690	35610	35430	36590	35670	34850	34950
26	32290	33810	34240	34590	35180	35690	35610	35900	36570	35640	34910	34940
27	32300	33830	34250	34630	35280	35740	35600	36150	36550	35570	34910	34920
28	32330	33870	34250	34670	35280	35630	35570	36490	36510	35530	34900	34900
29	32340	33880	34250	34640	---	35630	35560	36600	36460	35490	34880	34880
30	32370	33840	34280	34670	---	35640	35530	36780	36440	35420	34900	34850
31	32400	---	34250	34680	---	35700	---	36810	---	35360	34900	---
MAX	32400	33880	34280	34680	35280	35740	35770	36810	36850	36430	35300	35040
MIN	29790	32350	33820	34260	34680	35290	35530	35220	36440	35360	34850	34710
(↑)	2647.55	2648.62	2648.92	2649.23	2649.65	2649.95	2649.83	2650.71	2650.47	2649.71	2649.38	2649.35
(Φ)	+2670	+1440	+410	+430	+600	+420	-170	+1280	-370	-1080	-460	-50
(↑↑)	265	245	236	243	211	225	299	345	302	428	405	298

CAL YR 1986 MAX 34350 MIN 28180 (Φ) +3890 (↑↑) 3801  
WTR YR 1987 MAX 36850 MIN 29790 (Φ) +5120 (↑↑) 3502

(↑) Elevation, in feet, at end of month.

(Φ) Change in contents, in acre-feet.

(↑↑) Diversions, in acre-feet, for municipal and industrial uses by Greenbelt Municipal Water Authority.

## RED RIVER BASIN

07300000 SALT FORK RED RIVER NEAR WELLINGTON, TX

LOCATION.--Lat 34°57'27", long 100°13'14", Collingsworth County, Hydrologic Unit 11120202, near center of stream at downstream side of bridge on U.S. Highway 83, 4 mi downstream from Fort Worth and Denver (Burlington) Railway Co. bridge, 4.5 mi south of Lutie, and 7.2 mi north of Wellington.

DRAINAGE AREA.--1,222 mi<sup>2</sup>, of which 209 mi<sup>2</sup> probably is noncontributing.

## WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 1,941.41 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair except those for periods of daily discharges that are computed from wire-weight readings, which are poor. Several small diversions upstream from gage for irrigation. There is some regulation for municipal use by Greenbelt Lake (station 07299840), capacity 59,100 acre-feet 42 mi upstream.

AVERAGE DISCHARGE.--14 years (water years 1953-66) prior to completion of Greenbelt Lake, 72.6 ft<sup>3</sup>/s (52,600 acre-ft/yr); 21 years (water years 1967-87) regulated, 46.2 ft<sup>3</sup>/s (33,470 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 146,000 ft<sup>3</sup>/s May 16, 1957 (gage height, 19.00 ft), from rating curve extended above 11,000 ft<sup>3</sup>/s on basis of slope-area measurement of 63,400 ft<sup>3</sup>/s; minimum, 0.1 ft<sup>3</sup>/s June 19, 1952.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 10,400 ft<sup>3</sup>/s Oct. 3 at 0100 hours (gage height, 8.10 ft, from flood-mark); minimum daily, 3.2 ft<sup>3</sup>/s Aug. 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	103	66	57	51	28	53	38	9.9	58	13	4.4	17
2	1050	59	40	54	23	64	40	9.9	54	13	4.4	12
3	2620	160	41	53	20	55	31	11	45	15	4.3	11
4	203	3540	28	44	16	44	33	13	45	15	4.3	9.9
5	109	497	26	47	13	62	35	15	61	13	4.8	11
6	98	194	31	61	14	56	43	15	61	12	5.2	33
7	52	155	51	67	17	43	51	14	48	10	4.3	27
8	51	87	75	62	15	41	43	14	45	17	3.9	20
9	53	45	77	98	14	48	27	14	105	12	3.7	17
10	59	38	35	75	18	65	25	12	206	9.8	4.0	17
11	1190	43	30	54	18	61	21	12	88	8.6	4.1	23
12	541	58	35	61	14	61	18	12	66	158	4.2	69
13	59	45	33	84	14	65	18	12	47	163	16	127
14	46	78	32	77	18	69	21	13	32	48	8.9	69
15	45	92	41	57	66	73	23	14	19	169	9.0	61
16	44	97	33	67	59	73	18	17	15	59	8.8	40
17	36	102	28	58	45	148	20	21	11	204	5.6	35
18	29	100	27	109	30	103	18	25	11	81	4.9	31
19	32	94	50	59	43	61	15	33	13	36	3.7	27
20	32	93	38	58	95	48	17	38	14	19	3.3	52
21	593	78	63	102	92	31	18	38	90	14	3.2	582
22	722	74	78	105	50	31	18	61	108	12	3.4	155
23	212	68	42	92	25	164	20	73	81	9.0	3.8	45
24	153	73	57	42	40	140	18	65	37	7.9	4.2	31
25	111	84	57	14	59	58	14	283	54	7.6	4.6	20
26	80	81	55	46	76	73	15	1420	76	7.0	30	15
27	76	70	48	36	207	65	14	1780	37	6.3	61	14
28	78	78	39	28	126	58	14	1530	17	5.6	23	12
29	58	78	45	36	---	35	15	740	13	4.7	15	11
30	51	57	48	24	---	25	12	376	13	4.6	17	11
31	62	---	46	18	---	29	---	162	---	4.5	33	---
TOTAL	8648	6384	1386	1839	1255	2002	713	6852.8	1570	1158.6	310.0	1604.9
MEAN	279	213	44.7	59.3	44.8	64.6	23.8	221	52.3	37.4	10.0	53.5
MAX	2620	3540	78	109	207	164	51	1780	206	204	61	582
MIN	29	38	26	14	13	25	12	9.9	11	4.5	3.2	9.9
AC-FT	17150	12660	2750	3650	2490	3970	1410	13590	3110	2300	615	3180

CAL YR 1986 TOTAL 31747.8 MEAN 87.0 MAX 3540 MIN 2.5 AC-FT 62970  
WTR YR 1987 TOTAL 33723.2 MEAN 92.4 MAX 3540 MIN 3.2 AC-FT 66890

## 07300000 SALT FORK RED RIVER NEAR WELLINGTON, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: February 1951 to October 1954, October 1967 to current year. Chemical and biochemical analyses: October 1974 to current year.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: June 1952 to September 1954, October 1967 to current year.

WATER TEMPERATURE: June 1952 to September 1954, October 1967 to current year.

INSTRUMENTATION.--From September 1968 to September 1974, 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, 4,340 microsiemens July 15, 1984; minimum daily, 330 microsiemens July 30, 1982.

WATER TEMPERATURE: Maximum daily, 40.0°C July 20, 1981; minimum daily, 0.0°C on many days during winter months.

## EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 3,990 microsiemens May 16; minimum daily, 980 microsiemens Oct. 11.

WATER TEMPERATURE: Maximum daily, 37.0°C June 16; minimum daily, 1.0°C Jan. 16.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

		STREAM- FLOW, INSTAN- TANEOUS (CFS)	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)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	
OCT 01...	1135	101	2180	7.60	19.5	--	--	--	--	--	
NOV 12...	1700	162	2650	8.00	2.0	12.7	98	0.7	140	170	
JAN 07...	1700	71	2800	7.80	6.0	11.5	101	1.1	<4	K48	
MAR 05...	1215	58	2690	8.00	17.0	8.9	99	0.2	--	--	
MAY 13...	1415	9.0	3380	7.60	32.0	7.0	105	1.6	130	60	
JUL 08...	1400	7.5	3400	7.50	35.0	6.2	98	0	740	200	
AUG 26...	1035	5.9	3330	7.60	26.0	7.4	99	0.4	440	340	
DATE		HARD- NESS (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 WH WAT TOTAL FIELD MG/L AS CAC03	SULFATE DIS- SOLVED (MG/L AS S04)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
OCT 01...	780	610	210	61	190	3	5.3	166	670	260	
NOV 12...	1200	930	330	81	210	3	4.4	224	900	320	
JAN 07...	1200	1000	340	79	240	3	4.3	174	1100	320	
MAR 05...	1100	950	310	87	220	3	4.6	182	970	300	
MAY 13...	1400	1300	440	84	190	2	4.0	138	1400	280	
JUL 08...	1800	1700	550	97	230	2	4.4	95	1600	340	
AUG 26...	1700	1500	530	86	180	2	4.4	145	1600	240	
DATE		FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)
OCT 01...	0.60	20	1500	--	--	--	--	--	--	--	
NOV 12...	0.70	24	2000	--	<0.010	0.500	0.090	0.11	0.20	0.020	
JAN 07...	0.70	21	2200	--	<0.010	1.00	0.150	0.25	0.40	<0.010	
MAR 05...	0.70	20	2000	--	<0.010	0.600	0.120	0.48	0.60	0.020	
MAY 13...	0.40	19	2500	--	<0.010	1.70	0.030	0.77	0.80	0.010	
JUL 08...	0.70	18	2900	1.27	0.030	1.30	0.190	0.81	1.0	0.020	
AUG 26...	0.60	22	2700	1.48	0.020	1.50	0.130	0.47	0.60	<0.010	

## RED RIVER BASIN

07300000 SALT FORK RED RIVER NEAR WELLINGTON, TX--Continued

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1986 TO SEPTEMBER 1987

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. 1986	8648	1560	1130	26400	140	3330	650	15200	690
NOV. 1986	6384	1780	1330	22800	160	2780	750	13000	810
DEC. 1986	1386	2740	2150	8060	240	915	1200	4450	1300
JAN. 1987	1839	2810	2230	11100	250	1240	1200	6080	1400
FEB. 1987	1255	2550	1970	6690	230	773	1100	3720	1200
MAR. 1987	2002	2690	2110	11400	240	1300	1200	6300	1300
APR. 1987	713	3000	2410	4630	270	512	1300	2530	1500
MAY 1987	6852.8	1980	1480	27400	180	3320	840	15500	900
JUNE 1987	1570	2770	2190	9290	250	1050	1200	5110	1300
JULY 1987	1158.6	2290	1760	5520	210	643	980	3070	1100
AUG. 1987	310.0	3050	2460	2050	270	226	1300	1120	1500
SEPT 1987	1604.9	2450	1910	8270	220	950	1100	4580	1200
TOTAL	33723.3	**	**	144000	**	17000	**	80600	**
WTD.AVG.	92	2080	1580	**	190	**	890	**	960

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
EQUIVALENT MEAN

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2230	2660	2800	2680	2800	2670	2750	3390	2460	3260	3130	3030
2	1710	2740	2820	2770	2640	2690	2890	3310	2580	3290	3300	3090
3	1160	2470	2780	2760	2710	2730	2910	3320	2660	3130	3280	3330
4	2000	1250	2810	2770	2760	2740	2940	3240	2730	3070	3280	3380
5	2350	1530	2830	3340	2800	2760	2880	3330	2780	3150	3230	3340
6	2410	2030	2710	2760	2840	2790	2810	3400	3010	3260	3330	2410
7	2500	2400	2650	2740	2740	2790	2730	3420	2920	3340	3300	3270
8	2580	2520	2550	3040	2720	2820	2800	2960	3040	3440	3270	3340
9	2570	2620	2530	2570	2900	2800	2800	2880	2760	3340	3290	3270
10	2560	2710	2690	2640	2800	2660	2970	2770	2650	3440	3290	3370
11	980	2680	2820	2580	2720	2720	2980	3320	2740	3300	3180	3090
12	1470	2670	2760	3320	2690	2840	2980	3340	2840	2700	3300	2870
13	1880	2460	2950	2680	2660	2820	3090	3340	2970	1770	2440	2410
14	2270	2730	2980	2770	2830	2800	3050	3330	3080	1990	3370	2770
15	2390	2650	2730	3190	2690	2840	3080	3400	3200	1440	3330	3360
16	2450	2660	2860	2770	2470	2830	3120	3990	3250	2310	3310	3400
17	2500	2690	2890	3950	2620	2700	3090	3410	3430	1810	3270	3380
18	2710	2700	2990	2750	2790	2780	3110	3450	3420	2460	3270	3350
19	2640	2790	2660	3020	2720	2850	3270	3290	3380	3180	3260	3540
20	2600	2780	2620	3000	2540	2920	3130	3340	3360	3190	3260	3210
21	2020	2770	2600	2740	2540	2950	3240	3360	2510	3150	3350	1760
22	1400	2820	2490	2700	2650	2950	3320	3110	2470	3270	3330	1930
23	1930	2850	2600	2670	2730	2420	3260	3080	2510	3170	3300	2560
24	2230	2800	2780	2650	2700	2300	3230	3210	3010	3080	3260	2780
25	2410	2780	2720	2770	2550	2520	3240	2410	3120	3030	3230	3160
26	2470	2860	2740	2430	2490	2560	3270	2090	2690	3390	3020	3270
27	2470	2910	2800	2480	2250	2650	3310	1510	2830	3180	2560	3320
28	2540	2800	3020	2610	2360	2670	3280	1890	3040	3230	3400	3390
29	2560	2750	2820	2580	---	2690	3300	1940	3220	3170	3250	3170
30	2570	2780	2770	2800	---	2740	3280	1910	3430	3240	3200	3330
31	2540	---	3060	2780	---	2710	---	2090	---	3310	3000	---
MEAN	2230	2600	2770	2820	2670	2730	3070	2990	2940	2970	3210	3060

## RED RIVER BASIN

47

07300000 SALT FORK RED RIVER NEAR WELLINGTON, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24.0	12.0	---	6.0	11.0	14.0	22.0	24.0	26.0	20.0	23.0	18.0
2	---	---	5.0	7.0	15.0	12.0	25.0	17.0	22.0	28.0	30.0	20.0
3	23.0	---	9.0	6.0	---	19.0	---	20.0	24.0	23.0	25.0	19.0
4	20.0	12.0	---	8.0	11.0	14.0	18.0	21.0	---	28.0	22.0	28.0
5	18.0	7.0	10.0	9.0	---	8.0	11.0	24.0	30.0	---	23.0	25.0
6	---	---	10.0	14.0	8.0	19.0	13.0	19.0	24.0	---	21.0	21.0
7	24.0	17.0	10.0	---	15.0	12.0	14.0	15.0	23.0	32.0	---	20.0
8	24.0	---	8.0	7.0	10.0	12.0	22.0	25.0	28.0	28.0	26.0	20.0
9	---	10.0	---	8.0	12.0	6.0	10.0	---	24.0	22.0	29.0	20.0
10	18.0	---	3.0	7.0	17.0	7.0	25.0	22.0	28.0	27.0	30.0	19.0
11	13.0	9.0	---	3.0	13.0	16.0	---	32.0	22.0	23.0	29.0	19.0
12	9.0	2.0	11.0	5.0	8.0	---	20.0	7.0	22.0	24.0	34.0	21.0
13	---	---	2.0	13.0	18.0	---	11.0	22.0	---	24.0	22.0	---
14	19.0	5.0	12.0	10.0	12.0	20.0	15.0	18.0	---	---	26.0	21.0
15	21.0	5.0	12.0	6.0	8.0	12.0	8.0	20.0	30.0	19.0	---	18.0
16	---	---	10.0	1.0	10.0	18.0	11.0	19.0	37.0	20.0	25.0	28.0
17	22.0	15.0	12.0	5.0	5.0	15.0	22.0	26.0	33.0	31.0	27.0	---
18	---	15.0	12.0	---	5.0	14.0	6.0	27.0	20.0	26.0	22.0	23.0
19	---	15.0	10.0	3.0	---	---	11.0	21.0	12.0	32.0	21.0	---
20	14.0	---	11.0	3.0	9.0	22.0	20.0	20.0	---	26.0	22.0	18.0
21	---	15.0	8.0	7.0	7.0	20.0	10.0	18.0	27.0	23.0	21.0	16.0
22	20.0	---	8.0	7.0	10.0	20.0	24.0	20.0	31.0	32.0	21.0	17.0
23	17.0	10.0	10.0	---	10.0	10.0	11.0	18.0	35.0	22.0	---	19.0
24	---	11.0	11.0	5.0	10.0	12.0	15.0	---	31.0	27.0	---	16.0
25	14.0	9.0	---	10.0	9.0	15.0	19.0	26.0	21.0	25.0	21.0	18.0
26	19.0	13.0	12.0	8.0	---	7.0	---	19.0	29.0	28.0	32.0	26.0
27	20.0	---	10.0	14.0	6.0	11.0	25.0	18.0	24.0	23.0	20.0	---
28	20.0	---	6.0	11.0	5.0	8.0	20.0	18.0	29.0	23.0	19.0	19.0
29	20.0	15.0	---	6.0	---	7.0	27.0	24.0	29.0	24.0	19.0	17.0
30	12.0	---	13.0	13.0	---	12.0	6.0	21.0	27.0	20.0	25.0	15.0
31	---	---	12.0	11.0	---	19.0	---	25.0	---	23.0	20.0	---
MEAN	18.5	11.0	9.5	7.5	10.0	13.5	16.5	21.0	26.5	25.0	24.5	20.0

## RED RIVER BASIN

07300500 SALT FORK RED RIVER AT MANGUM, OK

LOCATION.--Lat 34°51'32", long 99°30'28", in SW 1/4 SE 1/4 sec.34. T.5 N., R.22 W., Greer County, Hydrologic Unit 11120202, near left bank at downstream side of pier of bridge on State Highway 34, 0.5 mi south of Mangum, 13.0 mi downstream from Fish Creek, and at mile 35.5.

DRAINAGE AREA.--1,566 mi<sup>2</sup>, of which 209 mi<sup>2</sup> probably is noncontributing.

PERIOD OF RECORD.--April 1905 to June 1906, October 1937 to current year. Monthly discharge only for some periods, published in WSP 1311.

REVISED RECORDS.--WSP 1211: Drainage area. WSP 1241: 1938.

GAGE.--Water-stage recorder. Datum of gage is 1,490.87 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Bureau of Reclamation). Apr. 11, 1905, to June 30, 1906, nonrecording gage at site 0.2 mi upstream at different datum. Oct. 1, 1937, to Nov. 8, 1938, nonrecording gage at present site and datum.

REMARKS.--Records good. Several unpublished observations of water temperature, specific conductance, and pH were made during the year and are available at the District Office in Oklahoma City.

AVERAGE DISCHARGE.--50 years (water years 1938-87), 86.4 ft<sup>3</sup>/s (62,600 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 72,000 ft<sup>3</sup>/s May 16, 1957 (gage height, 14.55 ft); maximum gage height, 14.7 ft June 16, 1938; no flow at times in most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 6,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 3	1415	*21,400	*14.66	No other peak greater than base discharge.			
Minimum daily discharge, 13 ft <sup>3</sup> /s Aug. 25.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	318	123	140	111	127	176	91	62	344	128	19	34
2	665	120	140	106	121	159	95	61	305	98	19	32
3	12900	122	136	106	119	165	91	59	258	89	18	26
4	1740	666	134	105	117	151	85	56	218	88	18	22
5	687	625	137	104	123	138	82	56	274	80	19	20
6	606	260	141	102	121	132	87	57	200	75	25	25
7	493	224	152	101	119	127	91	59	189	70	22	24
8	353	202	171	106	116	124	94	57	183	67	20	27
9	282	191	186	111	112	125	95	56	175	66	18	29
10	245	185	179	115	107	136	89	55	719	68	18	26
11	638	172	167	124	107	145	88	53	404	61	17	30
12	1040	159	148	108	107	158	85	51	339	57	17	51
13	389	165	142	100	108	152	83	49	323	60	18	115
14	191	164	136	97	107	149	81	49	353	158	20	57
15	161	164	133	99	177	142	79	62	215	86	26	39
16	127	187	135	99	170	141	75	49	175	69	23	34
17	94	185	139	90	164	334	74	46	148	208	20	30
18	87	169	139	e82	142	133	73	44	129	90	18	26
19	88	164	135	e90	132	123	70	48	127	85	17	24
20	81	163	140	e94	129	105	70	57	116	58	16	24
21	429	159	141	e100	139	93	69	59	129	48	15	54
22	1500	154	137	e110	153	90	71	61	183	42	14	81
23	289	152	137	120	144	148	71	157	189	38	14	71
24	177	147	138	132	137	151	70	125	348	34	14	45
25	133	151	135	146	137	129	68	190	284	32	13	60
26	119	149	130	141	174	129	67	249	132	30	17	34
27	131	147	127	167	493	114	65	733	126	28	22	30
28	138	141	127	174	259	105	63	1960	114	25	53	28
29	132	139	123	155	---	98	63	1470	101	23	42	25
30	125	141	118	137	---	95	62	475	285	21	32	24
31	123	---	115	125	---	89	---	560	---	20	36	---
TOTAL	24481	5890	4358	3557	4161	4256	2347	7125	7085	2102	660	1147
MEAN	790	196	141	115	149	137	78.2	230	236	67.8	21.3	38.2
MAX	12900	666	186	174	493	334	95	1960	719	208	53	115
MIN	81	120	115	82	107	89	62	44	101	20	13	20
AC-FT	48560	11680	8640	7060	8250	8440	4660	14130	14050	4170	1310	2280
CAL YR 1986	TOTAL	66637	MEAN	183	MAX	12900	MIN	1.7	AC-FT	132200		
WTR YR 1987	TOTAL	67169	MEAN	184	MAX	12900	MIN	13	AC-FT	133200		

e Estimated.

## RED RIVER BASIN

49

07301300 NORTH FORK RED RIVER NEAR SHAMROCK, TX

LOCATION.--Lat 35°15'51", long 100°14'29", Wheeler County, Hydrologic Unit 11120302, on left bank at downstream side of bridge on U.S. Highway 83, 2.5 mi north of Shamrock, 16 mi upstream from Texas-Oklahoma State line, and 23 mi downstream from McClellan Creek.

DRAINAGE AREA.--1,082 mi<sup>2</sup>, of which 379 mi<sup>2</sup> probably is noncontributing.

PERIOD OF RECORD.--1951-63 (occasional low-flow measurements), February 1964 to current year.  
Water-quality records.--Chemical analyses: October 1964 to September 1981.

Gage.--Water-stage recorder. Datum of gage is 2,165.55 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharge. Records fair. There is some regulation by Lake McClellan (capacity 5,000 acre-feet) 41 mi upstream. Flow is affected at times by discharge from the flood-detention pools of 11 floodwater-retarding structures with a combined detention capacity of 18,290 acre-feet. These structures control runoff from 165 mi<sup>2</sup>. Gage-height telemeter at station.

AVERAGE DISCHARGE.--23 years, 31.6 ft<sup>3</sup>/s (22,890 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,400 ft<sup>3</sup>/s May 29, 1975 (gage height, 7.47 ft), from rating curve extended above 3,800 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1915, 16.1 ft in May 1957, from information by State Department of Highways and Public Transportation and by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,070 ft<sup>3</sup>/s Oct. 2 at 2215 hours (gage height, 3.02 ft); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	43	32	40	31	61	60	40	1.5	50	3.1	.00	.00
2	182	31	39	35	43	73	31	1.3	36	1.1	.00	.00
3	374	34	39	37	39	60	28	.84	34	2.6	.00	.00
4	64	508	39	36	39	48	35	.74	31	.62	.00	.00
5	37	216	40	31	39	42	37	.89	32	.18	.00	.00
6	36	141	40	31	38	40	57	1.4	28	.05	.00	.09
7	24	78	46	34	35	39	63	1.7	14	.09	.00	.02
8	8.3	66	64	36	35	35	62	1.6	7.6	2.2	.06	.01
9	6.3	52	99	39	35	63	57	1.1	22	.08	.01	.01
10	10	52	88	35	35	157	45	.47	38	.03	.01	.00
11	245	42	62	35	35	165	32	.12	32	.02	.01	.13
12	54	49	52	36	35	185	31	.04	43	.03	.27	1.0
13	14	31	42	37	35	173	29	.01	10	.04	.05	5.4
14	12	68	47	37	35	142	25	.02	4.3	.04	.01	2.3
15	10	51	69	35	65	104	19	1.1	2.4	15	.01	1.1
16	8.6	39	46	36	40	122	20	.28	1.6	15	.01	.26
17	6.7	39	43	31	38	237	19	.01	1.4	13	.01	.02
18	6.1	44	43	33	39	237	14	.05	1.8	17	.01	.07
19	4.6	43	51	35	39	111	10	.63	1.9	3.2	.00	.24
20	4.2	46	57	37	50	117	8.0	.40	9.5	.17	.00	4.4
21	255	43	50	e34	60	86	7.7	.03	14	.01	.00	61
22	214	46	54	e33	40	73	7.7	.67	98	.01	.00	19
23	83	48	45	e33	35	311	8.3	10	70	.01	.00	6.6
24	42	48	41	38	39	248	7.9	20	24	.00	.00	5.9
25	38	60	39	52	38	222	6.7	63	42	.00	.00	2.5
26	39	84	39	81	64	142	5.8	294	30	.00	.08	.54
27	36	83	39	70	151	52	4.6	251	17	.00	.01	.07
28	35	68	39	56	116	65	3.6	240	8.2	.00	.01	.03
29	34	42	37	62	---	32	2.8	100	2.3	.00	.01	.01
30	33	43	35	39	---	64	2.0	94	1.9	.00	.00	.01
31	35	---	31	48	---	93	---	54	---	.00	.00	---
TOTAL	1993.8	2227	1495	1243	1353	3598	719.1	1140.90	707.9	73.58	.57	110.71
MEAN	64.3	74.2	48.2	40.1	48.3	116	24.0	36.8	23.6	2.37	.02	3.69
MAX	374	508	99	81	151	311	63	294	98	17	.27	61
MIN	4.2	31	31	31	35	32	2.0	.01	1.4	.00	.00	.00
AC-FT	3950	4420	2970	2470	2680	7140	1430	2260	1400	146	1.1	220

CAL YR 1986 TOTAL 13261.81 MEAN 36.3 MAX 620 MIN .00 AC-FT 26300  
WTR YR 1987 TOTAL 14662.49 MEAN 40.2 MAX 508 MIN .00 AC-FT 29080

e Estimated.

## 07301410 SWEETWATER CREEK NEAR KELTON, TX

LOCATION.--Lat 35°28'23", long 100°07'14", Wheeler County, Hydrologic Unit 11120302, near center of stream at downstream side of bridge on Farm Road 592, 5 mi north of Kelton, 8 mi upstream from Texas-Oklahoma State line, and 8.5 mi northeast of Wheeler.

DRAINAGE AREA.--287 mi<sup>2</sup>, of which 20 mi<sup>2</sup> probably is noncontributing.

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

Water-quality records.--Chemical analyses: October 1969 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,230 ft above National Geodetic Vertical datum of 1929, from topographic map.

REMARKS.--No estimated daily discharge. Records good. There are many small diversions upstream from station for ranch use. Gage-height telemeter at station via Sutron Data Collection Platform.

AVERAGE DISCHARGE.--25 years (water years 1963-87), 13.4 ft<sup>3</sup>/s (0.68 in/yr), 9,710 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,890 ft<sup>3</sup>/s May 20, 1977 (gage height, 15.73 ft); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1882, about 20 ft May 16, 1957.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 3	1130	*482	*12.19				
Minimum discharge, 0.83 ft <sup>3</sup> /s Aug. 22, 23.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25	18	19	20	25	34	29	14	29	13	2.6	2.8
2	24	17	19	20	25	29	26	14	26	14	2.3	2.1
3	296	18	19	19	23	27	25	13	24	13	2.0	1.6
4	76	169	19	20	23	25	24	13	22	11	1.8	1.1
5	35	183	19	19	22	24	24	13	20	10	1.9	1.0
6	23	87	19	19	21	24	24	13	19	9.1	1.8	2.4
7	19	40	17	20	21	23	23	13	17	8.3	1.5	4.1
8	17	27	17	22	21	22	23	13	16	8.5	1.3	3.5
9	16	22	16	31	20	23	23	12	16	8.1	1.6	3.5
10	15	18	17	29	20	24	21	12	20	7.6	2.1	3.2
11	44	17	18	25	20	25	21	11	19	7.2	2.3	3.1
12	44	16	18	23	20	26	21	11	18	6.9	2.0	3.9
13	35	15	18	23	20	27	21	11	17	6.6	2.7	4.6
14	24	17	18	23	21	25	21	11	15	6.6	3.4	3.9
15	19	17	18	21	46	23	20	11	14	6.8	2.5	4.2
16	17	17	19	21	61	23	19	10	14	6.5	2.0	3.8
17	17	17	19	21	32	26	19	9.8	13	8.5	1.6	3.4
18	16	17	19	22	27	28	19	9.4	12	8.7	1.4	3.9
19	15	18	19	24	25	26	18	9.5	12	7.1	1.3	4.8
20	15	18	19	25	27	23	17	10	13	6.4	1.2	6.5
21	116	18	19	26	28	21	17	9.9	12	6.1	.97	17
22	160	18	19	25	26	20	17	9.6	17	5.8	.87	9.2
23	55	18	19	25	24	48	17	12	21	5.6	.89	7.3
24	32	19	19	25	24	143	17	13	146	5.2	1.2	6.5
25	26	18	19	24	24	63	16	18	119	4.8	1.2	5.9
26	24	19	19	29	28	44	16	27	26	4.4	1.2	5.4
27	22	19	19	38	87	41	15	152	16	4.1	1.9	5.4
28	21	19	19	35	67	42	15	100	13	3.7	2.1	5.5
29	19	19	19	29	---	35	15	126	12	3.4	1.8	5.6
30	19	19	19	25	---	32	15	52	18	3.2	2.1	5.6
31	18	---	19	24	---	31	---	36	---	2.8	2.4	---
TOTAL	1304	954	575	752	828	1027	598	789.2	756	223.0	55.93	140.8
MEAN	42.1	31.8	18.5	24.3	29.6	33.1	19.9	25.5	25.2	7.19	1.80	4.69
MAX	296	183	19	38	87	143	29	152	146	14	3.4	17
MIN	15	15	16	19	20	20	15	9.4	12	2.8	.87	1.0
AC-FT	2590	1890	1140	1490	1640	2040	1190	1570	1500	442	111	279

CAL YR 1986 TOTAL 6268.03 MEAN 17.2 MAX 296 MIN .36 AC-FT 12430  
WTR YR 1987 TOTAL 8002.89 MEAN 21.9 MAX 296 MIN .87 AC-FT 15870

## RED RIVER BASIN

51

## 07307800 PEASE RIVER NEAR CHILDRESS, TX

LOCATION.--Lat 34°13'39", long 100°04'24", Cottle County, Hydrologic Unit 11130105, near right bank at downstream side of bridge on Farm Road 104, 0.8 mi upstream from Catfish Creek, 4.4 mi downstream from confluence of North and Middle Forks, 17 mi southeast of Childress, and 71.0 mi upstream from mouth.

DRAINAGE AREA.--2,754 mi<sup>2</sup>, of which 559 mi<sup>2</sup> probably is noncontributing.

PERIOD OF RECORD.--December 1959 to September 1962, and October 1967 to current year.  
Water-quality records.--Chemical analyses: July 1968 to September 1982.

GAGE.--Water-stage recorder. Datum of gage is 1,492.98 ft above National Geodetic Vertical Datum of 1929. Prior to Dec. 21, 1959, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Records good. There are three small diversions for irrigation above station. Flow is affected at times by discharge from the flood-retention pools of six floodwater-retarding structures with a combined detention capacity of 1,360 acre-ft. These structures control runoff from 6.27 mi<sup>2</sup> in the Kent Creek drainage basin.

AVERAGE DISCHARGE.--22 years (water years 1961-62, 1967-87), 62.9 ft<sup>3</sup>/s (0.39 in/yr), 45,570 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,000 ft<sup>3</sup>/s June 9, 1960 (gage height, 13.59 ft), from rating curve extended above 4,000 ft<sup>3</sup>/s on basis of runoff comparisons with nearby stations; maximum gage height, 14.83 ft Oct. 20, 1983; no flow Aug. 10-22, 1969, May 25, 26, 1971.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1909, 22 ft June 1, 1957; flood in May 1935 reached a stage of 18 ft and was the second highest, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,200 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 3	2000	*14,500	*13.46	Nov. 4	1700	2,660	10.08
Oct. 9	1800	7,340	11.49	May 27	2000	2,280	9.93
Oct. 11	1630	2,450	9.99	May 28	1500	5,160	10.86

Minimum daily discharge, 8.7 ft<sup>3</sup>/s May 14, 15.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	257	103	48	42	73	159	41	12	282	173	12	15
2	402	99	42	43	74	122	35	12	198	101	12	13
3	9100	100	40	41	80	107	37	11	143	49	12	12
4	3860	925	40	39	72	97	37	11	113	31	11	11
5	831	873	44	39	81	95	36	12	98	21	47	11
6	558	370	46	42	83	93	39	13	85	18	70	17
7	494	279	51	41	84	86	37	13	72	16	19	17
8	421	180	57	45	74	84	37	12	65	38	13	14
9	1840	134	72	54	68	76	34	12	138	25	12	13
10	760	110	74	48	69	72	30	11	201	18	15	12
11	1050	93	72	45	69	72	30	9.9	102	16	16	11
12	654	86	62	46	64	69	29	9.4	133	15	12	20
13	379	81	49	46	63	70	28	9.2	347	67	12	16
14	271	83	47	47	63	69	25	8.9	131	169	12	14
15	207	82	46	48	137	61	24	9.4	81	102	15	28
16	176	89	44	49	122	63	23	9.6	56	306	13	18
17	152	87	43	44	108	72	22	13	41	499	14	15
18	139	76	61	29	100	85	20	12	51	747	34	19
19	118	72	72	42	96	80	17	18	49	410	14	18
20	109	67	93	63	110	66	16	19	56	210	15	14
21	261	65	88	54	118	54	15	13	47	134	24	23
22	314	71	85	58	134	52	16	18	45	99	16	18
23	282	63	86	77	108	90	17	388	41	83	12	16
24	222	61	93	95	105	130	15	216	41	49	12	15
25	142	67	88	90	110	103	14	75	80	33	11	14
26	125	63	74	92	132	79	14	39	52	26	13	17
27	119	58	57	93	307	73	13	654	43	21	16	19
28	110	58	56	94	247	62	13	2250	30	18	20	16
29	107	56	55	82	---	56	13	1650	25	16	22	15
30	109	54	50	69	---	50	13	908	49	15	21	15
31	106	---	44	63	---	47	---	439	---	13	22	---
TOTAL	23675	4605	1879	1760	2951	2494	740	6887.4	2895	3538	569	476
MEAN	764	153	60.6	56.8	105	80.5	24.7	222	96.5	114	18.4	15.9
MAX	9100	925	93	95	307	159	41	2250	347	747	70	28
MIN	106	54	40	29	63	47	13	8.9	25	13	11	11
AC-FT	46960	9130	3730	3490	5850	4950	1470	13660	5740	7020	1130	944

CAL YR 1986 TOTAL 40263.8 MEAN 110 MAX 9100 MIN 2.0 AC-FT 79860  
WTR YR 1987 TOTAL 52469.4 MEAN 144 MAX 9100 MIN 8.9 AC-FT 104100

## RED RIVER MAIN STEM

07308500 RED RIVER NEAR BURKBURNETT, TX

LOCATION.--Lat 34°06'36", long 98°31'53", Cotton County, Okla., Hydrologic Unit 11130102, on left bank at downstream side of bridge on U.S. Highways 277 and 281, 2.5 mi northeast of Burkburnett, and at mile 933.

DRAINAGE AREA.--20,570 mi<sup>2</sup>, of which 5,936 mi<sup>2</sup> probably is noncontributing.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1924 to August 1925 (monthly discharge only), December 1959 to current year.

GAGE.--Water-stage recorder. Datum of gage is 952.57 ft above National Geodetic Vertical Datum of 1929. July 11, 1924, to Aug. 31, 1925, nonrecording gage at site 1,000 ft downstream at same datum. Dec. 16, 1959, to Jan. 11, 1960, nonrecording gage at present site and datum.

REMARKS.--Records fair except those for periods when manometer was out of operation, which are poor. There are many small diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--27 years (water years 1961-87), 1,014 ft<sup>3</sup>/s (734,600 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 166,000 ft<sup>3</sup>/s Oct. 21, 1983 (gage height, 16.90 ft); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 3, 1957, reached a stage of 13.54 ft, from levels to floodmarks. According to local residents, higher stages occurred in 1891 and June 1941.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 9,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 1	1145	24,900	10.39	Mar. 21	0845	10,000	8.46
Oct. 5	0930	46,700	12.10	May 24	1415	16,300	8.94
Oct. 13	0200	15,900	9.35	May 29	2000	*98,700	*13.78
Oct. 23	2000	38,600	11.37	June 12	0100	14,600	8.05
Nov. 6	1215	21,700	9.95	July 1	0115	15,500	8.33
Feb. 6	1430	10,000	8.60				

Minimum discharge, 350 ft<sup>3</sup>/s Sept. 11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22400	5220	3060	1520	3830	9470	1730	588	36500	11000	530	920
2	18100	5170	2720	1460	3300	7920	1640	621	17700	6640	464	1010
3	23100	5090	2560	1430	3910	4350	1590	715	10200	3250	426	654
4	33700	5870	2610	1360	3510	3570	1550	702	6700	2620	404	533
5	43700	11600	2670	1300	3380	3130	1550	689	4000	2500	390	515
6	41700	19700	2820	1270	7300	3220	1520	688	3720	1530	411	474
7	30200	10800	2860	1240	4750	3170	1490	624	3750	1250	456	443
8	8760	5970	2930	1160	2920	2860	1470	530	3750	1110	521	428
9	6540	5230	2890	1570	2000	2670	1460	489	3400	1020	601	399
10	6200	5190	2650	2220	1850	2380	1450	469	3240	931	639	379
11	10600	5090	2670	2570	1870	2190	1670	456	7740	822	601	352
12	9270	4880	2730	2060	1910	2320	1650	447	12300	756	538	489
13	14200	4920	2730	1740	2000	2470	1440	429	9320	848	530	539
14	8890	4660	2450	1760	2070	2520	1290	439	7960	837	521	814
15	5520	4260	2230	1720	2130	2500	1180	444	4070	768	521	748
16	5090	3980	2220	1620	2060	2590	1140	455	3300	748	547	903
17	5000	3890	2160	1620	2210	4340	1140	461	2780	1290	1670	1040
18	4880	3740	2090	1620	3120	3720	1110	570	2270	3240	2370	1220
19	4800	3710	2070	1510	3370	5390	1060	904	2140	3120	1540	1490
20	4570	3120	2020	1470	2350	5130	1000	761	2630	5600	940	866
21	4420	2720	1950	1530	2280	3420	986	635	2510	4230	710	997
22	23800	2460	1930	1600	2370	5250	981	661	1910	2630	611	1370
23	35500	2490	1910	1750	2460	4750	941	860	1670	1710	496	1970
24	30700	2410	1910	2060	2360	2630	923	12400	1620	1320	456	1820
25	20100	2530	1910	2310	2250	2500	878	12400	2040	1080	404	1930
26	11600	3860	1840	2260	2820	3690	757	13200	2340	945	390	1210
27	6050	3600	1820	2400	3620	3120	710	10400	2490	816	505	756
28	5550	2480	1740	2690	6660	2810	669	52900	2210	721	709	663
29	5810	1870	1680	2880	---	2440	645	88100	1680	689	609	1140
30	5640	2290	1660	3540	---	1880	620	87500	2840	649	498	2050
31	5450	---	1560	4230	---	1710	---	69300	---	574	599	---
TOTAL	461840	148800	71050	59470	84660	110110	36240	359837	168780	65244	20607	28122
MEAN	14900	4960	2292	1918	3024	3552	1208	11610	5626	2105	665	937
MAX	43700	19700	3060	4230	7300	9470	1730	88100	36500	11000	2370	2050
MIN	4420	1870	1560	1160	1850	1710	620	429	1620	574	390	352
AC-FT	916100	295100	140900	118000	167900	218400	71880	713700	334800	129400	40870	55780

CAL YR 1986 TOTAL 979048 MEAN 2682 MAX 43700 MIN 74 AC-FT 1942000  
WTR YR 1987 TOTAL 1614760 MEAN 4424 MAX 88100 MIN 352 AC-FT 3203000

07308500 RED RIVER NEAR BURKBURNETT, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: May 1968 to September 1974. Chemical and biochemical analyses: October 1974 to current year. Pesticide analyses: October 1973 to September 1982.

PERIOD OF DAILY RECORD.--  
SPECIFIC CONDUCTANCE: July 1968 to September 1981.  
WATER TEMPERATURE: July 1968 to September 1981.

INSTRUMENTATION.--From December 1968 to September 1979, specific conductance was continuously recorded at this station.

EXTREMES FOR PERIOD OF DAILY RECORD.--  
SPECIFIC CONDUCTANCE: Maximum daily, 17,400 microsiemens July 30, 1972; minimum daily, 889 microsiemens Sept. 24, 1970.  
WATER TEMPERATURE: Maximum daily, 35.5°C June 29, 1980; minimum daily, 0.0°C on many days during winter months.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	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 (MG/L AS CACO3)
NOV 13...	1400	5090	4200	8.00	3.0	490	11.8	91	1.1	870	2500	930
JAN 08...	1330	1160	7400	8.30	5.5	33	11.6	99	1.3	84	340	1300
MAR 06...	1320	3220	4360	8.00	15.0	220	9.7	101	0.7	--	--	980
MAY 20...	1310	592	4350	7.80	25.5	290	7.3	95	2.5	200	630	900
JUL 09...	1445	878	5720	7.90	30.0	0.60	9.4	132	0.8	740	30	1100
AUG 27...	1540	592	5920	8.10	23.5	55	10.8	135	1.0	420	70	980
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- LITY WH WAT TOTAL 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 13...	730	250	74	600	9	7.4	199	720	920	0.40	11	2780
JAN 08...	1000	340	110	1100	14	8.0	257	1200	1600	0.40	11	4880
MAR 06...	790	250	86	590	8	8.0	195	800	940	0.50	9.8	2980
MAY 20...	790	230	79	580	9	7.5	115	790	920	0.40	8.1	2870
JUL 09...	1100	290	98	890	12	8.9	59	1000	1500	0.40	10	3740
AUG 27...	880	230	97	950	14	8.8	100	940	1400	0.40	7.7	3840
DATE	SOLIDS, SUM OF CONSTITU- ENTS, 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- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS PO4)
NOV 13...	2700	1.08	0.020	1.10	0.120	0.140	0.28	0.40	0.070	0.070	0.030	0.09
JAN 08...	4500	1.68	0.020	1.70	0.150	0.150	0.65	0.80	0.020	0.010	0.030	0.09
MAR 06...	2800	1.09	0.010	1.10	0.340	0.090	0.96	1.3	0.490	0.150	0.030	0.09
MAY 20...	2700	0.850	0.020	0.870	0.150	0.140	2.9	3.0	0.360	0.010	<0.010	--
JUL 09...	3800	--	<0.010	<0.100	0.130	0.100	1.4	1.5	0.230	0.010	0.010	0.03
AUG 27...	3700	--	<0.010	<0.100	0.070	0.040	0.93	1.0	0.110	0.020	<0.010	--
DATE	SEDI- MENT, DIS- SOLVED (MG/L)	SEDI- MENT, DIS- SOLVED (MG/L)	SEDI- MENT, DIS- SOLVED (MG/L)	SEDI- MENT, DIS- SOLVED (MG/L)	SEDI- MENT, DIS- SOLVED (MG/L)	SEDI- MENT, DIS- SOLVED (MG/L)	SEDI- MENT, DIS- SOLVED (MG/L)	SEDI- MENT, DIS- SOLVED (MG/L)	SEDI- MENT, DIS- SOLVED (MG/L)	SEDI- MENT, DIS- SOLVED (MG/L)	SEDI- MENT, DIS- SOLVED (MG/L)	SEDI- MENT, DIS- SOLVED (MG/L)
NOV 13...	1070	14700	83	<10	3	100	<10	<1	<1	<1	3	<10
JAN 08...	180	564	83	--	--	--	--	--	--	--	--	--
MAR 06...	556	4830	91	20	2	200	<10	<1	<1	1	3	20
MAY 20...	402	643	96	20	2	100	<10	<1	<1	<1	4	40
JUL 09...	262	621	95	--	--	--	--	--	--	--	--	--
AUG 27...	132	211	98	10	3	<100	<10	<1	4	<1	1	50

## RED RIVER MAIN STEM

07308500 RED RIVER NEAR BURKBURNETT, TX--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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 13...	94	50	30	<0.1	8	2	2	<1	3000	10	<10
JAN 08...	--	--	--	--	--	--	--	--	--	--	--
MAR 06...	<5	50	20	<0.1	<1	4	3	<1	3100	<100	10
MAY 20...	<5	60	20	0.3	2	<1	3	<1	3200	<10	200
JUL 09...	--	--	--	--	--	--	--	--	--	--	--
AUG 27...	<5	70	<10	0.3	4	<1	1	<1	3800	30	40

## 07311669 TRUSCOTT BRINE LAKE NEAR TRUSCOTT, TX

LOCATION.--Lat 33°47'52", long 99°50'11", Knox County, Hydrologic Unit 11130204, in gage house on top and near center of dam on Bluff Creek, 3.0 mi northeast of Truscott, and 3.6 mi upstream from mouth.

DRAINAGE AREA.--26.2 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1984 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (U.S. Army Corps of Engineers benchmark).

REMARKS.--The lake is formed by a rolled-filled earthen structure with a 2-foot thick blanket of soil cement normal to the upstream slope. The dam is 16,080 ft long with a maximum height of 107 ft above streambed. Uncontrolled spillway is a saddle type sodded spillway on right end of dam 1,000 ft wide. Elevation-spillway discharge points furnished by U.S. Army Corps of Engineers show a discharge of 13,200 and 35,400 ft<sup>3</sup>/s at elevations of 1,502.00 and 1,508.00 ft, respectively. Lake is operated and maintained by U.S. Army Corps of Engineers for the purpose of storage and evaporation of water pumped from South and Middle Wichita Rivers as part of Red River Chloride Control project. 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.....	1,512.5	
Crest of spillway.....	1,499.0	107,000

COOPERATION.--The area and capacity tables 1-A and 1-C are provided by the U.S. Army Corps of Engineers, Tulsa District.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 7,950 acre-ft July 17, 1987 (elevation, 1,445.40 ft); minimum, 1,190 acre-ft Oct. 18, 19, 1984 (elevation, 1,429.47 ft).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 7,950 acre-ft July 17 (elevation, 1,445.40 ft); minimum, 2,490 acre-ft Oct. 1 (elevation, 1,434.70 ft).

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

1,434.0	2,270	1,442.0	5,750
1,436.0	2,930	1,444.0	6,980
1,438.0	3,720	1,446.0	8,380
1,440.0	4,660		

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2580	4600	4790	4900	5030	5360	5730	5970	7330	7790	7850	7810
2	2870	4570	4790	4910	5040	5370	5720	5990	7340	7810	7840	7800
3	3480	4580	4790	4890	5040	5380	5730	5990	7320	7830	7840	7760
4	3560	4730	4780	4900	5040	5380	5740	5960	7340	7840	7830	7760
5	3580	4750	4790	4900	5090	5390	5730	5960	7360	7830	7820	7760
6	3600	4760	4800	4910	5100	5400	5750	5960	7380	7830	7820	7790
7	3560	4770	4810	4900	5130	5400	5760	5960	7400	7810	7810	7810
8	3560	4770	4800	4910	5130	5400	5780	5960	7430	7810	7790	7820
9	3970	4760	4800	4930	5130	5380	5790	5960	7490	7780	7780	7830
10	4030	4760	4800	4930	5160	5380	5790	5970	7530	7760	7790	7850
11	4040	4750	4800	4940	5160	5390	5810	5980	7530	7760	7780	7860
12	4020	4750	4820	4950	5160	5390	5820	5950	7570	7780	7770	7850
13	4030	4720	4820	4940	5170	5400	5810	5970	7590	7810	7780	7860
14	4030	4740	4820	4950	5190	5420	5830	5980	7620	7830	7800	7820
15	4040	4750	4830	4940	5170	5400	5840	5990	7630	7850	7790	7840
16	4040	4760	4820	4930	5170	5510	5870	5990	7640	7900	7790	7840
17	4040	4770	4830	4930	5170	5550	5880	6000	7660	7940	7810	7840
18	4040	4760	4840	4950	5180	5560	5890	6000	7640	7940	7830	7850
19	4040	4770	4850	4950	5180	5590	5900	6020	7660	7940	7840	7850
20	4030	4770	4850	4960	5200	5610	5890	6040	7670	7920	7830	7850
21	4380	4770	4860	4970	5210	5610	5890	6040	7690	7940	7840	7860
22	4540	4780	4870	4970	5230	5630	5900	6070	7690	7920	7850	7860
23	4560	4760	4880	4970	5240	5610	5920	6320	7700	7910	7850	7860
24	4560	4750	4890	4970	5240	5630	5930	6340	7680	7910	7860	7860
25	4570	4780	4890	4980	5250	5640	5930	6360	7700	7900	7870	7860
26	4580	4790	4890	4990	5290	5660	5940	6370	7710	7890	7880	7860
27	4580	4790	4890	5000	5340	5690	5950	6580	7710	7880	7880	7870
28	4580	4800	4900	5010	5360	5670	5980	7130	7710	7880	7880	7870
29	4580	4810	4900	5020	---	5660	5960	7290	7760	7870	7860	7870
30	4590	4800	4900	5010	---	5670	5970	7320	7780	7860	7840	7880
31	4590	---	4900	5030	---	5730	---	7320	---	7860	7810	---
MAX	4590	4810	4900	5030	5360	5730	5980	7320	7780	7940	7880	7880
MIN	2580	4570	4780	4890	5030	5360	5720	5950	7320	7760	7770	7760
(+) 1439.85	1440.27	1440.46	1440.69	1441.31	1441.96	1442.37	1444.50	1445.16	1445.27	1445.21	1445.30	
(Φ) +2100	+210	+100	+130	+330	+370	+240	+1350	+460	+80	-50	+70	

CAL YR 1986 MAX 4900 MIN 1560 (+) +2830  
WTR YR 1987 MAX 7940 MIN 2580 (+) +5390

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

07311669 TRUSCOTT BRINE LAKE NEAR TRUSCOTT, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: October 1984 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1984 to current year.

WATER TEMPERATURE: October 1984 to current year.

INSTRUMENTATION.--Beginning October 1, 1984 specific conductance and water temperature are recorded continuously at this station.

REMARKS.--Where maximum and minimum specific conductance values are not shown, mean values are estimated.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 8,250 microsiemens Sept. 30, 1987; minimum, 1,340 microsiemens Oct. 23, 1987.

WATER TEMPERATURE: Maximum, 34.0°C Aug. 11, 1987; minimum, 0.5°C Jan. 31, Feb. 2, 9, 1985.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 8,250 microsiemens Sept. 30; minimum, 1,430 microsiemens Oct. 4.

WATER TEMPERATURE: Maximum, 34.0°C Aug. 11; minimum, 2.0°C Jan. 24.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	HARD- NESS (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)
NOV 18...	1600	1740	7.70	11.5	640	560	180	47	120
JAN 06...	1220	1910	7.80	8.0	720	630	200	54	130
FEB 18...	1430	1980	7.80	12.0	770	670	210	60	130
MAR 31...	1410	2590	7.70	11.0	920	820	250	72	230
MAY 21...	1355	3890	7.70	27.5	940	840	250	76	540

DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WH WAT TOTAL 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)
NOV 18...	2	8.0	84	550	210	0.40	8.8	1200
JAN 06...	2	9.1	88	600	240	0.30	8.0	1300
FEB 18...	2	9.5	102	620	250	0.30	7.0	1300
MAR 31...	3	8.0	98	690	410	0.30	5.2	1700
MAY 21...	8	9.4	95	860	810	0.30	4.5	2600

DAY	SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987									MAX	MIN	MEAN
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN			
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	1950	1900	1920	1850	1830	1840	1800	1770	1790	1890	1870	1880
2	1910	1870	1890	1840	1830	1830	1810	1780	1800	1930	1880	1890
3	1850	1460	1620	1830	1820	1830	1800	1780	1790	1920	1900	1900
4	1730	1430	1620	1830	1810	1820	1790	1780	1790	1920	1900	1900
5	1750	1720	1730	1820	1800	1810	1800	1790	1800	1920	1900	1910
6	1740	1510	1690	1810	1790	1800	1810	1790	1800	1920	1900	1910
7	1690	1690	1690	1810	1800	1800	1820	1790	1810	1920	1880	1890
8	1730	1680	1700	1800	1790	1800	1820	1800	1810	1900	1870	1890
9	1690	1610	1670	1800	1780	1790	1830	1790	1810	1900	1880	1890
10	1670	1630	1660	1800	1780	1790	1830	1810	1820	1900	1880	1890
11	2120	1650	2070	1780	1770	1780	1840	1820	1830	1910	1730	1880
12	2090	2000	2050	1790	1750	1770	1840	1810	1830	1890	1820	1880
13	2010	1950	1980	1760	1740	1750	1840	1820	1830	1910	1880	1890
14	1980	1950	1970	1770	1760	1760	1840	1820	1830	1910	1880	1890
15	1990	1980	1980	1760	1750	1750	1850	1820	1840	1900	1880	1890
16	1980	1970	1980	1760	1750	1750	1850	1820	1830	1900	1890	1900
17	1980	1960	1960	1750	1740	1750	1840	1820	1830	1910	1890	1900
18	1960	1940	1950	1750	1730	1740	1850	1820	1840	1900	1890	1900
19	1960	1940	1950	1780	1730	1750	1850	1830	1850	1920	1890	1900
20	1960	1930	1950	1770	1720	1740	1860	1830	1840	1910	1900	1900
21	1940	1930	1940	1780	1720	1750	1850	1820	1840	1930	1890	1900
22	1950	1890	1930	1810	1720	1770	1860	1840	1850	1920	1890	1900
23	1900	1860	1880	1770	1740	1760	1870	1840	1850	1930	1890	1910
24	1880	1840	1860	1770	1740	1760	1870	1840	1850	1920	1900	1900
25	1870	1830	1850	1770	1740	1760	1870	1850	1860	1920	1880	1900
26	1860	1820	1840	1780	1760	1760	1870	1850	1860	1920	1860	1890
27	1850	1830	1840	1780	1760	1770	1870	1850	1860	1910	1880	1900
28	1860	1830	1840	1780	1740	1760	1870	1840	1860	1910	1880	1900
29	1860	1840	1840	1780	1760	1770	1870	1860	1870	1910	1880	1900
30	1850	1830	1840	1790	1760	1770	1870	1860	1870	1910	1870	1900
31	1860	1830	1840	---	---	---	1880	1860	1870	1910	1800	1900
MONTH	2120	1430	1860	1850	1720	1780	1880	1770	1830	1920	1730	1900

## RED RIVER BASIN

57

07311669 TRUSCOTT BRINE LAKE NEAR TRUSCOTT, TX--Continued

DAY	SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR									OCTOBER 1986 TO SEPTEMBER 1987		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	1910	1890	1900	2050	2030	2040	2720	2360	2610	---	---	3240
2	1910	1890	1900	2060	2040	2050	2810	2700	2770	---	---	3210
3	1900	1890	1900	2060	2030	2050	2820	2750	2780	---	---	3400
4	1910	1840	1900	2080	2040	2050	2840	2770	2810	---	---	3430
5	1910	1870	1890	2070	2050	2060	2810	2790	2800	3480	3400	3430
6	1900	1890	1900	2080	2060	2060	2850	2800	2820	3450	3400	3420
7	1910	1900	1900	2090	2040	2060	2850	2810	2830	3540	3400	3460
8	1920	1900	1900	2080	2050	2060	2850	2780	2830	3540	3470	3510
9	1920	1900	1910	2090	2050	2070	2870	2800	2840	3600	3510	3540
10	---	---	1910	2110	2080	2100	2870	2850	2850	3710	3500	3590
11	---	---	1920	2140	2100	2120	2890	2840	2860	3750	3620	3680
12	---	---	1930	---	---	2120	2880	2730	2850	---	---	3680
13	---	---	1940	---	---	2130	2940	2860	2900	---	---	3700
14	---	---	1950	---	---	2130	3100	2940	3010	---	---	3700
15	---	---	1960	2280	1950	2140	3150	2940	3080	---	---	3750
16	---	---	1970	---	---	2150	3200	3120	3140	---	---	3750
17	---	---	1980	---	---	2160	3210	3130	3170	---	---	3750
18	---	---	1980	2200	2150	2170	3220	3150	3180	---	---	3800
19	1990	1970	1980	2170	2040	2150	3230	3180	3200	---	---	3800
20	2000	1980	1990	2190	2040	2160	3270	3200	3220	---	---	3850
21	2000	1980	1990	2280	2150	2180	3240	3200	3220	---	---	3890
22	2000	1980	1990	---	---	2200	3290	3220	3240	3910	3860	3880
23	2010	1900	1990	2310	2110	2240	3350	3190	3260	3930	3750	3860
24	2000	1990	1990	2370	2280	2330	3270	3240	3250	---	---	3870
25	2020	2000	2010	2390	2350	2370	3320	3240	3270	---	---	3860
26	2020	2000	2010	2420	2380	2400	3310	3240	3290	---	---	3900
27	2040	2010	2010	2450	2390	2420	3300	3200	3280	---	---	4010
28	2040	2010	2020	2470	2420	2440	---	---	3280	---	---	4060
29	---	---	---	2650	2460	2540	---	---	3260	---	---	3840
30	---	---	---	2650	2580	2600	---	---	3250	---	---	3720
31	---	---	---	2620	2580	2600	---	---	---	---	---	3650
MONTH	2040	1840	1950	2650	1950	2200	3350	2360	3040	3930	3400	3680
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	---	---	3700	4730	4620	4660	---	---	6180	7300	7200	7240
2	3930	3760	3830	4790	4650	4700	---	---	6200	7300	7110	7220
3	3870	3860	3870	4840	4740	4780	---	---	6320	7260	7140	7200
4	3950	3880	3920	---	---	4820	---	---	6380	7260	7130	7180
5	3990	3930	3960	---	---	4870	6450	6230	6420	7310	7060	7220
6	4050	3960	3990	---	---	4930	---	---	6430	7290	7200	7250
7	4050	3780	4000	---	---	4960	---	---	6450	7410	7280	7310
8	4060	4000	4020	---	---	5040	---	---	6460	7400	7270	7330
9	4010	3930	3990	---	---	5070	6570	6160	6470	7580	7340	7420
10	4040	3930	3980	---	---	5120	6610	6330	6510	7470	7380	7410
11	4110	3950	4010	---	---	5160	---	---	6500	7510	7400	7450
12	4030	3960	4010	---	---	5280	---	---	6500	7550	7390	7480
13	4160	4020	4060	5620	5510	5570	---	---	6500	7670	7450	7540
14	4110	4020	4060	5790	5580	5650	---	---	6520	7740	7410	7640
15	---	---	4090	5730	5600	5670	---	---	6540	7680	7450	7620
16	---	---	4140	5680	5550	5640	---	---	6560	7720	7620	7660
17	---	---	4140	---	---	5640	6890	6570	6680	7720	7500	7660
18	---	---	4100	---	---	5660	6790	6600	6710	7790	7660	7740
19	4210	4020	4170	---	---	5680	6840	6610	6730	7950	7790	7850
20	4320	4180	4230	---	---	5700	6840	6610	6700	7980	7800	7860
21	4280	4220	4250	---	---	5710	---	---	6760	8060	7860	7970
22	4340	4260	4290	---	---	5740	---	---	6840	8040	7970	8010
23	4350	4230	4300	---	---	5770	6980	6800	6900	8090	7960	8000
24	4320	4250	4280	---	---	5800	7060	6850	6960	8200	7980	8050
25	4380	4230	4330	---	---	5810	---	---	6900	8170	8010	8070
26	4380	4300	4350	---	---	5820	7030	6670	6890	8130	8060	8080
27	4390	4050	4320	---	---	5930	7210	7000	7120	8200	8070	8140
28	4420	4320	4370	---	---	6020	7260	7160	7210	8230	8100	8170
29	4560	4410	4460	---	---	6080	---	---	7200	8240	8160	8200
30	4650	4560	4610	---	---	6160	---	---	7190	8250	8170	8200
31	---	---	---	---	---	6220	7220	7100	7190	---	---	---
MONTH	4650	3760	4130	5790	4620	5470	7260	6160	6670	8250	7060	7670

## RED RIVER BASIN

07311669 TRUSCOTT BRINE LAKE NEAR TRUSCOTT, TX--Continued

DAY	TEMPERATURE, WATER (DEG. C), WATER YEAR			OCTOBER 1986			TO SEPTEMBER 1987					
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER				NOVEMBER			DECEMBER			JANUARY		
1	26.5	24.0	25.0	17.5	17.5	17.5	10.0	8.5	9.5	11.0	9.0	9.5
2	24.0	23.0	23.5	17.5	17.0	17.0	10.5	8.5	9.0	9.0	6.5	8.0
3	24.0	22.5	23.0	17.0	16.5	17.0	10.5	8.5	9.5	7.5	6.0	6.5
4	23.5	22.5	23.0	16.5	16.0	16.5	10.0	9.0	9.0	7.0	4.0	5.5
5	22.5	21.5	22.0	16.0	15.5	16.0	9.5	9.0	9.0	9.0	4.0	6.0
6	21.5	20.5	21.0	15.5	15.5	15.5	10.0	9.0	9.5	9.0	7.0	8.0
7	23.5	18.5	21.5	15.5	15.5	15.5	11.0	9.5	10.0	9.0	6.5	7.5
8	19.0	17.0	18.0	15.5	15.0	15.0	10.0	9.5	9.5	7.0	7.0	7.0
9	17.5	16.5	17.0	15.5	15.0	15.0	9.5	9.0	9.5	7.5	6.5	7.0
10	17.0	16.5	16.5	15.0	14.5	14.5	9.0	8.5	9.0	8.0	6.5	6.5
11	21.0	20.5	20.5	14.5	14.0	14.5	8.5	8.0	8.5	7.0	6.0	6.5
12	20.5	19.5	20.0	14.0	13.5	14.0	12.0	8.0	9.0	11.5	6.0	7.5
13	19.5	19.5	19.5	13.5	12.5	13.0	9.5	8.5	9.0	9.0	6.5	7.5
14	19.5	19.0	19.0	12.5	11.5	12.0	9.0	8.5	9.0	8.5	6.5	7.0
15	19.5	18.5	19.0	---	---	11.5	12.0	9.0	9.5	6.5	6.0	6.5
16	18.5	18.5	18.5	---	---	11.5	10.0	9.5	9.5	6.5	5.5	6.0
17	19.0	18.5	19.0	---	---	11.5	9.5	9.0	9.5	5.5	4.0	5.0
18	19.0	18.5	19.0	---	---	11.0	9.5	9.0	9.0	4.5	3.5	4.0
19	19.0	18.5	18.5	11.0	10.0	10.5	9.0	8.5	9.0	6.0	2.5	4.0
20	18.5	18.5	18.5	13.0	10.0	11.0	9.5	8.5	9.0	4.5	3.0	3.5
21	18.5	18.0	18.5	11.0	6.5	9.0	9.0	8.5	8.5	4.0	3.0	3.5
22	18.0	18.0	18.0	9.5	6.5	7.5	9.0	8.5	8.5	5.5	2.5	3.5
23	18.0	18.0	18.0	6.5	6.0	6.5	10.0	8.5	8.5	5.5	3.0	3.5
24	18.0	18.0	18.0	11.5	5.5	8.5	11.5	8.0	9.5	3.5	2.0	3.0
25	18.0	17.5	18.0	10.5	10.0	10.0	10.0	8.5	9.0	5.5	2.5	3.5
26	18.0	17.5	17.5	10.5	9.5	10.0	9.5	8.5	9.0	6.0	2.5	4.0
27	18.0	17.5	18.0	11.5	9.5	10.5	11.0	8.5	9.5	8.5	3.5	4.5
28	18.0	18.0	18.0	13.5	9.5	11.0	11.5	9.0	10.0	6.5	3.0	4.0
29	18.0	17.5	17.5	12.5	9.5	10.5	10.5	9.0	9.5	7.5	5.0	5.5
30	18.0	17.5	17.5	11.5	9.5	10.5	11.0	8.5	9.5	8.0	4.5	6.0
31	18.0	17.5	18.0	---	---	---	10.5	9.0	9.5	6.5	5.0	5.5
MONTH	26.5	16.5	19.5	17.5	5.5	12.5	12.0	8.0	9.0	11.5	2.0	5.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	7.0	5.5	6.0	9.5	7.5	8.5	12.5	8.0	10.5	26.0	22.5	24.0
2	8.0	5.5	6.5	10.5	8.0	9.0	10.0	6.5	8.0	25.0	22.0	23.5
3	9.0	6.5	7.0	12.0	8.5	9.5	12.0	6.0	8.5	25.0	20.0	22.0
4	10.5	6.5	8.0	12.5	8.0	10.0	13.0	6.5	9.5	24.0	20.0	21.5
5	7.5	6.0	6.5	13.5	10.0	11.5	10.0	9.5	9.5	23.0	19.0	21.0
6	6.5	6.0	6.5	15.5	11.0	12.5	11.5	9.0	10.0	21.0	18.5	20.0
7	8.0	6.0	7.0	14.5	11.0	12.0	11.5	9.5	10.0	24.0	18.5	20.5
8	7.5	6.0	6.5	14.5	11.0	12.5	17.0	10.0	13.0	22.5	18.5	20.5
9	6.5	6.0	6.0	12.5	10.0	10.5	15.5	11.5	13.5	26.0	19.5	22.5
10	---	---	---	10.0	9.5	10.0	14.0	10.5	12.5	30.0	23.0	25.0
11	---	---	---	17.0	9.5	12.0	18.0	12.0	14.5	28.5	22.0	25.0
12	---	---	---	16.5	11.5	13.5	19.5	13.0	15.0	28.0	23.0	25.0
13	---	---	---	15.0	12.5	13.5	14.5	11.5	13.0	27.0	22.0	24.0
14	---	---	---	18.5	13.0	15.5	13.5	10.0	12.5	25.5	22.0	23.5
15	---	---	---	15.5	11.5	14.0	19.5	9.5	12.0	25.5	23.0	24.0
16	---	---	---	15.0	11.5	13.0	20.0	13.0	16.0	28.0	23.0	25.0
17	---	---	---	16.0	11.5	13.5	23.0	12.0	16.5	31.5	24.5	27.0
18	---	---	---	15.5	12.0	13.5	23.5	16.0	19.5	31.5	25.5	27.5
19	9.5	9.0	9.0	15.0	11.5	13.5	22.5	17.5	21.0	---	---	---
20	9.0	9.0	9.0	15.0	11.0	12.5	21.5	17.5	20.0	---	---	---
21	10.5	8.5	9.0	14.0	12.5	13.5	18.0	16.0	17.0	---	---	---
22	10.5	8.5	9.0	18.0	13.0	15.0	22.0	16.5	19.0	26.0	24.0	25.0
23	9.0	6.0	8.0	17.0	12.0	14.5	22.5	18.0	19.5	24.5	23.5	24.0
24	7.5	7.0	7.0	13.5	11.5	12.0	21.5	17.5	19.0	26.5	23.0	24.5
25	7.5	7.0	7.0	14.0	11.5	12.5	24.0	19.0	21.5	25.5	23.5	24.5
26	7.5	7.0	7.5	14.5	11.5	12.5	24.5	21.0	22.5	24.5	24.0	24.0
27	12.5	7.5	9.0	15.0	11.5	13.0	25.5	21.5	23.0	24.0	23.0	23.5
28	10.0	7.0	8.0	12.5	10.5	11.5	27.0	21.0	23.5	23.0	22.0	22.5
29	---	---	---	11.0	9.5	10.5	26.5	22.5	24.0	24.5	20.5	22.5
30	---	---	---	12.5	9.0	10.0	26.5	22.5	24.0	29.0	22.0	25.5
31	---	---	---	11.5	8.5	10.0	---	---	---	27.5	24.5	25.5
MONTH	12.5	5.5	7.5	18.5	7.5	12.0	27.0	6.0	16.0	31.5	18.5	23.5

## RED RIVER BASIN

59

07311669 TRUSCOTT BRINE LAKE NEAR TRUSCOTT, TX--Continued

DAY	TEMPERATURE, WATER (DEG. C), WATER YEAR			OCTOBER 1986 TO SEPTEMBER 1987								
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	26.0	24.5	25.5	30.0	25.0	27.0	32.0	27.0	29.5	30.0	24.5	26.5
2	29.5	24.5	26.0	30.0	26.0	27.5	32.5	27.0	29.5	30.0	25.0	26.5
3	25.5	24.0	24.5	29.5	26.0	27.5	32.5	28.0	30.0	29.0	25.5	26.5
4	25.0	23.0	24.0	28.5	26.5	27.5	31.5	28.0	29.0	29.5	25.0	26.5
5	27.0	23.0	24.5	27.5	26.5	27.0	29.0	27.0	28.0	28.0	25.0	26.0
6	29.0	24.0	26.0	28.5	26.0	27.0	33.5	27.5	29.5	27.0	25.0	25.5
7	27.5	25.0	26.5	28.5	26.5	27.0	32.5	28.0	29.5	27.0	24.5	25.5
8	27.0	25.0	26.0	29.0	26.0	27.0	33.0	27.5	29.0	28.0	24.5	26.0
9	26.0	25.0	25.5	28.5	25.5	27.0	30.0	27.0	28.0	31.0	25.0	27.0
10	28.0	24.5	25.5	26.5	25.5	26.0	31.5	27.0	28.5	29.0	25.5	26.5
11	29.0	25.0	26.5	27.5	25.0	26.0	34.0	27.5	29.5	28.0	24.0	26.0
12	27.5	26.0	26.5	29.5	25.5	27.0	33.5	28.5	30.0	27.5	24.5	25.5
13	31.5	26.0	28.0	27.0	25.0	25.5	33.0	27.0	29.5	30.5	24.5	26.5
14	33.5	26.5	29.5	30.0	24.5	26.5	33.0	28.0	29.5	26.0	24.5	25.0
15	33.5	29.0	30.5	30.5	25.0	27.0	32.5	28.0	29.5	26.0	24.0	25.0
16	31.0	28.5	29.5	27.5	25.5	26.5	32.5	28.0	29.0	27.0	24.0	25.0
17	32.0	28.5	29.5	27.5	25.0	26.0	33.0	27.5	29.0	27.0	25.0	26.0
18	28.5	26.5	27.5	30.5	25.5	27.0	32.0	27.5	29.0	26.0	24.0	24.5
19	30.0	26.5	27.5	29.0	26.0	27.0	33.0	27.0	29.5	26.5	23.5	24.5
20	31.0	26.0	28.0	30.0	26.0	27.5	31.5	27.5	29.0	26.5	23.5	24.5
21	28.5	27.0	27.5	29.0	26.5	27.5	30.5	27.0	28.5	25.0	23.5	24.0
22	30.0	26.5	27.5	30.0	27.0	28.0	32.5	27.0	29.0	25.5	23.0	24.0
23	30.0	27.0	28.5	31.0	27.0	28.5	29.5	26.0	28.0	26.0	23.0	24.0
24	29.5	27.0	28.0	31.5	27.0	28.5	32.0	26.0	28.0	26.5	23.0	24.5
25	28.5	26.0	27.0	31.0	27.5	28.5	30.5	26.5	28.0	27.0	23.0	24.5
26	28.5	26.0	27.0	30.5	28.0	29.0	29.0	26.0	26.5	25.0	23.0	23.5
27	29.5	26.5	27.5	30.0	28.0	28.5	26.5	25.5	26.0	26.0	22.5	24.0
28	27.5	26.0	26.5	30.5	27.5	29.0	27.5	25.0	26.0	24.0	23.0	23.5
29	27.5	25.5	26.0	32.0	27.0	29.0	30.0	24.5	26.5	24.0	23.0	23.5
30	27.0	25.5	26.0	31.5	27.0	29.0	29.5	25.5	27.0	24.5	22.5	23.5
31	---	---	---	32.5	27.5	29.0	27.0	25.0	26.0	---	---	---
MONTH	33.5	23.0	27.0	32.5	24.5	27.5	34.0	24.5	28.5	31.0	22.5	25.0

## RED RIVER BASIN

07311700 NORTH WICHITA RIVER NEAR TRUSCOTT, TX

LOCATION.--Lat 33°49'14", long 99°47'10", Foard-Knox County line, Hydrologic Unit 11130204, near right bank at downstream side of bridge on State Highway 6, 4.5 mi north of Truscott, about 47.6 mi upstream from confluence with South Wichita River, and 188.4 mi upstream from mouth.

DRAINAGE AREA.--937 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--1952-57 (occasional low-flow measurements), December 1959 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,351.78 ft above National Geodetic Vertical Datum of 1929. Prior to Jan. 2, 1960, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Jan. 20, 21. Records good except those for periods of estimated daily discharge which are fair. There is one small diversion for irrigation above station. Gage-height telemeter at station via Sutron Data Collection Platform.

AVERAGE DISCHARGE.--27 years (water years 1961-87), 63.2 ft<sup>3</sup>/s (0.92 in/yr), 45,790 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 28,900 ft<sup>3</sup>/s Sept. 19, 1965 (gage height, 21.96 ft); minimum, 0.01 ft<sup>3</sup>/s July 25, 1964, and Aug. 22, 23, 1974.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1900 occurred in September 1919; the next highest flood occurred in May 1954, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 3	1230	3,030	15.80	Mar. 16	1900	1,130	10.98
Oct. 9	2030	3,080	15.88	May 12	1630	1,420	12.01
Oct. 21	2400	1,780	13.18	May 28	1230	*18,300	*21.29

Minimum discharge, 17 ft<sup>3</sup>/s May 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	612	50	44	40	45	150	37	22	233	57	29	31
2	624	50	41	40	45	82	35	20	152	56	28	29
3	2580	50	42	40	44	66	34	20	108	54	28	26
4	2280	460	41	38	39	59	33	19	93	53	27	25
5	359	201	39	37	121	53	33	19	82	50	27	23
6	180	107	44	37	105	48	36	19	73	48	29	26
7	117	78	49	42	69	46	35	20	66	47	30	30
8	94	65	61	47	57	46	35	20	59	44	28	31
9	1260	56	61	68	51	42	34	19	86	43	27	27
10	1880	51	48	54	49	38	32	19	108	42	28	26
11	321	48	49	43	47	37	30	22	119	40	28	25
12	865	47	47	46	44	35	30	20	102	41	26	25
13	325	46	47	45	42	34	29	19	65	75	24	34
14	153	45	43	45	41	34	28	43	65	43	47	29
15	105	46	49	45	45	34	28	35	46	41	25	27
16	87	48	52	49	100	282	28	25	38	41	36	25
17	78	49	52	51	80	365	28	24	34	72	107	23
18	72	44	57	38	55	158	28	21	30	338	161	24
19	67	48	59	61	51	71	26	31	29	118	39	24
20	63	48	56	e52	57	55	26	30	35	63	31	25
21	586	46	53	e44	67	49	27	27	277	52	27	24
22	871	47	57	43	63	46	29	37	109	46	26	24
23	271	48	54	41	58	47	28	476	80	41	23	24
24	133	47	47	39	58	44	27	456	70	38	21	23
25	101	56	45	40	56	39	25	155	73	36	21	22
26	77	60	42	41	69	52	25	66	65	34	28	22
27	67	52	46	41	114	54	25	714	62	33	44	22
28	61	48	46	40	380	46	25	10900	58	32	31	23
29	55	46	44	40	---	39	24	7980	60	31	30	24
30	53	45	43	35	---	38	24	2190	57	30	33	25
31	51	---	41	38	---	38	---	431	---	29	61	---
TOTAL	14448	2132	1499	1360	2052	2227	884	23899	2534	1768	1150	768
MEAN	466	71.1	48.4	43.9	73.3	71.8	29.5	771	84.5	57.0	37.1	25.6
MAX	2580	460	61	68	380	365	37	10900	277	338	161	34
MIN	51	44	39	35	39	34	24	19	29	29	21	22
AC-FT	28660	4230	2970	2700	4070	4420	1750	47400	5030	3510	2280	1520

CAL YR 1986	TOTAL	35846	MEAN	98.2	MAX	2580	MIN	5.4	AC-FT	71100
WTR YR 1987	TOTAL	54721	MEAN	150	MAX	10900	MIN	19	AC-FT	108500

e Estimated.

## RED RIVER BASIN

61

07311700 NORTH WICHITA RIVER NEAR TRUSCOTT, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: February 1954 to March 1959, July 1966 to current year. Sediment analyses: April 1978 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: July 1968 to current year.

WATER TEMPERATURE: July 1968 to current year.

INSTRUMENTATION.--Since August 1968, specific conductance is recorded continuously at this station. Since June 1982, water temperature is recorded continuously at this station.

REMARKS.--Where maximum and minimum specific conductance values are not shown, mean values are 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, 35,800 microsiemens Oct. 9, 1982; minimum, 400 microsiemens June 7, 8, 1985.

WATER TEMPERATURE: Maximum, 39.0°C Aug. 21, 23, 1969, Aug. 22, 1973; minimum, 0.0°C on many days during winter months.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 17,400 microsiemens May 11; minimum, 500 microsiemens May 29.

WATER TEMPERATURE: Maximum, 34.5°C Aug. 4, 13; minimum, 0.0°C Jan. 17, 18, 25.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	HARD- NESS (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
OCT											
04...	1525	2360	724	7.60	15.5	250	180	83	11	48	1
07...	1550	112	5570	--	21.5	--	--	--	--	--	--
NOV											
19...	1010	47	12300	7.70	11.0	2400	2200	650	180	2000	19
JAN											
06...	1345	36	13700	7.80	9.5	2300	2200	650	170	2400	22
FEB											
18...	1220	54	8620	--	7.5	--	--	--	--	--	--
MAR											
31...	1540	38	12100	7.80	17.5	2300	2100	620	180	2100	20
MAY											
12...	1615	19	16500	--	29.5	--	--	--	--	--	--
28...	1700	14700	530	7.30	17.0	180	130	60	8.2	27	0.9
29...	1305	7770	500	--	17.5	--	--	--	--	--	--
30...	1700	945	2170	--	23.5	--	--	--	--	--	--
JUN											
03...	1410	103	7850	--	24.0	--	--	--	--	--	--
23...	1140	83	5780	8.10	26.0	1200	1100	330	99	800	10
AUG											
05...	1550	27	14900	--	28.5	--	--	--	--	--	--
SEP											
15...	1700	27	15300	--	28.5	--	--	--	--	--	--

DATE	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WH WAT TOTAL 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 CONSTI- TUENTS, DIS- SOLVED (MG/L)	SEDI- MENT, DIS- SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. STEEVE DIAM. % FINER THAN .062 MM
OCT										
04...	6.2	72	200	64	0.20	7.7	460	1270	8090	93
07...	--	--	--	--	--	--	--	225	68	98
NOV										
19...	13	182	2200	3200	0.30	5.3	8400	83	11	92
JAN										
06...	13	168	2200	3700	0.40	6.4	9200	22	2.1	80
FEB										
18...	--	--	--	--	--	--	--	55	8.0	94
MAR										
31...	12	151	2100	3400	0.40	3.4	8500	61	6.3	88
MAY										
12...	--	--	--	--	--	--	--	31	1.6	91
28...	4.8	56	140	33	0.20	7.0	310	2410	95700	99
29...	--	--	--	--	--	--	--	4640	97300	48
30...	--	--	--	--	--	--	--	1530	3900	96
JUN										
03...	--	--	--	--	--	--	--	184	51	92
23...	10	128	1000	1300	0.30	7.1	3600	844	189	99
AUG										
05...	--	--	--	--	--	--	--	35	2.6	97
SEP										
15...	--	--	--	--	--	--	--	115	8.4	68

## RED RIVER BASIN

07311700 NORTH WICHITA RIVER NEAR TRUSCOTT, TX--Continued

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1986 TO SEPTEMBER 1987

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. 1986	14448	2690	1740	67700	680	26500	380	14800	450
NOV. 1986	2132	9050	5960	34300	2400	14100	1200	7160	1400
DEC. 1986	1499	12800	8480	34300	3500	14300	1700	7010	*
JAN. 1987	1360	13800	9180	33700	3900	14200	1900	6820	*
FEB. 1987	2052	9230	6070	33600	2500	13700	1300	7050	1500
MAR. 1987	2227	7900	5180	31100	2100	12600	1100	6580	1300
APR. 1987	884	14200	9510	22700	4000	9600	1900	4570	*
MAY 1987	23899	1520	983	63400	380	24700	220	14000	250
JUNE 1987	2534	8020	5240	35800	2100	14400	1100	7640	1300
JULY 1987	1768	10300	6790	32400	2800	13300	1400	6740	*
AUG. 1987	1150	11500	7630	23700	3200	9870	1600	4850	*
SEPT 1987	768	15500	10400	21500	4400	9200	2100	4280	*
TOTAL	54721	**	**	434000	**	176000	**	91500	**
WTD.AVG.	150	4480	2940	**	1200	**	620	**	720

DAY	SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR			OCTOBER 1986			TO SEPTEMBER 1987		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER		
1	8500	700	3450	---	---	12000	13300	12900	13000
2	1700	900	1200	---	---	12500	13500	13200	13300
3	1100	800	952	---	---	13000	13400	12900	13200
4	1000	600	696	---	---	4800	13200	13100	13100
5	2800	800	1220	---	---	3800	13300	13100	13200
6	4600	2900	3760	---	---	5200	13300	13000	13200
7	6000	4600	5280	---	---	6200	13100	12900	13000
8	7100	6000	6550	---	---	9000	13100	11600	12400
9	---	---	3500	---	---	9600	12300	10700	11800
10	---	---	1000	---	---	10000	12000	10700	11400
11	---	---	2000	---	---	10500	12400	11900	12200
12	---	---	1200	---	---	11000	12800	12400	12600
13	---	---	4000	---	---	11500	13000	12800	12900
14	---	---	5000	---	---	11800	13100	12900	13000
15	---	---	8000	---	---	12000	13200	12900	13000
16	---	---	9000	---	---	12500	13200	13000	13100
17	---	---	10000	---	---	12500	13200	12900	13000
18	---	---	10500	---	---	13000	12900	12500	12600
19	---	---	11000	---	---	13000	12700	12400	12600
20	---	---	12000	---	---	12800	12600	12400	12500
21	---	---	8800	---	---	12500	12600	12300	12500
22	---	---	3200	12700	12400	12500	12300	12100	12200
23	---	---	4600	12900	12600	12800	12500	12200	12300
24	---	---	7000	13000	12900	13000	12600	12400	12500
25	---	---	8500	13000	11000	12300	12900	12600	12700
26	---	---	9500	12200	10400	11700	13000	12800	12900
27	---	---	10500	12100	11600	11900	13300	13000	13100
28	---	---	10700	12300	12100	12200	13400	13200	13300
29	---	---	11000	12700	12300	12400	13500	13100	13300
30	---	---	11400	12900	12600	12700	13600	13300	13400
31	---	---	11800	---	---	---	13600	13400	13500
MONTH	8500	600	6360	13000	10400	11000	13600	10700	12800

## RED RIVER BASIN

63

07311700 NORTH WICHITA RIVER NEAR TRUSCOTT, TX--Continued

DAY	SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR									OCTOBER 1986 TO SEPTEMBER 1987		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	14300	13800	14100	4790	2800	4070	12600	12400	12500	16300	15700	16000
2	14200	13800	14000	5980	4790	5460	13000	12600	12800	16400	15800	16100
3	14200	13700	14000	7070	6080	6520	13100	12900	13000	16500	15700	16200
4	14100	13800	14000	7960	7070	7500	13400	12800	13200	16500	14900	15800
5	14100	10000	12800	8850	8060	8490	13400	13200	13300	16500	15100	15600
6	9800	7620	8430	9540	8950	9250	13400	13200	13300	16600	15900	16200
7	8450	7830	8140	10100	9640	9880	13400	13300	13400	16900	15400	16200
8	8880	8370	8610	10600	10200	10400	13500	13200	13400	17000	16300	16700
9	9310	8880	9070	11000	10600	10800	13600	13300	13400	17100	16300	16800
10	9510	9220	9310	11200	11000	11100	13800	13500	13600	17200	16200	16900
11	9460	9150	9370	12000	11200	11600	14100	13700	13900	17400	16300	16900
12	9780	9460	9590	12200	12000	12000	14200	13800	14000	17300	16400	16800
13	9910	9690	9780	12300	12100	12100	14300	14100	14200	16600	15800	16300
14	10000	9730	9890	12400	12000	12200	14500	14200	14300	16100	12500	15300
15	9960	9750	9860	12500	12300	12400	14800	14400	14600	15800	9590	12800
16	10100	9180	9730	12400	2140	8960	14900	14600	14700	16100	15700	15900
17	9200	9000	9090	6040	2540	3330	15000	14600	14800	16100	15600	15800
18	---	---	8810	6020	3330	4700	15100	14600	14900	15500	13900	14800
19	---	---	9070	8110	5620	7160	15300	14700	15000	14400	8780	12800
20	---	---	9290	9100	8110	8650	15300	15000	15200	15400	11500	14000
21	---	---	9400	9990	9200	9590	15400	15000	15200	16500	15400	15800
22	10300	9560	9870	10900	10100	10500	15300	14800	15100	16000	9480	13800
23	11800	10400	10600	11000	10700	10800	15300	14800	15100	10600	2080	4830
24	11000	10600	10800	11300	11000	11100	15500	14900	15200	9770	2160	4950
25	11300	11100	11200	11700	11300	11400	15400	14900	15200	3240	2160	2590
26	11300	9120	10500	11700	9750	10700	15500	15100	15300	4430	3340	3900
27	9710	8110	9020	10500	10200	10400	15500	14900	15300	4530	1820	2940
28	10500	2400	5090	11400	10600	11000	15600	15100	15400	2020	510	980
29	---	---	---	11800	11400	11700	15700	15000	15400	770	500	625
30	---	---	---	12100	11800	12000	16000	15500	15800	2650	787	1690
31	---	---	---	12400	12000	12200	---	---	---	4730	2650	3660
MONTH	14300	2400	10100	12500	2140	9610	16000	12400	14400	17400	500	11900
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	6400	4730	5640	11400	10900	11200	14400	13300	13700	15500	13900	14600
2	7570	6500	7020	11800	11200	11500	14700	14100	14400	15700	15000	15500
3	8260	7570	7870	12000	11600	11800	14900	14300	14600	15100	14700	14800
4	8850	8250	8530	12200	11800	12000	15000	14500	14700	14800	13500	14300
5	9430	8740	9060	12200	12000	12100	15000	14700	14800	14800	13400	14100
6	9720	9430	9530	12500	12100	12300	15400	14700	15000	15200	12800	14800
7	9910	9620	9790	12600	12400	12500	15700	15100	15400	15700	12900	15000
8	10100	9800	9950	13100	12400	12800	15600	15200	15400	16000	15400	15700
9	9900	7090	8950	13300	13000	13200	15700	15100	15400	16300	15700	16100
10	8480	7380	7930	13500	13100	13300	15600	14900	15300	16000	15600	15900
11	9870	7860	9100	13700	13200	13400	16000	15300	15600	16000	15500	15800
12	9660	7250	8550	13900	6330	13500	16100	15500	15700	15900	15400	15700
13	8840	7150	7980	13200	4230	10100	16200	15600	15900	15600	11100	14300
14	8940	8030	8370	13700	13200	13500	15900	5570	10900	15000	13100	14300
15	9520	8230	8790	13900	13500	13700	13500	6970	11500	15500	15000	15200
16	10200	9510	9850	13800	12600	13500	14900	12200	13400	16000	15500	15700
17	9700	8990	9200	12500	6700	10300	16700	2960	9450	16100	15600	15900
18	9780	8990	9340	17000	3880	8350	8060	3650	5320	16100	14100	15600
19	10400	9680	10000	5310	4420	4780	8850	5550	7070	15900	15500	15700
20	10700	9770	10300	6520	5170	5810	11400	9050	10500	16300	15900	16100
21	13900	2750	7240	7490	6530	7020	12500	11300	11900	16700	16100	16400
22	5040	3050	4090	8250	7490	7860	13700	12500	13200	16400	15300	16200
23	6220	5140	5730	9010	8250	8630	13600	13200	13500	16200	15100	16000
24	7260	6220	6650	9870	9010	9420	13600	13100	13400	16200	15800	16000
25	8010	6290	7190	10600	9780	10200	13900	13200	13600	16200	15800	15900
26	9450	8010	8830	11400	10600	11000	13800	7730	12800	16000	15800	15900
27	10400	9450	9960	12100	11400	11700	13200	10800	12500	16400	15900	16200
28	10700	10200	10500	12600	12000	12300	11000	9520	10100	16100	15100	16000
29	11200	6170	10400	13100	12400	12800	13700	11200	12800	16000	15800	15900
30	11400	9980	11000	13300	12900	13100	14300	11100	13800	16200	15000	15900
31	---	---	---	13600	13100	13300	14100	3710	7510	---	---	---
MONTH	13900	2750	8580	17000	3880	11200	16700	2960	12900	16700	11100	15500

## RED RIVER BASIN

07311700 NORTH WICHITA RIVER NEAR TRUSCOTT, TX--Continued

DAY	TEMPERATURE, (DEG. C)			WATER YEAR			OCTOBER 1986			TO SEPTEMBER 1987		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	24.0	21.5	22.5	20.5	16.5	18.5	8.0	5.5	7.0	7.5	4.0	6.0
2	23.5	23.0	23.5	17.0	13.0	14.0	9.0	4.0	6.5	8.0	4.0	6.5
3	24.5	22.5	23.0	14.5	12.5	13.5	9.0	5.0	7.5	8.5	5.5	7.0
4	24.0	21.5	23.0	14.5	12.0	13.0	9.0	5.5	7.5	8.0	4.0	6.5
5	21.5	19.5	20.5	14.0	10.0	12.0	11.0	8.0	9.5	9.0	5.0	7.0
6	22.5	18.5	20.5	15.5	10.5	13.0	11.5	9.5	10.5	10.5	6.5	8.5
7	22.5	19.5	21.0	17.5	12.5	15.0	14.0	11.5	12.5	9.5	6.5	8.0
8	23.0	19.5	21.0	17.0	13.5	15.0	11.5	8.5	9.5	8.5	6.0	7.0
9	21.5	17.0	19.5	15.0	11.5	13.5	8.5	5.5	7.5	8.0	5.0	6.5
10	19.0	18.0	18.5	13.0	8.5	11.5	5.5	4.5	5.0	7.0	3.5	5.5
11	19.5	16.0	18.5	10.0	5.5	8.0	7.0	4.5	6.0	7.0	2.0	5.0
12	15.5	12.5	14.0	8.5	4.0	6.5	8.0	3.5	6.0	9.0	3.5	6.5
13	15.0	11.5	13.0	5.5	1.5	3.5	8.5	4.0	6.5	8.5	5.0	7.0
14	18.0	13.5	15.5	9.0	3.5	6.0	9.5	7.0	8.0	10.0	5.5	8.0
15	19.5	15.0	17.0	11.5	7.0	9.0	12.5	9.0	10.5	8.5	6.0	6.5
16	20.5	15.5	17.5	14.5	9.5	12.0	11.0	10.0	10.5	5.5	2.0	4.0
17	21.5	16.5	19.0	16.0	10.5	13.5	10.5	9.0	10.0	2.0	.0	.5
18	22.0	17.5	19.5	15.0	12.0	13.5	9.0	6.5	8.0	1.5	.0	.5
19	21.0	17.0	19.0	14.5	11.0	13.0	7.5	5.0	6.0	---	---	---
20	20.5	16.5	19.0	14.5	11.0	13.0	8.0	4.5	6.5	---	---	---
21	19.0	15.0	17.0	14.0	9.0	12.0	7.5	6.5	7.0	---	---	---
22	19.0	15.0	17.0	15.0	10.5	13.0	7.0	6.0	6.5	5.5	.5	3.0
23	20.0	18.5	19.0	13.0	9.0	11.0	8.5	6.0	7.0	6.5	1.5	4.0
24	19.0	16.5	18.0	10.5	6.5	8.5	9.5	5.5	8.0	4.5	2.0	3.0
25	19.0	15.5	17.5	10.0	8.5	9.0	10.0	7.5	9.0	5.0	.0	2.5
26	19.5	15.0	17.0	9.5	6.5	8.0	9.5	6.0	8.0	8.0	2.0	5.0
27	19.5	14.5	17.0	10.0	6.0	8.0	9.0	5.0	7.5	10.0	4.0	7.0
28	20.0	14.5	17.5	11.0	5.5	8.5	9.0	5.0	7.0	10.5	5.5	8.0
29	20.0	15.5	18.0	12.0	6.5	9.5	9.5	6.0	8.0	12.5	8.0	10.5
30	21.0	16.0	18.5	11.0	8.5	9.5	9.0	5.0	7.0	11.5	7.0	9.5
31	20.5	16.0	18.5	---	---	---	8.5	5.0	7.0	11.5	7.5	9.5
MONTH	24.5	11.5	18.5	20.5	1.5	11.0	14.0	3.5	8.0	12.5	.0	6.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	13.5	10.0	11.5	13.0	8.0	10.5	21.0	10.5	16.0	30.0	20.5	25.0
2	13.0	8.5	11.0	15.0	8.5	11.5	14.0	9.0	11.5	30.0	21.0	25.0
3	14.0	9.0	11.5	16.0	9.5	12.5	18.5	7.5	12.5	27.5	19.5	23.5
4	14.5	9.5	12.0	16.5	9.5	13.0	18.0	10.0	14.0	26.5	18.5	22.5
5	14.0	7.5	10.5	16.5	10.0	13.0	13.0	10.5	11.5	26.5	18.5	22.5
6	7.5	5.5	6.5	18.5	10.5	14.5	17.5	9.0	13.0	22.5	19.0	20.5
7	11.0	4.0	7.0	18.5	11.5	15.0	16.0	11.0	13.5	25.5	18.0	21.5
8	12.0	6.5	9.5	18.0	11.0	14.5	21.5	10.5	15.5	27.0	19.0	23.0
9	11.0	6.0	9.0	14.5	9.5	12.0	23.0	13.0	18.0	27.5	19.5	24.0
10	14.0	7.5	10.5	9.0	6.5	8.0	24.0	14.0	19.0	28.5	21.0	25.0
11	16.5	10.5	13.5	15.0	6.5	10.5	26.0	15.5	20.5	29.0	21.5	25.5
12	17.0	11.5	14.5	16.0	9.0	12.0	25.0	17.0	21.5	29.5	22.0	26.0
13	18.5	12.5	15.5	17.5	9.0	13.5	21.5	13.0	16.5	27.5	21.5	24.5
14	15.5	12.0	14.0	20.5	11.5	16.0	18.0	9.0	13.5	29.5	21.0	25.0
15	13.5	9.0	11.5	17.5	13.0	15.5	24.0	11.0	17.0	29.0	22.0	25.5
16	8.5	8.0	8.0	---	---	---	27.0	15.5	21.0	30.0	21.5	26.0
17	9.0	6.5	7.5	14.0	8.0	12.0	28.5	18.0	23.5	32.0	22.5	27.0
18	10.5	4.5	7.5	15.0	8.5	11.5	29.5	19.5	24.0	32.0	23.0	27.0
19	8.5	5.5	6.5	16.5	11.0	13.5	29.5	19.5	24.0	24.5	21.0	22.0
20	6.5	4.5	5.5	21.0	12.0	16.5	26.0	20.0	23.5	30.0	19.5	24.5
21	9.5	5.5	7.5	18.0	13.5	16.5	19.5	15.0	16.5	30.5	21.0	25.5
22	12.5	6.0	9.5	21.5	14.0	17.5	25.0	12.5	18.0	24.5	20.0	22.0
23	12.5	7.0	10.0	17.5	9.0	13.5	27.5	15.5	21.5	21.0	18.0	19.5
24	10.5	9.5	10.0	15.0	6.5	10.5	27.5	17.5	22.5	23.0	20.0	21.5
25	10.0	9.0	9.5	16.5	8.0	12.5	28.5	18.0	23.5	27.0	21.5	24.0
26	10.5	9.5	10.0	13.5	10.5	12.0	29.0	18.5	24.0	24.5	22.5	23.5
27	16.0	10.0	12.5	18.0	8.5	13.5	29.5	19.0	24.5	22.0	18.0	19.0
28	13.5	10.0	12.0	14.5	8.5	12.0	30.0	20.5	25.0	18.5	17.0	17.5
29	---	---	---	---	---	---	29.5	20.5	25.0	19.0	16.5	17.5
30	---	---	---	---	---	---	29.5	20.5	24.5	23.0	18.5	20.5
31	---	---	---	---	---	---	---	---	---	24.5	22.0	23.0
MONTH	18.5	4.0	10.0	21.5	6.5	13.0	30.0	7.5	19.0	32.0	16.5	23.0

## 65

DAY	TEMPERATURE, WATER (DEG. C.), WATER YEAR			OCTOBER 1986		TO SEPTEMBER 1987						
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN			
JUNE			JULY			AUGUST			SEPTEMBER			
1	26.5	23.0	24.5	30.5	24.0	27.0	33.5	26.0	29.5	30.5	23.0	26.5
2	28.0	23.5	25.5	31.0	26.0	28.0	34.0	26.0	30.0	31.0	23.0	27.0
3	25.5	21.5	24.0	31.0	26.0	28.0	34.0	26.5	30.0	31.0	22.5	26.5
4	25.0	20.0	22.5	31.0	26.0	28.5	34.5	26.0	29.5	29.0	22.5	25.5
5	27.0	21.0	24.0	28.5	25.0	26.5	29.0	26.0	27.5	29.5	22.0	25.5
6	27.5	22.0	25.0	31.5	24.0	27.5	33.5	24.5	28.5	27.0	24.0	25.0
7	28.0	22.5	25.0	31.5	25.0	28.0	33.0	26.0	29.0	29.0	22.5	25.5
8	26.0	23.0	24.5	31.0	25.0	28.0	33.0	25.0	28.5	29.5	23.5	26.0
9	24.5	22.5	23.5	31.5	25.0	28.0	33.0	25.5	28.5	30.5	24.0	27.0
10	25.5	22.5	24.0	30.5	24.5	27.0	32.0	25.5	28.0	29.0	23.5	26.0
11	28.5	24.0	26.0	31.5	24.0	27.0	34.0	26.0	29.5	30.0	22.5	26.0
12	29.0	25.0	27.0	32.5	24.5	28.0	34.0	26.0	29.5	28.5	22.5	25.5
13	30.5	24.5	27.5	27.0	23.0	24.5	34.5	26.0	29.5	30.0	23.0	26.5
14	32.0	26.0	29.0	30.5	22.5	26.0	32.0	27.0	29.0	26.5	23.5	25.0
15	32.0	26.0	29.0	32.0	24.5	28.0	34.0	26.0	29.5	28.5	22.0	24.5
16	31.0	25.5	28.5	28.5	24.5	26.5	33.0	26.0	29.0	28.5	20.5	24.5
17	31.5	25.5	28.5	31.0	23.0	26.5	31.5	23.0	28.5	29.0	21.5	25.0
18	29.5	23.0	26.5	29.5	25.5	28.0	29.5	24.0	26.5	24.5	19.5	22.0
19	28.5	24.5	26.5	31.5	26.5	28.5	33.0	25.5	29.0	26.0	17.5	21.5
20	29.5	23.0	26.0	32.0	25.5	28.5	33.0	26.0	29.0	26.5	19.5	22.5
21	27.5	25.5	26.5	31.5	25.5	28.5	33.0	25.0	28.5	26.5	19.5	22.5
22	27.0	24.0	25.5	32.5	25.5	29.0	34.0	25.5	29.5	25.5	19.5	22.5
23	31.5	23.5	27.5	32.5	26.0	29.0	31.5	25.5	28.5	26.0	19.0	22.0
24	30.5	26.5	28.5	33.0	26.0	29.0	32.0	23.5	27.5	26.0	19.0	22.0
25	29.5	24.5	27.0	33.0	26.0	29.5	32.0	24.5	28.0	25.5	19.0	22.5
26	29.5	24.0	26.5	32.5	25.5	29.0	28.5	24.5	25.5	25.0	20.0	21.5
27	30.0	24.0	27.0	32.5	25.0	28.5	24.5	22.0	23.5	27.0	20.0	23.0
28	29.5	23.0	26.0	32.0	25.5	28.5	27.5	20.0	23.5	23.0	20.0	21.5
29	28.0	23.0	25.0	33.0	25.5	29.0	29.5	21.5	25.5	24.5	18.0	21.0
30	28.0	23.0	25.5	33.0	25.0	29.0	31.0	23.5	27.0	25.5	18.0	21.5
31	---	---	---	34.0	25.5	29.5	27.5	20.5	24.0	---	---	---
MONTH	32.0	20.0	26.0	34.0	22.5	28.0	34.5	20.0	28.0	31.0	17.5	24.0

## RED RIVER BASIN

## 07311782 SOUTH WICHITA RIVER AT LOW FLOW DAM NEAR GUTHRIE, TX

LOCATION.--Lat 33°37'19", long 100°12'31", King County, Hydrologic Unit 11130205, on right bank 1.0 mi downstream from ranch road crossing, 2.9 mi upstream from Willow Creek, 6.6 mi east of Guthrie, and 91.5 mi upstream from confluence with North Wichita River.

DRAINAGE AREA.--223 mi.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1984 to September 1985, May 1987 to current year (discharge to 07311669 Truscott Brine Lake near Truscott).

GAGE.--Water-stage recorder. Datum of gage is 1,590.0 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated discharge. Discharge represents flow diverted by pumping from South Wichita River at station 07311782 to Truscott Brine Lake near Truscott (station 07311669). Flow is determined from digital recorder monitoring flowmeter in pipeline. From May to September 1987, specific conductivity and discharge values collected at this station were used for computation of water quality loads for station 07311669. Gage-height telemeter at station.

COOPERATION.--Flow data furnished by the U.S. Army Corps of Engineers, Tulsa District.

EXTREMES FOR CURRENT YEAR.--Not determined.

DISCHARGE, IN CUBIC FEET PER SECOND, MAY TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	7.1	3.9	8.5	7.8	7.8
2	---	---	---	---	---	---	---	7.1	5.4	12	7.8	7.8
3	---	---	---	---	---	---	---	7.1	8.5	10	7.7	7.8
4	---	---	---	---	---	---	---	.82	14	9.7	7.4	7.3
5	---	---	---	---	---	---	---	6.2	14	11	7.4	7.1
6	---	---	---	---	---	---	---	.00	14	3.8	8.2	7.1
7	---	---	---	---	---	---	---	2.9	13	.00	3.5	6.5
8	---	---	---	---	---	---	---	6.9	13	.19	.00	7.1
9	---	---	---	---	---	---	---	6.7	13	.00	.00	9.3
10	---	---	---	---	---	---	---	6.7	11	3.1	.00	7.8
11	---	---	---	---	---	---	---	6.7	3.3	12	7.7	7.8
12	---	---	---	---	---	---	---	7.0	11	12	14	7.4
13	---	---	---	---	---	---	---	5.2	13	6.7	9.2	7.9
14	---	---	---	---	---	---	---	7.1	13	13	6.9	7.8
15	---	---	---	---	---	---	---	6.7	12	7.2	2.9	12
16	---	---	---	---	---	---	---	7.4	13	10	9.2	8.6
17	---	---	---	---	---	---	---	7.9	12	7.3	10	7.8
18	---	---	---	---	---	---	---	5.5	7.8	.00	7.8	7.8
19	---	---	---	---	---	---	---	7.0	11	.00	7.8	7.8
20	---	---	---	---	---	---	---	10	8.6	7.9	7.8	7.8
21	---	---	---	---	---	---	---	7.8	13	13	7.8	7.8
22	---	---	---	---	---	---	---	2.1	13	13	7.8	7.8
23	---	---	---	---	---	---	---	7.1	13	13	7.1	7.8
24	---	---	---	---	---	---	---	9.4	13	7.5	3.8	7.8
25	---	---	---	---	---	---	---	13	9.5	8.3	7.1	7.8
26	---	---	---	---	---	---	---	13	13	13	3.2	7.8
27	---	---	---	---	---	---	---	1.7	11	12	8.8	6.2
28	---	---	---	---	---	---	---	.00	8.8	10	13	7.4
29	---	---	---	---	---	---	---	.00	11	7.8	12	7.1
30	---	---	---	---	---	---	---	.00	13	7.8	7.8	7.1
31	---	---	---	---	---	---	---	.01	---	7.8	7.8	---
TOTAL	---	---	---	---	---	---	---	176.13	332.8	247.59	219.30	232.9
MEAN	---	---	---	---	---	---	---	5.68	11.1	7.99	7.07	7.76
MAX	---	---	---	---	---	---	---	13	14	13	14	12
MIN	---	---	---	---	---	---	---	.00	3.3	.00	.00	6.2
AC-FT	---	---	---	---	---	---	---	349	660	491	435	462

CAL YR 1986	TOTAL	--	MEAN	--	MAX	--	MIN	--	AC-FT	--
WTR YR 1987	TOTAL	--	MEAN	--	MAX	--	MIN	--	AC-FT	--

WATER-QUALITY RECORDS

WATER TEMPERATURE: Maximum, 31.0°C Aug. 4, 13-15.

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)
MAY	1987	176.13	30500	20600	9820	10200	4830	2900	1370	*
JUNE	1987	332.8	19200	12600	11300	6100	5460	2000	1760	*
JULY	1987	247.59	26500	17800	11900	8700	5800	2600	1730	*
AUG.	1987	219.30	30900	20900	12400	10300	6090	2900	1730	*
SEPT	1987	232.9	31200	21100	13300	10400	6540	2900	1850	*
TOTAL		1208.72	**	**	58700	**	28700	**	8450	**
WTD.AVG.		7.9	26800	18000	**	8800	**	2600	**	**

DAY	SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR			OCTOBER 1986			TO SEPTEMBER 1987					
	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												

## RED RIVER BASIN

07311782 SOUTH WICHITA RIVER AT LOW FLOW DAM NEAR GUTHRIE, TX--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C. WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	1986	1987	
FEBRUARY			MARCH			APRIL			MAY			
1										---	---	32700
2										---	---	32700
3										---	---	32700
4										---	---	32700
5										33800	31600	32700
6										---	---	---
7										---	---	33400
8										34600	32300	33200
9										34400	32600	33200
10										33700	32300	32900
11										33400	32200	32800
12										34900	31800	33300
13										---	---	32900
14										34200	32700	33500
15										34400	32600	33500
16										34200	32000	33100
17										33600	32100	32900
18										---	---	30800
19										---	---	30100
20										31600	29100	30400
21										35500	30300	32800
22										---	---	31100
23										29300	24500	26900
24										27500	23000	26200
25										24100	21300	22200
26										27800	20800	24000
27										---	---	25700
28										---	---	---
29										---	---	---
30										---	---	---
31										8650	7340	7860
MONTH										35500	7340	30200
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	---	---	12600	25800	24600	25000	29400	28400	28900	---	---	31400
2	---	---	13000	25800	24700	25100	30200	29200	29700	---	---	31500
3	---	---	14500	25900	25000	25400	31000	30000	30500	---	---	31700
4	16400	14500	15700	28900	24900	26600	31800	30800	31300	32600	28900	30500
5	17100	16300	16800	29900	27000	28200	32500	30400	31500	33200	29000	30200
6	17900	17100	17400	28300	26100	27400	31100	28400	29700	31600	27500	29700
7	18700	17800	18200	---	---	---	30900	27800	29100	---	---	31500
8	19400	18500	18900	---	---	27200	---	---	---	---	---	31400
9	20000	19300	19600	---	---	---	---	---	---	---	---	31500
10	20300	19900	20100	---	---	28800	---	---	---	---	---	31500
11	---	---	16900	29800	27000	28700	---	---	31000	---	---	31500
12	13800	13100	13400	32300	28200	30700	---	---	31000	33500	29000	31400
13	14300	13000	13300	---	---	29300	---	---	31100	---	---	31300
14	---	---	14200	29900	27800	28600	---	---	31300	33200	29800	31200
15	---	---	15200	28600	28300	28400	34300	29400	31800	---	---	29500
16	---	---	16200	---	---	28000	---	---	31600	---	---	31300
17	---	---	17200	---	---	28400	---	---	31500	---	---	31200
18	---	---	18100	---	---	---	---	---	31500	---	---	31100
19	---	---	19100	---	---	---	---	---	31500	---	---	31000
20	---	---	20100	---	---	16500	---	---	31500	---	---	31100
21	---	---	21100	20100	16300	18400	---	---	31500	---	---	31200
22	---	---	22100	25400	18600	21600	---	---	31400	---	---	31300
23	24000	21500	22900	28700	24700	26200	---	---	31600	---	---	31400
24	25500	23300	24200	30200	23900	27400	---	---	31600	---	---	31500
25	---	---	23700	28200	21800	26000	---	---	31600	---	---	31500
26	25700	23700	24500	28100	26600	27400	---	---	31500	---	---	31600
27	26100	23800	24900	29100	26100	27800	---	---	31600	---	---	31600
28	26000	24200	25200	30200	25600	28400	33700	29400	31700	---	---	31700
29	26500	23900	25600	29600	27700	28600	---	---	29200	---	---	31600
30	24600	22500	23600	30800	27600	29000	---	---	28200	---	---	31500
31	---	---	---	29700	27800	28500	---	---	31300	---	---	---
MONTH	26500	13000	18900	32300	16300	26700	34300	27800	30900	33500	27500	31200

## RED RIVER BASIN

69

07311782 SOUTH WICHITA RIVER AT LOW FLOW DAM NEAR GUTHRIE, TX--Continued

DAY	MAX	MIN	TEMPERATURE, WATER (DEG. C), WATER YEAR			MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	
			MEAN	MAX	MIN										
			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	MAX	MIN	MEAN
			FEBRUARY			MARCH			APRIL						
1													27.5	23.0	24.5
2													27.0	23.0	24.5
3													25.5	21.5	23.0
4													22.5	20.0	20.5
5													22.0	20.5	21.5
6													---	---	---
7													20.5	19.5	20.0
8													21.0	20.0	20.5
9													21.5	20.5	21.0
10													22.0	21.5	22.0
11													23.0	22.0	22.5
12													23.0	22.5	22.5
13													23.5	23.0	23.0
14													24.0	23.0	23.5
15													24.0	23.5	24.0
16													24.5	23.5	24.0
17													25.0	24.0	24.5
18													28.0	24.5	26.0
19													26.5	24.0	25.0
20													26.0	22.5	24.0
21													26.0	23.5	24.5
22													24.5	22.5	23.0
23													22.5	21.5	22.0
24													23.0	21.5	22.0
25													24.0	22.5	23.0
26													24.0	23.0	24.0
27													23.0	18.5	21.5
28													---	---	---
29													---	---	---
30													---	---	---
31													25.0	21.5	23.0
MONTH													28.0	18.5	23.0

## RED RIVER BASIN

07311782 SOUTH WICHITA RIVER AT LOW FLOW DAM NEAR GUTHRIE, TX--Continued

DAY	TEMPERATURE, WATER (DEG. C), WATER YEAR			OCTOBER 1986 TO			SEPTEMBER 1987			MIN	MEAN	
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN			
JUNE			JULY			AUGUST			SEPTEMBER			
1	25.5	22.5	23.5	27.0	24.5	26.0	30.5	27.0	28.5	27.0	24.5	26.0
2	25.5	24.0	24.5	28.0	26.0	27.0	30.5	27.0	28.5	27.5	24.5	26.0
3	25.5	25.0	25.0	29.0	27.0	28.0	30.5	27.0	28.5	28.0	24.5	26.0
4	25.0	22.0	23.5	29.5	28.0	29.0	31.0	27.5	29.0	26.5	23.5	25.0
5	22.5	22.0	22.5	29.0	26.5	28.0	29.5	27.5	28.5	26.0	23.0	24.5
6	23.5	22.5	23.0	29.0	26.0	27.5	29.5	27.0	28.5	25.0	23.5	24.5
7	24.0	23.5	24.0	---	---	---	30.0	27.0	28.0	26.0	23.0	24.5
8	25.0	20.5	24.0	29.0	27.0	28.0	---	---	---	25.5	23.5	24.5
9	24.5	24.0	24.0	---	---	---	---	---	---	26.0	23.5	24.5
10	24.0	24.0	24.0	28.5	26.5	27.5	---	---	---	25.5	23.5	24.5
11	25.5	23.5	24.5	28.0	25.5	26.5	30.0	28.5	29.0	25.5	22.5	24.0
12	26.0	25.0	25.5	29.0	26.0	27.0	30.5	28.5	29.0	25.0	22.5	23.5
13	26.0	26.0	26.0	27.5	25.0	26.0	31.0	27.5	29.0	25.0	22.5	23.5
14	---	---	---	26.5	24.0	25.5	31.0	28.0	29.0	24.5	23.0	24.0
15	---	---	---	26.0	24.5	25.5	31.0	27.5	29.0	25.0	22.0	23.5
16	---	---	---	27.0	26.0	26.5	30.0	28.0	29.0	25.0	22.0	23.5
17	---	---	---	29.0	25.0	26.5	30.5	28.5	29.5	25.0	23.0	24.0
18	---	---	---	---	---	---	30.5	27.5	29.0	24.5	22.0	22.5
19	---	---	---	---	---	---	30.5	27.0	28.5	23.0	20.5	22.0
20	---	---	---	28.0	26.5	27.5	30.0	26.5	28.0	23.5	20.0	21.5
21	---	---	---	28.5	27.5	28.0	30.0	26.0	27.5	23.5	20.5	22.0
22	---	---	---	28.5	27.5	28.0	30.0	26.0	27.5	24.0	20.5	22.0
23	27.0	25.0	26.0	28.5	27.5	28.0	30.0	26.5	27.5	24.0	20.5	22.0
24	28.0	27.0	27.5	29.0	26.5	28.0	27.5	24.5	26.0	24.0	20.5	22.0
25	27.5	25.5	26.5	29.0	27.0	28.0	27.5	24.5	26.0	24.0	20.5	22.0
26	27.0	25.0	26.0	29.0	27.0	28.0	26.0	25.0	25.5	23.5	20.5	22.0
27	27.0	25.0	26.0	29.0	26.0	27.5	25.5	24.5	25.0	24.5	21.0	22.5
28	27.5	24.5	26.0	29.5	26.0	27.5	25.0	24.0	24.5	24.5	22.5	23.5
29	27.0	24.5	26.0	30.0	26.5	28.0	26.5	24.5	25.5	24.5	21.5	23.0
30	28.0	24.0	26.0	30.0	26.5	28.0	27.5	25.5	26.5	---	---	---
31	---	---	---	---	---	---	27.0	25.5	26.5	---	---	---
MONTH	28.0	20.5	25.0	30.0	24.0	27.5	31.0	24.0	27.5	28.0	20.0	23.5

## RED RIVER BASIN

71

## 07311783 SOUTH WICHITA RIVER BELOW DAM NEAR GUTHRIE, TX

LOCATION.--Lat 33°37'19", long 100°12'31", King County, Hydrologic Unit 11130205, on right bank 1.1 mi downstream from ranch road crossing, 2.8 mi upstream from Willow Creek, 6.6 mi east of Guthrie, and 91.4 mi upstream from confluence with North Wichita River.

DRAINAGE AREA.--223 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1985 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,590.0 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for periods of estimated daily discharge, which are fair. Gage-height telemeter at station via Sutron Data Collection Platform. Diversions from station 07311782 via pipeline to station 07311669 began in May 1987. Specific conductance and water temperature for October 1986 to April 1987 were collected at station 07311782 but are published at this station and used for computation of water quality loads at this station. Mini-monitor installed at this station in May and specific conductivity values for this probe used to compute water quality loads for the remainder of the water year.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,100 ft<sup>3</sup>/s July 3 (gage height, 19.01 ft); no flow for several periods during year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage of 20.8 ft since at least 1950, occurred in May 1954, at station 07311780 located about 1.1 mi upstream.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base discharge of 300 ft<sup>3</sup>/s and maximum (\*).

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 2	0415	1,220	8.63	May 28	1830	*1,540	*8.99

Minimum discharge, 0.02 ft<sup>3</sup>/s Apr. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	36	10	8.2	8.7	9.4	13	1.3	.03	9.3	.19	.09	.08
2	394	9.8	8.1	8.0	8.8	7.3	2.1	.0	8.3	.18	.09	.07
3	193	9.9	8.4	7.8	9.0	.39	.33	.03	8.5	.16	.08	.08
4	55	11	8.4	7.9	8.5	5.9	.13	.03	3.8	.14	.06	.09
5	20	e30	8.5	7.9	9.7	6.8	.08	.03	2.6	.14	.06	.08
6	7.5	e6.6	8.6	8.3	9.8	7.8	1.2	.03	.99	.13	.07	.09
7	13	e5.6	9.0	8.4	10	7.8	6.3	.37	.39	1.8	.06	.07
8	4.1	e6.0	9.3	8.8	9.8	7.7	.06	.05	.23	7.5	.06	.06
9	8.8	e5.1	8.1	8.9	9.3	6.8	.06	.05	.27	7.5	4.1	.07
10	12	e4.7	8.8	8.2	8.7	5.6	.06	.06	12	6.3	6.5	.08
11	11	e4.7	8.9	8.2	8.3	6.3	.07	.06	11	.14	6.6	.06
12	10	e4.4	8.2	8.1	7.4	4.5	.07	.06	6.4	.12	3.6	.08
13	10	e4.7	8.2	8.3	6.5	4.3	.12	.07	4.9	.19	.10	.08
14	9.8	e4.4	8.4	8.4	7.5	4.5	.03	.08	5.7	.12	.09	.06
15	9.5	e3.7	8.3	8.2	7.8	6.8	.03	.08	2.5	.10	.08	.06
16	9.4	e2.9	8.3	8.2	7.3	4.9	.03	.08	1.2	.81	.08	.06
17	9.4	e21	8.4	e8.2	6.9	2.3	.03	.10	.53	28	.08	.06
18	9.2	1.2	9.9	e8.2	7.2	1.8	.03	.10	4.9	26	.08	.05
19	9.5	9.3	9.7	e8.2	7.6	1.6	.03	.10	.11	5.6	.08	.06
20	9.3	8.9	9.3	8.2	7.3	1.4	.03	.09	4.4	1.8	.10	.06
21	11	8.7	9.1	8.2	8.6	.85	.03	.09	.12	.15	.08	.06
22	12	9.0	9.4	8.2	8.6	.97	.03	.10	.11	.12	.07	.06
23	11	8.8	9.2	8.2	8.4	3.4	.03	6.7	.13	.09	.05	.05
24	11	9.0	9.3	8.5	8.2	1.4	.03	6.3	.14	.08	.05	.05
25	10	9.9	8.9	8.2	7.7	1.9	.03	.13	.32	.07	.06	.05
26	10	9.7	8.5	8.1	8.9	2.0	.03	.12	.18	.07	.06	.05
27	9.7	9.4	8.4	8.0	20	3.7	.03	112	.19	.06	.76	.05
28	9.6	9.1	8.0	8.0	16	1.3	.03	1030	.19	.06	.08	.05
29	7.3	8.9	7.8	8.0	---	.92	.03	414	1.5	.06	.09	.05
30	7.3	8.9	7.7	8.3	---	4.2	.03	52	.27	.06	.09	.05
31	10	---	7.7	8.6	---	.58	---	25	---	.07	.08	---
TOTAL	949.4	255.3	267.0	255.4	253.2	128.71	12.39	1647.94	91.17	87.81	23.53	1.92
MEAN	30.6	8.51	8.61	8.24	9.04	4.15	.41	53.2	3.04	2.83	.76	.06
MAX	394	30	9.9	8.9	20	13	6.3	1030	12	28	6.6	.09
MIN	4.1	1.2	7.7	7.8	6.5	.39	.03	.00	.11	.06	.05	.05
AC-FT	1880	506	530	507	502	255	25	3270	181	174	47	3.8

CAL YR 1986 TOTAL 8067.75 MEAN 22.1 MAX 3520 MIN .00 AC-FT 16000  
WTR YR 1987 TOTAL 3973.71 MEAN 10.9 MAX 1030 MIN .00 AC-FT 7880

e Estimated.

07311783 SOUTH WICHITA RIVER BELOW DAM NEAR GUTHRIE, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: May 1987 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: May 1987 to current year.

WATER TEMPERATURE: May 1987 to current year.

INSTRUMENTATION.--Beginning May 1987, specific conductance and water temperature are recorded continuously at this station.

REMARKS.--Specific conductance and water temperature for October 1986 to April 1987 were collected at station 07311782 but are published at this station and used for computation of water quality loads at this station. Mini-monitor installed at this station in May and specific conductance values for this probe used to compute water-quality loads for the remainder of the water year. Interruptions in the record were due to malfunction of the instrument. Where maximum and minimum specific conductance values are not shown, mean value is sometimes 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 relationship 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 CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 36,200 microsiemens May 1, 7; minimum, 350 microsiemens May 28.

WATER TEMPERATURE: Maximum, 32.0°C July 15, 25; minimum, 3.0°C Jan. 18, 19.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	HARD- NESS (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)
OCT 06...	1500	0.02	11800	7.30	21.5	1200	1100	360	84
JAN 05...	1340	8.0	27600	7.70	10.0	2900	2800	850	200
FEB 17...	1350	3.7	27900	7.40	11.0	3200	3000	920	220
APR 30...	1230	0.02	31300	7.80	24.0	3300	3200	960	220
MAY 28...	1315	928	1370	8.80	17.0	420	360	140	17
30...	1240	47	5850	7.10	21.5	830	760	250	50
DATE	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WH WAT TOTAL 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 06...	2300	29	12	108	1200	3500	0.30	10	7500
JAN 05...	5400	45	22	147	2900	8500	0.50	8.3	18000
FEB 17...	5900	47	22	164	2800	9600	0.50	7.4	20000
APR 30...	6000	47	23	118	2700	10000	0.60	7.7	20000
MAY 28...	110	2	4.4	56	370	180	0.20	6.0	860
30...	920	14	7.9	69	740	1500	0.30	9.4	3500

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1986 TO SEPTEMBER 1987

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. 1986	949.4	8370	5470	14000	2600	6710	870	2240	860
NOV. 1986	255.3	25400	17000	11700	8300	5700	2500	1730	*
DEC. 1986	267.0	26900	18000	13000	8800	6330	2600	1890	*
JAN. 1987	255.4	28800	19400	13400	9500	6550	2800	1910	*
FEB. 1987	253.2	27300	18300	12500	9000	6120	2700	1810	*
MAR. 1987	128.71	25000	16700	5810	8100	2830	2500	856	*
APR. 1987	12.39	28300	19000	636	9300	311	2700	91	*
MAY 1987	1647.97	3630	2340	10400	1100	4910	390	1740	360
JUNE 1987	91.17	16300	10600	2620	5100	1250	1700	419	*
JULY 1987	87.81	18500	12200	2880	5900	1390	1900	447	*
AUG. 1987	23.53	30500	20700	1310	10200	645	2900	184	*
SEPT 1987	1.92	27000	18100	94	8800	46	2600	14	*
TOTAL	3973.80	**	**	88300	**	42800	**	13300	**
WTD.AVG.	11	12400	8230	**	4000	**	1200	**	**

07311783 SOUTH WICHITA RIVER BELOW DAM NEAR GUTHRIE, TX--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	28100	9260	26500	24800	24600	24700	26500	26100	26300	27200	25500	27000
2	5560	1460	2620	24900	24800	24900	26700	26400	26500	27700	27100	27300
3	2970	1670	2240	25400	24800	25000	27200	26800	26900	27600	27300	27500
4	7290	2680	5120	25500	24600	25100	27400	27200	27300	28200	27300	27600
5	10600	7490	9120	24700	24000	24300	27800	27600	27700	28300	27600	28000
6	---	---	11800	24100	23000	23200	27800	27300	27500	28600	27600	27800
7	13500	12100	12700	23300	23100	23200	27400	26900	27300	30700	28800	29900
8	15200	13600	14500	23500	23100	23200	27100	26800	26900	31200	30800	31000
9	16200	14900	15500	24400	23400	23900	27400	27100	27200	31300	31100	31200
10	16300	16000	16200	24800	24400	24600	---	---	27200	31200	31000	31100
11	17000	15500	16200	25100	24700	24900	27100	26900	27000	31000	30600	30800
12	17700	16500	17100	25500	25100	25300	26900	26700	26800	30600	30400	30500
13	18600	17800	18200	25900	25400	25700	26800	26500	26700	30500	30300	30400
14	19100	18300	18600	26200	25800	26000	26700	26500	26600	30400	30000	30300
15	20500	18900	19600	26300	25800	25900	27000	26700	26800	30800	30400	30500
16	21000	20300	20600	25900	25700	25800	27200	27000	27100	31000	28500	30100
17	21600	21000	21300	---	---	25800	27400	27300	27300	28700	27900	28200
18	22100	20000	21700	25900	25600	25700	27300	27100	27200	28200	27900	28100
19	22900	22000	22300	25800	25700	25700	27100	27000	27100	28400	28100	28200
20	23200	22700	22800	26200	24600	25800	27100	26700	26900	28500	28300	28400
21	23300	22600	22900	26400	25900	26300	27000	26900	26900	28500	28300	28400
22	22500	22400	22500	26400	25900	26300	26900	26700	26800	28800	27300	28100
23	22500	22400	22500	26400	26300	26300	26800	26700	26700	27500	27400	27400
24	22500	22400	22500	26400	26200	26300	26800	26500	26600	27500	27400	27400
25	22500	20900	21900	26600	26400	26500	26700	26500	26600	27800	27400	27700
26	22700	21300	22400	26700	26300	26500	26600	26400	26500	27800	27700	27800
27	23300	22700	22900	26800	26500	26700	26500	26300	26400	---	---	28000
28	23700	23300	23400	26700	26400	26600	26400	26000	26200	---	---	28000
29	24000	21800	23700	26500	26300	26400	26300	26100	26200	---	---	28200
30	24500	23900	24200	26400	26100	26200	26600	25900	26400	28200	28100	28200
31	24600	24400	24500	---	---	---	27000	26600	26800	28500	28300	28400
MONTH	28100	1460	18300	26800	23000	25400	27800	25900	26900	31300	25500	28800
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	28600	28400	28600	19400	17500	18100	27300	26600	27100	32600	28300	29700
2	28600	28300	28400	20700	19300	20300	27400	27200	27200	32300	28900	30600
3	28700	27900	28500	20600	20500	20600	27600	27000	27300	32100	29700	30900
4	28700	28300	28600	21800	20500	20800	28600	27500	27900	---	---	30500
5	28700	27800	28300	23100	21900	22300	28700	28500	28600	33200	30100	31400
6	27900	27700	27800	24100	23000	23400	29600	28500	28700	30000	29300	29700
7	28000	27800	27900	24700	24000	24200	---	---	28800	36200	29100	31900
8	27900	27800	27800	25600	24700	24900	29000	27800	28500	35600	32900	34000
9	27900	27500	27800	25700	24800	25300	28400	27000	28200	35400	32200	33100
10	27800	27600	27700	26400	25600	26000	28100	17600	27200	33600	30700	32000
11	27700	27600	27700	27400	26400	27000	27600	20000	27000	32600	30300	31300
12	27700	27500	27700	27500	27300	27400	31500	20200	26600	34000	29200	31600
13	27700	27500	27600	27500	27300	27400	32300	25900	28000	33300	29600	31600
14	27700	27600	27700	27600	27100	27500	28100	15100	24400	32600	30700	31700
15	27700	27000	27300	27900	27600	27800	28200	24500	27600	33100	30400	31600
16	28000	27400	27800	28300	27800	28000	28100	27500	27900	32900	30100	31400
17	28000	27800	27900	28300	27800	28100	29100	18400	28000	32900	30200	31700
18	28100	27900	28000	28400	28000	28300	---	---	28400	---	---	30900
19	28100	27800	28000	28400	27700	28200	30900	27700	28700	30800	26500	28900
20	27800	27400	27700	28000	27500	27900	---	---	29300	32000	27900	29400
21	27700	27500	27600	28400	27800	28000	31100	28900	29100	---	---	30800
22	27700	27500	27600	28800	28200	28500	29500	28800	29200	27900	23800	25400
23	27600	27200	27500	28800	28600	28800	30800	28900	29300	27400	19300	23300
24	27200	27100	27200	28900	28700	28800	28900	28300	28500	26800	24400	25400
25	27300	27200	27200	29400	28900	29100	---	---	29300	26700	24800	25700
26	27300	27200	27200	---	---	29600	28900	28200	28600	27100	25600	26200
27	27300	25800	26900	30100	29600	29900	---	---	30900	25700	1580	21300
28	25600	17600	21000	31400	28400	30000	---	---	31000	1800	350	1150
29	---	---	---	29500	28100	28400	---	---	31200	5560	1940	3530
30	---	---	---	28200	27600	28000	---	---	31500	7710	5550	6460
31	---	---	---	27800	27100	27400	---	---	---	10500	7910	9230
MONTH	28700	17600	27500	31400	17500	26500	32300	15100	28500	36200	350	26500

## RED RIVER BASIN

07311783 SOUTH WICHITA RIVER BELOW DAM NEAR GUTHRIE, TX--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	13100	10600	11700	21000	20300	20800	28200	27400	27800	---	---	26800
2	14100	11900	12800	21600	20600	21000	28900	28000	28400	---	---	28100
3	14500	13000	13700	21800	20800	21300	29500	28600	29000	---	---	27200
4	15900	14500	15300	30700	20800	24800	29900	29200	29500	---	---	25000
5	17000	15800	16400	29300	25400	27000	30900	28000	29600	27700	23100	24700
6	17600	16700	17200	28200	24400	26100	31600	27900	29500	25600	21800	23900
7	18700	17600	18200	26600	24000	25500	31100	27600	29100	---	---	26000
8	19600	18500	19100	31400	24800	26200	31300	27400	28700	---	---	26700
9	20200	19300	19800	28900	24900	26400	---	---	30000	---	---	27700
10	21600	19500	20500	29000	26000	27300	---	---	31000	31700	26700	28700
11	17200	14300	15300	29400	25300	27400	---	---	31000	30400	27000	28700
12	15000	13800	14100	31100	25700	28900	---	---	31000	---	---	27000
13	15300	13900	14500	27700	23400	26200	32800	29700	30900	---	---	27400
14	17400	15300	16300	---	---	27100	32700	30200	31500	28800	24800	26000
15	17400	16700	16900	32900	25400	28200	32300	29200	30700	---	---	26700
16	18600	16800	17600	32300	15800	25400	32400	29600	30900	---	---	27000
17	---	---	19800	25100	12300	18800	33500	29600	30900	27900	26900	27300
18	---	---	20700	13200	10800	11600	32400	29100	30400	27600	27100	27300
19	---	---	21700	14900	12500	13200	32900	28700	30500	27800	27000	27300
20	---	---	22600	15500	13400	14200	32800	28700	30600	27900	27100	27400
21	---	---	23600	19100	15200	16800	31800	28500	30100	28000	27300	27500
22	---	---	24500	21500	19100	20300	31200	28700	29700	28000	27300	27500
23	---	---	25400	23200	21700	22500	31600	28600	29700	28000	27400	27600
24	---	---	26400	24500	23200	23900	---	---	29400	28000	27400	27600
25	25600	22600	24400	25500	24500	25000	30400	27900	29600	28000	27400	27600
26	25400	24400	24800	25900	25200	25600	30500	28600	29600	27900	27500	27600
27	25100	24400	24800	26500	25700	26000	29200	24800	26800	28000	27500	27700
28	25000	24500	24700	26700	26000	26400	27200	24700	25700	27900	27600	27700
29	24900	17000	22900	27000	26300	26600	27100	25100	25700	27900	27500	27600
30	20800	17800	19900	27200	26400	26800	28100	25100	26200	---	---	27600
31	---	---	---	---	---	27200	28400	26000	27000	---	---	---
MONTH	25600	10600	19500	32900	10800	23700	33500	24700	29400	31700	21800	27100

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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

## RED RIVER BASIN

75

07311783 SOUTH WICHITA RIVER BELOW DAM NEAR GUTHRIE, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	12.0	11.5	12.0	13.0	9.5	11.5	13.0	8.0	9.5	26.0	21.5	23.5
2	12.5	11.5	12.0	14.0	10.5	12.5	12.0	10.0	11.0	25.5	22.0	23.5
3	13.0	12.0	12.5	13.0	11.0	11.5	12.0	9.5	11.0	25.0	21.0	23.0
4	13.0	12.0	12.5	13.0	10.5	11.5	14.0	11.0	12.0	---	---	21.5
5	12.5	11.5	12.5	14.0	12.0	13.0	13.0	11.5	12.0	24.0	19.5	21.5
6	11.5	10.0	10.5	14.5	12.5	13.5	14.5	11.0	12.5	21.5	20.0	20.5
7	10.0	9.0	9.5	15.0	13.5	14.0	---	---	---	24.0	18.5	21.0
8	10.5	9.5	10.0	15.0	13.5	14.0	14.0	12.0	13.0	26.0	20.5	23.0
9	11.5	10.5	11.0	15.0	10.5	13.0	14.5	13.5	14.0	27.5	21.0	23.5
10	12.0	11.5	11.5	10.5	9.5	10.0	16.0	14.0	15.0	27.5	21.0	24.0
11	12.5	12.0	12.5	11.0	9.5	10.0	16.5	15.5	16.0	27.5	22.0	24.5
12	13.5	12.5	13.0	11.0	10.0	10.5	18.0	16.5	17.0	28.5	22.0	25.0
13	14.0	13.0	13.5	12.0	10.0	11.0	18.5	14.5	16.5	28.0	23.0	25.0
14	14.0	14.0	14.0	12.5	11.0	12.0	16.5	13.0	14.5	26.5	23.0	24.5
15	14.5	12.0	13.5	12.5	11.5	12.0	19.0	13.5	15.5	28.0	23.0	25.5
16	12.0	11.5	12.0	14.0	12.5	13.0	18.5	15.5	17.0	28.5	23.0	25.5
17	11.5	10.5	11.0	14.0	12.0	13.5	20.0	18.5	19.0	30.0	23.5	26.0
18	10.0	9.0	9.5	13.5	10.5	12.0	21.5	20.0	20.5	---	---	26.0
19	10.5	10.0	10.0	13.0	11.0	12.0	23.5	20.0	21.0	25.0	21.5	23.5
20	10.0	9.5	9.5	12.5	11.0	11.5	---	---	---	28.5	20.5	24.0
21	10.0	9.5	10.0	14.0	12.0	12.5	21.0	18.5	19.5	---	---	25.0
22	10.5	10.0	10.0	15.0	13.0	14.0	20.0	13.0	18.0	24.0	22.0	23.0
23	11.0	10.0	10.5	14.0	8.0	12.0	20.0	14.0	18.5	22.0	20.0	21.0
24	11.0	11.0	11.0	11.0	7.5	9.5	23.5	19.5	21.0	23.0	19.5	21.0
25	11.0	11.0	11.0	10.5	8.0	9.5	23.5	20.0	21.5	26.0	21.5	23.0
26	11.0	11.0	11.0	---	---	10.5	23.0	21.0	22.0	24.0	22.5	23.5
27	14.5	11.0	12.0	12.0	10.5	11.0	24.5	21.5	22.5	23.0	18.0	21.5
28	14.5	11.0	12.5	11.5	11.0	11.5	26.5	22.0	24.0	18.5	17.0	18.0
29	---	---	---	12.0	9.5	11.0	26.5	22.5	24.0	20.0	17.0	18.5
30	---	---	---	10.0	7.0	8.0	---	---	---	24.5	19.0	21.5
31	---	---	---	8.0	6.0	7.0	---	---	---	25.5	22.0	23.5
MONTH	14.5	9.0	11.5	15.0	6.0	11.5	26.5	8.0	17.0	30.0	17.0	23.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	27.0	23.0	25.0	30.0	25.0	27.5	30.5	27.0	28.5	---	---	---
2	26.5	23.5	25.0	30.5	26.5	28.0	30.5	27.0	29.0	---	---	---
3	26.5	24.0	25.5	31.0	27.0	29.0	31.0	27.0	29.0	---	---	---
4	25.5	22.5	24.0	30.5	27.0	29.0	30.5	27.0	29.0	---	---	---
5	26.0	22.5	24.5	29.5	26.5	28.5	30.0	27.5	28.5	27.5	24.0	26.0
6	25.5	23.5	25.0	30.0	26.5	28.5	31.0	27.0	29.0	27.0	24.5	25.5
7	26.5	24.0	25.0	29.5	26.5	28.0	30.5	27.0	29.0	---	---	---
8	26.0	23.5	25.0	29.0	28.0	28.5	30.5	26.5	28.5	---	---	---
9	25.5	24.0	24.5	29.5	27.0	28.5	31.5	27.5	29.0	---	---	---
10	26.5	24.0	25.0	29.0	27.0	28.0	30.5	28.5	29.5	30.5	25.0	27.5
11	28.5	24.0	26.0	30.0	25.0	27.0	29.5	28.5	29.0	29.5	25.5	27.5
12	30.0	26.0	27.5	31.5	26.0	28.5	30.0	28.5	29.5	---	---	---
13	31.5	26.5	28.5	28.5	24.5	26.5	31.5	28.0	29.5	---	---	---
14	31.0	27.0	29.0	30.0	24.0	26.5	31.0	28.5	29.5	26.5	24.0	25.5
15	31.0	28.0	29.5	32.0	24.0	27.0	31.0	28.0	29.5	---	---	---
16	31.0	27.5	29.0	28.0	25.0	26.0	31.5	28.0	29.5	28.5	22.0	25.0
17	---	---	---	29.0	23.0	26.0	31.0	28.5	29.5	29.0	23.0	25.5
18	---	---	---	29.5	25.5	27.5	30.5	27.5	29.0	25.0	22.0	23.0
19	---	---	---	30.5	26.0	28.5	31.0	27.5	29.0	27.0	20.0	23.0
20	---	---	---	30.0	26.0	28.0	30.0	27.0	28.5	27.5	21.0	23.5
21	---	---	---	30.5	26.0	28.5	30.0	26.5	28.5	27.0	21.5	24.0
22	---	---	---	30.5	26.0	28.0	30.0	27.0	28.5	27.0	21.5	24.0
23	---	---	---	30.5	26.0	28.0	29.5	27.0	28.5	26.5	21.0	23.5
24	---	---	---	30.5	26.0	28.0	29.5	26.0	27.5	27.0	21.5	23.5
25	30.5	24.5	27.5	32.0	26.0	28.5	28.5	26.0	27.0	27.0	21.5	24.0
26	30.5	25.0	27.5	30.5	25.5	28.0	26.5	25.0	26.0	26.0	21.5	23.5
27	29.5	25.0	27.0	30.5	26.0	28.0	25.0	24.5	25.0	28.0	22.0	24.5
28	29.0	24.5	26.5	31.0	25.5	28.0	26.5	23.5	25.0	25.5	23.0	24.5
29	28.5	24.5	26.0	31.0	26.0	28.5	27.0	24.0	25.5	26.0	22.0	24.0
30	28.0	25.0	26.5	31.5	26.0	28.5	27.0	24.5	26.0	26.5	21.5	23.5
31	---	---	---	---	---	28.5	---	---	26.0	---	---	---
MONTH	31.5	22.5	26.5	32.0	23.0	28.0	31.5	23.5	28.0	30.5	20.0	24.5

## RED RIVER BASIN

07311800 SOUTH WICHITA RIVER NEAR BENJAMIN, TX

LOCATION.--Lat 33°38'39", long 99°48'02", Knox County, Hydrologic Unit 11130205, on right bank at upstream side of bridge on State Highway 6, 2 mi downstream from Panhandle and Santa Fe Railway Co. bridge, 4 mi north of Benjamin, and 41 mi upstream from confluence with North Wichita River.

DRAINAGE AREA.--584 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--1952-57 (occasional low-flow measurements), December 1959 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,334.23 ft above National Geodetic Vertical Datum of 1929. Prior to Jan. 2, 1960, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Records good. There are low flow diversions to evaporation lake upstream at South Wichita River at Low Flow Dam near Guthrie (station 07311782). There were other minor (daily) diversions above station during the year. Gage-height telemeter at station via Sutron Data Collection Platform.

AVERAGE DISCHARGE.--27 years (water years 1961-87), 40.4 ft<sup>3</sup>/s (0.94 in/yr), 29,270 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,000 ft<sup>3</sup>/s Oct. 18, 1960 (gage height, 15.40 ft); maximum gage height, 16.70 ft Oct. 20, 1983; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1903 occurred in September 1919 (stage and discharge unknown), from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 3	0200	3,670	15.03	May 28	1700	*3,730	*15.19
Oct. 10	0100	1,700	13.23	June 20	1530	1,510	12.86
Oct. 22	0030	1,630	13.00	June 29	2200	1,490	12.54
May 23	1400	1,590	13.00				

Minimum discharge, 1.7 ft<sup>3</sup>/s Sept. 28, 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	89	70	39	34	40	84	27	7.9	100	53	12	7.7
2	3150	64	39	33	34	68	25	7.9	76	43	11	5.9
3	3100	61	38	32	32	63	24	7.9	57	37	11	5.0
4	1290	378	37	31	30	57	23	7.9	48	32	82	4.4
5	337	125	37	30	147	53	24	7.8	37	30	129	3.8
6	232	90	37	28	91	48	24	6.2	30	27	17	3.8
7	171	81	42	27	61	47	22	6.1	24	24	13	3.7
8	138	69	39	32	53	45	21	5.6	21	22	11	3.2
9	737	61	38	48	48	43	27	5.5	48	21	10	2.9
10	698	60	38	34	48	41	22	13	39	20	9.7	2.8
11	217	57	38	31	47	39	19	8.7	48	19	9.5	2.5
12	159	55	40	29	45	36	18	7.1	29	20	9.1	4.5
13	131	52	40	29	44	34	17	8.8	18	117	21	83
14	118	57	40	29	43	36	16	8.2	11	23	9.9	19
15	107	52	39	27	62	36	15	5.4	9.2	20	7.6	11
16	93	52	37	27	57	264	14	4.8	7.2	32	17	7.9
17	87	50	40	30	50	139	14	4.4	5.4	80	15	10
18	81	47	55	29	45	51	13	3.5	4.6	26	7.7	24
19	79	54	54	35	50	40	12	13	4.9	66	6.3	8.4
20	74	43	47	37	66	36	11	9.9	935	48	5.7	5.6
21	626	44	46	34	60	95	11	5.1	536	44	5.2	4.5
22	658	36	60	34	53	62	11	123	127	26	4.8	3.9
23	194	36	52	32	47	40	11	1090	113	22	4.5	3.6
24	150	36	47	32	52	33	10	112	101	20	4.3	3.2
25	124	36	42	32	50	30	9.1	49.0	101	18	4.0	2.5
26	106	37	39	31	86	72	11	34	81	17	18	2.3
27	102	37	39	29	119	53	9.3	135	71	16	159	1.9
28	91	37	35	32	91	37	8.7	1850	71	15	13	2.6
29	85	37	35	32	---	31	8.4	2530	298	14	13	2.0
30	80	38	37	27	---	30	8.6	1440	175	14	10	1.8
31	72	---	35	27	---	28	---	190	---	13	9.1	---
TOTAL	13376	1952	1281	974	1651	1771	486.1	7707.7	3226.3	979	659.4	247.4
MEAN	431	65.1	41.3	31.4	59.0	57.1	16.2	249	108	31.6	21.3	8.25
MAX	3150	378	60	48	147	264	27	2530	935	117	159	83
MIN	72	36	35	27	30	28	8.4	3.5	4.6	13	4.0	1.8
AC-FT	26530	3870	2540	1930	3270	3510	964	15290	6400	1940	1310	491

CAL YR 1986	TOTAL 32001.0	MEAN 87.7	MAX 3150	MIN 1.1	AC-FT 63470
WTR YR 1987	TOTAL 34310.7	MEAN 94.0	MAX 3150	MIN 1.8	AC-FT 68060

## RED RIVER BASIN

77

07311800 SOUTH WICHITA RIVER NEAR BENJAMIN, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: July 1949 to March 1959, July 1966 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1967 to current year.

WATER TEMPERATURE: October 1967 to current year.

INSTRUMENTATION.--Since August 1968, specific conductance is recorded continuously at this station. Since April 1983, water temperature is recorded continuously at this station.

REMARKS.--Interruptions in the record were due to malfunctions of the instrument. Where maximum and 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, 48,900 microsiemens May 13, 1971; minimum, 500 microsiemens June 4, 1986.

WATER TEMPERATURE: Maximum, 38.5°C July 30, 1983; minimum, 0.0°C on many days during winter months.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 24,600 microsiemens May 19; minimum, 965 microsiemens, May 28.

WATER TEMPERATURE: Maximum, 34.5°C July 12; minimum, 0.0°C on several days during November and January.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	HARD- NESS (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)
JAN 08...	1420	31	15800	7.80	6.5	2800	2600	710	240
FEB 17...	1130	49	12600	7.80	6.0	2700	2500	650	250
MAR 30...	1120	30	12400	7.70	5.5	2900	2800	700	290
JUN 03...	1305	56	7900	7.90	24.0	1900	1800	510	160
AUG 05...	1022	36	1540	7.90	24.5	560	500	160	40
SEP 17...	1030	9.7	9530	7.80	23.5	1900	1800	520	150

DATE	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WH WAT TOTAL 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)
JAN 08...	2600	22	20	174	2500	4500	0.30	6.1	11000
FEB 17...	2100	18	18	180	2400	3400	0.30	4.8	8900
MAR 30...	2000	17	16	180	2500	3300	0.30	5.6	8900
JUN 03...	1100	11	12	167	1800	1700	0.30	8.7	5400
AUG 05...	140	3	6.5	66	550	140	0.30	7.7	1100
SEP 17...	1400	14	18	121	2100	2100	0.30	18	6400

## RED RIVER BASIN

07311800 SOUTH WICHITA RIVER NEAR BENJAMIN, TX--Continued

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1986 TO SEPTEMBER 1987

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. 1986	13376	4290	2970	107000	1300	45200	670	24200	760
NOV. 1986	1952	10600	7310	38500	3200	16800	1500	8060	*
DEC. 1986	1281	14300	9860	34100	4400	15100	2000	6840	*
JAN. 1987	974	15300	10600	27900	4700	12400	2100	5490	*
FEB. 1987	1651	11300	7820	34800	3400	15200	1600	7280	*
MAR. 1987	1771	8950	6200	29700	2700	12700	1300	6420	1500
APR. 1987	486.1	16600	11500	15000	5200	6760	2200	2890	*
MAY 1987	7707.7	3150	2180	45400	920	19100	500	10300	560
JUNE 1987	3226.3	5850	4060	35400	1700	14900	920	8030	1000
JULY 1987	979	9320	6460	17100	2800	7380	1400	3620	1600
AUG. 1987	659.4	8170	5660	10100	2400	4350	1200	2140	1400
SEPT 1987	247.4	8770	6070	4060	2600	1750	1300	860	1500
TOTAL	34310.9	**	**	399000	**	172000	**	86200	**
WTD.AVG.	94	6220	4310	**	1900	**	930	**	1100

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987											
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN
OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	8400	3140	7180	11900	11700	11800	---	---	14800	15300	15100
2	2870	1190	1840	12100	11800	11900	---	---	14900	15400	15100
3	2570	2190	2370	12000	11800	11900	---	---	14900	15700	15200
4	2260	1950	2110	---	---	5500	---	---	15000	16000	15700
5	4000	1980	2620	---	---	6000	15300	14900	15100	---	---
6	6820	4130	5450	---	---	7000	15100	14700	15000	---	---
7	7540	5630	6630	---	---	8000	14800	14500	14600	---	---
8	9540	7340	8800	---	---	10000	14900	14400	14700	---	---
9	9780	3910	7440	---	---	11000	14900	14600	14700	15000	9900
10	4650	1970	3470	---	---	11500	15300	14900	15100	14200	13200
11	6190	2460	5440	---	---	12000	15400	15200	15300	15400	14300
12	7810	5950	6520	---	---	12200	15400	15200	15300	15800	15400
13	8710	7870	8470	---	---	12400	15500	15400	15500	15900	15600
14	9200	8650	8890	---	---	12600	15500	15400	15400	15800	15400
15	10200	9220	9720	---	---	12800	15500	15300	15400	16300	15800
16	11100	10200	10700	---	---	13000	15700	15300	15500	16300	16000
17	11800	11200	11500	---	---	13400	15400	14600	15200	16500	16000
18	12000	11800	11900	13900	13500	13600	14400	12700	13200	17200	15700
19	12600	11800	12100	14000	13500	13700	13100	12600	12800	16800	14500
20	13100	12600	12900	14300	13700	14000	13600	13100	13400	15400	14400
21	12900	6830	10900	14400	14200	14300	13900	13000	13700	15300	14200
22	---	---	3860	---	---	14400	12900	11900	12300	15300	14100
23	---	---	5500	---	---	14400	13300	11800	12500	15100	14100
24	8010	5900	6710	---	---	14500	13400	12800	13100	14800	14400
25	9400	8100	8920	---	---	14500	13000	12700	12800	15100	14700
26	9900	9400	9700	---	---	14600	13400	12900	13100	15600	15100
27	9800	9600	9740	---	---	14600	14100	13500	13800	15800	15000
28	10400	9550	9840	---	---	14700	14400	14100	14300	15700	15300
29	11200	10300	10800	---	---	14700	14800	14400	14500	16200	15500
30	11600	11200	11500	---	---	14800	14900	14700	14800	16900	16200
31	12000	11600	11800	---	---	---	15100	14800	14900	17000	16100
MONTH	13100	1190	7910	14400	11700	12300	15700	11800	14400	17200	9900

## RED RIVER BASIN

79

07311800 SOUTH WICHITA RIVER NEAR BENJAMIN, TX--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	16200	14100	14700	9330	8910	9100	14700	13600	13900	21500	20800	21200
2	14700	14200	14500	9050	7890	8420	15400	14900	15100	21900	21000	21400
3	15500	14700	15000	7910	7020	7410	15400	15000	15200	22200	21300	21800
4	15800	15500	15600	7210	6940	7080	15300	14900	15100	22600	21500	21900
5	15900	3480	7930	7270	7010	7160	15400	15000	15200	22400	21700	22000
6	8740	4430	6660	7420	7150	7260	15200	14200	14600	22300	21700	22000
7	9760	8760	9340	7480	7230	7360	14200	13200	13600	22300	21500	22000
8	10700	9880	10200	7620	7380	7500	14700	13300	13700	22200	21300	21900
9	11200	10700	10900	7890	7520	7690	21100	14800	18200	22200	21100	21700
10	11400	11100	11300	9250	7900	8400	22100	21200	21700	22000	18600	20500
11	11700	11300	11500	11000	9350	10100	22000	20800	21300	20300	19600	20000
12	12100	11800	11900	11800	11100	11300	20800	19500	20100	---	---	20000
13	12400	12100	12200	12100	11600	11900	19400	18000	18600	21900	8230	20000
14	12400	12200	12300	12600	12100	12300	17900	16500	17100	18400	8860	14700
15	12400	12200	12300	12900	12500	12700	16500	15100	15700	21000	18700	19900
16	12500	12300	12400	13400	7080	7500	15300	14800	15100	22400	21000	21500
17	12700	11900	12400	9440	6020	7040	15500	15000	15200	23500	22300	22700
18	13100	12300	12600	13100	9650	11800	15800	15200	15400	24400	23400	23800
19	13400	13000	13200	13200	4680	12100	15900	15300	15600	24600	14200	21000
20	13300	13000	13100	13200	12800	13000	16100	15600	15800	15300	14300	14700
21	13100	12600	12900	---	---	7000	16200	15900	16000	17800	15400	16300
22	13100	12300	12800	---	---	8000	16500	16000	16300	18100	5080	7990
23	13300	12500	12900	---	---	9000	16900	16300	16600	6080	5600	5850
24	13300	13000	13100	---	---	10000	17300	16800	17000	6670	6090	6410
25	13600	13200	13400	---	---	11000	17800	17300	17500	7360	6720	7040
26	13800	12300	13300	---	---	9000	18300	17800	18000	7780	7190	7540
27	12200	6510	8390	---	---	10000	19000	18400	18700	7180	3070	6220
28	9090	8340	8720	---	---	12100	19700	19100	19300	2420	965	1380
29	---	---	---	---	---	12900	20500	19900	20100	2540	1200	2100
30	---	---	---	---	---	12400	21100	20400	20700	---	---	2100
31	---	---	---	13500	12500	12900	---	---	---	---	---	3680
MONTH	16200	3480	12000	13500	4680	9720	22100	13200	16900	24600	965	15500
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	---	---	5260	9060	8160	8620	14100	13900	14000	---	---	13000
2	---	---	6840	9170	8370	8820	14100	14000	14000	---	---	14000
3	8340	5820	7520	9510	8510	8980	14100	14000	14100	---	---	14900
4	9020	4360	7490	10400	9540	10000	14200	4590	11700	16000	14900	15500
5	9810	9130	9430	11100	10500	10800	---	---	2920	16200	15400	15800
6	9820	4970	5830	11800	11100	11400	12700	4300	9020	15900	15300	15600
7	5230	5050	5170	12300	11800	12100	---	---	11000	16400	15700	16100
8	5250	4970	5180	12900	12300	12600	---	---	12000	16500	16000	16200
9	10500	3800	5430	13700	12800	13200	---	---	13000	16600	16300	16500
10	9640	4660	5860	14300	13400	13800	---	---	14000	---	---	16500
11	9440	6870	7860	14600	14000	14300	---	---	15000	---	---	16500
12	9960	5370	7570	14800	13500	14500	---	---	15000	---	---	9600
13	7200	5910	6530	9620	4030	6140	---	---	13400	---	---	4400
14	8380	7300	7880	7990	6520	6730	---	---	8400	---	---	6100
15	8570	8020	8220	11600	8190	9990	---	---	12500	---	---	7800
16	15500	8570	11900	11600	3890	10000	---	---	12400	8530	7620	8130
17	16500	15100	15800	---	---	3300	---	---	13300	---	---	8800
18	15800	14100	15000	---	---	3280	---	---	11000	12100	3130	7310
19	14100	13700	13900	---	---	3450	---	---	12000	12300	12100	12200
20	14100	3320	5910	---	---	8320	---	---	12500	12400	12200	12300
21	5780	4170	4780	13200	13100	13200	---	---	13000	12600	12400	12500
22	---	---	4460	13300	13200	13300	---	---	13500	12700	12500	12600
23	3160	2660	2850	13400	13300	13300	---	---	14000	12800	12600	12700
24	3890	3210	3480	13400	13300	13400	---	---	14500	12800	12700	12800
25	5350	4010	4720	13500	13400	13400	---	---	15000	12900	12700	12800
26	9610	5340	7010	13600	13500	13600	---	---	10800	13100	12800	12900
27	6560	5860	6170	13700	13600	13700	---	---	3600	13400	13100	13300
28	6230	5890	6070	13800	13700	13800	---	---	7100	---	---	13600
29	---	---	6250	13900	13800	13800	---	---	8000	---	---	13800
30	---	---	8680	14000	13800	13900	---	---	11000	16400	13900	15000
31	---	---	---	14000	13900	14000	---	---	12000	---	---	---
MONTH	16500	2660	7300	14800	3890	11000	14200	4300	11700	16600	3130	12600

## RED RIVER BASIN

07311800 SOUTH WICHITA RIVER NEAR BENJAMIN, TX--Continued

DAY	TEMPERATURE, WATER (DEG. C), WATER YEAR			OCTOBER 1986 TO SEPTEMBER 1987								
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER				NOVEMBER			DECEMBER			JANUARY		
1	26.5	20.5	23.0	17.0	13.5	15.5	---	---	---	8.0	4.0	6.5
2	21.0	20.5	21.0	13.0	9.5	10.5	---	---	---	8.0	4.0	6.0
3	23.0	20.0	21.5	12.5	8.5	10.5	---	---	---	8.5	5.5	7.0
4	22.5	19.5	20.5	12.0	11.0	12.0	---	---	---	8.5	4.0	6.5
5	20.0	19.5	20.0	12.0	8.0	10.0	11.5	8.5	10.0	---	---	---
6	21.5	19.0	20.0	13.0	8.0	10.5	12.0	10.0	11.0	---	---	---
7	22.0	18.0	20.0	15.0	10.5	12.0	15.0	12.0	13.0	---	---	---
8	22.5	19.5	20.5	14.5	11.0	12.5	12.0	9.0	10.0	---	---	---
9	21.0	17.5	19.5	11.0	7.5	9.5	9.0	6.5	8.0	8.0	5.0	6.5
10	19.5	18.0	19.0	9.0	1.5	7.0	6.0	4.5	5.5	7.5	3.5	5.5
11	19.5	18.5	19.0	4.0	.0	1.5	7.5	5.0	6.0	7.5	2.0	5.0
12	19.0	16.0	17.5	2.5	.0	.5	9.0	4.0	6.5	9.5	3.5	6.5
13	16.0	15.0	15.5	.0	.0	.0	9.0	4.5	7.0	8.5	5.0	7.0
14	15.5	14.0	15.0	7.0	.0	2.5	10.0	7.0	8.5	10.0	5.0	8.0
15	16.0	14.0	15.0	11.5	2.5	6.5	12.5	9.5	10.5	8.0	5.0	6.0
16	16.5	14.0	15.5	14.5	6.5	9.5	11.0	10.5	10.5	5.0	1.5	3.0
17	17.5	15.0	16.5	16.0	5.0	11.5	10.5	9.5	10.5	.0	.0	.0
18	18.5	16.0	17.0	14.5	11.5	13.0	9.0	7.0	8.0	.0	.0	.0
19	17.5	15.5	16.5	14.5	11.0	12.5	8.0	5.0	6.5	.0	.0	.0
20	17.0	14.5	16.0	15.0	11.0	13.0	8.5	5.0	6.5	3.0	.0	1.0
21	16.5	14.0	15.0	14.5	9.5	12.0	8.0	7.0	7.5	4.0	.0	1.5
22	18.0	14.0	16.0	---	---	---	7.5	6.5	6.5	5.0	.0	2.5
23	18.5	17.0	17.5	---	---	---	9.0	6.0	7.0	6.5	1.0	3.5
24	17.5	16.5	17.0	---	---	---	10.0	5.5	7.5	4.5	2.0	3.0
25	17.0	15.5	16.0	---	---	---	10.0	7.5	8.5	5.0	.0	2.5
26	15.5	13.5	14.5	---	---	---	10.0	6.0	8.0	7.5	1.5	4.5
27	15.0	13.0	14.0	---	---	---	9.5	5.0	7.5	8.5	3.0	6.0
28	15.0	12.5	14.0	---	---	---	9.5	4.5	7.0	9.5	4.5	7.5
29	15.5	13.0	14.5	---	---	---	10.5	6.5	8.5	11.0	7.0	9.5
30	18.5	13.5	16.0	---	---	---	9.5	5.0	7.5	10.5	6.0	8.5
31	17.5	13.5	16.0	---	---	---	9.0	5.0	7.0	10.5	6.0	8.5
MONTH	26.5	12.5	17.5	17.0	.0	9.0	15.0	4.0	8.0	11.0	.0	5.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	12.5	8.5	10.5	13.0	10.0	11.5	20.0	11.0	15.5	28.0	21.5	24.5
2	13.5	6.5	10.0	14.0	10.0	12.0	14.0	9.5	12.0	27.5	22.0	25.0
3	13.5	7.5	10.5	15.0	11.0	13.0	18.0	8.0	13.0	26.0	20.5	23.5
4	13.5	7.5	11.0	15.5	11.0	13.5	18.0	10.5	14.0	25.5	19.5	23.0
5	12.5	7.5	9.0	15.5	11.0	13.5	14.5	11.0	12.0	25.5	20.0	23.0
6	7.5	6.5	7.0	17.0	12.0	14.5	17.0	10.0	13.0	23.5	20.0	21.5
7	7.0	5.5	6.0	17.0	13.0	15.0	16.5	11.5	14.0	22.0	20.0	21.0
8	7.5	6.5	7.0	17.5	13.0	15.0	21.0	12.0	16.0	22.5	19.0	21.0
9	7.5	6.0	7.0	16.0	11.5	14.0	21.5	13.5	17.5	23.0	19.5	21.0
10	9.0	6.5	7.5	11.5	9.0	10.0	22.5	15.0	18.5	28.5	20.0	24.0
11	10.5	9.0	9.5	14.5	8.5	11.5	24.0	16.0	20.0	28.0	22.5	25.5
12	11.5	9.5	10.5	15.5	10.5	13.0	24.5	17.5	21.0	28.5	23.0	25.5
13	12.0	10.5	11.5	16.5	11.0	14.0	21.0	15.0	17.5	28.5	20.5	24.5
14	12.0	11.0	11.5	18.5	13.0	15.5	18.0	11.5	15.0	24.0	21.0	22.5
15	11.5	9.0	10.5	18.0	14.5	16.5	23.0	13.0	17.5	26.5	23.0	24.5
16	9.0	7.0	8.0	18.0	6.5	14.5	25.0	16.5	21.0	30.5	23.5	27.5
17	9.0	6.0	7.5	15.0	11.0	13.0	27.0	18.5	23.0	33.0	24.5	28.5
18	10.5	5.0	8.0	16.5	12.5	14.5	27.0	20.0	23.5	31.0	26.5	29.0
19	9.0	6.5	7.5	17.5	13.0	15.0	26.5	20.5	23.5	27.5	25.0	26.0
20	6.5	5.5	6.0	21.5	13.5	17.0	25.0	21.0	23.0	30.5	25.0	27.0
21	9.0	6.0	7.0	19.0	13.5	16.0	20.5	16.0	17.5	30.0	27.0	28.5
22	12.0	7.0	9.5	21.0	13.5	16.5	22.5	14.5	18.5	27.0	18.5	21.0
23	12.0	7.5	10.0	18.5	11.0	15.0	26.0	16.5	21.0	21.0	20.5	20.5
24	10.5	10.0	10.5	15.5	8.5	12.0	26.0	18.5	22.5	21.0	20.5	20.5
25	10.5	10.0	10.0	16.5	10.0	13.5	26.5	19.0	23.0	22.0	21.0	21.5
26	11.0	10.0	10.5	14.5	11.0	12.5	27.5	19.5	23.5	24.5	22.5	23.5
27	14.0	11.0	12.0	18.0	9.5	13.5	28.0	20.0	24.0	23.5	20.5	21.5
28	13.5	11.5	12.5	17.0	11.5	14.5	28.5	21.0	24.5	21.0	17.0	20.0
29	---	---	---	11.0	6.0	8.0	27.0	21.0	24.5	20.0	17.5	18.0
30	---	---	---	13.0	3.5	8.0	27.5	20.5	24.0	---	---	---
31	---	---	---	18.5	6.5	12.0	---	---	---	---	---	---
MONTH	14.0	5.0	9.0	21.5	3.5	13.5	28.5	8.0	19.0	33.0	17.0	23.5

## RED RIVER BASIN

81

07311800 SOUTH WICHITA RIVER NEAR BENJAMIN, TX--Continued

DAY	TEMPERATURE, WATER (DEG. C), WATER YEAR			OCTOBER 1986			TO SEPTEMBER 1987					
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	---	---	---	25.5	24.0	24.5	24.5	24.5	24.5	31.0	29.0	30.5
2	---	---	---	26.0	25.5	25.5	25.0	24.5	24.5	31.0	29.0	30.5
3	25.5	21.5	24.0	27.0	25.5	26.0	25.0	24.5	24.5	30.5	24.0	28.5
4	24.5	20.0	22.0	27.5	26.5	27.0	25.0	24.5	25.0	29.0	22.0	25.0
5	27.5	20.5	24.0	27.5	26.5	27.0	---	---	26.0	28.5	22.0	25.5
6	24.5	22.5	23.0	27.5	26.5	27.0	---	---	29.5	29.5	22.5	25.5
7	23.5	22.5	23.0	28.0	26.5	27.5	---	---	30.0	29.5	23.0	26.0
8	23.0	22.0	22.5	29.5	27.0	28.0	---	---	32.0	28.0	23.0	26.0
9	23.5	22.0	23.0	31.0	23.5	27.5	29.5	27.5	28.5	28.0	23.5	26.0
10	26.5	22.0	23.0	30.5	24.0	27.5	30.0	28.0	29.5	---	---	---
11	27.5	24.0	25.5	32.0	24.5	28.5	30.5	28.0	29.0	---	---	---
12	26.5	24.5	25.0	34.5	26.5	30.5	29.5	27.5	28.5	29.5	22.5	25.5
13	26.5	24.0	25.0	29.0	27.5	29.0	29.0	27.5	28.5	25.5	24.5	25.5
14	27.5	24.5	26.0	30.0	28.0	29.0	29.5	28.0	29.0	---	---	---
15	27.5	24.5	26.0	31.5	23.5	27.5	29.5	28.0	29.0	---	---	---
16	31.0	24.5	27.5	29.0	23.5	26.0	29.5	27.5	29.0	27.0	19.0	24.5
17	30.5	25.0	28.0	24.5	24.0	24.0	30.0	28.0	29.0	---	---	25.0
18	28.5	23.0	26.0	25.0	24.5	25.0	30.0	28.5	29.5	22.0	21.5	21.5
19	28.0	24.5	26.5	25.5	25.0	25.5	29.5	27.0	28.5	22.0	21.0	21.5
20	26.0	21.0	23.0	26.0	25.5	25.5	29.0	27.5	29.0	22.5	21.0	22.0
21	27.5	21.5	24.5	26.0	25.5	25.5	30.0	28.0	29.0	22.5	21.5	22.0
22	26.5	25.0	26.0	25.5	25.0	25.5	29.5	28.0	29.0	23.0	22.0	22.5
23	30.0	24.5	26.5	25.5	25.0	25.5	29.0	27.0	27.5	24.0	22.5	23.0
24	30.0	26.5	28.0	25.5	25.0	25.0	27.0	26.5	26.5	24.5	23.0	23.5
25	30.0	25.0	27.5	25.5	25.0	25.0	27.0	26.5	27.0	25.5	23.5	24.5
26	30.5	23.5	27.0	25.0	24.5	25.0	27.5	27.0	27.5	26.0	24.5	25.0
27	27.0	24.5	25.5	25.0	24.5	24.5	27.5	27.0	27.0	27.5	25.5	26.0
28	27.0	24.0	26.0	24.5	24.5	24.5	28.5	27.5	28.0	---	---	---
29	26.5	22.5	25.0	24.5	24.5	24.5	30.0	28.5	29.5	---	---	---
30	24.0	23.0	23.5	24.5	24.5	24.5	31.0	29.5	30.0	29.5	17.5	25.5
31	---	---	---	24.5	24.5	24.5	31.0	30.0	30.5	---	---	---
MONTH	31.0	20.0	25.0	34.5	23.5	26.0	31.0	24.5	28.0	31.0	17.5	25.0

## 07312000 LAKE KEMP NEAR MABELLE, TX

LOCATION.--Lat 33°45'30", long 99°09'03", Baylor County, Hydrologic Unit 11130206, in outlet gate tower near center of dam on Wichita River, 6.2 mi north of Mabelle, 13 mi northeast of Seymour, and 126.7 mi upstream from mouth.

DRAINAGE AREA.--2,086 mi<sup>2</sup>.

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

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Oct. 1, 1972, nonrecording gage at different site and at datum 2.40 ft higher.

REMARKS.--The lake is formed by a rolled earthfill dam 8,890 ft long. The original dam was completed Aug. 25, 1923, but deliberate impoundment had begun Oct. 1, 1922. Enlargement of the dam was completed in November 1973. The 3,000-foot-wide uncontrolled spillway is located approximately 600 ft to right and slightly upstream from right end dam. The controlled outlet works near center of dam consist of two hydraulically operated slide gates 5 ft 8-in by 13 ft with a 13-foot-diameter conduit and spillway basin. The dam and lake are owned by the city of Wichita Falls and the Wichita County Water Improvement District No. 2. Water is used for irrigation in the Wichita River Valley, oilfield operation, municipal, and industrial uses. The capacity table is based on a resurvey made in 1973. Data collection platform at station. Figures given herein represents total contents. Data regarding the dam and lake are given in the following table.

	Elevation (feet)	Capacity (acre-feet)
Top of dam.....	1,183.0	-
Crest of spillway.....	1,160.0	603,000
Top of flood-control pool.....	1,156.0	502,900
Top of conservation pool.....	1,144.0	268,000
Lowest gated outlet (invert).....	1,090.0	1,400

COOPERATION.--Capacity table No. 4-C was provided by the U.S. Army Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 420,900 acre-ft June 30, 1941 (elevation, 1,152.0 ft), present datum; minimum since first appreciable storage, 26,160 acre-ft June 30, 1953 (elevation, 1,108.0 ft), present datum.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 362,400 acre-ft June 8 at 1300 hours (elevation, 1,149.43 ft); minimum, 249,300 acre-ft Sept. 30 (elevation, 1,142.76 ft).

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

1,142.0	238,200	1,148.0	335,600
1,144.0	268,000	1,150.0	373,300
1,146.0	300,500		

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	288600	322200	280600	275500	274400	277400	267800	267600	355500	285000	269800	256100
2	294400	319300	278400	276200	274700	278200	268500	268200	358500	283800	269100	255800
3	303100	316400	276600	275800	275000	277800	268300	267100	359300	283000	268200	255500
4	312200	322400	274700	275800	275100	276800	268000	265400	359900	282200	267400	254900
5	323600	324100	274100	276000	279100	275500	268500	264400	360900	281500	266600	254600
6	330100	325000	274100	276000	281300	274100	269000	263600	361600	279700	266000	254000
7	332900	325800	275200	276300	282200	273000	269000	263100	362000	278500	265300	253700
8	334200	324800	275200	277000	282700	271800	269300	263000	361100	277300	264500	253400
9	334700	320900	274900	277800	281900	270200	269600	262500	360100	276300	263700	253100
10	337100	317000	275200	277800	279400	268900	269600	262200	358800	275500	263000	252800
11	339600	312500	275400	278100	276800	269300	269800	261900	356800	274700	262800	252400
12	339300	307900	275500	277800	275400	269100	269900	261600	355100	274600	261800	252700
13	338600	304300	275700	276900	274000	269900	271100	261000	353000	276500	261500	252800
14	336500	300600	276200	276100	271700	270200	269300	260600	350800	277300	260400	253200
15	333300	297400	276300	274800	269900	270300	269400	260200	348000	277000	259600	253400
16	329900	293800	276500	273800	268800	272700	269600	259900	345100	277800	259400	253400
17	326600	290500	277100	273700	269000	276200	269900	259000	340700	278400	259300	254000
18	322900	286400	277900	272800	269100	277300	270000	258400	337400	278500	259200	253000
19	319000	282600	277300	271800	269300	277100	270200	258400	332100	278400	259000	253100
20	315100	279400	276500	271600	270100	276300	270200	258200	330200	278100	258900	253300
21	316600	275800	275500	271700	270600	274800	270600	257700	326300	277600	257900	252800
22	323100	275000	274900	271400	270700	275200	270600	259300	323600	277300	257400	252700
23	328400	274900	274400	271600	270900	275700	270400	264700	319500	276500	257200	252500
24	331300	274700	274200	271800	271500	274900	270600	269100	314900	275800	256800	252100
25	332000	279400	274400	271800	272000	274900	270700	271400	310100	275000	256200	251500
26	333000	280200	274900	272000	273600	276200	270900	272200	305600	274400	257400	250900
27	332900	281000	274900	272600	275300	275800	270200	278700	300500	273800	257100	250500
28	331200	281400	275000	273400	276600	274500	269400	295700	295500	273000	257100	250300
29	329600	281400	275400	273300	---	272300	269000	307000	291800	272200	257000	250000
30	327800	282600	275700	273300	---	270900	268500	328700	287100	271400	256400	249300
31	325500	---	275700	273900	---	269800	---	348300	---	270700	256500	---
MAX	339600	325800	280600	278100	282700	278200	271100	348300	362000	285000	269800	256100
MIN	288600	274700	274100	271400	268800	268900	267800	257700	287100	270700	256200	249300
(+)	1147.44	1144.91	1144.48	1144.37	1144.54	1144.11	1144.03	1148.68	1145.19	1144.17	1143.24	1142.76
(Φ)	+43700	-42900	-6900	-1800	+2700	-6800	-1300	+79800	-61200	-16400	-14200	-7200

CAL YR 1986 MAX 340000 MIN 236800 (Φ) +25000  
WTR YR 1987 MAX 362000 MIN 249300 (Φ) -32500

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

## RED RIVER BASIN

83

## 07312100 WICHITA RIVER NEAR MABELIF, TX

LOCATION.--Lat 33°45'36", long 99°08'33", Baylor County, Hydrologic Unit 11130206, near left bank at downstream side of bridge on U.S. Highways 183 and 283, 0.3 mi downstream from Lake Kemp Dam, 6.2 mi north of Mabelle, and 13 mi north-east of Seymour.

DRAINAGE AREA.--2,086 mi<sup>2</sup>, all of which is above Lake Kemp Dam.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--1952-58 (occasional discharge measurements), October 1959 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,062.72 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Flow is regulated by Lake Kemp (see station 07312000). Water is released from Lake Kemp to supply Lake Diversion. Water from Lake Diversion is released for mining, recreation, and irrigation in the vicinity of Wichita Falls.

AVERAGE DISCHARGE.--28 years, 151 ft<sup>3</sup>/s (109,400 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,290 ft<sup>3</sup>/s Mar. 24, 1976 (gage height, 10.47 ft); minimum daily, 0.15 ft<sup>3</sup>/s June 22, 1973.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,790 ft<sup>3</sup>/s June 24 at 1430 hours (gage height, 8.64 ft); minimum daily, 0.46 ft<sup>3</sup>/s Apr. 23, 26.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.8	1830	649	1.3	1.7	1.7	668	303	1.2	2060	259	119
2	22	1830	1180	1.1	1.4	1.4	235	319	1.2	884	258	118
3	9.4	1830	1180	1.4	1.3	567	3.4	319	1.4	688	237	118
4	4.0	893	1170	1.2	1.3	982	2.7	321	1.4	686	229	118
5	4.6	3.6	709	1.2	7.3	984	2.1	321	1.4	683	240	118
6	5.3	2.2	3.3	1.2	4.0	983	1.7	323	1.5	681	249	118
7	2.4	1.9	2.3	1.4	1.5	982	1.4	217	1.5	681	257	118
8	2.0	908	2.1	1.7	1.6	981	1.1	133	710	666	260	118
9	2.0	2100	1.8	2.9	722	981	.96	132	1430	511	261	82
10	489	2350	1.3	1.3	1800	584	1.1	131	1620	233	256	84
11	1600	2350	1.1	1.1	2040	4.0	.96	130	1830	253	261	120
12	1850	2340	.97	432	1830	2.7	.96	130	1830	256	257	120
13	1850	2340	.94	703	1830	1.9	.91	129	1830	245	260	120
14	2020	2320	.93	702	1830	1.5	.82	131	1840	252	260	74
15	2400	2310	.94	703	1450	1.4	.81	132	1840	264	260	3.4
16	2390	2310	.94	703	591	3.0	.73	239	1840	261	260	1.9
17	2390	2300	.97	706	4.8	2.5	.78	313	1830	264	261	1.9
18	2380	2300	1.7	705	2.7	1.3	.76	313	2290	265	172	2.3
19	2370	2300	365	582	2.1	390	.72	314	2750	266	120	1.9
20	2370	2290	590	331	1.9	979	.78	314	2740	258	118	1.9
21	1860	2290	592	329	1.5	981	.84	312	2740	262	118	2.0
22	15	912	592	328	1.4	981	.60	295	2730	252	118	2.0
23	3.1	4.0	411	230	1.3	465	.58	6.6	2730	263	117	70
24	2.2	2.7	193	165	1.4	2.8	.68	1.1	2720	250	116	120
25	1.6	17	2.6	68	1.4	2.3	.64	.74	2720	258	194	121
26	1.3	3.6	2.1	3.0	5.5	2.5	.63	.68	2540	254	248	121
27	350	2.0	2.0	2.6	2.5	517	334	150	2700	255	248	122
28	1210	1.7	1.7	2.4	6.0	970	680	62	2700	227	175	123
29	1210	1.5	1.5	2.3	---	974	234	5.6	2690	259	121	207
30	1210	1.4	1.4	2.2	---	972	105	1.6	2630	247	120	259
31	1470	---	1.3	2.0	---	864	---	1.3	---	231	119	---
TOTAL	29496.7	38144.6	7662.88	6717.3	12145.6	15166.0	2282.66	5500.62	51289.6	13115	6429	2705.3
MEAN	952	1271	247	217	434	489	76.1	177	1710	423	207	90.2
MAX	2400	2350	1180	706	2040	984	680	323	2750	2060	261	259
MIN	1.3	1.4	.93	1.1	1.3	1.3	.58	.68	1.2	227	116	1.9
AC-FT	58510	75660	15200	13320	24090	30080	4530	10910	101700	26010	12750	5370
CAL YR 1986	TOTAL	121361.95	MEAN	332	MAX	2980	MIN	.67	AC-FT	240700		
WTR YR 1987	TOTAL	190654.37	MEAN	522	MAX	2750	MIN	.58	AC-FT	378200		

## RED RIVER BASIN

07312100 WICHITA RIVER NEAR MABELLE, TX--Continued

## WATER-QUALITY RECORDS

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

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: July 1968 to current year.

WATER TEMPERATURE: July 1968 to current year.

INSTRUMENTATION.--From 1968 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, 7,110 microsiemens May 13, 14, 1980; minimum daily, 561 microsiemens May 28, 1975.

WATER TEMPERATURE: Maximum daily, 32.0°C Sept. 4, 1972, June 26, July 5, 1975; minimum daily, 0.0°C Dec. 20, 1973, and Feb. 9, 17, 1980.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 5,980 microsiemens Oct. 27; minimum daily, 2,610 microsiemens Oct. 3.

WATER TEMPERATURE: Maximum daily, 28.0°C Aug. 9, 15-17, 19; minimum daily, 5.0°C Jan. 10, 11.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	HARD- NESS (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)
APR 01...	1000	667	5070	8.00	12.0	900	800	250	67
JUN 24...	1600	2720	4440	7.80	26.0	780	670	210	61
DATE	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WH WAT TOTAL 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 01...	710	11	6.6	98	740	1200	0.30	5.0	3000
JUN 24...	680	11	9.6	105	700	1100	0.30	5.7	2800

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1986 TO SEPTEMBER 1987

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. 1986	29496.7	5430	3350	267000	1400	107700	730	58300	960
NOV. 1986	38144.6	4740	2890	298000	1100	117800	640	65700	850
DEC. 1986	7662.89	4620	2810	58200	1100	22900	620	12800	830
JAN. 1987	6717.3	4840	2950	53600	1200	21300	650	11800	870
FEB. 1987	12145.6	4840	2960	96900	1200	38500	650	21300	870
MAR. 1987	15166.0	5040	3090	126000	1200	50500	680	27800	900
APR. 1987	2282.66	5380	3310	20400	1300	8230	720	4470	950
MAY 1987	5500.62	5310	3270	48500	1300	19500	720	10600	940
JUNE 1987	51289.6	4630	2820	391000	1100	154100	620	86300	840
JULY 1987	13115	4570	2780	98500	1100	38800	610	21800	830
AUG. 1987	6429	4860	2970	51600	1200	20500	650	11400	870
SEPT 1987	2705.3	5080	3110	22800	1200	9090	680	5000	910
TOTAL	190655.27	**	**	1532000	**	609000	**	337000	**
WTD. AVG.	522	4870	2980	**	1200	**	660	**	870

## RED RIVER BASIN

85

07312100 WICHITA RIVER NEAR MABELLE, TX--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
EQUIVALENT MEAN

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5630	4840	5530	5460	5180	4780	5160	5260	5310	4430	4700	4970
2	3720	4820	4490	5650	5440	5430	5730	5290	5680	4490	4700	4960
3	2610	4780	4480	5720	5140	5410	5520	5300	5600	4570	4700	4960
4	3580	4750	4470	5680	5280	4940	5560	5310	5680	4540	4710	4990
5	5080	5380	4480	5660	4220	4910	5520	5350	5690	4520	4720	5000
6	4380	5510	5070	5790	4940	4940	5500	5330	5670	4550	4720	5000
7	5420	5520	5140	5370	4800	4950	5370	5340	5620	4560	4720	5000
8	5860	5520	4920	5610	5430	4960	5630	5350	5660	4550	4740	5000
9	5890	4780	4770	5450	4850	4970	5570	5370	5040	4560	4740	5010
10	5890	4750	5650	5120	4840	4980	5760	5470	5060	4580	4730	5880
11	5690	4780	5660	5430	4840	5430	5730	5440	4940	4590	4720	5010
12	5740	4720	5700	4870	4830	5390	5770	5430	4930	4600	4740	5000
13	5660	4700	5740	4840	4830	5410	5790	5430	4770	4610	4760	5010
14	5640	4680	5760	4860	4840	5490	5900	5430	4750	4620	4760	5370
15	5600	4680	5730	4830	4840	5550	5810	5430	4700	4630	4770	5410
16	5540	4680	5720	4830	4850	5640	5670	5410	4880	4620	4780	5440
17	5460	4680	5730	4820	5170	4660	5750	5420	4780	4580	4760	5450
18	5320	4670	4850	4820	5390	5590	5750	5440	4810	4620	4800	5530
19	5370	4660	4720	4830	5440	5380	5860	5430	4920	4610	4770	5320
20	5390	4670	4560	4840	5530	5020	5860	5430	4460	4610	5220	5360
21	5280	4670	4560	4820	5470	5030	5590	5440	4590	4590	5180	5360
22	4660	4760	4640	4820	5490	5030	5780	5460	4520	4600	5170	5450
23	5720	5520	4600	4830	5490	5000	5840	3230	4470	4600	5170	5460
24	5820	5560	4600	4830	5380	5550	5720	4920	4460	4600	5170	5090
25	5870	5330	5190	4830	5470	5430	5730	5340	4380	4590	5170	5080
26	5760	5300	4980	5300	5150	5110	5720	5730	4400	4590	5180	5090
27	5980	5280	4820	5160	4460	5500	5760	3800	4370	4590	5130	5090
28	5010	5510	5250	5300	3610	5040	5240	3590	4360	4600	5160	5030
29	5040	5570	5180	5380	---	5050	5330	2750	4430	5040	5200	5100
30	5040	5650	5450	5120	---	5050	5710	3720	4410	5010	5200	5090
31	5000	---	5450	5460	---	5060	---	5010	---	5000	5180	---
MEAN	5250	5020	5090	5170	5040	5180	5650	5050	4910	4620	4910	5180

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22.0	18.0	8.0	8.0	11.0	9.0	11.0	16.0	21.0	25.0	27.0	25.0
2	24.0	17.0	10.0	9.0	11.0	10.0	12.0	20.0	20.0	25.0	27.0	25.0
3	20.0	17.0	10.0	9.0	10.0	10.0	10.0	20.0	23.0	25.0	27.0	25.0
4	21.0	18.0	10.0	8.0	11.0	9.0	11.0	20.0	18.0	26.0	27.0	25.0
5	19.0	14.0	10.0	9.0	13.0	10.0	11.0	20.0	19.0	26.0	27.0	25.0
6	18.0	14.0	12.0	9.0	9.0	10.0	11.0	20.0	22.0	26.0	27.0	25.0
7	18.0	16.0	14.0	9.0	12.0	10.0	12.0	20.0	22.0	26.0	27.0	25.0
8	20.0	16.0	11.0	11.0	10.0	10.0	12.0	20.0	21.0	26.0	27.0	25.0
9	21.0	16.0	9.0	8.0	10.0	10.0	12.0	20.0	23.0	26.0	28.0	25.0
10	20.0	16.0	10.0	5.0	8.0	10.0	14.0	20.0	23.0	26.0	27.0	20.0
11	23.0	15.0	11.0	5.0	9.0	10.0	15.0	20.0	24.0	26.0	27.0	25.0
12	21.0	15.0	10.0	9.0	9.0	10.0	16.0	20.0	24.0	26.0	27.0	24.0
13	21.0	13.0	10.0	8.0	9.0	10.0	14.0	20.0	25.0	25.0	27.0	25.0
14	19.0	13.0	12.0	8.0	10.0	12.0	11.0	21.0	25.0	25.0	27.0	23.0
15	19.0	13.0	14.0	8.0	9.0	13.0	12.0	20.0	25.0	25.0	28.0	22.0
16	---	13.0	14.0	8.0	9.0	16.0	14.0	22.0	24.0	26.0	28.0	18.0
17	19.0	13.0	14.0	7.0	9.0	13.0	16.0	23.0	25.0	25.0	28.0	21.0
18	20.0	13.0	11.0	7.0	8.0	10.0	17.0	21.0	26.0	25.0	27.0	21.0
19	19.0	13.0	10.0	6.0	9.0	12.0	18.0	23.0	25.0	26.0	28.0	19.0
20	19.0	12.0	9.0	6.0	10.0	12.0	19.0	21.0	26.0	26.0	27.0	21.0
21	19.0	12.0	9.0	6.0	10.0	12.0	16.0	23.0	26.0	26.0	27.0	19.0
22	18.0	13.0	9.0	6.0	10.0	13.0	13.0	23.0	26.0	26.0	27.0	19.0
23	20.0	13.0	9.0	6.0	10.0	13.0	13.0	19.0	26.0	26.0	27.0	18.0
24	18.0	11.0	9.0	5.0	12.0	9.0	15.0	20.0	26.0	26.0	26.0	23.0
25	16.0	12.0	10.0	6.0	12.0	10.0	17.0	20.0	26.0	26.0	27.0	23.0
26	16.0	11.0	8.0	7.0	12.0	12.0	18.0	20.0	26.0	27.0	27.0	23.0
27	---	10.0	7.0	6.0	13.0	12.0	17.0	20.0	26.0	26.0	26.0	23.0
28	18.0	10.0	9.0	8.0	9.0	12.0	16.0	20.0	26.0	26.0	25.0	23.0
29	19.0	10.0	9.0	10.0	---	11.0	17.0	18.0	26.0	27.0	25.0	22.0
30	18.0	10.0	10.0	8.0	---	10.0	16.0	20.0	25.0	27.0	25.0	22.0
31	18.0	---	9.0	10.0	---	11.0	---	23.0	---	27.0	25.0	---
MEAN	19.5	13.5	10.0	7.5	10.0	11.0	14.0	20.5	24.0	26.0	27.0	22.5

## RED RIVER BASIN

07312110 SOUTH SIDE CANAL NEAR DUNDEE, TX

LOCATION.--Lat 33°48'50", long 98°55'57", Archer County, Hydrologic Unit 11130206, on left bank 125 ft downstream from Lake Diversion headgates and 5.3 mi northwest of Dundee.

PERIOD OF RECORD.--October 1971 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,039.70 ft above National Geodetic Vertical Datum of 1929 (Wichita County Water Improvement District bench mark).

REMARKS.--No estimated daily discharges. Records good. Water diverted from Lake Diversion is used for mining, industrial, recreation and irrigation. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--16 years, 80.5 ft<sup>3</sup>/s (58,300 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 374 ft<sup>3</sup>/s July 22, 1974; maximum gage height, 8.66 ft July 23, 1978; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 308 ft<sup>3</sup>/s June 29, 30; maximum gage height, 6.85 ft June 29, 30; minimum daily discharge, 0.01 ft<sup>3</sup>/s Feb. 1-4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	103	1.7	2.8	3.9	.01	.13	2.4	104	37	307	262	149
2	103	1.7	2.4	3.9	.01	.16	2.5	104	37	304	263	136
3	103	1.7	2.3	3.4	.01	.16	2.5	104	37	234	262	134
4	103	1.8	2.2	2.3	.01	.14	2.5	105	37	178	259	133
5	103	1.7	2.1	1.1	.02	.13	2.5	104	36	181	258	132
6	103	1.7	2.0	1.1	.02	.13	2.5	106	36	181	257	132
7	103	1.6	1.8	1.1	.02	.17	2.3	108	36	180	258	131
8	103	1.6	1.6	1.1	.02	.47	2.3	120	56	180	259	131
9	67	1.6	1.6	.91	.02	109	2.3	151	126	180	260	132
10	2.6	1.7	21	.79	.02	110	2.3	153	203	180	262	130
11	1.9	1.7	37	.69	.03	104	2.2	153	126	180	261	130
12	1.9	1.6	20	.20	.06	81	1.6	152	232	180	264	131
13	1.9	1.6	3.4	.09	.11	79	1.7	152	293	180	243	131
14	2.0	1.5	3.3	.09	.13	78	33	152	295	180	227	129
15	2.0	1.5	3.1	.09	.09	78	72	151	297	180	227	130
16	2.0	1.5	3.1	.09	.10	82	61	150	299	180	225	105
17	2.0	1.5	3.0	.07	.12	78	52	151	301	180	213	90
18	2.0	1.5	2.9	.05	.11	76	53	156	300	180	185	90
19	2.0	1.5	2.8	.03	.11	80	54	177	302	180	186	90
20	2.0	1.5	2.8	.03	.11	39	52	179	305	180	185	89
21	2.0	1.4	3.9	.04	.11	3.1	52	179	307	180	181	90
22	1.9	2.0	4.8	.04	.12	3.0	52	154	306	180	181	89
23	1.7	3.1	4.9	.04	.13	2.9	51	6.9	306	180	180	108
24	1.7	3.1	5.0	.04	.13	2.6	43	3.2	306	180	180	118
25	1.7	3.1	5.0	.03	.12	2.6	22	3.6	305	180	180	118
26	1.7	3.0	5.0	.02	.15	2.8	25	3.7	307	180	178	118
27	1.7	3.0	4.9	.02	.13	2.8	56	19	306	180	184	118
28	1.7	3.0	3.9	.02	.13	2.8	60	44	306	215	172	118
29	1.7	3.0	3.9	.02	---	2.5	70	42	308	236	161	118
30	1.7	3.0	3.9	.02	---	2.5	89	39	308	249	161	118
31	1.7	---	3.9	.02	---	2.5	---	37	---	261	161	---
TOTAL	932.5	59.9	170.3	21.34	2.15	1072.12	926.6	3263.4	6456	6126	6735	3568
MEAN	30.1	2.00	5.49	.69	.08	34.6	30.9	105	215	198	217	119
MAX	103	3.1	37	3.9	.15	110	89	179	308	307	264	149
MIN	1.7	1.4	1.6	.02	.01	.13	1.6	3.2	36	178	161	89
AC-FT	1850	119	338	42	4.3	2130	1840	6470	12810	12150	13360	7080

CAL YR 1986 TOTAL 20063.54 MEAN 55.0 MAX 180 MIN .01 AC-FT 39800  
WTR YR 1987 TOTAL 29333.29 MEAN 80.4 MAX 308 MIN .01 AC-FT 58180

## RED RIVER BASIN

87

07312200 BEAVER CREEK NEAR ELECTRA, TX

LOCATION.--Lat 33°54'21", long 98°54'17", Wichita County, Hydrologic Unit 11130207, near right bank at downstream side of bridge on Farm Road 2326, 6.5 mi northwest of Kamay, 8 mi upstream from Wichita River, and 9 mi south of Electra.

DRAINAGE AREA.--652 mi<sup>2</sup>.

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

Water-quality records.--Chemical analyses: October 1968 to June 1970. Water temperatures: October 1968 to June 1970. Sediment records: April 1966 to September 1975.

GAGE.--Water-stage recorder. Datum of gage is 991.3 ft above National Geodetic Vertical Datum of 1929 (State Department of Highways and Public Transportation reference point).

REMARKS.--No estimated daily discharges. Records fair. Some regulation by Santa Rosa Lake, capacity 11,570 acre-ft, about 30 mi upstream. There are several diversions above station.

AVERAGE DISCHARGE.--27 years, 69.0 ft<sup>3</sup>/s (1.44 in/yr), 49,990 acre-ft.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,700 ft<sup>3</sup>/s Mar. 17, 1961 (gage height, 33.57 ft); maximum gage height May 29, 1987, 34.94 ft; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1925, 36.0 ft, probably occurred Oct. 2, 1941 (partly caused by breaching of Santa Rosa Dam to avoid its failure), from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 2	1230	3,960	27.79	Feb. 6	2200	1,090	20.80
Oct. 5	0600	3,960	27.79	Feb. 28	2030	1,060	20.44
Oct. 23	0830	2,730	25.46	Mar. 23	0930	2,880	25.57
Nov. 5	1100	2,320	24.60	May 29	0800	*11,600	*34.94
Nov. 26	1230	1,220	21.45	June 12	0915	1,490	23.03

Minimum discharge, 10 ft<sup>3</sup>/s Aug. 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2050	106	84	28	35	691	91	19	3190	40	16	17
2	3700	79	71	27	36	234	81	19	3080	33	16	18
3	3090	63	59	27	34	147	63	17	2350	27	17	18
4	3510	893	52	28	32	117	59	18	930	25	17	18
5	3820	2170	47	26	103	98	55	19	433	25	17	17
6	3160	820	44	26	854	87	49	17	232	25	17	16
7	2410	265	45	25	823	76	46	17	167	24	16	16
8	1360	222	133	28	337	67	43	19	134	23	15	15
9	823	198	257	101	245	60	41	19	119	21	14	15
10	484	150	137	114	220	55	39	17	135	21	15	17
11	249	121	85	63	190	51	36	17	630	21	16	15
12	187	93	71	44	158	47	33	18	1340	21	15	18
13	134	75	61	37	130	45	32	17	452	23	15	19
14	118	59	54	34	114	45	31	17	177	25	15	16
15	92	63	50	32	99	45	28	17	147	27	14	15
16	73	58	47	31	82	64	27	17	122	22	14	14
17	62	53	44	31	66	731	25	17	103	41	16	14
18	53	49	46	33	59	356	25	16	88	61	21	16
19	45	45	61	34	56	151	25	18	73	30	22	17
20	39	42	56	44	54	119	25	24	63	22	14	18
21	103	41	48	65	53	121	25	17	60	20	13	31
22	1760	38	44	120	53	1660	24	23	51	20	12	31
23	2510	37	41	124	51	2680	23	246	45	20	11	25
24	916	35	39	131	51	1090	23	323	40	20	11	17
25	492	226	37	99	58	506	21	64	38	20	12	17
26	724	1120	36	68	235	364	21	24	35	19	27	17
27	881	509	34	58	478	326	22	115	32	19	125	18
28	720	187	32	54	728	236	22	4100	29	19	69	33
29	426	126	31	52	---	158	19	11000	28	19	24	46
30	217	101	30	44	---	113	20	7680	35	18	17	29
31	139	---	29	37	---	97	---	4600	---	17	16	---
TOTAL	34347	8044	1905	1665	5434	10637	1074	28551	14358	768	659	593
MEAN	1108	268	61.5	53.7	194	343	35.8	921	479	24.8	21.3	19.8
MAX	3820	2170	257	131	854	2680	91	11000	3190	61	125	46
MIN	39	35	29	25	32	45	19	16	28	17	11	14
AC-FT	68130	15960	3780	3300	10780	21100	2130	56630	28480	1520	1310	1180
CAL YR 1986	TOTAL	83739	MEAN	229	MAX	6960	MIN	.21	AC-FT	166100		
WTR YR 1987	TOTAL	108035	MEAN	296	MAX	11000	MIN	11	AC-FT	214300		

## 07312500 WICHITA RIVER AT WICHITA FALLS, TX

LOCATION.--Lat 33°54'34", long 98°32'00", Wichita County, Hydrologic Unit 11130206, near center of stream at downstream side of bridge on Beverly Drive in Wichita Falls, 4 mi upstream from Fort Worth and Denver Railway Co. bridge, 8.4 mi upstream from Holliday Creek, and 55.3 mi upstream from mouth.

DRAINAGE AREA.--3,140 mi<sup>2</sup>, of which 2,086 mi<sup>2</sup> is above Lake Kemp Dam.

PERIOD OF RECORD.--February 1900 to January 1902 (monthly discharge only, published in WSP 1311), October 1910 to December 1911 (gage heights only), March 1938 to current year.

## WATER-DISCHARGE RECORDS

REVISED RECORDS.--WSP 1211: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 924.26 ft above National Geodetic Vertical Datum of 1929. February 1900 to February 1902 and Oct. 1, 1910, to Dec. 31, 1911, nonrecording gages at site 4 mi downstream at different datum. Mar. 30, 1938, to Dec. 1, 1959, nonrecording gage at present site and datum.

REMARKS.--No estimated daily discharges. Records good. Flow from 2,086 mi<sup>2</sup> is regulated by Lake Kemp (capacity 603,000 acre-ft) 71 mi upstream. Since completion of Lake Kemp in 1923, no outflow has been permitted to pass over spillway. Water is diverted from Lake Diversion (capacity 40,000 acre-ft), 41 mi upstream for the irrigation of 42,000 acres under permit in the vicinity of Wichita Falls. During the water year, Wichita County Water Improvement District No. 2 diverted 58,180 acre-ft from Lake Diversion for mining, industrial use, recreation, and irrigation. Gage-height telemeter at station via Sutron Data Collection Platform.

AVERAGE DISCHARGE.--50 years (water years 1901, 1939-87), 274 ft<sup>3</sup>/s (198,500 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,800 ft<sup>3</sup>/s Oct. 3, 1941 (gage height, 24.0 ft); no flow Oct. 11, 1960 (construction of cofferdam upstream).

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge, 50,000 ft<sup>3</sup>/s June 8, 1915, computed by Vernon L. Sullivan, engineer for Big Wichita River Irrigation Co.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 9,730 ft<sup>3</sup>/s June 1 at 0300 hours (gage height, 23.41 ft); minimum, 81 ft<sup>3</sup>/s May 12, Sept. 27, 28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	312	1100	418	140	182	1910	821	96	9280	2250	190	143
2	1340	1100	307	135	166	1490	805	94	7440	2320	198	134
3	2060	1210	530	132	160	559	511	92	5870	2280	215	124
4	2520	1590	886	133	151	352	208	92	4360	1960	195	121
5	2740	2070	950	128	280	560	177	88	3170	1220	180	116
6	2800	2500	990	122	740	855	166	88	1350	607	179	112
7	2900	2830	1020	119	1190	867	154	114	583	431	174	116
8	2840	2070	942	124	1250	836	147	95	442	407	166	112
9	2470	599	973	291	644	812	141	94	639	405	162	112
10	1610	431	847	374	416	873	136	102	1010	410	194	125
11	859	861	321	294	386	842	133	100	1150	415	197	133
12	573	1570	235	227	873	764	128	99	1590	387	195	124
13	690	1830	218	183	1350	400	122	100	2140	345	186	120
14	862	1940	196	168	1390	184	118	110	2350	322	159	117
15	1260	2030	180	202	1270	167	120	103	1820	296	144	118
16	1510	2100	166	277	1150	166	128	101	1560	281	138	115
17	1650	2140	160	359	1060	721	130	96	1570	289	140	116
18	1790	2130	163	430	973	1120	117	94	1580	298	148	99
19	1890	2100	167	497	853	617	120	97	1560	330	144	97
20	1960	2100	167	560	797	277	103	109	1570	300	147	106
21	2010	2080	161	583	405	226	111	117	1760	285	135	120
22	3000	2080	152	613	199	520	122	145	2000	266	128	113
23	3480	2080	146	646	175	1460	124	235	2120	237	129	107
24	3510	1950	151	705	171	2130	124	451	2200	205	128	98
25	3390	1610	199	635	167	2300	122	447	2250	202	120	89
26	2470	1880	244	509	383	1020	114	179	2240	203	125	84
27	1150	1970	243	423	918	557	104	131	2230	202	141	81
28	1160	1800	204	330	1600	445	95	2070	2220	204	158	96
29	1200	883	176	269	---	581	98	5130	2220	204	160	142
30	1340	538	158	231	---	860	97	6070	2280	210	141	119
31	1190	---	150	203	---	844	---	8600	---	194	129	---
TOTAL	58536	51172	11820	10042	19299	25315	5596	25539	72554	17965	4945	3409
MEAN	1888	1706	381	324	689	817	187	824	2418	580	160	114
MAX	3510	2830	1020	705	1600	2300	821	8600	9280	2320	215	143
MIN	312	431	146	119	151	166	95	88	442	194	120	81
AC-FT	116100	101500	23440	19920	38280	50210	11100	50660	143900	35630	9810	6760
CAL YR 1986	TOTAL	214060	MEAN	586	MAX	5810	MIN	23	AC-FT	424600		
WTR YR 1987	TOTAL	306192	MEAN	839	MAX	9280	MIN	81	AC-FT	607300		

## 07312500 WICHITA RIVER AT WICHITA FALLS, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: April 1966 to July 1975. Chemical and biochemical analyses: November 1981 to current year. Sediment analyses: April 1966 to July 1975.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1981 to current year.

WATER TEMPERATURE: October 1981 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, 9,490 microsiemens Mar. 2, 1984; minimum daily, 245 microsiemens Oct. 24, 1983.

WATER TEMPERATURE: Maximum daily, 35.0°C July 21, 1982, July 4, 1983, and June 15, 16, 1984; minimum daily, 0.0°C Dec. 21, 30, 1983 and Feb. 2, 1985.

## EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 7,700 microsiemens Apr. 28, 29; minimum daily, 398 microsiemens May 31.

WATER TEMPERATURE: Maximum daily, 30.0°C Aug. 11, 12, 25; minimum daily, 3.0°C Jan. 18.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	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 (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3
OCT										
03...	1245	2060	515	7.50	25.0	--	--	--	120	36
NOV										
13...	1530	1830	4500	7.90	8.0	10.4	91	1.4	780	690
JAN										
08...	1515	121	7200	7.80	8.5	10.3	94	1.3	1400	1100
MAR										
04...	1200	347	3000	8.20	12.0	--	--	--	570	410
06...	1520	884	4310	7.80	14.0	9.7	99	1.0	780	660
24...	1400	2170	1720	8.80	14.0	--	--	--	330	240
APR										
21...	1335	112	7080	7.80	18.5	--	--	--	--	--
MAY										
20...	1600	116	6700	7.70	27.0	10.3	139	2.7	1200	1000
29...	1145	5300	474	9.50	18.0	--	--	--	100	33
JUL										
10...	0920	354	5000	7.70	27.0	6.6	88	0.3	1000	870
AUG										
26...	1500	126	5850	7.70	29.0	8.4	116	0.7	1100	910

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 WH WAT TOTAL 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									
03...	34	9.7	56	2	4.7	89	27	99	0.20
NOV									
13...	220	57	680	11	7.5	99	630	1100	0.30
JAN									
08...	320	140	990	12	6.0	302	570	2000	0.30
MAR									
04...	140	54	370	7	5.4	157	240	710	0.30
06...	210	62	670	11	6.9	118	560	1100	0.30
24...	86	28	220	5	4.8	89	180	400	0.20
APR									
21...	--	--	--	--	--	220	--	--	--
MAY									
20...	280	120	1000	13	6.9	192	660	1900	0.30
29...	27	7.9	51	2	4.6	67	21	90	0.20
JUL									
10...	260	85	700	10	7.0	133	650	1200	0.30
AUG									
26...	260	110	810	11	7.6	194	740	1300	0.30

## RED RIVER BASIN

07312500 WICHITA RIVER AT WICHITA FALLS, TX--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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- PHORUS, TOTAL (MG/L AS P)
OCT 03...	10	290	--	--	--	--	--	--	--
NOV 13...	7.5	2800	--	<0.010	<0.100	0.070	0.83	0.90	0.070
JAN 08...	9.7	4200	0.190	0.010	0.200	0.220	0.18	0.40	0.020
MAR 04...	7.8	1600	--	--	--	--	--	--	--
06...	5.4	2700	--	0.010	<0.100	0.140	0.66	0.80	0.070
24...	6.4	980	--	--	--	--	--	--	--
APR 21...	--	--	--	--	--	--	--	--	--
MAY 20...	0.7	4100	--	<0.010	<0.100	0.120	0.88	1.0	0.090
29...	6.3	250	--	--	--	--	--	--	--
JUL 10...	8.3	3000	--	<0.010	<0.100	0.090	0.51	0.60	0.020
AUG 26...	10	3400	--	<0.010	<0.100	0.070	0.43	0.50	0.020

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1986 TO SEPTEMBER 1987

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. 1986	58536	2680	1570	249000	680	107800	270	43300	490
NOV. 1986	51172	4160	2450	338000	1100	147300	430	59300	770
DEC. 1986	11820	4890	2910	93000	1300	40700	520	16500	910
JAN. 1987	10042	4840	2880	78100	1300	34200	510	13800	900
FEB. 1987	19299	3610	2120	110000	920	47800	370	19200	660
MAR. 1987	25315	2970	1730	118000	750	51000	300	20400	540
APR. 1987	5596	5920	3590	54300	1600	24000	650	9770	1100
MAY 1987	25539	1290	760	52400	330	22800	130	9190	240
JUNE 1987	72554	2770	1620	317000	700	137000	280	55000	510
JULY 1987	17965	4880	2900	141000	1300	61600	510	24900	910
AUG. 1987	4945	5630	3380	45200	1500	19900	600	8070	1100
SEPT 1987	3409	5710	3440	31700	1500	14000	620	5660	1100
TOTAL	306192	**	**	1627000	**	708000	**	285000	**
WTD. AVG.	839	3340	1970	**	860	**	340	**	620

## RED RIVER BASIN

91

07312500 WICHITA RIVER AT WICHITA FALLS, TX--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
EQUIVALENT MEAN

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4990	4470	4230	6250	5170	1650	4420	7520	960	4600	5410	6080
2	752	4600	4430	6390	5650	1480	4590	7390	1270	4390	5450	5900
3	604	4920	4520	6520	5980	2250	4700	7440	1150	4600	5430	5600
4	724	4260	4480	6670	6010	3080	4830	7380	980	4660	5590	5710
5	672	3390	4510	6650	3420	4020	5200	7610	1130	4700	5620	6090
6	539	2900	4540	6650	2950	4230	5920	7420	1750	4940	5680	5730
7	535	2950	4550	7000	2000	3990	6220	6840	2220	5030	5710	5810
8	772	3630	4520	7090	1450	4140	6470	7070	2740	5110	5780	5870
9	1060	3480	4840	3940	2390	4270	6680	7240	3450	5000	5740	5900
10	1610	3460	4260	4530	2710	4320	6750	7100	3760	5020	5570	5880
11	1790	4350	4250	4760	2890	4430	6850	7220	3740	5070	5520	5250
12	2750	4660	4570	5710	3960	4440	6980	7130	3950	5100	5530	4550
13	3900	4690	4630	5420	4100	4850	7110	6930	1940	5070	5190	5580
14	5000	4680	5230	5210	4100	4950	7190	7040	2310	5220	5560	5930
15	5360	4700	5520	5560	4130	5650	7280	6610	3760	5270	5650	5910
16	5360	4690	5760	4660	4200	6260	7150	6900	3770	5300	5750	5810
17	5390	4700	5860	4680	4240	2650	6760	6840	3860	5360	5710	6050
18	5340	4720	5860	4610	4280	2310	7170	6820	4000	5470	5700	5700
19	5390	4730	6160	4700	4360	2390	7050	6990	4130	5450	5720	6000
20	5440	4720	6750	4790	4410	3040	7360	6640	4200	6030	5690	6030
21	5360	4750	6500	4800	4570	3970	7220	6960	4450	5340	5580	5700
22	4450	4760	6550	4740	4790	3360	7340	6750	4460	5350	5500	5870
23	3160	4770	6590	4840	5420	1700	7110	4950	4560	5260	5590	5800
24	2920	4820	6730	4210	5690	1770	7060	3930	4590	5430	5720	5740
25	2660	4380	6970	4070	6010	2430	6850	3960	4630	5550	5760	5820
26	2050	3370	5280	4040	4010	2270	7210	3070	4680	5450	5760	5950
27	1480	2660	5210	4230	3670	2720	7540	4910	4660	5430	5620	6090
28	1260	2870	5310	4430	2190	2930	7700	1100	4640	5440	5450	5560
29	2240	3520	5580	4800	---	3430	7700	548	4630	5460	5910	5780
30	3400	4020	5810	5160	---	4160	7560	457	4570	5510	6260	3900
31	4170	---	6050	5290	---	4280	---	398	---	5440	5740	---
MEAN	2940	4150	5360	5240	4100	3470	6670	5780	3360	5200	5640	5720

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26.0	19.0	8.0	9.0	12.0	11.0	15.0	25.0	21.0	25.0	29.0	27.0
2	24.5	17.0	10.5	8.0	14.0	12.0	12.0	22.0	23.0	25.0	28.0	23.0
3	25.0	16.0	10.0	8.0	15.0	14.0	14.0	23.0	24.0	28.0	27.0	23.0
4	23.0	15.5	9.5	7.5	16.0	14.5	15.0	21.0	21.0	27.0	27.0	22.0
5	21.0	16.0	10.0	9.0	11.0	14.0	12.0	21.0	22.0	26.0	27.0	26.0
6	21.0	14.5	10.5	11.0	8.5	16.0	18.0	20.0	---	27.5	27.0	26.0
7	20.0	16.5	12.0	9.0	8.5	13.5	15.5	19.0	24.0	26.0	27.0	24.0
8	20.0	15.5	10.0	9.0	8.5	15.0	18.5	25.0	24.0	26.0	28.0	27.0
9	21.5	14.5	8.0	9.0	10.0	---	14.0	22.0	23.0	26.0	28.0	26.0
10	21.0	14.0	7.0	6.0	12.5	12.0	19.0	28.0	24.0	26.0	28.0	26.0
11	21.0	12.0	8.0	5.5	14.0	12.0	19.0	28.0	24.0	---	30.0	26.0
12	17.0	9.0	9.0	8.5	14.0	12.0	19.0	27.5	25.0	27.0	30.0	28.0
13	16.0	8.5	8.0	8.0	14.0	14.0	17.0	28.0	25.0	25.0	28.0	24.0
14	17.0	9.0	9.0	11.0	13.0	13.0	18.0	28.0	26.0	23.0	27.0	27.0
15	19.0	13.0	11.5	8.0	13.0	16.0	19.0	26.0	26.0	24.0	28.0	27.0
16	18.0	10.0	12.0	5.5	9.5	18.0	22.0	25.0	27.0	25.0	28.0	26.5
17	20.0	13.0	12.0	6.5	9.0	15.5	23.0	26.0	27.0	25.0	27.0	28.0
18	18.5	11.0	10.5	3.0	10.0	14.0	22.0	25.0	27.0	27.0	26.0	22.0
19	19.0	13.0	11.0	4.0	9.0	15.0	22.5	25.0	27.0	27.0	27.0	21.0
20	19.5	12.0	9.0	3.5	8.0	18.0	21.0	21.0	27.0	26.0	27.0	24.0
21	18.0	12.5	10.0	4.0	8.5	16.0	18.0	24.0	29.0	26.0	27.0	25.0
22	19.0	13.0	9.0	4.5	12.0	---	16.0	24.0	26.0	26.0	27.0	24.0
23	18.5	10.5	10.5	5.0	12.0	13.0	17.0	22.0	26.5	26.0	28.0	24.0
24	18.0	10.0	10.0	4.0	11.0	13.0	19.0	21.5	27.0	26.0	29.5	25.0
25	17.0	9.0	9.5	4.5	11.0	13.0	21.0	22.0	26.5	28.0	30.0	25.0
26	---	8.0	10.0	6.0	11.5	12.0	25.5	23.0	29.0	27.0	27.0	---
27	17.5	---	8.0	8.0	13.5	14.5	26.0	24.0	27.0	26.0	24.0	23.0
28	18.0	9.0	8.0	8.0	10.0	12.0	26.0	20.0	26.0	26.0	25.0	23.0
29	18.0	9.0	9.5	11.0	---	9.5	26.5	17.0	25.0	26.0	27.0	23.0
30	16.0	9.0	9.5	11.0	---	9.0	26.0	20.0	25.0	26.5	25.0	21.0
31	16.0	---	8.0	8.0	---	12.0	---	23.0	---	26.5	26.0	---
MEAN	19.5	12.5	9.5	7.0	11.5	13.5	19.0	23.5	25.5	26.0	27.5	24.5

## RED RIVER BASIN

## 07312700 WICHITA RIVER NEAR CHARLIE, TX

LOCATION.--Lat 34°03'11", long 98°17'47", Clay County, Hydrologic Unit 11130206, on right bank at upstream side of bridge on Farm Road 810, 3.0 mi southeast of Charlie, and 5.7 mi northwest of Petrolia.

DRAINAGE AREA.--3,439 mi<sup>2</sup>, of which 2,086 mi<sup>2</sup> is above Lake Kemp Dam and 143 mi<sup>2</sup> is above Lake Wichita Dam.

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

GAGE.--Water-stage recorder. Datum of gage is 872.71 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for period of estimated discharge, which are poor. For statement regarding regulations and diversions, see station 07312500. Records furnished by the city of Wichita Falls show that 13,230 acre-ft were returned to river above this station as sewage effluent and filter plant washwater. Several observation of water temperature were made during the year.

AVERAGE DISCHARGE.--20 years, 319 ft<sup>3</sup>/s (231,100 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,620 ft<sup>3</sup>/s June 4, 1987 (gage height, 24.36 ft); minimum, 24 ft<sup>3</sup>/s Feb. 18, 1978, result of freeze-up.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,620 ft<sup>3</sup>/s June 4 at 1830 hours (gage height, 24.36 ft); minimum, 125 ft<sup>3</sup>/s May 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	638	e1260	e560	e165	326	2630	1060	191	5100	2530	282	241
2	795	e1260	e445	e145	317	2000	1030	193	5310	2480	274	241
3	1730	e1350	e335	e140	263	1500	996	157	5640	2710	267	223
4	2250	e1650	e600	e140	243	703	656	152	6470	2550	260	205
5	2560	e2000	e940	e138	660	510	327	143	6460	2330	249	199
6	2810	e2350	e1050	e135	1320	832	276	134	5690	1820	242	189
7	2940	e2700	e1200	e135	1180	1050	257	183	3190	1180	241	188
8	3070	e3000	e1300	e135	1460	1040	243	271	1130	729	238	184
9	3080	e2200	e1050	e150	1350	1020	233	137	812	640	224	180
10	2680	e660	e1100	e300	871	1000	223	128	1030	615	237	189
11	1770	e490	e900	e475	587	1080	216	139	1380	602	280	223
12	1100	e900	e360	e420	551	1080	209	158	1490	594	273	220
13	827	e1700	e280	338	1090	963	200	167	2220	576	269	256
14	971	e1950	e250	229	1500	487	192	153	2590	559	281	206
15	1210	e2070	e220	278	1540	341	185	152	2470	501	273	208
16	1550	e2200	e195	327	1450	333	185	165	2140	476	255	210
17	1700	e2250	e180	430	1350	905	200	164	1830	459	251	210
18	1810	e2280	e175	543	1260	1270	218	154	1760	472	287	201
19	1920	e2290	e180	595	1150	1260	200	142	1810	477	271	176
20	1970	e2290	e180	722	1020	653	198	175	1780	484	243	163
21	2000	e2200	e178	781	922	449	187	177	1770	485	239	178
22	2640	e2180	e175	827	485	471	218	179	1870	426	224	215
23	3550	e2150	e165	839	319	1140	215	416	2040	376	209	169
24	3700	e2150	e155	912	288	1840	207	608	2160	353	205	170
25	3640	e2010	e180	920	303	2160	206	797	2260	313	209	163
26	2530	e1940	e245	800	522	2170	203	531	2330	290	197	158
27	1520	e2120	e290	671	1290	1560	195	227	2340	290	234	155
28	1490	e2300	e290	555	1960	833	188	1680	2330	292	254	174
29	1570	e2100	e230	447	---	648	184	4280	2320	282	255	234
30	1540	e900	e200	370	---	782	190	4910	2350	275	259	242
31	1420	---	e185	325	---	1080	---	4940	---	284	266	---
TOTAL	62981	56900	13793	13387	25577	33790	9297	22003	82072	26450	7748	5970
MEAN	2032	1897	445	432	913	1090	310	710	2736	853	250	199
MAX	3700	3000	1300	920	1960	2630	1060	4940	6470	2710	287	256
MIN	638	490	155	135	243	333	184	128	812	275	197	155
AC-FT	124900	112900	27360	26550	50730	67020	18440	43640	162800	52460	15370	11840
CAL YR 1986	TOTAL	253304	MEAN 694	MAX 5610	MIN 46	AC-FT 502400						
WTR YR 1987	TOTAL	359968	MEAN 986	MAX 6470	MIN 128	AC-FT 714000						

e Estimated.

## 07314000 LAKE KICKAPOO NEAR ARCHER CITY, TX

LOCATION.--Lat 33°39'47", long 98°46'43", Archer County, Hydrologic Unit 11130209, on intake tower near left end of dam on North Fork Little Wichita River, 8.2 mi south of Mankins, and 9.2 mi northwest of Archer City.

DRAINAGE AREA.--275 mi<sup>2</sup>.

PERIOD OF RECORD.--February 1946 to current year. Prior to October 1965, monthend contents only.  
Water-quality records.--Chemical analyses: October 1969 to September 1984.

REVISED RECORDS.--WSP 1211: Drainage area.

GAGE.--Nonrecording gage read twice daily prior to Feb. 17, 1974, once daily thereafter. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by city of Wichita Falls). Prior to Oct. 8, 1946, water-stage recorder at same site and datum.

REMARKS.--The lake is formed by a rolled earthfill dam 8,200 ft long, including a 483-foot-wide reinforced concrete ogee-type uncontrolled spillway near right end of dam. The dam was completed Dec. 15, 1945, and storage began Feb. 1, 1946. The service outlet consists of two gate-controlled 4- by 5-foot conduits. The dam and lake are owned by the city of Wichita Falls, which uses the water for their municipal supply. The capacity table is based on Geological Survey topographic maps, dated 1929. The capacity curve, dated November 1946, was entitled "Lake Kickapoo Area & Capacity Curve". 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.....	1,062.0	-
Design flood (2-foot freeboard).....	1,060.0	221,000
Crest of spillway.....	1,045.0	106,000
Lowest gated outlet (invert).....	1,000.92	0

COOPERATION.--Capacity curve, record of lake elevations, and diversions for municipal use are provided by the city of Wichita Falls.

EXTREMES (at 0800) FOR PERIOD OF RECORD.--Maximum contents, 134,300 acre-ft Aug. 2, 1950 (elevation, 1,049.2 ft); minimum observed since first filling in July 1950, 35,660 acre-ft June 30, 1953 (elevation, 1,029.8 ft).

EXTREMES (at 0800) FOR CURRENT YEAR.--Maximum contents, 113,800 acre-ft May 29-31 (elevation, 1,046.2 ft); minimum, 94,820 acre-ft Sept. 29, 30 (elevation, 1,043.2 ft).

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

1,042.0	87,700	1,046.0	112,500
1,044.0	99,700	1,048.0	126,000

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
OBSERVATION AT 08:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	106600	108600	109200	107300	108600	107300	107300	104700	111800	106000	101600	97870
2	108600	108000	109900	108000	108000	110600	107300	104700	111200	106000	101600	97870
3	109200	108000	109200	108000	108000	110600	106600	104100	109900	106000	101600	97870
4	109200	108600	108600	108000	108000	109900	106600	103500	109200	106000	101000	97870
5	109200	108000	108600	107300	108000	109900	106600	103500	108600	106000	101000	97870
6	109900	108000	108600	108000	108000	109900	106000	102800	108600	106000	100300	97870
7	109900	108600	108600	108000	108000	109900	106000	102800	108600	106000	101000	97870
8	109900	108600	108000	108000	108000	108600	106000	102800	108600	106000	101000	97870
9	108600	108600	108000	108000	109200	108000	106000	102800	108000	106000	100300	97870
10	108600	108000	108000	108000	109200	108000	106000	102200	108000	106000	101000	97870
11	108600	108000	108000	108000	109200	108000	106000	102200	108000	106000	101000	97260
12	108600	108600	108000	108600	108600	108000	106000	102200	108000	105400	101000	97260
13	108000	108000	108000	108000	108600	108000	107300	102200	108000	105400	101000	97260
14	108000	108600	108000	108000	108600	108000	106600	102200	108600	105400	101000	97260
15	108000	108000	108000	108000	108600	108000	105400	102200	108600	105400	100300	97260
16	107300	108000	108000	108000	108600	108600	105400	101600	108600	104700	100300	97260
17	107300	107300	108000	108000	108000	110600	104700	102200	108600	104700	100300	97260
18	107300	107300	108000	108000	107300	110600	104700	102200	108600	105400	100300	97260
19	106600	107300	108000	108000	107300	109900	105400	102200	108600	105400	99700	96040
20	106600	107300	108000	108000	107300	109900	105400	102200	108600	104100	99090	96040
21	108600	107300	108000	108000	107300	108000	105400	102200	108600	104700	99090	96040
22	109900	107300	108000	108600	107300	109200	105400	102200	108600	104700	99090	96040
23	109900	107300	108000	109900	107300	109200	105400	102200	108000	104100	99090	96040
24	109900	106600	108000	108600	108000	109900	105400	102200	108000	104100	97260	95430
25	109900	107300	108000	108000	107300	109900	105400	102200	108000	104100	97260	95430
26	109900	110600	108000	108000	108000	109900	105400	102200	107300	104100	97260	95430
27	109200	111200	108000	108600	107300	109200	104700	102200	106600	102200	97260	95430
28	108600	109900	108000	108600	107300	109900	104700	102800	106600	102200	97260	96040
29	108600	109900	107300	108600	---	109200	104700	113800	106000	102200	97260	94820
30	108600	109200	107300	108600	---	109200	104700	113800	106600	102200	97260	94820
31	108600	---	107300	108600	---	109200	---	113800	---	101600	97870	---
MAX	109900	111200	109900	109900	109200	110600	107300	113800	111800	106000	101600	97870
MIN	106600	106600	107300	107300	107300	107300	104700	101600	106000	101600	97260	94820
(+)	1045.4	1045.5	1045.2	1045.4	1045.2	1045.5	1044.8	1046.2	1045.1	1044.3	1043.7	1043.2
(Φ)	+1300	+600	-1900	+1300	-1300	+1900	-4500	+9100	-7200	-5000	-3730	-3050
(++)	83.5	101	71.7	83.8	112	65.0	127	127	93.8	118	148	205

CAL YR 1986 MAX 113800 MIN 81450 (Φ) +17830 (++) 1230  
WTR YR 1987 MAX 113800 MIN 94820 (Φ) -12480 (++) 1334

(+) Elevation, in feet, at end of month.  
(Φ) Change in content, in acre-feet.  
(++) Diversions, in acre-feet, for municipal use.

## RED RIVER BASIN

## 07314500 LITTLE WICHITA RIVER NEAR ARCHER CITY, TX

LOCATION.--Lat 33°39'45", long 98°36'46", Archer County, Hydrologic Unit 11130209, on left bank at downstream side of bridge on State Highway 79, 1.5 mi downstream from confluence of North and Middle Forks, and 4.8 mi north of Archer City.

DRAINAGE AREA.--481 mi<sup>2</sup>, of which 275 mi<sup>2</sup> is above Lake Kickapoo.

PERIOD OF RECORD.--May 1932 to January 1956, August 1966 to current year.

Water-quality records.--Chemical analyses: January 1953 to January 1956. Water temperatures: January 1953 to January 1956. Sediment records: May 1968 to September 1975.

REVISED RECORDS.--WSP 827: 1932-35. WSP 1211: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 934.72 ft above National Geodetic Vertical Datum of 1929. Aug. 17, 1954, to Jan. 6, 1956, nonrecording gage at present site and datum.

REMARKS.--Records fair except those for estimated daily discharge, which are poor. Some regulation by Lake Kickapoo (station 07314000) on North Fork Little Wichita River. Records furnished by the City of Wichita Falls show that 1,334 acre-ft were diverted from Lake Kickapoo for municipal use during the current year. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--13 years (water years 1933-45) prior to completion of Lake Kickapoo, 110 ft<sup>3</sup>/s (79,700 acre-ft/yr); 31 years (water years 1946-55, 1967-87) regulated, 46.6 ft<sup>3</sup>/s (33,760 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,900 ft<sup>3</sup>/s Oct. 31, 1941 (gage height, 26.18 ft); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 1930 reached a stage of about 28 ft, from information by State Department of Highways and Public Transportation.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,050 ft<sup>3</sup>/s May 31 at 2200 hours (gage height, 23.01 ft); no flow for several days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.0	e51	170	6.2	e34	1060	8.4	.03	1930	2.3	.02	16
2	159	e47	177	9.4	e53	1120	4.6	.03	1410	2.0	.02	4.8
3	77	e42	61	3.8	e42	670	6.0	.03	805	2.0	.02	3.7
4	253	e41	36	37	e221	336	4.7	.02	288	1.2	.00	2.5
5	317	e71	28	6.8	e360	218	2.9	.02	139	.54	.01	1.7
6	350	e258	21	3.7	e208	151	2.6	.02	85	.22	.00	.89
7	401	e334	22	2.6	e94	102	2.3	.03	53	.07	.00	.35
8	304	e218	58	2.8	e59	76	3.5	.02	37	.06	.00	.08
9	195	e141	63	28	e82	54	2.5	.02	23	.05	.01	.05
10	119	e98	53	149	e108	44	2.2	.01	16	.05	.02	.04
11	81	e66	28	e87	e102	30	1.9	.01	18	.05	.02	.03
12	97	e74	20	46	81	14	2.9	.02	193	.04	.02	.04
13	63	e94	15	37	62	8.6	1.9	.01	536	.61	.03	.07
14	28	e60	8.5	28	56	7.4	59	.01	104	.08	.07	1.3
15	17	e44	7.1	28	51	7.4	58	.01	62	.05	.04	6.0
16	7.9	e39	6.5	30	93	9.0	5.3	.01	35	.05	.02	5.7
17	5.7	e33	6.3	24	33	234	2.3	.01	22	2.1	.01	7.6
18	5.2	e30	22	e39	24	486	1.3	.00	59	3.0	.00	3.5
19	3.9	e37	107	e78	7.3	359	.71	.02	37	1.6	.0	1.5
20	2.7	e41	80	e42	5.1	195	.30	.02	46	.70	.0	.47
21	2.4	e35	55	e15	5.3	144	.25	.02	67	.18	.0	.15
22	357	e30	40	e37	6.7	100	.71	.03	38	.06	.0	.08
23	713	e29	37	e41	12	85	2.2	.03	25	.04	.0	.07
24	555	e29	33	e63	6.7	220	.85	.03	14	.03	.00	.07
25	e356	e128	23	e66	8.3	97	.23	2.5	11	.02	.00	.06
26	e214	e641	18	e108	116	25	.09	1.0	18	.02	.01	.05
27	e130	e700	17	e115	384	34	.06	1.9	5.9	.02	1.6	.04
28	e97	e706	12	e68	574	19	.05	.79	3.7	.02	9.7	.04
29	e77	e450	8.8	e26	---	91	.05	755	3.0	.02	2.9	.09
30	e65	242	10	e17	---	54	.04	1320	3.0	.02	.58	1.5
31	e57	---	7.2	e15	---	30	---	1870	---	.02	9.0	---
TOTAL	5113.8	4809	1250.4	1259.3	2888.4	6080.4	177.84	4029.86	6086.6	17.22	24.10	58.47
MEAN	165	160	40.3	40.6	103	196	5.93	130	203	.56	.78	1.95
MAX	713	706	177	149	574	1120	59	1870	1930	3.0	9.7	16
MIN	2.4	29	6.3	2.6	5.1	7.4	.04	.00	3.0	.02	.00	.03
AC-FT	10140	9540	2480	2500	5730	12060	353	7990	12070	34	48	116

CAL YR 1986 TOTAL 28733.05 MEAN 78.7 MAX 1370 MIN .00 AC-FT 56990  
WTR YR 1987 TOTAL 31795.16 MEAN 87.1 MAX 1930 MIN .00 AC-FT 63070

e Estimated.

## 07314800 LAKE ARROWHEAD NEAR HENRIETTA, TX

LOCATION.--Lat 33°45'51", long 98°22'17", Clay County, Hydrologic Unit 11130209, at intake tower near center of dam on Little Wichita River, 2.3 mi upstream from Lake Creek, 11 mi southwest of Henrietta, and 12.3 mi southeast of Wichita Falls.

DRAINAGE AREA.--822 mi<sup>2</sup>.

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

GAGE.--Water-stage recorder. Datum of gage is 0.40 ft below National Geodetic Vertical Datum of 1929.

REMARKS.--The lake is formed by a rolled earthfill dam 15,900 ft long, including an uncontrolled reinforced concrete ogee spillway 1,581 ft wide located near the left end of dam. The dam was completed in December 1966 and storage began in June 1967. The service outlet works, located in a cylindrical service tower at upstream side of dam, consist of two gated 5-foot-diameter inlets that can be used for controlled releases. The dam was built by the city of Wichita Falls to impound water for municipal, industrial, and recreational uses. The area-capacity curves are based on Geological Survey topographic maps. 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.....	944.4	-
Design flood.....	939.95	551,400
Crest of spillway (top of conservation pool).....	926.4	262,100
Lowest gated outlet (invert).....	874.1	-

COOPERATION.--Capacity table provided by Homer Hunter and Associates and Biggs and Mathews, Consulting Engineers, for the city of Wichita Falls. Area-capacity curves provided by Homer Hunter and Associates. Record of diversions provided by the city of Wichita Falls.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 279,200 acre-ft June 10, 1985 (gage height, 927.43 ft); minimum since first appreciable storage, 4,640 acre-ft Aug. 31 to Sept. 4, 1967.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 270,800 acre-ft June 3 (gage height, 926.93 ft); minimum, 234,500 acre-ft Sept. 30 (gage height, 924.63 ft).

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

922.0	197,000	926.0	255,700
924.0	225,200	928.0	288,900

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	260800	261100	264500	260900	262300	269700	256300	254900	268200	264200	247700	240600
2	261000	260800	264700	262000	262500	268900	257600	254900	270000	263300	247400	239800
3	262300	260700	264300	259100	262500	268700	258100	253900	269900	260500	247100	239500
4	261500	262000	264100	260300	262800	267500	256800	253600	269400	260300	246500	239100
5	262500	263400	263900	260200	262900	265900	257100	256500	268500	261000	247100	238800
6	263900	263100	263700	260000	262900	265200	257300	255700	267200	259200	246900	238000
7	264100	263800	263700	258600	263600	264400	257300	257800	266400	259100	246500	238000
8	264100	263100	263700	259500	262900	263400	257600	257600	266200	257900	245700	237800
9	263400	263400	262900	260200	263400	261500	257900	257100	265700	257600	245700	238000
10	263700	260300	262800	260200	263100	261600	257300	256500	265400	257000	244900	237500
11	261500	262300	263300	260800	262800	261900	257900	256700	265400	256800	245700	236800
12	262900	258800	263600	261000	262900	261500	257300	256300	267000	255700	245500	237100
13	262500	259900	262600	261300	262900	261800	257000	256800	268700	255400	244800	237700
14	263000	261600	262300	260700	262800	261300	256500	256200	268900	255400	244100	237400
15	260600	262200	262100	260200	261000	261500	256700	255900	267900	255400	244000	238000
16	261500	261200	262100	259700	260200	260300	257000	255500	267500	255700	243200	237800
17	261000	262300	261800	261000	260300	260800	257600	255200	267400	256300	242900	237200
18	260800	261000	262300	260800	259900	261500	257500	254700	266600	254900	242900	236500
19	261100	260400	262600	260700	260000	262100	257600	254300	267400	254300	242400	236600
20	260800	260400	262900	260800	260200	261800	256300	254900	266100	253600	242100	235900
21	261800	261200	261900	261000	260500	260800	256300	254400	265900	253600	241500	235700
22	262500	261500	261600	261500	260300	262100	256800	253800	265900	253000	241400	235300
23	263300	260300	262100	261500	260200	259500	256700	253900	265700	252900	240000	235900
24	264400	260100	262400	261000	260300	259400	256700	255200	264200	252900	239400	236200
25	264400	263000	261800	261300	260700	259700	256500	255200	263700	252200	239400	235900
26	264500	264300	262400	261500	261800	259900	256300	255200	263400	251300	238900	235400
27	263900	265900	261900	261100	265100	259900	256200	254900	264100	250400	239200	235300
28	263900	267000	260800	262400	269700	257300	256200	261300	263900	249900	239400	234800
29	262800	266800	261500	261800	---	256700	255900	263400	263400	249000	239400	234800
30	263500	266100	261600	261100	---	258400	255200	266200	262400	248600	239100	234500
31	262600	---	262100	261800	---	259100	---	267700	---	248000	239500	---
MAX	264500	267000	264700	262400	269700	269700	258100	267700	270000	264200	247700	240600
MIN	260600	258800	260800	258600	259900	256700	255200	253600	262400	248000	238900	234500
(↑)	926.43	926.65	926.40	926.38	926.88	926.21	925.97	926.74	926.42	925.51	924.96	924.63
(Φ)	+2400	+3500	-4000	-300	+9700	-10600	-3900	+12500	-5300	-14400	-8500	-5000
(↑↑)	1238	1283	1297	1318	1122	1198	1574	1931	1678	2461	2725	1819
CAL YR 1986	MAX 268200	MIN 214500	(Φ) +37300	(↑↑) 20194								
WTR YR 1987	MAX 270000	MIN 234500	(Φ) -25700	(↑↑) 19644								

(↑) Elevation, in feet, at end of month.

(Φ) Change in contents, in acre-feet.

(↑↑) Diversions, in acre-feet, for municipal use by city of Wichita Falls.

## RED RIVER BASIN

## 07314900 LITTLE WICHITA RIVER ABOVE HENRIETTA, TX

LOCATION.--Lat 33°49'36", long 98°14'23", Clay County, Hydrologic Unit 11130209, on right bank at downstream side of bridge on U.S. Highways 822 and 287, 1.0 mi downstream from Duck Creek, 2.8 mi west of Henrietta, 6.6 mi upstream from Turkey Creek, and 7.6 mi upstream from Dry Fork Little Wichita River.

DRAINAGE AREA.--1,037 mi<sup>2</sup>.

PERIOD OF RECORD.--January 1953 to current year. Prior to October 1974, published as "near Henrietta".

Water-quality records.--Chemical analyses: December 1952 to January 1956, November 1959 to September 1966. January 1968 to September 1985.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 831.57 ft above National Geodetic Vertical Datum of 1929. Prior to June 26, 1953, nonrecording gage. Prior to July 11, 1975, at site 2.6 mi downstream at same datum.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Flow largely regulated by Lake Arrowhead 39 mi upstream (capacity 262,100 acre-feet). The city of Wichita Falls diverted 1,334 acre-feet from Lake Kickapoo and 19,644 acre-feet from Lake Arrowhead for municipal uses, and returned 13,230 acre-feet as sewage effluent and filter plant washwater to the Wichita River below station 07312500 at Wichita Falls and above station 07312700 near Charlie. The City of Henrietta diverted 408 acre-feet from pool at gage for municipal use. Records of diversions are furnished by the cities of Wichita Falls and Henrietta, respectively.

AVERAGE DISCHARGE.--13 years (water years 1954-66) prior to completion of Lake Arrowhead, 124 ft<sup>3</sup>/s (89,840 acre-ft/yr); 21 years (water years 1967-87) regulated, 48.1 ft<sup>3</sup>/s (34,850 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,630 ft<sup>3</sup>/s May 1, 1966 (gage height, 18.28 ft, at former site); maximum gage height, 23.95 ft May 24, 1982, at present site; no flow at times each year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1908 reached a stage of 21 ft at former site, from information by State Department of Highways and Public Transportation.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,300 ft<sup>3</sup>/s Mar. 2 at 0430 hours (gage height, 22.36 ft); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.3	145	652	18	149	2090	11	.02	760	8.3	6.2	e12
2	8.7	62	438	12	181	2260	18	.0	896	5.4	.11	e9.8
3	16	24	357	142	190	2110	15	.0	994	3.6	.00	e8.3
4	31	59	294	25	180	1930	9.8	.0	997	2.9	.00	e5.2
5	33	164	221	10	292	1700	8.9	.0	926	4.4	.00	e.45
6	63	186	208	63	737	1290	8.2	.0	738	13	.00	e.00
7	133	271	243	15	766	762	6.6	.0	500	13	.00	e.00
8	202	268	209	5.5	589	474	5.3	.0	333	8.2	.00	e.00
9	221	192	241	19	392	329	4.2	.0	247	5.6	.00	e.00
10	186	112	221	21	403	162	3.8	.0	188	4.0	.00	.00
11	196	79	172	22	390	143	3.5	.0	173	3.0	.00	.00
12	153	62	172	64	248	152	3.9	.0	130	2.4	.00	.00
13	53	50	130	56	198	132	3.4	.0	200	3.2	.00	.00
14	82	18	153	60	227	190	2.1	.0	443	2.1	.00	.00
15	61	46	112	60	170	169	2.2	.0	543	1.1	.00	.00
16	35	36	61	22	58	99	2.4	.0	425	.27	.00	.00
17	26	19	42	17	39	189	2.4	.0	302	.06	.00	.00
18	21	13	39	29	47	206	1.2	.0	240	.00	.00	.00
19	20	11	68	93	49	209	.0	.0	189	.00	.00	.00
20	15	8.5	99	123	40	291	.0	.0	388	.00	.00	.00
21	11	8.9	86	127	34	274	.23	.0	252	.00	.00	.00
22	35	7.9	68	149	37	156	.72	.0	134	.00	.00	.00
23	168	7.7	48	164	45	254	.18	.0	78	.00	.00	.00
24	305	7.5	56	176	131	157	.0	3.9	42	.00	.00	.00
25	341	10	57	122	94	53	.02	6.0	24	.00	.00	.00
26	357	83	48	125	193	47	.19	7.2	13	.00	.00	.00
27	344	308	41	116	448	79	.39	7.3	7.1	.00	.00	.00
28	304	561	36	97	1380	111	.45	215	4.8	.00	.00	.00
29	254	693	36	129	---	33	.32	1190	4.3	12	.00	.00
30	152	726	25	56	---	17	.08	1170	24	13	e11	.00
31	145	---	20	48	---	12	---	901	---	13	e17	---
TOTAL	3981.0	4238.5	4653	2185.5	7707	16080	114.48	3500.42	10195.2	118.53	34.31	35.75
MEAN	128	141	150	70.5	275	519	3.82	113	340	3.82	1.11	1.19
MAX	357	726	652	176	1380	2260	18	1190	997	13	17	12
MIN	8.7	7.5	20	5.5	34	12	.00	.00	4.3	.00	.00	.00
AC-FT	7900	8410	9230	4330	15290	31890	227	6940	20220	235	68	71

CAL YR 1986 TOTAL 26363.59 MEAN 72.2 MAX 2590 MIN .00 AC-FT 52290  
WTR YR 1987 TOTAL 52843.50 MEAN 145 MAX 2260 MIN .00 AC-FT 104800

e Estimated.

## RED RIVER BASIN

97

07315200 EAST FORK LITTLE WICHITA RIVER NEAR HENRIETTA, TX

LOCATION.--Lat 33°48'46", long 98°05'05", Clay County, Hydrologic Unit 11130209, at downstream side of bridge on U.S. Highway 82, 5.8 mi upstream from Little Wichita River, 6.4 mi east of Henrietta, and 8.9 mi west of Ringgold.

DRAINAGE AREA.--178 mi<sup>2</sup>.

PERIOD OF RECORD.--November 1963 to current year.

REVISED RECORDS.--WRD TX-72-1: 1966(M).

GAGE.--Water-stage recorder. Datum of gage is 825.32 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. There are no known diversions upstream from station.

AVERAGE DISCHARGE.--23 years (water years 1965-87), 27.9 ft<sup>3</sup>/s (2.13 in/yr), 20,210 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 32,500 ft<sup>3</sup>/s Oct. 13, 1981 (gage height, 31.70 ft), from rating curve extended above 5,100 ft<sup>3</sup>/s on basis of contracted-opening measurement of 15,500 ft<sup>3</sup>/s; no flow for many days most years.

Maximum stage since at least 1920, that of Oct. 13, 1981.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in October 1941 reached a stage of 28.8 ft, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Mar. 1	0400	*5,590	*26.12	June 30	1330	533	15.62
May 29	0715	772	17.85	July 2	1930	507	15.37
June 20	1100	512	15.42				

Minimum discharge, no flow for part of Sept. 27, 28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.17	.11	6.8	1.7	46	3550	10	4.1	39	67	.39	.12
2	52	.10	4.5	1.8	130	1250	9.5	4.2	14	205	.25	.08
3	49	.11	2.8	1.8	100	206	8.7	3.7	7.7	137	.16	.22
4	18	225	2.0	1.4	41	94	8.2	3.7	4.9	27	.12	.18
5	31	482	1.6	1.2	94	76	7.7	3.5	3.5	9.6	.11	.03
6	47	219	1.2	1.2	177	61	7.4	3.6	3.2	4.9	.13	.03
7	48	33	19	1.2	132	52	7.2	3.4	3.8	2.6	.13	.08
8	27	13	258	1.2	73	45	7.2	3.1	3.0	1.5	.10	.10
9	8.3	6.4	373	94	37	40	7.0	2.6	2.3	.94	.06	.06
10	8.3	3.5	84	286	22	36	6.6	2.6	2.1	.95	.03	.05
11	2.7	2.1	30	124	14	32	6.3	3.8	1.7	1.6	.02	.07
12	1.2	1.4	16	41	11	28	5.9	4.4	1.8	1.9	.02	.14
13	.73	.88	9.3	21	9.0	27	5.3	4.6	151	1.9	.46	.25
14	1.2	.77	6.5	14	7.6	25	4.7	4.3	199	1.6	2.9	.29
15	.74	.65	4.9	10	13	25	4.4	1.1	31	1.2	.36	1.2
16	.42	.55	3.8	8.2	50	24	4.1	.77	10	1.1	.16	.51
17	.23	1.1	3.5	8.9	40	28	3.8	.69	5.9	1.3	4.6	2.3
18	.16	2.2	5.2	49	17	83	3.7	.66	327	1.6	14	2.5
19	.10	2.8	18	116	10	64	3.4	.89	113	.94	.25	1.6
20	.09	3.5	50	215	7.9	33	3.2	1.1	256	.63	.10	.73
21	.12	3.4	27	233	8.3	24	4.4	1.1	62	.61	.04	.35
22	.14	3.8	14	107	29	20	4.0	1.5	11	.62	.05	.20
23	.14	4.0	8.8	58	34	19	3.3	2.2	8.3	.64	.05	.16
24	.14	4.1	8.2	35	69	19	3.3	3.9	2.4	.55	.06	.14
25	.16	12	8.2	23	221	23	2.9	4.8	2.6	.41	.06	.05
26	.16	232	6.3	16	368	20	2.6	4.3	.99	.28	.04	.02
27	.14	244	4.4	12	694	16	2.3	4.1	.95	.24	.19	.01
28	.14	55	3.5	9.4	1560	15	2.3	123	.96	.27	.17	.31
29	.13	22	2.8	8.5	---	17	2.0	741	.73	.36	.06	.38
30	.14	11	2.3	7.6	---	15	3.4	660	294	.40	.07	.22
31	.13	---	1.9	6.6	---	12	---	385	---	.48	.12	---
TOTAL	297.88	1589.47	987.5	1514.7	4014.8	5979	154.8	1987.71	1563.83	475.12	25.26	12.38
MEAN	9.61	53.0	31.9	48.9	143	193	5.16	64.1	52.1	15.3	.81	.41
MAX	52	482	373	286	1560	3550	10	741	327	205	14	2.5
MIN	.09	.10	1.2	1.2	7.6	12	2.0	.66	.73	.24	.02	.01
AC-FT	591	3150	1960	3000	7960	11860	307	3940	3100	942	50	25
CAL YR 1986	TOTAL	9427.10	MEAN	25.8	MAX	713	MIN	.00	AC-FT	18700		
WTR YR 1987	TOTAL	18602.19	MEAN	51.0	MAX	3550	MIN	.01	AC-FT	36900		

## 07315500 RED RIVER NEAR TERRAL, OK

LOCATION.--Lat 33°52'43", long 97°56'03", Jefferson County, Hydrologic Unit 11130201, on left bank at downstream side of bridge abutment on U.S. Highway 81, 0.5 mi downstream from Chicago, Rock Island, and Railroad Co. bridge, 1.2 mi south of Terral, 3.6 mi downstream from Little Wichita River, and at mile 872.

DRAINAGE AREA.--28,723 mi<sup>2</sup>, of which 5,936 mi<sup>2</sup> probably is noncontributing.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1938 to current year. Monthly discharge only for some periods, published in WSP 1311.

REVISED RECORDS.--WSP 1211: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 770.31 ft above National Geodetic Vertical Datum of 1929. Prior to Jan. 12, 1939, nonrecording gage at same site and datum.

REMARKS.--Records fair except those for periods of estimated daily discharges, which are poor. There are many small diversions upstream for irrigation, oilfield, and municipal uses upstream from station. Gage-height telemeter at station via Sutron Data Collection platform.

AVERAGE DISCHARGE.--49 years (water years 1939-87), 2,307 ft<sup>3</sup>/s (1,671,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 225,000 ft<sup>3</sup>/s May 30, 1987 (gage height 32.65 )ft; maximum gage height 33.60 ft, Oct. 22, 1983; minimum, 43 ft<sup>3</sup>/s Mar. 15, 1939.  
Maximum stage since at least 1891, that of Oct. 22, 1983.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 19, 1935, reached a stage of 27.2 ft, although floods in 1891 and on May 1, 1908, are reported to have reached about the same stage.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 21,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 6	1500	72,000	21.85	Mar. 1	2100	43,400	18.80
Oct. 13	2000	27,300	17.80	May 30	0700	*225,000	*32.65
Oct. 24	1500	85,800	23.42	June 13	1200	37,000	18.24
Nov. 6	1500	36,800	19.21	July 1	2330	30,500	17.17
Feb. 6	1700	28,500	17.00	July 3	0730	28,200	16.75

Minimum discharge, 671 ft<sup>3</sup>/s Sept. 12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17000	4420	5850	2090	8150	38500	3610	1290	94700	18300	1380	1230
2	30100	3830	5510	e2060	9020	32100	3440	1250	62600	23100	1330	1240
3	33400	3270	4910	2000	6920	20300	3150	1210	37100	24000	1270	1450
4	46100	4800	4180	2030	6210	12100	3070	1200	24700	14500	1360	1400
5	65700	21000	3720	1850	7290	10900	2660	1230	19200	10500	1160	1010
6	69400	34700	3540	1830	20300	10800	2620	1200	17000	8370	1150	867
7	56400	30400	3750	1880	24100	10600	2350	1200	15300	6600	1150	834
8	27400	21700	5160	1980	17000	8910	2270	1210	11700	5630	1150	793
9	16600	15000	7420	2640	11700	7770	2160	1260	8870	5110	1230	747
10	14800	11700	8530	7560	7530	6620	2090	1100	8220	4220	1370	750
11	13400	9470	7110	9020	6670	5850	1880	1040	8180	3610	1400	716
12	16200	8480	5900	7710	6060	4830	1940	1010	20800	3200	1460	711
13	22500	9650	4870	5170	5480	4000	2010	991	33400	3060	1420	740
14	22800	7990	4260	4600	5240	3140	1920	1080	21800	3000	1380	830
15	11000	5360	3780	4250	5780	2310	1990	1060	14800	3080	1420	882
16	7800	4650	3330	3940	6210	1950	1940	943	9740	2690	1380	1040
17	5720	4400	3090	e3810	7180	1940	1900	931	8700	2680	1330	1030
18	4420	4090	3070	e3850	7260	6710	1950	923	8520	2740	1630	1090
19	3510	3910	3270	e3980	7180	10200	1940	908	9280	4150	3360	1360
20	3400	3920	3250	e4170	6560	10200	1820	964	9670	5350	2390	1630
21	2630	4050	3150	4610	5800	8120	1830	1170	10600	5710	1470	1940
22	8080	4000	2990	4570	5080	6280	1830	1110	8740	6280	1150	1360
23	36900	3930	2940	4360	4630	11400	1790	1140	7970	5770	997	1280
24	76300	3910	2990	4360	4760	12600	1720	1340	7300	3410	915	1780
25	57200	4100	2780	4720	5310	9220	1650	9970	7390	2510	832	2030
26	28000	9890	2620	4850	7450	7240	1600	11600	7680	2000	837	1890
27	16100	17000	2420	4700	17700	8510	1510	13800	8170	1890	892	1750
28	9980	13300	2420	5100	28400	6320	1420	20800	7800	1730	912	1390
29	6980	11300	2350	6780	---	4520	1360	123000	7560	1610	1060	1190
30	5950	7180	2340	6700	---	4150	1310	211000	7680	1490	1250	1390
31	5120	---	2240	6340	---	3960	---	145000	---	1440	1250	---
TOTAL	740890	291400	123740	133510	260970	292050	62730	561930	525170	187730	41285	36350
MEAN	23900	9713	3992	4307	9320	9421	2091	18130	17510	6056	1332	1212
MAX	76300	34700	8530	9020	28400	38500	3610	211000	94700	24000	3360	2030
MIN	2630	3270	2240	1830	4630	1940	1310	908	7300	1440	832	711
AC-FT	1470000	578000	245400	264800	517600	579300	124400	1115000	1042000	372400	81890	72100

CAL YR 1986 TOTAL 1786150 MEAN 4894 MAX 76300 MIN 273 AC-FT 3543000  
WTR YR 1987 TOTAL 3257750 MEAN 8925 MAX 211000 MIN 711 AC-FT 6462000

e Estimated.

07315500 RED RIVER NEAR TERRAL, OK--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 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 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, 13,000 microsiemens June 15, 1984; minimum daily, 255 microsiemens Jan. 1.

WATER TEMPERATURE: Maximum daily, 35.0°C Aug. 13, 16, 17, 1983; minimum daily, 0.0°C on many days during winter months.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 7,800 microsiemens Sept. 17; minimum daily, 450 microsiemens May 29.

WATER TEMPERATURE: Maximum daily, 30.0°C July 31, Aug. 2, 5, 7, 10, 13; minimum daily, 5.0°C on several days during November and January.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	HARD- NESS (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)	
OCT										
14...	1145	22400	3000	7.70	15.5	550	430	160	37	
24...	1400	84100	1110	7.50	19.0	220	130	64	14	
JAN										
13...	1200	5150	2500	8.30	5.5	530	400	140	44	
MAR										
02...	1030	33400	1270	9.60	10.0	260	210	69	21	
23...	1150	12600	2270	8.50	17.0	530	440	140	45	
MAY										
29...	1725	181000	450	7.30	18.0	110	37	34	6.6	
DATE		SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WH WAT TOTAL 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										
14...	410	8	6.6	120	430	650	0.30	9.4	1800	
24...	140	4	5.2	90	130	210	0.30	9.5	630	
JAN										
13...	310	6	6.6	134	370	530	0.30	6.6	1500	
MAR										
02...	160	4	5.1	49	160	280	0.20	8.6	730	
23...	270	5	5.2	95	370	450	0.30	6.9	1300	
MAY										
29...	40	2	3.8	75	44	55	0.20	7.0	240	

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1986 TO SEPTEMBER 1987

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. 1986	740890	1730	1030	2060000	350	695800	220	437600	340
NOV. 1986	291400	2720	1640	1287000	570	449800	340	270000	530
DEC. 1986	123740	3770	2290	764000	830	277900	470	157900	710
JAN. 1987	133510	3270	1980	713000	710	256200	410	148000	620
FEB. 1987	260970	2460	1480	1042000	510	361600	310	219200	480
MAR. 1987	292050	2260	1360	1069000	460	365000	290	226100	450
APR. 1987	62730	4480	2730	463000	1000	171400	560	95000	830
MAY 1987	561930	1000	597	906000	200	305900	130	192500	200
JUNE 1987	525170	1620	965	1368000	320	455800	210	292000	330
JULY 1987	187730	2720	1640	831000	580	293000	340	173700	520
AUG. 1987	41285	4940	3030	338000	1100	127200	620	68700	900
SEPT 1987	36350	4510	2760	271000	1000	101700	560	55300	820
TOTAL	3257755	**	**	11100000	**	3861000	**	2336000	**
WTD.AVG.	8925	2100	1260	**	440	**	270	**	410

## RED RIVER MAIN STEM

07315500 RED RIVER NEAR TERRAL, OK--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
EQUIVALENT MEAN

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4000	2750	2320	5450	4090	1850	3700	4950	940	2660	4970	3540
2	1170	3040	2830	5230	3580	1740	4070	4980	1240	1550	4980	3430
3	936	3310	3010	4970	3060	1650	4050	5060	1360	1270	5010	3440
4	875	3150	3150	5220	3200	1620	4180	5120	1550	1780	4980	3980
5	1230	2440	3590	5500	2950	1770	4380	5100	1590	2100	5000	4730
6	1380	2160	4320	5080	1830	1940	4430	5180	1520	2590	5030	4910
7	1480	2640	4250	5210	1310	2210	4540	5220	1510	2520	5110	4700
8	1550	2190	3540	5010	1480	2560	4500	5210	1680	2300	5070	4820
9	1620	2320	3420	3440	1530	2600	4450	5090	1860	2390	5300	5180
10	1850	2470	2610	1950	1540	2640	4550	5140	1870	2870	5320	5220
11	2120	2590	2580	990	1990	2710	4670	5190	1990	3380	5120	4830
12	2500	2640	3000	1380	2410	2970	4850	5220	1650	3650	5230	4680
13	3910	2800	3400	1820	2660	3070	4900	5250	1490	3730	5450	4660
14	3170	3170	3870	2320	2990	3410	4800	5010	1460	3680	5750	4820
15	2590	3730	3880	2600	3500	3790	4530	5030	1500	3730	5800	4800
16	2670	3660	3900	2980	3220	3850	4580	5170	2050	3930	5560	6870
17	3100	3820	4130	3150	2740	3750	4590	5230	2300	4110	5310	7800
18	3530	4130	4170	3370	2630	2900	4570	5280	2470	4030	5160	7750
19	4160	4410	4100	3440	3490	2750	4530	5310	2310	4630	5020	6990
20	4540	4620	4240	3580	3920	2660	4500	5240	2010	5530	4440	5890
21	4550	4670	4250	3470	3700	2600	4490	4970	2090	5070	4060	3350
22	3580	4780	4290	3330	3520	2340	4470	5040	2150	3680	4420	3520
23	1710	4770	4550	3470	3530	2260	4680	4960	2180	3160	4920	4480
24	1070	4730	4830	3620	3510	1750	4730	4530	2350	3250	4980	4070
25	1480	4680	5120	3690	3500	2070	4790	3250	2560	3430	4800	3570
26	1590	3640	5540	4080	3000	2130	4600	2710	2860	3660	4820	3270
27	1750	2100	5760	4420	2780	2930	4790	2160	2990	3890	4620	3300
28	2080	1580	5680	4210	1430	3160	4710	1540	2970	4170	4360	3790
29	2150	1710	5090	3670	---	3240	4780	450	3070	4440	4300	3820
30	2250	1820	5700	3520	---	3440	4920	646	2820	4640	4250	4080
31	2440	---	5850	3820	---	3450	---	750	---	4700	3490	---
MEAN	2360	3220	4100	3680	2820	2640	4540	4320	2010	3440	4920	4680

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23.0	18.0	8.0	7.0	12.0	10.0	13.0		25.0	24.0	29.0	25.0
2	24.0	14.0	7.0	---	10.0	11.0	11.0		25.0	26.0	30.0	25.0
3	24.0	14.0	8.0	7.0	12.0	13.0	10.0		24.0	26.0	29.0	25.0
4	---	16.0	8.0	7.0	11.0	13.0	11.0		23.0	26.0	29.0	26.0
5	21.0	13.0	8.0	7.0	11.0	14.0	12.0		24.0	28.0	30.0	25.0
6	20.0	12.0	10.0	8.0	11.0	13.0	13.0		24.0	27.0	29.0	26.0
7	19.0	14.0	10.0	8.0	8.0	15.0	14.0		25.0	27.0	30.0	24.0
8	20.0	15.0	11.0	9.0	10.0	15.0	15.0		25.0	27.0	28.0	28.0
9	21.0	14.0	10.0	9.0	9.0	13.0	16.0		25.0	27.0	29.0	24.0
10	20.0	14.0	7.0	5.0	8.0	10.0	16.0		24.0	27.0	30.0	25.0
11	21.0	10.0	7.0	5.0	12.0	12.0	17.0		25.0	27.0	29.0	28.0
12	---	10.0	8.0	6.0	14.0	13.0	23.0		25.0	27.0	29.0	28.0
13	15.0	5.0	11.0	9.0	14.0	12.0	18.0		26.0	27.0	30.0	24.0
14	18.0	6.0	7.0	10.0	14.0	12.0	16.0		27.0	26.0	28.0	24.0
15	18.0	9.0	9.0	9.0	13.0	16.0	15.0		26.0	26.0	29.0	28.0
16	16.0	9.0	11.0	7.0	9.0	17.0	21.0		27.0	26.0	---	24.0
17	16.0	12.0	11.0	---	8.0	13.0	21.0		28.0	26.0	29.0	24.0
18	18.0	12.0	10.0	---	9.0	15.0	---		26.0	26.0	29.0	---
19	18.0	11.0	8.0	---	9.0	---	---		28.0	27.0	27.0	23.0
20	19.0	12.0	8.0	7.0	9.0	16.0	---		26.0	27.0	29.0	23.0
21	19.0	12.0	10.0	5.0	8.0	17.0	---		25.0	28.0	27.0	27.0
22	18.0	14.0	8.0	5.0	11.0	17.0	18.0		27.0	28.0	27.0	28.0
23	18.0	8.0	7.0	5.0	11.0	15.0	21.0		28.0	28.0	29.0	23.0
24	17.0	9.0	9.0	5.0	11.0	13.0	18.0		28.0	28.0	27.0	23.0
25	21.0	10.0	10.0	5.0	10.0	10.0	22.0		26.0	29.0	27.0	27.0
26	16.0	8.0	10.0	6.0	11.0	13.0	22.0		27.0	28.0	---	23.0
27	16.0	9.0	11.0	6.0	13.0	13.0	23.0		28.0	28.0	26.0	23.0
28	17.0	8.0	9.0	7.0	12.0	14.0	26.0		28.0	29.0	26.0	27.0
29	18.0	8.0	10.0	10.0	---	9.0	25.0		27.0	29.0	26.0	23.0
30	17.0	10.0	8.0	10.0	---	8.0	26.0		28.0	29.0	27.0	26.0
31	17.0	---	7.0	9.0	---	12.0	---		---	30.0	26.0	---
MEAN	19.0	11.0	9.0	7.0	10.5	13.0	18.0		26.0	27.0	28.5	25.0

## RED RIVER BASIN

101

## 07315950 MOSS LAKE NEAR GAINESVILLE, TX

LOCATION.--Lat 33°46'26", long 97°12'50", Cooke County, Hydrologic Unit 11130201, on top of upstream side of dam adjacent to guardrail of roadway about 250 ft from right end of Fish Creek dam on Fish Creek, 1.6 mi upstream from Bearhead Creek, 3.7 mi upstream from mouth, and 10 mi northwest of Gainesville.

DRAINAGE AREA.--65 mi<sup>2</sup>.

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

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Apr. 20, 1979, recording gage at site about 150 ft upstream at same datum.

REMARKS.--The lake is formed by a rolled earthfill dam 1,460 ft long. The dam was completed and storage began Dec. 2, 1966. An uncontrolled morning-glory-type spillway with a 7- by 7-foot opening is designed to discharge 2,500 ft<sup>3</sup>/s at a 10-foot head. The emergency spillway is a 400-foot-wide cut through natural ground located about 100 ft to the left of the left end of dam. The dam was built by the city of Gainesville to impound water for municipal use. Area and capacity tables are based on a 1961 survey. There was no diversion from the lake during the current water year. 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.....	740.0	
Top of design flood pool.....	736.0	55,230
Crest of spillway.....	725.0	36,440
Crest of spillway morning-glory type (top of conservation pool)...	715.0	23,210
Lowest gated outlet (invert).....	666.0	78

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 50,990 acre-ft Oct. 13, 1981 (elevation, 733.72 ft); minimum since lake filled in May 1968, 17,740 acre-ft Sept. 26, 1980 (elevation, 709.67 ft).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 29,680 acre-ft May 29 at 0230 hours (elevation, 720.25 ft); minimum, 21,720 acre-ft Oct. 7 (elevation, 713.64 ft).

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

713.0	21,040	717.0	25,550
715.0	23,210	719.0	28,040
		721.0	30,690

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21820	21860	21850	22050	23100	24460	23080	22980	23720	23010	22740	22280
2	21810	21870	21840	22050	23100	23930	23060	22980	22400	23100	22720	22260
3	21790	21890	21840	22040	23090	23660	23060	23090	23380	23100	22690	22230
4	21760	21890	21850	22060	23080	23510	23060	23130	23290	23100	22660	22200
5	21740	21890	21850	22060	23070	23390	23060	23120	23230	23070	22630	22190
6	21740	21870	21840	22080	23090	23330	23060	23090	23200	23050	22620	22170
7	21750	21870	21840	22080	23130	23290	23060	23070	23160	23020	22580	22170
8	21850	21860	21840	22190	23120	23260	23070	23070	23120	23000	22550	22140
9	21840	21860	21850	22450	23100	23190	23070	23060	23090	22980	22530	22110
10	21850	21850	21840	22500	23100	23160	23070	23050	23100	22960	22650	22200
11	21850	21850	21850	22550	23100	23160	23070	23030	23290	22950	22660	22200
12	21860	21850	21860	22580	23090	23130	23070	23030	23560	22940	22650	22220
13	21860	21860	21860	22580	23090	23120	23060	23020	23570	22910	22620	22230
14	21850	21860	21860	22630	23100	23120	23020	23510	23440	22910	22590	22300
15	21850	21860	21870	22640	23130	23120	23020	23420	23310	22910	22560	22590
16	21850	21850	21890	22670	23110	23330	23010	23330	23240	22900	22540	22580
17	21830	21850	21920	22900	23100	24310	23020	23280	23190	22920	22520	22570
18	21820	21850	21940	23280	23090	23850	23030	23230	23210	22910	22520	22880
19	21820	21850	21970	23290	23080	23620	23030	23140	23160	22900	22500	22910
20	21810	21860	21970	23270	23080	23490	23020	23130	23240	22900	22460	22900
21	21850	21860	21980	23240	23130	23370	23010	23100	23230	22890	22430	22890
22	21840	21860	21980	23180	23130	23340	23010	23080	23180	22880	22410	22870
23	21840	21870	21990	23170	23130	23270	23010	23080	23130	22880	22390	22850
24	21840	21860	22020	23120	23260	23210	23010	23080	23110	22870	22370	22850
25	21850	21850	22020	23100	23290	23170	23010	23100	23090	22860	22350	22840
26	21850	21850	22020	23090	23950	23160	23010	23070	23070	22850	22320	22840
27	21850	21850	22040	23090	23850	23170	23000	23070	23030	22830	22350	22800
28	21860	21850	22040	23100	25600	23110	23000	28650	23010	22810	22330	22810
29	21870	21850	22050	23080	---	23080	23000	26870	22990	22790	22320	22800
30	21870	21850	22050	23070	---	23070	22990	24800	23010	22770	22300	22790
31	21860	---	22050	23060	---	23080	---	24080	---	22760	22300	---
MAX	21870	21890	22050	23290	25600	24460	23080	28650	23720	23100	22740	22910
MIN	21740	21850	21840	22040	23070	23070	22990	22980	22400	22760	22300	22110
(+)	713.77	713.76	713.94	714.86	717.04	714.88	714.80	715.76	714.82	714.59	714.17	714.62
(Φ)	+20	-10	+200	+1010	+2540	-2520	-90	+1090	-1070	-250	-460	+490

CAL YR 1986 MAX 24590 MIN 21740 (Φ) +260  
WTR YR 1987 MAX 28650 MIN 21740 (Φ) +950

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

## RED RIVER MAIN STEM

07316000 RED RIVER NEAR GAINESVILLE, TX

LOCATION.--Lat 33°43'40", long 97°09'35", in SW 1/4 sec.36, T.9 S., R.1 E., Love County, OK, Hydrologic Unit 11130201, at downstream right bank near end of bridge on Interstate 35, 0.2 mi downstream from Gulf, Colorado, and Santa Fe Railway Co. bridge, 5.0 mi downstream from Fish Creek, 4.5 mi southwest of Thackerville, OK, 7.0 mi north of Gainesville, and at mile 791.5.

DRAINAGE AREA.--30,782 mi<sup>2</sup>, of which 5,936 mi<sup>2</sup> probably is noncontributing.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1936 to current year. Monthly discharge only for some periods, published in WSP 1311.

REVISED RECORDS.--WSP 1211: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 627.91 ft above National Geodetic Vertical Datum of 1929. Prior to Jan. 17, 1939, and Feb. 13, 1965 to Nov. 14, 1966, nonrecording gage at same site and datum.

REMARKS.--Records poor. Flow slightly regulated by Lake Kemp (station 07312000) since 1943, by Lake Altus (station 07302500 in Oklahoma) since 1946, by Lake Kickapoo (station 07314000) since 1967, by Lake Arrowhead (station 07314800), and by Moss Lake (station 07315950). U.S. Army Corps of Engineers satellite telemeter at station.

COOPERATION.--Gage-height record and 11 discharge measurements were furnished by U.S. Army Corps of Engineers, with records computed by U.S. Geological Survey.

AVERAGE DISCHARGE.--51 years, 2,981 ft<sup>3</sup>/s (2,160,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 265,000 ft<sup>3</sup>/s May 31, 1987 (gage height, 40.08 ft); minimum, 48 ft<sup>3</sup>/s Jan. 27, 1940.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 24,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 8	0330	66,300	22.51	May 31	1820	*265,000	*40.08
Oct. 14	1500	32,400	17.22	June 14	0510	47,800	b21.72
Oct. 26	0600	75,400	23.77	June 20	2210	30,850	b17.45
Nov. 7	1200	37,300	17.99	July 1	0200	47,000	19.63
Nov. 28	1100	30,700	16.95	July 4	1100	47,000	19.63
Mar. 2	----	59,600	a21.59				

a From floodmark.

b Backwater.

Minimum daily discharge, 392 ft<sup>3</sup>/s May 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3530	11900	e8000	e3610	7590	e58000	e4400	810	231000	40100	2100	1640
2	16700	e11000	7380	e3400	7800	60300	e3900	769	151000	21400	1970	1640
3	34100	10200	10000	e3080	11500	44300	e3400	757	81800	34500	1890	1630
4	36000	10600	11700	e2810	10600	23000	3130	816	46600	44800	1790	1580
5	43900	14300	11100	e2750	7990	13200	3090	697	31400	28300	1710	1610
6	55400	29300	e10500	2680	10300	11000	2870	656	23800	15400	e1620	1710
7	63200	36400	e9900	2540	11600	11000	2450	676	23400	11200	e1530	1390
8	65000	29500	e12000	2510	e10000	9970	2240	685	20900	8540	e1470	1200
9	39200	13000	16500	3260	e9400	9460	2150	670	15200	7040	e1410	1110
10	21700	8740	e18100	5060	e9000	e8600	2060	651	11100	6180	e1340	1150
11	20400	7320	19000	8870	8600	e7900	1980	658	10800	5280	e1300	1150
12	18600	6540	20700	12500	8470	7150	e1880	574	14800	4560	e1240	1140
13	21500	6010	17800	11600	8580	6920	e1780	509	39400	4170	e1180	1040
14	29800	6670	14400	7810	8330	6680	e1680	480	45000	3920	e1140	989
15	23700	7040	e12000	6340	7960	e6300	1560	747	33800	3820	e1100	1450
16	14600	e7400	e10800	5430	7700	e6000	1570	696	24100	3780	e1050	2220
17	12000	e7800	e9900	4670	e8000	e5700	1520	735	15800	3740	e1000	1940
18	10600	7280	e9000	4510	e8400	e16000	1460	493	13000	3550	e980	2000
19	9340	7020	e8200	e4200	e8800	e22000	1390	429	13100	3400	e940	1920
20	7880	6540	e7800	e3900	9480	e20000	1360	409	13400	3450	1250	1730
21	7330	6320	e7400	e3700	8970	12800	1420	392	22400	4730	2790	1740
22	6750	6220	e7000	e3500	8530	11200	1340	411	13300	5350	2570	1820
23	16500	6120	e6600	e3300	7520	7870	1260	556	10400	6360	2020	2050
24	44800	5970	e6200	e3100	6880	e10000	1220	638	9460	5010	1690	1660
25	64800	6070	e5600	e2900	7150	e13000	1180	733	10400	4090	1490	1480
26	72300	6320	e5200	5590	10000	12400	1110	5200	9470	3540	e1450	1730
27	40600	16000	e4600	5860	15400	9640	1060	13300	9440	3160	1420	2020
28	18000	e19000	e4200	5920	e35000	e8200	1010	32400	9130	2820	1420	1990
29	15100	e14000	e3890	5830	---	e6400	941	71900	12200	2550	1360	1920
30	13300	e11000	e3750	6250	---	5500	873	114000	44400	2370	1340	1660
31	12300	---	e3680	7610	---	e4900	---	232000	---	2230	1440	---
TOTAL	858930	341580	302900	155090	279550	455390	57284	484447	1010000	299340	47000	48309
MEAN	27710	11390	9771	5003	9984	14690	1909	15630	33670	9656	1516	1610
MAX	72300	36400	20700	12500	35000	60300	4400	232000	231000	44800	2790	2220
MIN	3530	5970	3680	2510	6880	4900	873	392	9130	2230	940	989
AC-FT	1704000	677500	600800	307600	554500	903300	113600	960900	2003000	593700	93220	95820
CAL YR 1986	TOTAL	2471670	MEAN	6772	MAX	72300	MIN	288	AC-FT	4903000		
WTR YR 1987	TOTAL	4339820	MEAN	11890	MAX	232000	MIN	392	AC-FT	8608000		

e Estimated.

07316000 RED RIVER NEAR GAINESVILLE, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: May 1944 to April 1946, October 1952 to September 1964, October 1966 to current year. Chemical and biochemical analyses: January 1968 to September 1986. Pesticide analyses: April 1968 to September 1982. Sediment analyses: January 1978 to September 1986.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: May 1944 to April 1946, October 1952 to September 1964, October 1966 to current year.

WATER TEMPERATURE: October 1952 to September 1963, October 1966 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, 11,100 microsiemens July 16, 1972, and June 19, 1984; minimum daily, 176 microsiemens Nov. 4, 1958.

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

## EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 5,830 microsiemens Sept. 21; minimum daily, 455 microsiemens May 30.

WATER TEMPERATURE: Maximum daily, 32.0°C July 30, Aug. 16; minimum daily, 3.0°C Jan. 19, 22, 23.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	HARD- NESS (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 22...	1400	6750	3810	690	540	190	52	560
JAN 28...	1130	5920	3530	710	460	180	63	510
JUN 02...	1410	172000	869	210	120	62	14	98
JUL 21...	1115	4730	3800	720	570	180	65	550
DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WH WAT TOTAL 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)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)
OCT 22...	10	7.7	152	460	900	0.40	8.8	2300
JAN 28...	9	6.7	248	440	840	0.30	9.3	2200
JUN 02...	3	5.3	97	100	150	0.30	9.2	500
JUL 21...	9	6.6	149	510	880	0.40	9.0	2300

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1986 TO SEPTEMBER 1987

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. 1986	858930	1800	1040	2419000	410	958700	210	489200	340
NOV. 1986	341580	2670	1560	1443000	630	577900	320	290600	500
DEC. 1986	302900	3250	1920	1568000	770	632600	390	315000	600
JAN. 1987	155090	3200	1890	793000	760	320100	380	159200	590
FEB. 1987	279550	2400	1400	1057000	560	421400	280	213100	450
MAR. 1987	455390	1770	1030	1260000	410	498300	210	255100	340
APR. 1987	57284	3760	2230	345000	900	139600	450	69100	690
MAY 1987	484447	870	502	657000	200	258800	100	133200	170
JUNE 1987	1010000	1340	773	2109000	300	829800	160	427700	260
JULY 1987	299340	2560	1500	1212000	600	485100	300	244100	480
AUG. 1987	46990	4430	2650	336000	1100	137300	530	67200	800
SEPT 1987	48309	3810	2270	296000	920	120000	450	59200	700
TOTAL	4339810	**	**	13495000	**	5379000	**	2723000	**
WTD.AVG.	11890	1970	1150	**	460	**	230	**	370

## RED RIVEER MAIN STEM

07316000 RED RIVER NEAR GAINESVILLE, TX--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
EQUIVALENT MEAN

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4120	2130	1630	5220	3330	1000	3140	4430	740	3060	4100	4130
2	3850	2310	1950	5250	3710	1180	3140	4410	850	2690	4110	3940
3	1370	2690	2430	5190	3200	1290	3140	4460	885	2010	4230	3810
4	940	2790	2760	5200	3140	1340	3650	4310	1200	1390	4350	3420
5	1000	2680	3160	5160	2830	1300	3410	4640	1260	1530	4460	3270
6	1390	2060	3070	5230	2910	1460	3740	4700	1480	1860	4490	3460
7	1600	1850	3240	4990	1640	1610	3780	4870	1470	2210	4530	3900
8	1440	2390	3360	5130	1530	1760	3870	4820	1440	2750	4580	4130
9	1450	2060	3880	4000	1360	1990	3910	4900	1460	2650	4580	4210
10	1480	2100	2980	3920	1320	2320	3910	4740	1680	2460	4600	4250
11	1640	2290	2440	2690	1440	2440	3900	4750	1760	2420	4170	4090
12	1840	2370	2460	1790	1600	2480	3870	4700	1620	2630	4530	4100
13	2320	2440	2490	2190	1800	2560	3980	4510	1810	3110	4860	4200
14	3470	2800	2450	2330	2180	2700	4080	4640	1500	3370	4950	4420
15	3000	2810	2840	2350	2380	2860	4210	3630	1430	3460	4790	3340
16	2590	3010	3200	2440	2820	3080	4360	3270	1330	3530	4700	3110
17	2420	3440	3670	2650	2920	3070	4240	4480	1720	3430	4820	2660
18	2570	3590	3680	2660	2820	1530	3950	3460	1970	3420	5090	1970
19	2910	3690	3680	2640	2510	2550	3940	4570	2140	3680	5320	3160
20	3330	3830	3890	2420	2490	2930	3990	4980	2080	3840	4440	4460
21	3700	4160	3950	2760	3140	2240	4000	5130	1760	3630	4260	5830
22	3950	4390	3960	2590	3700	2130	3760	5240	1570	5590	4400	5600
23	4490	4470	4010	2640	3550	2240	3970	4870	1860	5160	4760	5110
24	1390	4550	4020	2650	3090	2130	4080	4970	2170	4140	4210	3780
25	1230	4510	4640	2860	3030	1680	3750	4860	2310	3300	3800	3290
26	1350	4470	4860	3120	2680	1670	3710	4140	2400	3200	4090	3760
27	1530	4120	5090	3250	2160	1710	4150	2560	2560	3230	4390	4250
28	1600	2030	5250	3660	1470	1990	4350	1280	2900	3320	4340	3750
29	1920	1700	5470	4000	---	2760	4300	968	3180	3460	4260	3080
30	2010	1610	5370	3920	---	2900	4360	455	3130	3720	4380	2980
31	2040	---	5350	3860	---	3000	---	569	---	3790	4150	---
MEAN	2260	2980	3590	3510	2530	2130	3890	4010	1790	3160	4480	3850

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25.0	17.0	7.0	7.0	10.0	10.0	14.0	---	22.0	28.0	28.0	24.0
2	26.0	15.0	8.0	6.0	12.0	10.0	10.0	23.0	24.0	26.0	29.0	23.0
3	25.0	17.0	8.0	7.0	11.0	12.0	9.0	23.0	23.0	25.0	31.0	24.0
4	24.0	16.0	8.0	6.0	13.0	12.0	11.0	24.0	24.0	26.0	---	---
5	22.0	16.0	8.0	6.0	12.0	11.0	10.0	27.0	22.0	27.0	30.0	26.0
6	22.0	14.0	7.0	10.0	10.0	11.0	14.0	25.0	24.0	29.0	31.0	26.0
7	20.0	---	---	8.0	8.0	13.0	16.0	26.0	24.0	29.0	30.0	25.0
8	20.0	14.0	10.0	8.0	9.0	13.0	13.0	23.0	26.0	29.0	31.0	25.0
9	20.0	14.0	10.0	10.0	7.0	14.0	19.0	24.0	25.0	27.0	29.0	24.0
10	21.0	14.0	8.0	5.0	8.0	11.0	16.0	23.0	25.0	27.0	29.0	27.0
11	22.0	11.0	7.0	5.0	10.0	10.0	17.0	26.0	24.0	26.0	21.0	25.0
12	18.0	9.0	6.0	6.0	13.0	10.0	19.0	28.0	24.0	26.0	29.0	24.0
13	17.0	6.0	6.0	5.0	11.0	10.0	18.0	29.0	25.0	27.0	---	28.0
14	17.0	5.0	6.0	7.0	13.0	14.0	14.0	---	26.0	28.0	28.0	26.0
15	17.0	10.0	8.0	8.0	13.0	14.0	13.0	23.0	27.0	25.0	29.0	23.0
16	18.0	8.0	9.0	6.0	10.0	16.0	14.0	24.0	27.0	26.0	32.0	24.0
17	18.0	10.0	10.0	5.0	8.0	16.0	16.0	25.0	30.0	26.0	28.0	25.0
18	18.0	11.0	9.0	---	8.0	14.0	24.0	28.0	28.0	27.0	---	22.0
19	18.0	10.0	10.0	3.0	7.0	15.0	21.0	27.0	28.0	27.0	28.0	24.0
20	20.0	10.0	8.0	4.0	7.0	14.0	25.0	28.0	27.0	27.0	27.0	23.0
21	20.0	10.0	8.0	4.0	8.0	14.0	19.0	29.0	27.0	28.0	28.0	23.0
22	18.0	12.0	8.0	3.0	9.0	---	22.0	25.0	29.0	28.0	29.0	21.0
23	18.0	12.0	9.0	3.0	10.0	16.0	17.0	24.0	30.0	28.0	---	20.0
24	18.0	10.0	9.0	6.0	10.0	15.0	17.0	24.0	31.0	28.0	27.0	21.0
25	18.0	8.0	10.0	4.0	10.0	14.0	22.0	25.0	31.0	29.0	27.0	22.0
26	18.0	8.0	10.0	5.0	9.0	12.0	23.0	26.0	27.0	29.0	27.0	24.0
27	18.0	8.0	8.0	5.0	10.0	11.0	26.0	25.0	29.0	29.0	26.0	22.0
28	18.0	8.0	---	8.0	10.0	13.0	28.0	19.0	28.0	29.0	23.0	23.0
29	18.0	8.0	9.0	11.0	---	9.0	27.0	19.0	27.0	28.0	25.0	21.0
30	18.0	8.0	7.0	10.0	---	9.0	22.0	20.0	28.0	32.0	26.0	20.0
31	17.0	---	7.0	8.0	---	10.0	---	20.0	---	29.0	27.0	---
MEAN	19.5	11.0	8.0	6.5	10.0	12.5	18.0	24.5	26.5	27.5	28.0	23.5

## RED RIVER BASIN

105

## 07331500 LAKE TEXOMA NEAR DENISON, TX

LOCATION.--Lat 33°49'05", long 96°34'20", in NE 1/4 sec.33, T.8 S., R.7 E., Bryan County, OK, Hydrologic Unit 11130210, in control tower of Denison Dam on Red River, 1.2 mi upstream from Shawnee Creek, 1.8 mi upstream from Sand Creek, 4.0 mi northwest of Denison, 6.0 mi southwest of Colbert, and at mile 725.9.

DRAINAGE AREA.--39,719 mi<sup>2</sup>, of which 5,936 mi<sup>2</sup> probably is noncontributing.

PERIOD OF RECORD.--July 1942 to current year. Monthend contents only for some periods, published in WSP 1311.

REVISED RECORDS.--WSP 1211: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is at National Geodetic Vertical Datum of 1929. Prior to Mar. 30, 1944, nonrecording gage at same site and datum. Prior to Oct. 1, 1948, supplementary nonrecording gage in Cumberland pool at the same datum.

REMARKS.--Lake is formed by a rolled earthfill dam. The controlled outlet consists of eight 20-foot-diameter conduits and the uncontrolled outlet is a concrete, ogee-type weir spillway. Flow was diverted through conduits July 27, 1942 regulated storage began Oct. 31, 1943; power pool was first filled Mar. 15, 1945. Capacity is based on a 1969 survey at elevation 640.0 ft (capacity, 5,312,000 acre-ft), crest of spillway, 2,643,000 acre-ft at elevation 617.0 ft, maximum power pool; 1,031,000 acre-ft at elevation 590.0 ft, minimum power pool in Denison pool. Dead storage, 11,000 acre-ft at elevation 610.0 ft in Cumberland pool. When contents are below 2,105,000 acre-ft, the lake is divided into two pools by protective levees around the Cumberland oilfield on the Washita River arm with bottom outlet channel for the upper pool (known as Cumberland pool) at elevation 610 ft. At higher elevations the two pools are considered as being at a common level, contents being computed from gage in Denison pool. Figures given herein represent total contents of both pools. Lake is used principally for flood control and power development. Revised capacity table, based on survey in 1969, used since Oct. 1, 1977.

COOPERATION.--Records furnished by U.S. Army Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 5,991,300 acre-ft June 5, 1957 (elevation, 643.18 ft); minimum content since power pool was first filled, 1,565,100 acre-ft Sept. 16, 1964; minimum elevation, 599.96 ft Mar. 1, 2, 1957.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 4,635,000 acre-ft June 5, 6 (elevation, 635.09 ft); minimum, 2,514,000 acre-ft Sept. 12 (elevation, 615.47 ft).

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

614	2,399,000	627	3,649,000
618	2,733,000	632	4,240,000
622	3,117,000	637	4,891,000

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
2400-HR VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2654000	2830000	2822000	2640000	2704000	2938000	2679000	2629000	3902000	3171000	2665000	2531000
2	2666000	2804000	2801000	2624000	2704000	3034000	2663000	2630000	4312000	3146000	2662000	2529000
3	2713000	2785000	2784000	2640000	2704000	3116000	2656000	2636000	4532000	3150000	2657000	2527000
4	2802000	2801000	2775000	2641000	2708000	3140000	2650000	2645000	4614000	3149000	2650000	2524000
5	2863000	2798000	2762000	2641000	2713000	3140000	2642000	2647000	4635000	3127000	2643000	2522000
6	2933000	2822000	2756000	2641000	2716000	3123000	2643000	2638000	4634000	3090000	2636000	2522000
7	3037000	2859000	2759000	2635000	2743000	3099000	2643000	2636000	4615000	3037000	2630000	2525000
8	3117000	2891000	2768000	2634000	2787000	3070000	2644000	2634000	4584000	2981000	2623000	2524000
9	3152000	2897000	2765000	2657000	2804000	3037000	2645000	2632000	4541000	2924000	2616000	2520000
10	3118000	2894000	2754000	2669000	2802000	2990000	2647000	2629000	4487000	2884000	2608000	2521000
11	3088000	2869000	2747000	2683000	2785000	2930000	2650000	2628000	4428000	2856000	2601000	2518000
12	3043000	2849000	2843000	2700000	2765000	2868000	2661000	2624000	4373000	2824000	2592000	2516000
13	3006000	2823000	2735000	2711000	2751000	2822000	2679000	2621000	4334000	2809000	2589000	2516000
14	2979000	2814000	2727000	2713000	2751000	2791000	2671000	2623000	4314000	2801000	2581000	2528000
15	2957000	2817000	2717000	2715000	2746000	2758000	2669000	2621000	4280000	2790000	2575000	2542000
16	2918000	2815000	2706000	2713000	2741000	2752000	2668000	2619000	4231000	2778000	2569000	2541000
17	2890000	2810000	2701000	2713000	2743000	2755000	2667000	2620000	4167000	2771000	2566000	2536000
18	2866000	2801000	2700000	2725000	2743000	2764000	2662000	2618000	4117000	2764000	2564000	2533000
19	2841000	2793000	2692000	2735000	2743000	2772000	2661000	2616000	4040000	2760000	2560000	2534000
20	2815000	2793000	2686000	2735000	2740000	2789000	2658000	2614000	3980000	2756000	2557000	2539000
21	2799000	2788000	2679000	2734000	2732000	2805000	2658000	2614000	3925000	2751000	2553000	2538000
22	2793000	2786000	2674000	2734000	2724000	2809000	2649000	2614000	3860000	2748000	2553000	2532000
23	2798000	2783000	2672000	2731000	2710000	2824000	2647000	2619000	3795000	2744000	2553000	2524000
24	2829000	2777000	2667000	2736000	2708000	2825000	2646000	2624000	3721000	2739000	2546000	2522000
25	2873000	2791000	2672000	2729000	2704000	2826000	2643000	2632000	3645000	2734000	2544000	2516000
26	2944000	2792000	2669000	2724000	2709000	2820000	2641000	2627000	3563000	2724000	2540000	2515000
27	2979000	2802000	2664000	2720000	2735000	2802000	2637000	2632000	3484000	2713000	2545000	2517000
28	2951000	2823000	2662000	2711000	2833000	2788000	2635000	2717000	3398000	2699000	2541000	2528000
29	2912000	2829000	2659000	2712000	---	2756000	2634000	2852000	3316000	2692000	2538000	2533000
30	2871000	2833000	2650000	2706000	---	2720000	2633000	3006000	3248000	2672000	2535000	2529000
31	2848000	---	2646000	2700000	---	2696000	---	3322000	---	2668000	2536000	---
MAX	3152000	2897000	2843000	2736000	2833000	3140000	2679000	3322000	4635000	3171000	2665000	2542000
MIN	2654000	2777000	2646000	2624000	2704000	2696000	2633000	2614000	3248000	2668000	2535000	2515000
(↑)	619.24	619.08	617.03	617.63	619.08	617.59	616.88	623.99	623.28	617.27	615.74	615.65
(Φ)	+219,000	-15,000	-187,000	+54,000	+133,000	-137,000	-63,000	+689,000	-74,000	-580,000	-132,000	-7,000
CAL YR 1986	MAX 3152000	MIN 2335000	(Φ) +102,000									
WTR YR 1987	MAX 4635000	MIN 2515000	(Φ) -100,000									

(↑) Elevation, in feet, at end of month.

(Φ) Change in contents, in acre-feet.

## RED RIVER MAIN STEM

## 07331600 RED RIVER AT DENISON DAM NEAR DENISON, TX

LOCATION.--Lat 33°49'08", long 96°33'47", Grayson County, Hydrologic Unit 11140101, on right bank 1,800 ft downstream from Denison Dam powerhouse, 0.4 mi upstream from Shawnee Creek (spillway flow return), 4.5 mi north of Denison, and at mile 725.5.

DRAINAGE AREA.--39,720 mi<sup>2</sup>, of which 5,936 mi<sup>2</sup> is probably noncontributing. At site used prior to October 1961, drainage area was 39,777 mi<sup>2</sup>, of which 5,936 mi<sup>2</sup> probably was noncontributing.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1923 to current year. Monthly discharge only for some periods, published in WSP 1311. Prior to October 1934, published as "near Denison, TX", and October 1934 to September 1961, published as "near Colbert, OK". Gage-height records collected at various sites in this vicinity 1892-93, 1906-28, 1931-49 are contained in reports of the National Weather Service.

REVISED RECORDS.--WSP 807: 1935 (M). WSP 1211: Drainage area. WSP 1241: 1924-29, 1932-33, 1934 (M), 1935.

GAGE.--Water-stage recorder. Datum of gage is 500.00 ft above National Geodetic Vertical Datum of 1929. Oct. 9, 1923 to Sept. 24, 1934, nonrecording gage, and July 29, 1942 to Sept. 30, 1961, water-stage recorder, at county road bridge 2.5 mi downstream. Prior to Oct. 1, 1931, at datum 6.85 ft higher; Oct. 1, 1931 to Sept. 24, 1934, at datum 7.07 ft higher; and July 29, 1942 to Sept. 30, 1961, at datum 2.64 ft lower; Sept. 25, 1934 to July 28, 1942, water-stage recorder at railway bridge 1.9 mi downstream at datum 7.36 ft higher.

REMARKS.--Records good. Flow regulated since October 1943 by Lake Texoma (station 07331500).

COOPERATION.--Gage-height record and 4 discharge measurements furnished by U.S. Army Corps of Engineers; records computed by U.S. Geological Survey.

AVERAGE DISCHARGE.--20 years (water years 1924-43) prior to regulation by Denison Dam, 5,684 ft<sup>3</sup>/s (4,118,000 acre-ft/yr); 43 years (water years 1945-87) since regulation by Denison Dam, 4,718 ft<sup>3</sup>/s (3,418,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 201,000 ft<sup>3</sup>/s May 21, 1935 (gage height, 31.8 ft), at site and datum then in use; maximum gage height, 32.0 ft Apr. 25, 1942 (at site and datum used in 1943); minimum daily discharge, 12 ft<sup>3</sup>/s Jan. 10, 1944.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 26, 1908, reached a stage of 45.5 ft (at site and datum used July 29, 1942 to Sept. 30, 1961); from record of National Weather Service.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 53,100 ft<sup>3</sup>/s June 19 (gage height, 18.94 ft); minimum daily, 65 ft<sup>3</sup>/s Apr. 12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5590	24400	18300	7330	10600	17600	16600	e3600	40800	46800	3570	3240
2	6710	24300	18400	7390	10600	22900	14200	e3200	40800	37200	3570	3030
3	10400	20700	16400	2390	10600	27500	e10400	e2800	44800	33400	4730	2950
4	10600	17500	13600	1880	10600	31000	e10500	e2830	48100	38000	4740	3060
5	12900	17400	12800	3220	10600	31000	e10500	4580	48200	42200	4750	2200
6	19400	20100	10500	5840	12200	31000	e7740	5880	48200	42200	4740	2160
7	11700	24900	10400	6410	15300	31000	e5760	5380	48200	42200	4770	241
8	28200	24800	10400	6610	15300	30900	e5780	5350	49600	42200	4740	2880
9	36300	24800	13500	6740	17700	30900	e5740	4020	51100	37700	4750	3130
10	41100	24800	17700	6560	21100	34500	e5840	4010	51000	28400	4750	2970
11	41100	24700	17700	6520	21100	40100	e2780	3800	51000	20900	4890	2930
12	41000	24700	16000	6850	19400	40200	e65	3990	51200	20900	4830	2930
13	41100	22500	13700	9460	14400	32200	e3060	3990	51000	16600	4750	2920
14	41300	16200	13700	10500	12800	23800	e5770	421	50900	10400	4740	3460
15	41400	13100	13700	10600	12800	23800	e5780	3740	51000	10300	3840	5710
16	39300	13100	12700	10500	12800	21600	e5660	2520	51000	10300	3860	6040
17	30200	13100	10500	10500	12800	16900	e5700	2440	50700	10300	3770	6190
18	24000	13100	10000	10800	12800	16600	e5210	2460	50000	9620	3740	6030
19	23900	12400	10500	10500	13700	16600	e5820	2090	51100	9540	3710	3430
20	22300	10400	9590	10500	14500	16600	e5780	2770	50700	9480	3720	3310
21	16400	10400	9500	10500	14500	16500	e7000	2050	50400	9380	3720	5900
22	13600	10400	9080	10500	14500	16600	e7890	2300	50200	9400	2590	6000
23	15200	10400	6820	10500	13600	16500	e6030	2120	50100	9440	2540	5950
24	23800	10400	7530	10500	12400	17000	e6170	168	49300	9460	3800	3310
25	37600	10600	3580	10500	12400	20900	e6190	2080	49800	9450	3740	5750
26	40500	11300	6710	10500	12500	24700	e6070	5310	49700	9470	2970	2520
27	40500	13600	7130	10500	12400	24800	e6150	9470	49700	9450	2960	2430
28	40500	15700	6360	10600	12500	24700	e4060	10000	49600	9470	2970	140
29	40600	18400	7010	10600	---	24600	e3740	16200	49500	9470	2950	99
30	38000	18400	7110	10600	---	24700	e3660	28300	49400	8760	2940	5720
31	28400	---	7400	10600	---	19900	---	36000	---	4750	2950	---
TOTAL	863600	516600	348320	267000	386500	767600	195645	183869	1477100	617140	121090	106630
MEAN	27860	17220	11240	8613	13800	24760	6521	5931	49240	19910	3906	3554
MAX	41400	24900	18400	10800	21100	40200	16600	36000	51200	46800	4890	6190
MIN	5590	10400	3580	1880	10600	16500	65	168	40800	4750	2540	99
AC-FT	1713000	1025000	690900	529600	766600	1523000	388100	364700	2930000	1224000	240200	211500

CAL YR 1986 TOTAL 2922150 MEAN 8006 MAX 41400 MIN 69 AC-FT .5796000  
WTR YR 1987 TOTAL 5851090 MEAN 16030 MAX 51200 MIN 65 AC-FT 11610000

e Estimated.

07331600 RED RIVER AT DENISON DAM NEAR DENISON, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: May 1944 to current year. Chemical and biochemical analyses: October 1974 to September 1986. Sediment analyses: October 1974 to September 1986.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: May 1944 to current year.

WATER TEMPERATURE: October 1945 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, 3,520 microsiemens Aug. 14, 1944; minimum daily, 656 microsiemens Oct. 16, 1945.

WATER TEMPERATURE (1945-69): Maximum daily, 31.0°C July 17, 1969; minimum daily, 3.0°C Feb. 2-4, 7, 1966.

## EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,930 microsiemens Jan. 7; minimum daily, 1,040 microsiemens July 8.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	HARD- NESS (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 22...	1100	13600	1610	310	210	86	23	200
JAN 28...	0940	10600	1790	410	220	110	32	230
JUN 02...	1140	40800	1680	430	280	110	38	180
JUL 21...	0950	9380	1160	300	180	79	25	120
DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WH WAT TOTAL 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)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)
OCT 22...	5	6.4	100	220	320	0.30	5.9	920
JAN 28...	5	5.8	189	270	330	0.30	7.7	1100
JUN 02...	4	4.9	148	260	300	0.30	7.9	990
JUL 21...	3	4.8	121	180	180	0.30	8.2	670

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1986 TO SEPTEMBER 1987

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. 1986	863600	1590	919	2142000	310	734000	210	495800	350
NOV. 1986	516600	1600	922	1286000	320	440500	210	297600	350
DEC. 1986	348320	1740	1010	950000	350	326000	230	220600	370
JAN. 1987	267000	1830	1060	766000	360	263000	250	178100	380
FEB. 1987	386500	1830	1060	1111000	370	381500	250	258300	380
MAR. 1987	767600	1710	988	2049000	340	702600	230	475200	360
APR. 1987	195645	1620	936	494000	320	169400	220	114500	350
MAY 1987	183869	1680	969	481000	330	165000	220	111600	360
JUNE 1987	1477100	1460	837	3339000	290	1143000	190	770900	320
JULY 1987	617140	1120	633	1055000	220	359900	150	241700	260
AUG. 1987	121090	1520	872	285000	300	97700	200	65900	330
SEPT 1987	106630	1550	890	256000	310	87800	210	59300	340
TOTAL	5851094	**	**	14214000	**	4870000	**	3289000	**
WTD.AVG.	16030	1560	900	**	310	**	210	**	340

## RED RIVER MAIN STEM

07331600 RED RIVER AT DENISON DAM NEAR DENISON, TX--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
EQUIVALENT MEAN

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1610	1680	1660	1860	1790	1870	1610	1660	1700	1120	1330	1360
2	1580	1660	1670	1830	1780	1870	1610	1670	1710	1120	1330	1430
3	1600	1630	1680	1820	1790	1870	1630	1680	1710	1110	1330	1770
4	1580	1670	1640	1820	1770	1880	1620	1680	1720	1100	1320	1760
5	1580	1600	1640	1810	1820	1860	1620	1610	1730	1090	1310	1760
6	1560	1630	1700	1880	1780	1850	1610	1590	1700	1080	1360	1760
7	1550	1640	1780	1930	1790	1800	1610	1580	1650	1060	1360	1760
8	1540	1600	1820	1780	1810	1750	1610	1630	1610	1040	1360	1760
9	1550	1560	1730	1770	1820	1710	1620	1640	1610	1060	1350	1750
10	1550	1590	1720	1800	1820	1500	1620	1640	1600	1090	1350	1750
11	1570	1550	1740	1810	1850	1510	1650	1650	1590	1080	1390	1750
12	1590	1520	1740	1830	1850	1610	1670	1650	1470	1080	1500	1740
13	1590	1540	1760	1840	1850	1660	1690	1680	1430	1070	1430	1740
14	1610	1550	1780	1840	1850	1700	1640	1710	1420	1070	1650	1740
15	1610	1550	1790	1880	1840	1740	1610	1730	1410	1140	1650	1650
16	1610	1550	1760	1850	1840	1770	1610	1730	1430	1370	1660	1510
17	1580	1560	1770	1840	1840	1700	1620	1730	1420	1250	1660	1510
18	1600	1560	1750	1830	1850	1670	1630	1730	1410	1220	1670	1480
19	1600	1570	1720	1830	1850	1720	1630	1730	1400	1210	1690	1450
20	1610	1570	1750	1810	1840	1700	1630	1730	1380	1190	1710	1430
21	1620	1580	1780	1810	1830	1690	1630	1710	1380	1160	1660	1420
22	1640	1600	1810	1810	1820	1690	1620	1700	1370	1180	1640	1430
23	1690	1600	1720	1810	1820	1680	1620	1700	1390	1200	1620	1430
24	1640	1600	1720	1820	1810	1660	1610	1700	1300	1230	1390	1430
25	1600	1600	1740	1820	1860	1640	1600	1690	1240	1220	1530	1430
26	1570	1620	1770	1830	1870	1630	1630	1690	1250	1210	1780	1430
27	1550	1620	1800	1820	1870	1650	1650	1680	1250	1250	1820	1430
28	1560	1630	1830	1810	1870	1660	1640	1680	1250	1280	1730	1430
29	1630	1650	1840	1810	---	1660	1640	1680	1250	1230	1740	1430
30	1640	1650	1880	1810	---	1670	1650	1690	1180	1270	1750	1430
31	1710	---	1910	1800	---	1650	---	1690	---	1330	1760	---
MEAN	1600	1600	1750	1830	1830	1710	1630	1680	1470	1160	1540	1570

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26.0	---	13.0	---	---	---	13.0	---	---	24.0	---	27.0
2	26.0	---	13.0	10.0	8.0	8.0	13.0	19.0	---	---	---	27.0
3	26.0	20.0	12.0	---	8.0	9.0	13.0	---	---	---	26.0	26.0
4	---	20.0	12.5	---	8.0	9.0	---	14.0	---	---	26.0	25.0
5	---	20.0	12.0	8.0	8.0	10.0	---	16.0	21.0	---	27.0	---
6	25.0	19.0	---	---	8.0	10.0	13.0	16.0	---	25.0	27.0	---
7	25.0	19.0	---	9.0	---	---	13.0	16.0	---	25.0	27.0	---
8	24.0	---	12.0	9.0	---	---	13.0	15.0	21.0	25.0	---	25.0
9	24.0	14.5	12.0	9.0	8.0	11.0	13.0	---	21.0	25.0	---	25.0
10	24.0	18.0	12.0	---	8.0	11.0	13.0	---	---	25.0	21.0	---
11	---	---	12.0	---	8.0	11.0	---	16.0	21.0	---	24.0	26.0
12	---	17.0	11.0	9.0	---	11.0	---	16.0	---	---	27.0	---
13	---	16.0	---	9.0	---	11.0	13.0	---	---	26.0	27.0	---
14	22.0	15.5	---	9.0	---	---	13.0	---	---	26.0	25.0	26.0
15	22.0	---	11.0	9.0	---	---	13.0	16.0	22.0	26.0	---	---
16	22.0	---	11.0	---	---	9.0	14.0	---	21.0	26.0	---	27.0
17	22.0	15.0	11.0	---	9.0	---	---	---	---	26.0	---	---
18	---	15.0	11.0	---	9.0	12.0	13.0	14.0	22.0	---	26.0	---
19	---	14.5	11.0	---	9.0	11.0	---	14.0	22.0	---	26.0	---
20	22.0	---	---	8.0	---	11.0	---	15.0	---	26.0	26.0	---
21	22.0	14.5	---	8.0	---	---	15.0	15.0	---	26.0	---	27.0
22	21.0	14.5	10.0	8.0	---	---	---	15.0	22.0	26.0	---	27.0
23	20.0	---	10.0	8.0	10.0	12.0	---	16.0	22.0	26.0	---	---
24	20.0	14.5	10.0	---	10.0	---	---	---	23.0	26.0	27.0	26.0
25	---	15.0	---	---	10.0	12.0	16.0	---	23.0	---	26.0	---
26	---	---	---	8.0	10.0	11.0	---	15.0	24.0	26.0	26.0	---
27	20.0	---	---	8.0	10.0	12.0	14.0	16.0	---	---	26.0	---
28	20.0	---	---	8.0	---	---	12.0	---	---	26.0	26.0	---
29	20.0	---	10.0	8.0	---	---	---	---	23.0	26.0	---	25.0
30	19.0	---	9.0	8.0	---	13.0	15.0	---	24.0	26.0	---	25.0
31	20.0	---	9.0	---	---	13.0	---	---	---	26.0	25.0	---
MEAN	22.5	16.5	11.0	8.5	9.0	11.0	13.5	15.5	22.0	25.5	26.0	26.0

## 07335390 PAT MAYSE LAKE NEAR CHICOTA, TX

LOCATION.--Lat 33°51'10", long 93°32'38", Lamar County, Hydrologic Unit 11140101, on upstream side of dam on Sanders Creek, 2,800 ft to right of outlet channel, 2.0 mi southeast of Chicota, and 4.6 mi upstream from mouth.

DRAINAGE AREA.--175 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1967 to current year. Prior to October 1970, published as Pat Mayse Reservoir.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to May 10, 1968, non-recording gage at present site and datum.

REMARKS.--The lake is formed by a rolled earthfill dam about 7,080 ft long, including a spillway 100 ft wide located near the right abutment of dam. The dam was completed and deliberate impoundment began Sept. 28, 1967. The flood-control outlet works consist of an uncontrolled morning-glory-type drop-inlet spillway that is connected to a 7.25-foot-diameter concrete conduit through the dam. A 24- and 12-inch diameter low-flow pipe is provided for additional outlets. The lake was built for flood control, municipal, and industrial water supply, recreation, fish and wildlife conservation, and for channel improvement on Sanders Creek. Water is diverted from the lake for municipal and industrial uses by the city of Paris. Any resultant effluent is discharged into Pine Creek below Lake Crook, which is located in another drainage basin. The capacity table is based on Geological Survey topographic maps dated 1949. Data regarding the dam and lake are given in the following table:

	Elevation (feet)	Capacity (acre-feet)
Top of dam.....	488.5	
Crest of spillway.....	477.0	352,700
Top of flood-control pool.....	460.5	189,100
Crest of morning-glory drop-inlet spillway (top of conservation pool).....	450.6	122,100
Streambed.....	393.0	0

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 208,000 acre-ft Dec. 11, 12, 1971 (elevation, 462.87 ft); minimum since conservation pool was first reached on Apr. 20, 1968, 100,900 acre-ft Nov. 10, 1978 (elevation, 446.80 ft).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 147,300 acre-ft Mar. 19 (elevation, 454.63 ft); minimum, 118,600 acre-ft Sept. 12-14 (elevation, 450.00 ft).

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

449.0	112,800	453.0	136,800
451.0	124,500	455.0	149,800

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	120400	121300	135300	129800	129500	139200	134000	125900	125700	125200	124100	119600
2	120400	121200	134700	129400	129400	139500	133400	125800	125800	125200	123900	119400
3	120200	121100	134200	129700	129200	138800	132800	125700	125800	125600	123800	119400
4	121000	122200	133600	129700	128900	137900	132400	125900	125500	126000	123700	119200
5	120900	122600	133100	129600	128800	137200	132000	125900	125500	126000	123500	119100
6	120800	122900	132600	129400	128600	136500	131600	125800	125300	125700	123400	119000
7	120800	122900	132500	129200	128400	135700	131200	125800	125100	125500	123200	118900
8	121200	123000	132300	129100	128100	135200	131100	125800	125000	125300	122900	118900
9	121500	122800	132100	130600	127900	134500	130600	125600	125200	125200	122800	118800
10	121600	123800	131800	132100	127900	133900	130200	125600	125400	125200	122600	118600
11	122100	125300	131600	132100	127800	133500	130000	125400	125500	125000	122500	118600
12	122100	128000	131300	132000	127700	133100	129700	125300	125800	124900	122200	118600
13	122300	127900	130900	131800	127600	132600	129600	125200	125800	124900	122200	118600
14	122300	127800	130700	131500	127500	132200	129100	125000	125800	124900	122000	118600
15	122300	127700	130700	131300	128000	131800	128900	125200	125700	124600	121800	119400
16	122300	127600	130700	130900	127900	131400	128800	125200	125600	124700	121600	119300
17	122200	127400	130700	130900	127800	140500	128500	125200	125500	124800	121400	119300
18	122200	127500	131800	132000	127700	146200	128400	125000	125400	125100	121300	119700
19	122000	127400	133200	132900	127400	146800	128100	125000	125500	125100	121200	119800
20	121900	127400	133300	132900	127500	145600	128000	124900	125600	125000	121200	120300
21	121800	127200	133100	132500	128100	144200	127700	124800	125600	125000	120900	120500
22	121700	127200	132800	132100	128500	142900	127400	124600	125400	124900	120700	120300
23	121900	127200	132400	131700	128600	141600	127200	124500	125500	124700	120500	120200
24	121900	127500	132100	131500	128800	140500	127000	124400	125900	124600	120400	120100
25	121800	131700	131800	131100	129200	139500	126900	124400	126200	124600	120300	119900
26	121700	137600	131500	130800	130700	138500	126700	124400	126100	124600	120100	119800
27	121600	138200	131500	130600	133200	137600	126600	124300	125900	124600	120100	119700
28	121600	137600	130900	130300	137100	136700	126400	125200	125500	124700	119900	119600
29	121500	136900	130600	130000	---	135700	126300	125200	125500	124700	119800	119500
30	121400	136000	130300	129900	---	135100	126200	125600	125500	124600	119600	119300
31	121300	---	130000	129600	---	134600	---	125700	---	124400	119800	---
MAX	122300	138200	135300	132900	137100	146800	134000	125900	126200	126000	124100	120500
MIN	120200	121100	130000	129100	127400	131400	126200	124300	125000	124400	119600	118600
(↑)	450.47	452.87	451.90	451.83	453.04	452.65	451.28	451.20	451.16	450.98	450.20	450.13
(Φ)	+800	+14700	-6000	-400	+7500	-2500	-8400	-500	-200	-1100	-4600	-500

CAL YR 1986 MAX 149600 MIN 119800 (Φ) +1700  
WTR YR 1987 MAX 146800 MIN 118600 (Φ) -1200

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

## RED RIVER MAIN STEM

07335500 RED RIVER AT ARTHUR CITY, TX

LOCATION.--Lat 33°52'32", long 95°30'08", in NW 1/4 sec.11, T.8 S., R.17 E., Choctaw County, OK, Hydrologic Unit 11140101, on right downstream bank of bridge on U.S. Highway 271 at Arthur City, 10.6 mi downstream from Muddy Boggy River, 26.0 mi upstream from Kiamichi River, and at mile 633.1.

DRAINAGE AREA.--44,531 mi<sup>2</sup>, of which 5,936 mi<sup>2</sup> probably is noncontributing.

PERIOD OF RECORD.--January to September 1905 (gage heights and discharge measurements only), October 1905 to December 1911, July 1936 to current year. Monthly discharge only for some periods, published in WSP 1311. Gage-height records collected at same site since 1891 are contained in reports of the National Weather Service.

REVISED RECORDS.--WSP 1241: Drainage area. WSP 1311: 1906-11.

GAGE.--Water-stage recorder. Datum of gage is 380.07 ft above National Geodetic Vertical Datum of 1929. From 1905-11 nonrecording gage at St. Louis-San Francisco Railway Co. bridge 200 ft upstream at same datum. July 1, 1936, to Mar. 24, 1940, nonrecording gage at present site and datum.

REMARKS.--Records fair. Flow regulated since October 1943 by Lake Texoma (station 07331500), 92.8 mi above station.

COOPERATION.--Gage-height record and 7 discharge measurements furnished by U.S. Army Corps of Engineers; records computed by U.S. Geological Survey.

AVERAGE DISCHARGE.--13 years (water years 1906-11, 1937-43) prior to regulation by Denison Dam), 9,266 ft<sup>3</sup>/s (6,713,000 acre-ft/yr); 43 years (water years 1945-87) since regulation by Denison Dam), 8,256 ft<sup>3</sup>/s (5,981,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 400,000 ft<sup>3</sup>/s May 28, 1908 (gage height, 43.2 ft), from rating curve extended above 41,000 ft<sup>3</sup>/s, on basis of records for later years; minimum, 130 ft<sup>3</sup>/s Dec. 11-12, 1956 (gage height, 4.49 ft).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 62,700 ft<sup>3</sup>/s June 5 (gage height, 18.91 ft); maximum gage height, 19.59 ft June 21; minimum daily discharge, 1,750 ft<sup>3</sup>/s Sept. 9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6680	32700	22700	8350	12400	39800	26400	4380	53500	54500	7010	3230
2	6880	28400	22100	8400	12600	e45000	21300	4260	56200	52700	5520	3220
3	9770	28000	21900	8660	13000	e48000	20000	4210	56600	46200	4520	3460
4	10600	27900	21100	8500	13200	e45000	15200	3450	58000	38600	4370	3350
5	12700	25800	17700	5340	13300	e45000	13700	3260	61300	38000	5120	3230
6	15700	27600	16900	4670	12800	e46000	13600	3230	57500	44900	5130	3220
7	19300	25500	13800	5420	12500	e47000	12600	4940	49400	44100	5130	2810
8	17500	29500	12400	7040	17400	e49000	9910	6450	49100	42800	5100	2480
9	23400	29400	15800	9450	19400	e48000	9290	5860	49900	42400	5090	1750
10	35500	28600	19900	19700	19700	e46000	9070	5390	52400	39800	5070	1890
11	41000	30200	24400	21300	23400	e44000	8930	4620	52600	31800	5110	3140
12	40800	30600	23100	18800	24200	e45000	8690	4460	52400	22900	5130	3240
13	39500	28700	21300	17700	23400	e44000	6340	4250	52600	21600	5330	3200
14	38900	27000	18100	17400	20100	42700	5660	4310	53400	20600	5320	3320
15	40000	21900	17500	14500	17600	33300	5590	4290	52600	13600	5140	4290
16	41700	17900	17400	14100	17600	33000	6550	2770	53000	11300	5060	7360
17	41300	16500	17200	14100	18700	45600	6580	3170	53800	10900	4380	7950
18	36700	16200	15600	17600	21300	52300	6530	3880	54100	10900	4290	7130
19	36300	16100	16600	24900	21700	42600	6480	3690	53200	10500	4200	8210
20	32300	15800	16800	24000	20000	35200	5890	3490	56600	9890	4080	8660
21	26800	12400	14200	21200	19700	32400	6330	3290	61100	9670	4050	6320
22	21900	11200	11600	20600	20500	31500	6320	3420	57800	9510	4020	4940
23	18500	11100	10900	19500	19700	27100	7860	3110	56400	9350	4010	6190
24	17500	10900	8940	16600	19200	23700	7340	3460	57800	9420	3270	6460
25	23100	16100	8930	14500	18500	22700	6230	4040	55400	9570	2980	6390
26	36700	29500	8160	13600	18700	26300	6140	3500	54700	9380	3680	4830
27	42100	28900	6180	13300	24600	30300	6100	3080	53500	9300	3990	5370
28	41200	25300	8010	13000	31700	32900	6050	6610	53000	9230	3660	3800
29	40000	22800	7970	12800	---	31800	5600	21200	53000	9180	3360	3060
30	39800	23300	7800	12600	---	31500	4740	34200	53600	9180	3320	1940
31	38700	---	8110	12500	---	30300	---	45300	---	9170	3300	---
TOTAL	892830	695800	473100	440130	526900	1197000	281020	215570	1634500	710950	139740	134440
MEAN	28800	23190	15260	14200	18820	38610	9367	6954	54480	22930	4508	4481
MAX	42100	32700	24400	24900	31700	52300	26400	45300	61300	54500	7010	8660
MIN	6680	10900	6180	4670	12400	22700	4740	2770	49100	9170	2980	1750
AC-FT	1771000	1380000	938400	873000	1045000	2374000	557400	427600	3242000	1410000	277200	266700

CAL YR 1986 TOTAL 4506320 MEAN 12350 MAX 45600 MIN 749 AC-FT 8938000  
WTR YR 1987 TOTAL 7341980 MEAN 20120 MAX 61300 MIN 1750 AC-FT 14560000

e Estimated.

LOCATION.--Lat 33°41'15", long 94°41'39", Bowie County, Tex.-McCurtain County, Okla. State line, Hydrologic Unit 11140106, near left bank at downstream side of bridge on U.S. Highway 259, 4.8 mi upstream from North Mill Creek, 13 mi north of De Kalb, and at mile 556.9.

WATER-DISCHARGE RECORDS

GAGE.--Water-stage recorder. Datum of gage is 302.92 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. At times, flood peaks may be affected by storage in Lake Texoma (station 07331500) located approximately 169 mi upstream, and low flows may be affected by releases for generation of electric power. Storage and/or releases from Lake Hugo on the Kiamichi River, a tributary to the Red River about 45 miles upstream, may also affect flows. Gage-height telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 189,000 ft<sup>3</sup>/s Dec. 11, 1971 (gage height, 31.55 ft), from graph based on gage readings; minimum, 213 ft<sup>3</sup>/s Nov. 30, 1979, from graph based on gage readings.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge since 1957, 205,000 ft<sup>3</sup>/s June 1957 (gage height, 32.2 ft), from rating curve extended above 186,500 ft<sup>3</sup>/s. The greatest flood since 1936 occurred in February 1938, stage unknown.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 72,300 ft<sup>3</sup>/s June 3 at 2015 hours (gage height, 23.84 ft); minimum daily, 2,920 ft<sup>3</sup>/s Sept. 11.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7350	41700	29500	9380	14200	50700	33500	5440	58700	63600	11900	4760
2	7100	34800	28700	9540	14300	57200	28600	4840	66700	64500	11300	4580
3	6870	30000	27800	10000	14400	55200	22200	4590	70700	63800	9040	4490
4	8250	31200	27200	11100	14400	57800	20300	4540	69100	58100	7760	4520
5	11800	35200	24900	11100	14200	60500	16900	4170	67900	51300	7120	4680
6	12900	30500	19600	9010	14300	63700	14600	3660	70100	49600	7460	4540
7	14300	30900	17400	7930	14100	62000	14000	3500	67700	54700	7670	4450
8	17400	29500	16100	7750	13800	58300	13300	4160	63900	56200	7620	4410
9	19400	32100	15200	9790	15600	52400	10800	6210	63100	55100	7580	3960
10	22000	33900	17600	14600	19100	47600	9290	6520	63900	54800	7530	3650
11	36900	40700	23900	22800	20000	42800	8730	5990	66500	52600	7470	2920
12	45500	40200	30300	24000	23400	42600	8430	5160	66800	44700	7490	3570
13	45600	38800	29000	22600	26300	48800	8160	4660	66200	34300	7440	4380
14	44200	36100	25900	22000	25100	50000	7330	4450	66100	30200	7150	4480
15	43000	32300	22300	21100	21900	40800	5820	4350	66300	27900	7160	4570
16	42600	25600	20000	19200	18800	31000	6120	4590	66000	19900	7060	4840
17	42800	20700	18700	17800	17800	41100	8040	4200	66900	15700	6900	6680
18	41400	18600	19500	17500	19300	64600	8400	2970	68300	14600	6340	9680
19	35800	18500	20200	21800	23100	68100	8340	3800	68400	14200	5710	9240
20	31000	18200	19800	30700	25200	60500	8250	3850	68000	13800	5600	9380
21	28900	17900	20000	31200	23900	52500	7720	3680	70800	13000	5450	10900
22	28400	16100	17800	29900	22800	50000	7300	5150	74400	12600	5370	9230
23	23600	14200	15600	29400	23500	48300	7380	3730	72600	12400	5350	7090
24	19700	14100	14500	25400	23400	43400	7400	5160	72500	12200	5310	6720
25	17600	14600	12700	20900	23400	38700	8530	4680	71700	12100	5060	7560
26	21500	21500	11700	19100	23100	37100	7170	4060	68600	12200	4450	7620
27	37100	36000	11300	18400	26100	37400	6670	4880	67000	12100	4490	7000
28	44800	36200	9190	17100	37700	36300	6500	6090	65100	11900	5130	5800
29	44800	33400	9750	15800	---	36100	6400	8470	63500	11800	5180	5980
30	43900	30200	10100	15400	---	35700	6270	24400	63200	11700	4880	4620
31	43700	---	9220	14800	---	35200	---	45600	---	11700	4730	---
TOTAL	890170	853700	595460	557100	573200	1506400	332450	207550	2020700	973300	208700	176300
MEAN	28720	28460	19210	17970	20470	48590	11080	6695	67360	31400	6732	5877
MAX	45600	41700	30300	31200	37700	68100	33500	45600	74400	64500	11900	10900
MIN	6870	14100	9190	7750	13800	31000	5820	2970	58700	11700	4450	2920
AC-FT	1766000	1693000	1181000	1105000	1137000	2988000	659400	411700	4008000	1931000	414000	349700
CAL YR 1986	TOTAL 6079870		MEAN 16660	MAX 62700	MIN 1440	AC-FT 12060000						
WTR YR 1987	TOTAL 8895030		MEAN 24370	MAX 74400	MIN 2920	AC-FT 17640000						

## RED RIVER MAIN STEM

07336820 RED RIVER NEAR DE KALB, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: January 1968 to current year. Pesticide analyses: October 1970 to September 1981. Sediment analyses: November 1979 to current year.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: January 1968 to current year.  
WATER TEMPERATURE: January 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 relationship 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, 2,140 microsiemens July 13, 1980; minimum daily, 114 microsiemens Oct. 31, 1984.  
WATER TEMPERATURE: Maximum daily, 34.0°C on several days during July and August 1969-70; minimum daily, 0.0°C Jan. 11, 1977.

## EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,740 microsiemens Feb. 13; minimum daily, 515 microsiemens May 29.  
WATER TEMPERATURE: Maximum daily, 30.0°C on several days during July and August; minimum daily, 4.0°C Jan. 23.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	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 (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	
OCT 08...	0945	14500	1260	7.90	22.0	7.5	87	1.4	260	170	68	
NOV 18...	1730	18400	1420	7.90	15.5	9.0	92	4.4	310	210	86	
JAN 07...	0905	8410	1060	7.80	8.0	11.0	94	0.3	260	140	72	
FEB 24...	1430	23300	1320	8.20	9.5	11.4	102	1.0	310	190	86	
APR 14...	1500	7430	1290	8.30	16.5	9.3	98	0.8	340	190	90	
JUN 02...	1500	69	1040	7.60	23.5	7.0	85	1.0	250	140	66	
JUL 21...	1715	13	1240	8.40	30.0	9.2	125	1.8	300	170	81	
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 WH WAT TOTAL 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)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)
OCT 08...	21	150	4	5.3	88	160	240	0.30	2.0	700	0.180	
NOV 18...	23	180	5	5.2	102	220	280	0.30	6.1	860	0.390	
JAN 07...	19	120	3	4.2	115	140	200	0.20	7.4	630	--	
FEB 24...	24	150	4	4.4	121	200	240	0.30	7.3	780	0.390	
APR 14...	28	130	3	4.1	152	190	210	0.30	6.8	750	0.270	
JUN 02...	21	110	3	4.0	112	150	170	0.20	7.1	600	0.380	
JUL 21...	24	130	3	4.6	130	180	210	0.30	7.1	720	--	
DATE		NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. STEEVE DIAM. % FINER THAN .062 MM	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)
OCT 08...	0.020	0.200	0.030	1.2	1.2	0.170	651	25500	72	--	--	
NOV 18...	0.010	0.400	0.040	0.26	0.30	0.070	456	22700	42	--	--	
JAN 07...	<0.010	0.300	0.030	0.67	0.70	0.030	427	9700	19	1	120	
FEB 24...	0.010	0.400	0.020	1.3	1.3	0.080	--	--	--	--	--	
APR 14...	0.030	0.300	0.060	0.74	0.80	0.070	642	12900	16	--	--	
JUN 02...	0.020	0.400	0.070	1.2	1.3	0.120	2210	412	42	--	--	
JUL 21...	<0.010	<0.100	<0.010	--	0.90	0.140	289	10	57	2	160	

07336820 RED RIVER NEAR DE KALB, TX--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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)
OCT 08...	--	--	--	--	--	--	--	--	--	--
NOV 18...	--	--	--	--	--	--	--	--	--	--
JAN 07...	<1	<10	1	47	<5	24	0.2	<1	<1	13
FEB 24...	--	--	--	--	--	--	--	--	--	--
APR 14...	--	--	--	--	--	--	--	--	--	--
JUN 02...	--	--	--	--	--	--	--	--	--	--
JUL 21...	<1	<10	1	4	<5	1	0.6	1	<1	<3

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1986 TO SEPTEMBER 1987

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. 1986	890170	1530	879	2111000	290	686200	200	482300	340
NOV. 1986	853700	1320	754	1737000	240	546500	170	387000	300
DEC. 1986	595460	1320	754	1213000	240	378100	170	268400	300
JAN. 1987	557100	996	563	847000	170	250400	120	180000	240
FEB. 1987	573200	1450	832	1288000	270	414100	190	291800	320
MAR. 1987	1506400	1100	625	2541000	190	765800	130	548000	260
APR. 1987	332450	1340	763	685000	240	214600	170	152100	310
MAY 1987	207550	1100	623	349000	190	105800	130	75600	260
JUNE 1987	2020700	1250	709	3869000	220	1190100	160	847400	290
JULY 1987	973300	1090	615	1616000	180	478100	130	343700	260
AUG. 1987	208700	1180	670	378000	200	114200	140	81600	280
SEPT 1987	176300	1260	718	342000	220	105300	160	74900	290
TOTAL	8895030	**	**	16976000	**	5249000	**	3733000	**
WTD.AVG.	24370	1240	707	**	220	**	160	**	290

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
EQUIVALENT MEAN

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1500	1620	1110	1570	1440	921	1460	1450	887	1130	1200	1330
2	1500	1630	1290	1610	1490	792	1480	1440	1010	1100	1150	1320
3	1440	1650	1350	1630	1470	602	1410	1420	1120	1050	1080	1300
4	1440	1720	1380	1600	1480	841	1390	1410	1120	1050	1010	1310
5	1230	1460	1390	1570	1510	957	1380	1420	1240	1060	997	1290
6	1230	1390	1420	1400	1510	1060	1360	1380	1320	1060	1020	1290
7	1430	1310	1460	1140	1530	1120	1420	1290	1400	1120	1110	1300
8	1270	1240	1490	1000	1560	1170	1430	1290	1490	1130	1110	1300
9	1500	1380	1500	1080	1580	1230	1390	1320	1520	1050	1110	1330
10	1380	1530	1510	1110	1670	1340	1280	1340	1500	1030	1120	1310
11	1420	1340	1230	710	1650	1480	1310	1360	1460	1030	1100	1320
12	1470	1340	1150	710	1720	1520	1330	1440	1410	1040	1130	1350
13	1530	1320	1200	610	1740	1410	1340	1320	1490	1040	1120	1380
14	1540	1290	1260	628	1700	1470	1330	1380	1580	1110	1160	1410
15	1560	1380	1320	665	1660	1480	1080	1400	1310	1060	1180	1340
16	1590	1380	1320	914	1620	1490	990	1400	1280	980	1200	1340
17	1590	1390	1470	1110	1580	1580	870	1400	1260	974	1220	1340
18	1580	1390	1500	1090	1630	1190	980	1400	1240	1050	1200	1330
19	1570	1390	1360	1070	1370	851	1080	1160	1230	1100	1240	1330
20	1550	1400	1310	1050	1260	699	1190	1390	1140	1140	1290	1330
21	1570	1400	1260	721	1160	753	1190	1400	1130	1220	1300	1150
22	1600	1420	1210	720	1280	807	1200	1350	1120	1300	1330	1060
23	1600	1430	1220	750	1400	861	1310	1360	1120	1240	1290	990
24	1640	1460	1380	790	1350	883	1330	1360	1140	1190	1290	941
25	1640	1420	1340	935	1340	993	1340	1370	1140	1180	1300	1230
26	1650	1050	1310	1080	1340	1050	1360	1310	1150	1170	1310	1330
27	1540	912	1270	1150	1180	1090	1370	1200	1150	1160	1310	1290
28	1550	646	1220	1180	1050	1210	1420	913	1150	1120	1330	1260
29	1560	762	1180	1340	---	1340	1430	515	1160	1150	1320	1240
30	1540	880	1430	1360	---	1460	1430	639	1160	1190	1300	1240
31	1540	---	1520	1380	---	1480	---	763	---	1210	1290	---
MEAN	1510	1330	1330	1090	1470	1130	1300	1280	1250	1110	1200	1280

## RED RIVER MAIN STEM

07336820 RED RIVER NEAR DE KALB, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25.0	18.0	10.0	7.0	---	---	10.0	22.0	21.0	25.0	30.0	25.0
2	25.0	---	10.0	7.0	9.0	9.0	12.0	---	22.0	25.0	---	25.0
3	25.0	18.0	10.0	7.0	9.0	10.0	11.0	---	22.0	24.0	30.0	25.0
4	---	18.0	9.0	---	10.0	10.0	---	22.0	21.0	---	30.0	26.0
5	---	17.0	10.0	6.0	10.0	10.0	---	22.0	22.0	---	30.0	26.0
6	22.0	16.0	---	7.0	10.0	10.0	12.0	23.0	---	26.0	30.0	---
7	20.0	16.0	---	8.0	---	---	13.0	23.0	---	25.0	30.0	---
8	21.0	16.0	10.0	8.0	---	---	14.0	23.0	23.0	25.0	30.0	26.0
9	21.0	---	---	8.0	8.0	12.0	14.0	---	23.0	26.0	---	27.0
10	21.0	16.0	9.0	6.0	8.0	11.0	15.0	---	23.0	26.0	30.0	27.0
11	---	14.0	8.0	---	9.0	10.0	---	23.0	22.0	---	30.0	27.0
12	---	13.0	8.0	6.0	10.0	10.0	---	23.0	22.0	---	30.0	---
13	20.0	11.0	---	6.0	11.0	10.0	11.0	23.0	---	27.0	30.0	---
14	18.0	9.0	---	7.0	---	10.0	16.0	24.0	---	26.0	30.0	25.0
15	18.0	9.0	9.0	8.0	---	---	15.0	25.0	24.0	26.0	---	25.0
16	19.0	---	9.0	8.0	10.0	13.0	15.0	---	24.0	26.0	---	---
17	19.0	12.0	10.0	8.0	9.0	13.0	17.0	---	24.0	26.0	30.0	---
18	---	---	10.0	---	7.0	13.0	---	23.0	24.0	26.0	30.0	---
19	---	14.0	9.0	---	8.0	13.0	---	25.0	24.0	---	---	---
20	19.0	13.0	---	5.0	---	13.0	20.0	25.0	25.0	27.0	30.0	---
21	19.0	13.0	---	5.0	7.0	---	21.0	25.0	---	---	30.0	24.0
22	19.0	---	9.0	5.0	---	---	20.0	26.0	25.0	28.0	---	---
23	---	---	9.0	4.0	8.0	16.0	19.0	---	25.0	28.0	---	22.0
24	---	12.0	8.0	5.0	8.0	14.0	19.0	---	25.0	29.0	29.0	22.0
25	---	12.0	---	---	9.0	13.0	---	24.0	---	---	29.0	23.0
26	18.0	12.0	9.0	5.0	9.0	13.0	---	24.0	25.0	---	29.0	24.0
27	18.0	11.0	---	5.0	10.0	13.0	21.0	24.0	---	20.0	28.0	---
28	18.0	10.0	---	6.0	---	---	22.0	24.0	---	29.0	27.0	---
29	18.0	---	8.0	9.0	---	---	21.0	23.0	---	---	25.0	---
30	18.0	---	8.0	9.0	---	10.0	22.0	---	25.0	30.0	---	---
31	---	---	7.0	9.0	---	9.0	---	---	---	30.0	25.0	---
MEAN	20.0	13.5	9.0	6.5	9.0	11.5	16.5	23.5	23.5	26.5	29.0	25.0

## 115

LOCATION.--Lat 33°33'07", long 94°02'28", in NW 1/4 SW 1/4 sec.7, T.14 S., R.28 W., Miller County, Hydrologic Unit 1140106, near right bank at downstream side of southbound bridge on U.S. Highway 71 at Index, 2.2 mi south of Oaden, 20.6 mi upstream from Little River, and at mile 485.3.

PERIOD OF RECORD.--July 1936 to current year. Gage-height records collected at same site since 1917 are contained in reports of National Weather Service.

GAGE.--Water-stage recorder. Datum of gage is 246.87 ft National Geodetic Vertical Datum of 1929. Prior to Dec. 12, 1939, nonrecording gage, and Dec. 12, 1939, to July 19, 1979, water-stage recorder, at site 500 ft downstream at present datum.

AVERAGE DISCHARGE.--51 years, 12,040 ft<sup>3</sup>/s, 8,723,000 acre-ft/yr.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 49,200 ft<sup>3</sup>/s June 7 (gage height, 15.70 ft); minimum daily, 1,180 ft<sup>3</sup>/s Oct. 13, 14.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8990	34900	25800	9300	15300	39500	32300	6170	39300	57400	10500	4140
2	7280	33400	25600	9090	15200	43600	30900	5690	47500	57500	10500	4040
3	6590	29200	25000	6450	15400	48000	27500	5020	53500	58000	10500	4000
4	6420	27400	24100	10300	15400	49100	23700	4680	57400	56200	8470	3880
5	6810	28900	23700	10900	15200	51700	21800	4560	55400	50900	7230	3820
6	9180	30100	21900	11200	15000	54300	18500	4420	55700	45100	6400	3870
7	11100	27600	18600	9910	14800	57300	15900	3960	56800	44700	6260	3920
8	12500	27600	18100	8370	14700	55500	15000	3710	54500	48500	6570	3840
9	15300	26900	19200	8080	14400	52500	14200	3680	52800	49600	6600	3870
10	17500	28500	19100	10500	15500	49700	11900	4890	53600	49100	6590	3660
11	21200	31300	19800	16000	18500	45400	9900	6020	55000	48600	6550	3350
12	31500	34400	24900	22000	19800	42400	9020	5990	57000	45600	6540	3030
13	34500	33300	27500	21500	22600	42600	8600	5530	57200	39100	6630	2760
14	33600	31300	25900	20200	24800	45600	8200	4920	56500	32400	6670	3220
15	32200	29200	23600	19900	24500	44500	7650	4610	56400	29600	6410	3680
16	32400	26600	21300	19200	22800	37300	6190	4430	57500	27300	6280	3840
17	33300	22700	19800	17400	20100	39900	5600	4600	57800	20300	6250	3900
18	34100	19700	19500	16400	19100	59300	7060	4610	58800	15700	6140	4430
19	31900	18000	21000	16900	20000	67600	8110	3810	59700	14200	5930	6790
20	28200	17900	21500	22700	23800	64200	8220	3550	58900	13600	5330	7890
21	25600	17700	20800	27300	25900	54700	8070	3980	59000	13100	5030	7740
22	24700	17600	20300	26800	24400	48500	7790	3950	61100	12200	4860	8630
23	24500	16600	18500	25900	23600	45800	7160	3810	63600	11500	4730	8610
24	21300	14700	16400	25300	24000	43700	7140	3690	62000	11300	4630	7010
25	18300	14800	15000	22300	24500	39900	7040	3660	62300	11200	4540	5880
26	16700	16000	13400	19200	25300	36800	7830	3650	61700	11000	4500	6110
27	21200	23300	12100	17900	26600	35300	7610	3840	59000	10900	4150	6490
28	32700	31300	11400	17700	31100	34900	6690	4290	57900	10900	3820	6370
29	35900	30100	9740	16700	---	33700	6380	5220	56700	10700	4000	5500
30	35600	27800	9540	15700	---	33300	6290	7040	56700	10600	4390	5140
31	34800	---	9860	15500	---	32900	---	24000	---	10500	4380	---
TOTAL	705870	768800	602940	519600	572300	1429500	362250	161980	1701300	92730		

## 07342470 SOUTH SULPHUR RIVER NEAR COMMERCE, TX

LOCATION.--Lat 33°13'11", long 95°51'45", Hunt County, Hydrologic Unit 11140301, on left bank at downstream side of bridge on State Highway 11, 0.7 mi upstream from St. Louis Southwestern Railroad bridge, 1.8 mi downstream from Dunbar Creek, and 3.0 mi southeast of Commerce.

DRAINAGE AREA.--189 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1979 to current year. Stage records collected at this site November 1956 to September 1979 are published in reports by the U.S. Army Corps of Engineers.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 450.00 ft above National Geodetic Vertical Datum of 1929.

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

AVERAGE DISCHARGE.--8 years (water years 1980-87), 136 ft<sup>3</sup>/s (9.56 in/yr), 98,530 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 27,100 ft<sup>3</sup>/s May 13, 1982 (gage height, 28.66 ft); minimum, 0.09 ft<sup>3</sup>/s Apr. 21, 1985.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Oct. 20, 1971, reached a stage of 27.80 ft, from records published by the U.S. Army Corps of Engineers.

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

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Nov. 25	1200	*9,400	*24.31	Mar. 17	1300	7,860	23.18
Feb. 28	1730	3,720	17.43	May 29	0730	3,560	17.03

Minimum daily discharge, 0.91 ft<sup>3</sup>/s Aug. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.7	3.2	21	16	7.4	3040	7.2	1.5	178	1.5	.92	1.3
2	1.6	3.1	17	14	8.2	338	5.1	1.7	80	7.2	.91	1.4
3	1.5	3.3	12	42	7.9	101	4.1	2.3	38	11	1.3	1.3
4	7.4	19	11	63	7.6	60	3.7	18	25	7.8	1.4	1.5
5	33	195	8.7	42	6.9	41	3.3	7.3	18	3.3	1.4	1.4
6	130	42	7.6	31	5.3	30	2.9	4.6	13	2.4	1.5	1.1
7	61	16	8.0	25	4.5	22	2.7	6.0	9.4	2.1	1.6	1.1
8	125	8.6	7.9	22	3.3	17	2.8	5.0	6.8	1.5	1.4	1.7
9	38	6.2	8.7	601	3.0	14	2.5	3.0	6.4	1.9	1.3	1.3
10	13	18	8.3	834	3.1	11	2.4	2.2	9.5	2.2	2.2	1.6
11	6.8	810	11	125	6.0	9.6	2.2	2.1	11	2.3	1.8	1.6
12	6.7	254	15	49	5.1	8.3	2.5	2.1	94	1.5	1.4	3.3
13	7.0	47	51	32	5.1	7.8	3.0	1.4	176	e1.0	1.4	2.5
14	4.1	21	74	25	4.6	6.9	6.4	1.4	69	e2.2	1.4	2.9
15	3.3	13	307	21	19	5.9	3.6	1.9	24	e1.8	1.5	149
16	3.0	9.2	425	19	26	6.2	3.2	5.6	12	e1.5	1.5	41
17	2.8	7.4	169	45	10	4380	2.9	8.8	14	e1.2	1.2	9.4
18	2.5	6.6	1690	1790	7.7	3400	2.5	6.4	36	e1.2	1.4	1070
19	3.0	5.8	1090	757	5.7	325	1.8	2.9	17	e1.0	1.1	1210
20	2.7	5.2	183	115	692	78	1.8	2.1	9.8	e1.2	1.1	84
21	2.5	4.8	84	56	748	42	1.9	1.9	57	e1.4	1.3	24
22	2.6	8.0	53	35	149	27	1.8	14	27	e1.4	1.1	9.0
23	9.8	33	54	26	63	21	2.2	21	12	e1.6	1.1	4.5
24	53	37	75	22	283	18	2.2	412	9.3	e2.0	1.0	2.5
25	28	5800	60	16	437	12	2.1	108	5.8	e2.2	1.2	1.8
26	13	4310	41	12	975	8.9	1.7	31	3.7	e2.0	1.1	1.3
27	7.3	626	32	11	2170	8.1	1.8	12	2.8	e1.6	1.3	.98
28	5.2	92	26	8.4	2990	6.8	1.7	541	2.0	e1.4	1.3	7.2
29	4.1	48	23	7.6	---	6.6	1.7	3010	1.8	1.3	1.3	5.4
30	3.6	29	20	5.5	---	12	1.6	1590	1.6	1.4	1.4	2.2
31	3.3	---	19	5.3	---	11	---	153	---	1.4	1.3	---
TOTAL	586.5	12481.4	4612.2	4872.8	8653.4	12075.1	85.3	5980.2	969.9	73.5	41.13	2646.28
MEAN	18.9	416	149	157	309	390	2.84	193	32.3	2.37	1.33	88.2
MAX	130	5800	1690	1790	2990	4380	7.2	3010	178	11	2.2	1210
MIN	1.5	3.1	7.6	5.3	3.0	5.9	1.6	1.4	1.6	1.0	.91	.98
AC-FT	1160	24760	9150	9670	17160	23950	169	11860	1920	146	82	5250

CAL YR 1986 TOTAL 56160.06 MEAN 154 MAX 7660 MIN .79 AC-FT 111400  
WTR YR 1987 TOTAL 53077.19 MEAN 145 MAX 5800 MIN .91 AC-FT 105300

e Estimated.

## RED RIVER BASIN

117

07342500 SOUTH SULPHUR RIVER NEAR COOPER, TX

LOCATION.--Lat 33°21'23", Long 95°35'41", Delta County, Hydrologic Unit 11140301, on levee on left bank 110 ft downstream from bridge on State Highways 19 and 154, 1.0 mi downstream from Big Creek, 1.0 mi upstream from Brushy Creek, 4.5 mi downstream from Doctors Creek, and 5.6 mi southeast of Cooper.

DRAINAGE AREA.--527 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1942 to current year. Monthly discharge only for some periods, published in WSP 1311.

GAGE.--Water-stage recorder. Datum of gage is 371.91 ft above National Geodetic Vertical Datum of 1929. Prior to Feb. 15, 1985, at site 360 ft to right and 90 ft upstream at same datum. Oct. 1, 1970, at datum 3.00 ft higher. May 9, 1942, to Nov. 8, 1949, nonrecording gage, and Nov. 9, 1949, to May 13, 1955, water-stage recorder at site 1,060 ft to right of present gage. Gage-height telemeter at station.

REMARKS.--No estimated daily discharge. Records good. There are numerous small diversions upstream from station. Low flow is sustained by sewage effluent released upstream.

AVERAGE DISCHARGE.--45 years (water years 1943-87), 404 ft<sup>3</sup>/s (10.41 in/yr), 292,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 47,200 ft<sup>3</sup>/s May 13, 1982 (gage height, 27.21 ft, from floodmark), in gage well; no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 8,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Nov. 26	2130	a*10,900	*20.74	Mar. 18	1600	9,870	20.55

a Result of levee break upstream.

Minimum discharge, 0.09 ft<sup>3</sup>/s Aug. 12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.2	6.1	150	31	61	6460	59	8.2	1280	7.5	1.1	2.2
2	2.6	4.7	82	28	76	6230	36	8.3	418	7.0	.73	1.8
3	2.2	3.4	55	67	82	4220	24	8.5	199	12	.59	.92
4	14	11	43	387	79	840	18	11	85	16	.48	2.1
5	527	330	35	225	70	257	15	11	46	14	.44	1.3
6	333	398	30	106	63	144	14	16	29	17	.37	.88
7	403	120	27	69	59	96	12	19	21	14	.34	1.0
8	303	53	25	54	55	75	11	11	16	10	.25	1.0
9	1040	33	29	757	52	60	9.6	7.4	14	7.6	.21	.81
10	365	25	28	1640	48	51	9.0	6.2	13	6.0	.16	.57
11	85	686	28	1590	46	43	8.8	5.5	17	5.0	.12	.39
12	50	1130	27	407	45	36	7.1	3.5	55	3.4	.13	.45
13	71	546	25	162	44	31	7.9	1.9	201	4.0	.23	1.1
14	48	124	29	106	44	28	23	1.2	275	4.5	.23	2.6
15	29	55	132	84	47	25	27	.93	366	5.0	.42	150
16	19	36	592	76	55	23	29	2.4	2240	4.2	1.0	278
17	14	26	589	258	116	2650	14	39	264	3.0	.64	127
18	9.3	20	1280	1430	84	8510	9.3	85	350	2.9	.60	687
19	6.8	16	2000	2070	68	7710	7.9	45	137	3.1	.45	1680
20	5.4	13	2410	2050	371	5510	6.8	26	65	2.7	.31	1730
21	3.8	11	926	582	1360	1290	5.8	13	37	2.2	.26	773
22	2.8	9.4	236	244	1240	284	4.4	8.1	28	2.4	.22	105
23	3.8	126	141	147	378	168	3.1	6.0	49	2.4	.25	35
24	5.6	143	229	110	401	133	2.2	25	33	2.6	.28	16
25	55	1840	192	94	1010	97	2.4	359	24	3.0	.21	7.8
26	78	7590	120	84	1260	64	3.4	191	45	3.5	.17	3.0
27	42	8670	79	76	2240	43	4.6	70	26	2.9	.30	.61
28	27	6100	58	71	4400	33	5.6	37	17	2.4	.56	.77
29	18	2230	47	66	---	36	7.0	707	13	1.9	1.3	58
30	13	352	40	61	---	75	6.9	1670	9.3	1.6	1.9	69
31	9.1	---	35	59	---	86	---	2260	---	1.4	1.6	---
TOTAL	3587.6	30707.6	9719	13191	13854	45308	393.8	5663.13	6372.3	175.2	15.85	5737.30
MEAN	116	1024	314	426	495	1462	13.1	183	212	5.65	.51	191
MAX	1040	8670	2410	2070	4400	8510	59	2260	2240	17	1.9	1730
MIN	2.2	3.4	25	28	44	23	2.2	.93	9.3	1.4	.12	.39
AC-FT	7120	60910	19280	26160	27480	89870	781	11230	12640	348	31	11380
CFSM	.22	1.94	.59	.81	.94	2.77	.0	.35	.40	.0	.0	.36
IN.	.25	2.17	.69	.93	.98	3.20	.0	.40	.45	.0	.0	.40

CAL YR 1986 TOTAL 134853.69 MEAN 369 MAX 8670 MIN .52 AC-FT 267500 CFSM .70 IN. 9.52  
WTR YR 1987 TOTAL 134724.00 MEAN 369 MAX 8670 MIN .12 AC-FT 267200 CFSM .70 IN. 9.51

07342500 SOUTH SULPHUR RIVER NEAR COOPER, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: October 1958 to September 1966, October 1967 to current year. Chemical and biochemical analyses: December 1979 to current year.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1958 to September 1966, October 1967 to current year.

WATER TEMPERATURE: October 1958 to September 1966, 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, 4,710 microsiemens Aug. 14, 1973; minimum daily, 82 microsiemens July 2, 1976.

WATER TEMPERATURE: Maximum daily, 36.0°C Aug. 6, 1960, Aug. 10, 1962; minimum daily, 0.0°C on many days during winter months.

## EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,200 microsiemens Nov. 5; minimum daily, 127 microsiemens Nov. 27.

WATER TEMPERATURE: Maximum daily, 28.0°C on several days during July and August; minimum daily, 3.0°C Jan. 22, 23.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	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 (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3
OCT 06...	1435	240	303	7.70	21.0	90	220	6.5	74	2.9	95	0
NOV 20...	1430	12	366	7.70	13.0	85	37	8.0	77	2.6	130	9
JAN 08...	1440	51	354	7.70	7.5	55	44	13.0	110	1.8	130	7
FEB 23...	1550	333	267	7.80	9.0	110	60	12.5	110	2.8	100	19
APR 13...	1305	8.4	657	7.90	20.0	18	21	6.4	73	1.8	250	8
JUN 04...	1050	86	293	7.80	23.0	70	43	6.3	75	2.6	100	1
JUL 20...	1600	2.5	555	7.90	30.0	26	6.0	7.2	98	1.2	180	0
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 WH WAT TOTAL 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 06...		34	2.4	20	0.9	4.2	97	26	13	0.40	14	170
NOV 20...		46	3.7	23	0.9	4.2	121	33	16	0.20	11	210
JAN 08...		44	3.8	24	1	3.4	119	40	18	0.20	9.2	210
FEB 23...		36	3.3	18	0.8	3.1	84	30	25	0.20	8.3	170
APR 13...		85	10	47	1	4.3	246	72	26	0.30	2.7	390
JUN 04...		36	3.2	17	0.8	4.6	102	24	10	0.30	12	170
JUL 20...		62	6.2	48	2	4.9	194	44	29	0.40	7.9	320
DATE		SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDED (MG/L)	SOLIDS, VOLATILE, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS- SOLVED (UG/L AS AS)
OCT 06...		698	80	1.65	0.050	1.70	0.030	1.4	1.4	0.300	17	--
NOV 20...		46	8	2.03	0.070	2.10	0.060	0.54	0.60	0.360	11	--
JAN 08...		62	2	0.280	0.020	0.300	0.040	0.76	0.80	0.170	12	8
FEB 23...		180	42	0.860	0.040	0.900	0.100	1.3	1.4	0.170	--	--
APR 13...		54	7	--	0.020	<0.100	0.070	1.3	1.4	0.090	--	2
JUN 04...		142	19	1.45	0.050	1.50	0.080	1.6	1.7	0.330	13	--
JUL 20...		30	<1	--	<0.010	<0.100	<0.010	--	0.90	0.150	9.7	7

07342500 SOUTH SULPHUR RIVER NEAR COOPER, TX--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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 06...	--	--	--	--	--	--	--	--	--	--	--
NOV 20...	--	--	--	--	--	--	--	--	--	--	--
JAN 08...	56	<1	<10	1	70	<5	14	<0.1	<1	<1	<3
FEB 23...	--	--	--	--	--	--	--	--	--	--	--
APR 13...	110	<1	<10	1	22	<5	22	<0.1	<1	<1	8
JUN 04...	--	--	--	--	--	--	--	--	--	--	--
JUL 20...	86	<1	<10	2	16	<5	18	0.3	2	<1	38

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1986 TO SEPTEMBER 1987

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. 1986	3587.6	387	223	2160	22	209	34	327	120
NOV. 1986	30707.6	192	112	9280	7.5	622	15	1250	69
DEC. 1986	9719	302	176	4610	13	329	24	634	110
JAN. 1987	13191	293	171	6070	12	420	23	828	100
FEB. 1987	13854	312	181	6790	14	509	25	947	110
MAR. 1987	45308	199	117	14300	6.9	846	15	1870	74
APR. 1987	393.8	672	384	408	44	46	62	66	200
MAY 1987	5663.13	292	169	2590	13	198	24	363	100
JUNE 1987	6372.3	258	150	2580	10	178	20	351	91
JULY 1987	175.2	485	280	132	25	12	41	20	160
AUG. 1987	15.85	623	357	15	38	1.6	56	2.4	190
SEPT 1987	5737.30	182	107	1650	6.0	93	14	214	68
TOTAL	134724.78	**	**	50600	**	3460	**	6870	**
WTD.AVG.	369	239	139	**	9.5	**	19	**	85

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
EQUIVALENT MEAN

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	368	324	241	474	484	218	547	844	346	406	621	625
2	369	330	257	491	460	198	543	841	258	413	620	625
3	369	337	309	491	550	214	593	840	279	396	615	640
4	605	570	330	448	577	222	631	820	298	554	625	648
5	960	1200	354	370	668	258	660	841	346	437	614	654
6	369	420	377	377	613	288	686	843	332	421	623	666
7	362	295	381	383	608	332	663	814	330	435	625	675
8	272	316	444	367	627	376	670	835	347	442	623	679
9	204	314	446	347	643	414	684	819	356	451	626	685
10	310	318	455	278	655	446	692	829	366	460	624	693
11	263	308	493	246	651	474	690	847	470	469	625	701
12	284	242	473	264	631	507	703	867	426	480	636	714
13	303	265	497	284	641	529	678	888	394	490	637	715
14	378	293	499	305	656	548	660	897	385	508	640	610
15	310	302	498	332	644	569	782	909	397	496	638	290
16	292	315	499	359	611	582	721	914	134	537	619	210
17	294	327	377	396	653	365	714	911	143	542	617	213
18	297	345	343	362	723	148	735	686	272	546	614	252
19	304	351	239	237	710	153	754	602	211	547	614	158
20	232	361	238	239	662	181	784	470	333	553	617	154
21	314	372	250	256	339	180	810	437	356	554	616	179
22	318	374	279	276	255	233	818	457	349	578	618	200
23	318	1000	298	300	271	272	824	468	381	596	613	207
24	321	321	352	330	291	313	842	550	418	605	620	218
25	327	356	391	357	324	364	838	610	488	619	621	233
26	454	152	380	382	276	432	850	281	508	627	614	246
27	341	127	388	402	269	490	850	281	448	632	619	254
28	334	161	402	421	243	508	846	272	419	634	619	263
29	314	174	439	442	---	520	840	325	438	631	627	262
30	317	204	450	460	---	532	840	214	418	627	628	190
31	320	---	462	477	---	514	---	222	---	623	629	---
MEAN	349	359	382	360	526	367	732	659	355	526	622	429

## RED RIVER BASIN

07342500 SOUTH SULPHUR RIVER NEAR COOPER, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
ONCE-DAILY

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

07343000 NORTH SULPHUR RIVER NEAR COOPER, TX

LOCATION.--Lat 33°28'29", long 95°35'15", Lamar County, Hydrologic Unit 11140301, on left bank at downstream side of highway embankment near left end of downstream bridge on State Highways 19 and 24, 2.3 mi upstream from Auds Creek, 5.5 mi upstream from Hickory Creek, 8.7 mi northeast of Cooper, and 15.6 mi upstream from mouth.

DRAINAGE AREA.--276 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 372.42 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Nov. 8, 1949, nonrecording gage, Nov. 8, 1949, to May 21, 1960, water-stage recorder at site 50 ft upstream at datum 9.00 ft higher, and May 22, 1960, to Sept. 30, 1970, at datum 5.00 ft higher.

REMARKS.--Records good except those below 2.0 ft<sup>3</sup>/s and those for estimated daily discharges, which are poor. In 1928-29, the channel was rectified for a distance of 28 mi upstream and 18 mi downstream from this station. Gage-height telemeter at station.

AVERAGE DISCHARGE.--38 years, 238 ft<sup>3</sup>/s (11.61 in/yr), 171,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 90,600 ft<sup>3</sup>/s Oct. 19, 1971 (gage height, 36.16 ft, from floodmarks); no flow at times most years.  
Maximum stage since at least 1915, that of Oct. 19, 1971.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 2, 1944, reached a stage of 35.6 ft, present datum, and flood in 1932 reached about same stage, from information by U.S. Army Corps of Engineers and local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 20,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Nov. 25	0930	30,800	24.12	Sept. 18	1400	*38,200	*27.27
Mar. 17	1115	29,200	23.40				

Minimum daily discharge, no flow Aug. 7-9 and Sept. 5-8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.86	.29	69	121	44	805	21	.50	585	.08	1.6	.04
2	.29	.29	53	115	103	284	19	.50	68	.06	1.2	.03
3	.50	.29	46	614	62	161	18	.56	28		.24	.02
4	.86	1410	37	213	44	112	17	4.0	16		.82	.01
5	201	401	30	105	35	86	16	20	6.8	17	.02	.00
6	130	69	27	76	29	72	15	10	2.2	3.5	.00	.00
7	50	38	31	62	29	61	13	2.8	1.0	.39	.00	.00
8	2400	.27	90	53	26	54	13	12	.40	.34	.00	.00
9	391	21	218	2120	23	48	12	23	.40	.06	.01	.02
10	70	2650	91	573	20	42	10	16	68	.10	.04	.04
11	33	2990	62	190	19	36	9.3	4.6	89	.08	.08	.03
12	163	336	62	105	19	34	8.4	1.6	205	.07	e.08	.08
13	58	124	102	82	19	31	21	.96	135	.06	112	51
14	26	63	67	76	19	30	16	1.1	38	2.8	11	569
15	19	52	638	70	105	27	10	.72	25	.90	3.8	3330
16	5.4	45	435	252	112	27	7.4	11	103	1110	2.0	881
17	2.7	41	431	489	52	12000	6.3	30	21	1020	1.8	96
18	1.6	32	2740	2360	34	811	5.5	8.7	44	129	.16	10000
19	.76	25	653	500	25	244	4.8	2.8	16	29	.11	775
20	.36	23	265	183	864	132	4.1	1.1	7.4	11	.09	159
21	.32	21	173	115	591	88	3.8	.86	5.5	5.0	.08	56
22	.31	355	147	86	215	68	2.4	.73	1.5	4.9	.03	25
23	3.3	291	206	65	141	70	1.5	3.3	1.4	2.3	.02	13
24	21	179	235	59	638	69	1.1	9.9	141	12	.02	7.9
25	24	14300	160	51	530	45	.89	4.8	29	66	.02	4.6
26	11	1210	144	42	2650	35	.63	3.6	5.3	25	.01	2.4
27	3.6	357	139	36	1970	33	.56	.98	.49	9.4	e.01	1.2
28	2.0	194	135	35	6370	30	.58	274	.34	5.6	.01	3.0
29	1.3	146	134	34	---	28	.60	2410	.19	4.9	.01	12
30	.61	98	131	30	---	27	.50	173	e.14	4.1	.01	4.2
31	.32	---	127	26	---	24	---	53	---	2.3	.04	---
TOTAL	3622.09	25498.87	7878	8938	14788	15614	259.36	3086.11	1644.06	3027.94	134.59	15990.56
MEAN	117	850	254	288	528	504	8.65	99.6	54.8	97.7	4.34	533
MAX	2400	14300	2740	2360	6370	12000	21	2410	585	1110	112	10000
MIN	.29	.29	27	26	19	24	.50	.50	.14	.06	.00	.00
AC-FT	7180	50580	15630	17730	29330	30970	514	6120	3260	6010	267	31720
CFSM	.42	3.08	.92	1.04	1.91	1.82	.0	.36	.20	.35	.0	1.93
IN.	.49	3.44	1.06	1.20	1.99	2.10	.0	.42	.22	.41	.0	2.16

CAL YR 1986 TOTAL 89062.36 MEAN 244 MAX 14300 MIN .00 AC-FT 176700 CFSM .88 IN. 12.0  
WTR YR 1987 TOTAL 100480.86 MEAN 275 MAX 14300 MIN .00 AC-FT 199300 CFSM .99 IN. 13.5

e Estimated.

07343000 NORTH SULPHUR RIVER NEAR COOPER, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: July 1950 to September 1958, January 1967 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1968 to current year.

WATER TEMPERATURES: October 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, 2,320 microsiemens Oct. 24, 1983; minimum daily, 191 microsiemens Oct. 12, Dec. 10, 1971.

WATER TEMPERATURES: Maximum daily, 39.0°C June 1, 1977; minimum daily, 0.0°C on many days during winter months.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,300 microsiemens May 3; minimum daily, 267 microsiemens Nov. 25.

WATER TEMPERATURE: Maximum daily, 34.0°C July 23; minimum daily, 1.0°C Jan. 23.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	TEMPER- ATURE WATER (DEG C)	HARD- NESS (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 09...	1420	23	341	20.5	120	20	42	3.0	19
NOV 20...	1020	23	727	12.5	260	75	92	7.8	51
JAN 05...	1700	88	590	8.0	230	57	81	6.3	38
APR 15...	1715	10	955	19.0	290	130	97	11	87
JUN 03...	1935	26	482	28.0	170	54	59	5.3	36
JUL 23...	1145	3.3	474	--	140	53	48	4.4	41

DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WH WAT TOTAL 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 CONSTITUENTS, DIS- SOLVED (MG/L)
OCT 09...	0.8	3.6	97	44	12	0.40	10	190
NOV 20...	1	2.9	187	140	31	0.30	8.3	450
JAN 05...	1	2.6	171	100	21	0.30	6.9	360
APR 15...	2	2.4	161	230	66	0.40	2.2	590
JUN 03...	1	2.6	115	96	18	0.50	9.3	300
JUL 23...	2	2.6	85	120	18	0.50	9.0	290

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1986 TO SEPTEMBER 1987

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. 1986	3622.09	494	301	2940	23	225	110	1090	160
NOV. 1986	25498.87	351	212	14600	15	1000	77	5280	120
DEC. 1986	7878	506	309	6570	25	523	110	2440	170
JAN. 1987	8938	514	313	7560	25	595	120	2800	170
FEB. 1987	14788	427	260	10400	19	765	95	3800	140
MAR. 1987	15614	405	245	10300	17	731	89	3760	140
APR. 1987	259.36	920	576	403	63	44	230	161	290
MAY 1987	3086.11	509	311	2590	26	214	120	970	170
JUNE 1987	1644.06	440	267	1190	20	88	98	435	150
JULY 1987	3027.94	510	312	2550	26	209	120	954	170
AUG. 1987	134.59	484	294	107	22	8.0	110	39	160
SEPT 1987	15990.57	320	193	8330	12	522	69	2960	110
TOTAL	100481.59	**	**	67600	**	4920	**	24700	**
WTD. AVG.	275	410	249	**	18	**	91	**	140

## RED RIVER BASIN

123

07343000 NORTH SULPHUR RIVER NEAR COOPER, TX--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
EQUIVALENT MEAN

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	802	787	676	691	818	367	835	1270	320	641	532	759
2	800	789	683	709	677	490	775	1280	383	647	545	792
3	990	835	698	633	721	598	884	1300	467	483	562	790
4	800	383	713	445	745	673	880	1260	580	395	579	806
5	570	415	759	576	746	726	915	1250	770	436	582	---
6	377	488	783	644	744	726	920	1250	605	456	---	---
7	490	545	750	702	764	759	934	1240	626	478	---	---
8	518	600	677	660	784	793	875	1250	663	529	---	---
9	320	628	548	490	803	773	942	1210	706	580	677	839
10	429	656	565	510	823	786	960	978	700	620	687	842
11	494	311	652	521	843	791	959	982	466	667	765	854
12	446	379	686	571	822	796	980	1040	502	722	727	876
13	504	472	706	651	855	807	1000	1050	581	698	490	940
14	528	537	727	670	862	805	851	1060	460	808	425	503
15	618	597	559	633	772	802	907	1080	339	834	434	310
16	675	637	468	600	736	804	903	1080	330	730	453	350
17	680	668	533	558	763	370	993	978	498	320	452	390
18	655	696	367	412	728	353	1010	943	539	330	460	301
19	650	713	378	420	819	481	1000	1030	458	414	462	329
20	645	725	481	516	506	591	1030	1080	454	445	460	453
21	640	728	555	610	425	651	1090	1110	474	450	479	508
22	661	722	610	658	526	706	1120	1140	536	453	495	558
23	707	607	643	702	610	712	1130	1150	621	459	496	609
24	728	473	629	748	630	686	1150	1170	578	493	511	625
25	756	267	675	740	480	738	1180	1120	548	570	523	632
26	760	304	703	792	556	737	1200	1080	518	453	517	639
27	730	441	718	807	377	759	1210	1070	488	441	535	645
28	734	500	728	830	304	780	1230	851	458	438	540	708
29	747	565	759	770	---	787	1250	429	490	470	543	732
30	769	625	755	750	---	819	1270	447	568	484	564	690
31	781	---	782	815	---	790	---	535	---	516	695	---
MEAN	645	570	644	640	687	692	1010	1060	524	531	543	634

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24.0	18.0	10.0	4.0	10.0	8.0	14.0	22.0	22.0	26.0	28.0	28.0
2	24.0	16.5	8.0	7.0	9.0	8.0	12.0	21.0	24.0	24.0	27.0	23.0
3	24.0	15.5	8.0	6.0	11.0	9.0	7.0	20.0	25.0	21.0	27.0	24.0
4	25.0	16.0	6.0	5.0	12.0	9.0	9.0	20.0	22.0	25.0	29.0	24.0
5	20.0	13.5	9.0	4.0	11.0	10.0	14.0	---	22.0	27.0	31.0	---
6	18.0	11.5	7.0	6.0	10.0	12.0	12.0	---	25.0	27.0	---	---
7	15.0	13.5	9.0	8.0	---	13.0	12.0	29.0	23.0	26.0	---	---
8	19.0	15.0	10.0	---	---	14.0	14.0	21.0	25.0	25.0	---	---
9	19.0	16.5	8.0	---	---	15.0	15.0	21.0	24.0	25.0	33.0	24.0
10	20.0	12.0	7.0	---	---	11.0	16.0	16.0	25.0	26.0	28.0	23.0
11	20.0	10.0	4.0	5.0	12.0	---	17.0	21.0	22.0	25.0	28.0	29.0
12	15.0	7.0	5.0	3.0	12.0	10.0	---	23.0	24.0	25.0	28.0	23.0
13	12.0	2.0	---	5.0	14.0	10.0	21.0	31.0	25.0	26.0	33.0	24.0
14	11.0	3.0	6.0	8.0	14.0	12.0	12.0	26.0	---	24.0	32.0	25.0
15	14.0	3.0	8.0	---	13.0	15.0	18.0	28.0	29.0	23.0	30.0	21.0
16	15.0	10.0	8.0	---	10.0	19.0	15.0	28.0	23.0	25.0	26.0	---
17	14.0	11.5	10.0	7.0	5.0	13.0	17.0	24.0	28.0	23.0	26.0	25.0
18	17.0	14.5	8.0	5.0	4.0	13.0	19.0	24.0	24.0	24.0	27.0	22.0
19	---	12.0	6.0	2.0	6.0	12.0	19.0	25.0	27.0	32.0	26.0	22.0
20	---	11.0	6.0	3.0	5.0	15.0	29.0	23.0	25.0	27.0	27.0	24.0
21	15.0	9.5	6.0	2.0	6.0	16.0	21.0	27.0	27.0	26.0	27.0	21.0
22	16.0	11.0	6.0	3.0	8.0	19.0	17.0	24.0	27.0	28.0	28.0	20.0
23	18.0	12.0	7.0	1.0	7.0	17.0	15.0	24.0	29.0	34.0	27.0	21.0
24	17.0	9.5	5.0	6.0	10.0	10.0	17.0	24.0	24.0	27.0	25.0	20.0
25	14.0	9.0	7.0	5.0	9.0	10.0	18.0	23.0	---	26.0	26.0	---
26	15.0	9.0	8.0	5.0	10.0	14.0	---	24.0	---	---	26.0	---
27	13.0	9.5	8.0	6.0	10.0	11.0	---	24.0	---	28.0	26.0	27.0
28	14.0	7.5	7.0	8.0	10.0	15.0	---	21.0	33.0	27.0	---	23.0
29	14.0	---	6.0	13.0	---	10.0	18.0	19.0	25.0	27.0	23.0	22.0
30	16.0	7.0	7.0	10.0	---	6.0	19.0	20.0	25.0	27.0	25.0	20.0
31	16.0	---	5.0	8.0	---	7.0	---	25.0	---	27.0	23.0	---
MEAN	17.0	11.0	7.0	5.5	9.5	12.0	16.0	23.5	25.0	26.0	27.5	23.5

## RED RIVER BASIN

07343200 SULPHUR RIVER NEAR TALCO, TX

LOCATION.--Lat 33°23'10", long 95°07'56", Franklin County, Hydrologic Unit 11140302, at downstream side of highway embankment near right end of bridge on U.S. Highway 271, 2.2 mi northwest of Talco, 3.2 mi downstream from Mustang Creek, and 162 mi upstream from mouth.

DRAINAGE AREA.--1,365 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WDR TX-76-1(P).

GAGE.--Water-stage recorder. Datum of gage is 290.82 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharge. Records good. The River Crest Stream Electric Generating Plant diverts water for cooling purposes upstream from this station. Flow is also affected at times by discharge from the flood detention pools of 14 floodwater-retarding structures with a combined detention capacity of 8,210 acre-ft. These structures control runoff from 23.4<sup>2</sup> in the Auds and Depot Creek drainage basins. Gage-height telemeter at station.

AVERAGE DISCHARGE.--31 years, 1,383 ft<sup>3</sup>/s (13.76 in/yr), 1,002,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 77,000 ft<sup>3</sup>/s Dec. 11, 1971 (gage height, 29.40 ft, from floodmark); no flow at times in 1957, 1964-65, 1970, and 1979-80.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods in 1908 and 1914 each reached a stage of 27.5 ft, and flood in 1945 reached a stage of 26.5 ft, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 15,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Nov. 26	1430	16,400	23.94	Mar. 18	1500	*16,800	*24.83

Minimum daily discharge, 0.43 ft<sup>3</sup>/s Aug. 31, Sept. 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.1	22	1280	113	88	8660	213	17	2060	25	7.5	.43
2	3.4	17	422	102	154	6370	155	16	1750	24	5.9	10
3	2.8	14	261	148	275	5210	119	15	590	34	4.8	11
4	3.0	22	181	1190	206	4200	98	16	500	364	3.9	6.8
5	1150	2140	138	936	151	1520	86	19	308	135	3.2	4.1
6	896	1350	116	553	122	443	79	27	128	69	3.4	2.5
7	606	746	104	321	106	292	72	41	77	45	4.3	1.8
8	676	341	116	232	95	228	67	34	58	32	2.7	1.3
9	2850	185	283	919	87	194	63	29	45	32	2.5	.91
10	2240	119	396	6220	79	150	60	39	42	27	2.4	.78
11	787	3330	254	4390	73	115	56	48	204	20	2.2	.70
12	273	5690	162	2590	69	101	52	39	196	16	7.8	.60
13	333	2740	132	772	66	92	49	30	241	13	8.0	.62
14	210	1090	161	364	64	86	109	25	247	11	31	.66
15	148	435	247	254	121	82	163	21	254	15	37	1090
16	92	255	1530	199	571	78	104	19	450	21	20	2230
17	62	182	1600	329	419	2720	78	18	1540	978	12	870
18	42	138	2390	1740	233	13900	65	20	957	668	7.8	581
19	29	105	6960	5230	169	9500	55	48	566	142	5.2	4860
20	21	83	4850	3960	236	6940	46	62	290	67	3.5	5050
21	18	70	3510	2680	3170	5780	39	49	236	42	2.5	2910
22	15	283	1660	888	3080	3080	35	40	124	27	1.9	1240
23	15	637	651	379	1920	724	32	31	78	19	1.3	307
24	21	632	555	244	868	478	28	26	70	16	1.0	143
25	39	2790	557	187	2330	394	26	23	176	16	.85	94
26	58	14200	438	152	2740	281	24	198	98	19	.67	73
27	104	11500	302	129	6930	208	23	199	66	39	.66	56
28	91	9390	222	116	7520	148	21	108	60	28	.63	46
29	64	9370	177	108	---	159	19	938	44	18	.55	47
30	42	5560	148	101	---	312	18	2080	32	13	.48	56
31	29	---	128	92	---	329	---	1580	---	9.8	.43	---
TOTAL	10924.3	73436	29931	35638	31942	72774	2054	5855	11487	2984.8	186.07	19695.20
MEAN	352	2448	966	1150	1141	2348	68.5	189	383	96.3	6.00	657
MAX	2850	14200	6960	6220	7520	13900	213	2080	2060	978	37	5050
MIN	2.8	14	104	92	64	78	18	15	32	9.8	.43	.43
AC-FT	21670	145700	59370	70690	63360	144300	4070	11610	22780	5920	369	39070
CFSM	.26	1.79	.71	.84	.84	1.72	.05	.14	.28	.07	.00	.48
IN.	.30	2.00	.82	.97	.87	1.98	.06	.16	.31	.08	.01	.54

CAL YR 1986 TOTAL 374939.2 MEAN 1027 MAX 14200 MIN 1.1 AC-FT 743700 CFSM .75 IN. 10.22  
WTR YR 1987 TOTAL 296907.37 MEAN 813 MAX 14200 MIN .43 AC-FT 588900 CFSM .60 IN. 8.09

07343200 SULPHUR RIVER NEAR TALCO, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: January 1965 to current year. Chemical and biochemical analyses: January 1968 to current year. Pesticide analyses: January 1968 to current year.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1966 to current year.

WATER TEMPERATURE: October 1966 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, 1,800 microsiemens Feb. 17, 1976; minimum daily, 100 microsiemens Sept. 11, 1974  
WATER TEMPERATURE: Maximum daily, 39.0°C Aug. 13, 1987; minimum daily, 0.0°C on many days during winter months.

## EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,220 microsiemens May 23, 24; minimum daily, 171 microsiemens Mar. 19.  
WATER TEMPERATURE: Maximum daily, 39.0°C Aug. 13; minimum daily, 5.0°C on several days during January and February.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	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 (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)	
OCT 08...	1515	587	321	7.80	20.5	7.1	80	2.3	110	0	38	2.8	
NOV 19...	1340	14	404	7.80	12.0	8.5	80	3.0	150	28	55	4.0	
JAN 07...	1655	287	379	7.60	8.0	10.7	91	1.8	140	23	51	3.8	
FEB 25...	1215	6400	350	8.10	9.5	11.5	102	1.5	130	20	46	3.3	
APR 15...	1115	166	911	7.60	18.0	7.4	80	0.8	320	86	110	11	
JUN 03...	1330	515	298	7.80	24.5	6.4	78	1.4	100	10	36	3.0	
JUL 22...	1850	23	375	7.70	29.0	5.5	73	1.2	140	21	51	3.3	
DATE		SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WH WAT TOTAL 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)	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)
OCT 08...	23	1	4.2		112	33	10	0.40	12	190	1.66	0.040	1.70
NOV 19...	25	0.9	3.6		126	59	15	0.30	8.6	250	1.24	0.060	1.30
JAN 07...	24	0.9	3.2		120	53	16	0.20	7.9	230	0.370	0.030	0.400
FEB 25...	21	0.8	2.8		108	45	11	0.20	3.3	200	1.04	0.060	1.10
APR 15...	68	2	3.4		234	170	56	0.30	4.0	560	--	0.030	<0.100
JUN 03...	16	0.7	4.2		92	28	11	0.30	9.9	160	2.40	0.100	2.50
JUL 22...	21	0.8	2.6		120	46	11	0.50	8.2	220	0.970	0.030	1.00
DATE		NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	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)
OCT 08...	0.030	1.2		1.2	0.080	--	--	--	--	--	--	--	--
NOV 19...	0.040	0.46		0.50	0.120	--	--	--	--	--	--	--	--
JAN 07...	0.080	0.92		1.0	0.140	--	3	51	<1	50	1	40	<5
FEB 25...	0.080	1.4		1.5	0.190	3.7	--	--	--	--	--	--	--
APR 15...	0.080	0.42		0.50	0.040	--	--	--	--	--	--	--	--
JUN 03...	0.080	2.2		2.3	0.220	--	--	--	--	--	--	--	--
JUL 22...	0.020	0.98		1.0	0.100	--	1	61	<1	<10	1	16	<5

## RED RIVER BASIN

07343200 SULPHUR RIVER NEAR TALCO, TX--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	MANGANESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELENIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)	PCB, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	PCN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	ALDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	CHLOR- DANE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DDD, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DDE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)
OCT 08...	--	--	--	--	--	--	--	--	--	--	--
NOV 19...	--	--	--	--	--	--	--	--	--	--	--
JAN 07...	28	<0.1	<1	<1	<3	--	--	--	--	--	--
FEB 25...	--	--	--	--	--	--	--	--	--	--	--
APR 15...	--	--	--	--	--	--	--	--	--	--	--
JUN 03...	--	--	--	--	--	--	--	--	--	--	--
JUL 22...	21	0.1	<1	<1	<3	<1	<1.0	<0.1	<1.0	<0.1	11
DATE	DDT, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DIELDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	ENDOSULFAN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	ENDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	HEPTACHLOR, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	HEPTACHLOR EPOXIDE TOT. IN BOTTOM MATL. (UG/KG)	LINDANE TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	METHOXY- CHLOR, TOT. IN BOTTOM MATL. (UG/KG)	MIREX, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	PERTHANE TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	TOXAPHENE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)
OCT 08...	--	--	--	--	--	--	--	--	--	--	--
NOV 19...	--	--	--	--	--	--	--	--	--	--	--
JAN 07...	--	--	--	--	--	--	--	--	--	--	--
FEB 25...	--	--	--	--	--	--	--	--	--	--	--
APR 15...	--	--	--	--	--	--	--	--	--	--	--
JUN 03...	--	--	--	--	--	--	--	--	--	--	--
JUL 22...	0.9	0.5	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<1.00	30

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1986 TO SEPTEMBER 1987

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. 1986	10924.3	300	175	5170	11	315	33	963	110
NOV. 1986	73436	243	141	28000	7.9	1570	25	4970	94
DEC. 1986	29931	334	196	15800	13	1020	38	3050	130
JAN. 1987	35638	314	183	17700	11	1100	35	3340	120
FEB. 1987	31942	343	201	17300	13	1140	39	3380	130
MAR. 1987	72774	236	138	27000	7.7	1510	24	4780	91
APR. 1987	2054	623	374	2070	34	189	91	503	210
MAY 1987	5855	532	320	5050	29	464	78	1230	180
JUNE 1987	11487	283	165	5120	9.9	308	30	946	110
JULY 1987	2984.8	358	210	1700	14	113	41	334	130
AUG. 1987	186.07	491	291	146	22	11	63	32	180
SEPT 1987	19695.20	311	182	9690	12	612	35	1840	120
TOTAL	296907.37	**	**	135000	**	8370	**	25400	**
WTD.AVG.	813	288	168	**	10	**	32	**	110

## RED RIVER BASIN

127

07343200 SULPHUR RIVER NEAR TALCO, TX--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
EQUIVALENT MEAN

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	480	435	287	410	663	261	365	693	240	538	451	650
2	497	463	330	410	693	229	390	687	302	493	427	628
3	505	511	363	410	700	225	432	774	299	487	471	625
4	466	486	396	410	547	241	453	845	273	543	468	635
5	311	338	418	400	557	300	499	854	250	331	455	590
6	340	344	440	393	556	345	552	788	271	370	453	640
7	284	345	475	406	557	387	594	886	289	413	458	646
8	334	360	520	454	572	422	625	820	316	418	466	660
9	267	343	560	348	603	450	655	885	331	417	492	671
10	247	310	603	281	653	476	587	954	348	425	465	629
11	263	288	542	262	680	513	727	903	378	441	448	686
12	302	288	507	261	700	512	754	1110	432	452	479	712
13	326	268	505	296	725	616	740	1030	445	462	443	701
14	419	293	527	344	748	637	825	1150	429	456	452	710
15	417	322	517	387	620	667	852	1110	482	416	496	338
16	400	332	443	428	511	649	818	1090	380	467	506	343
17	404	363	422	463	434	386	778	1200	180	275	532	289
18	420	394	350	500	454	215	748	1140	237	340	547	326
19	440	419	289	298	514	171	703	1030	233	337	567	448
20	451	450	264	261	470	181	678	1010	263	291	563	236
21	464	468	263	260	396	203	680	1070	266	353	577	211
22	482	353	299	310	321	242	689	1140	299	372	567	236
23	486	456	350	357	392	305	698	1220	284	387	576	278
24	490	408	382	385	328	349	703	1220	303	390	628	298
25	488	344	460	433	348	407	703	1190	353	403	607	317
26	490	234	440	469	317	405	721	1090	427	408	596	327
27	530	224	430	514	287	402	738	687	474	390	616	340
28	554	175	430	548	281	415	748	620	462	404	615	320
29	490	180	420	577	---	450	761	768	554	416	710	365
30	411	214	420	602	---	483	780	374	552	432	635	368
31	429	---	420	631	---	411	---	282	---	451	605	---
MEAN	416	347	422	403	522	386	667	923	345	412	528	474

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26.0	16.5	9.0	---	10.0	10.0	13.0	23.0	23.0	---	28.0	28.0
2	27.0	18.0	9.0	---	12.0	13.0	11.0	22.0	25.0	26.0	28.0	25.0
3	25.0	18.0	9.0	---	12.0	13.0	13.0	23.0	25.0	26.0	31.0	26.0
4	25.0	17.0	9.0	---	13.0	13.0	11.0	24.0	25.0	26.0	32.0	26.0
5	23.0	16.0	8.0	6.0	13.0	13.0	12.0	24.0	25.0	27.0	31.0	24.0
6	22.0	15.0	8.0	7.0	11.0	---	16.0	25.0	23.0	28.0	30.0	27.0
7	21.0	15.0	9.0	8.0	10.0	15.0	16.0	25.0	24.0	29.0	31.0	25.0
8	20.0	15.0	10.0	7.0	11.0	15.0	17.0	25.0	27.0	28.0	28.0	27.0
9	20.0	15.0	---	7.0	11.0	17.0	19.0	23.0	27.0	28.0	28.0	28.0
10	20.0	---	9.0	5.0	12.0	14.0	20.0	23.0	25.0	28.0	31.0	25.0
11	20.0	11.0	8.0	5.0	13.0	15.0	20.0	25.0	26.0	29.0	32.0	26.0
12	19.0	10.0	8.0	6.0	14.0	15.0	19.0	26.0	26.0	30.0	32.0	23.0
13	18.0	8.0	6.0	6.0	14.0	15.0	20.0	26.0	25.0	28.0	39.0	23.0
14	16.0	7.0	7.0	7.0	13.0	14.0	18.0	27.0	27.0	28.0	30.0	28.0
15	16.0	7.0	7.0	8.0	13.0	15.0	19.0	26.0	29.0	28.0	29.0	22.0
16	17.0	9.0	8.0	8.0	12.0	17.0	20.0	24.0	29.0	27.0	29.0	24.0
17	16.0	10.0	9.0	8.0	9.0	16.0	21.0	24.0	24.0	25.0	31.0	26.0
18	---	12.0	---	8.0	9.0	15.0	20.0	27.0	27.0	27.0	31.0	24.0
19	---	12.0	9.0	6.0	8.0	16.0	20.0	27.0	28.0	27.0	30.0	22.0
20	18.0	---	8.0	5.0	7.0	17.0	24.0	27.0	26.0	29.0	31.0	22.0
21	17.0	12.5	7.0	5.0	5.0	18.0	22.0	27.0	27.0	29.0	31.0	23.0
22	17.0	11.0	7.0	5.0	7.0	18.0	23.0	28.0	29.0	30.0	28.0	22.0
23	18.0	12.0	8.0	5.0	9.0	18.0	22.0	26.0	30.0	27.0	28.0	23.0
24	18.0	11.5	8.0	5.0	9.0	18.0	22.0	25.0	29.0	29.0	31.0	23.0
25	16.0	10.0	7.0	6.0	10.0	16.0	20.0	25.0	30.0	26.0	31.0	23.0
26	16.0	10.0	8.0	6.0	10.0	---	21.0	27.0	30.0	27.0	31.0	21.0
27	17.0	9.0	---	8.0	11.0	16.0	24.0	26.0	29.0	30.0	29.0	22.0
28	17.0	10.0	---	8.0	11.0	15.0	24.0	26.0	24.0	30.0	27.0	23.0
29	17.0	8.0	---	10.0	---	---	25.0	23.0	29.0	30.0	24.0	24.0
30	17.0	8.0	---	10.0	---	12.0	25.0	21.0	27.0	31.0	24.0	22.0
31	17.0	---	---	9.0	---	11.0	---	21.0	---	30.0	26.0	---
MEAN	19.0	12.0	8.0	7.0	10.5	15.0	19.0	25.0	26.5	28.0	29.5	24.0

## 07343500 WHITE OAK CREEK NEAR TALCO, TX

LOCATION.--Lat 33°19'20", long 95°05'33", Titus County, Hydrologic Unit 11140300, near center of main channel at downstream side of bridge on U.S. Highway 271, 0.8 mi downstream from Lewis Creek, 2.4 mi upstream from Ripley Creek, 2.7 mi south of Talco, and 38.4 mi upstream from mouth.

DRAINAGE AREA.--494 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 1711: Elevation of historical maximum.

GAGE.--Water-stage recorder. Datum of gage is 286.45 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. There are several small diversions above station for municipal supply. The cities of Sulphur Springs and Mount Vernon discharged sewage effluent into tributaries above this station. Gage-height telemeter at station.

AVERAGE DISCHARGE.--37 years (water years 1951-87), 439 ft<sup>3</sup>/s (12.07 in/yr), 318,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 48,000 ft<sup>3</sup>/s Dec. 11, 1971 (gage height, 21.20 ft), from rating curve extended above 23,000 ft<sup>3</sup>/s; no flow at times in 1954, 1956, 1964-65, 1969-73, 1976, and 1978-79.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1870, 22.9 ft Mar. 31, 1945, from floodmarks and from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 9,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Mar. 19	1630	14,600	18.43	No other peak greater than base discharge.			

Minimum discharge, 0.22 ft<sup>3</sup>/s Sept. 3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.0	4.8	259	85	60	3470	374	11	131	70	2.5	1.0
2	1.0	3.3	106	76	57	3230	380	9.8	99	82	2.6	1.0
3	.94	2.2	71	71	53	2690	262	9.2	60	269	2.6	1.1
4	.86	2.9	57	82	54	1990	155	9.3	33	121	2.6	1.1
5	.83	4.3	47	228	56	1580	117	9.2	31	67	2.7	1.1
6	.77	5.9	40	304	58	829	94	9.8	39	56	2.8	1.1
7	.70	14	35	206	55	272	80	18	41	42	2.8	1.3
8	.74	58	113	122	47	163	72	43	35	31	2.8	1.5
9	.80	50	304	262	42	129	66	30	20	24	2.8	1.5
10	.73	37	247	811	38	108	61	18	14	19	2.8	1.4
11	.73	43	132	1020	36	94	57	13	11	16	2.8	1.3
12	1.2	84	86	1030	33	83	52	10	21	14	2.8	1.4
13	1.7	170	81	894	31	73	48	8.9	110	12	19	1.5
14	2.4	202	62	694	31	67	45	8.0	110	9.8	9.2	1.6
15	4.5	114	98	306	64	62	41	7.2	145	8.7	4.8	1.8
16	7.2	54	332	183	232	58	57	6.6	264	7.9	3.5	3.6
17	9.8	30	454	148	286	465	95	6.4	327	7.3	2.4	3.7
18	7.5	19	565	247	213	2020	68	5.8	351	6.9	1.8	7.1
19	5.7	14	758	615	140	10500	48	53	362	6.5	1.5	12
20	4.2	11	837	790	196	8990	39	110	413	5.6	1.3	138
21	2.9	8.5	760	768	678	4820	33	52	419	5.1	1.2	264
22	2.3	116	712	788	901	3030	29	25	402	4.5	1.2	225
23	2.1	394	542	704	944	1700	25	15	235	4.4	1.1	87
24	2.1	528	424	320	978	641	22	11	115	4.6	1.1	31
25	1.7	624	455	156	1140	276	20	22	82	4.6	1.1	14
26	2.8	851	449	117	1210	242	18	45	72	4.2	1.1	8.5
27	60	842	367	97	1660	208	16	37	74	3.5	1.1	6.2
28	46	788	219	82	2680	151	15	31	62	3.0	1.1	5.1
29	24	771	149	72	---	123	13	25	48	2.9	1.1	4.2
30	12	676	117	67	---	163	12	14	41	2.6	1.1	2.8
31	7.0	---	99	63	---	261	---	37	---	2.4	1.1	---
TOTAL	216.20	6521.9	8977	11408	11973	48488	2414	710.2	4167	917.5	88.4	831.9
MEAN	6.97	217	290	368	428	1564	80.5	22.9	139	29.6	2.85	27.7
MAX	60	851	837	1030	2680	10500	380	110	419	269	19	264
MIN	.70	2.2	35	63	31	58	12	5.8	11	2.4	1.1	1.0
AC-FT	429	12940	17810	22630	23750	96180	4790	1410	8270	1820	175	1650
CFSM	.0	.44	.59	.74	.87	3.17	.16	.05	.28	.06	.0	.06
IN.	.0	.49	.68	.86	.90	3.65	.18	.05	.31	.07	.0	.06

CAL YR 1986	TOTAL	149841.97	MEAN	411	MAX	11400	MIN	.26	AC-FT	297200	CFSM	.83	IN.	11.3
WTR YR 1987	TOTAL	96712.62	MEAN	265	MAX	10500	MIN	.70	AC-FT	191800	CFSM	.54	IN.	7.28

## RED RIVER BASIN

129

07343500 WHITE OAK CREEK NEAR TALCO, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: October 1967 to current year. Chemical and biochemical analyses: November 1982 to September 1985.

## 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 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, 1,220 micromhos June 15, 1972; minimum daily, 33 micromhos May 16, 1969.

WATER TEMPERATURE: Maximum daily, 37.0°C July 18, Aug. 3, 15, 1975, and Aug. 7, 1986; minimum daily, 0.0°C on several days during January 1968, 1970, 1978, and 1984.

## EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 609 microsiemens May 12; minimum daily, 66 microsiemens Mar. 20.

WATER TEMPERATURE: Maximum daily, 33.0°C on several days during July and August; minimum daily, 5.0°C Jan. 11, 21-24.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	TEMPER- ATURE WATER (DEG C)	HARD- NESS (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 09...	1040	0.48	382	21.5	80	5	19	7.8	42
NOV 19...	1010	14	175	13.0	47	9	12	4.1	14
JAN 08...	0805	128	196	8.0	49	22	12	4.7	15
FEB 25...	0945	1160	119	9.5	31	20	7.6	3.0	8.8
APR 15...	0940	41	370	16.0	86	39	20	8.8	34
JUN 03...	1000	65	274	24.5	64	12	16	5.9	24
JUL 23...	0835	4.3	303	27.5	77	12	19	7.1	26

DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WH WAT TOTAL 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 CONSTITU- ENTS, DIS- SOLVED (MG/L)
OCT 09...	2	8.9	75	50	39	0.30	6.2	220
NOV 19...	0.9	7.9	38	27	13	0.20	8.4	110
JAN 08...	1	6.1	27	38	15	0.10	11	120
FEB 25...	0.7	4.7	11	27	10	0.10	6.4	74
APR 15...	2	5.9	47	76	30	0.20	6.5	210
JUN 03...	1	7.7	52	38	22	0.30	7.4	150
JUL 23...	1	7.6	65	43	21	0.30	8.3	170

## RED RIVER BASIN

07343500 WHITE OAK CREEK NEAR TALCO, TX--Continued

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1986 TO SEPTEMBER 1987

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. 1986	216.20	436	251	146	46	27	65	38	99
NOV. 1986	6521.9	111	66	1160	8.8	154	19	336	29
DEC. 1986	8977	140	83	2010	11	273	24	582	36
JAN. 1987	11408	145	86	2640	12	361	25	762	38
FEB. 1987	11973	143	85	2740	12	385	24	781	37
MAR. 1987	48488	92	55	7180	7.1	926	16	2100	24
APR. 1987	2414	267	156	1020	25	161	43	279	65
MAY 1987	710.2	411	236	453	44	84	61	118	94
JUNE 1987	4167	174	103	1150	15	168	29	326	44
JULY 1987	917.5	186	110	272	16	39	31	77	47
AUG. 1987	88.4	314	183	44	30	7.1	50	12	76
SEPT 1987	831.9	168	99	222	14	32	28	63	43
TOTAL	96713.10	**	**	19000	**	2620	**	5470	**
WTD.AVG.	265	123	73	**	10	**	21	**	32

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
EQUIVALENT MEAN

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	374	337	113	176	290	91	238	488	436	190	349	360
2	380	331	130	180	312	97	175	487	322	177	354	362
3	382	330	140	183	312	102	186	488	282	134	366	374
4	383	316	151	187	321	106	198	486	326	137	370	378
5	385	327	162	190	346	109	218	494	284	205	377	390
6	389	308	167	181	377	142	236	501	274	188	383	402
7	382	291	176	190	370	176	256	512	247	205	384	406
8	382	309	166	206	383	201	270	546	324	218	392	436
9	383	276	158	142	413	228	287	607	286	257	401	425
10	385	319	151	105	393	246	304	587	252	266	407	437
11	385	361	165	122	383	262	320	597	252	275	404	434
12	382	292	196	114	398	280	328	609	239	294	398	450
13	386	188	190	118	404	293	340	590	353	287	262	456
14	391	185	227	123	402	304	345	562	251	281	280	458
15	405	177	429	143	397	309	363	561	265	272	269	473
16	408	168	138	163	299	325	383	560	141	265	263	497
17	437	166	157	179	298	122	408	550	132	265	262	541
18	418	170	140	290	335	83	383	540	147	267	257	529
19	400	172	122	184	239	75	390	555	99	273	299	236
20	382	176	118	150	147	66	367	297	123	284	258	224
21	371	181	104	132	138	70	365	248	122	289	261	148
22	356	173	113	124	124	82	365	263	133	295	263	120
23	354	105	118	128	126	111	381	278	155	300	270	140
24	356	92	126	141	124	155	404	294	159	304	272	154
25	362	89	163	178	129	185	409	307	160	307	280	164
26	361	91	156	196	127	220	419	362	160	315	289	167
27	542	92	159	215	105	254	435	261	159	326	309	174
28	437	84	163	232	93	244	448	356	195	331	311	180
29	358	86	166	247	---	240	455	358	237	337	321	187
30	333	92	170	262	---	227	467	372	208	341	327	193
31	340	---	173	260	---	248	---	450	---	345	326	---
MEAN	387	209	162	176	278	182	338	457	224	265	321	330

## RED RIVER BASIN

131

07343500 WHITE OAK CREEK NEAR TALCO, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27.0	15.5	9.0	---	10.0	10.0	12.0	23.0	24.0	---	28.0	28.0
2	27.0	18.0	9.0	---	12.0	12.0	10.0	22.0	26.0	25.0	28.0	28.0
3	28.0	18.0	9.0	---	13.0	12.0	11.0	24.0	26.0	26.0	32.0	28.0
4	26.0	16.5	9.0	---	13.0	13.0	10.0	24.0	26.0	25.0	33.0	28.0
5	24.0	16.0	8.0	6.0	13.0	13.0	11.0	24.0	26.0	27.0	32.0	24.0
6	23.0	16.0	8.0	8.0	11.0	---	14.0	25.0	23.0	29.0	32.0	28.0
7	24.0	16.0	8.0	7.0	10.0	13.0	14.0	25.0	24.0	30.0	33.0	25.0
8	22.0	15.0	10.0	7.0	10.0	14.0	16.0	25.0	27.0	28.0	29.0	28.0
9	22.0	15.0	---	7.0	10.0	15.0	17.0	22.0	27.0	28.0	29.0	27.0
10	25.0	---	9.0	7.0	11.0	13.0	18.0	22.0	26.0	27.0	33.0	26.0
11	20.0	12.0	8.0	5.0	12.0	14.0	19.0	26.0	27.0	30.0	33.0	26.0
12	19.0	10.0	8.0	6.0	14.0	13.0	18.0	27.0	25.0	28.0	33.0	24.0
13	18.0	8.0	7.0	6.0	14.0	14.0	---	27.0	25.0	29.0	29.0	29.0
14	18.0	8.0	7.0	7.0	13.0	12.0	17.0	29.0	26.0	31.0	30.0	28.0
15	17.0	8.0	7.0	8.0	14.0	14.0	18.0	28.0	27.0	30.0	28.0	21.0
16	17.0	10.5	9.0	9.0	11.0	16.0	19.0	24.0	27.0	29.0	28.0	26.0
17	16.0	13.0	9.0	8.0	9.0	16.0	20.0	24.0	25.0	26.0	33.0	29.0
18	---	14.0	---	8.0	9.0	16.0	20.0	28.0	27.0	31.0	32.0	25.0
19	---	13.0	10.0	9.0	8.0	17.0	20.0	26.0	27.0	28.0	32.0	23.0
20	18.0	---	9.0	6.0	7.0	18.0	24.0	25.0	25.0	31.0	32.0	23.0
21	17.0	13.0	8.0	5.0	6.0	18.0	22.0	27.0	25.0	32.0	32.0	23.0
22	16.0	11.0	8.0	5.0	8.0	19.0	23.0	28.0	28.0	33.0	28.0	22.0
23	17.0	11.5	8.0	5.0	9.0	19.0	23.0	25.0	28.0	29.0	28.0	22.0
24	17.0	11.0	9.0	5.0	10.0	17.0	23.0	25.0	28.0	28.0	31.0	22.0
25	16.0	10.5	7.0	6.0	10.0	16.0	20.0	25.0	29.0	26.0	31.0	24.0
26	16.0	10.5	9.0	6.0	10.0	---	20.0	27.0	29.0	27.0	31.0	20.0
27	16.0	9.5	---	7.0	11.0	15.0	25.0	26.0	27.0	32.0	29.0	21.0
28	16.0	10.0	---	9.0	11.0	15.0	25.0	26.0	26.0	33.0	26.0	23.0
29	17.0	9.0	---	11.0	---	---	25.0	24.0	27.0	32.0	26.0	24.0
30	17.0	9.0	---	11.0	---	10.0	25.0	23.0	28.0	32.0	25.0	24.0
31	18.0	---	---	10.0	---	10.0	---	24.0	---	32.0	27.0	---
MEAN	20.0	12.5	8.5	7.0	10.5	14.5	18.5	25.0	26.5	29.0	30.0	25.0

## 07344200 WRIGHT PATMAN LAKE NEAR TEXARKANA, TX

LOCATION.--Lat 33°18'16", long 94°09'38", Bowie-Cass County line, Hydrologic Unit 11140302, in intake structure of Wright Patman Dam on the Sulphur River, 0.5 mi upstream from U.S. Highway 59, 10 mi southwest of Texarkana, and 44.5 mi upstream from mouth.

DRAINAGE AREA.--3,443 mi<sup>2</sup>.

PERIOD OF RECORD.--July 1953 to current year. Published as Texarkana Reservoir prior to October 1970 and as Lake Texarkana from October 1970 to September 1972.

REVISED RECORDS.--WSP 1561: 1957(M). WSP 1711: 1959(M).

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). July 19 to Dec. 31, 1953, nonrecording gage at site about 125 ft upstream at datum 200 ft higher.

REMARKS.--The lake is formed by a rolled earthfill dam 18,500 ft long, including a 200-foot uncontrolled spillway and a 1-mile long dike. Temporary impoundment of water began July 2, 1953, and deliberate impoundment began June 27, 1956. The dam was completed in December 1957. The flood-control outlet works consist of two 20.0-foot-diameter conduits controlled by four 10.0- by 20.0-foot electrically driven broome-type gates. Flow is affected at times by discharge from the flood-detention pools of 25 floodwater-retarding structures with a combined detention capacity of 13,450 acre-ft. These structures control runoff from 40.0 mi<sup>2</sup> in the Sulphur River and Langford Creek drainage basins. Outflow discharging over the spillway passes into an outlet channel and then to the Sulphur River. The lake was built for flood control and for conservation. An unknown amount of water is diverted for industrial and municipal uses. The capacity table is based on a 1948 survey. 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.....	286.0	-
Crest of spillway.....	259.5	2,654,300
Top of conservation pool.....	220.0	145,300
Lowest gated outlet (invert).....	200.0	2,600

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

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 1,912,100 acre-ft May 9, 1966 (elevation, 252.64 ft); minimum since first appreciable storage and after deliberate impoundment began, 137,500 acre-ft Sept. 5, 1958.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 458,800 acre-ft March 29 at 0900 hours (elevation, 230.55 ft); minimum, 164,700 acre-ft Feb. 5 at 0400 hours (elevation, 220.92 ft).

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

220.0	145,300	224.0	240,200	228.0	364,100
222.0	189,300	226.0	298,800	231.0	476,800

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
INSTANTANEOUS OBSERVATIONS AT 0700

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	267000	194100	195500	257200	175600	236400	401900	223600	223400	258300	260100	239100
2	267000	188800	187900	242400	172200	235600	386000	223600	226000	262100	259200	238600
3	265800	189300	185300	233700	168200	236700	368600	222300	227600	262600	258300	237700
4	265500	197000	189300	223400	164900	240700	351400	223100	231300	263200	257200	237200
5	264400	198200	194600	213600	166000	251000	332600	223100	234500	263200	256600	236700
6	265000	197200	201400	204800	167800	264700	315500	223400	237200	263200	256600	236100
7	264400	198400	210100	200400	168400	277000	306300	222300	238600	266100	256100	235300
8	265200	199900	217700	197000	167100	285100	294800	221800	238800	266100	254900	234500
9	266100	199400	214400	196000	166400	287200	283300	221300	239600	266700	254600	234200
10	264400	203300	207000	193300	167300	285700	275200	220300	239400	266100	253200	234000
11	264700	203600	199900	192200	166900	281800	267300	220000	239400	265800	252700	233200
12	264100	202300	196700	191900	166400	274000	259800	219700	239900	265800	253000	233200
13	265500	199900	194300	192200	166400	263800	256900	218400	240500	265200	252700	232900
14	264700	197700	192900	192900	165300	247600	248700	218400	240700	264700	252400	232600
15	262600	196700	193800	193300	172000	227800	240500	218400	241800	263800	251500	233200
16	259500	196500	195800	194300	178300	218200	236400	219500	241000	263500	251000	233400
17	256100	196500	198700	196000	183700	214600	234200	219200	241800	262400	250100	232900
18	252100	193800	204100	208500	187200	237500	233400	219700	242100	261800	249600	235600
19	248500	195000	209300	201100	189500	272300	231800	219000	244300	261500	249000	236900
20	244600	192600	215600	200400	196000	292700	231000	218700	246500	262400	248500	240700
21	239600	190500	221600	200900	200900	319600	231000	218200	249000	262600	247600	242700
22	236700	188300	227000	200100	206800	354100	230200	217700	251300	262600	247100	245700
23	233400	184800	236900	199600	209600	392800	229700	219000	254400	262400	245700	248500
24	230000	185800	242900	201600	211100	427300	228600	219700	255800	264100	244300	251800
25	226800	188600	249600	200600	213100	444600	228100	220300	257800	263800	243800	255800
26	225500	189100	255200	201400	219700	454800	227600	219700	258100	264400	243500	259500
27	217900	190200	262100	200600	223600	457600	227300	220000	258300	263200	242900	260900
28	212100	191400	268700	197700	233200	456400	225700	219700	258300	262400	242100	261800
29	207500	192600	271400	193600	---	447700	225500	220300	258100	261800	240200	261200
30	203800	195000	267000	187600	---	435700	225500	220300	258900	261200	240200	259500
31	199200	---	262400	180900	---	419000	---	221000	---	260600	240200	---
MAX	267000	203600	271400	257200	233200	457600	401900	223600	258900	266700	260100	261800
MIN	199200	184800	185300	180900	164900	214600	225500	217700	223400	258300	240200	232600
(†)	222.41	222.24	224.79	221.64	223.74	229.52	223.45	223.28	224.67	224.73	224.00	224.69
(Φ)	-69000	-4200	+67400	-81500	+52300	+185800	-193500	-4500	+37900	+1700	-20400	+19300
CAL YR 1986	MAX	396400	MIN	163200	(Φ)	+3200						
WTR YR 1987	MAX	457600	MIN	164900	(Φ)	-8700						

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

## RED RIVER BASIN

133

## 07344210 SULPHUR RIVER NEAR TEXARKANA, TX

LOCATION.--Lat 33°18'20", long 94°09'03", Bowie County, Hydrologic Unit 11140302, on downstream side of highway embankment near left end of downstream (northbound) bridge on U.S. Highway 59, 0.4 mi downstream from Texarkana Dam, 1.4 mi upstream from Elliott Creek, 11.7 mi southwest of Texarkana, and at mile 44.1.

DRAINAGE AREA.--3,443 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1985 to current year (midnight elevations). August 1937 to July 1953 and October 1953 to September 1979 (daily gage heights); January to December 1933, January 1937 to December 1942, and January 1945 to September 1979 (discharge measurements); January to December 1939 and January 1945 to September 1979 (daily discharges) published by U.S. Army Corps of Engineers; October 1979 to September 1985 (daily discharges).

GAGE.--Water-stage recorder. Datum of gage is 180.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Elevation records fair except those for Mar. 28 to May 5, when no record was obtained.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,100 ft<sup>3</sup>/s June 16 to July 5, 1981; maximum gage height, 32.57 ft June 15, 1981 at 1000 hours; no flow June 25, 1980.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge, 94,000 ft<sup>3</sup>/s Apr. 4, 1945; maximum stage, 47.23 ft Apr. 14, 1945; no flow on various occasions.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 212.05 ft at 1400 hours Mar. 26; minimum, 186.41 ft Aug. 29.

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	190.66	198.10	204.43	205.50	205.13	209.63		---	187.23	187.11	186.70	186.44
2	190.63	198.08	207.73	208.18	203.34	210.82		---	187.26	187.09	186.71	186.46
3	190.66	196.51	208.57	208.99	202.50	211.00		---	187.26	187.09	186.70	186.45
4	190.69	193.87	207.12	209.25	200.02	211.08		---	188.21	187.23	186.69	186.48
5	190.67	193.64	206.40	209.35	197.46	211.14		189.49	188.52	187.17	186.68	186.49
6	192.85	193.26	206.06	209.36	194.40	211.20		189.48	188.11	187.01	186.65	186.51
7	193.66	195.56	205.93	207.93	193.50	211.27		189.47	187.91	186.99	186.63	186.51
8	192.80	196.08	208.09	207.05	193.29	211.32		189.46	187.85	187.03	186.63	186.51
9	193.17	196.25	210.70	206.61	193.13	211.62		189.45	187.55	187.05	186.57	186.53
10	195.54	196.32	210.95	206.35	193.02	211.64		189.45	187.32	187.03	186.53	186.53
11	196.03	196.58	210.98	206.05	192.94	211.63		189.43	187.29	187.02	186.57	186.54
12	196.16	198.14	209.96	205.86	192.88	211.63		189.43	187.29	187.00	186.57	186.56
13	196.21	198.37	208.53	205.71	191.43	211.60		188.03	187.45	187.05	186.50	186.55
14	196.26	200.71	206.91	205.59	190.93	211.56		187.42	187.52	187.23	186.47	186.54
15	197.91	201.49	204.79	205.50	192.74	211.48		187.35	187.39	187.28	186.47	186.57
16	198.38	201.69	202.88	205.40	194.00	210.32		187.72	187.54	187.28	186.43	186.56
17	198.51	201.76	200.56	205.36	193.44	211.16		187.36	187.35	187.30	186.45	186.53
18	198.54	201.79	198.63	205.55	193.96	211.31		187.28	187.30	187.30	186.47	186.51
19	198.50	198.15	196.92	205.61	195.98	211.43		187.28	187.52	187.34	186.48	186.49
20	198.46	197.10	195.35	205.55	198.88	211.53		187.28	187.57	186.75	186.52	186.53
21	198.42	200.33	194.21	205.52	200.14	211.63		187.29	187.46	186.72	186.54	186.58
22	198.39	201.60	193.55	205.46	199.94	211.75		187.25	187.40	186.76	186.53	186.49
23	198.42	202.38	195.90	205.43	201.73	211.85		187.28	187.64	186.66	186.53	186.48
24	198.42	202.36	198.15	205.44	204.56	211.93		187.33	187.72	186.71	186.53	186.46
25	198.38	203.25	198.71	205.40	205.43	211.98		187.31	187.65	186.77	186.53	186.49
26	198.33	203.65	198.81	205.38	206.11	212.00		187.29	187.57	186.81	186.49	186.54
27	198.25	203.37	198.73	205.38	208.64	211.80		187.19	187.48	186.79	186.44	186.55
28	198.20	203.08	198.65	205.37	209.54	---		187.17	187.32	186.76	186.43	186.57
29	198.14	202.83	201.25	205.30	---	---		187.19	187.24	186.74	186.42	186.54
30	198.11	202.63	204.40	205.20	---	---		187.22	187.22	186.73	186.44	186.51
31	198.11	---	205.24	205.12	---	---		187.26	---	186.73	186.48	---
MAX	198.54	203.65	210.98	209.36	209.54	---		---	188.52	187.34	186.71	186.58
MIN	190.63	193.26	193.55	205.12	190.93	---		---	187.22	186.66	186.42	186.44
(†)	198.11	202.63	205.24	205.12	209.54	---		187.26	187.22	186.73	186.48	186.51

CAL YR 1986 MAX - MIN -  
WTR YR 1987 MAX - MIN -

† Elevation, in feet, at end of month.

## 07344482 BIG CYPRESS CREEK NEAR WINNSBORO, TX

LOCATION.--Lat 33°01'24", long 95°16'12", Franklin County, Hydrologic Unit 11140305, on left bank at downstream side of bridge on State Highway 37, 0.3 mi downstream from Glade Branch, 1.8 mi upstream from Little Cypress Creek, 4.7 mi north of Winnsboro, and 146.5 mi upstream from mouth.

DRAINAGE AREA.--27.2 mi<sup>2</sup>.

PERIOD OF RECORD.--March 1974 to current year.

GAGE.--Water-stage recorder. Datum of gage is 375.83 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Flow affected slightly by Lake Franklin located 1.4 mi upstream on Glade Branch. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--13 years (water years 1975-87), 19.1 ft<sup>3</sup>/s (9.54 in/yr), 13,840 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,320 ft<sup>3</sup>/s Nov. 24, 1974 (gage height, 12.39 ft); maximum gage height, 12.69 ft, Dec. 11, 1985; no flow at times in water years 1974, 1978-80, 1982, and 1984-87.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 900 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Mar. 17	1545	*1,290	*10.97	No other peak greater than base discharge.			
Minimum daily discharge, no flow for many days.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	.73	3.4	8.9	1.2	5.0	64	6.9	1.7	2.9	22	.00	.12		
2	.83	3.7	8.7	1.5	7.1	34	5.4	2.0	e3.4	6.7	.00	.11		
3	.88	4.2	10	3.1	5.2	26	5.0	2.8	e2.8	7.4	.00	.13		
4	.78	6.1	11	3.6	4.0	19	4.8	4.6	e2.1	3.0	.00	.13		
5	1.1	5.8	12	2.9	3.3	16	4.6	3.4	e1.7	1.1	.00	.13		
6	1.8	5.2	13	2.9	3.2	14	4.5	2.8	e1.2	.52	.00	.13		
7	1.5	5.8	15	2.2	3.4	12	4.2	e2.2	e.89	.32	.00	.15		
8	1.3	6.8	19	2.5	2.9	11	4.2	e1.7	e.73	.30	.00	.18		
9	1.4	7.3	40	66	2.4	10	4.0	e1.2	e.73	.30	.00	.16		
10	1.3	8.6	15	39	2.5	8.2	3.8	e.97	8.6	.30	.00	.21		
11	1.3	11	11	14	2.6	7.8	3.6	e.73	6.4	.26	.00	.30		
12	3.8	8.5	11	8.1	2.2	7.4	3.9	e.55	19	.20	.00	.32		
13	1.6	8.8	11	5.9	2.4	7.1	4.2	e.37	20	.04	.01	.41		
14	.96	8.5	12	5.7	2.7	9.0	3.9	e.28	5.2	.00	.03	.56		
15	.79	9.2	24	4.9	29	7.4	3.5	.77	5.7	.00	.03	.64		
16	.97	11	21	4.5	19	7.0	3.2	5.2	14	.00	.06	1.1		
17	1.1	11	13	5.3	8.1	666	3.6	3.6	e4.0	.03	.10	.45		
18	1.0	12	31	80	4.8	169	3.5	e2.7	e1.9	.03	.10	5.4		
19	1.0	14	21	37	3.6	32	3.0	e2.1	e1.0	.00	.07	4.6		
20	1.2	15	11	18	168	20	2.7	e1.5	e3.8	.00	.02	.76		
21	1.4	14	5.7	12	73	13	2.3	e1.0	e2.7	.00	.00	.36		
22	1.7	25	.75	8.9	33	10	2.3	e.73	e1.3	.00	.00	.16		
23	3.9	17	15	7.5	22	12	2.2	e.55	.97	1.5	.00	.08		
24	3.6	16	11	6.9	114	12	2.0	e.44	1.3	2.0	.00	.10		
25	2.0	32	2.8	5.5	60	6.8	2.1	e.39	.94	.75	.00	.08		
26	1.6	15	1.1	4.9	173	5.7	2.1	e.39	.63	.12	.00	.08		
27	1.7	7.8	.74	4.8	136	5.8	1.8	e.37	.53	.00	.00	.15		
28	1.8	6.6	.59	4.2	330	5.6	1.7	e.34	.36	.00	.00	.50		
29	2.1	6.4	.57	5.3	---	7.9	1.7	3.8	.28	.00	.00	2.2		
30	2.5	7.2	.48	3.3	---	11	1.7	e1.5	3.3	.00	.09	.94		
31	3.0	---	.64	2.9	---	8.0	---	e.70	---	.00	.13	---		
TOTAL	50.64	312.9	357.97	374.5	1222.4	1244.7	102.4	51.38	118.36	46.87	.64	20.64		
MEAN	1.63	10.4	11.5	12.1	43.7	40.2	3.41	1.66	3.95	1.51	.02	.69		
MAX	3.9	32	40	80	330	666	6.9	5.2	20	22	.13	5.4		
MIN	.73	3.4	.48	1.2	2.2	5.6	1.7	.28	.28	.00	.00	.08		
AC-FT	100	621	710	743	2420	2470	203	102	235	93	1.3	41		
CFSM	.06	.38	.42	.44	1.61	1.48	.13	.06	.15	.06	.0	.0		
IN.	.07	.43	.49	.51	1.67	1.70	.14	.07	.16	.06	.0	.0		
CAL YR 1986	TOTAL	4692.44	MEAN	12.9	MAX	513	MIN	.00	AC-FT	9310	CFSM	.47	IN.	6.42
WTR YR 1987	TOTAL	3903.36	MEAN	10.7	MAX	666	MIN	.00	AC-FT	7740	CFSM	.39	IN.	5.34

e Estimated.

## 07344484 LAKE CYPRESS SPRINGS NEAR MOUNT VERNON, TX

LOCATION.--Lat 33°03'22", long 95°08'22", Franklin County, Hydrologic Unit 11140305, in brick meter house located on upstream side and near center of dam on Big Cypress Creek, 1.5 mi upstream from Andy's Creek, 2.6 mi downstream from Panther Creek, and 10.3 mi southeast of Mount Vernon.

DRAINAGE AREA.--75.0 mi<sup>2</sup>.

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

REMARKS.--The lake is formed by a rolled earthfill dam 5,230 ft long. Deliberate impoundment began July 7, 1970, and the dam was completed Feb. 15, 1971. The spillway is an excavated channel through natural ground 1,000 ft wide located to the left of left end of dam. The service spillway is a rectangular 23- by 23-foot drop inlet located near the right end of dam. The low-flow outlet works consist of an 18-inch-diameter concrete pipe that has duplicate valve controls and discharges into the service spillway conduit. 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.....	397.0	-
Crest of spillway.....	385.0	100,400
Crest of spillway.....	378.0	72,850
Lowest gated outlet (invert).....	317.75	0

COOPERATION.--The capacity table, provided by the Franklin County Water District, was based on data prepared by Wisenbaker, Fix, and Associates, Consulting Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 83,770 acre-ft Feb. 2, 1975 (elevation, 381.00 ft); minimum, 59,440 acre-ft Nov. 12-14, 1978 (elevation, 373.79 ft).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 77,340 acre-ft Mar. 18 at 0900 hours (elevation, 379.28 ft); minimum, 69,130 acre-ft Oct. 2-3 (elevation, 376.89 ft).

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

376.0	66,240	379.0	76,340
377.0	69,490	380.0	79,980
378.0	72,850		

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	69190	69790	71360	72920	73230	76730	73880	72710	72850	72950	72270	70220
2	69130	69790	71360	72880	73230	76090	73740	72680	72780	73880	72240	70150
3	69130	69790	71360	72920	73230	75770	73670	72710	72710	73810	72170	70120
4	69160	70020	71360	72920	73230	75450	73640	72750	72680	73780	72100	70050
5	69160	70020	71360	72920	73230	75170	73610	72810	72610	73640	72000	69990
6	69220	69950	71290	72920	73190	74930	73500	72810	72580	73470	71960	69920
7	69220	69990	71360	72920	73190	74680	73500	72810	72580	73430	71930	69890
8	69220	70050	71860	72880	73160	74540	73470	72780	72510	73360	71760	69850
9	69220	70050	71960	73360	73120	74330	73430	72780	72470	73300	71730	69820
10	69220	70190	72000	73400	73090	74120	73400	72750	72750	73260	71690	69720
11	69320	70190	71930	73400	73090	74060	73330	72750	72920	73160	71660	69690
12	69750	70190	71930	73400	73090	73950	73330	72710	73190	73120	71560	69720
13	69720	70190	71930	73400	73090	73810	73300	72680	73190	73090	71490	69720
14	69590	70120	72000	73360	72920	73780	73190	72640	73190	72950	71490	69690
15	69590	70120	72240	73330	73400	73710	73160	72750	73260	72920	71420	69890
16	69590	70120	72370	73260	73400	73670	73160	72750	73260	72920	71360	69890
17	69560	70120	72410	73260	73330	77200	73120	72750	73260	72810	71260	69890
18	69520	70120	72680	73740	73300	77200	73120	72750	73260	72780	71220	70290
19	69560	70190	72750	73740	73230	76770	73120	72750	73120	72750	71120	70290
20	69520	70190	72750	73710	74120	76230	73120	72680	73190	72750	71090	70290
21	69460	70150	72750	73640	74300	75840	73050	72680	73120	72680	70990	70290
22	69390	70490	72780	73540	74300	75490	72990	72710	73090	72610	70890	70190
23	69820	70690	72950	73430	74160	75280	72950	72880	73090	72680	70790	70120
24	69890	70720	73020	73400	74650	75000	72920	72810	73090	72610	70750	70050
25	69890	71290	73020	73360	74680	74750	72920	72780	73090	72580	70690	70020
26	69890	71320	73020	73300	75280	74510	72880	72780	72950	72580	70620	69990
27	69850	71320	73020	73260	75980	74330	72850	72750	72880	72580	70520	69920
28	69820	71320	73020	73260	77050	74230	72810	72950	72750	72540	70450	69890
29	69820	71360	72990	73260	---	74120	72810	72850	72750	72470	70350	69890
30	69820	71390	72950	73230	---	73950	72780	72850	72950	72440	70250	69890
31	69820	---	72920	73190	---	73990	---	72850	---	72340	70250	---
MAX	69890	71390	73020	73740	77050	77200	73880	72950	73260	73880	72270	70290
MIN	69130	69790	71290	72880	72920	73670	72780	72640	72470	72340	70250	69690
(†)	377.10	377.57	378.02	378.10	379.20	378.33	377.98	378.00	378.03	377.85	377.23	377.12
(Φ)	+630	+1570	+1530	+270	+3860	-3060	-1210	+70	+100	-610	-2090	-360

CAL YR 1986 MAX 79650 MIN 69130 (Φ) -750  
WTR YR 1987 MAX 77200 MIN 69130 (Φ) +700

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

## 07344486 BRUSHY CREEK AT SCROGGINS, TX

LOCATION.--Lat 32°58'32", Long 95°11'03", Franklin County, Hydrologic Unit 11140305, at downstream side of highway embankment near left end of bridge on Farm Road 115, 0.1 mi north of Scroggins, 0.3 mi downstream from Briary Creek, 2.5 mi upstream from South Brushy Creek, and 9.5 mi upstream from mouth.

DRAINAGE AREA.--23.4 mi<sup>2</sup>.

PERIOD OF RECORD.--December 1977 to current year.

GAGE.--Water-stage recorder. Datum of gage is 343.90 ft above National Geodetic Vertical Datum of 1929.

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

AVERAGE DISCHARGE.--9 years (water years 1979-87), 14.7 ft<sup>3</sup>/s (8.53 in/yr), 10,650 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,140 ft<sup>3</sup>/s Sept. 20, 1979 (gage height, 13.46 ft); no flow in water years 1978, 80, 84-87.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 800 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Mar. 17	1130	*1,610	*13.25	No other peak greater than base discharge.			
Minimum discharge, no flow Aug. 11-12, 20-31, Sept. 1, 6-10.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.19	2.4	5.6	11	8.0	54	5.9	6.3	2.6	2.0	.06	.00
2	.23	2.4	5.3	8.7	10	27	5.5	6.0	2.7	2.4	.06	.04
3	.26	2.6	6.2	11	9.9	22	5.6	6.1	2.6	4.1	.06	.05
4	.22	4.0	7.3	13	8.6	20	5.7	6.1	2.6	2.8	.06	.04
5	.73	7.1	8.6	11	8.4	18	5.1	5.6	2.8	2.3	.06	.02
6	2.0	4.7	11	10	9.2	17	5.5	5.4	2.8	1.9	.04	.00
7	1.1	3.8	12	10	10	17	5.8	3.8	2.9	1.9	.03	.00
8	.33	4.1	13	10	10	18	5.8	4.7	3.4	1.9	.03	.00
9	.66	3.9	43	20	9.7	20	5.4	5.3	4.0	2.4	.03	.00
10	.65	3.2	13	17	10	20	6.2	5.4	8.1	2.0	.01	.00
11	.65	3.9	7.3	10	12	20	6.5	5.1	8.4	1.7	.00	.09
12	3.7	3.9	6.5	8.7	13	20	6.7	5.0	7.7	1.4	.00	.28
13	2.4	4.1	6.7	8.4	14	19	5.9	5.3	6.0	1.2	.05	.45
14	1.1	4.4	9.0	8.6	14	19	6.7	5.6	3.9	1.3	.11	.67
15	.66	4.4	21	8.6	26	18	6.9	6.4	2.5	1.1	.06	1.0
16	.50	4.9	18	8.3	24	18	6.6	10	2.7	1.0	.04	2.0
17	.44	5.5	12	9.1	18	576	6.1	6.5	2.5	.88	.04	2.5
18	.35	5.6	17	25	16	71	6.4	5.5	4.6	.85	.03	4.1
19	.33	5.5	16	17	15	13	6.1	4.4	2.8	.76	.01	4.1
20	1.2	5.5	11	10	45	7.6	6.4	4.0	4.6	.67	.00	1.1
21	.63	5.4	8.2	9.2	46	5.3	6.1	3.5	3.7	.56	.00	1.0
22	.66	11	7.2	8.3	24	4.4	5.3	3.0	2.8	.58	.00	1.1
23	2.8	13	13	7.2	21	6.0	5.1	2.8	2.2	.52	.00	1.0
24	7.2	15	12	7.4	37	6.7	5.2	2.7	2.5	.47	.00	1.0
25	2.5	29	8.5	7.3	31	4.5	5.3	2.8	2.2	.41	.00	1.0
26	1.1	18	8.0	6.8	44	4.5	5.6	2.6	2.2	.30	.00	1.2
27	.73	8.8	8.2	6.9	63	6.0	5.8	2.2	2.3	.25	.00	1.4
28	1.5	6.7	8.3	7.8	243	6.1	6.1	2.2	2.4	.14	.00	1.7
29	1.8	5.8	8.3	8.8	---	6.0	5.9	2.8	2.4	.12	.00	4.2
30	2.2	5.7	8.3	8.3	---	7.1	5.1	3.0	2.3	.08	.00	1.2
31	2.3	---	12	7.4	---	5.9	---	2.4	---	.07	.00	---
TOTAL	41.12	204.3	351.5	320.8	799.8	1077.1	176.3	142.5	105.2	38.06	.78	31.24
MEAN	1.33	6.81	11.3	10.3	28.6	34.7	5.88	4.60	3.51	1.23	.03	1.04
MAX	7.2	29	43	25	243	576	6.9	10	8.4	4.1	.11	4.2
MIN	.19	2.4	5.3	6.8	8.0	4.4	5.1	2.2	2.2	.07	.00	.00
AC-FT	82	405	697	636	1590	2140	350	283	209	75	1.5	62

CAL YR 1986 TOTAL 3701.34 MEAN 10.1 MAX 351 MIN .00 AC-FT 7340  
WTR YR 1987 TOTAL 3288.66 MEAN 9.01 MAX 576 MIN .00 AC-FT 6520

## 07344489 LAKE BOB SANDLIN NEAR MOUNT PLEASANT, TX

LOCATION.--Lat 33°04'48", long 95°00'07", Titus County, Hydrologic Unit 11140305, in control room in left abutment of service spillway at left end of Fort Sherman Dam on Big Cypress Creek, 1.7 mi upstream from Tankersley Creek, 3.5 mi upstream from bridge on U.S. Highway 271, 5.7 mi southwest of the county courthouse in Mount Pleasant, and 129.2 mi upstream from mouth.

DRAINAGE AREA.--239 mi<sup>2</sup>.

PERIOD OF RECORD.--August 1977 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. A nonrecording gage was located at same site and datum prior to Apr. 12, 1978.

REMARKS.--The lake is formed by a rolled earthfill dam 10,800 ft long, including spillways. Deliberate impoundment began Aug. 8, 1977, and the dam was completed by April 1978. The spillway is an excavated channel cut through natural ground. The spillway is 4,500 ft wide, located to the left of the left end of the dam. The service spillway is 289.5 ft wide with 160 ft of net flow width controlled by four 40- by 22.5-foot tainter gates. The dam was built, owned, maintained, and operated by the Titus County Fresh Water Supply District No. 1 to provide water for municipal use. Flow from 75.0 mi<sup>2</sup> above this station is controlled by Lake Cypress Springs on Big Cypress Creek and from 36.0 mi<sup>2</sup> above this station is controlled by Montecello Reservoir on Blundell Creek, a tributary to Big Cypress Creek. Stage telemeter at station. Figures given herein represent total contents. Data regarding the dam and lake are give in the following table:

	Elevation (feet)	Capacity (acre-ft)
Top of dam.....	349.0	-
Crest of uncontrolled spillway.....	341.3	251,000
Crest of gated spillway.....	316.5	64,790
Lowest gated outlet (invert).....	294.5	3,300

COOPERATION.--Area and capacity tables were compiled by Forest and Cotton, Inc., Consulting Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 222,800 acre-ft Mar. 17, 1987 (elevation, 338.49 ft); minimum, 516 acre-ft Aug. 8-17, 1977 (elevation, 290.00 ft).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 222,800 acre-ft Mar. 17 at 1030 hours (elevation, 338.49 ft); minimum, 190,100 acre-ft Sept. 30 (elevation, 334.97 ft).

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

334.0	186,000	337.0	208,600
335.0	190,400	338.0	218,100
336.0	199,400	339.0	227,800

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	194200	194000	196200	201100	207000	210600	208700	208300	205700	206500	200700	192100
2	194100	193900	196000	201000	207100	211600	208900	208300	205500	208300	200500	191900
3	193900	193800	195900	201600	207100	212300	208900	208300	205900	208300	200200	191700
4	194100	194600	195900	201600	207100	212800	208900	208500	205700	208100	199800	191600
5	193800	194400	195700	201600	207200	213300	209200	208600	205600	207700	199900	191500
6	194100	194400	195700	201600	207600	213600	209200	208400	205400	207700	199700	191300
7	194000	194400	195800	201700	207600	215200	209200	208300	205200	207200	199500	191100
8	194200	194400	197100	201900	207600	213400	209200	208300	205100	207100	199200	191000
9	194100	194400	197700	203000	207600	212900	209200	208300	205100	207000	198900	190800
10	193900	194200	197700	203100	207600	212400	209200	208100	205500	206800	198700	190800
11	193900	194600	197800	203200	207600	212100	209300	208000	206000	206500	198400	190800
12	194400	194300	197800	203300	207700	211700	209300	208000	206400	206200	198200	190800
13	194300	194400	197800	203500	207800	211200	210100	207900	206500	206000	197800	190800
14	194000	194000	198000	203600	207900	211000	209500	207900	206500	205800	197400	190800
15	193900	193900	198600	203700	207900	211200	209300	208000	207000	205300	197100	191200
16	193800	193900	198800	203900	207900	211500	209300	208100	207000	205100	196800	191100
17	193700	193900	198900	204200	207900	214800	209400	208000	207400	204900	196300	191000
18	193500	193900	199600	205700	207900	207600	209400	207800	207400	204700	196000	191600
19	193500	193800	200000	205600	207900	209000	209400	207500	207400	204400	195700	191600
20	193400	193800	199900	205800	211900	209900	209300	207500	207400	204000	195400	191400
21	193300	193700	199900	206000	212800	210500	209300	206800	207400	203500	195100	191200
22	193300	193500	200000	206000	212700	211400	209100	206600	207400	203000	194800	191000
23	194300	194200	200500	206000	212700	211500	209000	206400	207400	202900	194400	190800
24	194500	194600	200700	206200	212800	210900	208900	206400	207500	202700	194100	190800
25	194400	195100	200800	206200	212400	210600	208800	206100	207200	202500	193700	190600
26	194300	196200	200800	206200	213300	211000	208800	205900	207000	202200	193500	190300
27	194200	196200	200900	206300	213400	210800	208800	205900	206800	201900	193300	190200
28	194100	196200	201000	206500	211100	209900	208700	205800	206700	201600	192800	190700
29	194000	196200	201000	206500	---	209100	208500	205900	206300	201200	192700	190400
30	194300	196200	201000	206500	---	208600	208400	205700	206700	201000	192500	190100
31	194000	---	201100	206500	---	208600	---	205700	---	201200	192400	---
MAX	194500	196200	201100	206500	213400	214800	210100	208600	207500	208300	200700	192100
MIN	193300	193500	195700	201000	207000	195200	208400	205700	205100	201000	192400	190100
(↑)	335.40	335.64	336.18	336.77	337.26	337.00	336.98	336.68	336.79	336.19	335.22	334.97
(Φ)	-300	+2200	+4900	+5400	+4600	-2500	-200	-2700	+1000	-5500	-8800	-2300

CAL YR 1986 MAX 215800 MIN 193300 (Φ) -9600  
WTR YR 1987 MAX 214800 MIN 190100 (Φ) -4200

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

LOCATION.--Lat 33°01'15", long 94°52'55", Camp-Titus County line, Hydrologic Unit 11140305, near center of stream at downstream side of bridge on State Highway 11, 0.5 mi upstream from Louisiana & Arkansas Railway Co. bridge, 1.4 mi upstream from Williamson Creek, 5.2 mi east of Pittsburg, 19.2 mi downstream from Lake Bob Sandlin, and 110.0 mi upstream from mouth.

WATER-DISCHARGE RECORDS

GAGE.--Water-stage recorder. Datum of gage is 247.49 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 12, 1954, water-stage recorder at site 1,900 ft downstream at present datum.

AVERAGE DISCHARGE.--24 years (water years 1944-62, 1968-72), prior to combined regulation by Lake Cypress Springs and Monticello Reservoir, 327 ft<sup>3</sup>/s (12.13 in/yr), 236,900 acre-ft/yr; 15 years (water years 1973-87) regulated, 241 ft<sup>3</sup>/s (174,600 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 58,500 ft<sup>3</sup>/s Mar. 30, 1945 (gage height, 28.3 ft, from floodmark, and adjusted to present site on basis of record for flood of Apr. 27, 1958), from rating curve extended above 20,000 ft<sup>3</sup>/s; no flow Aug. 20 to Oct 3, 1954, July 19 to Nov. 4, 1956.  
Maximum stage since at least 1895, that of Mar. 30, 1945.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 30,400 ft<sup>3</sup>/s Mar. 17 at 2100 hours (gage height, 23.65 ft); minimum, 1.7 ft<sup>3</sup>/s Sept. 11-12.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.8	4.1	12	23	22	5610	244	9.2	8.1	7.8	5.2	7.1
2	4.4	4.1	11	22	47	2100	57	9.4	7.9	45	8.5	4.9
3	4.4	4.1	11	27	57	1010	46	9.7	7.7	331	6.8	3.4
4	3.7	6.0	13	63	40	315	42	11	10	546	5.0	3.0
5	4.5	14	11	53	30	106	36	13	16	196	4.8	3.2
6	7.0	23	12	24	26	76	31	13	10	22	5.8	3.2
7	9.0	12	10	29	27	65	28	11	8.1	12	4.6	3.0
8	10	12	15	30	27	200	28	10	6.8	10	4.1	2.7
9	7.1	12	99	46	25	381	33	12	6.2	11	4.6	2.6
10	6.5	9.4	275	237	21	411	27	11	6.1	10	5.2	2.4
11	5.9	7.4	137	294	19	408	25	9.6	6.4	9.0	6.6	1.9
12	5.0	37	43	76	18	400	23	8.9	12	8.4	3.5	2.0
13	31	21	29	43	18	394	22	41	17	8.8	6.7	3.2
14	16	15	26	39	18	385	21	28	40	7.2	8.0	4.7
15	9.6	13	44	41	172	212	25	12	15	5.4	4.9	4.7
16	10	13	127	37	528	38	26	10	13	5.0	4.5	8.7
17	11	11	105	36	532	14800	21	9.8	23	5.3	4.5	14
18	10	8.3	81	77	156	20900	20	9.5	150	5.5	3.9	9.3
19	7.8	6.8	163	225	66	4310	19	10	211	5.5	3.2	14
20	5.7	10	116	180	236	1140	17	8.9	50	11	2.7	13
21	3.8	11	55	93	757	487	16	8.6	17	13	2.9	7.0
22	3.4	41	39	52	907	168	16	8.3	12	68	3.2	4.4
23	6.2	88	52	41	706	117	16	8.4	9.6	97	4.1	3.0
24	16	71	120	37	664	302	16	9.6	9.7	16	3.5	2.7
25	21	151	86	33	806	629	15	18	15	10	3.0	3.3
26	14	115	48	25	1400	698	15	14	14	6.8	2.6	3.3
27	8.9	57	32	23	1720	194	14	10	9.7	5.6	2.8	3.3
28	6.1	30	25	25	4550	164	13	8.6	7.9	5.0	3.2	3.3
29	4.1	18	22	25	---	489	9.7	8.9	6.9	3.8	3.0	3.9
30	3.6	14	20	22	---	686	9.3	9.1	6.6	3.3	3.1	13
31	4.0	---	21	22	---	745	---	8.6	---	4.1	3.8	---
TOTAL	266.5	839.2	1860	2000	13595	57940	931.0	369.1	732.7	1494.5	138.3	158.2
MEAN	8.60	28.0	60.0	64.5	486	1869	31.0	11.9	24.4	48.2	4.46	5.27
MAX	31	151	275	294	4550	20900	244	41	211	546	8.5	14
MIN	3.4	4.1	10	22	18	38	9.3	8.3	6.1	3.3	2.6	1.9
AC-FT	529	1660	3690	3970	26970	114900	1850	732	1450	2960	274	314
CAL YR 1986	TOTAL 75839.3				MEAN 208	MAX 9890	MIN 1.3	AC-FT 150400				
WTR YR 1987	TOTAL 80323.8				MEAN 220	MAX 20900	MIN 1.9	AC-FT 159300				

## 07344500 BIG CYPRESS CREEK NEAR PITTSBURG, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: March 1965 to current year. Chemical and biochemical analyses: January 1983 to September 1985.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1968 to current year.  
WATER TEMPERATURE: October 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, 989 microsiemens Aug. 29, 1987; minimum daily, 53 microsiemens Mar. 17, 1987.  
WATER TEMPERATURE: Maximum daily, 32.0°C Aug. 20, 1969; minimum daily, 0.0°C on several days during winter months of 1982-84.

## EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 989 microsiemens Aug. 29; minimum daily, 53 microsiemens Mar. 17.  
WATER TEMPERATURE: Maximum daily, 30.0°C Aug. 14; minimum daily, 7.0°C on several days during January.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	HARD- NESS (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 30...	1150	3.5	551	66	49	16	6.4	61
JAN 29...	1200	24	380	80	52	18	8.6	35
MAR 20...	1400	1200	153	44	24	9.7	4.7	11
MAY 05...	1300	13	363	71	23	16	7.6	43
JUN 25...	1200	14	350	63	15	15	6.1	33
AUG 13...	1200	5.3	335	46	32	11	4.6	32
DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WH WAT TOTAL 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)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)
OCT 30...	3	15	17	50	99	0.20	9.5	270
JAN 29...	2	6.2	28	59	45	0.10	12	200
MAR 20...	0.7	3.8	20	30	14	0.10	5.6	91
MAY 05...	2	8.2	48	44	53	0.20	11	210
JUN 25...	2	8.8	48	32	46	0.50	12	180
AUG 13...	2	12	14	30	60	0.20	5.8	160

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1986 TO SEPTEMBER 1987

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. 1986	266.5	505	269	193	73	52	58	42	82
NOV. 1986	839.2	300	166	377	37	85	42	96	67
DEC. 1986	1860	281	157	788	34	170	41	205	66
JAN. 1987	2000	319	177	956	40	214	45	243	71
FEB. 1987	13595	192	109	4000	22	793	30	1100	50
MAR. 1987	57940	137	78	12300	15	2310	22	3460	37
APR. 1987	931.0	321	178	447	40	101	45	113	71
MAY 1987	369.1	406	221	220	54	54	52	52	80
JUNE 1987	732.7	306	168	333	40	78	41	81	64
JULY 1987	1494.5	208	116	468	25	102	30	121	48
AUG. 1987	138.3	679	345	129	110	42	60	22	68
SEPT 1987	158.2	691	352	151	110	48	62	27	73
TOTAL	80324.5	**	**	20300	**	4050	**	5560	**
WTD.AVG.	220	165	94	**	19	**	26	42	42

## RED RIVER BASIN

07344500 BIG CYPRESS CREEK NEAR PITTSBURG, TX--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
EQUIVALENT MEAN

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	748	487	299	370	434	185	223	383	600	590	332	906
2	678	471	314	444	361	175	283	396	623	650	332	976
3	675	428	326	404	390	192	294	407	608	163	492	746
4	679	395	335	360	378	226	322	396	609	122	628	737
5	655	353	350	344	400	261	332	383	514	158	557	801
6	639	360	354	371	398	289	339	392	512	230	642	820
7	544	491	431	352	374	327	334	423	504	274	660	816
8	627	542	479	368	406	335	352	473	561	293	772	851
9	587	645	359	393	399	216	372	501	598	313	768	893
10	575	477	251	298	406	219	359	513	612	347	784	914
11	572	387	199	247	410	233	375	503	624	350	851	935
12	590	408	234	258	428	221	355	535	543	396	757	956
13	628	383	251	279	432	222	357	300	480	421	478	984
14	412	482	292	317	449	219	416	269	364	529	450	947
15	453	376	285	358	354	228	392	315	502	511	446	925
16	503	306	269	391	324	226	379	344	438	492	440	663
17	436	358	318	366	237	53	391	416	400	495	602	583
18	414	388	300	356	258	135	408	406	223	518	744	568
19	513	374	278	338	290	170	375	448	168	569	827	506
20	443	383	194	275	179	163	362	441	212	648	831	459
21	457	403	276	281	209	191	362	438	263	883	859	550
22	441	372	283	328	163	241	373	449	275	362	887	536
23	395	250	282	363	220	191	409	443	293	223	916	538
24	305	260	301	342	205	254	388	437	298	251	951	576
25	341	215	332	347	202	219	382	467	356	219	954	635
26	388	233	325	367	171	211	385	391	426	264	957	707
27	495	254	303	357	167	240	388	406	444	284	962	724
28	552	260	308	383	155	287	402	429	473	299	972	712
29	572	266	321	384	---	210	391	450	516	308	989	706
30	558	281	316	426	---	207	381	490	552	320	984	741
31	531	---	314	449	---	210	---	528	---	322	868	---
MEAN	529	376	306	352	314	218	363	425	453	381	732	747

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27.0	17.0	12.0	7.0	15.0	14.0	11.0	20.0	25.0	25.0	27.0	24.0
2	27.0	18.0	10.0	7.0	14.0	15.0	13.0	20.0	26.0	25.0	28.0	23.0
3	27.0	18.0	10.0	---	15.0	15.0	10.0	21.0	25.0	23.0	29.0	25.0
4	27.0	18.0	8.0	8.0	16.0	14.0	10.0	22.0	26.0	24.0	28.0	23.0
5	25.0	17.0	10.0	9.0	15.0	14.0	11.0	23.0	23.0	26.0	28.0	26.0
6	22.0	17.0	9.0	10.0	15.0	16.0	12.0	21.0	21.0	29.0	26.0	23.0
7	21.0	17.0	10.0	12.0	14.0	15.0	12.0	21.0	22.0	28.0	27.0	23.0
8	22.0	18.0	12.0	10.0	15.0	15.0	19.0	23.0	24.0	26.0	28.0	23.0
9	22.0	19.0	12.0	10.0	13.0	16.0	15.0	20.0	25.0	25.0	28.0	23.0
10	21.0	17.0	11.0	10.0	12.0	15.0	15.0	21.0	25.0	26.0	27.0	24.0
11	21.0	14.0	10.0	7.0	13.0	14.0	16.0	23.0	25.0	26.0	27.0	23.0
12	20.0	13.0	10.0	8.0	16.0	14.0	19.0	22.0	25.0	---	28.0	23.0
13	18.0	10.0	9.0	7.0	13.0	14.0	20.0	21.0	25.0	26.0	29.0	22.0
14	15.0	9.0	8.0	10.0	16.0	15.0	16.0	22.0	---	25.0	30.0	25.0
15	15.0	9.0	10.0	11.0	15.0	16.0	15.0	23.0	25.0	25.0	28.0	24.0
16	16.0	12.0	10.0	12.0	14.0	15.0	17.0	22.0	27.0	25.0	28.0	26.0
17	15.0	13.0	12.0	12.0	12.0	14.0	17.0	25.0	25.0	25.0	27.0	27.0
18	19.0	14.0	12.0	10.0	11.0	15.0	18.0	23.0	23.0	26.0	27.0	25.0
19	16.0	14.0	11.0	9.0	10.0	15.0	21.0	23.0	27.0	26.0	27.0	24.0
20	16.0	16.0	10.0	7.0	11.0	17.0	20.0	23.0	25.0	29.0	27.0	22.0
21	16.0	15.0	10.0	7.0	10.0	19.0	22.0	23.0	25.0	29.0	27.0	23.0
22	17.0	13.0	10.0	7.0	17.0	18.0	19.0	24.0	26.0	29.0	27.0	22.0
23	18.0	15.0	10.0	7.0	13.0	16.0	17.0	24.0	27.0	28.0	27.0	19.0
24	18.0	14.0	10.0	10.0	13.0	15.0	18.0	24.0	26.0	26.0	27.0	21.0
25	18.0	13.0	10.0	10.0	13.0	14.0	19.0	23.0	---	26.0	27.0	20.0
26	17.0	12.0	10.0	11.0	14.0	14.0	18.0	25.0	27.0	26.0	27.0	21.0
27	16.0	12.0	10.0	12.0	15.0	14.0	18.0	25.0	25.0	26.0	27.0	21.0
28	17.0	12.0	10.0	13.0	14.0	15.0	19.0	26.0	26.0	26.0	---	22.0
29	18.0	10.0	9.0	13.0	---	14.0	19.0	24.0	25.0	27.0	26.0	21.0
30	16.0	10.0	9.0	14.0	---	10.0	20.0	23.0	25.0	29.0	25.0	19.0
31	17.0	---	8.0	15.0	---	10.0	---	23.0	---	27.0	24.0	---
MEAN	19.5	14.0	10.0	10.0	13.5	14.5	16.5	22.5	25.0	26.5	27.5	23.0

## 07345500 ELLISON CREEK RESERVOIR NEAR LONE STAR, TX

LOCATION.--Lat 32°55'16", long 94°43'17", Morris County, Hydrologic Unit 11140305, at pumphouse of Lone Star Steel Co., on left bank 1,700 ft upstream from Ellison Creek Dam on Ellison Creek, 0.6 mi upstream from Big Cypress Creek, and 1.4 mi southwest of Lone Star.

DRAINAGE AREA.--37.0 mi<sup>2</sup>.

PERIOD OF RECORD.--January 1943 to September 1962 (published as "near Daingerfield"), January 1974 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Sept. 22, 1943, staff gage at site just upstream from dam at datum 200 ft lower.

REMARKS.--The reservoir is formed by a rolled earthfill dam 4,000 ft long, with an uncontrolled concrete spillway 300 ft long at the left end of dam. Deliberate impoundment began Jan. 14, 1943, and the dam was completed in April 1943. Another spillway is cut through natural ground near the right end of dam. In addition, there is a relief dam approximately 125 ft long, located near the reservoir pumphouse that can be breached if the other spillways are unable to release sufficient floodwater. There is a 36-inch-diameter conduit through the dam that is used for pumping water from Big Cypress Creek into the reservoir and can also be used to discharge water from the reservoir into Big Cypress Creek. The dam is owned by Lone Star Steel Co. The company diverts water from the lake for cooling purposes and returns most of the water to the lake. Area capacity curves are based on a survey made in 1942. 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.....	280.1	-
Design flood.....	275.1	36,600
Crest of spillway.....	273.1	33,000
Crest of concrete spillway.....	268.1	24,700
Lowest gated outlet (invert).....	235.1	196

COOPERATION.--Capacity table and area-capacity curves were provided by Lone Star Steel Co.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 31,240 acre-ft Apr. 26, 1958 (elevation, 272.11 ft); minimum since lake first filled in May 1944, 15,760 acre-ft Dec. 24, 1975 (elevation, 261.28 ft).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 26,580 acre-ft Mar. 17 (elevation, 269.35 ft); minimum, 21,430 acre-ft Nov. 4 (elevation, 265.92 ft).

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

265.0	20,230	266.0	21,540	267.0	22,970
268.0	24,470	269.0	26,020	270.0	27,620

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22460	21610	22750	24580	24520	25170	23500	24140	23980	24310	24310	23800
2	22570	21600	22780	24520	24500	25030	23630	24130	24010	24550	24310	23780
3	22460	21500	22810	24580	24500	24970	23740	24160	24020	24580	24250	23750
4	22460	21760	22840	24560	24500	24920	23860	24250	24020	24550	24190	23710
5	22460	21760	22880	24520	24490	24860	23960	24280	24020	24530	24190	23680
6	22550	21710	22910	24470	24550	24840	24080	24250	24040	24470	24140	23800
7	22550	21810	22990	24430	24560	24780	24170	24190	24110	24470	24140	23770
8	22540	21820	23420	24440	24560	24750	24310	24160	24110	24500	24160	23600
9	22520	21830	24200	24610	24550	24690	24400	24100	24160	24550	24140	23560
10	22510	21830	24400	24660	24520	24640	24490	24050	24170	24590	24140	23530
11	22490	21810	24470	24630	24500	24590	24610	24010	24400	24610	24160	23510
12	22580	21810	24590	24580	24500	24530	24690	23950	24470	24660	24370	23500
13	22580	21750	24690	24530	24500	24500	24810	23900	24550	24700	24430	23500
14	22550	21710	24840	24500	24490	24500	24840	23830	24890	24640	24430	23480
15	22520	21680	25040	24470	24920	24500	24830	23810	24860	24580	24430	23510
16	22510	21690	25010	24440	24970	24760	24810	23840	24760	24550	24430	23480
17	22490	21680	24950	24460	24890	26520	24810	23930	24890	24530	24410	23450
18	22490	21670	25000	24810	24840	25690	24810	23920	24920	24530	24220	23560
19	22480	21620	24970	24810	24780	25310	24830	23900	24830	24550	24110	23530
20	22460	21610	24920	24780	25150	25070	24830	23870	24750	24550	24080	23500
21	22440	21580	24860	24760	25140	24940	24800	23870	24730	24530	24080	23470
22	22420	21880	24840	23180	25030	24830	24760	23930	24630	24520	24080	23410
23	22510	22020	24920	23150	24950	24730	24730	23870	24550	24490	24080	23350
24	22460	22110	24920	23140	25070	24610	24590	23780	24460	24490	24050	23330
25	22270	22320	24890	24580	25040	24490	24500	23710	24400	24470	24020	23300
26	22060	22410	24840	24520	25250	24350	24410	23720	24370	24490	23950	23300
27	21920	22490	24810	24500	25310	24220	24310	23750	24350	24490	24080	23290
28	21880	22570	24760	24470	25320	24080	24220	23800	24340	24430	24070	23330
29	21830	22640	24690	24470	---	23900	24200	23860	24320	24400	23870	23290
30	21720	22700	24660	24470	---	23720	24170	23900	24310	24370	23860	23230
31	21640	---	24630	24460	---	23560	---	23950	---	24310	23830	---
MAX	22580	22700	25040	24810	25320	26520	24840	24280	24920	24700	24430	23800
MIN	21640	21500	22750	23140	24490	23560	23500	23710	23980	24310	23830	23200
(†)	266.07	266.82	268.10	267.99	268.55	257.39	267.80	267.65	267.89	267.89	267.57	267.17
(Φ)	-930	+1060	+1930	-170	+860	-1760	+610	-220	+360	0	-480	-600
CAL YR 1986	MAX	25490	MIN	21500	(Φ)	+70						
WTR YR 1987	MAX	26520	MIN	21500	(Φ)	+660						

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

## 07345900 LAKE O' THE PINES NEAR JEFFERSON, TX

LOCATION.--Lat 32°45'04", long 94°29'59", Marion County, Hydrologic Unit 11140305, on left bank 1,500 ft upstream from left end of Ferrell's Bridge Dam on Big Cypress Creek, on Farm Road 726, 9.0 mi west of Jefferson, and 80.1 mi upstream from mouth.

DRAINAGE AREA.--850 mi<sup>2</sup>.

PERIOD OF RECORD.--August 1957 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Nov. 12, 1957, non-recording gage at same site and datum.

REMARKS.--The lake is formed by a rolled earthfill dam 10,600 ft long, including a 200-foot-wide concrete spillway. Impoundment of water began Aug. 21, 1957, and the dam was completed June 25, 1958. Official operation began Dec. 11, 1959. The flood-control outlet works consist of two 10.0-foot-diameter conduits that are controlled by two 8.0- by 12.5-foot electrically driven broome-type gates. The low-flow outlet works consist of a controlled 14-inch pipe. Flow over the spillway is discharged into a 2,000-foot-long rectified channel and then into Cypress Creek. The capacity table is based on a survey made in 1950. The lake was built for flood control, conservation, and water supply. During the current year, an unknown amount of water was diverted from the lake for municipal and industrial uses. 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.....	277.0	-
Crest of spillway.....	249.5	842,100
Top of conservation pool.....	228.5	254,900
Crest of intake to wet well (14 in).....	202.5	5,760
Lowest gated outlet (invert).....	200.0	2,860

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

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 694,360 acre-ft May 5, 1966 (elevation, 245.41 ft); minimum since December 1959, 210,100 acre-ft Oct. 6, 1984 (elevation, 225.98 ft).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 440,400 acre-ft March 29 at 1000 hours (elevation, 236.92 ft); minimum, 251,300 acre-ft Dec. 31 at 2200 hours (elevation, 228.31 ft).

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

228.0	245,600	232.0	324,800	236.0	417,100
230.0	283,700	234.0	369,100	237.0	442,500

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
INSTANTANEOUS OBSERVATIONS AT 0700

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	263100	259700	265800	252100	264300	304500	428700	279700	275600	282700	280300	269400
2	262200	259700	263500	251300	262400	318400	425900	276800	275100	284500	279900	268700
3	261800	259400	262000	253700	261600	327300	421600	273700	274900	283500	279500	268100
4	261600	262400	260900	253500	260700	332500	415900	273300	274300	283300	279200	267700
5	261100	262200	259700	253500	260500	335100	410700	272500	273700	283700	278800	267300
6	261600	261400	259200	254700	261800	336000	406300	273300	273300	284100	278000	266800
7	260500	265000	259500	255200	260100	336000	401100	273100	272900	285700	277800	266600
8	260500	264700	266000	255800	259400	336200	396000	272700	272500	285500	277400	266200
9	260300	264300	272300	258200	257800	335800	391000	272500	272300	285900	276600	265400
10	259700	265000	272500	259700	257100	333600	386700	272500	272500	285700	276200	266400
11	259000	264700	272300	259400	257100	332300	380800	272300	273900	285500	275800	265800
12	262200	265200	271200	260500	256900	330300	375200	272100	275100	285300	278600	265400
13	260100	264100	269200	261200	256700	326900	371700	272300	275800	285300	278400	264700
14	259500	263300	269200	262400	256900	323700	365900	272100	275800	285100	278200	264300
15	258800	262900	268900	262900	261200	320300	360000	272300	280500	284500	277800	266800
16	258200	263100	268100	263500	262000	317800	354100	272900	279500	284500	277400	265800
17	257500	262900	267100	265000	263100	322200	348700	274100	281700	284100	276800	265400
18	256900	262800	267900	268100	262900	369800	343000	273100	282100	283700	276400	268100
19	256300	262400	266600	267500	263300	418900	337500	272500	282500	283700	276000	266800
20	256000	262600	265400	268700	268300	430500	332300	272100	283500	283300	275600	266000
21	255200	261800	264300	269600	269600	432000	328000	271900	283700	283100	275100	265600
22	255400	265000	263700	271000	271400	431500	321800	274500	283500	282700	274700	265200
23	262000	268500	263300	269400	272300	435000	314200	275400	284300	282700	274100	264700
24	260700	267300	261800	269600	275800	435500	310500	276200	284300	282500	273500	264100
25	260500	269400	260700	268700	279000	436000	305300	275200	284100	282300	272700	263700
26	260300	268900	259400	267300	283300	437300	300000	274900	283700	282100	271900	263300
27	260100	268100	257800	266800	289200	437300	295300	274900	282900	282100	271800	262800
28	259900	267700	256000	265600	295700	439400	291500	275100	282500	281900	271400	265200
29	259900	266600	254500	265600	---	438600	286500	275100	281900	281300	270400	264700
30	259700	265800	252400	264500	---	436000	282900	275100	282100	281100	271200	263900
31	259700	---	251300	263100	---	432000	---	277000	---	280700	270400	---
MAX	263100	269400	272500	271000	295700	439400	428700	279700	284300	285900	280300	269400
MIN	255200	259400	251300	251300	256700	304500	282900	271900	272300	280700	270400	262800
(+)	228.76	229.08	228.31	228.94	230.60	236.59	229.96	229.66	229.92	229.85	229.32	228.98
(Φ)	-3800	+6100	-14500	+11800	+32600	+136300	-149100	-5900	+5100	-1400	-10300	-6500
CAL YR 1986	MAX	327100	MIN	251300	(Φ)	-42800						
WTR YR 1987	MAX	439400	MIN	251300	(Φ)	+400						

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

## RED RIVER BASIN

143

## 07346000 BIG CYPRESS CREEK NEAR JEFFERSON, TX

LOCATION.--Lat 32°44'58", long 94°29'55", Marion County, Hydrologic Unit 11140306, on left bank 950 ft downstream from Ferrell's Bridge Dam, 7.6 mi upstream from French Creek, 8.5 mi west of Jefferson.

DRAINAGE AREA.--850 mi<sup>2</sup>.

PERIOD OF RECORD.--July 1924 to September 1959 (published as Cypress Creek), October 1979 to current year. Records of stage and discharge for the period October 1959 to September 1979 published by the U.S. Army Corps of Engineers, New Orleans District.

Water-quality records.--Chemical and biochemical analyses: January 1983 to September 1985.

GAGE.--Water-stage recorder. Datum of gage is 180.00 ft above National Geodetic Vertical Datum of 1929 (U.S. Army Corps of Engineers benchmark). Prior to Nov. 2, 1933, staff gage, and Nov. 2, 1933, to Dec. 8, 1955, water-stage recorder, at site about 950 ft upstream at datum 3.70 ft higher. After Dec. 9, 1955, at site about 550 ft downstream or at present site at datum 180.00 lower.

REMARKS.--Records good. Flow regulated by Lake O' the Pines (station 07345900) since August 1957. Gage-height telemeter at station.

AVERAGE DISCHARGE.--33 years (water years 1925-57), prior to completion of Ferrell's Bridge Dam, 660 ft<sup>3</sup>/s (478,200 acre-ft/yr); 10 years (water years-1959, 1980-87) regulated, 586 ft<sup>3</sup>/s (424,600 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 57,100 ft<sup>3</sup>/s Apr. 1, 1945 (gage height, 28.78 ft, site and datum then in use), from rating curve extended above 29,000 ft<sup>3</sup>/s; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,060 ft<sup>3</sup>/s Apr. 22 at 0600 hours (gage height, 19.53 ft); no flow July 26-30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	192	25	551	120	607	408	2110	1440	39	26	27	48
2	191	25	550	25	616	360	2400	1180	37	27	27	49
3	190	25	558	26	617	355	2530	971	37	27	27	50
4	190	26	558	25	609	350	2680	668	37	27	26	50
5	189	25	433	24	605	487	2660	419	37	28	23	50
6	188	25	284	24	604	649	2650	166	37	28	21	50
7	179	31	277	24	613	658	2630	31	37	28	21	50
8	162	27	356	23	609	658	2610	29	36	30	22	49
9	179	24	554	24	603	868	2620	33	36	31	22	49
10	164	23	628	23	477	1150	2630	33	37	32	22	50
11	186	22	766	23	308	1200	2620	32	37	33	25	50
12	191	22	1010	23	299	1420	2620	32	37	33	30	50
13	190	72	1050	23	298	1970	2610	30	37	33	34	50
14	207	134	1070	23	298	2310	2610	28	37	33	27	50
15	190	134	1100	23	369	2350	2780	28	37	32	26	47
16	186	134	1120	22	364	2340	2880	28	37	31	26	39
17	186	134	1110	22	310	2360	2870	28	29	31	24	39
18	185	133	1120	25	448	2390	2850	28	28	31	26	40
19	183	134	1130	23	616	2470	2850	29	29	32	35	51
20	182	133	1130	22	677	2490	2850	31	28	35	46	51
21	184	133	1120	162	704	2470	2880	31	28	40	47	52
22	97	136	1120	337	663	2100	2940	31	28	36	47	47
23	29	138	1140	456	643	1150	2730	35	27	39	47	37
24	29	141	1160	605	653	451	2800	32	28	38	48	35
25	27	360	1150	612	663	275	3000	32	26	21	48	36
26	27	563	1150	611	682	256	3020	32	26	.00	51	35
27	26	559	1150	610	710	303	2630	32	27	.00	52	35
28	26	555	1150	611	629	488	2190	34	27	.00	52	36
29	25	553	1160	612	---	827	2150	37	26	.00	52	36
30	25	550	1170	608	---	1390	1910	38	26	6.5	52	35
31	25	---	866	605	---	1790	---	37	---	30	51	---
TOTAL	4230	4996	27691	6396	15294	38743	79310	5635	975	818.50	1084	1346
MEAN	136	167	893	206	546	1250	2644	182	32.5	26.4	35.0	44.9
MAX	207	563	1170	612	710	2490	3020	1440	39	40	52	52
MIN	25	22	277	22	298	256	1910	28	26	.00	21	35
AC-FT	8390	9910	54930	12690	30340	76850	157300	11180	1930	1620	2150	2670

CAL YR 1986 TOTAL 160292.00 MEAN 439 MAX 2580 MIN 21 AC-FT 317900  
WTR YR 1987 TOTAL 186518.50 MEAN 511 MAX 3020 MIN .00 AC-FT 370000

## 07346045 BLACK CYPRESS BAYOU AT JEFFERSON, TX

LOCATION.--Lat 32°46'40", long 94°21'26", Marion County, Hydrologic Unit 11140306 near center of channel at downstream side of bridge on U.S. Highway 59, 1.1 mi north of Jefferson, 2.0 mi upstream from Texas and Pacific Railway Co. bridge, and 5.2 mi upstream from mouth.

DRAINAGE AREA.--365 mi<sup>2</sup>.

PERIOD OF RECORD.--September 1968 to current year. May 1938 to September 1955 (daily gage heights) and November 1956 to August 1968 (daily gage heights and discharge measurements) published by U.S. Army Corps of Engineers as "Black Cypress Creek at Jefferson". September 1964 to August 1968 operated as low-flow partial-record station only. Water-quality records.--Chemical analyses: October 1967 to September 1981.

GAGE.--Water-stage recorder. Datum of gage is 171.47 ft above National Geodetic Vertical Datum of 1929 (U.S. Army Corps of Engineers benchmark).

REMARKS.--Records good except those below 1.0 ft<sup>3</sup>/s, which are poor. No known regulation or diversion in vicinity of gage. Gage-height telemeter at station.

AVERAGE DISCHARGE.--19 years (water years 1969-87), 315 ft<sup>3</sup>/s (11.72 in/yr), 228,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,120 ft<sup>3</sup>/s Apr. 25, 1974 (gage height, 17.69 ft); no flow at times most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1938, 22.42 ft Apr. 29, 1958, from records of U.S. Army Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Mar. 21	1600	*3,430	*15.76				

Minimum discharge, 0.01 ft<sup>3</sup>/s Sept. 8-10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.8	34	787	518	288	1800	371	59	96	45	15	.15
2	4.5	27	734	460	317	1930	331	54	75	48	14	.10
3	4.3	22	662	422	306	1960	307	49	60	66	12	.07
4	4.2	28	570	420	289	1810	289	48	56	94	9.1	.05
5	4.1	43	470	399	282	1600	271	51	59	80	6.6	.04
6	4.4	49	375	381	290	1330	262	57	57	121	5.1	.03
7	4.2	60	293	392	332	1090	250	61	49	138	3.9	.02
8	5.4	199	472	407	356	900	240	63	39	119	3.2	.01
9	9.4	213	1050	425	356	757	232	63	30	101	2.8	.01
10	11	195	1180	462	350	648	222	60	24	84	2.5	.01
11	11	207	1320	482	346	552	208	54	21	77	2.3	.02
12	31	223	1670	485	331	472	196	51	21	71	2.1	.02
13	25	217	1520	508	314	413	190	45	30	58	4.9	.02
14	15	191	1330	534	294	371	189	38	81	48	13	.02
15	12	164	1320	543	451	343	174	33	85	41	8.4	.02
16	10	144	1300	551	618	327	162	30	82	38	5.1	.11
17	9.9	135	1140	541	611	396	154	34	64	37	3.4	3.4
18	9.8	131	1040	547	642	500	149	69	102	36	2.6	14
19	9.2	129	1030	528	773	529	144	67	160	31	2.0	32
20	9.1	128	1000	485	1020	1430	140	55	185	24	1.6	14
21	9.2	125	967	493	1280	3260	135	44	194	20	1.1	7.0
22	11	134	948	579	1300	2780	127	40	162	16	.75	3.5
23	25	223	942	621	1260	1810	118	38	115	11	.54	2.4
24	113	373	917	617	1290	1300	108	46	127	8.0	.42	1.9
25	90	490	861	590	1270	1010	98	69	115	7.6	.32	1.8
26	67	630	797	538	1360	834	92	77	77	9.6	.23	1.8
27	90	692	758	475	1440	717	90	119	59	10	.22	1.6
28	108	705	719	416	1620	624	83	164	49	7.6	.18	1.5
29	90	754	670	365	---	540	75	174	40	13	.15	5.7
30	67	801	625	327	---	470	67	166	32	15	.16	10
31	47	---	578	299	---	416	---	132	---	16	.16	---
TOTAL	915.5	7466	28045	14810	19386	32919	5474	2110	2346	1490.8	123.83	101.30
MEAN	29.5	249	905	478	692	1062	182	68.1	78.2	48.1	3.99	3.38
MAX	113	801	1670	621	1620	3260	371	174	194	138	15	32
MIN	4.1	22	293	299	282	327	67	30	21	7.6	.15	.01
AC-FT	1820	14810	55630	29380	38450	65290	10860	4190	4650	2960	246	201

CAL YR 1986 TOTAL 108228.05 MEAN 297 MAX 2640 MIN 2.7 AC-FT 214700  
WTR YR 1987 TOTAL 115187.06 MEAN 316 MAX 3260 MIN .01 AC-FT 228500

## RED RIVER BASIN

145

## 07346050 LITTLE CYPRESS CREEK NEAR ORE CITY, TX

LOCATION.--Lat 32°40'21", long 94°45'03", Upshur County, Hydrologic Unit 11140307, on right bank at downstream side of bridge on U.S. Highway 259, 4 mi downstream from Clear Creek, 9 mi south of Ore City, and 12 mi north of Longview.

DRAINAGE AREA.--383 mi<sup>2</sup>.

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

GAGE.--Water-stage recorder. Datum of gage is 232.67 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharge. Records good. No known diversion above station. During the year, the city of Gilmer discharged a small amount of sewage effluent into a tributary above station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--24 years (water years 1964-87), 256 ft<sup>3</sup>/s (9.08 in/yr), 185,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,500 ft<sup>3</sup>/s Apr. 24, 1966 (gage height, 20.20 ft); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1902 occurred in March 1945; maximum stage since 1945, that of Apr. 24, 1966. The flood in April 1958 reached a stage of 19.4 ft, or 1.3 ft lower than the flood of March 1945 at a point 6 mi upstream, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Mar. 19	0930	*12,600	*15.66	No other peak greater than base discharge.			
Minimum discharge, no flow for many days.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	1.6	63	135	144	1830	164	37	77	40	7.2	.00
2	.00	.54	44	116	166	1860	143	35	53	43	5.5	.00
3	.00	.78	32	106	182	1920	133	34	41	63	4.5	.00
4	.00	3.0	25	118	179	1680	126	37	36	82	3.3	.00
5	.00	48	20	131	182	1340	119	48	34	94	2.3	.00
6	.00	96	18	140	183	1050	113	61	32	121	1.7	.00
7	.00	73	17	150	194	830	110	81	29	133	1.6	.00
8	.00	69	76	151	197	658	107	84	25	131	1.4	.00
9	.00	59	727	156	180	501	104	57	23	147	.93	.00
10	.00	32	1170	190	162	365	100	44	23	147	.64	.00
11	.00	16	961	211	150	256	97	40	23	148	.45	.00
12	.00	10	674	237	140	185	94	36	32	139	.23	.00
13	.30	8.4	493	273	134	141	91	32	175	99	.87	.00
14	3.5	7.2	434	306	127	113	90	28	655	59	.23	.00
15	3.8	7.7	497	312	314	104	88	23	442	38	.06	.00
16	3.0	7.9	578	288	537	93	87	21	447	31	.02	.16
17	2.0	7.8	510	250	514	250	84	24	493	26	.01	.16
18	1.1	6.5	447	250	448	2960	79	35	791	24	.00	.06
19	.69	4.9	487	293	447	12000	78	44	813	21	.00	.03
20	.49	4.2	511	308	672	7630	76	36	600	19	.00	.01
21	.33	2.9	473	331	1120	3220	71	30	432	16	.00	.00
22	.27	36	417	387	1100	1700	64	27	300	15	.00	.00
23	1.0	195	426	459	899	1200	57	242	200	15	.00	.00
24	28	234	470	504	1020	937	52	168	155	14	.00	.00
25	53	244	439	469	1300	751	51	116	130	13	.00	.00
26	33	238	357	391	1290	612	48	149	120	16	.00	.00
27	18	184	308	299	1380	487	46	183	83	20	.00	.00
28	8.4	138	282	228	1660	387	44	198	62	19	.00	.00
29	3.5	125	251	188	---	307	41	126	44	16	.00	.00
30	1.5	101	208	165	---	244	39	73	34	13	.00	.15
31	3.2	---	170	151	---	195	---	58	---	9.5	.00	---
TOTAL	165.08	1961.42	11585	7693	15021	45806	2596	2207	6404	1771.5	30.94	.57
MEAN	5.33	65.4	374	248	536	1478	86.5	71.2	213	57.1	.998	.02
MAX	53	244	1170	504	1660	12000	164	242	813	148	7.2	.16
MIN	.00	.54	17	106	127	93	39	21	23	9.5	.00	.00
AC-FT	327	3890	22980	15260	29790	90860	5150	4380	12700	3510	61	1.1
CFSM	.0	.17	.98	.65	1.40	3.86	.23	.19	.56	.15	.0	.0
IN.	.0	.19	1.13	.75	1.46	4.45	.25	.21	.62	.17	.0	.0
CAL YR 1986	TOTAL 56821.09	MEAN 156	MAX 1940	MIN .00	AC-FT 112700	CFSM .41	IN. 5.52					
WTR YR 1987	TOTAL 95241.30	MEAN 261	MAX 12000	MIN .00	AC-FT 188900	CFSM .68	IN. 9.25					

## 07346070 LITTLE CYPRESS CREEK NEAR JEFFERSON, TX

LOCATION.--Lat 32°42'50", long 94°20'44", Marion County, Hydrologic Unit 11140307, on downstream side of highway embankment near left end of bridge on U.S. Highway 59, 0.3 mi downstream from Texas and Pacific Railway Co. bridge, 3.3 mi downstream from Grays Creek, 3.5 mi south of Jefferson, and 6.8 mi upstream from mouth.

DRAINAGE AREA.--675 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1946 to current year.

GAGE.--Water-stage recorder. Datum of gage is 174.60 ft above National Geodetic Vertical Datum of 1929. Prior to Sept. 19, 1947, nonrecording gage at upstream side of bridge at same datum.

REMARKS.--No estimated daily discharge. Records good. No known diversion above station, but some sewage effluent is discharged into tributaries that enter Little Cypress Creek above this station. Gage-height telemeter at station.

AVERAGE DISCHARGE.--41 years (water years 1947-87), 502 ft<sup>3</sup>/s (10.10 in/yr), 363,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 35,500 ft<sup>3</sup>/s Apr. 26, 1966 (gage height, 22.28 ft); no flow at times.  
Maximum stage since May 1944, that of Apr. 26, 1966.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in May 1944 reached a stage of 21.1 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 8,070 ft<sup>3</sup>/s Mar. 22 at 1800 hours (gage height, 15.34 ft); minimum, 0.06 ft<sup>3</sup>/s Sept. 9-11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	18	393	638	461	2530	887	89	201	115	12	.10
2	11	9.6	333	484	485	2610	778	82	155	102	11	.09
3	11	3.9	278	529	478	2560	687	76	123	95	8.4	.09
4	11	2.4	231	523	447	2360	588	72	135	88	5.7	.09
5	11	9.9	184	464	422	2230	516	68	121	87	3.9	.09
6	11	23	146	461	426	2190	453	66	90	97	3.1	.09
7	12	77	121	425	501	2150	401	66	68	111	2.6	.08
8	14	120	192	390	501	2080	367	100	54	142	2.1	.07
9	15	157	477	406	482	1870	341	116	44	159	1.4	.06
10	16	184	678	416	457	1650	323	138	38	158	.91	.06
11	16	184	768	397	432	1430	308	132	34	160	.76	.07
12	19	176	935	394	407	1250	292	106	42	165	.62	.08
13	24	139	1170	395	375	1090	279	83	56	167	.40	.08
14	23	106	1310	397	346	953	278	68	120	164	.33	.08
15	22	79	1330	400	479	845	268	60	251	158	.33	.08
16	23	59	1290	402	866	725	257	53	301	138	.32	.07
17	22	47	1250	419	960	725	244	60	427	103	.28	.07
18	21	43	1200	512	979	855	231	78	589	74	.22	.36
19	20	39	1170	602	1040	830	218	75	630	56	.17	.38
20	19	36	1150	610	1180	882	206	71	628	43	.14	.27
21	19	34	1110	593	1590	1810	190	68	658	33	.19	.24
22	19	38	1080	573	1530	7270	180	65	703	27	.21	1.1
23	22	49	1050	542	1370	7070	170	59	730	21	.20	2.8
24	34	91	1030	514	1530	5120	160	48	731	18	.19	2.3
25	27	217	1000	496	1810	3670	145	52	681	22	.13	1.5
26	40	361	960	484	1830	2590	133	175	568	23	.13	.92
27	58	387	920	485	2020	1930	122	238	432	18	.12	.76
28	68	402	883	502	2320	1550	112	247	264	14	.12	.59
29	63	410	834	515	---	1320	103	234	184	12	.10	.59
30	47	413	768	521	---	1140	96	225	139	8.8	.08	1.7
31	29	---	708	504	---	1000	---	216	---	9.8	.09	---
TOTAL	760	3914.8	24949	14993	25724	66285	9333	3286	9197	2588.6	56.24	14.86
MEAN	24.5	130	805	484	919	2138	311	106	307	83.5	1.81	.50
MAX	68	413	1330	638	2320	7270	887	247	731	167	.12	2.8
MIN	11	2.4	121	390	346	725	96	48	34	8.8	.08	.06
AC-FT	1510	7770	49490	29740	51020	131500	18510	6520	18240	5130	112	.29
CFSM	.0	.19	1.19	.72	1.36	3.17	.46	.16	.45	.12	.0	.0
IN.	.0	.22	1.37	.83	1.42	3.65	.51	.18	.51	.14	.0	.0

CAL YR 1986 TOTAL 113384.44 MEAN 311 MAX 2550 MIN .52 AC-FT 224900 CFSM .46 IN. 6.25  
WTR YR 1987 TOTAL 161100.50 MEAN 441 MAX 7270 MIN .06 AC-FT 319500 CFSM .65 IN. 8.88

## 07346070 LITTLE CYPRESS CREEK NEAR JEFFERSON, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: June 1964 to current year. Pesticide analyses: January 1968 to June 1981.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1967 to current year.

WATER TEMPERATURE: October 1967 to current year.

INSTRUMENTATION.--Beginning June 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, 1,350 microsiemens Nov. 9, 1969; minimum, 38 microsiemens June 27, 1986.

WATER TEMPERATURE: Maximum daily, 32.0°C on several days during summer months of 1977-78 and 1980; minimum 0.0°C on several days during winter months of 1983, 1985.

## EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 330 microsiemens Oct. 23, 24; minimum, 38 microsiemens Mar. 22, 23.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW- INSTAN- TANEOUS (CFS)	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 (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3
OCT 29...	1100	66	185	6.40	14.5	8.1	79	0.9	32	25
JAN 28...	1200	503	148	6.70	8.0	10.2	86	1.5	28	19
MAR 18...	1200	858	141	6.42	16.0	7.1	73	0.8	28	15
MAY 06...	1800	64	152	7.40	22.0	8.4	96	1.1	32	11
JUN 24...	1800	734	107	6.40	25.0	4.8	58	1.3	24	3
AUG 12...	1500	0.62	174	6.00	32.0	5.0	69	2.8	37	7
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 WH WAT TOTAL FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
OCT 29...	7.8	3.0	18	1	5.2	7	24	34	<0.10	14
JAN 28...	6.6	2.9	13	1	3.0	9	20	22	<0.10	16
MAR 18...	6.4	2.9	14	1	2.4	13	23	20	<0.10	16
MAY 06...	7.2	3.4	17	1	3.4	21	15	26	0.10	19
JUN 24...	5.9	2.2	8.3	0.8	3.7	21	13	11	<0.10	14
AUG 12...	9.0	3.6	20	1	3.9	30	22	26	0.10	20
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- PHORUS, TOTAL (MG/L AS P)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)
OCT 29...	110	--	<0.010	0.100	0.010	2.9	2.9	0.060	--	--
JAN 28...	89	--	<0.010	<0.100	0.030	0.77	0.80	0.020	<1	67
MAR 18...	92	--	<0.010	<0.100	0.040	0.76	0.80	0.070	--	--
MAY 06...	100	0.290	0.010	0.300	0.070	0.83	0.90	0.110	--	--
JUN 24...	72	0.090	0.010	0.100	0.090	1.1	1.2	0.130	<1	67
AUG 12...	120	--	0.010	<0.100	0.060	0.94	1.0	0.140	--	--

07346070 LITTLE CYPRESS CREEK NEAR JEFFERSON, TX--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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)
OCT 29...	--	--	--	--	--	--	--	--	--	--
JAN 28...	<1	<10	4	370	<5	46	<0.1	<1	<1	11
MAR 18...	--	--	--	--	--	--	--	--	--	--
MAY 06...	--	--	--	--	--	--	--	--	--	--
JUN 24...	<1	<10	5	1500	<5	210	<0.1	<1	<1	25
AUG 12...	--	--	--	--	--	--	--	--	--	--

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1986 TO SEPTEMBER 1987

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. 1986	760	194	118	243	35	71	20	41	31
NOV. 1986	3914.8	123	78	829	20	207	15	159	23
DEC. 1986	24949	104	67	4510	16	1090	13	883	20
JAN. 1987	14993	150	95	3830	25	1000	18	709	27
FEB. 1987	25724	120	77	5330	19	1320	15	1020	23
MAR. 1987	66285	87	56	10100	13	2390	11	1990	17
APR. 1987	9333	144	91	2300	24	594	17	428	26
MAY 1987	3286	156	98	870	26	230	18	160	28
JUNE 1987	9197	139	88	2190	23	562	17	411	26
JULY 1987	2588.6	151	95	667	25	175	18	123	27
AUG. 1987	56.24	201	123	19	35	5.4	21	3.2	33
SEPT 1987	14.86	202	124	5.0	36	1.4	21	0.9	33
TOTAL	161101.50	**	**	30900	**	7650	**	5940	**
WTD.AVG.	441	111	71	**	18	**	14	**	21

## SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	146	141	143	178	169	173	124	121	123	146	141	143
2	148	144	146	168	164	166	128	125	126	151	146	148
3	150	147	149	165	163	164	131	128	130	152	150	151
4	152	147	149	164	160	163	131	130	131	151	148	150
5	151	149	150	165	161	163	135	131	133	151	150	151
6	156	149	152	172	130	154	140	134	137	153	151	152
7	153	141	148	161	138	149	143	140	141	155	152	153
8	143	119	133	134	120	124	142	124	136	161	156	159
9	129	118	126	133	121	123	125	97	108	161	155	158
10	122	118	120	141	119	130	99	89	95	154	152	153
11	121	115	118	119	108	112	89	85	87	154	149	151
12	117	77	106	126	108	114	85	82	83	155	149	153
13	178	101	138	136	126	133	84	83	83	162	155	158
14	197	168	188	136	135	135	84	81	83	163	160	162
15	240	208	219	138	135	136	82	80	81	160	156	158
16	258	238	248	139	137	138	83	81	82	157	155	156
17	281	268	272	140	138	139	86	83	84	156	153	154
18	293	272	288	140	139	140	91	86	88	153	139	148
19	306	288	301	142	140	141	98	92	94	146	141	143
20	321	304	316	144	142	143	104	98	101	149	145	147
21	328	319	325	147	144	146	107	104	105	150	149	150
22	329	327	328	152	146	148	111	107	109	155	150	153
23	330	327	329	154	148	152	114	111	112	156	155	156
24	330	205	278	152	141	148	114	112	113	155	154	155
25	203	145	175	147	118	131	115	113	114	153	149	152
26	179	121	133	123	107	114	120	116	118	149	146	148
27	193	120	158	124	110	115	124	120	122	146	144	145
28	136	118	125	111	109	110	131	125	128	---	---	140
29	229	138	185	115	110	112	134	130	132	---	---	140
30	228	201	214	121	116	119	138	133	136	---	---	140
31	200	180	190	---	---	---	141	138	140	---	---	140
MONTH	330	77	195	178	107	138	143	80	111	163	139	151

## RED RIVER BASIN

149

07346070 LITTLE CYPRESS CREEK NEAR JEFFERSON, TX--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1			142			94			128			162
2			142			93			131			163
3			141			94			134			163
4			143			98			137			163
5			144			99			140			164
6			143			100			142			164
7			140			101			144			164
8			140			102			146			161
9			141			106			147			160
10			142			110			148			158
11			143			115			148			158
12			144			119			149			161
13			145			123			150			161
14			147			126			150			160
15			141			129			150			162
16			129			133			151			170
17			126			133			152			162
18			126			129			152			160
19			124			130			153			160
20			121			128			154			161
21			112			107			155			161
22			113			38			155			162
23			116			38			156			162
24			113			59			156			168
25			107			77			158			160
26			107			93			158			152
27			103			105			160			148
28			98			112			160			146
29			---			117			161			147
30			---			122			161			148
31			---			125			---			149
MONTH			130			105			150			159
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1			150	---	---	156	246	165	201	274	200	239
2			153	---	---	158	230	165	198	287	198	238
3			156	---	---	160	235	166	202	200	198	199
4			155	---	---	162	248	170	201	198	196	197
5			156	---	---	162	254	173	209	198	195	196
6			160	---	---	161	242	178	191	197	195	196
7			161	---	---	159	206	177	187	196	192	194
8			164	---	---	154	204	185	187	197	192	194
9			168	---	---	152	200	186	188	195	193	194
10			172	172	154	162	199	188	189	196	194	195
11			175	168	141	154	190	188	189	196	193	194
12			171	145	139	141	232	189	194	195	192	194
13			164	151	140	145	274	190	242	195	192	193
14			156	147	141	143	278	191	229	195	192	193
15			146	150	139	144	275	191	228	195	191	192
16			148	144	136	138	268	192	230	193	189	191
17			143	142	135	137	275	193	228	192	189	191
18			137	138	136	137	276	194	235	192	168	183
19			134	142	138	139	270	195	236	187	175	183
20			133	148	141	144	273	197	251	187	181	184
21			134	154	147	149	271	196	233	188	184	186
22			134	158	152	155	285	197	235	190	184	186
23			130	163	156	159	272	199	240	194	190	191
24			130	165	161	163	272	198	228	200	191	196
25			134	168	164	166	269	198	237	206	196	202
26			136	168	167	168	274	198	233	211	201	207
27			138	171	168	169	275	196	236	217	208	213
28			144	173	170	172	282	197	245	223	213	217
29			150	173	172	172	286	202	252	226	219	223
30			154	172	169	171	287	199	248	243	223	233
31			---	245	168	203	281	201	240	---	---	---
MONTH			150	245	135	157	287	165	221	287	168	200

## 07346070 LITTLE CYPRESS CREEK NEAR JEFFERSON, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER				NOVEMBER			DECEMBER			JANUARY		
1	26.5	26.0	26.0	15.5	14.5	15.0	10.0	9.5	9.5	6.0	5.5	6.0
2	26.5	26.0	26.5	15.5	15.0	15.0	9.5	9.5	9.5	5.5	5.0	5.5
3	26.5	26.0	26.5	16.5	15.5	16.0	9.0	8.5	8.5	6.5	5.5	6.0
4	26.5	26.0	26.5	16.5	16.0	16.0	8.5	7.5	8.0	6.5	6.0	6.5
5	26.5	25.0	25.5	16.5	15.5	16.0	8.0	7.5	7.5	6.0	5.5	6.0
6	24.5	22.5	23.5	15.5	15.0	15.5	7.5	7.0	7.5	7.0	5.5	6.0
7	22.0	21.5	22.0	15.0	15.0	15.0	8.5	7.5	8.0	7.5	7.0	7.0
8	22.0	21.0	21.5	16.0	15.0	15.5	11.5	8.5	9.5	7.5	7.5	7.5
9	21.0	21.0	21.0	16.5	16.0	16.5	11.5	11.0	11.5	8.0	7.5	7.5
10	21.5	21.0	21.0	16.0	15.0	15.5	11.0	9.5	10.5	7.5	7.0	7.0
11	21.5	21.0	21.0	15.0	14.0	14.5	9.5	8.5	9.0	6.5	5.5	6.0
12	21.0	18.5	20.0	14.0	12.0	13.0	8.5	8.0	8.0	5.5	4.5	5.0
13	19.0	18.0	18.5	12.0	10.0	11.0	8.0	7.0	7.5	5.5	5.0	5.5
14	18.0	17.0	17.5	10.0	8.5	9.0	7.5	7.0	7.5	7.0	5.5	6.5
15	17.5	16.5	17.0	8.5	8.0	8.5	7.5	7.5	7.5	8.0	7.0	7.5
16	16.5	16.0	16.0	11.0	8.5	10.0	8.5	8.0	8.0	9.0	8.5	8.5
17	16.0	15.5	16.0	12.5	11.0	11.5	9.0	8.5	9.0	9.0	8.5	9.0
18	16.0	15.5	16.0	13.5	12.5	13.0	9.5	9.5	9.5	8.5	7.5	8.5
19	16.0	15.5	16.0	13.5	13.0	13.5	9.5	9.0	9.5	7.5	6.5	7.0
20	16.0	15.5	16.0	14.0	13.5	13.5	9.0	8.5	9.0	6.0	5.5	6.0
21	16.0	15.5	15.5	13.5	12.5	13.0	8.5	8.0	8.5	5.5	5.0	5.5
22	16.0	15.5	15.5	12.5	12.0	12.0	8.5	8.5	8.5	5.0	4.5	5.0
23	16.0	16.0	16.0	13.0	12.0	12.5	8.5	8.0	8.0	4.5	4.0	4.5
24	16.5	16.0	16.5	13.0	12.5	12.5	8.5	8.0	8.0	6.0	4.5	5.0
25	16.5	15.5	16.0	12.5	11.0	11.5	8.0	7.5	8.0	6.5	6.0	6.5
26	16.0	15.5	15.5	11.0	11.0	11.0	8.5	7.5	8.0	6.5	6.0	6.5
27	15.5	14.5	15.0	11.0	10.5	11.0	8.5	8.0	8.5	7.0	5.5	6.5
28	15.0	14.0	14.5	10.5	10.0	10.5	8.0	7.5	8.0	---	---	---
29	15.0	14.0	14.5	10.0	9.5	9.5	7.5	7.0	7.0	---	---	---
30	15.0	14.0	14.5	9.5	9.0	9.0	7.0	6.0	6.5	---	---	---
31	15.5	14.5	15.0	---	---	---	6.5	6.0	6.5	---	---	---
MONTH	26.5	14.0	19.0	16.5	8.0	13.0	11.5	6.0	8.5	9.0	4.0	6.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
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												

## RED RIVER BASIN

151

07346070 LITTLE CYPRESS CREEK NEAR JEFFERSON, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1				---	---	---	32.5	31.5	32.0	29.0	28.5	28.5
2				---	---	---	32.5	31.5	32.0	28.5	27.5	28.0
3				---	---	---	32.5	31.5	32.0	28.0	27.0	27.5
4				---	---	---	32.5	32.0	32.0	27.5	27.0	27.5
5				---	---	---	32.0	31.5	32.0	27.5	27.0	27.5
6				---	---	---	32.0	31.5	32.0	27.0	26.5	27.0
7				---	---	---	32.0	31.5	32.0	27.0	27.0	27.0
8				---	---	---	32.0	31.5	31.5	27.0	26.5	27.0
9				---	---	---	32.0	31.5	32.0	27.0	27.0	27.0
10				27.5	26.5	27.0	32.5	32.0	32.0	27.5	27.0	27.0
11				28.0	27.5	28.0	32.0	31.5	31.5	27.0	26.5	26.5
12				29.0	28.0	28.5	32.0	31.5	32.0	26.5	26.0	26.5
13				29.0	28.5	28.5	32.0	31.5	31.5	26.5	26.0	26.0
14				28.5	28.0	28.5	32.0	31.5	32.0	26.5	26.0	26.0
15				28.0	27.5	27.5	32.0	31.5	32.0	26.5	26.0	26.5
16				28.0	27.0	27.5	32.5	32.0	32.0	27.0	26.5	27.0
17				28.0	27.5	28.0	32.5	32.0	32.0	27.5	27.0	27.0
18				29.0	28.0	28.5	32.5	32.0	32.0	27.5	26.5	27.0
19				29.5	28.5	29.0	32.5	31.5	32.0	27.0	26.5	26.5
20				30.0	28.5	29.0	32.0	31.0	31.5	26.5	25.0	25.5
21				30.0	28.5	29.0	32.0	31.0	31.5	25.5	24.0	24.5
22				30.0	28.5	29.0	31.5	30.5	31.0	24.5	23.5	24.0
23				29.5	29.0	29.0	31.5	30.5	31.0	27.0	22.5	23.5
24				29.5	29.0	29.0	31.0	30.5	31.0	24.0	23.0	23.5
25				30.0	28.5	29.0	31.0	30.5	31.0	24.0	22.5	24.0
26				30.0	28.5	29.5	31.5	31.0	31.0	23.0	23.0	23.0
27				30.5	29.0	29.5	31.5	31.0	31.5	23.0	23.0	23.0
28				31.0	29.5	30.5	31.5	30.5	31.0	23.5	23.0	23.0
29				31.5	30.0	30.5	30.5	30.0	30.0	23.5	23.0	23.5
30				31.0	30.5	31.0	30.0	29.5	30.0	23.5	22.0	23.0
31				32.5	31.0	31.5	29.5	29.0	29.0	---	---	---
MONTH				32.5	26.5	29.0	32.5	29.0	31.5	29.0	22.0	26.0

07346140 FRAZIER CREEK NEAR LINDEN, TX

LOCATION.--Lat 33°03'14", long 94°17'24", Cass County, Hydrologic Unit 11140306, on right bank at downstream side of bridge on U.S. Highway 59, 1.6 mi upstream from Colley Creek, 3.7 mi upstream from Johns Creek, and 5.3 mi north east of Linden.

DRAINAGE AREA.--48.0 mi<sup>2</sup>.

PERIOD OF RECORD.--August 1958 to June 1961 (low-flow partial record only), November 1964 to current year.

GAGE.--Water-stage recorder. Datum of gage is 228.7 ft above National Geodetic Vertical Datum of 1929 (State Department of Highways and Public Transportation bridge plans).

REMARKS.--Records good except those for estimated daily discharges, which are fair. No known diversion. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--22 years (water years 1966-87), 40.3 ft<sup>3</sup>/s (11.40 in/yr), 29,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,010 ft<sup>3</sup>/s Apr. 22, 1974 (gage height, 12.51); no flow at times for most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1945, 15.6 ft Apr. 26, 27, 1958, from information by State Department of Highways and Public Transportation.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 700 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Dec. 9	1330	835	9.17	No other peak greater than base discharge.			

Minimum discharge, no flow Oct. 1-6 and Aug. 20 to Sept. 9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	2.0	31	35	33	390	33	12	8.1	2.0	1.2	.0
2	.00	1.2	27	33	58	203	32	11	15	2.0	1.0	.0
3	.00	.71	24	58	49	117	38	11	7.1	41	.81	.0
4	.00	1.2	22	106	37	90	36	11	4.3	22	.65	.0
5	.00	28	21	62	32	77	31	22	4.1	10	7.8	.0
6	.00	24	21	49	34	71	30	17	4.0	8.6	2.4	.0
7	.40	13	21	43	64	64	28	18	3.9	7.3	1.8	.0
8	.85	32	47	39	54	60	28	16	3.6	7.4	1.3	.0
9	.71	28	535	71	38	56	27	12	3.6	6.7	.80	.0
10	1.0	17	432	114	32	50	26	9.6	3.4	6.3	.69	.01
11	.52	14	195	66	31	46	25	8.4	3.2	5.8	.28	.01
12	.85	17	97	50	31	44	25	7.6	2.9	4.9	.01	.01
13	7.4	17	75	45	30	42	25	7.1	2.9	4.3	.04	.01
14	5.3	18	63	43	31	41	25	6.7	2.8	3.9	1.2	.01
15	2.1	13	121	42	138	41	23	6.6	2.8	3.2	1.5	.07
16	1.0	11	184	40	314	40	23	28	2.6	e3.1	.80	.35
17	.40	10	126	41	219	132	21	39	2.5	e2.9	.32	.02
18	.12	9.4	107	105	100	250	20	24	2.4	e2.8	.02	2.0
19	.01	8.4	126	128	71	162	19	15	2.2	e2.6	.01	12
20	.01	7.7	88	69	161	78	18	12	2.1	e2.5	.0	3.1
21	.01	8.3	67	54	300	62	17	10	2.0	e2.4	.0	1.7
22	.01	45	57	48	215	54	16	9.0	1.8	2.2	.0	1.1
23	7.9	111	85	43	111	55	15	8.4	1.7	2.1	.0	.70
24	50	90	120	41	122	79	14	13	5.4	24	.0	.41
25	38	119	75	43	162	55	13	19	6.7	13	.0	.35
26	16	162	58	40	176	43	13	13	7.1	8.3	.0	.03
27	9.4	99	51	35	256	40	12	13	6.0	4.4	.0	.01
28	6.6	53	45	34	396	38	12	12	4.8	2.9	.0	.35
29	4.8	40	42	34	---	35	12	9.8	3.6	2.4	.0	.14
30	3.7	34	39	33	---	35	12	8.4	2.8	1.9	.0	.08
31	2.9	---	37	30	---	35	---	7.9	---	1.9	.0	---
TOTAL	159.99	1033.91	3039	1674	3295	2585	669	417.5	125.4	214.8	22.63	22.46
MEAN	5.16	34.5	98.0	54.0	118	83.4	22.3	13.5	4.18	6.93	.73	.75
MAX	50	162	535	128	396	390	38	39	15	41	7.8	12
MIN	.00	.71	21	30	30	35	12	6.6	1.7	1.9	.00	.00
AC-FT	317	2050	6030	3320	6540	5130	1330	828	249	426	45	45

CAL YR 1986 TOTAL 13781.02 MEAN 37.8 MAX 535 MIN .00 AC-FT 27330  
WTR YR 1987 TOTAL 13258.60 MEAN 36.3 MAX 535 MIN .00 AC-FT 26300

e Estimated.

## SABINE RIVER MAIN STEM

08017200 COWLEECH FORK SABINE RIVER AT GREENVILLE, TX

LOCATION.--Lat 33°07'58", Long 96°04'36", Hunt County, Hydrologic Unit 12010001, on left bank 103 ft downstream from centerline of downstream bridge on Interstate Highway 30 (U.S. Highway 67), 0.3 mi downstream from Horse Creek, 0.9 mi downstream from Louisiana and Arkansas Railroad Co. bridge, 1.8 mi east of Greenville, and at mile 558.3.

DRAINAGE AREA.--77.7 mi<sup>2</sup>.

PERIOD OF RECORD.--February 1959 to current year. Prior to October 1963, published as Sabine River at Greenville.

REVISED RECORDS.--WSP 1732: Drainage area. WSP 2122: 1960, 1963-65.

GAGE.--Water-stage recorder. Datum of gage is 485.07 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are poor. The city of Greenville diverted water from city lakes upstream from the gage and from Lake Tawakoni for municipal use. Sewage effluent is returned to a tributary downstream from gage. Extreme low flow is largely sustained by return water from water treatment plant upstream. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--28 years (water years 1960-87), 61.2 ft<sup>3</sup>/s (10.70 in/yr), 44,340 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,300 ft<sup>3</sup>/s May 13, 1982 (gage height, 18.47 ft); no flow in 1964, 1969-70, 1972-73, and 1977-87.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1895, 22 ft in May 1935, from information by local resident and city engineer of Greenville. Flood of July 3, 1913, reached a stage of 20 ft, from information by local resident.

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

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Nov. 25	1515	*3,420	*16.22	Mar. 17	2100	3,150	16.13
Feb. 28	1800	3,070	16.10				

Minimum discharge, no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.9	.13	1.7	1.4	3.3	423	8.7	.22	51	.1	.00	e.00
2	2.0	.10	1.1	1.2	4.5	47	8.3	.22	14	7.3	.00	e.00
3	.39	.09	.72	14	4.7	26	7.9	.50	24	55	.00	e.00
4	5.3	53	.54	20	4.2	17	8.0	9.0	69	18	.00	e.00
5	8.9	113	.40	10	3.5	13	8.0	5.4	15	4.7	.00	e.00
6	82	13	.35	5.8	2.5	12	7.7	2.6	5.8	.81	.00	e.00
7	44	4.7	.43	3.9	1.9	11	7.2	1.2	3.0	.20	.00	e.00
8	21	2.2	.34	3.0	1.5	9.8	6.8	.78	1.8	.11	.00	e.00
9	16	1.1	.40	111	1.3	8.6	6.9	1.5	1.2	.24	.00	e.00
10	5.8	7.0	.30	75	1.1	7.7	6.3	.72	.97	.20	.00	e.28
11	3.3	393	.27	23	1.0	7.1	6.0	13	2.0	.1	.00	e.01
12	3.1	37	.69	11	1.1	6.1	5.9	37	202	.0	.00	e3.7
13	2.3	11	.57	7.8	.96	5.4	7.3	5.9	108	.43	.00	e1.7
14	1.1	5.9	3.5	6.1	.93	5.1	5.9	2.7	18	.14	.00	e.16
15	.51	3.6	101	5.3	6.0	5.0	5.3	16	6.8	.0	.00	e89
16	.32	2.2	92	6.1	9.6	5.8	4.6	141	16	.0	.00	e65
17	.20	1.5	57	27	5.0	1290	3.9	13	47	.0	.00	e6.0
18	.10	1.1	760	464	3.3	809	3.3	6.3	79	.0	.00	e287
19	.07	1.1	209	85	2.3	47	2.8	4.0	20	.0	.00	e379
20	.05	1.1	38	27	317	30	2.4	22	21	.00	e.00	e28
21	.05	1.1	17	14	237	24	1.8	18	19	.00	e.00	e3.2
22	.04	3.2	9.9	10	30	20	2.5	7.5	7.6	.00	e.00	e.22
23	17	5.2	14	8.2	17	19	2.4	16	3.4	.00	e.00	e.04
24	58	19	25	6.6	99	16	1.3	148	17	.0	e.00	e.00
25	20	2240	16	5.2	123	14	1.0	27	9.1	.00	e.00	e.00
26	5.5	883	9.5	3.8	457	13	.71	9.8	2.9	.00	e.00	e.00
27	2.7	45	6.3	3.1	664	11	.53	5.7	.91	.00	e3.0	e.00
28	1.4	11	4.1	2.9	1420	10	.39	269	.18	.00	e.60	e.37
29	.57	5.0	2.9	2.6	---	10	.29	2000	.1	.00	e.01	e.03
30	.28	2.5	2.3	2.1	---	10	.24	390	.15	.00	e.00	e.00
31	.19	---	1.9	1.7	---	9.1	---	45	---	.00	e.00	---
TOTAL	304.07	3866.82	1377.21	967.8	3422.69	2941.7	134.36	3219.04	765.91	87.33	3.61	863.71
MEAN	9.81	129	44.4	31.2	122	94.9	4.48	104	25.5	2.82	.12	28.8
MAX	82	2240	760	464	1420	1290	8.7	2000	202	55	3.0	379
MIN	.04	.09	.27	1.2	.93	5.0	.24	.22	.10	.00	.00	.00
AC-FT	603	7670	2730	1920	6790	5830	267	6380	1520	173	7.2	1710

CAL YR 1986 TOTAL 21316.90 MEAN 58.4 MAX 3070 MIN .00 AC-FT 42280  
WTR YR 1987 TOTAL 17954.11 MEAN 49.2 MAX 2240 MIN .00 AC-FT 35610

e Estimated.

## SABINE RIVER BASIN

08017300 SOUTH FORK SABINE RIVER NEAR QUINLAN, TX

LOCATION.--Lat 32°53'52", Long 96°15'11", Hunt County, Hydrologic Unit 12010001, on right bank at downstream side of bridge on Farm Road 1565, 2.4 mi upstream from Dry Creek, 6.2 mi upstream from Bearpen Creek, 7 mi southwest of Quinlan, and 25 mi upstream from mouth.

DRAINAGE AREA.--78.7 mi<sup>2</sup>.

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

REVISED RECORDS.--WSP 1732: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 461.0 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair. The city of Royse City discharges sewage effluent into the river above this station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--28 years (water years 1960-87), 79.5 ft<sup>3</sup>/s (13.72 in/yr), 57,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,000 ft<sup>3</sup>/s June 16, 1981 (gage height, 18.24 ft); maximum gage height, 18.77 ft Apr. 5, 1986; no flow at times each year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1890, 21 ft July 29, 1902, from information by local resident. Flood of Apr. 27, 1957, reached a stage of 17.76 ft, from floodmarks.

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

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Nov. 25	1200	*3,710	*16.31	No other peak greater than base discharge.			
Minimum daily discharge, no flow Oct. 1-22, Nov. 3, July 15-Sept. 30.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.01	2.8	1.1	.80	954	.07	.05	12	.01	.00	.00
2	.00	.01	1.2	.51	1.5	71	.04	.05	3.3	.26	.00	.00
3	.00	.00	.74	9.0	2.0	27	.02	.09	1.2	311	.00	.00
4	.00	3.9	.51	29	1.3	12	.02	.39	.72	62	.00	.00
5	.00	36	.34	10	.99	5.4	.44	24	.31	9.7	.00	.00
6	.00	3.9	.27	4.1	.78	2.4	.42	3.7	.13	1.8	.00	.00
7	.00	.41	.26	1.9	1.1	1.2	.40	.92	.12	.39	.00	.00
8	.00	1.2	.38	1.1	1.6	.63	.37	.36	.12	.17	.00	.00
9	.00	2.0	.96	99	1.6	.32	.39	27	.12	.11	.00	.00
10	.00	1.9	.89	94	1.3	.19	.37	5.3	.14	.12	.00	.00
11	.00	112	.53	26	1.2	.14	.41	.77	.77	.12	.00	.00
12	.00	30	.47	11	1.0	.11	.41	.31	126	.06	.00	.00
13	.00	6.8	2.3	6.1	.60	.07	.51	.18	396	.02	.00	.00
14	.00	1.6	2.0	3.7	.60	.09	1.1	3.1	53	.01	.00	.00
15	.00	.36	126	2.9	.98	.12	.94	40	13	.00	.00	.00
16	.00	.40	101	2.4	2.9	.14	.72	7.8	223	.00	.00	.00
17	.00	.55	43	5.8	2.2	1400	.57	2.8	539	.00	.00	.00
18	.00	.46	694	405	1.1	828	.43	1.2	188	.00	.00	.00
19	.00	.32	437	127	.68	56	.33	.74	45	.00	.00	.00
20	.00	.31	68	40	334	18	.26	24	47	.00	.00	.00
21	.00	.87	31	22	246	6.1	.29	18	21	.00	.00	.00
22	.00	3.8	17	13	50	2.6	.37	3.6	4.7	.00	.00	.00
23	32	9.5	51	7.0	25	1.5	.26	.79	1.0	.00	.00	.00
24	107	4.9	58	4.7	85	1.5	.22	.34	e.33	.00	.00	.00
25	15	2060	24	3.3	144	.47	.18	.53	e.16	.00	.00	.00
26	1.2	1090	12	2.2	460	.18	.14	.25	e.13	.00	.00	.00
27	.07	89	6.9	1.7	727	.11	.11	.15	e.08	.00	.00	.00
28	.01	24	3.9	1.4	1520	.07	.09	.92	e.05	.00	.00	.00
29	.03	12	2.5	1.3	---	.12	.07	757	e.03	.00	.00	.00
30	.02	5.9	1.7	1.1	---	.24	.05	409	e.02	.00	.00	.00
31	.01	---	2.6	.88	---	.15	---	34	---	.00	.00	---
TOTAL	155.34	3502.10	1693.25	938.19	3615.23	3389.85	10.0	1497.03	1676.43	385.77	.00	.00
MEAN	5.01	117	54.6	30.3	129	109	.33	48.3	55.9	12.4	.00	.00
MAX	107	2060	694	405	1520	1400	1.1	757	539	311	.00	.00
MIN	.00	.00	.26	.51	.60	.07	.02	.05	.02	.00	.00	.00
AC-FT	308	6950	3360	1860	7170	6720	20	2970	3330	765	.0	.0
CAL YR 1986	TOTAL 35720.49	MEAN 97.9	MAX 8130	MIN .00	AC-FT 70850							
WTR YR 1987	TOTAL 16863.05	MEAN 46.2	MAX 2060	MIN .00	AC-FT 33450							

e Estimated.

## SABINE RIVER MAIN STEM

155

## 08017400 LAKE TAWAKONI NEAR WILLS POINT, TX

LOCATION.--Lat 32°48'31", long 95°55'10", Van-Zandt County, Hydrologic Unit 12010001, in stairwell at left end of spillway of Iron Bridge Dam on Sabine River, 750 ft upstream from bridge on Farm Road 47, 3.8 mi upstream from McBee Creek, 9.0 mi northeast of Wills Point, and at mile 514.5.

DRAINAGE AREA.--756 mi<sup>2</sup>.

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

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

REMARKS.--Lake is formed by a rolled earthfill dam 29,500 ft long, including a 480-foot uncontrolled concrete ogee spillway. Outlet works consist of two 4- by 6-foot sluice gates and two 20-inch steel pipes controlled by service valves. Closure of earthen dam began July 1, 1960, and deliberate impoundment of water began Oct. 7, 1960. Capacity table is based on a 1956 survey. Diversions are made for municipal use by the city of Dallas and various other users in the Sabine River basin. The lake was built for water conservation. 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.....	454.0	-
Design flood.....	446.2	1,290,000
Crest of spillway.....	437.5	936,200
Lowest intake to wet well (invert).....	416.5	342,700
Lowest gated outlet (invert).....	378.0	0

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 1,130,000 acre-ft May 1, 1966 (elevation, 442.58 ft); minimum since lake first filled in May 1965, 802,700 acre-ft Oct. 21, 1972 (elevation, 433.65 ft).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 987,200 acre-ft Mar. 19 at 1100 hours (elevation, 438.89 ft); minimum, 863,100 acre-ft Sept. 30 (elevation, 435.43 ft).

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

435.0	848,200	438.0	954,300
437.0	918,200	439.0	991,200

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	870600	874800	950000	946700	941700	983900	949600	923600	933700	938100	913600	879300
2	869200	874400	946400	944600	940900	984600	948900	922500	937000	938800	912900	877900
3	869200	872700	945300	946400	940600	980900	946000	925000	936600	939500	911900	877200
4	870900	877600	944200	944200	940200	976800	944900	927900	935900	939900	911200	876200
5	870900	875500	942800	943500	940900	973200	944900	927600	935200	939100	910100	875100
6	871600	874400	942000	943500	940200	969800	943100	927200	934400	938100	908700	874100
7	870600	875100	942400	943500	937700	967200	942400	926100	933400	936600	907700	873000
8	873400	874800	942800	943500	937300	964700	941300	925400	933400	936200	905900	872700
9	873000	874400	942000	946700	935500	963200	940600	924300	933000	934800	904900	871300
10	872000	882800	940200	947800	935200	959900	939900	923600	934100	934400	904200	871300
11	874100	880700	939900	945600	935500	956500	938100	922900	937000	932600	903100	870900
12	875100	885300	938400	945600	935200	954700	938100	922100	940200	931900	901400	871300
13	872300	879700	937700	944600	935200	952500	941700	921400	945600	931500	900700	871300
14	871600	878600	939100	944600	935500	951100	937700	920700	946700	929400	898900	870900
15	871300	878300	941300	944200	939900	949600	936600	920000	947800	927900	897900	870900
16	870200	879000	943100	945300	935500	952200	935900	920300	947800	926500	896500	870600
17	869500	878300	943800	947800	933400	973200	935200	919600	954300	926100	895800	869900
18	868800	878600	950700	952500	931900	985000	934400	918900	955800	925400	894700	875100
19	868500	878300	956200	955100	931200	985700	934100	918500	955100	925000	893700	873700
20	867400	877900	956900	953600	938800	981300	933400	918200	954000	924300	891900	872700
21	866000	876900	956200	954000	943100	976500	933400	917500	951400	923600	890500	872300
22	867400	880400	955400	950000	943500	972000	931200	916800	951800	922500	889500	870600
23	877200	883200	955100	947800	942000	970900	930800	917100	951100	922100	888100	869200
24	878600	886300	954300	950300	944600	967600	929700	918200	949300	922100	887000	868100
25	878300	925000	953200	946000	946700	963900	929400	917800	947800	921100	885600	866700
26	877600	947100	952200	944200	952500	961700	928700	916400	945300	920300	883200	865000
27	876500	952900	951100	943500	962100	958400	927600	916400	943500	919600	883500	864300
28	875800	951800	950300	941700	974600	961300	926800	918500	941700	918200	882100	866700
29	875800	950700	949300	942400	---	958800	925400	924000	940200	917100	880400	865700
30	875100	951100	948500	941700	---	952900	924300	930800	939500	916400	880400	863200
31	874400	---	947500	940900	---	951100	---	933400	---	914700	880000	---
MAX	878600	952900	956900	955100	974600	985700	949600	933400	955800	939900	913600	879300
MIN	866000	872700	937700	940900	931200	949600	924300	916400	933000	914700	880000	863200
(+)	435.75	437.91	437.81	437.63	438.55	437.91	437.17	437.42	437.59	436.90	435.91	435.43
(Φ)	+2800	+76700	-3600	-6600	+33700	-23500	-26800	+9100	+6100	-24800	-34700	-16800

CAL YR 1986 MAX 1030000 MIN 866000 (Φ) +4700  
WTR YR 1987 MAX 985700 MIN 863200 (Φ) -8400

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

## 08017410 SABINE RIVER NEAR WILLS POINT, TX

LOCATION.--Lat 32°48'22", long 95°55'09", Van Zandt County, Hydrologic Unit 12010001, on right bank at downstream side of bridge on Farm Road 47, 750 ft downstream from Iron Bridge Dam that forms Lake Tawakoni, 3.6 mi upstream from McBee Creek, 9.0 mi northeast of Wills Point, and at mile 514.3.

DRAINAGE AREA.--756 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1970 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 370.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair except those below 1.0 ft<sup>3</sup>/s, which are poor. Flow regulated by Lake Tawakoni (see station 08017400). Several observations of water temperatures were obtained during the year.

AVERAGE DISCHARGE.--17 years, 394 ft<sup>3</sup>/s (285,500 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,600 ft<sup>3</sup>/s Dec. 11, 1971 (gage height, 18.5 ft, from graph based on gage readings); no flow most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge since construction of Iron Bridge Dam in 1960, about 21,000 ft<sup>3</sup>/s May 1, 1966, from theoretical rating curve of flow over dam 750 ft upstream.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,480 ft<sup>3</sup>/s Mar. 19 at 1315 hours (gage height, 13.68 ft), minimum daily, 0.07 ft<sup>3</sup>/s Sept. 26-28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.5	.40	633	429	155	2030	478	.27	24	123	.68	.41
2	1.3	1.2	593	323	155	2310	607	.26	45	82	.68	.35
3	1.3	.47	391	475	144	2130	461	2.7	154	85	.68	.33
4	2.2	1.4	313	427	128	1850	288	6.1	130	94	.68	.32
5	.60	10	272	248	128	1560	246	.25	77	79	3.4	.30
6	2.5	.22	227	232	367	1270	287	56	48	67	.27	.32
7	.21	.21	218	257	282	1050	215	34	36	46	.26	.27
8	.45	.21	282	238	168	960	161	25	24	28	.26	.31
9	.33	.38	434	420	93	903	121	.76	17	17	.24	.27
10	.30	1.1	428	609	22	882	115	.29	24	9.1	.21	1.2
11	1.1	23	232	474	20	792	68	.19	47	3.1	.23	.26
12	37	31	141	317	19	695	55	.25	132	.73	.36	.29
13	3.2	32	83	285	14	613	204	.22	372	65	.40	.23
14	.13	.14	82	266	11	529	411	1.5	554	70	.40	.30
15	.13	.13	133	261	126	483	151	7.0	504	.62	.40	.28
16	.20	.13	194	306	420	443	36	.51	531	1.7	.43	.27
17	.21	.13	230	325	327	1050	25	.22	543	.45	.48	.26
18	.21	.17	446	606	79	1960	19	.21	898	.40	.40	.26
19	.26	.21	634	663	4.6	2410	12	.16	819	.69	.44	.25
20	.36	.51	715	663	187	2250	5.5	.48	749	.35	.92	.11
21	.40	.32	718	616	290	1970	231	.52	711	.41	.60	.08
22	.63	1.4	689	796	319	1660	118	.40	658	.49	.53	.10
23	.96	17	756	483	210	1400	9.6	3.4	597	.55	.57	.08
24	7.5	9.8	714	442	229	1130	9.8	.39	553	.78	.51	.08
25	1.3	438	630	547	310	958	1.2	.29	505	.78	.51	.08
26	.43	638	593	328	434	892	.70	.90	459	.51	.51	.07
27	.32	573	542	256	707	799	.17	1.1	309	.49	1.1	.07
28	.32	616	499	224	1310	768	5.0	39	210	.49	.46	.07
29	.32	567	461	226	---	918	.10	12	151	.56	.48	.14
30	.32	514	443	200	---	886	.14	1.5	124	.62	.41	.19
31	.32	---	382	161	---	605	---	16	---	1.1	.47	---
TOTAL	66.31	3477.53	13108	12103	6658.6	38156	4341.21	211.87	10005	779.92	17.97	7.55
MEAN	2.14	116	423	390	238	1231	145	6.83	333	25.2	.58	.25
MAX	37	638	756	796	1310	2410	607	56	898	123	3.4	1.2
MIN	.13	.13	82	161	4.6	443	.10	.16	17	.35	.21	.07
AC-FT	132	6900	26000	24010	13210	75680	8610	420	19840	1550	36	15

CAL YR 1986 TOTAL 209583.37 MEAN 574 MAX 6020 MIN .00 AC-FT 415700  
WTR YR 1987 TOTAL 88932.11 MEAN 244 MAX 2410 MIN .07 AC-FT 176400

## SABINE RIVER MAIN STEM

157

08018500 SABINE RIVER NEAR MINEOLA, TX

LOCATION.--Lat 32°36'49", long 95°29'08", Wood County, Hydrologic Unit 12010001, on left bank at downstream side of highway embankment 3 ft downstream from left end of bridge on U. S. Highway 69, 3.5 mi south of Mineola, 4.5 mi upstream from Missouri Pacific Railway Lines bridge, 16.2 mi upstream from Lake Fork Creek, and at mile 461.1.

DRAINAGE AREA.--1,357 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1939 to September 1959, October 1967 to current year. Gage-height records collected at this site since July 1946 are contained in reports published by the National Weather Service.

REVISED RECORDS.--WSP 1732: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 304.16 ft above National Geodetic Vertical Datum of 1929. May 12, 1939 to Dec. 11, 1955, at site 55 ft upstream from downstream side of bridge; Dec. 12, 1955, to Dec. 12, 1959, at downstream side of bridge; Oct. 1, 1967, to Sept. 12, 1968, nonrecording gage at downstream side of bridge; Sept. 13, 1968 to Oct. 23, 1974, water-stage recorder at downstream side of bridge; Oct. 24, 1974, to Oct. 16, 1975, at site on right bank 75 ft downstream from bridge. All gages at present datum.

REMARKS.--Records good. Since October 1960, flow partly regulated by Lake Tawakoni (station 08017400), capacity 936,200 acre-ft., located 53 mi upstream, and since September 1962 by Lake Holbrook, capacity, 7,990 acre-ft., located on Keys Creek, a tributary to the Sabine River 8.0 mi upstream. Flow may be slightly affected at times by discharge from a floodwater-retarding structure with a detention capacity of 3,570 acre-ft. This structure controls runoff from 9.7 mi<sup>2</sup> in the Mill Creek drainage basin.

AVERAGE DISCHARGE.--20 years (water years 1940-59) prior to regulation by Lake Tawakoni, 1,054 ft<sup>3</sup>/s (763,600 acre-ft./yr); 20 years (water years 1968-87) regulated, 856 ft<sup>3</sup>/s (620,200 acre-ft./yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 76,000 ft<sup>3</sup>/s Apr. 1, 1945 (gage height, 24.00 ft); maximum gage-height, 24.37 ft June 8, 1943; no flow at times.  
Maximum stage since at least 1890, that of June 8, 1943.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,910 ft<sup>3</sup>/s Mar. 21 at 0930 hours (gage height, 17.53 ft); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.8	13	1190	541	269	2710	1240	16	110	254	.43	.00
2	1.5	9.8	888	486	243	2840	1220	15	75	183	.30	.00
3	1.4	7.1	706	476	223	2830	1080	15	78	221	.23	.00
4	1.3	9.4	676	446	222	2710	868	24	157	298	.22	.00
5	5.0	30	576	468	209	2640	735	40	369	265	.21	.00
6	13	22	412	533	194	2630	543	43	394	211	.23	.00
7	19	18	317	409	199	2590	396	44	238	163	.23	.00
8	14	56	278	308	344	2520	373	45	134	118	.21	.00
9	11	66	667	343	364	2370	329	54	89	87	.11	.00
10	7.5	42	781	503	239	2150	275	58	97	61	.01	.00
11	6.5	33	641	717	203	1880	223	45	125	43	.00	.00
12	16	25	595	929	123	1620	194	35	219	32	.00	.00
13	32	20	460	973	84	1430	175	26	672	22	.00	.00
14	69	91	299	747	70	1270	147	20	1170	16	.00	.00
15	150	114	276	510	113	1090	213	20	1280	12	.02	.00
16	87	97	365	388	170	873	432	43	1350	38	.01	.02
17	42	61	369	349	232	2260	359	83	1310	62	.00	.05
18	23	38	447	688	456	4190	191	129	1260	29	.00	.02
19	15	26	600	1250	447	4770	116	112	1220	14	.00	.00
20	11	20	745	1350	495	5370	83	79	1220	7.7	.00	.00
21	7.4	16	905	1460	932	5680	65	52	1350	4.5	.00	.00
22	6.3	26	986	1480	1120	4620	53	37	1530	2.9	.00	.00
23	10	57	1030	1340	1230	3660	117	36	1570	2.1	.00	.00
24	32	89	1090	1150	1250	3310	214	42	1380	2.5	.00	.11
25	28	302	1100	981	1250	2890	122	42	1110	1.5	.00	.24
26	20	420	1100	763	1360	2500	58	39	834	.93	.00	.11
27	19	676	1070	679	1790	2250	42	71	657	.70	.00	.00
28	51	1000	951	548	2520	1990	32	57	566	.61	.00	.02
29	39	1300	801	393	---	1690	24	53	438	.58	.00	.48
30	24	1390	679	313	---	1460	19	60	301	.57	.00	.38
31	16	---	595	284	---	1310	---	107	---	.53	.00	---
TOTAL	779.7	6074.3	21595	21805	16351	82103	9938	1542	21303	2154.12	2.21	1.43
MEAN	25.2	202	697	703	584	2648	331	49.7	710	69.5	.071	0.48
MAX	150	1390	1190	1480	2520	5680	1240	129	1570	298	.43	.48
MIN	1.3	7.1	276	284	70	873	19	15	75	.53	.00	.00
AC-FT	1550	12050	42830	43250	32430	162900	19710	3060	42250	4270	4.4	2.8
CAL YR 1986	TOTAL	357393.75	MEAN	979	MAX	9380	MIN	1.1	AC-FT	708900		
WTR YR 1987	TOTAL	183648.25	MEAN	503	MAX	5680	MIN	.00	AC-FT	364300		

## SABINE RIVER MAIN STEM

08018500 SABINE RIVER NEAR MINEOLA, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: October 1967 to current year. Biochemical analyses: October 1973 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 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, 11,400 microsiemens June 3, 1971; minimum daily, 70 microsiemens Dec. 12, 1971.

WATER TEMPERATURE: Maximum daily, 36.0°C Aug. 21, 1984; minimum daily, 0.0°C Jan. 15, Feb. 1, 1979.

## EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 4,400 microsiemens Oct. 6; minimum daily, 143 microsiemens Mar. 18.

WATER TEMPERATURE: Maximum daily, 29.0°C on several days during July and August.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	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 (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03
OCT 20...	1400	11	661	7.10	15.0	7.2	72	1.0	66	25
JAN 26...	1400	756	300	7.30	6.0	11.4	92	0.7	78	14
MAR 16...	1330	892	290	7.50	14.0	9.0	89	0.8	84	10
MAY 04...	1400	46	505	7.00	21.0	5.6	64	1.5	110	54
JUN 22...	1500	1.0	174	6.90	26.0	6.0	75	1.8	55	1

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 WH WAT TOTAL 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)
OCT 20...	20	4.0	110	6	4.6	41	40	160	0.20
JAN 26...	24	4.4	23	1	3.8	64	29	24	0.20
MAR 16...	27	4.1	23	1	4.0	74	25	26	0.20
MAY 04...	31	7.9	50	2	4.2	56	56	82	0.20
JUN 22...	17	3.1	10	0.6	4.7	54	18	10	<0.10

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- PHORUS, TOTAL (MG/L AS P)
OCT 20...	9.8	370	0.250	0.050	0.300	0.120	0.68	0.80	0.090
JAN 26...	3.6	150	--	<0.010	<0.100	0.040	0.66	0.70	0.030
MAR 16...	2.0	160	--	<0.010	<0.100	0.040	0.86	0.90	0.070
MAY 04...	11	280	--	0.010	<0.100	0.080	0.72	0.80	0.090
JUN 22...	6.3	100	--	0.020	<0.100	0.080	1.2	1.3	0.190

## SABINE RIVER MAIN STEM

159

08018500 SABINE RIVER NEAR MINEOLA, TX--Continued

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1986 TO SEPTEMBER 1987

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. 1986	778.7	1100	601	1260	260	554	70	147	130
NOV. 1986	6074.3	401	220	3610	77	1260	36	597	68
DEC. 1986	21595	308	169	9880	57	3300	30	1720	55
JAN. 1987	21805	296	163	9590	54	3180	29	1690	53
FEB. 1987	16351	339	187	8240	63	2770	32	1420	60
MAR. 1987	82103	203	112	24800	36	8010	20	4460	37
APR. 1987	9938	342	188	5050	63	1690	33	876	61
MAY 1987	1542	707	388	1620	140	594	60	251	110
JUNE 1987	21303	248	136	7850	45	2590	24	1390	45
JULY 1987	2154.12	560	307	1790	110	659	48	276	88
AUG. 1987	2.21	637	350	2.1	130	0.7	56	0.3	100
SEPT 1987	1.43	1520	830	3.2	360	1.4	100	0.4	190
TOTAL	183647.74	**	**	73700	**	24600	**	12800	**
WTD.AVG.	503	270	149	**	50	**	26	**	48

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
EQUIVALENT MEAN

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3600	1070	270	306	369	226	276	508	1100	238	538	---
2	3610	933	259	287	359	199	281	517	749	259	560	---
3	3610	830	243	284	400	198	309	516	547	221	577	---
4	3600	708	231	299	337	197	273	517	654	374	606	---
5	3700	577	257	335	328	196	287	548	305	406	641	---
6	4400	782	274	311	488	197	319	642	466	880	715	---
7	3750	659	350	327	358	203	315	898	359	1240	718	---
8	2270	549	437	332	340	209	323	960	304	1280	749	---
9	1640	1090	319	353	402	211	340	1180	319	1070	791	---
10	1370	990	543	255	382	225	347	1110	313	860	821	---
11	1890	821	392	423	426	244	401	886	286	725	---	---
12	1300	719	272	255	448	255	497	770	398	518	---	---
13	1660	656	299	263	577	252	448	774	442	455	---	---
14	1020	923	337	292	612	272	441	702	315	506	---	---
15	950	513	336	334	617	287	458	665	237	512	850	---
16	800	561	452	364	641	293	510	728	167	475	875	880
17	750	494	826	386	590	148	391	335	213	453	---	835
18	720	483	429	365	360	143	459	401	184	450	---	904
19	680	506	464	345	357	174	450	703	270	332	---	918
20	670	508	384	267	288	158	513	646	165	364	---	---
21	640	496	247	241	560	156	488	619	149	328	---	---
22	610	469	250	238	214	182	547	604	172	381	---	---
23	440	442	239	247	463	205	586	614	199	399	---	---
24	320	394	251	249	279	217	474	482	223	386	---	1210
25	600	830	251	252	444	229	292	459	244	367	---	1530
26	340	820	253	287	326	245	314	596	252	353	---	1720
27	410	540	251	306	210	227	361	779	305	416	---	1740
28	870	242	259	337	211	225	442	960	278	440	---	1700
29	957	226	261	375	---	227	474	940	256	473	---	1630
30	1730	219	282	394	---	254	466	893	261	498	---	1570
31	1300	---	345	401	---	265	---	808	---	530	---	---
MEAN	1620	635	331	313	407	217	403	702	338	522	703	1330

## SABINE RIVER MAIN STEM

08018500 SABINE RIVER NEAR MINEOLA, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25.0	13.0	---	8.0	9.0	10.0		---	25.0	---	---	---
2	25.0	15.0	10.0	---	---	10.0		---	25.0	---	29.0	---
3	26.0	15.0	10.0	9.0	---	11.0		---	25.0	---	29.0	---
4	25.0	16.0	9.0	6.0	---	11.0		---	---	---	29.0	---
5	23.0	15.0	9.0	6.0	---	10.0		---	23.0	---	29.0	---
6	20.0	13.0	9.0	8.0	---	12.0		---	24.0	---	29.0	---
7	13.0	14.0	---	8.0	---	11.0		---	25.0	---	29.0	---
8	19.0	15.0	11.0	8.0	---	12.0		---	26.0	---	---	---
9	19.0	14.0	10.0	8.0	---	14.0		---	25.0	---	29.0	---
10	19.0	14.0	9.0	7.0	---	12.0		---	24.0	---	29.0	---
11	19.0	12.0	8.0	6.0	---	12.0		---	24.0	28.0	---	---
12	17.0	11.0	8.0	7.0	---	12.0		---	25.0	28.0	---	---
13	15.0	---	7.0	5.0	---	12.0		---	25.0	28.0	---	---
14	14.0	---	7.0	6.0	---	12.0		---	26.0	27.0	---	---
15	14.0	---	9.0	8.0	---	12.0		---	25.0	---	---	---
16	17.0	10.0	9.0	9.0	---	14.0		---	25.0	26.0	---	25.0
17	13.0	12.0	10.0	9.0	---	13.0		---	26.0	27.0	---	27.0
18	14.0	12.0	9.0	8.0	---	15.0		---	25.0	27.0	---	26.0
19	14.0	12.0	9.0	6.0	---	15.0		---	26.0	28.0	---	---
20	14.0	13.0	8.0	5.0	---	15.0		---	25.0	27.0	---	---
21	14.0	12.0	8.0	5.0	---	16.0		25.0	27.0	26.0	---	---
22	15.0	11.0	9.0	6.0	---	17.0		24.0	27.0	28.0	---	---
23	16.0	13.0	9.0	5.0	---	17.0		25.0	27.0	28.0	---	---
24	17.0	12.0	9.0	7.0	---	16.0		25.0	26.0	27.0	---	19.0
25	15.0	10.0	9.0	5.0	---	13.0		24.0	26.0	---	---	20.0
26	14.0	10.0	9.0	6.0	---	13.0		25.0	27.0	27.0	---	22.0
27	13.0	---	8.0	---	---	12.0		25.0	26.0	27.0	---	25.0
28	14.0	---	8.0	---	---	13.0		25.0	26.0	28.0	---	23.0
29	14.0	---	8.0	---	---	12.0		23.0	26.0	28.0	---	23.0
30	14.0	---	9.0	---	---	11.0		23.0	26.0	28.0	---	19.0
31	14.0	---	8.0	8.0	---	10.0		---	---	29.0	---	---
MEAN	17.0	13.0	9.0	7.0	9.0	12.5		24.5	25.5	27.5	29.0	23.0

## SABINE RIVER BASIN

161

08018730 BURKE CREEK NEAR YANTIS, TX

LOCATION.--Lat 32°59'26", long 95°37'18", Hopkins County, Hydrologic Unit 12010003, at downstream side of highway embankment, 7 ft to left of left end of main bridge on Farm Road 1567, 100 ft upstream from Cane Branch, 1.2 mi upstream from Brushy Branch, and 5.0 mi northwest of Yantis.

DRAINAGE AREA.--33.1 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1978 to current year.

GAGE.--Water-stage recorder. Datum of gage is 400.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records fair. There are no known diversions or return effluents in the basin above gage. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--9 years, 20.4 ft<sup>3</sup>/s (8.37 in/yr), 14,780 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,170 ft<sup>3</sup>/s Dec. 18, 1984 (gage height, 12.21 ft); no flow most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1943, 17.5 ft June 6, 1943, from information by State Department of Highways and Public Transportation.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Mar. 17	1030	*3,180	*11.59	June 13	1400	2,060	10.86

Minimum discharge, no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.97	6.4	7.1	7.2	47	12	4.2	47	3.9	1.4	.00
2	.00	1.0	6.5	7.2	12	13	9.8	4.8	8.3	5.1	1.3	.00
3	.00	1.1	6.2	29	10	8.2	8.6	5.2	5.9	7.4	1.2	.00
4	.00	3.5	6.1	28	8.6	6.7	8.1	29	5.1	5.7	1.1	.00
5	.00	12	6.1	14	7.8	6.4	7.8	13	4.2	4.9	.97	.00
6	.00	6.3	6.0	12	7.6	6.4	7.9	6.6	3.7	4.5	1.0	.00
7	.00	4.5	6.4	10	8.0	6.1	7.6	5.2	3.4	4.2	1.0	.00
8	.00	4.0	10	11	8.0	6.1	7.4	4.5	3.2	4.6	.94	.00
9	.00	4.2	10	146	7.4	5.7	7.2	4.3	3.1	4.5	.86	.00
10	.0	6.0	8.9	84	7.0	5.3	7.1	4.4	11	4.3	.75	.00
11	.23	41	7.6	18	7.4	5.0	7.0	3.9	14	4.3	.71	.00
12	.87	10	7.3	13	7.8	4.8	7.0	3.7	12	4.1	.65	.00
13	2.3	6.7	8.1	12	7.7	4.7	18	3.5	673	3.8	.54	.00
14	1.3	6.2	7.9	11	8.4	4.9	20	3.3	171	3.6	.47	.00
15	.81	6.0	23	11	22	5.3	8.7	3.8	33	3.5	.45	.00
16	.61	5.9	23	11	16	6.0	7.2	147	98	3.5	.40	.00
17	.49	6.1	15	16	9.9	1510	6.7	11	18	3.4	.26	.00
18	.36	6.2	72	211	7.7	219	6.5	6.4	124	2.9	.20	14
19	.28	6.1	46	56	7.1	30	5.8	4.8	14	2.5	.09	19
20	.23	8.8	17	17	121	21	6.8	4.2	55	2.3	.04	1.6
21	.19	9.0	12	12	90	18	5.2	3.9	12	2.2	.00	.64
22	.17	88	10	10	22	16	4.9	3.5	7.3	2.1	.00	.29
23	7.4	34	37	7.9	14	36	4.8	3.3	6.0	2.1	.00	.14
24	13	13	28	7.9	102	24	4.7	3.1	5.8	2.0	.00	.03
25	6.0	248	14	7.8	55	12	4.5	3.1	6.0	2.0	.00	.00
26	3.8	116	11	7.3	126	9.8	4.3	3.6	5.2	1.8	.00	.00
27	2.7	14	9.1	6.9	173	9.5	4.2	3.4	4.8	1.7	.00	.00
28	1.9	9.2	8.1	7.4	109	9.1	4.4	3.2	4.5	1.7	.00	.49
29	1.4	7.2	7.8	7.9	---	37	4.3	11	4.5	1.6	.00	5.2
30	1.2	6.8	7.6	7.7	---	45	4.4	7.3	4.2	1.5	.00	1.4
31	1.0	---	7.3	6.9	---	16	---	6.6	---	1.4	.00	---
TOTAL	46.24	691.77	451.4	814.0	989.6	2154.0	222.9	324.8	1367.2	103.1	14.33	42.79
MEAN	1.49	23.1	14.6	26.3	35.3	69.5	7.43	10.5	45.6	3.33	.46	1.43
MAX	13	248	72	211	173	1510	20	147	673	7.4	1.4	19
MIN	.00	.97	6.0	6.9	7.0	4.7	4.2	3.1	3.1	1.4	.00	.00
AC-FT	92	1370	895	1610	1960	4270	442	644	2710	204	28	85
CAL YR 1986	TOTAL 8605.28	MEAN 23.6	MAX 836	MIN .00	AC-FT 17070							
WTR YR 1987	TOTAL 7222.07	MEAN 19.8	MAX 1510	MIN .00	AC-FT 14320							

## 08018800 LAKE FORK RESERVOIR NEAR QUITMAN, TX

LOCATION.--Lat 32°48'48", long 95°31'40", Wood County, Hydrologic Unit 12010003, in room at left end of gated concrete spillway structure of Lake Fork Dam on Lake Fork Creek, 2,000 ft upstream from bridge on State Highway 182, 2.3 mi upstream from Alum Branch, and 4.4 mi west-northwest of the county courthouse in Quitman.

DRAINAGE AREA.--490 mi<sup>2</sup>.

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

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

REMARKS.--The lake is formed by a rolled earthfill dam 12,660 ft long, including a 260-foot gated concrete spillway. The outlet works consist of two 5- by 8-foot low flow sluice gates, five 40- by 20-foot tainter gates, and two 5- by 6-foot sluice gates that open into a wet well where there are two 36-inch and one 10-inch valve-controlled and metered-outlet pipes. Deliberate impoundment began June 29, 1979, and closure of the dam was completed in January 1980. The lake was built for water conservation and is owned by the Sabine River Authority. No known diversions were made from the lake this year. Flow is affected at times by discharge from the flood-detention pools of 21 floodwater-retarding structures with a combined detention capacity of 20,270 acre-ft. These structures control runoff 60 mi<sup>2</sup> above the lake. 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.....	419.5	1,270,000
Top of tainter gates.....	405.0	732,900
Crest of gated spillway.....	385.0	291,900
Invert of upper sluice gate.....	383.0	260,400
Invert of lower sluice gate.....	360.5	43,120
Invert of sluice gate in two center pieces.....	360.0	40,620

COOPERATION.--Area and capacity tables were prepared and provided by URS/ Forest and Cotton, Inc., Consulting Engineers for the Sabine River Authority. Observed elevations for the period Oct. 31, 1979, to Jan. 31, 1980, were provided by the Sabine River Authority.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 703,900 acre-ft Feb. 6, 1986 (elevation, 400.00 ft); minimum observed, 46,140 acre-ft Dec. 11-14, 1979 (elevation, 361.10 ft).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 686,800 acre-ft June 25 at 1400 hours (elevation 403.39 ft); minimum, 627,600 acre-ft Oct. 21, 22 (elevation, 401.21).

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

401.0	622,100	403.0	675,800
402.0	648,500	404.0	703,900

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	628700	630300	652400	649900	649100	666300	650200	643800	653500	682300	672500	654300
2	628200	630300	651300	648500	650200	661400	650200	643200	655400	685700	672000	653700
3	628200	629500	650700	650700	650200	659700	649900	644000	655600	685700	671500	653200
4	628900	632100	650500	649400	650200	658100	649600	646700	654800	685400	670900	652600
5	627900	631100	650200	649400	650700	656500	649900	646700	654500	684500	671500	652100
6	629200	630500	650200	649100	651300	654800	649400	646700	654000	684300	670900	651500
7	628700	630800	651000	649900	649900	653200	649400	646400	653500	683700	670400	651300
8	629500	630800	652900	649600	650200	651000	648800	646200	653500	683400	669800	651000
9	629200	630300	652900	652600	649600	650500	648500	645600	654000	682800	669300	650200
10	628900	633200	652600	654800	649400	650500	648800	645400	655900	682300	668700	651800
11	631300	631900	652900	655900	649600	649600	648000	645100	659500	682000	668200	651500
12	632100	633500	651800	655400	649600	649400	648000	644800	663000	681400	667400	651800
13	630500	631300	651500	655600	649400	649400	650200	644600	668500	681700	666500	652100
14	630300	630500	652400	655600	649900	649100	648500	644600	671500	680600	666000	651800
15	630000	630300	653700	655900	652900	649100	648500	645900	673600	680000	665500	652600
16	629700	630500	654300	656200	651500	656700	648300	647800	675000	679500	664600	652400
17	629200	630300	654800	660000	651300	673900	648300	648000	678300	678900	663800	652100
18	628700	630500	657500	661900	650200	670600	648000	648000	682800	678600	663000	655400
19	628700	630300	658600	661600	650200	665500	647800	648000	684000	678300	662500	655400
20	628400	630300	658400	661100	656200	662500	647500	647800	685700	677800	661900	655100
21	627600	629700	657300	662200	658900	658900	647500	647500	685700	677200	661100	654500
22	628400	632900	656700	658400	659700	654800	646700	648800	685400	676700	660800	654000
23	631600	634800	656700	657300	660500	654000	646700	649900	685700	676400	660000	653200
24	632100	635300	655900	657300	663000	652900	646200	650200	686200	676100	659200	652600
25	631900	641100	655400	654800	664400	651000	645900	650700	686200	675800	658400	652400
26	631600	647200	654000	653500	667600	650200	645600	650200	685100	675500	657800	651800
27	631100	622600	652900	652400	670600	649400	645400	649900	684500	675300	657300	651500
28	630800	650200	651800	651300	670400	650500	644800	651000	683700	674700	656500	652600
29	630800	650700	650500	650200	---	651500	644600	651800	683100	674200	655400	651800
30	630500	651000	649600	649400	---	650700	644000	652100	682800	673600	655400	651000
31	630300	---	649400	649600	---	650500	---	652900	---	673100	654800	---
MAX	632100	651000	658600	662200	670600	673900	650200	652900	686200	685700	672500	655400
MIN	627600	622600	649400	648500	649100	649100	644000	643200	653500	673100	654800	650200
(↑)	401.31	402.09	402.03	402.04	402.80	402.07	401.83	402.16	403.25	402.90	402.23	402.09
(Φ)	+1400	+20700	-1600	+200	+20800	-19900	-6500	+8900	+29900	-9700	-18300	-3800

CAL YR 1986 MAX 701700 MIN 622600 (Φ) -16900  
WTR YR 1987 MAX 686200 MIN 622600 (Φ) +22100

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

## 08019000 LAKE FORK CREEK NEAR QUITMAN, TX

LOCATION.--Lat 32°45'47", long 95°27'46", Wood County, Hydrologic Unit 12010003, at downstream side of highway embankment near left end of bridge on State Highway 37, 0.3 mi downstream from Dry Creek, 2.4 mi south of Quitman, and 23.4 mi upstream from mouth.

DRAINAGE AREA.--585 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1924 to April 1926, February 1939 to current year. Discharge from some high-water periods in 1925-26 published in WSP 1342. Monthly discharge only for some periods, published in WSP 1312. Prior to October 1961, published as Lake Fork Sabine River near Quitman.

REVISED RECORDS.--WSP 1732: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 317.42 ft above National Geodetic Vertical Datum of 1929. From June 27, 1924, to Apr. 30, 1926, a nonrecording gage was located at site 1,000 ft downstream at same datum. Prior to Sept. 5, 1978, nonrecording gage at present site and datum.

REMARKS.--Records good. Since May 1962, flow from 31.0 mi<sup>2</sup> is controlled by Lake Quitman (capacity 7,440 acre-ft) on Dry Creek, a tributary above this station and below Lake Fork Reservoir. Construction of Lake Fork Dam and Reservoir (capacity, 675,800 acre-ft), located about 5 mi upstream from station, began in 1975. Deliberate impoundment began June 29, 1979, and the dam was completed in January 1980. Lake Fork Reservoir controls runoff from 490 mi<sup>2</sup>. The city of Quitman discharged a small amount of sewage effluent into a tributary above this station.

AVERAGE DISCHARGE.--41 years (water years 1925, 1940-79), prior to regulation by Lake Fork Reservoir, 432 ft<sup>3</sup>/s (313,000 acre-ft/yr); 8 years (water years 1980-87) regulated, 223 ft<sup>3</sup>/s (161,600 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 75,600 ft<sup>3</sup>/s Mar. 30, 1945 (gage height, 29.85 ft, from flood-mark), from rating curve extended above 49,000 ft<sup>3</sup>/s; no flow at times most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in July 1895 reached a stage of about 25.9 ft, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 8,550 ft<sup>3</sup>/s Mar. 18 at 1600 hours (gage height, 18.31 ft); minimum daily, 9.8 ft<sup>3</sup>/s Oct. 9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	23	29	55	54	3180	52	18	25	116	14	51
2	11	23	29	44	49	2810	47	17	26	91	13	31
3	11	23	30	44	49	2640	43	17	22	198	13	18
4	11	24	30	47	47	1270	41	20	63	236	13	16
5	12	25	31	45	45	1000	38	23	39	52	14	14
6	12	25	31	42	44	906	37	19	22	29	14	14
7	14	25	31	41	43	871	35	17	17	23	14	14
8	11	26	32	40	42	816	34	16	16	22	14	14
9	9.8	26	76	58	40	775	32	15	15	24	14	14
10	11	26	68	119	38	417	31	15	22	19	14	15
11	11	26	41	94	37	341	31	15	49	18	14	15
12	12	26	35	73	37	312	29	15	225	16	14	15
13	13	27	32	63	37	166	29	14	327	15	32	16
14	13	27	30	57	37	43	31	14	273	15	54	15
15	13	28	41	54	52	32	32	16	109	14	56	14
16	14	29	76	52	74	24	29	19	48	14	56	13
17	14	29	60	50	63	903	27	19	43	15	57	11
18	15	30	65	e100	54	7230	26	19	50	15	57	11
19	15	29	128	e300	47	7350	25	17	46	14	57	11
20	15	29	455	e606	119	2790	24	16	35	14	56	11
21	19	30	604	e606	248	2090	24	16	33	13	56	10
22	23	34	634	e606	209	2010	22	16	28	13	55	10
23	24	39	650	e606	138	1980	22	36	25	13	55	10
24	25	36	661	e606	301	1620	21	38	29	16	55	10
25	23	45	655	e606	564	1110	20	79	32	15	54	10
26	21	58	641	e606	595	914	20	49	25	14	54	10
27	21	38	632	e606	640	576	19	21	21	14	54	10
28	21	32	627	606	805	126	19	16	18	13	53	11
29	21	29	624	600	---	65	19	22	17	13	53	11
30	21	29	606	575	---	68	19	28	21	13	52	11
31	22	---	231	210	---	63	---	23	---	13	52	---
TOTAL	489.8	896	7915	8217	4508	44498	878	685	1721	1110	1183	436
MEAN	15.8	29.9	255	265	161	1435	29.3	22.1	57.4	35.8	38.2	14.5
MAX	25	58	661	606	805	7350	52	79	327	236	57	51
MIN	9.8	23	29	40	37	24	19	14	15	13	13	10
AC-FT	972	1780	15700	16300	8940	88260	1740	1360	3410	2200	2350	865

CAL YR 1986 TOTAL 165025.3 MEAN 452 MAX 11100 MIN 7.9 AC-FT 327300  
WTR YR 1987 TOTAL 72536.8 MEAN 199 MAX 7350 MIN 9.8 AC-FT 143900

e Estimated.

08019000 LAKE FORK CREEK NEAR QUITMAN, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: December 1961 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: November 1967 to current year.

WATER TEMPERATURE: December 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, 2,800 microsiemens Oct. 5, 1972; minimum daily, 37 microsiemens Dec. 11, 1971.

WATER TEMPERATURE: Maximum daily, 38.0°C Sept. 6, 1987; minimum daily, 0.0°C Dec. 23-27, 1983.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 784 microsiemens May 22; minimum daily, 192 microsiemens Aug. 26.

WATER TEMPERATURE: Maximum daily, 38.0°C Sept. 6; minimum daily, 6.0°C Jan. 9, 10, 20, 21.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	HARD- NESS (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)	
NOV 05...	1335	25	211	57	6	14	5.3	16	
MAY 06...	1616	21	408	85	41	20	8.4	42	
JUN 24...	1511	30	378	75	44	18	7.4	39	
AUG 20...	1618	56	197	60	9	15	5.5	14	
DATE		SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WH WAT TOTAL 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)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)
NOV 05...	1	6.3	51	13	23	0.10	2.2	110	
MAY 06...	2	6.0	44	47	64	0.20	9.1	220	
JUN 24...	2	5.3	31	47	63	0.20	10	210	
AUG 20...	0.8	6.9	51	17	19	0.20	1.8	110	

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1986 TO SEPTEMBER 1987

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. 1986	489.8	262	145	192	38	50	32	42	60
NOV. 1986	896	238	132	319	34	82	29	69	55
DEC. 1986	7915	221	122	2610	31	672	27	569	51
JAN. 1987	8217	252	139	3090	37	821	30	670	57
FEB. 1987	4508	342	189	2300	53	646	41	493	76
MAR. 1987	44498	262	145	17500	38	4610	32	3790	60
APR. 1987	878	477	263	624	80	190	55	131	100
MAY 1987	685	470	259	480	79	146	54	101	100
JUNE 1987	1721	363	201	933	57	263	43	199	81
JULY 1987	1110	323	179	536	49	148	38	115	73
AUG. 1987	1183	207	115	367	29	92	25	80	48
SEPT 1987	436	245	135	160	35	41	30	35	57
TOTAL	72536.8	**	**	29100	**	7760	**	6290	**
WTD.AVG.	199	268	148	**	40	**	32	**	61

## SABINE RIVER BASIN

165

08019000 LAKE FORK CREEK NEAR QUITMAN, TX--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
EQUIVALENT MEAN

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	269	210	240	350	420	200	480	351	489	219	258	230
2	275	205	242	361	419	195	500	400	450	250	257	237
3	281	206	241	396	414	210	484	429	424	320	255	235
4	282	207	240	398	420	215	480	434	374	401	256	240
5	281	215	239	430	428	243	478	490	360	389	255	233
6	281	223	238	457	435	275	480	514	376	391	257	237
7	289	222	239	475	440	300	500	518	350	360	257	235
8	288	220	245	500	445	330	532	475	326	350	255	236
9	290	220	588	550	450	355	510	410	288	348	250	229
10	288	222	290	646	460	380	500	370	267	346	256	240
11	289	223	287	500	465	410	494	341	250	349	252	257
12	290	221	292	418	469	435	492	325	272	345	255	256
13	289	221	292	398	470	465	482	370	350	344	236	255
14	289	216	286	390	470	490	500	400	385	333	197	254
15	290	215	350	385	468	498	543	410	403	325	198	255
16	285	216	549	380	458	501	528	409	405	315	197	258
17	282	216	500	375	465	430	515	425	390	305	195	251
18	273	214	475	260	439	241	500	430	380	300	196	250
19	270	215	208	240	437	242	495	435	400	290	195	250
20	265	219	212	218	425	250	488	550	417	287	194	250
21	257	225	207	216	400	260	490	650	413	283	193	250
22	255	250	205	209	436	275	470	784	387	284	194	247
23	250	307	202	217	450	289	445	625	384	286	193	249
24	247	310	204	219	367	310	410	600	400	285	194	257
25	248	275	203	218	320	325	400	458	428	286	195	259
26	247	260	204	213	300	350	390	430	410	287	192	257
27	247	261	202	208	275	370	375	402	400	288	195	258
28	240	261	195	204	247	385	359	408	385	271	197	252
29	230	260	197	206	---	400	356	483	374	287	200	252
30	225	261	210	260	---	447	355	478	371	268	215	243
31	219	---	250	427	---	473	---	500	---	260	235	---
MEAN	268	233	275	346	418	340	468	461	377	311	222	247

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30.0	---	10.0	9.0	9.0	---	15.0	19.0	21.0	27.0	31.0	34.0
2	30.0	15.0	9.0	10.0	10.0	12.0	13.0	19.0	22.0	27.0	32.0	33.0
3	29.0	14.0	10.0	10.0	11.0	13.0	12.0	17.0	22.0	28.0	33.0	34.0
4	28.0	16.0	11.0	9.0	10.0	13.0	11.0	17.0	23.0	27.0	32.0	34.0
5	28.0	17.5	10.0	8.0	11.0	13.0	12.0	---	22.0	27.0	33.0	35.0
6	25.0	17.0	11.0	7.0	11.0	14.0	12.0	18.0	23.0	27.0	33.0	38.0
7	23.0	18.0	11.0	7.0	12.0	13.0	12.0	17.0	23.0	28.0	33.0	33.0
8	22.0	18.0	9.0	7.0	11.0	14.0	13.0	18.0	---	28.0	32.0	33.0
9	21.0	18.0	8.0	6.0	12.0	14.0	14.0	18.0	---	29.0	32.0	32.0
10	20.0	17.0	9.0	6.0	13.0	15.0	14.0	18.0	22.0	29.0	32.0	32.0
11	21.0	16.0	10.0	7.0	13.0	15.0	---	18.0	22.0	29.0	35.0	32.0
12	20.0	18.0	9.0	8.0	12.0	14.0	18.0	19.0	23.0	29.0	33.0	31.0
13	19.0	12.0	10.0	7.0	13.0	13.0	16.0	19.0	24.0	29.0	33.0	32.0
14	18.0	11.0	11.0	8.0	12.0	14.0	16.0	20.0	24.0	30.0	33.0	31.0
15	18.0	10.5	12.0	8.0	13.0	15.0	17.0	19.0	25.0	30.0	34.0	30.0
16	18.0	11.0	11.0	8.0	---	15.0	17.0	20.0	25.0	30.0	34.0	30.0
17	17.0	12.0	10.0	7.0	11.0	15.0	18.0	20.0	26.0	30.0	33.0	29.0
18	18.0	11.5	10.0	7.0	12.0	16.0	17.0	20.0	26.0	30.0	34.0	28.0
19	17.0	12.0	11.0	7.0	11.0	16.0	18.0	19.0	20.0	30.0	34.0	28.0
20	16.0	13.0	10.0	6.0	11.0	16.0	17.0	19.0	26.0	31.0	34.0	28.0
21	16.0	12.5	9.0	6.0	12.0	16.0	17.0	20.0	27.0	31.0	34.0	27.0
22	15.0	11.0	10.0	7.0	11.0	17.0	18.0	20.0	27.0	31.0	35.0	26.0
23	14.0	10.0	9.0	7.0	10.0	17.0	17.0	21.0	27.0	32.0	35.0	25.0
24	15.0	9.5	10.0	8.0	10.0	17.0	18.0	20.0	24.0	33.0	35.0	34.0
25	16.0	10.0	11.0	7.0	10.0	16.0	18.0	19.0	28.0	33.0	35.0	24.0
26	15.0	11.0	10.0	---	11.0	15.0	18.0	20.0	27.0	32.0	30.0	23.0
27	16.0	9.5	11.0	---	11.0	14.0	19.0	20.0	27.0	33.0	35.0	23.0
28	14.0	10.0	10.0	9.0	11.0	14.0	19.0	20.0	27.0	33.0	34.0	22.0
29	16.0	11.0	9.0	9.0	---	13.0	19.0	19.0	27.0	32.0	35.0	22.0
30	16.0	11.0	9.0	8.0	---	13.0	20.0	19.0	27.0	33.0	34.0	21.0
31	16.0	---	8.0	8.0	---	14.0	---	19.0	---	32.0	33.0	---
MEAN	19.5	13.0	10.0	7.5	11.5	14.5	16.0	19.0	24.5	30.0	33.5	29.5

## SABINE RIVER BASIN

08019500 BIG SANDY CREEK NEAR BIG SANDY, TX

LOCATION.--Lat 32°36'14", long 95°05'29", Upshur County, Hydrologic Unit 12010002, on downstream side of highway embankment near left end of bridge on State Highway 155, 0.5 mi upstream from St. Louis Southwestern Railway Lines bridge, 1.6 mi northeast of Big Sandy, and 6.5 mi upstream from mouth.

DRAINAGE AREA.--231 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 1732: 1941(M), 1945-46, 1956, drainage area. WSP 1922: 1944(M), 1945-46.

GAGE.--Water-stage recorder. Datum of gage is 278.38 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 5, 1940, nonrecording gage, and Oct. 5, 1940, to Nov. 26, 1951, water-stage recorder at site 1.3 mi upstream at datum 3.00 ft higher.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Since June 1962, streamflow has been affected somewhat by the flood-detention pool at Lake Winnboro.

AVERAGE DISCHARGE.--48 years, 177 ft<sup>3</sup>/s (128,200 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,000 ft<sup>3</sup>/s Mar. 31, 1945 (gage height, 24.1 ft, from floodmark, present site and datum), from rating curve extended above 13,000 ft<sup>3</sup>/s; minimum 3.5 ft<sup>3</sup>/s July 24, Aug. 7-8, 1984. Maximum stage since at least 1875, that of Mar. 31, 1945, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Mar. 3	1430	1,520	13.02	Mar. 18	1830	*2,370	*14.45

Minimum daily discharge, 4.7 ft<sup>3</sup>/s Aug. 25.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	27	128	121	122	1110	172	e56	75	e60	e11	28
2	13	26	105	117	145	1430	169	e54	72	e100	e10	18
3	13	25	90	123	143	1450	170	e52	63	e185	e9.5	15
4	12	43	83	135	145	1160	161	e51	63	e210	e9.0	12
5	17	115	93	129	147	800	154	e49	59	e180	e8.5	11
6	29	122	115	132	140	527	151	e70	42	e120	e8.1	10
7	59	98	118	144	135	380	147	64	29	e90	e7.8	10
8	45	72	169	145	130	297	142	56	21	e70	e7.5	10
9	32	59	417	154	125	242	135	52	14	e59	e7.2	10
10	26	54	577	175	121	210	132	46	20	e45	e6.9	11
11	24	52	354	171	118	190	e126	40	45	e35	e6.6	20
12	25	52	282	179	116	176	e125	38	84	e32	e6.3	27
13	32	52	231	192	116	164	e120	38	146	e27	e6.0	34
14	34	50	212	200	117	155	e110	31	194	e23	e7.4	48
15	26	47	227	183	160	150	e105	27	220	e19	6.0	39
16	23	45	265	154	213	148	e97	50	289	e15	5.8	40
17	23	46	243	144	215	860	e93	83	361	e13	5.8	46
18	23	47	244	173	221	1840	e88	79	303	e11	5.7	37
19	21	45	275	189	220	1920	e85	75	202	e9.7	5.2	28
20	19	44	269	204	255	1860	e80	63	158	e9.2	5.5	24
21	19	43	251	228	356	1250	e78	53	166	e8.7	5.5	20
22	21	66	228	243	314	913	e76	39	165	e8.1	5.7	17
23	30	109	230	238	323	651	e75	53	120	e7.8	5.7	15
24	96	142	232	194	410	507	e72	153	e85	e7.5	4.9	16
25	96	182	206	162	528	390	e69	147	e61	e8.5	4.7	17
26	82	227	184	143	515	313	e65	143	e40	e10	5.4	17
27	73	209	171	136	658	270	e62	127	e31	e17	5.5	16
28	67	196	159	128	838	241	e61	118	e27	e20	5.5	16
29	48	177	145	126	---	215	e60	109	e27	e16	5.8	23
30	35	158	133	124	---	194	e58	92	e37	e13	7.5	41
31	30	---	126	120	---	181	---	80	---	e12	27	---
TOTAL	1107	2630	6562	5006	7046	20194	3238	2188	3219	1441.5	229.0	676
MEAN	35.7	87.7	212	161	252	651	108	70.6	107	46.5	7.39	22.5
MAX	96	227	577	243	838	1920	172	153	361	210	27	48
MIN	12	25	83	117	116	148	58	27	14	7.5	4.7	10
AC-FT	2200	5220	13020	9930	13980	40050	6420	4340	6380	2860	454	1340

CAL YR 1986 TOTAL 48399.0 MEAN 133 MAX 2490 MIN 7.5 AC-FT 96000  
WTR YR 1987 TOTAL 53536.4 MEAN 147 MAX 1920 MIN 4.7 AC-FT 106200

e Estimated.

## SABINE RIVER MAIN STEM

167

08020000 SABINE RIVER NEAR GLADEWATER, TX

LOCATION.--Lat 32°31'37", Long 94°57'36", Gregg County, Hydrologic Unit 12010002, on right bank 46 ft downstream from bridge on U.S. Highway 271, 0.4 mi downstream from Glade Creek, 1.2 mi southwest of Gladewater, and at mile 397.5.

DRAINAGE AREA.--2,791 mi<sup>2</sup>.

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

REVISED RECORDS.--WSP 1732: Drainage area. WDR TX-73-1: 1972.

GAGE.--Water-stage recorder. Datum of gage is 243.85 ft above National Geodetic Vertical Datum of 1929 (Texas Reclamation Department bench mark based on Geological Survey datum). Prior to Oct. 13, 1933, nonrecording gage at same site and datum.

REMARKS.--Records fair. Flow is partially regulated by Lake Tawakoni (station 08017400), capacity 936,200 acre-ft, by Lake Fork Creek Reservoir (station 08018800), capacity 675,800 acre-ft, and five tributary reservoirs with a combined capacity of 42,370 acre-ft. There are many diversions above station for oilfield operations and municipal supply. Rain gage and gage-height telemeter at station.

AVERAGE DISCHARGE.--28 years (water years 1933-60) prior to regulation by Lake Tawakoni, 2,012 ft<sup>3</sup>/s (1,458,000 acre-ft/yr); 27 years (water years 1961-87) regulated, 1,636 ft<sup>3</sup>/s (1,185,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 138,000 ft<sup>3</sup>/s Apr. 2, 1945 (gage height, 44.16 ft, from flood-mark), from rating curve extended above 91,000 ft<sup>3</sup>/s; minimum, 5.6 ft<sup>3</sup>/s Aug. 16, 1939. Maximum stage since at least 1892, that of Apr. 2, 1945.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in May 1914 reached a stage of about 41.7 ft (discharge, 85,900 ft<sup>3</sup>/s), from information by local resident.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 9,640 ft<sup>3</sup>/s Mar. 26 at 1000 hours (gage height, 31.34 ft); minimum, 37 ft<sup>3</sup>/s Aug. 17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	74	170	1410	1910	1360	5110	6600	237	e573	685	81	116
2	68	159	1520	1720	1290	5310	5930	226	e549	572	77	123
3	60	148	1530	1470	1130	5500	5110	226	e525	587	71	116
4	54	277	1390	1230	911	5700	4110	252	e481	666	65	104
5	50	784	1150	1110	795	5900	2920	275	e496	716	60	95
6	69	826	1000	1020	741	6100	2000	309	e635	781	61	77
7	129	952	918	996	719	6270	1480	326	e744	776	64	62
8	223	701	1170	1000	693	6400	1140	308	752	666	55	52
9	239	462	2770	982	677	6430	936	287	491	533	51	47
10	207	360	3900	1090	737	6360	844	274	378	423	50	45
11	178	328	3940	1200	758	6230	786	256	375	352	50	48
12	180	310	3500	1260	692	6020	736	256	494	301	46	55
13	177	285	2660	1330	636	5760	691	296	686	248	42	92
14	170	267	1870	1440	571	5430	643	e399	949	206	42	96
15	181	265	1660	1510	766	4920	591	385	1370	178	40	134
16	172	253	1920	1410	1140	4160	551	366	1730	160	40	178
17	169	273	1960	1190	1270	e4170	570	450	2030	148	37	156
18	195	291	1920	1140	1160	5450	703	e545	2290	144	50	193
19	170	269	1970	1340	1010	5990	692	579	2300	167	72	153
20	139	244	1960	1630	1450	6290	581	552	2190	177	76	108
21	114	223	1890	1890	2470	6560	494	507	2130	156	77	87
22	102	335	1820	2120	2930	6930	418	466	2010	136	77	75
23	153	483	2010	2320	2900	7550	372	436	1890	125	77	67
24	301	661	2410	2480	2890	8480	340	498	1840	160	78	60
25	379	878	2640	2540	3150	9290	340	528	1870	158	77	56
26	411	1240	2690	2500	3570	9580	418	550	1890	152	74	53
27	344	1350	2580	2360	4240	9430	407	617	1800	131	74	53
28	272	1280	2450	2120	4770	9020	341	624	1480	116	74	57
29	225	1230	2340	1890	---	8350	282	606	1090	107	75	66
30	190	1290	2220	1690	---	7720	253	582	854	96	83	61
31	180	---	2070	1500	---	7160	---	577	---	88	94	---
TOTAL	5575	16594	65238	49388	45426	203570	41279	12795	36892	9911	1990	2685
MEAN	180	553	2104	1593	1622	6567	1376	413	1230	320	64.2	89.5
MAX	411	1350	3940	2540	4770	9580	6600	624	2300	781	94	193
MIN	50	148	918	982	571	4160	253	226	375	88	37	45
AC-FT	11060	32910	129400	97960	90100	403800	81880	25380	73180	19660	3950	5330

CAL YR 1986 TOTAL 726294 MEAN 1990 MAX 12700 MIN 28 AC-FT 1441000  
WTR YR 1987 TOTAL 491343 MEAN 1346 MAX 9580 MIN 37 AC-FT 974600

e Estimated

LOCATION.--Lat 32°28'47", Long 94°48'15", Gregg County, Hydrologic Unit 12010002, on left bank at city of Longview pumping station at the end of Swinging Bridge Road, 1.4 mi southwest of the intersection of Swinging Bridge Road and Farm Road 2206 in Longview, 2.5 mi downstream from Hawkins Creek, 2.6 mi upstream from U.S. Highway 259, and at mile 357.4.

PERIOD OF RECORD.--August 1983 to current year (operated as a low-flow station only).

GAGE--Water-stage recorder and concrete control. Datum of gage is 230.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair. Daily discharges above 500 ft<sup>3</sup>/s are not published. Flow is partially regulated by Lake Tawakoni (station 08017400), capacity 936,200 acre-ft, and by Lake Fork Reservoir (station 0818800), capacity 675,800 acre-ft and by five tributary reservoirs with a combined capacity of 42,370 acre-ft. There are many diversions above station for oilfield operations and for municipal and industrial supply.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 26.80 ft Mar. 29, 1987; minimum daily discharge, 0.50 ft<sup>3</sup>/s Sept. 4, 1985.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 26.80 ft Mar. 29 at 0200 hours; minimum daily discharge, 0.58 ft<sup>3</sup>/s Aug. 18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	78	186	---	---	---	---	---	265	471	---	90	102
2	60	175	---	---	---	---	---	245	447	---	82	114
3	51	166	---	---	---	---	---	238	428	---	73	118
4	56	200	---	---	---	---	---	271	420	---	62	95
5	54	---	---	---	---	---	---	337	374	---	57	81
6	55	---	---	---	---	---	---	339	373	---	49	68
7	84	---	---	---	---	---	---	365	---	---	43	47
8	140	---	---	---	---	---	---	372	---	---	38	23
9	205	---	---	---	---	---	---	343	---	---	34	13
10	206	479	---	---	---	---	---	314	476	---	35	18
11	177	389	---	---	---	---	---	286	402	450	23	24
12	186	357	---	---	---	---	---	289	422	382	21	20
13	183	331	---	---	---	---	---	296	---	324	15	63
14	141	303	---	---	---	---	---	340	---	260	4.7	110
15	158	287	---	---	---	---	---	354	---	217	3.6	101
16	162	283	---	---	---	---	---	313	---	205	2.8	339
17	160	271	---	---	---	---	---	367	---	188	1.6	228
18	160	299	---	---	---	---	---	446	---	172	1.58	207
19	173	313	---	---	---	---	---	479	---	161	4.0	191
20	156	292	---	---	---	---	---	482	---	178	22	144
21	122	253	---	---	---	---	---	446	---	180	39	92
22	115	261	---	---	---	---	---	391	---	157	43	70
23	122	---	---	---	---	---	450	362	---	145	42	47
24	407	---	---	---	---	---	405	366	---	140	44	37
25	461	---	---	---	---	---	375	404	---	180	40	37
26	443	---	---	---	---	---	391	424	---	173	42	27
27	424	---	---	---	---	---	450	458	---	157	44	23
28	351	---	---	---	---	---	418	491	---	134	44	44
29	275	---	---	---	---	---	347	493	---	118	46	64
30	215	---	---	---	---	---	300	492	---	104	62	51
31	194	---	---	---	---	---	---	471	---	98	118	---
TOTAL	5774	---	---	---	---	---	---	11539	---	---	1225.28	2598
MEAN	186	---	---	---	---	---	---	372	---	---	39.5	86.6
MAX	461	---	---	---	---	---	---	493	---	---	118	339
MIN	51	---	---	---	---	---	---	238	---	---	.58	13
AC-FT	11450	---	---	---	---	---	---	22890	---	---	2430	5150
WTR YR 1987	TOTAL	-	MEAN	-	MAX	-	MIN	-	AC-FT	-		

## 08022040 SABINE RIVER NEAR BECKVILLE, TX

LOCATION.--Lat 32°19'38", long 94°21'12", Panola County, Hydrologic Unit 12010002, at downstream side of highway embankment near right end of downstream bridge on U.S. Highway 59, 0.9 mi upstream from Eightmile Creek, 6.0 mi upstream from Farm Road 1794, 8.4 mi northeast of Beckville, 12.4 mi downstream from State Highway 43, and at mile 327.0.

DRAINAGE AREA.--3,589 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1938 to current year. Prior to October 1978, published as "near Tatum".

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 190.00 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1978, at site 12.4 mi upstream at datum 14.18 ft higher. Prior to Sept. 21, 1945, non recording gage.

REMARKS.--No estimated daily discharges. Records good. Eight major reservoirs, with a combined capacity of 1,701,000 acre-ft, largely regulated flow. Several diversions above station and below Lake Tawakoni for oilfield operation, municipal, and industrial uses. Low flows are sustained by sewage effluents returned to the river above the station. For statement regarding regulation by Soil Conservation Service floodwater-retarding structures, see station 08018500.

AVERAGE DISCHARGE.--22 years (water years 1939-60) prior to regulation by Lake Tawakoni, 2,663 ft<sup>3</sup>/s (1,929,000 acre ft/yr); 27 years (water years 1961-87) regulated, 2,219 ft<sup>3</sup>/s (1,608,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 123,000 ft<sup>3</sup>/s Apr. 4, 1945 (gage height, 33.80 ft), site and datum then in use, from graph based on gage readings, from rating curve extended above 66,000 ft<sup>3</sup>/s on basis of partly estimated measurement of 88,900 ft<sup>3</sup>/s; minimum observed, 2.4 ft<sup>3</sup>/s Aug. 11, 1964.  
Maximum stage since at least 1884, that of Apr. 4, 1945.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in May 1884 reached a stage of about 2 ft lower than flood of Apr. 4, 1945. These dates and gage heights are based on information for stations near Tatum (08022000) and at Logansport, La. (08022500).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 9,160 ft<sup>3</sup>/s Mar. 1, at 1800 hours (gage height, 22.90 ft); minimum daily, 32 ft<sup>3</sup>/s Aug. 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	168	324	1560	2800	2090	9080	8690	451	613	1230	103	164		
2	145	301	1580	2590	2260	9010	8690	440	624	1060	99	180		
3	132	276	1640	2530	2430	8460	8620	415	592	924	97	149		
4	115	278	1670	2890	2040	7900	8420	399	549	914	84	144		
5	105	589	1620	2600	1690	7390	7990	462	534	839	72	137		
6	106	1020	1470	2050	1460	6990	7210	504	503	825	67	125		
7	130	1040	1290	1770	1700	6810	5980	501	475	819	68	108		
8	255	1470	1250	1620	1890	6710	4140	513	538	848	62	94		
9	267	1700	2160	1590	1560	6690	2590	529	649	837	56	81		
10	337	1160	4040	1870	1310	6680	1880	524	694	775	55	71		
11	337	811	4870	1970	1220	6690	1570	486	678	681	56	66		
12	337	681	4930	1840	1240	6720	1400	464	629	580	59	72		
13	448	607	4780	1800	1220	6750	1280	494	706	484	58	99		
14	491	546	4340	1820	1140	6740	1240	523	1140	413	55	101		
15	364	495	3810	1880	1670	6660	1220	518	1720	346	52	210		
16	301	463	4170	1960	4180	6520	1110	518	2160	299	51	202		
17	282	455	4290	1970	5330	6460	975	510	2500	255	45	277		
18	270	431	3920	2200	4430	6970	911	578	3560	229	41	498		
19	253	425	4030	2820	3220	7150	905	689	4250	204	37	331		
20	251	448	4000	2730	3340	6980	977	656	3630	178	36	265		
21	255	438	3530	2450	6220	6890	968	636	3510	172	32	234		
22	235	402	3140	2520	7880	6860	855	597	3090	182	37	188		
23	236	459	3310	2680	7140	6880	765	551	2600	177	57	143		
24	369	913	4430	2820	6410	7040	664	521	2250	165	63	115		
25	865	1820	4800	2930	6480	7230	599	557	2140	164	63	95		
26	783	2700	4360	3010	6860	7370	557	611	2040	222	62	88		
27	610	2780	3980	3020	7740	7610	550	676	2000	197	63	80		
28	551	2110	3810	2950	8600	7850	583	639	1920	167	69	74		
29	496	1770	3540	2800	---	8070	579	643	1750	145	73	68		
30	439	1630	3230	2600	---	8330	512	663	1490	134	93	178		
31	366	---	3010	2320	---	8550	---	645	---	117	122	---		
TOTAL	10299	28542	102560	73400	102750	226040	82430	16913	49534	14582	1987	4637		
MEAN	332	951	3308	2368	3670	7292	2748	546	1651	470	64.1	155		
MAX	865	2780	4930	3020	8600	9080	8690	689	4250	1230	122	498		
MIN	105	276	1250	1590	1140	6460	512	399	475	117	32	66		
AC-FT	20430	56610	203400	145600	203800	448400	163500	33550	98250	28920	3940	9200		
CFSM	.09	.27	.92	.66	1.02	2.03	.77	.15	.46	.13	.0	.0		
IN.	.11	.30	1.06	.76	1.07	2.34	.85	.18	.51	.15	.0	.0		
CAL YR 1986	TOTAL	1009450	MEAN	2766	MAX	13400	MIN	65	AC-FT	2002000	CFSM	.77	IN.	10.5
WTR YR 1987	TOTAL	713674	MEAN	1955	MAX	9080	MIN	32	AC-FT	1416000	CFSM	.54	IN.	7.40

## SABINE RIVER MAIN STEM

08022040 SABINE RIVER NEAR BECKVILLE, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: February 1952 to current year. Chemical and biochemical analyses: January 1968 to current year. Pesticide analyses: March 1968 to June 1981.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: February 1952 to current year.

WATER TEMPERATURE: February 1952 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. Formerly published as 08022000 Sabine River near Tatum.

## EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 3,040 microsiemens Jan. 13, 1966; minimum, 53 microsiemens Mar. 31, 1979.

WATER TEMPERATURE: Maximum, 38.0°C July 8, 1969; minimum, 0.0°C on several days during December 1983.

## EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,350 microsiemens Oct. 30; minimum daily, 128 microsiemens Mar. 22.

WATER TEMPERATURE: Maximum daily, 33.0°C Aug. 15; minimum daily, 6.0°C Jan. 23-26.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	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 (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3
OCT 21...	1100	295	647	7.50	17.0	7.8	81	1.2	68	0
JAN 29...	1115	2870	263	7.20	7.5	11.1	94	1.0	58	13
MAR 19...	1115	7120	210	7.60	15.0	8.0	80	0.7	50	11
MAY 05...	1130	458	500	6.70	23.0	9.4	110	1.8	83	27
JUN 23...	1130	2.0	200	6.30	27.0	5.7	72	1.2	44	8
AUG 11...	0930	59	670	7.50	29.0	4.6	61	4.1	63	0

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 WH WAT TOTAL FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
OCT 21...	19	4.9	110	6	5.0	86	36	130	0.30	14
JAN 29...	16	4.4	24	1	4.0	45	26	30	0.20	8.1
MAR 19...	14	3.6	20	1	3.4	39	21	27	0.10	8.1
MAY 05...	23	6.1	58	3	4.2	56	43	87	0.30	12
JUN 23...	12	3.5	20	1	4.2	36	22	25	0.30	10
AUG 11...	16	5.5	120	7	4.6	162	42	89	0.50	5.9

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- PHORUS, TOTAL (MG/L AS P)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)
OCT 21...	370	1.07	0.030	1.10	0.060	0.84	0.90	0.370	--	--
JAN 29...	140	0.290	0.010	0.300	0.030	0.97	1.0	0.140	<1	60
MAR 19...	120	--	<0.010	<0.100	0.050	1.4	1.4	0.090	--	--
MAY 05...	270	0.590	0.010	0.600	0.020	0.88	0.90	0.150	--	--
JUN 23...	120	0.270	0.030	0.300	0.110	0.99	1.1	0.230	--	--
AUG 11...	380	--	<0.010	<0.100	0.030	2.3	2.3	0.190	1	49

## 08022040 SABINE RIVER NEAR BECKVILLE, TX--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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)
OCT 21...	--	--	--	--	--	--	--	--	--	--
JAN 29...	1	<10	2	34	<5	42	0.1	<1	<1	12
MAR 19...	--	--	--	--	--	--	--	--	--	--
MAY 05...	--	--	--	--	--	--	--	--	--	--
JUN 23...	--	--	--	--	--	--	--	--	--	--
AUG 11...	<1	<10	2	16	<5	110	0.5	<1	<1	15

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1986 TO SEPTEMBER 1987

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. 1986	10299	705	387	10800	140	3840	57	1590	94
NOV. 1986	28542	402	223	17200	70	5410	38	2910	68
DEC. 1986	102560	245	137	38000	40	11000	25	6920	47
JAN. 1987	73400	295	165	32600	48	9600	30	5850	55
FEB. 1987	102750	234	131	36300	38	10500	24	6630	45
MAR. 1987	226040	178	100	61100	28	17100	19	11400	36
APR. 1987	82430	252	141	31300	41	9130	25	5670	48
MAY 1987	16913	437	243	11100	76	3470	41	1890	75
JUNE 1987	49534	257	144	19200	42	5620	26	3460	48
JULY 1987	14582	366	204	8020	63	2480	35	1380	64
AUG. 1987	1987	745	409	2200	150	783	60	324	100
SEPT 1987	4637	586	323	4050	110	1360	51	642	89
TOTAL	713674	**	**	272000	**	80200	**	48700	**
WTD.AVG.	1955	253	141	**	42	**	25	**	47

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
EQUIVALENT MEAN

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	819	754	249	278	281	172	192	424	408	264	565	512
2	928	644	260	279	273	174	198	429	370	295	552	708
3	980	545	341	277	279	180	205	465	403	295	582	703
4	920	539	288	265	280	182	209	462	366	308	593	712
5	945	588	293	291	297	185	212	497	370	323	618	641
6	947	565	284	311	303	187	224	543	384	336	619	551
7	950	656	297	318	310	190	237	502	377	311	628	548
8	1070	332	315	323	325	191	249	458	427	290	678	567
9	874	257	325	335	313	190	279	474	519	298	694	622
10	968	343	218	320	342	192	288	450	523	313	708	624
11	671	455	160	323	348	193	285	455	485	316	697	615
12	777	398	151	334	361	197	307	422	443	327	696	629
13	722	401	162	291	347	198	315	419	397	329	698	785
14	636	453	183	300	456	202	316	420	375	333	696	612
15	574	495	327	307	388	208	326	463	347	356	727	689
16	429	535	291	362	266	212	345	434	228	379	764	773
17	585	502	266	361	193	220	385	419	184	470	809	492
18	596	512	226	305	218	219	487	420	245	568	845	830
19	644	547	223	283	235	203	475	380	215	558	871	501
20	658	573	270	318	236	177	365	459	228	561	894	403
21	665	612	233	289	202	131	371	416	191	605	906	470
22	591	612	235	284	177	128	370	440	204	676	908	486
23	575	603	296	297	165	133	397	470	211	698	915	460
24	586	625	272	327	193	144	456	419	213	688	924	430
25	806	506	293	295	198	153	460	403	239	670	985	437
26	428	314	240	267	254	158	425	416	210	648	1060	433
27	517	270	235	258	231	160	425	410	204	702	1110	426
28	417	271	232	260	183	162	436	409	210	696	1040	437
29	510	230	242	262	---	165	439	453	219	669	865	451
30	1350	234	254	260	---	171	434	415	244	568	694	511
31	1090	---	272	271	---	177	---	376	---	514	589	---
MEAN	749	479	256	298	273	179	337	439	315	463	772	569

## SABINE RIVER MAIN STEM

08022040 SABINE RIVER NEAR BECKVILLE, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29.0	17.5	11.0	8.0	10.0	11.0	12.0	24.0	26.0	28.0	31.0	25.0
2	28.0	18.0	10.0	8.0	10.0	11.0	13.0	22.0	26.0	27.0	30.0	24.0
3	28.0	18.5	10.0	8.0	10.0	11.0	13.0	24.0	26.0	26.0	31.0	29.0
4	28.0	19.0	10.0	7.0	11.0	11.0	12.0	22.0	26.0	27.0	31.0	27.0
5	27.0	17.5	9.0	7.0	11.0	13.0	12.0	23.0	25.0	28.0	31.0	26.0
6	24.0	16.5	9.0	7.0	12.0	12.0	12.0	23.0	25.0	28.0	30.0	26.0
7	22.0	17.0	9.0	8.0	11.0	12.0	12.0	23.0	25.0	28.0	30.0	27.0
8	23.0	17.0	11.0	9.0	11.0	13.0	13.0	23.0	26.0	28.0	31.0	26.0
9	22.0	18.0	10.0	9.0	11.0	13.0	13.0	23.0	26.0	28.0	31.0	27.0
10	22.0	17.0	12.0	8.0	10.0	14.0	15.0	23.0	26.0	27.0	31.0	27.0
11	22.0	16.0	17.0	8.0	11.0	13.0	16.0	24.0	26.0	27.0	31.0	26.0
12	21.0	15.0	10.0	8.0	11.0	14.0	19.0	24.0	26.0	28.0	31.0	25.0
13	20.0	13.0	9.0	7.0	13.0	12.0	19.0	23.0	26.0	29.0	30.0	25.0
14	19.0	11.5	9.0	8.0	14.0	13.0	18.0	23.0	26.0	28.0	30.0	28.0
15	18.0	11.5	9.0	8.0	14.0	14.0	17.0	25.0	27.0	28.0	33.0	26.0
16	19.0	14.0	9.0	9.0	13.0	15.0	17.0	25.0	25.0	28.0	31.0	26.0
17	16.0	15.0	9.0	9.0	12.0	15.0	18.0	24.0	25.0	28.0	31.0	27.0
18	18.0	14.5	10.0	8.0	11.0	14.0	19.0	26.0	25.0	28.0	30.0	27.0
19	20.0	14.5	10.0	7.0	10.0	14.0	20.0	27.0	25.0	28.0	30.0	26.0
20	18.0	14.5	10.0	7.0	9.0	16.0	23.0	25.0	26.0	28.0	30.0	25.0
21	17.0	13.5	10.0	7.0	9.0	16.0	24.0	24.0	26.0	28.0	30.0	24.0
22	18.0	14.0	10.0	7.0	9.0	16.0	22.0	26.0	27.0	29.0	30.0	24.0
23	19.0	15.0	9.0	6.0	8.0	17.0	20.0	26.0	27.0	29.0	30.0	23.0
24	19.0	14.5	9.0	6.0	9.0	16.0	20.0	26.0	27.0	28.0	30.0	26.0
25	19.0	13.0	9.0	6.0	9.0	16.0	20.0	26.0	28.0	28.0	30.0	22.0
26	19.0	12.5	9.0	6.0	10.0	16.0	21.0	26.0	27.0	29.0	30.0	23.0
27	18.0	12.5	9.0	7.0	11.0	16.0	21.0	25.0	27.0	32.0	30.0	24.0
28	16.0	12.0	9.0	9.0	11.0	16.0	24.0	25.0	26.0	29.0	29.0	24.0
29	18.0	11.5	---	9.0	---	15.0	27.0	26.0	26.0	30.0	28.0	24.0
30	19.0	11.0	8.0	9.0	---	14.0	23.0	25.0	27.0	30.0	24.0	23.0
31	17.0	---	8.0	9.0	---	13.0	---	26.0	---	30.0	27.0	---
MEAN	20.5	15.0	10.0	7.5	11.0	14.0	18.0	24.5	26.0	28.5	30.0	25.5

## 08022060 MARTIN LAKE NEAR TATUM, TX

LOCATION.--Lat 32°15'42", long 94°34'23", Rusk County, Hydrologic Unit 12010002, on retaining wall, 30 ft to right of intake to generating plant No. 1, 1.9 mi upstream from Martin Dam on Martin Creek, 5.8 mi southwest of Tatum, and 21.9 mi upstream from mouth.

DRAINAGE AREA.--130 mi<sup>2</sup>.

PERIOD OF RECORD.--April 1974 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to May 15, 1976, non-recording gage near left end of dam 1.9 mi downstream at same datum.

REMARKS.--The lake is formed by a rolled earthfill dam 8,675 ft long, including a 1,000-foot uncontrolled spillway. Deliberate impoundment began in April 1974. The uncontrolled spillway is an excavated channel cut through natural ground and located at the left end of the dam. The controlled spillway is a concrete ogee design with four 14.0-by 40.0-foot-wide tainter gates located near the left end of the dam. The low-flow outlet works consist of a 3.0-by 5.0-foot conduit with a sluice gate located in one of the gate piers. There is an 8-inch pipe with sluice gate. The area and capacity tables are based on an aerial survey made in October 1971. There are no known diversions. 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.....	321.5	
Crest of uncontrolled spillway.....	312.0	111,500
Top of gates.....	308.0	87,960
Top of conservation pool.....	306.0	77,500
Crest of gated spillway.....	294.0	31,040
Lowest gated outlet (invert).....	284.0	10,320

COOPERATION.--Area and capacity tables provided by Forrest and Cotton, Consulting Engineers, for Texas Utilities Services, Inc.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 93,250 acre-ft Mar. 31, 1979 (elevation, 308.95 ft); minimum since first appreciable storage, 58,320 acre-ft Feb. 4, 1981 (elevation, 301.83 ft).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 84,260 acre-ft Feb. 15 at 0100 hours (elevation, 307.31 ft); minimum 68,290 acre-ft Sept. 30 (elevation, 304.09 ft from graph).

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

304.0	67,880	307.0	82,620
305.0	72,580	308.0	87,960
306.0	77,470		

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	69410	70250	77300	78460	78510	80650	78810	77200	76750	80390	76450	71290
2	69270	70250	77250	78510	78910	79780	78710	77000	76600	80500	76250	71100
3	69080	70210	77250	79520	79070	78860	78660	76950	76750	80390	76000	70960
4	69030	71010	77150	80190	79170	77900	78610	76950	76700	80340	75760	70870
5	68850	71250	77100	80390	79170	77150	78660	77200	76600	80140	75560	70680
6	68990	71340	77050	80550	79520	76800	78610	77100	76450	79930	75460	70540
7	68890	72200	77200	80600	79930	76750	78610	77050	76350	79830	75260	70350
8	69080	72590	77300	80650	80040	76800	78560	77000	76200	79680	75070	70210
9	69030	72590	78000	80700	80090	76800	78560	76900	76650	79630	74870	70020
10	68940	72590	78360	80090	80140	76750	78510	76850	76650	79580	74820	70020
11	68800	72680	78460	79420	80140	76850	78560	76750	76700	79470	74770	69920
12	70210	72590	78510	78960	80240	76850	78510	76800	76900	79270	74620	69880
13	70210	72540	78510	79070	80290	76900	78560	76750	77250	79120	74380	69830
14	70060	72390	79120	79120	80390	76900	78410	76700	78100	79020	74180	69740
15	69970	72440	80810	79220	84050	77000	78360	76950	78760	78810	73990	69640
16	69880	72390	80450	79270	83310	77200	78260	77100	78960	78610	73750	70300
17	69780	72440	80190	79520	82050	78860	78260	77050	79580	78460	73550	70300
18	69690	72340	79980	80390	80190	79630	78310	77000	81630	78310	73360	70210
19	69590	72340	79780	80650	78200	80190	78260	76900	82050	78100	73210	70060
20	69500	72300	79630	80810	79980	80340	78150	76750	82000	77950	72970	70060
21	69450	72250	79520	80290	79980	80450	78050	76650	81950	77750	72830	69740
22	69500	72490	80090	79580	78510	80240	77900	76500	81840	77600	72630	69550
23	70390	73120	80240	79020	76850	79830	77850	76400	81480	77450	72490	69410
24	70770	73940	82310	78310	77450	79320	77750	76950	81530	77350	72300	69220
25	70770	76200	80760	77950	78000	78960	77700	77250	81380	77450	72110	69080
26	70720	77000	79020	78000	79680	78960	77600	77250	81170	77350	71960	68940
27	70680	77100	78410	78000	80910	79020	77550	77250	81010	77200	71770	68800
28	70580	77250	78150	78150	81270	78860	77450	77100	80860	77050	71530	68710
29	70490	77250	78260	77950	---	78810	77350	77000	80650	76900	71440	68520
30	70390	77350	78310	78000	---	78760	77250	76900	80600	76850	71250	68290
31	70350	---	78460	78000	---	78760	---	76850	---	76650	71480	---
MAX	70770	77350	82310	80810	84050	80650	78810	77250	82050	80500	76450	71290
MIN	68800	70210	77050	77950	76850	76750	77250	76400	76200	76650	71250	68290
(+)	304.53	305.97	306.19	306.10	306.74	306.25	305.95	305.87	306.61	305.83	304.77	304.09
(Φ)	+800	+7000	+1110	-460	+3270	-2510	-1510	-400	+3750	-3950	-5170	-3190
CAL YR 1986	MAX	82310	MIN	68800	(Φ)	-450						
WTR YR 1987	MAX	84050	MIN	68290	(Φ)	-1260						

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

## SABINE RIVER BASIN

08022070 MARTIN CREEK NEAR TATUM, TX

LOCATION.--Lat 32°17'44", long 94°29'29", Panola County, Hydrologic Unit 1201002, on right bank, 35 ft downstream from right abutment, 360 ft to right of bridge on State Highway 149, 50 ft upstream from Gulf, Colorado and Santa Fe Railway Co. bridge, 1.7 mi upstream from Hogan Creek, 2.0 mi southeast of Tatum, 5.0 mi downstream from Martin Lake, and 15.0 mi upstream from mouth.

DRAINAGE AREA.--148 mi<sup>2</sup>.

PERIOD OF RECORD.--April 1974 to current year.

REVISED RECORDS.--WDR TX-76-1: 1975.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 240.26 ft above National Geodetic Vertical Datum of 1929. Prior to Mar. 31, 1978, at site 50 ft upstream at same datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Flow largely regulated by Martin Lake located 5 mi upstream. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--13 years (water years 1975-87), 80.0 ft<sup>3</sup>/s (57,960 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,540 ft<sup>3</sup>/s Apr. 30, 1976 (gage height, 13.76 ft); minimum, 0.25 ft<sup>3</sup>/s Oct. 17, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1948, 18.15 ft April 1969. The flood in April 1957 reached a stage of 13.95 ft, from information by State Department of Highways and Public Transportation.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,600 ft<sup>3</sup>/s Feb. 20 at 1630 hours (gage height, 12.63 ft); minimum, 1.6 ft<sup>3</sup>/s Sept. 7-8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.2	8.9	15	19	21	443	e24	e11	6.4	7.7	7.0	2.4
2	5.2	8.9	14	18	44	639	e24	e9.9	6.4	7.7	6.9	1.9
3	5.1	9.1	13	86	25	638	e23	e9.2	6.8	10	6.8	1.8
4	5.2	15	13	86	20	644	e23	e8.7	15	8.1	6.7	1.7
5	5.5	59	13	33	17	642	e22	8.0	9.5	5.5	5.5	2.9
6	6.3	22	13	25	20	451	e22	7.9	7.6	3.5	4.9	2.2
7	7.4	23	13	22	56	269	e21	8.1	6.7	2.9	5.1	1.7
8	9.3	88	16	20	30	80	e21	8.2	7.0	2.7	5.1	2.2
9	9.2	35	50	34	21	26	e20	8.6	7.7	3.2	5.4	2.0
10	7.9	19	34	188	18	22	e20	8.3	13	4.1	5.9	1.9
11	7.2	17	21	380	17	20	e19	7.9	11	2.9	6.2	2.4
12	22	21	17	395	17	20	e19	9.8	16	2.8	7.2	2.3
13	18	17	16	266	17	19	e18	9.3	33	3.1	7.2	2.5
14	11	15	15	45	17	18	e18	9.0	17	3.5	5.9	2.4
15	9.1	14	71	22	166	18	e17	8.5	16	3.6	7.1	2.4
16	8.6	14	89	20	481	18	e17	8.9	26	5.4	7.4	4.4
17	8.4	13	35	25	973	96	e17	10	13	7.0	7.7	3.2
18	8.2	13	53	71	956	87	e16	9.1	21	6.9	8.4	2.1
19	8.1	12	59	42	1150	27	e16	8.5	13	7.0	9.2	1.8
20	8.2	12	326	26	1370	e23	e15	8.3	11	6.8	9.2	2.0
21	8.8	13	1190	60	1210	e20	e15	8.3	10	6.6	10	2.2
22	8.6	18	1170	281	1160	e20	e14	8.2	9.0	6.7	11	2.1
23	21	51	480	386	1130	e172	e14	8.1	8.5	7.2	12	2.0
24	47	79	152	390	887	e326	e14	8.1	8.2	7.5	14	2.4
25	17	161	259	386	423	e332	e13	11	8.7	7.5	15	2.5
26	12	48	1400	207	479	e190	e13	12	8.4	7.1	15	2.4
27	11	23	1080	31	453	e37	e12	16	7.9	7.2	17	2.1
28	9.7	18	357	19	492	e26	e12	10	7.7	7.1	17	4.7
29	9.3	16	176	17	---	e26	e12	7.5	7.5	6.9	16	2.4
30	11	16	34	16	---	e25	e12	7.2	7.4	6.9	12	2.3
31	9.4	---	21	15	---	e25	---	6.7	---	7.1	2.2	---
TOTAL	339.9	878.9	7215	3631	11670	5399	523	280.3	346.4	182.2	276.0	71.3
MEAN	11.0	29.3	233	117	417	174	17.4	9.04	11.5	5.88	8.90	2.38
MAX	47	161	1400	395	1370	644	24	16	33	10	17	4.7
MIN	5.1	8.9	13	15	17	18	12	6.7	6.4	2.7	2.2	1.7
AC-FT	674	1740	14310	7200	23150	10710	1040	556	687	361	547	141

CAL YR 1986 TOTAL 15426.5 MEAN 42.3 MAX 1400 MIN .42 AC-FT 30600  
WTR YR 1987 TOTAL 30812.8 MEAN 84.4 MAX 1400 MIN 1.7 AC-FT 61120

e Estimated

## SABINE RIVER MAIN STEM

175

08022500 SABINE RIVER AT LOGANSPOUT, LA

LOCATION.--Lat 31°58'20", long 94°00'22", De Soto Parish, Louisiana-Shelby County, Texas State line at Logansport, Hydrologic Unit 12010004, on left bank just upstream from bridge on U.S. Highway 84, 3 mi upstream from Bayou Castor, 111 mi upstream from Toledo Bend Dam, and at mile 267.1.

DRAINAGE AREA.--4,842 mi<sup>2</sup>.

PERIOD OF RECORD.--Gage-height record March 1968 to current year. Discharge record July 1903 to February 1968.

REVISED RECORDS.--WSP 1312: 1903-6 (monthly and annual means). WSP 1732: 1929(M), 1933(M).

GAGE.--Water-stage recorder. Datum of gage is 147.72 ft above National Geodetic Vertical Datum of 1929. July 1, 1903 to Sept. 30, 1956, nonrecording gage. Oct. 1, 1956 to Jan. 16, 1964, water-stage recorder 4,600 ft upstream. Jan. 16, 1964 to Dec. 10, 1968, water-stage recorder 4,700 ft upstream. All gages to present datum except prior to Dec. 31, 1906 when datum was 2.00 ft lower.

REMARKS.--Station discontinued as daily streamflow station Mar. 1, 1968, due to backwater from storage in Toledo Bend Reservoir (station 08025350). Ten major reservoirs, with a combined capacity of 1,824,000 acre-ft, largely regulated the flow. For statement regarding regulation by Soil Conservation Service floodwater-retarding structures, see station 08018500. Numerous diversions above station for oilfield operations, municipal, and industrial uses.

AVERAGE DISCHARGE.--64 years (water years 1904-67), 3,208 ft<sup>3</sup>/s (2,324,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height (1968-87), 32.50 ft Apr. 20, 1969; minimum since initial filling of Toledo Bend Reservoir in June 1968, about 17.8 ft Sept. 15 or 16, 1987. Maximum discharge (1903-67), 92,000 ft<sup>3</sup>/s Apr. 8, 1945 (gage height, 44.07 ft, from floodmark); minimum, 16 ft<sup>3</sup>/s Sept. 26-28, Oct. 3, 4, 1939. Maximum stage since at least 1884, that of Apr. 8, 1945.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in May 1884 reached a stage of 39.4 ft, present site and datum.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 29.97 ft June 12 (time unknown); minimum, 19.45 ft Oct. 14.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21.41	20.10	22.76	23.42	21.10	26.85	24.41	22.09	21.57	21.60	19.84	---
2	21.55	20.03	22.51	23.44	21.35	26.65	24.12	22.07	21.51	21.54	19.80	---
3	21.41	19.96	22.46	23.03	21.50	26.50	24.22	21.84	21.22	21.45	19.73	---
4	21.35	19.95	22.45	23.23	21.38	26.35	24.22	21.88	21.20	21.53	19.65	---
5	21.12	20.13	22.42	23.36	21.26	26.17	24.20	21.90	21.20	21.50	19.50	---
6	21.17	20.04	22.38	23.26	21.26	25.96	24.12	21.89	21.21	21.58	19.40	---
7	21.22	20.39	22.32	22.95	21.81	25.76	24.04	21.80	21.26	21.40	19.36	---
8	21.20	20.64	22.27	22.75	21.97	25.60	23.89	21.76	21.18	21.40	19.50	---
9	21.14	20.75	22.14	22.55	21.94	25.43	23.54	21.80	21.30	21.25	19.45	---
10	21.13	20.55	22.47	22.28	21.78	25.26	23.00	21.80	21.30	21.24	---	---
11	21.12	20.10	22.68	22.41	21.64	25.21	23.10	21.77	21.31	21.23	---	---
12	21.07	19.80	22.78	22.35	21.53	25.11	22.72	21.89	21.34	21.21	---	---
13	21.11	19.75	22.87	---	21.56	25.05	22.39	21.89	21.25	21.01	---	---
14	21.10	19.83	22.82	---	21.72	25.12	22.19	21.80	25.31	20.93	---	---
15	20.96	19.78	23.07	---	22.06	25.00	22.12	21.75	21.35	20.91	---	---
16	20.87	19.70	23.33	---	22.50	25.09	22.07	21.78	21.50	20.87	---	---
17	20.84	19.62	23.52	---	22.65	25.00	22.02	21.81	21.66	20.85	---	---
18	20.77	19.47	23.59	---	22.95	24.92	22.03	21.80	21.76	20.77	---	---
19	20.68	19.46	23.73	---	23.12	24.92	21.96	21.84	21.98	20.71	---	---
20	20.65	19.40	23.74	22.21	24.28	24.91	21.91	21.76	22.07	20.67	---	---
21	20.60	19.41	23.62	22.10	25.30	24.95	21.65	21.61	22.09	20.63	---	---
22	20.54	19.34	23.44	21.35	25.19	24.98	21.80	21.57	22.03	20.42	---	---
23	20.77	20.40	23.91	21.94	25.30	24.95	21.89	21.60	21.95	20.35	---	---
24	20.63	22.35	24.44	21.70	25.60	24.82	21.77	21.71	21.81	20.34	---	---
25	20.63	24.93	24.78	21.52	25.75	24.71	21.80	21.75	21.80	20.37	---	---
26	20.57	25.55	24.84	21.48	26.15	24.59	21.84	21.78	21.56	20.21	---	---
27	20.53	25.13	24.78	21.42	26.65	24.56	21.86	21.64	21.66	20.16	---	---
28	20.45	24.61	24.55	21.32	26.90	24.50	21.86	21.69	21.71	20.09	---	---
29	20.38	24.00	24.28	21.30	---	24.15	21.91	21.45	21.78	20.00	---	---
30	20.23	23.39	24.00	21.20	---	24.27	21.94	21.48	21.84	19.92	---	---
31	20.17	---	23.72	21.10	---	24.33	---	21.48	---	19.89	---	---
MAX	21.55	25.55	24.84	---	26.90	26.85	24.41	22.09	25.31	21.60	---	---
MIN	20.17	19.34	22.14	---	21.10	24.15	21.65	21.45	21.18	19.89	---	---

## 08025350 TOLEDO BEND RESERVOIR NEAR BURKEVILLE, TX

LOCATION.--Lat 31°10'25", Long 93°33'57", Newton County, Hydrologic Unit 12010004, in powerhouse at right end of Toledo Bend Dam on Sabine River, 15 mi northeast of Burkeville, and at mile 156.5.

DRAINAGE AREA.--7,178 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1966 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Sabine River Authority). Prior to July 20, 1967, nonrecording gage at same site and datum. July 20, 1967, to June 30, 1973, recording gage at right end of spillway 1.6 mi north of present site and at same datum.

REMARKS.--The reservoir is formed by a rolled earthfill dam. Closure of embankment completed and deliberate impoundment was begun Oct. 3, 1966. The reservoir is operated for hydro-electric power generation and water conservation. Releases during high inflow periods are controlled by eleven 40- x 28-foot tainter gates. An 8.33- x 12.0-foot gated conduit through the dam is used for low-flow releases. Two additional 20-inch-diameter conduits, which bypass the larger conduit, may also be used for low-flow releases. Water for turbines is admitted through four 16.75- x 29.0-foot penstocks and controlled by vertically operated caterpillar-type gates. The capacity table is based on Geological Survey topographic maps. For statement regarding regulation by upstream reservoirs, see station 08020000. 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.....	185.0	-
Design flood.....	175.3	5,102,000
Top of gates.....	173.0	4,660,000
Top of power drawdown storage.....	172.0	4,476,000
Top of power head storage.....	162.2	2,922,000
Crest of spillway (controlled).....	145.0	1,162,000
Lowest gated outlet (invert).....	100.0	4,090

COOPERATION.--Capacity table furnished by the Sabine River Authority.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 4,739,000 acre-ft Mar. 21, 1969 (elevation, 173.42 ft) minimum since initial filling of reservoir in June 1968, 3,433,000 acre-ft Nov. 27, 1977 (elevation, 165.74 ft).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 4,550,000 acre-ft Mar. 4 at 1500 hours and Mar. 8 at 0800 hours (elevation, 172.40 ft); minimum contents, 3,417,000 acre-ft Sept. 16, 17 (elevation, 165.63 ft).

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

165.0	3,322,000	170.0	4,123,000	172.0	4,476,000
168.0	3,788,000	171.0	4,297,000	173.0	4,660,000

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3932000	3756000	4140000	4259000	3874000	4502000	4283000	4030000	3953000	3977000	3692000	3465000
2	3920000	3753000	4132000	4219000	3879000	4531000	4302000	4021000	3943000	3970000	3687000	3458000
3	3923000	3737000	4123000	4297000	3887000	4535000	4333000	4041000	3968000	3945000	3671000	3458000
4	3927000	3737000	4123000	4245000	3895000	4540000	4273000	4041000	3953000	3933000	3655000	3450000
5	3951000	3737000	4111000	4219000	3904000	4540000	4252000	4040000	3938000	3937000	3641000	3443000
6	3937000	3716000	4098000	4201000	3945000	4540000	4240000	4041000	3933000	3928000	3625000	3443000
7	3922000	3726000	4098000	4193000	3928000	4535000	4227000	4038000	3923000	3925000	3608000	3443000
8	3920000	3724000	4081000	4161000	3945000	4531000	4210000	4038000	3918000	3920000	3597000	3435000
9	3923000	3745000	4120000	4158000	3950000	4531000	4193000	4038000	3913000	3920000	3605000	3425000
10	3912000	3740000	4115000	4144000	3943000	4531000	4180000	4038000	3918000	3917000	3626000	3429000
11	3895000	3743000	4103000	4104000	3950000	4500000	4135000	4038000	3905000	3915000	3608000	3440000
12	3937000	3756000	4084000	4074000	3956000	4491000	4130000	4040000	3915000	3918000	3592000	3434000
13	3920000	3726000	4070000	4047000	3953000	4472000	4123000	4035000	3937000	3920000	3577000	3429000
14	3912000	3694000	4067000	4030000	3953000	4440000	4103000	4028000	3940000	3904000	3566000	3429000
15	3897000	3686000	4081000	4014000	4007000	4444000	4079000	4023000	3937000	3884000	3558000	3417000
16	3885000	3673000	4094000	3989000	4023000	4404000	4074000	4021000	3930000	3867000	3551000	3443000
17	3872000	3660000	4115000	3987000	4041000	4440000	4070000	4014000	3953000	3838000	3551000	3446000
18	3861000	3657000	4140000	4004000	4041000	4440000	4060000	4006000	3955000	3846000	3535000	3455000
19	3851000	3634000	4149000	3994000	4055000	4440000	4055000	4001000	3953000	3846000	3527000	3461000
20	3838000	3646000	4163000	4001000	4092000	4429000	4055000	3987000	3963000	3838000	3512000	3458000
21	3821000	3622000	4170000	3996000	4123000	4412000	4069000	3992000	3968000	3821000	3504000	3458000
22	3811000	3616000	4184000	3989000	4156000	4387000	4060000	3987000	3973000	3805000	3496000	3458000
23	3808000	3660000	4236000	3951000	4161000	4406000	4055000	3987000	3982000	3788000	3492000	3443000
24	3844000	3734000	4227000	3943000	4198000	4408000	4057000	3980000	3987000	3769000	3492000	3440000
25	3821000	3854000	4245000	3932000	4229000	4406000	4055000	3967000	3996000	3772000	3481000	3432000
26	3813000	3967000	4262000	3890000	4311000	4401000	4053000	3950000	3996000	3764000	3476000	3428000
27	3805000	4038000	4271000	3871000	4372000	4372000	4052000	3940000	3984000	3756000	3481000	3420000
28	3791000	4084000	4271000	3849000	4451000	4385000	4052000	3940000	3973000	3743000	3465000	3428000
29	3785000	4118000	4274000	3869000	---	4390000	4043000	3956000	3968000	3727000	3473000	3438000
30	3778000	4126000	4271000	3867000	---	4338000	4040000	3955000	3970000	3721000	3473000	3428000
31	3769000	---	4262000	3854000	---	4318000	---	3953000	---	3692000	3473000	---
MAX	3951000	4126000	4274000	4297000	4451000	4540000	4333000	4041000	3996000	3977000	3692000	3465000
MIN	3769000	3616000	4067000	3849000	3874000	4318000	4040000	3940000	3905000	3692000	3465000	3417000
(↑)	167.18	170.02	170.80	168.40	171.86	171.12	169.51	169.00	169.10	167.40	166.00	165.70
(Φ)	-158000	+357000	+136000	-408000	+597000	-133000	-278000	-87000	+17000	-278000	-219000	-45000

CAL YR 1986 MAX 4668000 MIN 3616000 (Φ) -200000  
WTR YR 1987 MAX 4540000 MIN 3417000 (Φ) -499000

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

## SABINE RIVER MAIN STEM

177

## 08025360 SABINE RIVER AT TOLEDO BEND RESERVOIR NEAR BURKEVILLE, TX

LOCATION.--Lat 31°10'25", long 93°33'57", Newton County, Hydrologic Unit 12010005, in powerhouse at right end of Toledo Bend Dam, 10 mi upstream from Sabine River near Burkeville gage, and at mile 156.5.

DRAINAGE AREA.--7,178 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1971 to current year.

Water-quality records. --Chemical and biochemical analyses: October 1967 to September 1986.

GAGE.--Water-stage recorders. Datum of gage is at National Geodetic Vertical Datum of 1929 (levels by Sabine River Authority).

REMARKS.--No estimated daily discharges. Records fair. Daily discharges are a combination of releases from various outlets at the dam. Discharges are results of releases through the turbines and are computed using scroll case differential pressure relationships. Taintor gate releases, low-flow sluiceway releases, bypass gate releases, and turbine leakages are all based on discharge measurements and operation logs.

AVERAGE DISCHARGE.--16 years, 5,294 ft<sup>3</sup>/s (3,836,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 67,000 ft<sup>3</sup>/s Jan. 28, 1974; minimum daily (estimated), 30 ft<sup>3</sup>/s Oct. 1-4, 1972.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 15,500 ft<sup>3</sup>/s Jan. 13-15, 25, 27; minimum daily, 144 ft<sup>3</sup>/s on many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	779	4270	3980	10800	2560	14800	14700	1370	204	5820	204	174
2	717	4780	6630	12600	2360	14600	14700	204	3250	6320	204	174
3	765	4900	5960	14600	2380	14400	14900	204	3160	6550	6600	824
4	157	4670	2210	15200	2780	14300	14500	1310	3240	204	6510	828
5	144	5060	6460	15200	2360	14500	14900	1300	2680	204	6800	745
6	693	4750	6590	15200	2550	14600	14700	1310	204	6510	6480	724
7	2430	5170	6640	15200	2760	14500	14900	2780	204	6190	6690	767
8	2550	7110	6750	15400	2570	14500	14800	2510	2900	6540	204	838
9	2700	7040	6520	15100	2410	14400	14800	204	2420	6470	204	823
10	2600	6950	10200	15300	2790	14500	9780	204	2770	6030	6360	805
11	5000	7150	11100	15300	2370	14500	8930	2740	2760	204	6310	850
12	4710	6980	11700	15400	2390	14400	14500	2370	2510	204	6980	808
13	4760	7020	12100	15500	2840	14600	14900	2860	204	6170	4500	800
14	5160	7180	10700	15500	2560	14500	14500	3290	204	6760	4310	869
15	4770	7250	10900	15500	2870	14500	9460	3510	2610	6700	174	847
16	5100	7250	11300	15300	2570	14400	3480	204	2680	6810	174	813
17	4790	7220	11700	15400	5050	14400	3830	204	2610	6550	4590	799
18	4870	7200	11400	11000	5050	14400	3660	3300	2610	204	4460	891
19	4670	6390	11400	7820	5750	14500	3770	3960	2730	204	4590	844
20	4680	154	11400	7780	7700	14400	1330	3240	204	6270	4540	890
21	4760	4370	11400	10200	13000	14500	204	3150	204	6330	4680	761
22	4860	7130	11400	11400	14800	14700	164	3180	2740	6410	174	820
23	4640	7100	10800	13300	14700	14600	144	204	2580	6420	174	854
24	4720	7050	11200	15400	14600	14500	144	204	2510	6620	174	692
25	4910	3310	11300	15500	14400	14600	144	3210	2540	204	174	884
26	4740	174	11300	15400	14600	14700	144	3390	2360	204	174	813
27	4850	174	11200	15500	15100	14300	144	3090	2670	6790	3870	854
28	4850	174	11300	14300	14800	14700	144	2690	2650	6480	4380	781
29	4820	174	11400	4600	---	14600	163	3340	2540	6520	174	792
30	4850	174	11200	3020	---	14600	189	204	174	6530	174	795
31	4490	---	10800	2800	---	14400	---	204	---	6650	4470	---
TOTAL	114535	148324	298940	400520	180670	449900	222624	59940	61122	150072	99502	23159
MEAN	3695	4944	9643	12920	6452	14510	7421	1934	2037	4841	3210	772
MAX	5160	7250	12100	15500	15100	14800	14900	3960	3250	6810	6980	891
MIN	144	154	2210	2800	2360	14300	144	204	174	204	174	174
AC-FT	227200	294200	592900	794400	358400	892400	441600	118900	121200	297700	197400	45940
CAL YR 1986	TOTAL	2167790	MEAN	5939	MAX	37200	MIN	144	AC-FT	4300000		
WTR YR 1987	TOTAL	2209310	MEAN	6053	MAX	15500	MIN	144	AC-FT	4382000		

## SABINE RIVER MAIN STEM

08026000 SABINE RIVER NEAR BURKEVILLE, TX

LOCATION.--Lat 31°03'50", long 93°31'10", Newton County, Texas-Vernon Parish, Louisiana State line, Hydrologic Unit 12010005, near left edge of low-water channel at downstream side of bridge on State Highway 63, about 200 ft downstream from Pearl Creek, 10 mi northeast of Burkeville, 16 mi downstream from Bayou Toro, and at mile 139.7.

DRAINAGE AREA.--7,482 mi<sup>2</sup>.

PERIOD OF RECORD.--September 1955 to current year. Published as "below Toledo Bend near Burkeville" for period 1955-75.  
Water-quality records.--Chemical and biochemical analyses: May 1968 to Sept. 1986. Pesticide analyses: October 1972 to September 1981.

REVISED RECORDS.--WSP 1732: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 70.59 ft above National Geodetic Vertical Datum of 1929. Prior to Aug. 23, 1958, nonrecording gage at same site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Flow regulated by Toledo Bend Reservoir (station 08025350) 16.8 mi upstream, capacity, 4,660,000 acre-ft.

AVERAGE DISCHARGE.--11 years (water years 1956-66) prior to completion of Toledo Bend Reservoir, 4,653 ft<sup>3</sup>/s (3,371,000 acre-ft/yr); 21 years (water years 1967-87) regulated, 5,083 ft<sup>3</sup>/s (3,683,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 80,600 ft<sup>3</sup>/s Jan. 29, 1974 (gage height, 34.20 ft); minimum daily, 38 ft<sup>3</sup>/s Sept. 14, 15, 1967.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1860, 35.9 ft in May 1884, from information by local resident. Flood of Apr. 15, 1945, reached a stage of 35.8 ft, and flood of May 23, 1953, reached a stage of 35.3 ft, from floodmarks.

EXTREMES FOR CURRENT YEAR.--Maximum discharge (estimated), 21,500 ft<sup>3</sup>/s Feb. 27 at time unknown (gage height, about 21.0 ft, estimated); minimum daily, 272 ft<sup>3</sup>/s Aug. 26.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	826	4000	2800	11000	3090	e19000	14500	1050	391	3600	2840	2030
2	905	5030	6880	11700	2900	e18000	14700	832	2310	5370	459	379
3	839	4670	6860	15500	2980	e17500	14800	416	2480	6140	3640	584
4	626	4730	2560	16800	3010	e16700	14400	1180	3100	3350	6080	877
5	282	4760	6320	16800	2820	e16200	14600	1450	2890	484	6340	816
6	475	4880	6980	16100	2780	e16000	14700	1160	1440	3630	6280	799
7	1590	4620	7010	15900	3000	e15800	14700	1890	352	5850	6350	833
8	2460	6840	7180	15900	2850	e15600	14700	2570	1600	6180	2980	758
9	2580	6920	6990	15900	2710	e15500	14700	1810	2330	7160	449	912
10	2650	6900	8480	15800	2780	e15500	13100	514	2660	6560	4030	937
11	3650	6890	12200	15800	2700	e15500	6200	1130	2740	3300	6370	743
12	4800	6860	11600	15800	2680	e15500	13800	2420	2840	666	6630	943
13	5220	6670	11600	16100	2760	e15500	14800	3130	1350	2980	5750	858
14	5040	6810	11300	16100	2730	e15500	14800	3300	902	6690	3830	867
15	4810	6830	11600	16200	e2900	e15400	12800	3550	1940	6180	2040	845
16	4650	6870	12500	16100	e3500	e15400	4200	2000	2810	6190	358	1070
17	4710	6940	12300	16100	e5000	e15300	3890	478	2690	6210	2190	1120
18	4600	7040	12600	15100	e5500	15200	3870	1780	3300	2970	4390	1010
19	4580	6870	13300	9160	e6000	14800	3470	3490	2950	469	3830	1090
20	4550	2100	12700	7700	e8000	14500	2880	3590	1640	3400	3970	1030
21	4480	2160	11800	8840	e12500	14400	671	2950	516	6000	4150	1040
22	4650	6660	11800	10700	e16000	14500	464	3750	1310	6150	1710	914
23	4630	8840	13400	11400	e16500	14600	370	1200	2830	6580	361	885
24	4930	13900	13200	14900	e16000	14800	342	384	2500	5940	298	885
25	4720	12700	12100	15400	e16000	14800	326	1310	2580	3120	283	894
26	4790	5300	11500	15400	e18000	14700	312	3300	2130	461	272	891
27	4520	2730	11400	15400	e21000	14500	303	3240	2360	3940	2160	920
28	4890	1600	11100	15400	e20000	14500	293	2690	2110	5830	3380	998
29	4670	981	11200	8790	---	14600	286	3000	2490	6210	1960	872
30	4630	839	11100	3500	---	14600	326	1710	1790	6050	460	937
31	4510	---	11100	2830	---	14500	---	403	---	6740	2380	---
TOTAL	111263	172940	313460	418120	206690	478900	229303	61677	63331	144400	96220	27737
MEAN	3589	5765	10110	13490	7382	15450	7643	1990	2111	4658	3104	925
MAX	5220	13900	13400	16800	21000	19000	14800	3750	3300	7160	6630	2030
MIN	282	839	2560	2830	2680	14400	286	384	352	461	272	379
AC-FT	220700	343000	621700	829300	410000	949900	454800	122300	125600	286400	190900	55020
CAL YR 1986	TOTAL	2299730	MEAN	6301	MAX	34500	MIN	282	AC-FT	4562000		
WTR YR 1987	TOTAL	2324040	MEAN	6367	MAX	21000	MIN	272	AC-FT	4610000		

e Estimated.

## SABINE RIVER MAIN STEM

179

## 08028500 SABINE RIVER NEAR BON WIER, TX

LOCATION.--Lat 30°44'49", long 93°36'30", Beauregard Parish, Louisiana-Newton County, Texas State line, Hydrologic Unit 12010005, near left bank at downstream side of bridge on U.S. Highway 190, 0.7 mi upstream from Quicksand Creek, 0.8 mi upstream from Gulf, Colorado, and Santa Fe Railway Co. bridge, 2.0 mi east of Bon Wier, 2.4 mi upstream from Caney Creek, and at mile 97.7.

DRAINAGE AREA.--8,229 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1923 to current year. Monthly discharge only for some periods, published in WSP 1312. Gage-height records collected in this vicinity since 1913 are contained in reports of the National Weather Service.

REVISED RECORDS.--WSP 1342: 1953. WSP 1442: 1924, 1926-27(M), 1929(M), 1939. WSP 1732: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 43.42 ft above National Geodetic Vertical Datum of 1929. Prior to July 8, 1931, nonrecording gage at site 0.8 mi downstream at datum 3.00 ft higher. July 8, 1931, to Oct. 15, 1958, nonrecording gage at present site at datum 3.00 ft higher. Oct. 16, 1958, to Sept. 30, 1975, water-stage recorder at present site at datum 3.00 ft higher.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Flow regulated by Toledo Bend Reservoir (station 08025350) located 58.8 mi upstream. Gage-height telemeter at station.

AVERAGE DISCHARGE.--43 years (water years 1924-66) prior to completion of Toledo Bend Reservoir, 6,846 ft<sup>3</sup>/s (4,960,000 acre-ft/yr); 21 years (water years 1967-87) regulated, 6,135 ft<sup>3</sup>/s (4,445,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 115,000 ft<sup>3</sup>/s May 19, 1953 (gage height, 28.70 ft); minimum daily, 134 ft<sup>3</sup>/s Nov. 9, 1966.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1833, 33.5 ft Apr. 23 or 24, 1913, from information by Gulf, Colorado, and Santa Fe Railway Co. and local residents. Flood in May 1884 reached a stage of 29 ft. Floods occurring about 1844 and 1860 were higher than flood in May 1884, from information by local residents. All flood data referenced to current datum.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 29,100 ft<sup>3</sup>/s Feb. 27 at 1800 hours (gage height, 22.06 ft); minimum daily, 800 ft<sup>3</sup>/s Aug. 27.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1280	5100	e4910	12100	4490	27700	15400	840	1650	3100	7410	3340
2	1290	4800	6090	12000	4570	26800	15400	1560	1430	5680	3030	2520
3	1330	5430	8600	13600	4530	24400	15500	1420	3160	7100	1360	1140
4	1260	5310	e7280	18100	4570	21100	15500	1080	3640	7500	4800	1100
5	1090	6390	e4570	19000	4540	17800	15200	2050	3930	3380	6870	1380
6	852	6700	7390	e18100	4330	16600	15400	2400	3570	1250	7120	1320
7	1260	6030	7830	e17200	4330	16300	15400	2420	2080	4780	7130	1260
8	2140	6290	7880	16600	4420	16200	15400	3200	972	7010	7210	1270
9	3070	8160	7970	16500	4190	16400	15500	4000	2120	10100	3130	1230
10	3220	8280	7950	16400	4010	16300	15400	3030	3120	11300	1320	1340
11	3220	8010	10200	16300	4080	16200	11300	1810	3750	9230	6120	1360
12	4570	7810	12100	16100	3930	16100	10300	2400	3720	4140	7890	1260
13	6150	7650	11800	16100	3870	15900	14600	3730	4250	1910	7960	1410
14	6420	7480	11700	16200	3960	15800	15400	5380	5620	5010	6550	1350
15	6040	7580	12000	16300	4120	15700	15300	5260	4480	7460	5110	1380
16	5750	7570	15300	16300	6040	15600	11000	5060	3630	7260	2550	1420
17	5500	7610	15800	16600	6410	15900	5640	3300	3990	7310	1220	2580
18	5530	7670	15100	20000	6780	17900	5070	1800	5910	7270	3360	2550
19	5330	7750	17300	19500	6760	18000	4910	3130	6320	3260	4850	2090
20	5260	e7060	17200	18500	7690	17300	4710	4680	4750	1380	4720	2170
21	5270	e2790	15800	e16300	12200	16300	3240	4520	2510	4650	4800	1920
22	5210	3640	14500	e12500	16900	15900	1520	4050	1710	7100	4820	1760
23	5320	7810	16500	12500	18800	15800	e1300	4520	2630	7200	2200	1570
24	5490	15000	19400	13800	18200	16000	e1200	1950	3580	7410	1050	1510
25	6260	24500	18000	15700	18100	16100	e1100	1330	4100	7010	901	1450
26	5930	e24700	16900	16100	21600	16000	e1000	2680	3530	3110	838	1410
27	5830	e18000	e14000	16200	28500	15900	e950	4100	3000	1380	800	1400
28	5450	e13900	13300	16100	28400	15700	e910	4220	2910	5120	2680	1370
29	5570	e10700	12900	15100	---	15500	880	3830	2780	7040	4150	1400
30	5380	e7670	12600	8680	---	15400	838	4180	3120	7060	2470	1300
31	5300	---	12300	5110	---	15500	---	2720	---	7030	1260	---
TOTAL	131572	267390	375170	479590	260320	538100	265268	96650	101962	179540	125679	48560
MEAN	4244	8913	12100	15470	9297	17360	8842	3118	3399	5792	4054	1619
MAX	6420	24700	19400	20000	28500	27700	15500	5380	6320	11300	7960	3340
MIN	852	2790	4570	5110	3870	15400	838	840	972	1250	800	1100
AC-FT	261000	530400	744100	951300	516300	1067000	526200	191700	202200	356100	249300	96320
CAL YR 1986	TOTAL	2635490	MEAN	7221	MAX	31100	MIN	768	AC-FT	5227000		
WTR YR 1987	TOTAL	2869800	MEAN	7862	MAX	28500	MIN	800	AC-FT	5692000		

e Estimated.

## SABINE RIVER MAIN STEM

08028500 SABINE RIVER NEAR BON WIER, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: October 1969 to current year. Chemical and biochemical analyses: October 1969 to May 1973. Sediment analyses: April 1957 to September 1962.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: November 1969 to June 1983.

WATER TEMPERATURE: November 1969 to June 1983.

COLOR: November 1969 to June 1983.

## EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 407 microsiemens Aug. 31, 1978; minimum daily, 34 microsiemens Feb. 3, 1983.

WATER TEMPERATURE: Maximum daily, 33.0°C July 17, 1978, and July 14, 26, 1980; minimum daily, 4.0°C Feb. 2, 1980.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW- INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	TEMPER- ATURE WATER (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
OCT							
01...	1050	1170	181	28.0	60	21	21
11...	1115	3170	190	24.0	50	22	23
16...	1500	6120	173	21.0	70	22	20
23...	1150	5680	182	21.0	30	19	23
28...	1110	5490	198	20.0	50	22	24
NOV							
06...	1245	7010	156	18.0	60	19	19
13...	1710	7620	184	16.5	30	19	22
20...	1145	7640	181	19.0	40	18	22
25...	1420	25400	68	17.0	120	12	8.5
DEC							
04...	1200	7600	163	14.5	50	17	17
10...	1315	7910	166	14.0	50	17	18
17...	0950	16100	139	13.0	40	15	17
24...	1235	19700	127	12.0	50	14	15
30...	1438	12600	161	12.0	40	16	19
JAN							
06...	1155	18000	163	11.0	60	17	16
14...	1230	16200	166	10.0	40	17	19
22...	1725	11600	163	9.0	50	17	17
28...	1345	16200	162	14.0	30	20	18
FEB							
06...	1315	4560	165	13.0	50	17	20
12...	0935	4340	163	13.0	30	17	19
20...	1245	7970	139	11.5	50	13	18
24...	1515	18000	145	11.0	100	15	17
MAR							
03...	0955	24800	110	13.0	120	12	15
12...	1815	16100	143	13.0	50	14	19
18...	1355	18300	134	15.0	60	14	17
25...	1450	16200	140	15.0	50	14	18
31...	1625	15500	147	14.0	50	15	19
APR							
08...	1830	15600	150	15.0	50	14	20
17...	1025	5840	152	18.5	70	16	17
25...	1205	1100	166	23.0	120	18	17
29...	1720	911	167	26.0	110	18	17
MAY							
07...	1340	2220	179	21.0	120	26	15
12...	1730	3480	206	21.0	120	32	20
19...	0750	1790	132	26.5	120	16	15
27...	1110	4060	157	23.0	120	19	16
JUN							
02...	1740	1420	164	27.0	140	23	16
11...	1315	4080	121	23.0	180	13	10
19...	0950	6640	99	25.5	280	13	11
23...	1600	3530	99	30.0	280	12	11
JUL							
02...	1350	7040	139	24.5	140	16	15
08...	1700	7810	138	24.0	80	15	17
16...	1740	7630	146	28.0	70	17	18
24...	0945	8350	145	29.0	40	17	18
28...	1730	6810	148	29.0	40	17	18
AUG							
05...	1700	7840	151	30.0	20	19	18
12...	1125	8850	149	28.0	60	21	18
18...	1830	4700	141	29.0	40	16	16
28...	1425	3970	142	31.0	40	14	16
SEP							
01...	1910	4850	158	30.0	50	22	18
10...	1100	1220	163	28.0	40	22	18
15...	1010	1220	165	28.0	40	23	19
24...	1655	1580	246	26.5	70	43	27
29...	1450	1390	219	26.0	70	33	24

## SABINE RIVER BASIN

181

08029500 BIG COW CREEK NEAR NEWTON, TX

LOCATION.--Lat 30°49'08", long 93°47'07", Newton County, Hydrologic Unit 12010005, near center of span at downstream side of bridge on State Highway 87, 2.6 mi southwest of Newton, 5.0 mi downstream from Melhones Creek, and 8.0 mi upstream from White Oak Creek.

DRAINAGE AREA.--128 mi<sup>2</sup>.

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

GAGE.--Water-stage recorder. Datum of gage is 134.69 ft above National Geodetic Vertical Datum of 1929. Prior to Dec. 19, 1957, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Records good. No known diversion above station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--35 years, 117 ft<sup>3</sup>/s (12.41 in/yr), 84,770 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,200 ft<sup>3</sup>/s Apr. 29, 1953 (gage height, 19.45 ft); minimum daily, 10 ft<sup>3</sup>/s July 7, 8, 21-23, 1971.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1907, 27.5 ft in April 1922, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,100 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Nov. 25	1800	*5,710	*16.75	Feb. 27	0500	2,170	15.40
Dec. 16	1300	1,130	14.15	June 14	1900	1,690	15.04
Dec. 19	1300	1,300	14.52	June 18	2000	1,200	14.32
Dec. 24	0200	1,490	14.81				

Minimum discharge, 40 ft<sup>3</sup>/s, Aug. 25, 26-27.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	63	56	165	122	98	545	107	63	202	227	64	64		
2	66	56	145	117	118	289	105	63	108	250	77	57		
3	56	57	130	224	129	203	104	90	98	195	59	50		
4	50	86	120	475	108	174	104	358	135	165	54	46		
5	46	663	114	272	101	155	99	298	90	102	51	44		
6	80	309	109	164	101	145	99	154	73	84	50	42		
7	229	142	105	141	108	138	101	224	64	101	49	41		
8	111	183	105	131	106	158	96	155	61	358	50	41		
9	87	174	112	128	95	182	93	412	67	569	49	42		
10	86	113	143	137	89	146	91	479	186	663	56	43		
11	69	90	165	130	88	136	90	212	300	265	92	46		
12	122	82	137	111	89	153	90	121	209	145	114	47		
13	368	80	116	110	89	138	93	116	338	130	69	51		
14	208	75	106	127	88	123	109	266	1300	106	58	59		
15	113	72	341	141	286	119	118	152	765	95	53	60		
16	79	72	1010	131	446	119	91	436	245	87	50	91		
17	67	74	426	233	218	224	85	378	299	86	48	274		
18	61	76	505	832	128	446	83	152	1040	110	46	262		
19	57	72	1170	387	110	245	81	107	558	86	46	123		
20	55	70	487	195	193	156	78	94	172	75	46	128		
21	53	69	223	152	413	136	77	87	140	70	44	78		
22	52	69	248	137	297	126	75	81	528	70	43	63		
23	63	425	1080	125	195	124	73	80	162	80	42	56		
24	203	1460	1150	119	173	173	72	84	128	72	42	52		
25	247	4470	374	120	314	161	70	99	204	66	41	50		
26	115	2530	217	129	938	123	70	101	123	72	40	48		
27	79	863	177	114	1770	114	68	80	94	82	40	48		
28	68	315	156	109	989	110	67	71	82	68	52	48		
29	62	223	143	109	---	106	66	93	76	61	99	48		
30	59	186	135	107	---	124	64	90	104	58	79	49		
31	58	---	128	101	---	116	---	225	---	56	85	---		
TOTAL	3132	13212	9742	5630	7877	5407	2619	5421	7951	4654	1788	2151		
MEAN	101	440	314	182	281	174	87.3	175	265	150	57.7	71.7		
MAX	368	4470	1170	832	1770	545	118	479	1300	663	114	274		
MIN	46	56	105	101	88	106	64	63	61	56	40	41		
AC-FT	6210	26210	19320	11170	15620	10720	5190	10750	15770	9230	3550	4270		
CFSM	.79	3.44	2.46	1.42	2.20	1.36	.68	1.37	2.07	1.17	.45	.56		
IN.	.91	3.84	2.83	1.64	2.29	1.57	.76	1.58	2.31	1.35	.52	.63		
CAL YR 1986	TOTAL	52785	MEAN	145	MAX	4470	MIN	30	AC-FT	104700	CFSM	1.13	IN.	15.3
WTR YR 1987	TOTAL	69584	MEAN	191	MAX	4470	MIN	40	AC-FT	138000	CFSM	1.49	IN.	20.2

## SABINE RIVER MAIN STEM

08030500 SABINE RIVER NEAR RULIFF, TX  
(Radiochemical and national stream-quality accounting network)

LOCATION.--Lat 30°18'13", Long 93°44'37", Calcasieu Parish, Louisiana-Newton County, Texas State line, Hydrologic Unit 12010005, at downstream side of bridge on State Highway 12, 2.4 mi north of Ruliff, 4.2 mi upstream from the Kansas City Southern Railway Co. bridge, 4.5 mi downstream from Cypress Creek, and at mile 40.2.

DRAINAGE AREA.--9,329 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 1282: 1941(M), 1942. WSP 1442: 1925-29, 1937-39, 1943. WSP 1732: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 4.08 ft above National Geodetic Vertical Datum of 1929. Prior to Mar. 1, 1941, nonrecording gage at Kansas City Southern Railway Co. bridge, 4.2 mi downstream and at datum 2.02 ft lower. Mar. 1, 1941, to Dec. 8, 1948, nonrecording gage at present site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Flow is partly regulated by Toledo Bend Reservoir (station 08025350) 116.3 mi upstream.

AVERAGE DISCHARGE.--42 years (water years 1925-66) prior to completion of Toledo Bend Reservoir, 8,422 ft<sup>3</sup>/s (6,102,000 acre-ft/yr); 21 years (water years 1967-87) regulated, 7,546 ft<sup>3</sup>/s (5,467,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 121,000 ft<sup>3</sup>/s May 22, 1953 (gage height, 19.98 ft); minimum, 270 ft<sup>3</sup>/s Sept. 27-30, Oct. 1-3, 17-20, 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1835, 22.2 ft in May or June 1884 (adjusted to present site and datum on basis of slope of flood of June 8, 9, 1950); flood of Apr. 26-29, 1913, reached a stage of 19.5 ft, present site and datum, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 43,800 ft<sup>3</sup>/s Nov. 28 at 1300 hours (gage height, 15.67 ft); minimum daily, 1,120 ft<sup>3</sup>/s Oct. 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1190	6040	23400	16100	14100	34800	15200	1300	4250	4810	6810	2420
2	1330	5920	18500	15300	11300	36500	15200	1260	3420	5480	7070	2260
3	1420	5730	14500	15100	8520	33900	15000	1360	2880	6200	6900	3180
4	1420	5790	11400	15100	6830	30400	15000	1820	2980	7240	4720	2160
5	1400	6180	10200	15500	6010	26700	14800	1700	3950	7960	3360	1430
6	1350	6720	9370	16700	5650	23400	14800	2080	4500	8120	5160	1360
7	1120	7630	8340	18800	5380	20400	14800	3070	4490	6610	6250	1470
8	1250	8550	8260	20400	5130	18500	14700	3450	3780	5630	6760	1430
9	1730	9010	8610	20100	5020	17300	14700	3710	2340	7430	7060	1410
10	2520	9100	8890	19400	4900	16600	14800	4310	2740	9340	6950	1410
11	2940	9370	9100	18400	4690	16200	14600	4760	5240	10900	4550	1450
12	3140	9630	9300	17800	4520	16100	14600	4240	7060	12000	3880	1450
13	3740	9620	9840	17500	4420	16000	14300	3490	8610	12000	5860	1470
14	5050	9380	10800	17500	4310	15900	13100	4030	11100	9900	6880	1500
15	6130	9200	12400	17400	4350	15900	12500	4980	14000	7030	7330	1500
16	6670	8900	14200	17800	4800	15900	12700	6150	15800	6730	7130	e1450
17	6750	8760	15400	19400	5710	16200	13300	6940	15300	7270	5980	1640
18	6510	8640	17000	21600	6760	16300	13400	6900	14500	7580	3420	2160
19	6210	8600	18900	22800	7310	16400	11700	5400	13200	7700	2520	3020
20	5990	8600	20600	24500	7580	16800	8990	3780	13100	7380	4060	2890
21	5840	8580	21900	25300	7960	17400	6980	4120	13600	5320	4860	2620
22	5760	7920	23400	23300	8840	17600	5780	4780	13300	3800	5090	2420
23	5760	5800	26200	20000	10500	17500	3970	4670	10700	5390	5200	2160
24	5830	5970	26800	17500	12800	17100	2550	4670	7590	6400	4460	1920
25	5910	10300	26600	15400	15500	16500	1940	4100	6270	6960	2480	1740
26	6170	17500	27300	14100	21800	16200	1700	2800	6200	7290	1480	1680
27	6580	28800	27400	13900	26200	15900	1560	2660	6420	7030	1260	1620
28	6700	42300	25300	14500	29600	15900	1480	3740	6120	4900	1150	e1580
29	6550	37700	22000	15100	---	15700	1410	4450	5270	3650	1520	1560
30	6350	29400	19300	15400	---	15300	1340	4490	4590	5360	3120	1530
31	6190	---	17200	15200	---	15200	---	4380	---	6330	3550	---
TOTAL	135500	355640	522410	556900	260490	600500	306900	119590	233300	219740	146820	55890
MEAN	4371	11850	16850	17960	9303	19370	10230	3858	7777	7088	4736	1863
MAX	6750	42300	27400	25300	29600	36500	15200	6940	15800	12000	7330	3180
MIN	1120	5730	8260	13900	4310	15200	1340	1260	2340	3650	1150	1360
AC-FT	268800	705400	1036000	1105000	516700	1191000	608700	237200	462800	435900	291200	110900

CAL YR 1986 TOTAL 3150280 MEAN 8631 MAX 42300 MIN 1120 AC-FT 6249000  
WTR YR 1987 TOTAL 3513680 MEAN 9627 MAX 42300 MIN 1120 AC-FT 6969000

e Estimated.

08030500 SABINE RIVER NEAR RULIFF, TX--Continued  
(Radiochemical and national stream-quality accounting network)

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: September 1945 to September 1946, October 1947 to current year. Chemical and biochemical analyses: February 1968 to current year. Pesticide analyses: January 1968 to May 1982. Radiochemical analyses: October 1969 to current year. Sediment analyses: October 1974 to current year.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: September 1945 to September 1946, October 1947 to current year.

WATER TEMPERATURE: October 1947 to current year.

pH: July 1968 to May 1975

COLOR: November 1969 to December 1975.

DISSOLVED OXYGEN: July 1968 to May 1975.

CHLORIDE: July 1968 to September 1968.

INSTRUMENTATION.--From February 1967 to December 1975, a water quality monitor continuously recorded specific conductance, pH, water temperature, dissolved oxygen, and chloride 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 equation developed for this station may be obtained from the Geological Survey District office upon request.

## EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 779 microsiemens Aug. 31, 1966; minimum, 27 microsiemens Feb. 16, 1984.

WATER TEMPERATURE: Maximum, 36.0°C Aug. 14, 1962; minimum, 1.0°C Jan. 28, 1948.

## EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 231 microsiemens Sept. 29; minimum daily, 35 microsiemens Nov. 30.

WATER TEMPERATURE: Maximum daily, 31.5°C Aug. 7, 22; minimum daily, 8.0°C Jan. 22, 23.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

		STREAM- FLOW, INSTAN- TANEOUS (CFS)	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)
DEC 09...	1135	8640	153	6.80	15.0	13	10.2	100	0.7	44	190
MAR 16...	1520	16100	139	6.60	15.5	6.5	11.2	112	1.1	74	34
JUN 23...	0911	11200	62	5.70	26.5	17	6.1	75	1.5	40	250
AUG 11...	0928	4930	139	6.20	28.0	9.8	6.2	79	0.7	110	250
DATE	HARD- NESS (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 WH WAT TOTAL 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)
DEC 09...	32	8	8.0	3.0	16	1	2.8	24	19	20	<0.10
MAR 16...	31	5	8.0	2.7	13	1	2.6	26	14	15	0.10
JUN 23...	16	5	4.2	1.3	6.6	0.7	1.6	11	11	8.0	<0.10
AUG 11...	28	7	6.8	2.6	14	1	3.1	21	18	16	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, 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- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)
DEC 09...	6.7	89	91	<0.010	<0.100	<0.010	<0.010	--	0.60	0.020	0.010
MAR 16...	5.4	72	77	<0.010	<0.100	0.010	0.010	0.99	1.0	0.030	0.010
JUN 23...	7.5	65	48	<0.010	<0.100	0.090	0.120	1.0	1.1	0.050	0.070
AUG 11...	6.9	81	81	<0.010	<0.100	0.020	0.020	1.3	1.3	0.100	0.030
DATE	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS PO4)	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)
DEC 09...	<0.010	--	43	1000	82	60	<1	47	<0.5	<1	<1
MAR 16...	<0.010	--	14	609	78	300	<1	51	<0.5	<1	<1
JUN 23...	0.060	0.18	13	393	95	160	1	46	<0.5	<1	<1
AUG 11...	0.030	0.09	17	226	83	30	<1	48	0.8	<1	<1

## SABINE RIVER MAIN STEM

08030500 SABINE RIVER NEAR RULIFF, TX--Continued  
(Radiochemical and national stream-quality accounting network)

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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)
DEC 09...	<3	3	85	<5	4	26	<0.1	<10	<1	<1	<1
MAR 16...	<3	4	150	<5	4	19	<0.1	<10	2	<1	<1
JUN 23...	<3	4	360	<5	<4	89	<0.1	<10	<1	<1	<1
AUG 11...	<3	1	140	<5	<4	14	<0.1	<10	<1	<1	1

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 (PCI/L METHOD PCI/L)	URANIUM DIS- SOLVED, EXTRAC- TION (UG/L)
DEC 09...	110	<6	26	<0.4	0.8	3.4	0.8	2.8	0.8	0.05	0.02
MAR 16...	110	<6	12	--	--	--	--	--	--	--	--
JUN 23...	49	<6	42	--	--	--	--	--	--	--	--
AUG 11...	100	<6	19	--	--	--	--	--	--	--	--

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1986 TO SEPTEMBER 1987

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. 1986	135500	172	99	36200	23	8240	19	6960	30
NOV. 1986	355640	108	66	63000	14	13700	13	12500	20
DEC. 1986	522410	105	66	93300	14	19400	13	19000	20
JAN. 1987	556900	134	82	123000	18	26400	16	24500	25
FEB. 1987	260490	115	72	50500	15	10600	15	10200	22
MAR. 1987	600500	115	72	117000	15	24500	15	23600	22
APR. 1987	306900	145	88	72500	19	15800	17	14300	27
MAY 1987	119590	130	80	25800	17	5540	16	5170	24
JUNE 1987	233300	75	49	31100	9.9	6230	10	6490	15
JULY 1987	219740	120	75	44400	16	9360	15	8970	23
AUG. 1987	146820	142	86	34200	19	7420	17	6770	26
SEPT 1987	55890	162	94	14200	21	3200	18	2750	29
TOTAL	3513680	**	**	705000	**	151000	**	141000	**
WTD.AVG.	9627	121	74	**	16	**	15	**	23

## SABINE RIVER MAIN STEM

185

08030500 SABINE RIVER NEAR RULIFF, TX--Continued  
(Radiochemical and national stream-quality accounting network)

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
EQUIVALENT MEAN

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	149	188	38	136	135	73	143	148	148	126	142	132
2	142	181	44	143	127	69	143	143	129	119	145	128
3	173	176	85	147	132	70	144	144	107	89	142	139
4	163	180	121	149	139	76	144	148	105	130	132	146
5	170	173	133	141	143	89	145	151	126	128	135	162
6	166	157	114	131	146	103	145	130	129	126	143	175
7	167	150	141	128	147	115	145	104	125	106	146	208
8	173	123	157	131	149	121	146	110	128	108	148	164
9	145	127	154	135	151	124	146	113	120	115	144	154
10	113	146	155	145	147	129	146	149	114	80	143	164
11	161	150	157	146	146	131	147	135	100	95	140	159
12	166	156	153	146	149	131	147	119	78	107	133	158
13	174	162	159	149	151	132	147	130	71	105	135	148
14	164	169	154	150	150	133	146	192	69	104	161	144
15	141	170	150	152	134	129	147	136	58	103	154	151
16	168	175	142	151	133	136	148	110	46	125	134	160
17	170	173	131	133	121	138	146	110	42	132	141	133
18	175	170	122	126	93	138	142	109	48	133	134	148
19	183	172	103	119	88	137	143	103	57	137	147	164
20	180	172	99	109	117	130	145	125	60	134	138	137
21	181	173	95	102	124	126	146	145	62	115	142	147
22	181	162	97	95	105	127	147	136	63	127	141	144
23	179	155	90	102	108	129	141	138	64	138	143	156
24	181	171	87	118	114	130	142	137	72	138	142	182
25	179	108	83	133	104	131	143	133	77	139	140	174
26	174	59	78	144	94	132	153	127	99	139	150	189
27	163	48	85	150	88	134	155	112	80	138	153	219
28	185	41	90	151	84	136	156	138	93	126	152	225
29	177	37	103	150	---	138	149	140	101	139	140	231
30	184	35	115	151	---	141	150	145	114	141	132	218
31	186	---	128	148	---	142	---	153	---	140	140	---
MEAN	168	142	115	136	126	122	146	133	90	122	142	165

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28.5	20.0	14.5	11.5	13.0	15.0	15.0	26.0	24.0	27.5	30.0	28.0
2	29.0	20.5	13.0	11.0	13.0	14.0	15.0	25.0	25.0	27.0	---	28.0
3	29.0	20.5	---	10.5	---	14.0	14.5	25.0	27.0	26.0	30.0	27.0
4	30.0	21.0	14.0	---	14.0	14.5	---	23.5	26.5	29.0	30.0	28.0
5	29.5	20.0	14.0	10.0	14.0	14.5	14.0	24.0	27.0	28.0	31.0	28.0
6	28.0	19.0	14.0	10.5	14.0	15.0	14.0	23.0	26.0	29.0	31.0	29.0
7	25.0	19.0	13.5	12.0	---	15.0	15.0	22.0	27.5	27.5	31.5	29.0
8	25.0	21.0	15.0	12.0	---	15.0	15.5	---	27.0	26.5	---	30.0
9	---	21.0	---	12.0	13.0	15.0	18.0	22.5	---	26.0	30.0	30.0
10	24.0	21.0	14.5	11.0	13.0	15.0	---	23.5	26.0	27.0	28.5	29.0
11	24.0	19.0	13.0	11.5	14.0	15.0	18.5	24.0	---	---	---	29.0
12	24.0	19.0	13.0	10.5	14.5	15.0	---	23.0	26.0	27.5	29.5	29.0
13	22.0	---	12.0	10.5	15.0	14.5	18.0	23.5	26.0	---	28.5	28.0
14	22.0	15.5	13.0	10.5	15.5	14.0	---	25.5	25.0	27.5	30.5	27.5
15	20.0	15.0	13.0	11.5	17.0	17.0	18.0	26.0	26.0	27.5	30.0	23.5
16	21.5	17.0	---	12.0	15.5	---	18.0	25.0	26.5	29.0	30.0	---
17	20.0	18.0	13.5	12.0	14.0	17.0	19.0	---	26.0	28.5	30.5	28.0
18	---	19.0	---	---	13.0	17.0	19.0	26.0	25.5	29.0	30.0	28.0
19	21.5	19.0	12.5	10.5	12.0	16.0	20.5	26.0	27.0	29.0	30.5	26.0
20	21.0	20.5	---	10.0	11.5	17.0	21.0	---	---	28.0	31.0	27.0
21	20.0	17.5	---	9.0	11.0	18.0	---	28.0	---	28.0	30.0	26.5
22	21.0	19.0	12.0	8.0	11.0	18.5	22.0	26.0	27.5	29.0	31.5	26.0
23	21.0	19.0	11.5	8.0	11.0	17.0	21.5	27.0	27.5	29.0	30.0	26.0
24	21.0	19.0	---	9.0	12.0	---	---	---	28.5	---	---	25.0
25	21.0	18.0	---	10.0	12.0	16.5	22.0	25.5	29.5	29.0	31.0	25.0
26	20.5	16.5	12.0	10.0	---	16.0	24.0	25.5	28.0	29.0	31.0	25.0
27	20.0	14.5	---	10.0	13.0	16.5	22.5	27.0	27.5	29.0	---	26.0
28	20.5	---	11.0	11.0	14.5	16.5	23.0	27.0	27.0	29.0	30.0	---
29	20.0	14.0	11.5	12.5	---	16.5	24.5	---	28.0	30.0	---	26.5
30	20.0	14.0	---	12.5	---	14.0	24.5	25.0	28.5	30.0	30.5	25.0
31	20.0	---	11.5	---	---	14.0	---	24.5	---	---	28.0	---
MEAN	23.0	18.5	13.0	10.5	13.5	15.5	19.0	25.0	27.0	28.0	30.0	27.5

## NECHES RIVER BASIN

08031200 KICKAPOO CREEK NEAR BROWNSBORO, TX

LOCATION.--Lat 32°18'34", Long 95°36'19", Henderson County, Hydrologic Unit 12020001, on left bank at bridge on Farm Road 314, 1.0 mi northeast of Brownsboro, and 11.5 mi upstream from mouth.

DRAINAGE AREA.--232 mi<sup>2</sup>.

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

GAGE.--Water-stage recorder. Datum of gage is 358.62 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records fair. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--25 years (water years 1963-87), 134 ft<sup>3</sup>/s (7.84 in/yr), 97,080 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,800 ft<sup>3</sup>/s Apr. 27, 1966 (gage height, 14.79 ft); maximum gage height, 15.34 ft May 11, 1968; no flow for many days.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1935, 16.4 ft in 1936 or 1937, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Dec. 10	Unknown	1,350	9.77	Mar. 19	0100	*2,800	*11.13
Feb. 28	1700	1,660	10.14				

Minimum discharge, no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	.01	9.3	275	118	81	1410	119	9.6	115	7.8	.00	.00		
2	.01	6.9	186	95	84	1230	117	9.0	95	11	.00	.00		
3	.01	5.4	104	85	92	926	110	9.0	54	46	.00	.00		
4	.07	75	70	81	96	659	97	20	123	66	.00	.00		
5	.54	196	59	82	93	495	86	52	298	53	.00	.00		
6	7.9	e250	55	88	83	391	81	80	413	46	.00	.00		
7	14	e217	66	92	76	307	77	89	520	27	.00	.00		
8	11	e178	228	88	71	235	76	66	477	17	.00	.00		
9	7.2	e137	e601	96	66	181	74	41	356	11	.00	.00		
10	7.6	e100	e1230	128	63	146	71	29	327	7.3	.00	.00		
11	9.7	e72	898	155	62	127	65	22	458	4.9	.00	.00		
12	9.0	e55	e707	156	59	113	60	28	433	3.1	.00	.00		
13	6.6	e46	e592	175	57	102	56	45	307	1.9	.00	.00		
14	5.8	e40	e524	205	58	94	53	41	304	3.2	.00	.00		
15	8.7	e37	e448	190	109	90	51	52	352	5.8	.00	.00		
16	8.8	e36	e402	144	207	89	50	43	337	6.9	.00	5.1		
17	5.9	e34	347	116	236	993	48	61	293	6.1	.00	.71		
18	2.9	30	334	144	231	2200	44	e99	198	3.4	.00	11		
19	1.0	29	442	209	250	2460	38	85	e132	3.1	.00	3.0		
20	1.2	26	460	242	374	1310	34	47	168	3.1	.00	.61		
21	1.4	25	391	441	620	766	30	26	e215	2.9	.00	1.0		
22	2.0	75	376	580	552	542	26	18	e230	2.7	.00	1.4		
23	6.0	149	473	457	730	423	23	14	e210	2.3	.00	1.1		
24	23	179	571	350	729	387	21	12	e155	1.6	.00	.59		
25	56	327	482	259	671	402	19	10	89	.88	.00	.32		
26	66	418	436	184	622	405	17	16	43	.44	.00	.19		
27	60	376	433	132	848	397	16	38	26	.16	.00	.12		
28	46	319	378	107	1390	335	14	39	19	.03	.00	.07		
29	26	301	300	95	---	251	11	34	14	.00	.00	.07		
30	16	315	224	86	---	178	10	46	9.6	.00	.00	.07		
31	12	---	162	82	---	133	---	69	---	.00	.00	---		
TOTAL	422.34	4063.6	12254	5462	8610	17777	1594	1249.6	6770.6	344.61	.00	25.35		
MEAN	13.6	135	395	176	307	573	53.1	40.3	226	11.1	.00	.84		
MAX	66	418	1230	580	1390	2460	119	99	520	66	.00	11		
MIN	.01	5.4	55	81	57	89	10	9.0	9.6	.00	.00	.00		
AC-FT	838	8060	24310	10830	17080	35260	3160	2480	13430	684	.0	50		
CFSM	.06	.58	1.70	.76	1.33	2.47	.23	.17	.97	.0	.00	.0		
IN.	.07	.65	1.96	.88	1.38	2.85	.26	.20	1.09	.06	.00	.0		
CAL YR 1986	TOTAL	87994.37	MEAN	241	MAX	5520	MIN	.00	AC-FT	174500	CFSM	1.04	IN.	14.1
WTR YR 1987	TOTAL	58572.95	MEAN	160	MAX	2460	MIN	.00	AC-FT	116200	CFSM	.69	IN.	9.39

e Estimated.

## 08031290 LAKE ATHENS NEAR ATHENS, TX

LOCATION.--Lat 32°12'15", long 95°43'30", Henderson County, Hydrologic Unit 12020001, at upstream side of dam on Flat Creek, 5 mi downstream from Underwood Lake, 8 mi east of Athens, and 18 mi upstream from Neches River.

DRAINAGE AREA.--21.6 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1964 to Jan. 12, 1987 (discontinued). Prior to October 1972, published as Flat 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 3,000 ft long. Deliberate impoundment began Nov. 1, 1962, and the dam was completed in May 1963. The emergency spillway is an uncontrolled 300-foot-wide channel cut through natural ground at the left end of the dam. The service spillway is an uncontrolled 6- x 6-foot square drop inlet that is connected to a concrete conduit of the same size that extends through the dam. A 4.0- x 5.5-foot inlet box with slide valve that connects to an 18-inch-diameter concrete conduit extends through the dam and serves as the low-flow service outlet. Water is used for municipal supply by the city of Athens. 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.....	453 +	-
Crest of spillway.....	446.0	42,600
Crest of drop inlet (top of conservation pool).....	440.0	32,790
Normal operating level.....	440.0	32,790
Lowest gated outlet (invert).....	396.5	100

COOPERATION.--The capacity table, furnished by the city of Athens, is based on Geological Survey topographic maps dated 1949-50.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 36,500 acre-ft May 10, 1968 (elevation, 442.37 ft); minimum since operating level was reached (May 7, 1968), 29,300 acre-ft Nov. 9-13, 1980 (elevation, 437.64 ft).

EXTREMES FOR PERIOD OCTOBER 1986 TO JANUARY 1987.--Maximum contents, 33,530 acre-ft Dec. 24 at 0100 to 2400 hours (elevation, 440.48 ft); minimum, 31,470 acre-ft Oct. 5 or 6 (elevation, 439.12 ft.)

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

439.0	31,290
441.0	34,340

RESERVOIR STORAGE (AC-FT), OCTOBER 1986 TO JANUARY 1987  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	31530	e32270	33180	33320								
2	e31530	e32250	33180	33320								
3	e31520	e32240	33180	33320								
4	e31520	e32340	33180	33300								
5	31520	e32640	33180	33290								
6	e31820	32670	33180	33270								
7	e31890	e32730	33360	33240								
8	e31890	e32730	33360	33210								
9	e31910	e32730	33440	33270								
10	e31910	e32730	33440	33270								
11	e31910	e32730	33380	33260								
12	31910	e32730	33380	33220								
13	e31890	e32730	33380	---								
14	e31890	32730	33380	---								
15	e31880	e32750	33430	---								
16	e31880	e32750	33430	---								
17	31860	e32750	33430	---								
18	e31860	32760	33440	---								
19	e31850	32760	33460	---								
20	e31830	32790	33430	---								
21	31830	32790	33380	---								
22	e31820	32980	33440	---								
23	e31890	33020	33520	---								
24	e32040	33050	33530	---								
25	e32190	33220	33520	---								
26	e32310	33220	33470	---								
27	e32310	33220	33440	---								
28	e32310	33220	33410	---								
29	32310	33190	33380	---								
30	e32300	33190	33350	---								
31	e32280	---	33320	---								
MAX	32310	33220	33530	---								
MIN	31520	32240	33180	---								
(†)	439.66	440.26	440.34	---								

CAL YR 1986 MAX 35310 MIN 31520  
WTR YR 1987 MAX -- MIN --

(†) Elevation, in feet, at end of month.  
e Contents estimated.

## NECHES RIVER BASIN

08031400 LAKE PALESTINE NEAR FRANKSTON, TX

LOCATION.--Lat 32°03'12", long 95°26'12", Anderson-Cherokee County line, Hydrologic Unit 12020001, in outlet tower near right bank, 140 ft upstream from Blackburn Crossing Dam on Neches River, 5 mi east of Frankston, 11 mi upstream from gage (station 08032000), and at mile 354.0.

DRAINAGE AREA.--839 mi<sup>2</sup>.

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

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Sept. 20, 1962, nonrecording gage read once daily.

REMARKS.--The lake is formed by a rolled earthfill dam with a 500-foot-wide uncontrolled emergency spillway near the left end of dam. Deliberate impoundment began May 1, 1962. The enlargement of lake began Sept. 26, 1969, and was completed on Mar. 3, 1971. The outlet works consist of two 5- x 7-foot gates located in concrete tower near center of dam and connected to an 8.5-foot-diameter concrete conduit through the dam. The low-flow outlet consists of two 3.0-foot iron pipes connected to the tower structure for low-flow releases. Water is used for municipal and industrial purposes in the Palestine area. The diversion point is downstream from gage (station 08032000). There are no large diversions above 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.....	364.0	-
Design flood.....	355.3	726,000
Crest of spillway (top of conservation pool).....	345.0	412,000
Lowest gated outlet (invert).....	298.0	550

COOPERATION.--The capacity table, furnished by the Upper Neches River Municipal Water Authority, is based on Geological Survey topographic maps dated 1946 and 1948-49.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 501,300 acre-ft June 7, 1973 (elevation, 348.29 ft); minimum since first appreciable storage, 11,450 acre-ft Nov. 28, 1970 (elevation, 310.00 ft).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 457,400 acre-ft Mar. 20 at 0600 hours (elevation, 346.72 ft); minimum, 367,400 acre-ft Oct. 2 (elevation, 343.20 ft).

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

343.0	362,600	345.0	411,800
344.0	386,700	347.0	464,900

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	368600	377500	400500	425900	420200	453300	424300	409000	414400	414100	400300	380400
2	367400	377800	400300	423300	419400	453000	423500	408500	414700	415500	399500	380000
3	367700	376800	400500	425900	419400	450900	423000	410500	417500	414100	398500	379200
4	368600	381900	400500	423000	419100	447900	422000	411800	417000	412600	397700	378500
5	369300	381600	400500	421200	419600	444900	421700	412100	417800	412100	397200	378000
6	371500	382800	400300	422000	419900	442000	420900	412600	418100	412600	396000	377500
7	371000	384300	401800	422000	417500	438700	420700	413600	417800	411300	395000	377500
8	372000	385300	409000	420900	419100	434800	420200	414100	417800	411500	394200	377100
9	372200	385500	414900	422000	417500	434000	419400	413600	418600	410300	394000	376800
10	371300	388000	418100	422200	416500	430600	419400	413400	419400	410300	393700	376300
11	371800	386000	419600	420900	417500	428500	417300	412800	420700	409000	392700	376300
12	371800	389500	421700	420700	417800	426900	418300	414100	422200	409300	392000	376300
13	371500	385000	423800	420200	417000	424900	419100	414100	423500	411800	390500	376800
14	371500	384800	425900	420700	419100	424100	417500	414400	423300	410500	389700	376800
15	371000	384300	429500	420900	424300	422800	417000	413900	422800	409800	389200	375900
16	370600	385500	429500	420900	423300	422200	417000	414100	421700	409000	389000	383300
17	370300	385000	430100	423500	423000	436100	416500	413900	422200	408800	388000	384000
18	370300	385700	431100	424600	422200	452200	415700	412800	422000	408800	387500	384800
19	369800	385700	431100	424100	423000	456800	415500	413100	421700	409000	387000	383800
20	369600	386200	430900	423500	428200	456000	415200	412600	421500	408300	386200	383600
21	368900	385700	430600	423500	429800	452500	416500	412800	420700	407300	385000	383600
22	369100	387500	433200	423000	431100	446800	414400	412300	420400	406500	384800	382600
23	376300	391200	433500	422000	432200	445200	414100	412600	420200	406000	384300	381600
24	376800	392200	433200	425400	435000	441700	413900	412100	419600	406300	382800	380900
25	377100	393500	433200	423000	435300	438400	413400	411500	420400	405500	381900	380400
26	377500	395700	432200	422200	441700	436600	412800	410300	418300	404300	380900	380000
27	377300	397200	431100	422000	445200	434000	412600	410000	417000	403800	382400	379500
28	377300	398500	430100	419400	450100	434500	412300	412100	415500	403300	381200	379700
29	377300	399000	429500	421700	---	431900	411300	414100	415200	402800	380000	379700
30	377500	399000	428200	420900	---	427200	409500	414400	414100	401800	379700	378700
31	377300	---	426900	419600	---	425900	---	414700	---	400800	380700	---
MAX	377500	399000	433500	425900	450100	456800	424300	414700	423500	415500	400300	384800
MIN	367400	376800	400300	419400	416500	422200	409500	408500	414100	400800	379700	375900
(†)	343.61	344.49	345.58	345.30	346.45	345.54	344.91	345.11	345.09	344.56	343.75	343.67
(Φ)	+8400	+21700	+27900	-7300	+30500	-24200	-16400	+5200	-600	-13300	-20100	-2000

CAL YR 1986 MAX 475300 MIN 367400 (Φ) +4700  
WTR YR 1987 MAX 456800 MIN 367400 (Φ) +9800

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

## NECHES RIVER MAIN STEM

189

08032000 NECHES RIVER NEAR NECHES, TX

LOCATION.--Lat 31°53'32", long 95°25'50", Anderson-Cherokee County line, Hydrologic Unit 12020001, on left bank just downstream from bridge on U.S. Highway 79, 1.0 mi downstream from Missouri Pacific Railway Co. bridge, 1.4 mi downstream from Walnut Creek, 4.4 mi northeast of Neches, and at mile 333.2.

DRAINAGE AREA.--1,145 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 1732: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 264.06 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 27, 1945, nonrecording gage at present site and datum.

REMARKS.--No estimated daily discharges. Records good except those for Mar. 1 to Apr. 15 and June 9 to July 21, which are poor. Some regulation by Lake Palestine (station 08031400) 11 mi upstream and by Lake Athens (station 08031290) 50 mi upstream, combined capacity 454,600 acre-ft. No large diversion above station. Gage-height telemeter at station.

AVERAGE DISCHARGE.--22 years (water years 1940-61) unregulated, 804 ft<sup>3</sup>/s (582,500 acre-ft/yr); 26 years (water years 1962-87) regulated, 633 ft<sup>3</sup>/s (458,600 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 45,500 ft<sup>3</sup>/s Apr. 2, 1945 (gage height, 22.07 ft); no flow Oct. 3-5, 1939.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in May 1908 (stage 24.3 ft) was the highest since flood in May 1884, which was probably higher.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,010 ft<sup>3</sup>/s Mar. 22 at 0400 hours (gage height, 15.22 ft); minimum daily, 77 ft<sup>3</sup>/s Oct. 3-5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	78	122	215	1520	715	3770	1540	179	468	292	110	99
2	78	119	201	1410	684	4180	1250	163	411	301	109	87
3	77	117	185	1300	676	4470	1070	153	378	350	108	95
4	77	127	170	1190	654	4370	964	174	583	364	107	102
5	77	182	163	1160	637	4130	848	210	642	307	106	102
6	81	189	158	1090	632	3790	753	217	635	263	105	102
7	138	225	158	987	671	3360	715	226	581	242	107	102
8	154	250	168	914	652	2950	681	265	512	222	106	101
9	164	217	373	868	585	2600	634	293	468	205	104	102
10	146	173	728	867	539	2300	577	270	488	193	103	103
11	124	159	842	903	483	2090	531	249	564	186	103	98
12	116	179	874	914	468	1910	499	224	610	174	103	86
13	141	173	855	858	469	1680	468	304	686	160	102	84
14	134	177	868	809	462	1440	527	307	987	173	101	90
15	117	148	988	778	505	1240	541	281	1040	204	100	90
16	106	145	1130	763	749	1080	504	285	1030	162	100	89
17	101	144	1300	763	886	1210	467	316	962	141	99	142
18	98	142	1480	818	921	1720	435	345	937	134	99	112
19	95	140	1660	906	851	2440	408	295	925	130	99	94
20	93	141	1740	960	847	3470	380	276	899	128	98	90
21	91	142	1770	980	1130	4620	361	259	893	122	98	89
22	91	145	1810	974	1380	4880	390	248	846	120	90	86
23	107	187	1960	972	1590	4400	345	241	776	119	97	84
24	314	213	2160	950	1730	3930	276	318	711	119	96	84
25	432	306	2360	903	1860	3450	275	334	662	119	95	83
26	370	406	2270	908	2160	3030	271	277	616	119	95	83
27	289	408	2140	896	2690	2650	244	236	583	120	89	83
28	199	357	2010	851	3320	2380	223	200	480	116	94	82
29	154	277	1880	802	---	2070	230	310	383	115	96	83
30	136	237	1760	758	---	1870	205	672	327	114	89	84
31	129	---	1650	748	---	1770	---	559	---	112	95	---
TOTAL	4507	5947	36026	29520	28946	89250	16612	8686	20083	5626	3103	2811
MEAN	145	198	1162	952	1034	2879	554	280	669	181	100	93.7
MAX	432	408	2360	1520	3320	4880	1540	672	1040	364	110	142
MIN	77	117	158	748	462	1080	205	153	327	112	89	82
AC-FT	8940	11800	71460	58550	57410	177000	32950	17230	39830	11160	6150	5580
CAL YR 1986	TOTAL	353788	MEAN	969	MAX	6100	MIN	77	AC-FT	701700		
WTR YR 1987	TOTAL	251117	MEAN	688	MAX	4880	MIN	77	AC-FT	498100		

08032000 NECHES RIVER NEAR NECHES, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: December 1969 to current year. Biochemical analyses: October 1974 to current year.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: December 1969 to current year.

WATER TEMPERATURES: December 1983 to current year.

INSTRUMENTATION.--Since December 1969, specific conductance is recorded continuously at this station.

Beginning December 1983 water temperature is recorded continuously at this station.

REMARKS.--Interruptions in the record were due to malfunctions of the instrument. Where maximum and 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 (1974-87): Maximum, 1,190 microsiemens Aug. 29, 1976; minimum 77 microsiemens July 28, 1979.

WATER TEMPERATURE: Maximum, 36.0°C July 16, 1985; minimum, 0.5°C Dec. 22, 1983 and Jan. 20, 22, 1984.

## EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 516 microsiemens Sept. 2, 3; minimum, 97 microsiemens Mar. 21, 22.

WATER TEMPERATURE: Maximum, 30.5°C on several days during July and August; minimum, 5.0°C on several days during January.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	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 (MG/L AS CACO3)
NOV 19...	1600	140	147	6.20	17.0	8.9	93	1.2	29
JAN 15...	1120	778	136	7.00	10.5	10.1	91	0.7	26
FEB 26...	1351	2210	124	7.10	11.0	10.3	95	1.0	23
APR 15...	1027	548	153	6.40	15.0	4.3	43	1.4	33
JUN 01...	1917	458	187	6.30	25.5	7.4	91	1.2	35
JUL 22...	1135	120	168	6.80	27.5	6.9	88	1.1	34
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 WH WAT TOTAL FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
NOV 19...	17	5.9	3.4	13	1	4.2	12	17	22
JAN 15...	14	4.9	3.3	12	1	3.6	12	18	19
FEB 26...	13	5.4	2.4	11	1	3.0	10	20	15
APR 15...	20	6.7	3.9	14	1	3.6	13	24	20
JUN 01...	17	7.4	3.9	17	1	3.4	18	19	27
JUL 22...	19	6.8	4.2	16	1	4.8	15	21	25
DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)
NOV 19...	0.10	14	87	<0.010	0.100	0.020	0.68	0.70	0.050
JAN 15...	0.10	12	80	<0.010	<0.100	0.060	0.74	0.80	0.030
FEB 26...	0.10	9.3	72	<0.010	<0.100	<0.010	--	1.0	0.180
APR 15...	0.10	9.1	89	<0.010	<0.100	0.030	0.57	0.60	0.050
JUN 01...	0.30	11	100	0.010	<0.100	0.060	0.64	0.70	0.090
JUL 22...	0.20	9.8	97	<0.010	<0.100	0.030	0.57	0.60	0.040

## NECHES RIVER MAIN STEM

191

08032000 NECHES RIVER NEAR NECHES, TX--Continued

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1986 TO SEPTEMBER 1987

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. 1986	4507	140	83	1000	20	240	22	264	26
NOV. 1986	5947	154	91	1460	22	354	23	367	28
DEC. 1986	36026	118	69	6690	16	1540	19	1880	22
JAN. 1987	29520	127	75	5940	17	1390	20	1630	23
FEB. 1987	28946	133	78	6090	18	1440	21	1640	24
MAR. 1987	89250	131	77	18500	18	4340	21	5000	24
APR. 1987	16612	158	93	4190	23	1020	23	1040	28
MAY 1987	8686	175	104	2440	26	611	24	574	31
JUNE 1987	20083	147	87	4690	21	1130	22	1210	27
JULY 1987	5626	161	96	1450	23	356	24	357	29
AUG. 1987	3103	337	216	1810	68	571	18	153	50
SEPT 1987	2811	304	195	1480	62	468	16	124	45
TOTAL	251117	**	**	55700	**	13500	**	14200	**
WTD.AVG.	688	139	82	**	20	**	21	**	25

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	133	132	132	142	138	140	154	148	151	116	114	115
2	132	128	130	139	137	138	149	144	147	116	115	116
3	129	128	128	138	136	137	146	145	146	119	116	117
4	129	127	128	150	134	139	147	145	146	119	117	118
5	129	127	128	233	143	173	147	146	146	123	118	120
6	131	126	128	153	139	148	147	145	146	125	121	123
7	169	124	139	144	136	138	151	146	149	123	121	122
8	173	149	159	193	146	170	184	150	164	122	121	122
9	203	157	170	161	151	155	217	137	173	126	122	123
10	157	153	155	151	143	147	134	113	121	128	120	125
11	154	148	151	166	144	150	126	117	122	120	116	118
12	149	143	146	199	153	169	132	125	127	124	117	120
13	217	142	166	166	152	158	133	128	132	126	123	125
14	148	139	142	152	142	145	128	125	126	126	124	125
15	145	138	141	145	142	144	136	125	131	138	124	132
16	140	136	138	146	144	145	130	118	122	137	135	136
17	137	135	136	149	145	148	124	114	117	140	135	137
18	137	134	136	148	145	147	116	114	115	151	141	146
19	150	133	136	147	141	145	114	112	113	142	132	136
20	159	132	143	173	140	148	114	113	113	133	132	132
21	134	132	133	161	140	148	114	113	114	134	132	133
22	134	132	133	143	138	140	115	114	115	135	132	134
23	142	130	133	212	140	172	115	113	114	133	130	131
24	230	119	151	205	159	169	115	112	113	137	133	135
25	123	117	119	215	165	183	115	111	113	136	131	134
26	132	123	126	186	143	156	113	112	113	133	130	131
27	157	133	152	143	138	140	114	112	113	136	131	133
28	155	143	148	163	140	153	114	113	114	138	136	137
29	143	140	141	165	154	160	114	113	114	140	136	138
30	141	138	139	155	149	152	114	113	114	140	134	136
31	141	137	139	---	---	---	115	114	114	135	133	134
MONTH	230	117	140	233	134	152	217	111	128	151	114	129

## NECHES RIVER MAIN STEM

08032000 NECHES RIVER NEAR NECHES, TX--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	139	136	138	127	124	125	152	148	150	177	174	176
2	152	139	145	126	123	124	157	151	155	177	172	175
3	140	138	139	127	125	126	157	154	156	175	171	173
4	138	136	137	127	125	126	160	157	159	227	168	178
5	137	136	137	128	126	127	160	159	160	189	161	169
6	137	134	136	129	127	128	168	158	160	163	161	162
7	140	134	136	129	127	128	169	157	161	163	160	162
8	143	139	141	131	128	129	160	154	157	227	160	174
9	143	137	140	133	130	132	157	153	155	224	171	188
10	142	138	141	134	132	133	155	153	154	239	169	180
11	143	141	142	136	133	134	155	151	154	194	165	174
12	142	140	141	141	131	134	166	153	160	169	163	166
13	142	140	141	135	132	133	162	148	153	302	165	208
14	143	141	142	137	134	136	181	149	157	193	170	178
15	184	143	158	140	137	139	151	149	150	172	165	169
16	153	130	136	140	137	139	159	153	156	170	160	166
17	137	130	134	149	125	140	160	157	159	286	172	206
18	141	135	139	122	108	111	161	157	159	201	168	176
19	141	139	141	127	114	120	163	153	155	172	168	169
20	174	138	152	136	128	130	167	162	163	169	167	168
21	146	122	128	135	97	118	167	161	164	172	167	170
22	135	129	133	139	97	114	161	156	158	168	165	167
23	129	126	127	140	135	138	160	156	158	172	161	165
24	130	127	128	141	138	139	166	161	164	218	162	186
25	129	125	127	143	139	141	166	160	164	197	170	180
26	126	123	125	144	142	143	169	164	166	206	176	184
27	127	125	126	144	143	144	169	164	168	181	175	178
28	127	125	125	146	143	145	174	168	170	177	175	176
29	---	---	---	147	145	146	207	171	183	291	170	191
30	---	---	---	147	146	146	187	170	178	184	154	161
31	---	---	---	148	147	147	---	---	---	164	154	157
MONTH	184	122	137	149	97	133	207	148	160	302	154	175
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	---	---	160	183	164	172	154	149	151	512	508	510
2	167	160	164	182	147	163	164	152	157	516	512	514
3	169	161	164	253	155	184	191	164	176	516	464	488
4	199	166	183	158	146	152	212	151	170	478	471	475
5	162	151	156	158	147	150	150	146	148	475	465	470
6	156	146	149	170	151	157	156	150	153	483	475	480
7	163	155	158	172	152	159	235	149	186	472	461	466
8	157	154	156	181	152	163	296	231	262	483	470	477
9	155	153	154	182	152	163	352	299	330	480	473	475
10	182	152	160	191	155	168	411	356	385	484	478	481
11	169	149	158	184	156	167	448	411	432	---	---	442
12	151	138	146	182	156	166	471	450	462	---	---	363
13	140	137	138	185	158	171	474	463	470	---	---	304
14	142	112	134	187	146	166	473	450	460	---	---	245
15	134	125	129	177	144	160	471	410	453	---	---	186
16	141	127	134	182	150	167	410	383	400	129	124	126
17	143	140	141	190	155	171	410	349	386	190	123	133
18	148	140	143	193	155	172	347	276	313	296	114	198
19	147	142	143	191	155	174	276	232	243	413	243	338
20	150	141	144	191	150	162	261	245	254	349	249	288
21	148	139	142	153	149	151	282	260	270	324	131	153
22	143	141	142	151	147	150	332	283	310	151	131	134
23	145	143	144	149	144	148	391	334	357	176	132	155
24	145	141	143	151	144	148	444	393	417	311	141	239
25	156	143	146	151	146	149	447	433	441	192	129	138
26	150	142	145	148	142	146	440	434	435	131	130	131
27	146	143	144	151	145	147	458	439	446	133	130	132
28	147	146	147	149	145	147	467	459	462	134	131	133
29	162	148	154	163	148	151	471	450	463	136	133	134
30	169	150	160	193	149	161	499	455	475	136	134	135
31	---	---	---	150	148	149	508	499	504	---	---	---
MONTH	199	112	149	253	142	160	508	146	341	516	114	298

## NECHES RIVER MAIN STEM

193

08032000 NECHES RIVER NEAR NECHES, TX--Continued

DAY	TEMPERATURE, WATER (DEG. C), WATER YEAR			OCTOBER 1986			TO SEPTEMBER 1987					
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	28.0	25.0	26.5	18.5	17.5	18.0	11.5	11.0	11.5	5.5	5.5	5.5
2	28.0	25.5	27.0	18.5	18.0	18.5	11.5	11.0	11.0	5.5	5.0	5.5
3	28.0	27.0	27.5	19.5	18.5	19.0	11.0	10.0	10.5	10.0	5.5	6.0
4	28.0	26.5	27.5	19.5	19.0	19.5	10.0	9.5	10.0	6.0	5.0	5.5
5	27.5	26.0	27.0	19.0	17.5	18.0	10.0	9.5	9.5	9.0	5.0	8.0
6	26.0	23.5	25.0	17.5	16.5	17.0	10.0	9.5	10.0	9.0	5.0	7.0
7	23.5	22.0	22.5	16.5	16.0	16.5	11.5	10.5	11.0	10.5	5.5	8.0
8	22.0	21.5	21.5	18.5	16.5	17.5	13.0	11.5	12.0	11.0	10.5	10.5
9	21.5	21.5	21.5	19.0	18.0	18.5	---	---	---	11.0	10.5	11.0
10	22.5	21.5	22.0	18.5	18.0	18.0	---	---	---	10.5	5.5	9.0
11	22.0	22.0	22.0	18.0	15.5	17.0	---	---	---	9.0	5.0	7.0
12	22.0	20.0	21.0	15.5	14.0	15.0	---	---	---	8.5	8.0	8.0
13	20.0	18.0	19.0	14.0	11.5	12.5	---	---	---	9.0	8.0	8.5
14	18.0	17.0	17.5	11.5	11.0	11.0	---	---	---	10.0	5.0	6.5
15	18.0	17.0	17.5	12.0	10.5	11.5	---	---	---	10.5	10.0	10.5
16	18.0	17.0	17.5	14.0	12.0	13.5	---	---	---	11.0	10.5	10.5
17	18.5	17.0	17.5	16.0	14.5	15.0	---	---	---	10.5	10.5	10.5
18	19.0	17.5	18.0	17.0	16.0	16.5	12.5	12.0	12.0	10.5	9.5	10.0
19	19.5	18.0	18.5	17.0	16.5	17.0	12.0	11.5	12.0	9.5	8.5	8.5
20	19.5	18.0	18.5	17.0	16.5	17.0	11.5	11.0	11.0	8.5	8.0	8.5
21	19.0	18.0	18.5	16.0	15.0	15.5	11.0	11.0	11.0	8.5	8.0	8.0
22	19.0	18.5	18.5	15.5	15.5	15.5	11.0	10.5	11.0	8.0	8.0	8.0
23	19.5	19.0	19.5	15.5	15.5	15.5	10.5	10.0	10.5	8.0	7.5	7.5
24	19.5	19.0	19.5	15.5	14.0	15.0	10.0	5.5	8.5	9.0	7.5	8.0
25	19.5	18.0	18.5	14.0	13.0	13.5	10.0	5.5	8.0	9.0	8.5	9.0
26	18.5	17.0	17.5	13.0	12.5	12.5	10.5	10.0	10.0	8.5	8.0	8.5
27	17.0	16.5	16.5	12.5	12.0	12.0	10.5	10.0	10.0	9.0	8.0	8.5
28	16.5	16.0	16.5	12.0	11.5	12.0	10.0	6.0	10.0	10.0	9.0	9.5
29	17.5	16.5	17.0	11.5	11.0	11.0	10.0	5.5	6.0	11.5	10.0	10.5
30	18.0	17.0	17.5	11.5	10.5	11.0	6.0	5.5	5.5	11.0	10.5	11.0
31	18.0	17.5	17.5	---	---	---	10.0	5.5	6.0	10.5	10.0	10.5
MONTH	28.0	16.0	20.5	19.5	10.5	15.5	13.0	5.5	10.0	11.5	5.0	8.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	11.0	10.5	10.5	12.5	11.5	12.0	14.0	12.5	13.0	23.5	23.0	23.5
2	11.0	10.5	10.5	12.5	11.0	12.0	14.5	13.5	14.0	23.5	23.0	23.0
3	11.5	10.5	11.0	12.5	11.5	12.0	13.5	12.5	13.0	23.0	22.0	22.5
4	11.5	11.0	11.5	13.0	11.5	12.5	13.5	12.5	13.0	22.0	21.0	21.5
5	12.0	11.0	11.5	13.5	12.0	12.5	14.0	13.0	13.5	21.5	20.5	21.5
6	11.5	11.5	11.5	14.0	12.5	13.0	15.0	13.5	14.0	22.0	21.0	21.5
7	11.0	11.0	11.0	13.5	13.0	13.0	15.5	14.0	14.5	22.5	21.5	22.0
8	11.5	10.0	11.0	14.0	13.0	13.5	16.0	14.5	15.0	22.5	21.5	22.0
9	11.5	10.5	11.0	15.0	14.0	14.5	17.0	15.0	16.0	23.5	22.5	23.0
10	11.5	10.0	11.0	15.0	14.0	14.5	18.0	16.5	17.0	24.0	23.0	23.5
11	12.5	11.0	11.5	14.0	13.5	14.0	18.0	16.5	17.5	24.5	23.5	24.0
12	12.5	11.5	12.0	14.0	13.0	13.5	19.5	17.5	18.0	25.0	24.0	24.5
13	13.0	12.0	12.5	14.0	13.0	13.5	20.0	18.5	19.0	24.0	22.5	23.0
14	14.0	12.5	13.0	14.5	13.5	14.0	18.5	17.0	17.0	24.5	23.0	23.5
15	14.0	13.0	13.5	15.0	14.0	14.5	17.0	15.5	16.0	25.0	24.5	24.5
16	13.5	11.5	12.5	15.5	14.5	15.0	18.0	16.0	17.0	25.5	24.5	25.0
17	11.5	10.5	11.0	16.5	15.5	16.0	19.5	17.0	18.0	25.5	24.5	25.0
18	10.5	10.0	10.0	16.5	15.5	16.0	21.0	19.0	19.5	26.0	25.0	25.5
19	10.0	10.0	10.0	16.0	15.0	15.5	21.0	19.0	20.0	26.0	25.5	25.5
20	10.0	9.0	9.5	17.0	15.5	16.0	21.0	19.5	20.5	25.0	24.5	25.0
21	9.5	9.0	9.0	17.5	16.0	17.0	21.0	19.5	20.5	25.0	24.0	24.5
22	10.5	10.0	10.0	18.0	16.5	17.0	20.0	18.5	19.0	25.5	24.0	24.5
23	11.0	10.0	10.5	17.5	16.0	17.0	19.5	18.0	19.0	---	---	---
24	11.0	10.5	10.5	16.0	15.0	15.5	20.0	19.0	19.5	---	---	---
25	10.5	10.5	10.5	15.5	15.0	15.0	21.0	19.5	20.5	---	---	---
26	11.0	10.5	11.0	15.5	15.0	15.0	21.5	20.5	21.0	---	---	---
27	11.5	11.0	11.5	16.0	15.0	15.5	22.5	21.0	21.5	---	---	---
28	12.5	11.5	12.0	17.0	15.5	16.0	23.0	21.5	22.5	---	---	---
29	---	---	---	16.5	13.5	15.0	23.5	22.5	23.0	---	---	---
30	---	---	---	13.5	12.0	12.5	24.0	22.5	23.5	---	---	---
31	---	---	---	12.5	11.5	12.0	---	---	---	---	---	---
MONTH	14.0	9.0	11.0	18.0	11.0	14.5	24.0	12.5	18.0	26.0	20.5	23.5

DAY	TEMPERATURE, WATER (DEG. C.), WATER YEAR			OCTOBER 1986		TO SEPTEMBER 1987						
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	---	---	---	27.5	26.0	26.5	30.5	29.0	29.5	26.5	24.5	25.5
2	26.0	25.0	25.5	27.0	25.5	26.5	30.5	29.0	29.5	26.5	24.5	25.5
3	26.0	25.0	25.5	26.5	25.0	26.0	30.5	29.0	29.5	26.0	24.5	25.0
4	25.5	24.0	24.5	27.5	26.0	26.5	30.0	28.5	29.5	26.5	25.0	25.5
5	25.0	24.0	24.5	28.0	27.0	27.5	30.0	28.5	29.0	27.0	25.5	26.0
6	25.5	24.0	24.5	28.5	27.5	28.0	30.0	28.5	29.0	27.0	25.5	26.0
7	26.5	25.0	25.5	28.0	27.0	27.5	30.0	28.5	29.5	26.5	26.0	26.0
8	27.0	26.0	26.5	27.5	26.5	27.0	30.5	29.0	29.5	26.0	24.5	25.5
9	27.0	26.0	26.5	26.5	26.0	26.0	30.0	29.0	29.5	26.5	25.0	25.5
10	26.0	25.5	25.5	27.5	26.0	26.5	30.0	28.5	29.0	26.0	25.5	25.5
11	25.5	25.0	25.5	28.0	26.5	27.5	29.5	28.5	29.0	---	---	---
12	26.0	25.0	25.5	29.0	27.5	28.0	30.0	28.5	29.0	---	---	---
13	27.0	26.0	26.0	28.5	27.5	28.0	30.5	29.0	29.5	---	---	---
14	26.5	25.5	26.0	28.0	27.0	27.5	30.5	29.0	29.5	---	---	---
15	26.5	25.0	26.0	27.5	26.0	26.5	30.0	29.0	29.5	---	---	---
16	26.5	25.0	26.0	27.5	26.5	27.0	30.0	29.0	29.5	26.5	25.5	26.0
17	26.5	26.0	26.5	27.5	26.5	27.0	30.0	28.5	29.0	26.5	26.0	26.0
18	26.5	25.5	26.0	28.5	27.0	27.5	30.0	28.5	29.0	26.5	25.5	26.0
19	26.0	25.0	25.5	29.0	27.5	28.0	30.0	28.5	29.0	25.5	25.0	25.0
20	26.0	26.0	26.0	29.0	27.5	28.0	30.0	28.5	29.0	25.0	24.0	24.5
21	26.5	25.5	26.0	28.5	27.0	28.0	30.0	28.5	29.0	24.5	23.5	24.0
22	27.0	26.0	26.5	28.5	27.5	28.0	30.5	28.5	29.0	24.0	23.5	23.5
23	27.5	26.5	27.0	28.0	27.5	27.5	29.5	25.5	29.0	23.5	22.5	23.0
24	27.0	26.5	26.5	29.0	27.0	28.0	30.0	28.5	29.0	23.0	22.0	22.5
25	27.5	26.5	27.0	29.0	27.5	28.0	29.5	28.5	29.0	23.0	22.0	22.5
26	28.5	27.0	28.0	29.0	27.5	28.0	30.0	28.5	29.0	23.0	22.5	22.5
27	28.0	27.5	28.0	29.0	27.5	28.0	29.0	28.5	29.0	23.5	22.5	23.0
28	28.0	26.5	27.5	29.5	28.0	28.5	28.5	27.5	28.0	24.0	23.0	23.5
29	28.0	27.0	27.5	29.5	28.0	28.5	27.5	26.5	27.0	24.0	23.5	24.0
30	27.5	26.5	27.0	30.0	28.5	29.0	26.5	26.0	26.5	23.5	22.5	23.0
31	---	---	---	30.5	28.5	29.5	26.0	25.5	26.0	---	---	---
MONTH	28.5	24.0	26.0	30.5	25.0	27.5	30.5	25.5	29.0	27.0	22.0	24.5

## NECHES RIVER BASIN

195

08033300 PINEY CREEK NEAR GROVETON, TX

LOCATION.--Lat 31°08'25", long 95°05'11", Trinity County, Hydrologic Unit 12020002, on left bank at downstream side of bridge on State Highway 94, 6.3 mi northeast of Groveton, and 7.3 mi upstream from Caney Creek.

DRAINAGE AREA.--79.0 mi<sup>2</sup>.

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

GAGE.--Water-stage recorder. Datum of gage is 251.40 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are poor. No diversions above station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--26 years, 40.0 ft<sup>3</sup>/s (6.88 in/yr), 28,980 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,480 ft<sup>3</sup>/s Apr. 20, 1979 (gage height, 15.70 ft); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1921, 17 ft in May 1942, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 600 ft<sup>3</sup>/s (revised) and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Nov. 24	unknown	1,800	unknown	Feb. 27	0200	865	12.29
Nov. 25	unknown	*3,230	*a14.07				

a From peak mark.

Minimum discharge, no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.02	.03	13	e8.0	4.3	414	e5.2	.73	e1.1	.15	e.14	e.00
2	.02	.03	10	e7.0	5.2	93	e4.6	.73	e.64	.19	e.10	e.00
3	.02	.03	8.0	e40	17	43	e4.3	.72	.96	.29	e.08	e.00
4	.02	.35	6.5	e50	9.8	27	e4.0	.68	7.8	.78	e.06	e.00
5	.02	30	5.4	e20	6.4	20	e5.0	.68	3.3	.51	e.05	e.00
6	.02	8.2	4.7	e12	5.1	15	e6.0	.68	.99	.24	e.04	e.00
7	.02	43	4.1	e10	4.4	12	e5.0	.68	.51	.18	e.03	e.00
8	.02	42	3.8	8.6	4.3	10	e4.0	2.0	.34	.39	e.02	e.00
9	.02	36	4.0	7.8	4.0	9.4	e3.2	123	.30	1.6	e.02	e.00
10	.02	41	7.4	8.3	3.9	8.5	e2.6	16	.30	3.6	e.02	.00
11	.02	8.7	18	8.2	3.8	7.7	e2.3	4.9	.32	1.6	e.01	.00
12	4.0	5.8	19	7.3	3.7	6.9	e2.1	2.2	.47	.67	e.01	.00
13	18	3.1	13	7.1	3.7	6.6	e2.0	1.9	5.4	.30	e.01	.00
14	3.8	1.5	9.8	7.1	3.6	6.2	e2.5	1.8	27	.20	e.00	.00
15	.97	.93	174	7.0	26	5.8	2.8	1.7	11	.17	e.00	.00
16	.34	.64	e500	7.0	48	5.4	2.0	12	88	.47	e.00	37
17	.19	.48	320	7.0	17	207	1.5	6.0	79	.41	e.00	143
18	.12	.35	252	91	8.5	547	1.3	2.4	17	.19	e.00	29
19	.09	.27	e472	93	5.5	372	1.2	1.8	7.4	e.10	e.00	6.3
20	.06	.27	e256	35	138	77	1.0	1.8	3.9	e.07	e.00	1.9
21	.04	.21	86	18	447	32	.84	3.2	2.2	e.05	e.00	.79
22	.04	.22	73	12	259	21	.81	2.3	1.2	.04	e.00	.40
23	.04	e800	e444	8.4	90	20	.78	2.2	.57	.03	e.00	.17
24	.05	e1600	519	7.5	296	29	.78	7.0	.38	.02	e.00	.11
25	.05	e2450	e270	7.8	586	19	.78	4.7	.32	.04	e.00	.08
26	.04	e2150	e85	7.7	732	12	.78	2.5	.24	.06	e.00	.06
27	.04	e600	e30	6.7	807	e10	.74	2.6	.20	.68	e.00	.05
28	.03	89	e20	5.7	650	e8.5	.73	2.2	.19	.53	e.00	.04
29	.03	32	e14	5.1	---	e7.5	.73	e1.8	.17	.37	e.00	.04
30	.03	20	e11	4.8	---	e6.7	.73	e2.0	.17	e.27	e.00	.03
31	.03	---	e9.0	4.5	---	e5.8	---	e2.5	---	e.20	e.00	---
TOTAL	28.21	7964.11	3661.7	529.6	4189.2	2065.0	70.30	215.40	261.37	14.40	.59	218.97
MEAN	.91	.265	118	17.1	150	66.6	2.34	6.95	8.71	.46	.02	7.30
MAX	.18	2450	519	93	807	547	6.0	123	88	3.6	.14	143
MIN	.02	.03	3.8	4.5	3.6	5.4	.73	.68	.17	.02	.00	.00
AC-FT	56	15800	7260	1050	8310	4100	139	427	518	29	1.2	434
CFSM	.0	3.36	1.50	.22	1.89	.84	.0	.09	.11	.0	.0	.09
IN.	.0	3.75	1.72	.25	1.97	.97	.0	.10	.12	.0	.0	.10
CAL YR 1986	TOTAL	17552.08	MEAN	48.1	MAX	2450	MIN	.00	AC-FT	34810	CFSM	.61
WTR YR 1987	TOTAL	19218.56	MEAN	52.7	MAX	2450	MIN	.00	AC-FT	38120	CFSM	.67
										IN.	8.27	
											9.05	

e Estimated.

## NECHES RIVER MAIN STEM

08033500 NECHES RIVER NEAR ROCKLAND, TX

LOCATION.--Lat 31°01'29", long 94°23'55", Tyler County, Hydrologic Unit 12020003, on downstream side of bridge at U.S. Highway 69, 2,200 ft upstream from abandoned ferry crossing, 0.8 mi upstream from Texas and New Orleans Railway Co. bridge, 1.2 mi north of Rockland, 3.2 mi downstream from Williams Creek, and 32.4 mi upstream from Angelina River.

DRAINAGE AREA.--3,636 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1903 to current year.

REVISED RECORDS.--WSP 878: 1926-27. WSP 1342: 1922(M), 1935. WSP 1732: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 88.41 ft above National Geodetic Vertical Datum of 1929. Prior to May 23, 1973, nonrecording gage located 2,200 ft downstream at datum 3.00 ft higher. May 23, 1973, to Sept. 30, 1975, recording gage at present site at datum 3.00 ft higher.

REMARKS.--No estimated daily discharges. Records good. At times low flow may be affected by regulations by Lake Athens (station 08031290), Lake Palestine (station 08031400), and Lake Jacksonville, combined capacity 130,700 acre-ft/yr. During the current year, the Upper Neches River Municipal Water Authority diverted 2,612 acre-ft from the Neches River at diversion point located about 10 mi downstream from station 08032000. This water is used for municipal and industrial purposes in the Palestine area. Gage-height telemeter at station.

AVERAGE DISCHARGE.--58 years (water years 1904-61) unregulated, 2,362 ft<sup>3</sup>/s (1,711,000 acre-ft/yr); 26 years (water years 1962-87) regulated, 1,999 ft<sup>3</sup>/s (1,448,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 49,800 ft<sup>3</sup>/s May 6, 1944 (gage height, 35.04 ft), present site; minimum observed during period of daily records, 1.6 ft<sup>3</sup>/s Sept. 28-30, Oct. 1, 2, 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Historical flood information begins with flood in May 1884 which reached a stage of 38.0 ft, present site, from information by local resident (discharge, about 62,000 ft<sup>3</sup>/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 15,400 ft<sup>3</sup>/s Nov. 28 at 0200 to 1800 hours and Mar. 2 at 1900 hours; maximum gage height, 23.96 ft Nov. 28 at 0800 hours; minimum daily discharge, 97 ft<sup>3</sup>/s Aug. 27.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	230	602	11300	5310	1880	14100	3180	578	529	1470	227	102
2	196	553	9440	4790	1980	15200	3200	547	524	1230	215	98
3	178	500	7460	4730	2110	15100	3310	539	561	1120	210	107
4	168	522	5380	4840	2180	14100	3460	578	668	1020	200	115
5	161	931	3320	4420	2070	12700	3610	516	761	950	202	122
6	156	1080	2030	4260	2010	11100	3750	497	848	900	183	136
7	155	1050	1490	4210	1940	9690	3800	499	891	813	174	145
8	169	1580	1200	4160	1860	8280	3770	508	897	746	151	146
9	174	2650	2160	4090	1790	6950	3630	547	879	777	151	136
10	161	2640	2920	4000	1680	5900	3430	625	894	941	169	124
11	155	2150	2030	3850	1620	5290	3200	747	978	1020	191	115
12	347	1870	1680	3690	1520	5020	2930	787	1050	995	159	115
13	883	1730	1580	3500	1440	4910	2650	782	1100	883	150	120
14	1110	1480	1550	3300	1390	4840	2360	769	1520	704	143	125
15	1070	1210	2480	3110	1990	4850	2030	687	1310	602	137	120
16	964	1020	4130	2900	2610	4850	1740	808	2190	508	137	164
17	859	853	4290	3160	2500	5680	1530	804	2020	442	133	570
18	698	704	4970	4570	2260	6750	1370	763	1810	399	130	1030
19	521	604	6320	4400	2190	6890	1270	757	1920	361	128	1040
20	398	551	6250	3840	2750	6750	1170	722	1920	334	121	1010
21	318	507	6230	3380	4760	6510	1100	669	1980	323	118	811
22	275	485	6080	3120	5240	6320	1030	643	1840	320	118	603
23	253	3530	7530	2910	5320	6190	966	629	1630	309	108	452
24	265	9290	7890	2740	5210	6040	904	633	1540	301	105	343
25	264	12400	8080	2580	5960	5610	847	745	1770	284	102	278
26	250	14100	8230	2400	8350	5110	780	667	1660	265	99	233
27	269	14900	7960	2280	9880	4520	721	665	1520	256	97	200
28	446	15400	7470	2170	11700	4030	678	617	1440	243	99	175
29	624	14700	6920	2090	---	3680	644	536	1380	233	98	159
30	678	13200	6340	2000	---	3420	617	501	1410	228	107	145
31	647	---	5810	1920	---	3250	---	506	---	228	111	---
TOTAL	13042	122792	160520	108720	96190	223630	63677	19871	39440	19205	4473	9039
MEAN	421	4093	5178	3507	3435	7214	2123	641	1315	620	144	301
MAX	1110	15400	11300	5310	11700	15200	3800	808	2190	1470	227	1040
MIN	155	485	1200	1920	1390	3250	617	497	524	228	97	98
AC-FT	25870	243600	318400	215600	190800	443600	126300	39410	78230	38090	8870	17930
CAL YR 1986	TOTAL	1031000	MEAN	2825	MAX	16000	MIN	155	AC-FT	2045000		
WTR YR 1987	TOTAL	880599	MEAN	2413	MAX	15400	MIN	97	AC-FT	1747000		

08033500 NECHES RIVER NEAR ROCKLAND, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: April 1941 to September 1942, September 1945 to September 1947. Chemical and biochemical analyses: December 1967 to current year. Sediment analyses: 1961 to 1963.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: April 1941 to September 1942, September 1945 to September 1947.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	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 (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03	
DEC 10...	1515	2850	153	6.80	12.0	8.8	81	2.4	34	23	
JAN 29...	1337	2080	216	6.40	12.0	12.3	114	1.2	44	31	
MAR 19...	1330	6950	152	6.00	17.0	7.8	80	1.8	30	23	
MAY 06...	1610	500	222	6.60	22.5	6.8	78	0.9	44	22	
JUN 25...	0828	1750	158	6.30	27.0	6.4	80	1.6	32	17	
AUG 12...	1633	155	226	6.70	32.0	7.3	100	1.6	42	36	
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 WH WAT TOTAL 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)
DEC 10...	9.3	2.7	14	1	2.9	11	29	19	0.10	17	
JAN 29...	9.9	4.6	22	1	3.1	13	41	29	<0.10	14	
MAR 19...	7.1	2.9	14	1	2.7	7	28	18	<0.10	10	
MAY 06...	9.9	4.7	23	2	3.3	22	29	31	0.10	15	
JUN 25...	7.4	3.2	16	1	3.5	15	25	20	<0.10	13	
AUG 12...	9.6	4.4	25	2	4.1	6	45	33	0.20	14	
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- PHORUS, TOTAL (MG/L AS P)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)
DEC 10...	100	0.080	0.020	0.100	0.040	1.2	1.2	0.050	1	56	
JAN 29...	130	--	0.010	<0.100	0.030	0.77	0.80	0.030	--	--	
MAR 19...	87	--	0.020	<0.100	0.020	0.88	0.90	0.060	--	--	
MAY 06...	130	0.180	0.020	0.200	0.060	0.54	0.60	0.070	--	--	
JUN 25...	97	--	<0.010	0.200	0.050	0.95	1.0	0.110	--	--	
AUG 12...	140	0.080	0.020	0.100	0.030	1.1	1.1	0.110	1	56	
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 10...	3	<10	7	400	<5	120	1.0	<1	<1	45	
JAN 29...	--	--	--	--	--	--	--	--	--	--	
MAR 19...	--	--	--	--	--	--	--	--	--	--	
MAY 06...	--	--	--	--	--	--	--	--	--	--	
JUN 25...	--	--	--	--	--	--	--	--	--	--	
AUG 12...	<1	<10	4	230	<5	110	<0.1	1	<1	17	

## NECHES RIVER BASIN

08033900 EAST FORK ANGELINA RIVER NEAR CUSHING, TX

LOCATION.--Lat 31°51'36", long 94°49'23", Rusk County, Hydrologic Unit 12020004, near left bank at downstream side of bridge on Farm Road 225, 0.1 mi downstream from Everett Branch, 0.9 mi upstream from Reagan Branch, 3.5 mi north of Cushing, and 8 mi upstream from Angelina River.

DRAINAGE AREA.--158 mi<sup>2</sup>.

PERIOD OF RECORD.--January 1964 to current year.

GAGE.--Water-stage recorder. Datum of gage is 275.29 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. No known diversion above station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--23 years, 117 ft<sup>3</sup>/s (10.06 in/yr), 84,770 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,500 ft<sup>3</sup>/s Apr. 12, 1980, (gage height, 13.34 ft) from rating curve extended above 4,600 ft<sup>3</sup>/s on basis of area-velocity study; minimum, 0.7 ft<sup>3</sup>/s Aug. 14, 1964.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,350 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Nov. 26	0500	1,510	10.41	Feb. 27	1400	1,430	10.08
Feb. 21	0900	*3,160	*10.63				

Minimum discharge, 8.7 ft<sup>3</sup>/s Aug. 27.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	24	35	150	142	102	919	95	37	35	29	17	96		
2	21	34	134	134	136	586	93	37	33	33	16	48		
3	19	33	121	167	133	331	94	39	33	45	15	25		
4	18	52	112	265	115	220	93	50	65	44	14	19		
5	17	125	105	235	104	188	88	48	76	34	13	17		
6	17	113	102	180	100	174	87	44	38	29	13	16		
7	18	89	101	155	144	163	87	44	29	37	12	16		
8	20	174	126	144	165	157	83	56	26	52	13	16		
9	23	159	178	146	129	151	81	49	32	67	13	16		
10	23	117	239	180	107	142	78	42	76	80	13	20		
11	22	99	241	164	100	136	76	38	71	59	14	68		
12	84	114	190	137	99	138	74	98	71	44	15	39		
13	182	92	149	127	97	131	84	336	60	34	14	34		
14	103	72	135	126	96	125	119	168	152	29	13	63		
15	54	65	416	126	224	123	95	79	250	27	12	44		
16	38	62	1130	123	372	122	77	62	221	25	11	51		
17	31	61	937	131	353	255	70	68	122	24	10	106		
18	28	60	651	265	203	359	67	80	153	24	10	59		
19	26	58	497	359	138	297	61	56	162	23	10	42		
20	24	61	386	272	604	187	58	47	82	22	9.7	41		
21	23	61	270	181	2470	144	54	43	56	20	9.4	32		
22	23	61	240	151	1330	129	52	41	46	20	9.2	26		
23	39	187	515	136	675	145	50	37	39	25	9.1	23		
24	273	565	949	132	460	199	49	54	79	32	9.2	21		
25	268	1070	1030	129	495	159	47	48	60	24	9.2	20		
26	120	1230	577	122	928	127	45	46	44	51	9.1	19		
27	66	709	278	114	1370	116	44	45	35	50	9.2	19		
28	50	489	196	111	1290	110	42	43	30	30	9.6	19		
29	42	244	173	111	---	103	40	38	28	23	11	20		
30	39	171	160	109	---	100	39	37	27	20	23	20		
31	36	---	151	101	---	98	---	38	---	18	60	---		
TOTAL	1771	6462	10639	4975	12539	6334	2122	1948	2231	1074	425.7	1055		
MEAN	57.1	215	343	160	448	204	70.7	62.8	74.4	34.6	13.7	35.2		
MAX	273	1230	1130	359	2470	919	119	336	250	80	60	106		
MIN	17	33	101	101	96	98	39	37	26	18	9.1	16		
AC-FT	3510	12820	21100	9870	24870	12560	4210	3860	4430	2130	844	2090		
CFSM	.36	1.36	2.17	1.02	2.83	1.29	.45	.40	.47	.22	.09	.22		
IN.	.42	1.52	2.50	1.17	2.95	1.49	.50	.46	.53	.25	.10	.25		
CAL YR 1986	TOTAL	49200.0	MEAN	135	MAX	4350	MIN	13	AC-FT	97590	CFSM	.85	IN.	11.6
WTR YR 1987	TOTAL	51575.7	MEAN	141	MAX	2470	MIN	9.1	AC-FT	102300	CFSM	.89	IN.	12.1

## NECHES RIVER BASIN

199

08036500 ANGELINA RIVER NEAR ALTO, TX

LOCATION.--Lat 31°40'10", long 94°57'24", Nacogdoches-Cherokee County line, Hydrologic Unit 12020004, near center of rectified channel at downstream side of bridge on State Highway 21, 0.4 mi upstream from Allen Creek, 1.5 mi upstream from Bingham Creek, 7.5 mi east of Alto, and 149.3 mi upstream from mouth.

DRAINAGE AREA.--1,276 mi<sup>2</sup>.

PERIOD OF RECORD.--May to August 1940 (discharge measurements only), September 1940 to March 1949 (fragmentary for 1941-42, 1944-49), February 1959 to current year.

Water-quality records.--Chemical analyses: November 1961 to September 1963.

REVISED RECORDS.--WSP 1732: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 204.30 ft above National Geodetic Vertical Datum of 1929. May 9, 1940, to Mar. 31, 1949, nonrecording gage on bridge at natural channel 1,400 ft to right at same datum. Feb. 18 to Sept. 15, 1959, nonrecording gage at present site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. No large diversion above station. Flow partly regulated since May 1957 by Lake Striker 35.5 mi upstream and by Lake Tyler 69.9 mi upstream since January 1949 (combined capacity, 110,700 acre-ft). Several observations of water temperature were made during the year. U.S. Army Corps of Engineers telemeter for rainfall and stage at station.

AVERAGE DISCHARGE.--29 years (water years 1943, 1960-87), 778 ft<sup>3</sup>/s, 563,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,600 ft<sup>3</sup>/s Apr. 28, 1966 (gage height, 21.51 ft), but may have been higher during period of no gage-height record in November 1940; minimum, 2.0 ft<sup>3</sup>/s Aug. 14, 15, 1964.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1905, about 22 ft in May 1908, from information by local residents. Flood in 1932 reached a stage of 21.5 ft, and flood in May 1958 reached a stage of 20.3 ft, from floodmarks and information by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7,250 ft<sup>3</sup>/s Mar. 3 at 1600 hours (gage height, 18.18 ft); minimum daily, 48 ft<sup>3</sup>/s Sept. 10-12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	56	208	1850	2360	694	6170	758	189	437	356	74	58
2	60	166	1670	2060	706	6780	664	177	393	380	69	65
3	66	138	1380	1810	718	7080	606	173	421	522	65	92
4	59	130	1080	1630	753	6770	571	178	443	508	62	111
5	54	279	804	1430	779	6100	537	176	490	414	61	96
6	51	479	633	1290	753	5230	510	182	446	388	59	81
7	50	581	557	1230	695	4270	489	192	435	345	67	74
8	50	609	532	1180	638	3530	476	253	330	299	89	61
9	51	604	543	1090	616	2950	468	261	256	314	92	52
10	61	575	624	994	645	2510	459	263	742	370	94	48
11	79	594	738	895	654	2130	450	230	991	329	95	48
12	156	633	833	862	625	1810	452	202	998	315	96	48
13	254	598	916	879	618	1550	514	223	1100	273	96	67
14	231	534	966	894	620	1320	596	339	1200	219	95	92
15	253	468	1330	886	683	1120	601	506	1080	185	94	87
16	306	394	1710	867	822	935	610	610	1220	160	92	110
17	247	327	1650	855	932	1030	570	629	1400	143	89	141
18	172	282	1770	931	1090	1190	479	677	1610	132	86	176
19	132	259	2010	980	1310	1200	416	760	1860	129	83	219
20	109	289	2170	1010	1980	1310	368	754	2040	121	81	228
21	93	321	2310	1100	2550	1480	347	611	2140	110	e78	192
22	85	336	2430	1220	2740	1650	306	472	2110	101	e76	179
23	93	422	2710	1300	3310	1870	294	504	1990	93	e73	178
24	394	614	2800	1290	4340	2090	332	525	1820	87	e70	184
25	393	960	2840	1220	5080	2160	288	421	1640	89	e67	174
26	413	1100	2940	1110	5610	2110	246	450	1460	134	e65	117
27	473	1200	3150	1020	5730	1980	232	464	1300	135	e63	78
28	491	1470	3290	929	5870	1810	217	370	1040	117	e62	63
29	449	1700	3260	852	---	1560	205	316	702	110	e65	57
30	329	1850	3040	782	---	1240	204	317	454	96	55	54
31	253	---	2710	725	---	944	---	367	---	82	52	---
TOTAL	5963	18120	55246	35681	51561	83879	13265	11791	32548	7056	2365	3230
MEAN	192	604	1782	1151	1841	2706	442	380	1085	228	76.3	108
MAX	491	1850	3290	2360	5870	7080	758	760	2140	522	96	228
MIN	50	130	532	725	616	935	204	173	256	82	52	48
AC-FT	11830	35940	109600	70770	102300	166400	26310	23390	64560	14000	4690	6410

CAL YR 1986 TOTAL 282573 MEAN 774 MAX 5300 MIN 40 AC-FT 560500  
WTR YR 1987 TOTAL 320705 MEAN 879 MAX 7080 MIN 48 AC-FT 636100

e Estimated.

## 08036700 LAKE NACOGDOCHES NEAR NACOGDOCHES, TX

LOCATION.--Lat 31°35'19", long 94°49'31", Nacogdoches County, Hydrologic Unit 12020004, at upstream side of dam on Bayou Loco near service outlet tower and 10 mi west of Nacogdoches.

DRAINAGE AREA.--87.9 mi<sup>2</sup>.

PERIOD OF RECORD.--March 1977 to current year.

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

REMARKS.--The lake is formed by a rolled earthfill dam. Deliberate impoundment began July 14, 1976. Water is used for industrial and municipal supply by the city of Nacogdoches. The emergency spillway is an uncontrolled 500-foot-wide cut through natural ground located near the right end of dam. There is an uncontrolled drop inlet with a 20.5-foot-diameter top opening that is connected to an 8-x 7-foot conduit that extends through the dam. A separate multi-gated inlet tower is connected to a valve by a 30-inch conduit through the dam. The valve box directs water to a purification plant. 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.....	303.0	-
Top of design flood.....	298.5	102,900
Crest of spillway.....	286.0	59,570
Crest of drop inlet (top of conservation pool).....	279.0	42,320
Lowest gated outlet (invert of 30 in conduit).....	238.25	254

COOPERATION.--The capacity table, furnished by the city of Nacogdoches, is based on Geological Survey topographic maps dated 1952.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 53,550 acre-ft June 3, 1979 (elevation, 283.76 ft); minimum since first appreciable storage, 20,540 acre-ft Nov. 26, 1977 (elevation, 266.62 ft).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 45,840 acre-ft Feb. 21 at 0100 to 1800 hours (elevation, 280.41 ft); minimum, 37,880 acre-ft Sept. 30 (elevation, 276.83 ft).

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

276.0	36,140	280.0	44,500
278.0	40,200	281.0	47,770

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e39660	40140	42710	42650	e42000	44830	41940	41240	41260	40920	39890	38450
2	e39620	40140	42600	42600	e42110	44220	41810	41180	41240	40960	39830	38410
3	e39600	40140	42490	42580	e42210	43850	41870	41260	41240	40880	39790	38350
4	e39580	40160	42390	42580	e42110	43540	41870	41260	41240	40860	39770	38330
5	e39560	40160	42280	42560	e42210	43300	41830	41260	41180	40810	39690	38260
6	e39540	40160	42210	42520	e42210	43100	41830	41260	41130	40750	39620	38180
7	e39540	40350	42170	42490	e42280	42950	41830	41260	41090	40770	39620	38160
8	e39540	40580	42170	42410	e42490	42800	41810	41370	41050	40770	39500	38140
9	e39540	40940	42190	42390	e42490	42730	41790	41370	41010	40810	39500	38100
10	e39520	41010	42240	42320	e42410	42600	41710	41370	41110	40810	39500	38240
11	e39520	41050	42260	42300	e42320	42560	41640	41370	41110	40750	39500	38220
12	e39580	41010	42280	42300	e42260	42490	41640	41300	41130	40730	39460	38240
13	e39890	41030	42280	42280	e42210	42430	41730	41320	41220	40670	39380	38330
14	e39690	41030	42280	42260	e42170	42300	41680	41320	41220	40620	39250	38260
15	39580	41030	43630	42240	e42540	42300	41680	41280	41200	40600	39190	38240
16	39580	41030	44190	42210	e42970	42300	41680	41490	41260	40520	39150	38370
17	39560	41070	44040	e42210	e43080	42780	41660	41560	41300	40450	39070	38370
18	39560	41110	44170	e42430	e42870	42910	41620	41560	41320	40450	39010	38370
19	39560	41090	44240	e42760	42580	42840	41620	41490	41320	40410	38960	38330
20	39560	41130	43930	e42760	44760	42710	41620	41470	41260	40370	38940	38280
21	39480	41130	43670	e42600	45640	42560	41600	41470	41240	40330	38860	38240
22	39480	41130	43520	e42430	44830	42520	41580	41450	41220	40310	38780	38140
23	39850	41830	44370	e42320	44220	42470	41560	41390	41150	40280	38720	38120
24	40120	42710	44390	e42260	44150	42470	41510	41370	41220	40220	38660	38080
25	40140	43870	44060	e42210	44110	42430	41470	41340	41220	40220	38610	38000
26	40140	43890	43760	e42150	45640	42340	41430	41300	41150	40180	38530	37980
27	40140	43580	43500	e42110	45640	42240	41410	41280	41070	40120	38530	37960
28	40140	43300	43260	e42070	45640	42110	41370	41260	41030	40060	38450	37960
29	40140	43080	43130	e42040	---	42000	41300	41300	40960	39990	38410	37860
30	40140	42910	42970	e42020	---	41960	41240	41260	40920	39990	38470	37800
31	40140	---	42820	e42000	---	41940	---	41260	---	39930	38490	---
MAX	40140	43890	44390	42760	45640	44830	41940	41560	41320	40960	39890	38450
MIN	39480	40140	42170	42000	42000	41940	41240	41180	40920	39930	38410	37800
(†)	277.97	279.27	279.23	278.85	280.35	278.82	278.49	278.50	278.34	277.87	277.17	276.83
(Φ)	+450	+2770	-90	-820	+3640	-3700	-700	+20	-340	-990	-1440	-690
(††)	226	173	149	154	137	153	291	391	326	323	546	253
CAL YR 1986	MAX	47120	MIN	39480	(Φ)	+670	(††)	2753				
WTR YR 1987	MAX	45640	MIN	37800	(Φ)	-1890	(††)	3122				

(†) Elevation, in feet, at end of month.

(Φ) Change in contents, in acre-feet.

(††) Diversions, in acre-feet, for municipal use by city of Nacogdoches.

e Estimated.

## 08039300 SAM RAYBURN RESERVOIR NEAR JASPER, TX

LOCATION.--Lat 31°03'38", long 94°06'21", Jasper County, Hydrologic Unit 12020005, in the powerhouse-intake structure of Sam Rayburn Dam on the Angelina River, 10 mi northwest of Jasper, and 25.2 mi upstream from mouth.

DRAINAGE AREA.--3,449 mi<sup>2</sup>.

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

GAGE.--Stevens-type AP recording transmitter. Datum of gage is National Geodetic Vertical Datum of 1929 (level by U.S. Army Corps of Engineers). Prior to Apr. 20, 1965, nonrecording gage at same site and datum.

REMARKS.--The reservoir is formed by a rolled earthfill dam 19,430 ft long, including spillway and dikes. The dam was completed and deliberate impoundment began Mar. 29, 1965. The spillway is an uncontrolled broad-crested weir 2,200 ft wide, on right bank 7,000 ft to right of outlet works, and is designed to discharge 125,300 ft<sup>3</sup>/s at maximum flood design. The flood-control outlet works consists of two 10.0- by 20.0-foot rectangular concrete-lined conduits controlled by two 10.0- by 20.0-foot tractor-type service gates and one 10.0- by 20.0-foot tractor-type emergency gate. Water for turbines is admitted through four 18.0- by 26.0-foot penstocks and controlled by two wheeled-leaf-type headgates. The reservoir is operated for flood control and power generation. The area-capacity tables are based on topographic maps prepared by the U.S. Army Corps of Engineers and detailed sedimentation ranges established in 1961 and dated February 1965. For statement regarding regulation by Soil Conservation Service floodwater-retarding structures, see station 08038000. Gage-height telemeter at station. 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.....	190.0	-
Design flood.....	183.0	5,610,000
Crest of spillway.....	176.0	4,442,400
Top of flood-control pool.....	173.0	3,997,600
Top of conservation pool (power pool).....	164.0	2,852,600
Top of power head and sediment pool.....	149.0	1,452,000
Lowest gated outlet (invert).....	105.0	21,940

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

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 3,881,000 acre-ft Feb. 7, 1974 (elevation, 172.17 ft); minimum since conservation storage was reached in 1968, 1,797,000 acre-ft Nov. 15, 1977 (elevation, 153.35 ft).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 3,323,000 acre-ft March 9 at 2400 hours (elevation, 167.95 ft); minimum 2,459,000 acre-ft Sept. 30 at 2400 hours (elevation, 160.37 ft).

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

160.0	2,421,000	164.0	2,853,000	168.0	3,329,000
162.0	2,631,000	166.0	2,085,000		

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2698000	2619000	3000000	3223000	2962000	3218000	2976000	2819000	2774000	2840000	2755000	2577000
2	2691000	2620000	3006000	3206000	2958000	3242000	2967000	2819000	2789000	2848000	2748000	2571000
3	2686000	2610000	3007000	3233000	2951000	3263000	2957000	2825000	2767000	2837000	2738000	2564000
4	2688000	2620000	3008000	3209000	2948000	3281000	2949000	2830000	2765000	2831000	2729000	2553000
5	2700000	2618000	3002000	3200000	2945000	3297000	2944000	2830000	2757000	2831000	2725000	2549000
6	2691000	2605000	2995000	3190000	2951000	3306000	2940000	2825000	2752000	2827000	2713000	2541000
7	2682000	2614000	2988000	3183000	2941000	3314000	2930000	2822000	2743000	2832000	2707000	2537000
8	2679000	2626000	2981000	3168000	2938000	3322000	2921000	2827000	2737000	2838000	2702000	2527000
9	2676000	2626000	2995000	3166000	2926000	3323000	2912000	2827000	2737000	2844000	2694000	2517000
10	2665000	2639000	2988000	3155000	2920000	3312000	2904000	2823000	2745000	2844000	2707000	2525000
11	2665000	2646000	2979000	3135000	2919000	3291000	2898000	2819000	2747000	2841000	2702000	2513000
12	2691000	2646000	2970000	3121000	2915000	3272000	2904000	2811000	2753000	2839000	2696000	2511000
13	2686000	2637000	2964000	3109000	2908000	3247000	2904000	2811000	2759000	2841000	2690000	2508000
14	2680000	2624000	2960000	3097000	2896000	3226000	2896000	2810000	2764000	2839000	2681000	2498000
15	2678000	2630000	2978000	3085000	2930000	3223000	2887000	2810000	2768000	2832000	2678000	2490000
16	2672000	2633000	2992000	3072000	2925000	3206000	2884000	2820000	2773000	2825000	2667000	2511000
17	2666000	2633000	3000000	3072000	2919000	3215000	2884000	2819000	2775000	2825000	2662000	2508000
18	2666000	2633000	3026000	3090000	2910000	3215000	2882000	2815000	2792000	2823000	2643000	2506000
19	2666000	2631000	3038000	3083000	2908000	3206000	2882000	2813000	2792000	2823000	2641000	2503000
20	2660000	2631000	3055000	3066000	2938000	3190000	2876000	2809000	2797000	2819000	2639000	2497000
21	2654000	2625000	3072000	3058000	2951000	3176000	2874000	2811000	2797000	2814000	2633000	2491000
22	2646000	2629000	3102000	3046000	2960000	3157000	2864000	2809000	2803000	2814000	2628000	2488000
23	2646000	2724000	3139000	3040000	2967000	3167000	2855000	2809000	2805000	2804000	2621000	2485000
24	2648000	2781000	3162000	3040000	2997000	3140000	2850000	2807000	2816000	2801000	2613000	2482000
25	2642000	2896000	3184000	3033000	3026000	3121000	2850000	2802000	2821000	2801000	2605000	2479000
26	2642000	2934000	3189000	3013000	3084000	3109000	2850000	2801000	2823000	2797000	2599000	2474000
27	2635000	2952000	3212000	3000000	3127000	3080000	2845000	2794000	2823000	2791000	2598000	2466000
28	2629000	2969000	3220000	2984000	3187000	3059000	2834000	2787000	2821000	2785000	2597000	2466000
29	2624000	2979000	3223000	2973000	---	3047000	2829000	2787000	2821000	2779000	2591000	2462000
30	2617000	2987000	3226000	2967000	---	3014000	2822000	2785000	2833000	2769000	2588000	2459000
31	2613000	---	3223000	2962000	---	2995000	---	2782000	---	2760000	2585000	---
MAX	2700000	2987000	3226000	3233000	3187000	3323000	2976000	2830000	2833000	2848000	2755000	2577000
MIN	2613000	2605000	2960000	2962000	2896000	2995000	2822000	2782000	2737000	2760000	2585000	2459000
(↑)	161.83	165.17	167.14	164.95	166.85	165.24	163.73	163.37	163.83	163.18	161.57	160.37
(Φ)	-93000	+374000	+236000	-261000	+225000	-192000	-173000	-40000	+51000	-73000	-175000	-126000
CAL YR 1986	MAX	3448000	MIN	2605000	(Φ)	+301000						
WTR YR 1987	MAX	3323000	MIN	2459000	(Φ)	-247000						

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

## 08040000 B. A. STEINHAGEN LAKE AT TOWN BLUFF, TX

LOCATION.--Lat 30°47'43", long 94°10'48", Tyler County, Hydrologic Unit 12020003, near right bank 70 ft upstream from outlet structure of Town Bluff Dam on Neches River, 0.4 mi north of Town Bluff, and at mile 113.7.

DRAINAGE AREA.--7,573 mi<sup>2</sup>.

PERIOD OF RECORD.--April 1951 to current year. Prior to October 1967, published as Dam B Reservoir at Town Bluff.

REVISED RECORDS.--WSP 1732: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Oct. 25, 1954, at site 490 ft upstream at same datum.

REMARKS.--The lake is formed by a rolled earthfill dam with concrete spillway sections. The total length of dam is 6,698 ft, including a concrete spillway and non-overflow section. Deliberate impoundment of water began Apr. 16, 1951, and the dam was completed in June 1951. The uncontrolled spillway is 6,100 ft long. A 326-foot-long gated service spillway with six 40.0- by 35.0-foot tainter gates is located near right end of dam. The capacity of the spillways at maximum flood design is 218,300 ft<sup>3</sup>/s. The capacity table is based on a survey made in 1945. Water is used for industrial, municipal and irrigation supplies. 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 (nonoverflow).....	95.0	-
Design flood.....	93.0	306,400
Crest of uncontrolled spillway (top of tainter gates).....	85.0	124,700
Top of conservation pool.....	83.0	94,200
Bottom of tainter gates (sill).....	50.0	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, 128,400 acre-ft May 22, 1953 (elevation, 85.21 ft); no storage Sept. 18 to Oct. 13, 1954.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 110,200 acre-ft Nov. 24 at 1700 hours (elevation, 84.10 ft); minimum 60,800 acre-ft Dec. 8 at 2100 hours (elevation, 80.15 ft).

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

80.0	59,320	83.0	94,250
82.0	81,280	85.0	124,700

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	99280	85400	75310	95900	89280	96460	81030	87320	79940	82140	74960	82880
2	98850	80660	74040	91540	87060	96600	80790	82510	80660	83380	76010	80790
3	99280	81520	72230	94800	85650	95350	84510	80540	83000	83880	77780	79090
4	95630	88760	72570	93840	85400	92080	84380	77780	84510	83630	78850	80060
5	90070	93160	75080	92480	84260	86420	86290	73820	85020	83500	79090	79570
6	89540	96600	70220	90470	81890	83000	87060	73020	85520	83130	80910	79330
7	88360	99280	63530	87970	81030	83380	88100	75780	86550	83750	82260	78850
8	88360	97860	62510	86550	78610	78850	90070	76830	86800	83130	83000	80540
9	87580	96880	78250	86550	78250	72120	89150	78610	89150	87190	84380	80790
10	86160	96740	92620	86040	81280	72120	91540	80420	93980	88620	88360	81400
11	81150	95900	92350	84890	80540	76360	87580	81770	93980	88490	85140	82380
12	78730	102700	90200	83380	82510	81520	82140	85520	94520	88360	84000	83000
13	81520	103600	85400	82260	83630	85650	85400	88620	95350	87450	86040	84890
14	82010	105400	81520	81150	85650	90070	84640	90340	96320	87580	86550	85910
15	81770	101400	86160	79330	96180	92890	91140	90340	96180	86420	87970	86160
16	83380	96740	85520	79090	94940	80300	89680	88620	99710	85270	88890	88620
17	83380	94520	83380	82760	93980	84260	84760	87450	99420	83500	90070	91270
18	79810	93980	90600	87060	88760	88360	82010	86160	96740	82760	91400	93840
19	74960	91940	95630	72570	87190	87320	81280	84890	91400	81030	92350	96740
20	73360	90470	94110	73250	90470	84510	86040	83500	87580	79450	93570	95630
21	73250	88620	89020	80660	95630	82010	93570	82260	85650	78250	93980	98710
22	75310	83500	87840	86800	96040	79450	96180	80910	83500	76480	93020	97020
23	79330	96320	92480	84000	94800	79090	97720	79810	83750	75310	92890	91400
24	88100	104800	92890	79570	93570	77420	97300	78370	83250	74160	91270	86420
25	90600	107200	91000	78250	90470	76010	91400	73240	84260	72570	90740	84510
26	85270	97300	86800	82010	93700	75540	84760	74960	83630	70670	90470	82380
27	86040	89940	86040	86420	95080	74730	84000	74270	82260	69890	91000	80660
28	88100	84890	87580	89680	96600	75660	86290	76240	80540	70110	87710	80420
29	90070	80180	86420	92890	---	77780	89410	77420	78850	69890	86800	80060
30	91400	76950	90470	95080	---	77070	91540	77660	80060	71780	86290	79210
31	90200	---	93160	89020	---	80790	---	79210	---	73470	84760	---
MAX	99280	107200	95630	95900	96600	96600	97720	90340	99710	88620	93980	98710
MIN	73250	76950	62510	72570	78250	72120	80790	73020	78850	69890	74960	78850
(+)	82.70	81.64	82.92	82.61	83.17	81.96	82.80	81.83	81.90	81.34	82.28	81.83
(Φ)	-2980	-13200	+16210	-4140	+7580	-15810	+10750	-12330	+850	-6590	+11290	-5550
CAL YR 1986	MAX	107200	MIN	62510	(Φ)	+6870						
WTR YR 1987	MAX	107200	MIN	62510	(Φ)	-13970						

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

## NECHES RIVER MAIN STEM

203

08040500 NECHES RIVER AT TOWN BLUFF, TX

LOCATION.--Lat 30°47'36", long 94°10'28", Jasper-Tyler County line, Hydrologic Unit 12020003, on left bank 0.3 mi downstream from Town Bluff Dam, 0.5 mi northeast of Town Bluff, 2.5 mi upstream from Walnut Run, 8 mi downstream from Wolf Creek, and at mile 113.4.

DRAINAGE AREA.--7,573 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1951 to current year.

REVISED RECORDS.--WSP 1732: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to May 21, 1953, water-stage recorder, and May 21, 1953, to Dec. 3, 1954, nonrecording gage at present site and datum.

REMARKS.--Records good. Flow is regulated by B.A. Steinhagen Lake (station 08040000) 0.3 mi upstream and by Sam Rayburn Reservoir (station 08039300) 37.9 mi upstream. Some diversions upstream from station. Gage-height telemeter at station.

AVERAGE DISCHARGE.--13 years (water years 1952-64) prior to regulation by Sam Rayburn Reservoir, 4,406 ft<sup>3</sup>/s (3,192,000 acre-ft/yr); 23 years (water years 1965-87) regulated, 4,803 ft<sup>3</sup>/s (3,480,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 90,900 ft<sup>3</sup>/s May 21, 22, 1953 (elevation, 82.85 ft); no flow at times due to regulation of B. A. Steinhagen Lake.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 1884 reached a stage about 86.8 ft (discharge, about 120,000 ft<sup>3</sup>/s), and is the highest since that date, from information by the U.S. Army Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 25,300 ft<sup>3</sup>/s Nov. 26 at 0800 hours (elevation, 72.43 ft), minimum daily, 2,100 ft<sup>3</sup>/s June 26.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3020	3050	14100	11100	7770	12600	14000	2890	2770	2340	2470	3350
2	3020	3030	12300	12500	7690	12900	13200	2900	2770	2330	2450	3330
3	3010	3010	10400	14500	7680	13400	11900	2890	2780	2450	2460	3180
4	3000	3070	9340	14900	7650	14400	8980	2930	2780	2380	2470	2990
5	2980	3440	9300	14800	7620	15000	8110	2910	2770	2300	2470	2990
6	2970	3270	9270	14700	7590	15400	8020	2870	2770	2270	2480	2980
7	2970	3140	9190	14600	7570	15300	8010	2890	2790	2270	2480	2980
8	2970	3130	7890	14200	7570	15300	8050	2870	2790	2330	2480	2980
9	2970	3130	5620	13700	7190	15200	8060	2860	2790	2660	2480	2980
10	2950	3110	6500	13700	6660	15100	7620	2860	2890	2870	2560	2980
11	2950	3100	8890	13600	6450	15200	7030	2850	3210	2490	2540	2990
12	2950	3240	8980	13600	5710	15700	6960	2830	3250	2350	2490	3010
13	2960	3790	8950	13400	5130	16400	6170	2850	3680	2310	2480	3020
14	2990	3810	8000	13400	5130	16900	5320	2890	4170	2290	2480	3020
15	2970	3790	7110	13400	5260	e17200	5280	2840	3520	2290	2480	3020
16	3070	3710	7580	13000	6590	e17500	5260	2830	3130	2280	2480	3050
17	3050	3700	7870	12600	8910	e17200	5190	2840	4220	2270	2480	3160
18	3050	3690	9030	13200	9720	e17100	4230	2840	6310	2250	2470	3100
19	3040	3670	9900	12900	e9350	e17100	2710	2830	5890	2230	2470	3080
20	3010	3470	9930	11600	e8650	e17100	2280	2820	4670	2220	2470	3070
21	3000	3300	9540	10000	e8620	e17200	2250	2810	3310	2300	2480	3060
22	3000	3280	9180	9990	e8620	e17200	3100	2800	3070	2530	2470	3050
23	3030	3290	10300	10000	e8620	e17300	4080	2840	2780	2530	2460	3040
24	3060	10600	10900	9950	9140	e17300	4110	2830	2250	2530	2460	3020
25	3130	22400	10400	9910	10600	17400	4080	2840	2160	2530	2460	3000
26	3100	23900	10200	9910	12500	17400	4030	2820	2100	2520	2480	2990
27	3050	20600	10100	9950	13100	17300	3460	2800	2190	2510	2650	2990
28	3050	18000	10100	10100	12500	17200	2680	2790	2320	2510	3180	2980
29	3050	16400	10100	10300	---	16700	2810	2770	2320	2500	3280	2980
30	3050	15600	10100	10300	---	16700	2930	2770	2290	2510	3380	2950
31	3050	---	10300	9580	---	15900	---	2770	---	2510	3390	---
TOTAL	93470	204720	291370	379390	229590	499600	179910	88130	94740	74660	80330	91320
MEAN	3015	6824	9399	12240	8200	16120	5997	2843	3158	2408	2591	3044
MAX	3130	23900	14100	14900	13100	17500	14000	2930	6310	2870	3390	3350
MIN	2950	3010	5620	9580	5130	12600	2250	2770	2100	2220	2450	2950
AC-FT	185400	406100	577900	752500	455400	991000	356900	174800	187900	148100	159300	181100

CAL YR 1986 TOTAL 2162630 MEAN 5925 MAX 23900 MIN 2180 AC-FT 4290000  
WTR YR 1987 TOTAL 2307230 MEAN 6321 MAX 23900 MIN 2100 AC-FT 4576000

e Estimated.

## NECHES RIVER MAIN STEM

08040500 NECHES RIVER AT TOWN BLUFF, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: January 1981 to current year.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	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 (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3
DEC 12...	1020	8990	144	6.90	11.0	11.4	103	0.7	31	17
JAN 29...	1005	10300	161	6.70	11.5	12.7	115	1.1	33	18
MAR 19...	1007	17100	139	6.80	15.5	10.0	100	1.1	29	20
MAY 05...	1405	2860	163	6.40	24.0	6.8	80	1.1	34	18
JUN 23...	1505	2580	134	6.40	29.0	6.6	86	1.7	27	9
AUG 11...	1535	2530	145	6.70	29.5	8.6	112	1.0	30	21
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 WH WAT TOTAL 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 12...	7.2	3.1	15	1	2.7	14	22	19	<0.10	10
JAN 29...	7.7	3.4	16	1	2.6	15	25	19	<0.10	9.4
MAR 19...	6.8	2.9	14	1	2.5	9	21	22	<0.10	9.1
MAY 05...	7.8	3.5	16	1	2.8	16	23	22	<0.10	9.5
JUN 23...	7.2	2.3	13	1	2.6	18	17	14	<0.10	10
AUG 11...	7.2	3.0	15	1	2.8	9	24	22	0.10	9.8
DATE	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)
DEC 12...	88	0.010	<0.100	0.030	0.47	0.50	0.020	<1	40	<1
JAN 29...	92	<0.010	<0.100	0.030	0.87	0.90	0.050	--	--	--
MAR 19...	84	<0.010	<0.100	0.010	0.89	0.90	0.050	--	--	--
MAY 05...	94	0.020	<0.100	0.080	1.1	1.2	0.050	--	--	--
JUN 23...	77	0.010	<0.100	0.060	1.2	1.3	0.060	--	--	--
AUG 11...	89	0.010	<0.100	0.020	0.58	0.60	0.090	1	42	<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)	
DEC 12...	<10	1	130	<5	40	<0.1	<1	<1	10	
JAN 29...	--	--	--	--	--	--	--	--	--	
MAR 19...	--	--	--	--	--	--	--	--	--	
MAY 05...	--	--	--	--	--	--	--	--	--	
JUN 23...	--	--	--	--	--	--	--	--	--	
AUG 11...	40	2	58	<5	20	<0.1	5	<1	27	

LOCATION.--Lat 30°21'20", long 94°05'35", Jasper-Hardin County line, Hydrologic Unit 12020003, near center of channel on downstream side of pier of bridge on U.S. Highway 96 at Evadale, 0.8 mi upstream from Mill Creek, 16 mi upstream from Village Creek, and at mile 55.6.

WATER-DISCHARGE RECORDS

GAGE.--Water-stage recorder. Datum of gage is 8.25 ft above National Geodetic Vertical Datum of 1929. July 1, 1904, to Dec. 31, 1906, nonrecording gage on Gulf, Colorado, and Santa Fe Railway Co. bridge at site 1.2 mi downstream at datum 5.50 ft lower; Apr. 1, 1921, to Dec. 7, 1948, nonrecording gages at site 1.2 mi downstream at present datum; Dec. 8, 1948, to Nov. 8, 1963, water-stage recorder at site 1.2 mi downstream at present datum.

AVERAGE DISCHARGE.--45 years (water years 1905-06, 1922-64) unregulated, 6,308 ft<sup>3</sup>/s (4,570,000 acre-ft/yr); 23 years (water years 1965-87) regulated, 5,414 ft<sup>3</sup>/s (3,922,000 acre-ft/yr).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in May 1884 reached a stage of 26.2 ft, at former site (discharge, about 125,000 ft<sup>3</sup>/s), and flood in August 1915 reached a stage of 24.5 ft, at former site (discharge, about 102,000 ft<sup>3</sup>/s). These are the highest floods since at least 1884. Stages furnished by Gulf, Colorado, and Santa Fe Railway Co.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 27,500 ft<sup>3</sup>/s Nov. 28 at 1900 hours (gage height, 18.02 ft); minimum daily, 2,360 ft<sup>3</sup>/s July 21.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3060	3260	22300	11100	10500	15200	19900	2950	2790	2910	2610	3490
2	3170	3270	20100	11300	9820	14900	19400	2920	2770	3170	2600	3490
3	3220	3280	18200	12100	8900	14400	18100	2940	2760	3300	2560	3440
4	3210	3340	16200	13600	8350	14300	16600	3150	2810	3290	2550	3370
5	3190	4180	14000	15300	8090	14500	14900	3230	2790	3150	2550	3170
6	3180	4610	12100	16700	7950	15200	12400	3230	2760	2950	2550	3060
7	3150	4580	11000	17000	7890	15900	10400	3290	2730	3000	2550	3030
8	3150	4340	10500	16800	7860	16600	9480	3330	2750	3310	2550	3030
9	3160	4150	10100	16400	7780	17000	9100	3260	2740	3480	2530	3050
10	3150	4040	8830	15900	7650	17200	8890	3150	3320	3930	2590	3060
11	3130	3850	7430	15300	7310	17300	8660	3080	4850	4160	2670	3090
12	3270	3660	7920	15200	6960	17300	8140	3010	6720	4100	2690	3080
13	3680	3570	8870	14900	6480	17500	7660	2970	7650	3660	2620	3090
14	3760	3840	9380	14900	5880	18000	7280	2990	7740	3000	2580	3090
15	3640	4040	9970	14700	5650	18800	6490	3040	7370	2740	2540	3090
16	3510	4100	9990	14800	5710	19500	5940	3430	6560	2630	2520	3110
17	3440	4040	9710	15500	6110	20400	5680	3400	5520	2600	2510	3170
18	3380	3990	9910	16300	7260	21000	5530	3100	5330	2580	2510	3320
19	3340	3950	10400	16100	8420	20800	5160	2970	6600	2550	2500	3360
20	3300	3940	11400	15800	9250	20800	4080	2880	7500	2440	2480	3320
21	3260	3860	12100	15200	9400	20700	3060	2840	6950	2360	2480	3290
22	3240	3660	12300	13300	8980	20600	2620	2810	5520	2410	2480	3240
23	3280	3760	13200	12200	8920	20500	2790	2800	4420	2610	2470	3200
24	3380	6040	13900	11300	9020	20500	3620	2880	3840	2710	2470	3170
25	3480	9930	14400	10800	9260	20500	3990	3080	3400	2710	2470	3150
26	3510	15100	14400	10500	10800	20500	4090	3410	3230	2710	2470	3120
27	3450	22200	13500	10400	12700	20500	4100	3390	2980	2710	2470	3090
28	3360	26700	12500	10300	14500	20500	3910	3170	2710	2680	2540	3090
29	3320	27000	11900	10300	---	20300	3250	2980	2700	2660	2930	3090
30	3300	24900	11500	10400	---	20100	2910	2870	2750	2650	3220	3070
31	3280	---	11300	10500	---	19600	---	2820	---	2630	3430	---
TOTAL	102950	221180	379310	424900	237400	570900	238130	95370	132560	91790	80690	95420
MEAN	3321	7373	12240	13710	8479	18420	7938	3076	4419	2961	2603	3181

## NECHES RIVER MAIN STEM

08041000 NECHES RIVER AT EVADALE, TX--Continued  
(National stream-quality accounting network)

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: September 1939 to current year. Pesticide analyses: February 1968 to July 1981. Sediment analyses: October 1960 to current year.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1947 to current year.

WATER TEMPERATURE: October 1947 to current year.

INSTRUMENTATION.--From October 1954 to September 1963, water temperature 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 relationship 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, 422 microsiemens Jan. 25, 1957; minimum daily, 23 microsiemens Sept. 19, 1963.

WATER TEMPERATURE (1947-85): Maximum daily, 34.0°C June 29, 1953; minimum daily, 3.0°C Jan. 30, 31, 1948, Jan. 31, 1949, and Jan 24, 1963.

## EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 176 microsiemens Feb. 11; minimum daily, 60 microsiemens Nov. 29.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	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 (MG/L AS CACO3)
DEC 10...	0940	9000	124	6.40	13.0	30	8.3	78	0.8	88	140	26
JAN 27...	1517	10400	162	5.90	10.0	16	11.2	98	1.0	60	52	34
MAR 17...	1220	20600	139	6.50	16.0	16	10.8	110	1.6	120	150	28
MAY 04...	1430	3180	161	6.50	23.5	24	9.0	105	1.3	170	230	33
JUN 22...	1514	5320	119	6.00	29.5	32	6.4	84	1.4	56	240	28
AUG 10...	1348	2620	150	7.00	29.5	33	6.8	89	0.7	92	240	30
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 WH WAT TOTAL 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)
DEC 10...	12	6.6	2.4	12	1	3.1	14	20	17	<0.10	11	101
JAN 27...	19	8.2	3.4	17	1	2.6	15	29	20	<0.10	11	112
MAR 17...	14	6.6	2.8	13	1	2.5	14	21	16	<0.10	8.8	86
MAY 04...	18	7.8	3.4	16	1	2.7	15	21	25	<0.10	9.7	99
JUN 22...	11	7.2	2.3	12	1	2.3	17	20	13	<0.10	11	104
AUG 10...	10	7.2	3.0	15	1	3.0	20	22	16	0.10	11	96
DATE	SOLIDS, SUM OF CONSTITU- ENTS, 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- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS PO4)	
DEC 10...	81	--	<0.010	<0.100	0.030	<0.010	0.77	0.80	0.040	0.020	<0.010	--
JAN 27...	100	--	<0.010	<0.100	0.030	0.010	0.67	0.70	0.030	0.020	<0.010	--
MAR 17...	80	--	<0.010	<0.100	<0.010	0.020	--	1.3	0.060	0.020	0.010	0.03
MAY 04...	95	0.090	0.030	0.120	0.080	0.070	2.0	2.1	0.050	0.060	0.020	0.06
JUN 22...	79	--	<0.010	<0.100	0.050	0.020	1.2	1.2	0.180	0.110	0.100	0.31
AUG 10...	90	--	<0.010	<0.100	0.020	0.030	0.48	0.50	0.080	0.010	<0.010	--

## NECHES RIVER MAIN STEM

207

08041000 NECHES RIVER AT EVADALE, TX--Continued  
(National stream-quality accounting network)

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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)
DEC 10...	19	462	95	100	<1	45	<0.5	2	<1	<3	3	250
JAN 27...	15	421	93	--	--	--	--	--	--	--	--	--
MAR 17...	89	4950	95	80	<1	44	<0.5	<1	<1	<3	2	210
MAY 04...	23	197	97	--	--	--	--	--	--	--	--	--
JUN 22...	31	445	98	80	1	48	<0.5	1	<1	<3	17	420
AUG 10...	40	283	80	40	<1	40	0.8	<1	<1	<3	2	120
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)	
DEC 10...	<5	7	45	<0.1	<10	<1	<1	<1	67	<6	17	
JAN 27...	--	--	--	--	--	--	--	--	--	--	--	
MAR 17...	<5	8	30	<0.1	<10	2	<1	<1	76	<6	24	
MAY 04...	--	--	--	--	--	--	--	--	--	--	--	
JUN 22...	<5	<4	64	<0.1	<10	4	<1	<1	68	<6	37	
AUG 10...	5	<4	5	<0.1	<10	<1	2	<1	84	<6	5	

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1986 TO SEPTEMBER 1987

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. 1986	102950	152	93	25800	20	5520	22	5980	31
NOV. 1986	221180	102	67	39800	13	7890	16	9520	22
DEC. 1986	379310	114	74	76000	15	15100	18	18100	25
JAN. 1987	424900	153	93	107000	20	23000	22	24700	31
FEB. 1987	237400	159	96	61300	21	13300	22	14100	32
MAR. 1987	570900	135	85	131000	18	27000	20	30700	28
APR. 1987	238130	152	93	59600	20	12700	21	13800	31
MAY 1987	95370	151	93	23800	20	5090	21	5520	31
JUNE 1987	132560	113	74	26500	15	5260	18	6320	25
JULY 1987	91790	121	78	19400	16	3890	19	4600	26
AUG. 1987	80690	143	89	19400	19	4070	21	4530	30
SEPT 1987	95420	144	90	23100	19	4850	21	5380	30
TOTAL	2670600	**	**	613000	**	128000	**	143000	**
WTD.AVG.	7317	136	85	**	18	**	20	**	28

## NECHES RIVER MAIN STEM

08041000 NECHES RIVER AT EVADALE, TX--Continued  
(National stream-quality accounting network)SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
EQUIVALENT MEAN

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	153	153	71	135	155	124	146	160	161	117	143	140
2	157	153	73	142	156	120	147	160	161	117	143	146
3	156	153	78	143	156	114	149	154	138	114	144	143
4	153	146	90	145	157	109	151	149	141	117	151	145
5	154	128	95	138	162	107	151	156	154	114	145	144
6	154	126	98	148	158	111	155	148	152	102	157	145
7	153	121	101	165	166	117	148	147	153	90	148	148
8	155	126	114	160	166	120	146	150	152	89	152	147
9	154	134	123	175	170	114	148	153	145	95	150	151
10	155	141	124	159	168	120	148	155	93	105	136	149
11	154	141	138	161	176	128	150	154	77	104	129	141
12	148	143	137	150	167	131	154	135	92	120	136	146
13	142	144	139	154	164	138	152	151	89	118	135	145
14	144	155	136	157	164	137	149	147	94	118	138	145
15	144	153	135	157	160	140	150	150	93	124	141	144
16	147	150	135	159	169	136	155	142	94	120	140	140
17	150	150	130	132	169	136	154	147	103	125	139	143
18	153	149	125	147	160	140	157	148	124	124	135	139
19	156	149	141	141	167	140	152	148	117	125	136	138
20	157	150	129	152	153	140	153	150	114	132	142	137
21	154	152	132	137	156	141	154	158	115	140	141	139
22	153	160	132	143	156	137	155	159	117	147	142	143
23	150	158	130	158	162	142	155	148	116	128	141	142
24	150	120	127	158	158	142	165	148	118	151	144	147
25	154	105	115	156	161	145	172	148	105	149	145	146
26	153	84	111	173	158	150	159	151	107	141	144	146
27	150	75	112	168	152	153	168	145	112	131	144	148
28	154	67	119	166	126	146	163	150	111	131	146	153
29	155	60	123	165	---	147	169	158	125	136	146	147
30	155	62	127	167	---	151	157	163	116	141	145	146
31	155	---	129	161	---	147	---	166	---	139	159	---
MEAN	152	130	118	154	160	133	154	152	120	123	143	144

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28.0	18.0	12.0	10.0	7.0	10.0	18.0	25.0	28.0	28.0	32.0	30.0
2	28.0	18.0	12.0	10.0	7.0	10.0	18.0	25.0	28.0	28.0	32.0	30.0
3	28.0	17.0	14.0	10.0	7.0	10.0	18.0	25.0	28.0	28.0	32.0	30.0
4	28.0	17.0	14.0	10.0	7.0	10.0	18.0	25.0	28.0	29.0	32.0	30.0
5	28.0	17.0	12.0	10.0	7.0	12.0	18.0	25.0	28.0	29.0	32.0	30.0
6	25.0	17.0	12.0	10.0	7.0	12.0	18.0	25.0	28.0	29.0	32.0	30.0
7	25.0	16.0	12.0	16.0	7.0	12.0	18.0	25.0	28.0	29.0	32.0	30.0
8	25.0	16.0	12.0	16.0	7.0	10.0	18.0	25.0	28.0	29.0	32.0	30.0
9	25.0	16.0	12.0	16.0	7.0	12.0	18.0	25.0	28.0	29.0	32.0	30.0
10	25.0	16.0	12.0	8.0	7.0	12.0	18.0	25.0	28.0	29.0	32.0	30.0
11	25.0	16.0	12.0	8.0	7.0	12.0	19.0	25.0	28.0	29.0	32.0	30.0
12	22.0	16.0	11.0	8.0	7.0	12.0	19.0	25.0	28.0	29.0	32.0	28.0
13	20.0	14.0	11.0	8.0	10.0	15.0	22.0	25.0	28.0	30.0	32.0	28.0
14	18.0	14.0	11.0	8.0	10.0	15.0	22.0	25.0	28.0	30.0	32.0	30.0
15	18.0	14.0	11.0	8.0	10.0	15.0	23.0	25.0	28.0	30.0	30.0	28.0
16	18.0	14.0	11.0	8.0	10.0	15.0	23.0	25.0	28.0	30.0	32.0	28.0
17	18.0	14.0	11.0	8.0	10.0	15.0	23.0	25.0	28.0	30.0	32.0	28.0
18	18.0	14.0	11.0	8.0	10.0	15.0	22.0	27.0	28.0	30.0	32.0	28.0
19	18.0	14.0	11.0	8.0	10.0	15.0	23.0	27.0	28.0	30.0	32.0	28.0
20	18.0	14.0	11.0	8.0	8.0	15.0	22.0	27.0	28.0	30.0	32.0	27.0
21	18.0	14.0	11.0	7.0	8.0	15.0	23.0	27.0	28.0	30.0	32.0	27.0
22	18.0	14.0	11.0	7.0	8.0	18.0	23.0	27.0	28.0	30.0	32.0	27.0
23	18.0	14.0	11.0	7.0	8.0	18.0	23.0	27.0	28.0	30.0	32.0	28.0
24	18.0	14.0	11.0	7.0	8.0	18.0	---	27.0	28.0	30.0	32.0	27.0
25	18.0	14.0	11.0	7.0	8.0	18.0	24.0	27.0	28.0	30.0	32.0	27.0
26	18.0	14.0	10.0	7.0	8.0	18.0	24.0	27.0	28.0	30.0	32.0	27.0
27	18.0	12.0	10.0	7.0	10.0	18.0	24.0	27.0	28.0	30.0	32.0	27.0
28	18.0	12.0	10.0	7.0	10.0	18.0	25.0	27.0	28.0	30.0	32.0	28.0
29	18.0	12.0	10.0	7.0	---	18.0	25.0	27.0	28.0	31.0	32.0	28.0
30	18.0	12.0	10.0	7.0	---	18.0	25.0	27.0	28.0	32.0	32.0	28.0
31	18.0	---	10.0	7.0	---	18.0	---	28.0	---	32.0	32.0	---
MEAN	21.0	15.0	11.5	9.0	8.0	14.5	21.0	26.0	28.0	29.5	32.0	28.5

## 08041500 VILLAGE CREEK NEAR KOUNTZE, TX

LOCATION.--Lat 30°23'52", long 94°15'48", Hardin County, Hydrologic Unit 12020006, at downstream side of bridge on Farm Road 418, 1.6 mi upstream from Gulf, Colorado, and Santa Fe Railway Co. bridge, 3.1 mi upstream from Cypress Creek, 3.4 mi northeast of Kountze, and 4.3 mi downstream from Beech Creek.

DRAINAGE AREA.--860 mi<sup>2</sup>.

PERIOD OF RECORD.--May 1924 to September 1927, October 1927 to November 1929 (discharge measurements only), April 1939 to current year.

Water-quality records: November 1967 to September 1985.

REVISED RECORDS.--WSP 1732: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 25.12 ft above National Geodetic Vertical Datum of 1929. Prior to Apr. 30, 1939, nonrecording gage at site 1.6 mi downstream at different datum. Apr. 30, 1939, to Sept. 30, 1966, water-stage recorder at site 2,000 ft downstream at present datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Small diversions above station. Gage-height telemeter at station.

AVERAGE DISCHARGE.--51 years, 854 ft<sup>3</sup>/s (13.49 in/yr), 618,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 67,200 ft<sup>3</sup>/s Nov. 26, 1940 (gage height, 27.6 ft) former site, from floodmark and from rating curve extended above 32,000 ft<sup>3</sup>/s; minimum not determined, probably occurred during period of no gage-height record Sept. 16 to Oct. 3, 1956; minimum daily, 16 ft<sup>3</sup>/s Oct. 1, 2, 1956.

Flood of May 27, 1929, reached a stage of about 32 ft at site 2,000 ft downstream at present datum; stage was determined on basis of information by engineers of Gulf, Colorado, and Santa Fe Railway Co. for site 1.6 mi downstream.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1884, about 34 ft in August 1915 at site 2,000 ft downstream at present datum; stage was determined on basis of information by engineers of Gulf, Colorado, and Santa Fe Railway Co. for site 1.6 mi downstream.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 11,900 ft<sup>3</sup>/s Nov. 28 at 0200 hours (gage height, 19.12 ft); minimum daily, 106 ft<sup>3</sup>/s Aug. 29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	327	273	4020	1480	796	5450	e560	221	986	e1500	243	157
2	313	261	2760	1280	775	5220	e520	215	721	e2600	230	259
3	287	261	1840	1310	779	4580	e480	219	511	e2700	216	262
4	255	286	1270	1930	854	3820	e450	288	464	e2500	206	206
5	232	983	981	2330	878	3150	e430	629	404	e2200	198	162
6	222	1640	790	2490	851	2340	e410	1230	369	e1800	193	137
7	347	1860	704	2560	775	1600	e395	1930	367	e1900	186	123
8	408	1930	673	2280	718	1180	e380	2310	327	e2500	181	114
9	337	1780	674	1840	690	1040	e370	2130	311	e2800	174	109
10	341	1390	725	1510	665	967	e370	1420	676	e3000	542	109
11	319	1030	806	1420	634	911	e380	1200	2170	e2800	619	115
12	333	767	1000	1320	603	899	e390	938	3880	e2200	590	119
13	757	571	1230	1160	577	905	e395	869	5340	e1700	724	120
14	1090	478	1320	1030	543	885	395	1350	5720	e1200	718	136
15	1180	434	1400	990	631	830	402	1980	e5400	e800	504	143
16	1120	411	2210	1060	1050	768	398	2100	e4800	e600	285	154
17	866	400	3030	e1450	1410	837	377	1920	e4000	e450	220	166
18	538	391	3790	e2200	1570	1420	353	1930	e5000	e500	189	216
19	390	385	5130	e3200	1530	1860	332	1970	e4500	e450	170	371
20	329	379	6340	3560	1520	2040	318	1770	e3500	e400	156	420
21	292	366	5660	3480	1930	2080	303	1170	e2500	e350	146	423
22	270	354	5200	3160	2060	1850	291	609	e2200	e335	137	355
23	258	359	6760	2570	2180	1550	280	504	e1800	359	129	273
24	257	1220	7730	1950	2150	1240	269	763	e1100	337	123	213
25	362	4210	6940	1400	2140	1150	259	1300	e1150	298	118	177
26	610	7770	6160	1130	2690	1150	251	1490	e1350	298	114	155
27	712	10800	5340	1030	4230	1010	243	1230	e1350	296	111	140
28	563	10900	4480	969	5220	805	238	918	e1050	316	109	131
29	407	7650	3390	918	---	686	233	695	e770	325	114	156
30	336	5510	2430	870	---	616	227	547	e730	310	128	232
31	297	---	1830	831	---	598	---	640	---	267	119	---
TOTAL	14355	65049	96613	54708	40449	53437	10699	36485	63446	38091	7892	5853
MEAN	463	2168	3117	1765	1445	1724	357	1177	2115	1229	255	195
MAX	1180	10900	7730	3560	5220	5450	560	2310	5720	3000	724	423
MIN	222	261	673	831	543	598	227	215	311	267	109	109
AC-FT	28470	129000	191600	108500	80230	106000	21220	72370	125800	75550	15650	11610
CFSM	.54	2.52	3.62	2.05	1.68	2.00	.41	1.37	2.46	1.43	.30	.23
IN.	.62	2.81	4.18	2.37	1.75	2.31	.46	1.58	2.74	1.65	.34	.25

CAL YR 1986 TOTAL 440789 MEAN 1208 MAX 15400 MIN 174 AC-FT 874300 CFSM 1.40 IN. 19.1  
WTR YR 1987 TOTAL 487077 MEAN 1334 MAX 10900 MIN 109 AC-FT 966100 CFSM 1.55 IN. 21.1

e Estimated.

## NECHES RIVER BASIN

08041700 PINE ISLAND BAYOU NEAR SOUR LAKE, TX

LOCATION.--Lat 30°06'21", long 94°20'04", Jefferson-Hardin County line, Hydrologic Unit 12020007, on right bank at downstream side of bridge on county road and 5.1 mi southeast of Sour Lake.

DRAINAGE AREA.--336 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

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

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

REMARKS.--No estimated daily discharges. Records good. Low flow for period March through September is affected by small diversions and return flow from irrigated fields. Gage-height telemeter at station.

AVERAGE DISCHARGE.--20 years, 490 ft<sup>3</sup>/s (355,000, acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 25,000 ft<sup>3</sup>/s Apr. 22, 1979 (elevation, 34.29 ft); minimum daily, 0.25 ft<sup>3</sup>/s Oct. 28, 1982.  
Maximum stage since at least 1917, that of Apr. 22, 1979.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7,950 ft<sup>3</sup>/s Nov. 26 at 1800 hours to Nov. 27 at 2400 hours (elevation, 29.70 ft); minimum daily, 7.7 ft<sup>3</sup>/s Sept. 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	83	64	3910	1490	145	2720	36	39	54	278	84	66
2	66	104	3010	1230	118	2720	26	43	63	365	52	61
3	51	421	2390	1030	100	2470	19	68	58	674	34	36
4	45	607	1970	895	87	2100	15	200	37	917	31	21
5	38	1370	1650	793	80	1800	13	299	22	1110	25	14
6	29	1570	1350	741	74	1500	11	287	16	1160	32	11
7	21	1940	1070	686	69	1210	13	239	21	1120	34	8.6
8	16	2130	780	636	64	871	15	201	41	1340	35	7.7
9	23	2050	532	604	59	486	13	156	116	1760	33	8.2
10	32	1970	344	570	51	233	13	102	536	2260	38	8.9
11	31	1860	244	500	42	138	15	94	1600	2990	37	26
12	320	1680	198	418	35	105	20	116	5480	3630	31	29
13	1240	1410	166	351	31	85	e22	113	6940	3390	25	26
14	1640	1120	142	327	28	70	e25	105	6520	2940	23	19
15	1850	748	501	343	107	57	e24	85	5200	2530	21	16
16	1880	393	1330	554	157	47	23	204	4320	2170	18	21
17	1720	193	1500	1030	116	155	23	153	3910	1890	15	47
18	1470	122	1840	1790	98	361	40	98	4390	1530	20	23
19	1240	96	2030	2470	101	397	36	59	3790	1080	22	34
20	1010	80	2080	2670	141	421	29	36	3200	642	30	32
21	734	67	2150	2420	311	413	19	25	2600	334	30	21
22	401	55	2520	2200	526	383	25	20	2100	229	25	16
23	216	94	5670	1990	697	317	33	22	1780	175	21	14
24	228	1910	5970	1790	812	242	25	116	1480	151	16	11
25	234	5870	5450	1520	922	204	23	131	1170	143	14	9.5
26	173	7800	4760	1270	1660	201	19	108	860	119	13	10
27	158	7950	3910	991	2250	221	13	74	623	107	14	8.7
28	164	7630	3120	677	2710	204	11	52	454	116	14	8.9
29	157	6470	2490	404	---	143	11	45	346	103	9.3	14
30	126	5080	2060	252	---	89	33	36	274	86	17	11
31	93	---	1770	184	---	56	---	31	---	97	57	---
TOTAL	15489	62854	66907	32826	11591	20419	643	3357	58001	35436	870.3	639.5
MEAN	500	2095	2158	1059	414	659	21.4	108	1933	1143	28.1	21.3
MAX	1880	7950	5970	2670	2710	2720	40	299	6940	3630	84	66
MIN	16	55	142	184	28	47	11	20	16	86	9.3	7.7
AC-FT	30720	124700	132700	65110	22990	40500	1280	6660	115000	70290	1730	1270
CAL YR 1986	TOTAL	259186.2	MEAN	710	MAX	7950	MIN	6.1	AC-FT	514100		
WTR YR 1987	TOTAL	309032.6	MEAN	847	MAX	7950	MIN	7.7	AC-FT	613000		

e Estimated.

## NECHES RIVER BASIN

211

08041700 PINE ISLAND BAYOU NEAR SOUR LAKE, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: February 1968 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: February 1968 to current year.

WATER TEMPERATURE: February 1968 to current year.

INSTRUMENTATION.--Since August 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 and 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, 11,600 microsiemens Mar. 23, 1968; minimum daily, 34 microsiemens June 12, 1975, July 28, 1979.

WATER TEMPERATURE: Maximum daily, 37.0°C Sept. 15, 1972; minimum daily, 2.0°C Jan. 11, 1973.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 498 microsiemens Apr. 6; minimum, 37 microsiemens June 12.

WATER TEMPERATURE: Maximum, 34.0°C Aug. 5; minimum, 6.5°C Jan. 23.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	TEMPER- ATURE WATER (DEG C)	HARD- NESS (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 01...	1440	80	.152	27.0	38	13	12	1.9	15
DEC 05...	1440	1620	56	11.5	16	6	4.8	0.90	5.3
JAN 28...	1450	640	85	11.0	23	7	7.1	1.2	8.2
MAR 25...	1300	202	199	17.5	38	15	12	1.9	22
JUN 26...	1300	845	124	27.5	34	2	11	1.6	11
AUG 10...	1630	38	276	27.5	55	9	17	3.1	33
DATE		SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WH WAT TOTAL 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)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)
OCT 01...		1	2.7	25	12	25	<0.10	8.1	92
DEC 05...		0.6	1.7	10	6.5	8.7	<0.10	5.1	39
JAN 28...		0.8	1.4	16	12	10	<0.10	5.1	55
MAR 25...		2	2.0	23	11	39	0.10	3.9	110
JUN 26...		0.9	2.1	32	13	13	<0.10	6.7	78
AUG 10...		2	2.3	46	16	46	0.20	8.8	150

## NECHES RIVER BASIN

08041700 PINE ISLAND BAYOU NEAR SOUR LAKE, TX--Continued

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1986 TO SEPTEMBER 1987

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. 1986	15486	99	54	2250	16	665	6.1	257	21
NOV. 1986	62834	62	34	5720	9.7	1640	4.0	674	13
DEC. 1986	66891	55	30	5430	8.5	1540	3.6	645	12
JAN. 1987	32841	73	39	3490	11	1000	4.6	409	15
FEB. 1987	11593	111	60	1870	18	571	6.6	208	22
MAR. 1987	20416	103	55	3050	17	921	6.2	343	21
APR. 1987	644	325	173	301	61	106	16	28	59
MAY 1987	3356	241	129	1170	44	400	13	114	45
JUNE 1987	58009	65	35	5540	10	1590	4.2	650	14
JULY 1987	35436	76	41	3950	12	1150	4.8	460	16
AUG. 1987	870.3	235	126	296	41	97	13	30	45
SEPT 1987	639.5	262	140	242	47	81	14	24	49
TOTAL	309015.5	**	**	33300	**	9760	**	3840	**
WTD.AVG.	847	74	40	**	12	**	4.6	**	15

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	---	---	158	176	168	171	54	50	51	64	56	59
2	164	158	160	204	100	160	58	54	56	70	62	66
3	178	162	168	166	114	135	62	58	60	84	70	77
4	222	176	196	112	78	103	66	62	64	96	82	90
5	248	224	242	86	78	81	70	62	66	94	80	86
6	242	218	230	80	76	78	70	66	68	82	78	80
7	228	206	216	80	74	78	80	70	75	86	82	85
8	228	210	218	80	74	77	88	80	83	86	80	83
9	280	202	233	82	80	80	108	88	96	88	82	84
10	232	206	218	82	76	79	124	108	115	96	86	90
11	278	216	244	84	76	79	138	124	133	102	96	99
12	276	78	155	86	80	84	150	140	146	108	100	104
13	108	84	97	94	86	91	158	150	154	116	108	112
14	88	78	82	106	94	100	162	158	160	130	116	122
15	86	80	82	120	106	112	192	54	115	144	126	135
16	86	78	81	144	122	132	86	68	78	138	104	117
17	90	86	87	172	146	158	70	64	67	114	70	94
18	92	88	89	192	172	179	64	60	62	74	64	69
19	90	84	86	202	190	195	68	62	65	66	52	59
20	90	84	86	216	202	208	68	64	66	54	52	53
21	104	90	98	230	214	222	64	60	62	62	54	59
22	118	102	110	242	228	234	66	56	61	64	60	62
23	144	120	132	250	102	224	54	40	46	62	56	59
24	150	128	137	102	58	73	44	40	41	62	58	60
25	178	132	156	58	42	50	42	38	40	66	62	63
26	200	190	195	44	40	42	46	42	44	72	66	68
27	196	180	189	52	44	47	48	46	47	80	72	75
28	220	172	186	52	48	50	48	46	47	98	82	89
29	218	164	184	52	48	50	52	46	49	114	98	107
30	166	164	165	50	48	50	54	50	51	132	114	123
31	168	164	165	---	---	---	58	52	55	146	132	140
MONTH	280	78	156	250	40	114	192	38	75	146	52	86

## NECHES RIVER BASIN

213

08041700 PINE ISLAND BAYOU NEAR SOUR LAKE, TX--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	162	146	153	108	56	69	334	318	326	377	281	322
2	180	164	171	144	58	74	354	336	345	382	287	344
3	200	180	192	110	58	73	420	356	389	365	148	324
4	218	202	210	78	60	66	416	404	411	284	146	190
5	232	216	224	128	58	77	458	416	435	---	---	180
6	244	232	239	152	62	78	498	414	471	160	115	137
7	254	246	250	116	68	82	408	364	385	336	163	234
8	270	256	262	130	78	89	400	390	395	246	202	221
9	276	270	271	126	96	109	418	336	371	220	201	212
10	282	276	280	156	128	143	380	310	347	244	220	232
11	306	280	286	188	158	173	398	320	358	274	235	241
12	298	292	295	224	186	206	---	---	340	383	285	338
13	312	298	305	244	218	231	---	---	330	362	254	279
14	356	316	338	272	248	262	---	---	320	275	244	254
15	342	180	250	290	264	278	---	---	310	263	113	248
16	336	216	267	454	292	317	---	---	300	222	98	160
17	306	276	293	420	142	257	304	256	290	244	188	197
18	282	274	278	302	162	187	284	188	225	283	196	232
19	282	262	274	170	150	161	277	233	250	193	186	189
20	290	222	254	228	138	166	380	224	308	204	191	198
21	240	150	205	198	142	159	389	361	374	215	204	211
22	146	102	118	208	162	185	435	233	354	231	215	222
23	104	96	99	240	172	183	388	302	360	240	116	221
24	112	106	109	214	176	189	342	226	308	187	110	137
25	114	106	109	210	198	205	342	231	308	223	137	183
26	108	72	83	236	208	224	317	291	309	178	136	144
27	86	66	73	320	236	271	333	311	324	169	156	164
28	78	60	68	240	226	230	338	306	326	189	169	175
29	---	---	---	262	236	248	303	256	286	226	189	197
30	---	---	---	298	296	298	305	244	270	207	189	201
31	---	---	---	316	298	308	---	---	---	234	163	213
MONTH	356	60	213	454	56	181	498	188	338	383	98	219
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	213	162	187	176	133	151	184	165	176	271	212	236
2	240	189	214	190	126	163	201	187	197	211	190	199
3	186	152	162	124	110	114	215	202	210	211	194	201
4	168	158	163	108	91	99	227	196	214	224	211	218
5	188	165	175	91	84	87	---	---	229	230	222	226
6	196	186	191	98	86	92	218	213	216	---	---	250
7	206	189	196	101	91	99	225	209	219	---	---	280
8	240	206	222	86	79	84	226	214	219	---	---	290
9	248	85	177	79	68	72	267	221	250	---	---	270
10	195	83	130	68	61	63	278	252	268	---	---	260
11	105	46	80	62	58	60	248	203	218	306	206	241
12	56	37	46	59	53	55	206	200	203	250	224	242
13	44	38	40	58	53	55	213	200	207	274	245	256
14	59	46	55	60	58	59	228	215	223	313	276	293
15	62	59	61	63	59	61	244	230	237	349	315	337
16	66	63	65	70	63	66	261	240	250	339	182	289
17	65	63	64	76	70	73	285	244	270	238	186	221
18	62	57	59	88	77	82	326	278	310	258	239	251
19	63	59	61	101	87	94	314	291	299	256	241	249
20	73	63	67	119	102	111	303	286	296	325	254	290
21	84	72	77	143	121	131	287	276	280	461	284	346
22	97	85	91	166	142	146	285	231	264	461	336	378
23	106	97	99	174	160	168	242	235	239	376	354	370
24	105	99	101	165	156	160	245	235	241	368	350	360
25	111	102	106	163	151	158	241	238	239	350	338	346
26	---	---	120	154	151	152	246	234	240	338	298	317
27	134	119	128	164	151	155	264	232	246	329	303	317
28	135	122	131	226	169	207	270	251	260	339	307	329
29	132	127	130	215	174	185	---	---	280	323	280	296
30	155	128	135	175	158	173	307	243	277	314	302	308
31	---	---	---	175	157	169	281	243	265	---	---	---
MONTH	248	37	118	226	53	114	326	165	243	461	182	282

## NECHES RIVER BASIN

08041700 PINE ISLAND BAYOU NEAR SOUR LAKE, TX--Continued

DAY	TEMPERATURE, WATER (DEG. C), WATER YEAR			OCTOBER 1986			TO SEPTEMBER 1987					
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	27.0	27.0	27.0	18.0	17.0	17.5	13.5	13.0	13.0	9.5	9.0	9.0
2	27.0	26.5	27.0	18.5	18.0	18.0	13.0	12.5	13.0	9.0	8.5	9.0
3	26.5	26.5	26.5	18.5	18.0	18.5	12.5	12.0	12.0	10.0	9.0	9.5
4	26.5	26.5	26.5	20.5	18.5	19.0	12.0	11.5	11.5	10.0	9.5	10.0
5	26.5	26.0	26.0	20.0	18.5	19.0	11.5	11.0	11.0	10.0	9.0	9.5
6	26.0	26.0	26.0	18.5	17.0	17.5	11.0	10.5	11.0	10.0	9.0	9.5
7	26.0	26.0	26.0	17.5	16.5	17.0	11.5	11.0	11.5	10.5	9.5	10.0
8	26.0	26.0	26.0	19.0	17.5	18.0	13.0	12.0	12.5	11.5	10.5	11.0
9	24.5	23.0	23.5	20.0	19.0	19.5	14.0	13.0	13.5	12.5	11.5	12.0
10	25.0	22.0	23.5	20.5	20.0	20.0	14.0	13.0	13.5	12.0	11.5	12.0
11	24.0	22.5	23.0	20.0	19.0	20.0	13.0	11.5	12.0	11.5	10.0	10.5
12	23.0	20.5	21.5	19.0	17.5	18.5	11.5	10.5	11.0	10.0	9.0	9.5
13	20.5	17.5	18.5	17.5	15.0	16.5	10.5	9.5	10.0	9.0	9.0	9.0
14	17.5	17.0	17.0	15.0	13.5	14.0	10.0	9.5	9.5	10.0	9.0	9.5
15	17.0	16.5	16.5	13.5	13.0	13.0	12.5	10.0	11.0	11.0	10.0	10.5
16	17.0	16.5	17.0	14.0	13.0	13.5	12.5	12.0	12.5	13.0	11.0	12.0
17	17.0	16.5	17.0	15.5	14.0	14.5	13.0	12.5	12.5	12.5	12.0	12.5
18	17.5	16.5	17.0	17.5	16.0	16.5	13.5	13.0	13.0	12.5	11.5	12.0
19	17.5	16.5	17.0	18.5	17.5	18.0	13.0	12.5	12.5	11.0	10.0	10.5
20	17.5	17.0	17.0	20.0	18.5	19.0	12.5	12.0	12.0	10.0	9.0	9.0
21	18.0	17.0	17.5	19.5	18.0	18.5	12.0	11.5	11.5	8.5	7.5	8.0
22	18.5	17.5	18.0	19.5	18.0	18.5	11.5	10.5	11.0	7.5	7.0	7.5
23	19.5	18.5	19.0	20.0	19.5	19.5	10.5	10.0	10.0	7.0	6.5	7.0
24	20.5	19.5	20.0	19.5	17.5	18.0	10.0	9.5	9.5	8.0	7.0	7.5
25	20.0	18.5	19.5	17.5	16.5	17.0	10.0	9.5	10.0	8.5	8.0	8.5
26	19.5	18.0	18.5	16.5	15.0	16.0	10.5	10.0	10.0	9.0	8.5	8.5
27	18.5	17.5	18.0	15.0	14.0	14.5	10.5	10.5	10.5	10.0	8.5	9.0
28	18.0	17.0	17.5	14.0	13.0	13.5	10.5	10.0	10.0	11.5	9.5	10.5
29	18.0	17.0	17.5	13.0	12.5	13.0	10.0	9.5	10.0	13.5	11.5	12.5
30	18.0	16.5	17.5	13.0	12.5	12.5	10.0	10.0	10.0	14.5	13.5	14.0
31	18.5	17.0	17.5	---	---	---	10.0	9.5	9.5	14.5	13.5	14.0
MONTH	27.0	16.5	20.5	20.5	12.5	17.0	14.0	9.5	11.5	14.5	6.5	10.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	15.0	14.0	14.5	16.0	15.5	15.5	16.0	14.5	15.0	27.5	22.5	24.5
2	15.5	14.5	15.0	16.0	15.0	15.5	16.0	13.5	14.5	28.0	23.0	25.0
3	15.0	14.5	15.0	16.0	15.0	15.5	15.5	13.0	14.5	26.5	20.5	24.0
4	16.0	14.5	15.0	15.5	15.0	15.5	15.5	14.0	14.5	23.0	19.5	21.0
5	16.5	15.5	16.0	15.5	15.0	15.0	15.5	14.0	14.5	22.5	21.0	22.0
6	16.5	15.5	16.0	15.5	15.0	15.5	18.0	14.5	15.5	22.5	22.0	22.0
7	15.5	14.5	15.0	15.5	15.0	15.5	18.5	16.0	17.0	23.0	21.5	22.0
8	15.0	13.5	14.5	16.0	15.0	15.5	19.5	16.0	17.5	22.5	21.5	22.0
9	15.0	13.5	14.0	16.5	15.0	16.0	21.0	17.5	19.5	23.0	21.5	22.0
10	14.0	12.5	13.0	17.0	16.0	16.5	23.5	20.0	21.5	24.0	21.5	22.5
11	15.0	13.5	14.0	16.5	15.0	15.5	23.5	21.0	22.5	25.0	22.5	23.5
12	15.5	14.0	15.0	14.5	13.5	14.0	---	---	---	24.5	23.0	23.5
13	16.5	15.0	16.0	14.5	12.5	13.5	---	---	---	25.5	22.5	23.5
14	17.5	16.0	17.0	15.0	12.5	14.0	---	---	---	27.0	24.0	25.5
15	19.5	17.0	18.0	16.5	14.5	15.5	---	---	---	28.5	24.5	26.0
16	18.0	16.0	16.5	19.0	16.5	17.5	25.5	18.5	22.0	27.5	23.0	25.0
17	16.0	13.5	14.5	20.0	17.5	19.0	27.0	19.5	22.5	26.5	24.0	25.5
18	13.0	11.5	12.5	19.0	17.5	18.5	27.5	20.0	23.5	26.5	24.5	25.5
19	12.0	11.0	11.5	19.0	18.0	18.5	28.5	21.0	24.5	26.5	25.0	26.0
20	11.5	10.5	11.0	20.0	18.5	19.0	28.0	21.5	24.5	27.0	25.5	26.0
21	10.5	10.0	10.5	20.0	19.0	19.5	26.5	21.5	24.0	28.5	25.5	27.0
22	11.0	10.0	10.5	20.0	19.0	19.5	26.5	21.5	24.0	29.5	26.5	27.5
23	11.5	10.5	11.0	19.5	19.0	19.5	26.0	19.5	23.0	29.5	26.5	28.0
24	11.5	11.5	11.5	19.0	18.0	18.5	26.0	19.5	23.0	28.5	24.5	26.5
25	12.0	11.5	12.0	18.0	17.0	17.5	26.5	20.5	23.5	27.5	25.5	26.5
26	13.5	12.5	13.0	18.0	16.5	17.5	26.0	20.5	23.0	27.5	25.0	26.0
27	14.5	13.5	14.0	18.5	17.0	17.5	28.0	21.5	24.0	28.5	25.5	27.0
28	16.0	14.5	15.0	19.0	17.0	18.0	28.0	23.0	25.0	29.5	26.0	27.5
29	---	---	---	18.5	16.5	17.5	28.0	23.5	25.5	28.5	25.0	26.5
30	---	---	---	---	---	---	29.5	22.5	25.5	27.5	23.0	25.0
31	---	---	---	14.5	13.0	13.5	---	---	---	28.5	25.0	26.5
MONTH	19.5	10.0	14.0	20.0	12.5	16.5	29.5	13.0	21.0	29.5	19.5	25.0

## NECHES RIVER BASIN

215

08041700 PINE ISLAND BAYOU NEAR SOUR LAKE, TX--Continued

DAY			TEMPERATURE, WATER (DEG. C)			WATER YEAR MEAN	OCTOBER 1986		TO SEPTEMBER 1987		MAX	MIN	MEAN
	MAX	MIN	MEAN	MAX	MIN		MEAN						
	JUNE		JULY				AUGUST				SEPTEMBER		
1	28.5	25.5	27.0	25.0	23.5	24.5	32.0	27.0	29.5	26.5	23.0	24.5	
2	27.5	25.5	26.5	24.5	23.5	24.0	32.0	27.5	29.5	26.5	24.0	25.0	
3	27.5	25.5	26.5	24.5	23.0	24.0	32.0	27.5	29.5	26.0	23.0	24.5	
4	26.5	25.0	26.0	25.5	24.0	24.5	32.0	27.5	29.5	26.0	23.5	25.0	
5	27.0	25.5	26.0	26.0	25.0	25.5	34.0	28.0	30.0	26.0	24.5	25.5	
6	28.5	25.5	26.5	26.0	25.5	26.0	33.0	27.5	30.0	26.5	24.5	25.5	
7	28.5	26.0	27.0	26.0	25.0	25.5	31.5	28.0	30.0	26.5	25.0	26.0	
8	27.0	26.0	26.5	25.0	24.0	24.5	32.0	27.0	29.5	28.0	26.0	27.0	
9	26.5	25.0	26.0	24.0	23.5	23.5	31.0	27.5	28.5	29.5	27.0	28.0	
10	26.5	25.0	25.5	24.0	23.0	23.5	30.5	26.0	27.5	29.5	26.5	28.0	
11	26.0	24.5	25.0	25.0	23.5	24.0	32.5	27.5	29.5	28.0	24.5	26.5	
12	24.5	24.5	24.5	25.5	24.5	25.0	31.5	28.0	29.5	28.0	25.5	26.5	
13	25.0	24.5	24.5	26.5	25.0	26.0	32.0	27.0	29.0	28.5	24.0	25.5	
14	25.5	25.0	25.0	26.5	26.0	26.0	31.5	27.0	29.0	29.5	25.5	27.0	
15	27.0	25.5	26.5	26.5	26.0	26.0	31.0	27.0	29.0	29.5	27.0	28.0	
16	27.0	27.0	27.0	26.0	26.0	26.0	31.0	27.5	29.0	28.5	25.0	27.0	
17	27.0	26.5	26.5	26.0	25.5	26.0	31.5	28.0	29.0	28.5	25.0	26.0	
18	26.5	25.5	26.0	26.5	26.0	26.5	31.5	27.5	29.5	28.5	27.0	27.5	
19	27.0	26.0	26.5	27.0	26.0	26.5	32.5	27.5	30.0	28.0	25.5	27.0	
20	28.0	26.5	27.0	26.5	26.0	26.5	32.0	28.0	29.5	27.5	25.0	26.5	
21	28.0	27.5	27.5	26.5	26.0	26.0	31.5	27.5	29.5	27.5	25.0	26.0	
22	28.5	27.5	28.0	27.0	25.5	26.0	32.0	27.0	29.0	26.5	24.5	25.5	
23	28.0	28.0	28.0	28.0	25.5	26.5	31.0	27.5	29.0	25.0	23.0	24.0	
24	28.0	28.0	28.0	28.5	26.0	27.5	30.0	27.5	28.5	24.0	22.5	23.5	
25	28.0	27.5	28.0	29.0	26.0	27.5	29.0	26.5	27.5	24.0	22.5	23.5	
26	---	---	---	29.0	26.0	27.5	29.0	27.0	28.0	24.5	23.0	23.5	
27	28.5	26.5	27.5	29.0	26.0	27.5	29.0	27.0	27.5	25.0	24.0	24.5	
28	27.0	25.5	26.5	30.0	26.0	27.5	28.5	26.0	27.0	25.0	24.0	24.5	
29	26.5	25.0	25.5	30.0	26.5	28.5	28.5	26.5	27.5	25.5	23.5	24.5	
30	25.5	24.0	24.5	31.5	27.0	28.5	27.0	24.5	26.0	25.5	23.0	24.0	
31	---	---	---	31.5	27.0	29.0	26.0	24.0	25.0	---	---	---	
MONTH	28.5	24.0	26.5	31.5	23.0	26.0	34.0	24.0	28.5	29.5	22.5	25.5	

LOCATION.--Lat 29°52'30", long 94°09'34", Jefferson County, Hydrologic Unit 12040201, near center of stream at downstream side of bridge on county road, 0.7 mi south of LaBelle, 6.0 mi upstream from Hillebrandt Bayou, 7.2 mi upstream from State Highway 73, and 11.2 mi upstream from saltwater gates and barge locks. Distances are measured along rectified channel.

PERIOD OF RECORD.--April 1954 to September 1984 (complete records for storms of 1.0 inch or more runoff, except for the period Sept. 10-22, 1961). October 1984 to current year (gauge heights only).

GAGE.--Water-stage recorder. Datum of gage is 4.63 ft below National Geodetic Vertical Datum of 1929, originally determined by several comparisons of water surface with auxiliary water-stage recorder 7.2 mi downstream during times of no flow and ideal weather conditions. Prior to October, 1984 auxiliary water-stage recorder 7.2 mi downstream.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,590 ft<sup>3</sup>/s Sept. 22, 1963, and Apr. 23, 1979; maximum gage height, 11.78 ft Sept. 20, 1963 (backwater from Hillebrandt Bayou); minimum discharge not determined (affected by tides and pumping); minimum gage height, 2.31 ft July 17, 1954.

Maximum stage since at least 1941, that of Sept. 20, 1963, and Apr. 23, 1979. Flood of Sept. 13, 1961 (Hurricane Carla), reached a stage of 11.51 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1941 reached a stage of 11.3 ft, from information by U.S. Army Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Maximum gage height (estimated), about 9.8 ft June 12 at time unknown; minimum gage height, 4.46 ft Mar. 31.

[illegible]

## 217

LOCATION.--Lat 29°55'44", long 94°06'35", Jefferson County, Hydrologic Unit 12040201, near center of stream at downstream side of bridge on county road, 1.3 mi southeast of Lovell Lake, and 4.4 mi upstream (along rectified channel) from Taylor Bayou.

PERIOD OF RECORD.--April 1954 to September 1984 (complete records for storms of 1.0 inch or more runoff, except for the period Sept. 11-18, 1961). October 1984 to current year (gage heights only).

REMARKS.--Records good. Prior to October 1984 records were computed using fall as a factor. Low flow is regulated by drainage from rice fields and operation of saltwater gages and barge locks. An unknown amount of water is diverted above and below gage for rice irrigation.

Maximum stage since 1941, 12.34 ft Sept. 19, 1963.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MAXIMUM VALUES

[illegible]

## TRINITY RIVER MAIN STEM

08042800 WEST FORK TRINITY RIVER NEAR JACKSBORO, TX

LOCATION.--Lat 33°17'36", long 98°04'43", Jack County, Hydrologic Unit 12030101, near left bank at downstream side of bridge on State Highway 59, 4 mi downstream from Big Cleveland Creek, 7 mi upstream from Carroll Creek, 7 mi north-east of Jacksboro, and at mile 660.

DRAINAGE AREA.--683 mi<sup>2</sup>.

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

Water-quality records.--Sediment records: October 1976 to September 1978.

GAGE.--Water-stage recorder. Datum of gage is 869.28 ft above National Geodetic Vertical Datum of 1929, from State Department of Highways and Public Transportation. Sept. 20, 1960, to May 30, 1961, nonrecording gage at same site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are fair. At end of year, flow from 70.9 mi<sup>2</sup> upstream from this station was partly controlled by 21 floodwater-retarding structures with a combined detention capacity of 19,780 acre-feet. A data Collection Platform which transmits gage heights was installed April 1987.

AVERAGE DISCHARGE.--31 years (water years 1957-87), 99.1 ft<sup>3</sup>/s (1.97 in/yr), 71,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 35,100 ft<sup>3</sup>/s Apr. 27, 1957 (gage height, 32.10 ft, from floodmark); no flow at times each year.

Maximum stage since at least 1900, that of Apr. 27, 1957.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1941 reached a stage of 30 ft, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,200 ft<sup>3</sup>/s and maximum (\*).

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 5	2130	1,250	15.67	June 1	1930	1,480	16.76
Feb. 28	2230	*4,940	21.29	June 14	1330	2,190	18.72

Minimum discharge, no flow for several days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	127	e.75	19	2.8	6.4	4490	16	1.6	1450	7.8	.00	62
2	569	e.60	9.4	2.3	7.5	3550	15	1.6	1330	6.0	.00	8.0
3	790	e.53	5.3	2.2	210	2210	14	1.6	428	7.3	.00	2.4
4	926	e.43	3.3	2.0	235	1520	e13	1.6	32	4.8	.00	1.3
5	1180	278	2.4	1.8	96	941	e12	1.6	15	2.5	.00	1.1
6	1100	470	1.8	1.7	136	246	e11	1.4	9.5	1.6	.65	.75
7	680	243	1.6	1.6	179	170	e9.7	1.4	8.3	1.3	.69	.45
8	290	46	1.5	1.5	106	144	e8.8	1.8	7.5	1.1	.05	.15
9	107	20	37	52	62	124	e8.0	1.8	6.6	.97	.01	.05
10	43	12	23	338	39	103	e7.2	1.7	7.7	.88	.00	.02
11	21	e9.5	12	284	25	80	e6.5	1.5	36	.87	.00	.0
12	35	e7.9	11	141	17	70	e5.8	1.5	337	.79	.00	.66
13	52	e6.7	7.0	77	13	64	e5.2	1.4	1150	.79	.00	1.5
14	39	e5.4	5.3	42	16	59	e4.6	1.2	2060	.76	.00	1.7
15	17	e4.6	3.3	27	195	58	e4.1	1.0	1530	.60	.00	68
16	e12	e3.7	2.6	18	154	57	e3.6	.89	470	.44	.00	70
17	e9.2	e3.0	2.3	15	51	76	e3.4	.75	122	.36	.00	23
18	e7.9	e2.4	17	35	28	148	e3.2	.63	96	.26	.00	7.0
19	e6.8	e2.0	100	68	16	127	e3.0	.57	82	.18	.00	2.8
20	e6.0	e1.5	188	103	18	116	e3.0	1.3	86	.12	.00	1.7
21	e5.4	e1.2	129	209	84	76	e2.8	.99	124	.09	.00	1.5
22	e4.5	e.87	85	179	158	48	e3.0	1.9	94	.06	.00	1.4
23	e3.7	e.60	71	108	97	36	3.0	2.4	75	.04	.00	.90
24	e3.2	e.41	48	69	150	32	2.8	46	65	.03	.00	.67
25	e2.8	36	29	46	365	28	2.3	96	57	.02	.00	.38
26	e2.4	273	18	31	563	23	2.2	41	48	.01	.00	.18
27	e2.1	493	12	22	940	23	2.0	16	37	.00	.00	.09
28	e1.8	539	8.3	16	3230	22	1.9	51	33	.00	.00	.07
29	e1.4	400	5.9	12	---	21	1.8	694	21	.00	.00	.34
30	e1.1	83	4.3	9.2	---	20	1.7	1040	13	.00	.00	.45
31	e.93	---	3.5	7.3	---	18	---	1300	---	.00	133	---
TOTAL	6047.22	2945.09	866.8	1924.4	7196.9	14700	180.6	3316.13	9830.6	39.67	134.40	258.56
MEAN	195	98.2	28.0	62.1	257	474	6.02	107	328	1.28	4.34	8.62
MAX	1180	539	188	338	3230	4490	16	1300	2060	7.8	133	70
MIN	.93	.41	1.5	1.5	6.4	18	1.7	.57	6.6	.00	.00	.00
AC-FT	11990	5840	1720	3820	14280	29160	358	6580	19500	79	267	513
CAL YR 1986	TOTAL 32550.71	MEAN 89.2	MAX 1380	MIN .00	AC-FT 64560							
WTR YR 1987	TOTAL 47440.01	MEAN 130	MAX 4490	MIN .00	AC-FT 94100							

e Estimated.

## TRINITY RIVER MAIN STEM

219

## 08043100 WEST FORK TRINITY RIVER AT BRIDGEPORT, TX

LOCATION.--Lat 33°12'07", long 97°48'09", Wise County, Hydrologic Unit 12030101, on left bank at downstream side of embankment near left end of bridge on U.S. Highway 380, 1.5 mi upstream from Village Creek, 1.8 mi upstream from Ramsey Creek, 2.6 mi west of City Hall in Bridgeport, and 2.9 mi downstream from Bridgeport Dam.

DRAINAGE AREA.--1,113 mi<sup>2</sup>.

PERIOD OF RECORD.--September 1984 to current year.

GAGE.--Water-stage recorder. Datum of gage is 725.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Flow is regulated by Bridgeport Reservoir located 2.9 mi upstream and has a capacity of 902,000 acre-ft, 515,000 acre-ft is for temporary storage.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,160 ft<sup>3</sup>/s Mar. 6, 1987 (gage height 26.17 ft).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,160 ft<sup>3</sup>/s Mar. 6 at 1145 hours (gage height 26.17 ft); minimum, 0.18 ft<sup>3</sup>/s July 22-23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.2	3.2	178	3.9	e3.3	1640	3.7	2.9	1200	5.8	2.3	331
2	2.8	3.2	147	3.8	e3.7	1740	3.6	3.0	1400	7.6	2.5	333
3	2.8	3.2	147	3.7	e4.4	2240	3.4	3.2	1400	5.3	2.5	336
4	3.3	6.1	147	3.7	e5.0	2720	3.4	3.5	1300	5.0	2.5	337
5	3.1	3.3	148	3.7	e5.6	3030	3.4	3.2	621	4.6	2.4	337
6	2.9	3.2	148	2.8	e6.2	3140	3.4	3.0	135	4.4	2.6	339
7	2.8	3.2	121	2.8	e6.7	3090	3.4	3.1	8.0	4.2	117	343
8	2.8	3.2	95	2.8	e7.0	3040	3.5	2.9	6.5	4.2	233	327
9	2.8	3.1	95	e4.1	e7.0	2090	3.7	2.8	8.5	4.2	235	260
10	2.7	3.4	95	e3.9	e7.0	530	3.9	2.8	66	4.2	236	264
11	2.9	3.7	95	e3.7	e6.7	12	3.7	2.8	347	4.2	238	243
12	3.5	3.4	95	e3.6	e7.0	7.7	3.7	2.8	874	4.1	240	98
13	2.6	3.4	95	e3.4	e6.7	6.0	3.7	2.8	1740	4.7	242	57
14	2.6	3.4	95	e3.3	e7.0	5.1	3.6	3.1	1660	4.2	243	6.6
15	2.6	3.4	95	e3.2	e6.7	4.4	3.6	2.8	1630	4.1	244	10
16	2.6	3.4	95	e3.2	e6.7	115	3.7	2.8	1620	4.7	246	4.2
17	2.8	3.4	95	e3.2	e6.5	720	3.7	2.8	1280	4.0	248	3.6
18	2.9	3.4	47	e3.0	e6.2	194	3.7	2.8	516	3.9	249	3.7
19	2.9	3.5	4.7	e2.9	e6.0	142	3.5	2.8	198	3.7	249	3.7
20	2.9	3.9	4.5	e2.9	e6.2	67	3.4	2.8	198	2.3	251	3.7
21	2.9	4.1	4.4	e2.8	e6.2	5.6	3.7	2.7	198	.32	252	3.9
22	2.9	4.2	4.4	e2.5	e6.5	4.9	3.5	3.0	86	.23	252	3.9
23	2.9	4.2	4.3	e2.5	e6.5	105	3.4	2.9	8.0	5.7	252	3.9
24	2.9	4.2	4.1	e2.5	e7.2	123	3.3	3.2	7.0	3.1	253	124
25	2.9	71	4.1	e2.5	e8.0	5.4	3.2	2.9	6.7	2.3	275	259
26	3.2	216	4.0	e2.5	e8.3	4.8	3.2	2.8	6.4	2.2	333	262
27	3.0	215	3.9	e2.5	e8.8	4.4	3.1	2.6	6.2	2.4	337	266
28	2.9	212	3.9	e2.4	750	4.1	3.0	113	6.0	2.2	333	269
29	2.9	213	3.9	e2.3	---	3.9	2.9	934	5.9	2.1	331	268
30	3.0	212	3.9	e2.4	---	3.8	2.9	908	5.8	2.1	331	268
31	3.3	---	4.0	e2.6	---	3.7	---	1000	---	2.2	334	---
TOTAL	90.3	1225.7	2087.1	95.1	923.1	24801.8	103.9	3033.8	16544.0	114.25	6568.8	5368.2
MEAN	2.91	40.9	67.3	3.07	33.0	800	3.46	97.9	551	3.69	212	179
MAX	3.5	216	178	4.1	750	3140	3.9	1000	1740	7.6	337	343
MIN	2.6	3.1	3.9	2.3	3.3	3.7	2.9	2.6	5.8	.23	2.3	3.6
AC-FT	179	2430	4140	189	1830	49190	206	6020	32820	227	13030	10650
CAL YR 1986	TOTAL 24920.22 MEAN 68.3 MAX 708 MIN 1.8 AC-FT 49430											
WTR YR 1987	TOTAL 60955.73 MEAN 167 MAX 3140 MIN .23 AC-FT 120900											

e Estimated.

## 08044000 BIG SANDY CREEK NEAR BRIDGEPORT, TX

LOCATION.--Lat 33°13'54", long 97°41'40", Wise County, Hydrologic Unit 12030101, at downstream side of bridge on U.S. Highway 380, 1.9 mi upstream from Greathouse Branch, 4.0 mi east of Bridgeport, and 4.4 mi upstream from mouth.

DRAINAGE AREA.--333 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1936 to current year.

REVISED RECORDS.--WSP 1148: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 724.44 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1984, at datum 3.00 ft higher.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Since May 1, 1956, streamflow from 100 mi<sup>2</sup> above this station is affected at times by storage in Lake Amon G. Carter, 30 mi upstream, with a capacity of 15,240 acre-ft at elevation 920.0 ft (spillway crest). During year, the city of Bowie diverted water from Lake Amon G. Carter for municipal use and discharged sewage effluent into tributaries to Big Sandy Creek upstream from this station. Flow was also affected at times by discharge from the flood-detention pools of 19 floodwater-retarding structures with a combined capacity of 11,430 acre-ft. These structures control runoff from 46.0 mi<sup>2</sup> between this station and Lake Amon G. Carter. Gage-height telemeter at station.

AVERAGE DISCHARGE.--51 years, 73.0 ft<sup>3</sup>/s (52,890 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 53,000 ft<sup>3</sup>/s June 10, 1941 (gage height, 15.69 ft, datum then in use, from floodmark), from rating curve extended above 22,000 ft<sup>3</sup>/s; no flow at times most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1887 occurred in 1908 and 1915 and reached about the same stage as that of June 10, 1941.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,620 ft<sup>3</sup>/s Mar. 1 at 0845 hours (gage height, 12.56 ft); minimum daily, 0.37 ft<sup>3</sup>/s, Sept. 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	51	14	39	40	-49	3670	38	21	467	57	3.2	9.9
2	1030	21	35	37	54	1340	35	20	246	298	2.6	4.0
3	1640	17	34	37	48	814	34	20	123	828	2.1	2.7
4	500	40	30	34	45	672	33	21	87	433	1.8	2.4
5	225	65	27	33	45	590	33	18	68	199	1.5	1.3
6	145	46	27	32	136	519	32	15	57	85	1.3	e.80
7	111	35	52	30	214	436	30	15	52	59	1.2	e.70
8	86	30	149	30	160	368	29	17	47	47	e1.0	e.60
9	72	24	152	146	133	318	28	19	47	39	e.90	e.50
10	63	19	93	202	119	271	28	17	67	e35	e.80	e.45
11	56	29	70	115	110	239	27	13	200	e30	e.70	e.40
12	96	26	59	79	103	215	27	11	1040	e27	e.65	e.38
13	93	21	52	67	95	198	26	11	2290	e26	e.60	e.37
14	66	18	50	61	91	183	24	9.7	2370	e23	e.55	e1.0
15	53	18	50	57	129	178	23	9.1	1190	e21	e.80	54
16	47	19	50	54	215	133	23	8.8	904	e20	e1.0	153
17	44	19	49	67	152	179	22	7.8	766	e19	1.1	38
18	41	17	101	239	116	141	21	6.9	681	e17	1.3	12
19	38	29	133	209	110	86	20	6.6	684	e15	1.1	6.9
20	35	22	93	115	157	68	21	6.5	842	e14	.88	5.2
21	33	17	71	93	226	60	345	10	799	14	e.80	4.2
22	31	17	71	80	229	55	107	8.3	702	21	e.60	3.6
23	32	15	75	72	182	55	57	7.1	451	30	e.56	3.2
24	32	17	67	68	203	57	42	28	330	30	e.50	3.0
25	30	101	59	63	298	51	35	32	274	27	e.48	e2.8
26	28	160	54	58	332	50	31	25	237	24	e.45	e2.6
27	25	93	51	55	382	51	28	13	157	15	e.42	e2.1
28	23	58	47	53	1690	49	25	519	84	8.6	e.40	e1.5
29	21	47	45	51	---	45	23	2190	66	6.3	e.50	e1.3
30	18	42	44	47	---	42	22	1910	62	5.0	e.70	e1.1
31	16	---	42	45	---	40	---	913	---	4.0	e1.0	---
TOTAL	4781	1096	1971	2369	5823	11173	1269	5928.8	15390	2476.9	31.49	320.00
MEAN	154	36.5	63.6	76.4	208	360	42.3	191	513	79.9	1.02	10.7
MAX	1640	160	152	239	1690	3670	345	2190	2370	828	3.2	153
MIN	16	14	27	30	45	40	20	6.5	47	4.0	.40	.37
AC-FT	9480	2170	3910	4700	11550	22160	2520	11760	30530	4910	62	635

CAL YR 1986 TOTAL 41872.70 MEAN 115 MAX 2010 MIN .00 AC-FT 83050  
WTR YR 1987 TOTAL 52628.97 MEAN 144 MAX 3670 MIN .37 AC-FT 104400

e Estimated.

## TRINITY RIVER MAIN STEM

221

08044500 WEST FORK TRINITY RIVER NEAR BOYD, TX

LOCATION.--Lat 33°05'07", long 97°33'30", Wise County, Hydrologic Unit 12030101, on right bank at downstream side of highway embankment, 10 ft right of right abutment of bridge on Farm Road 730, 0.6 mi northeast of Boyd, 3.5 mi downstream from Boggy Creek, and at mile 602.

DRAINAGE AREA.--1,725 mi<sup>2</sup>.

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

GAGE.--Water-stage recorder. Datum of gage is 660.57 ft above National Geodetic Vertical Datum of 1929. Prior to Dec. 14, 1954, water-stage recorder at site 2.2 mi downstream at datum 5.48 ft lower.

REMARKS.--Records good except those for estimated daily discharges, which are fair. During the current year, sustained flows at this site were the result of releases of water for downstream supply from Bridgeport Reservoir 5 mi upstream from this station (drainage area, 1,111 mi<sup>2</sup>). In addition, flow from 100 mi<sup>2</sup> is affected by storage in Lake Amon G. Carter (capacity, 15,240 acre-ft) on Big Sandy Creek. Flow is also affected at times by discharge from the flood-detention pools of 36 floodwater-retarding structures with a total combined detention capacity of 24,450 acre-ft. These structures control runoff from 91.2 mi<sup>2</sup> in the Big Sandy and Salt Creeks drainage basins. Several observations of water temperature were made during the year. Gage-height telemeter at station.

AVERAGE DISCHARGE.--40 years, 231 ft<sup>3</sup>/s (167,400 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 60,400 ft<sup>3</sup>/s Oct. 14, 1981 (gage height, 25.87 ft); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1880, about 25 ft in May 1908, present site and datum, from information by local residents, who also reported a flood of about the same gage height between 1870-80. A flood in April 1942 reached a stage of 20.6 ft, present site and datum, from information by State Department of Highways and Public Transportation.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,280 ft<sup>3</sup>/s May 29 at 1600 hours (gage height, 18.39 ft); minimum daily, 18 ft<sup>3</sup>/s Aug. 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	28	e210	e66	73	3220	90	35	2440	112	25	342
2	168	27	e180	e63	81	3760	91	35	2040	264	23	328
3	832	32	e175	e60	81	3660	85	52	1830	668	22	325
4	1190	36	e175	e57	73	3410	78	366	1650	676	21	319
5	881	104	e170	e54	68	3350	77	85	1510	368	20	316
6	340	81	e170	51	84	3380	75	44	989	186	19	314
7	212	53	e165	50	243	3460	75	36	361	114	18	315
8	153	43	e340	48	261	3480	72	50	174	85	155	315
9	114	43	e360	143	207	3370	70	38	148	e73	255	284
10	95	44	e250	326	179	3160	67	34	250	e68	258	253
11	85	44	e200	229	161	2030	67	31	439	e65	261	253
12	79	53	e185	142	146	772	64	29	1860	e63	263	218
13	135	43	e175	109	137	439	63	29	2660	e56	262	134
14	101	40	e170	97	128	348	58	67	2760	e53	262	81
15	80	36	e160	90	139	297	54	327	2870	e50	261	53
16	63	36	e150	85	225	269	53	88	2630	e48	260	163
17	58	38	e140	104	243	643	53	51	2380	e47	259	110
18	54	36	e220	452	180	835	51	38	2260	e46	257	50
19	52	34	e240	431	149	518	47	32	1820	e46	258	37
20	48	48	e160	244	192	325	44	28	1420	e44	258	29
21	47	51	e110	166	334	216	177	29	1330	40	257	27
22	49	47	e115	140	347	144	301	27	1190	37	258	24
23	47	39	e120	122	294	132	114	25	904	37	256	22
24	49	41	e110	114	260	253	73	51	535	39	255	20
25	43	98	e95	106	383	211	55	62	394	40	255	142
26	39	382	e90	98	513	117	47	43	308	39	284	234
27	37	385	e85	92	724	114	43	34	262	37	319	236
28	34	296	e80	86	1420	114	39	515	177	34	324	238
29	32	273	e75	86	---	110	37	4340	133	31	318	241
30	30	e250	e72	79	---	101	35	4040	117	28	317	239
31	28	---	e69	73	---	95	---	2960	---	27	403	---
TOTAL	5195	2761	5016	4063	7325	42333	2255	13621	37841	3521	6663	5662
MEAN	168	92.0	162	131	262	1366	75.2	439	1261	114	215	189
MAX	1190	385	360	452	1420	3760	301	4340	2870	676	403	342
MIN	20	27	69	48	68	95	35	25	117	27	18	20
AC-FT	10300	5480	9950	8060	14530	83970	4470	27020	75060	6980	13220	11230

CAL YR 1986 TOTAL 80628 MEAN 221 MAX 2580 MIN 14 AC-FT 159900  
WTR YR 1987 TOTAL 136256 MEAN 373 MAX 4340 MIN 18 AC-FT 270300

e Estimated.

## TRINITY RIVER MAIN STEM

08045400 LAKE WORTH ABOVE FORT WORTH, TX

LOCATION.--Lat 32°47'21", long 97°24'58", Tarrant County, Hydrologic Unit 12030102, on top of Lake Worth Dam on West Fork Trinity River, 240 ft to right of right end of uncontrolled concrete spillway, 2.9 mi upstream from Farmer's Branch, 3.3 mi upstream from bridge on State Highway 183 crossing West Fork Trinity River, 5.3 mi northwest of Tarrant County Courthouse in Fort Worth, and at river mile 572.0.

DRAINAGE AREA.--2,064 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1981 to current year.

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

Remarks.--The lake is formed by a rolled earthfill dam 3,200 ft long, with an uncontrolled concrete spillway 700 ft long near the center of the dam. Deliberate impoundment began in June 1914 and the dam was completed in October 1914. There is a 48-inch diameter pipe controlled by a 36-inch valve, which may be used to make small releases through the dam. The dam is owned by the city of Fort Worth. Area-capacity curves are based on a survey made in 1968. 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.....	606.3	
Crest of concrete spillway.....	594.0	37,070
Lowest gated outlet (invert).....	584.25	12,290

COOPERATION.--Copies of the capacity table (prepared by the U.S. Army Corps of Engineers) and area-capacity curves (prepared by Freese, Nichols, and Endress, Consulting Engineers) were provided by Tarrant County Water Control and Improvement District No. 1.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 53,900 acre-ft Oct. 15, 1981, at 0800 hours (elevation, 598.23 ft); minimum, 24,730 acre-ft Sept. 9-10, 1985 (elevation, 589.95 ft).

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum contents observed, 52,080 acre-ft May 25, 1957 (elevation, 598.47 ft); minimum observed, 20,540 acre-ft June 30, 1955 (elevation, 589.45 ft).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 42,630 acre-ft Mar. 8 at 1200 hours (elevation, 595.51 ft, from graph); minimum, 31,800 acre-ft Sept. 27 (elevation, 592.40 ft).

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

592.0	30,540
594.0	37,070
596.0	44,520

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	33470	35040	36690	35010	36800	40460	36320	34160	41900	36560	33250	33280
2	33250	35040	36590	34870	36830	40710	36120	34200	41940	37280	33220	33340
3	33190	35010	36490	34770	36760	41750	36360	34370	41790	37750	33190	33440
4	33860	35450	36420	34670	36800	42370	36590	35240	40390	37970	33150	33440
5	34840	35310	36290	34640	36900	42440	36900	36120	39450	38040	33060	33530
6	35610	35280	36260	34500	37100	42440	36930	36120	39270	37750	32970	33660
7	35880	35380	36460	34370	37210	42480	36830	36150	39230	37320	32750	33790
8	35950	35410	36290	34260	37390	42440	36690	36090	38220	37030	32680	33960
9	35950	35450	36120	34530	37390	42440	36530	36150	38330	36800	32620	34060
10	35920	35650	36020	34530	37430	42210	36390	36150	38830	36590	32620	34300
11	35950	35580	36050	34600	37460	41560	36220	36120	38620	36390	32620	34230
12	35920	35720	36190	34770	37500	40790	36090	36290	40870	36150	32490	34230
13	35820	35750	36050	34970	37460	39480	35990	36290	41290	35990	32460	34100
14	35780	35780	36120	35210	37460	38400	35650	36290	41670	35750	32430	33890
15	35720	35780	36190	35510	37540	38330	35580	36760	42060	35550	32400	33690
16	35680	35780	36190	35750	37390	38730	35610	36830	42140	35280	32370	33380
17	35610	35750	36360	36290	37320	39300	35510	36760	42140	35180	32370	33190
18	35510	35720	36590	36530	37390	39090	35410	36860	42210	35010	32340	33000
19	35480	35680	36420	36800	37430	39010	35310	36930	41870	34800	32270	32750
20	35410	35720	36360	37210	37860	38440	35310	36830	41170	34600	32210	32490
21	35280	35680	36220	37540	37970	38040	35210	36590	39990	34430	32150	32340
22	35310	36050	36150	37320	37860	37790	35010	36530	38830	34230	32150	32210
23	35510	36090	36020	37170	37900	37610	34940	36420	38870	34030	32080	32020
24	35480	36090	35850	37100	38040	37750	34840	36590	39050	33930	32080	31930
25	35450	36660	35750	36900	38040	37680	34800	36420	38800	33790	31990	31860
26	35410	36490	35650	36860	38550	37390	34700	36220	38000	33600	32050	31860
27	35340	36490	35480	36900	39590	37170	34600	36050	37610	33530	32430	31860
28	35280	36530	35380	36830	40420	37250	34470	37570	37170	33470	32590	31890
29	35240	36560	35280	36800	---	36900	34260	40100	36900	33500	32750	31890
30	35180	36730	35210	36800	---	36530	34130	41210	36760	33340	32900	31890
31	35040	---	35070	36760	---	36460	---	41750	---	33310	33120	---
MAX	35950	36730	36690	37540	40420	42480	36930	41750	42210	38040	33250	34300
MIN	33190	35010	35070	34260	36760	36460	34130	34160	36760	33310	31990	31860
(↑)	593.40	593.90	593.41	593.91	594.93	593.82	593.13	595.28	593.91	591.88	592.82	592.43
(Φ)	+1540	+1690	-1660	+1690	+3660	-3960	-2330	+7620	-4990	-3450	-190	-1230
CAL YR 1986	MAX	40640	MIN	24730	(Φ)	+9720						
WTR YR 1987	MAX	42480	MIN	31860	(Φ)	-1610						

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

## 08046500 BENBROOK LAKE NEAR BENBROOK, TX

LOCATION.--Lat 32°39'02", long 97°26'54", Tarrant County, Hydrologic Unit 12030102, in intake structure of Benbrook Dam on Clear Fork Trinity River, 2.5 mi south of Benbrook, 3.5 mi upstream from Marys Creek, and 14.6 mi upstream from mouth.

DRAINAGE AREA.--429 mi<sup>2</sup>.

PERIOD OF RECORD.--September 1952 to current year. Prior to October 1970, published as Benbrook Reservoir. Water-quality records.--Chemical analyses: October 1969 to September 1982.

REVISED RECORDS.--WSP 1922: Drainage area.

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

REMARKS.--The lake is formed by a rolled earthfill dam 9,130 ft long, including a 500-foot uncontrolled off-channel concrete-gravity spillway with a 100-foot notch in center of ogee weir section. The outlet works consist of a 13.0-foot-diameter concrete conduit controlled by two 6.5- by 13.0-foot broome-type gates and two 30-inch steel pipes controlled by slide gates. Deliberate impoundment began Sept. 29, 1952. From August 1950 to Sept. 28, 1952, the lake was operated as a detention basin only. The capacity table is based on a survey made in 1945. The lake was built for flood control, navigation, and low-flow regulation. Inflow is affected at times by the discharge from flood-detention pools of 12 floodwater-retarding structures with a combined detention capacity of 11,170 acre-ft. These structures control runoff from 37.6 mi<sup>2</sup>. 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.....	747.0	
Crest of spillway.....	724.0	258,600
Crest of notch in spillway.....	710.0	164,800
Top of conservation storage.....	694.0	88,250
Crest of intake to wet wells (inverts).....	656.0	6,550
Lowest gated outlet (invert).....	622.0	12

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

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 185,000 acre-ft June 6, 1957 (elevation, 713.35 ft); minimum since lake first filled in 1957, 61,450 acre-ft Oct. 10, 1984 (elevation, 686.16 ft).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 108,700 acre-ft June 19 at 1700 hours (elevation, 699.02 ft); minimum, 81,510 acre-ft Sept. 30 at 2100 hours (elevation, 692.17 ft).

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

692.0	80,890	696.0	95,990	700.0	113,000
694.0	88,250	698.0	104,200		

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	86050	84970	85310	87650	89320	98060	88670	87170	97290	94060	87130	83720
2	85980	84930	85270	87690	89430	99480	88630	87170	97690	93630	87020	83650
3	85900	84930	85270	87690	89510	100600	88550	87470	98060	92930	86870	83510
4	85830	85080	85270	87730	89620	101500	88550	88250	98260	92100	86760	83430
5	85830	85080	85270	87760	89770	102100	88630	88290	98060	91150	86680	83320
6	85940	85040	85310	87800	89930	102300	88670	88210	97330	90580	86610	83220
7	85940	84970	85420	87800	90040	102000	88670	88210	96600	90080	86500	83140
8	86010	84970	85420	87910	90080	101700	88710	88170	95950	89620	86390	83070
9	85980	84930	85420	88250	90230	100800	88710	88140	95670	89240	86270	83000
10	85980	84970	85380	88360	90310	99480	88670	88100	95640	89010	86160	83070
11	85860	85040	85570	88520	90380	98220	88710	88020	96110	88940	86090	83030
12	85720	84930	85640	88550	90380	96920	88710	87880	100900	88820	85980	83070
13	85720	84930	85640	88630	90350	95830	88710	87760	104200	88780	85860	83070
14	85680	84860	85750	88710	90270	94770	88630	87650	105500	88710	85720	82920
15	85640	84860	85790	88740	90160	94020	88520	89470	106100	88630	85600	82960
16	85600	84820	85830	88860	89960	93320	88520	89580	106900	88630	85530	82890
17	85570	84820	86090	89160	89770	93160	88440	89580	107500	88630	85270	82780
18	85420	84820	86570	89470	89620	92460	88320	89540	108400	88550	85160	82740
19	85380	84820	86760	89660	89470	91600	88210	89510	108600	88480	85040	82710
20	85310	84820	86870	89850	90120	90760	88060	89470	108200	88400	84900	82600
21	85270	84780	86940	89930	90380	89930	87990	89390	107700	88320	84750	82490
22	85270	84820	87060	89930	90420	89090	87910	89240	107100	88250	84670	82340
23	85340	84750	87170	89850	90460	88550	87800	89160	106400	88170	84560	82270
24	85310	84780	87240	89740	90690	88440	87730	89470	105200	88100	84450	82200
25	85270	85230	87320	89620	90650	88480	87650	89430	103700	87950	84310	82050
26	85230	85310	87350	89580	91300	88550	87540	89280	102100	87800	84160	81910
27	85190	85340	87430	89430	91830	88710	87470	89160	100500	87730	84200	81840
28	85120	85340	87500	89350	95790	88670	87390	90990	98750	87620	84090	81760
29	85120	85380	87500	89280	---	88630	87320	94140	97120	87500	84020	81620
30	85080	85340	87580	89160	---	88630	87200	95830	95670	87350	83940	81440
31	85010	---	87620	89160	---	88670	---	96760	---	87240	83870	---
MAX	86050	85380	87620	89930	95790	102300	88710	96760	108600	94060	87130	83720
MIN	85010	84750	85270	87650	89320	88440	87200	87170	95640	87240	83870	81440
(+)	693.13	693.22	693.83	694.24	695.95	694.11	693.72	696.19	695.92	693.73	692.82	692.15
(Φ)	-1150	+330	+2280	+1540	+6630	-7120	-1470	+9560	-1090	-8430	-3370	-2430

CAL YR 1986 MAX 113800 MIN 76070 (Φ) +10720  
WTR YR 1987 MAX 108600 MIN 81440 (Φ) -4720

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

## 08047000 CLEAR FORK TRINITY RIVER NEAR BENBROOK, TX

LOCATION.--Lat 32°39'54", long 97°26'30", Tarrant County, Hydrologic Unit 12030102, on left bank 1.5 mi downstream from Benbrook Dam, 1.7 mi southeast of Benbrook, 2.9 mi upstream from Marys Creek, and 13.1 mi upstream from mouth.

DRAINAGE AREA.--431 mi<sup>2</sup>.

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

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

GAGE.--Water-stage recorder. Datum of gage is 604.22 ft above National Geodetic Vertical Datum of 1929 (Corps of Engineers bench mark).

REMARKS.--Records good. Flow regulated by Benbrook Lake (station 08046500) since September 1952. There is a diversion 1.0 mi upstream for Pecan Valley Golf Course. Gage-height telemeter at station.

AVERAGE DISCHARGE.--5 years (water years 1948-52) prior to regulation by Benbrook Lake, 105 ft<sup>3</sup>/s (76,070 acre-ft/yr); 35 years (water years 1953-87) regulated, unadjusted, 67.3 ft<sup>3</sup>/s (48,760 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 82,900 ft<sup>3</sup>/s May 17, 1949 (gage height, 28.72 ft), from rating curve extended above 11,000 ft<sup>3</sup>/s on basis of velocity-area studies and slope-area measurement of 82,900 ft<sup>3</sup>/s; no flow at times most years. Maximum discharge since construction of Benbrook Dam in 1952, 4,710 ft<sup>3</sup>/s May 7, 1979 (gage height, 11.27 ft); maximum gage height, 12.20 ft Apr. 7, 1977. Maximum stage since at least 1922, that of May 17, 1949.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 925 ft<sup>3</sup>/s June 24 at 1130 hours (gage height, 5.98 ft); minimum daily, 2.6 ft<sup>3</sup>/s Feb. 3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.5	6.6	4.5	7.2	3.7	6.8	72	47	52	906	28	28
2	4.9	6.4	4.5	7.2	3.3	5.6	72	48	52	689	29	28
3	5.3	6.3	4.5	7.2	2.6	7.1	73	50	51	530	25	28
4	5.9	6.2	4.2	7.0	3.3	13	74	80	49	525	13	27
5	6.8	4.5	5.2	7.2	3.3	13	73	52	266	522	17	28
6	7.5	3.8	6.4	7.0	4.8	249	72	52	552	371	19	28
7	5.6	4.6	6.8	6.8	3.9	488	70	52	537	231	20	27
8	5.8	4.9	6.4	6.5	3.9	477	71	53	521	228	21	25
9	5.1	4.9	6.4	9.9	3.6	719	70	53	513	228	21	25
10	5.3	5.0	6.0	6.4	3.8	880	68	53	499	102	22	27
11	6.3	5.2	6.4	6.4	5.1	875	67	52	485	25	22	25
12	6.4	4.9	10	6.8	33	866	66	52	496	25	22	24
13	5.9	4.9	6.0	6.8	84	757	66	52	492	22	22	22
14	5.5	4.9	6.8	6.9	101	661	66	52	495	23	23	22
15	5.1	4.9	7.6	7.2	104	662	65	133	322	23	24	19
16	5.6	4.9	6.4	7.2	104	664	65	53	6.0	24	25	14
17	5.6	4.8	6.8	8.2	104	666	73	53	5.7	24	24	14
18	5.7	4.0	12	9.5	104	659	101	58	6.8	24	25	13
19	5.6	3.5	6.3	6.8	104	659	108	69	189	24	25	14
20	5.5	4.9	6.4	7.5	113	662	86	71	485	23	24	14
21	6.2	6.0	6.0	7.6	104	662	62	70	480	25	23	14
22	5.6	6.8	6.2	41	105	664	62	66	477	25	25	16
23	4.9	7.2	7.1	88	112	456	65	65	480	26	25	15
24	5.6	6.8	7.2	88	122	163	64	70	731	26	26	14
25	5.4	9.5	7.2	88	212	70	62	65	917	27	26	14
26	5.4	4.2	7.4	88	306	69	62	65	918	27	26	14
27	5.6	4.2	7.2	88	300	68	59	65	918	26	28	14
28	5.5	4.2	6.8	89	124	71	47	123	909	26	27	13
29	5.0	4.5	7.0	88	---	72	47	68	908	27	29	12
30	4.8	4.5	6.9	88	---	73	47	52	908	27	29	11
31	5.2	---	6.8	44	---	73	---	52	---	27	28	---
TOTAL	174.1	158.0	205.4	943.3	2277.3	12430.5	2055	1946	13720.5	4858	743	589
MEAN	5.62	5.27	6.63	30.4	81.3	401	68.5	62.8	457	157	24.0	19.6
MAX	7.5	9.5	12	89	306	880	108	133	918	906	29	28
MIN	4.8	3.5	4.2	6.4	2.6	5.6	47	47	5.7	22	13	11
AC-FT	345	313	407	1870	4520	24660	4080	3860	27210	9640	1470	1170

CAL YR 1986 TOTAL 19487.3 MEAN 53.4 MAX 958 MIN 3.5 AC-FT 38650  
WTR YR 1987 TOTAL 40100.1 MEAN 110 MAX 918 MIN 2.6 AC-FT 79540

## TRINITY RIVER BASIN

225

## 08047500 CLEAR FORK TRINITY RIVER AT FORT WORTH, TX

LOCATION.--Lat 32°43'56", long 97°21'31", Tarrant County, Hydrologic Unit 12030102, at Fort Worth pumping station on left bank, 240 ft upstream from the Texas and Pacific Railway Co. bridge in Fort Worth, 830 ft upstream from East West Expressway bridge, 2.5 mi upstream from mouth, 5 mi downstream from Marys Creek, and 10 mi downstream from Benbrook Dam.

DRAINAGE AREA.--518 mi<sup>2</sup>.

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

REVISED RECORDS.--WSP 1392: 1924-25, 1927. WSP 1922: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 532.91 ft above National Geodetic Vertical Datum of 1929. Prior to Apr. 3, 1970, various nonrecording and recording gages were located within 650 ft of present site at different datums.

REMARKS.--Records good. Since September 1952, flow largely regulated by Benbrook Lake (station 08046500). The city of Fort Worth diverted water from pool at gage during the current year. The Benbrook Water and Sewage Authority diverted water from the river upstream from the station for municipal use. Several observations of water temperature were made during the year. Gage-height telemeter at station.

AVERAGE DISCHARGE.--28 years (water years 1925-52) prior to regulation by Benbrook Lake, 112 ft<sup>3</sup>/s (81,140 acre-ft/yr); 35 years (water years 1953-87) regulated, unadjusted, 98.5 ft<sup>3</sup>/s (71,360 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 107,000 ft<sup>3</sup>/s May 17, 1949 (gage height, 28.20 ft, present datum), from rating curve extended above 16,000 ft<sup>3</sup>/s on basis of contracted-opening measurement of 107,000 ft<sup>3</sup>/s; no flow at times most years. Maximum stage since at least 1900, 28.20 ft May 17, 1949, present datum.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Apr. 25, 1922, reached a stage of 27.5 ft, present datum (discharge, 74,300 ft<sup>3</sup>/s, by slope-area measurement of peak flow); data furnished by Fort Worth city engineer.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 8,400 ft<sup>3</sup>/s May 15 at 0630 hours (gage height, 13.12 ft); minimum, no flow part of Apr. 16-17, due to pumping from pool at gage.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.6	6.2	14	26	35	188	106	74	56	1020	26	22
2	7.4	6.0	13	25	32	122	107	62	49	1270	25	19
3	5.8	6.0	13	25	29	96	111	127	47	623	25	16
4	5.7	88	13	24	26	89	111	619	48	570	21	13
5	50	25	14	24	26	81	111	83	147	546	15	13
6	59	14	14	24	58	195	111	68	456	431	9.6	13
7	22	10	40	23	34	444	108	68	456	253	10	13
8	23	9.3	26	24	32	444	105	74	476	250	10	13
9	18	9.1	20	184	30	677	105	67	743	237	9.9	13
10	12	19	17	41	29	948	103	67	645	155	11	77
11	12	30	17	35	28	948	100	65	718	39	25	31
12	15	17	116	33	29	948	96	65	780	38	18	84
13	13	13	40	32	65	881	104	67	667	35	16	39
14	11	11	37	32	95	778	86	66	606	34	15	22
15	11	9.7	63	31	133	778	62	1350	478	34	15	25
16	10	15	32	28	111	789	20	108	51	39	15	23
17	9.7	14	36	58	113	1100	.02	76	40	134	15	19
18	9.5	10	305	119	112	805	31	76	163	39	14	19
19	9.5	7.3	53	42	105	778	28	89	152	36	13	19
20	9.5	15	38	38	502	774	37	105	600	32	13	19
21	8.5	13	35	36	198	777	29	87	551	31	13	18
22	9.5	14	36	41	160	778	32	86	529	26	11	17
23	14	13	48	81	140	593	32	82	529	25	10	16
24	23	11	36	87	270	240	34	233	744	25	10	15
25	13	235	34	89	226	117	31	89	1020	26	10	14
26	9.6	34	32	89	656	111	29	79	1010	26	9.9	14
27	8.8	25	31	89	492	111	38	76	1010	26	98	13
28	8.7	19	29	89	1160	111	57	849	1010	23	36	21
29	7.8	16	30	89	---	111	54	640	1040	23	28	17
30	7.9	15	29	89	---	107	54	119	1060	26	24	15
31	7.7	---	27	72	---	105	---	77	---	26	23	---
TOTAL	440.2	729.6	1288	1719	4926	15024	2032.02	5793	15881	6098	594.4	672
MEAN	14.2	24.3	41.5	55.5	176	485	67.7	187	529	197	19.2	22.4
MAX	59	235	305	184	1160	1100	111	1350	1060	1270	98	84
MIN	5.7	6.0	13	23	26	81	.02	62	40	23	9.6	13
AC-FT	873	1450	2550	3410	9770	29800	4030	11490	31500	12100	1180	1330

CAL YR 1986 TOTAL 39551.84 MEAN 108 MAX 1840 MIN .13 AC-FT 78450  
WTR YR 1987 TOTAL 55197.20 MEAN 151 MAX 1350 MIN .02 AC-FT 109500

## TRINITY RIVER MAIN STEM

08048000 WEST FORK TRINITY RIVER AT FORT WORTH, TX

LOCATION.--Lat 32°45'39", long 97°19'56", Tarrant County, Hydrologic Unit 12030102, on left bank 125 ft upstream from Texas Electric Service Co.'s concrete dam, 980 ft downstream from centerline of Paddock Viaduct (North Main Street) at Fort Worth, 2,600 ft downstream from Clear Fork Trinity River, and at mile 556.8.

DRAINAGE AREA.--2,615 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1920 to current year. Gage-height records collected in this vicinity since 1910 are contained in reports of the National Weather Service. Water-quality records.--Chemical and biochemical analyses: October 1967 to September 1976.

REVISED RECORDS.--WSP 1392: 1925. WSP 1922: Drainage area.

GAGE.--Water-stage recorder and concrete dam control with angle-iron-crested notch for flow below 50 ft<sup>3</sup>/s. Datum of gage is 519.24 ft above Texas Reclamation Department datum. Prior to Aug. 22, 1954, at site 1,200 ft upstream at same datum. Aug. 22, 1954, to Oct. 15, 1955, at site 2,000 ft upstream at same datum.

REMARKS.--Records good. Flow is largely regulated by Lake Worth (station 08045400) on the West Fork Trinity River and by Benbrook Lake (station 08046500) on the Clear Fork Trinity River. At times, flow is sustained by releases from the flood-detention pool of Benbrook Lake. The city of Fort Worth diverts water upstream from station and from Cedar Creek Reservoir (station 08063010) for municipal and industrial uses and returns sewage effluent to river downstream from station 08048543. There are many small diversions upstream from station. Gage-height telemeter at station.

AVERAGE DISCHARGE.--67 years, 366 ft<sup>3</sup>/s (265,200 acre-ft/yr, unadjusted).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 85,000 ft<sup>3</sup>/s, Apr. 25, 1922 (gage height, 23.95 ft), site then in use, by slope-area measurement of peak flow by city engineer of Fort Worth; maximum gage height, 25.91 ft May 17, 1949, site then in use (discharge, 64,300 ft<sup>3</sup>/s); no flow at times. Maximum stage since at least 1866, that of May 17, 1949. Maximum stages have been affected by levee construction, levee breaks, and channel rectification.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 9,630 ft<sup>3</sup>/s May 28 at 2130 hours (gage height, 4.84 ft); minimum daily, 12 ft<sup>3</sup>/s Aug. 25.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	18	41	24	34	2610	152	86	4130	1070	38	31
2	21	19	43	24	30	2560	138	97	4240	1770	40	25
3	13	21	30	28	27	3270	141	136	4290	867	38	20
4	19	260	24	26	24	4150	140	1100	3530	956	35	19
5	115	47	23	26	26	4520	144	125	2190	1000	34	20
6	155	31	24	26	115	4660	173	104	2020	920	27	20
7	43	25	96	26	62	4980	171	105	1900	586	21	21
8	47	24	37	28	82	4940	160	124	1620	426	21	22
9	34	24	31	250	100	5140	140	122	1620	348	24	23
10	28	55	25	30	110	5330	127	122	1630	252	25	170
11	25	99	25	24	124	4940	123	122	1820	74	41	49
12	28	45	275	23	137	4250	121	138	2350	60	39	150
13	29	38	60	22	198	3170	142	115	4180	54	30	83
14	26	35	54	22	231	1790	125	96	3910	47	29	40
15	20	27	113	22	349	1320	100	1900	4390	48	25	36
16	19	29	38	21	257	1360	40	181	4280	56	23	34
17	19	31	62	70	235	2380	21	135	4300	257	23	28
18	19	26	520	167	204	2010	28	130	4650	64	21	34
19	19	34	54	34	201	1790	39	159	4370	49	18	31
20	20	41	37	31	1020	1610	38	189	4090	44	17	30
21	20	31	32	88	560	1270	40	145	3060	40	17	36
22	20	38	34	201	529	1070	39	123	2000	39	15	26
23	28	36	69	170	500	1010	38	99	1500	41	13	23
24	44	30	34	144	784	584	41	371	1810	42	13	23
25	29	478	30	114	643	470	38	128	2160	41	12	23
26	22	56	28	75	1350	363	33	109	1740	39	13	24
27	20	36	27	70	1420	274	33	104	1390	39	172	25
28	24	30	25	66	3690	235	48	1400	1240	35	46	80
29	28	25	25	71	---	238	56	2100	1160	35	34	40
30	20	24	25	63	---	202	57	3090	1200	37	32	28
31	18	---	24	52	---	175	---	3670	---	38	30	---
TOTAL	987	1713	1965	2038	13042	72671	2686	16625	82770	9374	966	1214
MEAN	31.8	57.1	63.4	65.7	466	2344	89.5	536	2759	302	31.2	40.5
MAX	155	478	520	250	3690	5330	173	3670	4650	1770	172	170
MIN	13	18	23	21	24	175	21	86	1160	35	12	19
AC-FT	1960	3400	3900	4040	25870	144100	5330	32980	164200	18590	1920	2410

CAL YR 1986 TOTAL 97696 MEAN 268 MAX 5170 MIN 8.3 AC-FT 193800  
WTR YR 1987 TOTAL 206051 MEAN 565 MAX 5330 MIN 12 AC-FT 408700

## 227

LOCATION.--Lat 32°45'06", long 97°17'21", Tarrant County, Hydrologic Unit 12030102, at downstream side of bridge on Beach Street, 1,700 ft downstream from Sycamore Creek, 0.9 mi downstream from Riverside Drive bridge, 2.6 mi east of the Tarrant County Courthouse, and at mile 549.6.

### WATER-DISCHARGE RECORDS

GAGE.--Water-stage recorder. Datum of gage is 478.70 ft above National Geodetic Vertical Datum of 1929, State Department of Highways and Public Transportation datum.

AVERAGE DISCHARGE.--11 years, 384 ft<sup>3</sup>/s (278,200 acre-ft/yr).

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1866 probably occurred in May 1949 (stage and discharge unknown). Maximum stages have been affected by levee construction, levee breaks, and channel rectification.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,170 ft<sup>3</sup>/s May 15 at 1030 hours (gage height, 19.65 ft); minimum daily, 6.5 ft<sup>3</sup>/s Aug. 21.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	31	20	31	52	87	3140	104	79	4030	1080	35	35
2	20	20	66	51	79	3020	97	90	4140	2350	36	33
3	14	19	46	53	59	3370	97	227	4170	941	36	26
4	36	328	36	52	53	3900	96	2300	3770	983	32	18
5	107	87	32	51	52	4180	98	118	2630	1040	25	17
6	165	51	36	44	195	4230	114	92	2400	957	24	11
7	78	40	120	45	126	4410	111	86	2250	429	11	13
8	77	32	72	44	129	4400	106	88	2010	249	8.1	15
9	60	28	57	725	141	4450	98	81	2190	192	6.8	17
10	45	68	45	100	148	4590	92	75	2100	162	7.5	134
11	39	128	43	66	158	4420	91	102	2420	74	30	76
12	43	70	374	58	165	4060	88	99	2510	60	53	149
13	44	59	116	54	206	3460	106	91	3980	57	36	104
14	38	51	87	52	242	2290	94	76	3840	53	19	64
15	31	43	184	52	403	1690	90	2770	4170	49	14	57
16	30	39	78	50	298	1670	54	220	4060	49	14	47
17	28	40	92	152	234	3100	25	114	4050	430	13	35
18	27	36	1210	482	208	2450	14	104	4380	82	11	47
19	27	46	131	107	203	2190	41	112	4050	60	8.6	43
20	27	55	86	83	1830	2020	40	131	3980	52	7.5	36
21	27	35	70	134	807	1600	46	111	3270	47	6.5	39
22	26	56	75	235	687	1290	41	104	2340	44	14	34
23	40	44	144	212	590	1210	40	95	1730	41	12	25
24	69	31	93	182	1350	566	42	685	1980	42	11	19
25	50	929	69	169	900	325	42	118	2370	41	8.3	17
26	39	107	65	133	2140	225	37	99	2020	40	7.6	16
27	33	60	65	130	2050	170	34	94	1560	39	218	19
28	23	44	60	126	4050	143	52	899	1370	36	73	60
29	18	35	59	124	---	147	61	3470	1180	31	45	53
30	26	31	58	123	---	127	59	3280	1500	32	39	28
31	24	---	56	115	---	115	---	3690	---	34	36	---
TOTAL	1342	2632	3756	4056	17590	72958	2110	19700	86450	9776	897.9	1287
MEAN	43.3	87.7	121	131	628	2353	70.3	635	2882	315	29.0	42.9
MAX	165	929	1210	725	4050	4590	114	3690	4380	2350	218	149
MIN	14	19	31	44	52	115	14	75	1180	31	6.5	11
AC-FT	2660	5220	7450	8050	34890	144700	4190	39070	171500	19390	1780	2550
CAL YR 1986	TOTAL 137030.3	MEAN 375	MAX 5380	MIN 8.3	AC-FT 271800							
WTR YR 1987	TOTAL 222554.8	MEAN 610	MAX 4590	MIN 6.5	AC-FT 441400							

08048543 WEST FORK TRINITY RIVER AT BEACH STREET, FORT WORTH, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: October 1976 to current year.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1976 to current year.

pH: October 1976 to current year.

WATER TEMPERATURE: October 1976 to current year.

DISSOLVED OXYGEN: October 1976 to current year.

INSTRUMENTATION.--Beginning October 1976, a four-parameter water-quality monitor records temperature, DO, pH, and specific conductance 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, 2,000 microsiemens Nov. 6, 1978; minimum, 102 microsiemens June 7, 1982 and May 9, 1986.

pH: Maximum, 9.8 units Aug. 8, Sept. 2, 1980; minimum, 6.6 units Aug. 15, 1987.

WATER TEMPERATURE: Maximum, 38.0°C July 14, 16, 1978; minimum, 0.0°C Jan. 31, Feb. 1, 2, 1985.

DISSOLVED OXYGEN: Maximum, 22.1 mg/L Oct. 4, 1983; minimum, 0.0 mg/L on many days during winter months.

## EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 1,180 microsiemens Nov. 20; minimum, 174 microsiemens May 28.

pH: Maximum, 9.0 units Nov. 20; minimum, 6.6 units Aug. 15.

WATER TEMPERATURE: Maximum, 36.0°C Aug. 6; minimum, 4.0°C Dec. 12.

DISSOLVED OXYGEN: Maximum, 15.7 mg/L Apr. 8; minimum, 2.4 mg/L Aug. 23, 24.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	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 (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3
NOV 04...	1040	158	332	7.50	19.0	6.5	71	7.5	120	21
JAN 20...	1300	84	530	7.90	6.5	11.4	93	1.4	200	29
APR 27...	1445	38	522	8.00	26.0	8.6	107	2.4	190	22
MAY 03...	2230	469	--	--	--	--	--	--	--	--
JUL 13...	1045	63	442	8.00	28.0	9.8	127	2.3	140	13
SEP 01...	1645	35	494	8.00	30.0	7.9	106	2.7	140	18

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 WH WAT TOTAL 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 04...	41	4.1	22	0.9	6.2	98	34	27	0.30
JAN 20...	70	6.2	27	0.9	11	171	60	34	0.40
APR 27...	63	8.2	36	1	8.8	169	55	44	0.40
MAY 03...	--	--	--	--	--	--	--	--	--
JUL 13...	47	5.8	32	1	5.4	128	39	30	0.40
SEP 01...	46	7.1	35	1	8.0	126	46	42	0.40

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- PHORUS, TOTAL (MG/L AS P)
NOV 04...	3.6	200	0.450	0.050	0.500	0.270	1.8	2.1	2.50
JAN 20...	4.7	320	0.580	0.020	0.600	0.280	0.92	1.2	0.150
APR 27...	4.4	320	0.180	0.020	0.200	0.080	1.7	1.8	0.090
MAY 03...	--	--	0.110	0.090	0.200	0.450	0.85	1.3	--
JUL 13...	6.7	240	--	0.010	<0.100	0.030	0.87	0.90	0.110
SEP 01...	7.6	270	--	<0.010	0.100	0.020	1.1	1.1	0.080

## TRINITY RIVER MAIN STEM

229

08048543 WEST FORK TRINITY RIVER AT BEACH STREET, FORT WORTH, TX--Continued

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1986 TO SEPTEMBER 1987

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. 1986	1342	462	263	954	33	120	46	165	160
NOV. 1986	2632	468	267	1900	36	254	47	331	160
DEC. 1986	3756	415	237	2400	28	280	41	411	150
JAN. 1987	4056	489	279	3050	37	409	49	532	170
FEB. 1987	17590	395	225	10700	24	1160	38	1820	150
MAR. 1987	72958	411	234	46200	26	5160	40	7880	150
APR. 1987	2110	514	293	1670	41	231	51	292	170
MAY 1987	19700	400	228	12100	26	1360	39	2070	150
JUNE 1987	86450	404	230	53800	25	5900	39	9160	150
JULY 1987	9776	371	212	5590	22	574	36	944	140
AUG. 1987	897.9	497	283	687	38	93	50	120	170
SEPT 1987	1287	445	254	881	31	106	44	152	160
TOTAL	222554.9	**	**	140000	**	15600	**	23900	**
WTD.AVG.	610	408	233	**	26	**	40	**	150

## SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	513	499	505	516	495	501	494	478	490	598	562	576
2	530	503	513	530	516	519	480	438	458	580	554	566
3	528	510	519	534	524	529	538	482	506	606	562	583
4	546	400	494	532	308	452	570	544	552	590	572	581
5	622	314	474	486	410	438	574	542	562	598	574	589
6	448	368	398	560	486	527	578	558	568	620	596	610
7	425	408	416	586	560	569	564	396	456	910	600	712
8	437	393	420	598	584	591	492	414	455	932	808	877
9	453	421	439	598	586	592	548	492	507	806	260	458
10	475	453	463	592	352	515	536	514	525	574	544	560
11	485	467	474	494	400	448	564	534	551	568	558	563
12	492	468	479	506	494	499	440	282	401	558	528	548
13	496	444	473	566	516	532	506	430	462	534	524	527
14	472	456	466	598	524	544	546	414	516	600	530	575
15	474	460	465	604	534	566	424	342	394	622	578	598
16	478	462	467	612	588	604	486	424	474	596	566	578
17	479	466	472	604	558	575	496	330	475	602	368	498
18	491	467	476	556	544	549	354	248	318	506	338	435
19	493	477	484	752	526	565	402	354	377	532	510	523
20	493	477	484	1180	768	933	442	406	425	546	522	531
21	499	483	489	1000	658	847	458	438	444	518	444	476
22	518	491	498	886	576	695	488	404	463	464	392	436
23	536	482	515	672	552	619	442	388	412	462	432	443
24	504	434	465	628	562	586	492	446	466	512	462	490
25	470	434	457	554	200	362	508	494	502	510	460	479
26	494	464	480	436	412	421	504	494	498	464	458	461
27	509	492	498	470	436	457	518	494	508	470	460	465
28	509	497	503	482	468	475	562	508	527	466	454	459
29	521	503	510	490	480	486	548	506	520	460	444	455
30	511	489	496	496	488	492	578	550	567	464	446	455
31	509	481	491	---	---	---	584	568	577	464	446	456
MONTH	622	314	477	1180	200	550	584	248	482	932	260	534

## TRINITY RIVER MAIN STEM

08048543 WEST FORK TRINITY RIVER AT BEACH STREET, FORT WORTH, TX--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	546	460	495	415	400	408	573	479	498	550	508	523
2	492	474	483	419	415	417	552	488	505	578	502	512
3	524	482	504	415	411	413	574	469	499	524	500	512
4	532	484	513	417	413	414	545	469	490	---	---	503
5	---	---	509	419	415	418	508	486	501	---	---	495
6	---	---	505	434	419	422	510	473	494	---	---	487
7	---	---	501	434	418	424	499	475	489	---	---	487
8	506	490	497	422	418	420	500	478	492	---	---	470
9	508	450	481	422	410	417	514	483	500	---	---	461
10	456	442	450	412	410	410	519	485	503	---	---	453
11	452	430	443	414	410	412	522	488	505	---	---	445
12	452	432	444	412	405	409	518	483	502	---	---	436
13	460	438	448	405	403	404	535	483	506	---	---	427
14	478	446	468	407	405	406	524	486	504	---	---	419
15	484	412	436	407	403	406	498	478	490	---	---	411
16	424	416	420	409	403	406	529	499	517	---	---	402
17	428	418	421	396	287	339	572	525	542	---	---	394
18	434	426	431	414	398	406	611	574	586	---	---	394
19	434	428	431	412	406	409	613	557	582	458	412	427
20	443	285	337	420	406	412	566	555	560	470	430	449
21	415	291	339	416	410	413	570	550	558	464	452	457
22	437	419	430	414	408	411	589	571	581	480	444	455
23	447	437	441	435	407	413	583	566	573	501	459	482
24	441	367	399	459	425	435	562	536	553	475	235	379
25	428	398	410	459	435	444	551	529	537	440	409	431
26	426	356	391	467	445	454	556	547	550	424	395	405
27	430	358	404	470	459	464	558	548	553	423	397	410
28	412	326	366	496	472	481	598	514	541	437	174	379
29	---	---	---	494	482	487	544	516	533	404	194	258
30	---	---	---	496	474	486	546	518	532	424	408	419
31	---	---	---	537	473	487	---	---	---	421	415	418
MONTH	546	285	443	537	287	424	613	469	526	578	174	439
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	423	413	415	388	382	385	524	510	516	508	484	493
2	436	414	416	390	178	306	516	508	513	510	494	503
3	421	418	419	366	292	331	534	508	522	508	490	500
4	425	419	423	402	340	371	530	514	522	506	338	471
5	436	423	426	406	400	402	544	526	536	502	300	454
6	436	420	427	408	394	399	568	542	557	414	254	323
7	420	417	418	410	402	405	562	510	539	500	358	468
8	423	415	418	428	400	414	546	524	536	516	242	452
9	424	314	376	436	410	418	578	550	566	532	504	518
10	408	330	369	438	418	426	604	568	577	530	202	449
11	409	357	387	470	430	456	630	494	608	462	452	458
12	419	388	406	448	428	436	570	384	494	462	262	389
13	412	386	404	496	420	447	542	518	532	448	382	420
14	414	407	412	---	---	471	600	472	523	448	432	440
15	409	401	405	---	---	435	604	538	561	444	356	408
16	416	405	411	---	---	400	582	504	531	450	424	439
17	416	408	411	476	198	365	550	496	529	462	442	449
18	412	312	390	412	352	382	542	524	533	480	382	446
19	406	398	401	446	412	433	546	524	537	648	432	510
20	408	394	399	---	---	439	---	---	550	472	460	465
21	400	394	397	---	---	446	---	---	558	470	456	463
22	406	396	399	---	---	452	572	556	566	456	440	447
23	402	400	400	---	---	458	---	---	582	456	446	452
24	406	398	400	478	456	463	---	---	573	470	458	464
25	398	392	394	476	460	467	---	---	564	476	462	466
26	396	388	391	484	470	474	600	580	588	492	472	479
27	394	390	391	494	484	489	592	208	431	---	---	479
28	398	390	391	494	488	491	468	432	444	---	---	460
29	392	354	388	516	494	505	494	456	474	---	---	424
30	378	316	364	524	508	516	504	494	500	---	---	424
31	---	---	---	526	510	518	500	486	492	---	---	---
MONTH	436	312	402	526	178	432	630	208	534	648	202	454

## TRINITY RIVER MAIN STEM

231

08048543 WEST FORK TRINITY RIVER AT BEACH STREET, FORT WORTH, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	8.0	7.5	7.7	8.0	7.6	7.8	8.0	7.8	7.9	8.3	8.0	8.1
2	8.0	7.6	7.8	8.0	7.6	7.8	8.1	7.9	8.0	8.4	8.0	8.1
3	8.1	7.6	7.8	8.2	7.7	7.9	8.0	7.8	7.9	8.3	7.9	8.1
4	7.7	7.4	7.6	7.9	7.5	7.8	8.0	7.9	7.9	8.5	8.0	8.2
5	8.1	7.4	7.7	7.9	7.7	7.8	8.0	7.9	8.0	8.6	8.0	8.3
6	7.9	7.7	7.8	7.9	7.7	7.8	8.0	7.9	8.0	8.6	8.0	8.3
7	7.8	7.7	7.7	7.9	7.7	7.8	8.1	7.7	7.9	8.8	7.9	8.4
8	7.7	7.5	7.6	7.8	7.6	7.7	7.9	7.8	7.8	8.7	8.3	8.6
9	7.7	7.5	7.6	7.9	7.6	7.8	7.9	7.8	7.9	8.5	8.1	8.2
10	7.6	7.5	7.6	7.8	7.7	7.7	8.2	7.9	8.0	8.3	8.2	8.2
11	7.7	7.5	7.6	8.1	7.7	7.9	8.2	8.0	8.1	8.2	8.1	8.1
12	7.9	7.7	7.8	7.9	7.8	7.8	8.2	8.0	8.1	8.2	7.9	8.0
13	7.9	7.8	7.8	8.0	7.8	7.9	8.1	8.0	8.1	8.1	7.8	8.0
14	7.9	7.7	7.8	8.0	7.9	7.9	8.1	8.0	8.0	8.3	7.9	8.1
15	7.8	7.7	7.8	8.0	7.8	7.9	8.0	7.9	8.0	8.3	7.9	8.0
16	7.8	7.7	7.8	7.9	7.7	7.8	7.9	7.9	7.9	8.0	7.8	7.9
17	7.9	7.7	7.8	8.0	7.7	7.8	7.9	7.8	7.8	8.1	7.9	8.0
18	7.9	7.7	7.8	8.0	7.7	7.8	8.1	7.8	7.9	8.1	8.1	8.1
19	7.9	7.7	7.7	8.0	7.7	7.8	7.8	7.8	7.8	8.1	8.0	8.1
20	7.8	7.7	7.7	9.0	8.2	8.7	7.8	7.7	7.8	8.1	7.9	8.0
21	7.8	7.6	7.7	8.5	8.0	8.3	7.8	7.7	7.8	8.1	8.0	8.0
22	7.7	7.6	7.7	8.4	7.7	8.0	7.9	7.8	7.8	8.1	7.9	8.0
23	7.7	7.6	7.6	7.9	7.7	7.8	8.0	7.9	7.9	8.3	8.1	8.2
24	8.1	7.5	7.7	8.0	7.8	7.9	8.0	7.9	7.9	8.3	8.1	8.2
25	8.0	7.7	7.9	8.0	7.8	7.9	8.0	7.8	7.9	8.4	8.2	8.3
26	8.0	7.7	7.8	7.9	7.8	7.8	8.0	7.8	7.9	8.4	8.1	8.2
27	8.0	7.7	7.8	7.8	7.7	7.8	8.1	7.9	7.9	8.4	8.1	8.2
28	8.1	7.7	7.8	7.8	7.7	7.8	8.1	7.9	7.9	8.4	8.0	8.2
29	8.0	7.6	7.8	7.8	7.7	7.8	8.1	7.9	8.0	8.5	8.0	8.2
30	8.0	7.6	7.7	7.8	7.8	7.8	8.1	7.9	8.0	8.5	8.0	8.2
31	8.2	7.7	7.9	---	---	---	8.2	7.9	8.0	8.5	8.0	8.2
MONTH	8.2	7.4	7.7	9.0	7.5	7.9	8.2	7.7	7.9	8.8	7.8	8.1
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	8.4	7.9	8.1	8.2	8.1	8.2	8.5	8.0	8.3	8.2	8.0	8.1
2	8.5	7.9	8.1	8.2	8.2	8.2	8.6	7.9	8.3	8.4	7.8	8.1
3	8.3	7.8	8.1	8.2	8.2	8.2	8.5	8.0	8.3	8.2	7.9	8.0
4	8.1	7.6	7.9	8.2	8.1	8.1	8.5	7.9	8.2	---	---	---
5	---	---	---	8.2	8.1	8.2	8.4	7.8	8.1	---	---	---
6	---	---	---	8.2	8.1	8.2	8.5	7.8	8.2	---	---	---
7	---	---	---	8.2	8.1	8.2	8.5	7.8	8.1	---	---	---
8	8.4	7.9	8.1	8.2	8.1	8.2	8.5	7.8	8.1	---	---	---
9	8.3	7.9	8.1	8.2	8.2	8.2	8.5	7.8	8.1	---	---	---
10	8.5	7.9	8.2	8.3	8.2	8.2	8.4	7.8	8.1	---	---	---
11	8.5	8.0	8.2	8.3	8.2	8.2	8.4	7.7	8.0	---	---	---
12	8.6	8.0	8.2	8.3	8.2	8.2	8.4	7.8	8.0	---	---	---
13	8.4	8.1	8.2	8.3	8.2	8.2	8.2	7.7	7.9	---	---	---
14	8.3	8.0	8.2	8.3	8.2	8.2	8.4	7.9	8.1	---	---	---
15	8.2	8.0	8.1	8.3	8.2	8.3	8.3	7.8	8.0	---	---	---
16	8.3	8.2	8.2	8.3	8.2	8.2	8.1	7.7	7.9	---	---	---
17	8.4	8.2	8.3	8.6	8.0	8.1	8.0	7.6	7.8	---	---	---
18	8.5	8.2	8.3	8.3	8.2	8.3	7.9	7.6	7.7	---	---	---
19	8.5	8.2	8.3	8.3	8.2	8.3	8.0	7.5	7.7	8.0	7.8	7.9
20	8.2	8.1	8.1	8.3	8.2	8.3	7.9	7.6	7.7	8.4	7.9	8.1
21	8.2	8.1	8.1	8.3	8.2	8.2	8.0	7.6	7.8	8.5	8.0	8.2
22	8.3	8.2	8.2	8.3	8.2	8.2	8.2	7.7	7.9	8.6	8.0	8.2
23	8.3	8.2	8.2	8.3	8.2	8.2	8.0	7.7	7.8	8.6	8.0	8.3
24	8.2	8.1	8.1	8.4	8.1	8.2	8.0	7.5	7.7	8.4	8.0	8.1
25	8.2	8.1	8.1	8.3	8.1	8.2	7.9	7.5	7.6	8.4	8.0	8.2
26	8.2	8.0	8.1	8.3	8.1	8.2	8.0	7.5	7.7	8.6	7.9	8.2
27	8.2	8.0	8.1	8.4	8.0	8.2	8.4	7.5	7.9	8.5	7.9	8.2
28	8.1	7.8	8.0	8.3	8.0	8.1	8.4	7.9	8.1	8.3	7.9	8.0
29	---	---	---	8.4	8.1	8.2	8.4	7.9	8.1	8.2	8.0	8.1
30	---	---	---	8.9	8.1	8.3	8.4	8.0	8.2	8.3	8.1	8.2
31	---	---	---	8.6	8.1	8.3	---	---	---	8.3	8.2	8.3
MONTH	8.6	7.6	8.1	8.9	8.0	8.2	8.6	7.5	8.0	8.6	7.8	8.1

## TRINITY RIVER MAIN STEM

08048543 WEST FORK TRINITY RIVER AT BEACH STREET, FORT WORTH, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	8.4	8.2	8.3	8.2	8.1	8.1	8.3	7.6	7.9	8.0	7.6	7.8
2	8.5	8.2	8.3	8.4	7.9	8.1	8.1	7.7	7.9	7.9	7.6	7.8
3	8.2	8.2	8.2	8.1	7.8	8.0	8.2	7.7	7.9	8.0	7.6	7.7
4	8.4	8.2	8.3	8.2	8.0	8.1	8.2	7.7	7.9	8.1	7.6	7.8
5	8.4	8.2	8.3	8.3	8.1	8.2	8.2	7.7	7.9	8.1	7.5	7.7
6	8.3	8.3	8.3	8.4	8.2	8.3	8.3	7.7	7.9	7.9	7.6	7.7
7	8.4	8.3	8.3	8.5	8.1	8.3	8.2	7.6	7.9	7.7	7.5	7.6
8	8.4	8.2	8.3	8.5	8.1	8.3	8.2	7.6	7.8	7.8	7.5	7.6
9	8.2	8.0	8.1	8.6	8.1	8.3	8.1	7.6	7.8	7.9	7.6	7.7
10	8.1	8.0	8.1	8.6	8.1	8.3	8.1	7.4	7.8	7.9	7.5	7.7
11	8.2	8.1	8.1	8.6	8.1	8.3	7.8	6.9	7.3	8.1	7.6	7.8
12	8.2	8.1	8.2	8.7	8.1	8.3	7.6	7.1	7.4	7.9	7.6	7.7
13	8.3	8.1	8.2	8.4	7.9	8.1	7.8	7.2	7.5	7.8	7.6	7.7
14	8.4	8.3	8.3	---	---	---	7.6	7.1	7.3	7.9	7.7	7.8
15	8.3	8.1	8.2	---	---	---	7.9	6.6	7.2	7.7	7.5	7.6
16	8.2	8.1	8.1	---	---	---	8.7	7.4	7.9	7.8	7.5	7.6
17	8.4	8.1	8.2	8.1	7.7	7.9	8.6	7.6	8.0	7.8	7.6	7.7
18	8.3	8.1	8.2	8.3	7.6	7.9	8.5	7.6	8.0	7.6	7.4	7.5
19	8.4	8.2	8.3	8.4	7.9	8.2	8.4	7.6	7.9	7.8	7.5	7.6
20	8.3	8.1	8.2	---	---	---	---	---	---	7.8	7.6	7.7
21	8.4	8.2	8.3	---	---	---	---	---	---	7.8	7.7	7.7
22	8.4	8.2	8.3	---	---	---	8.3	7.5	7.9	7.9	7.7	7.8
23	8.4	8.3	8.3	---	---	---	---	---	---	7.9	7.7	7.8
24	8.3	8.2	8.3	8.3	7.7	8.0	---	---	---	7.9	7.7	7.8
25	8.3	8.2	8.2	8.3	7.7	8.0	---	---	---	7.9	7.7	7.8
26	8.3	8.2	8.3	8.2	7.8	8.0	8.3	7.7	7.9	8.0	7.6	7.8
27	8.3	8.2	8.2	8.2	7.7	7.9	8.0	7.6	7.8	---	---	---
28	8.3	8.1	8.2	8.2	7.7	7.9	7.6	7.4	7.5	---	---	---
29	8.2	8.1	8.2	8.2	7.7	7.9	7.8	7.4	7.6	---	---	---
30	8.3	8.0	8.1	8.2	7.6	7.9	7.9	7.6	7.7	---	---	---
31	---	---	---	8.2	7.7	7.9	7.9	7.6	7.8	---	---	---
MONTH	8.5	8.0	8.2	8.7	7.6	8.1	8.7	6.6	7.7	8.1	7.4	7.7

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	28.0	26.0	27.0	21.5	19.5	20.0	12.5	10.0	11.0	11.0	8.5	10.0
2	29.0	26.5	27.5	19.5	18.0	19.0	11.5	8.0	10.0	10.0	7.5	9.0
3	28.0	26.0	26.5	20.0	16.5	18.5	11.5	8.5	10.0	10.5	8.5	9.5
4	26.5	24.0	25.5	19.5	17.5	19.0	12.0	9.0	10.5	10.0	7.0	8.5
5	24.0	21.5	23.0	17.5	15.5	16.5	13.0	10.5	12.0	9.5	7.0	8.5
6	22.5	20.5	21.5	17.0	14.5	16.0	13.0	11.5	12.0	12.5	8.5	10.5
7	21.5	20.5	21.0	17.0	15.5	16.5	13.0	12.0	12.5	12.5	10.0	11.5
8	22.0	20.5	21.5	19.0	16.0	17.5	12.5	11.5	12.0	11.5	9.5	10.0
9	25.0	21.5	23.0	18.0	16.0	17.0	11.5	9.5	10.5	10.5	8.5	9.5
10	24.5	22.0	23.5	16.5	15.0	15.5	9.0	7.5	8.0	10.0	7.5	8.5
11	25.0	22.5	23.5	14.5	12.0	13.0	7.5	6.5	7.0	9.5	5.5	7.5
12	22.5	16.0	18.0	12.0	9.5	11.0	9.0	4.0	7.0	10.5	6.0	8.5
13	18.5	14.5	16.5	9.0	6.5	7.5	9.0	6.5	7.5	10.0	8.5	9.5
14	20.0	16.0	18.0	10.0	7.5	8.5	9.5	8.0	8.5	13.0	9.5	11.0
15	20.5	17.0	19.0	13.5	8.5	11.0	10.0	9.0	9.5	12.5	11.0	11.5
16	20.5	17.5	19.0	16.0	13.0	14.5	11.0	9.5	10.5	11.0	8.5	10.0
17	22.0	17.5	20.0	17.0	13.5	15.5	12.0	10.5	11.0	8.0	6.5	7.0
18	22.5	19.0	21.0	18.0	15.5	16.5	12.0	9.5	10.0	6.0	5.0	6.0
19	22.5	19.0	21.0	16.5	14.0	15.0	12.0	9.0	10.5	8.5	4.5	6.0
20	22.5	19.0	20.5	16.5	13.0	15.0	11.0	9.0	10.0	8.5	5.0	7.0
21	20.5	19.0	20.0	15.0	12.0	14.0	10.5	10.0	10.5	9.0	5.0	6.5
22	20.0	19.0	19.5	18.0	14.5	16.0	10.5	9.5	9.5	7.5	5.5	6.5
23	21.0	20.0	20.5	16.5	12.5	14.5	10.0	9.0	9.5	9.0	5.5	7.0
24	21.5	19.0	20.5	12.5	10.5	11.0	11.0	7.5	9.5	10.5	7.0	8.0
25	20.5	17.5	19.0	11.5	10.0	11.0	11.5	9.5	10.5	9.5	6.0	7.5
26	20.5	17.0	19.0	13.0	10.5	11.5	12.0	10.0	11.0	10.5	6.5	8.5
27	21.0	17.0	19.0	12.5	9.5	11.0	11.0	8.5	10.0	12.0	7.5	9.5
28	21.5	17.5	19.5	12.0	9.0	11.0	11.5	10.0	10.5	13.0	8.0	10.5
29	22.0	18.5	20.0	12.5	9.0	11.0	12.0	8.5	10.5	14.0	11.5	12.5
30	21.5	19.5	20.5	13.0	9.5	11.5	11.0	8.5	10.0	14.5	10.5	12.0
31	22.0	18.5	20.0	---	---	---	11.5	8.5	10.0	13.0	10.5	12.0
MONTH	29.0	14.5	21.0	21.5	6.5	14.0	13.0	4.0	10.0	14.5	4.5	9.0

## TRINITY RIVER MAIN STEM

233

08048543 WEST FORK TRINITY RIVER AT BEACH STREET, FORT WORTH, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	16.0	12.5	14.0	11.5	10.0	11.0	18.0	11.0	14.5	26.0	22.0	23.5
2	16.5	11.0	14.0	12.0	10.0	11.0	15.5	11.5	13.0	28.0	22.0	25.0
3	17.0	12.5	15.0	12.0	10.5	11.5	16.5	10.0	13.0	---	---	---
4	17.5	13.5	16.0	13.0	10.5	11.5	17.0	11.5	14.5	---	---	---
5	---	---	---	13.0	11.0	12.0	15.0	13.0	13.5	---	---	---
6	---	---	---	13.5	12.5	13.0	17.0	12.5	14.5	---	---	---
7	---	---	13.5	14.0	12.5	13.0	17.5	13.0	15.0	---	---	---
8	15.5	11.0	13.0	14.0	12.5	13.5	19.5	13.5	16.5	---	---	---
9	13.5	10.5	12.0	14.0	13.0	13.5	21.5	14.5	18.0	---	---	---
10	13.5	10.5	12.0	13.0	12.5	13.0	21.5	16.5	19.0	---	---	---
11	16.0	11.5	13.5	13.5	12.0	12.5	23.5	16.5	20.0	---	---	---
12	16.5	12.0	14.0	13.5	12.0	13.0	24.0	19.0	21.5	---	---	---
13	16.0	13.0	14.5	14.0	12.0	13.0	22.5	18.5	20.5	---	---	---
14	16.5	14.0	15.0	14.0	12.5	13.5	19.0	15.5	17.0	---	---	---
15	15.5	13.0	14.5	15.0	14.0	14.5	23.0	15.5	19.0	---	---	---
16	13.0	11.0	12.0	15.5	15.0	15.0	23.0	17.5	20.5	---	---	---
17	11.0	9.5	10.5	16.5	14.5	15.5	26.0	21.0	23.5	---	---	---
18	11.5	8.5	9.5	15.5	14.0	15.0	28.5	22.5	25.0	---	---	---
19	10.5	9.0	9.5	16.0	14.5	15.0	26.0	23.5	25.0	27.5	25.0	26.5
20	9.0	7.0	8.0	17.0	15.0	16.0	26.0	23.5	25.0	29.0	24.0	26.0
21	10.0	7.0	8.5	18.0	16.5	17.0	25.0	19.5	21.5	29.0	25.0	27.0
22	11.5	9.5	10.5	18.0	17.0	17.5	22.5	18.0	20.5	30.5	25.5	28.0
23	11.5	9.5	10.5	17.5	15.0	17.0	24.0	20.5	22.5	29.5	25.5	27.5
24	10.5	10.0	10.5	17.0	14.0	15.5	24.5	22.0	23.5	28.5	24.0	26.0
25	10.5	10.0	10.5	16.0	14.0	15.0	26.0	22.5	24.5	29.0	24.5	26.5
26	11.5	10.5	11.0	15.0	14.0	14.5	26.5	23.0	25.0	28.5	25.0	26.5
27	12.0	11.5	11.5	18.5	13.0	15.5	27.0	23.5	25.5	27.5	24.5	26.0
28	12.0	11.0	12.0	16.0	13.0	15.0	28.0	24.0	25.5	26.5	21.0	24.0
29	---	---	---	12.5	10.0	11.0	27.5	24.0	26.0	23.0	19.5	21.0
30	---	---	---	13.0	8.0	10.0	27.0	23.0	25.5	25.5	23.0	24.5
31	---	---	---	15.5	9.5	12.0	---	---	---	25.5	24.5	25.0
MONTH	17.5	7.0	12.0	18.5	8.0	13.5	28.5	10.0	20.5	30.5	19.5	25.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	25.5	24.0	25.0	27.5	25.5	26.5	34.0	30.5	32.0	30.5	26.5	28.0
2	25.5	24.5	25.0	27.0	23.5	25.5	34.5	30.5	32.0	30.0	26.5	28.5
3	25.0	24.5	24.5	28.0	25.0	26.0	34.0	30.5	32.0	32.0	26.5	29.0
4	25.5	24.0	24.5	29.0	26.5	27.5	34.5	30.5	32.0	31.5	27.0	29.0
5	26.0	23.5	24.5	29.0	27.5	28.0	35.5	30.5	32.5	32.5	27.5	29.5
6	25.0	24.0	24.5	29.5	27.0	28.0	36.0	31.0	33.0	31.0	27.5	29.0
7	25.5	24.0	24.5	31.0	27.0	29.0	35.5	30.5	32.5	30.0	27.5	28.5
8	25.0	24.0	24.5	31.0	27.5	29.0	35.5	29.5	32.0	31.0	26.5	28.5
9	24.0	23.5	23.5	31.0	27.0	28.5	35.0	29.5	32.0	32.0	27.0	29.5
10	24.5	23.5	24.0	30.0	27.0	28.5	34.5	30.0	32.0	30.0	26.0	28.0
11	25.5	24.0	24.5	30.5	27.0	29.0	34.5	29.5	32.0	30.0	27.0	28.5
12	26.0	24.5	25.0	30.5	27.5	29.0	33.0	28.5	31.0	29.0	23.5	27.0
13	27.5	25.5	26.0	30.5	28.5	29.5	32.0	30.0	31.0	30.0	25.5	27.5
14	28.0	26.5	27.5	---	---	---	34.0	29.5	31.5	30.5	27.5	29.0
15	28.0	26.5	27.5	---	---	---	34.5	29.5	31.5	29.0	27.0	28.0
16	28.0	26.5	27.5	---	---	---	35.0	29.0	31.5	30.0	26.5	28.5
17	29.5	27.5	28.5	29.5	25.0	28.0	34.5	29.0	31.5	31.5	27.5	29.5
18	29.0	26.5	28.0	31.0	26.5	29.0	34.5	29.0	31.5	29.5	25.5	28.0
19	29.5	28.0	29.0	32.0	28.5	30.5	34.5	29.0	31.5	26.5	24.0	25.5
20	28.5	27.5	28.5	---	---	---	---	---	---	28.0	24.5	26.0
21	29.0	27.5	28.5	---	---	---	---	---	---	28.0	25.5	26.5
22	28.5	28.0	28.5	---	---	---	34.5	29.5	31.5	27.0	24.0	25.5
23	29.5	28.0	28.5	---	---	---	---	---	---	27.5	22.5	24.5
24	29.5	28.0	28.5	33.0	29.5	31.5	---	---	---	28.5	23.0	25.5
25	29.0	27.5	28.5	33.0	30.5	31.5	---	---	---	29.0	24.0	26.0
26	28.5	27.0	28.0	33.0	30.0	31.5	33.5	29.0	31.5	27.5	24.0	25.5
27	28.0	26.0	27.0	33.0	30.0	31.5	30.5	26.0	29.0	---	---	---
28	27.5	25.5	26.5	33.5	30.0	31.5	29.0	27.5	28.0	---	---	---
29	26.5	25.0	26.0	34.0	30.0	32.0	30.0	27.0	28.5	---	---	---
30	27.0	25.0	26.0	34.0	30.0	32.0	31.0	29.0	29.5	---	---	---
31	---	---	---	34.0	30.5	32.0	29.0	27.5	28.0	---	---	---
MONTH	29.5	23.5	26.5	34.0	23.5	29.5	36.0	26.0	31.0	32.5	22.5	27.5

## TRINITY RIVER MAIN STEM

08048543 WEST FORK TRINITY RIVER AT BEACH STREET, FORT WORTH, TX--Continued

OXYGEN, DISSOLVED (DO), MG/L, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	9.4	4.9	6.9	10.6	7.4	9.0	10.6	9.8	10.1	12.7	10.1	11.2
2	9.6	5.8	7.4	10.3	7.3	8.9	11.0	9.6	10.4	12.8	10.4	11.4
3	9.2	5.1	6.9	11.8	8.1	9.8	11.0	9.5	10.4	11.6	9.5	10.6
4	7.0	3.4	5.6	9.3	6.2	7.9	11.4	9.8	10.7	14.0	9.9	11.5
5	7.9	3.6	5.6	8.5	7.2	7.7	11.7	9.9	10.9	13.9	10.6	12.4
6	7.7	6.4	7.0	8.8	7.2	8.0	11.2	9.8	10.6	15.5	10.0	12.5
7	7.5	6.4	7.0	8.9	7.4	8.0	10.1	8.3	9.1	14.7	9.0	12.1
8	6.7	5.8	6.3	9.1	7.0	8.0	9.7	8.7	9.2	13.5	9.0	11.1
9	7.2	5.7	6.4	9.7	7.3	8.6	10.1	8.6	9.3	11.0	10.1	10.4
10	6.7	5.5	6.2	9.2	7.8	8.2	11.8	9.6	10.8	11.1	10.0	10.6
11	7.2	5.9	6.4	10.1	7.7	9.0	11.9	10.7	11.4	11.5	10.1	10.8
12	9.0	6.1	7.6	9.0	8.5	8.7	11.9	10.9	11.3	11.4	10.1	10.7
13	9.0	7.7	8.4	10.9	8.7	10.0	11.6	10.8	11.2	11.1	9.5	10.3
14	9.7	7.9	9.0	11.2	9.9	10.5	11.1	10.1	10.6	10.9	9.2	10.2
15	10.0	8.4	9.3	10.9	9.7	10.2	10.9	10.0	10.5	10.4	8.2	9.5
16	10.3	8.5	9.4	10.3	8.7	9.5	10.4	9.8	10.1	10.2	8.2	9.3
17	10.7	8.4	9.5	10.3	8.2	9.2	10.1	9.2	9.5	10.5	8.9	9.8
18	10.5	7.9	9.3	10.5	8.0	9.2	10.4	9.5	10.1	11.1	10.8	10.9
19	10.3	7.9	9.1	9.6	8.2	8.8	9.8	9.0	9.6	11.4	10.7	11.1
20	10.1	7.9	9.1	10.2	7.6	8.9	9.4	8.7	9.1	11.8	10.5	11.1
21	9.6	7.4	8.6	11.1	8.6	9.9	9.8	9.0	9.4	11.8	10.8	11.2
22	8.4	7.1	7.8	10.0	7.2	8.2	10.2	9.4	9.8	11.9	10.8	11.3
23	7.6	6.2	6.9	9.3	7.0	8.3	10.3	9.9	10.1	12.1	11.0	11.6
24	9.4	5.1	7.3	10.5	8.8	9.7	10.2	9.9	10.0	11.9	10.9	11.3
25	9.9	6.7	8.6	10.0	9.4	9.8	10.1	9.4	9.7	12.3	10.9	11.5
26	9.7	7.4	8.8	9.9	9.7	9.8	10.4	9.3	9.7	12.5	10.7	11.3
27	10.1	8.1	9.1	10.1	9.4	9.8	10.8	9.6	10.1	12.6	10.4	11.2
28	11.2	8.0	9.4	10.3	9.5	9.9	10.8	9.5	10.1	12.3	9.8	10.9
29	11.2	8.1	9.3	10.4	9.7	10.0	11.2	9.8	10.4	12.1	9.2	10.3
30	10.4	7.5	9.0	10.5	9.8	10.1	11.6	9.8	10.6	12.5	9.2	10.5
31	11.6	8.0	9.5	---	---	---	11.9	9.9	10.8	12.2	9.1	10.4
MONTH	11.6	3.4	8.0	11.8	6.2	9.1	11.9	8.3	10.2	15.5	8.2	10.9

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	12.0	8.6	9.9	11.0	10.6	10.8	13.5	9.3	11.2	7.5	5.9	6.5
2	12.0	8.2	10.1	11.1	10.7	10.9	13.3	8.6	11.0	9.3	5.5	7.1
3	12.1	7.4	9.9	11.0	10.7	10.8	14.6	9.4	11.9	---	---	---
4	11.0	6.5	9.1	11.0	10.6	10.8	14.5	8.9	11.7	---	---	---
5	---	---	---	10.9	10.4	10.7	12.9	8.5	10.7	---	---	---
6	---	---	---	10.7	10.4	10.6	14.5	8.5	11.3	---	---	---
7	---	---	---	10.7	10.5	10.5	14.6	8.4	11.2	---	---	---
8	12.4	8.7	10.1	10.6	10.2	10.4	15.7	8.2	11.5	---	---	---
9	12.4	9.0	10.3	10.3	10.0	10.2	15.5	7.9	11.5	---	---	---
10	12.5	9.4	10.5	10.4	10.1	10.2	15.0	7.4	11.1	---	---	---
11	12.3	9.2	10.4	10.7	10.3	10.5	14.1	7.3	10.6	---	---	---
12	12.1	8.9	10.1	10.7	10.2	10.4	13.5	7.1	9.9	---	---	---
13	11.2	8.8	9.6	10.7	10.1	10.4	11.0	6.7	8.4	---	---	---
14	10.4	8.2	9.3	10.5	9.9	10.2	12.0	7.7	9.7	---	---	---
15	10.0	8.3	9.1	10.2	9.6	9.9	13.3	7.3	10.0	---	---	---
16	10.7	9.5	10.0	10.0	9.5	9.7	12.2	7.3	9.8	---	---	---
17	12.0	10.0	10.9	9.5	8.9	9.4	11.6	8.5	10.2	---	---	---
18	12.6	10.8	11.5	10.2	9.5	9.9	12.2	8.1	9.9	---	---	---
19	12.3	10.8	11.3	10.4	9.5	9.9	9.5	6.1	8.0	7.4	5.9	6.6
20	11.4	10.8	11.3	10.3	9.4	9.9	9.3	6.0	7.7	9.3	6.3	7.5
21	11.6	10.6	11.3	10.3	9.2	9.6	9.3	6.2	7.9	10.4	6.3	8.1
22	11.3	10.6	10.9	10.2	9.0	9.5	11.4	7.4	9.3	11.4	6.3	8.5
23	11.5	10.6	11.0	10.2	9.0	9.5	10.5	7.6	9.2	13.0	6.0	9.0
24	10.7	10.3	10.6	10.8	9.3	9.9	10.4	7.2	8.8	9.4	6.3	7.5
25	10.9	10.5	10.7	11.1	9.3	10.1	9.7	6.8	8.3	9.7	6.3	7.7
26	10.6	10.4	10.5	11.1	9.4	10.1	10.1	6.7	8.3	10.3	6.1	8.0
27	10.6	10.2	10.5	11.7	9.6	10.4	10.4	7.0	8.5	9.8	6.5	8.0
28	10.5	9.9	10.2	11.3	9.1	10.0	10.5	6.2	8.4	8.3	6.3	7.0
29	---	---	---	12.3	9.6	10.9	10.0	5.4	7.7	8.6	7.5	8.2
30	---	---	---	12.6	10.6	11.5	9.6	5.9	7.8	8.1	7.7	8.0
31	---	---	---	13.4	9.7	11.4	---	---	---	8.2	7.7	7.9
MONTH	12.6	6.5	10.4	13.4	8.9	10.3	15.7	5.4	9.7	13.0	5.5	7.7

## TRINITY RIVER MAIN STEM

235

08048543 WEST FORK TRINITY RIVER AT BEACH STREET, FORT WORTH, TX--Continued

OXYGEN, DISSOLVED (DO), MG/L, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	8.2	7.8	8.0	8.2	7.1	7.6	10.0	5.8	7.9	---	---	---
2	8.1	7.7	7.9	7.5	6.8	7.1	9.1	6.2	7.6	9.6	7.4	8.5
3	8.3	7.8	8.0	7.5	6.8	7.1	10.2	5.9	7.9	10.5	7.9	9.0
4	8.7	8.0	8.3	7.6	6.7	7.1	9.5	6.3	7.9	11.7	7.2	9.0
5	8.7	8.1	8.4	8.0	6.8	7.3	9.7	6.7	7.9	12.1	7.0	8.9
6	8.9	8.0	8.5	8.2	6.9	7.5	10.3	6.2	7.7	11.4	6.9	8.4
7	8.9	8.0	8.5	8.6	6.7	7.5	11.7	5.7	8.5	9.7	6.3	7.5
8	8.9	8.0	8.4	8.7	6.4	7.3	10.6	6.3	8.4	10.7	6.3	8.2
9	8.2	7.8	8.0	9.0	6.2	7.4	9.3	5.6	7.3	10.8	7.7	9.1
10	8.3	7.8	8.1	9.3	6.0	7.4	9.8	5.0	7.4	8.3	6.1	7.6
11	8.2	7.8	8.0	9.9	5.8	7.7	---	---	---	10.7	5.8	8.0
12	8.0	7.7	7.8	10.7	8.7	10.3	---	---	---	9.1	6.6	8.0
13	8.2	7.7	7.9	10.4	7.7	9.8	---	---	---	8.7	6.4	7.7
14	8.2	7.5	7.9	---	---	---	---	---	---	9.8	5.9	7.7
15	7.9	7.4	7.6	---	---	---	---	---	---	7.5	6.0	6.9
16	7.9	7.2	7.6	---	---	---	---	---	---	9.0	6.5	7.5
17	7.9	7.1	7.4	8.3	6.3	7.1	12.8	4.3	8.5	9.3	6.5	7.7
18	7.8	7.1	7.4	10.1	5.6	7.6	11.8	4.9	8.2	6.7	4.7	5.9
19	7.9	7.1	7.4	10.7	10.0	10.2	11.6	4.5	8.3	8.5	5.1	6.7
20	7.8	6.9	7.3	---	---	---	---	---	---	8.9	7.5	8.1
21	7.8	7.0	7.4	---	---	---	---	---	---	9.3	8.3	8.6
22	7.8	6.9	7.3	---	---	---	10.5	5.5	8.0	10.4	8.3	9.3
23	7.9	7.0	7.4	---	---	---	9.4	2.4	6.1	11.4	7.9	9.6
24	7.8	6.9	7.3	10.3	6.3	8.3	5.7	2.4	3.8	11.9	7.9	9.5
25	7.8	7.0	7.3	10.2	6.5	8.4	---	---	---	11.8	7.3	9.2
26	7.9	7.0	7.4	10.1	6.7	8.4	---	---	---	11.6	6.8	9.1
27	8.2	7.2	7.6	9.8	6.8	8.3	---	---	---	---	---	---
28	8.3	7.2	7.7	10.2	5.1	8.2	---	---	---	---	---	---
29	8.3	7.2	7.7	10.2	6.7	8.4	---	---	---	---	---	---
30	8.0	7.0	7.4	9.9	6.1	7.9	---	---	---	---	---	---
31	---	---	---	10.1	6.1	8.1	---	---	---	---	---	---
MONTH	8.9	6.9	7.8	10.7	5.1	8.0	12.8	2.4	7.6	12.1	4.7	8.2

## TRINITY RIVER BASIN

08048980 VILLAGE CREEK AT KENNEDALE, TX

LOCATION.--Lat 32°38'18", long 97°14'31", Tarrant County, Hydrologic Unit 12030102, at center of channel on downstream side of bridge on Everman-Kennedale Road, 1.5 mi downstream from Elm Branch, and 3.0 mi upstream from bridge on Interstate Highway 20.

DRAINAGE AREA.--100 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1986 to current year.

GAGE.--Water-stage recorder. Datum of gage is 559.96 ft above National Geodetic Vertical Datum of 1929 (Tarrant County benchmark).

REMARKS.--No estimated daily discharges. Records good except those above 400 ft<sup>3</sup>/s, which are poor. Measured discharge include intrabasin transfers from Cedar Creek Reservoir (station 08063010). Releases enter the channel on the left bank about 50 ft downstream from the gage and cause backwater such that the stage record at the gage is a measure of both the controlled releases and unregulated flow in Village Creek. Water-quality monitor and gage-height telemeter station.

EXTREME FOR PERIOD OF RECORD.--Maximum discharge, 3,120 ft<sup>3</sup>/s June 13, 1987 (gage height, 15.74 ft); minimum daily, 0.08 ft<sup>3</sup>/s Aug. 20-22, 1986.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in March 1977 reached a stage of 23.5 ft, from high-water mark painted on abutment of bridge at gage.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,120 ft<sup>3</sup>/s June 13 at 0145 hours (gage height, 15.74 ft), from rating curve extended above 336 ft<sup>3</sup>/s; minimum daily, 0.02 ft<sup>3</sup>/s Aug. 19, 20, 23-26.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32	108	136	120	108	78	79	50	8.8	105	.1	99
2	94	124	137	121	110	31	79	78	4.7	275	.0	80
3	109	131	161	121	111	20	80	116	3.6	84	.0	58
4	79	136	169	120	110	16	72	175	3.9	62	.1	59
5	79	118	167	122	110	12	72	136	19	79	.1	79
6	78	110	131	123	113	11	76	119	37	86	.1	80
7	78	110	113	123	133	11	92	109	31	72	.0	75
8	78	102	117	123	130	10	91	111	41	66	.0	63
9	78	103	115	172	120	27	76	109	62	60	.0	58
10	80	112	114	185	106	78	53	101	65	58	6.5	69
11	83	116	115	170	103	81	48	77	201	58	21	86
12	86	116	116	141	95	76	80	86	237	64	.11	80
13	82	115	121	131	88	67	94	107	889	69	.0	90
14	74	116	118	131	103	37	113	83	98	77	36	90
15	35	118	133	130	104	54	120	156	37	86	31	91
16	47	118	125	130	108	70	117	124	28	76	.1	91
17	66	119	119	142	104	248	91	62	22	91	.0	91
18	74	121	195	218	117	58	82	55	21	107	.0	92
19	75	122	151	152	122	27	82	44	19	108	.0	92
20	75	125	128	127	162	17	82	44	20	86	.0	91
21	88	127	127	122	119	12	110	73	21	69	3.0	91
22	91	149	124	136	94	11	151	60	14	64	.0	91
23	89	149	134	143	68	17	127	47	41	61	.0	92
24	89	126	134	141	98	16	85	65	40	55	.0	39
25	101	171	124	122	98	6.5	69	81	54	44	.0	13
26	107	154	122	99	153	28	93	76	67	11	.0	43
27	111	137	122	22	121	71	92	67	59	36	8.0	60
28	112	134	121	63	239	71	76	81	36	36	70	86
29	108	133	119	109	---	55	69	478	41	37	72	93
30	107	134	96	109	---	46	69	53	90	36	73	83
31	107	---	120	108	---	69	---	20	---	13	74	---
TOTAL	2592	3754	4024	3976	3247	1431.5	2620	3043	2311.0	2231	395.11	2305
MEAN	83.6	125	130	128	116	46.2	87.3	98.2	77.0	72.0	12.7	76.8
MAX	112	171	195	218	239	248	151	478	889	275	74	99
MIN	32	102	96	22	68	6.5	48	20	3.6	11	.00	13
AC-FT	5140	7450	7980	7890	6440	2840	5200	6040	4580	4430	784	4570

CAL YR 1986 TOTAL 15746.59 MEAN 94.3 MAX 259 MIN .08 AC-FT 31230  
WTR YR 1987 TOTAL 31929.59 MEAN 87.5 MAX 889 MIN .00 AC-FT 63330

## TRINITY RIVER BASIN

237

08048980 VILLAGE CREEK AT KENNEDALE, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: July 1986 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: July 1986 to current year.

pH: July 1986 to current year.

WATER TEMPERATURE: July 1986 to current year.

DISSOLVED OXYGEN: July 1986 to current year.

INSTRUMENTATION.--Beginning July 1986, a four-parameter water-quality monitor continuously recorded 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 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 CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 868 microsiemens Feb. 14; minimum, 107 microsiemens Nov. 19.

pH: Maximum, 8.6 units Mar. 14; minimum, 7.1 units Oct. 2, Sept. 4, 5.

WATER TEMPERATURE: Maximum, 31.0°C Oct. 1; minimum, 3.0°C Jan. 23.

DISSOLVED OXYGEN: Maximum, 14.8 mg/L Mar. 31; minimum, 2.2 mg/L May 22, Aug. 12.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	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 (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03
NOV 17...	1015	114	217	7.90	14.0	9.8	97	0.2	66	11
JAN 21...	1400	137	490	7.80	7.0	12.1	100	1.3	130	19
APR 30...	0720	69	548	7.90	20.5	8.0	90	1.3	170	9
JUL 15...	0830	86	401	7.90	25.5	7.9	98	1.6	150	57
SEP 04...	1040	58	255	7.30	28.0	7.7	100	1.5	70	14

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 WH WAT TOTAL 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)
NOV 17...	20	3.8	15	0.8	4.8	55	24	16	0.20
JAN 21...	43	5.9	35	1	5.8	113	56	39	0.30
APR 30...	51	9.3	57	2	4.4	157	86	40	0.30
JUL 15...	48	7.6	12	0.4	6.0	94	38	33	0.30
SEP 04...	21	4.2	15	0.8	4.4	56	24	19	0.20

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- PHORUS, TOTAL (MG/L AS P)
NOV 17...	4.6	120	0.080	0.020	0.100	0.200	2.2	2.4	0.210
JAN 21...	6.4	260	0.780	0.020	0.800	0.120	0.78	0.90	0.320
APR 30...	3.6	350	0.530	0.070	0.600	0.110	1.7	1.8	0.090
JUL 15...	6.3	210	0.280	0.020	0.300	0.080	0.92	1.0	0.090
SEP 04...	4.9	130	0.390	0.010	0.400	0.030	0.87	0.90	0.090

## TRINITY RIVER BASIN

08048980 VILLAGE CREEK AT KENNEDALE, TX--Continued

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1986 TO SEPTEMBER 1987

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. 1986	2592	254	126	885	20	139	22	152	80
NOV. 1986	3754	273	140	1420	21	217	26	261	86
DEC. 1986	4024	308	161	1750	24	261	31	332	96
JAN. 1987	3976	513	302	3240	39	421	70	747	160
FEB. 1987	3247	651	418	3660	49	430	110	937	190
MAR. 1987	1431.5	637	406	1570	48	186	100	399	190
APR. 1987	2620	686	451	3190	51	364	120	839	200
MAY 1987	3043	468	273	2250	36	294	62	511	140
JUNE 1987	2311.0	458	271	1690	35	218	63	393	140
JULY 1987	2231	547	330	1990	42	251	79	473	170
AUG. 1987	395.39	337	180	192	26	28	36	38	100
SEPT 1987	2305	259	129	805	20	126	22	140	82
TOTAL	31929.89	**	**	22600	**	2930	**	5220	**
WTD.AVG.	88	445	263	**	34	**	61	**	140

## SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	340	225	258	---	---	339	222	156	182	544	420	491
2	275	216	247	---	---	354	204	171	192	505	347	460
3	250	226	241	---	---	370	205	189	195	538	333	442
4	298	228	253	---	---	386	211	193	200	493	438	464
5	---	---	233	---	---	372	315	214	269	491	379	452
6	---	---	232	---	---	357	328	307	321	552	476	513
7	---	---	229	---	---	342	384	295	352	527	473	502
8	---	---	227	---	---	328	411	363	393	538	475	511
9	---	---	230	---	---	314	410	358	384	763	393	562
10	---	---	232	---	---	299	352	310	328	392	376	381
11	---	---	235	---	---	284	311	288	299	503	396	451
12	---	---	237	---	---	270	354	269	298	547	506	529
13	---	---	240	---	---	256	370	354	362	548	535	542
14	---	---	242	---	---	241	386	353	370	554	540	549
15	---	---	244	---	---	226	594	375	484	544	512	533
16	---	---	247	---	---	212	558	391	502	526	481	501
17	---	---	249	---	---	198	383	341	354	618	472	513
18	---	---	252	216	126	183	389	161	265	675	361	502
19	---	---	254	245	107	179	306	161	240	524	421	470
20	---	---	256	222	125	173	317	301	312	555	527	545
21	---	---	259	208	123	171	297	278	288	557	539	551
22	---	---	261	201	185	198	279	242	265	553	460	515
23	---	---	264	179	126	158	296	221	262	574	544	561
24	---	---	266	196	164	181	341	298	325	579	445	530
25	---	---	268	541	190	383	353	342	346	555	474	528
26	---	---	271	575	326	469	350	333	342	582	544	561
27	---	---	273	318	239	273	341	325	336	618	592	609
28	---	---	275	238	215	227	329	306	322	620	223	503
29	---	---	291	226	207	219	304	272	287	606	515	564
30	---	---	307	229	217	223	---	---	260	636	581	622
31	---	---	232	---	---	---	543	228	369	640	608	628
MONTH	340	216	252	575	107	273	594	156	313	763	223	519

## TRINITY RIVER BASIN

239

08048980 VILLAGE CREEK AT KENNEDALE, TX--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	649	623	641	432	380	407	764	731	744	852	407	635
2	663	632	651	488	434	459	767	692	731	832	425	713
3	684	659	672	537	490	514	798	748	766	845	444	748
4	---	---	671	571	539	553	806	764	790	809	480	707
5	---	---	641	613	573	592	820	781	797	479	437	459
6	627	572	593	649	616	632	821	362	749	486	474	480
7	706	563	617	678	651	663	810	745	797	481	423	453
8	711	698	705	700	679	688	799	775	785	484	454	474
9	739	670	724	713	701	704	821	647	772	522	467	487
10	773	695	740	721	713	717	808	501	740	548	258	427
11	794	770	783	733	719	726	822	370	664	524	316	449
12	836	466	789	751	734	741	699	322	452	541	373	469
13	849	746	803	767	740	753	532	299	355	560	359	484
14	868	831	848	770	762	765	830	594	707	581	394	496
15	865	634	818	773	648	747	833	598	762	628	317	533
16	865	638	802	781	676	760	829	731	791	357	307	327
17	844	728	781	750	341	516	840	419	755	420	359	389
18	726	609	674	504	460	481	757	328	494	486	306	386
19	726	674	699	521	505	513	380	303	334	520	282	409
20	672	639	654	553	523	538	328	291	311	544	261	398
21	---	---	536	589	554	572	729	309	581	534	310	476
22	509	463	491	610	586	597	787	490	692	575	500	532
23	525	510	518	625	611	619	817	480	722	587	422	527
24	541	428	529	649	624	637	839	710	796	579	528	549
25	616	541	577	666	645	654	851	691	792	656	542	603
26	623	485	569	675	526	659	824	669	768	541	463	499
27	625	432	489	695	675	681	843	627	735	470	438	453
28	500	455	470	706	694	700	841	608	726	456	236	424
29	---	---	---	729	693	716	853	634	748	325	182	266
30	---	---	---	741	725	730	812	577	736	421	332	383
31	---	---	---	742	674	721	---	---	---	489	423	457
MONTH	868	428	660	781	341	637	853	291	686	852	182	487

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	528	491	512	806	745	780	577	528	552	276	238	265
2	564	529	548	797	183	610	575	525	554	256	229	242
3	586	565	577	421	312	348	607	537	572	253	233	243
4	612	585	599	454	429	445	595	518	559	254	236	244
5	633	323	605	481	455	468	644	554	592	260	226	247
6	655	613	643	501	481	493	668	568	612	256	233	248
7	669	654	663	528	503	519	664	555	606	251	238	246
8	674	629	664	551	516	537	616	525	560	257	235	246
9	742	514	654	576	533	554	603	526	562	263	230	246
10	498	356	400	574	540	559	566	248	455	323	243	273
11	478	320	418	616	530	585	508	298	422	335	295	315
12	464	242	412	604	561	586	520	440	494	328	249	287
13	371	193	282	602	427	547	538	448	505	312	270	293
14	470	380	432	598	524	559	507	231	413	291	265	278
15	540	473	505	576	503	541	494	306	392	272	231	255
16	600	542	570	571	512	550	509	467	497	270	234	254
17	661	602	632	678	565	601	505	448	474	263	243	253
18	695	658	682	775	573	711	477	333	436	258	234	244
19	716	685	702	560	503	521	477	324	412	286	233	268
20	743	704	722	517	457	475	506	331	434	263	242	255
21	825	731	783	489	458	476	510	289	438	256	238	248
22	814	766	797	515	480	501	497	348	457	251	236	244
23	767	357	567	521	495	512	480	324	419	258	234	247
24	716	347	553	527	483	511	499	289	444	260	237	248
25	736	487	694	554	497	518	520	438	484	275	227	257
26	754	709	739	629	286	509	584	478	526	268	248	257
27	775	708	747	535	350	466	794	222	587	273	257	266
28	796	732	766	539	443	497	623	311	443	272	245	262
29	797	745	779	533	406	475	307	259	283	272	238	251
30	779	728	757	506	392	453	257	244	253	276	246	256
31	---	---	---	564	401	501	257	240	243	---	---	---
MONTH	825	193	613	806	183	529	794	222	474	335	226	258

## TRINITY RIVER BASIN

08048980 VILLAGE CREEK AT KENNEDALE, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	---	---	---	---	---	---	8.0	8.0	8.0	8.2	8.1	8.1
2	7.7	7.1	7.4	---	---	---	8.1	8.0	8.0	8.1	8.0	8.1
3	8.0	7.6	7.9	---	---	---	8.0	8.0	8.0	8.0	8.0	8.0
4	7.8	7.7	7.8	---	---	---	8.0	7.9	8.0	8.0	8.0	8.0
5	---	---	---	---	---	---	8.0	7.9	8.0	8.0	7.9	8.0
6	---	---	---	---	---	---	8.0	7.9	7.9	7.9	7.9	7.9
7	---	---	---	---	---	---	7.9	7.9	7.9	7.9	7.9	7.9
8	---	---	---	---	---	---	7.9	7.8	7.9	7.9	7.9	7.9
9	---	---	---	---	---	---	7.9	7.9	7.9	7.9	7.8	7.9
10	---	---	---	---	---	---	7.9	7.9	7.9	7.9	7.8	7.9
11	---	---	---	---	---	---	7.9	7.9	7.9	7.9	7.8	7.9
12	---	---	---	---	---	---	7.9	7.9	7.9	7.9	7.8	7.8
13	---	---	---	---	---	---	7.9	7.9	7.9	7.8	7.8	7.8
14	---	---	---	---	---	---	7.9	7.9	7.9	7.8	7.7	7.7
15	---	---	---	---	---	---	7.9	7.9	7.9	7.7	7.7	7.7
16	---	---	---	---	---	---	7.9	7.9	7.9	7.7	7.7	7.7
17	---	---	---	---	---	---	7.9	7.9	7.9	7.7	7.7	7.7
18	---	---	---	8.0	7.8	7.9	7.9	7.9	7.9	7.7	7.7	7.7
19	---	---	---	8.0	7.9	7.9	8.0	7.9	7.9	7.7	7.6	7.6
20	---	---	---	8.0	7.9	7.9	8.0	7.9	7.9	7.6	7.6	7.6
21	---	---	---	8.0	7.9	7.9	8.0	7.9	7.9	7.7	7.6	7.6
22	---	---	---	7.9	7.9	7.9	8.0	7.9	8.0	8.2	7.7	7.9
23	---	---	---	7.9	7.9	7.9	8.0	8.0	8.0	8.2	8.1	8.1
24	---	---	---	7.9	7.9	7.9	8.0	8.0	8.0	8.1	8.0	8.0
25	---	---	---	8.4	7.9	8.1	8.0	8.0	8.0	8.0	7.9	8.0
26	---	---	---	8.5	8.1	8.3	8.0	7.9	8.0	7.9	7.9	7.9
27	---	---	---	8.1	8.1	8.1	8.0	8.0	8.0	7.9	7.8	7.8
28	---	---	---	8.1	8.0	8.1	8.1	8.0	8.0	---	---	---
29	---	---	---	8.1	8.0	8.0	8.1	8.0	8.0	---	---	---
30	---	---	---	8.0	8.0	8.0	8.1	8.0	8.0	---	---	---
31	---	---	---	---	---	---	8.2	8.0	8.1	---	---	---
MONTH	8.0	7.1	7.7	8.5	7.8	8.0	8.2	7.8	8.0	8.2	7.6	7.9

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	---	---	---	8.0	7.7	7.9	8.1	8.0	8.0	8.0	7.8	7.9
2	---	---	---	8.1	8.0	8.1	8.1	8.0	8.0	8.0	7.9	7.9
3	---	---	---	8.1	8.0	8.1	8.3	8.0	8.1	8.1	7.8	8.0
4	---	---	---	8.1	8.1	8.1	8.4	8.3	8.3	8.2	8.1	8.1
5	---	---	---	8.1	8.1	8.1	8.4	8.3	8.3	8.1	8.0	8.0
6	8.1	8.0	8.1	8.1	8.0	8.1	8.4	8.2	8.3	8.0	7.9	8.0
7	8.1	8.0	8.1	8.1	8.1	8.1	8.5	8.4	8.4	8.0	7.9	8.0
8	8.1	8.0	8.0	8.1	8.1	8.1	8.3	8.3	8.3	8.0	7.9	8.0
9	8.0	8.0	8.0	8.1	8.0	8.1	8.3	8.2	8.2	8.0	7.9	7.9
10	8.0	8.0	8.0	8.1	8.0	8.1	8.2	8.1	8.1	7.9	7.8	7.9
11	8.0	8.0	8.0	8.2	8.0	8.1	8.1	8.0	8.1	7.9	7.8	7.8
12	8.0	7.9	8.0	8.1	8.0	8.1	8.1	8.0	8.0	7.9	7.7	7.8
13	8.0	7.9	8.0	8.4	8.0	8.2	8.1	8.0	8.1	7.8	7.7	7.8
14	8.0	7.9	8.0	8.6	8.2	8.4	8.1	8.0	8.1	7.8	7.7	7.7
15	8.0	7.9	7.9	8.5	8.3	8.4	8.1	8.0	8.0	7.8	7.7	7.8
16	7.9	7.8	7.9	8.3	8.0	8.2	8.0	7.9	8.0	7.8	7.7	7.8
17	7.9	7.8	7.8	8.4	7.9	8.1	8.0	7.9	7.9	7.7	7.7	7.7
18	7.8	7.8	7.8	8.0	7.6	7.8	7.9	7.8	7.9	7.7	7.6	7.7
19	7.8	7.8	7.8	7.6	7.4	7.5	7.9	7.9	7.9	7.8	7.7	7.7
20	7.8	7.8	7.8	7.7	7.3	7.5	8.0	7.9	7.9	7.8	7.7	7.8
21	7.8	7.8	7.8	7.8	7.7	7.7	7.9	7.8	7.9	7.9	7.8	7.8
22	7.8	7.7	7.8	8.0	7.8	7.9	7.9	7.8	7.8	7.9	7.8	7.8
23	7.7	7.7	7.7	8.0	7.9	8.0	7.9	7.8	7.8	7.8	7.7	7.8
24	7.7	7.6	7.6	8.0	8.0	8.0	7.9	7.8	7.8	7.7	7.7	7.7
25	7.6	7.6	7.6	8.0	8.0	8.0	7.9	7.8	7.8	7.8	7.7	7.7
26	7.6	7.6	7.6	8.1	8.0	8.1	7.9	7.8	7.8	7.9	7.8	7.8
27	7.6	7.5	7.6	8.1	8.0	8.0	7.8	7.8	7.8	8.0	7.7	7.8
28	7.7	7.6	7.6	8.0	8.0	8.0	7.8	7.8	7.8	8.2	7.8	7.9
29	---	---	---	8.1	8.0	8.0	7.8	7.7	7.8	8.3	7.9	8.1
30	---	---	---	8.1	8.0	8.1	7.9	7.8	7.8	8.1	8.0	8.1
31	---	---	---	8.1	8.0	8.1	---	---	---	8.1	8.0	8.0
MONTH	8.1	7.5	7.8	8.6	7.3	8.0	8.5	7.7	8.0	8.3	7.6	7.9

## TRINITY RIVER BASIN

241

08048980 VILLAGE CREEK AT KENNEDALE, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	8.1	8.0	8.1	8.0	7.9	8.0	7.6	7.4	7.5	7.5	7.3	7.4
2	8.1	8.0	8.0	8.4	7.9	8.0	7.6	7.4	7.5	7.5	7.3	7.4
3	8.0	8.0	8.0	8.0	7.9	8.0	7.6	7.5	7.5	7.4	7.4	7.4
4	8.1	8.0	8.0	8.0	7.9	7.9	7.7	7.5	7.6	7.4	7.1	7.4
5	8.1	7.9	8.0	8.1	7.8	7.9	7.8	7.5	7.6	7.4	7.1	7.3
6	8.1	8.0	8.1	8.0	7.6	7.8	7.7	7.5	7.6	7.4	7.3	7.3
7	8.2	8.0	8.1	8.1	7.6	7.9	8.1	7.6	7.8	7.4	7.3	7.3
8	8.3	8.0	8.1	8.0	7.7	7.9	8.0	7.5	7.7	7.4	7.3	7.4
9	8.4	8.0	8.1	8.0	7.7	7.9	7.8	7.5	7.6	7.5	7.3	7.4
10	8.3	8.1	8.2	8.1	7.7	7.9	7.6	7.4	7.5	7.5	7.4	7.4
11	8.3	8.1	8.2	8.0	7.7	7.9	7.6	7.5	7.5	7.4	7.3	7.3
12	8.3	7.9	8.2	8.0	7.8	7.9	7.8	7.4	7.5	7.5	7.3	7.4
13	8.2	8.0	8.1	8.1	7.8	8.0	7.9	7.4	7.6	7.4	7.3	7.4
14	8.2	8.2	8.2	8.1	7.7	7.9	7.6	7.3	7.4	7.3	7.3	7.3
15	8.2	8.2	8.2	8.0	7.7	7.9	8.0	7.4	7.6	7.4	7.3	7.4
16	8.3	8.2	8.3	8.0	7.7	7.8	7.9	7.3	7.5	7.6	7.3	7.4
17	8.3	8.2	8.3	8.3	7.9	8.0	7.9	7.3	7.5	7.5	7.4	7.5
18	8.4	8.2	8.3	8.3	7.8	8.1	7.8	7.2	7.5	7.5	7.4	7.4
19	8.4	8.2	8.3	8.0	7.7	7.9	8.0	7.3	7.5	7.6	7.5	7.5
20	8.5	8.3	8.3	8.0	7.7	7.8	8.1	7.3	7.6	7.6	7.5	7.6
21	8.5	8.3	8.4	7.9	7.6	7.8	8.1	7.3	7.6	7.7	7.5	7.6
22	8.4	8.2	8.3	7.9	7.7	7.8	7.6	7.2	7.4	7.7	7.5	7.6
23	8.4	7.9	8.1	7.8	7.6	7.7	7.5	7.3	7.3	7.7	7.6	7.6
24	8.1	7.6	7.9	7.8	7.5	7.7	7.5	7.2	7.4	7.8	7.6	7.6
25	8.0	7.7	7.9	8.0	7.5	7.8	8.0	7.3	7.5	7.6	7.4	7.5
26	8.0	7.8	7.9	7.9	7.6	7.7	7.9	7.3	7.5	7.7	7.6	7.6
27	8.1	7.8	8.0	7.8	7.5	7.6	7.7	7.3	7.5	7.7	7.6	7.6
28	8.1	7.8	8.0	7.8	7.5	7.6	7.5	7.4	7.4	7.6	7.6	7.6
29	8.2	8.0	8.1	7.8	7.5	7.6	7.5	7.4	7.4	7.7	7.5	7.6
30	8.1	7.9	8.0	7.7	7.4	7.5	7.5	7.4	7.4	7.8	7.6	7.7
31	---	---	---	7.8	7.4	7.5	7.5	7.4	7.4	---	---	---
MONTH	8.5	7.6	8.1	8.4	7.4	7.8	8.1	7.2	7.5	7.8	7.1	7.5

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	31.0	26.0	27.5	---	---	---	12.0	10.5	11.5	8.5	7.0	7.5
2	28.0	25.0	26.0	---	---	---	11.0	10.0	10.5	8.5	7.0	7.5
3	26.5	25.5	26.0	---	---	---	10.5	10.0	10.5	9.0	7.5	8.5
4	26.5	26.0	26.0	---	---	---	10.5	9.5	10.0	8.0	7.0	7.5
5	---	---	---	---	---	---	10.5	10.5	10.5	8.0	7.0	7.5
6	---	---	---	---	---	---	11.0	10.5	11.0	9.0	7.0	8.0
7	---	---	---	---	---	---	11.0	10.5	10.5	10.0	9.0	9.5
8	---	---	---	---	---	---	11.5	10.5	10.5	10.0	9.0	9.5
9	---	---	---	---	---	---	10.5	10.0	10.0	9.0	8.5	9.0
10	---	---	---	---	---	---	10.0	8.5	9.0	8.5	7.5	8.0
11	---	---	---	---	---	---	8.5	8.0	8.0	7.5	5.5	6.5
12	---	---	---	---	---	---	8.0	6.5	7.0	8.0	6.0	7.0
13	---	---	---	---	---	---	7.5	5.5	6.5	8.0	6.5	7.0
14	---	---	---	---	---	---	7.5	6.5	7.0	10.0	8.0	9.0
15	---	---	---	---	---	---	7.5	7.0	7.5	10.5	9.5	10.0
16	---	---	---	---	---	---	9.0	7.5	8.5	10.5	9.5	10.0
17	---	---	---	---	---	---	9.5	9.0	9.5	9.5	7.5	8.5
18	---	---	---	15.0	14.5	15.0	10.0	9.0	9.5	7.0	4.5	5.5
19	---	---	---	15.0	14.5	14.5	9.0	8.5	8.5	5.0	4.0	4.5
20	---	---	---	15.0	14.5	14.5	8.5	7.5	8.0	6.0	4.0	5.0
21	---	---	---	14.5	14.0	14.0	9.0	8.0	8.5	7.0	5.0	6.0
22	---	---	---	15.0	14.0	14.5	9.0	8.5	8.5	6.0	4.5	5.5
23	---	---	---	15.0	14.5	15.0	8.5	8.0	8.0	6.0	3.0	4.5
24	---	---	---	14.5	13.5	13.5	8.0	6.5	7.5	8.0	5.0	6.0
25	---	---	---	13.0	10.0	11.5	9.0	7.5	8.5	7.0	5.5	6.5
26	---	---	---	11.0	9.5	10.0	9.5	8.0	8.5	7.5	5.0	6.0
27	---	---	---	11.0	9.5	10.0	9.0	7.0	8.0	9.5	5.0	7.0
28	---	---	---	10.5	9.0	9.5	8.5	8.0	8.5	8.5	5.5	7.0
29	---	---	---	10.0	8.5	9.5	9.0	7.5	8.0	11.0	8.0	9.5
30	---	---	---	10.5	8.5	9.5	9.5	7.0	8.5	11.0	8.5	9.5
31	---	---	---	---	---	---	9.0	7.0	7.5	10.0	9.0	9.5
MONTH	31.0	25.0	26.5	15.0	8.5	12.5	12.0	5.5	9.0	11.0	3.0	7.5

## TRINITY RIVER BASIN

08048980 VILLAGE CREEK AT KENNEDALE, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	11.0	10.5	10.5	12.5	11.0	12.0	13.5	9.5	11.0	20.5	18.5	20.0
2	11.5	10.5	11.0	11.5	10.5	11.5	13.5	11.5	12.5	20.5	20.0	20.0
3	11.5	10.5	11.0	12.5	10.0	11.0	14.0	10.0	12.0	23.0	20.0	21.5
4	---	---	---	13.0	10.0	11.5	14.5	10.5	12.5	22.5	20.0	21.5
5	---	---	---	14.0	10.5	12.0	13.0	12.0	12.5	23.0	21.5	22.0
6	12.5	11.5	12.0	14.5	11.5	13.0	15.5	11.5	13.5	22.5	21.5	22.0
7	11.0	10.5	11.0	14.5	12.5	13.5	15.5	12.5	13.5	22.0	21.0	21.5
8	11.0	9.5	10.0	15.5	14.0	14.5	15.0	12.5	13.5	22.0	21.0	21.0
9	12.0	9.5	10.5	15.0	13.5	14.5	15.5	13.0	14.5	22.0	20.5	21.0
10	11.5	9.0	10.5	14.0	12.5	13.5	19.5	15.0	16.5	21.5	19.5	21.0
11	10.5	9.5	10.0	14.0	11.5	12.5	17.5	15.5	16.5	22.0	20.0	21.5
12	12.5	10.0	11.0	13.5	11.0	12.0	17.5	15.5	16.5	22.5	22.0	22.0
13	13.0	12.5	12.5	13.5	10.5	12.0	16.0	14.5	15.0	22.5	22.0	22.0
14	13.5	12.5	13.0	15.5	11.5	13.5	17.5	15.5	16.5	24.0	22.0	23.0
15	14.0	13.0	13.5	15.5	13.0	14.0	17.0	15.0	16.0	24.0	20.5	22.5
16	14.0	13.0	14.0	16.0	15.0	15.5	16.5	15.5	16.0	23.0	21.5	22.0
17	13.0	11.0	12.0	17.0	15.0	16.0	18.0	16.5	17.0	25.0	22.0	23.5
18	10.5	9.5	10.0	16.0	14.5	15.5	18.0	17.5	18.0	24.5	24.0	24.0
19	9.5	7.5	8.5	16.5	15.5	16.0	18.0	17.0	17.5	25.0	23.0	24.0
20	9.5	8.5	9.0	19.0	15.0	17.0	18.0	17.0	17.5	23.5	22.5	23.0
21	8.5	6.0	7.0	20.5	16.5	18.5	19.5	17.5	19.0	24.0	23.5	23.5
22	8.0	6.0	7.0	21.0	18.0	19.5	19.0	18.5	18.5	25.5	24.0	24.5
23	9.5	8.0	8.5	20.0	16.5	19.0	19.0	17.5	18.0	25.5	24.5	25.0
24	10.5	7.5	9.0	17.5	15.0	16.0	19.5	18.0	18.5	25.5	24.0	25.0
25	9.5	9.0	9.5	16.0	14.0	15.0	19.5	18.0	19.0	26.0	24.5	25.0
26	10.0	9.5	9.5	14.5	13.0	14.0	19.5	18.5	19.0	25.5	24.5	25.0
27	12.0	10.0	11.0	15.0	11.5	13.0	19.5	19.0	19.0	25.0	23.5	24.5
28	13.0	12.0	12.5	16.0	13.0	14.5	20.0	19.0	19.5	24.5	19.5	24.0
29	---	---	---	12.5	9.5	11.0	20.5	19.5	20.0	20.5	19.5	20.0
30	---	---	---	12.0	8.0	9.5	20.5	20.0	20.5	23.0	20.0	21.0
31	---	---	---	14.0	8.5	11.0	---	---	---	24.0	23.0	23.5
MONTH	14.0	6.0	10.5	21.0	8.0	14.0	20.5	9.5	16.5	26.0	18.5	22.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	25.0	23.0	24.0	27.0	25.5	26.5	30.0	27.5	28.5	27.5	26.5	27.0
2	24.5	23.5	24.0	27.0	22.5	25.5	30.0	27.0	28.5	27.5	26.0	27.0
3	24.0	23.0	23.5	26.5	23.5	24.5	30.0	27.5	28.5	27.0	26.0	26.5
4	25.5	22.5	23.5	28.0	26.5	27.0	30.0	27.5	28.5	27.0	26.0	26.5
5	26.0	22.0	23.5	28.5	26.5	27.5	30.5	27.5	29.0	27.0	26.0	26.5
6	26.0	21.5	23.5	27.5	27.0	27.0	30.0	27.5	29.0	27.0	26.5	26.5
7	25.5	22.0	24.0	27.5	26.5	27.0	30.0	27.5	29.0	27.0	26.5	26.5
8	25.0	23.0	24.0	27.5	26.0	27.0	29.5	27.0	28.5	27.0	26.0	26.5
9	24.5	23.5	24.0	27.0	26.0	26.5	29.5	27.0	28.5	26.5	26.0	26.0
10	24.5	23.5	24.0	27.0	26.0	26.5	30.5	27.5	28.5	26.5	26.0	26.5
11	25.0	24.0	24.5	27.0	26.0	26.5	29.5	28.5	29.0	27.0	26.5	26.5
12	26.0	25.0	25.5	27.0	26.0	26.5	30.0	27.5	29.0	27.0	26.0	26.0
13	27.0	25.0	25.5	28.0	26.5	27.0	29.0	27.0	28.0	26.5	26.0	26.0
14	28.5	25.5	26.5	27.5	25.5	26.5	30.0	27.0	28.5	27.0	26.5	26.5
15	28.5	26.5	27.0	27.0	25.0	26.0	30.0	28.0	29.0	27.0	26.5	26.5
16	27.5	26.0	26.5	27.0	26.0	26.5	30.0	27.0	28.5	26.5	26.0	26.5
17	29.5	26.5	28.0	27.5	25.0	26.0	30.0	27.0	28.5	26.5	26.0	26.5
18	29.0	26.5	28.0	28.0	26.5	27.5	29.5	26.5	28.0	26.5	26.0	26.5
19	29.5	27.0	28.0	28.0	27.0	27.5	29.0	26.5	28.0	26.0	25.5	25.5
20	28.5	26.5	27.5	28.0	26.5	27.0	29.0	26.5	27.5	25.5	24.5	25.0
21	29.0	26.5	28.0	27.5	26.5	27.0	29.5	26.5	28.5	25.5	24.5	25.0
22	29.0	27.5	28.0	28.0	27.0	27.5	29.5	27.0	28.0	25.5	24.5	25.0
23	28.0	26.0	27.0	28.0	27.0	27.5	29.0	27.0	28.0	25.5	23.5	24.5
24	29.0	26.5	27.5	28.0	27.0	27.5	29.0	27.0	28.0	25.0	24.0	24.5
25	29.5	27.5	28.5	28.5	27.5	28.0	28.5	26.5	27.5	26.5	22.0	24.0
26	28.5	27.0	28.0	29.5	26.5	28.0	28.5	26.0	27.0	25.0	24.0	24.5
27	28.0	26.0	27.0	29.0	28.0	28.5	29.5	25.5	26.5	24.5	24.0	24.0
28	27.5	25.5	26.5	28.5	27.5	28.5	27.5	27.0	27.0	25.0	24.0	24.5
29	27.0	25.5	26.5	28.5	27.5	28.5	27.5	26.5	27.0	25.0	24.0	24.5
30	27.0	25.5	26.0	29.0	28.0	28.5	27.5	27.0	27.5	24.5	23.5	24.0
31	---	---	---	30.0	28.0	29.0	27.5	27.0	27.5	---	---	---
MONTH	29.5	21.5	26.0	30.0	22.5	27.0	30.5	25.5	28.0	27.5	22.0	25.5

TRINITY RIVER BASIN

243

08048980 VILLAGE CREEK AT KENNEDALE, TX--Continued

OXYGEN, DISSOLVED (DO), MG/L, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	8.6	4.8	7.4	---	---	---	12.2	9.2	10.9	12.6	11.0	11.8
2	8.8	8.0	8.6	---	---	---	11.5	10.7	10.9	12.5	11.0	11.7
3	7.9	6.7	7.3	---	---	---	11.1	10.7	10.8	12.6	11.6	12.3
4	7.6	5.2	6.7	---	---	---	11.0	10.6	10.8	12.8	11.1	11.9
5	---	---	---	---	---	---	10.7	9.6	10.2	12.8	11.3	12.0
6	---	---	---	---	---	---	10.0	9.2	9.6	12.8	11.5	12.0
7	---	---	---	---	---	---	10.5	8.6	9.2	12.3	11.0	11.6
8	---	---	---	---	---	---	9.1	8.3	8.7	12.2	10.2	11.1
9	---	---	---	---	---	---	9.7	9.0	9.4	12.1	11.0	11.5
10	---	---	---	---	---	---	11.0	9.5	10.0	11.5	11.2	11.3
11	---	---	---	---	---	---	11.3	10.7	10.9	11.7	11.2	11.4
12	---	---	---	---	---	---	11.6	10.4	11.1	11.9	11.2	11.5
13	---	---	---	---	---	---	12.3	10.4	11.7	12.0	10.9	11.4
14	---	---	---	---	---	---	12.3	11.2	11.6	11.6	10.7	11.0
15	---	---	---	---	---	---	13.3	11.9	12.5	11.3	10.2	10.7
16	---	---	---	---	---	---	12.8	11.9	12.4	10.8	9.9	10.2
17	---	---	---	9.3	8.2	8.5	11.9	11.1	11.6	10.9	9.4	9.9
18	---	---	---	10.7	7.8	8.7	12.5	11.0	11.9	12.4	11.6	12.2
19	---	---	---	11.1	6.4	8.5	12.4	11.8	12.3	12.5	12.3	12.4
20	---	---	---	9.7	7.1	8.5	11.8	11.4	11.6	12.6	12.1	12.3
21	---	---	---	10.3	8.1	9.1	11.4	10.3	10.9	12.1	11.6	11.9
22	---	---	---	8.7	7.4	8.1	10.8	10.1	10.4	12.2	11.4	11.8
23	---	---	---	10.7	8.0	9.8	11.8	10.7	11.1	12.3	11.0	11.5
24	---	---	---	10.1	9.6	9.9	12.9	11.8	12.5	12.1	10.9	11.5
25	---	---	---	11.2	6.3	9.5	12.5	11.8	12.3	12.1	10.8	11.4
26	---	---	---	11.0	9.7	10.5	12.4	11.7	12.0	11.9	10.5	11.1
27	---	---	---	9.6	8.5	9.1	12.0	11.3	11.6	13.3	11.0	11.8
28	---	---	---	8.9	8.4	8.5	11.7	10.9	11.3	12.1	10.9	11.3
29	---	---	---	9.3	8.6	8.9	11.7	11.2	11.4	12.5	11.0	11.6
30	---	---	---	9.3	8.6	8.9	14.0	10.5	11.5	12.8	10.6	11.4
31	---	---	---	---	---	---	---	---	---	14.3	11.1	12.2
MONTH	8.8	4.8	7.5	11.2	6.3	9.0	14.0	8.3	11.1	14.3	9.4	11.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	13.3	11.1	12.0	11.0	10.2	10.7	12.9	10.1	11.6	11.2	6.5	8.8
2	12.4	10.8	11.9	11.1	10.7	11.0	12.7	9.9	11.1	10.4	7.0	8.0
3	12.2	10.9	11.6	11.1	10.9	11.0	12.2	8.8	10.2	10.4	6.1	7.3
4	10.7	9.3	9.7	11.1	10.5	10.8	12.5	9.0	10.5	9.6	4.8	7.3
5	11.7	10.3	11.0	11.0	10.1	10.5	11.0	8.4	9.6	6.7	5.8	6.4
6	11.5	10.8	11.2	10.8	9.5	10.2	12.2	8.2	10.0	6.3	3.6	5.2
7	10.9	9.7	10.5	10.6	9.2	10.0	11.7	9.0	10.2	6.5	3.7	5.3
8	10.6	9.7	10.2	10.7	9.3	10.0	10.9	8.6	9.8	5.4	3.3	4.5
9	11.8	10.6	11.0	10.6	9.5	10.0	10.0	8.8	9.3	5.4	3.2	4.8
10	12.2	10.7	11.4	10.4	8.9	9.5	12.1	8.2	9.9	11.3	3.5	6.6
11	12.1	10.8	11.2	12.0	8.7	10.2	11.1	7.4	9.1	8.3	5.0	6.2
12	12.4	10.1	10.9	11.9	9.2	10.3	11.1	7.8	10.0	7.2	4.1	5.9
13	11.1	9.6	10.3	11.7	9.8	10.7	11.1	9.7	10.5	7.1	5.8	6.3
14	9.6	8.9	9.3	13.0	9.5	10.9	9.9	7.3	8.8	9.6	4.9	6.4
15	11.6	8.0	9.2	11.4	9.3	10.2	8.8	6.7	7.4	8.8	6.3	7.2
16	11.2	8.1	9.4	10.2	8.7	9.2	8.0	6.2	7.3	7.7	6.5	7.1
17	10.6	9.0	9.8	9.5	8.8	9.1	8.3	5.9	7.3	6.6	6.1	6.4
18	11.4	9.6	10.5	9.7	9.1	9.4	8.7	6.6	7.5	8.1	4.7	6.4
19	11.9	9.8	10.8	9.7	9.2	9.4	11.5	10.1	10.7	9.1	5.1	6.4
20	11.4	9.8	10.6	10.4	8.8	9.7	11.1	8.8	10.4	9.6	4.8	6.7
21	12.8	10.9	12.2	10.6	8.4	9.3	9.2	7.4	8.3	6.7	2.9	4.3
22	12.5	12.0	12.2	10.3	7.8	8.9	8.5	7.3	7.8	4.9	2.2	3.4
23	11.9	10.9	11.4	10.5	7.5	8.8	9.1	6.9	8.1	6.2	3.5	4.5
24	12.1	10.9	11.3	11.0	8.1	9.2	9.6	5.8	8.2	6.6	3.9	5.2
25	11.7	10.9	11.4	11.3	8.3	9.6	10.0	7.5	9.1	6.6	4.8	5.7
26	11.3	10.7	10.9	11.7	7.9	9.9	9.0	7.0	8.3	5.1	4.2	4.6
27	11.4	10.8	11.0	11.0	7.8	9.4	9.1	6.6	7.7	5.9	3.7	4.6
28	10.9	10.3	10.6	12.9	8.6	10.3	8.9	5.8	7.6	7.0	4.0	4.8
29	---	---	---	12.0	8.5	10.1	8.3	6.2	7.7	7.4	2.8	6.8
30	---	---	---	14.0	9.4	11.3	8.6	7.2	7.8	7.3	6.6	7.0
31	---	---	---	14.8	10.0	12.0	---	---	---	6.5	6.0	6.2
MONTH	13.3	8.0	10.8	14.8	7.5	10.1	12.9	5.8	9.1	11.3	2.2	6.0

## TRINITY RIVER BASIN

08048980 VILLAGE CREEK AT KENNEDALE, TX--Continued

OXYGEN, DISSOLVED (DO), MG/L, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	6.1	5.6	6.0	8.1	5.7	6.9	---	---	---	8.5	6.5	7.2
2	5.8	5.2	5.6	8.6	5.9	7.2	---	---	---	9.8	8.0	8.6
3	5.6	4.9	5.2	8.6	7.4	8.2	---	---	---	9.2	7.6	8.4
4	6.2	4.9	5.6	7.2	6.0	6.6	---	---	---	9.7	7.7	8.4
5	7.5	5.3	6.1	7.8	5.5	6.6	---	---	---	8.8	7.7	8.2
6	8.0	5.4	6.4	6.7	4.0	5.4	---	---	---	8.9	7.8	8.3
7	8.7	5.1	6.5	6.9	4.9	6.2	---	---	---	8.7	6.6	7.5
8	9.5	5.2	7.0	7.2	5.5	6.4	8.6	3.3	5.8	9.2	7.1	7.8
9	7.5	5.1	6.1	7.3	5.3	6.1	9.0	3.1	5.6	9.4	7.8	8.5
10	7.3	5.9	6.3	7.6	5.6	6.5	8.1	2.7	5.2	9.1	7.4	8.3
11	7.2	7.0	7.1	7.9	5.7	6.7	5.3	4.0	4.8	8.0	6.1	6.9
12	7.5	4.4	6.8	8.9	5.8	7.3	6.6	2.2	4.2	8.8	7.4	8.0
13	7.3	5.8	7.0	12.2	6.6	8.9	7.6	2.8	4.7	9.0	6.7	7.9
14	7.3	6.8	7.1	10.3	7.2	9.0	7.1	3.3	5.1	7.5	4.5	6.5
15	6.7	6.3	6.4	---	---	---	7.3	4.8	5.5	8.3	4.6	7.1
16	6.5	6.3	6.4	---	---	---	7.6	3.5	5.3	8.5	6.1	7.3
17	6.6	5.7	6.2	---	---	---	8.5	3.5	5.8	8.4	4.7	7.3
18	6.6	5.4	5.9	---	---	---	8.8	3.6	6.1	8.6	4.5	7.4
19	7.2	5.1	5.9	---	---	---	9.5	3.4	6.5	8.5	5.7	7.0
20	6.2	4.9	5.5	---	---	---	9.7	3.8	6.8	8.2	7.4	7.9
21	7.3	5.5	6.1	---	---	---	9.8	4.1	7.2	8.7	7.6	8.2
22	6.7	5.0	5.9	---	---	---	8.0	3.3	5.8	9.4	7.6	8.5
23	6.9	5.4	6.0	---	---	---	8.9	3.6	6.1	8.8	7.5	8.2
24	9.8	5.2	7.3	---	---	---	10.3	3.6	6.5	9.1	7.1	8.3
25	8.6	4.8	6.5	---	---	---	10.1	4.2	6.9	10.3	4.5	6.6
26	8.4	5.3	6.6	---	---	---	9.4	4.7	6.8	8.0	6.3	7.0
27	9.3	4.2	7.1	---	---	---	9.0	4.3	5.5	7.5	5.4	6.6
28	9.7	5.9	7.6	---	---	---	7.1	4.5	6.1	8.4	6.1	7.0
29	10.5	6.0	8.1	---	---	---	7.0	5.4	6.3	9.4	7.5	8.4
30	8.4	5.7	7.1	---	---	---	7.1	5.5	6.3	9.7	7.9	8.7
31	---	---	---	---	---	---	8.0	6.0	7.0	---	---	---
MONTH	10.5	4.2	6.5	12.2	4.0	7.0	10.3	2.2	5.9	10.3	4.5	7.7

## 08049200 LAKE ARLINGTON AT ARLINGTON, TX

LOCATION.--Lat 32°42'58", long 97°11'32", Tarrant County, Hydrologic Unit 12030102, in new pumphouse at right end of Arlington Dam on Village Creek near western boundary of Arlington, 1.5 mi upstream from the Texas and Pacific Railway Co. bridge, and 7 mi upstream from mouth.

DRAINAGE AREA.--143 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1957 to current year.

REVISED RECORDS.--WSP 1922: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Sept. 9, 1957, non-recording gage at same site and datum.

REMARKS.--Lake is formed by a rolled earthfill dam 6,482 ft long. The service spillway is a 10-foot diameter uncontrolled circular drop inlet. The spillway is an 882 foot-wide cut through natural ground near the right end of dam. The dam was completed and storage began Mar. 31, 1957. Capacities are based on a 1980 survey. The dam was built by city of Arlington to impound water for municipal and industrial uses. Water is diverted from Cedar Creek Reservoir (station 08063010) into Lake Arlington. Water is pumped from lake to generating plant of Texas Electric Service Co. 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.....	572.0	-
Crest of spillway.....	559.7	70,140
Crest of drop inlet (top of conservation pool).....	550.0	45,710
Lowest gated outlet (invert).....	505.0	180

COOPERATION.--Capacity table provided by Freese and Nichols, Inc., Consulting Engineers, for the city of Arlington.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 60,580 acre-ft May 4, 1979 (elevation, 556.20 ft); minimum since lake first filled in April 1957, 18,110 acre-ft Oct. 17, 1971 (elevation, 534.27 ft).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 42,130 acre-ft June 13 at 1000 hours (elevation, 550.97 ft); minimum, 22,370 acre-ft Sept. 30 (elevation, 540.51 ft.)

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

540.0	21,620	546.0	31,750	550.0	39,930
542.0	24,650	548.0	35,720	552.0	44,460
544.0	28,030				

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23710	23090	26020	30220	34410	39800	38610	36450	40290	38350	34530	23870
2	23640	23110	26090	30310	34530	39740	38550	36390	40070	39380	34120	23790
3	23530	23110	26180	30350	34650	39630	38520	37070	39870	39400	33760	23590
4	23450	23340	26280	30430	34750	39530	38460	38290	39720	39290	33310	23370
5	23430	23370	26420	30500	34890	39380	38440	38400	39530	39180	32940	23200
6	23400	23430	26510	30600	35110	39290	38420	38440	39420	39160	32510	23030
7	23370	23510	26700	30650	35280	39160	38440	38500	39250	39060	32040	22940
8	23320	23570	26800	30770	35400	39040	38480	38550	39180	38870	31730	22840
9	23290	23600	26920	31370	35500	38840	38400	38590	39740	38690	31300	22720
10	23250	23810	26960	31490	35580	38840	38270	38590	40090	38480	30810	22740
11	23180	23900	27110	31870	35680	38870	38120	38550	40470	38230	30480	22720
12	23170	23960	27320	31960	35780	38840	38060	38500	40610	38010	30120	22870
13	23090	24030	27390	32120	35890	38800	38080	38520	41880	37950	29710	22990
14	23080	24070	27600	32240	36010	38720	38030	38480	41360	36680	29370	23020
15	23000	24200	27820	32320	36140	38670	38030	39310	40950	37590	29000	23060
16	22880	24280	27910	32430	36200	39060	38060	39440	40590	37530	28560	23090
17	22830	24350	28080	32800	36260	40270	37990	39420	40230	37700	28160	23120
18	22750	24420	28740	33230	36390	40180	37860	39290	40160	37760	27720	23170
19	22650	24510	28870	33350	36530	40040	37760	39230	39930	37780	27290	23200
20	22560	24590	28960	33450	37280	39910	37630	39140	39870	37760	26850	23230
21	22530	24670	29040	33560	37400	39800	37630	39120	39670	37550	26470	23210
22	22560	24830	29200	33680	37490	39670	37720	39040	39500	37400	26000	23200
23	22620	24910	29400	33860	37510	39440	37720	38930	39380	37280	25570	23200
24	22630	25000	29510	33960	37910	39270	37610	39160	39180	37180	25150	23050
25	22660	25510	29600	34040	38080	39100	37400	39180	39060	36860	24730	22770
26	22740	25590	29710	34100	38820	39040	37300	39180	38870	36550	24310	22550
27	22800	25690	29810	34020	38990	39010	37180	39180	38720	36240	24210	22430
28	22910	25790	29900	34040	39780	38950	37010	40610	38420	35950	24140	22400
29	22930	25900	29990	34120	---	38820	36840	41560	38180	35680	24070	22400
30	22990	25990	30030	34210	---	38690	36660	41090	38330	35320	24010	22370
31	23020	---	30120	34290	---	38630	---	40630	---	34950	23930	---
MAX	23710	25990	30120	34290	39780	40270	38610	41560	41880	39400	34530	23870
MIN	22530	23090	26020	30220	34410	38630	36390	38180	34950	32370	23790	22370
(+)	540.95	542.81	545.14	547.29	549.93	549.39	548.45	550.31	549.25	547.62	541.54	540.51
(Φ)	-870	+2970	+4130	+4170	+5490	-1150	-1970	+3970	-2300	-3380	-11020	-1560

CAL YR 1986 MAX 44280 MIN 22530 (Φ) +110  
WTR YR 1987 MAX 41880 MIN 22370 (Φ) -1520

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

## TRINITY RIVER BASIN

08049200 LAKE ARLINGTON AT ARLINGTON, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: January 1964 to current year.

324304097113601 - LAKE ARLINGTON SITE AC

WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	SAMPLING DEPTH (FEET)	SPECIFIC CONDUCTANCE (US/CM)	PH (STANDARD UNITS)	TEMPERATURE WATER (DEG C)	TRANSPARANCY (SECCHI DISK) (M)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATURATION)	HARDNESS (MG/L AS CaCO3)
JAN									
28...	1101	1.00	268	8.90	11.5	0.70	10.0	93	100
28...	1103	10.0	268	8.80	11.0	--	9.5	87	--
28...	1105	20.0	268	8.80	11.0	--	9.3	85	--
28...	1107	30.0	268	8.70	10.5	--	9.0	81	99
28...	1109	40.0	271	8.70	10.0	--	8.5	76	--
28...	1111	45.0	273	8.70	10.0	--	8.0	72	100
MAY									
07...	0954	1.00	303	8.60	24.0	1.00	7.2	86	100
07...	0956	10.0	303	8.60	24.0	--	7.1	85	--
07...	0958	20.0	303	8.40	23.5	--	7.0	83	--
07...	1000	25.0	322	7.80	19.0	--	2.0	22	--
07...	1002	30.0	322	7.80	18.0	--	2.0	21	--
07...	1004	40.0	323	7.90	17.5	--	2.0	21	--
07...	1006	46.0	325	8.00	17.0	--	2.0	21	110
AUG									
28...	0950	1.00	327	7.90	29.5	1.30	5.2	69	110
28...	0952	10.0	327	7.90	29.5	--	5.2	69	--
28...	0954	20.0	327	7.90	29.5	--	5.2	69	--
28...	0956	30.0	327	7.90	29.5	--	5.1	67	--
28...	0958	36.0	369	7.30	26.0	--	2.3	28	130

DATE	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 WH WAT TOTAL FIELD MG/L AS CaCO3	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLORIDE, DIS-SOLVED (MG/L AS Cl)
JAN									
28...	14	33	4.3	16	0.7	4.7	86	25	21
28...	--	--	--	--	--	--	--	--	--
28...	0	33	4.1	16	0.7	4.5	--	--	--
28...	13	33	4.3	16	0.7	4.7	87	26	18
MAY									
07...	12	34	4.4	18	0.8	4.4	91	31	19
07...	--	--	--	--	--	--	--	--	--
07...	--	--	--	--	--	--	--	--	--
07...	--	--	--	--	--	--	--	--	--
07...	--	--	--	--	--	--	--	--	--
07...	11	38	4.6	19	0.8	4.4	103	30	20
AUG									
28...	12	37	5.0	21	0.9	5.2	101	30	21
28...	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--
28...	0	42	5.2	20	0.8	5.4	147	12	20

DATE	FLUORIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS-SOLVED (MG/L)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	IRON, DIS-SOLVED (UG/L AS FE)	MANGANESE, DIS-SOLVED (UG/L AS MN)
JAN								
28...	0.20	4.0	160	0.200	0.80	0.010	4	<1
28...	--	--	--	--	--	--	--	--
28...	--	--	--	0.200	0.90	0.030	10	17
28...	--	--	--	--	--	--	--	--
28...	--	4.4	160	0.200	0.70	0.020	12	92
MAY								
07...	0.20	3.8	170	<0.100	1.4	0.020	5	6
07...	--	--	--	<0.100	1.4	0.020	20	40
07...	--	--	--	--	--	--	--	--
07...	--	--	--	0.300	1.1	0.030	20	200
07...	--	--	--	--	--	--	--	--
07...	--	6.9	190	0.200	2.0	0.050	120	1100
AUG								
28...	0.30	5.2	190	<0.100	0.40	0.030	<3	19
28...	--	--	--	--	--	--	--	--
28...	--	--	--	<0.100	<0.20	0.020	20	290
28...	--	10	210	<0.100	3.2	0.130	750	4700

## TRINITY RIVER BASIN

247

08049200 LAKE ARLINGTON AT ARLINGTON, TX--Continued

324320097121101 - LAKE ARLINGTON SITE AL

WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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							
28...	1141	1.00	267	9.00	12.0	10.0	94
28...	1143	10.0	267	8.90	11.5	9.7	90
28...	1145	20.0	267	8.80	11.0	9.3	85
28...	1147	27.0	269	8.80	10.5	8.6	78
MAY							
07...	1022	1.00	303	8.80	24.0	7.2	86
07...	1024	10.0	303	8.70	24.0	7.1	85
07...	1026	20.0	303	8.20	23.0	5.5	65
07...	1028	25.0	320	8.00	19.0	1.8	20
07...	1030	31.0	320	8.10	18.5	1.8	19
AUG							
28...	1018	1.00	327	7.80	30.0	4.6	61
28...	1020	10.0	327	7.90	30.0	4.6	61
28...	1022	20.0	327	7.90	29.5	4.5	59

324253097121801 - LAKE ARLINGTON SITE BC

WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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							
28...	1206	1.00	266	8.80	11.0	9.6	88
28...	1208	10.0	266	8.80	10.5	9.2	83
28...	1210	20.0	266	8.80	10.0	9.1	81
28...	1212	30.0	266	8.70	10.0	8.8	79
28...	1214	40.0	270	8.70	10.0	7.7	69
MAY							
07...	1040	1.00	302	8.80	25.0	7.1	87
07...	1042	10.0	302	8.50	24.5	6.9	84
07...	1044	20.0	298	8.10	22.0	4.8	55
07...	1046	25.0	303	8.10	21.0	3.3	37
07...	1048	30.0	323	8.10	19.0	1.8	20
07...	1050	37.0	323	8.10	18.5	1.8	19
AUG							
28...	1032	1.00	326	8.10	29.5	5.2	69
28...	1034	10.0	326	8.10	29.5	5.2	69
28...	1036	20.0	326	8.10	29.5	5.2	69
28...	1038	27.0	326	8.00	29.0	5.2	68

324301097123301 - LAKE ARLINGTON SITE BL

WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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							
28...	1221	1.00	267	8.90	11.0	9.9	91
28...	1223	10.0	267	8.80	10.5	9.5	86
28...	1225	20.0	267	8.80	10.0	9.4	84
28...	1227	29.0	267	8.80	10.0	8.8	79
MAY							
07...	1055	1.00	302	8.80	24.5	7.1	86
07...	1057	10.0	302	8.70	24.5	7.0	85
07...	1059	20.0	299	8.20	22.5	5.3	62
07...	1101	25.0	298	8.10	21.5	4.1	47
07...	1103	32.0	324	8.10	18.5	1.8	19
AUG							
28...	1044	1.00	326	8.10	29.5	5.2	69
28...	1046	10.0	326	8.10	29.5	5.2	69
28...	1048	21.0	326	8.10	29.5	5.2	69

## TRINITY RIVER BASIN

08049200 LAKE ARLINGTON AT ARLINGTON, TX--Continued

## 324257097130301 - LAKE ARLINGTON SITE CC

WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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							
28...	1241	1.00	269	8.90	14.0	9.2	90
28...	1243	14.0	269	8.90	14.0	9.2	90
MAY							
07...	1116	1.00	305	8.50	30.0	6.0	80
07...	1118	10.0	305	8.40	29.5	6.0	80
07...	1120	22.0	305	8.40	28.0	5.8	75
AUG							
28...	1112	1.00	327	8.00	31.5	5.3	72
28...	1114	13.0	327	8.00	31.5	5.3	72

## 324228097130301 - LAKE ARLINGTON SITE DC

WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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							
28...	1256	1.00	267	8.90	12.5	9.2	87
28...	1258	10.0	267	8.90	10.5	9.1	82
28...	1300	19.0	267	8.80	10.5	9.0	81
MAY							
07...	1127	1.00	304	8.60	27.0	6.2	79
07...	1129	10.0	301	8.50	24.5	7.0	85
07...	1131	20.0	298	8.20	23.0	5.2	61
AUG							
28...	1127	1.00	325	8.10	30.5	5.3	71
28...	1129	11.0	325	8.10	30.0	5.2	69

## 324143097132201 - LAKE ARLINGTON SITE EC

WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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 (MG/L AS CACO3)
JAN									
28...	1316	1.00	263	8.90	11.0	0.70	9.8	90	100
28...	1318	10.0	263	8.80	10.5	--	9.2	83	--
28...	1320	20.0	260	8.80	10.0	--	9.0	80	--
28...	1322	25.0	260	8.80	10.0	--	8.8	79	97
MAY									
07...	1140	1.00	302	8.90	25.0	0.90	7.2	88	110
07...	1142	10.0	302	8.80	25.0	--	7.0	86	--
07...	1144	20.0	291	8.40	23.0	--	6.0	71	--
07...	1146	27.0	288	8.00	21.0	--	4.4	50	100
AUG									
28...	1144	1.00	326	8.30	28.0	0.50	5.7	73	110
28...	1146	10.0	326	8.20	26.5	--	5.7	71	--
28...	1148	16.0	326	8.20	26.0	--	5.7	71	110

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- LITY WH WAT TOTAL FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)
JAN								
28...	16	33	4.3	16	0.7	4.7	84	26
28...	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--
28...	17	32	4.2	16	0.7	4.6	80	26
MAY								
07...	20	35	4.6	19	0.8	4.5	86	31
07...	--	--	--	--	--	--	--	--
07...	--	--	--	--	--	--	--	--
07...	18	34	4.4	19	0.9	4.8	85	29
AUG								
28...	13	37	5.0	21	0.9	5.2	100	30
28...	--	--	--	--	--	--	--	--
28...	12	37	5.1	21	0.9	5.3	101	30

## TRINITY RIVER BASIN

249

08049200 LAKE ARLINGTON AT ARLINGTON, TX--Continued

324143097132201 - LAKE ARLINGTON SITE EC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	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- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
JAN								
28...	26	3.9	160	0.200	0.70	0.010	5	<1
28...	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--
28...	22	4.0	160	0.200	0.80	0.020	8	1
MAY								
07...	20	3.9	170	<0.100	1.9	0.030	<3	<1
07...	--	--	--	--	--	--	--	--
07...	--	--	--	--	--	--	--	--
07...	19	4.8	170	0.200	0.30	0.140	<3	7
AUG								
28...	21	5.1	180	<0.100	0.80	0.010	<3	4
28...	--	--	--	--	--	--	--	--
28...	21	5.1	190	<0.100	0.20	0.020	8	17

324133097130601 - LAKE ARLINGTON SITE EL

WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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)
MAY							
07...	1154	1.00	302	9.00	25.0	7.2	88
07...	1156	10.0	302	8.70	25.0	7.1	87
07...	1158	16.0	297	8.40	23.5	6.2	74
AUG							
28...	1204	1.00	329	8.30	28.0	5.8	74
28...	1206	11.0	328	8.20	26.5	5.7	71

324041097134601 - LAKE ARLINGTON SITE FC

WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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 (MG/L AS CAC03)
JAN									
28...	1346	1.00	259	9.30	11.0	0.60	10.4	95	97
28...	1348	14.0	256	9.20	10.5	--	10.2	92	95
MAY									
07...	1207	1.00	301	8.90	25.0	1.00	7.4	91	100
07...	1209	10.0	272	8.50	22.5	--	5.9	69	--
07...	1211	15.0	261	8.60	22.0	--	5.6	65	86
AUG									
28...	1224	1.00	382	8.00	26.0	0.40	5.2	64	140
28...	1226	6.00	367	8.00	26.0	--	5.1	63	120

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 WH WAT TOTAL FIELD MG/L AS CAC03	SULFATE DIS- SOLVED (MG/L AS S04)
JAN								
28...	14	32	4.2	16	0.7	4.7	83	26
28...	12	31	4.2	16	0.7	4.6	83	26
MAY								
07...	16	34	4.6	19	0.8	5.0	88	32
07...	--	--	--	--	--	--	--	--
07...	11	28	4.0	17	0.8	4.1	75	28
AUG								
28...	22	44	6.1	24	0.9	5.2	113	39
28...	10	39	5.8	23	0.9	4.4	111	46

## TRINITY RIVER BASIN

08049200 LAKE ARLINGTON AT ARLINGTON, TX--Continued

324041097134601 - LAKE ARLINGTON SITE FC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	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- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
JAN								
28...	25	3.9	160	0.100	0.90	0.030	5	<1
28...	18	4.0	150	0.200	<0.20	0.040	5	1
MAY								
07...	21	3.7	170	0.100	1.1	0.050	7	5
07...	--	--	--	--	--	--	--	--
07...	18	3.6	150	0.200	1.4	0.080	39	13
AUG								
28...	25	6.5	220	<0.100	0.80	0.030	<3	34
28...	23	6.4	210	<0.100	0.80	0.030	10	30

## 08049500 WEST FORK TRINITY RIVER AT GRAND PRAIRIE, TX

LOCATION.--Lat 32°45'46", long 96°59'42", Dallas County, Hydrologic Unit 12030102, on left bank at upstream side of bridge on Belt Line Road, 1.3 mi northeast of Grand Prairie, 3.7 mi upstream from Mountain Creek, and at mile 514.6.

DRAINAGE AREA.--3,065 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1925 to current year.

REVISED RECORDS.--WSP 628: 1925. WSP 1922: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 405.42 ft above National Geodetic Vertical Datum of 1929. Prior to Dec. 6, 1933, nonrecording gage at bridge on old channel 2,500 ft southeast of present site at datum 7.56 ft higher. Dec. 6, 1933, to May 24, 1956, water-stage recorder at site 440 ft downstream from site of nonrecording gage at datum 7.56 ft higher than present datum. May 25, 1956, to Apr. 18, 1957, nonrecording gage at site 1.5 mi downstream at different datum. Apr. 19 to Aug 13, 1957, nonrecording gage on bridge at present site and at datum 5.00 ft higher than present datum.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Flow is affected at times by three upstream reservoirs with a combined capacity of 248,600 acre-ft, of which 76,550 acre-ft is for flood control. During the current year, the city of Fort Worth discharged sewage effluent into the river upstream from this station. There are many diversions upstream from this station for municipal, industrial, and other uses. The river channel at this station was relocated and rectified in 1956. Gage-height telemeter at station.

AVERAGE DISCHARGE.--62 years (water years 1926-87), 560 ft<sup>3</sup>/s (405,700 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 62,000 ft<sup>3</sup>/s May 17, 1949 (gage-height, 28.00 ft, site and datum then in use), from rating curve extended above 36,000 ft<sup>3</sup>/s; minimum observed, 3.2 ft<sup>3</sup>/s June 6, 1925.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1900, 30.6 ft in May 1908 (former site and datum), from information by local resident. Flood in April 1922 reached a stage of 29.0 ft (former site and datum), from floodmarks.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,880 ft<sup>3</sup>/s May 29 at 1400 hours (gage height, 20.78 ft); minimum daily, 113 ft<sup>3</sup>/s Oct. 3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	144	132	211	211	330	4910	348	221	3790	1240	166	191
2	123	131	217	181	291	3300	325	284	e4100	1870	156	176
3	113	131	248	206	251	3320	307	340	e4250	2550	160	168
4	172	343	223	191	225	3970	301	3440	e4300	1110	163	162
5	268	644	211	213	206	4490	295	1260	e3900	1090	168	136
6	567	249	200	208	560	4660	315	399	e2850	1090	166	125
7	438	191	326	186	583	4740	339	318	e2500	896	189	145
8	271	159	402	203	376	4950	324	339	e2400	649	164	158
9	296	149	303	1140	368	4880	313	305	e2150	536	149	147
10	223	255	242	802	390	5110	301	282	e2300	470	148	221
11	158	498	216	351	406	5070	287	271	e2250	375	141	332
12	173	351	636	276	426	4680	328	334	e2600	253	168	349
13	184	246	686	255	438	3980	305	321	3160	230	204	658
14	175	208	395	237	505	2770	355	364	4060	240	186	339
15	160	190	762	238	703	1690	296	1460	3890	215	161	245
16	154	179	509	225	692	1460	279	2400	4410	248	148	227
17	145	170	356	258	558	3740	226	516	3920	660	141	191
18	144	174	2210	953	534	3060	197	397	4230	660	149	248
19	142	173	1120	687	495	2280	178	370	4410	286	147	233
20	144	237	463	410	1970	2030	202	361	4200	229	128	183
21	142	201	344	343	2080	1700	219	358	3700	218	132	156
22	143	176	295	451	1010	1360	213	326	2710	205	131	163
23	252	281	461	574	882	1240	201	300	1810	201	143	163
24	303	200	462	503	1660	1070	202	698	1590	198	141	148
25	217	1170	322	476	1550	697	200	831	2030	215	148	167
26	174	1080	265	412	2370	661	197	367	2080	183	145	150
27	156	365	248	364	3220	558	191	305	1580	172	364	136
28	147	268	241	356	3960	474	198	308	1350	181	515	135
29	138	227	227	345	---	462	218	6170	1220	178	241	218
30	138	207	228	341	---	425	224	4020	1500	171	182	188
31	144	---	224	325	---	383	---	3640	---	167	184	---
TOTAL	6148	8985	13253	11921	27039	84120	7884	31305	89240	16986	5528	6258
MEAN	198	299	428	385	966	2714	263	1010	2975	548	178	209
MAX	567	1170	2210	1140	3960	5110	355	6170	4410	2550	515	658
MIN	113	131	200	181	206	383	178	221	1220	167	128	125
AC-FT	12190	17820	26290	23650	53630	166900	15640	62090	177000	33690	10960	12410

CAL YR 1986 TOTAL 228631 MEAN 626 MAX 7440 MIN 76 AC-FT 453500  
WTR YR 1987 TOTAL 308667 MEAN 846 MAX 6170 MIN 113 AC-FT 612200

e Estimated.

08049500 WEST FORK TRINITY RIVER AT GRAND PRAIRIE, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: January 1964 to current year. Chemical and biochemical analyses: January 1968 to current year.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1966 to current year.

pH: October 1976 to current year.

WATER TEMPERATURE: October 1966 to current year.

DISSOLVED OXYGEN: October 1976 to current year.

INSTRUMENTATION.--Beginning November 1976, a four-parameter water-quality monitor records temperature, DO, pH, and specific conductance 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, 1,320 microsiemens Dec. 12, 1978; minimum, 108 microsiemens May 1, 1986.

pH: Maximum, 8.6 units July 2, 1981, June 27, 1982, Mar. 26, 1983, and Feb. 5, 1986; minimum, 6.6 units Jan. 6, 1979.

WATER TEMPERATURE: Maximum, 35.0°C Aug. 8, 1982; minimum, 3.0°C Jan. 9, 1973.

DISSOLVED OXYGEN: Maximum, 14.8 mg/L Dec. 14, 16, 1983; minimum, 0.0 mg/L on several days each year.

## EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 910 microsiemens Aug. 9; minimum, 141 microsiemens May 28.

pH: Maximum, 8.5 units May 28; minimum, 6.9 units Mar. 10.

WATER TEMPERATURE: Maximum, 34.5°C Aug. 9; minimum, 7.0°C Jan. 18.

DISSOLVED OXYGEN: Maximum, 14.4 mg/L Nov. 14; minimum, 2.7 mg/L Aug. 28.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	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 (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3
NOV										
06...	1210	268	644	7.20	18.5	7.8	84	1.2	160	20
JAN										
21...	0930	423	584	7.40	10.5	10.2	92	1.7	200	30
APR										
28...	1520	308	728	7.90	25.0	9.2	112	1.3	200	35
MAY										
02...	0700	356	--	--	--	--	--	--	--	--
02...	0900	370	--	--	--	--	--	--	--	--
02...	1100	373	--	--	--	--	--	--	--	--
02...	1300	367	--	--	--	--	--	--	--	--
02...	1500	353	--	--	--	--	--	--	--	--
02...	1700	342	--	--	--	--	--	--	--	--
02...	1900	336	--	--	--	--	--	--	--	--
02...	2100	339	--	--	--	--	--	--	--	--
02...	2300	373	--	--	--	--	--	--	--	--
03...	0100	373	--	--	--	--	--	--	--	--
03...	0300	373	--	--	--	--	--	--	--	--
03...	0500	384	--	--	--	--	--	--	--	--
JUL										
13...	1315	200	668	7.80	28.0	7.2	93	1.0	160	1
SEP										
02...	1305	105	786	7.50	28.0	5.5	71	1.4	160	28

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 WH WAT TOTAL 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									
06...	54	6.2	50	2	7.9	140	55	54	0.60
JAN									
21...	67	7.1	58	2	8.9	167	73	61	0.30
APR									
28...	65	8.3	78	3	9.4	162	87	76	0.70
MAY									
02...	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--
JUL									
13...	59	3.8	60	2	9.8	162	61	62	0.90
SEP									
02...	51	7.6	95	3	11	131	92	97	1.0

## TRINITY RIVER MAIN STEM

253

08049500 WEST FORK TRINITY RIVER AT GRAND PRAIRIE, TX--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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- PHORUS, TOTAL (MG/L AS P)
NOV 06...	6.8	320	1.47	0.030	1.50	0.070	0.93	1.0	0.040
JAN 21...	7.7	380	1.48	0.020	1.50	0.130	0.97	1.1	2.10
APR 28...	7.5	430	8.07	0.030	8.10	0.070	1.7	1.8	2.40
MAY 02...	--	--	4.25	0.350	4.60	0.130	1.7	1.8	--
02...	--	--	4.22	0.480	4.70	0.040	1.1	1.1	--
02...	--	--	3.65	0.350	4.00	0.030	1.3	1.3	--
02...	--	--	3.19	0.210	3.40	0.070	0.73	0.80	--
02...	--	--	3.24	0.160	3.40	0.080	1.4	1.5	--
02...	--	--	3.48	0.120	3.60	0.100	1.1	1.2	--
02...	--	--	3.79	0.110	3.90	0.100	1.5	1.6	--
02...	--	--	3.89	0.110	4.00	0.100	1.0	1.1	--
02...	--	--	4.06	0.140	4.20	0.080	0.42	0.50	--
03...	--	--	4.14	0.160	4.30	0.050	1.7	1.8	--
03...	--	--	4.22	0.180	4.40	0.070	1.0	1.1	--
03...	--	--	4.23	0.170	4.40	0.030	2.4	2.4	--
JUL 13...	9.2	360	4.48	0.120	4.60	0.170	0.83	1.0	2.50
SEP 02...	10	440	7.59	0.110	7.70	0.340	1.9	2.2	3.50

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1986 TO SEPTEMBER 1987

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. 1986	6148	703	396	6570	64	1060	78	1290	170
NOV. 1986	8985	653	367	8900	59	1420	71	1720	160
DEC. 1986	13253	537	301	10800	47	1680	56	1990	150
JAN. 1987	11921	538	301	9690	47	1510	55	1790	150
FEB. 1987	27039	510	286	20900	44	3240	52	3800	140
MAR. 1987	84120	481	269	61100	41	9410	48	11000	140
APR. 1987	7884	766	432	9190	70	1490	86	1840	180
MAY 1987	31305	408	228	19300	35	2950	40	3420	120
JUNE 1987	89240	447	250	60200	38	9200	44	10600	140
JULY 1987	16986	520	291	13400	45	2080	54	2460	140
AUG. 1987	5528	761	429	6400	70	1040	86	1280	170
SEPT 1987	6258	692	389	6580	62	1060	76	1290	170
TOTAL	308667	**	**	233000	**	36100	**	42500	**
WTD.AVG.	846	499	279	**	43	**	51	**	140

## TRINITY RIVER MAIN STEM

08049500 WEST FORK TRINITY RIVER AT GRAND PRAIRIE, TX--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	740	690	710	856	816	835	---	---	785	633	615	622
2	778	748	765	904	848	871	---	---	755	633	583	609
3	804	766	786	844	782	815	---	---	726	617	589	603
4	790	646	738	788	518	690	---	---	697	609	589	600
5	770	626	714	720	456	543	---	---	668	597	565	581
6	654	472	552	756	514	635	---	---	638	639	577	610
7	522	454	500	834	762	803	---	---	609	692	640	664
8	606	486	531	850	816	837	---	---	580	706	660	687
9	636	598	621	864	816	838	---	---	550	644	312	462
10	644	600	619	906	496	773	---	---	521	486	332	428
11	700	640	659	738	636	681	---	---	492	602	486	539
12	716	674	688	692	584	619	---	---	462	649	582	613
13	686	642	665	714	588	644	481	382	433	651	601	627
14	742	632	687	726	692	713	541	473	502	687	655	672
15	798	736	756	770	722	746	557	393	492	705	679	688
16	844	798	824	796	762	781	552	480	520	683	637	661
17	854	824	838	810	776	794	621	558	582	637	511	585
18	846	672	822	814	772	797	587	323	425	531	326	423
19	832	814	821	800	654	778	476	339	400	424	332	390
20	852	816	831	846	762	804	600	478	539	514	416	469
21	820	770	797	824	750	775	660	592	624	620	494	562
22	842	776	809	820	774	793	671	605	639	614	555	590
23	800	608	754	842	724	799	661	581	627	560	500	516
24	806	620	756	888	740	781	613	562	580	546	475	521
25	796	698	738	752	394	553	646	562	599	566	491	536
26	774	748	759	506	378	436	667	621	647	576	502	546
27	858	760	785	596	510	554	683	625	650	591	524	559
28	872	764	819	636	566	606	722	680	696	615	543	583
29	850	778	810	652	594	618	726	610	665	638	584	614
30	876	824	837	720	652	684	628	606	616	654	606	637
31	906	822	855	---	---	---	614	588	600	650	597	630
MONTH	906	454	737	906	378	720	726	323	591	706	312	575
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	657	605	640	440	362	400	789	701	752	738	719	730
2	662	615	644	453	442	449	795	762	782	748	721	735
3	672	626	651	463	439	453	800	754	783	733	519	709
4	711	665	690	445	431	438	808	764	791	444	234	297
5	719	694	709	493	435	462	802	742	775	458	274	366
6	710	630	669	529	493	509	784	712	756	605	460	532
7	615	585	597	525	448	485	763	688	735	670	579	615
8	654	575	622	---	---	475	768	708	743	696	463	633
9	658	609	640	---	---	465	762	686	736	660	614	639
10	685	612	651	---	---	455	777	718	759	650	609	638
11	682	653	671	452	443	449	---	---	759	673	621	641
12	691	644	671	534	452	475	---	---	759	685	620	653
13	674	635	661	542	442	469	---	---	759	696	591	643
14	668	628	650	473	452	463	---	---	759	714	415	647
15	680	631	651	507	476	490	---	---	759	684	261	578
16	633	575	616	532	493	511	---	---	759	420	247	324
17	633	579	610	529	391	457	---	---	759	577	428	512
18	640	605	625	504	395	446	862	770	808	628	544	588
19	643	581	618	522	492	512	903	854	867	672	585	627
20	619	360	453	572	518	531	862	792	828	673	612	645
21	464	350	399	571	541	558	788	724	752	676	593	633
22	496	439	461	588	555	576	846	754	804	705	637	654
23	553	493	534	628	565	587	835	774	804	667	610	650
24	571	459	517	594	566	582	859	790	822	667	346	555
25	504	438	468	659	577	627	811	768	788	483	338	415
26	498	429	461	677	638	653	773	743	755	577	447	511
27	447	403	426	700	615	664	753	712	730	620	548	586
28	473	371	440	712	638	687	724	687	708	639	141	545
29	---	---	---	713	654	692	769	719	744	251	199	240
30	---	---	---	709	632	673	738	714	724	417	250	333
31	---	---	---	745	646	702	---	---	---	427	415	421
MONTH	719	350	587	745	362	529	903	686	769	748	141	558

## TRINITY RIVER MAIN STEM

255

08049500 WEST FORK TRINITY RIVER AT GRAND PRAIRIE, TX--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	428	414	421	481	427	452	810	774	791	737	711	724
2	426	417	421	483	401	461	826	794	808	808	724	771
3	433	426	429	404	299	345	798	746	769	818	784	800
4	442	425	436	480	410	446	748	734	740	828	796	812
5	451	434	441	494	438	470	796	744	767	822	746	802
6	472	455	464	504	478	492	834	778	801	822	780	801
7	478	444	460	543	484	513	844	794	818	812	680	766
8	467	447	461	585	519	550	824	782	804	768	746	755
9	501	426	467	611	539	581	910	782	813	780	744	759
10	463	374	401	627	569	601	828	771	800	796	612	751
11	451	406	434	630	575	607	777	748	758	810	536	693
12	457	411	437	736	632	688	811	739	770	596	244	489
13	462	422	439	732	672	697	818	764	790	610	402	477
14	451	434	444	686	640	663	797	778	786	600	448	524
15	452	443	447	726	664	692	813	776	791	664	584	619
16	451	440	445	734	574	715	852	790	818	726	668	701
17	457	451	455	668	390	562	840	783	812	776	688	735
18	457	401	437	502	346	410	785	758	769	776	450	692
19	460	417	444	636	474	543	848	765	796	750	664	733
20	461	450	456	658	614	635	866	828	847	698	644	673
21	461	441	448	688	640	658	854	809	834	738	704	719
22	463	452	456	764	688	726	866	814	838	724	686	706
23	495	467	481	782	732	756	869	824	848	764	710	733
24	505	481	494	770	742	755	868	810	848	800	738	771
25	497	462	479	782	714	762	806	777	791	806	764	786
26	476	452	465	780	732	754	878	777	821	802	762	777
27	478	462	471	814	770	785	874	538	758	858	752	804
28	480	452	472	768	732	744	758	500	567	842	788	826
29	483	457	471	852	740	783	662	515	572	---	---	826
30	485	435	467	864	830	847	749	670	715	---	---	826
31	---	---	---	824	796	812	759	732	748	---	---	---
MONTH	505	374	451	864	299	629	910	500	780	858	244	728

PH (STANDARD UNITS), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	7.4	7.2	7.3	---	---	---	7.9	7.3	7.4	7.4	7.3	7.3
2	7.4	7.2	7.3	---	---	---	---	---	---	7.4	7.3	7.3
3	7.4	7.3	7.3	7.5	7.4	7.4	---	---	---	7.4	7.3	7.3
4	7.3	7.2	7.3	7.5	7.2	7.4	---	---	---	7.4	7.3	7.3
5	7.3	7.2	7.2	7.5	7.2	7.4	---	---	---	7.4	7.3	7.4
6	7.3	7.2	7.3	7.5	7.4	7.4	---	---	---	7.4	7.3	7.4
7	7.3	7.2	7.2	7.5	7.4	7.4	---	---	---	7.4	7.3	7.4
8	7.3	7.2	7.2	7.4	7.3	7.4	---	---	---	7.5	7.4	7.4
9	7.3	7.2	7.2	---	---	7.4	---	---	---	7.7	7.3	7.5
10	7.3	7.2	7.3	7.4	7.4	7.4	---	---	---	7.5	7.4	7.4
11	7.4	7.3	7.3	7.4	7.2	7.3	---	---	---	7.5	7.4	7.4
12	7.4	7.3	7.3	7.5	7.3	7.4	---	---	---	7.5	7.4	7.4
13	7.4	7.3	7.3	7.3	7.3	7.3	7.4	7.1	7.3	7.5	7.4	7.4
14	7.4	7.1	7.3	7.4	7.3	7.4	7.3	7.2	7.2	7.4	7.4	7.4
15	7.5	7.3	7.4	7.4	7.3	7.4	7.2	7.1	7.1	7.5	7.4	7.4
16	7.5	7.4	7.4	7.4	7.3	7.4	7.3	7.1	7.1	7.5	7.4	7.4
17	7.5	7.4	7.4	7.4	7.3	7.4	7.2	7.1	7.1	7.5	7.4	7.5
18	7.4	7.4	7.4	7.4	7.3	7.3	7.3	7.1	7.2	7.4	7.3	7.4
19	7.4	7.3	7.4	7.3	7.3	7.3	7.2	7.1	7.1	7.4	7.4	7.4
20	7.5	7.4	7.4	7.3	7.2	7.3	7.2	7.1	7.1	7.5	7.4	7.4
21	7.5	7.3	7.4	7.4	7.3	7.3	7.2	7.1	7.2	7.4	7.3	7.4
22	7.4	7.3	7.3	7.4	7.3	7.3	7.2	7.1	7.2	7.5	7.3	7.4
23	7.5	7.4	7.4	7.4	7.2	7.3	7.2	7.1	7.2	7.5	7.4	7.4
24	7.5	7.3	7.4	7.4	7.3	7.4	7.2	7.1	7.2	7.4	7.4	7.4
25	7.5	7.4	7.4	7.4	7.1	7.2	7.2	7.1	7.2	7.5	7.4	7.4
26	7.5	7.4	7.5	7.2	7.2	7.2	7.2	7.1	7.2	7.5	7.4	7.5
27	7.5	7.4	7.4	7.4	7.2	7.3	7.2	7.1	7.2	7.5	7.4	7.4
28	7.5	7.4	7.4	7.4	7.3	7.4	7.2	7.1	7.2	7.5	7.4	7.4
29	7.5	7.4	7.4	7.4	7.4	7.4	7.4	7.1	7.3	7.6	7.5	7.5
30	7.5	7.4	7.4	7.4	7.3	7.3	7.4	7.3	7.3	7.5	7.5	7.5
31	7.5	7.4	7.5	---	---	---	7.4	7.3	7.3	7.5	7.4	7.5
MONTH	7.5	7.1	7.4	7.5	7.1	7.3	7.9	7.1	7.2	7.7	7.3	7.4

## TRINITY RIVER MAIN STEM

08049500 WEST FORK TRINITY RIVER AT GRAND PRAIRIE, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	7.5	7.4	7.5	7.7	7.5	7.6	---	---	---	7.8	7.6	7.7
2	7.5	7.4	7.4	7.7	7.6	7.6	---	---	---	7.9	7.6	7.7
3	7.5	7.3	7.4	7.7	7.6	7.6	---	---	---	8.2	7.7	7.8
4	7.4	7.3	7.4	7.8	7.6	7.7	---	---	---	7.9	7.5	7.7
5	7.5	7.3	7.4	8.0	7.7	7.9	---	---	---	7.6	7.5	7.6
6	7.6	7.3	7.4	8.1	8.0	8.0	---	---	---	7.7	7.6	7.6
7	7.4	7.3	7.3	8.0	7.9	8.0	---	---	---	7.7	7.7	7.7
8	7.4	7.3	7.4	7.9	7.7	7.8	---	---	---	7.8	7.7	7.7
9	7.4	7.3	7.3	8.1	7.0	7.5	---	---	---	7.8	7.7	7.7
10	7.3	7.3	7.3	8.1	6.9	7.5	---	---	---	7.8	7.7	7.7
11	7.3	7.2	7.3	8.1	8.1	8.1	---	---	---	7.8	7.7	7.8
12	7.3	7.1	7.2	8.4	8.1	8.2	---	---	---	7.8	7.7	7.8
13	7.3	7.1	7.2	8.4	8.1	8.2	---	---	---	7.9	7.7	7.8
14	7.5	7.3	7.4	8.1	8.0	8.1	---	---	---	7.9	7.7	7.8
15	7.5	7.4	7.4	8.1	7.9	8.0	---	---	---	7.8	7.6	7.7
16	7.5	7.3	7.4	8.1	8.0	8.0	---	---	---	7.8	7.6	7.7
17	7.4	7.3	7.3	8.0	7.9	8.0	---	---	---	7.7	7.6	7.7
18	7.8	7.3	7.5	8.1	7.8	7.9	8.2	8.0	8.1	7.8	7.7	7.8
19	7.8	7.7	7.7	8.1	8.0	8.0	8.2	8.0	8.1	7.8	7.8	7.8
20	7.8	7.6	7.7	8.1	8.0	8.0	8.2	8.0	8.1	7.9	7.8	7.8
21	7.7	7.6	7.6	8.1	8.0	8.0	8.1	8.0	8.0	7.9	7.8	7.9
22	7.8	7.6	7.6	8.1	8.0	8.0	8.0	7.8	7.9	7.9	7.8	7.9
23	7.8	7.7	7.7	8.1	8.0	8.0	8.1	7.9	8.0	7.9	7.8	7.8
24	7.8	7.7	7.7	8.1	7.9	8.0	8.0	7.8	7.9	7.8	7.6	7.7
25	7.7	7.6	7.7	8.0	7.9	7.9	8.1	7.9	8.0	7.7	7.5	7.6
26	7.7	7.6	7.6	8.0	7.9	7.9	8.1	7.9	8.0	7.9	7.7	7.8
27	7.6	7.6	7.6	8.0	7.9	7.9	8.2	7.9	8.0	7.9	7.8	7.9
28	7.6	7.5	7.6	8.0	7.9	7.9	8.0	7.8	7.9	8.5	7.8	7.9
29	---	---	---	8.0	7.9	7.9	7.8	7.6	7.7	8.2	8.0	8.1
30	---	---	---	8.0	7.9	8.0	8.0	7.6	7.8	8.0	7.9	8.0
31	---	---	---	---	---	---	---	---	---	8.1	7.9	8.0
MONTH	7.8	7.1	7.5	8.4	6.9	7.9	8.2	7.6	8.0	8.5	7.5	7.8
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	8.1	8.0	8.1	7.9	7.7	7.8	8.0	7.7	7.9	7.8	7.6	7.7
2	8.1	8.1	8.1	7.9	7.8	7.9	8.0	7.7	7.9	7.8	7.6	7.6
3	8.2	8.1	8.1	7.9	7.7	7.8	8.0	7.7	7.9	7.6	7.4	7.5
4	8.2	8.1	8.2	7.9	7.7	7.8	8.0	7.7	7.9	7.6	7.4	7.5
5	8.1	8.1	8.1	8.0	7.8	7.9	8.0	7.7	7.8	7.8	7.5	7.6
6	8.1	8.0	8.1	8.1	7.9	8.0	8.0	7.7	7.8	7.7	7.5	7.6
7	8.1	8.0	8.1	8.0	7.9	7.9	7.9	7.7	7.8	7.8	7.5	7.6
8	8.1	8.0	8.1	7.9	7.9	7.9	8.0	7.7	7.8	7.8	7.5	7.6
9	8.1	7.9	8.0	7.9	7.9	7.9	8.0	7.7	7.9	7.7	7.5	7.6
10	8.0	7.8	7.8	7.9	7.8	7.9	7.9	7.7	7.8	7.7	7.5	7.6
11	7.9	7.8	7.8	8.0	7.9	7.9	7.9	7.7	7.8	7.7	7.4	7.6
12	7.9	7.8	7.8	8.0	7.9	7.9	7.8	7.6	7.7	8.1	7.5	7.7
13	7.9	7.8	7.9	8.0	7.8	7.9	7.9	7.6	7.8	7.8	7.5	7.7
14	8.1	7.9	8.0	8.0	7.8	7.9	7.9	7.7	7.8	7.7	7.6	7.6
15	8.1	8.0	8.0	8.1	7.8	7.9	8.0	7.7	7.8	7.7	7.6	7.6
16	8.1	7.9	8.0	8.0	7.7	7.9	8.0	7.7	7.8	7.7	7.5	7.6
17	8.0	8.0	8.0	7.8	7.6	7.7	8.0	7.7	7.9	7.8	7.5	7.7
18	8.0	7.8	8.0	7.7	7.6	7.7	8.0	7.7	7.8	7.7	7.5	7.6
19	8.0	7.9	7.9	7.8	7.6	7.7	7.9	7.6	7.8	7.8	7.5	7.6
20	8.0	7.9	8.0	7.9	7.6	7.7	8.0	7.7	7.9	8.1	7.6	7.8
21	8.1	7.9	8.0	7.9	7.7	7.8	8.0	7.8	7.9	8.0	7.7	7.8
22	8.1	8.0	8.0	7.8	7.6	7.8	8.0	7.7	7.8	8.0	7.6	7.8
23	8.0	7.8	7.9	7.9	7.7	7.8	7.9	7.7	7.8	8.0	7.6	7.8
24	7.9	7.8	7.9	7.9	7.7	7.8	7.9	7.7	7.8	8.2	7.7	7.9
25	7.9	7.8	7.9	8.0	7.7	7.8	7.9	7.6	7.7	8.1	7.8	8.0
26	8.0	7.9	7.9	8.0	7.7	7.8	7.8	7.6	7.7	8.0	7.7	7.9
27	8.0	7.9	7.9	8.1	7.7	7.9	7.8	7.4	7.6	8.0	7.7	7.9
28	8.0	7.9	7.9	8.0	7.7	7.8	7.5	7.4	7.5	8.0	7.8	7.9
29	8.0	7.9	7.9	8.0	7.7	7.8	7.8	7.4	7.6	---	---	---
30	7.9	7.8	7.9	8.0	7.7	7.9	7.8	7.6	7.7	---	---	---
31	---	---	---	8.0	7.7	7.9	7.8	7.6	7.7	---	---	---
MONTH	8.2	7.8	8.0	8.1	7.6	7.8	8.0	7.4	7.8	8.2	7.4	7.7

## TRINITY RIVER MAIN STEM

257

08049500 WEST FORK TRINITY RIVER AT GRAND PRAIRIE, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	29.0	27.5	28.0	---	---	---	---	---	---	14.0	13.5	14.0
2	29.0	28.0	28.5	---	---	---	---	---	---	13.5	13.0	13.5
3	28.5	27.5	28.0	---	---	---	---	---	---	14.0	13.0	13.5
4	28.0	26.5	27.5	22.5	20.5	22.0	---	---	---	13.5	13.0	13.5
5	26.5	25.0	26.0	22.0	19.0	19.5	---	---	---	13.5	12.5	13.0
6	25.0	23.0	24.0	19.5	18.0	19.0	---	---	---	15.0	13.0	14.0
7	23.0	22.5	23.0	20.5	19.5	20.0	---	---	---	15.0	14.5	15.0
8	24.0	22.5	23.0	22.0	20.5	21.0	---	---	---	15.0	14.0	14.5
9	26.0	24.0	25.0	---	---	---	---	---	---	14.0	10.0	11.5
10	25.5	24.5	25.0	20.5	17.0	19.0	---	---	---	11.0	10.0	10.5
11	25.5	24.5	25.0	18.0	16.0	17.5	---	---	---	12.0	10.0	11.0
12	25.0	21.5	23.0	15.5	14.5	15.0	---	---	---	13.0	10.5	12.0
13	21.5	20.5	21.0	14.5	13.5	13.5	10.5	9.0	9.5	13.5	12.0	13.0
14	22.0	20.5	21.0	14.5	14.0	14.0	12.5	10.5	11.5	15.0	13.5	14.0
15	22.5	20.5	21.5	17.0	14.5	15.5	14.0	11.5	12.5	15.5	15.0	15.0
16	23.0	21.0	22.0	19.5	17.0	18.0	14.0	11.5	13.0	15.5	13.5	14.5
17	23.5	21.5	22.5	20.5	18.5	19.5	15.0	14.0	14.5	13.5	11.0	12.5
18	24.0	22.0	23.0	20.5	19.5	20.0	15.0	11.0	13.0	11.0	7.0	9.0
19	24.0	22.5	23.5	19.5	18.0	19.0	12.5	11.0	12.0	9.5	7.5	8.5
20	24.0	22.5	23.0	19.0	18.0	18.5	14.0	12.5	13.0	11.0	8.5	10.0
21	23.5	22.5	23.0	18.5	17.5	18.0	14.5	13.5	14.0	11.5	9.5	10.5
22	23.0	22.0	22.5	19.5	18.0	19.0	14.5	13.5	14.0	11.5	10.0	10.5
23	23.0	22.0	22.5	19.5	17.0	18.5	14.0	12.5	13.5	10.5	9.0	9.5
24	23.5	22.0	23.0	17.0	16.0	16.5	13.5	12.0	12.5	11.5	9.5	10.5
25	22.5	21.5	22.0	16.5	12.0	14.0	14.5	12.5	13.5	12.0	9.5	11.0
26	22.5	20.5	21.5	14.0	12.0	13.0	15.0	14.0	14.5	12.0	9.5	11.0
27	22.5	20.5	21.5	15.0	13.5	14.5	14.5	13.5	14.0	13.0	10.0	11.5
28	23.0	21.0	22.0	15.5	14.5	15.0	14.5	14.0	14.0	14.5	11.5	13.0
29	23.5	21.5	22.5	16.0	14.0	15.0	14.5	13.5	14.0	15.5	13.5	14.5
30	23.5	22.0	23.0	17.0	15.0	16.0	14.5	13.5	14.0	15.0	13.5	14.5
31	24.0	22.0	23.0	---	---	---	14.5	13.5	14.0	15.0	13.5	14.5
MONTH	29.0	20.5	23.5	22.5	12.0	17.5	15.0	9.0	13.0	15.5	7.0	12.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	16.0	14.0	15.0	14.5	11.5	12.5	17.5	13.5	15.5	25.0	23.5	24.0
2	16.5	14.5	16.0	12.5	11.5	12.0	17.0	15.0	15.5	26.0	23.0	24.5
3	17.0	15.5	16.5	13.0	12.0	12.5	17.0	14.0	15.5	26.0	24.0	25.0
4	18.0	16.0	17.0	12.5	12.0	12.5	18.0	15.0	16.5	22.0	20.0	21.5
5	17.5	16.5	17.0	19.5	12.0	15.5	16.5	15.5	16.0	23.5	21.0	22.0
6	16.0	14.0	14.5	23.0	20.0	21.5	17.5	15.5	16.5	25.0	23.0	24.0
7	14.5	13.0	14.0	23.0	15.0	19.0	18.0	16.0	17.0	25.0	23.5	24.0
8	15.0	13.0	14.0	20.5	15.0	17.0	19.0	16.0	17.5	25.0	23.0	24.0
9	15.0	13.0	14.0	20.0	15.5	18.0	20.0	17.0	19.0	25.5	23.0	24.5
10	15.5	13.0	14.5	15.0	10.5	13.5	22.0	18.5	20.0	26.0	23.5	25.0
11	16.5	14.0	15.5	15.5	14.5	15.0	---	---	---	26.5	24.0	25.5
12	17.5	14.5	16.0	24.0	15.0	17.5	---	---	---	26.5	24.5	25.5
13	17.5	15.5	16.5	24.0	13.5	15.5	---	---	---	27.0	24.5	26.0
14	17.0	16.0	16.5	15.0	13.5	14.0	---	---	---	27.5	25.5	26.5
15	16.5	15.5	16.0	16.0	14.5	15.0	---	---	---	26.0	23.0	25.5
16	15.0	13.0	14.5	16.5	16.0	16.5	---	---	---	24.5	22.5	23.5
17	13.0	12.0	12.5	19.5	16.0	17.0	---	---	---	26.0	23.5	25.0
18	13.0	11.5	12.0	16.5	16.0	16.5	24.5	21.5	23.0	27.0	25.0	26.0
19	12.5	11.5	12.0	17.0	15.5	16.0	25.0	22.5	24.0	26.5	26.0	26.5
20	11.5	8.5	9.5	17.5	16.5	17.0	25.0	23.0	24.0	27.0	25.0	26.0
21	10.5	8.5	9.5	18.5	17.0	18.0	24.5	21.5	23.0	27.5	26.0	26.5
22	12.0	10.0	11.0	19.5	18.5	19.0	23.0	20.5	22.0	28.5	26.0	27.5
23	12.5	11.0	11.5	19.0	17.5	18.5	24.0	20.5	22.0	28.0	27.0	27.5
24	12.0	11.5	11.5	18.0	16.5	17.0	24.5	21.5	23.0	27.5	25.0	26.5
25	12.0	11.0	11.5	17.0	16.0	16.5	25.0	22.0	23.5	27.0	25.0	26.0
26	12.0	12.0	12.0	17.0	16.0	16.5	25.0	22.0	23.5	27.5	25.5	26.5
27	13.0	12.0	12.5	18.0	15.0	16.5	25.5	22.5	24.0	27.0	25.5	26.5
28	14.0	12.5	13.0	18.5	16.5	17.5	25.5	22.5	24.5	26.0	20.5	25.0
29	---	---	---	16.5	14.0	15.5	26.0	23.5	24.5	22.5	21.0	22.0
30	---	---	---	15.0	12.5	13.5	26.0	23.5	25.0	24.5	21.5	23.0
31	---	---	---	15.0	12.5	14.0	---	---	---	25.5	24.5	25.0
MONTH	18.0	8.5	14.0	24.0	10.5	16.0	26.0	13.5	20.5	28.5	20.0	25.0

## TRINITY RIVER MAIN STEM

08049500 WEST FORK TRINITY RIVER AT GRAND PRAIRIE, TX--Continued

## TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	25.0	24.5	25.0	28.5	26.0	27.0	32.5	30.0	31.5	29.5	27.0	28.0
2	26.0	25.0	25.5	27.5	26.0	27.0	32.5	30.0	31.5	29.5	27.0	28.0
3	26.0	26.0	26.0	27.0	24.5	26.0	32.5	30.5	31.5	29.5	27.0	28.5
4	26.5	24.5	26.0	29.0	26.5	27.5	32.0	30.0	31.0	29.5	27.5	29.0
5	25.5	24.5	25.0	29.5	27.5	28.5	32.5	30.5	31.5	30.5	28.0	29.0
6	26.0	24.5	25.0	29.5	28.0	28.5	33.0	30.5	32.0	30.0	28.0	29.0
7	25.5	24.5	25.0	30.0	28.0	29.0	32.5	30.5	31.5	29.0	27.5	28.5
8	25.5	25.0	25.0	30.0	28.0	29.0	32.5	30.5	31.5	29.5	27.0	28.0
9	25.0	24.5	24.5	30.0	28.5	29.0	34.5	30.5	32.0	29.5	27.5	28.5
10	25.0	24.0	24.5	29.5	28.5	29.0	32.5	30.5	31.5	29.0	27.0	28.5
11	25.0	24.5	25.0	30.0	28.0	29.0	32.5	30.5	31.5	29.0	28.0	28.5
12	26.0	25.0	25.5	30.5	28.0	29.0	32.5	30.5	31.5	27.5	23.0	26.5
13	27.0	25.0	26.0	30.0	28.5	29.0	32.0	30.0	31.5	28.0	26.0	27.0
14	29.0	27.0	28.0	30.0	27.5	28.5	32.0	30.0	31.0	29.5	27.0	28.0
15	28.5	28.0	28.0	30.0	27.5	28.5	32.5	30.0	31.0	29.0	28.0	28.5
16	29.0	27.5	28.0	30.0	28.0	29.0	32.5	30.0	31.5	30.0	27.5	29.0
17	30.0	29.0	29.5	29.0	26.5	28.0	32.5	30.5	31.5	30.5	28.0	29.5
18	29.5	28.5	29.0	29.5	27.0	28.5	32.5	30.5	31.5	30.0	27.5	28.5
19	30.5	28.5	29.5	31.0	28.5	29.5	32.5	30.0	31.0	28.0	26.5	27.5
20	31.0	29.5	30.0	31.5	29.0	30.0	32.0	30.0	31.0	28.0	26.0	27.0
21	31.0	28.0	29.0	31.0	29.0	30.0	32.5	30.0	31.0	28.0	26.0	27.0
22	29.0	28.5	28.5	31.5	29.0	30.5	33.5	30.5	31.5	27.5	26.0	26.5
23	29.5	28.5	28.5	31.0	29.5	30.0	32.5	30.5	31.5	27.0	24.5	26.0
24	29.5	28.5	29.0	31.5	29.0	30.0	32.0	30.5	31.5	27.5	25.0	26.0
25	29.0	28.5	29.0	31.5	29.5	30.5	33.5	30.0	31.0	27.5	25.5	26.5
26	29.0	28.0	28.5	32.0	29.0	30.5	31.5	30.0	30.5	27.5	25.5	26.5
27	28.5	27.5	28.0	31.5	29.5	30.5	31.0	28.0	29.5	28.0	25.5	26.5
28	28.5	27.0	27.5	31.5	29.5	30.5	28.5	26.5	27.5	28.0	26.5	27.0
29	27.5	27.0	27.0	32.0	29.5	31.0	28.0	26.0	27.0	---	---	---
30	27.0	26.0	26.5	32.0	30.0	31.0	28.5	27.5	28.0	---	---	---
31	---	---	---	32.5	30.0	31.0	28.5	27.5	28.0	---	---	---
MONTH	31.0	24.0	27.0	32.5	24.5	29.0	34.5	26.0	31.0	30.5	23.0	28.0

## OXYGEN, DISSOLVED (DO), MG/L, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	9.0	4.4	5.9	---	---	---	---	---	---	---	---	---
2	8.3	4.5	6.8	---	---	---	---	---	---	---	---	---
3	9.3	8.4	8.9	---	---	---	---	---	---	---	---	---
4	9.4	4.7	6.8	11.6	6.9	9.2	---	---	---	---	---	---
5	6.0	4.7	5.3	7.2	6.8	7.0	---	---	---	---	---	---
6	6.5	5.7	6.2	12.8	7.2	8.8	---	---	---	---	---	---
7	6.8	6.0	6.5	12.8	7.6	9.9	---	---	---	---	---	---
8	6.8	6.5	6.6	13.7	11.9	12.8	---	---	---	---	---	---
9	6.6	6.2	6.5	---	---	---	---	---	---	---	---	---
10	10.8	6.0	6.9	14.1	8.4	11.8	---	---	---	---	---	---
11	10.9	6.3	8.0	8.8	7.8	8.3	---	---	---	---	---	---
12	11.6	6.3	8.2	9.0	8.7	8.9	---	---	---	---	---	---
13	11.8	6.7	8.9	9.3	9.0	9.2	10.5	9.9	10.2	---	---	---
14	10.6	6.4	8.0	14.4	8.8	10.4	10.1	9.7	9.9	---	---	---
15	11.3	6.7	8.0	13.7	8.4	10.7	10.3	9.4	9.9	---	---	---
16	10.5	7.2	9.1	12.6	7.3	10.3	10.2	9.3	9.7	---	---	---
17	10.8	9.0	9.9	12.5	11.1	11.8	9.6	9.3	9.4	---	---	---
18	10.9	9.4	10.4	11.7	6.6	10.2	10.4	9.1	9.8	---	---	---
19	11.5	7.5	9.7	9.7	7.5	8.6	10.2	9.8	10.1	---	---	---
20	11.1	10.2	10.7	8.8	3.9	6.7	10.1	9.9	10.0	---	---	---
21	11.3	10.7	11.0	7.3	3.9	6.3	10.1	9.9	10.0	---	---	---
22	11.2	10.9	11.1	6.9	4.2	6.5	10.4	9.9	10.1	10.4	9.7	10.1
23	11.2	6.3	8.9	6.8	3.1	4.5	10.9	10.4	10.6	10.7	9.9	10.5
24	7.1	6.2	6.6	7.2	6.5	6.9	11.0	10.5	10.7	11.1	10.7	10.9
25	11.5	6.3	9.8	7.1	3.2	4.1	10.7	10.4	10.5	11.5	10.7	11.0
26	10.9	6.4	9.0	4.2	3.3	3.8	10.7	10.2	10.4	11.6	11.0	11.3
27	11.5	6.6	10.1	7.3	4.2	5.0	10.6	10.2	10.4	11.9	10.8	11.3
28	11.8	11.5	11.6	7.5	4.3	6.4	10.2	9.3	9.8	11.4	10.6	11.0
29	11.7	11.3	11.5	8.3	7.7	8.0	9.2	8.4	8.9	11.0	10.3	10.7
30	11.5	11.1	11.4	7.8	7.3	7.7	---	---	---	10.9	10.1	10.5
31	11.6	11.2	11.4	---	---	---	---	---	---	10.8	9.9	10.4
MONTH	11.8	4.4	8.7	14.4	3.1	8.2	11.0	8.4	10.0	11.9	9.7	10.8

## TRINITY RIVER MAIN STEM

259

08049500 WEST FORK TRINITY RIVER AT GRAND PRAIRIE, TX--Continued

OXYGEN, DISSOLVED (DO), MG/L, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	10.7	9.8	10.3	9.4	8.4	8.9	9.2	8.5	8.9	7.7	6.2	6.9
2	10.5	9.7	10.1	9.8	9.2	9.4	9.1	8.4	8.8	8.0	6.4	7.0
3	10.3	9.5	9.8	10.1	9.6	9.8	8.9	8.5	8.7	7.4	6.1	6.6
4	9.6	8.8	9.2	10.2	9.8	10.0	---	---	---	7.5	4.4	6.6
5	9.0	8.4	8.7	10.2	9.0	9.6	---	---	---	7.0	5.7	6.4
6	8.6	8.3	8.5	9.0	8.3	8.7	---	---	---	7.3	7.0	7.1
7	8.7	8.3	8.5	10.0	8.3	9.2	---	---	---	7.4	7.0	7.2
8	8.7	8.1	8.5	10.0	3.2	7.8	---	---	---	7.3	6.8	7.2
9	8.4	7.9	8.2	6.3	4.4	5.5	---	---	---	7.3	6.9	7.1
10	8.2	7.8	8.0	9.6	5.4	7.6	---	---	---	7.0	6.6	6.8
11	8.1	7.8	8.0	9.4	9.3	9.4	---	---	---	6.7	6.3	6.5
12	8.2	7.9	8.1	9.3	7.7	8.9	---	---	---	6.6	6.2	6.4
13	8.3	8.1	8.2	9.7	7.6	9.3	---	---	---	6.8	6.0	6.3
14	8.6	8.4	8.4	9.8	8.9	9.3	---	---	---	6.5	5.8	6.1
15	8.7	8.5	8.6	8.9	8.3	8.6	---	---	---	6.4	4.7	5.9
16	9.0	8.5	8.7	8.3	8.1	8.2	---	---	---	6.8	5.9	6.2
17	9.4	9.0	9.2	8.4	7.9	8.2	12.0	8.7	10.5	6.9	6.5	6.8
18	9.6	8.9	9.3	8.3	7.4	7.9	9.0	7.7	8.3	7.1	6.9	7.0
19	9.3	9.0	9.1	8.6	8.1	8.4	8.2	7.1	7.7	7.0	6.8	6.9
20	10.8	9.1	10.0	8.5	7.9	8.3	8.4	7.3	7.8	7.1	6.7	6.9
21	10.0	8.8	9.3	8.2	7.6	7.9	7.8	7.3	7.6	7.2	6.8	7.0
22	10.0	9.4	9.8	7.7	7.2	7.5	7.9	7.3	7.6	7.4	6.9	7.1
23	9.7	9.3	9.5	7.5	7.3	7.4	8.3	7.5	7.8	7.5	6.7	7.1
24	9.7	9.2	9.6	7.7	7.4	7.6	8.3	7.6	7.9	7.0	5.9	6.6
25	9.4	9.1	9.3	7.7	7.5	7.6	8.4	7.7	8.1	6.3	4.5	5.7
26	9.5	8.9	9.4	8.0	7.5	7.8	8.6	7.9	8.3	6.8	6.4	6.6
27	9.0	8.6	8.8	8.0	7.6	7.8	8.8	8.1	8.4	7.1	6.5	6.7
28	8.7	8.1	8.5	7.9	7.2	7.6	9.5	7.8	8.6	8.3	6.3	6.8
29	---	---	---	7.8	7.3	7.6	8.8	6.4	7.4	7.9	7.2	7.6
30	---	---	---	8.5	7.9	8.3	9.9	6.3	7.8	7.9	6.8	7.2
31	---	---	---	9.5	8.1	8.8	---	---	---	6.9	6.7	6.8
MONTH	10.8	7.8	9.0	10.2	3.2	8.4	12.0	6.3	8.3	8.3	4.4	6.8
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	7.2	7.0	7.1	7.1	6.6	6.9	13.5	6.2	8.1	6.7	6.1	6.3
2	7.3	7.2	7.2	7.2	6.6	7.1	13.5	6.2	8.1	6.3	5.7	6.0
3	7.5	7.4	7.4	7.2	5.4	6.2	12.5	6.0	7.5	8.2	5.3	6.0
4	7.6	7.2	7.5	7.3	6.5	6.9	10.9	6.5	7.7	8.4	5.2	6.0
5	7.4	7.1	7.2	7.3	7.2	7.2	13.5	6.4	8.0	9.4	5.2	6.8
6	7.2	6.8	7.0	7.3	7.1	7.2	13.7	6.4	8.2	9.5	5.6	7.3
7	7.1	6.9	7.0	7.2	6.7	7.0	14.0	6.3	8.0	9.9	5.7	6.7
8	7.1	6.9	7.0	7.3	6.7	7.0	13.9	6.4	8.6	10.2	6.3	7.5
9	7.1	6.8	7.0	7.3	6.6	6.9	12.4	6.5	8.2	10.1	6.5	7.5
10	6.9	6.4	6.5	6.9	6.4	6.7	8.5	6.6	7.4	7.6	6.5	7.0
11	6.8	6.5	6.7	6.8	6.3	6.6	8.6	5.9	6.9	6.8	5.7	6.3
12	6.8	6.5	6.5	6.8	6.2	6.4	7.1	5.8	6.4	8.2	5.6	6.5
13	6.8	6.3	6.5	7.2	6.2	6.6	7.2	5.7	6.2	6.6	5.8	6.4
14	7.1	6.8	7.0	7.3	5.8	6.5	7.1	5.8	6.4	7.1	5.7	6.4
15	7.1	6.9	7.0	7.4	5.7	6.5	9.1	5.8	6.8	7.6	6.4	6.9
16	7.1	7.0	7.1	7.2	5.1	6.1	9.3	5.7	7.0	7.2	6.4	6.8
17	7.3	6.7	7.0	5.5	4.6	5.0	9.7	5.9	7.2	7.4	6.1	6.7
18	7.4	6.8	7.2	4.7	3.7	4.1	9.6	6.1	7.3	7.0	6.2	6.5
19	7.3	6.8	7.0	4.9	4.3	4.6	9.6	6.1	7.3	7.8	6.6	7.1
20	7.0	6.8	6.9	5.9	4.4	4.9	9.8	6.1	7.5	11.5	7.0	8.4
21	7.0	6.6	6.8	5.5	4.7	5.1	9.7	5.9	7.3	12.0	7.3	8.7
22	7.0	6.6	6.7	6.5	4.8	5.6	10.0	6.0	7.5	12.2	7.6	8.9
23	6.8	6.5	6.6	6.3	5.3	5.8	10.0	6.1	7.5	12.7	8.1	9.5
24	7.0	6.8	6.9	6.8	5.3	6.1	9.6	6.0	7.2	12.2	8.4	9.8
25	7.0	6.8	6.9	7.8	5.4	6.3	10.0	6.1	7.5	9.9	8.2	9.0
26	7.1	6.8	7.0	12.1	5.7	7.2	9.9	6.1	7.3	13.0	7.8	9.8
27	7.3	7.0	7.1	12.4	5.8	7.3	6.8	3.5	5.9	12.8	7.9	10.0
28	7.4	7.1	7.3	8.5	6.3	7.2	5.5	2.7	3.8	11.9	8.2	9.6
29	7.6	7.3	7.5	13.2	6.2	7.4	6.0	3.1	4.8	---	---	---
30	7.5	6.3	7.2	13.4	6.1	7.5	8.8	5.8	6.3	---	---	---
31	---	---	---	8.7	6.1	7.3	6.4	6.0	6.1	---	---	---
MONTH	7.6	6.3	7.0	13.4	3.7	6.4	14.0	2.7	7.1	13.0	5.2	7.5

08049565 TRIGG BRANCH AT DALLAS-FORT WORTH AIRPORT NEAR EULESS, TX

LOCATION.--Lat 32°52'02", long 97°02'20", Tarrant County, Hydrologic Unit 12030102, at left end of upstream headwall of box culvert under International Parkway Road, near south toll booth entrance plaza to Dallas-Fort Worth Airport, 2.0 mi upstream from Bear Creek, and 2.2 mi north of intersection of Airport Freeway (State Highway 183) and International Parkway.

DRAINAGE AREA.--1.73 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1982 to September 1987 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 516.20 ft above National Geodetic Vertical Datum of 1929.

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

AVERAGE DISCHARGE.--5 years (water years 1983-87), 1.64 ft<sup>3</sup>/s (1,190 acre-ft/yr).EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 400 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
May 3	2315	*246	*3.45				
Minimum discharge, 0.03 ft <sup>3</sup> /s Oct. 13-14 and May 25.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.73	.45	.17	.55	1.4	2.2	1.1	.78	.10	1.2	.66	.44
2	.82	.63	.12	.55	1.0	1.6	1.2	.59	.41	2.8	.61	.74
3	.95	.58	.12	1.5	1.1	.80	1.3	7.3	.43	.42	.36	.74
4	6.2	8.0	.12	.75	1.2	.37	1.7	12	.23	.29	.47	.98
5	3.5	.52	.21	.89	1.6	.35	1.9	.28	.12	.41	.53	.83
6	3.6	.28	.70	.95	5.5	.49	2.1	.29	.16	.45	.37	1.0
7	1.3	.41	3.1	.99	.20	.66	2.1	.68	.23	.45	.46	1.0
8	2.3	.30	.57	1.0	.07	.79	2.2	.80	.87	.74	.42	.87
9	.10	.40	.64	13	.16	.93	2.3	.86	1.6	.66	.60	.97
10	.11	5.8	.37	.63	.24	.92	2.1	.93	.80	.64	.55	1.8
11	.11	2.3	2.2	.44	.40	1.0	1.9	1.1	.46	.57	.70	.17
12	.19	.36	7.3	.33	.41	1.2	1.8	1.1	.36	.80	.76	2.8
13	.05	.15	.67	.39	.58	1.3	1.7	.72	1.7	.80	.57	.34
14	.05	.12	2.9	.45	1.3	1.3	1.4	1.2	.31	.81	.65	.36
15	.31	.17	3.3	.48	.67	1.4	1.4	.33	.38	1.2	.58	.72
16	.06	.17	.46	.45	.07	3.3	1.5	.16	.35	2.2	.64	.41
17	.12	.23	4.8	4.6	.07	19	1.6	.27	.40	1.7	.50	.56
18	.08	.28	16	5.0	.10	.26	1.7	.08	.49	.48	.61	1.1
19	.30	5.8	1.1	.62	.17	.38	1.5	.12	.43	.36	.77	.48
20	.18	.43	.56	.46	12	.55	1.3	.41	1.5	.48	.66	.61
21	.28	.17	.44	.45	.44	.63	1.3	.09	.30	.71	.80	.65
22	.76	3.7	.55	.45	.07	.67	1.2	.22	e.28	.91	.55	.88
23	2.5	.21	1.4	.45	.07	1.2	1.2	.17	e.28	1.2	.67	.93
24	.48	.12	.35	.49	6.6	.67	1.2	2.9	e.28	1.1	.54	.88
25	.09	16	.36	.41	1.7	.77	1.1	.06	e.28	1.2	.53	.50
26	.20	.51	.42	.51	19	.92	1.1	.07	e.28	1.3	.53	.54
27	.17	.17	.45	.60	3.3	1.1	1.0	.21	e.28	1.2	2.0	.50
28	.17	.12	.45	.67	18	1.5	.89	9.7	e.36	1.2	.36	.52
29	.35	.17	.45	.78	---	1.0	.78	2.8	e.55	1.4	.27	.35
30	.37	.17	.46	.82	---	.91	.66	.48	.90	1.0	.53	.40
31	.58	---	.49	.82	---	.89	---	.19	---	.81	.31	---
TOTAL	27.01	48.72	51.23	40.48	77.42	49.06	44.23	46.89	15.12	29.49	18.56	23.07
MEAN	.87	1.62	1.65	1.31	2.76	1.58	1.47	1.51	.50	.95	.60	.77
MAX	6.2	16	16	13	19	19	2.3	12	1.7	2.8	2.0	2.8
MIN	.05	.12	.12	.33	.07	.26	.66	.06	.10	.29	.27	.17
AC-FT	54	97	102	80	154	97	88	93	30	58	37	46

CAL YR 1986 TOTAL 882.25 MEAN 2.42 MAX 112 MIN .00 AC-FT 1750  
WTR YR 1987 TOTAL 471.27 MEAN 1.29 MAX 19 MIN .05 AC-FT 935

e Estimated.

## TRINITY RIVER BASIN

261

08049580 MOUNTAIN CREEK NEAR VENUS, TX

LOCATION.--Lat 32°29'27", long 97°07'22", Johnson County, Hydrologic Unit 12030102, on right bank 20 ft from Farm Road and at right end of bridge on Farm Road 157, 3 mi upstream from Grassy Creek, 3.2 mi upstream from Reece Branch, 3.6 mi downstream from abandoned Missouri Pacific Railroad bridge, and 3.9 mi north of intersection of U.S. Highway 67, and Farm Road 157 in Venus.

PERIOD OF RECORD.--Chemical and biochemical analyses: December 1985 to current year.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	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 (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03
FEB 03...	1115	0.68	1050	7.50	11.5	28	7.4	10.0	94	1.2	450	280
MAR 19...	1125	2.9	1230	7.80	14.5	55	12	9.2	93	1.7	500	360
MAY 04...	1535	0.52	1780	7.40	22.0	16	2.6	4.4	52	1.8	730	520
JUN 25...	1730	0.34	1120	8.00	30.0	34	1.8	9.2	124	2.7	480	290

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 WH WAT TOTAL 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)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)
FEB 03...	160	12	57	1	4.6	174	360	32	0.50	7.6	740
MAR 19...	180	13	72	1	5.3	144	450	52	0.50	9.5	870
MAY 04...	250	25	110	2	4.9	212	600	79	0.60	3.5	1200
JUN 25...	170	13	60	1	6.6	190	350	46	0.30	18	780

DATE	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDE (MG/L)	SOLIDS, 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- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS- SOLVED (UG/L AS AS)
FEB 03...	10	<1	0.280	0.020	0.300	0.110	0.49	0.60	0.050	7.5	2
MAR 19...	30	15	0.380	0.020	0.400	0.090	1.7	1.8	0.060	11	--
MAY 04...	1	1	--	0.010	<0.100	0.160	1.0	1.2	0.030	8.6	4
JUN 25...	7	5	--	<0.010	<0.100	0.190	1.3	1.5	0.070	11	4

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 03...	61	1	<10	2	32	<5	340	<0.1	1	<1	14
MAR 19...	--	--	--	--	--	--	--	--	--	--	--
MAY 04...	68	<1	<10	3	23	<5	510	0.1	<1	3	6
JUN 25...	90	<1	<10	5	6	<5	5	<0.1	<1	<1	11

## TRINITY RIVER BASIN

08049700 WALNUT CREEK NEAR MANSFIELD, TX

LOCATION.--Lat 32°34'51", long 97°06'06", Tarrant County, Hydrologic Unit 12030102, on right bank at downstream side of bridge on county road, 2.6 mi northeast of Mansfield, 3.3 mi downstream from Texas and New Orleans Railroad Co. bridge, and 10.2 mi upstream from mouth.

DRAINAGE AREA.--62.8 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 531.08 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharge. Records fair. Several observations of water temperature were made during the year. Gage-height telemeter at station.

AVERAGE DISCHARGE.--27 years, 14.8 ft<sup>3</sup>/s (3.20 in/yr), 10,720 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,570 ft<sup>3</sup>/s May 3, 1979 (gage height, 29.7 ft, from floodmark); no flow at times in 1960-74, 1976-87.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 700 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
May 29	0930	1,520	16.97	No other peak greater than base discharge.			

Minimum discharge, no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.10	.18	.30	.61	30	4.7	1.4	13	.97	.00	.00
2	.00	.09	.18	.29	.64	11	4.4	1.5	10	.24	.00	.00
3	.00	.09	.20	.28	.58	8.0	4.0	44	9.6	8.6	.00	.00
4	.00	.87	.21	.30	.60	6.6	4.3	16	9.1	.76	.00	.00
5	.00	.17	.22	.29	.89	6.1	3.8	7.4	7.7	.18	.00	.00
6	.57	.09	.22	.28	2.6	6.1	4.0	2.5	6.6	.10	.08	.00
7	.05	.09	.33	.28	1.6	5.9	3.8	1.4	6.0	.09	.02	.00
8	.02	.09	.31	.28	1.1	6.0	3.6	1.3	6.4	.08	.00	.00
9	.02	.09	.30	15	.87	5.7	3.5	1.2	41	.08	.00	.00
10	.01	3.9	.24	3.1	.81	5.2	3.6	2.5	72	.08	.00	.12
11	.01	1.0	.24	1.2	.82	4.8	3.4	1.6	77	.09	.00	4.4
12	.07	.14	1.0	.64	.78	4.8	3.4	1.4	86	.08	.00	.20
13	.03	.12	.70	.49	.82	5.0	3.5	1.4	219	.08	.00	1.8
14	.03	.12	1.4	.44	.91	4.9	3.0	1.5	42	.08	.00	.29
15	.02	.12	8.0	.41	2.1	5.2	2.6	80	13	.09	.00	.15
16	.02	.16	.98	.39	1.1	5.5	2.4	11	8.6	.10	.00	.04
17	.02	.13	.55	3.1	.98	80	2.1	2.0	6.7	.42	.00	.00
18	.03	.13	56	41	.98	24	2.0	.73	17	.06	.00	.00
19	.02	.14	8.0	7.7	.99	11	2.0	.37	7.3	.05	.00	.00
20	.03	.16	1.4	2.3	119	8.6	1.9	.32	7.1	.04	.00	.00
21	.02	.13	.67	1.3	35	7.7	1.8	.19	5.6	.04	.00	.00
22	.03	.15	.77	1.1	8.6	6.9	1.8	.37	3.8	.05	.00	.00
23	1.9	.16	2.8	.90	4.8	6.7	1.7	.26	2.9	.08	.00	.00
24	.54	.16	.75	.68	25	5.6	1.7	90	2.3	.22	.00	.00
25	.08	17	.61	.51	20	5.0	1.7	6.5	1.9	.04	.00	.00
26	.08	.76	.47	.47	141	4.9	1.6	1.5	1.6	.02	.00	.00
27	.08	.29	.39	.45	79	4.8	1.6	.58	1.4	.01	.00	.00
28	.08	.24	.38	.47	136	5.0	1.5	124	1.2	.02	.00	.00
29	.08	.18	.33	.47	---	4.9	1.5	771	1.1	.01	.00	.00
30	.12	.17	.31	.55	---	4.8	1.4	51	1.1	.00	.00	.00
31	.09	---	.30	.47	---	4.4	---	18	---	.08	.00	---
TOTAL	4.05	27.04	88.44	85.44	588.18	305.1	82.3	1242.92	688.0	36.60	.10	7.00
MEAN	.13	.90	2.85	2.76	21.0	9.84	2.74	40.1	22.9	1.18	.0	.23
MAX	1.9	17	56	41	141	80	4.7	771	219	24	.08	4.4
MIN	.00	.09	.18	.28	.58	4.4	1.4	.19	1.1	.00	.00	.00
AC-FT	8.0	54	175	169	1170	605	163	2470	1360	73	.2	14
CFSM	.0	.0	.0	.0	.33	.16	.0	.64	.37	.0	.0	.0
IN.	.0	.0	.05	.05	.35	.18	.0	.74	.41	.0	.0	.0

CAL YR 1986	TOTAL	11216.92	MEAN	30.7	MAX	6130	MIN	.00	AC-FT	22250	CFSM	.49	IN.	6.64
WTR YR 1987	TOTAL	3155.14	MEAN	8.64	MAX	771	MIN	.00	AC-FT	6260	CFSM	.14	IN.	1.87

## TRINITY RIVER BASIN

263

08049700 WALNUT CREEK NEAR MANSFIELD, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD---Chemical and biochemical analyses: October 1985 to current year.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	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 (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03
OCT 31...	1045	0.10	839	7.50	16.5	22	2.3	1.9	20	1.8	300	140
FEB 02...	1515	0.65	1360	8.00	12.0	12	3.7	11.7	112	1.9	530	290
MAR 19...	1325	17	640	8.00	14.0	70	26	9.5	95	1.8	240	120
MAY 04...	1215	18	464	7.80	18.0	55	340	7.2	78	3.4	160	78
JUN 26...	1100	1.6	1330	7.70	24.5	27	40	6.1	74	3.8	530	250
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 WH WAT TOTAL 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 31...	100	13	57	1	6.2	166	210	25	0.50	12	520	
FEB 02...	170	26	87	2	5.3	246	350	97	0.50	8.0	890	
MAR 19...	77	11	39	1	5.9	118	140	40	0.30	12	400	
MAY 04...	53	6.2	25	0.9	5.5	80	95	30	0.40	6.4	270	
JUN 26...	170	26	78	2	7.9	277	320	91	0.40	16	880	
DATE		SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDED (MG/L)	SOLIDS, VOLA- TILE, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS- SOLVED (UG/L AS AS)
OCT 31...	1	<1	--	<0.010	<0.100	0.030	0.37	0.40	1.80	--	--	
FEB 02...	3	<1	--	0.010	<0.100	0.320	2.1	2.4	0.060	--	<1	
MAR 19...	16	13	0.080	0.020	0.100	0.070	1.0	1.1	0.150	11	--	
MAY 04...	440	92	0.560	0.040	0.600	0.230	1.9	2.1	0.430	16	2	
JUN 26...	94	30	0.190	0.010	0.200	0.160	2.0	2.2	0.140	8.8	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)
OCT 31...	--	--	--	--	--	--	--	--	--	--	--	
FEB 02...	67	<1	<10	2	41	10	100	<0.1	<1	<1	24	
MAR 19...	--	--	--	--	--	--	--	--	--	--	--	
MAY 04...	42	<1	<10	4	61	<5	140	0.3	<1	<1	41	
JUN 26...	120	<1	<10	4	5	<5	170	0.1	<1	<1	16	

LOCATION.--Lat 32°38'36", long 97°00'03", Dallas County, Hydrologic Unit 12030102, in control room of outlet works tower located 285 ft upstream from centerline of Joe Pool Dam on Mountain Creek, 0.7 mi downstream from Walnut Creek, 0.7 mi upstream from bridge over Mountain Creek on Camp Wisdom Road, 1.0 mi downstream from John Penn Branch, 5.5 mi west of water towers in downtown Duncanville, 7.1 mi upstream from Mountain Creek Dam on Mountain Creek, and 11.2 mi upstream from mouth.

DRAINAGE AREA.--232 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1985 to September 1986.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (Corps of Engineers benchmark).

REMARKS.--The lake is formed by a rolled-earthfill dam 22,360 ft long, including a 50-foot uncontrolled broad-crested concrete spillway. Impoundment of water began Jan. 7, 1986, after closure of the dam was completed in December 1985. The flood-control outlet works consist of a 10.5-foot-diameter conduit that is controlled by two 4.75- x 10.5-foot slide gates. Above elevation 541 ft, water will flow over a 50-foot-long uncontrolled broad-crested concrete spillway located about 0.5 mi to left of the outlet works tower. The low-flow outlet works consist of four 3- x 5-foot slide gates having invert elevations at 486.0, 495.0, 504.0, and 513.0 ft that open to a wet-well. Discharge from the wet-well to the 10.5-foot-diameter conduit is controlled by a 2- x 4-foot gate with invert at elevation 483.0 ft. A low-flow bypass system consisting of a turbine pump and 10-inch-diameter piping is also available for use if needed. The capacity table was provided by the U.S. Army Corps of Engineers. The lake was built for water supply, conservation, and flood-control. During the current year, no water has been diverted for municipal or industrial supply since the initial filling of the reservoir is in progress. 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.....	564.5	-
Crest of spillway.....	541.0	362,700
Top of conservation pool.....	522.0	176,900
Lowest gated outlet.....	466.0	1,095

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

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 104,100 acre-ft June 20, 1987 (elevation, 510.74 ft); minimum since initial filling began, 1,595 acre-ft Jan. 24, 1986 (elevation, 467.65 ft).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 104,100 acre-ft June 20 at 0200 hours (elevation, 510.74 ft); minimum, 58,860 acre-ft Oct. 22 at 0700 hours (elevation, 501.14 ft).

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

501.0	58,310	505.0	75,270	509.0	94,790
503.0	66,470	507.0	84,710	511.0	105,500

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	59690	61170	62430	66300	68780	81050	82530	81140	94790	102800	100300	96620
2	59650	61090	62390	66380	68780	81280	82390	81140	94790	103000	100200	96570
3	59610	61050	62390	66380	68780	81430	82340	81430	94790	103000	100000	96410
4	59490	61250	62390	66380	68780	81520	82290	82100	94890	102900	99910	96360
5	59490	61250	62350	66380	68830	81570	82290	82190	94840	102800	99750	96200
6	59650	61250	62390	66340	68960	81620	82290	82100	94790	102600	99640	96100
7	59610	61170	62430	66300	69000	81670	82290	82000	94740	102500	99540	96200
8	59650	61130	62430	66340	69000	81720	82290	82100	94690	102400	99320	96150
9	59610	61090	62350	66720	69000	81620	82290	82100	95420	102300	99210	96040
10	59570	61130	62310	66770	69040	81620	82190	82100	96250	102200	99320	96250
11	59530	61460	62390	66810	69040	81620	82290	82050	97620	102100	99270	96150
12	59450	61300	62390	66810	69040	81670	82290	81950	99750	102000	99160	96250
13	59370	61300	62390	66900	69130	81720	82340	81910	101800	101800	99000	96250
14	59300	61300	62560	66900	69170	81720	82000	82240	102800	101700	98840	95990
15	59220	61300	62880	66900	69170	81720	81950	82530	103000	101600	98680	96040
16	59180	61250	63050	66900	69170	81760	81950	82680	103500	101900	98520	95940
17	59180	61300	63130	67150	69170	82770	81910	82680	103500	101900	98310	95940
18	59060	61250	64950	68350	69130	82920	81950	82680	103800	101700	98150	95780
19	59020	61300	65460	68480	69170	83010	81810	82580	104000	101600	98040	95780
20	58980	61250	65620	68570	71500	83060	81810	82580	103900	101500	97890	95680
21	58940	61250	65710	68650	72250	83060	81720	82530	103900	101400	97730	95520
22	58940	61250	65790	68650	72430	83110	81670	82480	103900	101400	97620	95360
23	60450	61130	66090	68700	72470	83060	81620	82630	103600	101300	97520	95310
24	61170	61250	66220	68700	74230	82920	81570	85490	103500	101300	97410	95150
25	61300	62150	66260	68650	73730	82870	81520	85840	103400	101100	97250	95100
26	61340	62390	66300	68700	76280	82870	81480	85840	103300	101000	97040	94950
27	61380	62470	66300	68650	77940	82870	81430	85790	103200	100900	97150	94840
28	61340	62470	66340	68780	80810	82720	81380	86870	103000	100800	97040	94690
29	61300	62510	66380	68740	---	82580	81380	93910	103000	100700	96990	94530
30	61300	62470	66380	68740	---	82390	81240	94580	102800	100600	96880	94430
31	61250	---	66380	68700	---	82530	---	94740	---	100400	96780	---
MAX	61380	62510	92390	68780	80810	83110	82530	94740	104000	103000	100300	96620
MIN	58940	61050	62310	66300	68780	81050	81240	81140	94690	100400	96780	94430
(↑)	501.74	502.04	502.98	503.52	506.19	506.55	506.28	508.99	510.51	510.07	509.38	508.93
(Φ)	+1480	+1220	+3910	+2320	+12110	+1720	-1290	+13500	+8060	-2400	-3620	-2350
CAL YR 1986	MAX	92390	MIN	.00	(Φ)	+66380						
WTR YR 1987	MAX	104000	MIN	58940	(Φ)	+34660						

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

## TRINITY RIVER BASIN

265

08049800 JOE POOL LAKE NEAR DUNCANVILLE, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: January 1986 to current year.

323819096584801 - JOE POOL LAKE SITE AC

WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	SAMPLING DEPTH (FEET)	SPECIFIC CONDUCTANCE (US/CM)	PH (STANDARD UNITS)	TEMPERATURE WATER (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATURATION)	HARDNESS (MG/L AS CaCO3)	HARDNESS NONCARBONATE (MG/L AS CaCO3)	CALCIUM DIS-SOLVED (MG/L AS Ca)
FEB 19...	1450	1.00	587	8.40	11.0	11.0	100	210	71	73
19...	1451	1.00	--	--	--	--	--	--	--	--
MAY 22...	0830	1.00	--	--	--	--	--	--	--	--
22...	0830	1.00	610	8.20	25.0	7.4	91	210	78	71
SEP 04...	0815	1.00	605	--	26.5	7.4	93	200	84	69
DATE	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 WH WAT TOTAL FIELD (MG/L AS CaCO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLORIDE, DIS-SOLVED (MG/L AS CL)	FLUORIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS-SOLVED (MG/L)
FEB 19...	6.2	36	1	10	137	130	22	0.50	4.0	360
19...	--	--	--	--	--	--	--	--	--	--
MAY 22...	--	--	--	--	--	--	--	--	--	--
22...	6.9	41	1	9.4	128	140	23	0.40	0.7	370
SEP 04...	7.4	45	1	8.8	119	140	23	0.50	4.2	370
DATE	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)	PHOSPHORUS, TOTAL (MG/L AS P)	IRON, DIS-SOLVED (UG/L AS FE)	MANGANESE, DIS-SOLVED (UG/L AS MN)	
FEB 19...	--	<0.010	0.400	0.050	0.65	0.70	0.040	6	1	
19...	--	--	--	--	--	--	--	--	--	
MAY 22...	--	--	--	--	--	--	--	--	--	
22...	0.280	0.020	0.300	0.080	0.82	0.90	0.050	<3	58	
SEP 04...	0.070	0.030	0.100	0.060	0.64	0.70	0.030	9	7	

## TRINITY RIVER BASIN

08049800 JOE POOL LAKE NEAR DUNCANVILLE, TX--Continued

Joe Pool Lake near Duncanville, Texas (323819096584801)

Phytoplankton Analyses October 1986 to September 1987

Date	2-19-87
Time	1451
<hr/>	
TOTAL CELLS/mL	1,560
NUMBER OF SPECIES	10
DEPTH COLLECTED (ft.)	1.0

Organisms	Cells/mL
<b>CHLOROPHYTA (green algae)</b>	
<i>Ankistrodesmus nanoselene</i>	28
<i>Chlamydomonas</i> sp.	28
<i>Nephrocystium</i> sp.	170
<i>Scenedesmus</i> sp.	57
<b>CYANOPHYTA (blue-green algae)</b>	
<i>Dactylococcopsis fascicularis</i>	682
<b>BACILLARIOPHYTA (diatoms)</b>	
<b>Order Centrales</b>	
<i>Cyclotella stelligera</i>	224
<i>Melosira lirata</i>	74
<i>Stephanodiscus dubius</i>	66
<i>Stephanodiscus tenuis</i>	4
<b>Order Pennales</b>	
<i>Fragilaria crotonensis</i>	227

Joe Pool Lake near Duncanville, Texas (323819096584801)

Phytoplankton Analyses October 1986 to September 1987

Date	5-22-87
Time	0830
<hr/>	
TOTAL CELLS/mL	135,723
NUMBER OF SPECIES	29
DEPTH COLLECTED (ft.)	1.0

Organisms	Cells/mL
<b>CHLOROPHYTA (green algae)</b>	
<i>Closterium</i> sp.	114
<i>Crucigenia apiculata</i>	909
<i>Crucigenia quadrata</i>	227
<i>Gloocystis</i> sp.	57
<i>Oocystis</i> sp.	227
<i>Pediastrum tetras</i>	227
<i>Phacotus lenticularis</i>	57
<i>Scenedesmus dimorphus</i>	114
<i>Scenedesmus quadricauda</i>	227
<i>Sphaerocystis Schroeteri</i>	454
<b>CHRYSTOPHYTA (golden-brown algae)</b>	
<i>Kephyrion</i> sp.	227
<b>CYANOPHYTA (blue-green algae)</b>	
<i>Aphanocapsa delicatissima</i>	109851
<i>Chroococcus dispersus</i>	682
<i>Chroococcus limneticus</i>	2499
<i>Chroococcus varius</i>	341
<i>Dactylococcopsis smithii</i> (?)	114
<i>Microcystis</i> sp.	2272
<i>Oscillatoria subtilissima</i>	454
<i>Oscillatoria</i> sp.	170
<i>Spirulina laxissima</i>	454
<i>Synechococcus lineare</i> var. <i>spirale</i>	682
<i>Synechococcus</i> sp.	27
<b>EUGLENOPHYTA (euglenoid algae)</b>	
<i>Phacus orbicularis</i>	57
<b>BACILLARIOPHYTA (diatoms)</b>	
<b>Order Centrales</b>	
<i>Cyclotella ocellata</i>	14995
<i>Cyclotella stelligera</i>	57
<i>Stephanodiscus</i> sp.	57
<b>Order Pennales</b>	
<i>Navicula</i> sp.	57
<i>Nitzschia longissima</i> var. <i>reversa</i>	57
<i>Nitzschia</i> sp.	57

08049800 JOE POOL LAKE NEAR DUNCANVILLE, TX--Continued

Joe Pool Lake near Duncanville, Texas (323819096584801)

Phytoplankton Analyses October 1986 to September 1987

Date	9-4-87
Time	0816

TOTAL CELLS/mL	108,617
NUMBER OF SPECIES	35
DEPTH COLLECTED (ft.)	1.0

<u>Organisms</u>	<u>Cells/mL</u>
<b>CHLOROPHYTA (Green algae)</b>	
<i>Ankistrodesmus convolutus</i>	114
<i>Chlorococcum</i> sp.	284
<i>Chodatella subsalsa</i>	57
<i>Elakotothrix viridis</i>	57
<i>Oocystis</i> sp.	227
<i>Pediastrum simplex</i> var. <i>duodenarium</i>	14
<i>Scenedesmus</i> sp.	568
<b>CYANOPHYTA (Blue-green algae)</b>	
<i>Aphanocapsa delicatissima</i>	2499
<i>Aphanocapsa elachista</i>	3635
<i>Aphanothece saxicola</i>	34421
<i>Aphanothece</i> sp.	14541
<i>Chroococcus pallidus</i>	227
<i>Lyngbya nana</i>	682
<i>Merismopedia punctatum</i>	1477
<i>Merismopedia tenuissima</i>	1818
<i>Microcystis marina</i>	42714
<i>Oscillatoria angustissima</i>	3181
<i>Oscillatoria</i> sp.	57
<i>Raphidiopsis</i> sp.	341
<i>Synechococcus aeruginosa</i>	341
<i>Synechococcus</i> sp.	568
<b>CRYPTOPHYTA (Cryptomonads)</b>	
<i>Chroomonas</i> sp.	57
<b>BACILLARIOPHYTA (Diatoms)</b>	
<b>Order Centrales</b>	
<i>Cyclotella kutziana</i>	105
<i>Cyclotella meneghiniana</i>	22
<i>Cyclotella stelligera</i>	135
<i>Melosira granulata</i> var. <i>angustissima</i> f. <i>spiralis</i>	30
<i>Melosira lirata</i>	337
<i>Stephanodiscus niagarae</i>	52
<b>Order Pennales</b>	
<i>Diploneis</i> sp.	25
<i>Navicula bicephala</i>	3
<i>Navicula notha</i>	3
<i>Nitzschia gracilis</i>	3
<i>Nitzschia ignorata</i>	6
<i>Nitzschia palea</i>	3
<i>Synedra</i> sp.	13

## TRINITY RIVER BASIN

08049850 MOUNTAIN CREEK ABOVE DUNCANVILLE, TX.

LOCATION.--Lat 32°39'07", long 96°59'24", Dallas County, Hydrologic Unit 12030102, 0.6 mi downstream from Joe Pool Dam on Mountain Creek, 1.4 mi downstream from Walnut Creek, and 4.9 mi west of water towers in downtown Duncanville.

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: February to September 1987.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	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)	HARDNESS (MG/L AS CaCO3)	HARDNESS NONCARBONATE (MG/L AS CaCO3)
FEB 19...	1320	625	8.30	9.5	6	1.0	12.1	106	1.0	220	86
MAY 22...	0700	630	7.90	26.0	37	17	6.0	75	1.1	210	88
SEP 04...	0700	609	8.10	25.0	7	19	6.6	80	1.8	210	92
DATE	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 WH WAT TOTAL FIELD (MG/L AS CaCO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLORIDE, DIS-SOLVED (MG/L AS Cl)	FLUORIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS-SOLVED (MG/L)
FEB 19...	75	7.7	41	1	9.5	133	150	27	0.40	3.0	390
MAY 22...	72	7.6	43	1	9.7	123	150	24	0.50	1.8	380
SEP 04...	72	7.6	44	1	10	119	140	28	0.50	4.3	380
DATE	SOLIDS, RESIDUE AT 105 DEG. C, SUSPENDED (MG/L)	SOLIDS, 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)	PHOSPHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS-SOLVED (UG/L AS AS)
FEB 19...	14	12	--	<0.010	0.200	0.040	0.56	0.60	0.040	--	<1
MAY 22...	30	15	0.180	0.020	0.200	0.100	0.80	0.90	0.040	6.2	<1
SEP 04...	27	1	--	0.010	<0.100	0.040	0.56	0.60	0.040	6.9	<1
DATE	BARIUM, DIS-SOLVED (UG/L AS Ba)	CADMIUM, DIS-SOLVED (UG/L AS Cd)	CHROMIUM, DIS-SOLVED (UG/L AS Cr)	COPPER, DIS-SOLVED (UG/L AS Cu)	IRON, DIS-SOLVED (UG/L AS Fe)	LEAD, DIS-SOLVED (UG/L AS Pb)	MANGANESE, DIS-SOLVED (UG/L AS Mn)	MERCURY, DIS-SOLVED (UG/L AS Hg)	SELENIUM, DIS-SOLVED (UG/L AS Se)	SILVER, DIS-SOLVED (UG/L AS Ag)	ZINC, DIS-SOLVED (UG/L AS Zn)
FEB 19...	43	<1	50	1	5	<5	7	<0.1	<1	<1	19
MAY 22...	46	<1	<10	2	6	<5	3	0.1	<1	<1	7
SEP 04...	42	<1	<10	2	4	<5	<1	0.2	<1	<1	5

## 269

LOCATION.--Lat 32°39'43", long 96°58'56", Dallas County, Hydrologic Unit 12030102, at downstream side of bridge on Farm Road 1382, 2.3 mi downstream from Walnut Creek, 4.5 mi west of Duncanville, and 5.5 mi upstream from Mountain Creek Lake Dam.

PERIOD OF RECORD.--October 1970 to current year.

REMARKS.--Elevation records good. This station is used to aid in the operation of Mountain Creek Lake. Joe Pool Dam, located about 2 mi upstream, has been under construction and was essentially completed at the end of the 1985 water year. Deliberate impoundment began Jan. 7, 1986. Gage-height telemeter at station.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 458.43 ft Feb. 28 at 1200 hours; minimum, 456.77 ft June 7.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	457.07	457.19	457.25	457.18	457.17	457.23	457.06	457.21	456.83	457.06	457.05	457.14
2	457.07	457.21	457.28	457.17	457.15	457.01	457.07	457.23	456.80	457.07	457.05	457.15
3	457.07	457.21	457.30	457.19	457.15	456.95	457.12	457.30	456.84	456.97	457.06	457.16
4	457.09	457.30	457.32	457.19	457.15	457.04	457.12	457.10	456.81	456.96	457.05	457.17
5	457.12	457.28	457.34	457.19	457.13	457.19	457.12	456.84	456.78	456.98	457.06	457.17
6	457.18	457.28	457.35	457.20	457.24	457.29	457.14	456.81	456.78	457.02	457.07	457.17
7	457.12	457.29	457.39	457.20	457.19	457.31	457.14	456.81	456.77	457.05	457.07	457.18
8	457.13	457.31	457.40	457.20	457.15	457.32	457.15	456.84	456.79	457.06	457.07	457.24
9	457.10	457.31	457.38	457.41	457.13	457.16	457.16	456.84	457.12	457.07	457.08	457.22
10	457.10	457.54	457.34	457.29	457.24	457.06	457.17	456.86	456.94	457.07	457.18	457.21
11	457.10	457.46	457.34	457.24	457.29	457.01	457.18	456.88	456.90	457.06	457.10	457.26
12	457.10	457.41	457.36	457.22	457.27	457.00	457.20	456.90	456.92	457.06	457.09	457.18
13	457.08	457.39	457.35	457.21	457.19	456.99	457.28	456.92	456.87	457.06	457.09	457.24
14	457.07	457.38	457.48	457.21	457.17	456.94	457.29	456.96	456.86	457.07	457.07	457.21
15	457.10	457.38	457.51	457.21	457.17	456.86	457.25	456.97	457.24	457.07	457.07	457.19
16	457.14	457.38	457.39	457.21	457.13	456.86	457.25	456.97	457.22	457.14	457.07	457.17
17	457.11	457.38	457.40	457.51	457.27	457.27	457.24	456.98	456.96	457.12	457.08	457.16
18	457.10	457.39	457.59	457.42	457.27	456.98	457.24	456.98	456.99	457.08	457.09	457.17
19	457.10	457.41	457.21	457.20	457.24	456.88	457.25	457.02	456.99	457.06	457.09	457.18
20	457.10	457.43	457.12	457.13	457.75	456.84	457.24	457.05	457.00	457.05	457.09	457.17
21	457.10	457.44	457.08	457.10	457.20	456.82	457.23	457.03	457.00	457.05	457.09	457.17
22	457.12	457.46	457.09	457.18	457.06	456.81	457.23	457.03	457.00	457.05	457.10	457.17
23	457.32	457.46	457.18	457.17	456.99	456.80	457.23	457.05	457.00	457.05	457.11	457.17
24	457.22	457.46	457.12	457.12	457.42	456.79	457.22	457.17	457.00	457.06	457.12	457.19
25	457.19	457.55	457.10	457.12	457.31	456.84	457.23	457.03	457.00	457.06	457.13	457.25
26	457.17	457.29	457.09	457.10	458.06	456.87	457.23	457.00	457.00	457.07	457.13	457.22
27	457.16	457.21	457.11	457.10	457.39	456.94	457.23	456.99	457.00	457.07	457.14	457.23
28	457.16	457.17	457.14	457.12	457.99	456.99	457.22	457.88	457.01	457.07	457.19	457.23
29	457.											

## 08050050 MOUNTAIN CREEK LAKE NEAR GRAND PRAIRIE, TX

LOCATION.--Lat 32°43'55", long 96°56'35", Dallas County, Hydrologic Unit 12030102, at right end of spillway in Mountain Creek Dam on Mountain Creek, 2.5 mi upstream from Texas and Pacific Railway Co. bridge, and 3.7 mi southeast of Grand Prairie.

DRAINAGE AREA.--295 mi<sup>2</sup>.

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

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Oct. 21, 1960, non-recording gage at powerplant at same datum.

REMARKS.--The lake is formed by a rolled earthfill dam 5,800 ft long, including a controlled spillway six 34- by 27 foot tainter gates. The dam was completed in December 1936 and deliberate impoundment began on Mar. 24, 1937. The lake was built and is operated by Dallas Power and Light Co. to supply cooling water for their generating plant. The capacity curve is based on a survey made in 1963. For statement regarding regulation by Joe Pool Dam, see station 08049900. Figures given herein represent total contents. Gage-height telemeter at station. Data regarding the dam and lake are given in the following table:

	Elevation (feet)	Capacity (acre-feet)
Top of dam.....	467.0	
Top of gates.....	458.0	25,720
Top of dry weather conservation pool.....	457.0	22,840
Top of wet weather conservation pool.....	456.0	20,260
Crest of spillway (sill of tainter gates).....	431.0	0

COOPERATION.--The capacity curve was provided by the Dallas Power and Light Co.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 27,440 acre-ft Mar. 27, 1977 (elevation, 458.52 ft); minimum, 14,120 acre-ft Oct. 18, 1972 (elevation, 453.25 ft).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 24,740 acre-ft May 3 at 1400 hours (elevation, 457.66 ft); minimum, 19,600 acre-ft Sept. 30 (elevation, 455.72 ft).

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

455.0	17,890	457.0	22,840
456.0	20,260	458.0	25,720

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22380	22660	23730	22980	23730	23730	23650	24600	23620	23270	21760	19880
2	22270	22610	23680	22980	23790	23680	23680	24710	23650	23360	21730	19860
3	22140	22610	23700	23010	23730	23560	23700	24080	23760	23420	21630	19810
4	22120	22790	23680	23010	23880	23530	23700	23470	23880	23420	21550	19760
5	22320	22740	23680	22960	23790	23440	23700	23440	23960	23300	21420	19690
6	22400	22740	23700	23420	23440	23420	23700	22660	24110	23160	21320	19640
7	22560	22740	23760	23500	23360	23360	23700	22760	24190	23010	21190	19900
8	22580	22710	23760	23620	23390	23270	23700	22790	23760	22960	21110	19880
9	22610	22660	23590	23590	23300	23330	23730	22870	23590	22840	21060	19880
10	22610	22870	23620	23590	23240	23330	23680	22980	23530	22760	21290	20000
11	22560	22900	23500	23500	23190	23270	23760	23100	23500	22690	21270	20000
12	22500	22760	23390	23590	23530	23210	23790	23190	23240	22610	21190	20310
13	22450	22840	23390	23500	23470	23190	23850	23270	23700	22530	21110	20360
14	22480	22870	23270	23530	23330	23130	23850	22630	23500	22450	20980	20260
15	22450	22900	24140	23530	23330	23130	23850	22630	23500	22400	20910	20290
16	22450	22870	24080	23590	23360	22760	23850	22710	23500	22500	20800	20260
17	22400	22930	23990	23210	23330	23190	23880	22810	23560	22530	20670	20210
18	22380	22870	23270	23760	23270	23210	23930	22960	23500	22480	20600	20120
19	22320	22900	23190	23730	23300	23190	23990	23040	23560	22430	20490	20120
20	22300	22900	23160	23700	23240	23190	24080	23160	23500	22380	20410	20090
21	22140	22900	23210	23700	24020	23160	24140	23300	23700	22320	20310	20020
22	22270	22900	23190	23700	23910	22930	24190	23270	23850	22300	20260	19950
23	22630	22790	23010	23620	23850	23300	24250	22960	23880	22250	20190	19930
24	22760	22870	22960	23790	23360	23330	24280	23070	23730	22170	20120	19900
25	22760	23680	22980	23790	23100	23360	24310	23210	23620	22090	20050	19860
26	22740	23730	22960	23760	22710	23330	24370	23330	23530	22040	19950	19790
27	22740	23760	22960	23730	23590	23440	24420	22070	23470	21940	20070	19790
28	22740	23760	22960	23530	23590	23530	24480	23390	23420	21910	20020	19710
29	22710	23760	22960	23760	---	23530	24570	23420	23330	21860	20020	19640
30	22710	23760	22960	23760	---	23530	24650	23470	23270	21860	20000	19600
31	22660	---	22960	23760	---	23650	---	23560	---	21830	19980	---
MAX	22760	23760	24140	23790	24020	23730	24650	24710	24190	23420	21760	20360
MIN	22120	22610	22960	22960	22710	22760	23650	22070	23240	21830	19950	19600
(↑)	456.93	457.32	457.04	457.32	457.26	457.28	457.63	457.25	457.15	456.61	455.88	455.72
(Φ)	+260	+1100	-800	+800	-170	+60	+1000	-1090	-290	-1440	-1850	-380
CAL YR 1986	MAX	24510	MIN	20880	(Φ)	-480						
WTR YR 1987	MAX	24710	MIN	19600	(Φ)	-2800						

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

## TRINITY RIVER BASIN

271

## 08050100 MOUNTAIN CREEK AT GRAND PRAIRIE, TX

LOCATION.--Lat 32°44'52", long 96°55'33", Dallas County, Hydrologic Unit 12030102, on right bank at downstream side of downstream bridge on Jefferson Street, 1,000 ft upstream from bridge on U.S. Highway 80, 1.2 mi upstream from Texas and Pacific Railroad Co. bridge, 1.5 mi downstream from Mountain Creek Lake Dam, and 4.4 mi east of Grand Prairie.

DRAINAGE AREA.--298 mi<sup>2</sup>.

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

GAGE.--Water-stage recorder. Datum of gage is 404.31 ft above National Geodetic Vertical Datum of 1929. Prior to Dec. 19, 1984, at datum 3.0 ft higher.

REMARKS.--Records fair. Flow regulated by Mountain Creek Lake (station 08050050), 1.5 mi upstream. Several observations of water temperature were made during the year. Gage-height telemeters at station.

AVERAGE DISCHARGE.--27 years, 94.3 ft<sup>3</sup>/s (68,320 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 38,100 ft<sup>3</sup>/s Apr. 19, 1976 (gage height, 24.21 ft); maximum gage height, 24.62 ft May 7, 1969; no flow in 1964, 1972-74.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,330 ft<sup>3</sup>/s May 29 at 1845 hours (gage height, 11.09 ft); minimum daily, 0.06 ft<sup>3</sup>/s Sept. 29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.1	.75	1.5	.96	.49	262	1.1	.53	.53	.58	.62	1.1
2	.96	.78	1.9	1.2	.57	8.3	1.1	.53	.53	1.2	.62	.70
3	1.2	.83	1.4	1.7	.53	6.7	.90	.60	.44	2.1	.72	.75
4	1.2	1.6	1.2	1.1	.46	5.9	.95	12	.40	1.5	.62	.43
5	1.4	1.7	1.1	1.1	.36	4.9	.95	2.2	.37	3.8	.62	.40
6	2.6	1.2	1.1	184	2.0	4.8	1.0	1.0	.28	5.1	.49	.40
7	1.9	1.1	1.2	2.5	1.9	4.6	1.1	.83	.24	.80	.52	.80
8	2.2	1.0	1.2	68	.96	2.7	1.1	.78	.34	.47	.45	.90
9	1.9	1.1	1.2	340	.65	4.1	1.1	.72	1.1	.33	.44	.58
10	1.2	2.0	1.1	3.3	1.2	2.7	1.1	.72	3.9	.32	4.1	6.9
11	1.1	3.0	1.2	1.6	2.1	2.6	1.1	.62	2.5	.34	3.0	1.3
12	.79	1.8	2.1	1.9	153	2.3	1.2	.43	1.1	.32	.92	19
13	1.1	1.5	1.4	1.7	3.3	2.4	1.2	.38	1.6	.32	.55	3.4
14	1.1	1.7	2.9	2.0	3.4	3.1	1.4	.38	797	.32	.42	1.6
15	.93	1.5	634	1.7	4.0	2.8	1.4	.38	128	.32	.23	.91
16	.87	1.4	2.7	1.2	2.7	1.7	1.2	.38	526	.29	.24	.39
17	.75	1.2	2.3	2.4	2.4	612	1.2	.34	23	.34	.35	.32
18	.55	1.1	135	179	1.1	6.4	1.1	.32	43	.55	.28	.32
19	.53	1.3	13	3.3	.95	2.1	.74	.32	23	.57	.20	.71
20	.56	1.5	2.7	2.3	736	1.9	.72	.55	2.3	.29	.14	2.4
21	.55	2.5	2.1	1.6	590	1.8	.61	.57	1.8	.32	.29	1.0
22	.53	1.3	1.8	1.7	5.6	1.6	.53	.36	1.7	.38	.24	.54
23	.96	.59	3.7	1.9	4.8	9.7	.53	.27	1.4	1.0	.31	.44
24	1.5	1.0	2.3	2.1	9.0	3.5	.59	4.2	.89	2.2	.71	.29
25	.79	10	1.8	1.2	6.5	1.3	.62	2.0	.57	1.1	.95	.20
26	.60	2.8	1.4	.76	e379	1.2	.59	.71	.50	.81	.92	.32
27	.49	1.7	1.6	.57	838	1.3	.48	.62	.44	.65	1.8	.30
28	.42	1.7	1.4	.53	559	1.3	.49	30	.44	.62	2.1	.12
29	.31	1.8	1.2	3.1	---	1.2	.53	1990	.40	.62	1.6	.06
30	.53	1.6	1.5	.57	---	1.2	.53	145	.46	.93	1.5	.08
31	.68	---	1.1	.40	---	1.6	---	.93	---	.53	1.4	---
TOTAL	31.30	53.05	830.1	815.39	3309.97	969.7	27.16	2198.67	1564.23	29.02	27.35	46.66
MEAN	1.01	1.77	26.8	26.3	118	31.3	.91	70.9	52.1	.94	.88	1.56
MAX	2.6	10	634	340	838	612	1.4	1990	797	5.1	4.1	19
MIN	.31	.59	1.1	.40	.36	1.2	.48	.27	.24	.29	.14	.06
AC-FT	62	105	1650	1620	6570	1920	54	4360	3100	58	54	93

CAL YR 1986 TOTAL 13453.33 MEAN 36.9 MAX 3460 MIN .26 AC-FT 26680  
WTR YR 1987 TOTAL 9902.44 MEAN 27.1 MAX 1990 MIN .06 AC-FT 19640

e Estimated.

## TRINITY RIVER BASIN

08050400 ELM FORK TRINITY RIVER AT GAINESVILLE, TX

LOCATION.--Lat 33°27'27", long 97°09'22", Cooke County, Hydrologic Unit 12030103, on right bank 16 ft to the right of the right end of the bridge on Farm Road 51 and 31 ft downstream from the centerline of the road, 0.6 mi west of Cooke County courthouse in Gainesville, 1.0 mi upstream from Interstate Highway 35, and 1.2 mi downstream from Dogie Creek.

DRAINAGE AREA.--174 mi<sup>2</sup>.

PERIOD OF RECORD.--August 1985 to September 1987.

GAGE.--Water-stage recorder. Datum of gage is 700.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Several observations of water temperature were made during the year. Gage-height telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,500 ft<sup>3</sup>/s May 28, 1987 (gage height, 19.77 ft); minimum daily, 0.30 ft<sup>3</sup>/s Oct. 5, 1985.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in October 1981 reached a peak stage of 28.1 from information from an individual in the Gainesville Dept. of Public Works.

EXTREMES FOR 1986 WATER YEAR.--Maximum discharge, 10,300 ft<sup>3</sup>/s Apr. 3 at 2145 hours (gage height, 19.59 ft); minimum daily, 0.30 ft<sup>3</sup>/s Oct. 5.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 10,500 ft<sup>3</sup>/s May 28 at 2400 hours (gage height, 19.77 ft); minimum, 0.59 ft<sup>3</sup>/s Aug. 25-26.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.47	9.4	40	7.9	4.4	5.3	4.7	1480	890	12	.67	2.8
2	.41	8.5	46	8.3	8.0	5.3	5.4	310	1220	11	1.3	1.5
3	.40	7.5	32	7.9	30	5.0	2030	153	497	10	1.5	4.2
4	.33	6.2	28	7.4	22	4.6	1040	99	615	9.0	1.4	1.9
5	.30	5.7	25	6.8	48	4.7	257	82	1330	6.8	1.4	140
6	.41	5.3	22	7.1	178	4.6	132	70	408	5.5	1.0	135
7	.38	5.4	20	6.7	69	4.3	83	60	217	4.5	.97	60
8	.40	5.1	18	5.9	46	4.4	62	45	160	4.3	1.4	44
9	.46	5.4	17	5.6	33	4.4	45	40	122	3.9	1.4	20
10	.50	5.4	18	5.9	26	6.3	34	172	99	3.3	14	11
11	.55	5.2	19	5.8	20	6.9	28	99	294	3.0	.97	6.5
12	.52	6.4	24	6.1	17	7.5	25	69	157	2.8	.78	4.2
13	.50	6.3	23	5.9	15	12	21	48	98	2.5	.55	2.8
14	2.0	6.2	19	6.0	14	14	18	31	74	2.4	.42	2.4
15	.57	7.0	17	5.9	12	8.8	14	37	199	2.0	.79	2.1
16	.41	7.7	14	5.9	12	7.4	12	28	83	1.6	.66	1.6
17	1.0	7.2	13	6.7	11	6.5	10	75	110	1.4	.64	1.3
18	1070	8.4	13	6.8	9.7	12	10	308	72	1.2	.68	1.0
19	2310	8.0	12	6.5	9.1	10	1060	140	57	1.1	.69	.96
20	336	10	11	6.5	9.3	8.3	509	82	47	1.1	.69	.79
21	124	9.1	11	6.0	8.3	8.4	181	60	39	1.1	.70	.67
22	71	13	10	5.6	7.8	7.1	110	45	32	1.4	.65	.75
23	43	12	9.8	4.3	7.3	6.2	70	36	26	1.5	.60	.65
24	29	12	9.6	4.2	6.6	5.7	49	266	61	2.0	.62	.50
25	20	12	8.6	4.2	6.3	5.2	35	502	111	1.8	.97	.55
26	15	15	8.6	4.0	6.3	4.9	26	193	57	1.4	.82	.45
27	12	22	8.0	3.3	6.2	4.9	23	143	42	1.2	.66	.37
28	9.0	40	7.4	3.2	5.6	4.9	22	109	28	1.1	.77	.36
29	13	33	6.9	3.4	---	4.5	17	75	20	.83	.79	.41
30	15	28	6.9	3.7	---	4.3	341	59	16	.71	.71	.36
31	12	---	7.3	3.9	---	4.4	---	620	---	.68	.70	---
TOTAL	4088.61	332.4	525.1	177.4	647.9	202.8	6274.1	5536	7181	103.12	39.90	449.12
MEAN	132	11.1	16.9	5.72	23.1	6.54	209	179	239	3.33	1.29	15.0
MAX	2310	40	46	8.3	178	14	2030	1480	1330	12	14	140
MIN	.30	5.1	6.9	3.2	4.4	4.3	4.7	28	16	.68	.42	.36
AC-FT	8110	659	1040	352	1290	402	12440	10980	14240	205	79	891

WTR YR 1986 TOTAL 25557.27 MEAN 70.0 MAX 2310 MIN .30 AC-FT 50690

TRINITY RIVER BASIN

273

08050400 ELM FORK TRINITY RIVER AT GAINESVILLE, TX--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	510	14	14	15	61	1110	.64	11	581	165	5.4	1.2
2	126	14	14	14	78	835	60	11	396	328	4.9	1.1
3	30	17	12	16	62	656	55	17	289	266	4.5	.87
4	23	27	11	16	53	410	51	18	262	189	4.1	1.0
5	70	61	9.1	16	47	328	49	15	230	171	3.7	1.1
6	57	44	8.6	16	110	279	49	10	207	162	3.7	.95
7	47	28	14	14	161	225	46	8.8	188	155	3.2	1.3
8	32	21	41	15	115	203	45	8.7	156	150	2.9	1.4
9	24	16	65	817	87	192	42	7.8	133	145	2.5	1.3
10	19	23	49	259	75	181	40	7.6	127	142	11	3.5
11	17	31	34	134	70	174	39	7.4	185	138	6.9	1.4
12	16	17	27	100	64	160	38	10	1150	112	2.8	2.8
13	14	12	22	82	60	142	37	7.0	1240	92	2.4	1.7
14	14	9.4	20	70	60	131	34	6.0	470	77	2.2	6.2
15	11	9.7	21	64	102	121	32	106	333	57	2.0	608
16	8.6	8.9	22	64	128	119	28	29	281	50	1.7	158
17	7.0	9.4	26	173	100	1540	28	16	233	60	1.5	44
18	6.0	12	92	910	80	625	26	11	232	65	1.6	304
19	5.3	14	103	287	69	310	25	8.0	198	56	1.5	61
20	5.2	14	75	207	103	237	23	6.7	931	46	1.2	24
21	5.8	12	57	159	208	195	22	5.6	577	40	1.1	15
22	6.8	12	52	123	135	156	22	5.0	366	30	.92	8.8
23	8.3	13	49	96	107	133	20	7.7	291	28	.84	6.7
24	9.3	12	41	85	390	121	19	19	240	25	.91	5.2
25	8.9	19	34	76	370	103	18	18	209	22	.76	4.2
26	8.5	29	29	63	1200	94	18	14	195	16	.77	3.7
27	9.6	26	24	60	911	101	16	9.4	181	10	1.8	3.3
28	9.2	22	21	57	4730	93	15	2840	174	8.4	1.2	3.6
29	14	18	19	55	---	81	13	4020	168	7.2	1.1	4.0
30	14	15	18	49	---	72	12	1040	172	6.4	1.0	4.8
31	14	---	17	43	---	66	---	759	---	5.9	1.2	---
TOTAL	1150.5	580.4	1040.7	4155	9736	9193	986	9059.7	10395	2824.9	81.30	1284.12
MEAN	37.1	19.3	33.6	134	348	297	32.9	292	346	91.1	2.62	42.8
MAX	510	61	103	910	4730	1540	64	4020	1240	328	11	608
MIN	5.2	8.9	8.6	14	47	66	12	5.0	127	5.9	.76	.87
AC-FT	2280	1150	2060	8240	19310	18230	1960	17970	20620	5600	161	2550
CAL YR 1986	TOTAL 23382.77			MEAN 64.1	MAX 2030	MIN .36	AC-FT 46380					
WTR YR 1987	TOTAL 50486.41			MEAN 138	MAX 4730	MIN .76	AC-FT 100100					

## TRINITY RIVER BASIN

08050800 TIMBER CREEK NEAR COLLINSVILLE, TX

LOCATION.--Lat 33°33'16", long 96°56'49", Cooke County, Hydrologic Unit 12030103, on left bank 13 ft to the left of bridge on Farm Road 902 and 19 ft downstream from the centerline of the road, 2.1 mi west of Collinsville, and 3.0 mi upstream from mouth.

DRAINAGE AREA.--38.8 mi<sup>2</sup>.

PERIOD OF RECORD.--August 1985 to current year.

GAGE.--Water-stage recorder. Datum of gage is 640.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair. Several observations of water temperature were made during the year. Gage height telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,600 ft<sup>3</sup>/s Apr. 4, 1986 (gage height, 13.28 ft).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in October 1981 reached a peak stage of 15.0 ft, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,190 ft<sup>3</sup>/s May 29 at 0445 hours (gage height 12.88 ft); minimum, no flow July 24 to Aug. 29, Sept. 3-13, and Sept. 25-30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	75	.26	1.5	1.8	3.7	328	2.8	1.0	11	3.7	.00	.15
2	222	.26	1.2	1.7	5.7	42	2.6	.99	7.8	1.2	.00	.03
3	6.8	.24	1.0	1.6	4.3	27	2.3	1.3	6.5	1.5	.00	.00
4	144	7.0	.87	2.0	3.7	20	2.3	2.1	5.4	.99	.00	.00
5	144	12	.96	2.2	3.4	16	2.2	2.2	3.9	.51	.00	.00
6	4.3	1.6	1.1	2.1	13	14	2.1	1.9	3.3	.34	.00	.00
7	2.1	.43	1.3	2.1	19	12	2.2	1.5	2.9	.27	.00	.00
8	1.2	.32	2.5	2.4	7.7	10	2.3	2.2	2.4	.22	.00	.00
9	.96	.27	6.4	149	4.6	9.2	2.1	2.1	2.2	.18	.00	.00
10	.83	.27	6.2	24	3.9	8.2	2.0	1.9	4.4	.13	.00	.00
11	.78	5.5	3.1	2.8	3.8	7.6	2.0	1.6	6.3	.11	.00	.00
12	.96	3.4	2.3	1.8	3.9	7.2	1.9	1.5	21	.11	.00	.00
13	1.1	.92	1.9	1.7	3.8	6.9	1.9	.78	9.0	.08	.00	.00
14	.78	.50	1.6	1.9	3.9	6.9	1.8	4.1	3.9	.05	.00	.07
15	.67	.41	1.9	2.3	6.0	7.0	1.6	2.0	2.6	.07	.00	54
16	.62	.48	2.5	3.0	5.5	7.5	1.6	15	178	.07	.00	18
17	.57	.59	2.6	34	4.0	717	1.7	4.3	35	.10	.00	.52
18	.54	.54	51	423	3.6	216	2.3	1.4	16	.07	.00	19
19	.51	.49	20	45	3.4	21	2.5	1.1	10	.05	.00	5.3
20	.58	.48	3.4	14	16	11	1.5	.94	5.3	.04	.00	.38
21	.79	.58	1.6	9.1	49	7.8	1.4	.87	3.4	.04	.00	.12
22	.57	.82	.94	7.0	13	6.3	1.7	.83	2.2	.03	.00	.06
23	.53	3.2	.82	5.7	8.4	6.5	1.8	.69	1.6	.02	.00	.04
24	.53	2.4	1.4	5.5	51	5.3	1.4	.81	1.1	.0	.00	.01
25	.50	2.5	1.6	4.9	58	3.8	1.1	1.0	.88	.00	.00	.00
26	.42	8.0	1.1	4.3	168	3.3	1.1	1.3	.78	.00	.00	.00
27	.35	3.8	1.5	4.0	246	4.3	1.2	1.1	.49	.00	.00	.00
28	.33	2.2	1.7	4.0	739	4.1	1.1	291	.44	.00	.00	.00
29	.29	2.2	1.7	3.8	---	3.9	1.1	1010	.37	.00	.00	.00
30	.28	1.8	1.8	3.6	---	3.1	1.1	178	5.3	.00	5.7	.00
31	.27	---	1.8	3.5	---	2.9	---	20	---	.00	4.3	---
TOTAL	613.16	63.46	129.29	773.8	1455.3	1545.8	54.7	1555.51	353.46	9.88	10.00	97.68
MEAN	19.8	2.12	4.17	25.0	52.0	49.9	1.82	50.2	11.8	.32	.32	3.26
MAX	222	12	51	423	739	717	2.8	1010	178	3.7	5.7	54
MIN	.27	.24	.82	1.6	3.4	2.9	1.1	.69	.37	.00	.00	.00
AC-FT	1220	126	256	1530	2890	3070	108	3090	701	20	20	194

CAL YR 1986 TOTAL 10814.79 MEAN 29.6 MAX 863 MIN .00 AC-FT 21450  
WTR YR 1987 TOTAL 6661.98 MEAN 18.3 MAX 1010 MIN .00 AC-FT 13210

## TRINITY RIVER BASIN

275

08051130 ELM FORK TRINITY RIVER NEAR PILOT POINT, TX

LOCATION.--Lat 33°21'01", long 97°02'49", Denton County, Hydrologic Unit 12030103, on right bank of excavated outlet channel 1,600 ft downstream from center line of Ray Roberts Dam on Elm Fork Trinity River, 3.3 mi upstream from Bray Branch, 4.9 mi upstream from Farm Road 428 bridge, and 5.7 mi southwest of town square in Pilot Point.

## WATER-DISCHARGE RECORDS

DRAINAGE AREA.--692 mi<sup>2</sup>.

PERIOD OF RECORD.--Occasional low-flow measurements and annual maximum, water years 1981-84, July 1985 to current year.

GAGE.--Water-stage recorder. Datum of gage is 526.26 ft above National Geodetic Vertical Datum of 1929. Prior to July 1985, nonrecording staff and crest-stage gages at site 0.8 mi downstream at 526.26 ft lower datum.

REMARKS.--Records good except those below 5.0 ft<sup>3</sup>/s, which are poor, and those for Mar. 19 to May 7, which are fair. During the year, all flow was directed through the outlet structure of Ray Roberts Dam. Except for the period July 28 to Sept. 4, 1988 when the gates were being tested, flow through the outlet structure was not controlled until June 30, 1987 when the outlet structure gates were closed to fill Lake Ray Roberts.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,290 ft<sup>3</sup>/s Oct. 21, 1985 (gage height, 15.75 ft); minimum daily, no flow many days in 1987 water year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge since at least 1900, 183,000 ft<sup>3</sup>/s in October 1981 from discontinued gages 5.0 mi upstream on Elm Fork Trinity River and 6.3 mi upstream on Isle du Bois Creek. The crest-stage gage then in use recorded an elevation of 566.32 ft (gage height to current datum 40.06 ft) for that flood.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,290 ft<sup>3</sup>/s Mar. 1 at 1330 hours (gage height, 15.76 ft); minimum, no flow many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29	15	58	57	121	3220	396	74	2650	4.9	.18	.01
2	345	16	50	52	116	3180	372	73	1990	7.2	.19	.00
3	477	15	43	49	120	3010	346	76	1280	5.3	.18	.00
4	412	22	38	48	117	2760	320	72	1360	4.1	.18	.00
5	567	68	34	46	107	2540	283	56	1330	3.9	.28	.00
6	865	157	32	45	107	2300	255	48	1250	3.7	.66	.00
7	772	141	31	44	178	2080	231	45	1170	3.5	.46	.00
8	606	109	32	44	242	1890	200	43	1110	5.0	.28	.00
9	459	81	56	271	238	1730	174	39	1600	3.7	.25	.00
10	330	74	92	813	211	1540	144	30	1880	2.3	1.4	.00
11	228	137	95	880	182	1340	130	25	1710	2.2	1.5	.00
12	160	263	89	773	158	1170	122	24	1590	2.2	.40	.01
13	140	226	82	635	135	1090	111	39	1600	2.1	.19	.00
14	128	159	73	505	119	966	107	38	1560	2.0	.18	.02
15	107	113	67	401	133	832	102	49	1480	2.0	.13	.20
16	84	83	63	319	209	728	98	78	1430	2.1	.09	.00
17	65	64	61	278	236	1020	96	74	1590	2.6	.06	.00
18	52	52	98	778	214	1830	94	70	1500	2.2	.03	.00
19	43	43	306	1220	180	1940	92	68	1360	2.0	.01	.00
20	36	37	438	1200	183	1730	90	63	1280	2.0	.0	.00
21	31	32	381	1060	399	1450	89	61	1230	2.0	.00	.00
22	27	30	309	900	548	1230	85	56	1120	1.1	.00	.00
23	25	30	243	772	512	1010	83	52	994	1.2	.00	.00
24	24	29	194	642	466	853	83	51	853	1.3	.00	.00
25	22	29	155	525	609	731	77	49	738	1.1	.00	.00
26	21	34	127	425	762	628	77	48	652	.87	.00	.00
27	19	61	106	340	1270	557	75	47	586	.77	.01	.00
28	19	80	90	269	2160	509	75	222	537	.60	.00	.00
29	18	78	78	211	---	468	75	2230	498	.38	.00	.00
30	17	70	69	169	---	438	75	2690	172	.26	.19	.00
31	16	---	62	142	---	417	---	2770	---	.20	.90	---
TOTAL	6144	2348	3652	13913	10032	45187	4557	9360	38100	74.78	7.75	.24
MEAN	198	78.3	118	449	358	1458	152	302	1270	2.41	.25	.01
MAX	865	263	438	1220	2160	3220	396	2770	2650	7.2	1.5	.20
MIN	16	15	31	44	107	417	75	24	172	.20	.00	.00
AC-FT	12190	4660	7240	27600	19900	89630	9040	18570	75570	148	15	.5

CAL YR 1986 TOTAL 134983.34 MEAN 370 MAX 2500 MIN 2.6 AC-FT 267700  
WTR YR 1987 TOTAL 133375.03 MEAN 365 MAX 3220 MIN .00 AC-FT 264500

08051130 ELM FORK TRINITY RIVER NEAR PILOT POINT, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: December 1985 to current year.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	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 (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03
OCT 23...	1100	25	499	7.90	17.0	28	5.5	8.4	88	3.6	180	19
JAN 29...	1430	204	500	7.90	10.0	50	72	10.6	96	1.8	180	23
MAR 19...	1330	1960	332	7.50	16.5	50	61	9.3	97	1.7	120	22
JUN 03...	1700	1250	260	7.60	22.5	95	42	8.6	100	2.3	130	42
JUL 22...	1020	1.0	440	7.50	29.0	34	8.0	4.7	62	9.6	150	12
SEP 15...	1100	0.30	475	7.90	22.0	17	36	6.7	78	1.1	140	0

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 WH WAT TOTAL 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 23...	62	5.2	34	1	4.8	157	37	34	0.30	10	280
JAN 29...	65	5.3	30	1	3.7	161	39	30	0.20	8.8	280
MAR 19...	43	4.0	19	0.8	3.6	102	25	25	0.20	8.8	190
JUN 03...	45	3.4	18	0.7	4.7	84	61	11	0.30	9.0	200
JUL 22...	52	5.0	30	1	4.3	139	27	35	0.30	6.3	240
SEP 15...	46	5.2	35	1	5.4	136	35	29	0.30	7.9	250

DATE	SOLIDS, RESIDUE AT 105 DEG: C, SUS- PENDED (MG/L)	SOLIDS, VOLATA- TILE, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS- SOLVED (UG/L AS AS)
OCT 23...	65	8	1.88	0.020	1.90	0.070	1.8	1.9	0.190	8.1	--
JAN 29...	87	17	1.56	0.040	1.60	0.340	0.96	1.3	0.290	8.6	1
MAR 19...	51	21	0.550	0.050	0.600	0.170	1.6	1.8	0.180	10	--
JUN 03...	52	12	0.940	0.060	1.00	0.140	1.5	1.6	0.240	8.8	6
JUL 22...	30	1	0.260	0.040	0.300	0.190	1.1	1.3	0.130	8.7	2
SEP 15...	73	20	0.380	0.020	0.400	0.140	1.5	1.6	0.050	8.5	--

[illegible]

## 08051500 CLEAR CREEK NEAR SANGER, TX

LOCATION.--Lat 33°20'21", long 97°10'51", Denton County, Hydrologic Unit 12030103, at the downstream side of left abutment of main channel bridge on Interstate Highway 35, 600 ft downstream from Duck Creek, 1.3 mi upstream from Gulf, Colorado, and Santa Fe Railway Co. bridge, and 1.7 mi south of Sanger.

DRAINAGE AREA.--295 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

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

Water-quality records.--Specific conductance, water temperature, and sediment records: May 1968 to September 1976. Periodic sampling and analyses for nutrients, major inorganic constituents, physical properties and biochemical oxygen demand 6 times per year, and minor inorganics 3 times per year from Oct. 1984 to current year. Nutrient analyses from storm event samples, Mar. 1984 to Sept. 1987.

REVISED RECORDS.--WSP 1512: 1950, 1955. WSP 1922: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 582.23 ft above National Geodetic Vertical Datum of 1929 (U.S. Army Corps of Engineers bench mark). Prior to Apr. 18, 1975, water-stage recorder at site 950 ft downstream at datum 5.00 ft higher.

REMARKS.--Records good except for those estimated daily discharges, which are poor. No appreciable diversion above station. Flow is affected at times by discharge from the flood-detention pools of 51 floodwater-retarding structures with a combined detention capacity of 38,850 acre-ft. These structures control runoff from 149 mi<sup>2</sup> in the Clear Creek watershed. Several observations of water temperature were made during the year. Gage-height telemeter at station.

AVERAGE DISCHARGE.--31 years (water years 1950-80) prior to regulation, 74.3 ft<sup>3</sup>/s (53,830 acre-ft/yr); 7 years (water years 1981-87) after completion of floodwater retarding structures, 143 ft<sup>3</sup>/s (103,600 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 104,000 ft<sup>3</sup>/s Oct. 13, 1981 (gage height, 35.70 ft, site and datum then in use); no flow at times most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1880, 36.5 ft in May 1908, from information by Gulf, Colorado, and Santa Fe Railway Co. Flood in May 1935 reached a stage of 34.0 ft, from information by State Department of Highways and Public Transportation. Both peaks now referenced to present site and datum.

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

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
May 29	0345	*7,600	*26.44	No other peak greater than base discharge.			
Minimum discharge, 6.7 ft <sup>3</sup> /s Aug. 26-27.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	213	18	37	56	83	e1020	117	35	1040	82	18	17
2	490	18	34	52	106	e902	110	35	695	528	17	13
3	153	18	30	50	102	e788	102	38	522	703	16	10
4	193	32	28	50	90	e674	97	46	413	270	16	9.2
5	202	83	27	48	85	531	97	41	299	147	15	8.8
6	145	48	27	48	174	378	97	34	214	106	15	8.4
7	109	35	36	47	289	277	95	32	159	85	15	8.4
8	82	30	122	44	193	229	91	33	125	71	14	8.4
9	64	27	190	547	140	202	84	33	107	63	13	8.6
10	51	40	143	510	118	182	81	31	118	61	12	9.6
11	43	44	102	224	109	167	78	30	128	56	12	15
12	56	42	84	146	102	153	78	29	435	49	12	19
13	65	36	73	120	96	147	74	28	1250	45	12	15
14	49	31	66	111	95	145	70	29	480	45	11	16
15	40	29	70	105	158	142	66	175	311	43	11	51
16	36	29	77	105	164	141	63	96	233	39	11	201
17	35	28	77	273	126	1390	62	58	177	38	9.6	56
18	30	28	253	944	108	774	60	39	274	46	9.0	77
19	26	28	344	615	95	411	57	32	312	45	9.1	41
20	24	27	194	324	196	287	54	30	348	37	8.8	24
21	23	27	139	231	402	235	51	29	472	33	8.0	19
22	22	27	123	177	328	201	54	32	244	31	7.6	15
23	22	28	127	146	212	186	53	31	166	29	7.3	13
24	22	29	123	135	400	181	49	36	129	28	7.3	12
25	23	43	116	121	621	157	47	41	112	26	7.2	11
26	21	64	88	108	e709	146	44	34	142	24	7.0	9.5
27	21	57	78	101	e1340	161	43	28	99	23	7.0	9.2
28	20	46	75	98	e1140	155	41	1580	85	22	13	8.6
29	19	41	66	94	---	142	39	5670	76	21	14	10
30	19	40	62	87	---	127	37	1830	138	20	11	10
31	19	---	58	81	---	117	---	1370	---	19	13	---
TOTAL	2337	1073	3069	5798	7781	10748	2091	11585	9303	2835	358.9	733.7
MEAN	75.4	35.8	99.0	187	278	347	69.7	374	310	91.5	11.6	24.5
MAX	490	83	344	944	1340	1390	117	5670	1250	703	18	201
MIN	19	18	27	44	83	117	37	28	76	19	7.0	8.4
AC-FT	4640	2130	6090	11500	15430	21320	4150	22980	18450	5620	712	1460

CAL YR 1986 TOTAL 51250.2 MEAN 140 MAX 2990 MIN .79 AC-FT 101700  
WTR YR 1987 TOTAL 57712.5 MEAN 158 MAX 5670 MIN 7.0 AC-FT 114500

e Estimated.

## TRINITY RIVER BASIN

08051500 CLEAR CREEK NEAR SANGER, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: April 1959, January 1966, October 1984 to current year. Sediment analyses: February 1966 to May 1977.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1969 to August 1977.

WATER TEMPERATURES: May 1968 to August 1977.

SUSPENDED SEDIMENT DISCHARGE: May 1968 to August 1977.

## EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE (1972-77): Maximum daily, 1,920 microsiemens Oct. 12, 1976; minimum daily, 182 microsiemens July 29, 1973.

WATER TEMPERATURES (1968-70, 1972-77): Maximum daily, 39.0°C June 8, 1969; minimum daily, 0.0°C Jan. 9, 1970.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 7,370 mg/L May 12, 1972; minimum, no flow on many days.

SEDIMENT LOADS: Maximum daily, 79,000 tons May 7, 1969; minimum daily, 0 tons on many days.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	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 (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03
OCT												
23...	1600	22	732	8.00	17.0	4	1.4	10.8	114	0.7	260	58
JAN												
29...	1800	95	630	8.10	12.0	5	10	10.1	95	0.6	270	34
FEB												
20...	1410	170	--	--	--	--	--	--	--	--	--	--
26...	1340	734	--	--	--	--	--	--	--	--	--	--
MAR												
20...	1200	293	535	8.00	15.5	20	72	9.4	97	0.5	220	19
MAY												
28...	1215	756	346	--	--	--	--	--	--	--	130	12
28...	1510	1490	--	--	--	--	--	--	--	--	--	--
28...	1900	2610	367	--	--	--	--	--	--	--	130	9
28...	2015	6400	--	--	--	--	--	--	--	--	--	--
29...	0200	7350	--	--	--	--	--	--	--	--	--	--
29...	0730	7260	237	--	--	--	--	--	--	--	93	8
29...	1540	5230	--	--	--	--	--	--	--	--	--	--
JUN												
01...	1500	995	295	7.70	23.0	40	110	7.7	92	2.0	120	5
JUL												
22...	1630	31	663	7.70	30.0	2	4.3	8.3	112	0.9	230	57
SEP												
15...	1530	18	497	7.90	23.0	6	9.6	8.9	106	0.6	170	20

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 WH WAT TOTAL 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											
23...	86	12	48	1	2.5	206	47	74	0.30	11	400
JAN											
29...	96	7.0	28	0.8	2.1	235	39	36	0.20	9.2	360
FEB											
20...	--	--	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--	--	--
MAR											
20...	79	5.7	18	0.6	2.2	202	28	22	0.20	9.8	290
MAY											
28...	48	3.2	12	0.5	4.1	121	16	14	0.21	9.9	180
28...	--	--	--	--	--	--	--	--	--	--	--
28...	44	3.7	16	0.7	3.6	116	17	20	0.20	9.8	180
28...	--	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--	--
29...	33	2.5	5.0	0.2	2.7	85	10	5.8	0.20	7.7	120
29...	--	--	--	--	--	--	--	--	--	--	--
JUN											
01...	43	3.2	10	0.4	2.9	116	17	11	0.20	9.3	170
JUL											
22...	67	15	47	1	2.8	172	52	72	0.30	15	370
SEP											
15...	44	14	34	1	2.5	148	41	33	0.30	11	270

## 279

08051500 CLEAR CREEK NEAR SANGER, TX--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

[illegible]

08052700 LITTLE ELM CREEK NEAR AUBREY, TX

LOCATION.--Lat 33°17'00", long 96°53'33", Denton County, Hydrologic Unit 12030103, on left bank at downstream side of bridge on Farm Road 1385, 1.5 mi upstream from Mustang Creek, 5.5 mi east of Aubrey, and 18 mi upstream from Lewisville Dam on the Elm Fork Trinity River.

DRAINAGE AREA.--75.5 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1956 to September 1976, October 1979 to current year.

Water-quality records.--Chemical analyses: January 1968, March 1985 to current year. Specific conductance: December 1966 to September 1975, March 1985 to current year. Water temperatures: February 1966 to September 1975, March 1985 to current year. Sediment records: February 1966 to September 1975.

REVISED RECORDS.--WDR TX-70-1: 1969.

GAGE.--Water-stage recorder. Datum of gage is 534.76 ft above National Geodetic Vertical Datum of 1929 (State Department of Highways and Public Transportation bench mark).

REMARKS.--Records good except those for estimated daily discharges, which are fair. Several small diversions for irrigation above station. Flow is affected at times by discharge from flood-detention pools of 17 floodwater-retarding structures with a combined detention capacity of 10,460 acre-ft. These structures control runoff from 36.4 mi above station. Several observations of water temperature were obtained during the year. Automatic water-quality sampler at this station.

AVERAGE DISCHARGE.--28 years (water year 1957-76, 1980-1987), 46.4 ft<sup>3</sup>/s (33,620 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,300 ft<sup>3</sup>/s May 13, 1982 (gage height, 17.80 ft); no flow at times each year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since about 1900, 18.2 ft in May 1941, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Feb. 28	2045	1,460	15.15	May 29	1115	*1,480	*15.18

Minimum discharge, no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	50	.00	4.1	2.3	4.9	624	8.6	1.7	84	1.9	.04	.00
2	27	.00	3.6	2.2	4.9	296	8.2	1.7	63	30	.01	.00
3	13	.00	3.1	2.0	4.9	190	7.8	1.6	42	35	.00	.00
4	22	.02	2.5	2.0	4.8	e103	7.4	2.8	24	6.9	.00	.00
5	19	.04	2.4	1.9	4.6	e86	7.1	3.0	9.1	3.4	.00	.00
6	16	.08	2.0	2.0	4.7	e80	6.8	2.9	5.9	1.8	.00	.00
7	10	.33	1.9	1.9	e5.1	81	6.6	4.3	4.1	1.0	.00	.00
8	6.9	1.3	1.8	1.8	e5.5	71	6.2	20	3.1	.52	.00	.00
9	4.7	50	1.8	112	7.6	64	6.0	7.5	2.6	.32	.00	.00
10	3.0	153	1.5	96	6.6	53	5.9	4.5	2.9	.25	.00	.00
11	1.9	e33	1.4	30	5.9	42	5.8	14	3.6	.20	.00	.00
12	1.3	e9.6	1.3	14	5.2	34	5.7	20	3.7	.14	.00	.00
13	.90	e7.5	1.2	9.5	4.9	29	5.5	6.2	3.0	.10	.00	.00
14	.48	e7.1	1.2	7.8	e4.9	27	5.4	30	2.3	.08	.00	.00
15	.30	e6.7	1.2	6.5	6.3	25	5.2	58	15	.06	.00	.00
16	.22	e6.4	1.3	6.0	12	23	5.1	11	229	.04	.00	.00
17	.18	e5.9	1.5	9.2	11	118	5.0	5.9	88	.05	.00	.00
18	.16	e5.6	77	225	10	112	4.9	4.5	29	.04	.00	.00
19	.13	5.4	67	127	9.8	60	4.7	3.3	19	.02	.00	.00
20	.12	4.6	12	58	177	48	4.5	2.6	63	.00	.00	.00
21	.09	4.1	8.1	26	166	42	4.2	2.1	56	.00	.00	.00
22	.08	3.7	6.6	14	e69	37	3.9	1.7	27	.0	.00	.00
23	.07	3.4	6.0	8.9	e48	30	3.7	1.6	15	.01	.00	.00
24	.05	7.3	5.6	7.5	80	23	3.4	2.0	10	.0	.00	.00
25	.04	16	5.1	7.2	e96	18	3.2	2.1	8.2	1.1	.00	.00
26	.03	8.8	4.6	6.6	253	15	2.9	1.6	6.3	.46	.00	.00
27	.02	6.2	4.2	5.9	332	13	2.7	1.5	5.2	.31	.00	.00
28	.01	5.6	3.8	5.6	826	12	2.4	88	3.9	.23	.00	.00
29	.00	5.2	3.5	5.5	---	10	2.2	1160	2.9	.16	.00	.00
30	.00	4.6	3.1	5.3	---	9.5	1.9	255	2.3	.10	.00	.00
31	.00	---	2.8	5.1	---	9.0	---	120	---	.07	.00	---
TOTAL	177.68	361.47	243.2	814.7	2170.6	2384.5	152.9	1841.1	833.1	84.26	.05	.00
MEAN	5.73	12.0	7.85	26.3	77.5	76.9	5.10	59.4	27.8	2.72	.0	.00
MAX	50	153	77	225	826	624	8.6	1160	229	35	.04	.00
MIN	.00	.00	1.2	1.8	4.6	9.0	1.9	1.5	2.3	.00	.00	.00
AC-FT	352	717	482	1620	4310	4730	303	3650	1650	167	.1	.0

CAL YR 1986 TOTAL 17283.21 MEAN 47.4 MAX 4070 MIN .00 AC-FT 34280  
WTR YR 1987 TOTAL 9063.49 MEAN 24.8 MAX 1160 MIN .00 AC-FT 17980

e Estimated.

## 08052700 LITTLE ELM CREEK NEAR AUBREY, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: June 1962 to June 1963, June 1965 to January 1968. Chemical and biochemical analyses: October 1984 to current year. Sediment analyses: April 1966 to October 1974.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: December 1966 to June 1975.

WATER TEMPERATURES: February 1966 to June 1975.

SUSPENDED SEDIMENT DISCHARGE: February 1966 to September 1975.

## EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: (1966-68, 1971-74): Maximum daily, 1,380 microsiemens Jan. 24, Feb. 25, 1967; minimum daily, 195 microsiemens June 4, 1968.

WATER TEMPERATURE (1966-68, 1971-74): Maximum daily, 33.0°C June 16, 1968; minimum daily, freezing point Feb. 22, 1968.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 4,750 mg/L Aug. 13, 1966; minimum daily mean, no flow on many days.

SEDIMENT LOADS: Maximum daily, 17,900 tons May 31, 1967; minimum daily, 0 tons on many days.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	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 (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03
OCT 21...	1400	0.09	552	8.30	15.0	47	39	7.4	74	3.2	150	6
JAN 27...	1520	5.8	376	7.90	9.0	40	62	12.2	107	1.5	170	57
FEB 20...	1430	262	--	--	--	--	--	--	--	--	--	--
FEB 26...	1600	400	--	--	--	--	--	--	--	--	--	--
MAR 19...	1630	55	375	7.80	16.5	110	140	8.6	90	1.4	140	40
MAY 28...	1340	10	590	--	--	--	--	--	--	--	200	72
MAY 28...	1550	29	--	--	--	--	--	--	--	--	--	--
MAY 28...	2000	106	--	--	--	--	--	--	--	--	--	--
MAY 28...	2400	794	--	--	--	--	--	--	--	--	--	--
MAY 29...	1010	1480	318	--	--	--	--	--	--	--	130	54
MAY 29...	2400	665	--	--	--	--	--	--	--	--	--	--
MAY 30...	1200	199	--	--	--	--	--	--	--	--	--	--
JUN 03...	1100	44	360	7.70	22.5	55	120	7.9	92	3.1	96	7

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 WH WAT TOTAL 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 21...	52	5.5	55	2	6.1	147	110	17	0.60	1.7	340
JAN 27...	58	5.0	25	0.9	4.9	108	92	11	0.30	5.6	270
FEB 20...	--	--	--	--	--	--	--	--	--	--	--
FEB 26...	--	--	--	--	--	--	--	--	--	--	--
MAR 19...	50	4.4	19	0.7	4.6	103	73	6.7	0.30	8.4	230
MAY 28...	70	6.8	43	1	4.6	131	150	11	0.50	4.0	370
MAY 28...	--	--	--	--	--	--	--	--	--	--	--
MAY 28...	--	--	--	--	--	--	--	--	--	--	--
MAY 28...	--	--	--	--	--	--	--	--	--	--	--
MAY 29...	45	3.9	14	0.6	5.4	74	81	5.9	0.30	10	210
MAY 29...	--	--	--	--	--	--	--	--	--	--	--
MAY 30...	--	--	--	--	--	--	--	--	--	--	--
JUN 03...	34	2.6	13	0.6	4.7	89	13	18	0.20	9.3	150

DATE	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDED (MG/L)	SOLIDS, VOLA- TILE, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS- SOLVED (UG/L AS AS)
OCT 21...	80	12	--	0.020	<0.100	0.080	1.5	1.6	0.140	10	--
JAN 27...	46	16	1.17	0.030	1.20	0.120	1.4	1.5	0.150	9.0	2
FEB 20...	--	--	--	--	2.30	0.140	2.2	2.3	0.750	--	--
FEB 26...	--	--	--	--	1.80	0.170	1.9	2.1	0.390	--	--
MAR 19...	332	56	0.930	0.070	1.00	0.220	2.2	2.4	0.350	14	--
MAY 28...	--	--	--	--	<0.100	0.090	1.6	1.7	0.350	--	--
MAY 28...	--	--	--	--	0.900	0.120	0.98	1.1	0.660	--	--
MAY 28...	--	--	--	--	4.10	0.260	0.94	1.2	0.610	--	--
MAY 28...	--	--	--	--	1.60	0.030	2.2	2.2	0.420	--	--
MAY 29...	--	--	--	--	2.50	0.050	4.8	4.8	0.560	--	--
MAY 29...	--	--	--	--	4.20	0.090	2.6	2.7	0.330	--	--
MAY 30...	--	--	--	--	4.50	0.100	2.0	2.1	0.280	--	--
JUN 03...	217	25	2.67	0.130	2.80	0.070	2.1	2.2	0.320	11	2

## TRINITY RIVER BASIN

08052700 LITTLE ELM CREEK NEAR AUBREY, TX--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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 21...	--	--	--	--	--	--	--	--	--	--	--
JAN 27...	42	2	<10	5	120	<5	7	0.2	<1	<1	150
FEB 20...	--	--	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--	--	--
MAR 19...	--	--	--	--	--	--	--	--	--	--	--
MAY 28...	--	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--	--
JUN 03...	39	<1	<10	6	77	<5	3	<0.1	<1	<1	29

## TRINITY RIVER BASIN

283

08052730 PECAN CREEK NEAR AUBREY, TX

LOCATION.--Lat 33°17'50", long 96°55'06", Denton County, Hydrologic Unit 12030103, on Farm Road 428 bridge, over center of channel at downstream side of bridge, 1.1 mi downstream from unnamed tributary on right bank, 2.2 mi upstream from unnamed tributary on right bank, and 4.0 mi east of Aubrey.

DRAINAGE AREA.--32.2 mi<sup>2</sup>.

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: December 1985 to current year.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	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 (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3
JAN 27...	1630	1.3	680	7.30	7.5	65	27	11.8	100	1.2	250	160
MAR 19...	1700	9.0	388	7.20	16.0	85	48	8.8	91	1.5	140	68
JUN 03...	1245	2.8	765	7.10	21.5	50	20	6.8	78	3.5	270	150
JUL 20...	1700	0.32	470	7.40	27.0	47	8.0	6.7	85	1.6	170	74
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 WH WAT TOTAL 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)
JAN 27...	66	21	46	1	5.6	93	210	29	0.30	9.6	440	
MAR 19...	39	9.7	25	1	5.4	69	92	20	0.30	9.9	240	
JUN 03...	77	19	47	1	6.2	119	180	41	0.30	12	450	
JUL 20...	47	12	27	0.9	8.7	93	110	18	0.40	8.1	290	
DATE		SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDED (MG/L)	SOLIDS, VOLATILE, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS- SOLVED (UG/L AS AS)
JAN 27...	19	<1	0.290	0.010	0.300	0.060	0.74	0.80	0.070	7.2	<1	
MAR 19...	51	19	0.260	0.040	0.300	0.100	1.4	1.5	0.240	13	--	
JUN 03...	25	6	0.260	0.040	0.300	0.140	1.3	1.4	0.130	7.5	1	
JUL 20...	8	3	--	<0.010	<0.100	0.020	0.98	1.0	0.120	8.6	2	
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)
JAN 27...	69	2	<10	3	150	<5	200	0.1	<1	<1	45	
MAR 19...	--	--	--	--	--	--	--	--	--	--	--	
JUN 03...	100	<1	<10	3	110	<5	500	<0.1	<1	<1	18	
JUL 20...	71	2	<10	1	100	<5	94	<0.1	<1	<1	33	

## TRINITY RIVER BASIN

08052780 HICKORY CREEK AT DENTON, TX

LOCATION.--Lat 33°09'06", long 97°08'30", Denton County, Hydrologic Unit 12030103, on left bank 4 ft upstream from upstream side of bridge on Farm Road 1830, 0.4 mi downstream from Graveyard Branch, 1.2 mi downstream from Roark 1.4 mi upstream from Atchison, Topeka, and Santa Fe Railroad Co. bridge, and 4.4 mi south of Denton County Courthouse.

DRAINAGE AREA.--129 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1985 to September 1987 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 530.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Nine floodwater-retarding structures with a combined detention capacity of 5,560 acre-ft affecting runoff from 17.0 mi<sup>2</sup> are located in basin above the station. Automatic sampler for sampling storm flow is located at this station. Station discontinued Sept. 30, 1987, and all equipment subsequently removed.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,200 ft<sup>3</sup>/s May 29, 1987 at 0230 hours (gage height, 23.14 ft).

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum known stage, 29.54 ft Oct. 30, 1974, from information by the State Department of Highways and Public Transportation. Historic peaks from nearby stations indicate that any outstanding floods probably occurred in May 1908 and October 1981.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 13,200 ft<sup>3</sup>/s on May 29 at 0230 hours (gage height, 23.14 ft); minimum, no flow Oct. 19-20.

REVISIONS.--The maximum discharge for the water year 1986 has been revised to 11,600 ft<sup>3</sup>/s, May 10, 1986, gage height, 22.70 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.04	15	7.7	11	14	388	12	19	221	78	2.2	1.9
2	.04	17	6.3	9.8	16	200	11	20	141	379	2.9	1.0
3	.01	18	5.4	9.5	17	112	9.7	21	120	331	2.9	.93
4	24	46	4.4	11	14	68	9.8	306	88	95	3.0	.86
5	147	26	3.9	10	12	54	9.2	56	45	53	3.5	.79
6	47	24	3.9	9.6	62	46	8.9	24	20	34	4.2	.75
7	31	16	13	9.2	111	40	8.5	15	12	23	4.3	.74
8	9.0	16	50	8.9	56	34	8.1	17	7.9	17	4.3	.74
9	3.4	16	61	723	35	28	8.1	11	18	13	4.0	.74
10	1.7	102	52	174	26	24	8.0	7.4	84	14	3.9	10
11	.91	224	28	67	22	21	7.5	5.2	146	11	3.9	2.3
12	.57	47	19	45	20	19	7.6	4.0	118	8.2	3.5	2.4
13	.34	24	13	36	18	18	7.3	3.5	363	7.1	3.4	2.1
14	.23	16	11	31	18	17	7.4	2.9	82	6.1	3.4	1.4
15	.13	15	16	29	153	16	7.7	2.5	44	5.6	3.3	38
16	.08	14	28	27	81	17	9.1	2.3	28	4.7	3.2	4.0
17	.04	12	28	269	42	814	10	2.3	16	5.9	2.9	1.7
18	.02	12	454	1240	28	160	11	2.2	66	5.9	2.6	1.5
19	.00	11	185	185	21	62	12	1.9	64	4.2	2.4	1.7
20	.00	12	77	86	574	44	12	1.8	172	3.5	2.1	1.3
21	.07	12	51	62	500	34	14	1.5	123	3.1	1.8	.94
22	.42	18	41	50	144	27	16	2.1	43	2.9	1.8	.93
23	3.9	18	44	41	76	26	15	2.5	20	2.6	1.5	.80
24	8.2	24	48	35	366	25	14	13	15	2.7	1.4	.72
25	8.0	224	36	31	306	18	14	4.1	6.9	2.4	1.2	.68
26	8.3	172	29	26	1080	16	12	2.2	4.5	2.3	1.1	.61
27	9.2	49	22	22	664	16	11	1.6	3.2	2.2	1.2	.58
28	12	24	17	20	3680	16	13	2170	2.4	2.4	1.3	.55
29	12	14	15	20	---	16	15	5630	2.0	2.3	1.3	.54
30	13	10	13	17	---	15	18	354	228	2.1	1.4	.50
31	14	---	12	14	---	13	---	262	---	2.1	38	---
TOTAL	354.60	1248	1394.6	3329.0	8156	2404	326.9	8968.0	2303.9	1126.3	117.9	81.70
MEAN	11.4	41.6	45.0	107	291	77.5	10.9	289	76.8	36.3	3.80	2.72
MAX	147	224	454	1240	3680	814	18	5630	363	379	38	38
MIN	.00	10	3.9	8.9	12	13	7.3	1.5	2.0	2.1	1.1	.50
AC-FT	703	2480	2770	6600	16180	4770	648	17790	4570	2230	234	162

CAL YR 1986 TOTAL 37306.64 MEAN 102 MAX 4880 MIN .00 AC-FT 74000  
WTR YR 1987 TOTAL 29810.73 MEAN 81.7 MAX 5630 MIN .00 AC-FT 59130

## TRINITY RIVER BASIN

285

08052780 HICKORY CREEK AT DENTON, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD---Chemical and biochemical analyses: October 1984 to June 1987.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	HARD- NESS (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- LITY WH WAT TOTAL FIELD MG/L AS CAC03
OCT											
23...	1020	3.2	--	230	0	83	5.6	28	0.8	3.0	--
JAN											
29...	1150	20	642	260	21	95	6.3	32	0.9	2.2	242
FEB											
20...	1215	672	--	--	--	--	--	--	--	--	--
20...	1445	815	--	--	--	--	--	--	--	--	--
20...	2045	1250	--	--	--	--	--	--	--	--	--
21...	0845	519	--	--	--	--	--	--	--	--	--
26...	1200	777	--	--	--	--	--	--	--	--	--
26...	1700	1940	--	--	--	--	--	--	--	--	--
MAR											
19...	0830	65	420	160	14	59	4.2	23	0.8	3.2	151
19...	1200	65	--	--	--	--	--	--	--	--	--
MAY											
28...	1430	1030	336	120	11	44	3.5	16	0.7	4.4	113
28...	1635	2050	--	--	--	--	--	--	--	--	--
28...	1930	4290	258	88	11	32	1.9	13	0.6	3.4	77
28...	2330	11000	--	--	--	--	--	--	--	--	--
29...	0220	14200	--	--	--	--	--	--	--	--	--
29...	0800	9170	207	78	3	29	1.3	7.5	0.4	3.0	75
29...	1315	2680	226	87	7	32	1.6	8.4	0.4	3.2	80
29...	1635	991	--	--	--	--	--	--	--	--	--
JUN											
04...	1200	93	321	130	11	47	3.4	14	0.6	3.2	120
DATE		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)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)
OCT											
23...		39	17	0.30	12	--	1.90	0.020	0.58	0.60	0.040
JAN											
29...		54	25	0.30	8.7	370	--	--	--	--	--
FEB											
20...		--	--	--	--	--	0.800	0.070	1.4	1.5	0.260
20...		--	--	--	--	--	0.700	0.040	0.76	0.80	0.090
20...		--	--	--	--	--	1.10	0.090	0.91	1.0	0.190
21...		--	--	--	--	--	1.40	0.040	0.86	0.90	0.120
26...		--	--	--	--	--	1.30	0.050	0.95	1.0	0.100
26...		--	--	--	--	--	1.60	0.190	1.4	1.6	0.260
MAR											
19...		31	18	0.20	12	240	--	--	--	--	--
19...		--	--	--	--	--	1.40	0.180	1.0	1.2	0.090
MAY											
28...		27	17	0.30	7.3	190	0.600	0.370	2.2	2.6	0.440
28...		--	--	--	--	--	1.10	0.340	9.7	10	0.610
28...		16	13	0.20	9.4	140	1.90	0.170	3.9	4.1	0.490
28...		--	--	--	--	--	1.40	0.130	3.4	3.5	0.330
29...		--	--	--	--	--	1.30	0.130	4.2	4.3	0.270
29...		17	6.0	0.20	11	120	1.90	0.040	2.6	2.6	0.360
29...		20	7.1	0.20	11	130	1.70	0.050	4.8	4.9	0.410
29...		--	--	--	--	--	1.40	0.030	2.8	2.8	0.210
JUN											
04...		22	13	0.20	11	190	0.900	0.060	2.3	2.4	0.070

## TRINITY RIVER BASIN

08052800 LEWISVILLE LAKE NEAR LEWISVILLE, TX

LOCATION.--Lat 33°04'09", long 96°57'51", Denton County, Hydrologic Unit 12030103, in intake structure of Lewisville Dam on Elm Fork Trinity River, 2 mi upstream from bridge on State Highway 121, 2.4 mi northeast of Lewisville, 12 mi upstream from Denton Creek, and 30.0 mi upstream from mouth.

DRAINAGE AREA.--1,660 mi<sup>2</sup>.

PERIOD OF RECORD.--November 1954 to current year. Prior to October 1970, published as Garza-Little Elm Reservoir near Lewisville.

REVISED RECORDS.--WSP 1922: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to May 17, 1955, non-recording gage at site 4,000 ft upstream at same datum.

REMARKS.--The lake is formed by a rolled earthfill dam 32,888 ft long, including a 560-foot uncontrolled off-channel concrete-gravity spillway with ogee weir section. Deliberate impoundment began Nov. 1, 1954, and the dam was completed in August 1955. The controlled low-flow outlet works consist of a 16.0-foot-diameter conduit that is controlled by three 6.5- by 13.0-foot broome-type gates and two 60-inch steel pipes with service valves. The lake was built for flood control and water conservation. The city of Dallas obtains most of its municipal water supply from this lake. The capacity table is based on a survey made in 1965. Inflow is affected at times by discharge from the flood-detention pools of 118 floodwater-retarding structures with a combined detention capacity of 81,670 acre-ft. These structures control runoff from 298 mi<sup>2</sup> in the Elm Fork Trinity River, Clear, Little Elm, and Hickory Creeks watersheds. Gage-height telemeter at station. An unknown amount of water was diverted for municipal and industrial uses. 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.....	560.0	-
Crest of spillway.....	532.0	981,800
Top of conservation pool.....	515.0	457,600
Lowest intakes to wet wells (invert).....	481.0	42,560
Invert of three broome-type gates.....	448.0	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, 1,168,000 acre-ft Nov. 1, 1981 (elevation, 536.46 ft); minimum since initial filling in 1957, 184,700 acre-ft Sept. 28, 1980 (elevation, 498.65 ft).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 600,900 acre-ft March 18 at 2000 hours (elevation, 520.62 ft); minimum, 407,400 acre-ft Sept. 30 at 2200 hours (elevation, 512.77 ft).

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

512.0	391,000	516.0	481,200	520.0	583,500
514.0	434,700	518.0	530,800	521.0	611,800

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	450700	453700	460600	469800	472200	554400	521500	450900	574400	491900	462500	423000
2	450000	453000	460200	468900	468600	565700	514700	448400	576600	494100	461100	421700
3	450900	452100	459500	469300	465300	573500	507900	450700	577100	496600	459700	420800
4	454800	455100	459200	467900	463400	577100	502500	455100	574100	496100	458500	419500
5	456900	453900	458500	467000	462700	577900	497300	455300	569800	495800	457100	418600
6	459000	453000	458100	467000	462500	577400	492600	454800	565200	495100	456000	417700
7	460400	453400	458800	466500	460900	576000	487800	455300	560200	493400	454800	416800
8	462300	453900	459000	466300	460400	574100	482700	455800	555200	491400	453200	415500
9	463900	453700	459500	470300	459500	573000	477400	455800	552400	488700	452100	414400
10	464600	456000	459000	472900	459500	575700	474100	455300	550300	486600	451100	414600
11	465600	458100	458800	474500	459700	578800	470700	455100	548000	484100	450200	414200
12	465100	460200	459200	476500	459700	581500	467400	454800	545700	482700	448800	414400
13	464100	458300	459200	477400	459500	582400	467000	454400	545100	481000	446800	413500
14	463700	458100	459700	478800	460600	586000	465100	462000	542300	478600	445600	413300
15	463200	458100	460400	480000	462300	585700	464100	465800	539800	477400	444200	414400
16	462300	458500	460400	480800	462300	586800	463200	465800	544100	477400	442900	413800
17	461600	458500	461800	483200	462000	597000	462700	465600	540800	477400	441500	413300
18	461100	458500	465300	491400	461800	599800	461800	465300	537700	476700	440100	413500
19	460400	458300	467000	497100	461800	598100	460600	465600	533400	476500	438800	412900
20	458800	458100	468400	499500	468400	594700	460600	465600	530600	475500	437200	412700
21	457100	457600	469600	499800	472600	590800	459900	465100	526800	474500	435600	412000
22	457600	458800	470700	498800	474300	584600	458500	465100	522700	473600	434000	411600
23	458100	459000	471500	497800	475500	580700	457400	465100	519700	472900	432900	410700
24	457600	458300	471700	497500	478800	574400	456700	466500	516400	471900	431100	410000
25	457100	461300	471900	495300	482000	568100	456200	466300	512200	471000	429300	409600
26	456700	461600	472200	492600	491700	561500	455800	465100	508700	469800	427900	408500
27	456000	461300	471900	489500	502700	554400	455300	464800	504500	468900	427500	408300
28	455500	461100	471700	485400	533600	549800	454400	485100	500300	467700	427100	408500
29	455100	460900	471700	482900	---	543100	453400	538000	497100	466500	425700	408100
30	454600	461100	470700	479300	---	534100	452800	557800	495300	465100	424800	407000
31	453900	---	470500	475300	---	527500	---	567900	---	463700	424200	---
MAX	465600	461600	472200	499800	533600	599800	521500	567900	577100	496600	462500	423000
MIN	450000	452100	458100	466300	459500	527500	452800	448400	495300	463700	424200	407000
(↑)	514.84	515.15	515.55	515.75	518.11	517.87	514.79	519.43	516.58	515.26	513.53	512.75
(Φ)	+2800	+7200	+9400	+4800	+58300	-6100	-74700	+115100	-72600	-31600	-39500	-17200

CAL YR 1986 MAX 656800 MIN 430600 (Φ) +15400  
WTR YR 1987 MAX 599800 MIN 407000 (Φ) -44100

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

## TRINITY RIVER BASIN

287

## 08053000 ELM FORK TRINITY RIVER NEAR LEWISVILLE, TX

LOCATION (revised).--Lat 33°02'44", long 96°57'39", Denton County, Hydrologic Unit 12030103, on left bank at downstream edge of highway right-of-way 90 ft left of left end of bridge on State Highway 121, 1.8 mi east of Lewisville 1.9 mi downstream from Lewisville Lake, 8.3 mi upstream from Denton Creek, and 28.2 mi upstream from mouth.

DRAINAGE AREA.--1,673 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 1922: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 432.39 ft above National Geodetic Vertical Datum of 1929 (U.S. Army Corps of Engineers bench mark). Prior to Jan. 6, 1950, nonrecording gage 0.6 mi upstream at datum 3.26 ft lower.

REMARKS.--Records good. Flow regulated by Lewisville Lake (see station 08052800) since November 1954. Most of low flow is used by city of Dallas for municipal supply (see station 08055500). Gage-height telemeter at station.

AVERAGE DISCHARGE.--5 years (water years 1950-54), prior to regulation, 402 ft<sup>3</sup>/s (291,200 acre-ft/yr); 33 years (water years 1955-87), regulated, 664 ft<sup>3</sup>/s (481,100 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,700 ft<sup>3</sup>/s Sept. 15, 1950 (gage height, 30.75 ft); minimum daily, 0.8 ft<sup>3</sup>/s Jan. 19, 1955. Maximum discharge since construction of Lewisville Dam in 1954, 15,000 ft<sup>3</sup>/s (gage height, 27.83 ft) Nov. 2, 1981.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1907, 33.8 ft in 1908, present site and datum, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,250 ft<sup>3</sup>/s June 16 at 1330 hours (gage height, 20.11 ft); minimum daily, 47 ft<sup>3</sup>/s Mar. 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

* DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	222	191	218	447	2230	762	4020	684	1090	1930	351	257
2	214	190	220	447	2220	736	3730	1080	2530	464	351	297
3	154	191	220	456	2030	1200	3680	243	3340	181	349	246
4	100	190	219	454	1380	2420	3530	222	3440	317	351	251
5	67	147	218	452	1060	3280	3070	146	3510	305	332	257
6	55	143	217	452	1070	3650	2810	169	3840	511	311	248
7	50	130	221	451	1050	3680	2800	162	3900	965	307	248
8	48	115	201	450	1050	3680	2800	129	3910	967	308	248
9	48	121	180	527	763	3630	2800	138	3940	967	317	246
10	95	140	190	470	388	903	2390	128	4000	964	336	232
11	163	156	213	457	386	122	1680	119	3960	959	309	186
12	165	128	244	456	389	55	1650	139	3950	957	297	195
13	243	177	223	455	386	54	1250	127	3960	960	330	186
14	313	159	220	457	386	47	678	222	3980	654	331	186
15	313	134	244	457	270	728	548	265	3950	277	332	190
16	317	133	225	453	135	1690	426	131	4130	273	332	186
17	322	131	234	473	360	1860	417	123	4030	297	333	144
18	324	134	283	515	362	2210	417	119	3940	272	332	83
19	328	148	231	471	363	3600	416	120	3910	265	355	60
20	325	202	219	686	497	3890	381	128	3940	262	423	56
21	280	201	217	1530	400	4160	359	120	3920	259	465	79
22	192	229	215	1760	376	4200	451	118	3700	258	430	104
23	135	203	216	1760	532	4200	857	136	2920	259	414	98
24	136	169	239	1740	768	4190	291	191	2790	259	403	90
25	134	207	315	1730	966	4170	194	168	2780	258	400	85
26	135	176	329	1910	1350	4160	190	168	2680	259	400	85
27	158	220	331	2260	1280	4150	287	169	2320	289	391	85
28	201	220	331	2270	1140	4140	323	254	2260	337	349	85
29	184	218	381	2260	---	4140	253	732	2260	349	307	80
30	176	215	445	2250	---	4130	253	208	2270	350	306	72
31	172	---	447	2240	---	4120	---	398	---	351	290	---
TOTAL	5769	5118	7906	31196	23587	83957	42951	7256	101150	15975	10842	4865
MEAN	186	171	255	1006	842	2708	1432	234	3372	515	350	162
MAX	328	229	447	2270	2230	4200	4020	1080	4130	1930	465	297
MIN	48	115	180	447	135	47	190	118	1090	181	290	56
AC-FT	11440	10150	15680	61880	46780	166500	85190	14390	200600	31690	21510	9650
CAL YR 1986	TOTAL	357590	MEAN	980	MAX	4400	MIN	48	AC-FT	709300		
WTR YR 1987	TOTAL	340572	MEAN	933	MAX	4200	MIN	47	AC-FT	675500		

## TRINITY RIVER BASIN

08053000 ELM FORK TRINITY RIVER NEAR LEWISVILLE, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: January 1981 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1981 to current year.

WATER TEMPERATURE: November 1976 to current year.

INSTRUMENTATION.--From November 1976 to October 1981, water temperature 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, 790 microsiemens Nov. 14, 1983; minimum daily, 200 microsiemens May 13, 1982.

WATER TEMPERATURES: Maximum, 33.0°C July 27, 1977; minimum, 0.0°C Jan. 31 and Feb. 9, 1979.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 443 microsiemens Oct. 5; minimum daily, 308 microsiemens Sept. 9.

WATER TEMPERATURE: Maximum daily, 31.0°C on several days during August and September; minimum daily, 8.0°C Jan. 25.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	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 (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3
OCT 21...	1145	280	339	7.90	18.5	8.9	96	1.1	120	14
JAN 30...	1130	2250	365	8.00	7.5	12.8	107	1.8	120	11
MAR 20...	1600	3750	390	7.90	14.5	10.9	109	0.1	140	18
JUN 04...	1430	3350	340	7.90	22.5	9.3	108	1.3	120	19
JUL 23...	1200	259	360	7.50	25.0	7.7	94	1.5	130	11
SEP 16...	1330	186	339	7.60	25.0	8.6	106	0.1	110	4

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 WH WAT TOTAL FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
OCT 21...	40	4.1	21	0.9	5.4	103	33	19	0.30	4.0
JAN 30...	42	4.1	19	0.8	5.1	111	31	24	0.30	3.2
MAR 20...	48	4.3	21	0.8	4.7	120	33	20	0.30	3.8
JUN 04...	43	4.1	20	0.8	4.2	105	33	20	0.30	5.0
JUL 23...	44	4.2	22	0.9	5.7	116	31	19	0.40	7.2
SEP 16...	36	4.0	22	1	5.0	102	30	17	0.30	5.2

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- PHORUS, TOTAL (MG/L AS P)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)
OCT 21...	190	0.440	0.060	0.500	0.110	1.2	1.3	0.130	--	--
JAN 30...	200	--	<0.010	0.400	0.130	0.97	1.1	0.050	1	44
MAR 20...	210	0.380	0.020	0.400	0.120	1.1	1.2	0.050	--	--
JUN 04...	190	0.280	0.020	0.300	0.100	0.70	0.80	0.090	1	44
JUL 23...	200	0.270	0.030	0.300	0.430	0.97	1.4	0.230	11	47
SEP 16...	180	0.270	0.030	0.300	0.170	0.43	0.60	0.090	--	--

08053000 ELM FORK TRINITY RIVER NEAR LEWISVILLE, TX--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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)
OCT 21...	--	--	--	--	--	--	--	--	--	--
JAN 30...	3	<10	11	17	<5	6	1.7	<1	<1	100
MAR 20...	--	--	--	--	--	--	--	--	--	--
JUN 04...	<1	<10	2	16	<5	22	<0.1	<1	<1	5
JUL 23...	<1	<10	1	12	<5	890	0.2	<1	<1	33
SEP 16...	--	--	--	--	--	--	--	--	--	--

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1986 TO SEPTEMBER 1987

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. 1986	5769	331	184	2860	21	334	30	464	120
NOV. 1986	5118	320	177	2450	20	279	28	383	120
DEC. 1986	7906	330	183	3900	21	453	29	628	120
JAN. 1987	31196	348	193	16200	23	1940	32	2740	120
FEB. 1987	23587	360	199	12700	24	1550	35	2210	130
MAR. 1987	83957	376	208	47200	26	5900	38	8540	130
APR. 1987	42951	356	197	22800	24	2770	34	3950	120
MAY 1987	7256	381	211	4130	27	520	39	757	130
JUNE 1987	101150	346	191	52300	23	6230	32	8760	120
JULY 1987	15975	340	188	8110	22	957	31	1340	120
AUG. 1987	10842	332	184	5390	22	629	30	875	120
SEPT 1987	4865	321	178	2340	20	268	28	368	120
TOTAL	340572	**	**	180000	**	21800	**	31000	**
WTD.AVG.	933	354	196	**	24	**	34	**	120

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
EQUIVALENT MEAN

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	333	317	329	334	357	399	377	384	370	340	325	318
2	333	318	331	337	360	380	315	386	360	365	325	318
3	346	318	331	337	357	368	329	383	346	358	329	317
4	393	318	331	336	364	362	320	379	344	350	329	319
5	443	318	328	335	351	368	327	406	339	345	330	320
6	417	318	327	333	355	372	335	379	338	338	329	323
7	417	319	326	338	356	370	326	382	345	337	329	322
8	417	317	327	340	362	368	384	366	353	337	330	321
9	435	319	327	342	362	372	383	377	346	342	329	308
10	436	319	328	340	355	370	384	363	344	338	331	320
11	338	318	330	342	358	374	384	367	345	341	328	319
12	340	318	334	338	355	383	384	376	342	335	328	324
13	332	327	329	340	353	376	383	366	345	333	330	321
14	327	319	334	338	358	374	386	362	346	332	330	323
15	327	313	330	342	358	380	376	368	344	366	332	322
16	327	314	333	340	358	380	380	366	346	363	331	341
17	327	321	331	340	360	379	380	369	341	372	326	324
18	315	325	331	340	360	378	379	368	343	370	325	323
19	314	321	324	342	360	380	378	364	341	318	320	321
20	320	322	329	344	357	379	379	365	344	337	317	324
21	314	321	331	346	356	379	378	363	348	339	316	324
22	314	318	329	347	360	381	379	368	343	339	330	326
23	315	316	330	346	364	380	379	370	343	339	330	324
24	314	320	330	361	359	379	379	365	345	330	332	330
25	317	321	330	349	358	381	378	362	350	329	416	331
26	318	322	330	346	360	377	379	387	347	330	336	321
27	317	322	330	346	360	376	380	378	350	328	338	323
28	318	319	330	350	396	379	384	381	350	330	324	320
29	318	324	330	354	---	379	385	416	350	326	321	322
30	318	320	332	358	---	378	388	384	348	329	380	318
31	320	---	330	361	---	376	---	383	---	326	320	---
MEAN	346	319	330	343	360	377	370	375	347	341	332	322

## TRINITY RIVER BASIN

08053000 ELM FORK TRINITY RIVER NEAR LEWISVILLE, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28.0	23.0	13.0	---	9.0	11.0	15.0	21.0	25.0	---	29.0	---
2	28.0	21.5	16.0	10.0	9.0	11.0	15.0	20.0	25.0	---	29.0	---
3	28.0	20.0	14.0	10.0	9.0	11.0	15.0	20.0	25.0	23.0	30.0	30.0
4	25.0	19.5	13.0	10.0	9.0	12.0	15.0	19.0	25.0	25.0	30.0	30.0
5	25.0	20.0	13.0	10.0	10.0	13.0	15.0	20.0	25.0	25.0	30.0	31.0
6	25.0	19.5	13.0	11.0	10.0	13.0	16.0	20.0	---	25.0	30.0	29.0
7	24.0	19.0	13.0	11.0	10.0	13.0	16.0	20.0	---	25.0	30.0	29.0
8	23.0	18.5	12.0	---	11.0	13.0	16.0	20.0	24.0	25.0	30.0	29.0
9	24.0	18.5	11.0	---	11.0	15.0	16.0	21.0	24.0	25.0	30.0	29.0
10	24.0	18.0	11.0	---	11.0	13.0	16.0	21.0	25.0	25.0	30.0	29.0
11	25.0	17.5	---	10.0	12.0	14.0	16.0	22.0	24.0	25.0	31.0	30.0
12	23.0	16.5	11.0	10.0	12.0	14.0	16.0	23.0	25.0	25.0	30.0	28.0
13	23.0	16.5	12.0	10.0	12.0	13.0	15.0	23.0	25.0	25.0	30.0	28.0
14	23.0	17.0	12.0	11.0	12.0	13.0	15.0	24.0	24.0	25.0	30.0	29.0
15	23.0	18.0	12.0	10.0	---	13.0	16.0	24.0	24.0	25.0	31.0	29.0
16	23.0	17.0	12.0	10.0	---	14.0	17.0	24.0	25.0	24.0	31.0	29.0
17	23.0	17.5	12.0	10.0	---	14.0	17.0	24.0	25.0	25.0	31.0	29.0
18	23.0	17.5	11.0	9.0	---	14.0	17.0	24.0	---	26.0	31.0	29.0
19	23.0	17.0	12.0	---	11.0	15.0	17.0	24.0	---	26.0	31.0	29.0
20	23.0	17.0	11.0	---	11.0	14.0	17.0	24.0	---	26.0	31.0	30.0
21	24.0	17.5	11.0	---	11.0	14.0	17.0	24.0	25.0	26.0	31.0	30.0
22	23.0	---	11.0	---	16.0	16.0	18.0	24.0	25.0	27.0	31.0	30.0
23	22.0	13.5	---	---	16.0	15.0	20.0	24.0	25.0	27.0	31.0	30.0
24	23.0	13.0	---	9.0	11.0	19.0	20.0	24.0	25.0	20.0	31.0	30.0
25	23.0	13.5	---	8.0	11.0	15.0	21.0	25.0	25.0	27.0	31.0	28.0
26	23.0	14.0	---	9.0	11.0	15.0	21.0	24.0	25.0	28.0	31.0	26.0
27	23.0	13.5	---	9.0	11.0	16.0	21.0	24.0	---	28.0	31.0	26.0
28	22.0	15.5	---	---	13.0	16.0	21.0	24.0	---	28.0	31.0	26.0
29	23.0	13.0	12.0	---	---	15.0	---	24.0	25.0	28.0	31.0	27.0
30	23.0	13.0	11.0	---	---	15.0	---	24.0	25.0	28.0	31.0	28.0
31	23.0	---	11.0	9.0	---	15.0	---	24.0	---	29.0	30.0	---
MEAN	24.0	17.0	12.0	10.0	11.0	14.0	17.0	22.5	25.0	25.5	30.5	29.0

## TRINITY RIVER BASIN

291

08053500 DENTON CREEK NEAR JUSTIN, TX

LOCATION.--Lat 33°07'08", long 97°17'25", Denton County, Hydrologic Unit 12030104, on right bank at downstream side of bridge on Farm Road 156, 100 ft upstream from Gulf, Colorado, and Santa Fe Railway Co. bridge, 2.2 mi north of Justin, 3.0 mi upstream from Olivers Creek, 12.9 mi upstream from Harriet Creek, and 32.9 mi upstream from Grapevine Dam.

DRAINAGE AREA.--400 mi<sup>2</sup>.

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

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

REVISED RECORDS.--WSP 1732: 1950(M). WSP 1922: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 606.66 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Several small diversions above station. Flow is affected at times by discharge from the flood-detention pools of 84 floodwater-retarding structures with a combined detention capacity of 52,750 acre-ft. These structures control runoff from 197 mi<sup>2</sup> in the Denton Creek watershed. Gage-height telemeter at station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--31 years (water years 1950-80) prior to completion of floodwater-retarding structures, 77.4 ft<sup>3</sup>/s (56,080 acre-ft/yr); 7 years (water years 1981-87) after completion of floodwater-retarding structures, 159 ft<sup>3</sup>/s (115,200 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 34,700 ft<sup>3</sup>/s Oct. 13, 1981 (gage height, 18.68 ft), from high-water mark; no flow at times in 1949-65, 1967-74, 1976-85.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in May 1935 was the highest since 1908 and reached a stage of 20.6 ft at site about 1,500 ft upstream, from information by local resident. Flood in May 1908 reached a stage about 1.0 ft higher than flood in May 1935, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 11,300 ft<sup>3</sup>/s May 28 at 2115 hours (gage height, 16.03 ft); minimum daily, 1.4 ft<sup>3</sup>/s, Sept. 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	23	64	72	88	3900	107	44	913	103	e16	12
2	1500	23	59	68	97	1940	103	44	626	610	e15	e7.0
3	405	23	54	65	98	1230	97	45	460	1480	e14	e5.5
4	332	29	51	64	91	788	93	135	308	534	e13	e4.8
5	323	97	49	63	87	544	93	60	208	320	e12	e4.0
6	198	59	49	64	148	392	93	45	157	211	e11	e3.5
7	156	44	62	64	318	316	93	42	126	152	e11	e3.2
8	112	40	175	59	212	263	91	46	105	110	e10	e2.8
9	86	38	236	483	156	229	88	44	96	88	e10	e2.5
10	68	37	168	537	131	200	86	40	117	73	e9.5	e2.0
11	58	88	117	258	121	176	83	38	136	63	e9.0	e1.7
12	74	56	97	176	114	161	80	39	896	55	e8.7	e1.6
13	76	44	83	152	105	149	79	35	2730	50	e8.5	e1.5
14	58	37	77	132	100	149	75	34	1660	49	e8.0	e1.4
15	49	36	78	121	175	144	71	32	836	49	e7.6	15
16	43	36	82	112	259	140	70	33	570	48	e7.1	107
17	38	37	82	212	177	1410	68	35	384	48	e6.8	41
18	35	38	238	1190	131	988	66	33	643	47	e6.5	22
19	33	38	301	658	112	429	64	31	515	45	e6.3	17
20	31	37	207	363	334	284	61	31	945	40	e6.1	15
21	28	37	166	269	516	223	59	31	1080	35	e5.9	e13
22	27	37	147	211	367	194	84	29	517	32	e5.7	e11
23	26	38	146	174	263	179	74	27	303	e30	e5.4	e9.0
24	27	38	145	159	389	175	64	31	225	e28	e5.2	e8.0
25	27	95	132	141	696	153	60	40	179	e26	e5.0	e7.5
26	27	191	113	124	935	139	57	37	147	e24	e4.8	e7.0
27	27	126	97	118	1490	140	53	32	116	e22	e4.6	e6.5
28	26	92	89	117	3810	141	51	2200	97	e20	e4.4	e6.0
29	26	77	84	120	---	134	49	5140	85	e19	e4.2	e5.5
30	25	68	80	105	---	120	47	3330	120	e18	e4.0	e5.0
31	24	---	76	90	---	110	---	1440	---	e17	17	---
TOTAL	3985	1659	3604	6541	11520	15540	2259	13223	15300	4446	262.3	349.0
MEAN	129	55.3	116	211	411	501	75.3	427	510	143	8.46	11.6
MAX	1500	191	301	1190	3810	3900	107	5140	2730	1480	17	107
MIN	20	23	49	59	87	110	47	27	85	17	4.0	1.4
AC-FT	7900	3290	7150	12970	22850	30820	4480	26230	30350	8820	520	692

CAL YR 1986 TOTAL 53033.2 MEAN 145 MAX 2070 MIN .04 AC-FT 105200  
WTR YR 1987 TOTAL 78688.1 MEAN 216 MAX 5140 MIN 1.4 AC-FT 156100

e Estimated.

## 08054500 GRAPEVINE LAKE NEAR GRAPEVINE, TX

LOCATION.--Lat 32°58'21", long 97°03'22", Tarrant County, Hydrologic Unit 12030104, in intake structure of Grapevine Dam on Denton Creek, 2.7 mi northeast of Grapevine, 4.3 mi upstream from bridge on State Highway 121, and 11.7 mi upstream from mouth.

DRAINAGE AREA.--695 mi<sup>2</sup>.

PERIOD OF RECORD.--July 1952 to current year. Prior to October 1970, published as Grapevine Reservoir.

REVISED RECORDS.--WSP 1922: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to May 16, 1953, non-recording gage at site 1,000 ft upstream at present datum.

REMARKS.--The lake is formed by a rolled earthfill dam 12,850 ft long, including a 500-foot uncontrolled off-channel concrete-gravity spillway with an ogee weir section. The dam was completed in June 1952, and deliberate impoundment began July 3, 1952. The controlled outlet works consist of a 13.0-foot-diameter concrete conduit that is controlled by two 6.5- by 13.0-foot broome-type gates and two 30-inch steel pipes with service valves. The capacity table, used since April 1972, is based on a survey made in October 1966. The lake was built for flood control, navigation, and water conservation. The city of Dallas uses part of this water for their municipal supply. An unknown amount of water is diverted for industrial and municipal uses. Inflow is affected at times by discharge from the flood-detention pools of 87 floodwater-retarding structures with a combined detention capacity of 57,850 acre-ft. These structures control runoff from 217 mi<sup>2</sup> in the Denton Creek watershed. A 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.....	588.0	-
Crest of spillway.....	560.0	425,500
Top of conservation pool.....	535.0	181,100
Lowest intake to wet wells (invert).....	505.5	22,140
Invert of two broome-type gates.....	475.0	100

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

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 471,200 acre-ft Nov. 1, 1981 (elevation, 563.29 ft); minimum since lake first filled in 1957, 94,480 acre-ft Feb. 26, 1979 (elevation, 520.67 ft).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 234,700 acre-ft June 1 at 1300 hours (elevation, 541.80 ft); minimum, 161,700 acre-ft Sept. 30 at 2400 hours (elevation, 532.25 ft).

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

532.0	160,000	536.0	188,400	540.0	219,600
534.0	173,900	538.0	203,600	542.0	236,500

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	180100	178400	179400	186900	181400	219600	211000	181000	234900	202400	179100	168400
2	182100	178100	179200	186700	181500	224300	208900	181000	234900	202000	178800	168200
3	182700	177800	179200	186800	181800	226100	206800	181400	234400	203600	178500	167800
4	183500	178500	179200	186500	181900	225900	204700	183300	233200	202500	178200	167500
5	184000	178100	179200	186500	182300	224900	202700	183500	231800	201000	177800	167300
6	184000	178100	179200	186400	182800	223300	200700	183500	230100	199400	177500	166900
7	183700	178100	179700	186200	183400	221500	198800	183700	228400	197000	177100	166700
8	183500	178000	180000	186200	183900	219600	196700	183800	226900	195000	176600	166400
9	183100	177800	180500	187600	184000	218300	194600	183800	225900	192900	176200	166100
10	182600	178200	180700	188800	184100	218400	192700	183700	224800	190700	175800	166000
11	182300	178400	181100	189200	184000	218600	190700	183700	224200	188400	175500	165800
12	181500	178500	181300	189400	183700	218900	188500	183600	225400	186400	175000	165900
13	181000	178100	181400	189500	183500	219000	186800	183400	230500	183900	174500	165700
14	181000	177900	181800	189600	183400	219200	184200	184300	232500	182200	174200	165500
15	180900	177800	182100	189800	183700	219100	182700	184500	232800	181800	173700	165500
16	180700	177800	182200	189900	183800	219600	182100	185100	232200	181800	173200	165200
17	180700	177700	182800	190500	183600	223700	182000	185100	231200	182100	172800	165200
18	180600	177600	184000	193700	183200	225500	181800	185000	231000	181800	172400	165000
19	180500	177600	185000	195200	182900	225300	181500	184800	230100	181600	172000	164800
20	180400	177500	185500	195500	185000	224700	181500	184800	230800	181500	171700	164500
21	180200	177300	185900	195500	186800	223800	181400	184600	231300	181300	171200	164100
22	180200	177800	186200	195100	187300	222800	181300	184500	230100	181500	170900	163900
23	180200	177800	186700	193900	187400	222100	181200	184300	227700	181500	170600	163500
24	180100	177700	186800	193000	188300	220900	181100	184500	225300	181300	170200	163200
25	179800	178400	187000	191500	189700	219800	181100	184500	222100	181000	169800	162900
26	179500	178600	187100	189900	192900	218700	181100	184200	218800	180700	169500	162600
27	179400	178900	187100	188100	196600	217500	181200	184200	215300	180500	169600	162300
28	179100	179000	187200	186300	210200	216800	181100	191900	211700	180200	169300	162200
29	178900	179100	187200	184600	---	215500	181100	220500	208900	179900	168900	161900
30	178700	179300	187100	182800	---	213900	181000	229800	205700	179700	168700	161500
31	178500	---	187000	181500	---	212600	---	233200	---	179400	168700	---
MAX	184000	179300	187200	195500	210200	226100	211000	233200	234900	203600	179100	168400
MIN	178500	177300	179200	181500	181400	212600	181000	181000	205700	179400	168700	161500
(↑)	534.64	534.75	535.81	535.05	538.84	539.14	534.98	541.62	538.27	534.77	533.27	532.23
(Φ)	-1800	+800	+7700	-5500	+28700	-2400	-31600	+52200	-27500	-26300	-10700	-7200

CAL YR 1986 MAX 241800 MIN 155700 (Φ) +27500  
WTR YR 1987 MAX 234900 MIN 161500 (Φ) -18800

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

## TRINITY RIVER BASIN

293

## 08055000 DENTON CREEK NEAR GRAPEVINE, TX

LOCATION.--Lat 32°59'13", long 97°00'45", Denton County, Hydrologic Unit 12030104, on left bank at downstream side of left pier of bridge on State Highway 121, 1.3 mi downstream from Bakers Branch, 4.1 mi downstream from Grapevine Dam, 5.0 mi northeast of Grapevine, and 6.1 mi upstream from mouth.

DRAINAGE AREA.--705 mi<sup>2</sup>.

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

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

REVISED RECORDS.--WSP 1922: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 439.11 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Since July 1952, flow regulated by Grapevine Lake (see preceding page). Much of flow is used by the city of Dallas for municipal supply (see station 08055500). The city of Grapevine diverts water from Denton Creek just downstream from Grapevine Dam. There were several observations of water temperature made during the year.

AVERAGE DISCHARGE.--5 years (water years 1948-52) prior to regulation, 140 ft<sup>3</sup>/s (101,400 acre-ft/yr); 35 years (water years 1953-87) regulated, unadjusted, 163 ft<sup>3</sup>/s (118,100 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,900 ft<sup>3</sup>/s Feb. 26, 1948 (gage height, 30.38 ft), from rating curve extended above 6,000 ft<sup>3</sup>/s on basis of conveyance-slope study; no flow at times. Maximum discharge since construction of Grapevine Dam in 1952, 9,700 ft<sup>3</sup>/s Nov. 1, 1981 (gage height, 27.93 ft).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in May 1908 was slightly higher than the flood in April 1942, which reached a stage of 35.9 ft, from floodmarks, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,720 ft<sup>3</sup>/s June 26 at 0600 hours (gage height, 15.80 ft); minimum daily, 13 ft<sup>3</sup>/s Nov. 28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	86	92	14	176	290	315	953	28	314	1680	87	87
2	86	92	16	178	50	308	1210	17	923	1560	87	85
3	144	93	14	177	50	582	1200	18	981	1160	87	83
4	300	89	17	177	48	1140	1200	49	976	1150	86	85
5	285	75	15	178	49	1230	1200	31	968	1150	97	86
6	285	73	18	176	53	1380	1200	55	965	1150	112	86
7	284	74	17	176	52	1380	1200	79	966	1150	112	86
8	285	76	21	176	48	1370	1190	78	967	1140	116	85
9	285	75	28	197	99	1250	1190	78	976	1140	121	84
10	285	81	30	179	183	217	1190	77	974	1140	122	89
11	285	88	29	177	243	198	1190	75	973	1140	122	83
12	286	79	53	177	299	197	1180	78	974	1130	121	84
13	208	81	29	177	299	197	1180	76	964	1130	121	81
14	77	81	33	177	301	197	1180	79	967	841	121	82
15	23	83	38	178	247	266	948	82	971	210	120	82
16	22	81	33	178	159	360	416	85	976	129	119	81
17	22	84	41	186	290	422	168	87	963	111	116	79
18	21	85	118	199	290	548	163	83	978	104	103	75
19	19	87	37	180	291	820	162	84	1020	104	94	74
20	20	89	34	358	367	816	140	85	1030	100	94	75
21	22	86	29	485	302	812	116	82	1020	101	94	74
22	45	108	34	367	292	814	117	81	1190	98	94	72
23	84	88	34	839	339	817	104	81	1560	100	93	71
24	87	90	67	834	454	810	65	89	1560	93	93	74
25	87	130	138	831	512	802	35	81	1620	88	94	70
26	89	75	135	937	676	800	35	80	1710	89	94	68
27	87	17	138	1080	613	801	24	79	1710	88	99	68
28	89	13	135	1080	551	796	35	199	1700	89	94	69
29	90	15	155	1080	---	796	33	216	1690	90	94	68
30	89	16	176	1070	---	793	35	76	1690	89	93	70
31	92	---	178	833	---	793	---	73	---	87	90	---
TOTAL	4169	2296	1854	13213	7447	22027	19059	2461	34276	18431	3190	2356
MEAN	134	76.5	59.8	426	266	711	635	79.4	1143	595	103	78.5
MAX	300	130	178	1080	676	1380	1210	216	1710	1680	122	89
MIN	19	13	14	176	48	197	24	17	314	87	86	68
AC-FT	8270	4550	3680	26210	14770	43690	37800	4880	67990	36560	6330	4670
CAL YR 1986	TOTAL	79691	MEAN	218	MAX	1840	MIN	.57	AC-FT	158100		
WTR YR 1987	TOTAL	130779	MEAN	358	MAX	171	MIN	13	AC-FT	259400		

## TRINITY RIVER BASIN

08055500 ELM FORK TRINITY RIVER NEAR CARROLLTON, TX

LOCATION.--Lat 32°57'57", long 96°56'39", Dallas County, Hydrologic Unit 12030103, near left bank at downstream side of bridge on Sandy Lake Road, 40 ft upstream from Carrollton Dam, 0.3 mi downstream from Denton Creek, 1.0 mi upstream from St. Louis Southwestern Railway Lines bridge, 2.3 mi northwest of Carrollton, and 18.2 mi upstream from mouth.

DRAINAGE AREA.--2,459 mi<sup>2</sup>.

PERIOD OF RECORD.--January 1907 to current year. Monthly discharge only for some periods, published in WSP 1312. Prior to November 1923, published as "near Dallas".

REVISED RECORDS.--WSP 788: 1924. WSP 1148: Drainage area at former site. WSP 1632: 1908(M). WSP 1922: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 433.40 ft National Geodetic Vertical Datum of 1929. Prior to November 1923, nonrecording gage at site 15.5 mi downstream at different datum. Nov. 1, 1923, to Nov. 13, 1934, nonrecording gage, and Nov. 14, 1934, to July 6, 1938, water-stage recorder at present site and datum. July 7, 1938, to Apr. 14, 1939, nonrecording gage at site 9.3 mi downstream at datum 22.94 ft lower. Apr. 15, 1939, to Sept. 30, 1955, water-stage recorder at site 8.5 mi downstream at datum 22.94 ft lower.

REMARKS.--Records good except those for estimated daily discharge, which are fair. Flow is largely regulated by Lewisville Lake (station 08052800) since November 1954, and by Grapevine Lake (station 08054500) since July 1952. The city of Dallas diverts water from the pool at gage and from the river 14 mi downstream for municipal use. A water treatment plant returns water to the river below this station. In addition, the Dallas Power and Light Co. divert water from the pool at gage into North Lake for cooling water at their electric generating plant. Several observations of water temperature were made during the year. Gage-height telemeters at station.

AVERAGE DISCHARGE.--47 years (water years 1908-54) prior to regulation by Lewisville and Grapevine Lakes, 818 ft<sup>3</sup>/s (592,600 acre-ft/yr); 33 years (water years 1955-87) regulated, unadjusted, 749 ft<sup>3</sup>/s (542,600 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, about 17 ft May 25, 1908, present site and datum, from information by local resident; estimated discharge, 145,000 ft<sup>3</sup>/s, at site 8.5 mi downstream (from information by U.S. Army Corps of Engineers); maximum gage height subsequent to 1908, 14.5 ft Apr. 26, 1942, present site and datum, from observation by National Weather Service; discharge at site 8.5 mi downstream, 90,700 ft<sup>3</sup>/s; no flow at times. Flood in 1866 reached about the same stage as flood of May 25, 1908.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,750 ft<sup>3</sup>/s June 16 at 1100 hours (gage height, 5.40 ft); minimum, 5.7 ft<sup>3</sup>/s Nov. 15.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	155	125	142	533	2330	1130	4720	425	885	3170	199	148
2	137	138	133	523	1940	994	4740	946	2890	1580	212	169
3	118	126	118	551	1860	1340	4580	202	4050	1220	206	136
4	380	123	130	538	1400	3200	4460	380	4120	1250	210	129
5	273	82	150	488	1040	4070	3960	82	4110	1190	177	109
6	256	94	133	496	1110	4760	3610	154	4500	1580	185	128
7	229	73	146	492	1070	4860	3580	189	4600	1610	211	185
8	217	65	136	498	1040	4850	3590	105	4600	1610	316	165
9	203	75	100	871	912	4810	3580	87	4830	1600	318	145
10	233	52	60	621	561	1690	3340	183	4980	1590	315	202
11	357	212	129	526	585	333	2500	145	4760	1590	277	113
12	336	33	297	512	710	211	2440	173	4800	1590	200	173
13	386	66	170	480	707	209	2190	148	4800	1270	e185	80
14	292	57	145	532	704	199	1560	269	4780	315	e185	136
15	260	20	299	522	667	655	1340	588	4870	238	e185	137
16	239	31	192	535	223	1780	762	203	5350	367	e185	137
17	252	18	225	608	681	2520	482	199	4950	261	185	137
18	227	29	842	841	676	2290	465	168	4760	195	177	92
19	232	20	266	620	691	4000	454	170	4780	182	177	65
20	242	100	224	818	1160	4390	418	174	4950	177	233	57
21	206	117	169	1750	803	4670	393	160	4860	168	302	71
22	146	286	160	1680	697	4780	400	116	4830	211	254	128
23	96	134	168	2270	783	4770	791	107	4410	154	238	122
24	101	90	190	2220	1190	4750	280	206	4260	149	233	117
25	101	466	363	2230	1300	4740	124	136	4280	136	229	97
26	113	130	393	2410	2160	4730	107	135	4480	220	228	104
27	81	136	384	2920	1920	4730	159	129	4010	225	280	105
28	169	37	357	3030	2210	4720	244	372	3910	213	213	107
29	118	37	407	3040	---	4690	160	2250	3890	202	146	105
30	111	125	511	3000	---	4700	160	375	4000	202	165	89
31	58	---	491	2900	---	4690	---	363	---	205	173	---
TOTAL	6324	3097	7630	39055	31130	100261	55589	9339	131295	24670	6799	3688
MEAN	204	103	246	1260	1112	3234	1853	301	4376	796	219	123
MAX	386	466	842	3040	2330	4860	4740	2250	5350	3170	318	202
MIN	58	18	60	480	223	199	107	82	885	136	146	57
AC-FT	12540	6140	15130	77470	61750	198900	110300	18520	260400	48930	13490	7320
CAL YR 1986	TOTAL	383225	MEAN	1050	MAX	6080	MIN	.00	AC-FT	760100		
WTR YR 1987	TOTAL	418877	MEAN	1148	MAX	5350	MIN	18	AC-FT	830800		

e Estimated.

## TRINITY RIVER BASIN

295

08056500 TURTLE CREEK AT DALLAS, TX

LOCATION.--Lat 32°48'26", long 96°48'08", Dallas County, Hydrologic Unit 12030105, on left bank 68 ft upstream from Hall Street Dam, 210 ft upstream from Hall Street in Dallas, and 2.0 mi north of Dallas County Courthouse.

DRAINAGE AREA.--7.98 mi<sup>2</sup>.

PERIOD OF RECORD.--Water years 1948-51 (annual maximum only), October 1951 to September 1980, April 1984 to current year. Daily discharge records for April 1948 to September 1951, published in WSP 1392, are unreliable and should not be used.

REVISED RECORDS.--See PERIOD OF RECORD.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 428.13 ft above National Geodetic Vertical Datum of 1929. Prior to Dec. 17, 1951, at site 52 ft upstream at same datum.

REMARKS.--Records good. Flow is slightly affected by eight small on-channel dams above station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--32 years (water years 1952-80, 1986-87) 8.56 ft<sup>3</sup>/s (6,200 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,200 ft<sup>3</sup>/s Apr. 28, 1966 (gage height 10.54 ft), from rating curve extended above 2,460 ft<sup>3</sup>/s on basis of contracted-opening measurement of 12,200 ft<sup>3</sup>/s; no flow at times during most years.  
Maximum stage since at least 1903, that of Apr. 28, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,600 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
May 3	2400	*3,350	*6.90	May 28	2030	2,890	6.42
May 4	0415	2,510	6.00	June 13	0630	2,250	5.71

Minimum daily discharge, 0.87 ft<sup>3</sup>/s Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.2	1.8	2.5	2.9	4.8	9.2	3.8	2.3	3.4	1.7	1.1	1.6
2	2.1	1.4	2.2	3.0	2.8	7.5	3.4	2.2	4.8	36	1.1	1.2
3	1.4	1.4	2.2	10	2.8	6.3	3.2	115	8.9	3.2	1.0	1.2
4	12	27	2.2	2.7	2.8	5.8	3.0	275	2.9	2.2	1.1	1.3
5	35	2.5	2.3	2.9	2.8	6.0	3.1	5.9	2.7	1.8	2.5	1.1
6	31	2.2	2.4	2.9	20	6.2	4.2	4.5	2.0	1.6	3.0	.92
7	3.2	2.4	7.4	2.5	3.4	6.6	3.1	4.0	1.9	1.4	1.7	3.0
8	19	2.0	3.0	5.5	3.2	6.4	2.8	5.4	1.7	1.5	1.4	2.1
9	3.1	1.7	2.6	47	3.3	7.7	2.8	4.0	57	2.5	1.2	1.2
10	2.4	31	2.5	3.7	3.8	8.1	2.8	2.6	36	1.8	72	18
11	3.7	5.3	3.3	3.2	4.0	7.4	11	3.1	17	1.4	6.3	2.8
12	3.9	3.9	17	3.2	3.4	6.2	5.0	2.6	45	1.2	3.5	30
13	2.0	2.8	3.1	3.2	3.5	6.1	10	2.7	145	4.6	2.8	3.9
14	1.8	2.2	18	3.3	5.8	5.9	3.2	25	6.1	1.4	1.9	2.0
15	1.6	2.2	20	3.0	8.5	5.9	2.8	5.5	5.7	1.1	1.7	33
16	1.6	2.1	4.5	2.6	3.0	9.7	2.9	2.7	74	6.3	1.5	3.5
17	1.5	2.0	14	13	3.3	115	2.7	2.6	4.4	17	1.6	2.4
18	1.3	2.0	59	28	3.5	9.0	3.0	2.1	9.2	1.9	1.5	7.8
19	1.3	11	6.2	4.0	3.0	7.0	2.8	43	4.9	1.3	1.4	2.3
20	1.2	2.9	4.9	3.7	103	6.2	2.2	23	6.2	1.4	1.3	1.3
21	1.3	1.9	4.2	3.7	6.5	5.7	2.1	3.2	2.7	1.5	1.4	1.3
22	1.8	3.4	4.5	3.9	5.0	5.2	2.5	2.5	2.4	1.3	1.2	1.1
23	142	2.5	11	4.3	4.7	7.0	2.3	2.0	2.0	3.1	1.1	1.0
24	5.9	4.0	3.6	4.0	31	5.8	2.0	12	1.9	2.0	1.4	1.3
25	2.7	112	3.2	2.7	12	4.7	2.0	2.5	2.8	1.4	1.3	1.1
26	2.2	5.1	3.2	2.8	57	5.2	1.8	2.1	1.8	1.2	1.2	1.1
27	1.9	3.6	3.0	3.1	11	5.1	2.1	1.8	1.6	1.4	19	1.0
28	1.9	3.2	3.0	3.2	82	4.5	4.9	192	1.8	1.1	3.5	1.9
29	1.8	3.1	3.1	3.1	---	5.4	2.8	49	2.0	1.0	2.3	1.2
30	1.8	2.8	3.1	2.9	---	4.0	2.7	5.6	1.9	1.1	3.0	.87
31	1.7	---	3.1	2.7	---	4.0	---	3.7	---	1.1	2.2	---
TOTAL	296.3	251.4	224.3	186.7	399.9	304.8	103.0	809.6	459.7	107.5	147.2	132.49
MEAN	9.56	8.38	7.24	6.02	14.3	9.83	3.43	26.1	15.3	3.47	4.75	4.42
MAX	142	112	59	47	103	115	11	275	145	36	72	33
MIN	1.2	1.4	2.2	2.5	2.8	4.0	1.8	1.8	1.6	1.0	1.0	.87
AC-FT	588	499	445	370	793	605	204	1610	912	213	292	263
CAL YR 1986	TOTAL	4069.56	MEAN	11.1	MAX	305	MIN	1.0	AC-FT	8070		
WTR YR 1987	TOTAL	3422.85	MEAN	9.38	MAX	275	MIN	.87	AC-FT	6790		

## 08057000 TRINITY RIVER AT DALLAS, TX

LOCATION.--Lat 32°46'29", long 96°49'18", Dallas County, Hydrologic Unit 12030105, on right bank (levee) 90 ft downstream from Commerce Street viaduct in Dallas, 5.2 mi downstream from confluence of West and Elm Forks, and at mile 500.3.

DRAINAGE AREA.--6,106 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1898 to December 1899 (gage heights only published in WSP 28 and 37), July 1903 to current year.

REVISED RECORDS.--WSP 850: 1903-6 (monthly and annual means). WSP 1732: 1937(M). WSP 1922: Drainage area. WDR TX-73-1: 1972.

GAGE.--Water-stage recorder. Datum of gage is 368.02 ft above National Geodetic Vertical Datum of 1929. Oct. 1, 1898, to Dec. 31, 1899, nonrecording gage at site 2 mi upstream at different datum. July 1, 1903, to July 20, 1930, non-recording gage at present site and datum. July 21, 1930, to Sept. 30, 1932, nonrecording gage at site 6 mi downstream at datum 3.08 ft lower.

REMARKS.--Records fair. At times flow is affected by storage in seven upstream reservoirs, combined capacity 1,703,000 acre-ft, of which 846,200 acre-ft is for flood control. The city of Dallas diverts water for municipal use from Elm Fork, Lake Ray Hubbard (on the East Fork), and Lake Tawakoni (on the Sabine River), and purchases water from North Texas Municipal Water District (from the East Fork). Sewage effluent is returned to the river downstream from this station. The Trinity River Authority discharges sewage effluent into the river upstream from the station. For additional information on diversions and effluent returns upstream from this station, see stations 08048000, 08049200, and 08049500. Gage-height telemeters at station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--84 years, 1,536 ft<sup>3</sup>/s (1,113,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 184,000 ft<sup>3</sup>/s May 25, 1908 (gage height, 52.6 ft), from rating curve extended above 109,000 ft<sup>3</sup>/s; minimum observed for periods 1903-6, 1920-75, 1.2 ft<sup>3</sup>/s July 4, 1953, result of storage behind temporary dam 4 mi upstream. Maximum stage since at least 1840, that of May 25, 1908.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1866 reached about the same stage as that of May 25, 1908.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 12,400 ft<sup>3</sup>/s May 30 at 0045 hours (gage height, 33.83 ft); minimum daily, 255 ft<sup>3</sup>/s Aug. 20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	286	374	365	710	3120	8890	4990	420	5260	5000	439	466
2	269	370	373	723	2600	6070	4950	1010	5890	4750	421	440
3	256	375	401	795	2240	4850	4980	1110	7360	5120	415	428
4	430	727	406	784	1980	5530	4920	6130	8180	2940	426	406
5	909	1010	362	757	1430	7160	4780	4420	7900	2530	422	384
6	1260	511	343	887	1740	8140	4450	983	6850	2470	410	372
7	992	423	451	746	1880	8790	4170	607	6570	2580	297	471
8	953	393	576	793	1460	9310	4060	611	6440	2460	328	527
9	831	381	509	2670	1380	9500	4040	599	6530	2310	319	413
10	586	583	418	2570	1100	9380	4020	504	7990	2250	439	597
11	586	1230	364	1120	922	7390	3640	494	8000	2160	706	756
12	662	845	906	909	1120	5780	3060	542	8210	1990	429	960
13	615	559	1250	910	1070	4730	2940	659	8770	1960	344	1300
14	e600	496	713	789	1110	3460	2500	671	10100	1940	334	666
15	e525	456	2070	792	1410	2210	2020	1470	9900	1230	321	584
16	e500	432	1110	783	1200	2770	1510	3700	10500	595	299	540
17	e480	424	776	939	947	6500	967	1010	10100	1050	299	438
18	e450	409	3220	2210	1110	7260	772	640	9680	1380	281	563
19	e445	448	3580	1460	1120	5790	694	749	9720	673	264	489
20	e455	623	1130	1240	3660	6070	692	905	9160	518	255	419
21	470	524	750	1940	5290	6140	665	646	8900	481	310	393
22	436	540	601	2170	2330	5990	654	569	7890	459	354	380
23	926	729	776	2460	1770	5900	768	527	6800	472	337	382
24	838	542	825	2690	2640	5860	842	968	6010	613	288	377
25	530	2480	666	2660	3490	5490	466	1500	5840	488	268	367
26	463	2560	662	2650	4560	5310	419	652	5940	438	476	378
27	439	777	665	2880	7300	5210	410	598	5650	424	830	363
28	401	491	644	3190	7390	5140	415	1090	5140	420	1080	368
29	397	381	622	3290	---	5090	449	10100	4860	450	582	387
30	393	365	699	3280	---	5100	425	10200	4890	458	462	407
31	382	---	724	3270	---	5040	---	6030	---	447	459	---
TOTAL	17765	20458	26957	53067	67369	189850	69668	60114	225030	51056	12894	15021
MEAN	573	682	870	1712	2406	6124	2322	1939	7501	1647	416	501
MAX	1260	2560	3580	3290	7390	9500	4990	10200	10500	5120	1080	1300
MIN	256	365	343	710	922	2210	410	420	4860	420	255	363
AC-FT	35240	40580	53470	105300	133600	376600	138200	119200	446300	101300	25580	29790
CAL YR 1986	TOTAL	721376	MEAN	1976	MAX	18500	MIN	239	AC-FT	1431000		
WTR YR 1987	TOTAL	809249	MEAN	2217	MAX	10500	MIN	255	AC-FT	1605000		

e Estimated.

## TRINITY RIVER MAIN STEM

297

08057055 TRINITY RIVER AT CEDAR CREST BOULEVARD, DALLAS, TX

LOCATION.--Lat 32°45'04", long 96°47'07", Dallas County, Hydrologic Unit 12030105, on right bank at abandoned bridge abutment, 0.2 mi upstream from Cedar Crest Blvd. bridge, 1.8 mi southeast of Dallas City Hall, 2.1 mi downstream from Coombs Creek, and 2.7 mi downstream from Commerce Street Bridge (station 08057000).

PERIOD OF RECORD.--Chemical and biochemical analyses: February 1984 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: February 1984 to current year.

pH: February 1984 to current year.

WATER TEMPERATURES: February 1984 to current year.

DISSOLVED OXYGEN: February 1984 to current year.

INSTRUMENTATION.--Beginning February 1984, a four-parameter water-quality monitor records temperature, DO, pH, and specific conductance 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. Records of discharge are given for gaging station 08057000. No appreciable inflow between the two stations.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 996 micromhos/cm Aug. 30, 1986; minimum, 93 micromhos/cm Oct. 20, 1984.

pH: Maximum, 8.6 units Oct. 20, 1984; minimum, 7.0 units on several days during 1984 and 1985.

WATER TEMPERATURE: Maximum, 33.5°C Aug. 12, 1987; minimum, 7.5°C Jan. 19, 1987.

DISSOLVED OXYGEN: Maximum, 12.6 mg/L Jan. 26-28, 1987; minimum, 0.0 mg/L July 21, 1985.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 958 micromhos/cm July 26; minimum, 183 micromhos/cm Nov. 25.

pH: Maximum, 8.4 units on several days during January and February; minimum, 7.3 units Sept. 14, 29.

WATER TEMPERATURE: Maximum, 33.5°C Aug. 6; minimum, 7.5°C Jan. 19.

DISSOLVED OXYGEN: Maximum, 12.6 mg/L Jan. 26-28; minimum, 2.0 mg/L Aug. 11.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	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 (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3
NOV 13...	1615	559	586	7.80	14.0	9.0	86	1.3	150	18
JAN 23...	1215	2460	424	8.00	9.0	12.5	108	2.1	160	28
APR 29...	1020	449	750	7.90	23.5	6.7	79	7.2	190	27
JUL 14...	0900	1940	600	8.20	25.5	8.1	99	3.4	150	25
SEP 03...	1730	420	725	7.70	29.0	5.9	78	1.6	160	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 WH WAT TOTAL 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 13...	50	5.8	64	2	10	131	79	56	0.70
JAN 23...	54	5.2	32	1	6.2	128	52	32	0.40
APR 29...	64	7.3	82	3	9.4	163	100	68	0.80
JUL 14...	54	3.8	63	2	8.9	126	75	56	1.0
SEP 03...	53	6.9	85	3	10	146	83	79	1.1

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- PHORUS, TOTAL (MG/L AS P)
NOV 13...	7.6	350	4.00	0.100	4.10	0.640	1.3	1.9	0.930
JAN 23...	4.8	260	0.850	0.050	0.900	0.270	0.03	0.30	0.680
APR 29...	7.4	440	5.43	0.370	5.80	1.90	1.5	3.4	2.50
JUL 14...	9.6	350	0.860	0.040	0.900	0.160	1.4	1.6	0.890
SEP 03...	9.8	420	5.59	0.210	5.80	0.480	1.3	1.8	3.10

## TRINITY RIVER MAIN STEM

08057055 TRINITY RIVER AT CEDAR CREST BOULEVARD, DALLAS, TX--Continued

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1986 TO SEPTEMBER 1987

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. 1986	17765	617	350	16800	52	2510	77	3690	170
NOV. 1986	20458	563	321	17700	46	2550	71	3900	160
DEC. 1986	26957	577	328	23900	47	3450	72	5270	160
JAN. 1987	53067	470	270	38700	35	4990	60	8580	140
FEB. 1987	67369	461	266	48300	34	6120	59	10700	140
MAR. 1987	189850	426	247	126000	30	15400	55	28100	140
APR. 1987	69668	465	267	50300	35	6500	59	11100	140
MAY 1987	60114	510	291	47300	41	6630	64	10400	150
JUNE 1987	225030	437	253	154000	31	19000	56	34100	140
JULY 1987	51056	479	275	37900	37	5040	61	8380	140
AUG. 1987	12894	741	415	14500	69	2410	91	3170	180
SEPT 1987	15021	692	389	15800	63	2540	85	3470	170
TOTAL	809249	**	**	591000	**	77100	**	131000	**
WTD.AVG.	2217	471	271	**	35	**	60	**	140

## SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	752	724	739	811	785	798	725	672	703	639	607	623
2	754	731	745	819	773	800	711	681	691	625	605	615
3	780	757	772	791	754	774	708	683	693	627	598	612
4	786	558	724	776	437	625	687	657	672	612	594	603
5	538	414	495	609	493	551	714	669	692	618	601	608
6	548	356	490	573	515	538	723	702	712	699	539	607
7	531	497	513	680	580	636	737	685	719	622	535	594
8	575	438	514	735	674	708	749	629	696	688	559	610
9	614	471	541	749	696	725	699	652	679	573	385	484
10	647	614	630	706	388	606	724	646	680	496	420	462
11	661	518	635	574	434	496	740	724	732	529	482	517
12	603	527	580	574	502	537	730	526	632	590	529	571
13	631	591	612	600	575	587	576	502	534	581	567	573
14	621	595	605	681	599	640	585	511	553	588	570	578
15	645	623	634	693	654	671	545	451	494	592	571	583
16	658	632	644	712	657	690	577	524	541	600	583	590
17	687	659	676	725	684	704	629	560	595	595	535	575
18	692	664	679	737	702	721	501	391	455	527	471	491
19	720	643	682	737	678	718	507	407	437	484	431	452
20	705	638	673	688	555	613	597	519	563	518	490	509
21	686	643	670	663	621	649	655	605	640	523	436	485
22	697	647	682	668	574	646	731	650	703	444	430	438
23	691	234	515	613	571	589	707	645	683	444	402	425
24	614	437	554	664	602	628	685	622	653	411	392	403
25	719	621	685	641	183	369	673	619	649	416	401	410
26	719	708	715	467	364	404	652	623	639	426	412	421
27	749	705	728	512	422	480	655	636	647	427	403	418
28	780	733	756	601	515	576	657	635	648	412	403	408
29	783	719	763	681	605	657	684	649	663	412	405	409
30	770	702	730	687	657	672	665	606	638	414	406	410
31	798	763	781	---	---	---	625	608	617	414	403	409
MONTH	798	234	650	819	183	627	749	391	634	699	385	513

## TRINITY RIVER MAIN STEM

299

08057055 TRINITY RIVER AT CEDAR CREST BOULEVARD, DALLAS, TX--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	422	404	417	426	376	398	413	406	410	854	830	847
2	439	415	431	461	431	450	413	406	411	864	554	656
3	434	420	427	468	458	463	417	412	415	637	334	568
4	445	420	432	464	427	445	421	414	418	475	232	330
5	494	446	477	427	418	422	423	415	419	452	314	364
6	522	485	500	419	415	417	433	420	428	690	465	584
7	515	475	496	423	413	416	436	425	432	761	656	707
8	496	475	487	423	411	415	431	425	428	776	706	739
9	508	484	498	419	413	415	430	424	427	827	661	730
10	552	490	534	427	415	417	429	423	427	889	755	819
11	584	553	575	452	429	445	454	428	442	---	---	830
12	613	522	571	461	452	458	470	453	461	851	679	809
13	564	533	549	467	460	464	465	448	456	---	---	789
14	552	521	540	501	464	481	496	451	482	---	---	774
15	556	519	538	524	504	517	503	489	495	902	580	711
16	605	537	559	523	486	500	556	486	525	931	294	456
17	613	520	567	460	395	424	607	551	575	823	566	686
18	549	525	536	436	389	407	629	601	613	---	---	760
19	552	516	535	445	428	437	656	615	637	---	---	742
20	529	349	422	429	422	425	655	627	641	954	522	733
21	457	401	415	424	415	419	678	648	660	---	---	730
22	471	439	455	419	414	417	682	644	655	---	---	735
23	528	473	503	419	414	416	712	581	654	---	---	737
24	531	449	486	420	412	415	662	566	605	---	---	741
25	466	432	447	414	410	412	803	669	742	894	653	746
26	454	409	436	420	412	416	870	809	847	---	---	819
27	442	418	431	420	412	415	870	834	845	---	---	719
28	450	402	425	418	406	413	869	833	844	---	---	615
29	---	---	---	417	411	414	851	791	816	---	---	500
30	---	---	---	422	409	416	891	817	852	404	300	323
31	---	---	---	418	406	414	---	---	---	617	411	495
MONTH	613	349	489	524	376	432	891	406	569	954	232	671
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	609	504	575	---	---	393	795	755	773	764	733	749
2	531	418	490	---	---	386	822	749	777	758	737	747
3	409	380	393	---	---	352	833	757	783	771	744	759
4	418	375	389	---	---	387	797	751	773	809	775	794
5	434	398	412	---	---	454	768	748	755	816	794	804
6	447	384	415	486	393	432	801	770	783	824	801	810
7	446	412	428	471	402	426	807	787	791	795	437	698
8	444	424	435	466	438	449	848	805	819	660	610	629
9	429	407	420	490	450	466	853	813	831	734	667	712
10	427	376	395	508	454	478	---	---	759	755	515	666
11	416	377	392	519	491	503	---	---	680	723	556	636
12	417	389	402	516	470	493	---	---	670	713	368	566
13	472	386	429	510	461	487	---	---	740	526	365	487
14	517	450	479	---	---	500	812	784	799	574	503	542
15	518	480	501	597	452	511	791	783	789	646	499	592
16	509	462	488	724	590	655	788	768	774	655	605	628
17	501	474	489	751	495	622	819	744	770	762	658	726
18	472	431	460	589	477	513	841	801	818	742	587	701
19	450	420	440	602	486	554	856	807	837	725	593	661
20	467	444	459	716	595	664	894	836	864	790	727	762
21	470	451	460	812	706	748	868	826	851	785	722	752
22	463	441	452	862	753	794	817	737	771	798	758	779
23	453	437	445	847	782	800	792	740	774	793	773	780
24	441	405	425	779	615	677	831	751	786	832	782	806
25	453	336	395	857	707	773	828	789	804	859	811	832
26	---	---	388	958	805	859	839	763	796	835	819	829
27	---	---	383	940	799	847	809	531	693	832	806	821
28	---	---	385	902	803	834	633	534	596	848	774	808
29	---	---	383	820	755	800	600	577	591	846	826	836
30	---	---	403	812	735	767	702	603	662	827	786	800
31	---	---	---	834	785	801	743	699	723	---	---	---
MONTH	609	336	434	958	393	594	894	531	762	859	365	724

## TRINITY RIVER MAIN STEM

08057055 TRINITY RIVER AT CEDAR CREST BOULEVARD, DALLAS, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	7.9	7.8	7.8	7.9	7.9	7.9	8.0	7.9	7.9	8.0	7.9	8.0
2	7.9	7.8	7.8	8.0	7.8	7.9	8.0	7.9	7.9	8.0	7.9	8.0
3	7.8	7.8	7.8	8.0	7.9	7.9	7.9	7.8	7.9	8.0	7.9	8.0
4	7.8	7.6	7.7	7.9	7.8	7.8	7.9	7.8	7.8	8.0	7.9	8.0
5	7.8	7.7	7.8	7.8	7.6	7.7	7.9	7.8	7.9	8.0	7.9	8.0
6	7.8	7.7	7.8	7.8	7.7	7.8	7.9	7.9	7.9	8.2	7.9	8.0
7	7.8	7.7	7.7	7.9	7.8	7.8	8.0	7.8	7.9	8.2	7.9	8.0
8	7.8	7.7	7.8	7.8	7.8	7.8	7.9	7.8	7.8	8.2	7.9	8.0
9	7.8	7.7	7.7	7.8	7.8	7.8	7.9	7.8	7.9	8.1	8.0	8.1
10	7.8	7.7	7.8	7.9	7.8	7.8	7.9	7.8	7.9	8.0	7.9	8.0
11	7.8	7.6	7.7	7.8	7.7	7.8	7.9	7.8	7.8	8.0	8.0	8.0
12	7.9	7.8	7.8	7.9	7.7	7.8	8.0	7.9	7.9	8.0	8.0	8.0
13	7.9	7.8	7.8	7.9	7.8	7.9	7.9	7.8	7.9	8.0	8.0	8.0
14	7.9	7.8	7.8	7.9	7.8	7.8	7.9	7.8	7.8	8.0	8.0	8.0
15	7.9	7.7	7.8	7.9	7.8	7.8	8.1	7.9	8.0	8.0	7.9	8.0
16	8.0	7.9	7.9	7.8	7.8	7.8	7.9	7.8	7.8	8.0	7.9	8.0
17	8.0	7.9	8.0	7.9	7.8	7.8	7.9	7.8	7.8	8.0	7.9	8.0
18	8.0	7.9	8.0	7.8	7.8	7.8	8.0	7.8	7.9	8.0	7.9	8.0
19	8.0	7.9	7.9	7.8	7.7	7.8	7.9	7.8	7.8	8.0	7.9	7.9
20	8.0	7.9	8.0	7.8	7.7	7.7	7.9	7.8	7.9	7.9	7.9	7.9
21	8.0	7.9	7.9	7.8	7.7	7.8	7.9	7.9	7.9	8.0	7.9	8.0
22	8.0	7.8	7.9	7.9	7.8	7.8	7.9	7.9	7.9	8.0	8.0	8.0
23	7.8	7.7	7.8	7.9	7.8	7.8	7.9	7.9	7.9	8.0	8.0	8.0
24	7.8	7.7	7.8	7.9	7.8	7.8	7.9	7.8	7.9	8.1	8.0	8.0
25	7.9	7.8	7.9	8.1	7.7	7.9	7.9	7.9	7.9	8.1	8.0	8.1
26	7.9	7.9	7.9	7.8	7.7	7.7	7.9	7.9	7.9	8.3	8.0	8.1
27	8.0	7.9	7.9	7.9	7.8	7.8	8.0	7.9	7.9	8.3	8.3	8.3
28	7.9	7.8	7.9	7.9	7.8	7.9	8.0	7.9	7.9	8.3	8.3	8.3
29	7.9	7.8	7.9	7.9	7.8	7.9	8.0	7.9	7.9	8.4	8.3	8.3
30	7.9	7.8	7.9	7.9	7.8	7.9	8.0	7.9	7.9	8.4	8.3	8.4
31	8.0	7.9	7.9	---	---	---	8.0	7.9	7.9	8.4	8.3	8.4
MONTH	8.0	7.6	7.8	8.1	7.6	7.8	8.1	7.8	7.9	8.4	7.9	8.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	8.4	8.3	8.4	8.1	8.1	8.1	8.2	8.2	8.2	8.1	8.0	8.0
2	8.4	8.3	8.3	8.2	8.1	8.2	8.3	8.2	8.2	8.2	8.0	8.1
3	8.4	8.3	8.3	8.2	8.2	8.2	8.3	8.2	8.2	8.2	7.8	8.0
4	8.3	8.3	8.3	8.3	8.2	8.2	8.3	8.2	8.3	8.1	7.8	7.9
5	8.3	8.2	8.2	8.3	8.2	8.3	8.3	8.2	8.3	7.9	7.7	7.8
6	8.2	8.1	8.2	8.3	8.2	8.3	8.3	8.2	8.2	7.8	7.7	7.7
7	8.2	8.1	8.1	8.3	8.2	8.2	8.3	8.2	8.2	7.9	7.8	7.9
8	8.2	8.1	8.2	8.2	8.2	8.2	8.3	8.2	8.3	7.9	7.9	7.9
9	8.2	8.1	8.2	8.3	8.2	8.2	8.3	8.3	8.3	7.9	7.8	7.9
10	8.2	8.1	8.1	8.3	8.2	8.3	8.3	8.3	8.3	7.9	7.9	7.9
11	8.1	8.0	8.1	8.3	8.2	8.2	8.3	8.2	8.3	7.9	7.9	7.9
12	8.3	8.1	8.1	8.2	8.2	8.2	8.3	8.2	8.2	7.9	7.7	7.9
13	8.2	8.1	8.1	8.2	8.2	8.2	8.2	8.1	8.2	7.9	7.8	7.9
14	8.2	8.1	8.2	8.2	8.2	8.2	8.2	8.1	8.2	8.0	7.6	7.9
15	8.2	8.1	8.1	8.2	8.1	8.1	8.2	8.1	8.2	7.9	7.5	7.7
16	8.1	8.0	8.1	8.2	8.1	8.2	8.2	8.0	8.1	7.8	7.6	7.7
17	8.2	8.0	8.1	8.2	8.1	8.1	8.1	7.9	8.0	7.8	7.7	7.7
18	8.2	8.1	8.1	8.1	8.0	8.1	8.1	7.9	8.0	7.9	7.8	7.8
19	8.3	8.1	8.2	8.2	8.1	8.2	8.1	7.9	8.0	8.0	7.7	7.9
20	8.3	8.2	8.3	8.2	8.2	8.2	8.1	7.9	8.0	7.9	7.8	7.8
21	8.3	8.1	8.2	8.2	8.2	8.2	8.1	7.9	8.0	7.9	7.8	7.9
22	8.1	8.1	8.1	8.2	8.2	8.2	8.0	7.9	7.9	7.9	7.9	7.9
23	8.2	8.1	8.2	8.2	8.2	8.2	8.1	7.9	8.0	7.9	7.8	7.9
24	8.3	8.2	8.2	8.2	8.2	8.2	8.1	7.9	8.0	7.9	7.6	7.8
25	8.2	8.2	8.2	8.2	8.2	8.2	8.0	7.8	7.9	7.8	7.7	7.7
26	8.2	8.2	8.2	8.2	8.2	8.2	7.9	7.8	7.8	7.8	7.7	7.8
27	8.2	8.1	8.2	8.2	8.2	8.2	7.9	7.8	7.8	7.9	7.8	7.9
28	8.2	8.1	8.1	8.2	8.2	8.2	7.9	7.8	7.8	8.2	7.9	7.9
29	---	---	---	8.2	8.2	8.2	8.2	7.8	8.0	8.2	7.8	7.9
30	---	---	---	8.3	8.2	8.2	8.2	8.0	8.0	7.8	7.8	7.8
31	---	---	---	8.3	8.2	8.2	---	---	---	8.0	7.8	7.9
MONTH	8.4	8.0	8.2	8.3	8.0	8.2	8.3	7.8	8.1	8.2	7.5	7.9

## TRINITY RIVER MAIN STEM

301

08057055 TRINITY RIVER AT CEDAR CREST BOULEVARD, DALLAS, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	8.1	8.0	8.0	8.1	8.0	8.0	7.9	7.6	7.7	7.7	7.6	7.7
2	8.1	8.0	8.0	8.1	7.9	8.0	7.9	7.8	7.8	7.8	7.6	7.7
3	8.1	8.0	8.0	8.0	7.8	7.9	7.8	7.8	7.8	7.8	7.7	7.8
4	8.1	8.0	8.0	8.0	7.8	7.9	7.8	7.7	7.8	7.8	7.8	7.8
5	8.1	8.0	8.1	8.1	8.0	8.1	7.8	7.7	7.8	7.8	7.8	7.8
6	8.1	8.0	8.0	8.2	8.1	8.1	7.8	7.7	7.7	7.8	7.8	7.8
7	8.1	8.0	8.1	8.2	8.1	8.2	7.8	7.6	7.7	7.8	7.7	7.7
8	8.1	8.0	8.1	8.1	8.1	8.1	7.8	7.8	7.8	7.7	7.6	7.7
9	8.1	7.9	8.0	8.1	8.1	8.1	7.8	7.8	7.8	7.7	7.6	7.7
10	7.9	7.8	7.9	8.1	8.1	8.1	7.9	7.7	7.8	7.6	7.4	7.5
11	7.9	7.9	7.9	8.1	8.1	8.1	7.7	7.5	7.6	7.6	7.4	7.5
12	7.9	7.9	7.9	8.2	8.1	8.1	7.7	7.6	7.7	7.6	7.4	7.5
13	8.0	7.9	7.9	8.2	8.1	8.1	7.8	7.7	7.7	7.5	7.4	7.4
14	8.0	7.9	8.0	8.2	8.1	8.1	7.8	7.8	7.8	7.4	7.3	7.3
15	8.0	8.0	8.0	8.2	8.0	8.1	7.9	7.8	7.8	7.4	7.4	7.4
16	8.0	7.9	8.0	8.2	7.9	8.1	7.9	7.8	7.8	7.5	7.4	7.4
17	8.0	7.9	8.0	8.1	7.8	7.9	7.9	7.8	7.9	7.5	7.4	7.4
18	8.0	8.0	8.0	7.9	7.9	7.9	8.0	7.8	7.9	7.6	7.5	7.5
19	8.0	7.9	8.0	7.9	7.8	7.9	7.9	7.8	7.9	7.7	7.5	7.6
20	8.0	8.0	8.0	7.8	7.7	7.8	7.9	7.8	7.8	7.7	7.7	7.7
21	8.0	8.0	8.0	7.7	7.7	7.7	7.9	7.8	7.9	7.8	7.7	7.8
22	8.0	8.0	8.0	7.7	7.6	7.7	8.0	7.9	8.0	7.8	7.7	7.7
23	8.0	8.0	8.0	7.9	7.7	7.8	8.0	7.9	7.9	7.8	7.7	7.8
24	8.0	8.0	8.0	8.0	7.8	7.9	8.1	7.9	8.0	7.8	7.7	7.7
25	8.1	8.0	8.1	8.0	7.8	7.9	7.9	7.8	7.9	7.8	7.7	7.8
26	8.2	8.1	8.1	8.0	7.9	7.9	7.9	7.7	7.8	7.9	7.7	7.8
27	8.1	8.1	8.1	7.9	7.9	7.9	7.9	7.6	7.7	7.8	7.8	7.8
28	8.1	8.1	8.1	8.0	7.9	7.9	7.7	7.6	7.6	7.9	7.7	7.8
29	8.1	8.1	8.1	7.9	7.8	7.8	7.6	7.5	7.6	7.9	7.3	7.8
30	8.1	8.1	8.1	7.8	7.5	7.7	7.6	7.5	7.5	7.8	7.7	7.8
31	---	---	---	7.7	7.7	7.7	7.7	7.6	7.7	---	---	---
MONTH	8.2	7.8	8.0	8.2	7.5	8.0	8.1	7.5	7.8	7.9	7.3	7.7

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	28.5	27.0	27.5	22.5	21.0	21.5	15.0	13.5	14.0	12.5	11.5	12.0
2	28.0	27.0	27.5	22.0	20.5	21.5	14.0	12.5	13.5	12.0	11.0	11.5
3	27.5	26.5	27.0	22.0	20.0	21.0	14.5	13.0	14.0	12.0	11.5	12.0
4	27.0	26.0	27.0	21.0	19.5	20.5	14.5	13.0	14.0	12.0	11.0	11.5
5	25.5	23.5	24.5	19.5	17.5	18.5	15.0	13.5	14.5	12.0	11.0	11.5
6	24.0	22.0	23.0	18.5	17.5	18.0	15.5	14.0	14.5	13.5	11.5	12.0
7	23.0	22.5	22.5	19.0	18.0	18.5	15.5	14.5	15.0	13.0	11.5	12.5
8	23.0	22.5	22.5	20.0	18.5	19.5	16.5	14.5	15.5	13.0	11.0	12.5
9	24.0	22.5	23.5	20.0	18.5	19.5	16.0	14.0	15.0	12.0	10.0	11.0
10	24.5	23.5	24.0	18.5	16.0	17.5	14.0	13.0	13.5	11.0	9.5	10.0
11	24.5	23.5	24.0	17.0	15.0	15.5	14.0	13.0	13.5	10.5	9.5	10.0
12	23.5	21.0	22.0	15.0	13.0	14.5	13.5	10.5	12.0	11.0	10.0	10.5
13	21.5	20.0	21.0	14.0	12.0	12.5	12.0	10.5	11.0	11.0	10.5	11.0
14	21.5	20.0	21.0	14.5	13.0	14.0	12.0	11.0	11.5	12.5	11.0	12.0
15	22.0	20.5	21.0	16.5	14.5	15.5	13.0	11.5	12.0	13.0	12.5	12.5
16	22.0	20.5	21.5	19.0	16.0	17.5	13.5	12.5	13.0	13.0	12.0	12.5
17	22.5	21.0	22.0	20.0	18.0	18.5	14.5	13.5	14.0	11.5	10.5	11.0
18	22.5	21.5	22.0	20.5	19.0	19.5	14.0	12.0	12.5	10.0	8.0	9.0
19	23.0	21.5	22.0	18.5	18.0	18.5	12.0	11.0	11.5	8.5	7.5	8.0
20	23.0	21.5	22.0	18.0	16.5	17.0	13.0	12.0	12.5	9.5	8.5	9.0
21	22.0	21.5	21.5	17.5	16.5	17.0	13.5	13.0	13.5	9.5	8.5	8.5
22	21.5	21.0	21.5	17.5	16.5	17.0	14.0	13.5	13.5	9.0	8.0	8.5
23	21.5	19.5	21.0	16.5	15.5	16.0	13.5	13.0	13.0	8.5	8.0	8.5
24	21.5	21.0	21.5	16.0	14.5	15.0	13.5	12.5	13.0	9.0	8.0	8.5
25	22.0	21.0	21.5	14.5	11.0	12.5	13.5	13.0	13.5	9.0	8.5	8.5
26	22.0	20.5	21.0	13.5	12.0	12.5	14.0	13.0	13.5	9.0	8.5	8.5
27	22.0	20.0	21.0	13.5	13.0	13.0	13.5	12.5	13.0	9.0	8.5	8.5
28	22.0	20.0	21.0	14.5	13.0	13.5	13.0	12.5	12.5	9.5	8.5	9.0
29	22.5	20.5	21.0	15.0	13.5	14.0	13.0	12.0	12.5	10.5	9.5	10.0
30	22.5	21.0	21.5	15.5	13.5	14.5	13.0	12.0	12.5	10.0	9.5	10.0
31	22.0	20.5	21.5	---	---	---	12.5	11.5	12.0	10.0	9.5	9.5
MONTH	28.5	19.5	22.5	22.5	11.0	17.0	16.5	10.5	13.0	13.5	7.5	10.5

## TRINITY RIVER MAIN STEM

08057055 TRINITY RIVER AT CEDAR CREST BOULEVARD, DALLAS, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	11.0	9.5	10.5	12.5	12.0	12.0	14.0	12.5	13.0	24.5	23.5	24.0
2	11.5	10.5	11.0	12.5	11.5	12.0	13.5	12.5	13.0	24.0	22.5	23.0
3	11.5	11.0	11.0	13.0	11.5	12.0	13.0	12.0	12.5	23.5	21.5	22.5
4	12.0	11.0	11.5	12.5	11.5	12.0	13.5	12.5	13.0	22.0	19.5	21.0
5	12.5	11.5	12.0	12.5	11.5	12.0	13.0	12.5	13.0	23.0	20.5	21.5
6	12.0	11.0	12.0	13.0	12.0	12.5	13.5	12.5	13.0	24.5	22.5	23.5
7	11.5	11.0	11.5	13.0	12.5	12.5	14.5	13.0	13.5	24.5	23.0	24.0
8	12.0	11.0	11.5	13.0	12.5	13.0	14.5	13.5	14.0	24.5	23.0	24.0
9	12.0	11.0	11.5	13.5	12.5	13.0	15.5	14.0	14.5	25.5	22.5	24.0
10	13.0	11.0	12.0	13.0	12.5	13.0	15.5	14.5	15.0	26.0	23.5	24.5
11	14.5	13.0	14.0	13.5	12.5	13.0	16.5	15.0	15.5	26.0	24.0	25.0
12	15.5	14.0	14.5	13.5	12.5	13.0	17.5	16.0	16.5	26.0	24.5	25.5
13	15.0	14.0	14.5	14.0	12.5	13.5	17.0	16.0	16.5	26.5	24.5	25.5
14	15.0	14.5	15.0	14.5	13.0	13.5	16.0	15.0	15.5	27.0	24.5	25.5
15	15.0	14.5	15.0	15.5	14.0	14.5	17.0	15.0	16.0	25.5	24.5	25.0
16	14.5	13.5	13.5	15.5	14.5	15.0	18.5	16.0	17.0	25.0	22.0	23.5
17	13.5	12.0	12.5	15.5	14.5	15.0	20.5	17.5	19.0	25.5	23.5	24.5
18	12.0	11.0	12.0	15.5	14.5	15.0	21.5	19.0	20.5	26.5	25.0	25.5
19	11.5	11.5	11.5	15.0	14.0	14.5	22.0	19.5	21.0	26.5	22.0	25.5
20	11.0	8.5	9.5	15.0	14.0	14.5	22.5	20.0	21.5	26.0	22.5	24.5
21	10.0	9.0	9.5	15.5	14.5	15.0	22.5	20.0	21.0	27.5	25.0	26.0
22	11.0	10.0	10.5	16.0	15.0	15.5	21.0	19.0	20.0	28.5	26.0	27.0
23	12.0	10.5	11.0	15.5	14.5	15.0	21.0	19.5	20.5	28.0	26.0	27.0
24	11.5	11.0	11.5	14.5	14.0	14.0	21.5	18.5	20.0	27.0	24.5	26.0
25	11.5	11.0	11.0	14.5	14.0	14.0	23.5	20.5	22.0	26.0	25.5	25.5
26	11.5	11.0	11.5	14.0	13.5	14.0	24.5	22.0	23.0	27.0	25.5	26.0
27	12.0	11.5	12.0	14.5	13.5	14.0	24.5	22.5	23.5	26.5	25.5	26.0
28	12.5	12.0	12.5	15.0	14.0	14.5	25.0	22.5	23.5	26.0	21.0	24.5
29	---	---	---	14.0	12.5	13.0	25.0	23.0	24.0	22.0	21.0	21.5
30	---	---	---	12.5	12.0	12.0	25.5	23.0	24.5	23.0	21.0	22.0
31	---	---	---	13.0	12.0	12.5	---	---	---	25.0	23.0	24.0
MONTH	15.5	8.5	12.0	16.0	11.5	13.5	25.5	12.0	18.0	28.5	19.5	24.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	25.0	24.5	25.0	26.5	25.0	25.5	32.5	30.5	31.5	30.0	28.5	29.0
2	24.5	23.5	24.5	26.0	25.5	26.0	32.5	30.5	31.5	30.5	28.0	29.0
3	23.5	23.0	23.5	26.0	24.5	25.5	33.0	30.5	31.5	29.5	28.5	29.0
4	24.0	23.0	23.5	27.5	25.5	26.5	32.5	30.5	32.0	29.0	27.5	28.5
5	24.0	23.0	23.5	27.5	26.0	27.0	33.0	31.0	32.0	29.5	27.5	28.5
6	24.0	23.0	23.5	28.0	26.5	27.0	33.5	31.0	32.5	29.0	27.5	28.5
7	24.0	23.0	23.5	27.5	26.5	27.0	32.5	31.5	32.5	28.5	25.5	27.5
8	24.0	23.5	23.5	27.0	26.5	26.5	32.5	32.0	32.5	28.5	26.5	27.5
9	23.5	23.5	23.5	27.0	26.0	26.5	33.0	32.0	32.5	29.5	27.5	28.5
10	23.5	23.0	23.5	27.0	26.0	26.5	33.0	29.5	32.0	28.5	25.5	27.5
11	24.0	23.5	23.5	27.5	26.0	26.5	31.5	30.0	30.5	28.5	26.5	27.5
12	24.5	23.5	24.0	27.5	26.0	27.0	31.0	30.5	31.0	28.0	25.5	27.0
13	25.0	24.0	24.5	27.5	26.0	26.5	31.0	30.5	31.0	27.5	25.5	26.5
14	26.5	24.5	25.5	26.5	26.0	26.5	30.5	30.5	30.5	29.0	27.0	28.0
15	26.0	25.5	25.5	28.0	25.5	26.5	31.0	30.5	30.5	28.5	27.5	28.0
16	26.0	25.0	25.5	28.0	26.5	27.5	31.0	30.5	31.0	29.0	27.5	28.0
17	26.5	25.5	26.0	27.5	26.0	27.0	31.5	30.5	31.0	30.0	28.0	29.0
18	27.0	26.0	26.5	28.5	26.5	27.5	31.5	31.0	31.0	29.5	27.0	28.5
19	27.0	26.0	26.5	29.5	27.0	28.5	31.5	31.0	31.0	27.5	25.5	26.5
20	26.5	26.0	26.5	30.0	28.0	29.0	31.5	30.5	31.0	28.0	25.5	27.0
21	26.5	26.0	26.5	30.5	28.0	29.5	31.5	31.0	31.5	27.5	26.0	27.0
22	26.5	26.0	26.5	31.0	28.5	30.0	31.5	31.0	31.0	27.0	25.5	26.5
23	26.5	26.0	26.0	30.5	29.0	29.5	32.0	31.0	31.5	26.5	24.5	25.5
24	27.0	25.5	26.0	30.5	28.0	29.0	32.0	31.0	31.5	27.0	25.0	26.0
25	27.0	26.0	26.5	31.0	29.0	30.0	32.0	30.5	31.0	27.5	25.5	26.5
26	26.5	26.0	26.5	31.5	29.0	30.5	32.0	30.0	31.0	27.0	25.5	26.5
27	26.5	25.5	26.0	31.5	29.5	30.5	31.0	28.5	30.0	27.5	25.5	26.5
28	26.0	25.5	26.0	31.5	29.5	30.5	28.5	28.0	28.0	27.5	26.0	26.5
29	26.0	25.0	25.5	31.5	29.5	30.5	29.0	27.0	28.0	27.0	26.0	26.5
30	26.0	25.0	25.5	32.0	30.0	31.0	29.5	28.5	29.0	26.0	24.5	25.5
31	---	---	---	32.0	30.5	31.5	29.5	28.5	29.0	---	---	---
MONTH	27.0	23.0	25.0	32.0	24.5	28.0	33.5	27.0	31.0	30.5	24.5	27.5

TRINITY RIVER MAIN STEM

303

08057055 TRINITY RIVER AT CEDAR CREST BOULEVARD, DALLAS, TX--Continued

OXYGEN, DISSOLVED (DO), MG/L, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	5.5	5.0	5.2	7.1	6.9	7.0	8.7	8.5	8.6	10.4	9.9	10.1
2	5.2	4.7	5.0	7.2	7.0	7.1	9.0	8.7	8.8	10.4	10.0	10.2
3	5.3	4.9	5.1	7.4	7.1	7.2	8.9	8.4	8.8	10.3	9.7	10.0
4	5.9	3.3	4.9	7.5	7.3	7.4	8.7	8.3	8.5	10.5	10.1	10.3
5	6.8	5.7	6.4	7.6	7.4	7.5	8.9	8.5	8.7	10.5	10.1	10.3
6	7.5	6.6	7.0	7.8	7.5	7.7	8.7	8.5	8.6	10.6	9.9	10.1
7	7.2	6.7	6.9	8.1	7.8	8.0	8.4	8.1	8.3	10.6	9.8	10.1
8	7.4	6.8	7.1	8.4	8.0	8.2	8.6	8.2	8.4	10.3	9.4	9.8
9	7.2	6.8	7.0	8.6	8.4	8.5	9.2	8.5	8.9	10.6	9.7	10.2
10	7.3	6.7	6.9	8.7	8.5	8.6	9.5	8.9	9.2	10.6	10.2	10.4
11	6.8	4.0	6.1	8.7	8.6	8.6	9.3	9.1	9.2	10.8	10.5	10.6
12	7.7	6.6	7.1	8.9	8.6	8.8	10.6	9.1	9.9	10.8	10.5	10.6
13	7.9	7.5	7.7	9.0	8.4	8.7	10.8	10.2	10.6	10.6	10.4	10.5
14	7.9	7.4	7.6	8.6	8.2	8.3	10.6	9.9	10.2	10.4	10.2	10.3
15	8.0	6.8	7.5	8.3	7.9	8.1	10.6	10.0	10.4	10.1	9.8	10.0
16	7.9	7.2	7.5	7.9	7.2	7.5	10.0	9.7	9.8	10.0	9.6	9.8
17	7.4	6.9	7.1	7.4	6.9	7.1	9.6	9.0	9.4	10.2	9.7	9.9
18	7.0	6.6	6.8	6.8	6.5	6.6	10.3	9.3	10.0	11.2	10.1	10.8
19	6.7	6.5	6.6	6.6	6.3	6.5	10.0	9.6	9.8	11.4	11.0	11.2
20	6.8	6.6	6.7	7.2	6.5	6.8	9.8	9.7	9.8	11.3	11.0	11.1
21	6.8	6.5	6.7	7.2	6.9	7.1	9.8	9.5	9.6	11.9	11.1	11.5
22	6.8	6.7	6.7	7.8	6.9	7.2	9.6	9.3	9.4	11.9	11.8	11.8
23	7.1	6.6	6.8	8.0	7.4	7.7	9.8	9.4	9.6	11.9	11.7	11.8
24	6.9	6.7	6.8	7.9	7.6	7.7	9.9	9.5	9.7	11.9	11.9	11.9
25	6.9	6.8	6.8	9.7	7.8	8.8	9.9	9.5	9.7	12.1	11.9	12.0
26	6.8	6.7	6.7	8.6	8.3	8.4	9.9	9.7	9.8	12.6	11.9	12.2
27	6.8	6.6	6.7	9.0	8.5	8.7	10.1	9.7	9.9	12.6	12.5	12.5
28	6.7	6.5	6.6	9.0	8.7	8.8	10.1	9.9	10.0	12.6	12.2	12.4
29	6.9	6.6	6.7	8.9	8.6	8.7	10.1	9.9	10.0	12.3	12.1	12.1
30	6.9	6.7	6.8	8.8	8.6	8.7	10.4	9.9	10.1	12.3	12.1	12.2
31	7.0	6.8	6.9	---	---	---	10.3	10.1	10.2	12.3	12.1	12.2
MONTH	8.0	3.3	6.7	9.7	6.3	7.9	10.8	8.1	9.5	12.6	9.4	10.9

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	12.1	11.8	11.9	9.4	8.9	9.2	11.0	10.7	10.9	7.6	5.6	6.3
2	11.8	11.5	11.7	9.8	9.4	9.7	10.8	10.6	10.7	8.1	5.7	7.1
3	11.7	11.4	11.5	10.1	9.8	10.0	11.0	10.7	10.9	7.7	4.9	7.0
4	11.6	11.2	11.4	10.5	10.1	10.3	11.0	10.8	10.9	7.4	3.9	5.5
5	11.2	10.8	11.0	10.6	10.4	10.5	11.0	10.8	10.9	5.2	4.7	5.0
6	10.9	10.3	10.6	10.6	10.3	10.4	10.9	10.6	10.8	6.1	4.9	5.5
7	10.8	10.5	10.7	10.4	10.3	10.4	10.8	10.5	10.6	6.4	6.1	6.3
8	11.0	10.5	10.8	10.4	10.2	10.3	10.7	10.4	10.6	6.6	6.2	6.5
9	11.0	10.7	10.9	10.2	10.1	10.2	10.7	10.4	10.5	6.6	5.8	6.2
10	11.0	10.1	10.4	10.2	10.1	10.1	10.6	10.2	10.4	6.5	6.1	6.3
11	10.2	9.6	9.8	10.0	9.9	10.0	10.2	9.7	10.1	6.5	6.1	6.3
12	10.1	9.4	9.7	10.1	10.0	10.0	9.7	9.4	9.6	6.3	4.5	6.0
13	9.9	9.1	9.4	10.2	10.0	10.1	9.5	9.3	9.4	6.4	5.7	6.1
14	9.6	9.0	9.2	10.1	9.7	9.9	9.4	9.2	9.3	7.2	3.7	6.1
15	9.3	8.6	8.9	9.6	9.3	9.5	9.5	9.2	9.4	6.7	2.5	5.3
16	9.0	8.3	8.7	9.8	9.3	9.6	9.2	8.7	8.9	5.6	3.5	5.0
17	10.0	8.5	9.1	9.7	8.9	9.4	8.7	8.0	8.3	6.3	5.5	5.9
18	11.1	9.8	10.4	9.4	8.9	9.1	8.4	7.6	8.0	6.5	5.9	6.3
19	11.0	10.1	10.6	10.1	9.4	9.9	8.2	7.4	7.8	7.3	4.8	6.2
20	11.0	9.8	10.7	10.4	10.1	10.2	8.3	7.4	7.8	6.3	5.7	6.1
21	10.6	10.0	10.2	10.3	10.2	10.3	8.2	7.2	7.7	6.4	6.1	6.3
22	10.4	10.1	10.3	10.2	10.1	10.2	8.4	7.6	7.9	6.3	6.0	6.2
23	10.3	10.0	10.1	10.1	10.0	10.0	9.0	7.2	8.0	6.4	6.0	6.2
24	10.4	9.7	10.1	10.3	10.0	10.2	8.7	8.1	8.3	6.5	4.9	6.0
25	10.3	9.9	10.2	10.5	10.3	10.4	8.2	6.7	7.2	6.3	5.0	5.7
26	10.3	9.9	10.2	10.5	10.4	10.4	7.3	6.3	6.6	6.4	5.9	6.3
27	10.3	9.7	9.9	10.5	10.4	10.5	7.9	6.3	6.8	6.7	6.3	6.4
28	9.8	9.1	9.6	10.5	10.3	10.4	8.2	6.3	6.9	7.8	5.6	6.3
29	---	---	---	10.8	10.5	10.6	8.1	6.6	7.1	6.9	5.6	6.1
30	---	---	---	11.1	10.8	11.0	8.2	5.9	6.7	5.8	5.5	5.6
31	---	---	---	11.1	11.0	11.1	---	---	---	6.6	5.8	6.3
MONTH	12.1	8.3	10.3	11.1	8.9	10.1	11.0	5.9	9.0	8.1	2.5	6.1

## TRINITY RIVER MAIN STEM

08057055 TRINITY RIVER AT CEDAR CREST BOULEVARD, DALLAS, TX--Continued

OXYGEN, DISSOLVED (DO), MG/L, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	6.9	6.6	6.8	7.9	7.4	7.6	6.6	5.6	6.0	6.6	5.9	6.3
2	7.3	6.9	7.1	7.7	7.0	7.4	6.5	5.5	5.9	6.7	6.2	6.4
3	7.6	7.3	7.5	7.1	5.8	6.4	6.4	5.5	5.8	6.4	5.8	6.1
4	7.6	7.5	7.6	7.0	5.9	6.6	6.2	5.1	5.6	5.9	5.7	5.8
5	7.8	7.5	7.6	7.3	7.0	7.2	6.2	5.1	5.6	5.8	5.4	5.6
6	7.9	7.7	7.8	7.5	7.2	7.4	6.2	5.0	5.5	5.9	5.1	5.6
7	8.1	7.8	8.0	7.7	7.4	7.6	5.6	4.6	5.1	6.1	4.9	5.6
8	8.1	8.0	8.0	7.9	7.4	7.7	5.7	5.1	5.6	6.0	5.2	5.8
9	8.1	7.6	7.9	8.0	7.6	7.8	5.7	5.2	5.5	6.2	5.9	6.1
10	7.5	7.0	7.2	7.9	7.7	7.8	6.2	3.9	5.6	6.2	5.1	5.7
11	7.4	7.1	7.3	8.2	7.7	8.0	5.2	2.0	3.6	6.0	5.6	5.8
12	7.3	7.1	7.2	8.3	7.9	8.1	5.2	4.5	4.9	6.3	5.2	5.8
13	7.4	7.0	7.2	8.4	8.1	8.2	5.9	5.2	5.5	6.1	5.4	5.8
14	7.1	6.9	7.0	8.3	8.1	8.2	6.2	5.5	5.9	6.2	5.7	5.9
15	7.1	6.9	7.0	8.6	6.7	7.7	6.4	5.9	6.2	6.2	4.8	5.8
16	7.0	6.7	6.9	7.1	4.8	6.6	6.5	6.0	6.3	6.4	5.3	6.1
17	7.0	6.7	6.8	6.9	4.9	5.8	6.8	6.2	6.5	6.3	5.9	6.1
18	7.0	6.6	6.9	6.3	5.7	6.0	6.7	6.3	6.5	6.2	5.2	6.0
19	7.0	6.3	6.8	6.2	5.8	5.9	6.5	6.0	6.3	6.5	5.7	6.1
20	6.9	6.8	6.9	6.1	5.7	5.9	6.3	5.9	6.1	7.0	6.0	6.5
21	7.2	6.7	6.9	6.2	5.6	5.9	6.5	5.9	6.2	7.3	6.2	7.0
22	7.4	7.0	7.2	6.3	5.2	6.1	7.0	6.2	6.6	7.3	6.8	7.0
23	7.6	7.3	7.4	6.3	5.9	6.1	6.8	6.1	6.4	7.3	6.9	7.2
24	7.6	7.4	7.5	7.0	5.3	6.2	6.9	6.1	6.5	7.1	6.7	7.0
25	7.6	7.4	7.5	7.0	6.3	6.6	6.2	5.8	6.0	7.1	6.6	6.9
26	7.8	7.4	7.6	6.8	6.3	6.5	6.2	5.6	5.9	7.1	6.7	6.9
27	7.9	7.5	7.7	7.0	5.9	6.6	6.2	4.1	5.3	7.1	6.5	6.9
28	7.9	7.7	7.8	7.0	5.6	6.4	5.2	4.2	5.0	6.9	6.2	6.7
29	8.0	7.7	7.8	6.9	5.8	6.2	5.2	4.7	4.9	7.2	6.1	6.6
30	7.9	7.7	7.8	6.1	3.5	5.4	5.9	4.8	5.3	7.3	6.8	7.0
31	---	---	---	6.0	4.3	5.2	6.4	5.8	6.1	---	---	---
MONTH	8.1	6.3	7.4	8.6	3.5	6.8	7.0	2.0	5.8	7.3	4.8	6.3

## TRINITY RIVER BASIN

305

08057200 WHITE ROCK CREEK AT GREENVILLE AVENUE, DALLAS, TX

LOCATION.--Lat 32°53'21", long 96°45'23", Dallas County, Hydrologic Unit 12030105, on left bank 20 ft upstream from bridge on Greenville Avenue in Dallas, 1.1 mi downstream from Texas and New Orleans Railroad Co. bridge, 1.2 mi downstream from Cottonwood Creek, 2.9 mi upstream from White Rock Lake, and 8.2 mi northeast of Dallas County Courthouse.

DRAINAGE AREA.--66.4 mi<sup>2</sup>.

PERIOD OF RECORD.--August 1961 to September 1980, April 1984 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Oct. 24, 1961, non-recording gage at same site and datum.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Some regulation at low flow by main and tributary channel dams from which many small diversions are made. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--22 years (water years 1962-80, 85-87), 59.8 ft<sup>3</sup>/s (12.23 in/yr), 43,330 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 38,100 ft<sup>3</sup>/s Sept. 21, 1964 (elevation, 490.43 ft); minimum daily, 0.01 ft<sup>3</sup>/s July 8, 1970, June 27, July 14, 1971.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum elevation since at least 1886, that of Sept. 21, 1964.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base discharge of 2,900 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
May 4	0115	12,100	486.66	May 28	2145	*16,900	*487.74
May 4	0515	14,800	487.30	June 16	0900	9,180	485.80
May 14	2045	9,510	485.91				

Minimum daily discharge, 2.6 ft<sup>3</sup>/s Oct. 21-22.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e4.2	e6.6	25	24	43	140	32	7.4	54	e48	8.4	17
2	e4.5	e6.3	23	22	31	100	27	9.8	47	e440	8.2	14
3	e3.7	e6.0	22	57	25	82	25	108	154	e123	9.4	12
4	285	123	22	27	23	72	25	2630	49	e60	7.1	12
5	105	e21	22	22	24	64	25	65	41	e53	9.8	12
6	140	e12	21	22	145	59	25	42	32	e50	17	11
7	e16	e11	58	19	35	56	23	34	27	e48	10	29
8	306	e10	29	19	32	52	25	61	30	e46	9.1	25
9	e9.1	e8.9	35	357	30	48	24	37	265	e44	9.1	16
10	e5.1	129	21	55	28	43	23	29	916	e41	111	119
11	e4.2	93	20	37	28	40	21	23	340	e39	55	33
12	e4.2	e24	142	33	28	39	21	126	262	e37	15	167
13	e3.9	e22	49	33	26	38	84	43	150	e45	14	43
14	e3.9	e22	80	33	27	37	23	1150	72	e35	12	30
15	e3.7	e22	142	30	97	38	21	227	148	e30	11	159
16	e3.4	e20	52	33	32	45	19	65	e1880	e28	10	54
17	e3.0	e18	120	105	29	561	19	124	e153	e36	10	23
18	e3.0	e18	472	199	27	83	17	37	e121	e30	9.7	63
19	e3.0	e18	88	59	25	63	16	119	e68	e24	9.0	28
20	e2.8	29	62	46	528	53	14	94	e319	e21	11	20
21	e2.6	23	50	41	94	47	11	31	e71	e18	9.4	16
22	e2.6	65	43	38	60	44	16	22	e62	e15	9.2	14
23	133	31	76	35	53	60	12	19	e56	e18	9.1	11
24	51	25	45	33	179	41	8.4	95	e338	e36	9.0	11
25	e17	598	37	32	88	39	11	31	e60	12	9.6	11
26	e13	78	34	31	384	40	9.5	22	e54	13	9.4	10
27	e11	41	32	29	151	39	9.4	18	e52	11	231	12
28	e8.9	33	30	29	968	30	10	2070	e50	10	30	12
29	e8.1	29	29	29	---	41	9.1	1270	e48	8.5	22	10
30	e7.3	28	26	24	---	33	8.6	102	e48	8.3	23	9.3
31	e7.0	---	26	24	---	31	---	79	---	8.3	21	---
TOTAL	1175.2	1570.8	1933	1577	3240	2158	614.0	8790.2	5967	1436.1	738.5	1003.3
MEAN	37.9	52.4	62.4	50.9	116	69.6	20.5	284	199	46.3	23.8	33.4
MAX	306	598	472	357	968	561	84	2630	1880	440	231	167
MIN	2.6	6.0	20	19	23	30	8.4	7.4	27	8.3	7.1	9.3
AC-FT	2330	3120	3830	3130	6430	4280	1220	17440	11840	2850	1460	1990
CAL YR 1986	TOTAL	35067.0	MEAN	96.1	MAX	4260	MIN	2.6	AC-FT	69560		
WTR YR 1987	TOTAL	30203.1	MEAN	82.7	MAX	2630	MIN	2.6	AC-FT	59910		

e Estimated.

## TRINITY RIVER MAIN STEM

08057410 TRINITY RIVER BELOW DALLAS, TX

LOCATION.--Lat 32°42'26", long 96°44'08", Dallas County, Hydrologic Unit 12030105, on right bank at downstream side of bridge on South Loop Highway 12, 1.0 mi downstream from White Rock Creek, 1.5 mi upstream from Fivemile Creek, 6.4 mi southeast of Dallas County Courthouse in Dallas, and at mile 491.8.

DRAINAGE AREA.--6,278 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--November 1956 to September 1961 (monthly records only), October 1961 to current year.

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

REMARKS.--Records poor. Flow is affected at times by eight upstream reservoirs with a combined capacity of 1,714,400 acre-ft, of which 846,200 acre-ft is for flood control. Several cities with the Fort Worth-Dallas metroplex divert water for municipal use and return it to the river as sewage effluents above this station. Low flows are sustained by sewage effluents.

AVERAGE DISCHARGE.--30 years (water years 1958-87), 1,838 ft<sup>3</sup>/s (1,332,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 65,700 ft<sup>3</sup>/s May 27, 1957 (gage height, 32.02 ft); minimum daily, 131 ft<sup>3</sup>/s Dec. 9, 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 25, 1908, reached a stage of 41.1 ft, from information by U.S. Army Corps of Engineers, and is the highest since that date. Floods in 1866 and 1908 reached about the same stage at Dallas.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 12,800 ft<sup>3</sup>/s June 17 at 0630 hours (gage height, 25.07 ft); minimum daily, 569 ft<sup>3</sup>/s Aug. 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	683	627	654	970	3430	9460	5030	594	6640	5280	705	756
2	657	614	667	977	2980	9050	4950	1050	5870	5040	668	738
3	637	632	651	1050	2580	6590	5000	6060	7140	5560	678	714
4	776	1030	684	1090	2340	5230	4960	5840	8120	3500	684	684
5	1650	1530	630	1030	1820	6630	4860	7010	8460	2760	687	630
6	2020	1010	590	1080	2010	7960	4630	2240	7830	2680	668	598
7	1710	751	694	1080	2320	8710	4350	982	7040	2810	569	759
8	1370	687	921	1040	1850	9230	4200	889	6730	2700	692	868
9	1480	656	845	2600	1700	9590	4170	868	6670	2600	627	712
10	1080	867	747	3410	1450	9730	4140	730	7830	2550	706	898
11	938	1830	648	1650	1210	9500	3940	710	8550	2410	1110	1220
12	1090	1500	1100	1240	1320	7760	3380	743	9320	2260	856	1260
13	993	1080	1710	1220	1400	5490	3250	933	9780	2230	742	1810
14	977	866	1160	1090	1400	4030	2900	933	10300	2230	726	1080
15	860	768	2410	1080	1690	2720	2330	2030	10500	1660	733	929
16	811	723	1830	1070	1630	2480	1870	4200	11400	960	672	969
17	772	737	1220	1190	1240	5250	1280	1670	12600	1460	687	815
18	731	712	3330	2930	1360	8600	1010	967	11900	1800	674	902
19	714	728	4600	2900	1380	7410	907	1030	11300	1080	638	912
20	726	1030	1920	1620	3520	6510	907	1900	10800	878	645	753
21	752	935	1190	1770	6210	6480	902	1430	10300	756	668	716
22	700	862	974	2390	3390	6340	899	971	9760	722	705	695
23	1360	1100	1120	2650	2230	6170	941	780	8770	743	673	692
24	1620	972	1210	3000	2770	6170	1130	1020	7510	946	763	665
25	1070	2910	974	2990	3930	5830	682	1850	6690	785	752	651
26	785	3810	947	2960	4580	5430	576	991	6400	687	703	689
27	700	1640	940	3100	7610	5300	576	850	6130	680	1050	697
28	659	933	907	3450	8320	5240	575	1240	5490	692	1470	709
29	645	707	886	3570	---	5170	620	8500	5110	740	930	720
30	662	655	952	3580	---	5170	602	11600	5070	762	743	721
31	649	---	995	3540	---	5080	---	9100	---	747	772	---
TOTAL	30277	32902	38106	63317	77670	204310	75567	79711	250010	60708	23396	24962
MEAN	977	1097	1229	2042	2774	6591	2519	2571	8334	1958	755	832
MAX	2020	3810	4600	3580	8320	9730	5030	11600	12600	5560	1470	1810
MIN	637	614	590	970	1210	2480	575	594	5070	680	569	598
AC-FT	60050	65260	75580	125600	154100	405200	149900	158100	495900	120400	46410	49510
CAL YR 1986	TOTAL	849737	MEAN	2328	MAX	16900	MIN	560	AC-FT	1685000		
WTR YR 1987	TOTAL	960936	MEAN	2633	MAX	12600	MIN	569	AC-FT	1906000		

08057410 TRINITY RIVER BELOW DALLAS, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: October 1967 to current year. Pesticide analyses: October 1970 to July 1981. Sediment analyses: April 1972 to April 1975.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1967 to current year.

pH: January 1977 to current year.

WATER TEMPERATURE: October 1967 to current year.

DISSOLVED OXYGEN: January 1977 to current year.

INSTRUMENTATION.--Beginning October 1976, 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 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, 1,130 microsiemens Dec. 17, 1977; minimum, 112 microsiemens Oct. 20, 1984.

pH: Maximum, 8.8 units Jan. 23, 1980; minimum, 6.8 units Sept. 17, 18, 1981.

WATER TEMPERATURES: Maximum, 35.0°C Aug. 20, 25, 28, 31, 1972; minimum, 1.0°C Jan. 29, 1968.

DISSOLVED OXYGEN: Maximum, 12.5 mg/L Feb. 8, 1982; minimum, 0.0 mg/L on many days during spring and summer of 1977-81.

## EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 828 microsiemens May 18; minimum, 226 microsiemens Nov. 8.

WATER TEMPERATURE: Maximum, 38.0°C June 30; minimum, 7.0°C Jan. 19.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	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 (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3
NOV 13...	1230	1060	551	7.20	13.0	8.7	81	4.2	160	27
JAN 23...	1100	2570	494	7.70	8.0	11.6	98	1.4	160	28
APR 29...	1510	656	701	7.40	25.0	6.5	80	6.3	170	23
JUL 15...	1540	1570	674	7.70	29.0	7.8	103	0.8	170	45
SEP 03...	1025	673	680	7.40	28.0	4.9	63	3.4	140	10
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 WH WAT TOTAL 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 13...	54	4.9	53	2	9.9	128	75	49	0.90	
JAN 23...	54	5.1	36	1	6.6	128	57	40	0.50	
APR 29...	56	6.3	82	3	12	143	100	67	1.3	
JUL 15...	56	7.5	75	3	8.1	126	130	66	0.80	
SEP 03...	48	5.9	78	3	11	134	80	68	1.4	
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- PHORUS, TOTAL (MG/L AS P)
NOV 13...	7.5	330	3.52	0.180	3.70	0.300	2.8	3.1	2.50	
JAN 23...	5.1	280	1.79	0.110	1.90	0.390	1.0	1.4	0.930	
APR 29...	7.8	420	5.39	0.410	5.80	1.20	2.0	3.2	3.80	
JUL 15...	9.3	430	2.32	0.080	2.40	0.300	0.70	1.0	2.00	
SEP 03...	9.7	380	5.54	0.460	6.00	1.20	2.2	3.4	4.00	

## TRINITY RIVER MAIN STEM

08057410 TRINITY RIVER BELOW DALLAS, TX--Continued

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1986 TO SEPTEMBER 1987

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. 1986	30277	587	335	27400	44	3640	76	6240	160
NOV. 1986	32902	541	309	27400	40	3560	70	6230	150
DEC. 1986	38106	592	337	34700	45	4630	77	7920	160
JAN. 1987	63317	510	290	49600	37	6270	66	11200	150
FEB. 1987	77670	481	274	57500	34	7080	62	12900	150
MAR. 1987	204310	456	260	143000	31	17300	58	32200	140
APR. 1987	75567	484	276	56200	34	6980	62	12700	150
MAY 1987	79711	536	305	65700	40	8550	69	14900	150
JUNE 1987	250010	462	263	178000	32	21600	59	40000	140
JULY 1987	60708	508	290	47500	37	6010	66	10700	150
AUG. 1987	23396	684	390	24700	55	3460	90	5670	170
SEPT 1987	24962	631	360	24300	49	3300	82	5550	160
TOTAL	960936	**	**	736000	**	92400	**	166000	**
WTD.AVG.	2633	498	284	**	36	**	64	**	150

## SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	776	721	739	703	673	691	680	605	631	646	630	638
2	754	711	724	701	644	679	709	680	693	646	626	635
3	764	731	745	661	620	645	730	704	717	650	606	636
4	778	628	736	661	445	585	736	708	719	610	586	597
5	685	450	528	548	460	519	754	712	726	626	606	614
6	522	345	457	501	236	449	774	750	762	674	616	628
7	528	495	510	527	334	474	770	728	746	696	574	618
8	---	---	510	538	226	406	736	682	711	650	620	630
9	---	---	530	584	379	504	734	676	698	700	402	538
10	---	---	560	568	382	485	678	642	657	510	454	486
11	663	461	572	486	298	406	714	686	697	560	496	534
12	619	552	592	501	405	435	746	542	674	624	554	589
13	643	457	594	626	389	514	584	528	554	638	608	622
14	649	551	606	725	632	675	600	530	557	644	624	634
15	673	634	655	771	673	732	562	464	510	654	626	641
16	668	645	656	757	623	684	572	498	537	656	638	648
17	697	658	670	782	690	717	626	574	602	656	598	637
18	703	670	685	---	---	730	586	406	480	604	516	545
19	682	663	672	---	---	720	472	408	442	528	480	503
20	682	631	648	---	---	610	590	482	540	580	528	562
21	687	585	649	---	---	620	644	592	621	590	522	565
22	655	599	635	---	---	625	698	636	659	518	492	506
23	664	330	512	---	---	570	696	650	679	524	454	488
24	524	425	460	---	---	600	676	636	658	454	436	446
25	593	434	533	640	342	620	658	626	646	446	425	440
26	608	554	591	402	369	385	640	608	624	451	435	442
27	629	588	605	460	404	429	642	622	634	445	429	437
28	683	643	656	516	459	487	646	624	636	431	419	426
29	694	663	682	568	512	542	672	640	650	435	417	426
30	687	635	655	610	566	590	668	630	657	436	418	430
31	692	665	679	---	---	---	642	622	631	430	412	422
MONTH	778	330	614	782	226	571	774	406	637	700	402	547

## TRINITY RIVER MAIN STEM

309

08057410 TRINITY RIVER BELOW DALLAS, TX--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	416	398	412	460	395	421	---	---	441			780
2	450	412	428	486	436	460	---	---	442			631
3	458	436	447	505	486	491	436	430	434			563
4	463	439	451	507	460	481	438	430	434			378
5	513	465	489	460	443	450	436	428	433			404
6	527	501	511	454	441	448	450	432	441			575
7	517	489	505	479	446	462	456	448	452			671
8	500	490	495	484	468	478	452	444	448			696
9	518	488	506	478	467	472	448	442	445			689
10	574	510	541	477	461	467	444	436	442			758
11	600	572	588	---	---	472	478	442	456			771
12	630	569	598	---	---	477	---	---	478			750
13	581	549	568	---	---	482	---	---	473			735
14	567	539	560	511	473	487	---	---	494			704
15	559	527	544	---	---	468	---	---	504			674
16	569	531	549	---	---	449	---	---	527			476
17	610	542	585	492	395	431	---	---	566			654
18	564	546	555	442	416	431	---	---	596			828
19	568	552	561	---	---	461	---	---	614			759
20	576	373	454	---	---	451	---	---	617			691
21	475	419	440	---	---	447	---	---	632			689
22	490	446	475	---	---	445	---	---	627			693
23	557	494	525	---	---	445	---	---	626			696
24	563	471	523	---	---	444	---	---	588			700
25	486	465	476	---	---	442	---	---	695			701
26	486	428	455	---	---	445	---	---	777			774
27	466	443	455	---	---	444	---	---	775			673
28	470	423	443	---	---	443	---	---	774			580
29	---	---	---	---	---	443	---	---	783			479
30	---	---	---	---	---	445	---	---	780			384
31	---	---	---	---	---	443	---	---	---			529
MONTH	630	373	505	511	395	456	478	428	560			648
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	---	---	602	439	414	429	730	691	712	705	668	682
2	---	---	537	437	415	422	728	660	693	693	669	680
3	---	---	430	426	338	384	705	654	684	700	671	682
4	---	---	425	466	384	423	735	685	710	733	700	714
5	---	---	440	566	455	515	709	678	696	759	729	742
6	---	---	442	482	457	467	721	688	705	744	698	728
7	---	---	450	486	461	470	731	633	706	718	491	664
8	---	---	457	546	466	479	756	706	722	618	591	605
9	---	---	442	595	557	581	750	707	726	681	613	654
10	---	---	417	598	565	581	748	685	709	689	567	646
11	---	---	415	607	511	556	---	---	637	656	541	581
12	---	---	425	---	---	453	644	621	626	674	490	603
13	---	---	445	---	---	473	707	648	680	500	385	461
14	---	---	495	---	---	490	740	711	721	547	481	508
15	---	---	515	565	477	507	731	694	718	595	539	566
16	---	---	502	647	571	606	717	676	697	565	516	552
17	---	---	503	692	428	620	710	665	687	657	564	602
18	---	---	473	---	---	502	757	704	730	677	621	660
19	---	---	460	---	---	544	776	718	741	615	552	587
20	---	---	480	---	---	630	767	730	751	666	617	639
21	---	---	482	---	---	701	781	744	753	663	614	635
22	---	---	474	---	---	743	756	670	723	675	648	661
23	---	---	467	---	---	760	715	670	687	676	651	666
24	---	---	447	---	---	532	717	666	691	704	662	684
25	---	---	430	---	---	653	751	712	730	730	693	708
26	429	416	423	---	---	730	749	685	714	740	689	716
27	425	414	418	---	---	726	722	536	677	722	672	696
28	427	412	420	---	---	732	626	534	592	696	653	672
29	424	411	418	757	702	737	584	564	575	725	674	702
30	455	424	438	702	680	690	629	572	591	740	685	714
31	---	---	---	732	700	713	672	621	642	---	---	---
MONTH	455	411	459	757	338	576	781	534	691	759	385	647

## TRINITY RIVER MAIN STEM

08057410 TRINITY RIVER BELOW DALLAS, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	7.2	7.1	7.1	7.2	7.0	7.1	7.4	7.2	7.3	7.5	7.4	7.4
2	7.2	7.1	7.1	7.2	7.1	7.1	7.5	7.2	7.3	7.5	7.4	7.5
3	7.2	7.1	7.1	7.3	7.1	7.1	7.4	7.2	7.3	7.5	7.4	7.5
4	7.2	7.1	7.2	7.4	7.1	7.2	7.4	7.2	7.3	7.5	7.4	7.5
5	7.4	7.2	7.3	7.4	7.3	7.3	7.3	7.2	7.2	7.5	7.4	7.4
6	7.4	7.3	7.3	7.3	7.1	7.2	7.3	7.2	7.2	7.5	7.4	7.4
7	7.4	7.2	7.3	7.5	7.1	7.2	7.3	7.2	7.3	7.6	7.4	7.5
8	7.5	7.2	7.3	7.3	7.1	7.2	7.4	7.3	7.3	7.5	7.4	7.5
9	7.4	7.2	7.3	7.2	7.1	7.1	7.4	7.2	7.3	7.7	7.5	7.6
10	7.4	7.1	7.2	7.3	7.1	7.2	7.4	7.2	7.3	7.7	7.6	7.6
11	7.3	7.1	7.2	7.4	7.3	7.4	7.3	7.2	7.2	7.6	7.5	7.6
12	7.3	7.2	7.3	7.4	7.3	7.4	7.4	7.2	7.4	7.6	7.4	7.5
13	7.5	7.2	7.3	7.4	7.3	7.3	7.5	7.4	7.5	7.6	7.4	7.5
14	7.4	7.2	7.3	7.3	7.2	7.3	7.5	7.4	7.4	7.5	7.4	7.5
15	7.3	7.0	7.2	7.3	7.2	7.2	7.6	7.4	7.5	7.5	7.4	7.5
16	7.5	7.1	7.2	7.4	7.1	7.3	7.5	7.4	7.5	7.5	7.4	7.5
17	7.5	7.1	7.2	7.3	7.2	7.2	7.4	7.3	7.4	7.5	7.5	7.5
18	7.3	7.1	7.2	7.4	7.2	7.2	7.6	7.4	7.5	7.7	7.5	7.6
19	7.3	7.1	7.2	7.2	7.1	7.2	7.6	7.5	7.6	7.7	7.6	7.6
20	7.2	7.0	7.1	7.4	7.3	7.3	7.5	7.4	7.5	7.6	7.5	7.6
21	7.3	7.0	7.1	7.3	7.2	7.3	7.5	7.4	7.4	7.7	7.5	7.6
22	7.2	7.0	7.1	7.4	7.2	7.3	7.5	7.3	7.4	7.8	7.7	7.7
23	7.3	7.0	7.2	7.5	7.3	7.4	7.5	7.4	7.4	7.8	7.7	7.8
24	7.5	7.2	7.3	7.4	7.3	7.3	7.5	7.4	7.4	7.9	7.8	7.8
25	7.3	7.2	7.2	7.6	7.3	7.5	7.5	7.4	7.4	7.9	7.8	7.9
26	7.2	7.1	7.2	7.5	7.5	7.5	7.5	7.4	7.4	7.9	7.8	7.9
27	7.2	7.0	7.1	7.5	7.4	7.4	7.5	7.4	7.4	8.0	7.8	7.9
28	7.2	7.1	7.1	7.5	7.3	7.4	7.5	7.4	7.4	7.9	7.8	7.9
29	7.2	7.0	7.1	7.4	7.3	7.3	7.5	7.4	7.4	7.9	7.9	7.9
30	7.2	7.0	7.1	7.4	7.2	7.3	7.5	7.3	7.4	8.0	7.8	7.9
31	7.2	7.1	7.1	---	---	---	7.5	7.4	7.4	7.9	7.9	7.9
MONTH	7.5	7.0	7.2	7.6	7.0	7.3	7.6	7.2	7.4	8.0	7.4	7.6
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	8.0	7.8	7.9	8.0	7.9	7.9						
2	7.9	7.8	7.8	8.0	7.9	7.9						
3	7.9	7.7	7.8	8.0	7.9	7.9						
4	7.9	7.7	7.8	8.1	7.9	8.1						
5	7.7	7.6	7.7	8.1	8.0	8.1						
6	7.7	7.6	7.6	8.2	8.1	8.2						
7	7.7	7.6	7.6	8.2	7.8	8.0						
8	7.7	7.5	7.6	7.8	7.8	7.8						
9	7.7	7.5	7.6	7.8	7.7	7.8						
10	7.7	7.4	7.5	7.8	7.8	7.8						
11	7.5	7.3	7.4	---	---	---						
12	7.5	7.4	7.4	---	---	---						
13	7.5	7.4	7.5	7.9	7.8	7.8						
14	7.6	7.5	7.5	7.8	7.7	7.8						
15	7.6	7.5	7.5	8.0	7.6	7.7						
16	7.6	7.4	7.5	8.1	7.7	7.9						
17	7.5	7.4	7.4	---	---	---						
18	7.6	7.4	7.5	---	---	---						
19	7.6	7.5	7.5	---	---	---						
20	7.9	7.6	7.7	---	---	---						
21	7.9	7.7	7.8	---	---	---						
22	7.7	7.7	7.7	---	---	---						
23	7.7	7.7	7.7	---	---	---						
24	7.8	7.7	7.8	---	---	---						
25	7.9	7.8	7.8	---	---	---						
26	7.9	7.8	7.8	---	---	---						
27	8.0	7.9	7.9	---	---	---						
28	7.9	7.9	7.9	---	---	---						
29	---	---	---	---	---	---						
30	---	---	---	---	---	---						
31	---	---	---	---	---	---						
MONTH	8.0	7.3	7.7	8.2	7.6	7.9						

## TRINITY RIVER MAIN STEM

311

08057410 TRINITY RIVER BELOW DALLAS, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	---	---	---	7.6	7.5	7.6	7.6	7.5	7.5	7.5	7.3	7.4
2	---	---	---	7.9	7.6	7.7	7.6	7.4	7.5	7.5	7.3	7.4
3	---	---	---	7.9	7.7	7.8	7.6	7.4	7.5	7.5	7.3	7.4
4	---	---	---	7.8	7.7	7.7	7.6	7.4	7.4	7.5	7.3	7.4
5	---	---	---	7.8	7.6	7.8	7.5	7.3	7.4	7.5	7.4	7.4
6	---	---	---	8.0	7.9	8.0	7.5	7.3	7.4	7.5	7.3	7.4
7	---	---	---	8.0	7.8	7.9	7.5	7.1	7.4	7.7	7.3	7.4
8	---	---	---	7.9	7.7	7.8	7.5	7.3	7.4	7.6	7.3	7.4
9	---	---	---	8.1	7.7	8.0	7.5	7.3	7.4	7.6	7.3	7.4
10	---	---	---	8.1	7.7	7.7	7.5	7.3	7.4	7.5	7.3	7.4
11	---	---	---	7.9	7.7	7.8	7.4	7.2	7.3	7.6	7.4	7.5
12	---	---	---	---	---	---	7.4	7.2	7.3	7.6	7.4	7.5
13	---	---	---	---	---	---	7.4	7.3	7.3	7.6	7.5	7.5
14	---	---	---	---	---	---	7.4	7.3	7.3	7.5	7.3	7.4
15	---	---	---	---	---	---	7.5	7.3	7.4	7.5	7.3	7.4
16	---	---	---	---	---	---	7.4	7.2	7.3	7.6	7.4	7.4
17	---	---	---	---	---	---	7.4	7.2	7.3	7.5	7.3	7.4
18	---	---	---	---	---	---	7.3	7.1	7.2	7.5	7.4	7.4
19	---	---	---	---	---	---	7.2	7.0	7.1	7.5	7.3	7.4
20	---	---	---	---	---	---	7.2	7.0	7.1	7.5	7.3	7.4
21	---	---	---	---	---	---	7.2	7.1	7.2	7.5	7.2	7.3
22	---	---	---	---	---	---	7.4	7.2	7.3	7.5	7.2	7.3
23	---	---	---	---	---	---	7.5	7.3	7.4	7.5	7.3	7.3
24	---	---	---	---	---	---	7.5	7.3	7.4	7.5	7.2	7.3
25	---	---	---	---	---	---	7.5	7.3	7.4	7.4	7.2	7.3
26	7.9	7.8	7.9	---	---	---	7.5	7.3	7.4	7.5	7.3	7.4
27	7.9	7.8	7.8	---	---	---	7.5	7.2	7.4	7.5	7.2	7.3
28	7.9	7.7	7.8	---	---	---	7.5	7.4	7.4	7.5	7.2	7.3
29	7.8	7.6	7.7	7.7	7.5	7.6	7.5	7.3	7.4	7.5	7.3	7.3
30	7.6	7.4	7.5	7.6	7.5	7.5	7.5	7.3	7.3	7.5	7.2	7.4
31	---	---	---	7.6	7.4	7.5	7.6	7.2	7.4	---	---	---
MONTH	7.9	7.4	7.7	8.1	7.4	7.7	7.6	7.0	7.4	7.7	7.2	7.4

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	29.0	27.5	28.5	23.5	22.5	23.0	17.0	15.0	16.0	13.0	12.0	12.5
2	28.5	28.0	28.5	23.5	22.5	23.0	15.5	13.5	15.0	12.5	11.0	12.0
3	28.0	27.5	28.0	23.0	21.5	22.5	16.5	14.5	15.5	12.5	11.5	12.5
4	28.0	27.0	27.5	23.0	21.0	22.0	16.5	14.5	16.0	12.5	11.0	11.5
5	27.0	24.0	25.0	21.5	19.0	20.0	17.0	15.5	16.5	12.0	11.0	12.0
6	24.5	22.0	23.0	20.0	18.0	19.0	17.5	16.0	17.0	14.0	11.5	12.5
7	23.0	22.5	23.0	20.5	18.5	20.0	17.5	16.0	17.0	14.0	12.0	13.0
8	23.5	22.5	23.0	22.0	20.0	21.0	17.5	16.0	17.0	13.5	12.5	13.0
9	24.5	23.0	23.5	21.5	20.5	21.0	16.5	14.5	15.5	13.5	10.0	11.5
10	25.0	24.0	24.5	21.0	18.0	19.5	14.5	13.0	13.5	10.5	9.5	10.0
11	25.0	24.5	25.0	18.0	15.5	16.5	14.5	12.5	13.5	10.5	9.0	10.0
12	24.5	21.0	22.5	16.0	15.0	15.5	14.0	10.5	13.0	12.0	9.5	11.0
13	21.0	20.0	20.5	15.0	12.5	13.5	11.5	10.5	11.0	12.0	10.5	11.5
14	22.0	20.0	21.0	15.5	13.0	14.0	12.5	10.5	11.5	13.5	11.5	12.5
15	22.5	20.5	21.5	17.5	14.5	16.0	12.5	11.0	12.0	14.5	13.0	13.5
16	22.5	20.5	22.0	19.5	16.5	18.0	13.5	12.0	12.5	14.0	12.5	13.5
17	23.5	21.0	22.5	20.5	18.0	19.5	15.0	13.5	14.0	12.5	11.0	12.0
18	23.5	22.0	23.0	21.0	19.5	20.5	14.0	11.5	12.5	11.0	8.0	9.0
19	23.5	22.5	23.0	20.5	19.0	19.5	11.5	10.5	11.0	8.5	7.0	7.5
20	23.5	22.0	23.0	19.0	16.5	18.0	13.0	11.0	12.0	10.0	8.5	9.0
21	23.5	22.5	23.0	18.5	17.0	17.5	14.0	13.0	13.0	9.5	8.5	9.0
22	23.0	22.0	22.5	19.0	17.5	18.0	14.0	13.0	13.5	8.5	7.5	8.5
23	23.0	21.0	22.0	18.5	16.5	17.5	13.5	12.5	13.5	8.5	7.5	8.0
24	22.0	21.0	21.5	17.0	15.5	16.0	13.5	12.0	13.0	9.0	7.5	8.5
25	22.0	20.5	21.5	16.0	12.0	13.0	14.0	12.5	13.5	8.5	7.5	8.0
26	22.0	21.0	21.5	13.5	12.5	13.0	14.5	13.0	13.5	9.0	7.5	8.0
27	22.5	20.5	22.0	14.5	13.0	13.5	14.0	12.5	13.0	9.0	7.5	8.5
28	23.0	21.0	22.5	15.5	13.5	14.5	13.5	12.5	13.0	9.5	8.0	9.0
29	23.5	22.0	22.5	16.0	14.0	15.5	14.0	12.0	13.0	10.5	9.0	10.0
30	23.5	22.0	23.0	17.0	15.0	16.0	13.5	12.5	13.0	10.0	9.0	9.5
31	23.5	22.5	23.0	---	---	---	13.5	11.5	12.5	10.0	9.0	9.5
MONTH	29.0	20.0	23.5	23.5	12.0	18.0	17.5	10.5	14.0	14.5	7.0	10.5

## TRINITY RIVER MAIN STEM

08057410 TRINITY RIVER BELOW DALLAS, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	11.0	9.0	10.0	12.5	11.5	12.0	---	---	---	---	---	---
2	11.5	10.0	11.0	13.0	11.5	12.0	---	---	---	---	---	---
3	12.0	10.5	11.5	13.0	12.0	12.5	13.5	12.0	13.0	---	---	---
4	12.5	11.0	11.5	13.0	12.0	12.5	14.0	12.5	13.0	---	---	---
5	13.5	12.0	13.0	13.0	11.5	12.5	13.5	12.5	13.0	---	---	---
6	13.5	11.5	12.5	13.5	12.0	12.5	14.0	12.5	13.5	---	---	---
7	12.5	11.5	12.0	14.0	12.5	13.0	14.5	13.0	14.0	---	---	---
8	13.0	11.0	12.0	14.5	13.5	14.0	15.0	13.5	14.5	---	---	---
9	13.0	11.5	12.0	14.5	14.0	14.0	16.0	14.0	15.0	---	---	---
10	14.5	11.5	13.0	14.5	13.5	14.0	16.0	14.5	15.5	---	---	---
11	16.5	14.0	15.0	14.0	12.5	13.5	17.5	15.0	16.5	---	---	---
12	16.5	14.5	15.5	---	---	---	23.5	17.5	21.0	---	---	---
13	16.5	14.5	15.5	---	---	---	23.0	18.0	20.5	---	---	---
14	16.5	15.5	16.0	14.5	13.0	14.0	---	---	---	---	---	---
15	16.0	15.0	15.5	---	---	---	---	---	---	---	---	---
16	15.5	14.0	14.5	---	---	---	---	---	---	---	---	---
17	14.0	12.5	13.5	---	---	---	---	---	---	---	---	---
18	13.5	11.5	12.5	---	---	---	---	---	---	---	---	---
19	13.0	12.0	12.5	---	---	---	---	---	---	---	---	---
20	12.0	8.5	10.0	---	---	---	---	---	---	---	---	---
21	10.0	9.0	9.5	---	---	---	---	---	---	---	---	---
22	11.5	10.0	10.5	---	---	---	---	---	---	---	---	---
23	12.5	11.0	11.5	---	---	---	---	---	---	---	---	---
24	12.5	11.5	12.0	---	---	---	---	---	---	---	---	---
25	11.5	11.0	11.0	---	---	---	---	---	---	---	---	---
26	11.5	11.5	11.5	---	---	---	---	---	---	---	---	---
27	12.0	11.5	12.0	---	---	---	---	---	---	---	---	---
28	12.5	12.0	12.5	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
MONTH	16.5	8.5	12.5	14.5	11.5	13.0	23.5	12.0	15.5	---	---	---

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	---	---	---	35.5	28.0	33.5	31.5	30.5	31.0	29.5	28.0	28.5
2	---	---	---	28.0	26.0	26.5	31.5	30.0	31.0	29.0	27.5	28.5
3	---	---	---	26.5	25.0	26.0	31.5	30.5	31.0	29.5	28.0	29.0
4	---	---	---	28.5	26.5	27.0	31.5	30.5	31.0	30.0	28.5	29.0
5	---	---	---	32.5	28.5	30.0	31.5	30.5	31.0	30.0	28.5	29.0
6	---	---	---	29.0	28.0	28.0	32.0	30.5	31.5	29.5	28.0	29.0
7	---	---	---	28.5	27.5	28.0	32.0	30.5	31.5	29.0	27.0	28.5
8	---	---	---	29.5	27.0	27.5	32.0	30.5	31.0	28.5	27.0	28.0
9	---	---	---	31.5	27.5	29.0	32.0	30.5	31.0	29.5	28.0	28.5
10	---	---	---	31.5	29.0	30.0	32.0	30.5	31.0	29.5	27.0	28.5
11	---	---	---	31.0	29.5	30.0	31.5	29.0	30.0	29.0	27.5	28.0
12	---	---	---	33.0	28.5	30.5	32.5	30.5	31.5	28.5	27.0	28.0
13	---	---	---	31.5	28.0	30.0	32.0	30.5	31.0	28.0	26.0	27.0
14	---	---	---	30.0	26.5	28.0	32.0	30.5	31.0	29.5	27.5	28.5
15	---	---	---	30.5	27.0	28.5	32.0	30.5	31.0	29.5	28.5	29.0
16	---	---	---	32.5	30.0	31.0	32.0	30.5	31.0	29.0	28.0	28.5
17	---	---	---	31.0	29.0	30.5	32.0	30.5	31.0	30.0	28.0	29.0
18	---	---	---	33.0	29.0	31.0	32.0	30.5	31.0	30.0	27.5	29.0
19	---	---	---	33.5	29.5	31.5	32.0	30.5	31.0	27.5	26.5	27.0
20	---	---	---	34.0	28.5	31.5	32.0	30.0	31.0	28.0	26.5	27.5
21	---	---	---	34.0	29.0	31.5	32.0	30.5	31.0	28.0	27.0	27.5
22	---	---	---	35.0	29.5	32.5	32.0	30.5	31.0	28.0	26.5	27.0
23	---	---	---	33.0	30.0	31.5	32.0	30.0	31.0	27.5	25.5	26.5
24	---	---	---	34.5	28.0	31.0	32.0	30.5	31.0	27.5	26.0	27.0
25	---	---	---	34.5	29.5	32.0	31.5	30.0	30.5	28.0	26.5	27.5
26	27.5	27.0	27.0	34.5	30.0	32.0	31.0	30.0	30.5	27.5	26.5	27.0
27	28.0	27.0	27.5	34.5	29.5	32.5	31.0	28.5	29.5	27.5	26.5	27.0
28	28.0	26.5	27.5	32.5	29.5	31.0	28.5	27.5	28.0	28.0	27.0	27.5
29	36.0	30.5	33.0	31.0	30.0	30.5	28.5	27.0	27.5	28.0	27.0	27.5
30	38.0	33.0	34.5	31.5	30.0	31.0	28.5	28.0	28.5	27.0	25.5	26.5
31	---	---	---	31.5	30.5	31.0	29.0	28.0	28.5	---	---	---
MONTH	38.0	26.5	30.0	35.5	25.0	30.0	32.5	27.0	30.5	30.0	25.5	28.0

## TRINITY RIVER MAIN STEM

313

08057410 TRINITY RIVER BELOW DALLAS, TX--Continued

OXYGEN, DISSOLVED (DO), MG/L, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	4.4	3.9	4.1	6.0	5.5	5.7	8.0	7.4	7.6	9.2	8.9	9.1
2	4.3	3.6	4.0	6.4	5.6	5.9	8.4	7.3	7.9	9.4	9.0	9.2
3	4.0	3.6	3.9	6.5	6.0	6.2	7.8	7.2	7.6	9.2	8.9	9.0
4	4.6	3.5	4.0	6.6	5.8	6.0	7.7	7.3	7.6	9.4	9.1	9.3
5	5.7	3.4	5.2	6.9	6.0	6.6	7.9	7.2	7.6	9.5	9.1	9.2
6	6.6	5.5	5.9	7.1	6.4	6.9	7.7	7.2	7.4	9.4	8.9	9.1
7	6.2	5.6	5.9	7.3	6.4	6.7	7.5	7.2	7.3	9.5	8.7	9.1
8	6.3	5.4	5.8	6.8	6.1	6.4	7.8	7.2	7.4	9.0	8.4	8.8
9	6.3	5.3	5.8	6.6	6.0	6.3	8.0	7.1	7.6	10.0	8.6	9.4
10	6.0	5.1	5.5	7.7	6.1	6.6	8.4	7.8	8.1	10.0	9.7	9.8
11	5.5	4.3	5.0	8.0	7.1	7.6	8.3	7.8	8.1	9.9	9.6	9.8
12	6.2	5.1	5.7	8.1	7.9	8.0	9.4	7.9	8.6	9.8	9.3	9.6
13	7.3	6.2	6.6	8.8	8.1	8.5	9.8	9.5	9.7	9.7	9.3	9.4
14	7.4	6.1	6.7	8.6	7.8	8.3	9.7	8.9	9.3	9.3	8.9	9.1
15	6.8	5.7	6.3	7.9	7.4	7.8	9.8	8.8	9.4	9.0	8.6	8.8
16	7.4	5.8	6.4	7.7	6.9	7.4	9.5	8.7	9.1	8.8	8.5	8.7
17	7.3	5.7	6.3	7.2	6.5	6.9	8.7	8.0	8.4	9.0	8.7	8.8
18	6.5	5.7	6.0	6.5	5.5	6.2	9.5	8.5	9.1	10.4	9.1	9.9
19	6.5	5.7	6.1	6.7	6.1	6.3	9.4	9.0	9.2	10.5	10.2	10.4
20	6.6	5.7	6.2	7.1	6.4	6.7	9.1	8.8	9.0	10.2	9.8	10.0
21	6.6	5.5	5.9	7.0	6.6	6.8	9.0	8.5	8.8	10.7	9.9	10.3
22	6.4	5.1	5.8	7.0	6.7	6.8	8.9	8.3	8.6	11.0	10.7	10.8
23	6.7	5.1	5.9	8.0	6.8	7.4	8.8	8.4	8.6	11.7	10.8	11.3
24	6.3	5.8	6.0	7.9	7.1	7.4	9.1	8.6	8.8	11.8	11.6	11.7
25	6.6	6.0	6.3	9.3	7.4	8.5	9.0	8.6	8.8	11.8	11.6	11.7
26	6.5	6.1	6.3	8.5	8.0	8.2	9.1	8.6	8.8	12.0	11.7	11.9
27	6.4	5.8	6.2	8.3	8.0	8.2	9.1	8.6	8.8	12.1	11.9	12.0
28	6.1	5.4	5.8	8.5	7.8	8.2	9.3	8.7	9.1	12.1	11.7	11.9
29	5.9	5.3	5.5	8.0	7.4	7.9	9.4	8.7	9.0	11.8	11.6	11.7
30	5.9	5.4	5.7	8.0	7.4	7.7	9.2	8.8	9.0	11.9	11.6	11.7
31	5.9	5.3	5.7	---	---	---	9.3	8.6	9.0	11.9	11.6	11.8
MONTH	7.4	3.4	5.7	9.3	5.5	7.1	9.8	7.1	8.5	12.1	8.4	10.1
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	11.8	11.4	11.6	8.4	8.0	8.2	---	---	---	---	---	---
2	11.5	10.8	11.2	8.2	7.9	8.1	---	---	---	---	---	---
3	11.2	10.3	10.7	8.4	8.0	8.2	10.9	10.7	10.8	---	---	---
4	10.9	10.0	10.5	9.4	8.3	9.0	11.0	10.8	10.9	---	---	---
5	10.2	9.4	9.8	9.6	8.7	9.2	11.0	10.9	11.0	---	---	---
6	9.6	9.3	9.5	9.6	8.6	9.2	11.0	10.8	10.9	---	---	---
7	9.9	9.6	9.7	10.4	7.7	8.5	10.8	10.6	10.7	---	---	---
8	10.0	9.4	9.7	10.8	9.5	10.3	11.0	10.5	10.7	---	---	---
9	9.9	9.2	9.7	---	---	---	10.6	10.3	10.5	---	---	---
10	9.8	8.5	9.2	---	---	---	---	---	---	---	---	---
11	8.8	7.8	8.4	---	---	---	---	---	---	---	---	---
12	8.5	8.0	8.2	---	---	---	---	---	---	---	---	---
13	8.4	7.7	8.1	---	---	---	---	---	---	---	---	---
14	8.3	7.8	8.0	8.7	8.3	8.6	---	---	---	---	---	---
15	8.4	7.7	8.0	9.5	5.0	7.4	---	---	---	---	---	---
16	8.5	7.8	8.2	11.5	5.7	7.8	---	---	---	---	---	---
17	9.0	7.8	8.3	10.8	7.8	8.6	---	---	---	---	---	---
18	9.3	8.9	9.1	10.7	6.8	9.5	---	---	---	---	---	---
19	9.5	8.6	9.1	---	---	---	---	---	---	---	---	---
20	10.4	9.5	10.0	---	---	---	---	---	---	---	---	---
21	10.3	9.4	9.9	---	---	---	---	---	---	---	---	---
22	9.7	9.2	9.5	---	---	---	---	---	---	---	---	---
23	9.5	9.2	9.4	---	---	---	---	---	---	---	---	---
24	9.6	9.2	9.4	---	---	---	---	---	---	---	---	---
25	9.7	9.4	9.6	---	---	---	---	---	---	---	---	---
26	9.8	9.3	9.5	---	---	---	---	---	---	---	---	---
27	9.7	9.0	9.4	---	---	---	---	---	---	---	---	---
28	9.0	8.6	8.8	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
MONTH	11.8	7.7	9.4	11.5	5.0	8.7	11.0	10.3	10.8	---	---	---

## TRINITY RIVER MAIN STEM

08057410 TRINITY RIVER BELOW DALLAS, TX--Continued

OXYGEN, DISSOLVED (DO), MG/L, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1				---	---	---	6.4	5.4	5.9	9.2	5.8	7.1
2				---	---	---	6.1	4.8	5.7	8.9	5.2	6.5
3				---	---	---	5.9	5.1	5.5	5.6	4.9	5.2
4				---	---	---	5.6	4.8	5.3	5.0	4.6	4.8
5				---	---	---	5.4	4.7	5.1	5.3	4.4	4.7
6				---	---	---	5.3	4.6	5.0	5.8	4.4	4.9
7				---	---	---	5.6	4.4	4.8	6.3	4.5	5.2
8				---	---	---	5.2	4.8	5.0	5.7	4.4	5.0
9				---	---	---	5.0	4.6	4.8	5.7	4.8	5.1
10				---	---	---	4.8	4.1	4.6	5.7	4.6	4.9
11				---	---	---	4.3	3.1	3.8	5.3	4.6	5.0
12				---	---	---	5.3	3.6	4.7	5.4	4.7	4.9
13				---	---	---	5.9	5.1	5.4	5.3	4.7	5.1
14				---	---	---	6.2	5.2	5.7	5.3	4.6	5.0
15				---	---	---	6.7	5.6	6.0	5.1	4.3	4.6
16				---	---	---	7.3	6.0	6.5	5.2	4.2	4.7
17				---	---	---	7.8	6.5	7.0	4.6	4.2	4.5
18				---	---	---	7.4	6.2	6.7	4.9	4.0	4.3
19				---	---	---	6.9	6.0	6.5	5.2	4.3	4.7
20				---	---	---	6.9	6.1	6.5	5.5	4.7	5.0
21				---	---	---	7.2	6.0	6.6	6.0	4.8	5.3
22				---	---	---	8.6	6.5	7.3	5.7	5.1	5.4
23				---	---	---	8.7	6.7	7.5	5.4	5.1	5.2
24				---	---	---	8.8	6.7	7.5	5.8	5.0	5.3
25				---	---	---	8.1	6.1	6.9	5.3	4.8	4.9
26				---	---	---	7.1	5.4	6.1	6.1	4.7	5.2
27				---	---	---	7.9	4.7	5.8	6.5	5.1	5.7
28				---	---	---	7.4	4.9	6.5	6.7	5.5	6.1
29				6.8	5.0	6.2	7.8	4.8	6.9	6.4	5.4	5.8
30				6.4	4.0	5.3	9.0	5.2	6.6	6.5	5.6	6.0
31				6.0	3.2	5.0	10.5	6.4	8.4	---	---	---
MONTH				6.8	3.2	5.5	10.5	3.1	6.0	9.2	4.0	5.2

TRINITY RIVER BASIN

315

08057445 PRAIRIE CREEK AT U.S. HIGHWAY 175, DALLAS, TX

LOCATION.--Lat 32°42'17", long 96°40'11", Dallas County, Hydrologic Unit 12030105, on left bank at downstream side of the downstream access road bridge on U.S. Highway 175, 3.4 mi upstream from mouth, and 9.0 mi southeast of Dallas City Hall.

DRAINAGE AREA.--9.03 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1975 to September 1980, April 1984 to current year.

GAGE.--Water-stage recorder. Datum of gage is 390.00 ft above National Geodetic Vertical Datum of 1929.

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

AVERAGE DISCHARGE.--8 years (water years 1976-80, 1985-87), 6.74 ft<sup>3</sup>/s (4,880 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,060 ft<sup>3</sup>/s Oct. 20, 1984 (gage height, 25.12 ft); from rating curve extended above 1,900 ft<sup>3</sup>/s on basis of velocity-area study; no flow at times each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 900 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
June 16	0700	*1,650	*21.51	No other peak greater than base discharge.			

Minimum daily discharge, no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.8	1.1	.89	.84	1.8	6.5	1.3	1.6	1.2	.31	.12	.19
2	3.4	1.2	.90	.82	3.0	3.0	1.3	1.6	.80	17	.08	.06
3	.74	1.3	.88	2.7	2.8	2.0	1.2	8.1	1.5	5.0	.04	.01
4	8.8	25	.89	3.0	2.4	1.3	1.1	50	.78	1.4	.03	.0
5	4.6	4.5	.94	1.7	2.2	1.1	1.2	1.4	.29	.44	.02	.00
6	45	.94	1.3	1.3	8.2	.98	1.3	.13	.12	.17	.04	.00
7	2.4	.40	2.0	1.2	4.2	.97	2.8	.00	.08	.07	.07	.20
8	2.3	.25	2.3	1.0	1.7	.70	.09	.00	.09	.02	.09	.00
9	1.8	.42	1.4	28	1.2	.58	.00	.00	18	.09	.08	.04
10	.18	14	.94	4.8	1.1	.45	.23	.00	23	2.8	.10	4.9
11	.07	16	.75	2.6	1.2	.39	.48	.00	81	1.4	.12	3.3
12	2.3	2.7	8.6	1.9	1.2	.31	.89	.00	108	.57	.26	3.9
13	.68	2.0	4.6	1.5	1.1	.29	5.4	.00	9.4	.23	.32	4.0
14	.12	1.3	5.9	1.4	1.2	.37	1.6	28	3.0	.31	.28	2.0
15	.01	.94	26	1.3	6.0	1.5	.70	17	29	.05	.28	1.0
16	.00	1.1	4.6	1.4	1.8	1.8	.71	.90	223	.00	.85	.66
17	.00	.86	3.1	7.8	.94	205	.84	.19	12	.75	1.3	.42
18	.03	1.5	67	38	.76	4.4	.91	.05	14	2.2	1.7	.30
19	.04	2.7	7.2	5.6	.61	1.7	.99	21	3.7	1.3	1.9	.56
20	.01	3.5	3.9	2.9	81	.98	1.1	27	3.1	.95	2.1	.71
21	.00	1.9	2.6	2.3	6.6	.67	1.2	1.6	2.2	.49	2.5	.59
22	.11	5.3	1.8	1.9	2.7	.49	1.3	.40	1.2	.25	2.6	.41
23	111	3.0	4.6	2.0	1.9	1.2	1.2	.13	.64	19	2.1	.39
24	22	1.2	3.4	1.8	27	2.2	1.3	.05	1.8	8.8	2.3	.49
25	2.3	180	2.1	1.6	8.0	1.8	1.2	.07	1.5	4.4	1.5	.39
26	.69	7.2	1.5	1.5	80	1.8	1.3	.08	.62	.85	1.5	.45
27	.48	3.2	1.3	1.6	14	1.7	1.3	.09	.35	.24	3.6	.44
28	.30	1.7	1.1	1.6	169	1.8	1.3	56	.34	.09	2.5	1.1
29	.32	1.1	.95	1.8	---	3.0	1.4	65	.28	.06	.79	.74
30	.83	.90	.94	1.8	---	2.1	1.5	5.6	.27	.18	.30	.10
31	1.0	---	.94	1.7	---	1.4	---	1.9	---	.25	.44	---
TOTAL	214.31	287.21	165.32	129.36	433.61	252.48	37.14	287.89	541.26	69.67	29.91	27.35
MEAN	6.91	9.57	5.33	4.17	15.5	8.14	1.24	9.29	18.0	2.25	.96	.91
MAX	111	180	67	38	169	205	5.4	65	223	19	3.6	4.9
MIN	.00	.25	.75	.82	.61	.29	.00	.00	.08	.00	.02	.00
AC-FT	425	570	328	257	860	501	74	571	1070	138	59	54
CAL YR 1986	TOTAL	2281.42	MEAN	6.25	MAX	260	MIN	.00	AC-FT	4530		
WTR YR 1987	TOTAL	2475.47	MEAN	6.78	MAX	223	MIN	.00	AC-FT	4910		

## TRINITY RIVER BASIN

08058900 EAST FORK TRINITY RIVER AT MCKINNEY, TX

LOCATION.--Lat 33°14'38", long 96°36'31", Collin County, Hydrologic Unit 12030106, at downstream side of highway embankment near left end of main channel bridge on State Highways 5 and 121, 750 ft downstream from Honey Creek, 1.2 mi upstream from Southern Pacific Railway Co. bridge, 1.7 mi upstream from Clemons Creek, 3.3 mi north of McKinney, 26. mi upstream from Lavon Dam, and 86.5 mi upstream from mouth.

DRAINAGE AREA.--164 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 528.74 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Flow from 89.1 mi<sup>2</sup> above this station was affected at times by discharge from the flood-detention pools of 49 floodwater-retarding structures with a combined detention capacity of 26,080 acre-ft. Non-recording rain gage and gage-height telemeter at station.

AVERAGE DISCHARGE.--12 years regulated, 90.0 ft<sup>3</sup>/s (65,200 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 61,800 ft<sup>3</sup>/s May 13, 1982 (gage height, 22.17 ft, from graph); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1913, about 28 ft in April 1942 (discharge not determined), from information by State Department of Highways and Public Transportation.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,550 ft<sup>3</sup>/s Mar. 1 at 0300 hours (gage height, 18.22 ft); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.01	3.5	e32	24	e36	e1960	58	14	346	29	.11	.06
2	.01	2.6	30	23	e38	e662	53	14	249	51	.12	.06
3	.01	2.3	28	23	e38	e401	48	14	277	28	.05	.04
4	47	2.8	25	32	e35	e321	45	613	196	21	.02	.03
5	197	9.3	25	27	e33	e277	42	189	137	15	.01	.07
6	51	9.2	24	26	e33	e235	41	91	106	13	.01	.03
7	30	7.1	24	25	e38	e192	39	66	88	11	.01	.05
8	23	6.7	26	25	e36	e158	38	185	76	9.9	.00	.27
9	20	6.2	27	126	e33	e137	37	88	64	9.1	.00	.06
10	18	6.0	30	155	e31	e123	35	63	82	8.6	.00	.63
11	16	223	27	85	e30	e109	32	52	83	8.0	.00	.27
12	15	71	26	65	e29	e101	31	57	80	7.1	.00	.23
13	14	41	24	58	e28	e97	29	38	68	6.5	.00	.21
14	14	30	22	52	e28	92	30	35	51	7.8	.00	.17
15	13	24	24	49	e64	88	27	83	57	6.1	.00	4.3
16	12	20	27	52	e53	85	25	43	426	4.9	.00	2.5
17	11	18	26	60	e38	621	25	32	244	5.2	.00	.30
18	11	16	74	207	e34	e1000	24	26	171	6.1	.00	.07
19	9.9	14	143	182	e32	e1000	23	25	144	5.1	.00	9.4
20	9.3	13	83	115	e68	e895	21	28	440	3.8	.00	12
21	8.8	e13	63	94	e193	e813	19	23	227	2.8	.00	7.2
22	8.0	e14	51	81	e136	e580	19	20	124	2.5	.00	6.1
23	7.8	e18	47	71	117	e240	19	16	84	2.0	.00	4.5
24	7.7	e19	50	65	114	109	18	16	70	2.0	.00	3.0
25	7.6	e120	43	60	184	91	17	17	52	3.6	.00	1.5
26	6.8	e111	39	54	280	82	17	16	41	2.6	.00	.68
27	6.0	e48	36	49	530	77	17	13	35	1.2	.37	.34
28	5.3	e38	31	47	1540	75	16	263	33	.62	.08	.17
29	4.7	e34	29	43	---	75	16	1950	30	.61	.07	.17
30	3.9	e32	28	42	---	69	15	658	30	.42	.06	.06
31	4.0	---	26	e38	---	62	---	715	---	.16	.04	---
TOTAL	581.83	972.7	1190	2055	3849	10827	876	5463	4111	274.71	.95	54.47
MEAN	18.8	32.4	38.4	66.3	137	349	29.2	176	137	8.86	.03	1.82
MAX	197	223	143	207	1540	1960	58	1950	440	51	.37	12
MIN	.01	2.3	22	23	28	62	15	13	30	.16	.00	.03
AC-FT	1150	1930	2360	4080	7630	21480	1740	10840	8150	545	1.9	108

CAL YR 1986 TOTAL 47375.96 MEAN 130 MAX 4540 MIN .01 AC-FT 93970  
WTR YR 1987 TOTAL 30255.54 MEAN 82.9 MAX 1960 MIN .00 AC-FT 60010

e Estimated.

## TRINITY RIVER BASIN

317

08058900 EAST FORK TRINITY RIVER AT MCKINNEY, TX--Continued

PERIOD OF RECORD---Chemical and biochemical analyses: October 1980 to August 1982, November 1985 to June 1987.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	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 (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLU MG/L AS CAC03
OCT 06...	1230	48	320	8.40	18.5	27	140	7.4	79	1.8	140	11
JAN 06...	1415	27	520	7.90	7.0	5	1.1	14.0	117	1.3	230	24
FEB 23...	1527	113	460	7.90	9.0	6	2.2	11.1	98	2.5	220	20
APR 15...	1245	27	600	7.80	15.0	8	2.0	10.3	104	0.7	260	30
JUN 01...	1530	330	357	7.60	22.0	28	69	8.8	103	1.1	150	13
JUL 20...	1230	3.9	620	7.50	26.0	2	3.7	4.0	50	0.8	270	3
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 WH WAT TOTAL 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)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)
OCT 06...		52	1.6	14	0.5	3.4	125	28	6.2	0.40	11	190
JAN 06...		86	2.7	21	0.6	2.4	202	54	11	0.40	3.3	300
FEB 23...		84	2.4	20	0.6	2.4	200	54	9.8	0.40	5.1	300
APR 15...		100	3.5	22	0.6	2.2	234	69	11	0.40	3.5	350
JUN 01...		58	1.8	10	0.4	3.3	139	28	5.6	0.40	9.1	200
JUL 20...		100	3.7	27	0.8	2.8	262	58	12	0.40	10	370
DATE		SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDED (MG/L)	SOLIDS, VOLA- TILE, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS- SOLVED (UG/L AS AS)
OCT 06...		246	34	2.97	0.130	3.10	0.030	2.4	2.4	0.050	10	--
JAN 06...		4	<1	--	<0.010	1.10	0.030	0.47	0.50	0.020	--	2
FEB 23...		40	20	0.790	0.010	0.800	0.040	1.3	1.3	0.030	4.1	--
APR 15...		11	1	0.070	0.030	0.100	0.080	0.42	0.50	0.030	4.1	1
JUN 01...		354	59	0.970	0.030	1.00	0.070	1.9	2.0	0.100	13	--
JUL 20...		8	3	--	<0.010	0.300	0.070	0.73	0.80	0.040	4.3	2
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 06...		--	--	--	--	--	--	--	--	--	--	--
JAN 06...		62	<1	30	2	14	<5	34	<0.1	<1	<1	5
FEB 23...		--	--	--	--	--	--	--	--	--	--	--
APR 15...		81	<1	60	1	39	<5	64	<0.1	<1	<1	9
JUN 01...		--	--	--	--	--	--	--	--	--	--	--
JUL 20...		90	<1	10	1	14	<5	220	<0.1	<1	<1	<3

## TRINITY RIVER BASIN

08059300 PILOT GROVE CREEK NEAR BLUE RIDGE, TX

LOCATION.--Lat 33°15'13", long 96°24'44", Collin County, Hydrologic Unit 12030106, on county road bridge, over center of channel at downstream side of bridge, 3.1 mi downstream from Desert Creek, and 3.2 mi south of Blue Ridge.

PERIOD OF RECORD.--Chemical and biochemical analyses: November 1985 to June 1987.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	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 (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3
APR 14...	1000	19	530	8.00	14.5	2	3.0	7.6	76	0.7	250	0
JUN 02...	1030	69	440	7.80	22.0	8	30	8.8	103	3.2	210	0
JUL 21...	1345	13	460	7.90	27.0	2	4.0	8.6	110	1.0	220	0
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 WH WAT TOTAL 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)
APR 14...		97	3.0	18	0.5	1.7	256	29	13	0.50	5.7	320
JUN 02...		81	2.2	9.6	0.3	2.1	220	17	6.1	0.30	10	260
JUL 21...		84	2.8	17	0.5	1.9	225	17	11	0.40	10	280
DATE		SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDED (MG/L)	SOLIDS, VOLA- TILE, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS- SOLVED (UG/L AS AS)
APR 14...		14	4	0.170	0.030	0.200	0.070	0.33	0.40	0.040	--	<1
JUN 02...		99	14	0.690	0.010	0.700	0.030	2.1	2.1	0.110	5.9	--
JUL 21...		20	1	--	<0.010	0.200	0.040	0.66	0.70	0.030	4.1	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)
APR 14...		78	1	60	<1	10	<5	47	0.1	<1	<1	8
JUN 02...		--	--	--	--	--	--	--	--	--	--	--
JUL 21...		81	<1	<10	2	7	<5	27	<0.1	<1	<1	<3

## TRINITY RIVER BASIN

319

## 08059400 SISTER GROVE CREEK NEAR BLUE RIDGE, TX

LOCATION.--Lat 33°17'40", long 96°28'58", Collin County, Hydrologic Unit 12030106, on left bank at upstream side of highway embankment of bridge on Farm Road 545, 3.5 mi upstream from Hatler Branch, 4.8 mi west of Blue Ridge, 7.4 mi upstream from Stiff Creek, 14.7 mi upstream from mouth, and 24.7 mi upstream from Lavon Dam.

DRAINAGE AREA.--83.1 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 536.29 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. At end of year, flow from 47.4 mi<sup>2</sup> above this station is affected at times by discharge from the flood-detention pools of 34 floodwater-retarding structures with a combined detention capacity of 12,710 acre-ft. Several observations of water temperature were made during the year. Gage height telemeter at station.

AVERAGE DISCHARGE.--12 years regulated, 48.1 ft<sup>3</sup>/s (34,850 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,300 ft<sup>3</sup>/s May 13, 1982 (gage height, 22.5 ft, from floodmarks); no flow at times most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since about 1900, 20.7 ft probably in July 1913, from information furnished by State Department of Highways and Public Transportation. The probable date is from published records for discontinued station 08059500 located 9.7 mi downstream.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,740 ft<sup>3</sup>/s Feb. 28 at 2200 hours (gage height, 15.30 ft); no flow Sept. 13 and 17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.08	7.6	30	29	47	783	46	7.6	196	28	1.2	.02
2	.08	6.6	25	28	52	388	45	7.9	131	23	1.1	.02
3	.08	9.4	21	30	50	298	42	8.4	95	32	1.1	.02
4	.33	14	19	37	47	228	41	317	76	25	.93	.02
5	74	21	18	35	44	146	37	169	55	21	.90	.02
6	35	22	17	35	44	108	31	117	43	21	.76	.02
7	15	25	17	33	51	94	28	75	35	18	.58	.02
8	8.4	23	20	31	48	87	27	90	30	16	.54	.01
9	5.4	21	22	122	44	80	27	65	27	15	.30	.01
10	4.0	25	26	150	41	69	25	56	39	14	.17	.04
11	3.2	132	21	73	41	64	25	38	43	14	.16	.01
12	3.0	57	20	59	41	61	27	29	42	12	.16	.02
13	3.1	29	17	54	40	59	25	20	41	6.6	.14	.00
14	2.3	20	17	52	37	57	25	18	33	6.8	.16	.02
15	2.1	16	19	50	77	56	25	18	36	5.0	.12	.15
16	1.6	16	26	52	74	56	24	24	310	4.3	.28	.01
17	1.4	16	26	58	54	396	24	22	194	4.5	.20	.00
18	1.3	15	57	160	47	296	19	17	105	5.1	.10	.26
19	1.3	13	120	149	45	184	16	16	85	12	.09	21
20	1.6	12	61	88	103	119	15	23	366	5.4	.08	2.4
21	1.7	12	48	73	178	90	14	22	164	4.0	.07	1.1
22	1.5	14	43	66	102	77	14	15	107	3.7	.07	.41
23	2.7	17	42	60	78	81	13	12	92	3.3	.06	.19
24	5.3	19	44	59	71	72	13	12	174	4.9	.06	.13
25	10	156	41	56	99	59	13	12	82	9.7	.05	.10
26	13	175	38	53	169	56	13	11	59	8.2	.05	.06
27	10	69	35	51	370	55	12	8.1	46	6.7	.13	.04
28	8.0	51	33	51	1050	54	10	167	38	3.9	.04	.02
29	7.5	42	32	52	---	53	9.1	976	31	1.8	.03	.05
30	12	36	31	50	---	51	8.2	399	29	1.5	.06	.02
31	8.3	---	30	47	---	48	---	261	---	1.4	.03	---
TOTAL	243.27	1091.6	1016	1943	3144	4325	693.3	3033.0	2804	337.8	9.72	26.19
MEAN	7.85	36.4	32.8	62.7	112	140	23.1	97.8	93.5	10.9	.31	.87
MAX	74	175	120	160	1050	783	46	976	366	32	1.2	.21
MIN	.08	6.6	17	28	37	48	8.2	7.6	27	1.4	.03	.00
AC-FT	483	2170	2020	3850	6240	8580	1380	6020	5560	670	19	52
CFSM	.09	.44	.39	.75	1.35	1.68	.28	1.18	1.12	.13	.0	.0
IN.	.11	.49	.45	.87	1.41	1.94	.31	1.36	1.26	.15	.0	.0
CAL YR 1986	TOTAL	26442.70	MEAN	72.4	MAX	1540	MIN	.00	AC-FT	52450	CFSM	.87
WTR YR 1987	TOTAL	18666.74	MEAN	51.1	MAX	1050	MIN	.00	AC-FT	37030	CFSM	.62
										IN.	11.8	8.36

## TRINITY RIVER BASIN

08059400 SISTER GROVE CREEK NEAR BLUE RIDGE, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD---Chemical and biochemical analyses: November 1985 to June 1987.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	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 (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03
OCT 06...	1600	29	240	7.70	18.5	31	1000	7.8	84	6.7	120	5
JAN 07...	1100	32	460	8.00	7.0	4	3.4	--	--	1.2	220	0
FEB 24...	1030	64	470	7.90	9.0	11	5.2	10.4	92	0.5	230	17
APR 14...	1345	26	475	7.70	15.0	3	2.5	10.3	166	0.5	230	0
JUN 02...	1330	124	340	7.80	22.5	18	23	8.6	102	4.1	160	10
JUL 21...	1000	3.9	420	7.80	24.0	2	0.30	6.2	75	1.0	200	0
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 WH WAT TOTAL 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)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)
OCT 06...		47	1.8	7.5	0.3	3.1	120	15	3.6	0.40	14	160
JAN 07...		85	2.5	11	0.3	2.0	227	23	6.8	0.40	3.4	270
FEB 24...		90	2.2	12	0.4	1.8	217	26	8.1	0.30	5.3	280
APR 14...		87	2.8	13	0.4	2.0	233	23	7.1	0.40	3.6	280
JUN 02...		61	1.7	7.7	0.3	2.4	149	13	4.8	0.30	8.6	190
JUL 21...		76	2.2	11	0.4	2.3	202	10	6.1	0.30	9.3	240
DATE		SOLIDS, RESIDUE AT 105 DEG C, SUS- PENDED (MG/L)	SOLIDS, VOLA- TILE, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS- SOLVED (UG/L AS AS)
OCT 06...		278	30	1.06	0.040	1.10	0.010	1.4	1.4	0.090	9.8	--
JAN 07...		11	<1	--	<0.010	0.900	0.010	0.59	0.60	<0.010	4.6	1
FEB 24...		36	15	0.690	0.010	0.700	0.040	0.96	1.0	0.070	4.1	--
APR 14...		9	4	0.070	0.030	0.100	0.040	1.8	1.8	0.030	5.5	1
JUN 02...		90	31	0.960	0.040	1.00	0.040	2.0	2.0	0.140	7.2	--
JUL 21...		23	20	--	<0.010	0.400	0.050	0.55	0.60	0.060	4.9	3
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 06...		--	--	--	--	--	--	--	--	--	--	--
JAN 07...		68	1	<10	1	11	<5	29	<0.1	<1	<1	5
FEB 24...		--	--	--	--	--	--	--	--	--	--	--
APR 14...		68	<1	130	<1	26	<5	48	<0.1	<1	<1	<3
JUN 02...		--	--	--	--	--	--	--	--	--	--	--
JUL 21...		64	<1	<10	2	<3	<5	21	<0.1	<1	<1	<3

## TRINITY RIVER BASIN

321

08059600 WILSON CREEK AT MCKINNEY, TX

LOCATION.--Lat 33°10'25", long 96°37'17", Collin County, Hydrologic Unit 12030106, on State Highway 5 & 121 bridge, over center of channel at downstream side of downstream bridge on State Highways 5 and 121, 0.5 mi upstream from Southern Pacific Railroad Co. bridge, 1.6 mi south of City Hall in McKinney, and 5.0 mi upstream from Sloan Creek.

PERIOD OF RECORD.--Chemical and biochemical analyses: October 1985 to April 1987.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	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 (MG/L AS CAC03)	HARD- NESS NONCARB TOT FLD MG/L AS CAC03
JAN 06...	1115	26	520	7.40	6.5	6	48	11.6	96	1.5	240	74
FEB 23...	1245	61	490	7.80	8.0	5	3.8	11.0	94	2.5	230	49
APR 13...	1545	8.2	565	7.60	15.0	4	5.5	10.4	105	0.5	260	46
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 WH WAT TOTAL 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 CONSTI- TUENTS, DIS- SOLVED (MG/L)
JAN 06...	91	3.1	12	0.4	2.4	166	76	7.9	0.50	4.6	300	
FEB 23...	88	2.6	12	0.4	2.4	181	61	9.3	0.40	5.2	290	
APR 13...	100	3.5	18	0.5	2.1	218	77	12	0.50	3.1	350	
DATE		SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDE (MG/L)	SOLIDS, VOLA- 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- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS- SOLVED (UG/L AS AS)
JAN 06...	79	11	6.56	0.040	6.60	0.090	1.5	1.6	0.010	5.1	2	
FEB 23...	38	17	1.67	0.030	1.70	0.100	0.70	0.80	0.020	14	--	
APR 13...	32	8	0.760	0.040	0.800	0.080	0.62	0.70	0.020	3.6	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)
JAN 06...	76	1	<10	2	3	<5	29	<0.1	1	<1	9	
FEB 23...	--	--	--	--	--	--	--	--	--	--	--	
APR 13...	83	<1	<10	1	32	<5	110	<0.1	<1	<1	3	

## TRINITY RIVER BASIN

08060500 LAVON LAKE NEAR LAVON, TX

LOCATION.--Lat 33°01'54", long 96°28'56", Collin County, Hydrologic Unit 12030106, in right abutment of spillway in dam on East Fork Trinity River, 3,850 ft upstream from St. Louis Southwestern Railway Lines bridge, 4,000 ft upstream from bridge on State Highway 78, 2.9 mi west of Lavon, and 55.9 mi upstream from mouth.

DRAINAGE AREA.--770 mi<sup>2</sup>.

PERIOD OF RECORD.--September 1953 to current year. Prior to October 1970, published as Lavon Reservoir.  
Water-quality records.--Chemical analyses: October 1969 to September 1974, October 1975 to September 1982.

REVISED RECORDS.--WSP 1922: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Jan. 20, 1954, non-recording gage in the approach channel at same datum.

REMARKS.--The lake is formed by a rolled earthfill dam 18,860 ft long, including a 568-foot gated spillway with twelve 40.0- by 28.0-foot tainter gates. The original dam was 9,499 ft long, but conservation capacity was increased to present size in December 1975. Deliberate impoundment began Sept. 14, 1953, and the dam was completed in October 1953. Low-flow outlets consist of five 36-inch-diameter controlled sluice gates. Capacity Table No. 9, now in use, is based on Design Memo, 1970 Conditions. Lake was designed for flood control and water conservation. Water for municipal supply can be released down to elevation 453.0 ft. Flow is affected at times by discharge from the flood-detention pools of 149 floodwater-retarding structures with a combined detention capacity of 69,170 acre-ft. These structures control runoff from 242 mi<sup>2</sup> in the East Fork Trinity River, Pilot Grove, and Sister Grove Creek drainage basins. Gage-height telemeter at station. Figures given herein represent total contents. Data regarding dam and lake are given in the following table:

	Elevation (feet)	Capacity (acre-feet)
Top of dam.....	514.0	-
Design flood.....	509.0	921,200
Top of tainter gates.....	503.5	748,200
Top of conservation pool.....	492.0	456,500
Crest of spillway (sill of tainter gates).....	475.5	178,300
Lowest gated outlet (invert).....	453.0	12,700

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

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 734,000 acre-ft May 26, 1982 (elevation, 503.02 ft); minimum since lake first filled in 1957, 80,150 acre-ft Apr. 17, 1976 (elevation, 465.96 ft).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 503,400 acre-ft June 21 at 1200 hours (elevation, 494.11 ft); minimum, 386,600 acre-ft Sept. 27 at 2100 hours (elevation, 488.53 ft).

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

488.0	376,200	492.0	456,500	495.0	523,700
490.0	415,200	494.0	500,600		

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	408300	398200	400800	407500	419200	473500	457500	443500	483800	466500	438100	403900
2	406700	397600	400200	407300	419200	480500	456200	442400	485400	466300	436800	402700
3	406300	397000	400000	407500	419400	482500	456000	443500	487600	465900	435800	401900
4	408300	397600	400000	406700	419400	482700	455500	447100	486300	464400	434700	401000
5	408900	397000	399400	406500	419600	481200	455300	448100	482900	462800	433700	399800
6	408900	396100	399200	406700	420400	478700	455100	448300	479600	461600	432700	399200
7	408300	396100	399600	406300	419800	476100	454900	448300	475700	460300	431200	399000
8	408300	396100	399400	406900	420200	473500	454700	449000	472400	458800	430200	398400
9	407900	395700	399800	409100	419600	470600	453800	449000	471100	457000	429000	397600
10	407500	396700	399000	411000	419200	467000	454100	448700	472400	456000	428000	397600
11	408500	396100	399000	411200	419200	463500	453200	448300	477600	455300	426700	397000
12	407300	397600	399200	411400	419200	460900	453400	448100	484700	455300	425500	397600
13	405900	395300	399000	411400	419200	459400	453600	447700	486300	454500	424500	397200
14	405500	394500	399400	411800	419400	458100	453200	448100	486500	453600	422900	396700
15	404900	394100	400200	412400	421100	458100	452800	448100	486700	452600	421900	396500
16	404300	394300	400600	412800	420700	459000	452300	447900	494100	451700	420200	395900
17	403700	393900	401700	413600	420400	469100	451900	447500	498200	451300	419200	395900
18	403300	393900	404100	415200	420200	482300	451500	447300	499100	450400	418000	397400
19	402700	393500	405700	417200	420000	485400	450900	446800	499300	450000	416800	397200
20	402100	393500	406300	417800	423700	484700	450700	447900	503200	449200	415600	396100
21	401200	393000	406700	418400	426300	482100	450200	447900	502500	448500	414400	395500
22	401200	393300	407300	418400	427600	478700	449400	447900	499500	447500	413400	395300
23	402300	394100	407500	418000	428000	476600	449000	447100	496400	446600	412400	393500
24	401900	394300	407500	418800	429600	475700	448300	446600	493400	446000	411200	392600
25	401400	398200	407500	418800	430800	473300	447700	446000	490100	445200	409800	391800
26	400800	400200	407700	418800	434500	469800	447100	445000	486000	444300	408500	390800
27	400200	400800	407700	418800	440300	465900	446400	444500	482100	443300	408700	390200
28	399600	400800	407500	418200	458800	463500	445800	445300	477200	443100	407900	389100
29	399400	400800	407500	419200	---	460000	444700	446700	473900	442600	406900	389500
30	398800	401000	407500	419000	---	456800	444100	477600	470400	442200	405900	388700
31	398200	---	407500	418800	---	456600	---	482300	---	439300	405300	---
MAX	408900	401000	407700	419200	458800	485400	457500	482300	503200	466500	438100	403900
MIN	398200	393000	399000	406300	419200	456600	444100	442400	470400	439300	405300	388700
(↑)	489.13	489.27	489.60	490.17	492.09	491.99	491.40	493.17	492.63	491.17	489.49	488.64
(Φ)	-10300	+2800	-6500	+11300	+40000	-2200	-12500	+38200	-11900	-31100	-34000	-16600

CAL YR 1986 MAX 589900 MIN 393000 (Φ) -7300  
WTR YR 1987 MAX 503200 MIN 388700 (Φ) -19800

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

## TRINITY RIVER BASIN

323

## 08061000 EAST FORK TRINITY RIVER NEAR LAVON, TX

LOCATION.--Lat 33°01'25", long 96°28'31", Collin County, Hydrologic Unit 12030106, on left bank at downstream side of St. Louis Southwestern Railway Lines bridge, 150 ft upstream from bridge on State Highway 78, 3,550 ft downstream from Lavon Dam, 2.5 mi west of Lavon, and 54.9 mi upstream from mouth.

DRAINAGE AREA.--773 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1953 to current year.

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

REVISED RECORDS.--WSP 1922: Drainage area.

GAGE.--Water-stage recorder, concrete control, and crest-stage gage. Datum of gage is 429.58 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1969, at site 150 ft downstream at same datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Flow is regulated by Lavon Lake (station 08060500).

AVERAGE DISCHARGE.--34 years, 334 ft<sup>3</sup>/s (242,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 39,000 ft<sup>3</sup>/s May 26, 27, 1957, from records of released flow from Lavon Lake furnished by U.S. Army Corps of Engineers; maximum gage height, 17.34 ft May 26, 1957; no flow at times each year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1894, 22.3 ft in 1913 and in April 1942, from information by St. Louis Southwestern Railway Lines and local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,160 ft<sup>3</sup>/s Mar. 9 at 1900 (gage height, 13.12 ft); minimum daily, no flow many days.

DISCHARGE, in CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.13	.16	.82	1.5	e.21	.80	e1.2	.16	.09	1660	.00	.13
2	.13	.31	1.3	2.3	e.25	.36	e.60	.16	.0	953	.00	.11
3	.07	.58	1.3	2.9	e.20	474	e.60	.26	1.4	431	.00	.14
4	.48	1.1	1.1	2.0	e.20	1140	e.60	2.1	1020	415	.00	.13
5	.22	.36	.71	1.7	e.20	1750	e.60	.21	1800	415	.00	.09
6	.51	.46	.56	e1.4	e.30	2070	e.60	.05	1790	415	.01	.11
7	.25	.56	.56	e1.2	e.33	2070	e.60	.03	1770	415	.03	.72
8	.16	.45	.56	1.1	e.28	2070	e.80	.0	1770	415	.03	.23
9	.16	.52	.92	e1.6	e.25	2080	e8.0	.01	1440	411	.01	.07
10	.16	1.6	1.1	e1.2	e.25	2080	e.80	.01	376	156	.01	.17
11	.16	.73	1.1	e1.0	e.20	2060	e.80	.01	2.7	.27	.0	.16
12	.17	.39	1.5	e.80	e.20	1670	e.80	.01	6.6	.16	.00	.26
13	.14	.08	1.4	e.60	e.20	1390	e.80	.03	1.8	.18	.00	.49
14	.16	.11	1.2	e.50	e.20	e510	.16	.02	1.1	.16	.00	.09
15	.16	.13	1.9	e.50	e.25	e510	.14	.02	1.4	.16	.00	.06
16	.16	.11	1.2	e.45	e.35	e510	.13	.03	3.7	.16	.00	.07
17	.19	.11	1.2	e.47	e.30	e1.2	.16	.00	2.3	.27	.00	.07
18	.22	.08	8.3	e1.1	e.25	e1.2	.15	.00	3.7	.17	.00	.93
19	.22	.27	1.7	e.60	e.25	e1.2	.09	.00	972	.14	.00	.16
20	.22	.56	1.1	e.50	e3.0	e.80	.07	.17	1250	.11	.00	.16
21	.22	.39	1.0	e.45	e2.0	e2050	2.7	.08	1370	.11	.00	.12
22	.26	.22	.82	e.40	e1.0	e2050	2.1	.01	1750	.11	.01	.10
23	1.1	.17	1.1	e.35	e.80	e2050	.78	.00	1740	.20	.01	.11
24	.48	2.7	1.0	e.30	2.0	e1350	.33	.00	1730	.28	.01	.16
25	.20	13	.82	e.30	.77	e1250	.16	.00	1720	.11	.0	.16
26	.20	1.6	.75	e.25	4.6	e1250	.16	.00	1720	.09	.00	.11
27	.22	1.2	.82	e.25	1.4	e2000	.16	.00	1710	.02	.00	.04
28	.19	1.1	.82	e.25	18	e2000	.20	30	1690	.02	1.1	.01
29	1.5	1.1	.82	e.20	---	e2000	.22	6.8	1680	.01	.27	.00
30	1.2	.91	1.0	e.20	---	e2000	.19	.54	1670	.01	.16	.0
31	.38	---	1.5	e.20	---	e1000	---	.24	---	.0	.14	---
TOTAL	10.02	31.06	39.98	26.57	38.24	39389.55	24.70	40.95	28992.78	5688.73	1.79	5.16
MEAN	.32	1.04	1.29	.86	1.37	1271	.82	1.32	966	184	.06	.17
MAX	1.5	13	8.3	2.9	18	2080	8.0	30	1800	1660	1.1	.93
MIN	.07	.08	.56	.20	.20	.36	.07	.00	.00	.00	.00	.00
AC-FT	20	62	79	53	76	78130	49	81	57510	11280	3.6	10

CAL YR 1986 TOTAL 104682.34 MEAN 287 MAX 1990 MIN .07 AC-FT 207600  
WTR YR 1987 TOTAL 74288.86 MEAN 204 MAX 2080 MIN .00 AC-FT 147400

e Estimated.

## TRINITY RIVER BASIN

08061540 ROWLETT CREEK NEAR SACHSE, TX

LOCATION.--Lat 32°57'35", long 96°36'51", Dallas County, Hydrologic Unit 12030106, on left bank at downstream side of bridge on State Highway 78, 150 ft downstream from Gulf, Colorado, and Santa Fe Railway Co. bridge, 250 ft downstream from Spring Creek, and 1.5 mi southwest of Sachse.

DRAINAGE AREA.--120 mi<sup>2</sup>.

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

GAGE.--Water-stage recorder. Datum of gage is 450.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. No known diversions above station. The North Texas Municipal Water District returns sewage effluent into a tributary above this station. Rain gage and gage-height tele-meter at station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--19 years (water years 1969-87), 98.4 ft<sup>3</sup>/s (71,290 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 29,500 ft<sup>3</sup>/s Mar. 27, 1977 (gage height, 29.31 ft); no flow Aug. 24 to Sept. 2, 1969.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1942, 35.4 ft in 1942, from information by State Department of Highways and Public Transportation.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
May 29	0115	*6,400	*24.32	No other peak greater than base discharge.			
Minimum daily discharge, 12 ft <sup>3</sup> /s Aug. 19, 22 and 26.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	37	27	69	69	85	365	75	29	141	418	18	17
2	86	27	65	67	83	224	71	31	117	100	18	16
3	41	28	71	99	73	177	70	56	297	55	16	15
4	416	177	54	73	72	147	70	1770	149	48	15	17
5	171	47	50	70	70	129	69	101	104	44	24	16
6	175	29	52	69	166	117	64	69	94	38	46	14
7	70	25	82	67	101	115	58	61	86	34	20	23
8	235	28	73	58	83	110	58	72	81	33	20	24
9	75	26	75	487	78	119	60	56	233	30	17	17
10	59	175	60	129	72	100	53	46	373	31	17	70
11	54	167	68	100	73	97	53	42	230	29	25	26
12	75	46	200	95	78	91	53	139	828	38	17	226
13	53	39	104	89	76	90	77	81	262	28	15	279
14	48	35	128	85	78	89	45	602	136	24	14	68
15	46	36	216	79	182	85	42	507	125	26	14	288
16	42	33	114	78	97	86	42	66	1020	46	13	107
17	39	32	192	137	85	946	42	58	200	28	14	59
18	39	31	631	292	85	218	41	44	546	23	14	118
19	37	46	174	122	85	140	40	174	154	22	12	61
20	39	35	124	100	746	127	37	336	644	19	14	52
21	38	26	110	93	175	117	37	65	75	20	13	50
22	37	99	104	87	109	111	37	56	233	23	12	47
23	173	38	146	82	94	123	33	49	79	27	14	41
24	95	35	107	80	190	102	35	78	57	28	13	40
25	43	844	95	75	140	93	32	48	50	21	13	37
26	37	145	91	74	591	90	35	41	48	20	12	38
27	36	87	87	71	332	87	33	36	45	19	141	37
28	33	77	81	69	2050	84	31	1040	42	18	26	42
29	32	72	79	68	---	86	30	2350	62	19	20	40
30	31	71	76	65	---	83	29	282	40	20	20	33
31	28	---	71	64	---	76	---	192	---	19	20	---
TOTAL	2420	2583	3649	3193	6149	4624	1452	8577	6551	1348	667	1918
MEAN	78.1	86.1	118	103	220	149	48.4	277	218	43.5	21.5	63.9
MAX	416	844	631	487	2050	946	77	2350	1020	418	141	288
MIN	28	25	50	58	70	76	29	29	40	18	12	14
AC-FT	4800	5120	7240	6330	12200	9170	2880	17010	12990	2670	1320	3800
CAL YR 1986	TOTAL	53750	MEAN	147	MAX	3640	MIN	24	AC-FT	106600		
WTR YR 1987	TOTAL	43131	MEAN	118	MAX	2350	MIN	12	AC-FT	85550		

## 08061550 LAKE RAY HUBBARD NEAR FORNEY, TX

LOCATION.--Lat 32°48'00", long 96°29'45", Kaufman County, Hydrologic Unit 12030106, near right end of spillway in Forney Dam on East Fork Trinity River, 0.5 mi upstream from Duck Creek, 1.8 mi upstream from bridge on Interstate Highway 20, 3.8 mi northwest of Forney, 24 mi downstream from Lavon Dam, and 31.8 mi upstream from mouth.

DRAINAGE AREA.--1,071 mi<sup>2</sup>.

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

Water-quality records.--Chemical analyses: October 1969 to September 1979.

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

REMARKS.--The lake is formed by a rolled earthfill dam 12,500 ft long, including a 664-foot gated spillway with fourteen 40- by 28-foot tainter gates. Closure was made in September 1967, but the gates were not closed until Mar. 22, 1978. Low-flow releases are made through three 4.5- by 6.75-foot sluiceways. The lake was built by the city of Dallas for municipal water supply. Flow is affected at times by discharge from the flood-detention pools of 14 floodwater-retarding structures with a combined detention capacity of 12,530 acre-ft. These structures control runoff from 44.5 mi<sup>2</sup> above this station and below Lavon Lake station (08060500). Gage-height telemeter at station. Area and capacity tables are based on surveys made in 1953 and 1959. 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.....	450.0	-
Design flood.....	440.5	611,500
Top of tainter gates.....	437.5	536,700
Top of conservation pool.....	435.5	489,900
Crest of spillway (sill of tainter gates).....	409.5	83,130
Lowest gated outlet (invert).....	388.0	80

COOPERATION.--The area and capacity tables were provided by Forrest and Cotton, Consulting Engineers, for the city of Dallas.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 513,900 acre-ft May 13, 1982 (elevation, 436.54 ft); minimum since first appreciable filling following closure of gates on Mar. 22, 1970, 326,600 acre-ft Sept. 29, 30, 1978, (elevation, 427.48 ft).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 503,000 acre-ft Mar. 17 at 0600 hours (elevation, 436.07 ft); minimum, 437,700 acre-ft Sept. 30 (elevation, 433.13 ft).

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

433.0	435,000
435.0	478,600
437.0	524,700

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	464000	463300	471500	476600	482700	490600	491100	482000	491500	489500	474200	450000
2	462400	463300	470600	475700	482900	489700	490600	481300	492400	491300	473300	448900
3	463100	462200	470600	478900	483100	490400	489900	483600	490400	489700	472400	448200
4	467300	465700	470100	476400	483100	490200	489700	488600	488600	486500	471500	447400
5	467500	464200	469700	475700	484300	489900	489700	488600	488100	485400	470800	446500
6	467700	462900	468800	476600	484900	490200	489200	489000	488800	485200	470100	446100
7	467300	463100	469900	477500	483400	489900	489000	488800	489000	485600	469000	445700
8	468400	463100	470100	476600	484300	489900	488600	488300	489700	486300	467900	445700
9	468200	463100	471700	479100	482700	491300	488100	487900	492200	486700	467000	444800
10	467700	467300	469900	478900	482500	489900	488300	487900	490400	486700	467000	444600
11	469900	464200	469500	477700	482900	488800	486300	487700	493100	486300	465700	444400
12	467700	469300	469700	478000	482900	489000	487700	487700	492700	486500	464600	445000
13	465700	463100	469700	477700	482200	489000	488800	487400	490800	486500	464200	447200
14	465500	462200	470400	478200	483100	489900	488100	488800	491100	485400	463100	447800
15	465500	462000	471300	478900	485800	490600	487700	490400	490400	484500	461800	446300
16	464600	462400	471300	479800	484500	496800	487700	490800	490400	483400	460400	446100
17	464200	462000	474800	481100	483600	496100	487000	489900	492000	483100	460700	446100
18	464000	462900	476200	480900	483100	489700	486500	489900	491500	483100	459600	447200
19	463500	463100	476200	481600	483800	489900	486100	490400	490400	482900	458700	446100
20	463100	463100	476400	480900	488800	489500	485800	490800	491700	482200	457800	445200
21	462000	462400	476800	481600	489200	490600	486300	491300	491100	481800	456900	445200
22	462200	463100	477700	480900	489500	489500	484700	490600	491100	480900	456100	443900
23	466600	465500	477300	480700	489700	490400	484900	489900	490800	480900	455400	442900
24	466200	464800	477300	483100	491100	488100	484500	489700	491100	480700	454300	442000
25	465500	472100	477300	481600	489500	487700	484300	489200	491300	479800	453400	441100
26	465100	471900	477300	481600	489700	486700	484000	488300	490600	479100	452100	440500
27	464600	471900	477100	481800	491100	487700	483800	487900	489700	478200	453700	440500
28	464200	471300	477100	480200	496300	492900	483400	496100	489000	477500	452600	439600
29	464400	471300	477100	482000	---	493600	482700	490400	488600	476800	451700	439900
30	463700	472400	476800	482500	---	491100	482000	491500	489500	475900	451100	439600
31	463300	---	477100	482000	---	490800	---	492200	---	475000	450600	---
MAX	469900	472400	477700	483100	496300	496800	491100	496100	493100	491300	474200	450000
MIN	462000	462000	468800	475700	482200	486700	482000	481300	488100	475000	450600	439600
(↑)	434.31	434.72	434.93	435.15	435.78	435.54	435.15	435.60	435.48	434.84	433.73	433.13
(Φ)	0	+9100	+4700	+4900	+14300	-5500	-8800	+10200	-2700	-14500	-24400	-11000
CAL YR 1986	MAX	503500	MIN	462000	(Φ)	+1400						
WTR YR 1987	MAX	496800	MIN	439600	(Φ)	-23700						

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

08061700 DUCK CREEK NEAR GARLAND, TX

LOCATION.--Lat 32°49'58", long 96°35'43", Dallas County, Hydrologic Unit 12030106, on right bank in the median area between the dual bridges on Belt Line Road, 6.0 mi southeast of Garland, and 7.7 mi upstream from mouth.

DRAINAGE AREA.--31.6 mi<sup>2</sup>.

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

Water-quality records.--Sediment records: October 1976 to September 1982.

REVISED RECORDS.--WSP 1922: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 430.02 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1962, at datum 4.00 ft higher.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Flow is slightly regulated by several small on-channel dams. There are several small diversions above station including the irrigation of a golf course. Low flows are sustained by effluents from the city of Garland. Recording rain gage at station.

AVERAGE DISCHARGE.--29 years, 30.8 ft<sup>3</sup>/s (13.24 in/yr), 22,310 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,000 ft<sup>3</sup>/s July 27, 1962 (gage height, 20.80 ft, present datum); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since about 1895, 21.5 ft (present datum) June 13, 1949, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Nov. 25	0700	2,730	16.37	May 28	2345	*7,120	*18.42
Mar. 17	0245	2,920	16.56	June 11	2330	3,630	17.07
May 4	0800	3,400	16.93	June 13	0845	5,490	17.92
May 14	2230	5,440	17.90	June 16	0845	5,160	17.79
May 19	2345	2,670	16.31				

Minimum daily discharge, 1.1 ft<sup>3</sup>/s Aug. 11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.4	e6.8	9.3	e7.2	15	26	6.8	3.6	27	3.3	1.5	1.9
2	5.1	e6.8	8.9	e10	14	14	6.2	4.2	25	157	1.6	2.0
3	2.6	e6.8	8.7	e12	11	11	5.9	35	58	31	1.7	1.9
4	140	e113	8.6	e9.9	11	9.2	5.9	1070	24	5.4	1.8	2.1
5	104	e9.1	8.5	e7.9	11	8.4	6.0	11	19	4.1	21	1.9
6	165	e6.2	8.2	e6.8	59	8.1	6.4	7.3	18	3.5	4.7	2.1
7	13	e5.6	15	e6.5	18	7.7	6.1	6.7	17	3.1	2.0	2.8
8	84	e5.9	11	e6.5	13	7.4	6.0	5.9	17	3.1	1.5	5.1
9	13	e5.6	8.8	184	12	7.7	6.1	6.3	172	3.4	1.4	2.6
10	8.8	e130	8.2	11	12	7.7	5.9	5.2	151	3.4	1.4	28
11	8.5	e16	7.9	8.4	12	7.4	6.3	5.1	449	3.3	1.1	4.7
12	23	e8.3	89	7.9	12	7.5	8.2	22	720	3.1	1.6	99
13	8.7	e7.2	13	8.0	12	6.5	59	32	783	5.7	1.6	9.4
14	6.8	e5.9	54	7.3	12	5.9	6.0	596	18	3.1	1.7	4.1
15	6.5	e5.0	149	7.4	57	6.8	4.2	226	31	2.1	1.7	39
16	5.6	e4.8	16	7.7	15	7.6	4.3	11	986	2.0	2.0	11
17	5.6	e4.5	49	37	14	959	4.9	8.9	44	6.0	1.8	3.5
18	5.0	e7.2	329	134	14	20	4.5	7.6	26	3.3	1.7	37
19	5.6	e11	22	13	13	13	4.4	255	7.1	2.1	1.7	4.8
20	5.6	e10	e8.7	11	466	12	4.3	314	81	1.8	1.4	2.8
21	5.6	8.8	e8.7	11	30	11	4.2	13	6.9	1.6	1.6	2.6
22	5.9	12	e9.1	10	23	10	4.8	9.8	5.5	1.8	1.8	2.3
23	e613	9.7	e11	9.9	21	15	4.1	8.9	15	2.6	2.8	2.0
24	e52	8.6	e9.9	9.9	134	7.7	4.9	11	114	4.1	2.2	2.0
25	e8.3	699	e9.5	10	45	6.9	5.9	8.7	5.2	2.9	2.1	1.9
26	e7.2	20	e9.5	9.9	327	7.1	3.9	7.1	4.1	2.4	2.1	2.3
27	e6.2	12	e9.1	9.9	72	6.8	3.4	13	3.7	1.9	24	1.7
28	e6.2	11	e8.7	9.9	769	6.7	3.5	593	3.3	1.6	5.0	2.9
29	e6.2	10	e8.3	9.9	---	7.8	3.4	820	3.2	2.8	2.9	2.4
30	e6.5	9.6	e7.9	9.9	---	8.1	3.3	51	3.2	1.9	2.6	1.6
31	e6.8	---	e7.5	9.9	---	6.4	---	34	---	1.9	2.7	---
TOTAL	1342.7	1176.4	932.0	613.7	2224	1246.4	208.8	4202.3	3837.2	275.3	104.7	287.4
MEAN	43.3	39.2	30.1	19.8	79.4	40.2	6.96	136	128	8.88	3.38	9.58
MAX	613	699	329	184	769	959	59	1070	986	157	24	99
MIN	2.4	4.5	7.5	6.5	11	5.9	3.3	3.6	3.2	1.6	1.1	1.6
AC-FT	2660	2330	1850	1220	4410	2470	414	8340	7610	546	208	570

CAL YR 1986 TOTAL 15349.7 MEAN 42.1 MAX 1500 MIN 2.0 AC-FT 30450  
WTR YR 1987 TOTAL 16450.8 MEAN 45.1 MAX 1070 MIN 1.1 AC-FT 32630

e Estimated.

## TRINITY RIVER BASIN

327

## 08061750 EAST FORK TRINITY RIVER NEAR FORNEY, TX

LOCATION.--Lat 32°46'27", long 96°30'12", Kaufman County, Hydrologic Unit 12030106, on right bank 25 ft downstream from bridge on Interstate Highway 20, 0.2 mi downstream from Duck Creek, 1.9 mi downstream from Lake Ray Hubbard Dam, 2.5 mi upstream from Texas and Pacific Railroad Co. bridge, 2.6 mi northwest of Forney, and 30.8 mi upstream from mouth.

DRAINAGE AREA.--1,118 mi<sup>2</sup>, of which 1,071 mi<sup>2</sup> is above Lake Ray Hubbard.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1973 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 374.86 ft (revised, datum lowered 3.00 ft effective Oct. 1, 1984) above National Geodetic Vertical Datum of 1929 (from State Department of Highways and Public Transportation bridge plans). Prior to Aug. 26, 1975, recording gage at 3 ft higher datum located at site 126 ft upstream and 868 ft to left. From Aug. 26, 1975, to May 12, 1977, recording gage at 3 ft higher datum located at site 105 ft downstream.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Flow is regulated by Lake Ray Hubbard (station 08061550). Low flow is sustained by sewage effluent discharged from the city of Garland into Duck Creek, that enters the East Fork Trinity River 0.2 mi upstream from this station. Gage-height telemeter at station.

AVERAGE DISCHARGE.--14 years (water years 1974-87), 549 ft<sup>3</sup>/s (397,800 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,400 ft<sup>3</sup>/s Mar. 27, 1977 (gage height, 16.34 ft); minimum daily, 13 ft<sup>3</sup>/s Oct. 18, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 17,900 ft<sup>3</sup>/s May 29 at 1745 hours (gage height, 17.40 ft); minimum daily, 28 ft<sup>3</sup>/s Oct. 18, 19, 21 and July 27.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	33	e45	e85	e40	e90	e2500	47	37	579	1190	40	42
2	35	e50	e80	e40	e95	e2000	53	43	256	1320	35	46
3	48	e65	e75	e70	e88	e1500	48	48	1250	1310	30	49
4	111	e180	e70	e55	e75	e1300	47	728	1770	1210	32	44
5	249	e130	e70	e45	e102	1700	48	156	1620	1200	36	43
6	336	e40	e65	e40	e160	2080	44	66	1260	576	70	41
7	119	e40	e70	e38	e150	2080	45	57	1250	52	42	43
8	113	e40	e65	e90	e120	2070	39	54	1260	43	34	52
9	e60	e60	e50	285	e85	2050	46	47	1520	42	38	56
10	e30	e240	e45	e350	e80	2050	45	42	2280	45	41	58
11	e40	e95	e60	e140	e83	2030	41	44	948	38	35	84
12	e60	e65	e140	e120	e68	1390	47	40	3540	39	34	114
13	e35	e60	e65	e120	e55	487	85	84	3070	38	30	127
14	e35	e50	e170	e102	e60	56	90	43	424	47	43	78
15	e30	e45	e200	e90	e90	69	46	560	525	32	43	59
16	e30	e45	e100	e90	e130	665	41	75	2690	37	39	108
17	e29	e45	e450	e500	e150	6980	40	66	1070	52	35	63
18	e28	e40	e250	285	e88	6070	41	61	1070	48	40	75
19	e28	35	e120	e235	e80	238	40	59	1530	37	41	93
20	e30	e35	e85	e200	e150	678	33	1300	1770	35	40	57
21	e28	e65	e75	e160	e700	1690	35	135	1700	34	39	53
22	e300	e75	e80	e140	e250	1940	34	444	1700	35	35	54
23	e550	e75	e90	e120	e200	2220	34	157	1690	41	35	52
24	e210	e100	e80	e115	e190	1930	33	60	1800	38	37	53
25	e65	e1200	e75	e115	e350	1900	45	51	1680	37	39	47
26	e60	e300	e65	e110	e750	1900	45	45	1650	29	60	43
27	e65	e250	e55	e95	e1190	1370	38	44	1640	28	52	45
28	e55	e200	e50	e94	e2000	849	34	584	1640	29	89	43
29	e50	e150	e45	e90	---	886	34	9400	1520	39	58	44
30	e45	e100	e45	e85	---	686	34	595	1200	50	50	47
31	e45	---	e45	e80	---	64	---	89	---	39	45	---
TOTAL	2952	3920	3020	4139	7629	53428	1332	15214	45902	7790	1317	1813
MEAN	95.2	131	97.4	134	272	1723	44.4	491	1530	251	42.5	60.4
MAX	550	1200	450	500	2000	6980	90	9400	3540	1320	89	127
MIN	28	35	45	38	55	56	33	37	256	28	30	41
AC-FT	5860	7780	5990	8210	15130	106000	2640	30180	91050	15450	2610	3600

CAL YR 1986 TOTAL 268567 MEAN 736 MAX 10500 MIN 26 AC-FT 532700  
WTR YR 1987 TOTAL 148456 MEAN 407 MAX 9400 MIN 28 AC-FT 294500

e Estimated.

## TRINITY RIVER BASIN

08061750 EAST FORK TRINITY RIVER NEAR FORNEY, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: November 1981 to current year.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1981 to current year.

pH: August 1986 to current year.

WATER TEMPERATURE: October 1981 to current year.

DISSOLVED OXYGEN: August 1986 to current year.

INSTRUMENTATION.--Beginning August 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. 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, 1,100 microsiemens Aug. 29, 1985; minimum, 192 microsiemens Aug. 4, 1986.

pH: Maximum, 8.8 units Mar. 10, 25, 26, 1987; minimum, 6.6 units May 27, 28, 1987.

WATER TEMPERATURE: Maximum, 32.5°C Aug. 18, 1986; minimum, 4.0°C Jan. 16, Feb. 6, 1982.

DISSOLVED OXYGEN: Maximum, 12.5 mg/L Jan. 22, 1987; minimum, 3.5 mg/L Oct. 21, 1986.

## EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 1,020 microsiemens May 15; minimum, 119 microsiemens Oct. 6.

WATER TEMPERATURE: Minimum, 7.0°C Feb. 20.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	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 (MG/L AS CaCO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CaCO3
NOV 14...	0900	50	576	7.50	11.0	8.6	77	6.4	150	19
JAN 20...	1245	200	624	7.70	12.0	9.0	83	21	190	20
APR 13...	1245	47	651	7.40	22.5	5.6	66	10	170	35
JUN 10...	1150	3320	284	7.50	23.5	8.5	100	4.8	100	7
JUL 13...	1245	36	590	7.10	28.0	6.4	82	3.7	140	51
SEP 03...	0900	48	680	7.40	26.0	6.3	78	2.4	160	65

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 WH WAT TOTAL 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 14...	54	3.1	53	2	8.5	129	55	53	1.3	8.2
JAN 20...	71	3.4	46	2	7.1	171	60	44	1.1	8.2
APR 13...	60	3.9	61	2	8.4	131	67	53	1.0	7.1
JUN 10...	36	2.7	17	0.8	4.0	94	28	13	0.40	2.2
JUL 13...	51	3.5	59	2	8.9	91	130	52	1.0	9.7
SEP 03...	56	3.9	67	2	10	91	59	77	2.4	11

DATE	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- PHORUS, TOTAL (MG/L AS P)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)
NOV 14...	310	3.70	1.30	5.00	3.30	1.7	5.0	0.120	--	--
JAN 20...	340	1.90	1.10	3.00	3.90	4.1	8.0	4.20	6	39
APR 13...	340	6.50	1.70	8.20	3.50	0.0	3.3	2.50	--	--
JUN 10...	160	0.250	0.050	0.300	0.100	1.1	1.2	0.350	--	--
JUL 13...	370	9.54	0.060	9.60	0.240	2.0	2.2	7.50	5	30
SEP 03...	340	9.39	0.610	10.0	1.50	3.5	5.0	6.70	--	--

08061750 EAST FORK TRINITY RIVER NEAR FORNEY, TX--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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 14...	--	--	--	--	--	--	--	--	--	--
JAN 20...	<1	<10	7	45	<5	38	<0.1	<1	<1	25
APR 13...	--	--	--	--	--	--	--	--	--	--
JUN 10...	--	--	--	--	--	--	--	--	--	--
JUL 13...	<2	<10	12	29	<5	46	<0.1	<1	<1	19
SEP 03...	--	--	--	--	--	--	--	--	--	--

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1986 TO SEPTEMBER 1987

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. 1986	2952	505	283	2260	33	265	43	342	160
NOV. 1986	3920	498	281	2970	31	328	43	458	160
DEC. 1986	3020	565	315	2570	39	318	47	386	180
JAN. 1987	4139	642	353	3950	50	502	51	571	190
FEB. 1987	7629	603	334	6880	45	927	49	1010	190
MAR. 1987	53428	312	183	26400	11	1530	31	4460	120
APR. 1987	1332	716	389	1400	62	225	54	195	210
MAY 1987	15214	410	233	9550	24	983	36	1490	140
JUNE 1987	45902	314	184	22800	11	1370	31	3850	120
JULY 1987	7790	326	189	3980	13	281	31	659	120
AUG. 1987	1317	698	381	1360	59	210	54	191	200
SEPT 1987	1813	592	329	1610	42	207	49	240	190
TOTAL	148456	**	**	85700	**	7200	**	13900	**
WTD.AVG.	407	372	214	**	18	**	35	**	130

## SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	606	574	599	728	694	712	674	644	653	---	---	660
2	598	590	596	746	660	704	677	665	672	---	---	675
3	592	580	587	697	598	663	677	667	672	---	---	696
4	620	207	570	677	391	585	720	679	700	---	---	705
5	405	185	266	563	372	495	749	721	729	---	---	656
6	270	119	208	614	567	594	758	703	731	---	---	629
7	488	285	393	677	618	658	716	683	702	---	---	618
8	555	343	508	688	659	676	708	629	657	---	---	586
9	538	346	442	696	626	666	711	678	694	735	330	539
10	607	544	585	666	506	639	732	699	723	614	427	528
11	625	591	610	472	360	413	717	697	709	676	619	635
12	653	597	627	583	481	547	699	409	557	683	617	646
13	612	596	601	570	560	565	602	467	527	706	667	690
14	675	612	626	635	571	594	612	555	598	739	690	713
15	721	696	713	649	614	631	528	295	395	755	654	713
16	777	681	708	618	564	595	584	433	506	736	673	689
17	907	707	812	590	546	569	603	537	583	763	690	742
18	736	634	698	613	551	580	628	317	471	632	365	462
19	841	678	756	637	597	620	---	---	425	634	513	562
20	708	642	673	609	306	417	---	---	380	670	610	643
21	715	650	691	550	500	530	---	---	395	688	641	667
22	704	678	690	559	529	544	---	---	485	688	517	600
23	728	204	519	532	496	511	---	---	548	688	556	624
24	502	302	382	546	499	528	---	---	576	758	693	714
25	574	509	550	479	126	326	---	---	596	756	680	710
26	659	515	611	542	435	490	---	---	558	733	651	686
27	681	642	665	601	543	568	---	---	574	783	695	743
28	702	654	676	623	600	611	---	---	586	789	715	754
29	732	652	709	626	617	622	---	---	600	769	692	737
30	687	671	678	646	618	627	---	---	626	772	698	730
31	712	669	690	---	---	---	---	---	648	771	695	740
MONTH	907	119	595	746	126	576	758	295	590	789	330	661

## TRINITY RIVER BASIN

08061750 EAST FORK TRINITY RIVER NEAR FORNEY, TX--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	758	656	704	317	298	300	770	712	741	785	736	767
2	736	623	662	502	301	379	842	679	765	777	734	753
3	718	675	700	581	310	456	802	700	757	789	756	777
4	752	688	722	319	288	305	762	697	739	757	558	690
5	776	686	738	307	287	295	811	688	751	902	760	837
6	708	531	648	299	288	295	749	648	693	954	911	938
7	618	518	544	298	286	294	736	647	702	987	953	966
8	660	621	640	296	285	292	719	664	697	---	---	968
9	670	607	634	294	281	286	726	665	698	---	---	970
10	709	656	682	284	280	282	786	725	765	983	951	973
11	700	659	676	283	278	281	797	714	756	964	931	950
12	696	628	665	327	280	294	742	654	699	987	936	962
13	671	628	651	558	287	380	656	421	597	1010	927	967
14	729	656	707	664	577	608	653	473	573	1010	967	990
15	762	478	614	687	344	625	734	663	703	1020	639	733
16	631	562	580	323	282	302	756	688	728	864	733	798
17	681	619	652	401	231	286	770	716	747	947	873	913
18	701	660	678	391	283	306	801	709	758	1010	948	985
19	732	690	704	558	402	451	762	675	722	---	---	770
20	693	244	507	582	297	456	673	643	660	---	---	560
21	720	553	635	430	297	323	757	655	719	568	384	455
22	796	722	754	316	297	308	806	708	772	633	300	451
23	873	795	828	319	298	308	879	776	828	708	393	533
24	905	877	894	308	296	299	842	732	794	703	638	669
25	915	588	796	299	295	297	764	724	741	661	589	612
26	587	565	571	305	295	297	785	706	743	663	601	617
27	649	586	614	347	304	330	735	676	706	698	658	679
28	669	278	452	346	333	339	740	691	716	693	280	517
29	---	---	---	336	326	333	757	710	735	313	262	280
30	---	---	---	482	332	374	818	722	775	518	280	391
31	---	---	---	703	501	633	---	---	---	543	521	533
MONTH	915	244	666	703	231	355	879	421	726	1020	262	742

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	562	291	415	272	262	267			726			716
2	501	380	415	371	263	277			708			688
3	450	300	353	288	260	271			702			701
4	303	300	301	282	261	276			698			693
5	342	302	319	281	276	279			731			712
6	353	340	347	509	277	353			712			705
7	351	340	347	646	528	587			683			688
8	353	340	347	683	597	644			623			672
9	353	292	343	701	634	677			702			625
10	293	272	283	720	632	681			705			619
11	450	223	344	721	622	676			725			608
12	292	182	240	661	592	638			663			600
13	470	238	346	614	562	579			659			556
14	669	480	574	623	572	588			656			488
15	734	509	651	741	613	689			712			426
16	534	234	417	701	644	675			778			503
17	484	272	347	735	626	685			702			546
18	463	271	317	624	586	601			688			498
19	291	271	279	605	586	596			672			588
20	324	279	288	---	---	605			685			526
21	285	275	282	---	---	626			712			511
22	295	282	286	---	---	636			715			566
23	294	282	289	---	---	618			732			555
24	345	291	298	---	---	606			725			626
25	303	259	277	---	---	588			756			632
26	261	251	259	---	---	602			688			645
27	266	257	260	---	---	656			675			635
28	287	267	277	---	---	670			705			622
29	298	275	282	---	---	686			656			616
30	295	273	282	---	---	666			645			602
31	---	---	---	---	---	725			723			
MONTH	734	182	336	741	260	572			699			606

## TRINITY RIVER BASIN

331

08061750 EAST FORK TRINITY RIVER NEAR FORNEY, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	7.7	7.6	7.6	7.2	7.2	7.2	7.6	7.5	7.6	---	---	---
2	7.6	7.6	7.6	7.2	7.2	7.2	7.6	7.6	7.6	---	---	---
3	7.6	7.6	7.6	7.3	7.2	7.2	7.6	7.3	7.4	---	---	---
4	7.6	7.5	7.5	7.3	7.2	7.3	7.5	7.4	7.4	---	---	---
5	7.6	7.5	7.6	7.4	7.3	7.3	7.4	7.3	7.4	---	---	---
6	7.7	7.6	7.7	7.3	7.3	7.3	7.4	7.3	7.4	---	---	---
7	7.7	7.6	7.6	7.4	7.3	7.4	7.4	7.3	7.4	---	---	---
8	7.6	7.5	7.6	7.4	7.3	7.4	7.4	7.3	7.4	---	---	---
9	7.5	7.4	7.5	7.3	7.3	7.3	7.4	7.3	7.4	7.4	7.3	7.3
10	7.4	7.4	7.4	7.4	7.3	7.3	7.4	7.4	7.4	7.4	7.3	7.3
11	7.4	7.3	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
12	7.4	7.3	7.3	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
13	7.4	7.3	7.3	7.5	7.4	7.5	7.5	7.4	7.4	7.4	7.4	7.4
14	7.3	7.3	7.3	7.8	7.4	7.5	7.4	7.4	7.4	7.4	7.4	7.4
15	7.3	7.2	7.3	7.5	7.3	7.4	7.5	7.4	7.5	7.4	7.4	7.4
16	7.3	7.1	7.2	7.3	7.2	7.3	7.5	7.4	7.4	7.5	7.4	7.4
17	7.1	7.0	7.1	7.2	7.2	7.2	7.4	7.4	7.4	7.5	7.5	7.5
18	7.0	7.0	7.0	7.2	7.1	7.1	7.5	7.4	7.5	7.6	7.5	7.6
19	7.0	7.0	7.0	7.1	7.1	7.1	---	---	---	7.7	7.6	7.7
20	7.0	7.0	7.0	7.1	7.1	7.1	---	---	---	7.7	7.5	7.6
21	7.0	7.0	7.0	7.2	7.1	7.1	---	---	---	7.5	7.4	7.5
22	7.1	7.0	7.0	7.2	7.2	7.2	---	---	---	7.5	7.4	7.5
23	7.1	7.0	7.1	7.3	7.2	7.2	---	---	---	7.5	7.4	7.5
24	7.1	7.1	7.1	7.3	7.3	7.3	---	---	---	7.4	7.3	7.4
25	7.1	7.1	7.1	7.4	7.3	7.4	---	---	---	7.4	7.3	7.4
26	7.2	7.1	7.2	7.4	7.4	7.4	---	---	---	7.3	7.3	7.3
27	7.2	7.2	7.2	7.5	7.4	7.4	---	---	---	7.3	7.3	7.3
28	7.2	7.2	7.2	7.5	7.5	7.5	---	---	---	7.3	7.3	7.3
29	7.2	7.2	7.2	7.5	7.5	7.5	---	---	---	7.3	7.3	7.3
30	7.2	7.2	7.2	7.5	7.5	7.5	---	---	---	7.3	7.3	7.3
31	7.2	7.2	7.2	---	---	---	---	---	---	7.3	7.3	7.3
MONTH	7.7	7.0	7.3	7.8	7.1	7.3	7.6	7.3	7.4	7.7	7.3	7.4

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	7.3	7.3	7.3	8.4	8.3	8.4	7.7	7.6	7.6	6.9	6.8	6.9
2	7.3	7.3	7.3	8.4	7.8	8.1	7.7	7.6	7.7	6.8	6.7	6.8
3	7.3	7.3	7.3	8.3	7.7	7.9	7.7	7.6	7.6	6.8	6.7	6.7
4	7.3	7.3	7.3	8.4	8.2	8.3	7.6	7.5	7.6	7.9	6.7	7.2
5	7.3	7.3	7.3	8.5	8.3	8.4	7.6	7.6	7.6	7.7	7.5	7.6
6	7.4	7.3	7.3	8.4	8.1	8.3	7.6	7.5	7.6	7.6	7.4	7.5
7	7.4	7.4	7.4	8.3	8.1	8.2	7.6	7.5	7.5	7.6	7.4	7.5
8	7.4	7.4	7.4	8.7	8.1	8.3	7.6	7.5	7.6	7.6	7.4	7.4
9	7.4	7.3	7.4	8.7	8.5	8.6	7.5	7.4	7.5	7.4	7.3	7.3
10	7.4	7.4	7.4	8.8	8.7	8.7	7.5	7.4	7.4	7.3	7.2	7.3
11	7.4	7.4	7.4	8.7	8.5	8.6	7.4	7.4	7.4	7.4	7.2	7.3
12	7.4	7.3	7.4	8.5	8.3	8.4	7.5	7.4	7.4	7.3	7.1	7.2
13	7.4	7.3	7.3	8.3	7.5	7.9	7.5	7.4	7.4	7.4	7.1	7.3
14	7.3	7.3	7.3	7.5	7.3	7.4	7.8	7.5	7.6	7.3	7.1	7.2
15	7.3	7.3	7.3	7.9	7.3	7.4	7.7	7.5	7.5	7.6	7.2	7.5
16	7.4	7.3	7.4	8.0	7.8	7.9	7.5	7.4	7.4	7.5	7.2	7.3
17	7.4	7.4	7.4	8.2	7.7	8.0	7.4	7.4	7.4	7.2	6.9	7.1
18	7.4	7.4	7.4	8.5	8.0	8.3	7.4	7.3	7.4	7.0	6.9	6.9
19	7.5	7.4	7.4	7.9	7.7	7.8	7.4	7.3	7.3	7.0	6.9	7.0
20	7.5	7.4	7.5	8.5	7.7	8.0	7.4	7.2	7.4	7.4	7.0	7.2
21	7.5	7.4	7.4	8.5	8.1	8.3	7.4	7.2	7.4	7.6	7.2	7.4
22	7.4	7.3	7.4	8.5	8.3	8.4	7.4	7.3	7.3	8.0	7.5	7.7
23	7.3	7.3	7.3	8.4	8.3	8.3	7.4	7.2	7.3	7.8	7.5	7.6
24	7.3	7.3	7.3	8.7	8.4	8.6	7.3	7.2	7.2	7.6	7.4	7.5
25	7.4	7.3	7.3	8.8	8.6	8.7	7.3	7.1	7.2	7.4	7.2	7.3
26	8.3	7.3	7.6	8.8	8.6	8.7	7.4	7.2	7.3	7.2	6.8	7.1
27	8.3	8.1	8.2	8.7	8.5	8.6	7.3	7.2	7.3	6.8	6.6	6.7
28	8.3	7.9	8.2	8.6	8.4	8.5	7.4	7.1	7.2	7.7	6.6	7.1
29	---	---	---	8.6	8.5	8.6	7.2	7.1	7.1	7.9	7.4	7.7
30	---	---	---	8.6	8.0	8.4	7.1	6.9	7.0	7.7	7.5	7.6
31	---	---	---	7.9	7.6	7.7	---	---	---	7.6	7.5	7.5
MONTH	8.3	7.3	7.4	8.8	7.3	8.2	7.8	6.9	7.4	8.0	6.6	7.3

## TRINITY RIVER BASIN

08061750 EAST FORK TRINITY RIVER NEAR FORNEY, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	7.5	7.3	7.5	7.8	7.4	7.6						
2	7.3	7.0	7.1	7.5	7.2	7.4						
3	7.3	7.1	7.2	7.5	7.2	7.3						
4	7.2	7.1	7.2	7.3	7.2	7.3						
5	7.2	7.1	7.1	7.3	7.2	7.2						
6	7.1	7.0	7.0	7.2	7.1	7.2						
7	7.1	7.0	7.1	7.1	7.0	7.1						
8	7.1	7.0	7.0	7.1	7.0	7.1						
9	7.5	7.0	7.1	7.1	7.0	7.1						
10	7.5	7.4	7.5	7.2	7.0	7.1						
11	7.6	7.3	7.4	7.3	7.1	7.2						
12	7.9	7.5	7.7	7.2	7.1	7.1						
13	8.1	7.7	7.9	7.5	7.1	7.3						
14	7.7	7.3	7.5	7.6	7.3	7.5						
15	8.0	7.4	7.6	7.7	7.4	7.6						
16	8.0	7.7	7.8	7.7	7.4	7.5						
17	7.9	7.7	7.8	7.5	7.4	7.5						
18	8.5	7.7	8.1	7.6	7.5	7.5						
19	8.3	8.0	8.1	7.5	7.4	7.4						
20	8.2	7.9	8.1	---	---	---						
21	8.2	7.9	8.0	---	---	---						
22	8.0	7.8	8.0	---	---	---						
23	7.8	7.5	7.7	---	---	---						
24	7.7	7.4	7.6	---	---	---						
25	7.9	7.4	7.6	---	---	---						
26	8.1	7.6	7.8	---	---	---						
27	7.9	7.3	7.7	---	---	---						
28	7.3	7.1	7.3	---	---	---						
29	7.3	7.1	7.2	---	---	---						
30	7.6	7.1	7.3	---	---	---						
31	---	---	---	---	---	---						
MONTH	8.5	7.0	7.5	7.8	7.0	7.3						

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	27.5	26.5	27.0	23.5	22.0	22.5	16.0	13.5	15.5	---	---	---
2	27.5	26.5	27.0	23.0	22.0	22.5	15.0	13.5	14.5	---	---	---
3	27.0	26.0	26.5	22.0	21.0	21.5	17.5	14.5	16.0	---	---	---
4	27.0	25.0	26.5	22.0	18.5	21.0	18.0	16.0	17.0	---	---	---
5	24.5	21.5	23.5	18.5	17.5	18.0	18.0	17.5	18.0	---	---	---
6	21.5	19.0	20.5	19.5	17.5	18.0	18.0	17.0	17.5	---	---	---
7	22.5	20.0	21.0	20.0	19.0	19.5	18.5	17.0	17.5	---	---	---
8	23.5	21.0	22.5	22.0	20.0	20.5	18.0	17.0	17.0	---	---	---
9	24.0	21.0	22.5	21.5	20.0	21.0	17.5	15.5	16.5	15.0	10.0	12.5
10	25.0	24.0	24.0	20.0	16.5	19.5	15.5	13.0	14.0	13.0	10.5	12.0
11	25.0	24.0	24.5	15.5	13.5	14.0	15.0	12.5	13.5	13.5	11.5	12.5
12	24.5	19.5	22.0	15.0	13.0	14.5	---	---	13.5	14.5	12.5	13.5
13	20.5	19.0	19.5	13.0	10.5	11.5	---	---	13.0	15.0	14.0	14.5
14	21.5	19.5	20.5	13.0	10.5	12.0	15.0	13.0	14.0	16.5	14.5	15.5
15	22.0	20.5	21.5	15.5	13.0	14.0	12.5	10.5	11.5	16.5	15.5	16.0
16	23.0	21.0	22.0	17.5	15.5	16.5	16.0	12.5	14.5	16.0	15.5	15.5
17	23.5	21.5	22.0	19.0	17.5	18.0	17.0	14.5	16.0	15.0	13.5	14.5
18	23.5	21.5	22.0	20.5	18.0	19.0	14.5	11.5	12.5	12.0	7.5	9.0
19	23.5	22.0	22.5	19.0	18.0	18.5	---	---	---	12.0	8.5	10.0
20	23.5	22.0	22.5	18.5	15.0	16.5	---	---	---	13.0	11.5	12.5
21	22.5	21.5	22.0	18.0	16.5	17.5	---	---	---	14.5	13.0	13.5
22	22.0	20.5	21.0	18.5	17.5	18.5	---	---	---	---	---	---
23	22.5	19.5	21.0	18.0	16.5	17.5	---	---	---	---	---	---
24	20.5	19.5	20.0	16.0	14.5	15.5	---	---	---	---	---	---
25	21.0	19.0	20.5	14.0	10.0	11.0	---	---	---	---	---	---
26	21.5	19.0	20.5	13.0	11.5	12.0	---	---	---	---	---	---
27	21.5	20.0	21.0	13.5	12.5	13.0	---	---	---	---	---	---
28	22.0	21.0	21.5	15.5	13.0	14.5	---	---	---	---	---	---
29	23.0	21.5	22.0	16.0	14.0	15.5	---	---	---	---	---	---
30	23.0	21.5	22.5	16.5	15.0	16.0	---	---	---	---	---	---
31	23.0	22.0	22.5	---	---	---	---	---	---	---	---	---
MONTH	27.5	19.0	22.5	23.5	10.0	17.0	18.5	10.5	15.0	16.5	7.5	13.0

## TRINITY RIVER BASIN

333

08061750 EAST FORK TRINITY RIVER NEAR FORNEY, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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

## TRINITY RIVER BASIN

08061750 EAST FORK TRINITY RIVER NEAR FORNEY, TX--Continued

OXYGEN, DISSOLVED (DO), MG/L, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	6.9	4.8	5.6	4.4	3.9	4.2	7.6	6.9	7.1	---	---	---
2	5.9	4.8	5.3	3.9	3.8	3.8	7.6	7.2	7.4	---	---	---
3	5.5	4.8	5.3	4.8	3.8	4.1	7.3	6.8	7.0	---	---	---
4	5.7	4.0	4.5	5.9	3.5	4.3	7.1	6.4	6.8	---	---	---
5	7.4	5.2	5.9	5.5	4.9	5.2	7.1	6.5	6.8	---	---	---
6	8.5	7.2	7.8	5.2	4.6	5.1	7.2	6.6	6.9	---	---	---
7	8.0	6.9	7.5	4.7	4.3	4.5	7.0	6.2	6.6	---	---	---
8	8.0	6.4	7.0	4.7	4.2	4.4	7.5	6.5	7.0	---	---	---
9	7.9	6.6	7.1	4.8	4.3	4.6	6.7	6.3	6.5	10.8	7.3	9.0
10	6.6	5.7	6.2	7.8	4.5	4.8	7.7	6.8	7.3	9.9	9.2	9.4
11	6.2	5.5	5.7	8.5	7.6	8.0	7.6	7.0	7.3	9.1	8.6	8.8
12	7.4	5.7	6.6	7.8	7.0	7.3	11.6	7.1	9.4	8.8	8.3	8.5
13	7.2	6.3	6.8	8.8	7.6	8.4	10.5	8.7	9.6	8.2	7.8	8.0
14	6.6	5.4	6.1	8.6	7.8	8.2	10.0	8.0	8.3	7.8	7.2	7.5
15	5.8	4.8	5.4	7.9	7.3	7.7	10.8	9.6	10.4	8.3	7.3	7.8
16	5.3	4.3	4.9	7.3	6.7	7.1	9.5	8.1	8.7	7.1	6.9	7.0
17	5.7	4.3	4.9	7.0	6.1	6.3	9.4	7.7	8.1	9.1	7.1	7.4
18	5.6	4.5	5.0	6.3	5.3	5.8	10.6	9.2	10.0	11.2	9.8	10.6
19	5.2	3.9	4.4	6.0	5.3	5.7	---	---	---	10.1	9.0	9.6
20	4.4	3.8	4.0	7.8	5.8	7.0	---	---	---	9.0	8.4	8.8
21	3.9	3.5	3.7	6.4	6.2	6.3	---	---	---	8.6	8.0	8.3
22	4.4	3.7	4.0	6.4	6.0	6.2	---	---	---	12.5	7.8	10.1
23	7.1	4.0	5.7	6.4	6.0	6.2	---	---	---	10.5	8.3	9.1
24	7.4	6.4	6.9	7.5	6.2	6.5	---	---	---	8.3	7.4	7.9
25	8.3	6.0	6.8	9.9	8.0	9.3	---	---	---	8.3	7.7	8.1
26	6.6	5.6	5.9	8.5	7.9	8.2	---	---	---	8.2	7.5	7.8
27	6.1	5.5	5.8	8.1	7.6	7.9	---	---	---	8.5	7.7	8.0
28	5.8	5.3	5.5	7.7	7.5	7.6	---	---	---	7.7	7.0	7.4
29	5.7	5.0	5.3	7.5	7.1	7.3	---	---	---	7.4	6.7	6.9
30	5.2	4.5	4.7	7.4	6.9	7.2	---	---	---	7.1	6.6	6.8
31	4.8	4.3	4.5	---	---	---	---	---	---	7.2	6.5	6.8
MONTH	8.5	3.5	5.6	9.9	3.5	6.3	11.6	6.2	7.8	12.5	6.5	8.2

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	6.8	6.1	6.6	11.9	11.3	11.7	8.1	7.7	7.9	4.3	3.9	4.1
2	7.0	6.1	6.7	11.7	8.9	10.7	8.3	7.4	7.8	4.3	3.9	4.0
3	6.5	5.8	6.2	11.2	8.0	9.3	8.2	7.7	7.9	4.8	3.7	4.0
4	6.5	5.6	5.9	11.3	11.0	11.1	7.9	7.3	7.6	6.2	4.2	5.2
5	6.3	5.4	5.9	11.3	11.1	11.2	8.0	7.1	7.5	6.1	4.6	5.5
6	8.6	6.1	7.1	11.3	11.0	11.1	7.5	7.1	7.3	6.8	5.5	5.9
7	8.7	7.4	8.3	11.1	10.8	11.0	7.6	6.9	7.2	7.2	5.4	6.1
8	7.3	6.6	7.0	11.1	11.0	11.0	8.6	6.7	7.3	7.4	5.4	6.2
9	7.6	6.5	6.9	11.2	10.9	11.0	7.6	6.4	6.9	6.7	5.5	5.8
10	7.3	6.5	6.8	11.2	10.8	11.0	7.0	6.2	6.6	6.4	5.3	5.8
11	6.9	6.2	6.6	11.2	10.8	10.9	7.1	5.8	6.3	7.3	5.9	6.5
12	7.4	6.0	6.5	11.0	10.4	10.8	7.0	5.6	6.2	7.5	6.0	6.5
13	6.6	5.8	6.2	10.6	8.8	9.9	6.2	5.4	5.8	7.7	5.9	6.7
14	6.3	5.6	5.9	8.6	8.0	8.2	8.6	6.2	7.1	7.6	6.5	6.9
15	7.6	5.5	6.5	8.8	7.6	7.9	7.8	6.6	7.1	6.4	5.6	6.1
16	6.6	6.4	6.5	10.2	9.4	9.9	7.8	5.8	6.5	6.7	6.3	6.5
17	7.4	6.4	6.8	10.4	8.6	9.7	6.3	5.2	5.7	6.7	6.4	6.5
18	7.0	6.5	6.9	11.4	9.6	10.7	5.9	5.0	5.3	6.5	6.1	6.3
19	6.9	6.2	6.5	9.2	7.6	8.1	5.8	4.6	5.1	6.5	6.0	6.1
20	11.2	6.8	9.4	11.2	7.4	9.1	5.5	4.6	4.9	8.5	5.4	7.5
21	9.9	8.3	9.2	11.5	10.2	11.0	5.3	4.3	4.7	7.2	6.2	6.6
22	8.4	7.9	8.2	11.1	10.8	11.0	5.6	5.0	5.3	8.8	5.8	7.3
23	8.0	7.5	7.8	10.9	10.6	10.7	6.1	4.9	5.3	7.6	6.0	6.7
24	10.8	7.3	9.1	11.2	10.8	11.0	6.2	4.7	5.3	6.1	5.4	5.6
25	11.7	10.7	11.2	11.4	10.8	11.1	5.6	4.7	5.1	5.8	5.2	5.4
26	11.6	11.0	11.3	11.5	11.0	11.2	5.1	4.3	4.8	5.4	4.7	5.1
27	11.2	10.6	11.0	11.3	10.5	11.0	6.7	4.1	5.0	5.0	4.7	4.8
28	11.6	9.0	10.7	11.0	10.5	10.7	7.7	4.1	5.4	8.7	4.7	6.3
29	---	---	---	11.1	10.5	10.8	5.5	4.2	4.6	9.4	6.7	8.5
30	---	---	---	11.5	10.2	10.9	4.6	3.9	4.3	7.6	5.1	6.4
31	---	---	---	9.9	8.1	8.8	---	---	---	7.0	6.5	6.7
MONTH	11.7	5.4	7.6	11.9	7.4	10.4	8.6	3.9	6.1	9.4	3.7	6.1

TRINITY RIVER BASIN

335

08061750 EAST FORK TRINITY RIVER NEAR FORNEY, TX--Continued

OXYGEN, DISSOLVED (DO), MG/L, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	9.3	5.9	7.4	7.3	6.3	6.8						
2	8.1	5.7	7.1	7.0	6.2	6.5						
3	9.3	7.5	8.5	7.2	6.4	6.7						
4	9.5	8.5	9.0	7.0	6.3	6.6						
5	9.5	8.4	9.0	7.2	6.3	6.7						
6	9.6	8.4	8.9	7.3	6.2	6.7						
7	9.5	8.2	8.8	6.1	5.1	5.5						
8	8.8	8.0	8.4	5.9	5.0	5.3						
9	8.6	8.0	8.3	5.8	5.5	5.6						
10	8.4	7.9	8.3	7.1	5.4	6.1						
11	8.0	5.6	7.3	7.5	5.8	6.4						
12	8.6	5.1	7.0	7.0	5.9	6.4						
13	8.0	5.2	7.0	8.0	6.2	6.8						
14	5.8	4.8	5.3	8.2	6.0	6.8						
15	8.2	5.0	6.0	7.5	6.6	7.0						
16	---	---	---	7.0	6.2	6.4						
17	---	---	---	6.7	6.4	6.4						
18	---	---	---	6.8	6.3	6.6						
19	---	---	---	6.9	6.3	6.6						
20	---	---	---	---	---	---						
21	---	---	---	---	---	---						
22	---	---	---	---	---	---						
23	---	---	---	---	---	---						
24	---	---	---	---	---	---						
25	---	---	---	---	---	---						
26	7.3	6.4	6.8	---	---	---						
27	7.2	6.4	6.8	---	---	---						
28	6.8	6.1	6.5	---	---	---						
29	6.8	6.1	6.4	---	---	---						
30	7.1	6.1	6.5	---	---	---						
31	---	---	---	---	---	---						
MONTH	9.6	4.8	7.5	8.2	5.0	6.4						

## TRINITY RIVER BASIN

08061970 EAST FORK TRINITY RIVER ABOVE SEAGOVILLE, TX

LOCATION.--Lat 32°42'01", long 96°31'52", Dallas County, Hydrologic Unit 12030106, at downstream side of downstream bridge on IH 20 (under construction) about 20 ft right of channel; 100 ft downstream from South Mesquite Creek and 3.7 mi north of intersection of U. S. Highway 175 and Malloy Bridge Road in Seagoville.

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: April to September 1987.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: March to September 1987.

pH: March to September 1987.

WATER TEMPERATURE: March to September 1987.

DISSOLVED OXYGEN: March to September 1987.

INSTRUMENTATION.--Beginning March 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.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 818 microsiemens Aug. 15; minimum, 196 microsiemens June 16.

WATER TEMPERATURE: Maximum, 31.0°C on many days during July and August.

DISSOLVED OXYGEN: Maximum, 10.7 mg/L Mar. 30; minimum, 2.8 mg/L Apr. 13.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM)	PH (STANDARD UNITS)	TEMPERATURE WATER (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATURATION)	OXYGEN DEMAND, BIO-CHEMICAL, 5 DAY (MG/L)	HARDNESS (MG/L AS CaCO3)	HARDNESS NONCARBONATE, TOT FLD (MG/L AS CaCO3)
APR 16...	0910	717	7.50	17.0	4.8	50	11	200	29
JUN 11...	1000	319	7.10	23.5	5.7	68	3.1	110	9
JUL 16...	0930	614	7.20	26.5	4.6	58	4.4	150	37
SEP 03...	1210	645	7.60	26.0	4.7	58	5.0	150	31

DATE	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, WH WAT TOTAL (MG/L AS CaCO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLORIDE, DIS-SOLVED (MG/L AS Cl)	FLUORIDE, DIS-SOLVED (MG/L AS F)
APR 16...	72	4.6	61	2	8.7	170	70	66	1.0
JUN 11...	41	2.9	18	0.8	4.3	105	30	13	0.70
JUL 16...	50	5.7	60	2	8.2	111	120	38	0.70
SEP 03...	54	3.5	69	3	10	118	90	67	1.6

DATE	SILICA, DIS-SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS-SOLVED (MG/L)	NITROGEN, NITRATE (MG/L AS N)	NITROGEN, NITRITE (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)	PHOSPHORUS, TOTAL (MG/L AS P)
APR 16...	7.1	390	4.33	0.970	5.30	2.80	1.1	3.9	0.740
JUN 11...	4.2	180	0.320	0.080	0.400	0.200	1.0	1.2	0.340
JUL 16...	8.7	360	3.39	0.210	3.60	1.40	1.8	3.2	4.30
SEP 03...	10	380	7.39	0.310	7.70	3.10	3.0	6.1	5.10

TRINITY RIVER BASIN

337

08061970 EAST FORK TRINITY RIVER ABOVE SEAGOVILLE, TX--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1				---	---	---	689	604	639	787	705	750
2				---	---	---	740	679	704	784	727	758
3				---	---	---	788	674	721	785	604	697
4				---	---	---	761	702	742	657	206	372
5				---	---	---	743	707	725	549	232	381
6				---	---	---	773	718	743	675	541	586
7				---	---	---	751	670	723	689	604	646
8				---	---	---	756	667	716	763	674	694
9				---	---	---	757	717	739	777	707	735
10				---	---	---	748	727	739	745	695	726
11				---	---	---	805	733	777	710	692	698
12				---	---	---	812	763	793	705	651	687
13				---	---	---	761	550	690	759	641	676
14				---	---	---	661	518	588	682	525	584
15				---	---	---	704	634	655	547	231	357
16				---	---	---	742	699	725	579	390	464
17				---	---	---	759	715	739	641	517	571
18				---	---	---	754	711	739	678	634	647
19				---	---	---	760	711	737	718	418	667
20				---	---	---	737	710	722	473	221	318
21				---	---	---	732	673	697	538	328	406
22				---	---	---	756	655	693	559	241	458
23				---	---	---	784	713	752	544	250	429
24				---	---	---	806	749	786	671	532	599
25				---	---	---	768	725	750	679	635	655
26				---	---	---	718	697	711	673	613	632
27				---	---	---	732	704	715	661	604	629
28				372	346	359	731	702	716	688	288	609
29				395	336	367	723	675	704	321	198	268
30				424	343	371	769	663	715	426	274	310
31				591	415	506	---	---	---	515	353	443
MONTH				591	336	401	812	518	720	787	198	563

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	561	302	450	310	284	295	735	678	703	710	623	661
2	503	221	392	313	264	285	711	681	697	731	672	693
3	361	234	306	330	272	289	709	674	684	719	636	680
4	378	314	329	301	277	292	728	689	710	721	657	695
5	363	310	323	300	284	293	730	677	695	717	652	692
6	381	314	327	409	282	317	706	619	671	700	630	675
7	345	299	310	559	416	473	646	554	594	690	635	660
8	334	296	311	633	548	588	713	654	690	656	606	619
9	380	309	325	648	600	623	735	658	696	638	573	613
10	385	302	321	653	622	638	733	690	709	655	480	595
11	373	315	332	655	595	632	688	645	659	673	497	586
12	380	220	272	639	591	614	688	629	654	617	377	503
13	363	216	279	611	560	588	717	659	688	594	289	429
14	363	266	296	616	534	576	811	695	719	518	439	470
15	449	315	393	633	532	590	818	693	765	580	465	523
16	382	196	276	696	590	635	694	667	682	624	470	558
17	436	280	310	702	630	672	710	647	684	582	458	506
18	419	307	354	694	636	666	694	633	660	644	561	611
19	385	304	325	633	601	615	722	632	679	638	457	544
20	384	314	333	634	598	614	723	684	699	555	466	510
21	345	303	318	616	593	607	736	678	705	639	576	615
22	368	302	316	656	602	636	739	689	710	642	579	613
23	361	309	324	664	607	644	759	676	708	701	622	664
24	376	293	325	658	604	640	772	702	735	656	601	628
25	350	300	312	644	609	634	717	656	678	687	611	653
26	311	283	294	651	618	633	708	643	675	671	616	650
27	308	278	290	665	616	636	747	619	690	658	587	629
28	325	276	295	682	627	648	678	591	629	669	609	646
29	323	288	302	698	645	673	648	604	625	654	568	613
30	323	298	312	714	663	689	732	659	702	653	582	616
31	---	---	---	747	692	715	702	671	685	---	---	---
MONTH	561	196	322	747	264	563	818	554	686	731	289	605

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1												
2												
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31												
MONTH												

## TRINITY RIVER BASIN

339

08061970 EAST FORK TRINITY RIVER ABOVE SEAGOVILLE, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1				---	---	---	---	---	---	23.0	22.0	22.5
2				---	---	---	---	---	---	24.0	21.0	22.5
3				---	---	---	---	---	---	24.0	22.5	23.0
4				---	---	---	---	---	---	23.0	19.5	21.0
5				---	---	---	---	---	---	22.0	20.0	21.0
6				---	---	---	---	---	---	24.0	21.5	22.5
7				---	---	---	---	---	---	24.5	22.5	23.0
8				---	---	---	---	---	---	24.5	22.5	23.5
9				---	---	---	---	---	---	24.5	22.5	23.5
10				---	---	---	---	---	---	25.0	22.0	23.5
11				---	---	---	---	---	---	25.5	23.0	24.0
12				---	---	---	---	---	---	25.0	23.5	24.5
13				---	---	---	---	---	---	25.5	23.0	24.0
14				---	---	---	---	---	---	26.0	24.0	25.0
15				---	---	---	---	---	---	24.5	22.0	23.0
16				---	---	---	---	---	---	24.5	23.0	24.0
17				---	---	---	22.5	19.0	20.5	25.5	23.5	24.5
18				---	---	---	23.5	20.5	22.0	25.5	24.5	25.0
19				---	---	---	24.0	21.5	22.5	26.0	22.0	25.0
20				---	---	---	24.0	22.0	23.0	22.5	21.5	22.0
21				---	---	---	23.0	21.0	22.5	24.5	22.0	23.0
22				---	---	---	22.0	20.0	21.0	26.5	24.5	25.0
23				---	---	---	22.0	19.0	20.5	25.5	23.5	24.5
24				---	---	---	22.5	19.5	21.0	26.0	25.0	25.5
25				---	---	---	23.0	20.0	21.5	26.0	24.5	25.5
26				---	---	---	24.0	21.0	22.0	27.0	25.0	26.0
27				---	---	---	24.0	21.0	22.5	26.5	25.0	25.5
28				15.0	13.5	14.5	24.5	21.5	23.0	25.0	21.5	24.5
29				14.0	11.5	12.5	24.0	22.0	23.0	21.5	20.0	21.0
30				12.5	11.0	11.5	24.5	20.5	23.0	23.0	21.5	22.0
31				---	---	---	---	---	---	25.0	23.0	24.0
MONTH				15.0	11.0	13.0	24.5	19.0	22.0	27.0	19.5	23.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	25.0	23.5	24.0	28.5	27.0	27.5	31.0	29.0	30.0	28.0	25.5	27.0
2	25.0	22.5	23.5	28.0	25.5	26.5	30.5	28.5	29.5	27.5	24.5	26.5
3	23.5	22.5	23.0	27.0	25.5	26.0	31.0	28.5	29.5	27.5	25.0	26.5
4	24.0	23.0	23.5	27.0	26.5	27.0	31.0	28.5	29.5	28.0	26.0	27.0
5	24.5	23.0	23.5	27.5	26.0	26.5	31.0	28.5	29.5	28.0	26.0	27.0
6	24.5	23.0	24.0	28.0	25.5	26.5	31.0	29.0	29.5	28.0	25.5	27.0
7	25.0	23.5	24.5	28.5	27.0	27.5	31.0	29.0	30.0	27.0	26.0	26.5
8	24.5	23.5	24.0	28.5	27.0	27.5	31.0	29.0	29.5	27.5	25.0	26.5
9	24.5	23.5	24.0	28.5	27.0	27.5	31.0	29.0	30.0	28.0	26.0	27.0
10	24.0	23.5	24.0	28.5	27.0	27.5	31.0	28.5	30.0	28.5	25.5	26.5
11	25.5	23.5	24.0	29.0	27.5	28.0	31.0	28.5	30.0	27.5	26.0	26.5
12	25.5	24.5	25.0	29.5	27.5	28.5	31.0	29.0	30.0	27.5	24.5	25.5
13	26.0	24.0	25.0	28.5	27.5	28.0	31.0	29.0	30.0	26.0	23.0	25.0
14	27.5	25.0	26.0	28.5	26.5	27.5	30.5	28.5	29.5	28.0	25.5	27.0
15	27.5	26.0	27.0	28.5	25.5	27.0	30.5	28.5	29.5	28.0	27.0	27.5
16	25.5	22.5	24.5	28.0	26.5	27.5	30.5	29.0	29.5	28.0	26.5	27.5
17	27.0	24.5	25.5	28.0	26.5	27.0	31.0	28.5	29.5	28.5	26.5	27.5
18	26.5	26.0	26.5	29.0	26.5	27.5	31.0	28.5	29.5	28.0	26.5	27.5
19	26.5	25.5	26.0	29.5	27.5	28.5	30.5	28.0	29.0	26.5	25.5	26.0
20	26.0	24.0	25.0	29.5	27.5	28.5	30.0	27.5	29.0	26.5	23.5	25.0
21	26.5	25.0	25.5	29.0	27.5	28.5	30.5	28.0	29.5	26.0	23.5	25.0
22	26.5	25.0	25.5	29.0	27.5	28.5	30.5	28.0	29.5	25.5	23.5	25.0
23	27.0	24.5	25.5	30.0	27.5	28.5	30.5	28.0	29.5	24.5	22.5	24.0
24	27.5	25.5	26.0	29.5	27.5	28.5	30.5	28.0	29.0	25.0	22.5	24.0
25	28.5	27.0	27.5	30.0	28.0	29.0	30.5	28.0	29.5	25.5	23.0	24.5
26	29.0	27.5	28.0	30.0	28.0	29.0	30.5	28.5	29.5	25.5	23.5	24.5
27	28.5	27.5	28.0	30.0	27.5	29.0	29.5	27.5	28.5	26.0	23.5	24.5
28	27.5	26.5	27.0	30.5	28.0	29.0	27.5	26.0	26.5	26.5	24.5	25.5
29	27.0	25.5	26.5	30.5	28.0	29.0	27.0	25.0	26.0	26.0	24.0	25.0
30	27.5	26.0	26.5	30.5	28.5	29.5	27.5	26.0	26.5	25.0	23.0	24.0
31	---	---	---	31.0	29.0	29.5	27.0	26.0	27.0	---	---	---
MONTH	29.0	22.5	25.5	31.0	25.5	28.0	31.0	25.0	29.0	28.5	22.5	26.0

## TRINITY RIVER BASIN

08061970 EAST FORK TRINITY RIVER ABOVE SEAGOVILLE, TX--Continued

OXYGEN, DISSOLVED (DO), MG/L, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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												
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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				---	---	---	8.0	6.4	7.1	4.8	3.4	4.1
2				---	---	---	6.5	6.0	6.3	5.0	3.1	4.0
3				---	---	---	7.1	6.3	6.7	5.6	3.4	4.0
4				---	---	---	6.7	5.9	6.2	6.0	4.3	5.3
5				---	---	---	5.9	5.1	5.6	5.7	4.2	5.1
6				---	---	---	5.9	5.0	5.5	5.5	4.8	5.2
7				---	---	---	6.0	5.1	5.6	5.7	4.2	5.1
8				---	---	---	5.8	4.9	5.4	5.2	4.3	4.9
9				---	---	---	5.7	4.5	5.2	5.5	4.0	4.8
10				---	---	---	5.3	4.4	4.9	5.2	4.1	4.7
11				---	---	---	5.4	4.0	4.7	5.2	3.9	4.7
12				---	---	---	5.4	3.7	4.6	6.3	4.6	5.4
13				---	---	---	5.8	2.8	4.6	6.1	5.0	5.5
14				---	---	---	5.7	4.7	5.4	6.9	5.0	5.8
15				---	---	---	7.4	5.1	6.1	6.4	4.8	5.3
16				---	---	---	5.7	4.5	4.9	6.4	5.1	5.8
17				---	---	---	5.2	3.9	4.6	6.2	5.1	5.8
18				---	---	---	4.9	3.6	4.4	5.7	4.7	5.1
19				---	---	---	4.9	3.3	4.2	7.1	4.3	4.8
20				---	---	---	5.1	3.2	4.3	7.6	5.2	6.4
21				---	---	---	5.0	3.8	4.5	7.0	5.8	6.3
22				---	---	---	5.2	3.7	4.6	7.8	4.8	5.8
23				---	---	---	5.2	4.1	4.8	7.8	5.5	6.8
24				---	---	---	5.3	4.2	4.8	5.4	4.0	4.8
25				---	---	---	5.3	4.0	4.6	5.1	3.3	4.4
26				---	---	---	5.3	3.6	4.6	4.9	3.7	4.5
27				---	---	---	4.8	3.1	4.3	4.8	3.3	4.4
28				10.2	9.4	9.8	5.1	3.5	4.3	7.6	3.9	4.8
29				10.4	9.8	10.1	5.6	3.4	4.7	7.2	5.8	6.7
30				10.7	10.2	10.4	5.8	3.7	4.7	6.1	4.2	5.3
31				9.9	8.0	9.1	---	---	---	6.2	4.1	5.3
MONTH				10.7	8.0	9.9	8.0	2.8	5.1	7.8	3.1	5.2

## TRINITY RIVER BASIN

341

08061970 EAST FORK TRINITY RIVER ABOVE SEAGOVILLE, TX--Continued

OXYGEN, DISSOLVED (DO), MG/L, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	8.1	5.3	6.4	7.5	6.2	6.8	6.1	3.6	4.6	3.6	3.0	3.4
2	7.5	6.1	6.7	6.7	6.1	6.4	5.6	3.3	4.3	4.1	3.3	3.7
3	8.5	5.6	6.8	6.8	6.0	6.4	6.5	3.4	4.8	5.0	3.7	4.4
4	8.7	7.5	8.0	6.9	6.3	6.6	7.5	3.8	5.4	4.7	3.6	4.2
5	8.7	7.5	8.0	6.9	6.1	6.5	6.6	4.0	5.2	4.9	3.4	4.0
6	8.8	7.3	8.0	6.5	5.6	6.3	8.2	4.6	5.9	5.4	3.8	4.3
7	8.9	7.2	8.0	5.4	4.3	4.8	5.3	3.9	4.5	5.0	3.3	4.3
8	8.4	7.1	7.7	4.5	3.4	3.9	5.0	3.4	4.1	5.2	4.2	4.7
9	7.6	6.9	7.3	4.3	3.5	3.9	5.2	3.1	4.1	4.8	3.9	4.4
10	7.1	5.7	6.4	4.4	3.7	4.1	4.8	3.6	4.2	5.3	3.9	4.4
11	5.8	5.1	5.6	4.9	3.4	4.3	5.0	3.4	4.1	4.6	3.7	4.3
12	6.3	5.2	5.6	4.8	3.9	4.4	5.6	3.7	4.5	6.1	3.6	4.5
13	5.5	4.6	5.1	4.7	3.8	4.4	5.8	3.1	4.4	5.5	4.3	5.0
14	4.5	3.9	4.2	5.6	3.9	4.7	5.7	3.4	4.4	5.2	4.5	4.8
15	6.5	4.4	5.2	5.5	4.0	5.0	5.2	3.4	4.3	4.7	4.0	4.3
16	7.0	5.0	6.3	5.4	3.6	4.4	6.2	4.1	5.0	4.6	3.5	4.0
17	5.7	4.7	5.2	4.6	3.1	3.8	6.5	4.2	5.2	4.6	4.0	4.3
18	7.6	5.1	6.1	4.2	3.6	3.9	7.1	4.1	5.2	4.6	3.5	4.0
19	7.6	6.9	7.2	4.3	3.1	3.9	5.8	3.9	4.7	5.1	3.7	4.4
20	7.1	6.8	7.0	4.4	3.1	3.9	5.9	4.0	4.7	5.1	4.2	4.7
21	7.7	6.7	7.1	5.5	3.6	4.4	5.0	3.8	4.3	4.9	3.8	4.5
22	7.8	6.9	7.3	6.4	4.0	5.0	5.5	3.7	4.5	5.2	4.2	4.7
23	7.8	6.8	7.2	7.3	4.8	5.6	6.5	3.6	5.0	5.3	4.0	4.6
24	7.6	6.5	7.0	5.9	4.6	5.1	6.8	4.3	5.4	5.3	3.9	4.5
25	7.4	6.6	6.9	7.4	5.0	5.9	7.4	4.6	5.8	5.0	3.7	4.4
26	7.2	6.1	6.6	6.6	5.2	5.7	6.0	3.8	5.1	5.5	3.6	4.4
27	7.3	6.2	6.7	7.3	4.5	5.7	6.2	4.0	4.9	5.8	3.4	4.4
28	7.4	6.4	6.8	7.3	4.9	5.9	5.2	4.2	4.7	5.4	3.2	4.4
29	7.3	6.4	6.8	7.1	4.8	5.8	4.3	3.6	4.0	5.4	4.1	4.6
30	7.1	6.2	6.6	5.8	4.4	5.1	5.3	3.8	4.8	5.8	3.4	4.4
31	---	---	---	4.9	3.7	4.3	4.1	3.2	3.6	---	---	---
MONTH	8.9	3.9	6.7	7.5	3.1	5.1	8.2	3.1	4.7	6.1	3.0	4.4

## TRINITY RIVER BASIN

08061980 EAST FORK TRINITY RIVER AT SEAGOVILLE, TX

LOCATION.--Lat 32°39'53", long 96°31'26", Dallas County, Hydrologic Unit 12030106, on right bank at downstream side of bridge on Malloy Bridge Road, 1.3 mi north of intersection of U. S. Highway 175 and Malloy Bridge Road in Seagoville and 3.5 mi downstream from South Mesquite Creek.

## WATER-QUALITY RECORDS

PERIOD OF RECORD.-- Chemical and biochemical analyses: April to September 1987.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: March to September 1987.

pH: March to September 1987.

WATER TEMPERATURE: March to September 1987.

DISSOLVED OXYGEN: March to September 1987.

INSTRUMENTATION.--Beginning March 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.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 820 microsiemens Aug. 15; minimum, 210 microsiemens May 4.

WATER TEMPERATURE: Maximum, 31.0°C July 31, Aug. 1, 7, 11, 12.

DISSOLVED OXYGEN: Maximum, 10.9 mg/L Mar. 27; minimum, 1.9 mg/L Sept. 18.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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 (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03
APR 15...	1400	627	7.40	17.5	5.1	54	11	180	38
JUN 10...	0845	318	7.30	23.0	6.0	70	1.7	110	11
JUL 15...	1345	330	6.90	26.5	4.1	51	8.7	120	15
SEP 02...	1210	672	7.40	25.0	3.1	38	3.7	150	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 WH WAT TOTAL 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)
APR 15...	66	4.1	53	2	8.0	144	75	51	0.80
JUN 10...	39	2.8	17	0.7	4.4	98	29	16	0.40
JUL 15...	39	6.5	28	1	5.1	109	44	22	0.30
SEP 02...	55	3.7	65	2	10	118	--	--	1.2

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- PHORUS, TOTAL (MG/L AS P)
APR 15...	6.4	350	3.54	0.860	4.40	2.60	1.6	4.2	1.40
JUN 10...	3.2	170	0.500	0.100	0.600	0.160	1.2	1.4	0.330
JUL 15...	6.0	220	6.02	0.580	6.60	1.20	1.4	2.6	4.40
SEP 02...	11	--	6.64	0.560	7.20	5.40	--	--	5.30

TRINITY RIVER BASIN

343

08061980 EAST FORK TRINITY RIVER AT SEAGOVILLE, TX--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1				---	---	---	649	522	594	751	709	727
2				---	---	---	703	646	680	769	726	754
3				---	---	---	770	674	719	769	631	721
4				---	---	---	754	674	713	640	210	435
5				---	---	---	750	704	725	422	214	315
6				---	---	---	767	718	736	554	438	504
7				---	---	---	742	710	725	617	548	588
8				---	---	---	733	681	704	664	584	641
9				---	---	---	750	727	736	741	651	703
10				---	---	---	737	717	727	722	681	707
11				---	---	---	---	---	710	700	674	684
12				---	---	---	---	---	703	682	668	674
13				---	---	---	---	---	686	687	639	655
14				---	---	---	---	---	652	735	506	577
15				---	---	---	---	---	634	617	244	382
16				---	---	---	---	---	640	487	310	389
17				---	---	---	---	---	642	575	484	525
18				---	---	---	---	---	647	632	577	616
19				---	---	---	---	---	649	669	632	655
20				---	---	---	---	---	668	667	241	407
21				---	---	---	---	---	700	517	410	449
22				---	---	---	---	---	678	664	409	562
23				---	---	---	---	---	674	535	403	452
24				---	---	---	---	---	680	700	530	602
25				---	---	---	---	---	686	728	697	713
26				---	---	---	---	---	688	724	662	693
27				343	315	322	---	---	701	685	647	665
28				345	336	341	---	---	712	709	580	656
29				343	324	336	---	---	710	451	267	316
30				357	335	341	708	659	679	345	308	315
31				523	365	443	---	---	---	466	324	377
MONTH				523	315	357	770	522	687	769	210	563

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	550	323	454	297	279	287	727	685	709	693	610	660
2	449	258	362	340	275	285	722	680	702	712	618	656
3	354	261	311	319	280	289	701	686	690	696	638	655
4	343	325	334	295	283	288	723	689	703	710	669	699
5	331	326	328	295	291	293	729	690	712	719	662	698
6	328	319	324	358	289	302	727	633	692	711	639	683
7	320	301	309	494	365	420	670	560	609	696	631	667
8	315	295	306	598	487	553	721	608	660	659	611	637
9	351	299	314	635	574	612	730	676	702	633	599	614
10	316	298	308	647	616	630	741	718	732	654	530	607
11	333	307	314	663	622	649	717	663	690	669	503	580
12	370	252	288	650	601	620	660	624	644	564	387	502
13	297	281	290	642	573	597	687	661	672	592	290	426
14	303	271	279	617	575	598	712	689	701	495	402	449
15	414	309	359	632	522	584	820	707	772	515	458	489
16	430	250	297	644	557	598	732	659	689	601	499	552
17	302	282	287	695	650	674	698	647	672	556	427	469
18	393	306	338	692	641	666	701	635	671	613	513	566
19	308	301	304	655	607	629	675	625	647	625	455	567
20	325	304	313	614	598	605	706	677	690	527	450	474
21	309	302	304	620	593	606	708	674	687	627	530	573
22	304	300	302	645	595	611	720	682	701	623	584	602
23	306	301	304	645	608	631	701	670	690	687	605	637
24	331	293	307	645	460	567	756	694	728	659	597	630
25	294	288	292	653	430	546	706	651	683	661	602	621
26	287	275	280	648	618	629	671	628	650	669	610	646
27	280	272	276	646	620	631	705	611	670	647	582	626
28	288	277	281	666	632	645	656	570	622	643	613	628
29	293	289	291	680	627	651	617	569	598	637	557	598
30	302	292	298	712	668	684	710	615	658	---	---	632
31	---	---	---	734	675	707	702	648	666	---	---	---
MONTH	550	250	312	734	275	551	820	560	681	719	290	595

DAY	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
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												

## TRINITY RIVER BASIN

345

08061980 EAST FORK TRINITY RIVER AT SEAGOVILLE, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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

## TRINITY RIVER BASIN

08061980 EAST FORK TRINITY RIVER AT SEAGOVILLE, TX--Continued

OXYGEN, DISSOLVED (DO), MG/L, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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				---	---	---	8.6	7.0	7.9	4.0	3.6	3.8
2				---	---	---	7.0	6.8	6.9	4.0	3.6	3.8
3				---	---	---	7.4	7.0	7.1	4.5	2.3	3.7
4				---	---	---	7.4	6.6	7.0	5.7	2.9	4.4
5				---	---	---	6.7	6.3	6.5	5.7	4.8	5.0
6				---	---	---	6.5	6.2	6.3	5.2	4.9	5.0
7				---	---	---	6.5	6.1	6.3	5.2	4.5	4.8
8				---	---	---	6.4	6.0	6.2	5.2	4.4	4.8
9				---	---	---	6.2	5.8	6.0	4.7	4.1	4.4
10				---	---	---	6.0	5.4	5.7	4.7	4.1	4.4
11				---	---	---	---	---	---	4.3	4.0	4.2
12				---	---	---	---	---	---	4.9	4.3	4.5
13				---	---	---	---	---	---	5.3	4.8	5.1
14				---	---	---	---	---	---	5.3	4.8	5.0
15				---	---	---	---	---	---	5.7	3.5	4.9
16				---	---	---	---	---	---	5.9	5.0	5.3
17				---	---	---	---	---	---	5.8	5.3	5.5
18				---	---	---	---	---	---	5.7	4.6	5.0
19				---	---	---	---	---	---	4.7	4.1	4.4
20				---	---	---	---	---	---	6.5	4.4	5.2
21				---	---	---	---	---	---	6.4	5.2	5.5
22				---	---	---	---	---	---	6.8	4.7	5.1
23				---	---	---	---	---	---	6.9	5.4	6.4
24				---	---	---	---	---	---	5.2	4.1	4.5
25				---	---	---	---	---	---	4.0	3.6	3.8
26				---	---	---	---	---	---	3.8	3.5	3.7
27				10.9	9.1	9.8	---	---	---	3.8	3.6	3.7
28				9.9	9.0	9.5	---	---	---	4.8	3.6	3.9
29				10.5	9.7	10.0	---	---	---	6.3	5.1	5.7
30				10.8	10.3	10.6	4.0	3.6	3.8	5.8	4.6	5.3
31				10.6	8.6	9.6	---	---	---	5.1	3.3	4.1
MONTH				10.9	8.6	9.9	8.6	3.6	6.3	6.9	2.3	4.7

## TRINITY RIVER BASIN

347

08061980 EAST FORK TRINITY RIVER AT SEAGOVILLE, TX--Continued

OXYGEN, DISSOLVED (DO), MG/L, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	7.1	4.9	5.5	7.0	5.9	6.4	4.7	3.1	3.7	3.5	2.9	3.1
2	7.0	5.7	6.3	6.5	5.8	6.2	4.4	3.3	3.8	3.4	2.9	3.1
3	7.4	4.9	5.8	6.7	5.6	6.1	4.6	3.2	3.8	5.4	3.1	3.6
4	7.3	6.4	6.8	6.8	6.0	6.3	5.1	3.4	4.1	3.8	2.9	3.3
5	7.1	5.9	6.5	6.8	6.1	6.4	4.8	3.8	4.2	3.5	2.6	3.0
6	7.4	5.8	6.6	6.5	5.6	6.2	6.1	3.7	4.7	3.7	2.7	3.1
7	7.8	6.3	7.0	5.4	4.1	4.5	5.9	3.8	4.3	3.4	2.6	2.9
8	7.5	6.4	7.0	4.4	3.5	3.8	4.0	3.3	3.6	3.2	2.8	3.0
9	6.9	5.9	6.4	3.6	3.4	3.5	4.1	3.2	3.6	3.4	2.7	2.9
10	6.0	5.1	5.6	3.6	3.5	3.6	4.7	3.3	3.8	3.4	2.5	2.9
11	5.4	4.8	5.1	3.8	3.4	3.6	4.3	3.2	3.7	3.4	2.6	3.2
12	5.2	4.3	4.8	4.2	3.5	3.8	4.2	3.3	3.6	3.8	2.8	3.1
13	5.3	4.7	5.0	3.8	3.5	3.6	3.9	3.0	3.3	4.0	3.0	3.6
14	4.9	4.1	4.6	4.1	3.5	3.7	4.0	3.0	3.4	3.9	3.0	3.5
15	5.0	3.6	4.1	4.5	4.0	4.3	4.1	3.2	3.5	3.0	2.6	2.8
16	6.5	5.2	5.9	4.3	3.7	4.1	4.1	2.7	3.5	2.6	2.3	2.4
17	5.6	4.6	5.1	4.2	3.6	3.7	4.5	3.1	3.6	2.7	2.1	2.5
18	7.1	4.6	5.4	4.2	3.6	3.8	4.2	2.9	3.5	2.2	1.9	2.1
19	7.3	6.4	6.8	3.6	3.3	3.5	4.9	2.9	3.6	3.2	2.1	2.5
20	6.9	6.0	6.5	3.7	3.2	3.5	4.1	3.2	3.5	3.0	2.7	2.8
21	7.7	6.2	6.9	3.8	3.0	3.5	4.2	3.2	3.6	3.3	2.6	2.9
22	8.1	6.3	7.1	4.9	3.2	3.7	3.9	3.0	3.4	4.4	2.6	3.2
23	8.0	6.4	7.2	5.2	3.6	4.2	3.8	2.9	3.3	4.1	3.0	3.4
24	7.1	6.3	6.7	4.5	3.4	4.1	4.1	3.1	3.5	4.2	3.2	3.5
25	7.4	5.5	6.3	5.1	4.0	4.6	4.6	3.1	3.6	4.2	3.2	3.5
26	7.3	5.4	6.3	5.1	4.1	4.4	4.1	3.3	3.6	4.4	3.0	3.6
27	7.3	5.6	6.4	4.4	3.9	4.2	3.8	3.0	3.4	4.5	3.1	3.6
28	7.2	5.7	6.4	4.6	4.1	4.3	4.3	3.5	4.0	4.6	3.1	3.7
29	7.1	5.8	6.4	4.7	4.1	4.4	4.0	3.4	3.6	4.4	3.2	3.8
30	6.7	5.7	6.2	5.1	3.7	4.3	3.7	3.2	3.5	---	---	---
31	---	---	---	4.2	3.3	3.7	3.5	2.9	3.2	---	---	---
MONTH	8.1	3.6	6.1	7.0	3.0	4.4	6.1	2.7	3.7	5.4	1.9	3.1

## TRINITY RIVER BASIN

08062000 EAST FORK TRINITY RIVER NEAR CRANDALL, TX

LOCATION.--Lat 32°38'19", long 96°29'17", Kaufman County, Hydrologic Unit 12030106, on right bank 15 ft downstream from downstream eastbound bridge on U.S. Highway 175, 0.7 mi downstream from Mustang Creek, 1.8 mi northwest of Crandall, 4.0 mi upstream from Buffalo Creek, and 11.0 mi upstream from mouth.

DRAINAGE AREA.--1,256 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

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

Water-quality records.--Chemical and biochemical analyses: October 1967 to September 1981. Pesticide analyses: October 1976 to September 1981.

REVISED RECORDS.--WSP 1922: Drainage area. WDR TX-75-1: 1974.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 338.69 ft above National Geodetic Vertical Datum of 1929. Prior to Feb. 21, 1983, at datum 5.00 ft higher.

REMARKS.--Records fair. Flow largely regulated by Lavon Lake (station 08060500) since September 1953 and Lake Ray Hubbard (station 08061550) since Mar. 22, 1970. The city of Forney discharges sewage effluent into a tributary below Lake Ray Hubbard and above this station. The North Texas Municipal Water District discharges sewage effluent into tributaries above this station from the Mesquite and Chandler's Landing sewage treatment plants. Flow is affected at times by discharge from the flood-detention pools of 20 floodwater-retarding structures with a combined detention capacity of 11,760 acre-ft. These structures control runoff from 39.2 mi<sup>2</sup>. Gage-height telemeter at station.

AVERAGE DISCHARGE.--4 years (water years 1950-53) prior to regulation by Lavon Lake, 652 ft<sup>3</sup>/s (472,400 acre-ft/yr); 34 years (water years 1954-87) regulated, 598 ft<sup>3</sup>/s (433,300 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 33,000 ft<sup>3</sup>/s May 28, 1957 (gage height, 22.81 ft); no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7,110 ft<sup>3</sup>/s Mar. 18 at 2100 hours (gage height, 16.12 ft, from rating curve extended above 4,000 ft<sup>3</sup>/s); minimum daily, 39 ft<sup>3</sup>/s Oct. 22.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	50	94	197	111	81	4190	113	63	405	1340	55	50
2	40	97	165	104	97	4420	97	67	684	1330	54	50
3	53	92	140	106	95	1650	98	87	1430	1580	50	55
4	58	156	124	144	80	1020	84	524	1470	1440	48	54
5	251	281	119	109	78	1440	79	654	1710	1310	49	50
6	481	117	120	92	90	1750	79	135	1690	1300	65	47
7	305	86	114	88	171	1990	75	104	1400	500	74	45
8	110	76	122	88	109	2040	75	93	1290	82	55	51
9	163	77	118	309	87	2040	62	85	1290	68	48	56
10	96	133	103	409	81	2040	77	78	1610	66	51	59
11	57	570	91	167	81	2050	72	73	2190	70	53	110
12	76	215	131	134	72	2040	70	75	1860	59	49	96
13	95	133	195	118	55	1280	97	95	2490	58	46	168
14	66	117	124	109	62	185	180	103	4650	57	45	117
15	50	102	435	110	117	110	103	511	2290	72	55	84
16	46	96	324	89	153	380	82	277	1480	47	53	92
17	42	94	173	102	93	1950	77	103	2850	53	50	96
18	40	94	898	611	80	6220	77	98	2390	80	49	65
19	42	87	879	381	74	5580	76	92	1590	72	50	85
20	42	128	293	210	715	980	73	799	1870	57	49	86
21	54	126	206	163	1100	1470	67	848	1960	52	48	60
22	39	133	180	149	271	1770	71	185	1920	51	47	55
23	686	140	203	122	192	1990	68	512	1850	50	43	56
24	1090	182	227	109	372	2190	70	115	1830	73	45	63
25	262	2330	169	114	1070	2090	69	93	1890	74	47	60
26	128	2840	147	112	1870	1990	79	85	1840	55	45	55
27	117	1030	132	103	2890	1970	78	83	1800	49	68	52
28	114	570	120	94	3100	1360	69	113	1790	50	79	52
29	125	435	115	93	---	1090	68	1490	1770	50	79	61
30	108	301	111	84	---	1080	65	5210	1630	58	62	55
31	97	---	110	88	---	332	---	3150	---	60	53	---
TOTAL	4983	10932	6585	4822	13336	60687	2450	16000	54919	10263	1664	2085
MEAN	161	364	212	156	476	1958	81.7	516	1831	331	53.7	69.5
MAX	1090	2840	898	611	3100	6220	180	5210	4650	1580	79	168
MIN	39	76	91	84	55	110	62	63	405	47	43	45
AC-FT	9880	21680	13060	9560	26450	120400	4860	31740	108900	20360	3300	4140

CAL YR 1986 TOTAL 299460 MEAN 820 MAX 8200 MIN 37 AC-FT 594000  
WTR YR 1987 TOTAL 188726 MEAN 517 MAX 6220 MIN 39 AC-FT 374300

08062000 EAST FORK TRINITY RIVER NEAR CRANDALL, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: January to April 1964, May 1966 to September 1981, June 1986 to current year. Pesticide analyses: March 1977 to July 1981. Sediment analyses: April to September 1964.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1967 to September 1981, May 1986 to current year.

pH: March to September 1977, May 1986 to current year.

WATER TEMPERATURE: October 1967 to September 1981, May 1986 to current year.

DISSOLVED OXYGEN: March to September 1977, May 1986 to current year.

INSTRUMENTATION.--From March to November 1977, a four-parameter water quality monitor continuously recorded specific conductance, pH, water temperature, and dissolved oxygen at this station. Beginning May 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. 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 office upon request.

## EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 1,010 microsiemens Nov. 23, 1968; minimum, 193 microsiemens June 16, 1981 and May 16, 1987.

pH: Maximum, 8.7 units Mar. 11, 27, 1987; minimum, 6.9 units July 10, 11, 15, 1987.

WATER TEMPERATURE: Maximum, 34.0°C June 26, July 1, Aug. 16, 17, 1980; minimum, 1.0°C Jan. 3, 1979.

DISSOLVED OXYGEN: Maximum, 14.5 mg/L July 8, 1977; minimum, .0 mg/L on many days during 1977.

## EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 957 microsiemens May 26; minimum, 193 microsiemens May 16.

pH: Maximum, 8.7 units Mar. 11, 27; minimum, 6.9 units July 10, 11, 15.

WATER TEMPERATURE: Maximum, 32.5°C July 29.

DISSOLVED OXYGEN: Maximum, 11.3 mg/L Jan. 19; minimum, 0.7 mg/L Apr. 14.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	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 (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03
NOV 14...	1100	981	445	7.20	9.5	8.6	75	7.2	140	12
JAN 22...	0930	1590	598	8.20	7.0	9.0	74	11	190	31
APR 15...	0945	110	536	7.00	16.5	5.3	55	14	170	38
JUN 08...	1200	1640	282	7.50	24.5	6.8	82	2.2	100	7
JUL 15...	1030	72	600	7.00	26.5	4.5	56	8.4	160	54
SEP 02...	0900	57	610	7.50	25.0	4.0	49	5.5	140	21

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 WH WAT TOTAL 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)
NOV 14...	52	3.3	40	2	7.4	131	51	38	0.80
JAN 22...	70	4.0	44	1	6.3	160	66	42	0.90
APR 15...	60	3.7	41	1	6.3	127	63	42	0.60
JUN 08...	36	2.7	15	0.7	3.7	94	26	10	0.40
JUL 15...	57	3.7	60	2	9.2	104	130	61	1.2
SEP 02...	49	3.8	62	2	11	117	54	58	1.5

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- PHORUS, TOTAL (MG/L AS P)
NOV 14...	8.8	280	1.89	0.710	2.60	1.90	1.6	3.5	2.50
JAN 22...	8.2	340	2.58	0.820	3.40	2.40	1.2	3.6	2.10
APR 15...	5.2	300	2.70	0.600	3.30	1.40	2.8	4.2	4.90
JUN 08...	2.0	150	0.090	0.010	0.100	0.090	1.0	1.1	0.100
JUL 15...	8.7	390	6.78	0.620	7.40	1.10	1.1	2.2	7.60
SEP 02...	10	320	5.09	0.910	6.00	5.60	4.4	10	5.80

## TRINITY RIVER BASIN

08062000 EAST FORK TRINITY RIVER NEAR CRANDALL, TX--Continued

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1986 TO SEPTEMBER 1987

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. 1986	4982	376	209	2820	19	253	39	527	120
NOV. 1986	10932	321	180	5330	14	410	35	1040	110
DEC. 1986	6583	448	247	4390	25	452	44	790	130
JAN. 1987	4822	558	303	3940	39	510	50	649	140
FEB. 1987	13336	576	310	11200	43	1540	50	1780	130
MAR. 1987	60687	328	185	30200	13	2210	36	5950	110
APR. 1987	2450	685	364	2410	58	380	54	357	140
MAY 1987	16000	349	194	8370	18	788	36	1550	110
JUNE 1987	54919	302	171	25300	11	1700	34	5080	110
JULY 1987	10263	356	198	5500	18	490	37	1030	110
AUG. 1987	1664	680	362	1630	57	254	54	243	140
SEPT 1987	2085	578	313	1760	42	234	51	286	140
TOTAL	188724	**	**	103000	**	9220	**	19300	**
WTD.AVG.	517	363	202	**	18	**	38	**	110

## SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1			400	---	---	510	428	379	410	633	596	610
2			396	---	---	501	462	426	447	---	---	635
3			342	---	---	520	---	---	500	661	625	643
4			350	---	---	515	517	475	498	678	627	647
5			247	---	---	505	527	488	517	622	590	603
6			210	---	---	495	562	523	536	602	561	579
7			205	---	---	497	---	---	544	643	606	631
8			256	---	---	346	568	521	557	656	601	629
9			297	---	---	366	583	291	457	651	371	568
10			380	---	---	372	---	---	466	537	359	413
11			426	---	---	404	---	---	455	517	455	500
12			410	---	---	440	---	---	496	585	521	567
13			401	---	---	422	582	394	485	630	565	601
14			415	---	---	412	491	235	404	645	590	613
15			505	---	---	418	516	372	450	683	623	645
16			495	---	---	522	400	332	363	689	646	659
17			578	---	---	486	473	406	449	685	610	660
18			515	---	---	422	488	285	388	609	383	487
19			556	---	---	478	383	283	325	469	373	412
20			501	---	---	426	446	387	421	508	470	483
21			499	---	---	422	484	449	476	565	511	547
22			490	---	---	416	524	490	508	---	---	565
23			505	528	495	510	551	506	528	630	602	618
24			365	541	249	458	550	505	522	610	570	581
25			358	306	215	241	530	506	518	662	578	631
26			415	274	239	254	529	516	524	689	651	670
27			450	288	276	282	574	527	550	692	641	664
28			476	300	285	290	577	529	555	681	621	651
29			484	311	300	307	574	551	562	724	657	695
30			485	379	313	345	584	554	565	723	674	699
31			490	---	---	---	603	477	567	724	681	699
MONTH			416	541	215	419	603	235	485	724	359	600

## TRINITY RIVER BASIN

351

08062000 EAST FORK TRINITY RIVER NEAR CRANDALL, TX--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	722	686	698	---	---	312	592	467	531	718	650	680
2	721	695	712	---	---	386	669	592	628	755	698	727
3	719	664	692	---	---	359	736	657	682	746	676	720
4	689	648	662	478	336	376	738	656	681	---	---	710
5	704	681	693	340	324	334	726	696	714	---	---	698
6	717	688	705	326	308	318	715	689	705	---	---	686
7	753	581	658	315	307	310	744	681	717	---	---	620
8	583	561	574	315	310	312	726	685	707	659	576	610
9	654	564	604	311	306	308	742	677	711	730	602	664
10	672	632	648	307	303	305	743	720	728	748	593	663
11	689	647	658	306	300	303	732	713	724	707	600	674
12	726	687	706	320	300	305	790	726	765	675	656	664
13	721	692	703	363	323	333	788	724	757	659	624	647
14	720	666	695	459	367	430	809	512	618	714	513	625
15	691	642	667	576	464	535	---	---	622	596	225	388
16	713	527	635	638	345	495	678	617	635	368	193	317
17	630	526	598	391	237	278	722	680	707	511	302	455
18	660	603	627	---	---	300	735	709	721	603	492	544
19	---	---	700	350	297	316	733	704	720	636	596	611
20	---	---	636	475	352	401	734	703	719	---	---	330
21	---	---	612	485	321	340	707	695	701	378	304	335
22	---	---	656	369	331	338	706	659	676	544	311	437
23	---	---	797	335	327	330	719	594	658	546	320	359
24	---	---	805	335	330	333	752	695	724	518	402	465
25	---	---	756	330	325	327	774	691	748	655	519	612
26	---	---	556	328	323	325	750	695	722	957	624	700
27	---	---	625	343	323	327	691	676	683	938	601	649
28	---	---	356	351	344	347	700	594	677	649	514	592
29	---	---	---	348	330	341	---	---	688	559	201	277
30	---	---	---	348	337	344	686	658	673	213	204	208
31	---	---	---	460	350	413	---	---	---	397	214	323
MONTH	753	526	658	638	237	348	809	467	691	957	193	548
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	527	324	434	---	---	296	---	---	692	---	---	678
2	406	229	345	---	---	288	---	---	712	---	---	649
3	316	200	243	---	---	289	---	---	718	---	---	641
4	308	210	294	---	---	293	---	---	699	---	---	640
5	308	305	306	---	---	301	---	---	726	---	---	677
6	525	305	317	---	---	316	---	---	715	---	---	686
7	602	214	305	---	---	496	---	---	736	---	---	675
8	---	---	305	---	---	618	---	---	696	---	---	656
9	---	---	296	---	---	751	---	---	685	---	---	641
10	315	202	274	---	---	726	---	---	694	---	---	612
11	318	304	309	---	---	746	---	---	722	---	---	619
12	350	201	279	---	---	732	---	---	716	---	---	607
13	---	---	291	---	---	646	---	---	689	---	---	592
14	---	---	312	---	---	621	---	---	677	---	---	414
15	---	---	346	---	---	576	---	---	686	---	---	420
16	---	---	321	680	352	561	---	---	696	---	---	496
17	---	---	295	710	388	588	---	---	666	---	---	563
18	---	---	312	738	432	669	---	---	659	---	---	481
19	---	---	326	741	453	689	---	---	646	---	---	496
20	---	---	319	678	405	622	---	---	636	---	---	520
21	---	---	296	---	---	619	---	---	631	---	---	496
22	---	---	284	676	316	617	---	---	624	---	---	546
23	---	---	282	---	---	612	---	---	646	---	---	591
24	---	---	318	---	---	646	---	---	688	---	---	641
25	---	---	301	---	---	586	---	---	717	---	---	626
26	---	---	291	711	444	617	---	---	677	---	---	606
27	---	---	284	709	424	627	---	---	664	---	---	621
28	---	---	282	702	426	644	---	---	656	---	---	642
29	---	---	296	718	423	624	---	---	620	---	---	621
30	---	---	305	---	---	606	---	---	658	---	---	596
31	---	---	---	---	---	706	---	---	647	---	---	---
MONTH	602	200	306	741	316	572	---	---	680	---	---	592

## TRINITY RIVER BASIN

08062000 EAST FORK TRINITY RIVER NEAR CRANDALL, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1				---	---	---	7.9	7.9	7.9	8.1	8.0	8.1
2				---	---	---	8.0	7.9	7.9	8.3	8.0	8.2
3				---	---	---	8.1	7.9	8.0	8.3	8.2	8.3
4				---	---	---	8.1	8.1	8.1	8.4	8.3	8.4
5				---	---	---	8.1	8.0	8.0	8.5	8.3	8.4
6				---	---	---	8.0	8.0	8.0	8.4	8.3	8.3
7				---	---	---	8.0	8.0	8.0	8.4	8.3	8.3
8				---	---	---	8.0	8.0	8.0	8.3	8.3	8.3
9				---	---	---	8.0	8.0	8.0	8.5	8.3	8.3
10				---	---	---	8.1	8.0	8.0	8.5	8.4	8.5
11				---	---	---	8.0	8.0	8.0	8.5	8.4	8.4
12				---	---	---	8.2	8.0	8.0	8.5	8.4	8.4
13				---	---	---	8.2	8.0	8.1	8.4	8.3	8.4
14				7.4	7.3	7.4	8.1	8.0	8.1	8.4	8.3	8.3
15				7.4	7.3	7.4	8.2	8.0	8.1	8.3	8.3	8.3
16				7.4	7.4	7.4	8.2	8.1	8.1	8.3	8.2	8.3
17				7.4	7.4	7.4	8.1	8.0	8.1	8.3	8.3	8.3
18				7.4	7.4	7.4	8.3	8.0	8.1	8.5	8.3	8.5
19				7.4	7.4	7.4	8.2	8.1	8.2	8.5	8.4	8.4
20				7.5	7.4	7.4	8.2	8.1	8.2	8.4	8.3	8.3
21				7.5	7.3	7.4	8.1	8.1	8.1	8.3	8.2	8.2
22				7.4	7.4	7.4	8.1	8.1	8.1	8.3	8.2	8.3
23				7.5	7.4	7.5	8.2	8.1	8.1	8.3	8.2	8.3
24				7.9	7.5	7.6	8.2	8.1	8.2	8.4	8.2	8.3
25				8.1	7.8	8.0	8.2	8.1	8.1	8.3	8.2	8.3
26				8.0	7.9	7.9	8.1	8.1	8.1	8.3	8.2	8.2
27				7.9	7.9	7.9	8.1	8.0	8.1	8.3	8.2	8.2
28				8.0	7.9	7.9	8.1	8.1	8.1	8.2	8.1	8.2
29				8.0	7.9	8.0	8.1	8.0	8.1	8.3	8.1	8.2
30				8.0	7.9	7.9	8.1	8.1	8.1	8.2	8.1	8.1
31				---	---	---	8.1	8.0	8.1	8.2	8.1	8.1
MONTH				8.1	7.3	7.6	8.3	7.9	8.1	8.5	8.0	8.3

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	8.1	8.0	8.0	---	---	---	8.0	7.9	7.9	7.5	7.4	7.4
2	8.1	8.0	8.0	---	---	---	7.9	7.8	7.8	7.5	7.4	7.4
3	8.0	8.0	8.0	---	---	---	7.8	7.7	7.8	7.4	7.3	7.4
4	8.0	7.9	8.0	8.5	8.2	8.4	7.8	7.7	7.8	7.7	7.3	7.4
5	7.9	7.9	7.9	8.5	8.4	8.5	7.7	7.6	7.7	7.7	7.4	7.5
6	7.9	7.9	7.9	8.5	8.4	8.4	7.6	7.6	7.6	7.5	7.4	7.4
7	7.9	7.8	7.8	8.4	8.3	8.3	7.6	7.5	7.6	7.5	7.4	7.5
8	7.8	7.7	7.8	8.4	8.2	8.3	7.6	7.5	7.5	7.5	7.4	7.4
9	7.8	7.8	7.8	8.5	8.3	8.4	7.6	7.4	7.5	7.5	7.4	7.4
10	7.9	7.8	7.8	8.6	8.3	8.5	7.6	7.4	7.5	7.4	7.3	7.4
11	7.9	7.8	7.8	8.7	8.4	8.5	7.4	7.3	7.4	7.4	7.3	7.4
12	7.9	7.9	7.9	8.6	8.3	8.5	7.3	7.2	7.3	7.4	7.3	7.3
13	7.9	7.9	7.9	8.4	8.3	8.4	7.2	7.1	7.1	7.4	7.3	7.3
14	7.9	7.8	7.9	8.3	8.0	8.1	7.2	7.0	7.1	7.4	7.2	7.3
15	7.9	7.8	7.9	8.0	7.9	8.0	7.3	7.0	7.2	7.5	7.2	7.4
16	7.9	7.8	7.8	8.2	7.8	8.0	7.4	7.2	7.3	7.4	7.3	7.3
17	7.8	7.8	7.8	8.2	7.9	8.1	7.4	7.2	7.3	7.3	7.3	7.3
18	7.8	7.8	7.8	8.1	7.9	8.0	7.4	7.2	7.3	7.4	7.3	7.3
19	---	---	---	8.2	8.0	8.1	7.4	7.2	7.2	7.3	7.3	7.3
20	---	---	---	8.1	8.0	8.1	7.4	7.2	7.3	7.6	7.2	7.3
21	---	---	---	8.4	8.0	8.3	7.3	7.2	7.3	7.3	7.2	7.2
22	---	---	---	8.3	8.2	8.3	7.3	7.2	7.3	7.3	7.2	7.2
23	---	---	---	8.3	8.1	8.2	7.3	7.2	7.3	7.4	7.2	7.4
24	---	---	---	8.4	8.1	8.3	7.3	7.2	7.3	7.3	7.2	7.2
25	---	---	---	8.6	8.3	8.4	7.3	7.2	7.3	7.3	7.2	7.2
26	---	---	---	8.6	8.3	8.4	7.3	7.2	7.2	7.3	7.2	7.2
27	---	---	---	8.7	8.3	8.5	7.2	7.1	7.2	7.3	7.2	7.2
28	---	---	---	8.4	8.3	8.3	7.2	7.2	7.2	7.3	7.1	7.2
29	---	---	---	8.4	8.3	8.4	7.5	7.2	7.3	7.6	7.1	7.3
30	---	---	---	8.4	8.3	8.4	7.5	7.4	7.4	7.4	7.2	7.3
31	---	---	---	8.3	8.0	8.1	---	---	---	7.3	7.2	7.2
MONTH	8.1	7.7	7.9	8.7	7.8	8.3	8.0	7.0	7.4	7.7	7.1	7.3

## TRINITY RIVER BASIN

353

08062000 EAST FORK TRINITY RIVER NEAR CRANDALL, TX--Continued

## PH (STANDARD UNITS), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	7.4	7.3	7.3	7.5	7.3	7.4	7.8	7.6	7.7	7.6	7.5	7.5
2	7.6	7.3	7.4	7.5	7.3	7.4	7.9	7.6	7.7	7.6	7.5	7.6
3	7.7	7.3	7.4	7.4	7.2	7.3	7.8	7.6	7.7	7.7	7.6	7.6
4	7.6	7.5	7.5	7.3	7.2	7.3	7.9	7.6	7.7	7.7	7.6	7.6
5	7.6	7.4	7.5	7.3	7.2	7.2	8.1	7.6	7.8	7.7	7.6	7.6
6	7.7	7.4	7.5	7.3	7.2	7.2	7.8	7.6	7.7	7.7	7.6	7.7
7	7.7	7.5	7.6	7.2	7.1	7.1	8.1	7.7	7.8	7.7	7.6	7.6
8	7.7	7.5	7.6	7.1	7.0	7.1	7.8	7.6	7.7	7.7	7.6	7.6
9	7.6	7.4	7.5	7.0	7.0	7.0	7.8	7.6	7.7	7.7	7.6	7.6
10	7.4	7.3	7.4	7.0	6.9	7.0	7.7	7.6	7.6	7.7	7.5	7.6
11	7.3	7.2	7.3	7.0	6.9	7.0	7.7	7.6	7.6	7.7	7.6	7.7
12	7.3	7.2	7.3	7.1	7.0	7.0	7.7	7.5	7.6	7.7	7.6	7.6
13	7.3	7.2	7.3	7.1	7.0	7.0	7.7	7.5	7.6	7.7	7.6	7.7
14	7.3	7.2	7.2	7.0	7.0	7.0	7.7	7.5	7.6	7.7	7.6	7.7
15	7.2	7.1	7.1	7.4	6.9	7.1	7.7	7.5	7.6	7.6	7.6	7.6
16	7.4	7.1	7.2	7.3	7.2	7.2	7.6	7.4	7.5	7.7	7.6	7.6
17	7.2	7.1	7.2	7.3	7.2	7.2	7.6	7.5	7.5	7.6	7.5	7.5
18	7.3	7.1	7.2	7.4	7.3	7.3	7.6	7.5	7.5	7.5	7.5	7.5
19	7.4	7.3	7.3	7.4	7.3	7.3	7.6	7.4	7.5	7.6	7.5	7.5
20	7.3	7.2	7.2	7.4	7.2	7.3	7.6	7.5	7.5	7.6	7.5	7.5
21	7.3	7.1	7.2	7.5	7.2	7.3	7.6	7.5	7.5	7.5	7.5	7.5
22	7.4	7.1	7.2	7.4	7.2	7.3	7.5	7.4	7.5	7.6	7.5	7.5
23	7.3	7.1	7.2	7.5	7.2	7.3	7.5	7.4	7.5	7.5	7.5	7.5
24	7.4	7.1	7.2	7.5	7.3	7.4	7.5	7.4	7.5	7.5	7.5	7.5
25	7.6	7.2	7.3	7.4	7.3	7.4	7.6	7.4	7.5	7.5	7.5	7.5
26	7.6	7.3	7.4	7.5	7.3	7.4	7.6	7.4	7.5	7.5	7.4	7.5
27	7.6	7.3	7.4	7.5	7.4	7.4	7.5	7.4	7.4	7.5	7.5	7.5
28	7.5	7.2	7.4	7.6	7.4	7.5	7.6	7.4	7.5	7.6	7.5	7.6
29	7.5	7.2	7.3	7.6	7.5	7.5	7.5	7.4	7.5	7.6	7.5	7.6
30	7.4	7.2	7.3	8.0	7.5	7.7	7.5	7.4	7.4	---	---	---
31	---	---	---	7.8	7.6	7.7	7.6	7.5	7.6	---	---	---
MONTH	7.7	7.1	7.3	8.0	6.9	7.3	8.1	7.4	7.6	7.7	7.4	7.6

## TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1				---	---	---	12.5	11.0	11.5	---	---	---
2				---	---	---	12.0	10.5	11.0	---	---	---
3				---	---	---	---	---	---	11.0	10.5	11.0
4				---	---	---	---	---	---	11.5	9.0	10.5
5				---	---	---	---	---	---	11.0	9.0	10.0
6				---	---	---	---	---	---	11.5	9.0	10.5
7				---	---	---	---	---	---	13.5	11.5	12.5
8				---	---	---	---	---	---	12.5	12.0	12.0
9				---	---	---	---	---	---	12.5	9.5	11.0
10				---	---	---	---	---	---	10.5	8.5	9.0
11				---	---	---	---	---	---	9.5	8.0	8.5
12				---	---	---	---	---	---	10.0	8.0	9.0
13				---	---	---	---	---	---	10.5	9.0	9.5
14				10.0	9.0	9.5	---	---	---	12.5	10.0	11.5
15				12.0	9.0	10.5	---	---	---	14.0	12.0	13.0
16				15.0	12.0	13.5	---	---	---	13.5	12.5	13.5
17				17.0	14.0	15.5	---	---	---	12.5	10.5	11.5
18				18.5	16.0	17.0	---	---	---	10.5	6.5	8.0
19				17.0	16.0	16.5	---	---	---	6.5	5.5	6.0
20				18.0	16.0	17.0	---	---	---	8.0	6.0	7.0
21				16.0	14.5	15.5	---	---	---	8.5	7.0	7.5
22				16.0	15.0	15.5	---	---	---	9.0	7.0	8.0
23				16.0	15.0	15.5	---	---	---	9.5	7.0	8.5
24				14.5	10.5	13.5	---	---	---	11.0	8.0	9.5
25				11.0	10.0	10.5	---	---	---	10.5	8.5	9.5
26				11.5	10.0	11.0	---	---	---	11.5	9.0	10.0
27				11.0	10.5	10.5	---	---	---	12.0	9.5	10.5
28				11.0	10.0	10.5	---	---	---	---	---	---
29				11.0	10.0	10.5	---	---	---	---	---	---
30				11.5	10.0	11.0	---	---	---	---	---	---
31				---	---	---	---	---	---	---	---	---
MONTH				18.5	9.0	13.0	12.5	10.5	11.5	14.0	5.5	10.0

## TRINITY RIVER BASIN

08062000 EAST FORK TRINITY RIVER NEAR CRANDALL, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1				---	---	---	15.0	11.5	13.5	24.0	23.0	23.5
2				---	---	---	14.0	12.5	13.5	24.5	22.0	23.5
3				---	---	---	14.5	11.5	13.0	25.0	23.0	24.0
4				13.5	11.5	12.5	15.5	12.0	13.5	24.0	20.5	22.5
5				13.5	11.0	12.0	15.0	13.0	14.0	22.0	20.0	21.0
6				14.0	11.0	12.5	16.5	13.5	15.0	24.5	21.5	23.0
7				13.5	11.0	12.5	17.0	14.5	15.5	25.0	22.5	23.5
8				13.0	12.0	12.5	17.5	15.0	16.5	25.0	23.0	24.0
9				14.5	12.5	13.5	19.5	15.5	17.5	25.5	23.0	24.0
10				14.0	12.0	13.0	20.0	16.5	18.5	26.0	23.0	24.5
11				14.0	11.5	13.0	21.0	17.5	19.5	26.5	23.5	25.0
12				13.5	11.5	13.0	22.5	19.0	20.5	26.0	24.0	25.0
13				13.5	12.0	13.0	22.0	19.5	21.0	26.5	24.0	25.0
14				15.0	13.0	14.0	19.5	16.5	17.5	27.0	24.5	25.5
15				17.0	14.5	16.0	19.5	15.5	17.5	25.5	23.0	24.5
16				17.5	13.5	16.0	21.5	17.5	19.5	25.0	23.0	24.0
17				17.0	13.5	15.0	23.0	19.0	21.0	26.5	24.0	25.0
18				15.5	13.5	14.5	24.5	20.5	22.5	26.5	25.0	25.5
19				16.5	14.0	15.0	25.0	22.0	23.5	26.0	25.0	25.5
20				18.5	16.0	17.5	25.5	22.5	24.0	25.0	22.0	23.5
21				18.5	13.5	15.0	24.0	22.0	23.0	24.5	22.5	23.5
22				16.5	14.0	15.5	23.0	20.5	22.0	27.5	24.5	25.5
23				16.5	14.0	15.0	23.0	20.0	21.5	27.0	24.0	25.0
24				15.0	11.5	13.5	23.5	20.0	22.0	26.0	25.0	25.5
25				14.5	12.5	13.5	24.0	20.5	22.5	27.5	25.0	26.0
26				14.0	13.0	13.5	24.5	21.0	22.5	27.5	25.5	26.5
27				16.0	12.5	14.0	25.0	21.5	23.0	27.0	26.0	26.5
28				15.5	13.5	14.5	25.5	22.0	23.5	26.0	24.5	25.5
29				14.0	11.0	12.0	25.0	23.0	24.0	24.0	21.0	22.0
30				11.5	10.5	11.0	25.5	22.5	24.0	24.0	22.0	22.5
31				13.0	10.5	11.5	---	---	---	25.5	23.5	24.5
MONTH				18.5	10.5	13.5	25.5	11.5	19.5	27.5	20.0	24.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	26.5	24.0	25.0	29.0	27.0	28.0	---	---	---	28.5	25.5	27.0
2	25.0	23.0	24.0	28.5	26.0	27.5	---	---	---	28.5	25.0	27.0
3	23.5	23.0	23.5	28.0	25.5	26.5	---	---	---	29.0	25.5	27.0
4	24.5	23.5	24.0	28.0	27.0	27.5	---	---	---	29.0	25.5	27.0
5	24.5	23.0	24.0	28.0	26.5	27.5	---	---	---	29.0	26.0	27.5
6	25.0	23.0	24.0	28.0	26.5	27.5	---	---	---	29.0	26.0	27.5
7	25.5	24.0	25.0	29.5	27.5	28.5	---	---	---	27.5	26.0	26.5
8	25.5	24.5	25.0	29.5	27.5	28.5	---	---	---	28.5	25.0	26.5
9	25.0	24.0	24.5	29.0	27.5	28.5	---	---	---	29.0	25.5	27.0
10	24.5	24.0	24.0	29.5	27.5	28.5	---	---	---	28.0	26.0	27.0
11	25.0	24.0	24.5	30.0	28.0	29.0	---	---	---	28.0	26.0	27.0
12	25.5	25.0	25.5	30.5	28.0	29.0	---	---	---	27.5	25.5	26.5
13	26.5	24.5	25.5	29.5	28.5	29.0	30.5	29.0	30.0	28.5	25.0	26.5
14	28.0	26.0	27.0	29.5	27.5	28.5	31.0	28.5	29.5	---	---	27.5
15	28.0	26.5	27.5	29.0	26.5	28.0	31.5	28.5	30.0	---	---	---
16	27.0	24.5	25.5	29.0	27.5	28.0	32.0	29.0	30.5	---	---	---
17	27.5	25.5	26.5	28.5	27.0	28.0	32.0	29.0	30.5	---	---	---
18	28.0	26.0	27.0	29.5	27.0	28.5	32.0	29.0	30.5	---	---	---
19	27.5	26.5	27.0	30.5	28.0	29.0	32.0	29.0	30.0	---	---	---
20	27.0	25.5	26.0	30.5	28.5	29.5	31.5	28.5	30.0	---	---	---
21	27.5	25.5	26.5	30.0	28.5	29.0	31.5	28.5	30.0	---	---	---
22	27.5	26.0	27.0	30.5	28.0	29.0	32.0	28.5	30.0	28.5	24.5	26.5
23	27.5	26.0	27.0	30.5	28.0	29.5	31.5	28.5	30.0	26.5	22.5	24.5
24	28.0	26.0	27.0	30.0	28.5	29.5	31.0	29.0	30.0	26.5	22.5	24.5
25	29.0	27.5	28.0	30.5	28.5	29.5	31.0	28.5	29.5	27.5	23.0	25.0
26	29.0	27.5	28.5	31.0	29.0	30.0	31.5	28.5	29.5	26.5	23.5	25.0
27	28.5	27.0	28.0	31.5	29.0	30.5	29.5	27.5	28.5	27.5	24.0	25.5
28	28.5	26.5	27.5	32.0	29.0	30.5	27.5	26.0	27.0	27.5	24.5	26.0
29	28.0	26.0	27.0	32.5	29.0	30.5	27.0	25.0	26.0	28.0	25.0	27.0
30	27.5	26.5	27.0	---	---	---	27.0	26.0	26.5	---	---	---
31	---	---	---	---	---	---	27.0	26.0	26.5	---	---	---
MONTH	29.0	23.0	26.0	32.5	25.5	28.5	32.0	25.0	29.0	29.0	22.5	26.5

## TRINITY RIVER BASIN

355

08062000 EAST FORK TRINITY RIVER NEAR CRANDALL, TX--Continued

OXYGEN, DISSOLVED (DO), MG/L, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1				---	---	---	8.0	7.7	7.9	7.9	7.4	7.6
2				---	---	---	8.3	7.9	8.0	8.3	7.4	7.9
3				---	---	---	9.4	8.2	8.8	7.7	6.8	7.3
4				---	---	---	9.1	8.4	8.7	8.1	6.8	7.6
5				---	---	---	8.4	8.0	8.2	8.8	7.2	8.0
6				---	---	---	8.1	7.7	7.9	8.5	6.8	7.6
7				---	---	---	7.9	7.4	7.7	8.0	6.2	6.9
8				---	---	---	7.3	6.4	6.8	7.3	6.3	6.6
9				---	---	---	7.4	6.7	7.1	9.9	6.5	7.7
10				---	---	---	7.5	6.7	7.1	10.2	8.9	9.8
11				---	---	---	7.7	6.9	7.2	9.8	9.0	9.4
12				---	---	---	8.0	6.9	7.3	9.7	8.6	9.1
13				---	---	---	8.0	6.5	7.0	8.8	8.0	8.4
14				3.5	2.7	3.1	7.0	6.1	6.5	8.3	7.0	7.7
15				4.4	3.4	3.9	6.5	5.6	6.1	7.7	6.4	6.9
16				4.8	3.8	4.5	6.4	6.0	6.3	6.8	6.1	6.3
17				4.1	3.0	3.5	6.0	5.6	5.9	7.3	6.2	6.7
18				4.5	3.4	4.1	5.9	4.4	5.2	11.1	7.4	9.8
19				4.7	3.7	4.2	4.5	4.0	4.2	11.3	10.7	11.2
20				5.0	4.2	4.7	5.5	4.4	4.9	10.7	10.0	10.5
21				5.1	4.2	4.5	5.7	5.5	5.6	10.0	9.3	9.7
22				4.8	4.3	4.5	5.9	4.7	5.6	9.4	8.6	9.1
23				5.3	4.7	4.9	5.4	4.7	5.1	9.3	8.1	8.8
24				6.9	5.2	5.7	6.2	5.2	5.5	8.1	6.2	7.4
25				7.3	6.7	7.0	5.6	5.1	5.3	6.4	5.6	5.9
26				7.4	6.8	7.1	6.0	5.2	5.6	5.9	5.2	5.5
27				7.0	6.7	6.8	6.6	5.8	6.3	5.5	4.9	5.3
28				7.7	7.0	7.3	6.9	6.4	6.7	5.0	4.3	4.8
29				8.0	7.7	7.9	7.9	6.7	7.0	4.3	3.4	3.8
30				8.2	7.9	8.0	7.3	7.0	7.2	3.5	3.2	3.4
31				---	---	---	7.5	7.1	7.3	3.6	3.2	3.4
MONTH				8.2	2.7	5.4	9.4	4.0	6.7	11.3	3.2	7.4
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	3.7	3.2	3.4	---	---	---	9.0	7.7	8.4	5.1	4.4	4.7
2	3.5	2.9	3.3	---	---	---	7.7	7.1	7.4	5.2	4.4	4.7
3	3.2	2.6	2.9	---	---	---	7.8	6.9	7.4	4.8	3.7	4.4
4	3.0	2.4	2.7	5.5	4.4	4.9	7.9	6.9	7.5	5.2	2.4	4.0
5	2.9	2.3	2.6	4.7	4.0	4.4	7.3	6.5	6.9	5.6	5.0	5.2
6	2.9	2.1	2.5	4.3	4.1	4.2	7.0	6.1	6.5	5.6	4.9	5.2
7	3.4	2.2	2.7	4.4	3.6	4.0	7.2	6.0	6.5	5.5	4.8	5.1
8	3.8	2.5	3.1	4.2	3.8	4.1	7.2	6.0	6.4	5.8	4.7	5.2
9	4.3	3.1	3.8	4.1	3.9	4.0	7.2	5.6	6.1	5.5	4.5	5.0
10	4.9	3.6	4.3	5.1	3.9	4.5	7.8	5.5	6.3	5.4	4.3	4.8
11	5.5	4.8	5.1	5.9	5.1	5.5	7.7	4.9	6.1	5.2	4.3	4.6
12	5.2	4.6	5.0	6.0	5.8	5.9	8.2	4.3	5.8	5.1	4.3	4.6
13	5.1	4.4	4.8	6.0	5.7	5.8	6.7	3.5	5.0	5.5	4.3	4.8
14	4.6	4.2	4.4	5.9	5.5	5.7	5.7	7	4.7	5.5	4.6	4.9
15	5.5	4.5	5.0	7.2	5.8	6.4	5.6	3.3	4.4	5.2	4.2	4.7
16	6.0	5.2	5.5	7.9	6.5	7.2	4.3	3.4	3.8	5.1	4.8	5.0
17	6.5	5.6	6.0	7.8	6.8	7.3	5.5	3.6	4.5	5.4	4.4	5.0
18	7.0	5.6	6.3	8.3	7.2	7.8	5.5	3.8	4.5	5.1	4.2	4.7
19	---	---	---	8.2	6.6	7.7	5.6	3.4	4.2	4.7	4.2	4.5
20	---	---	---	7.6	6.3	6.9	5.6	3.3	4.3	6.7	4.2	4.9
21	---	---	---	9.4	7.0	9.0	5.4	3.7	4.4	6.7	5.5	6.0
22	---	---	---	9.2	8.3	8.8	5.7	4.0	4.7	5.6	4.9	5.4
23	---	---	---	8.8	8.1	8.4	5.9	4.1	4.8	6.9	5.0	6.5
24	---	---	---	9.5	8.3	8.8	5.7	4.6	5.0	5.8	4.5	5.4
25	---	---	---	9.9	8.5	9.2	6.0	4.4	5.1	4.8	4.0	4.4
26	---	---	---	10.2	8.6	9.3	5.8	4.2	4.9	5.0	3.9	4.4
27	---	---	---	10.5	8.9	9.6	5.4	4.4	4.8	4.9	3.9	4.3
28	---	---	---	9.5	8.6	9.1	5.0	4.0	4.5	4.8	3.8	4.2
29	---	---	---	10.0	9.4	9.6	5.0	4.2	4.5	6.3	4.3	5.9
30	---	---	---	10.3	9.9	10.1	5.2	4.3	4.7	6.2	5.4	5.8
31	---	---	---	10.2	8.5	9.6	---	---	---	5.3	4.3	4.9
MONTH	7.0	2.1	4.1	10.5	3.6	7.1	9.0	.7	5.5	6.9	2.4	4.9

## TRINITY RIVER BASIN

08062000 EAST FORK TRINITY RIVER NEAR CRANDALL, TX--Continued

OXYGEN, DISSOLVED (DO), MG/L, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	6.7	5.2	5.6	7.9	7.0	7.5	5.7	3.8	4.5	4.8	4.0	4.3
2	6.9	5.8	6.3	7.5	6.4	7.1	6.9	3.4	4.7	6.0	4.6	5.7
3	7.0	5.1	5.6	7.6	6.5	7.1	6.4	3.4	4.7	6.1	4.8	5.5
4	7.1	6.5	6.8	8.0	6.9	7.4	6.9	3.6	5.0	6.4	5.0	5.5
5	7.2	6.1	6.6	7.9	7.3	7.6	10.7	3.9	6.0	6.2	5.0	5.5
6	7.2	6.0	6.7	7.9	7.0	7.5	6.2	3.8	4.8	6.8	4.7	5.6
7	7.9	6.6	7.2	6.9	5.2	6.2	9.1	4.5	6.1	6.3	4.7	5.4
8	7.4	6.9	7.1	5.3	4.7	5.0	6.4	4.2	5.1	5.7	4.1	5.0
9	7.1	6.3	6.8	5.5	4.8	5.1	6.0	4.1	4.9	5.6	4.3	4.8
10	---	---	---	5.3	4.3	4.7	6.1	3.9	4.7	5.1	4.5	5.0
11	5.7	5.2	5.4	5.4	4.2	4.7	6.3	3.8	4.8	4.9	4.1	4.7
12	5.5	4.7	5.1	6.3	4.2	4.9	5.5	3.6	4.3	5.5	4.3	4.9
13	8.9	5.2	6.1	5.8	3.9	4.6	5.5	3.8	4.4	5.5	3.5	5.0
14	7.5	5.0	5.7	5.7	4.3	4.8	5.8	3.6	4.5	5.6	5.3	5.4
15	---	---	---	6.5	4.5	5.0	5.9	3.9	4.7	6.1	5.0	5.6
16	---	---	---	5.9	4.3	4.9	5.8	3.9	4.7	5.5	4.8	5.1
17	6.0	5.2	5.6	5.4	4.3	4.8	6.2	4.0	4.9	5.8	4.7	5.4
18	7.3	4.9	5.5	5.5	4.1	4.6	5.7	3.9	4.6	5.1	4.4	4.8
19	7.1	6.3	6.8	5.5	4.0	4.6	5.7	3.5	4.4	5.4	4.0	4.7
20	6.7	6.2	6.4	5.6	4.0	4.6	5.7	3.8	4.6	5.3	4.4	5.0
21	7.5	6.2	6.6	6.8	4.0	4.9	5.5	3.9	4.5	6.0	4.4	5.0
22	7.8	6.1	6.8	6.0	4.0	4.6	5.2	3.9	4.4	5.9	4.3	5.0
23	7.8	6.2	6.9	6.5	4.0	5.0	5.5	3.7	4.4	6.0	5.0	5.3
24	7.8	6.2	6.8	5.2	4.0	4.4	5.5	3.7	4.4	6.4	5.0	5.6
25	7.2	5.4	6.2	5.1	3.1	4.1	5.7	3.8	4.6	7.3	4.9	5.6
26	7.5	5.5	6.4	5.3	3.5	4.5	6.4	3.8	4.8	6.5	4.9	5.3
27	8.5	5.8	7.1	5.5	4.0	4.6	4.7	3.5	4.2	6.5	4.9	5.5
28	8.1	6.5	7.3	5.8	4.0	4.7	5.0	3.8	4.3	6.2	4.1	5.1
29	7.9	6.3	6.9	5.9	4.2	4.8	5.2	4.0	4.6	6.0	4.0	4.9
30	7.8	6.5	7.1	7.9	4.0	5.1	4.7	3.8	4.2	---	---	---
31	---	---	---	6.3	3.9	4.8	4.6	3.8	4.3	---	---	---
MONTH	8.9	4.7	6.4	8.0	3.1	5.3	10.7	3.4	4.7	7.3	3.5	5.2

## TRINITY RIVER MAIN STEM

357

## 08062500 TRINITY RIVER NEAR ROSSER, TX

LOCATION.--Lat 32°25'35", long 96°27'46", Ellis County, Hydrologic Unit 12030105, on right bank at downstream side of right pier of bridge on State Highway 34, 2.5 mi south of Rosser, 8.5 mi downstream from East Fork Trinity River, and at mile 451.4.

DRAINAGE AREA.--8,147 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1924 to September 1925, October 1938 to current year. Monthly discharge only for some periods, published in WSP 1312.

REVISED RECORDS.--WSP 1922: Drainage area. WDR TX-77-1: 1942(M), drainage area.

GAGE.--Water-stage recorder. Datum of gage is 302.65 ft above National Geodetic Vertical Datum of 1929. July 25, 1924, to Sept. 30, 1925, nonrecording gage at abandoned lock and dam No. 7, 1.7 mi upstream from present site at datum 6.94 ft higher.

REMARKS.--Records good. At times, flow is affected by storage in 15 upstream reservoirs having combined capacity of 3,572,000 acre-ft, of which 1,138,000 acre-ft is for flood control. A levee system constructed in 1916 extends several miles upstream and downstream from station. The cities of Fort Worth with Dallas and several small cities divert considerable water for municipal use, of which about 60 percent is returned as sewage effluents that sustains low flows at this site. Flow may be effected at times by discharge from the flood-detention pools of 38 floodwater-retarding structures with a combined detention capacity of 22,680 acre-ft. These structures control runoff from 76.7 mi<sup>2</sup>. Two separate gage-height telemeters at station.

AVERAGE DISCHARGE.--50 years (water years 1925, 1939-87), 2,644 ft<sup>3</sup>/s (1,916,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 150,000 ft<sup>3</sup>/s Apr. 23, 1942, following numerous breaks in levee systems along both banks; maximum gage height, 41.55 ft Apr. 22, 1942, just prior to levee breaks; minimum discharge, 32 ft<sup>3</sup>/s for several days in 1924-25.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in May 1908 reached a stage of about 33 ft (present site and datum), from information by U.S. Army Corps of Engineers (discharge believed to have been about the same as that of Apr. 22, 1942).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 15,700 ft<sup>3</sup>/s Feb. 28 at 2300 hours (gage height, 25.76 ft); minimum daily, 593 ft<sup>3</sup>/s Aug. 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	888	815	1410	1400	4070	14400	5840	793	10700	7060	775	747
2	787	784	1310	1350	3870	14000	5670	799	8060	7000	742	776
3	752	775	1220	1360	3360	12200	5630	1600	8090	7290	704	754
4	742	838	1180	1520	2990	8320	5630	3160	9420	7160	705	751
5	1400	1920	1150	1480	2650	8010	5550	7930	9990	5020	721	747
6	2480	1730	1070	1390	2180	9130	5400	6320	10100	4410	715	744
7	2990	1080	1040	1520	2820	9990	5090	2120	9480	3560	733	728
8	1890	902	1240	1350	2740	10500	4850	1310	8750	3200	593	1050
9	1810	842	1350	1740	2230	10900	4740	1180	8420	2990	654	902
10	1660	807	1230	4730	2080	11200	4700	1060	9010	2880	647	794
11	1210	2410	1090	3580	1720	11400	4660	931	10100	2800	958	1220
12	1380	2580	1070	2020	1550	11100	4230	924	10800	2640	1060	1300
13	1410	1670	1980	1700	1770	9300	3730	1030	10900	2470	824	1980
14	1190	1290	2030	1620	1700	6110	3670	1180	10900	2440	748	1870
15	1110	1060	2330	1500	2080	4160	3130	1910	10800	2370	749	1220
16	982	976	3810	1470	2370	3130	2620	3760	10800	1470	724	1090
17	952	934	2300	1440	1920	6370	2000	4060	12300	1040	696	1050
18	923	927	3540	3210	1650	12100	1390	1660	14300	1870	712	851
19	902	881	7100	5120	1760	14500	1220	1190	13300	1700	685	974
20	876	984	5260	3450	3170	10800	1160	2570	12900	1040	669	914
21	876	1240	2550	2260	8100	8400	1130	3350	12600	872	663	749
22	887	1100	1840	2660	7060	8670	1140	1770	12100	816	717	707
23	970	1210	1800	3070	3890	8650	1110	1610	11600	800	731	683
24	2300	1380	2180	3390	3160	8700	1310	1200	10900	1170	713	687
25	2870	8000	1850	3590	5450	8620	1250	2040	9850	1030	801	663
26	1520	11500	1540	3560	7240	8160	864	1900	8990	843	754	637
27	1110	7080	1470	3530	10700	7890	799	1150	8620	744	742	647
28	967	3270	1420	3780	13800	7490	796	1090	8240	735	1330	628
29	892	2120	1350	4050	---	6880	786	5190	7670	734	1440	679
30	877	1690	1320	4110	---	6880	823	11400	7280	778	914	692
31	840	---	1400	4120	---	6470	---	13800	---	795	794	---
TOTAL	40443	62795	61430	81070	108080	284430	90918	89987	306970	79727	24413	27234
MEAN	1305	2093	1982	2615	3860	9175	3031	2903	10230	2572	788	908
MAX	2990	11500	7100	5120	13800	14500	5840	13800	14300	7290	1440	1980
MIN	742	775	1040	1350	1550	3130	786	793	7280	734	593	628
AC-FT	80220	124600	121800	160800	214400	564200	180300	178500	608900	158100	48420	54020
CAL YR 1986	TOTAL	1256950	MEAN	3444	MAX	21900	MIN	563	AC-FT	2493000		
WTR YR 1987	TOTAL	1257500	MEAN	3445	MAX	14500	MIN	593	AC-FT	2494000		

08062500 TRINITY RIVER NEAR ROSSER, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: October 1954 to current year. Chemical and biochemical analyses: January 1968 to current year. Pesticide analyses: January 1968 to July 1981. Sediment analyses: 1962, April to September 1964, April 1972 to April 1975.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1954 to current year.

pH: March 1977 to current year.

WATER TEMPERATURE: October 1954 to current year.

DISSOLVED OXYGEN: March 1977 to current year.

INSTRUMENTATION.--Beginning March 1977, a four-parameter water-quality monitor records temperature, DO, pH, and specific conductance 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, 2,990 microsiemens Oct. 13, 1956; minimum, 122 microsiemens Sept. 30, 1981.

pH: Maximum, 9.9 units July 12, 1982; minimum, 6.8 units Oct. 3, 19, 20, Nov. 19, 1980.

WATER TEMPERATURE: Maximum, 36.0°C July 1, 1955; minimum, 1.0°C on many days during winter months.

DISSOLVED OXYGEN: Maximum, 11.4 mg/L Feb. 12, 1986; minimum, 0.0 mg/L on several days during 1979-81.

## EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 762 microsiemens May 3; minimum, 241 microsiemens Nov. 25.

pH: Maximum, 8.1 units Mar. 30, 31, Apr. 1; minimum, 7.2 units on many days during year.

WATER TEMPERATURE: Maximum, 32.0°C on many days during July and August; minimum, 8.5°C Jan. 24-27, Feb. 21.

DISSOLVED OXYGEN: Maximum, 10.3 mg/L Jan. 26, 27; minimum, 0.7 mg/L May 4.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	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 (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03
NOV										
13...	0930	1790	480	7.40	12.0	8.4	76	7.4	140	33
JAN										
23...	1000	3110	492	7.90	8.0	10.8	92	3.3	160	20
APR										
14...	1445	3820	492	7.70	17.0	7.8	82	8.7	170	26
MAY										
02...	2320	865	--	--	--	--	--	--	--	--
03...	0120	967	--	--	--	--	--	--	--	--
03...	0320	1110	--	--	--	--	--	--	--	--
03...	0520	1260	--	--	--	--	--	--	--	--
03...	0720	1380	--	--	--	--	--	--	--	--
03...	0920	1530	--	--	--	--	--	--	--	--
03...	1120	1610	--	--	--	--	--	--	--	--
03...	1320	1670	--	--	--	--	--	--	--	--
03...	1520	1720	--	--	--	--	--	--	--	--
03...	1720	1740	--	--	--	--	--	--	--	--
03...	1920	1750	--	--	--	--	--	--	--	--
03...	2120	1750	--	--	--	--	--	--	--	--
JUN										
09...	1500	7920	386	7.70	24.5	6.9	83	3.4	130	17
JUL										
14...	1445	2510	459	7.50	27.5	6.6	84	10	140	27
SEP										
01...	1450	808	548	7.40	27.0	5.0	63	4.1	130	27
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 WH WAT TOTAL 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)
NOV										
13...	51	4.2	40	2	7.3	112	58	44	0.70	
JAN										
23...	56	5.0	36	1	5.9	140	59	32	0.50	
APR										
14...	58	5.5	37	1	5.5	141	53	38	0.50	
MAY										
02...	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--
JUN										
09...	44	4.8	24	1	4.6	113	37	25	0.30	
JUL										
14...	48	5.6	38	1	6.1	116	65	32	0.50	
SEP										
01...	45	4.7	60	2	9.6	105	69	60	1.0	

## TRINITY RIVER MAIN STEM

359

08062500 TRINITY RIVER NEAR ROSSER, TX--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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- PHORUS, TOTAL (MG/L AS P)
NOV 13...	8.5	280	3.26	0.240	3.50	0.400	0.80	1.2	1.40
JAN 23...	5.7	280	1.90	0.200	2.10	0.590	1.0	1.6	0.020
APR 14...	5.5	290	1.83	0.270	2.10	0.450	3.9	4.3	1.10
MAY 02...	--	--	7.76	0.340	8.10	0.070	1.5	1.6	--
03...	--	--	7.20	0.200	7.40	0.040	1.9	1.9	--
03...	--	--	7.17	0.130	7.30	0.040	1.1	1.1	--
03...	--	--	7.70	0.100	7.80	0.040	1.4	1.4	--
03...	--	--	6.97	0.030	7.00	0.030	0.77	0.80	--
03...	--	--	7.06	0.040	7.10	0.040	1.3	1.3	--
03...	--	--	6.35	0.050	6.40	0.040	2.0	2.0	--
03...	--	--	6.35	0.050	6.40	0.030	1.1	1.1	--
03...	--	--	6.48	0.020	6.50	0.040	2.0	2.0	--
03...	--	--	--	<0.010	7.00	0.040	1.9	1.9	--
03...	--	--	5.97	0.030	6.00	0.030	0.77	0.80	--
03...	--	--	5.76	0.040	5.80	0.030	1.4	1.4	--
JUN 09...	5.1	210	0.920	0.080	1.00	0.120	1.3	1.4	0.740
JUL 14...	6.9	270	1.92	0.080	2.00	0.070	0.83	0.90	1.40
SEP 01...	8.7	320	4.19	0.510	4.70	0.700	0.80	1.5	3.40

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1986 TO SEPTEMBER 1987

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. 1986	40443	552	311	34000	39	4270	67	7360	160
NOV. 1986	62795	469	265	44900	32	5360	57	9580	140
DEC. 1986	61430	538	303	50300	37	6200	65	10800	160
JAN. 1987	81070	525	296	64800	36	7870	63	13900	150
FEB. 1987	108080	464	263	76700	30	8770	55	16100	150
MAR. 1987	284430	414	235	180000	25	19400	49	37300	140
APR. 1987	90918	492	278	68200	33	8020	59	14500	150
MAY 1987	89987	446	252	61300	29	7050	53	12900	140
JUNE 1987	306970	382	217	180000	23	18700	44	36900	130
JULY 1987	79727	427	242	52000	27	5770	50	10900	140
AUG. 1987	24413	636	358	23600	48	3150	79	5210	160
SEPT 1987	27234	600	337	24800	44	3230	74	5440	160
TOTAL	1257497	**	**	861000	**	97800	**	181000	**
WTD. AVG.	3445	448	254	**	29	**	53	**	140

## TRINITY RIVER MAIN STEM

08062500 TRINITY RIVER NEAR ROSSER, TX--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	648	558	610	727	695	717	555	514	537	638	616	628
2	694	656	682	734	691	710	585	558	573	648	610	622
3	710	698	705	751	726	737	609	583	596	644	620	635
4	698	678	684	751	729	738	626	588	605	628	604	618
5	702	672	689	731	598	670	615	592	606	632	608	619
6	656	436	557	610	532	570	611	596	605	618	598	612
7	470	382	426	614	569	596	608	596	602	614	580	605
8	494	458	474	595	574	580	657	610	636	646	596	619
9	532	496	517	651	599	621	655	643	647	626	592	612
10	540	484	508	696	653	677	644	618	631	624	416	504
11	560	486	526	700	501	610	642	607	620	484	436	465
12	582	528	558	521	449	484	607	589	599	560	474	512
13	592	556	579	519	466	495	648	602	627	592	560	573
14	578	540	559	551	521	538	634	524	549	620	594	609
15	602	570	585	581	551	565	541	513	523	612	598	606
16	608	596	602	627	583	602	537	450	487	618	608	612
17	649	610	626	661	627	643	524	462	503	---	---	606
18	663	634	643	661	644	651	532	455	516	---	---	601
19	692	652	664	672	657	659	435	387	417	---	---	597
20	717	673	681	686	655	668	436	390	411	---	---	555
21	704	666	674	686	674	679	513	440	476	---	---	544
22	691	637	656	644	603	614	559	519	541	---	---	526
23	699	424	624	656	618	638	584	561	573	---	---	505
24	394	334	361	659	422	601	600	572	590	505	471	494
25	453	367	405	338	241	296	601	583	590	472	450	465
26	496	459	474	370	280	322	629	590	601	466	452	460
27	583	500	542	372	355	363	618	593	608	467	453	460
28	626	585	605	408	368	387	619	595	610	453	439	448
29	640	622	628	451	412	438	620	614	617	439	430	436
30	691	643	668	513	448	480	---	---	624	436	422	431
31	726	693	708	---	---	---	638	624	631	442	426	435
MONTH	726	334	588	751	241	578	657	387	573	648	416	549
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	437	429	432	401	375	384	450	442	447	746	736	742
2	449	425	439	401	378	386	454	442	447	734	710	719
3	468	445	456	447	403	423	448	440	444	762	650	736
4	468	454	461	478	447	463	453	445	449	618	356	536
5	475	456	464	460	421	442	457	443	450	384	316	348
6	519	473	492	421	407	416	457	441	451	394	336	364
7	537	515	524	409	394	404	469	453	462	484	398	439
8	530	510	521	414	392	403	477	465	471	592	490	543
9	516	500	508	414	407	411	469	461	466	628	586	601
10	529	503	512	411	407	409	469	457	463	660	628	643
11	549	527	532	407	401	404	464	454	460	678	636	662
12	585	557	576	426	407	419	486	460	474	678	628	655
13	602	586	597	448	428	439	484	476	480	674	662	669
14	606	560	579	473	450	465	496	472	485	704	654	683
15	579	551	565	499	469	482	529	483	505	672	532	639
16	571	551	563	540	505	521	525	508	516	564	394	461
17	566	549	557	544	370	474	555	519	527	584	336	387
18	630	564	592	368	348	357	581	555	569	480	402	441
19	629	586	602	388	348	362	613	577	595	540	484	513
20	597	468	545	436	392	418	622	611	619	608	396	519
21	446	363	404	445	417	428	630	607	622	444	320	390
22	438	406	420	421	413	415	643	621	630	522	428	478
23	483	440	466	413	403	407	656	641	649	566	492	553
24	537	481	507	411	399	404	663	642	648	638	510	577
25	543	456	496	405	399	403	677	609	644	674	484	606
26	461	421	439	407	401	403	643	602	617	638	490	562
27	415	396	406	423	409	415	697	645	671	544	494	516
28	412	378	388	432	413	424	738	699	716	594	520	562
29	---	---	---	440	426	430	748	732	736	594	280	491
30	---	---	---	434	426	431	754	726	744	348	282	325
31	---	---	---	448	426	439	---	---	---	366	322	334
MONTH	630	363	502	544	348	422	754	440	549	762	280	539

## 08062500 TRINITY RIVER NEAR ROSSER, TX--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	420	370	400	378	363	371	688	658	669	566	548	555
2	456	420	440	368	357	363	690	654	668	612	570	596
3	444	396	419	380	359	368	688	678	682	660	614	635
4	410	390	399	370	304	332	688	664	673	656	632	643
5	402	398	401	374	345	364	670	650	661	654	638	645
6	402	396	400	378	367	373	692	642	664	672	652	659
7	400	390	396	434	359	405	690	662	673	692	672	681
8	394	382	389	438	388	429	674	652	662	702	674	695
9	388	380	385	433	421	426	680	662	670	664	566	640
10	398	376	387	437	422	427	678	642	665	582	534	563
11	382	356	368	441	423	432	706	680	693	624	516	588
12	384	340	361	436	424	432	700	567	650	598	536	568
13	360	350	355	425	415	420	592	533	558	610	492	556
14	364	350	355	458	408	430	594	570	588	480	410	448
15	390	352	370	460	445	453	649	591	612	490	468	484
16	398	356	390	469	459	464	676	649	662	540	484	517
17	372	350	361	544	471	501	---	---	640	566	534	549
18	392	366	374	624	552	585	---	---	626	560	548	555
19	400	380	394	585	515	545	---	---	649	634	554	586
20	392	376	385	555	497	511	---	---	643	646	620	638
21	398	390	393	543	500	517	---	---	597	614	560	590
22	396	390	392	590	544	559	---	---	586	638	562	604
23	392	374	383	643	591	621	---	---	605	644	630	639
24	390	371	376	665	508	613	---	---	591	664	624	647
25	384	374	377	628	538	594	---	---	636	680	664	671
26	379	365	374	656	601	630	---	---	646	684	668	676
27	369	360	365	623	575	594	---	---	686	710	680	694
28	367	356	362	658	629	644	699	661	677	746	708	723
29	364	357	361	664	650	657	665	550	597	---	---	725
30	369	356	361	714	654	669	586	560	573	---	---	730
31	---	---	---	694	680	689	561	541	553	---	---	---
MONTH	456	340	382	714	304	497	706	533	637	746	410	617

PH (STANDARD UNITS), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	7.4	7.3	7.4	7.3	7.2	7.2	7.6	7.6	7.6	7.7	7.6	7.6
2	7.4	7.4	7.4	7.2	7.2	7.2	7.6	7.6	7.6	7.7	7.6	7.6
3	7.4	7.4	7.4	7.3	7.2	7.2	7.6	7.6	7.6	7.7	7.6	7.6
4	7.4	7.4	7.4	7.2	7.2	7.2	7.6	7.6	7.6	7.7	7.6	7.7
5	7.4	7.3	7.4	7.3	7.2	7.2	7.6	7.6	7.6	7.7	7.6	7.6
6	7.5	7.3	7.4	7.4	7.2	7.3	7.6	7.6	7.6	7.7	7.6	7.6
7	7.6	7.5	7.5	7.4	7.3	7.3	7.6	7.5	7.5	7.6	7.5	7.6
8	7.6	7.5	7.5	7.4	7.2	7.3	7.5	7.5	7.5	7.6	7.5	7.6
9	7.5	7.4	7.4	7.3	7.2	7.2	7.5	7.5	7.5	7.6	7.5	7.6
10	7.4	7.3	7.4	7.3	7.2	7.2	7.6	7.5	7.6	7.8	7.6	7.7
11	7.5	7.4	7.4	7.4	7.2	7.3	7.6	7.6	7.6	7.8	7.7	7.8
12	7.6	7.4	7.5	7.4	7.2	7.3	7.6	7.6	7.6	7.8	7.7	7.7
13	7.6	7.4	7.5	7.6	7.4	7.5	7.6	7.5	7.5	7.7	7.6	7.7
14	7.5	7.4	7.5	7.6	7.5	7.5	7.7	7.6	7.6	7.7	7.6	7.6
15	7.6	7.4	7.5	7.6	7.4	7.5	7.7	7.6	7.7	7.7	7.6	7.6
16	7.6	7.4	7.5	7.4	7.4	7.4	7.7	7.6	7.6	7.6	7.5	7.6
17	7.4	7.3	7.4	7.4	7.3	7.3	7.7	7.6	7.7	---	---	---
18	7.4	7.3	7.3	7.4	7.3	7.3	7.7	7.6	7.6	---	---	---
19	7.4	7.3	7.3	7.3	7.3	7.3	7.7	7.7	7.7	---	---	---
20	7.4	7.3	7.3	7.3	7.3	7.3	7.8	7.7	7.7	---	---	---
21	7.4	7.3	7.3	7.3	7.2	7.3	7.8	7.7	7.7	---	---	---
22	7.4	7.3	7.3	7.4	7.3	7.4	7.8	7.7	7.7	---	---	---
23	7.4	7.2	7.3	7.4	7.4	7.4	7.8	7.7	7.7	---	---	---
24	7.6	7.5	7.5	7.7	7.4	7.5	7.8	7.7	7.7	7.8	7.8	7.8
25	7.6	7.4	7.4	8.0	7.7	7.8	7.8	7.7	7.7	7.9	7.8	7.8
26	7.5	7.4	7.4	7.8	7.6	7.7	7.7	7.6	7.7	7.9	7.8	7.9
27	7.5	7.4	7.4	7.7	7.6	7.6	7.7	7.6	7.7	7.9	7.8	7.8
28	7.4	7.3	7.4	7.7	7.6	7.6	7.7	7.6	7.7	7.9	7.8	7.9
29	7.4	7.3	7.3	7.7	7.6	7.7	7.7	7.6	7.7	7.9	7.8	7.9
30	7.3	7.2	7.3	7.7	7.6	7.6	---	---	---	7.9	7.9	7.9
31	7.3	7.2	7.2	---	---	---	7.7	7.6	7.6	8.0	7.8	7.9
MONTH	7.6	7.2	7.4	8.0	7.2	7.4	7.8	7.5	7.6	8.0	7.5	7.7

## TRINITY RIVER MAIN STEM

08062500 TRINITY RIVER NEAR ROSSER, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	7.9	7.9	7.9	7.9	7.9	7.9	8.1	8.0	8.0	7.7	7.5	7.6
2	7.9	7.8	7.9	7.9	7.9	7.9	8.0	7.9	8.0	7.7	7.5	7.6
3	7.9	7.8	7.8	7.9	7.9	7.9	8.0	8.0	8.0	7.6	7.4	7.5
4	7.8	7.8	7.8	7.9	7.9	7.9	8.0	8.0	8.0	7.6	7.4	7.5
5	7.8	7.7	7.8	8.0	7.9	8.0	8.0	8.0	8.0	7.6	7.5	7.6
6	7.7	7.6	7.7	8.0	8.0	8.0	8.0	7.9	8.0	7.6	7.5	7.5
7	7.7	7.6	7.7	8.0	8.0	8.0	8.0	7.9	7.9	7.5	7.5	7.5
8	7.7	7.7	7.7	8.0	8.0	8.0	8.0	7.9	7.9	7.5	7.4	7.4
9	7.7	7.6	7.7	8.0	8.0	8.0	8.0	7.9	7.9	7.5	7.4	7.5
10	7.8	7.6	7.7	8.0	8.0	8.0	8.0	7.9	7.9	7.6	7.4	7.5
11	7.7	7.6	7.7	8.0	8.0	8.0	8.0	7.9	7.9	7.5	7.4	7.5
12	7.7	7.6	7.6	8.0	8.0	8.0	7.9	7.8	7.9	7.6	7.4	7.5
13	7.6	7.5	7.5	8.0	7.9	8.0	7.8	7.8	7.8	7.5	7.4	7.4
14	7.6	7.5	7.5	8.0	7.9	7.9	7.9	7.7	7.8	7.5	7.3	7.4
15	7.6	7.5	7.6	7.9	7.8	7.9	7.8	7.7	7.7	7.5	7.3	7.4
16	7.7	7.6	7.6	7.8	7.7	7.8	7.8	7.7	7.7	7.4	7.3	7.4
17	7.8	7.6	7.7	7.8	7.7	7.7	7.7	7.6	7.7	7.5	7.4	7.5
18	7.8	7.7	7.7	7.8	7.7	7.7	7.6	7.5	7.6	7.5	7.5	7.5
19	7.8	7.7	7.8	7.8	7.8	7.8	7.6	7.5	7.5	7.5	7.5	7.5
20	7.9	7.8	7.8	7.8	7.8	7.8	7.5	7.5	7.5	7.7	7.4	7.5
21	8.0	7.9	7.9	7.9	7.8	7.9	7.6	7.5	7.5	7.5	7.4	7.5
22	7.9	7.8	7.9	7.9	7.9	7.9	7.6	7.5	7.6	7.5	7.5	7.5
23	7.9	7.8	7.8	7.9	7.9	7.9	7.6	7.4	7.5	7.6	7.5	7.5
24	7.9	7.8	7.8	8.0	7.9	7.9	7.5	7.4	7.4	7.6	7.5	7.5
25	7.9	7.8	7.9	8.0	8.0	8.0	7.5	7.4	7.4	7.6	7.5	7.5
26	7.9	7.9	7.9	8.0	8.0	8.0	7.6	7.5	7.6	7.7	7.5	7.6
27	7.9	7.8	7.9	8.0	8.0	8.0	7.6	7.4	7.5	7.7	7.6	7.6
28	7.9	7.9	7.9	8.0	7.9	8.0	7.6	7.4	7.5	7.6	7.6	7.6
29	---	---	---	8.0	8.0	8.0	7.6	7.5	7.5	7.8	7.5	7.6
30	---	---	---	8.1	8.0	8.1	7.7	7.5	7.6	7.8	7.7	7.7
31	---	---	---	8.1	8.0	8.1	---	---	---	7.7	7.6	7.6
MONTH	8.0	7.5	7.8	8.1	7.7	7.9	8.1	7.4	7.7	7.8	7.3	7.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	7.6	7.6	7.6	7.7	7.6	7.6	7.8	7.5	7.6	7.5	7.2	7.4
2	7.7	7.7	7.7	7.6	7.6	7.6	7.8	7.5	7.6	7.6	7.5	7.5
3	7.8	7.7	7.8	7.6	7.5	7.5	7.7	7.5	7.6	7.6	7.5	7.5
4	7.8	7.7	7.8	7.5	7.4	7.5	7.7	7.6	7.6	7.6	7.5	7.5
5	7.8	7.8	7.8	7.5	7.4	7.4	7.7	7.6	7.6	7.6	7.5	7.5
6	7.8	7.8	7.8	7.5	7.5	7.5	7.7	7.6	7.6	7.6	7.5	7.6
7	7.8	7.8	7.8	7.6	7.5	7.5	7.7	7.6	7.6	7.6	7.5	7.5
8	7.8	7.8	7.8	7.6	7.5	7.5	7.7	7.5	7.6	7.5	7.4	7.5
9	7.8	7.7	7.8	7.5	7.5	7.5	7.6	7.5	7.6	7.6	7.5	7.5
10	7.8	7.7	7.7	7.5	7.4	7.5	7.5	7.4	7.5	7.7	7.4	7.5
11	7.7	7.6	7.7	7.4	7.4	7.4	7.5	7.4	7.4	7.7	7.4	7.4
12	7.7	7.6	7.6	7.5	7.4	7.4	7.4	7.3	7.3	7.5	7.4	7.4
13	7.6	7.6	7.6	7.5	7.4	7.5	7.4	7.3	7.4	7.5	7.3	7.4
14	7.6	7.6	7.6	7.6	7.4	7.5	7.4	7.4	7.4	7.5	7.4	7.4
15	7.6	7.6	7.6	7.6	7.5	7.6	7.4	7.4	7.4	7.5	7.5	7.5
16	7.6	7.6	7.6	7.6	7.5	7.6	---	---	---	7.5	7.4	7.4
17	7.6	7.6	7.6	7.7	7.5	7.6	---	---	---	7.4	7.3	7.4
18	7.6	7.6	7.6	7.6	7.3	7.4	---	---	---	7.5	7.3	7.4
19	7.6	7.6	7.6	7.4	7.2	7.3	---	---	---	7.5	7.4	7.4
20	7.6	7.6	7.6	7.5	7.3	7.4	---	---	---	7.5	7.4	7.5
21	7.7	7.6	7.6	7.4	7.3	7.3	---	---	---	7.6	7.4	7.5
22	7.7	7.6	7.6	7.5	7.3	7.4	---	---	---	7.6	7.5	7.5
23	7.7	7.6	7.7	7.5	7.4	7.4	---	---	---	7.6	7.5	7.6
24	7.8	7.6	7.7	7.5	7.3	7.4	---	---	---	7.6	7.5	7.6
25	7.7	7.6	7.6	7.4	7.3	7.4	---	---	---	7.6	7.5	7.5
26	7.7	7.6	7.7	7.5	7.4	7.4	---	---	---	7.6	7.5	7.5
27	7.7	7.7	7.7	7.6	7.4	7.5	---	---	---	7.6	7.5	7.5
28	7.7	7.7	7.7	7.7	7.6	7.6	7.5	7.3	7.4	7.6	7.5	7.5
29	7.7	7.7	7.7	7.8	7.7	7.7	7.3	7.2	7.3	---	---	---
30	7.7	7.6	7.7	7.8	7.6	7.7	7.4	7.3	7.4	---	---	---
31	---	---	---	7.7	7.5	7.6	7.4	7.3	7.4	---	---	---
MONTH	7.8	7.6	7.7	7.8	7.2	7.5	7.8	7.2	7.5	7.7	7.2	7.5

## TRINITY RIVER MAIN STEM

363

08062500 TRINITY RIVER NEAR ROSSER, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	28.0	27.5	28.0	22.0	21.0	21.5	13.0	12.5	12.5	12.0	11.5	11.5
2	28.5	27.5	28.0	21.5	20.5	21.0	12.5	12.0	12.5	11.5	11.0	11.5
3	27.5	27.5	27.5	21.5	20.5	21.0	12.5	12.0	12.0	12.0	11.0	11.5
4	28.0	27.0	27.5	21.5	20.5	21.0	12.5	12.0	12.0	12.0	10.5	11.5
5	27.0	25.5	26.0	20.5	19.0	19.5	13.5	12.5	13.0	11.5	11.0	11.0
6	25.5	23.0	24.5	19.0	18.5	18.5	13.5	13.0	13.5	12.5	11.0	11.5
7	23.0	21.5	22.0	18.5	18.0	18.5	14.5	13.5	14.0	13.0	12.0	12.5
8	23.0	22.0	22.5	19.0	18.0	18.5	15.0	14.5	15.0	13.0	12.5	12.5
9	23.5	23.0	23.0	19.0	18.5	19.0	15.0	14.0	14.5	13.0	12.0	12.5
10	24.0	23.0	23.5	18.5	18.0	18.5	14.0	12.0	13.0	12.0	10.0	11.0
11	24.0	23.5	24.0	17.5	15.0	16.5	12.0	11.0	11.5	10.0	9.0	9.5
12	23.5	21.0	22.0	15.0	13.5	14.5	11.5	10.5	11.0	10.0	9.0	9.5
13	20.5	20.0	20.5	13.5	12.0	12.5	12.0	10.5	11.5	10.5	10.0	10.5
14	20.5	19.5	20.0	12.0	12.0	12.0	12.0	10.5	11.0	12.0	10.5	11.5
15	20.5	19.5	20.0	13.0	11.5	12.0	12.0	10.5	11.0	13.5	12.0	13.0
16	20.5	20.0	20.5	15.0	13.0	14.0	12.0	12.0	12.0	13.5	12.5	13.0
17	21.0	20.0	20.5	16.5	15.5	16.0	13.0	12.0	12.5	---	---	---
18	21.5	21.0	21.0	18.0	16.5	17.5	13.0	12.0	12.5	---	---	---
19	22.0	21.0	21.5	18.0	17.5	18.0	12.0	11.0	11.5	---	---	---
20	22.0	21.5	22.0	18.0	17.5	18.0	11.0	10.5	11.0	---	---	---
21	22.0	21.5	21.5	18.0	17.0	17.5	11.5	11.0	11.0	---	---	---
22	21.5	21.0	21.5	17.0	16.5	17.0	12.0	11.5	12.0	---	---	---
23	22.0	20.5	21.5	16.5	15.5	16.5	12.0	11.5	11.5	---	---	---
24	20.5	20.0	20.5	15.5	11.5	15.0	12.0	11.0	11.5	10.0	8.5	9.0
25	20.5	20.0	20.5	12.0	10.5	11.0	12.5	12.0	12.0	9.5	8.5	9.0
26	20.5	19.5	20.0	12.5	11.0	12.0	13.0	12.5	12.5	9.5	8.5	9.0
27	20.0	19.5	19.5	12.0	11.5	11.5	13.0	12.0	12.5	10.0	8.5	9.0
28	20.5	19.5	20.0	11.5	11.0	11.5	12.0	12.0	12.0	10.5	9.0	10.0
29	21.0	20.0	20.5	12.0	11.0	11.5	12.0	11.5	12.0	11.5	10.0	11.0
30	21.5	20.5	21.0	13.0	11.0	12.0	12.0	11.5	12.0	11.5	10.5	11.0
31	21.5	21.0	21.0	---	---	---	12.5	11.5	12.0	11.0	10.0	10.5
MONTH	28.5	19.5	22.5	22.0	10.5	16.0	15.0	10.5	12.0	13.5	8.5	11.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	11.5	10.5	11.0	13.0	12.5	12.5	14.0	12.0	13.0	24.0	23.0	24.0
2	12.0	10.5	11.5	12.5	12.0	12.0	13.5	13.0	13.5	24.5	23.0	23.5
3	13.0	11.5	12.0	13.0	12.0	12.5	14.0	12.5	13.0	24.5	23.5	24.0
4	13.5	12.0	12.5	13.5	12.5	13.0	14.0	12.5	13.0	24.0	21.5	23.0
5	13.0	12.5	13.0	13.5	12.5	13.0	14.0	13.0	13.5	21.5	20.5	21.5
6	13.0	12.5	12.5	13.5	12.5	13.0	14.0	13.0	13.5	23.0	21.0	22.0
7	12.5	12.0	12.5	13.5	12.5	13.0	14.5	13.0	14.0	23.5	23.0	23.0
8	12.5	11.5	12.0	14.0	13.0	13.5	15.5	14.0	14.5	24.5	23.0	24.0
9	12.5	11.5	12.0	14.0	13.0	13.5	16.0	14.5	15.0	25.0	24.0	24.5
10	12.5	11.5	12.0	13.5	13.0	13.5	17.0	15.0	16.0	25.5	24.0	24.5
11	14.0	12.5	13.5	13.0	12.5	12.5	17.5	15.5	16.5	26.0	25.0	25.5
12	15.5	14.0	15.0	13.5	12.5	13.0	19.0	16.5	17.5	26.0	25.5	26.0
13	16.5	15.5	16.0	14.0	13.0	13.5	19.0	18.0	18.5	26.5	25.5	26.0
14	16.0	15.5	16.0	14.5	13.0	14.0	18.0	16.5	17.0	27.0	26.0	26.5
15	16.0	15.5	15.5	15.5	14.0	14.5	17.5	15.5	16.5	26.5	25.5	26.0
16	15.5	14.0	14.5	16.5	15.5	16.0	18.5	16.5	17.5	26.0	24.0	25.0
17	13.5	12.0	13.0	16.5	15.5	16.0	19.5	18.0	19.0	26.0	23.5	24.5
18	12.5	11.5	12.0	16.0	15.0	15.5	21.5	19.5	20.5	26.5	25.5	26.0
19	12.5	11.5	12.0	16.0	14.5	15.5	22.5	21.0	21.5	26.5	26.0	26.0
20	11.5	9.5	10.5	16.5	15.5	16.0	23.5	22.0	22.5	26.0	25.0	25.5
21	10.0	8.5	9.0	16.5	15.5	16.0	23.0	22.0	22.5	26.0	23.5	25.0
22	10.5	9.5	10.0	17.0	15.5	16.0	22.0	20.5	21.5	28.0	26.0	26.5
23	11.5	10.0	11.0	16.5	15.5	16.5	22.0	21.0	21.5	27.5	27.0	27.5
24	11.5	11.5	11.5	15.5	14.5	15.0	22.5	21.0	21.5	27.5	26.5	27.0
25	12.0	11.5	11.5	15.0	14.5	14.5	22.5	21.5	22.0	27.0	25.5	26.5
26	11.5	11.0	11.5	14.5	14.0	14.0	22.5	21.5	22.0	27.0	26.0	26.5
27	12.5	11.5	12.0	15.0	14.0	14.5	23.5	22.0	23.0	27.0	26.0	26.5
28	13.0	12.5	12.5	15.5	14.5	15.0	24.5	23.0	23.5	26.5	25.5	26.0
29	---	---	---	14.5	12.5	13.5	24.5	23.5	24.0	25.5	21.5	23.5
30	---	---	---	12.5	12.0	12.0	24.5	23.5	24.0	23.0	21.5	22.0
31	---	---	---	13.0	11.5	12.0	---	---	---	23.5	22.5	23.0
MONTH	16.5	8.5	12.5	17.0	11.5	14.0	24.5	12.0	18.5	28.0	20.5	25.0

## TRINITY RIVER MAIN STEM

08062500 TRINITY RIVER NEAR ROSSER, TX--Continued

## TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	25.5	23.5	24.5	27.5	26.5	27.0	32.0	31.0	31.5	27.5	26.0	27.0
2	26.0	25.0	25.5	27.0	26.5	27.0	32.0	31.0	31.5	27.5	26.5	27.0
3	25.0	24.0	24.5	27.5	26.0	26.5	32.0	31.0	31.5	28.5	27.0	27.5
4	24.0	23.5	24.0	28.0	26.0	27.0	32.0	31.0	31.5	28.5	27.0	28.0
5	24.5	23.5	24.0	28.5	27.0	28.0	32.0	30.5	31.5	28.5	27.5	28.0
6	25.0	23.5	24.5	29.0	27.5	28.0	32.0	31.0	31.5	28.5	27.5	28.0
7	25.5	24.0	24.5	28.5	27.5	28.0	32.0	31.0	31.5	28.0	27.5	28.0
8	25.0	24.0	24.5	28.5	28.0	28.0	32.0	31.0	31.5	28.5	27.0	27.5
9	24.5	24.0	24.5	28.0	27.5	28.0	32.0	31.0	31.5	28.0	27.5	28.0
10	24.5	24.0	24.0	28.5	27.5	28.0	32.0	31.0	31.5	28.0	27.0	27.5
11	24.5	24.0	24.5	28.5	27.5	28.0	32.0	30.5	31.5	28.5	27.5	28.0
12	25.0	24.5	24.5	29.0	27.5	28.5	32.0	31.0	31.5	27.5	26.5	27.5
13	25.5	25.0	25.5	28.5	28.0	28.0	31.0	30.5	31.0	28.0	27.0	27.5
14	26.5	25.5	26.0	28.0	27.5	28.0	31.0	30.0	30.5	28.0	27.0	27.5
15	27.0	26.5	27.0	28.5	27.0	27.5	31.5	30.5	31.0	28.0	27.5	28.0
16	26.5	26.0	26.5	28.5	28.0	28.0	31.5	30.5	31.0	29.0	27.5	28.5
17	27.0	26.0	26.5	28.5	27.5	28.0	---	---	---	29.0	28.0	28.5
18	27.5	27.0	27.0	29.5	28.0	28.5	---	---	---	29.0	27.0	28.0
19	28.0	27.0	27.5	29.5	28.5	29.0	---	---	---	27.0	27.0	27.0
20	27.5	27.0	27.5	30.0	29.0	29.5	---	---	---	27.0	26.0	26.5
21	27.5	27.0	27.0	30.0	29.5	30.0	---	---	---	26.5	25.5	26.0
22	28.0	27.0	27.5	30.5	29.5	30.0	---	---	---	25.5	24.5	25.0
23	28.0	27.5	27.5	30.5	30.0	30.0	---	---	---	25.0	23.5	24.5
24	28.0	27.0	27.5	31.0	29.5	30.0	---	---	---	25.5	24.0	25.0
25	28.5	27.0	27.5	30.0	29.5	30.0	---	---	---	26.0	24.5	25.0
26	28.5	27.5	28.0	30.5	30.0	30.5	---	---	---	25.5	24.5	25.0
27	28.0	27.0	27.5	31.0	30.0	30.5	---	---	---	26.0	24.5	25.5
28	28.0	27.0	27.5	31.0	30.0	30.5	28.5	28.0	28.5	27.0	25.5	26.0
29	27.5	26.5	27.0	31.5	30.0	31.0	28.5	27.0	27.5	---	---	---
30	27.5	26.0	27.0	31.5	30.5	31.0	27.5	27.0	27.5	---	---	---
31	---	---	---	32.0	31.0	31.5	27.0	26.5	27.0	---	---	---
MONTH	28.5	23.5	26.0	32.0	26.0	29.0	32.0	26.5	30.5	29.0	23.5	27.0

## OXYGEN, DISSOLVED (DO), MG/L, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER				NOVEMBER			DECEMBER			JANUARY		
1	4.6	2.8	3.7	5.2	4.6	4.8	8.4	8.2	8.3	8.5	7.9	8.2
2	4.1	3.3	3.7	5.1	4.5	4.8	8.5	8.1	8.3	8.5	7.9	8.2
3	4.0	3.4	3.7	5.2	4.8	4.9	8.6	8.2	8.4	8.5	8.0	8.2
4	3.9	3.4	3.7	5.1	4.6	4.9	8.5	8.1	8.2	8.6	8.0	8.3
5	4.0	2.7	3.3	5.3	4.2	4.7	8.0	7.6	7.7	8.3	8.0	8.1
6	4.5	2.5	3.4	6.7	4.2	5.3	7.8	7.4	7.6	8.5	7.9	8.2
7	5.4	4.1	5.0	6.7	6.4	6.5	7.6	7.2	7.3	8.1	7.5	7.8
8	5.6	5.0	5.2	6.9	6.0	6.6	7.3	6.6	6.9	7.8	7.4	7.6
9	5.6	4.4	4.9	6.3	5.6	5.9	7.0	6.6	6.8	7.8	7.3	7.6
10	5.0	3.8	4.2	6.3	5.7	5.9	7.4	6.8	7.3	9.2	7.6	8.5
11	5.1	4.0	4.4	6.9	6.0	6.4	8.0	7.3	7.7	9.3	9.1	9.2
12	5.6	4.2	4.8	7.9	5.8	7.0	8.3	7.8	8.0	9.3	9.1	9.2
13	5.3	4.2	4.7	8.7	7.8	8.3	8.1	7.5	7.8	9.0	8.6	8.8
14	5.8	4.6	5.3	8.7	8.4	8.5	8.9	8.0	8.6	8.9	8.1	8.3
15	6.2	5.1	5.6	8.8	8.0	8.6	9.0	8.4	8.7	8.4	7.5	7.8
16	6.3	5.1	5.6	8.0	7.3	7.7	8.8	8.2	8.5	7.8	7.1	7.4
17	5.8	4.6	5.2	7.2	6.5	6.7	8.7	8.2	8.5	---	---	---
18	5.7	4.6	5.0	6.7	5.8	6.2	8.4	8.0	8.2	---	---	---
19	5.7	4.7	5.0	6.1	5.3	5.7	8.9	8.4	8.7	---	---	---
20	5.9	4.4	5.0	5.8	5.2	5.5	9.1	8.7	8.9	---	---	---
21	5.7	4.6	5.0	5.7	4.7	5.3	9.0	8.8	8.9	---	---	---
22	5.6	4.8	5.1	6.0	5.5	5.7	8.8	8.5	8.6	---	---	---
23	5.1	3.5	4.5	6.2	5.8	6.0	8.8	8.5	8.6	---	---	---
24	5.7	4.5	5.3	8.8	5.9	6.7	8.8	8.3	8.5	10.0	9.8	9.9
25	6.0	5.2	5.4	8.9	8.2	8.5	8.6	8.3	8.4	10.1	9.9	10.0
26	6.1	5.7	5.8	8.3	8.1	8.1	8.6	8.1	8.3	10.3	10.0	10.1
27	6.3	5.8	6.1	8.7	8.1	8.4	8.4	8.1	8.2	10.3	10.0	10.1
28	6.3	5.8	6.0	8.8	8.6	8.7	8.5	8.2	8.3	10.2	10.0	10.1
29	6.3	5.7	5.9	8.8	8.7	8.7	8.6	8.2	8.4	10.2	9.8	10.0
30	5.9	5.1	5.3	8.8	8.3	8.6	---	---	---	10.1	9.8	9.9
31	5.4	4.7	5.0	---	---	---	8.5	8.0	8.2	10.2	9.8	9.9
MONTH	6.3	2.5	4.9	8.9	4.2	6.7	9.1	6.6	8.2	10.3	7.1	8.8

## TRINITY RIVER MAIN STEM

365

08062500 TRINITY RIVER NEAR ROSSER, TX--Continued

OXYGEN, DISSOLVED (DO), MG/L, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	10.1	9.7	9.9	8.3	8.3	8.3	9.8	9.6	9.7	6.9	5.2	6.0
2	10.0	9.4	9.7	8.6	8.4	8.5	9.6	9.4	9.5	7.5	5.5	6.2
3	9.5	9.1	9.4	8.6	8.3	8.4	9.5	9.4	9.5	6.5	4.4	5.1
4	9.2	8.9	9.1	9.2	8.4	8.7	9.6	9.5	9.6	5.4	.7	4.4
5	9.2	8.8	9.0	9.7	9.3	9.5	9.6	9.5	9.6	4.4	3.3	3.9
6	8.8	8.5	8.6	9.8	9.5	9.6	9.7	9.5	9.5	4.8	4.3	4.5
7	8.7	8.4	8.6	9.7	9.3	9.5	9.6	9.3	9.4	5.2	4.8	5.0
8	8.9	8.6	8.8	9.5	9.2	9.3	9.3	9.1	9.2	5.4	4.8	5.2
9	9.0	8.7	8.8	9.3	9.2	9.2	9.2	8.9	9.1	5.5	5.0	5.3
10	9.1	8.6	8.8	9.3	9.1	9.2	9.1	8.9	9.0	5.8	5.2	5.4
11	8.7	8.3	8.5	9.4	9.2	9.3	9.1	8.7	8.9	5.5	5.2	5.3
12	8.3	7.2	7.6	9.4	9.2	9.3	8.7	8.1	8.4	5.8	5.0	5.4
13	7.7	6.7	7.1	9.6	9.4	9.5	8.1	7.9	8.0	5.4	4.7	5.1
14	7.0	6.8	6.9	9.4	9.1	9.3	8.1	7.7	7.9	5.2	4.3	4.8
15	7.2	6.5	6.8	9.2	8.7	9.0	7.8	7.6	7.7	5.5	2.5	4.7
16	7.4	7.0	7.2	8.6	8.1	8.5	7.8	7.4	7.6	4.8	2.3	3.5
17	8.4	7.4	7.8	8.7	7.2	8.0	7.4	6.8	7.2	5.2	3.0	4.5
18	8.4	7.7	8.0	7.8	7.4	7.6	6.9	6.2	6.6	5.5	5.2	5.4
19	8.3	7.7	8.0	7.9	7.6	7.7	6.5	5.6	6.0	5.7	5.4	5.5
20	9.3	8.1	8.6	8.3	7.6	7.9	5.9	5.5	5.7	6.0	3.1	4.9
21	9.6	9.1	9.4	8.6	8.3	8.4	6.1	5.4	5.8	5.0	2.9	4.3
22	9.4	8.9	9.2	8.7	8.5	8.6	6.6	5.9	6.3	5.2	4.6	4.9
23	9.1	8.9	9.0	8.6	8.4	8.5	6.2	5.7	6.0	5.4	4.3	5.0
24	8.9	8.7	8.8	8.8	8.5	8.6	6.1	5.5	5.8	5.4	4.8	5.1
25	9.1	8.7	8.8	9.0	8.8	8.9	6.4	5.6	6.0	5.2	4.1	4.7
26	9.2	9.0	9.1	9.1	8.9	9.0	6.8	6.4	6.6	5.7	4.7	5.2
27	9.0	8.6	8.8	9.1	8.8	9.0	6.5	5.7	6.1	5.8	5.4	5.6
28	8.6	8.2	8.4	9.1	8.7	8.9	6.5	5.4	5.9	5.9	5.7	5.8
29	---	---	---	9.1	8.8	8.9	6.6	5.4	6.0	6.2	4.4	5.2
30	---	---	---	9.6	9.2	9.4	7.2	4.9	6.0	5.4	5.1	5.3
31	---	---	---	9.8	9.7	9.7	---	---	---	5.3	4.7	5.0
MONTH	10.1	6.5	8.5	9.8	7.2	8.9	9.8	4.9	7.6	7.5	.7	5.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	5.4	4.8	5.1	6.5	6.4	6.5	6.0	4.4	5.4	5.4	4.9	5.1
2	6.2	5.5	5.8	6.4	6.2	6.3	5.6	4.3	5.0	5.8	5.1	5.4
3	6.4	6.3	6.3	6.3	5.7	6.0	5.5	4.1	4.9	5.8	4.8	5.2
4	6.7	6.4	6.6	5.8	5.3	5.6	6.0	4.5	5.3	5.4	5.0	5.2
5	6.8	6.7	6.7	5.9	5.3	5.6	5.9	4.5	5.3	5.7	5.1	5.3
6	6.7	6.6	6.7	6.2	5.9	6.0	5.7	4.5	5.2	5.7	5.2	5.5
7	6.9	6.7	6.8	6.3	6.1	6.2	5.6	4.4	5.1	5.4	4.8	5.1
8	7.0	6.9	6.9	6.4	6.0	6.2	5.8	4.3	5.1	4.9	4.2	4.6
9	7.0	6.9	6.9	6.3	6.1	6.2	5.2	4.3	4.7	5.7	4.7	5.3
10	6.9	6.4	6.7	6.1	5.8	6.0	4.5	3.9	4.2	5.8	4.4	5.1
11	6.5	6.2	6.3	5.9	5.8	5.8	4.0	3.2	3.6	4.9	3.7	4.4
12	6.3	5.8	6.0	6.1	5.7	5.9	3.2	2.2	2.9	4.9	4.0	4.3
13	5.9	5.6	5.7	6.4	6.0	6.2	3.6	2.4	3.0	4.9	3.3	3.9
14	5.7	5.4	5.5	6.7	6.1	6.4	3.9	3.2	3.4	5.0	3.5	4.4
15	5.6	5.4	5.5	6.6	6.3	6.4	4.1	3.6	3.8	5.1	4.7	4.9
16	5.7	5.5	5.6	6.3	6.1	6.2	4.4	3.9	4.1	5.1	3.8	4.5
17	5.5	5.2	5.4	6.2	5.6	6.0	---	---	---	4.3	3.7	4.0
18	5.3	5.2	5.2	5.7	3.7	4.7	---	---	---	5.0	3.8	4.5
19	5.4	5.2	5.3	4.6	3.8	4.2	---	---	---	4.6	4.2	4.4
20	5.6	5.4	5.5	4.9	4.3	4.6	---	---	---	5.0	4.2	4.5
21	5.6	5.4	5.6	4.4	4.1	4.2	---	---	---	5.8	4.6	5.2
22	5.8	5.6	5.7	5.4	4.2	4.6	---	---	---	6.1	5.0	5.5
23	5.9	5.8	5.8	5.4	4.6	5.0	---	---	---	6.4	5.5	6.0
24	5.9	5.8	5.8	5.4	2.6	4.2	---	---	---	6.5	5.7	6.1
25	6.0	5.8	5.9	4.4	4.1	4.3	---	---	---	6.0	5.1	5.6
26	6.3	6.0	6.1	5.1	4.3	4.6	---	---	---	5.7	5.4	5.5
27	6.4	6.2	6.3	5.8	4.4	5.0	---	---	---	6.1	5.4	5.8
28	6.4	6.3	6.4	6.2	5.2	5.7	5.3	3.8	4.5	5.6	5.2	5.5
29	6.5	6.4	6.4	6.7	5.9	6.3	4.3	3.2	3.6	---	---	---
30	6.6	6.5	6.5	6.9	5.6	6.3	5.0	4.3	4.7	---	---	---
31	---	---	---	6.4	4.8	5.6	5.5	4.8	5.1	---	---	---
MONTH	7.0	4.8	6.0	6.9	2.6	5.6	6.0	2.2	4.5	6.5	3.3	5.0

## TRINITY RIVER MAIN STEM

08062700 TRINITY RIVER AT TRINIDAD, TX  
(National stream-quality accounting network)

LOCATION.--Lat 32°08'05", long 96°06'20", Henderson County, Hydrologic Unit 12030105, on left bank at pumping station of Texas Power and Light Co., near southwest boundary of Trinidad, 0.5 mi downstream from St. Louis Southwestern Railway Lines bridge, 0.9 mi downstream from bridge on State Highway 31, 8 mi upstream from Cedar Creek, and at mile 391.2.

DRAINAGE AREA.--8,538 mi<sup>2</sup>, not including 1,007 mi<sup>2</sup> upstream from Cedar Creek Reservoir.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1964 to current year. Records of gage height collected in this vicinity for period October 1913 to September 1915 are contained in reports of U.S. Army Corps of Engineers, and records collected since October 1915 are contained in reports of the National Weather Service.

GAGE.--Water-stage recorder. Datum of gage is 239.21 ft above National Geodetic Vertical Datum of 1929. Prior to May 3, 1967, at site 0.9 mi upstream at datum 1.28 ft higher.

REMARKS.--Record good. There are 62 floodwater-retarding structures with a combined detention capacity of 38,690 acre-ft in drainage basin above this station. These structures control runoff from 126 mi<sup>2</sup>. For regulation by upstream reservoirs, see Trinity River near Rosser (station 08062500). The spillway outflow from Cedar Creek Reservoir (station 08062650) enters the Trinity River 13 mi upstream from station. There are many diversions above station for municipal supply for the cities of Fort Worth, Dallas, and several small towns. Low flows are maintained by sewage effluent from the Dallas-Fort Worth metroplex. Gage-height telemeter at station. Additional telemeter equipment was discontinued Jan. 31, 1982, and subsequently removed.

AVERAGE DISCHARGE.--23 years, 3,656 ft<sup>3</sup>/s (2,649,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 83,000 ft<sup>3</sup>/s May 8, 1969 (gage height, 44.10 ft); minimum daily, 312 ft<sup>3</sup>/s Aug. 9, 1972.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1908, 49.8 ft Apr. 25, 1942 (present site and datum), from records of the National Weather Service. Flood in 1908 reached a stage of 48.3 ft, present site and datum, from records of the National Weather Service.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 16,900 ft<sup>3</sup>/s Nov. 28 at 1200 hours (gage height, 31.96 ft); minimum daily, 711 ft<sup>3</sup>/s Aug. 9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	927	866	5280	1450	4000	15700	5560	859	10300	6410	838	881
2	874	837	3680	1450	3950	16100	5130	841	10200	6150	828	869
3	796	811	1660	1250	3720	16300	4980	861	10200	6090	806	875
4	769	1360	1370	1250	3210	15400	4950	1570	10100	6180	775	845
5	790	2100	1300	1600	2840	13800	4940	3520	9420	5980	775	836
6	1210	1990	1250	1460	2490	11800	4900	6010	9360	4760	789	815
7	2250	1770	1180	1380	2140	9920	4790	5190	9360	4160	785	784
8	2690	1180	1210	1470	2670	9290	4600	2190	9160	3400	793	760
9	1800	968	7370	1410	2570	9290	4440	1330	8420	3000	711	948
10	1660	893	3420	2920	2140	9400	4360	1190	7760	2790	728	1010
11	1500	860	1520	5520	1970	9520	4340	1040	7750	2690	737	892
12	1190	2020	1230	3670	1670	9670	4300	928	8380	2600	913	1190
13	1600	2380	1160	2070	1510	9770	4000	937	9170	2430	1110	1320
14	1460	1660	1840	1700	1670	9680	3630	973	9640	2300	913	1690
15	1190	1280	3050	1600	1900	7500	3520	1170	10300	2260	827	1860
16	1090	1080	4810	1490	2700	4590	2930	2260	11200	2160	821	1290
17	972	997	4310	1520	2480	5930	2440	3790	11600	1490	811	1110
18	918	948	4250	4640	1940	11300	1880	3670	11900	1120	788	1110
19	872	940	6050	7800	1670	12600	1430	1740	12300	1680	798	955
20	842	905	7600	8270	3990	13800	1240	1190	12900	1620	787	999
21	826	960	6520	5910	9120	13500	1150	2380	12900	1100	775	997
22	839	1190	3320	2860	9950	13000	1140	2900	12600	930	771	853
23	933	1180	4900	2730	9170	11600	1130	1710	12300	867	800	802
24	3020	1210	3330	3030	6810	9800	1110	1600	12000	851	831	780
25	5270	3990	3160	3320	6050	8490	1230	1420	11700	1090	810	777
26	3220	9600	3370	3540	7440	7740	1220	1880	11200	1070	866	758
27	1660	14600	1600	3550	10600	7100	924	1780	10400	903	860	735
28	1200	16500	1590	3450	13600	6630	846	1180	9290	811	837	743
29	1030	12900	1450	3700	---	6420	836	1430	8130	791	1250	739
30	940	7440	1250	3930	---	6200	830	5200	7100	791	1440	762
31	897	---	1240	4000	---	5860	---	8240	---	817	1050	---
TOTAL	45235	95415	95270	93940	123970	317700	88776	70979	307040	79291	26623	28985
MEAN	1459	3180	3073	3030	4427	10250	2959	2290	10230	2558	859	966
MAX	5270	16500	7600	8270	13600	16300	5560	8240	12900	6410	1440	1860
MIN	769	811	1160	1250	1510	4590	830	841	7100	791	711	735
AC-FT	89720	189300	189000	186300	245900	630200	176100	140800	609000	157300	52810	57490
CAL YR 1986	TOTAL	1600870	MEAN	4386	MAX	24800	MIN	689	AC-FT	3175000		
WTR YR 1987	TOTAL	1373220	MEAN	3762	MAX	16500	MIN	711	AC-FT	2724000		

08062700 TRINITY RIVER AT TRINIDAD, TX--Continued  
(National stream-quality accounting network)

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: May 1966 to current year. Pesticide analyses: November 1977 to June 1982. Sediment analyses: November 1977 to current year.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: September 1967 to September 1981, May 1986 to current year.

PH: September 1967 to October 1969, May 1986 to current year.

WATER TEMPERATURE: September 1967 to September 1981, May 1986 to current year.

DISSOLVED OXYGEN: September 1967 to October 1969, May 1986 to current year.

INSTRUMENTATION.--From April 1967 to October 1969, a four-parameter water-quality monitor continuously recorded specific conductance, pH, water temperature, and dissolved oxygen. Since May 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 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, 1,000 micromhos Dec. 28, 1977; minimum daily, 240 micromhos June 5, 1981.

WATER TEMPERATURE: Maximum daily, 34.0°C July 17, 1979, and July 9, 13, 1980; minimum daily 3.5°C Jan. 5, 1979.

## EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 842 microsiemens May 1; minimum, 196 microsiemens Dec. 9.

pH: Maximum, 8.3 units on several days during year; minimum, 7.1 units May 30.

WATER TEMPERATURE: Minimum, 7.0°C Jan. 22, 23.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	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 (MG/L AS CAC03)
NOV 12...	1230	2030	620	7.90	15.0	98	7.3	72	7.7	530	540	160
JAN 21...	0810	6420	378	8.00	8.0	78	11.1	93	--	430	540	120
APR 14...	1000	3580	501	8.00	17.5	20	7.5	79	5.1	58	320	170
JUN 09...	1010	8450	390	7.30	27.0	8.6	6.6	83	4.3	180	1800	140
JUL 14...	1015	2300	480	7.50	27.5	71	6.0	76	2.3	40	600	150
SEP 01...	0950	790	584	7.60	26.0	31	5.2	64	4.9	110	860	130
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 WH WAT TOTAL 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)
NOV 12...	26	54	5.0	62	2	9.9	130	76	58	1.0	8.0	403
JAN 21...	32	42	4.1	26	1	5.5	90	52	31	0.40	5.7	232
APR 14...	23	57	5.7	35	1	5.7	143	53	35	0.50	5.2	289
JUN 09...	19	46	4.9	25	1	4.9	116	36	26	0.40	5.3	239
JUL 14...	12	50	5.5	38	1	6.3	136	44	35	1.0	7.3	288
SEP 01...	23	44	4.7	62	2	10	106	69	59	1.0	8.4	349
DATE	SOLIDS, SUM OF CONSTITU- ENTS, 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- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)
NOV 12...	360	4.70	0.300	5.00	0.220	0.180	4.3	4.5	3.10	2.40	2.20	6.7
JAN 21...	220	1.02	0.080	1.10	0.360	0.300	1.0	1.4	0.620	0.420	0.370	1.1
APR 14...	290	1.58	0.220	1.80	0.320	0.240	0.98	1.3	0.820	0.530	0.560	1.7
JUN 09...	220	0.740	0.070	0.810	0.130	0.130	1.3	1.4	0.520	0.300	0.260	0.80
JUL 14...	270	1.66	0.140	1.80	0.130	0.110	0.77	0.90	0.840	0.830	0.640	2.0
SEP 01...	330	4.22	0.280	4.50	0.150	0.140	1.4	1.6	2.40	2.50	2.00	6.1

## TRINITY RIVER MAIN STEM

08062700 TRINITY RIVER AT TRINIDAD, TX--Continued  
(National stream-quality accounting network)

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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 12...	155	847	89	10	4	43	<0.5	<1	<1	<3	7	22
JAN 21...	244	4230	92	30	2	38	<0.5	<1	2	<3	4	40
APR 14...	167	1620	99	20	2	54	<0.5	<1	<1	<3	2	10
JUN 09...	222	5060	99	--	--	--	--	--	--	--	--	--
JUL 14...	134	831	98	<10	4	49	<0.5	<1	<1	<3	2	<3
SEP 01...	57	122	98	--	--	--	--	--	--	--	--	--
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 12...	<5	13	5	<0.1	<10	12	<1	<1	430	<6	13	
JAN 21...	<5	9	3	<0.1	<10	2	<1	<1	340	<6	9	
APR 14...	<5	34	3	0.1	<10	<1	<1	<1	400	<6	5	
JUN 09...	--	--	--	--	--	--	--	--	--	--	--	
JUL 14...	<5	14	<1	<0.1	<10	6	<1	<1	360	<6	8	
SEP 01...	--	--	--	--	--	--	--	--	--	--	--	

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1986 TO SEPTEMBER 1987

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. 1986	45235	527	300	36600	36	4410	66	8120	150
NOV. 1986	95415	375	215	55500	23	5880	47	12000	120
DEC. 1986	95270	424	243	62500	26	6650	53	13500	130
JAN. 1987	93940	470	269	68100	30	7600	59	14900	140
FEB. 1987	123970	415	239	79800	25	8320	52	17200	130
MAR. 1987	317700	393	226	194000	22	19300	48	41600	130
APR. 1987	88776	500	286	68400	33	7890	63	15100	150
MAY 1987	70979	519	296	56700	35	6780	66	12600	150
JUNE 1987	307040	377	217	180000	21	17400	46	38400	130
JULY 1987	79291	434	249	53300	27	5680	54	11600	140
AUG. 1987	26623	685	386	27700	54	3880	88	6350	160
SEPT 1987	28985	548	312	24400	38	2990	69	5430	150
TOTAL	1373224	**	**	907000	**	96800	**	197000	**
WTD. AVG.	3762	427	245	**	26	**	53	**	130

## TRINITY RIVER MAIN STEM

369

08062700 TRINITY RIVER AT TRINIDAD, TX--Continued  
(National stream-quality accounting network)

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	754	714	732	648	625	634	302	293	299	616	610	613
2	763	736	755	696	649	676	442	297	336	631	616	620
3	738	615	686	730	695	713	486	438	460	633	615	627
4	647	600	623	739	433	622	516	487	501	615	609	611
5	708	621	669	579	395	506	534	517	526	619	608	616
6	694	654	674	684	592	643	575	532	551	615	597	606
7	660	597	644	676	596	641	580	564	572	620	602	613
8	600	396	472	604	546	581	608	527	583	602	590	596
9	461	393	420	598	554	574	442	196	262	604	598	600
10	492	458	471	615	594	607	563	342	484	605	418	543
11	527	494	516	619	593	601	602	565	582	472	393	443
12	537	504	523	669	611	637	606	589	599	480	426	466
13	529	487	506	605	451	525	618	591	607	489	465	477
14	541	442	493	511	451	483	603	584	595	539	485	510
15	588	531	559	512	459	487	619	383	528	565	542	556
16	564	544	555	550	514	531	397	352	376	605	567	593
17	573	560	566	573	551	564	508	398	474	610	603	606
18	602	572	588	602	574	588	487	271	363	597	312	357
19	616	600	606	643	603	625	417	289	380	368	320	345
20	648	613	630	682	645	662	414	350	373	369	347	359
21	659	642	648	674	660	666	401	339	357	455	343	384
22	682	650	665	670	656	662	457	408	431	491	454	468
23	690	620	669	680	656	670	459	267	317	563	494	533
24	643	516	588	656	597	639	508	357	470	570	504	541
25	508	341	385	590	301	474	543	380	488	518	503	513
26	391	346	366	278	219	246	573	392	448	508	477	487
27	431	395	409	245	225	230	594	575	587	479	467	473
28	472	435	458	279	246	260	603	587	597	477	466	472
29	524	472	494	283	279	280	606	590	598	479	463	469
30	591	527	563	293	282	290	611	589	596	463	446	453
31	625	592	611	---	---	---	615	609	612	453	443	448
MONTH	763	341	566	739	219	544	619	196	482	633	312	516
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	454	443	449	328	318	324	450	431	440	842	794	824
2	453	445	449	348	322	337	455	447	451	807	711	800
3	459	444	449	369	349	355	455	449	451	691	476	569
4	473	460	466	410	369	392	452	445	449	519	478	495
5	489	475	483	444	411	427	457	450	453	482	479	480
6	490	477	484	448	432	441	459	452	456	495	481	487
7	499	479	489	432	420	427	462	451	456	538	498	524
8	546	501	524	421	418	419	474	459	464	550	536	538
9	553	541	545	420	415	417	483	474	477	679	552	601
10	551	531	545	420	411	415	482	473	477	725	673	708
11	539	529	534	413	410	411	478	469	473	797	720	734
12	552	529	535	411	408	409	475	466	471	795	748	771
13	560	553	557	426	412	419	494	472	478	769	719	752
14	603	560	590	440	426	432	512	496	501	776	629	734
15	617	597	610	466	440	449	524	502	511	777	641	688
16	595	516	539	484	467	475	522	511	516	641	626	632
17	562	540	550	491	285	384	547	517	537	638	537	598
18	605	550	564	373	305	334	554	538	546	628	481	559
19	571	554	563	358	295	314	565	551	557	511	376	426
20	571	283	445	354	312	325	613	567	596	455	398	426
21	361	297	313	388	355	372	637	614	624	602	457	509
22	388	350	362	401	388	395	665	639	653	597	350	460
23	387	362	371	420	390	406	663	656	660	430	379	408
24	375	362	367	419	415	417	668	661	665	510	419	466
25	398	376	383	420	417	418	687	665	678	537	470	505
26	447	362	415	422	418	420	692	682	687	632	468	542
27	360	314	336	420	416	418	717	682	696	635	531	594
28	317	312	315	423	416	419	761	707	731	626	510	559
29	---	---	---	430	385	416	801	722	763	565	468	521
30	---	---	---	433	385	422	840	801	822	571	330	474
31	---	---	---	437	430	433	---	---	---	348	310	329
MONTH	617	283	473	491	285	401	840	431	558	842	310	571

## TRINITY RIVER MAIN STEM

08062700 TRINITY RIVER AT TRINIDAD, TX--Continued  
(National stream-quality accounting network)

## SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	344	321	328	368	363	365	682	664	673			620
2	399	346	374	375	366	370	693	666	676			646
3	408	394	401	375	359	364	711	680	696			634
4	416	393	406	378	358	366	704	678	693			622
5	398	388	393	374	327	351	696	678	683			587
6	401	392	398	397	345	372	706	689	701			588
7	401	399	401	405	398	403	706	688	698			546
8	399	395	397	421	391	402	708	680	687			522
9	395	384	390	453	423	441	692	656	683			487
10	385	379	382	463	442	453	729	687	703			465
11	389	380	385	482	462	470	695	686	692			455
12	382	362	372	483	474	477	693	681	686			436
13	378	352	364	477	463	469	715	675	694			440
14	362	353	358	467	452	463	720	700	711			426
15	363	329	349	460	448	454	700	645	677			422
16	368	331	347	467	448	457	664	564	590			412
17	395	341	375	467	457	462	620	588	603			521
18	380	342	358	481	468	475	640	612	623			565
19	390	348	366	553	480	498	686	643	668			570
20	384	334	360	681	559	630	710	688	700			536
21	399	378	386	617	562	585	732	696	711			585
22	395	387	391	599	548	561	701	681	692			605
23	399	385	390	554	528	538	686	668	679			626
24	390	385	387	561	530	538	726	675	705			647
25	387	383	385	618	563	580	763	704	716			656
26	387	383	385	669	622	648	731	713	725			671
27	384	379	382	681	569	629	735	725	730			678
28	379	370	374	644	595	621	733	681	709			685
29	370	364	367	674	631	658	719	667	680			680
30	369	364	367	644	606	621	708	680	693			676
31	---	---	---	673	618	649	678	606	663			
MONTH	416	321	377	681	327	496	763	564	685			567

## PH (STANDARD UNITS), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	8.3	8.0	8.1	8.1	7.8	7.9	8.1	8.0	8.1	7.9	7.9	7.9
2	8.3	8.0	8.1	7.9	7.8	7.8	8.1	8.0	8.0	7.9	7.8	7.9
3	8.2	8.0	8.1	7.9	7.8	7.8	8.0	7.9	7.9	7.9	7.8	7.8
4	8.2	8.0	8.1	7.9	7.7	7.8	8.0	7.9	7.9	7.8	7.8	7.8
5	8.2	8.1	8.1	7.7	7.6	7.6	7.9	7.8	7.9	7.8	7.8	7.8
6	8.1	7.8	8.0	7.7	7.7	7.7	7.9	7.8	7.9	7.8	7.8	7.8
7	7.8	7.5	7.7	7.7	7.6	7.6	7.9	7.8	7.8	8.0	7.8	7.9
8	7.7	7.5	7.6	7.7	7.6	7.7	7.8	7.8	7.8	8.0	8.0	8.0
9	7.7	7.7	7.7	8.0	7.7	7.8	8.3	7.8	8.1	8.0	8.0	8.0
10	7.8	7.7	7.7	8.1	7.9	7.9	8.0	8.0	8.0	8.0	8.0	8.0
11	7.8	7.7	7.7	8.1	7.9	8.0	8.0	8.0	8.0	7.9	7.9	7.9
12	7.8	7.7	7.7	7.9	7.8	7.9	8.0	8.0	8.0	8.0	7.9	8.0
13	7.9	7.7	7.8	7.9	7.7	7.8	8.0	8.0	8.0	8.1	8.0	8.0
14	7.8	7.7	7.8	8.0	7.8	7.9	8.0	7.9	8.0	8.1	8.0	8.1
15	7.9	7.8	7.8	8.1	8.0	8.0	8.0	7.9	7.9	8.1	8.1	8.1
16	7.9	7.8	7.8	8.2	8.1	8.2	8.0	8.0	8.0	8.1	8.0	8.1
17	7.9	7.7	7.8	8.3	8.2	8.2	8.0	7.9	8.0	8.1	8.0	8.0
18	7.8	7.7	7.7	8.3	8.2	8.3	8.1	8.0	8.0	8.2	8.0	8.0
19	7.8	7.7	7.8	8.3	8.2	8.3	8.0	8.0	8.0	8.0	8.0	8.0
20	7.8	7.7	7.7	8.2	8.2	8.2	8.0	7.9	7.9	8.0	8.0	8.0
21	7.9	7.6	7.7	8.2	8.2	8.2	7.9	7.9	7.9	8.1	8.0	8.0
22	7.8	7.7	7.8	8.2	8.1	8.1	8.0	7.9	8.0	8.2	8.0	8.1
23	7.8	7.7	7.8	8.1	8.0	8.1	8.0	8.0	8.0	8.1	8.0	8.1
24	7.8	7.5	7.6	8.0	8.0	8.0	8.0	8.0	8.0	8.1	8.0	8.1
25	7.6	7.5	7.6	8.2	7.9	8.0	8.0	8.0	8.0	8.2	8.1	8.1
26	7.6	7.5	7.6	---	---	---	8.0	8.0	8.0	8.3	8.1	8.1
27	7.7	7.5	7.6	---	---	---	8.0	7.9	7.9	8.3	8.1	8.1
28	7.9	7.7	7.8	8.2	8.0	8.1	8.0	7.9	7.9	8.2	8.1	8.1
29	7.9	7.8	7.8	8.0	8.0	8.0	7.9	7.9	7.9	8.2	8.1	8.2
30	8.0	7.9	7.9	8.1	8.0	8.1	7.9	7.9	7.9	8.2	8.2	8.2
31	8.0	7.9	7.9	---	---	---	7.9	7.9	7.9	8.2	8.2	8.2
MONTH	8.3	7.5	7.8	8.3	7.6	8.0	8.3	7.8	8.0	8.3	7.8	8.0

## TRINITY RIVER MAIN STEM

371

08062700 TRINITY RIVER AT TRINIDAD, TX--Continued  
(National stream-quality accounting network)

PH (STANDARD UNITS), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	8.2	8.2	8.2	8.0	7.9	8.0	7.9	7.9	7.9	8.1	7.7	7.8
2	8.2	8.2	8.2	7.9	7.9	7.9	8.0	7.9	7.9	7.8	7.5	7.7
3	8.3	8.2	8.2	7.9	7.9	7.9	8.0	7.9	7.9	7.5	7.3	7.4
4	8.2	8.2	8.2	8.0	7.9	8.0	8.0	7.9	8.0	7.4	7.4	7.4
5	8.2	8.1	8.1	8.0	8.0	8.0	8.0	7.9	8.0	7.4	7.4	7.4
6	8.1	8.0	8.1	8.0	8.0	8.0	8.0	7.9	8.0	7.4	7.4	7.4
7	8.1	8.0	8.1	8.0	8.0	8.0	8.0	8.0	8.0	7.4	7.3	7.3
8	8.0	8.0	8.0	8.0	8.0	8.0	8.0	7.9	8.0	7.4	7.3	7.3
9	8.1	7.9	8.0	8.0	8.0	8.0	8.0	7.9	8.0	7.5	7.4	7.4
10	8.0	8.0	8.0	8.0	8.0	8.0	8.0	7.9	8.0	7.6	7.4	7.6
11	8.0	7.9	8.0	8.0	8.0	8.0	8.0	7.9	8.0	7.8	7.6	7.6
12	8.0	7.9	8.0	8.0	7.9	8.0	8.1	8.0	8.1	7.9	7.7	7.8
13	8.0	7.9	7.9	8.0	7.9	7.9	8.1	8.0	8.1	7.8	7.5	7.6
14	8.0	7.8	7.9	7.9	7.9	7.9	8.1	8.0	8.0	7.6	7.4	7.5
15	7.9	7.8	7.8	7.9	7.8	7.9	8.1	8.0	8.0	7.6	7.3	7.4
16	7.8	7.8	7.8	7.8	7.8	7.8	8.0	7.9	8.0	7.4	7.3	7.3
17	7.9	7.8	7.8	7.9	7.5	7.6	7.9	7.9	7.9	7.3	7.2	7.3
18	8.0	7.8	7.9	7.6	7.5	7.5	7.9	7.9	7.9	7.3	7.3	7.3
19	8.0	7.9	8.0	7.6	7.5	7.6	7.9	7.9	7.9	7.5	7.3	7.4
20	8.1	8.0	8.0	7.6	7.5	7.6	7.9	7.9	7.9	7.6	7.4	7.5
21	8.0	8.0	8.0	7.6	7.5	7.6	7.9	7.8	7.9	7.6	7.5	7.6
22	8.0	7.9	8.0	7.7	7.6	7.6	7.9	7.8	7.9	7.5	7.3	7.4
23	8.0	8.0	8.0	7.7	7.7	7.7	8.0	7.9	7.9	7.4	7.3	7.4
24	8.0	7.9	8.0	7.8	7.7	7.8	8.0	7.9	7.9	7.5	7.4	7.4
25	8.0	8.0	8.0	7.8	7.8	7.8	8.0	7.9	7.9	7.5	7.4	7.4
26	8.0	8.0	8.0	7.8	7.8	7.8	7.9	7.8	7.9	7.6	7.4	7.5
27	8.0	8.0	8.0	7.9	7.8	7.8	8.0	7.8	7.9	7.5	7.4	7.4
28	8.0	8.0	8.0	7.9	7.8	7.9	7.9	7.8	7.9	7.5	7.4	7.4
29	---	---	---	8.0	7.8	7.9	8.1	7.8	8.0	7.5	7.4	7.5
30	---	---	---	7.9	7.8	7.9	8.1	7.8	7.9	7.4	7.1	7.2
31	---	---	---	7.9	7.9	7.9	---	---	---	7.2	7.2	7.2
MONTH	8.3	7.8	8.0	8.0	7.5	7.8	8.1	7.8	7.9	8.1	7.1	7.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	7.2	7.2	7.2	7.5	7.4	7.5						
2	7.2	7.2	7.2	7.6	7.4	7.5						
3	7.3	7.2	7.3	7.6	7.4	7.5						
4	7.3	7.3	7.3	7.5	7.4	7.5						
5	7.3	7.3	7.3	---	---	---						
6	7.3	7.3	7.3	---	---	---						
7	7.3	7.3	7.3	---	---	---						
8	7.3	7.3	7.3	---	---	---						
9	7.4	7.3	7.4	---	---	---						
10	7.4	7.4	7.4	---	---	---						
11	7.4	7.3	7.4	---	---	---						
12	7.4	7.3	7.3	---	---	---						
13	7.4	7.3	7.3	---	---	---						
14	7.3	7.2	7.3	---	---	---						
15	7.4	7.2	7.3	7.8	7.6	7.7						
16	7.4	7.3	7.3	7.9	7.7	7.8						
17	7.4	7.3	7.4	7.9	7.8	7.8						
18	7.4	7.3	7.3	7.9	7.8	7.9						
19	7.4	7.3	7.3	8.1	7.8	8.0						
20	7.4	7.3	7.4	7.9	7.8	7.8						
21	7.5	7.3	7.4	7.9	7.8	7.9						
22	7.5	7.3	7.4	8.2	7.9	8.0						
23	7.7	7.4	7.6	8.1	7.6	7.7						
24	7.7	7.6	7.6	7.8	7.7	7.7						
25	7.6	7.6	7.6	7.9	7.8	7.8						
26	7.6	7.5	7.5	7.9	7.8	7.9						
27	7.5	7.5	7.5	8.0	7.9	7.9						
28	7.5	7.4	7.5	8.1	8.0	8.0						
29	7.5	7.4	7.5	---	---	---						
30	7.5	7.4	7.5	---	---	---						
31	---	---	---	---	---	---						
MONTH	7.7	7.2	7.4	8.2	7.4	7.8						

## TRINITY RIVER MAIN STEM

08062700 TRINITY RIVER AT TRINIDAD, TX--Continued  
(National stream-quality accounting network)

## TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	27.0	26.0	26.5	20.5	19.5	20.0	11.5	10.5	11.0	11.0	10.5	11.0
2	27.0	26.0	26.5	20.0	19.5	20.0	11.5	10.5	11.0	11.0	10.5	10.5
3	26.5	26.0	26.5	20.5	19.5	20.0	11.0	10.0	10.5	11.0	10.5	11.0
4	26.5	26.0	26.5	20.5	19.5	20.0	11.0	10.0	10.5	11.0	10.5	10.5
5	26.0	25.0	25.5	19.5	18.0	18.5	11.0	10.0	10.5	11.0	10.0	10.5
6	25.0	23.0	24.0	18.0	17.0	18.0	11.5	10.5	11.0	11.5	10.5	11.0
7	23.0	22.5	22.5	18.0	17.5	18.0	12.0	11.0	11.5	11.5	11.0	11.5
8	22.5	21.0	21.5	18.5	18.0	18.0	13.0	12.0	12.5	12.0	11.5	11.5
9	21.5	20.5	21.0	18.5	17.5	18.0	12.0	11.5	12.0	12.0	12.0	12.0
10	22.0	21.0	21.5	18.0	17.5	17.5	12.0	11.5	12.0	11.5	10.5	11.0
11	22.5	22.0	22.5	17.5	15.5	16.5	11.5	11.0	11.0	10.5	9.5	10.5
12	22.5	20.5	21.5	15.5	14.0	15.0	11.0	10.5	11.0	10.0	9.0	9.5
13	20.5	19.5	20.0	13.5	11.5	12.5	11.0	10.5	10.5	9.5	9.0	9.0
14	19.5	18.5	19.0	12.0	11.0	11.5	10.5	10.0	10.5	10.0	9.5	10.0
15	19.5	18.5	19.0	11.5	10.5	11.0	11.0	10.0	10.5	11.0	10.0	11.0
16	20.0	18.5	19.5	12.5	11.5	12.0	11.0	10.5	11.0	12.0	11.0	11.5
17	20.0	18.5	19.5	13.5	12.5	13.0	12.0	11.0	11.5	12.0	11.5	12.0
18	20.0	19.0	19.5	14.5	13.0	14.0	12.0	11.0	11.5	12.0	9.0	10.0
19	20.5	19.5	20.0	15.5	14.5	15.0	12.0	11.0	11.5	9.0	8.0	8.5
20	20.5	19.5	20.0	16.0	15.5	16.0	11.5	11.0	11.0	8.5	8.0	8.0
21	20.5	20.0	20.0	16.0	15.5	15.5	11.0	10.5	10.5	8.0	7.5	8.0
22	20.0	20.0	20.0	16.0	16.0	16.0	10.5	10.5	10.5	7.5	7.0	7.0
23	20.5	20.0	20.5	16.5	15.5	16.0	10.5	10.0	10.0	8.5	7.0	7.5
24	20.5	20.0	20.5	15.0	13.5	14.5	10.5	10.0	10.5	9.0	8.0	8.5
25	20.0	19.0	19.5	13.5	10.5	12.0	11.0	10.0	10.5	9.0	8.5	9.0
26	19.5	19.0	19.0	11.5	9.5	10.5	11.5	11.0	11.0	9.0	8.5	8.5
27	19.0	18.5	18.5	12.0	11.0	11.5	11.5	11.5	11.5	9.5	8.5	9.0
28	19.0	18.0	19.0	11.0	10.0	10.5	11.5	11.5	11.5	10.0	9.0	9.5
29	19.5	18.5	19.0	10.5	9.5	10.0	12.0	11.5	11.5	11.0	10.0	10.5
30	19.5	18.5	19.0	11.5	10.5	10.5	11.5	11.0	11.5	11.0	10.5	11.0
31	20.0	19.0	19.5	---	---	---	11.5	10.5	11.0	11.0	10.5	11.0
MONTH	27.0	18.0	21.0	20.5	9.5	15.0	13.0	10.0	11.0	12.0	7.0	10.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	11.0	10.5	10.5	12.0	11.0	11.5	11.0	10.0	10.5	24.0	22.0	23.0
2	11.0	10.5	11.0	12.5	10.5	12.0	11.0	11.0	11.0	24.0	23.0	23.5
3	11.5	11.0	11.0	13.0	12.0	12.5	11.5	10.5	11.0	23.5	20.5	22.0
4	12.5	11.5	12.0	13.0	10.5	11.5	12.0	11.0	11.5	21.5	21.0	21.0
5	13.0	12.0	12.5	11.5	10.5	11.0	11.5	11.0	11.5	21.0	20.0	20.5
6	12.5	12.0	12.5	11.5	11.0	11.5	12.0	11.0	11.5	21.5	20.0	21.0
7	12.0	11.0	11.5	11.0	10.5	11.0	12.0	11.0	12.0	23.5	22.0	22.5
8	12.5	11.0	11.5	11.5	10.5	11.0	13.0	11.5	12.5	23.0	22.5	23.0
9	12.0	11.5	11.5	11.5	10.5	11.0	13.5	12.5	13.0	24.5	23.0	23.5
10	12.0	11.0	11.5	11.0	10.5	11.0	14.5	13.0	14.0	25.5	23.5	25.0
11	13.0	11.5	12.0	11.0	10.5	10.5	15.5	14.0	14.5	26.0	24.0	25.0
12	13.5	12.5	13.0	10.5	10.0	10.5	16.0	15.0	15.5	26.5	25.0	26.0
13	14.5	13.5	14.0	11.0	10.5	10.5	16.5	16.0	16.0	26.0	24.0	25.5
14	15.0	14.0	14.5	11.5	10.5	11.0	17.0	16.0	16.5	25.5	24.0	25.0
15	15.5	15.0	15.5	12.5	11.5	12.0	17.0	16.5	16.5	25.5	24.0	24.5
16	15.0	13.5	14.0	13.0	12.5	12.5	17.5	16.0	16.5	24.0	24.0	24.0
17	13.5	12.0	12.5	14.0	12.5	13.0	18.0	16.0	17.0	25.0	24.0	24.5
18	12.5	10.0	12.0	14.0	12.0	13.0	19.5	17.5	18.5	24.5	24.0	24.5
19	12.0	10.0	11.5	14.0	12.5	13.0	20.5	19.0	20.0	28.5	23.5	25.5
20	11.0	9.5	10.0	14.5	13.0	13.5	22.0	20.0	21.0	28.5	27.5	28.0
21	10.0	9.5	9.5	15.5	14.5	15.0	22.0	21.5	21.5	29.0	26.5	27.5
22	10.0	9.0	9.5	16.0	14.5	15.0	22.5	21.0	21.5	28.5	26.5	27.0
23	10.5	9.0	10.0	15.5	14.5	15.0	22.5	20.5	21.5	28.0	26.0	27.0
24	10.5	10.0	10.5	14.5	14.0	14.0	22.5	20.5	21.5	27.5	26.5	27.0
25	11.0	10.5	10.5	14.0	13.0	13.5	22.5	20.5	21.5	27.0	26.0	26.5
26	11.5	11.0	11.0	13.0	12.5	12.5	22.5	21.0	22.0	28.5	26.5	27.0
27	11.5	9.5	11.0	13.0	12.0	12.5	23.5	21.0	22.5	28.0	26.5	27.0
28	11.5	9.5	11.0	13.0	12.0	12.5	24.5	22.0	23.0	27.0	26.0	27.0
29	---	---	---	12.5	11.5	12.0	24.0	22.0	23.5	26.5	24.5	25.0
30	---	---	---	11.5	11.0	11.0	23.5	22.0	23.0	26.0	22.5	24.0
31	---	---	---	10.5	10.0	10.5	---	---	---	23.0	22.0	22.5
MONTH	15.5	9.0	11.5	16.0	10.0	12.0	24.5	10.0	17.0	29.0	20.0	24.5

## TRINITY RIVER MAIN STEM

373

08062700 TRINITY RIVER AT TRINIDAD, TX--Continued  
(National stream-quality accounting network)

## TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	25.0	23.0	24.0	---	---	---	---	---	---	---	---	---
2	26.5	25.0	26.0	---	---	---	---	---	---	---	---	---
3	27.0	26.5	26.5	---	---	---	---	---	---	---	---	---
4	26.5	25.5	26.0	---	---	---	---	---	---	---	---	---
5	26.0	25.0	25.0	---	---	---	---	---	---	---	---	---
6	26.0	25.0	25.5	---	---	---	33.0	31.5	32.0	---	---	---
7	26.5	25.0	25.5	---	---	---	---	---	---	---	---	---
8	26.0	25.0	25.5	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---
10	26.0	23.5	25.0	---	---	---	---	---	---	---	---	---
11	25.5	22.0	24.0	---	---	---	---	---	---	---	---	---
12	26.0	23.0	24.0	---	---	---	---	---	---	---	---	---
13	26.0	24.0	25.0	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	28.0	27.0	27.5	---	---	---	---	---	---
16	---	---	---	28.0	27.0	27.5	---	---	---	---	---	---
17	29.5	27.5	28.5	27.5	27.0	27.5	---	---	---	---	---	---
18	29.0	27.5	28.5	28.5	27.0	28.0	---	---	---	---	---	---
19	30.0	25.5	28.0	29.0	27.5	28.5	---	---	---	---	---	---
20	29.5	28.0	29.0	29.0	28.0	28.5	---	---	---	---	---	---
21	---	---	---	29.5	28.5	29.0	32.0	29.5	31.0	---	---	---
22	---	---	---	30.5	28.5	29.5	31.5	29.0	31.0	---	---	---
23	---	---	---	---	---	---	31.5	30.0	31.0	---	---	---
24	---	---	---	---	---	---	32.0	30.5	31.0	---	---	---
25	---	---	---	---	---	---	31.5	30.5	31.0	---	---	---
26	---	---	---	---	---	---	31.0	30.0	30.5	---	---	---
27	---	---	---	---	---	---	30.5	29.0	29.5	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
MONTH	30.0	22.0	26.0	30.5	27.0	28.5	33.0	29.0	31.0	---	---	---

## OXYGEN, DISSOLVED (DO), MG/L, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	8.3	6.0	7.1	7.3	6.9	7.1	9.9	9.7	9.8	9.7	9.3	9.5
2	8.2	5.8	7.1	7.0	6.6	6.7	10.1	9.3	9.8	9.6	9.4	9.5
3	7.2	6.0	6.7	6.7	6.3	6.5	9.4	9.2	9.3	9.4	9.2	9.3
4	8.9	6.1	7.3	6.6	5.9	6.3	9.6	9.4	9.4	9.5	9.0	9.3
5	8.0	6.6	7.1	6.3	4.8	5.7	9.6	9.4	9.5	9.6	9.2	9.4
6	6.9	5.3	6.2	6.5	5.8	6.2	9.5	9.3	9.4	9.5	9.1	9.3
7	5.2	3.2	4.4	5.9	5.0	5.4	9.3	8.9	9.1	9.1	8.9	9.0
8	4.9	2.9	4.3	6.2	5.1	5.5	8.9	8.6	8.8	9.2	8.9	9.0
9	5.6	5.0	5.4	7.7	6.3	7.1	11.1	9.1	10.4	8.9	8.7	8.8
10	6.2	5.4	5.8	7.7	7.6	7.6	9.5	8.4	8.7	9.0	8.6	8.8
11	6.2	5.2	5.6	8.1	7.7	7.9	8.9	8.6	8.7	9.9	9.3	9.5
12	5.8	5.2	5.5	7.7	5.9	7.0	9.1	8.8	8.9	10.0	9.5	9.8
13	6.5	5.7	6.1	6.6	5.7	6.3	9.3	9.2	9.2	10.1	9.8	10.0
14	6.7	5.7	6.3	8.0	6.1	7.1	9.5	9.0	9.4	9.9	9.8	9.9
15	6.7	6.1	6.3	8.8	8.0	8.5	10.1	8.7	9.4	9.7	9.3	9.4
16	7.0	6.1	6.4	8.9	8.7	8.9	10.3	10.0	10.2	9.4	8.7	9.1
17	7.1	6.8	6.9	8.7	8.2	8.4	9.9	8.3	8.9	8.9	8.5	8.7
18	7.2	6.7	7.1	8.3	7.6	8.0	10.7	8.8	9.8	11.0	8.6	10.5
19	7.5	6.7	7.1	7.8	7.3	7.6	10.6	9.3	9.8	10.9	10.7	10.8
20	7.3	6.3	6.8	7.5	7.1	7.3	9.8	9.1	9.4	11.3	10.9	11.0
21	7.4	6.2	6.5	7.5	7.1	7.3	10.2	9.7	9.9	11.5	10.9	11.2
22	7.1	6.4	6.7	7.3	6.8	7.1	9.7	9.6	9.6	11.1	10.7	10.9
23	6.8	6.2	6.5	6.8	6.5	6.6	11.1	9.6	10.7	10.7	10.2	10.5
24	6.6	4.3	6.0	7.4	6.6	6.8	10.5	9.7	9.9	10.8	10.2	10.5
25	5.3	3.6	4.5	8.0	7.5	7.8	10.6	9.6	10.0	10.8	10.6	10.7
26	5.4	5.2	5.3	9.4	8.0	8.5	10.5	9.2	10.1	10.8	10.5	10.7
27	6.7	5.4	5.9	9.5	8.8	9.3	9.3	9.2	9.2	10.9	10.6	10.8
28	7.1	6.8	7.0	8.8	8.1	8.6	9.3	9.2	9.3	10.8	10.7	10.7
29	7.3	7.0	7.1	9.0	8.1	8.4	9.4	9.1	9.2	10.6	10.4	10.5
30	7.5	7.1	7.4	9.7	9.0	9.4	9.5	9.2	9.4	10.6	10.3	10.4
31	7.5	7.0	7.2	---	---	---	9.5	9.2	9.4	10.5	10.2	10.4
MONTH	8.9	2.9	6.3	9.7	4.8	7.4	11.1	8.3	9.5	11.5	8.5	9.9

## TRINITY RIVER MAIN STEM

08062700 TRINITY RIVER AT TRINIDAD, TX--Continued  
(National stream-quality accounting network)

## OXYGEN, DISSOLVED (DO), MG/L, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	10.5	10.2	10.3	---	---	---	9.6	9.4	9.6	8.2	5.9	6.9
2	10.4	10.2	10.3	---	---	---	9.5	9.3	9.4	6.6	4.5	5.6
3	10.4	10.2	10.3	---	---	---	9.5	9.2	9.4	4.3	.0	2.1
4	10.2	9.8	9.9	---	---	---	9.4	9.1	9.3	3.3	2.8	3.0
5	9.9	9.3	9.5	7.8	7.6	7.7	9.4	9.2	9.3	3.7	3.3	3.5
6	9.6	9.2	9.4	8.6	7.7	8.2	9.4	9.2	9.3	4.2	3.7	4.1
7	9.6	9.3	9.5	9.0	8.6	8.8	9.4	9.1	9.3	4.7	4.2	4.4
8	9.4	8.9	9.2	9.1	8.8	9.0	9.2	9.0	9.1	4.8	4.4	4.5
9	9.2	8.9	9.0	9.0	8.8	8.9	9.0	8.7	8.9	5.8	4.8	5.2
10	9.3	9.1	9.2	9.0	8.8	8.9	8.7	8.5	8.6	6.1	4.8	5.7
11	9.4	9.0	9.2	9.0	8.8	8.9	8.5	8.3	8.4	7.5	5.9	6.5
12	9.3	8.9	9.1	9.1	9.0	9.1	8.5	8.2	8.4	8.7	7.1	7.7
13	9.0	8.5	8.6	9.2	8.9	9.0	8.2	7.6	7.9	7.6	6.2	6.5
14	8.6	7.4	7.9	9.2	8.9	9.0	7.8	7.5	7.6	6.3	4.3	5.8
15	7.7	6.9	7.2	8.9	8.7	8.9	7.8	7.5	7.6	6.0	4.2	4.6
16	7.5	7.1	7.2	8.7	8.5	8.6	7.6	7.2	7.3	4.2	3.8	3.9
17	7.9	7.1	7.6	9.6	8.3	8.9	7.3	7.0	7.2	3.8	1.6	3.3
18	8.3	7.8	8.0	9.4	8.3	9.0	7.2	6.7	7.0	4.5	3.3	3.9
19	9.0	7.8	8.5	8.6	8.2	8.4	6.9	6.6	6.7	5.5	4.5	4.9
20	---	---	---	8.3	7.5	8.1	6.8	6.3	6.5	6.1	5.4	5.8
21	---	---	---	7.6	7.4	7.5	6.8	6.2	6.5	6.3	5.2	6.1
22	9.2	8.8	8.9	8.1	7.6	7.8	7.1	6.1	6.5	4.5	2.4	3.2
23	---	---	---	8.5	8.0	8.2	7.4	6.5	6.9	5.3	3.3	4.6
24	---	---	---	8.5	8.2	8.4	8.1	6.9	7.4	5.7	5.3	5.5
25	---	---	---	8.8	8.5	8.7	7.7	6.9	7.3	5.7	5.1	5.3
26	---	---	---	8.9	8.8	8.9	7.8	6.5	7.1	6.1	5.2	5.8
27	---	---	---	9.0	8.8	9.0	8.5	6.6	7.4	5.7	4.9	5.3
28	---	---	---	9.0	8.9	8.9	7.9	6.9	7.3	6.5	5.4	5.7
29	---	---	---	9.2	8.9	9.0	8.7	6.9	8.0	6.6	6.2	6.5
30	---	---	---	9.2	9.0	9.1	8.9	6.7	7.5	6.2	3.0	4.7
31	---	---	---	9.5	9.2	9.4	---	---	---	5.0	3.5	4.4
MONTH	10.5	6.9	8.9	9.6	7.4	8.7	9.6	6.1	8.0	8.7	.0	5.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	5.0	4.8	4.9	6.5	6.4	6.5	---	---	---	---	---	---
2	5.1	4.8	4.9	6.5	6.3	6.4	---	---	---	---	---	---
3	5.5	5.1	5.3	6.3	6.0	6.1	---	---	---	---	---	---
4	6.0	5.5	5.8	---	---	---	---	---	---	---	---	---
5	6.4	6.1	6.2	---	---	---	---	---	---	---	---	---
6	6.6	6.4	6.5	---	---	---	---	---	---	---	---	---
7	6.6	6.4	6.5	---	---	---	---	---	---	---	---	---
8	6.6	6.4	6.5	---	---	---	---	---	---	---	---	---
9	6.7	6.5	6.6	---	---	---	7.8	5.7	6.1	---	---	---
10	6.8	6.6	6.7	---	---	---	6.2	5.6	5.9	---	---	---
11	6.7	6.1	6.5	---	---	---	10.2	6.2	7.7	---	---	---
12	6.2	5.9	6.0	---	---	---	8.9	5.8	7.2	---	---	---
13	6.2	5.7	6.0	---	---	---	6.6	4.8	5.7	---	---	---
14	5.8	5.5	5.6	---	---	---	6.9	4.7	5.7	---	---	---
15	6.0	5.6	5.7	6.4	6.0	6.3	7.0	4.9	6.0	---	---	---
16	5.9	5.2	5.6	6.6	6.2	6.4	7.8	5.0	6.3	---	---	---
17	5.7	5.3	5.5	6.4	6.1	6.2	8.2	5.6	6.8	---	---	---
18	5.6	5.2	5.4	6.5	6.2	6.3	9.3	6.0	7.6	---	---	---
19	5.7	5.2	5.4	6.8	6.2	6.5	9.1	6.4	7.7	---	---	---
20	5.9	5.5	5.7	---	---	---	8.5	6.0	7.4	---	---	---
21	5.8	4.9	5.4	---	---	---	8.4	6.0	7.2	---	---	---
22	6.0	5.4	5.7	---	---	---	9.6	6.5	7.8	---	---	---
23	6.1	5.7	5.8	---	---	---	8.8	6.1	7.4	---	---	---
24	6.3	5.9	6.1	---	---	---	8.8	6.0	7.3	---	---	---
25	6.3	5.9	6.1	---	---	---	9.6	6.4	7.9	---	---	---
26	6.2	5.8	6.0	---	---	---	7.6	5.9	6.8	---	---	---
27	6.2	5.9	6.0	---	---	---	6.9	5.8	6.4	---	---	---
28	6.2	6.0	6.1	---	---	---	---	---	---	---	---	---
29	6.2	6.1	6.2	---	---	---	---	---	---	---	---	---
30	6.4	6.2	6.3	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
MONTH	6.8	4.8	5.9	6.8	6.0	6.3	10.2	4.7	6.9	---	---	---

## TRINITY RIVER BASIN

375

08062800 CEDAR CREEK NEAR KEMP, TX

LOCATION.--Lat 32°30'18", long 96°06'57", Kaufman County, Hydrologic Unit 12030107, on left bank at downstream side of highway embankment at left end of bridge on Farm Road 1836, 3.6 mi upstream from Williams Creek, 8.1 mi north-east of Kemp, and 51.5 mi upstream from mouth.

DRAINAGE AREA.--189 mi<sup>2</sup>.

PERIOD OF RECORD.--January 1963 to September 1987 (discontinued).

GAGE.--Water-stage recorder and crest-stage gages. Datum of gage is 341.48 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those below 10 ft<sup>3</sup>/s, which are fair, and estimated daily discharges, which are poor. Flow is affected at times by storage in Terrell Municipal Lake (capacity, 8,300 acre-ft). The city of Terrell diverts water from Terrell Municipal Lake (above this station) for municipal use and returns sewage effluent to a tributary of Kings Creek that enters the creek downstream from this station. Flow is affected at times by discharge from the flood-detention pools of 20 floodwater-retarding structures with a combined detention capacity of 18,880 acre-ft. These structures control runoff from 55.9 mi<sup>2</sup>.

AVERAGE DISCHARGE.--24 years (water years 1964-87), 114 ft<sup>3</sup>/s (82,590 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 29,000 ft<sup>3</sup>/s Apr. 26, 1966 (gage height, 16.8 ft); no flow at times each year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1889, about 20.5 ft in 1945, from information by State Department of Highways and Public Transportation and local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Nov. 26	0800	2,910	13.61	Mar. 18	0430	*3,250	*13.75

Minimum discharge, no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.99	104	e28	11	1540	e36	.70	17	11	.76	e.00
2	.00	.63	62	e21	10	592	e23	.71	42	11	.65	e.00
3	.00	.40	45	e17	10	112	e18	.73	321	53	.61	e.00
4	.00	5.1	e46	e16	10	66	e15	.85	300	261	.62	e.00
5	.00	32	e40	e15	9.0	48	e12	1.4	58	228	.54	e.00
6	.01	34	e35	e14	7.6	39	e10	1.4	30	63	.52	e.00
7	.01	20	e31	13	6.6	32	e9.3	1.7	22	38	.48	e.00
8	.02	13	e28	11	6.1	29	e8.9	1.5	19	30	.44	e.00
9	.00	6.8	e25	51	6.1	25	8.4	1.1	17	26	.39	e.00
10	.00	3.7	e23	448	5.8	22	7.5	.83	17	23	.45	e.00
11	.14	2.7	e23	199	4.6	20	6.3	.64	20	21	.48	e.00
12	220	25	e20	67	4.4	19	5.5	.65	18	19	.44	e.00
13	503	22	e19	41	4.0	18	5.2	.89	125	16	.42	e.00
14	68	13	e18	30	4.1	17	15	1.7	713	14	.43	e.00
15	31	9.1	e98	24	17	16	19	16	1260	13	.43	e.00
16	18	6.2	e467	20	49	15	15	35	688	11	.39	e.00
17	11	4.0	e147	19	30	800	12	27	127	9.7	.30	e.00
18	5.3	2.4	e177	526	19	2720	9.0	21	305	8.3	.19	e.00
19	2.2	1.3	e1560	1490	14	1870	6.7	14	428	6.9	.10	e.00
20	1.0	1.3	e1380	600	178	1120	4.9	10	133	e5.0	e.00	e.00
21	.54	1.5	e198	101	1230	366	3.5	8.3	66	e2.2	e.00	e.00
22	.47	2.9	e75	56	936	146	2.4	7.6	46	e1.8	e.00	e.00
23	35	39	e85	40	130	71	1.8	8.1	34	e1.5	e.00	e.00
24	191	47	e235	30	153	57	1.6	6.5	27	e1.4	e.00	e.00
25	180	714	e137	24	679	43	1.2	5.3	24	e1.3	e.00	e.00
26	48	2210	e50	20	478	32	1.2	5.1	21	e1.2	e.00	e.00
27	23	1640	e30	18	1380	27	.95	5.4	18	e1.1	e.00	e.00
28	14	1210	e24	16	1610	e22	.82	5.1	15	e1.0	e.00	e.00
29	8.8	819	e21	15	---	e20	1.1	6.5	14	e.98	e.00	e.00
30	5.0	334	e20	14	---	e38	.82	6.8	12	.91	e.00	e.00
31	2.1	---	e18	12	---	e61	---	13	---	.84	e.00	---
TOTAL	1367.59	7221.02	5241	3996	7002.3	10003	262.09	215.50	4937	882.13	8.64	.00
MEAN	44.1	241	169	129	250	323	8.74	6.95	165	28.5	.28	.00
MAX	503	2210	1560	1490	1610	2720	36	35	1260	261	.76	.00
MIN	.00	.40	18	11	4.0	15	.82	.64	12	.84	.00	.00
AC-FT	2710	14320	10400	7930	13890	19840	520	427	9790	1750	17	.0
CAL YR 1986	TOTAL	62307.64	MEAN	171	MAX	4230	MIN	.00	AC-FT	123600		
WTR YR 1987	TOTAL	41135.98	MEAN	113	MAX	2720	MIN	.00	AC-FT	81590		

e Estimated.

## TRINITY RIVER BASIN

08062900 KINGS CREEK NEAR KAUFMAN, TX.

LOCATION--Lat 32°30'48", long 96°19'44", Kaufman County, Hydrologic Unit 12030107, on left bank at downstream side of bridge on Farm Road 1388, 3.6 mi upstream from Big Cottonwood Creek, 4.8 mi downstream from Big Brush Creek, and 5.3 mi south of Kaufman.

DRAINAGE AREA.--233 mi<sup>2</sup>.

PERIOD OF RECORD.--January 1963 to September 1987 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 343.24 ft above State Department of Highways and Public Transportation datum.

REMARKS.--Records fair. During the year, the cities of Terrell and Kaufman returned sewage effluent (amounts unknown) into the creek above this station. Flow is affected at times by discharge from the flood-detention pools of 28 floodwater-retarding structures with a combined detention capacity of 14,560 acre-ft. These structures control runoff from 46.8 mi<sup>2</sup> in the Cedar Creek drainage basins. Gage-height telemeter is at station.

AVERAGE DISCHARGE.--24 years (water years 1964-87), 157 ft<sup>3</sup>/s (113,700 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 56,200 ft<sup>3</sup>/s Apr. 19, 1976 (gage height, 26.19 ft), from rating curve extended above 50,000 ft<sup>3</sup>/s; no flow at times most years. Maximum stage since at least 1942, that of Apr. 19, 1976.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1949 reached a stage of 23.1 ft, from information by State Department of Highways and Public Transportation.

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

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Nov. 25	1830	*21,000	*22.16	Mar. 18	1130	3,970	18.40
Mar. 1	0300	3,880	18.35				

Minimum daily discharge, 0.80 ft<sup>3</sup>/s Oct. 3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.90	11	250	59	6.1	3380	54	.92	16	.85	1.9	6.3
2	.85	8.4	194	30	9.9	669	28	.99	19	1.7	1.5	6.7
3	.80	6.8	144	25	13	214	17	1.8	9.0	e53	1.6	9.0
4	.99	4.6	118	22	8.4	142	16	2.2	5.9	e500	1.5	9.9
5	.94	5.5	87	19	6.5	105	13	38	3.0	e465	1.7	8.1
6	1.6	11	65	16	6.5	83	11	1.3	2.1	e63	2.1	6.3
7	22	4.5	44	14	6.5	63	9.3	4.0	2.3	e38	1.8	5.9
8	4.0	3.0	30	12	7.6	51	8.0	2.2	1.1	e30	1.8	5.7
9	16	2.2	21	129	7.6	43	7.2	1.9	1.5	e26	1.5	5.9
10	7.8	1.9	19	527	6.5	33	6.3	1.7	1.5	20	2.6	6.5
11	4.2	700	19	174	7.8	22	5.4	1.5	.85	12	1.6	6.9
12	523	474	15	98	5.1	16	4.5	1.4	1.7	9.3	2.3	8.1
13	178	103	12	72	4.2	14	4.7	.85	510	5.3	2.6	13
14	46	55	10	56	4.0	9.6	8.1	.99	1050	2.8	4.0	9.9
15	19	34	263	43	64	9.3	9.6	1.7	175	2.3	5.3	6.9
16	7.6	23	515	31	75	7.4	5.3	1.4	257	2.1	2.7	4.9
17	4.2	19	189	34	33	1470	5.0	2.8	206	2.0	1.8	3.7
18	2.7	13	821	1020	15	3660	4.3	1.7	349	1.8	1.9	4.2
19	2.0	12	1590	959	8.4	1000	3.7	.85	297	1.7	1.9	4.4
20	1.6	11	439	236	727	219	3.0	.85	193	1.5	1.6	4.5
21	1.2	9.7	184	134	1790	138	2.7	3.0	101	2.0	2.6	3.9
22	.99	30	121	102	413	100	2.4	18	51	1.4	3.4	3.4
23	382	239	181	78	162	80	1.9	14	23	1.8	4.0	2.7
24	1390	185	347	64	161	80	1.9	12	11	2.2	4.7	3.1
25	535	12300	200	53	379	61	1.9	11	5.5	2.1	3.9	3.4
26	106	9960	144	40	794	47	2.0	8.7	3.9	2.6	3.7	3.7
27	56	3400	110	33	2170	37	1.6	8.2	2.4	3.1	4.7	3.5
28	35	1020	90	20	2870	25	1.1	7.2	2.0	2.3	5.3	4.2
29	23	523	76	13	---	23	.85	5.3	1.1	1.5	5.9	6.5
30	16	377	61	7.1	---	93	.99	4.4	.85	1.8	6.1	6.2
31	13	---	47	6.1	---	98	---	2.8	---	2.1	6.1	---
TOTAL	3402.37	29546.6	6406	4126.2	9761.1	11992.3	240.74	163.65	3302.70	1261.25	94.1	177.4
MEAN	110	985	207	133	349	387	8.02	5.28	110	40.7	3.04	5.91
MAX	1390	12300	1590	1020	2870	3660	54	38	1050	500	6.1	13
MIN	.80	1.9	10	6.1	4.0	7.4	.85	.85	.85	.85	1.5	2.7
AC-FT	6750	58610	12710	8180	19360	23790	478	325	6550	2500	187	352

CAL YR 1986 TOTAL 92202.89 MEAN 253 MAX 12300 MIN .66 AC-FT 182900  
WTR YR 1987 TOTAL 70473.52 MEAN 193 MAX 12300 MIN .80 AC-FT 139800

e Estimated.

## 08063010 CEDAR CREEK RESERVOIR NEAR TRINIDAD, TX

LOCATION.--Lat 32°14'35", long 96°08'26", Henderson County, Hydrologic Unit 12030107, inside pumphouse on lower level, 1,000 ft north of spillway, 5.5 mi upstream from Joe B. Hogsett Dam on Cedar Creek, and 8.0 mi northwest of Trinidad.

DRAINAGE AREA.--1,007 mi<sup>2</sup>.

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

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to May 15, 1972, at unfinished pumphouse at same site and datum. May 16, 1972, to Sept. 8, 1975, at site 0.25 mi north and upstream from pumphouse at same datum.

REMARKS.--The reservoir is formed by a rolled earthfill dam 17,539 ft long. The spillway is located on the right bank 5.5 mi upstream from the dam and discharges into the Trinity River through a cut channel 2 mi long. Deliberate impoundment began July 2, 1965, and the dam was completed in February 1966. The spillway is 474 ft long and has eight 40- by 24-foot radial gates and two automatically operated 40- by 8.5-foot hinged gates. Low-flow releases may be made downstream through a 5.0-foot-diameter conduit through the dam. The dam is the property of Tarrant County Water Control and Improvement District No. 1 and was built for municipal and industrial supply and for recreational purposes. The area and capacity tables were based on a survey during the period 1940-58. Water is diverted from the reservoir for municipal and industrial uses by lakeside developments and by the cities of Arlington, Fort Worth, Mansfield, Kemp, Trinidad, and Mabank. Figures given herein represent total contents. Gage-height telemeter at station. Data regarding the dam and reservoir are given in the following table:

	Elevation (feet)	Capacity (acre-feet)
Top of dam.....	340.0	-
Top of radial gates.....	325.0	785,100
Top of automatic gates.....	322.5	696,400
Top of conservation pool.....	322.0	679,200
Crest of spillway (automatic gates).....	314.0	441,000
Crest of spillway (radial gates).....	302.0	197,800
Lowest gated outlet (invert).....	263.5	430

COOPERATION.--Records of diversions provided by the Tarrant County Water Control and Improvement District No. 1. The area and capacity tables were provided by Freese and Nichols, Consulting Engineers, for Tarrant County Water Control and Improvement District No. 1.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 722,000 acre-ft June 4, 1973 (elevation, 323.24 ft); minimum since first appreciable storage in 1966, 332,900 acre-ft Mar. 19, 1967 (elevation, 309.42 ft).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 686,100 acre-ft Feb. 26 at 2100 hours (elevation, 322.20 ft); minimum, 602,900 acre-ft Sept. 30 (elevation, 319.65 ft).

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

319.0	582,600
321.0	646,000
323.0	713,500

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	629900	642200	680600	677200	678600	681600	674900	659300	673300	673300	651700	619000
2	628600	641800	679200	675900	677600	682000	675200	658300	673600	674600	650700	617700
3	628300	640900	679200	677600	677200	679600	674900	659000	676600	675200	649000	617100
4	631500	649000	679200	676600	677200	679900	674300	662600	677600	674900	648400	615800
5	631900	648700	678900	675900	678600	680600	673600	662300	678200	676600	647400	614800
6	632200	647000	678900	676900	678600	680900	673600	663300	676900	675600	646000	613500
7	631900	648000	679600	677200	676200	680900	673300	662000	676200	673600	645100	613800
8	632800	647700	684400	675200	676600	680900	672600	664000	675900	674300	643500	613500
9	632500	647400	679200	680300	675200	682700	671900	662000	675900	673300	642200	612300
10	632200	650300	679200	681600	674900	682700	671600	661600	677200	672300	641500	615400
11	633500	647400	679200	678600	674900	680600	669900	661600	677900	670300	641200	613200
12	636700	651000	677900	679200	674300	680300	670900	660600	679200	670300	639600	613500
13	636000	646700	677600	678900	673300	679900	673300	662600	678600	671300	637700	612900
14	636400	645400	679600	679600	676900	678900	671600	661600	680900	668600	636700	612900
15	636000	645400	679900	679900	679900	678600	670600	661300	680900	666900	635400	614500
16	635100	645100	679200	680300	679200	680600	669900	664000	679200	666000	633800	615400
17	634800	644700	680900	682000	678600	683000	669300	662600	681600	665000	633500	614500
18	633800	645700	679200	685100	678600	684400	668600	663000	680300	665000	632200	613800
19	633800	644400	680900	684400	679200	683700	667300	662300	683000	664000	631500	612600
20	633200	644100	679900	679900	683300	683300	667600	663300	680300	663300	630600	612000
21	631500	643100	679200	680300	681300	681600	667300	664000	680900	662600	629300	611300
22	632800	645700	680900	678600	682700	678600	666000	663600	680300	662000	628300	609800
23	639300	647700	677900	678200	680300	678200	665600	665600	680900	660300	627000	608800
24	643500	649400	680600	678900	682000	680300	665300	666900	680300	660000	626100	607600
25	645700	667600	679200	678900	682700	679900	664600	665000	680300	660000	624500	607000
26	645400	682700	678200	678200	686100	679900	664000	663600	678600	657000	622800	605700
27	645100	682300	678600	678200	685400	678600	663300	663300	676900	656700	622800	605100
28	644400	684400	678200	677200	683300	682700	662600	664600	675200	656700	621600	606300
29	644100	684400	678200	678600	---	679200	661000	670300	674600	655300	619900	605100
30	642800	683000	677900	678200	---	676600	660000	671300	673300	654000	618700	602900
31	642500	---	677600	676900	---	676200	---	673300	---	653300	619300	---
MAX	645700	684400	684400	685100	686100	684400	675200	673300	683000	676600	651700	619000
MIN	628300	640900	677600	675200	673300	676200	660000	658300	673300	653300	618700	602900
(↑)	320.89	322.11	321.95	321.93	322.12	321.91	321.42	321.82	321.82	321.22	320.17	319.65
(Φ)	+11300	+40500	-5400	-700	+6400	-7100	-16200	+13300	0	-20000	-34000	-16400

CAL YR 1986 MAX 688100 MIN 628300 (Φ) -1600  
WTR YR 1987 MAX 686100 MIN 602900 (Φ) -28300

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

## TRINITY RIVER BASIN

08063050 NAVARRO MILLS LAKE NEAR DAWSON, TX

LOCATION.--Lat 31°57'27", long 96°41'21", Navarro County, Hydrologic Unit 12030108, in left abutment of spillway of Navarro Mills Dam on Richland Creek, 1.7 mi upstream from bridge on State Highway 31, 3.0 mi upstream from St. Louis Southwestern Railway Lines bridge, 4.2 mi upstream from Post Oak Creek, 4.6 mi north of Dawson, and 63.9 mi upstream from mouth.

DRAINAGE AREA.--320 mi<sup>2</sup>.

PERIOD OF RECORD.--August 1962 to current year. Prior to October 1970, published as Navarro Mills Reservoir.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Oct. 8, 1962, nonrecording gage in low-water channel at same datum.

REMARKS.--The lake is formed by a rolled earthfill dam 7,570 ft long, including a 240-foot off-channel gated spillway with six 40.0- by 29.0-foot tainter gates. From Aug. 27, 1962, to Mar. 14, 1963, lake was operated as a detention basin only. Deliberate impoundment began Mar. 15, 1963, and dam was completed in September 1963. Low-flow outlet works consist of two 36-inch-diameter gate-controlled conduits. Lake was built for flood control and water conservation. Capacity table prior to September 1976 is based on survey made in February 1956 by U.S. Army Corps of Engineers. Capacity table after Aug. 31, 1976, is based on a sedimentation survey made in September 1972. Flow is affected at times by discharge from the flood-detention pools of 51 floodwater-retarding structures with a combined detention capacity of 26,160 acre-ft. These structures control runoff from 86.9 mi<sup>2</sup> in the Richland Creek drainage basin. An unknown amount of water is diverted for municipal and industrial uses. Gage-height telemeter at station. Figures given herein represent total contents. Data regarding dam and lake are given in the following table:

	Elevation (feet)	Capacity (acre-feet)
Top of dam.....	457.0	-
Design flood.....	451.9	329,500
Top of gates (top of flood-control storage pool).....	443.0	206,200
Top of conservation pool.....	424.5	56,960
Crest of spillway.....	414.0	18,840
Lowest gated outlet (invert).....	400.0	1,150

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

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 183,300 acre-ft May 18, 1968 (elevation, 440.36 ft); minimum since initial filling in May 1965, 32,490 acre-ft Dec. 28, 1978 (elevation, 418.89 ft).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 100,300 acre-ft June 19 at 1300 hours (elevation, 431.53 ft); minimum, 48,860 acre-ft Sept. 30 at 2000 hours (elevation, 422.84 ft).

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

422.0	45,020	426.0	64,810	430.0	89,340
424.0	54,460	428.0	76,310	432.0	103,800

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	53570	57270	71890	66680	57120	70560	57120	56760	64220	70920	55170	51000
2	53470	57320	70440	65630	57170	71130	57120	56710	64920	68660	55120	50960
3	53370	57220	68510	64870	57320	71600	56510	58130	67900	65980	54960	50810
4	53320	64060	66450	63790	57270	72000	55850	62720	72590	63600	54810	50710
5	53320	65800	64380	62820	57520	72240	56160	62720	73410	61000	54660	50620
6	56810	65250	62350	61870	57670	71310	56160	62190	73710	59010	54510	50420
7	58240	64060	60560	60920	57720	69360	56210	61400	73180	58360	54360	50620
8	58700	62720	59160	59990	57720	67400	56310	62510	71940	57650	54220	50620
9	58800	61340	58750	60040	57720	65360	56310	66230	72470	57140	54070	50520
10	58900	60090	58750	59680	57780	63360	56310	65900	73470	57190	53970	50620
11	59520	58640	58540	59160	57930	61400	56410	65300	76610	57140	53780	50470
12	64710	57720	57880	58640	57980	59520	56360	64650	80300	57090	53630	50470
13	65360	57320	57220	58240	58080	58440	58340	63520	89890	56990	53480	50470
14	64810	57320	57520	57720	58180	57830	57320	62190	92200	56940	53390	50420
15	63310	57370	59780	57370	58540	57320	57170	64270	93820	56890	53190	50470
16	61290	57370	60510	57220	58390	56910	57060	64060	95320	56740	53100	50570
17	59730	57520	60820	57930	58340	58700	57010	62720	96480	56740	52900	50420
18	58440	57520	62030	62140	58340	59260	56960	61080	99680	56680	52710	50130
19	57620	57570	62140	62720	58390	59310	56910	58800	99240	56640	52560	50130
20	57420	57570	61870	62720	59520	58950	56910	57520	97710	56530	52420	50080
21	57320	57570	61550	62080	59990	58080	57220	57120	96110	56430	52270	49790
22	57780	57780	63410	61030	60250	57420	57170	57060	94180	56430	52170	49590
23	61130	57980	69470	60610	60090	57010	57170	57470	92410	56330	52030	49590
24	63790	59470	70670	60350	60350	56510	57120	59470	89890	56180	51880	49500
25	64170	71080	71310	59620	60720	56610	57120	59680	87150	56030	51690	49410
26	63790	72650	71650	59160	63680	56710	57060	58850	84270	56080	51540	49270
27	62660	73470	71250	58640	65360	56710	57010	57930	81460	55820	51440	49230
28	61190	73770	70390	58340	69640	57010	56910	57570	78660	55720	51340	49180
29	59880	73530	69530	57720	---	57060	56860	61980	76000	55570	51200	49040
30	58540	73000	68630	57320	---	57010	56760	64270	73470	55520	51150	48910
31	57570	---	67730	57010	---	57060	---	65250	---	55370	51200	---
MAX	65360	73770	71890	66680	69640	72240	58340	66230	99680	70920	55170	51000
MIN	53320	57220	57220	57010	57120	56510	55850	56710	64220	55370	51150	48910
(↑)	424.62	427.45	426.53	424.51	426.87	424.52	424.46	426.08	427.53	424.18	423.33	422.85
(Φ)	+3900	+15430	-5270	-10720	+12630	-12580	-300	+8490	+8220	+18100	-4170	-2290

CAL YR 1986 MAX 95250 MIN 53320 (Φ) +7170  
WTR YR 1987 MAX 99680 MIN 48910 (Φ) -4760

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

## TRINITY RIVER BASIN

379

08063100 RICHLAND CREEK NEAR DAWSON, TX

LOCATION.--Lat 31°56'18", long 96°40'52", Navarro County, Hydrologic Unit 12030108, at downstream side of bridge on State Highway 31, 1.3 mi upstream from St. Louis Southwestern Railway Lines bridge, 1.7 mi downstream from Navarro Mills Dam, 2.5 mi upstream from Post Oak Creek, and 3.6 mi northeast of Dawson.

DRAINAGE AREA.--333 mi<sup>2</sup>.

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

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

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 367.52 ft (revised) above National Geodetic Vertical Datum of 1929. Nov. 21, 1960, to Sept. 30, 1982, water-stage recorder at same site and at 3.00-foot higher datum. Prior to Nov. 21, 1960, nonrecording gage at same site and datum.

REMARKS.--Records good except those below 2.0 ft<sup>3</sup>/s, which are fair. Flow regulated since Mar. 15, 1963, by Navarro Mills Lake. Flow is affected at times by discharge from the flood-detention pool of a floodwater-retarding structure with a capacity of 297 acre-ft. This structure controls runoff from 1.28 mi<sup>2</sup> below Navarro Mills Lake and above this station. Gage-height telemeter located at station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--27 years, 144 ft<sup>3</sup>/s (104,300 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 25,500 ft<sup>3</sup>/s July 3, 1961 (gage height, 25.50 ft), from rating curve extended above 14,000 ft<sup>3</sup>/s; no flow at times. Maximum discharge since completion of Navarro Mills Dam in 1963, 3,850 ft<sup>3</sup>/s Nov. 24, 1974 (gage height, 22.85 ft).

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since about 1895, about 31 ft (revised) June 19, 1929, from information by local residents. Floods in 1946 and 1957 reached a stage of about 26 ft (revised), from information by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,400 ft<sup>3</sup>/s June 4 at 0730 hours (gage height, 17.08 ft); minimum daily, 0.01 ft<sup>3</sup>/s Aug. 26-29 and Sept. 20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.51	166	576	565	70	9.6	.94	4.7	640	1140	.52	.33
2	.40	1.8	728	561	2.0	5.4	1.4	4.6	816	1130	.53	.19
3	.42	1.8	859	557	1.6	3.4	218	5.6	1060	1110	.45	.12
4	.41	21	981	553	1.3	2.7	335	55	768	1090	.33	.10
5	.77	6.9	960	551	1.1	2.2	.64	197	21	1070	.36	.07
6	1.9	361	941	544	1.1	489	.33	368	11	888	.39	.04
7	1.3	690	925	538	1.1	968	.31	363	315	399	.23	.14
8	.78	682	780	533	1.0	953	.25	379	615	277	.15	.28
9	.63	676	409	442	.85	938	.21	439	817	207	.32	.17
10	.53	672	8.3	320	.84	930	.20	381	694	4.2	.21	.31
11	.67	670	197	314	.90	914	.18	375	175	2.6	.17	.08
12	4.0	653	356	311	.78	898	.14	375	92	2.1	.27	.07
13	.69	166	353	308	.96	603	5.4	517	296	1.5	.15	.20
14	327	1.3	162	308	.72	360	3.0	674	19	1.4	.07	.12
15	734	.51	48	306	1.1	359	.75	707	8.8	1.2	.05	.05
16	936	.54	9.8	139	.90	240	.65	700	8.9	1.2	.04	.20
17	770	.86	5.5	2.6	.75	122	.62	676	6.3	1.3	.04	.76
18	629	1.4	195	126	.62	112	.59	754	9.8	1.3	.04	.22
19	445	2.1	348	9.8	.56	107	1.2	931	460	1.0	.27	.51
20	131	.90	336	194	13	292	1.3	835	924	1.1	.05	.01
21	.34	1.0	332	491	7.4	454	1.8	311	920	1.2	.03	.04
22	.20	1.5	364	549	3.3	449	2.0	3.1	915	1.4	.04	.03
23	230	1.1	304	333	94	451	1.8	7.1	905	1.5	.05	2.2
24	108	6.1	9.2	330	362	202	1.7	145	1080	.86	.05	1.2
25	4.4	546	6.0	330	189	1.2	1.9	8.3	1250	3.7	.04	1.1
26	208	33	4.6	326	34	.72	1.8	310	1230	3.1	.01	1.1
27	544	5.7	319	324	16	.63	2.6	503	1210	4.6	.01	.91
28	687	3.1	578	323	100	.56	2.5	347	1190	2.9	.01	2.1
29	679	226	573	320	---	.52	2.8	337	1180	.73	.01	4.2
30	671	419	570	233	---	.53	3.5	21	1160	.83	.03	5.1
31	508	---	568	164	---	.46	---	311	---	.65	.17	---
TOTAL	7624.95	6017.60	12805.4	10905.4	906.88	9868.91	593.51	11044.4	18796.8	7351.36	5.09	21.95
MEAN	246	201	413	352	32.4	318	19.8	356	627	237	.16	.73
MAX	936	690	981	565	362	968	335	931	1250	1140	.53	5.1
MIN	.20	.51	4.6	2.6	.56	.46	.14	3.1	6.3	.65	.01	.01
AC-FT	15120	11940	25400	21630	1800	19570	1180	21910	37280	14580	10	44
CAL YR 1986	TOTAL	71340.05	MEAN	195	MAX	1370	MIN	.00	AC-FT	141500		
WTR YR 1987	TOTAL	85941.31	MEAN	235	MAX	1250	MIN	.01	AC-FT	170500		

## TRINITY RIVER BASIN

08063500 RICHLAND CREEK NEAR RICHLAND, TX

LOCATION.--Lat 31°57'02", long 96°25'16", Navarro County, Hydrologic Unit 12030108, at left end of downstream bridge on U.S. Highway 75 (Interstate Highway 45), 800 ft downstream from Texas and New Orleans Railroad Co. bridge, 1.0 mi north of Richland, 3.5 mi downstream from Pin Oak Creek, and 36.7 mi upstream from mouth.

DRAINAGE AREA.--734 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--December 1924 to February 1925 (discharge measurements and gage heights only), March 1939 to current year.

REVISED RECORDS.--WSP 1922: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 299.12 ft above National Geodetic Vertical Datum of 1929. Dec. 11, 1924, to Feb. 11, 1925, nonrecording gage at site 800 ft upstream. Mar. 17, 1939, to Feb. 14, 1958, water-stage recorder at site 50 ft upstream. Feb. 15, 1958, to Jan. 28, 1959, nonrecording gage at present site. June 8, 1955, Feb. 14, 1958, and since Feb. 6, 1959, supplementary water-stage recorder at overflow channel 3,900 ft to right of main channel gage. All gages at present datum.

REMARKS.--Records good except for last three weeks in September when a low-water crossing was built about 1.5 mi downstream that invalidated the stage-discharge relationship at the main gage, and May 4-7 when the discharges at the supplemental gage were estimated and large enough to have an effect on the total flow for both gages. The records for the above period of invalid stage-discharge relationship and estimated record are poor. Since October 1962, flow is partly regulated by Navarro Mills Lake (station 08063050) about 25 mi upstream. Flow is also affected at times by discharge from the flood-detention pools of 73 floodwater-retarding structures with a combined detention capacity of 42,060 acre-ft. These structures control runoff from 143 mi<sup>2</sup> in the Richland Creek drainage basin. Several observations of water temperature were made during the year. Gage-height telemeter at station.

AVERAGE DISCHARGE.--23 years (water years 1940-62) prior to regulation by Navarro Mills Lake, 404 ft<sup>3</sup>/s (292,700 acre-ft/yr); 25 years (water years 1963-87) regulated, unadjusted, 330 ft<sup>3</sup>/s (239,100 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 58,900 ft<sup>3</sup>/s May 12, 1948 (gage height, 24.16 ft); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1899, 25.5 ft in December 1913 (discharge not determined), from information by Texas and New Orleans Railroad Co.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 9,100 ft<sup>3</sup>/s Nov. 26 at 1300 hours (gage height, 21.63 ft); maximum gage height at main channel, 21.66 ft Nov. 26 at 1100 hours; no flow Aug. 22.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	467	805	742	231	2710	23	13	777	1310	5.9	.08
2	.00	124	1000	739	98	977	21	12	930	1280	4.2	.04
3	.00	19	1030	744	33	525	19	12	1200	1270	3.4	.03
4	6.7	447	1310	745	27	317	471	e74	3200	1240	2.4	.02
5	2.0	1820	1330	740	25	193	227	e428	2820	1220	1.3	.01
6	73	484	1280	731	24	127	29	e547	835	1200	2.5	.03
7	168	894	1250	721	23	1060	21	e512	457	822	1.7	.16
8	82	908	1230	719	22	1270	19	485	748	459	1.2	.86
9	39	857	2980	783	22	1250	18	898	951	422	.80	.83
10	18	822	1790	788	21	1230	17	768	1600	243	1.1	4.4
11	9.2	800	547	596	22	1210	17	568	1720	31	1.2	1.5
12	105	786	603	503	21	1190	17	520	1320	16	.99	.34
13	164	467	572	466	20	1150	16	517	3140	14	.59	1.5
14	37	100	535	449	20	584	28	738	3060	12	.38	3.3
15	539	21	1910	439	39	487	46	782	992	11	.35	1.7
16	993	13	2290	428	51	483	28	891	657	9.9	.25	4.3
17	1150	11	848	145	34	930	22	826	693	9.9	.16	8.5
18	834	8.6	649	1740	29	1250	20	788	382	11	.10	9.4
19	726	7.0	1490	2020	27	548	17	961	394	16	.07	10
20	407	6.5	947	672	787	346	17	1050	1010	15	.04	9.0
21	112	5.9	680	650	1650	602	15	835	1110	14	.01	10
22	14	5.7	789	852	616	626	14	194	1090	12	.00	10
23	640	4.6	3240	655	292	609	13	26	1070	11	.03	9.3
24	3880	8.0	3110	512	636	595	13	1970	1090	9.0	.01	8.0
25	2660	3700	1130	488	1450	182	16	1080	1340	8.3	.03	6.9
26	602	8180	586	467	1400	38	19	243	1420	6.9	.02	5.8
27	618	4480	356	453	2600	28	17	675	1410	6.4	.02	4.9
28	847	1290	771	444	2660	26	17	539	1380	6.9	.01	4.0
29	851	826	814	438	---	25	14	896	1350	7.6	.01	3.4
30	820	920	782	431	---	24	13	1950	1340	8.3	.02	2.4
31	783	---	760	273	---	23	---	775	---	7.3	.10	---
TOTAL	17179.90	28482.3	37414	20573	12880	20615	1244	20573	39486	9709.5	28.89	120.70
MEAN	554	949	1207	664	460	665	41.5	664	1316	313	.93	4.02
MAX	3880	8180	3240	2020	2660	2710	471	1970	3200	1310	5.9	10
MIN	.00	4.6	356	145	20	23	13	12	382	6.4	.00	.01
AC-FT	34080	56490	74210	40810	25550	40890	2470	40810	78320	19260	57	239
CAL YR 1986	TOTAL	194132.50	MEAN	532	MAX	8180	MIN	.00	AC-FT	385100		
WTR YR 1987	TOTAL	208305.25	MEAN	571	MAX	8180	MIN	.00	AC-FT	413200		

e Estimated.

## TRINITY RIVER BASIN

381

08063500 RICHLAND CREEK NEAR RICHLAND, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: October 1967 to December 1973. Chemical and biochemical analyses: August 1983 to current year.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1967 to September 1969, August 1983 to current year.

WATER TEMPERATURE: October 1967 to September 1969, August 1983 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, 1,920 microsiemens Nov. 5, 1968; minimum daily, 119 microsiemens Oct. 30, 1967.

WATER TEMPERATURE: Maximum daily, 34.0°C Aug. 18, 1969; minimum daily, 2.0°C Dec. 22, 1983.

## EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,900 microsiemens Apr. 22, 25; minimum daily, 124 microsiemens Dec. 26.

WATER TEMPERATURE: Maximum daily, 29.0°C on several days during July, August and September.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	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 (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3
NOV 18...	1545	8.7	510	7.60	17.0	26	15	9.6	100	3.2	190	38
JAN 08...	1400	720	340	8.20	9.0	13	32	11.3	98	1.4	130	22
APR 15...	1800	39	1360	8.20	19.0	16	2.2	8.6	94	1.7	470	140
JUN 03...	2000	1300	316	8.10	24.0	36	78	8.0	95	2.5	130	6
JUL 21...	1655	14	601	8.20	30.0	17	1.7	9.1	121	2.0	200	28
SEP 14...	1730	1.0	2060	7.90	27.0	6	3.4	8.1	103	0.5	640	440

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 WH WAT TOTAL 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 18...	65	5.8	31	1	4.8	148	57	32	0.30	9.6	290
JAN 08...	48	3.5	17	0.7	4.0	112	36	14	0.40	7.8	200
APR 15...	160	17	130	3	5.4	333	200	150	0.40	6.1	870
JUN 03...	44	4.7	16	0.6	4.3	123	30	13	0.30	7.2	190
JUL 21...	71	6.1	35	1	5.1	174	58	30	0.30	9.2	320
SEP 14...	220	23	200	4	6.3	204	390	320	0.30	11	1300

DATE	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDED (MG/L)	SOLIDS, VOLATILE, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS- SOLVED (UG/L AS AS)
NOV 18...	21	3	0.190	0.010	0.200	0.040	0.66	0.70	0.090	5.9	--
JAN 08...	48	8	0.980	0.020	1.00	0.010	0.99	1.0	0.040	6.4	7
APR 15...	12	<1	--	<0.010	<0.100	0.060	0.74	0.80	0.040	--	3
JUN 03...	213	43	0.690	0.010	0.700	0.020	1.9	1.9	0.200	8.4	--
JUL 21...	10	1	--	<0.010	<0.100	0.010	1.2	1.2	0.080	10	3
SEP 14...	12	6	--	<0.010	<0.100	0.040	1.2	1.2	0.030	5.0	2

08063500 RICHLAND CREEK NEAR RICHLAND, TX--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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)
NOV 18...	--	--	--	--	--	--	--	--	--	--	--
JAN 08...	48	1	<10	4	11	<5	5	<0.1	<1	<1	4
APR 15...	170	1	<10	5	11	<5	27	<0.1	<1	<1	12
JUN 03...	--	--	--	--	--	--	--	--	--	--	--
JUL 21...	81	<1	<10	1	4	<5	3	<0.1	<1	<1	23
SEP 14...	200	<1	10	2	20	5	20	<0.1	1	1	<10

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1986 TO SEPTEMBER 1987

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. 1986	17179.90	225	130	6030	13	582	24	1120	81
NOV. 1986	28482.3	222	128	9850	12	958	24	1830	80
DEC. 1986	37414	268	155	15600	15	1550	29	2920	96
JAN. 1987	20573	391	227	12600	25	1370	44	2440	140
FEB. 1987	12880	319	185	6440	20	691	36	1240	110
MAR. 1987	20615	615	364	20200	53	2950	79	4400	210
APR. 1987	1244	1550	944	3170	190	635	240	801	490
MAY 1987	20573	470	274	15200	32	1790	55	3030	160
JUNE 1987	39486	383	222	23700	24	2550	43	4560	140
JULY 1987	9709.5	859	511	13400	82	2140	120	3030	290
AUG. 1987	28.89	1500	908	71	180	14	230	18	470
SEPT 1987	120.70	1780	1090	355	230	76	280	93	550
TOTAL	208306.29	**	**	127000	**	15300	**	25500	**
WTD.AVG.	571	386	225	**	27	**	45	**	130

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
EQUIVALENT MEAN

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	329	265	413	433	190	1880	1850	384	387	1480	1780
2	---	273	289	416	600	250	1880	1870	375	370	1460	1780
3	---	215	298	415	794	320	1850	1880	382	540	1430	1760
4	600	213	313	414	806	350	1340	1590	408	770	1570	1750
5	520	215	300	413	803	380	1450	502	406	1000	1590	1730
6	341	224	295	415	799	575	1850	512	372	1250	1490	1800
7	222	278	291	413	810	1130	1890	497	428	1370	1500	1790
8	277	253	290	412	811	1150	1800	470	377	1380	1520	1790
9	297	305	182	419	809	1010	1750	501	375	1370	1650	1790
10	331	307	233	420	798	1050	1870	472	371	1360	1610	1770
11	374	249	301	420	789	1130	1870	512	378	1360	1570	1790
12	249	281	319	415	806	1050	1730	520	383	1380	1440	1790
13	207	369	312	415	790	1080	1690	525	378	1370	1450	1800
14	232	382	345	373	803	262	1550	494	406	1370	1470	1790
15	195	357	270	393	800	331	1360	473	377	1360	1480	1800
16	175	410	225	418	775	332	1590	450	376	1370	1500	1780
17	150	463	241	416	865	331	1890	470	373	1380	1440	1800
18	208	525	331	350	846	329	1890	511	389	1380	1600	1800
19	307	593	276	300	850	338	1890	495	390	1380	1470	1740
20	331	600	295	289	549	347	1790	404	377	1380	1530	1780
21	354	620	328	336	296	329	1890	420	390	1390	1640	1770
22	341	646	310	352	440	336	1900	499	373	1390	---	1770
23	275	644	275	436	445	337	1850	504	391	1390	1520	1800
24	153	732	260	438	345	339	1870	250	375	1380	1550	1790
25	211	350	145	440	311	271	1900	275	292	1380	1640	1800
26	240	150	124	389	318	262	1890	500	372	1370	1460	1760
27	277	129	195	437	225	305	1890	540	380	1360	1620	1760
28	292	240	267	439	210	275	1890	571	383	1370	1550	1780
29	296	250	339	438	---	280	1870	560	379	1370	1490	1780
30	342	266	340	436	---	280	1880	530	376	1370	1590	1800
31	301	---	340	435	---	1080	---	592	---	1510	1680	---
MEAN	289	362	277	404	640	517	1790	653	381	1250	1530	1780

## TRINITY RIVER BASIN

383

08063500 RICHLAND CREEK NEAR RICHLAND, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
ONCE-DAILY

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

## TRINITY RIVER BASIN

08063685 WAXAHACHIE CREEK NEAR WAXAHACHIE, TX

LOCATION.--Lat 32°18'27", long 96°44'19", Ellis County, Hydrologic Unit 12030109, at bridge on county road, 1.0 mi northwest of intersection of county road and Farm Road 984, 1.3 mi upstream from normal pool of Bardwell Lake, and 8.4 mi southeast of Waxahachie.

PERIOD OF RECORD.--Chemical and biochemical analyses: October 1980 to August 1982, October 1985 to June 1987.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	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 (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03
OCT 08...	1400	44	444	7.10	21.0	9	250	5.6	64	3.4	150	35
JAN 06...	1320	65	524	8.10	10.0	4	2.4	10.6	95	1.5	240	21
APR 21...	1520	25	599	8.20	20.0	10	10	7.2	80	1.2	260	21
JUN 05...	1325	180	404	--	22.5	11	20	7.4	86	2.2	170	28
JUL 20...	1445	18	635	8.10	26.0	8	1.4	6.7	83	1.3	200	16
SEP 14...	1430	8.3	795	7.80	25.0	5	19	6.2	76	0.1	180	16
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 WH WAT TOTAL 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)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)
OCT 08...	57	2.2	29	1	4.2	116	65	17	0.20	7.0	--	250
JAN 06...	91	2.3	18	0.5	2.4	216	34	16	0.30	5.8	300	300
APR 21...	100	3.0	32	0.9	2.9	241	45	24	0.40	8.6	--	360
JUN 05...	63	2.2	17	0.6	2.9	138	40	14	0.30	6.7	--	230
JUL 20...	77	2.2	54	2	3.8	185	92	20	0.40	9.3	--	370
SEP 14...	66	2.5	100	3	6.2	159	180	35	0.40	8.0	--	490
DATE	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDED (MG/L)	SOLIDS, VOLATILE, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS- SOLVED (UG/L AS AS)	
OCT 08...	72	11	2.92	0.280	3.20	0.410	0.99	1.4	0.050	5.8	--	
JAN 06...	9	<1	1.56	0.140	1.70	0.200	0.70	0.90	0.080	3.4	2	
APR 21...	24	2	1.84	0.060	1.90	0.100	0.80	0.90	0.370	3.4	3	
JUN 05...	83	29	0.830	0.070	0.900	0.060	1.5	1.6	0.170	5.2	--	
JUL 20...	26	1	--	<0.010	2.00	0.040	0.96	1.0	0.160	4.1	3	
SEP 14...	31	10	3.28	0.020	3.30	0.020	0.98	1.0	0.710	6.7	4	
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 08...	--	--	--	--	--	--	--	--	--	--	--	
JAN 06...	64	2	<10	2	6	<5	43	<0.1	<1	<1	13	
APR 21...	85	<1	<10	4	7	<5	66	<0.1	<1	<1	8	
JUN 05...	--	--	--	--	--	--	--	--	--	--	--	
JUL 20...	67	<1	<10	1	4	<5	12	<0.1	<1	<1	14	
SEP 14...	63	<1	<10	2	11	<5	20	--	<1	1	6	

## TRINITY RIVER BASIN

385

08063690 MUSTANG CREEK NEAR ENNIS, TX

LOCATION.--Lat 32°21'41", long 96°43'54", Ellis County, Hydrologic Unit 12030109, on county road, near center of channel at upstream side of bridge, 3.4 mi upstream from Wolf Branch, 4.6 mi upstream from U.S. Highway 287 bridge, and 6.7 mi northwest of intersection of U.S. Highway 287 and Business Route U.S. Highway 75 in Ennis.

PERIOD OF RECORD.--Chemical and biochemical analyses: October 1985 to June 1987.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	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 (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03
OCT 08...	1545	0.19	417	7.80	24.0	23	350	8.4	101	1.5	130	11
JAN 05...	1500	1.6	689	8.40	8.0	3	0.40	12.1	103	1.2	210	45
APR 21...	1015	0.15	751	8.40	20.0	17	9.0	8.6	95	1.3	190	75
JUN 05...	1500	4.9	500	--	25.5	30	13	8.2	101	1.3	170	20
JUL 20...	0945	0.04	310	8.10	27.0	8	5.0	7.4	93	1.2	98	0
SEP 14...	1030	0.37	356	7.90	26.0	4	4.7	8.0	100	0.2	130	29
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 WH WAT TOTAL 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 08...	47	2.4	36	1	3.5	116	52	21	0.50	8.7	240	
JAN 05...	77	3.7	62	2	1.8	163	96	55	0.50	2.7	400	
APR 21...	68	5.2	91	3	2.2	116	140	86	0.60	2.4	470	
JUN 05...	64	3.2	35	1	3.6	153	46	30	0.50	9.3	280	
JUL 20...	36	2.0	23	1	2.7	101	32	15	0.50	4.9	180	
SEP 14...	47	2.6	23	0.9	3.4	99	51	20	0.50	6.5	210	
DATE	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDE (MG/L)	SOLIDS, 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- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS- SOLVED (UG/L AS AS)	
OCT 08...	73	13	1.77	0.030	1.80	0.020	0.38	0.40	0.100	5.0	--	
JAN 05...	5	4	2.19	0.010	2.20	0.020	0.88	0.90	<0.010	3.8	2	
APR 21...	21	3	--	<0.010	<0.100	0.010	0.69	0.70	0.030	4.3	<1	
JUN 05...	53	15	1.67	0.030	1.70	0.030	0.87	0.90	0.080	8.4	--	
JUL 20...	20	1	--	<0.010	<0.100	<0.010	--	0.70	0.050	4.7	2	
SEP 14...	5	1	--	<0.010	<0.100	<0.010	--	0.50	0.030	4.7	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)	
OCT 08...	--	--	--	--	--	--	--	--	--	--	--	
JAN 05...	66	<1	<10	2	3	<5	6	<0.1	<1	<1	3	
APR 21...	61	<1	<10	3	8	<5	4	<0.1	<1	<1	8	
JUN 05...	--	--	--	--	--	--	--	--	--	--	--	
JUL 20...	44	<1	<10	1	6	<5	6	<0.1	<1	<1	5	
SEP 14...	56	<1	<10	2	9	5	3	--	2	1	7	

08063695 LAKE CLARK OUTFLOW NEAR ENNIS, TX

LOCATION.--Lat 32°19'01", long 96°39'32", Ellis County, Hydrologic Unit 12030109, on county road bridge, over center of channel at downstream side of bridge, 0.4 mi downstream from U.S. Highway 287, 0.9 mi downstream from Lake Clark outlet, and 2.2 mi west of intersection of U.S. Highway 287 and Business Route U.S. Highway 75 in Ennis.

PERIOD OF RECORD.--Chemical and biochemical analyses: October 1985 to June 1987.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	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 (MG/L AS CAC03)	HARD- NESS NONCARB- WH WAT TOT FLD MG/L AS CAC03
OCT												
08...	1505	0.03	477	7.70	23.0	55	98	7.8	92	2.2	200	56
DEC												
30...	1530	0.50	310	8.50	11.0	8	1.3	12.4	112	1.0	120	3
JUN												
02...	1145	1.8	287	--	27.5	3	1.5	7.7	99	1.1	120	7

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 WH WAT TOTAL 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 08...	69	6.3	22	0.7	7.6	142	88	11	0.30	15	300
DEC 30...	42	4.4	13	0.5	5.4	120	23	7.8	0.30	4.6	170
JUN 02...	40	4.2	11	0.5	4.9	110	20	7.8	0.30	3.0	160

DATE	SOLIDS, RESIDUE AT 105 DEG. C. SUS- PENDED (MG/L)	SOLIDS, VOLA- TILE, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, AMON- IA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS- SOLVED (UG/L AS AS)
OCT 08...	36	7	0.370	0.030	0.400	0.030	0.87	0.90	0.110	10	--
DEC 30...	3	<1	--	<0.010	<0.100	0.020	0.78	0.80	<0.010	6.6	1
JUN 02...	10	2	--	<0.010	<0.100	0.040	0.86	0.90	0.040	5.9	--

[illegible]

## 08063700 BARDWELL LAKE NEAR ENNIS, TX

LOCATION.--Lat 32°15'00", Long 96°38'49", Ellis County, Hydrologic Unit 12030109, in intake structure of Bardwell Dam on Waxahachie Creek, 5 mi south of Ennis, and 5.6 mi upstream from mouth.

DRAINAGE AREA.--178 mi<sup>2</sup>.

PERIOD OF RECORD.--November 1965 to current year. Prior to October 1970, published as Bardwell Reservoir.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (U.S. Army Corps of Engineers benchmark). Prior to Apr. 25, 1966, nonrecording gage on intake structure at same datum.

REMARKS.--The lake is formed by a rolled earthfill dam 15,400 ft long, including a 350-foot uncontrolled off-channel concrete-gravity spillway with ogee weir section. Deliberate impoundment began Nov. 20, 1965, and dam was completed Mar. 27, 1966. Controlled low-flow outlet works consists of a 10.0-foot-diameter concrete conduit with two 5.0- by 10.0-foot sluice gates. Lake was built for flood control and water conservation. Capacity table beginning October 1976 is based on a survey completed in 1972. Runoff from 81.4 mi<sup>2</sup> above Bardwell Lake is modified by Lake Waxahachie, with a capacity of 13,500 acre-ft at spillway elevation. The city of Waxahachie diverts water from Lake Waxahachie and returns an unknown amount of effluent to Waxahachie Creek. Inflow is affected at times by discharge from flood-detention pools of 23 floodwater-retarding structures with a combined detention capacity of 15,370 acre-ft. These structures control runoff from 52.4 mi<sup>2</sup> in the Chambers Creek watershed. 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.....	460.0	-
Design flood.....	455.9	-
Crest of spillway (top of flood-control pool).....	439.0	137,600
Top of conservation pool.....	421.0	52,300
Lowest gated outlet (invert).....	391.0	690

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

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 103,300 acre-ft May 19, 1969 (elevation, 432.35 ft); minimum since initial filling, 39,720 acre-ft Nov. 10, 1978 (elevation, 417.21 ft).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 66,440 acre-ft March 6 at 1600 hours (elevation, 424.73 ft); minimum, 47,810 acre-ft Sept. 30 at 2100 hours (elevation, 419.72 ft).

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

419.0	45,390	423.0	55,920
421.0	52,290	425.0	67,520

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	52120	54140	59040	52940	53130	61400	52580	52580	57880	52860	51190	48670
2	52010	53530	58440	52730	53090	64900	52540	52580	58180	53110	51090	48640
3	51980	52980	57650	52840	52980	65460	52540	53090	59840	53180	51020	48570
4	52040	53200	56750	52620	52840	65930	52580	53710	62230	53150	50950	48500
5	52040	52910	55850	52620	52870	66290	52690	53740	62620	53110	50910	48430
6	52760	52510	54980	52840	52840	65730	52800	53560	62890	53080	50840	48360
7	52910	52470	54220	53020	52620	63980	52840	53340	62270	52760	50740	48570
8	52980	52620	53420	53130	52580	62350	52870	53710	61110	52610	50630	48640
9	53020	52690	52980	53890	52470	60800	52910	53560	60100	52330	50520	48570
10	52980	52800	52580	54140	52400	59000	52980	53310	59230	52180	50490	48670
11	53310	52870	52440	54290	52440	57200	52980	53130	59150	52150	50420	48670
12	53670	53200	52470	54290	52540	55740	53090	52910	59910	52150	50310	48710
13	53530	53050	52580	54000	52620	54870	53490	52650	60340	52180	50170	48670
14	53420	53090	52910	53780	52910	54320	53340	52730	60680	52110	50070	48670
15	53130	53200	53670	53530	54030	53850	53380	53160	61190	52010	49930	48670
16	52870	53420	54030	53310	54070	53270	53380	53340	62970	51900	49820	48670
17	52620	53380	54290	53450	53850	53890	53340	53420	64020	51900	49750	48640
18	52510	53240	55020	54140	53530	53560	53380	53310	64940	51970	49680	48740
19	52470	52840	54910	54070	53240	53160	53380	53130	64940	51940	49610	48600
20	52470	52510	54720	53920	54980	52730	53240	53160	63980	51900	49540	48500
21	52440	52400	54430	53780	55380	52580	53130	53050	62970	51860	49470	48500
22	52510	52620	54290	53530	55450	52260	52800	52940	61770	51830	49400	48330
23	54540	52840	54650	53240	55340	52290	52760	52870	60570	51760	49300	48300
24	56070	53560	55090	53130	55960	52400	52730	52690	59380	51720	49160	48230
25	56640	57610	55490	52800	56070	52440	52690	52690	58180	51650	49090	48160
26	56940	58360	55780	52650	57540	52510	52690	52620	56980	51650	48990	48090
27	56750	58930	55450	52620	59080	52510	52690	52690	55890	51550	48950	48050
28	56260	59270	54690	52510	62930	52840	52690	53240	54830	51480	48920	48050
29	55780	59460	53920	52690	---	52840	52620	55920	53670	51400	48850	47950
30	55230	59380	53490	52800	---	52690	52580	57460	53090	51330	48810	47750
31	54650	---	53240	52840	---	52510	---	58100	---	51260	48780	---
MAX	56940	59460	59040	54290	62930	66290	53490	58100	64940	53180	51190	48740
MIN	51980	52400	52440	52510	52400	52260	52540	52580	53090	51260	48780	47750
(†)	421.65	422.92	421.26	421.15	423.84	421.06	421.08	422.58	421.22	420.71	420.00	419.70
(Φ)	+2500	+4730	-6140	-400	+10090	-10420	+70	+5520	-5010	-1830	-2480	-1030
CAL YR 1986	MAX	75220	MIN	49690	(Φ)	-2460						
WTR YR 1987	MAX	66290	MIN	47750	(Φ)	-4400						

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

## TRINITY RIVER BASIN

08063800 WAXAHACHIE CREEK NEAR BARDWELL, TX

LOCATION.--Lat 32°14'36", long 96°38'24", Ellis County, Hydrologic Unit 12030109, on left bank at downstream side of highway embankment near left end of bridge on county road, 0.8 mi downstream from Bardwell Dam, 3.6 mi southeast of Bardwell, 3.8 mi downstream from bridge on State Highway 34, and 4.1 mi upstream from mouth.

DRAINAGE AREA.--178 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1963 to current year.

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

GAGE.--Water-stage recorder. Datum of gage is 370.18 ft above National Geodetic Vertical Datum of 1929 (U.S. Army Corps of Engineers bench mark).

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Bardwell Lake (station 08063700) 0.8 mi upstream. Gage-height telemeter at station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--24 years, 73.7 ft<sup>3</sup>/s (53,400 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,960 ft<sup>3</sup>/s Feb. 9, 1965 (gage height, 17.55 ft); no flow at times most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1944, about 23 ft in 1944 and 1945, from information by U.S. Army Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 986 ft<sup>3</sup>/s Mar. 6 at 1815 hours (gage height, 11.71 ft); minimum, no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.02	365	422	183	3.2	6.1	31	.00	226	67	.0	.0
2	.01	367	402	125	50	5.1	.97	.00	522	26	.0	.0
3	.01	289	417	91	84	4.9	.97	.00	520	.59	.00	.0
4	.01	226	482	90	86	4.8	.93	.23	261	.51	.00	.0
5	.02	231	473	34	86	4.6	.90	32	1.5	.54	.00	.0
6	.32	232	466	3.3	85	438	.54	59	.00	27	.00	.0
7	.12	100	459	2.5	85	966	.07	60	389	69	.00	.06
8	.14	3.5	452	2.2	59	954	.06	60	706	71	.00	.01
9	.05	3.4	297	2.7	43	938	.05	63	701	69	.00	.01
10	.05	3.1	133	2.6	43	924	.05	62	700	27	.00	.07
11	.06	3.3	96	2.4	23	918	.05	60	319	.08	.00	.02
12	.64	3.5	41	78	1.4	746	.05	60	.05	.10	.00	.02
13	.17	3.5	1.3	180	.61	466	.27	61	.01	.12	.00	.01
14	43	3.7	1.3	181	.60	327	.11	26	.10	.11	.00	.01
15	78	3.9	2.2	181	3.2	327	.10	.06	.23	.06	.00	.0
16	79	4.0	1.4	179	.94	327	.09	.02	.84	.10	.00	.02
17	79	68	1.0	179	106	331	.09	.01	.01	.12	.00	.0
18	30	166	157	185	187	330	.09	20	.0	.07	.00	.01
19	.09	246	299	183	187	326	.07	51	356	.06	.00	.01
20	.08	241	295	183	193	246	36	49	705	.07	.00	.0
21	.08	103	296	183	189	179	63	50	701	.06	.00	.0
22	.23	4.5	295	183	188	180	65	50	699	.05	.00	.0
23	2.1	4.5	116	183	188	78	26	50	691	.12	.00	.00
24	1.2	5.3	1.1	183	191	6.0	.14	19	688	.02	.00	.0
25	.32	11	.93	183	262	6.3	.11	.22	683	.0	.0	.0
26	56	4.7	.80	115	331	6.1	.11	.07	610	.0	.0	.0
27	279	4.4	263	69	146	5.6	.11	.04	507	.0	.0	.0
28	365	4.3	434	69	8.2	5.6	.11	.05	507	.0	.01	.0
29	360	72	433	33	---	5.4	.03	.14	500	.0	.01	.01
30	358	198	288	3.9	---	39	.00	.02	346	.0	.0	.0
31	366	---	184	3.3	---	60	---	.03	---	.0	.0	---
TOTAL	2098.72	2974.6	7210.03	3275.9	2830.15	9160.5	227.07	832.89	11339.74	358.78	.02	.26
MEAN	67.7	99.2	233	106	101	295	7.57	26.9	378	11.6	.00	.01
MAX	366	367	482	185	331	966	65	63	706	71	.01	.07
MIN	.01	3.1	.80	2.2	.60	4.6	.00	.00	.00	.00	.00	.00
AC-FT	4160	5900	14300	6500	5610	18170	450	1650	22490	712	.0	.5
CAL YR 1986	TOTAL	36929.44	MEAN	101	MAX	872	MIN	.00	AC-FT	73250		
WTR YR 1987	TOTAL	40308.41	MEAN	110	MAX	966	MIN	.00	AC-FT	79950		

## TRINITY RIVER BASIN

389

08064100 Chambers Creek near Rice, Tex.

LOCATION.--Lat 32°11'54, long 96°31'12", Navarro County, Hydrologic Unit 12030109, on downstream side of highway embankment 20 ft left of left end of bridge on Farm Road 1126, 3.6 mi downstream from Oak Branch, 3.9 mi upstream from Cummins Creek, 4.2 mi upstream from bridge on Interstate Highway 45, 5.0 miles downstream from Waxahachie Creek, and 3.4 mi southwest of Rice.

DRAINAGE AREA.--807 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1983 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 340.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Flow from 178 mi<sup>2</sup> is affected by storage in Bardwell Lake on Waxahachie Creek. Flood releases from Bardwell Lake will sustain higher flows from time to time. In addition flow is affected at times by discharge from the flood-detention pools of numerous floodwater-retarding structures in the drainage basin above this station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 43,400 ft<sup>3</sup>/s June 6, 1986, at 2200 hours (gage height, 31.12 ft), from rating curve extended above 15,000 ft<sup>3</sup>/s on basis of velocity-area study; no flow at times each year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood information for next downstream station (08064500) indicates maximum stage since at least 1870 occurred in August 1887 and other significant floods occurred in December 1913, May 1944, and May 1958. Stages for these floods are unknown for this station and over the years a levee system has been developed along the main channel to limit crop land flooding.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,730 ft<sup>3</sup>/s Feb. 27 at 1400 hours (gage height, 26.90 ft from crest-stage gage), from rating curve extended above 15,000 ft<sup>3</sup>/s on basis of velocity-area study; minimum, 0.77 ft<sup>3</sup>/s Aug. 26-27, 29-30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.6	555	621	513	163	e1690	275	23	1290	269	5.6	4.4
2	5.1	533	707	456	200	1290	146	23	1060	217	5.0	2.8
3	2.7	490	716	365	310	982	131	25	1620	111	4.5	2.0
4	1.7	561	797	358	298	771	122	436	2630	108	4.1	1.7
5	1.5	830	781	293	288	641	116	916	1620	96	4.0	2.0
6	4.1	516	763	177	287	762	112	455	722	80	4.0	1.7
7	167	362	754	170	309	1400	112	300	701	214	3.5	2.0
8	252	107	754	159	300	1370	106	254	1070	210	3.0	1.6
9	166	89	659	232	236	1330	100	717	1040	206	2.9	2.2
10	83	74	391	563	219	1290	94	763	2200	167	2.8	6.5
11	47	69	284	363	202	1260	86	367	3710	53	2.7	6.2
12	220	153	242	277	120	1170	78	282	2440	40	2.4	3.8
13	289	125	135	478	114	894	90	274	1750	35	2.3	2.6
14	140	87	127	471	110	691	111	202	1960	33	2.5	2.5
15	187	70	580	466	1080	682	75	230	1530	30	2.5	2.0
16	163	65	797	454	836	673	58	455	2250	28	2.1	1.7
17	152	96	514	449	435	1090	53	372	1550	27	1.9	1.8
18	110	231	669	1490	503	1510	49	164	1000	34	1.6	1.7
19	15	349	1480	1460	457	943	44	234	1170	32	1.5	1.6
20	11	347	1070	852	1670	763	65	497	1390	27	1.3	1.7
21	7.4	279	863	693	3040	609	189	360	1310	22	1.2	1.7
22	6.1	63	805	626	1760	577	185	275	1170	19	1.1	1.7
23	106	77	1470	580	978	488	158	226	1080	18	1.1	1.7
24	2550	74	1160	550	1050	288	38	241	1020	16	.99	2.1
25	3360	3850	705	525	1430	246	34	324	974	14	.90	2.2
26	1110	3170	519	455	1990	222	33	305	920	12	.79	2.1
27	801	1230	564	343	4640	209	31	140	787	11	.79	1.7
28	789	716	894	331	e2940	198	31	99	767	9.9	.88	1.3
29	682	550	865	297	---	189	29	848	748	8.9	.79	1.2
30	631	576	769	191	---	231	27	3070	690	8.1	.89	1.2
31	590	---	538	173	---	328	---	3830	---	7.2	1.3	---
TOTAL	12656.2	16294	21993	14810	25965	24787	2778	16707	42169	2163.1	70.93	69.4
MEAN	408	543	709	478	927	800	92.6	539	1406	69.8	2.29	2.31
MAX	3360	3850	1480	1490	4640	1690	275	3830	3710	269	5.6	6.5
MIN	1.5	63	127	159	110	189	27	23	690	7.2	.79	1.2
AC-FT	25100	32320	43620	29380	51500	49170	5510	33140	83640	4290	141	138
CAL YR 1986	TOTAL	196646.50	MEAN	539	MAX	21900	MIN	1.5	AC-FT	390000		
WTR YR 1987	TOTAL	180461.94	MEAN	494	MAX	4640	MIN	.79	AC-FT	357900		

e Estimated.

## TRINITY RIVER BASIN

08064100 Chambers Creek near Rice, Tex.--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: October 1983 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1983 to current year.

WATER TEMPERATURE: October 1983 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, 1,380 microsiemens Aug. 30, 31, Sept. 6, 1987; minimum daily, 187 microsiemens Dec. 18, 1984.

WATER TEMPERATURE: Maximum daily, 38.0°C Aug. 16, 1987; minimum daily, 3.0°C Jan. 1, 13, 20, 12, 1984.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,380 microsiemens Aug. 30, 31, Sept. 6; minimum daily 262 microsiemens Nov. 25.

WATER TEMPERATURE: Maximum daily, 38.0°C Aug. 16.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	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 (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3
NOV 17...	1400	61	645	7.80	15.0	9	12	8.4	85	4.1	250	46
JAN 08...	1745	172	668	8.00	10.0	7	18	10.3	92	1.3	270	68
APR 16...	1630	59	773	8.20	22.0	13	17	8.2	96	1.8	280	90
JUN 04...	2000	2980	340	8.00	22.0	32	310	7.2	83	2.0	130	28
JUN 11...	1230	4.0	385	7.40	26.0	50	100	--	--	2.2	150	39
JUL 22...	1700	19	650	8.10	29.0	7	14	6.9	90	1.0	200	65
SEP 17...	1340	1.9	1080	7.60	26.5	6	5.8	6.0	76	0.4	270	120

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 WH WAT TOTAL 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 17...	91	4.6	39	1	3.6	200	97	31	0.40	8.2	390
JAN 08...	100	4.5	35	1	2.5	200	95	29	0.40	5.6	390
APR 16...	100	7.2	60	2	2.9	189	150	47	0.40	3.6	480
JUN 04...	47	2.9	16	0.6	4.0	101	50	12	0.30	11	200
JUN 11...	56	3.0	18	0.7	4.6	113	62	11	0.30	13	240
JUL 22...	73	5.3	56	2	3.7	139	110	47	0.40	7.7	390
SEP 17...	94	8.1	120	3	3.8	144	190	110	0.50	8.0	620

DATE	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDED (MG/L)	SOLIDS, VOLATILE, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS- SOLVED (UG/L AS AS)
NOV 17...	19	6	1.08	0.020	1.10	0.040	0.56	0.60	0.060	4.7	--
JAN 08...	44	<1	--	<0.010	1.60	0.030	0.87	0.90	<0.010	5.0	3
APR 16...	41	5	0.490	0.010	0.500	0.040	0.56	0.60	0.030	--	3
JUN 04...	669	111	1.45	0.050	1.50	0.040	2.2	2.2	0.190	16	--
JUN 11...	631	93	0.670	0.030	0.700	0.040	2.0	2.0	0.520	11	--
JUL 22...	36	9	--	<0.010	0.200	0.010	0.69	0.70	0.050	4.5	2
SEP 17...	12	7	--	<0.010	<0.100	0.020	0.78	0.80	0.040	4.3	2

08064100 Chambers Creek near Rice, Tex.--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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)
NOV 17...	--	--	--	--	--	--	--	--	--	--	--
JAN 08...	60	<1	<10	2	8	<5	24	<0.1	<1	<1	3
APR 16...	71	<1	<10	4	8	<5	30	<0.1	<1	<1	7
JUN 04...	--	--	--	--	--	--	--	--	--	--	--
JUL 11...	--	--	--	--	--	--	--	--	--	--	--
JUL 22...	67	<1	<10	1	4	<5	4	<0.1	<1	<1	8
SEP 17...	92	<1	<10	2	<3	<5	44	<0.1	<1	<1	4

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1986 TO SEPTEMBER 1987

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. 1986	12656.2	370	209	7160	13	448	46	1560	140
NOV. 1986	16294	359	203	8920	13	553	44	1950	130
DEC. 1986	21993	448	256	15200	21	1260	59	3530	160
JAN. 1987	14810	545	316	12600	34	1350	78	3140	180
FEB. 1987	25965	506	292	20400	29	2030	71	4970	170
MAR. 1987	24787	515	297	19900	30	1970	72	4830	170
APR. 1987	2778	692	409	3070	60	449	110	843	200
MAY 1987	16707	494	285	12800	29	1290	69	3130	160
JUNE 1987	42169	383	217	24700	14	1580	48	5420	140
JULY 1987	2163.1	495	285	1670	28	163	69	403	170
AUG. 1987	70.93	1080	667	128	160	30	220	43	200
SEPT 1987	69.4	1240	783	147	210	39	280	52	180
TOTAL	180462.63	**	**	127000	**	11200	**	29900	**
WTD.AVG.	494	454	260	**	23	**	61	**	160

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
EQUIVALENT MEAN

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	638	312	399	481	527	518	556	702	412	406	872	1350
2	641	315	373	499	533	507	727	677	376	412	900	1370
3	663	320	372	508	546	537	735	624	366	510	940	1340
4	666	345	360	512	529	556	732	544	309	518	979	1320
5	664	348	359	578	522	564	734	912	401	526	996	1350
6	670	356	359	679	526	523	738	812	433	532	1000	1380
7	683	379	363	680	543	512	741	499	402	564	1010	1360
8	510	426	369	678	584	496	743	472	363	400	1030	1370
9	526	498	406	668	606	479	747	502	393	402	1050	1330
10	538	544	425	674	609	457	714	497	356	404	1070	1270
11	564	569	456	691	602	437	720	456	405	556	1080	1270
12	426	574	512	716	748	446	747	434	421	597	1120	1240
13	416	590	606	508	731	452	772	450	416	660	1140	1230
14	406	621	632	504	716	487	772	467	412	634	1140	1220
15	386	626	466	502	659	489	773	427	406	620	1160	1220
16	354	630	477	496	616	492	796	612	390	637	1180	1170
17	346	636	481	505	646	494	809	431	412	639	1170	1110
18	334	415	492	537	507	553	818	439	396	644	1200	1120
19	473	364	533	550	505	524	826	447	391	634	1220	1140
20	522	366	505	504	350	517	830	458	388	639	1230	1130
21	568	426	434	508	470	522	512	353	380	644	1250	1110
22	578	542	426	506	681	549	504	448	376	677	1260	1130
23	464	637	419	507	507	591	501	452	363	653	1210	1150
24	346	633	496	509	478	659	802	474	354	650	1300	1140
25	368	262	571	520	503	671	829	488	356	648	1310	1120
26	375	363	585	507	432	675	838	495	347	707	1320	1120
27	364	403	538	560	464	672	847	544	350	737	1330	1160
28	335	401	431	560	471	677	843	586	346	735	1350	1180
29	332	422	427	558	---	670	840	467	342	749	1370	1190
30	328	412	446	679	---	672	843	444	336	788	1380	1210
31	316	---	467	692	---	557	---	426	---	838	1380	---
MEAN	477	458	458	567	558	547	746	517	380	605	1160	1230

## TRINITY RIVER BASIN

08064100 Chambers Creek near Rice, Tex.--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27.0	---	10.0	8.0	---	---	14.0	23.0	---	---	31.0	26.0
2	27.0	---	10.0	---	---	12.0	13.0	---	---	27.0	---	27.0
3	27.0	19.0	10.0	---	---	12.0	12.0	---	24.0	27.0	---	27.0
4	26.0	19.0	11.0	---	---	12.0	13.0	20.0	23.0	---	32.0	27.0
5	---	---	11.0	---	12.0	13.0	---	21.0	23.0	---	32.0	---
6	---	---	11.0	9.0	10.0	---	13.0	---	23.0	30.0	33.0	24.0
7	18.0	---	12.0	10.0	10.0	---	15.0	23.0	---	---	32.0	25.0
8	19.0	---	11.0	9.0	---	---	17.0	24.0	25.0	27.0	31.0	26.0
9	20.0	---	---	10.0	10.0	---	19.0	22.0	26.0	---	---	29.0
10	22.0	15.0	9.0	---	11.0	---	20.0	---	25.0	27.0	32.0	27.0
11	22.0	12.0	---	---	13.0	13.0	---	---	29.0	---	31.0	26.0
12	16.0	13.0	---	7.0	15.0	14.0	---	24.0	26.0	---	31.0	26.0
13	15.0	16.0	---	8.0	---	14.0	22.0	24.0	---	30.0	31.0	---
14	---	17.0	8.0	10.0	---	13.0	18.0	25.0	---	29.0	30.0	---
15	---	14.0	10.0	10.0	---	---	19.0	23.0	---	29.0	30.0	27.0
16	---	---	---	9.0	10.0	---	22.0	24.0	---	29.0	38.0	---
17	---	15.0	---	---	8.0	16.0	23.0	24.0	---	---	28.0	28.0
18	19.0	15.0	---	---	9.0	16.0	---	---	---	27.0	31.0	26.0
19	19.0	14.0	11.0	5.0	9.0	15.0	---	---	26.0	30.0	---	25.0
20	---	14.0	---	5.0	6.0	16.0	25.0	23.0	---	29.0	28.0	---
21	18.0	---	---	6.0	7.0	17.0	20.0	25.0	---	---	30.0	25.0
22	18.0	---	---	5.0	8.0	---	20.0	26.0	27.0	29.0	28.0	24.0
23	---	14.0	8.0	6.0	9.0	---	21.0	---	27.0	30.0	28.0	24.0
24	19.0	11.0	---	---	9.0	14.0	23.0	---	---	---	28.0	20.0
25	18.0	9.0	9.0	---	10.0	15.0	---	---	---	30.0	31.0	24.0
26	18.0	10.0	10.0	7.0	10.0	14.0	---	25.0	---	31.0	28.0	22.0
27	18.0	10.0	9.0	8.0	---	15.0	25.0	---	---	30.0	26.0	24.0
28	28.0	---	9.0	10.0	---	15.0	25.0	26.0	---	31.0	26.0	---
29	19.0	---	10.0	12.0	---	---	25.0	20.0	---	---	26.0	23.0
30	19.0	---	9.0	12.0	---	9.0	25.0	24.0	27.0	31.0	26.0	23.0
31	---	---	---	11.0	---	12.0	---	---	---	30.0	26.0	---
MEAN	20.5	14.0	10.0	8.5	10.0	14.0	19.5	23.5	25.5	29.0	30.0	25.0

## TRINITY RIVER BASIN

393

08064700 TEHUACANA CREEK NEAR STREETMAN, TX

LOCATION.--Lat 31°50'54", long 96°17'23", Freestone County, Hydrologic Unit 12030201, at downstream side of bridge on U.S. Highway 75, 2.8 mi southeast of Streetman, 3.1 mi downstream from Chicago, Rock Island, and Pacific Railroad Co. bridge, 3.8 mi upstream from Caney Creek, and 25 mi upstream from mouth.

DRAINAGE AREA.--142 mi<sup>2</sup>.

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

Water-quality records.--Chemical analyses: February 1968 to September 1985.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 287.58 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharge. Records fair.

AVERAGE DISCHARGE.--19 years, 71.2 ft<sup>3</sup>/s (6.81 in/yr), 51,580 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 50,600 ft<sup>3</sup>/s Feb. 3, 1986 (gage height, 27.71 ft); no flow at times most years.

Maximum stage since at least 1932, that of Feb. 3, 1986.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in September 1932 reached a stage of about 24 ft, from information by State Department of Highways and Public Transportation.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Nov. 25	1415	3,040	21.72	Mar. 17	1530	2,980	21.65
Dec. 23	1000	*4,980	*22.45	May 4	0945	4,690	22.38

Minimum discharge, no flow Sept. 20-30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.37	2.8	6.2	12	3.6	240	3.7	1.1	1100	.77	.25	.09
2	.38	2.7	4.2	9.9	3.6	75	3.6	1.1	99	1.0	.23	.09
3	.38	2.5	3.1	8.4	3.4	40	3.4	1.1	141	1.2	.21	.08
4	.46	545	2.6	8.0	3.3	26	3.2	1920	1150	.93	.21	.07
5	1.1	679	2.1	7.3	3.0	18	3.5	289	152	.76	.26	.06
6	3.6	64	1.9	6.3	3.0	14	3.6	49	42	.67	.18	.07
7	9.0	16	1.8	6.1	2.8	11	3.1	19	18	.60	.30	.11
8	4.6	6.8	3.0	6.0	2.8	9.1	3.3	9.8	9.2	.59	.34	24
9	4.5	4.0	792	7.3	2.7	7.9	3.0	128	29	.60	.35	10
10	2.7	2.7	246	33	2.5	6.9	2.9	88	420	.75	.33	3.5
11	1.9	2.5	66	19	2.4	6.2	2.9	30	417	.62	.31	14
12	1.9	2.3	29	12	2.4	6.0	2.5	13	123	.50	.31	6.8
13	2.4	2.1	16	8.1	2.3	5.5	2.3	7.6	623	.42	.41	3.4
14	2.2	1.8	13	6.7	2.3	5.0	2.6	4.3	97	.41	.47	2.8
15	2.0	1.6	1190	5.8	25	4.9	2.5	2.9	39	.39	.47	2.8
16	2.0	1.5	449	5.3	31	5.1	2.4	62	128	.35	.48	259
17	1.8	1.4	106	7.2	12	1320	2.3	18	36	.35	.44	57
18	1.5	1.6	248	65	6.0	556	2.2	6.5	53	.38	.36	1.3
19	1.5	1.8	326	137	4.1	85	2.1	3.8	24	.36	.31	.04
20	1.5	1.8	97	60	388	38	2.0	2.6	12	.36	.25	.00
21	1.5	1.6	46	32	384	22	1.7	2.0	16	.37	.17	.00
22	1.8	1.6	502	20	86	15	1.5	1.5	5.4	.40	.15	.00
23	9.6	1.6	2320	13	39	12	1.3	1.3	3.1	.40	.15	.00
24	782	2.2	533	9.3	256	11	1.3	1.4	2.1	.35	.14	.00
25	99	1970	116	7.4	348	7.9	1.2	1.3	1.6	.31	.12	.00
26	18	1430	58	6.7	758	6.4	1.2	1.3	1.2	.23	.10	.00
27	6.8	133	32	5.8	641	5.7	1.1	1.1	1.0	.25	.10	.00
28	4.3	40	28	4.9	1470	5.1	1.1	1.0	.90	.39	.09	.00
29	3.2	17	20	4.7	---	4.7	1.2	117	.84	.38	.08	.00
30	2.6	9.7	16	4.2	---	4.2	1.1	198	.77	.34	.07	.00
31	2.5	---	14	3.9	---	4.1	---	74	---	.29	.08	---
TOTAL	977.09	4950.6	7287.9	542.3	4488.2	2577.7	69.8	3056.7	4745.11	15.72	7.72	385.21
MEAN	31.5	165	235	17.5	160	83.2	2.33	98.6	158	.51	.25	12.8
MAX	782	1970	2320	137	1470	1320	3.7	1920	1150	1.2	.48	259
MIN	.37	1.4	1.8	3.9	2.3	4.1	1.1	1.0	.77	.23	.07	.00
AC-FT	1940	9820	14460	1080	8900	5110	138	6060	9410	31	15	764
CAL YR 1986	TOTAL	47470.34	MEAN	130	MAX	12800	MIN	.02	AC-FT	94160		
WTR YR 1987	TOTAL	29103.76	MEAN	79.7	MAX	2320	MIN	.00	AC-FT	57730		

## TRIINITY RIVER BASIN

08064800 CATFISH CREEK NEAR TENNESSEE COLONY, TX

LOCATION.--Lat 31°52'51", long 95°52'07", Anderson County, Hydrologic Unit 12030201, on left bank at downstream side of bridge on U.S. Highway 287, 2 mi upstream from Beaver Creek, 3.5 mi northwest of Tennessee Colony, 12 mi downstream from Coon Creek Lake, and 12 mi upstream from mouth.

DRAINAGE AREA.--207 mi<sup>2</sup>.

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

Water-quality records.--Chemical analyses: April 1964 to June 1965.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 234.93 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good except those for October, which are fair. Some regulation upstream by Coon Creek Lake. No known diversions above station. There were several observations of water temperature made during the year.

AVERAGE DISCHARGE.--25 years, 102 ft<sup>3</sup>/s (73,900 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,550 ft<sup>3</sup>/s May 11, 1968 (gage height, 15.90 ft); minimum daily, 0.8 ft<sup>3</sup>/s Aug. 19-21, 1964.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1927, 22 ft in June 1944 as a result of dam failure at Coon Creek Lake, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,400 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Mar. 19	0400	*1,540	*11.31	No other peak greater than base discharge.			
Minimum daily discharge, 8.1 ft <sup>3</sup> /s Sept. 7-10.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	52	162	155	114	574	134	43	130	80	18	28
2	11	50	141	146	109	536	120	41	128	82	17	20
3	11	50	133	138	106	408	112	41	121	99	17	14
4	11	56	125	131	106	315	111	60	183	97	17	11
5	11	77	120	127	106	255	109	84	375	104	18	9.1
6	19	117	113	129	106	216	110	116	442	90	17	8.3
7	27	216	107	126	106	187	110	150	328	70	16	8.1
8	36	212	123	122	106	162	112	149	233	58	16	8.1
9	48	163	147	126	105	141	115	122	174	55	16	8.1
10	57	132	205	134	105	127	113	101	146	53	15	8.1
11	55	118	415	147	104	118	105	85	131	46	15	8.4
12	46	111	390	162	99	112	96	73	139	39	15	9.6
13	42	105	278	156	97	108	92	76	155	33	15	11
14	39	100	223	143	96	105	95	82	183	28	15	13
15	33	96	244	136	123	103	96	70	181	26	14	14
16	26	92	269	133	143	101	101	64	170	24	14	14
17	20	88	349	134	251	352	100	62	158	24	13	13
18	16	88	388	168	266	837	94	59	166	25	13	13
19	17	89	334	218	205	1380	89	58	173	26	12	15
20	23	91	305	276	213	745	86	56	182	26	12	16
21	26	91	291	255	253	475	83	55	165	22	12	16
22	28	90	297	222	453	358	79	51	135	21	11	15
23	46	91	376	180	449	300	73	51	111	20	11	14
24	136	98	386	157	364	273	67	62	90	18	11	14
25	236	157	432	137	306	278	62	56	73	17	12	14
26	337	206	378	126	397	294	60	53	63	17	12	14
27	286	262	290	120	461	255	58	47	55	20	12	14
28	182	289	236	115	572	214	53	42	47	23	12	14
29	113	242	200	110	---	181	49	68	36	23	12	15
30	75	195	180	106	---	163	46	90	31	21	13	22
31	58	---	166	109	---	149	---	109	---	19	19	---
TOTAL	2082	3824	7803	4644	5921	9822	2730	2276	4704	1306	442	401.8
MEAN	67.2	127	252	150	211	317	91.0	73.4	157	42.1	14.3	13.4
MAX	337	289	432	276	572	1380	134	150	442	104	19	28
MIN	11	50	107	106	96	101	46	41	31	17	11	8.1
AC-FT	4130	7580	15480	9210	11740	19480	5410	4510	9330	2590	877	797

CAL YR 1986	TOTAL	59932.8	MEAN	164	MAX	2320	MIN	6.8	AC-FT	118900
WTR YR 1987	TOTAL	45955.8	MEAN	126	MAX	1380	MIN	8.1	AC-FT	91150

## 08065000 TRINITY RIVER NEAR OAKWOOD, TX

LOCATION.--Lat 31°38'54", long 95°47'21", Anderson County, Hydrologic Unit 12030201, on left bank at downstream side of bridge on U.S. Highways 79 and 84, 1.5 mi upstream from Missouri Pacific Railroad Co. bridge, 6 mi northeast of Oakwood, and at mile 313.4.

DRAINAGE AREA.--12,833 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1923 to September 1924 (monthly discharge only), October 1924 to current year. Records of January 1905 to September 1923, published in WSP 850 and 878, have been found unreliable and should not be used. Gage-height records collected in this vicinity since 1904 are contained in reports of the National Weather Service.

REVISED RECORDS.--WSP 1442: 1934. See also PERIOD OF RECORD. WSP 1922: Drainage area. WRD TX-81-1: 1980 (M,m).

GAGE.--Water-stage recorder. Datum of gage is 175.06 ft above National Geodetic Vertical Datum of 1929. Prior to July 1932, nonrecording gage at site 1.5 mi downstream at datum 1.06 ft lower. July 15, 1932, to Oct. 7, 1934, nonrecording gage at present site and datum.

REMARKS.--Records good except those for estimated daily discharges and period Dec. 16 to Jan. 13 which are poor. Twenty-one major reservoirs with a capacity of 4,200,000 acre-ft, of which 1,362,000 acre-ft is for flood control, partly regulate the flow. Streamflow is affected at times by discharge from the flood-detention pools of 252 floodwater-retarding structures with a combined detention capacity of 183,300 acre-ft. These structures control runoff from 614 mi<sup>2</sup> in the Richland, Chambers, and Tehuacana Creeks drainage basins. The Industrial Generating Co., Fairfield, makes a minor diversion from the river at a site about 34 mi upstream. The diversion to Big Brown Lake is used to maintain the normal pool elevation for that lake. Gage-height telemeter at station.

AVERAGE DISCHARGE.--30 years (water years 1924-53) unregulated, 5,045 ft<sup>3</sup>/s (3,655,000 acre-ft/yr); 34 years (water years 1954-87) regulated, 4,557 ft<sup>3</sup>/s (3,302,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 153,000 ft<sup>3</sup>/s Apr. 29, 1942 (gage height, 51.64 ft); minimum observed, 28 ft<sup>3</sup>/s Aug. 24, 1925.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in May 1890 reached a stage of 53 ft (discharge about 180,000 ft<sup>3</sup>/s) and was the highest since that date, from information in local newspapers. Flood of June 4, 1908, reached a stage of 52.2 ft, present site and datum, from information by the National Weather Service (discharge about 164,000 ft<sup>3</sup>/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 22,500 ft<sup>3</sup>/s Mar. 7 at 2000 hours (gage height, 38.58 ft); minimum daily, 648 ft<sup>3</sup>/s Sept. 28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e780	e1900	16900	3290	4620	16000	7680	1050	9320	12600	838	1240
2	e900	e2700	18000	3070	4570	16700	7200	1050	11400	11000	860	953
3	e900	e2900	18200	2900	4470	17600	6650	1060	12900	10000	865	815
4	e850	e3200	15400	2790	4310	18800	6240	1070	13900	9230	844	781
5	e800	e4500	9020	2680	3940	20100	6010	1910	14900	8810	788	763
6	e950	e7000	4960	2650	3550	21300	5980	4090	15700	8540	752	729
7	e1600	e7000	3820	2660	3260	22200	6010	6480	16200	7690	744	709
8	e2400	e6000	3550	2490	2930	22400	5880	7090	16300	6470	751	686
9	e3000	e4500	4670	2550	2980	21600	5610	5420	16000	5320	741	673
10	e3000	e3200	8930	2630	3190	20000	5310	3470	15200	4280	727	686
11	e2800	e2700	10700	3250	2950	17900	5110	2840	14000	3710	657	943
12	e2600	e2500	9410	5910	2670	16000	4990	2930	13300	3390	680	910
13	e2300	e2800	6890	6250	2430	14600	4910	3600	13300	3180	685	899
14	e2200	e3000	4660	4750	2170	13700	4700	2890	13700	2950	939	1240
15	e2100	e2500	4520	3590	2170	13300	4320	2210	14000	2700	1000	1360
16	e2000	e2100	6700	3240	2610	12600	4120	2540	14300	2560	838	1820
17	e1900	1880	9280	3180	3590	11700	3840	3330	14600	2500	760	1660
18	e1900	1540	10600	3440	4190	11900	3330	4800	15100	2160	764	1440
19	e1900	1360	10600	5520	3960	13300	2800	5420	15400	1550	752	1250
20	e1900	1290	10800	8960	3510	14800	2240	4360	15700	1530	732	1060
21	e1850	1270	11500	10600	5710	15900	1830	3120	15900	1910	732	920
22	e1850	1320	12300	11000	10100	16400	1630	3150	16000	1610	695	962
23	e2500	1650	13000	9090	12400	16600	1540	4110	15900	1200	670	885
24	e3500	1820	13200	6110	13700	16600	1530	3550	15900	1030	665	754
25	e5000	2210	13400	4840	14200	16400	1550	2560	15900	989	700	699
26	e8000	5850	13200	4540	14500	15700	1550	3020	15800	1070	709	675
27	e7000	10200	12300	4530	14800	13900	1630	3560	15600	1290	703	670
28	e6000	12600	8770	4510	15300	11700	1410	3160	15300	1160	755	648
29	e3500	14300	5050	4420	---	9820	1150	2880	14800	975	734	658
30	e2500	15700	3710	4410	---	8760	1070	3110	13900	877	811	650
31	e1600	---	3480	4530	---	8220	---	6080	---	847	1280	---
TOTAL	80080	131490	297520	144380	168780	486500	117820	105910	440220	123128	24171	28138
MEAN	2583	4383	9597	4657	6028	15690	3927	3416	14670	3972	780	938
MAX	8000	15700	18200	11000	15300	22400	7680	7090	16300	12600	1280	1820
MIN	780	1270	3480	2490	2170	8220	1070	1050	9320	847	657	648
AC-FT	158800	260800	590100	286400	334800	965000	233700	210100	873200	244200	47940	55810

CAL YR 1986 TOTAL 2463790 MEAN 6750 MAX 38600 MIN 751 AC-FT 4887000  
WTR YR 1987 TOTAL 2148140 MEAN 5885 MAX 22400 MIN 648 AC-FT 4261000

e Estimated.

## TRINITY RIVER BASIN

08065200 UPPER KEECHI CREEK NEAR OAKWOOD, TX

LOCATION.--Lat 31°34'11", long 95°53'17", Leon County, Hydrologic Unit 12030201, at right bank at downstream side of bridge on U.S. Highway 79, 1.9 mi upstream from Missouri Pacific Railroad Co. bridge, 2 mi southwest of Oakwood, 11 mi upstream from Buffalo Creek, and 21 mi upstream from mouth.

DRAINAGE AREA.--150 mi<sup>2</sup>.

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

Water-quality records: Chemical analyses: June 1962 to April 1964, November 1967 to September 1975.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 240.11 ft above National Geodetic Vertical Datum of 1929.

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

AVERAGE DISCHARGE.--25 years (water years 1963-87), 74.1 ft<sup>3</sup>/s (6.71 in/yr), 53,690 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,000 ft<sup>3</sup>/s May 16, 1965 (gage height, 14.91 ft), and Apr. 25, 1966, from rating curve extended above 5,800 ft<sup>3</sup>/s; maximum gage height, 15.46 ft Oct. 31, 1974; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1900, about 21 ft in 1932, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Dec. 24	1400	*1,390	*12.64				

Minimum discharge, no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	.03	2.6	19	38	22	561	25	5.0	34	4.1	1.4	.01		
2	.03	2.9	15	34	24	246	23	4.7	23	3.9	1.0	.03		
3	.03	3.3	13	32	25	92	22	5.5	162	7.1	.71	.03		
4	.02	12	12	32	23	63	21	5.8	138	7.7	.50	.01		
5	.03	47	11	31	22	51	21	5.9	130	7.3	.36	.02		
6	.05	43	10	30	21	44	22	5.8	84	6.7	.24	.03		
7	.07	21	10	30	21	39	24	5.7	29	5.3	.15	.06		
8	.10	12	12	29	22	36	23	6.3	19	4.6	.09	.08		
9	.95	8.8	70	36	21	34	22	6.4	20	5.7	.05	.09		
10	3.7	6.6	195	59	19	31	20	6.5	37	6.1	.02	.15		
11	3.1	5.3	276	63	19	33	19	6.1	73	5.5	.01	.21		
12	2.9	5.4	124	41	19	40	18	5.3	168	7.0	.00	.35		
13	2.9	5.8	44	34	19	36	18	4.7	122	6.9	.00	.84		
14	4.2	5.3	35	32	19	33	27	4.0	241	6.6	.00	1.4		
15	2.7	5.2	148	32	41	30	21	3.4	167	5.1	.00	1.3		
16	1.8	5.3	272	32	51	30	17	3.1	47	4.3	.00	2.8		
17	1.3	6.0	443	34	35	327	15	3.1	101	4.5	.00	5.4		
18	1.2	6.9	394	69	26	717	14	2.8	69	4.9	.00	6.0		
19	1.2	6.0	244	157	22	661	13	2.5	153	4.6	.00	5.6		
20	1.2	6.6	373	201	92	309	12	2.8	135	4.2	.00	5.4		
21	1.1	8.0	338	69	230	84	10	4.8	34	4.1	.00	4.8		
22	1.4	9.8	156	45	307	59	9.3	4.9	21	4.7	.00	4.0		
23	11	21	348	36	169	57	8.8	3.8	15	4.6	.00	3.1		
24	106	18	1140	32	109	79	8.1	6.4	14	4.0	.00	2.7		
25	203	79	927	30	193	69	7.3	9.1	12	4.4	.00	2.3		
26	230	202	435	27	361	46	6.8	6.1	9.9	4.7	.00	2.0		
27	40	300	106	26	558	40	6.5	4.2	7.8	5.3	.00	1.9		
28	14	216	67	24	830	36	6.0	3.3	6.4	5.6	.00	1.8		
29	9.0	38	53	24	---	31	5.7	112	5.3	3.2	.00	1.6		
30	6.0	25	46	24	---	29	5.4	168	4.5	2.0	.00	1.5		
31	4.6	---	41	22	---	26	---	97	---	1.7	.00	---		
TOTAL	653.61	1133.8	6377	1405	3320	3969	470.9	515.0	2081.9	156.4	4.53	55.51		
MEAN	21.1	37.8	206	45.3	119	128	15.7	16.6	69.4	5.05	.15	1.85		
MAX	230	300	1140	201	830	717	27	168	241	7.7	1.4	6.0		
MIN	.02	2.6	10	22	19	26	5.4	2.5	4.5	1.7	.00	.01		
AC-FT	1300	2250	12650	2790	6590	7870	934	1020	4130	310	9.0	110		
CFSM	.14	.25	1.37	.30	.79	.85	.10	.11	.46	.0	.0	.0		
IN.	.16	.28	1.58	.35	.82	.98	.12	.13	.52	.0	.0	.0		
CAL YR 1986	TOTAL	30417.52	MEAN	83.3	MAX	2400	MIN	.01	AC-FT	60330	CFSM	.56	IN.	7.54
WTR YR 1987	TOTAL	20142.45	MEAN	55.2	MAX	1140	MIN	.00	AC-FT	39950	CFSM	.37	IN.	5.00

## TRINITY RIVER MAIN STEM

397

08065350 TRINITY RIVER NEAR CROCKETT, TX  
(National stream-quality accounting network)

LOCATION.--Lat 31°20'18", long 95°39'22", Houston-Leon County line, Hydrologic Unit 12030201, on left bank at an abandoned bridge abutment near left end of an abandoned lock and dam, 1,000 ft upstream from State Highway 7, 6.9 mi downstream from Upper Keechi Creek, 11.9 mi west of Crockett, and at mile 265.4.

DRAINAGE AREA.--13,911 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1964 to current year.

GAGE.--Water-stage recorder. Datum of gage is 141.15 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 13, 1983, water-stage recorder at site 1,000 ft downstream at datum 4.56 ft lower. Gage-height telemeter at station.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. For statement regarding regulation by upstream reservoirs, see station 08065000. Flow from 44 mi<sup>2</sup> of Elkhart Creek basin is affected by storage in Houston County Lake near Crockett (capacity 19,500 acre-ft). There are many diversions above station for irrigation, municipal, and industrial uses.

AVERAGE DISCHARGE.--23 years (water years 1965-87), 5,765 ft<sup>3</sup>/s (4,177,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 78,000 ft<sup>3</sup>/s May 15, 1969 (gage height, 52.24 ft); at former site and datum; minimum, 275 ft<sup>3</sup>/s Aug. 13, 1964.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1900, 56.1 ft Apr. 30 or May 1, 1942, at former site and datum from information by Texas Department of Highways and Public Transportation.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 22,200 ft<sup>3</sup>/s Mar. 9 at 1300 hours (gage height, 27.93 ft); minimum daily, 749 ft<sup>3</sup>/s Aug. 25.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	957	1730	17100	3770	4820	20000	9360	1560	8600	16500	1110	1500
2	1040	1900	18100	3460	4970	20000	8740	1520	12400	15000	1100	1480
3	1190	2890	18900	3240	4880	20000	8130	1510	14800	13300	1130	1160
4	1160	3150	19200	3120	4690	20100	7480	1530	16300	11900	e1170	965
5	1070	3510	16400	3000	4430	20300	6910	1590	17500	10800	e1160	e900
6	1010	5370	9510	2960	3970	20800	6730	2740	18600	10300	e1100	e870
7	1230	7510	4810	3000	3570	21400	6730	5060	19100	9760	e1050	e850
8	1990	7570	3790	2970	3310	21900	6720	7200	19100	8400	e1000	e830
9	2680	6480	3800	2830	3090	22100	6540	7290	18900	6700	e970	820
10	3150	4940	6250	2960	3200	22100	6250	4990	18700	5180	e940	e800
11	2980	3650	11000	3020	3250	21000	5950	3440	18000	4320	e910	e823
12	2800	3000	12300	4270	3050	19500	5750	3130	17000	3850	e870	1130
13	2680	2660	10500	6680	2860	17700	5630	3380	16600	e3660	839	1150
14	2380	3000	7370	6060	2660	16200	5560	3630	16900	e3440	832	1210
15	2310	3350	5750	4190	2590	15400	5280	3080	17200	3210	1160	1510
16	2380	2950	6860	3320	2830	14900	4890	3000	17400	3050	1220	1980
17	2180	2460	9000	3140	3230	15400	4640	3190	17500	2930	1010	2310
18	2100	2020	11400	3270	4090	16100	4130	4030	17900	2870	905	1970
19	2090	1710	13100	4020	4400	15700	3710	5310	18300	2520	877	1760
20	2090	1570	12900	7470	5160	16900	3220	5380	18500	2050	868	1540
21	2110	1520	13000	11200	6480	18300	2760	4110	18700	2160	838	1350
22	2060	1500	13900	13000	9300	18700	2430	3300	18900	2380	827	1190
23	2090	1590	16200	12900	12800	18700	2250	3650	18800	2060	795	1200
24	2960	2020	16700	9770	15000	e18400	2150	4110	18700	1660	755	1080
25	4420	2570	16000	6370	16500	18300	2140	3450	18700	1440	749	924
26	6980	3580	15800	5030	18300	18100	2150	3010	18600	1370	762	853
27	9090	7980	16000	4770	19700	17400	2150	3500	18500	e1690	791	823
28	8770	12100	14200	4750	19800	15600	2190	3650	18400	e1830	805	805
29	7620	14500	9670	4700	---	13200	1950	3650	18000	1560	823	777
30	5300	16100	5400	4600	---	11200	1670	4040	17400	1310	846	787
31	2760	---	4140	4650	---	10100	---	4540	---	1180	1010	---
TOTAL	93627	134880	359050	158490	192930	555300	144190	113570	524000	158380	29222	35347
MEAN	3020	4496	11580	5113	6890	17910	4806	3664	17470	5109	943	1178
MAX	9090	16100	19200	13000	19800	22100	9360	7290	19100	16500	1220	2310
MIN	957	1500	3790	2830	2590	10100	1670	1510	8600	1180	749	777
AC-FT	185700	267500	712200	314400	382700	1101000	286000	225300	1039000	314100	57960	70110

CAL YR 1986 TOTAL 2755190 MEAN 7548 MAX 35800 MIN 933 AC-FT 5465000  
WTR YR 1987 TOTAL 2498990 MEAN 6847 MAX 22100 MIN 749 AC-FT 4957000

e Estimated.

## TRINITY RIVER MAIN STEM

08065350 TRINITY RIVER NEAR CROCKETT, TX--Continued  
(National stream-quality accounting network)

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: February 1964 to current year. Chemical and biochemical analyses: February 1968 to current year. Pesticide analyses: November 1971 to July 1981. Sediment records: November 1972 to September 1977.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: February 1964 to current year.

pH: March 1975 to current year.

WATER TEMPERATURE: February 1964 to September 1971, March 1975 to current year.

DISSOLVED OXYGEN: March 1975 to current year.

SUSPENDED-SEDIMENT DISCHARGE: July 1972 to September 1977.

INSTRUMENTATION.--Beginning March 1975, 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 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, 2,370 microsiemens Sept. 22, 1964; minimum, 105 microsiemens July 28, 1979.

pH: Maximum, 9.6 units Aug. 11, 12, 1981; minimum, 5.9 units Aug. 12, 1977.

WATER TEMPERATURE (1975-87): Maximum, 37.0°C July 4, 1970, Sept. 4, 1978; minimum, 1.0°C Jan. 17, 1978, Nov. 24, 1984.

DISSOLVED OXYGEN: Maximum, 19.3 mg/L Feb. 10, 1981; minimum, 0.0 mg/L Apr. 20, 1976.

## EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 787 microsiemens May 7; minimum, 228 microsiemens Dec. 11, 26.

pH: Maximum, 8.5 units Oct. 4, May 2-5; minimum, 7.5 units Oct. 24-27, Mar. 18.

WATER TEMPERATURE: Maximum, 34.0°C Aug. 6-8, 13; minimum, 7.5°C Jan. 22-24.

DISSOLVED OXYGEN: Maximum, 11.1 mg/L Oct. 4; minimum, 3.1 mg/L May 8.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

						OXYGEN, DIS-SOLVED (PER-CENT SATURATION)		OXYGEN DEMAND, BIO-CHEMICAL, 5 DAY (MG/L)		HARD-NESS NONCARB WH WAT TOT FLD MG/L AS CAC03	
DATE	TIME	STREAM-FLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (US/CM)	PH (STANDARD UNITS)	TEMPERATURE WATER (DEG C)	OXYGEN, DIS-SOLVED (MG/L)				HARD-NESS (MG/L AS CAC03)	
NOV 20...	1220	1580	450	7.70	18.0	10.3	107	1.6	140	43	
JAN 15...	1544	3940	451	7.90	11.0	10.0	91	3.7	140	43	
FEB 26...	1630	18900	325	7.60	11.5	9.8	91	2.5	100	26	
APR 15...	1845	5180	476	7.30	19.5	9.2	101	1.9	160	33	
JUN 04...	1424	16400	317	7.00	25.0	5.6	68	2.3	110	12	
JUL 22...	1835	2340	507	7.80	30.0	6.5	87	1.0	160	26	
DATE		CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNESIUM, DIS-SOLVED (MG/L AS MG)	SODIUM ADSORPTION RATIO	POTASSIUM, DIS-SOLVED (MG/L AS K)	ALKALINITY WH WAT TOTAL FIELD (MG/L AS CAC03)	SULFATE DIS-SOLVED (MG/L AS S04)	CHLORIDE, DIS-SOLVED (MG/L AS CL)	FLUORIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SiO2)	
NOV 20...	50	4.6	35	1	6.1	101	53	40	0.50	9.7	
JAN 15...	48	5.2	33	1	5.5	98	60	36	0.40	8.3	
FEB 26...	34	4.5	20	0.9	4.3	77	45	20	0.20	7.6	
APR 15...	53	5.8	33	1	5.1	123	54	34	0.40	6.2	
JUN 04...	36	3.8	17	0.8	15	94	37	21	0.30	7.1	
JUL 22...	54	5.8	41	1	7.1	133	51	39	0.50	8.3	
DATE		SOLIDS, SUM OF CONSTITUENTS, DIS-SOLVED (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)	PHOSPHORUS, TOTAL (MG/L AS P)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)
NOV 20...	260	2.05	0.050	2.10	0.030	0.77	0.80	<0.010	5	61	
JAN 15...	260	1.38	0.120	1.50	0.170	1.0	1.2	0.790	--	--	
FEB 26...	180	0.700	0.100	0.800	0.090	0.91	1.0	0.210	--	--	
APR 15...	270	1.46	0.040	1.50	0.050	0.55	0.60	0.650	--	--	
JUN 04...	190	0.790	0.110	0.900	0.070	1.1	1.2	0.470	--	--	
JUL 22...	290	2.27	0.030	2.30	0.040	0.66	0.70	0.890	5	59	

08065350 TRINITY RIVER NEAR CROCKETT, TX--Continued  
(National stream-quality accounting network)

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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 20...	<1	<10	6	48	<5	24	<0.1	<1	<1	5
JAN 15...	--	--	--	--	--	--	--	--	--	--
FEB 26...	--	--	--	--	--	--	--	--	--	--
APR 15...	--	--	--	--	--	--	--	--	--	--
JUN 04...	--	--	--	--	--	--	--	--	--	--
JUL 22...	<1	<10	2	9	<5	<1	0.4	<1	<1	52

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1986 TO SEPTEMBER 1987

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. 1986	93627	438	250	63300	36	9170	54	13800	130
NOV. 1986	134880	353	203	73900	27	9710	43	15700	120
DEC. 1986	359050	293	169	164000	21	19900	35	34200	100
JAN. 1987	158490	429	246	105000	35	14800	53	22700	130
FEB. 1987	192930	376	216	112000	29	15100	46	24000	120
MAR. 1987	555300	380	218	327000	29	43600	47	69700	120
APR. 1987	144190	492	281	110000	42	16200	61	23900	140
MAY 1987	113570	486	278	85200	41	12700	61	18600	140
JUNE 1987	524000	387	223	315000	30	42000	47	67100	130
JULY 1987	158380	433	248	106000	35	14900	54	22900	130
AUG. 1987	29222	721	406	32100	73	5750	94	7390	160
SEPT 1987	35347	643	364	34700	62	5880	83	7870	160
TOTAL	2498986	**	**	1529000	**	210000	**	328000	**
WTD.AVG.	6847	395	227	**	31	**	49	**	120

DAY	SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987											
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER												
1	696	663	679	381	330	349	274	251	258	484	459	477
2	715	689	704	440	385	413	272	256	260	470	453	460
3	727	708	719	534	433	476	264	255	260	475	465	468
4	714	684	704	408	374	386	278	264	270	490	475	482
5	715	687	702	402	372	382	280	271	276	506	489	498
6	717	705	712	393	363	383	344	281	307	517	506	511
7	733	698	711	411	271	337	387	347	370	525	516	523
8	754	736	743	303	261	275	407	389	398	525	507	523
9	772	468	606	376	306	348	406	402	404	535	527	533
10	600	482	556	393	375	388	410	366	390	532	523	527
11	642	566	620	388	374	382	404	228	302	579	504	536
12	549	395	438	379	368	373	257	231	246	534	516	521
13	405	364	379	382	373	379	298	257	271	567	422	503
14	448	409	434	395	372	386	326	298	314	498	435	458
15	470	438	452	475	395	426	346	327	335	494	435	453
16	490	471	481	530	479	508	362	317	344	485	471	478
17	492	468	480	473	450	461	357	321	342	475	460	468
18	507	468	486	464	442	451	350	248	292	491	461	481
19	509	452	483	481	466	476	275	248	265	501	469	490
20	529	504	516	493	470	481	332	269	303	498	369	464
21	510	478	492	516	491	503	333	263	288	354	285	302
22	488	477	481	537	517	528	356	315	343	319	297	311
23	485	426	471	549	539	545	327	297	312	320	314	317
24	442	363	399	546	504	520	295	263	275	348	319	337
25	458	329	416	517	422	453	295	240	280	405	348	383
26	421	301	350	467	413	431	235	228	232	464	408	432
27	393	305	365	489	311	414	277	232	252	504	467	487
28	343	291	305	329	235	281	327	279	307	491	475	484
29	298	291	294	239	230	233	334	304	318	498	454	475
30	319	298	309	260	234	245	417	337	373	457	447	453
31	331	319	326	---	---	---	465	418	443	453	447	449
MONTH	772	291	510	549	230	407	465	228	311	579	285	461

08065350 TRINITY RIVER NEAR CROCKETT, TX--Continued  
(National stream-quality accounting network)

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	455	440	449	283	257	269	449	418	434	674	646	660
2	446	428	437	259	249	253	461	430	453	699	667	678
3	439	429	432	264	248	254	465	447	455	689	670	676
4	444	430	437	291	263	276	476	453	465	690	675	684
5	467	435	449	320	289	304	489	476	484	728	678	690
6	466	454	461	350	319	335	488	475	482	728	671	689
7	483	461	470	417	352	380	482	470	476	787	557	646
8	500	478	487	427	408	418	501	475	482	662	447	581
9	512	499	505	407	402	404	494	462	474	430	380	399
10	513	501	504	415	396	402	480	464	472	406	381	396
11	521	502	511	406	395	400	478	470	473	443	405	428
12	528	514	522	398	387	390	487	473	480	447	441	445
13	533	520	524	404	389	397	487	478	484	451	420	435
14	538	520	529	417	405	412	484	476	479	480	427	454
15	533	505	517	422	409	415	484	474	478	494	469	481
16	524	504	514	435	422	429	487	477	482	501	435	469
17	537	517	526	439	401	422	511	485	498	549	498	525
18	565	523	541	416	380	395	541	510	524	539	503	517
19	537	459	517	407	374	393	549	530	539	550	480	518
20	506	345	411	366	325	338	564	550	557	552	408	473
21	394	342	363	378	349	367	574	552	562	497	410	450
22	437	360	401	376	359	369	583	568	575	498	395	425
23	364	282	299	417	375	397	573	487	531	416	393	404
24	342	292	311	439	416	427	509	481	493	481	417	441
25	342	318	330	455	435	439	543	488	513	549	484	520
26	339	300	321	442	432	437	578	536	557	525	417	478
27	300	253	267	447	435	441	617	570	595	448	308	425
28	295	258	268	444	438	441	693	608	644	465	465	413
29	---	---	---	442	438	440	678	666	672	399	341	376
30	---	---	---	439	433	436	684	648	667	467	334	404
31	---	---	---	444	431	437	---	---	---	493	427	460
MONTH	565	253	439	455	248	384	693	418	516	787	334	505
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	502	373	442	452	396	416	666	614	635	753	739	745
2	484	331	396	401	391	396	699	651	677	755	744	750
3	349	299	319	398	387	392	749	662	700	750	704	730
4	352	308	329	392	384	388	680	647	664	705	695	701
5	366	351	359	413	387	396	734	656	682	739	705	720
6	356	334	344	414	384	391	728	677	699	757	726	745
7	353	347	350	409	387	398	715	668	679	760	720	730
8	394	352	369	401	361	380	731	697	722	731	654	698
9	385	373	379	402	370	386	741	726	734	657	641	649
10	393	384	389	416	396	402	759	727	737	665	656	661
11	393	387	390	425	412	418	761	745	755	660	640	649
12	389	383	386	468	423	445	752	728	741	645	636	640
13	434	367	393	530	471	487	727	705	721	681	650	671
14	378	364	371	531	478	498	736	707	726	711	680	693
15	382	373	377	515	475	491	760	727	749	768	713	747
16	382	343	371	532	509	515	755	738	752	756	605	648
17	383	362	375	513	496	505	753	731	743	626	529	578
18	382	359	376	518	494	505	753	738	746	659	536	585
19	401	384	390	513	501	506	739	723	731	645	594	612
20	423	382	396	528	503	511	744	734	738	644	575	602
21	400	378	388	530	502	520	768	735	751	643	508	589
22	426	402	410	529	507	520	781	764	771	554	506	523
23	435	401	417	539	508	521	779	745	764	536	491	504
24	441	419	431	536	514	525	741	666	695	578	536	549
25	436	420	426	578	531	551	698	671	689	619	555	563
26	435	421	424	626	581	606	702	682	692	608	567	586
27	431	418	420	638	617	626	737	691	711	683	599	616
28	417	413	415	637	596	616	760	735	748	731	611	625
29	414	397	403	627	574	594	786	756	766	692	621	634
30	398	394	396	594	577	581	784	740	753	766	627	647
31	---	---	---	614	579	599	760	720	734	---	---	---
MONTH	502	299	388	638	361	487	786	614	723	768	491	646

## TRINITY RIVER MAIN STEM

401

08065350 TRINITY RIVER NEAR CROCKETT, TX--Continued  
(National stream-quality accounting network)

DAY	PH (STANDARD UNITS)			WATER YEAR			OCTOBER 1986 TO SEPTEMBER 1987					
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER				NOVEMBER			DECEMBER			JANUARY		
1	8.3	8.1	8.2	7.7	7.6	7.6	8.0	7.9	7.9	7.9	7.9	7.9
2	8.4	8.2	8.3	7.7	7.6	7.6	7.9	7.7	7.9	7.9	7.9	7.9
3	8.4	8.1	8.2	7.7	7.7	7.7	7.9	7.8	7.8	8.0	7.9	7.9
4	8.5	8.1	8.3	7.8	7.7	7.7	7.9	7.8	7.8	7.9	7.9	7.9
5	8.4	8.0	8.2	7.8	7.7	7.8	7.9	7.7	7.8	7.9	7.9	7.9
6	8.0	7.8	7.8	7.8	7.6	7.7	7.9	7.8	7.8	7.9	7.9	7.9
7	7.8	7.7	7.7	7.7	7.6	7.7	7.9	7.8	7.9	7.9	7.9	7.9
8	7.9	7.6	7.7	7.8	7.6	7.7	7.9	7.9	7.9	7.9	7.8	7.9
9	7.9	7.6	7.7	7.7	7.6	7.6	8.0	8.0	8.0	7.9	7.8	7.9
10	7.7	7.6	7.6	7.6	7.6	7.6	8.0	7.9	8.0	7.9	7.9	7.9
11	7.7	7.6	7.6	7.7	7.6	7.7	8.2	7.9	8.0	7.9	7.8	7.9
12	7.7	7.6	7.7	7.8	7.7	7.7	8.2	8.0	8.1	7.9	7.8	7.9
13	7.8	7.7	7.7	7.8	7.7	7.7	8.1	7.9	8.0	7.9	7.7	7.8
14	7.8	7.7	7.8	7.8	7.7	7.8	8.0	7.9	7.9	7.9	7.7	7.7
15	7.8	7.7	7.8	7.8	7.7	7.8	7.9	7.8	7.8	7.8	7.7	7.7
16	7.9	7.8	7.8	7.7	7.6	7.7	7.8	7.6	7.7	7.8	7.7	7.8
17	7.9	7.8	7.8	7.7	7.6	7.6	7.8	7.7	7.7	7.8	7.7	7.8
18	7.9	7.8	7.9	7.7	7.6	7.6	7.9	7.7	7.8	7.9	7.8	7.8
19	7.9	7.8	7.8	7.8	7.7	7.7	7.9	7.8	7.8	7.9	7.8	7.8
20	7.9	7.9	7.9	7.8	7.7	7.7	7.8	7.7	7.8	7.9	7.8	7.8
21	7.9	7.8	7.9	7.9	7.7	7.8	8.0	7.7	7.9	7.9	7.8	7.9
22	7.9	7.7	7.8	7.8	7.8	7.8	7.9	7.8	7.8	7.9	7.9	7.9
23	7.8	7.7	7.8	7.9	7.8	7.8	7.8	7.8	7.8	7.9	7.8	7.9
24	7.7	7.5	7.6	7.9	7.8	7.8	7.9	7.8	7.9	7.9	7.8	7.8
25	7.7	7.5	7.6	7.9	7.7	7.8	8.0	7.8	7.9	7.9	7.8	7.9
26	7.8	7.5	7.7	7.8	7.6	7.7	8.0	7.9	7.9	7.9	7.9	7.9
27	7.7	7.5	7.6	7.9	7.8	7.8	8.0	7.9	7.9	7.9	7.8	7.9
28	7.7	7.6	7.7	8.1	7.9	8.0	7.9	7.8	7.8	8.1	7.9	8.0
29	7.7	7.6	7.6	8.2	8.0	8.1	7.9	7.8	7.8	8.2	8.1	8.1
30	7.7	7.6	7.6	8.1	7.9	8.0	7.8	7.6	7.8	8.2	8.1	8.1
31	7.7	7.6	7.6	---	---	---	7.8	7.7	7.8	8.2	8.1	8.1
MONTH	8.5	7.5	7.8	8.2	7.6	7.7	8.2	7.6	7.9	8.2	7.7	7.9
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	8.1	8.1	8.1	7.9	7.8	7.8	7.9	7.8	7.9	8.3	8.2	8.2
2	8.2	8.1	8.1	7.9	7.8	7.8	7.9	7.9	7.9	8.5	8.2	8.3
3	8.1	8.1	8.1	7.9	7.8	7.8	7.9	7.9	7.9	8.5	8.2	8.3
4	8.1	8.1	8.1	7.8	7.7	7.8	7.9	7.9	7.9	8.5	8.3	8.4
5	8.2	8.1	8.1	7.8	7.7	7.7	7.9	7.9	7.9	8.5	8.3	8.4
6	8.2	8.1	8.1	7.8	7.7	7.7	7.9	7.9	7.9	8.4	8.1	8.2
7	8.2	8.1	8.1	7.7	7.7	7.7	7.9	7.8	7.9	8.1	7.6	7.8
8	8.1	8.0	8.1	7.8	7.7	7.7	8.0	7.9	7.9	7.7	7.6	7.7
9	8.1	8.0	8.1	7.8	7.7	7.8	8.0	7.9	7.9	7.7	7.7	7.7
10	8.1	8.0	8.1	7.8	7.7	7.8	8.0	7.9	7.9	7.7	7.7	7.7
11	8.1	8.0	8.1	7.9	7.8	7.8	7.9	7.8	7.9	7.7	7.7	7.7
12	8.1	7.9	7.9	7.9	7.8	7.9	7.9	7.8	7.9	7.8	7.7	7.8
13	7.9	7.8	7.9	8.0	7.9	7.9	7.9	7.8	7.9	7.8	7.7	7.8
14	7.9	7.9	7.9	8.0	7.9	7.9	7.9	7.8	7.9	7.8	7.8	7.8
15	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.8	7.9	7.9	7.8	7.8
16	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.8	7.9	7.9	7.6	7.7
17	8.0	7.9	8.0	7.9	7.7	7.8	7.9	7.8	7.8	7.9	7.7	7.8
18	8.1	7.9	8.0	7.7	7.5	7.6	7.9	7.8	7.8	7.9	7.8	7.8
19	8.0	7.9	7.9	7.6	7.6	7.6	7.9	7.8	7.8	7.9	7.7	7.8
20	8.0	7.8	7.9	7.8	7.7	7.7	7.8	7.7	7.8	7.9	7.7	7.8
21	7.8	7.7	7.8	7.7	7.6	7.7	7.8	7.7	7.8	7.8	7.7	7.7
22	7.9	7.7	7.9	7.7	7.6	7.7	7.8	7.8	7.8	7.8	7.7	7.8
23	8.1	8.0	8.1	7.7	7.6	7.7	7.9	7.8	7.9	7.9	7.8	7.8
24	8.1	8.0	8.0	7.8	7.7	7.7	8.0	7.9	7.9	7.9	7.9	7.9
25	8.0	7.9	7.9	7.9	7.7	7.8	8.0	7.9	8.0	7.9	7.8	7.9
26	7.9	7.7	7.9	7.8	7.8	7.8	8.1	8.0	8.0	7.8	7.7	7.8
27	7.9	7.7	7.8	7.8	7.7	7.8	8.1	8.0	8.1	7.9	7.7	7.8
28	7.8	7.8	7.8	7.8	7.7	7.8	8.2	8.1	8.1	7.9	7.8	7.8
29	---	---	---	7.8	7.8	7.8	8.2	8.1	8.2	7.9	7.7	7.8
30	---	---	---	7.9	7.8	7.8	8.3	8.1	8.2	7.8	7.7	7.7
31	---	---	---	7.9	7.8	7.8	---	---	---	7.8	7.7	7.7
MONTH	8.2	7.7	8.0	8.0	7.5	7.8	8.3	7.7	7.9	8.5	7.6	7.9

## TRINITY RIVER MAIN STEM

08065350 TRINITY RIVER NEAR CROCKETT, TX--Continued  
(National stream-quality accounting network)

DAY	PH (STANDARD UNITS)			WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987								
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	7.8	7.6	7.7	7.9	7.7	7.8	8.1	7.9	8.0	8.0	8.0	8.0
2	7.8	7.6	7.7	7.9	7.8	7.8	8.2	8.0	8.1	8.0	7.9	8.0
3	7.8	7.7	7.8	7.9	7.8	7.8	8.2	8.1	8.2	8.0	7.9	8.0
4	7.8	7.7	7.7	7.8	7.8	7.8	8.2	8.0	8.1	8.1	8.0	8.0
5	7.7	7.6	7.7	8.0	7.8	7.8	8.2	8.0	8.1	8.1	8.0	8.0
6	7.7	7.6	7.6	7.9	7.8	7.8	8.3	8.0	8.1	8.1	8.0	8.0
7	7.7	7.6	7.7	8.0	7.8	7.9	8.4	8.1	8.2	8.2	8.0	8.0
8	7.8	7.7	7.7	7.9	7.7	7.8	8.4	8.1	8.2	8.2	8.0	8.1
9	7.8	7.7	7.8	7.8	7.7	7.8	8.3	8.1	8.2	8.1	7.9	8.0
10	7.8	7.7	7.8	7.8	7.7	7.8	8.4	8.1	8.2	8.2	8.0	8.1
11	7.8	7.7	7.8	7.9	7.8	7.8	8.3	8.1	8.2	8.2	8.1	8.1
12	7.8	7.7	7.8	8.0	7.8	7.9	8.3	8.0	8.1	8.1	8.0	8.1
13	7.9	7.7	7.8	8.0	7.9	7.9	8.4	8.1	8.2	8.1	8.0	8.0
14	7.9	7.7	7.8	8.0	7.8	7.9	8.3	8.1	8.2	8.1	7.9	8.0
15	7.8	7.7	7.7	8.0	7.9	7.9	8.2	8.1	8.1	8.2	8.0	8.1
16	7.9	7.6	7.8	8.0	7.9	7.9	8.2	8.0	8.1	8.1	7.8	8.0
17	7.8	7.7	7.7	7.9	7.9	7.9	8.2	8.0	8.1	7.9	7.7	7.8
18	7.8	7.7	7.7	8.0	7.9	7.9	8.2	8.0	8.1	8.0	7.7	7.8
19	7.8	7.7	7.7	8.0	7.9	7.9	8.2	8.0	8.1	8.1	7.8	7.9
20	7.8	7.7	7.7	8.0	7.9	7.9	8.2	8.0	8.1	8.2	7.8	7.9
21	7.8	7.6	7.7	8.0	7.9	7.9	8.2	8.0	8.0	8.1	7.7	7.8
22	7.8	7.7	7.8	8.0	7.9	7.9	8.2	8.0	8.1	8.1	7.9	7.9
23	7.9	7.8	7.8	8.0	7.9	7.9	8.3	8.0	8.1	8.0	7.9	7.9
24	7.9	7.8	7.8	8.0	7.9	7.9	8.3	8.0	8.1	8.1	7.9	8.0
25	7.9	7.8	7.8	8.0	7.9	7.9	8.3	8.0	8.1	8.2	7.9	7.9
26	7.9	7.8	7.8	8.0	7.9	7.9	8.2	8.0	8.1	8.0	7.9	7.9
27	7.9	7.8	7.9	8.0	7.9	7.9	8.2	8.0	8.1	8.2	7.9	7.9
28	7.9	7.8	7.9	8.0	7.9	7.9	8.2	8.0	8.1	8.3	7.9	8.0
29	7.9	7.8	7.9	8.0	7.8	7.9	8.2	8.0	8.1	8.3	7.9	8.1
30	7.9	7.8	7.8	8.0	7.9	7.9	8.3	8.0	8.1	8.3	8.1	8.2
31	---	---	---	8.1	7.9	8.0	8.1	8.0	8.1	---	---	---
MONTH	7.9	7.6	7.8	8.1	7.7	7.9	8.4	7.9	8.1	8.3	7.7	8.0

DAY	TEMPERATURE, WATER (DEG. C.), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987											
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	30.0	29.0	29.5	20.5	19.5	20.0	12.0	11.5	11.5	10.5	10.0	10.0
2	30.0	29.0	29.5	20.5	20.0	20.0	12.0	11.5	11.5	10.5	9.5	10.0
3	29.5	28.5	29.0	21.0	20.0	20.5	11.5	11.0	11.5	10.5	10.0	10.0
4	30.0	28.5	29.0	20.5	20.0	20.5	11.5	11.0	11.5	10.5	9.5	10.0
5	29.5	28.5	29.0	20.0	19.0	19.5	11.5	11.0	11.5	10.0	9.5	10.0
6	28.5	27.0	27.5	19.5	19.0	19.0	12.0	11.5	11.5	10.5	9.5	10.0
7	27.0	26.0	26.5	19.0	18.5	19.0	12.5	11.5	12.0	11.0	10.5	10.5
8	26.0	25.0	25.5	19.0	18.0	18.5	13.0	12.5	13.0	11.5	11.0	11.0
9	25.0	23.5	24.5	19.0	18.5	18.5	13.0	12.5	13.0	12.0	11.5	11.5
10	24.0	23.0	23.5	19.0	18.0	18.5	12.5	12.5	12.5	11.5	11.0	11.0
11	24.5	23.5	24.0	18.5	17.5	18.0	12.5	11.0	12.0	11.0	10.5	11.0
12	24.0	21.5	22.5	17.5	16.5	17.0	11.0	10.5	10.5	10.5	10.0	10.5
13	21.5	20.5	21.0	16.5	15.0	15.5	10.5	9.5	10.0	10.5	10.0	10.5
14	21.5	20.0	20.5	14.5	14.0	14.5	10.0	9.5	10.0	11.0	10.5	10.5
15	21.0	20.0	20.5	14.0	13.5	13.5	11.0	10.0	10.0	11.0	10.5	11.0
16	21.0	20.0	20.5	15.0	14.0	14.5	11.5	10.5	11.0	11.5	11.0	11.5
17	21.0	19.5	20.0	15.5	14.5	15.0	11.5	11.0	11.5	11.5	11.0	11.5
18	21.0	19.5	20.0	16.5	15.0	16.0	12.0	11.5	11.5	11.5	10.5	11.0
19	20.5	19.5	20.0	16.5	16.0	16.5	12.5	11.5	12.0	10.5	10.0	10.5
20	20.5	19.5	20.0	17.5	16.5	17.0	12.0	11.5	12.0	10.0	9.5	10.0
21	20.0	19.5	20.0	17.0	16.0	16.5	12.0	11.5	12.0	9.5	8.0	8.5
22	20.0	19.5	20.0	17.0	16.5	16.5	11.5	11.5	11.5	8.0	7.5	8.0
23	20.5	20.0	20.0	17.0	16.5	16.5	11.0	10.5	11.0	8.0	7.5	8.0
24	21.0	20.5	20.5	16.5	15.5	16.0	10.5	10.0	10.0	8.5	7.5	8.0
25	20.5	20.0	20.0	15.5	14.0	14.5	10.0	9.5	10.0	8.5	8.0	8.0
26	20.5	19.5	20.0	14.5	13.5	14.0	10.0	10.0	10.0	9.0	8.0	8.5
27	20.5	19.5	20.0	14.0	12.5	13.0	10.0	9.5	10.0	10.0	9.0	9.5
28	20.0	19.5	19.5	12.5	11.5	12.0	10.0	10.0	10.0	10.5	9.5	10.0
29	20.0	19.0	19.5	12.5	11.5	12.0	10.5	10.0	10.0	12.0	10.5	11.5
30	20.0	19.5	19.5	12.0	11.5	12.0	10.5	9.5	10.0	12.0	11.0	11.5
31	20.0	19.0	19.5	---	---	---	10.5	10.0	10.0	12.0	11.5	12.0
MONTH	30.0	19.0	22.5	21.0	11.5	16.5	13.0	9.5	11.0	12.0	7.5	10.0

## TRINITY RIVER MAIN STEM

403

08065350 TRINITY RIVER NEAR CROCKETT, TX--Continued  
(National stream-quality accounting network)

DAY	MAX	MIN	TEMPERATURE, MEAN	WATER (DEG. C), MAX	MIN	MEAN	YEAR MAX	1986 MIN	TO MEAN	SEPTEMBER 1987 MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	12.5	12.0	12.5	13.0	12.5	13.0	15.0	14.0	14.5	26.0	24.5	25.0
2	12.5	12.0	12.5	13.5	12.5	13.0	15.0	14.5	14.5	26.0	25.0	25.5
3	13.0	12.0	12.5	13.5	13.0	13.5	14.5	14.0	14.5	26.0	25.0	25.5
4	13.5	12.5	13.0	14.0	13.0	13.5	15.0	13.5	14.5	26.0	25.0	25.5
5	13.5	13.0	13.0	14.5	14.0	14.0	14.5	14.0	14.5	26.0	24.5	25.0
6	13.5	13.0	13.0	15.0	14.5	15.0	15.0	14.0	14.5	25.5	24.5	25.0
7	13.5	12.5	13.0	15.5	15.0	15.5	15.5	14.5	15.0	24.5	24.0	24.5
8	13.5	12.5	13.0	16.5	15.5	16.0	16.5	15.0	15.5	25.5	24.5	25.0
9	13.5	12.5	13.0	16.5	16.0	16.0	16.5	15.5	16.0	24.5	23.5	24.0
10	13.5	12.5	13.0	16.0	15.5	16.0	17.5	16.0	16.5	24.5	23.5	24.0
11	14.0	13.0	13.5	15.5	14.5	15.0	18.5	17.0	17.5	25.5	24.0	24.5
12	14.0	13.5	13.5	15.0	14.0	14.5	19.5	18.0	18.5	25.5	25.0	25.5
13	14.5	13.5	14.0	14.5	14.0	14.5	20.0	19.5	19.5	26.0	25.0	25.5
14	15.5	14.5	15.0	15.0	14.0	14.5	19.5	19.0	19.5	26.5	25.5	26.0
15	16.0	15.0	15.5	15.0	14.5	14.5	20.0	18.5	19.5	26.5	25.5	26.0
16	15.0	14.5	14.5	15.5	15.0	15.5	20.5	19.0	20.0	26.0	25.0	25.5
17	14.0	13.5	14.0	16.5	15.5	16.0	21.0	19.5	20.0	27.5	26.0	26.5
18	13.5	13.0	13.0	17.5	16.5	17.0	21.5	20.0	21.0	27.5	26.5	27.0
19	13.0	12.0	12.5	17.5	17.0	17.5	22.5	21.0	21.5	27.5	26.5	27.0
20	13.0	10.0	11.0	17.5	16.5	17.0	23.0	21.5	22.5	27.0	26.0	26.5
21	10.5	10.0	10.0	18.0	17.0	17.5	23.5	22.0	23.0	27.5	26.5	27.0
22	11.0	10.0	10.5	18.5	17.5	18.0	23.5	22.0	23.0	28.0	27.0	27.5
23	10.5	10.0	10.0	19.0	18.0	18.5	23.5	22.0	22.5	28.0	27.0	27.5
24	10.5	10.0	10.5	18.5	18.0	18.5	24.0	22.0	23.0	28.5	26.0	27.5
25	10.5	10.5	10.5	18.0	17.5	18.0	24.5	22.5	23.5	28.0	27.0	27.5
26	11.5	10.5	11.0	17.5	17.0	17.5	24.5	22.5	23.5	28.5	27.5	28.0
27	12.0	11.5	12.0	17.5	16.5	17.0	25.0	23.0	24.0	28.0	27.5	27.5
28	13.0	12.0	12.5	17.5	16.5	17.0	25.5	23.5	24.5	28.0	27.0	27.5
29	---	---	---	16.5	15.0	16.0	26.0	24.0	25.0	27.0	24.5	26.0
30	---	---	---	15.0	14.5	15.0	26.0	24.0	25.0	25.0	24.5	25.0
31	---	---	---	15.0	14.0	14.5	---	---	---	25.5	24.5	25.0
MONTH	16.0	10.0	12.5	19.0	12.5	16.0	26.0	13.5	19.5	28.5	23.5	26.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	26.0	25.5	25.5	29.5	28.5	29.0	33.5	31.5	32.5	29.5	28.0	28.5
2	25.5	24.5	25.0	29.0	28.5	29.0	33.5	32.0	32.5	29.5	27.5	28.5
3	25.0	24.5	24.5	29.0	28.0	28.5	33.5	32.0	32.5	29.5	27.5	28.5
4	25.5	24.5	25.0	29.0	28.5	28.5	33.5	32.0	32.5	29.5	28.0	28.5
5	26.0	25.0	25.5	29.0	28.5	28.5	33.5	32.0	32.5	29.5	28.0	29.0
6	26.0	25.0	25.5	29.5	28.5	29.0	34.0	32.5	33.0	30.0	28.0	29.0
7	26.0	25.0	25.5	29.5	28.5	29.0	34.0	32.5	33.0	29.0	28.0	28.5
8	26.0	25.5	25.5	29.0	28.5	29.0	34.0	32.5	33.0	29.0	27.5	28.5
9	26.0	25.5	26.0	29.5	28.5	29.0	33.5	32.5	33.0	29.5	28.0	28.5
10	26.0	25.5	26.0	30.0	29.0	29.5	33.5	32.0	32.5	29.0	28.0	28.5
11	26.0	25.5	26.0	30.0	29.0	29.5	33.5	32.0	33.0	28.5	27.5	28.0
12	26.0	25.5	26.0	30.5	29.5	30.0	33.5	32.0	33.0	28.0	27.0	27.5
13	26.5	25.5	26.0	31.0	30.0	30.5	34.0	32.5	33.0	28.0	27.0	27.0
14	27.0	26.0	26.5	31.0	30.0	30.5	33.5	32.0	32.5	28.5	27.0	27.5
15	27.0	26.5	27.0	30.5	29.5	30.0	33.0	32.0	32.5	29.0	27.5	28.0
16	27.5	27.0	27.0	30.5	29.5	30.0	33.5	32.0	32.5	28.0	27.0	27.5
17	28.0	27.0	27.5	30.0	29.5	29.5	33.0	32.0	32.5	28.5	27.0	27.5
18	28.0	27.5	27.5	30.5	29.0	30.0	33.0	31.5	32.5	28.5	28.0	28.0
19	28.5	27.5	28.0	31.0	29.5	30.0	33.5	32.0	32.5	28.0	27.0	27.5
20	28.5	28.0	28.5	31.5	29.5	30.5	33.5	32.0	32.5	28.0	26.5	27.0
21	29.0	28.0	28.5	31.5	30.0	30.5	33.5	32.0	32.5	27.5	26.0	27.0
22	29.5	28.5	29.0	31.0	30.0	30.5	33.5	32.0	33.0	27.0	26.0	26.5
23	29.5	28.5	29.0	31.0	30.0	30.5	33.5	32.5	33.0	26.5	25.0	25.5
24	29.5	29.0	29.5	32.0	30.5	31.0	33.5	32.0	32.5	26.0	24.5	25.5
25	30.0	29.0	29.5	31.5	30.0	31.0	33.5	32.0	32.5	26.0	24.5	25.0
26	30.0	29.5	29.5	32.0	30.0	31.0	33.0	32.0	32.5	25.5	24.5	25.0
27	30.0	29.0	29.5	32.5	30.5	31.5	32.5	31.5	32.0	26.5	25.0	25.5
28	29.5	29.0	29.5	32.5	31.0	31.5	32.0	31.0	31.5	26.5	25.0	25.5
29	29.5	28.5	29.0	32.5	31.0	32.0	31.0	30.0	30.5	26.5	25.0	25.5
30	29.0	28.5	29.0	33.0	31.0	32.0	30.0	29.5	30.0	25.5	24.5	25.0
31	---	---	---	33.0	31.5	32.0	29.5	28.5	29.0	---	---	---
MONTH	30.0	24.5	27.0	33.0	28.0	30.0	34.0	28.5	32.5	30.0	24.5	27.5

## TRINITY RIVER MAIN STEM

08065350 TRINITY RIVER NEAR CROCKETT, TX--Continued  
(National stream-quality accounting network)

DAY	MAX	MIN	OXYGEN, DISSOLVED (DO), MG/L, MEAN	MAX	MIN	MEAN	YEAR	OCTOBER 1986	TO	SEPTEMBER 1987	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY				
1	9.0	7.1	8.0	7.2	7.1	7.2	---	---	---	9.9	9.7	9.8	
2	9.8	8.2	8.9	7.5	7.2	7.4	---	---	---	10.1	9.8	10.0	
3	10.3	7.4	8.7	7.6	7.2	7.5	---	---	---	10.1	9.9	10.0	
4	11.1	7.4	9.0	7.5	7.2	7.4	---	---	---	10.1	9.9	10.0	
5	9.7	7.6	8.7	7.7	7.4	7.5	---	---	---	10.1	9.9	10.0	
6	8.0	6.6	7.1	7.8	7.3	7.6	---	---	---	10.1	9.9	10.0	
7	7.0	5.4	6.3	7.3	6.7	6.9	---	---	---	10.0	9.7	9.8	
8	6.9	6.4	6.6	7.2	4.3	6.2	---	---	---	9.8	9.2	9.7	
9	6.5	5.7	6.0	5.3	3.7	4.4	---	---	---	9.7	9.4	9.5	
10	6.2	5.9	6.1	5.3	3.8	4.4	---	---	---	9.6	9.5	9.5	
11	5.9	5.1	5.4	4.2	3.8	4.0	10.7	8.7	9.6	9.6	9.1	9.4	
12	6.7	5.8	6.5	4.9	3.7	4.5	10.7	10.4	10.6	9.8	9.5	9.6	
13	7.0	6.7	6.9	5.1	4.1	4.5	10.6	10.5	10.6	9.7	9.0	9.4	
14	7.1	7.0	7.1	5.7	4.6	5.0	10.8	10.6	10.7	9.1	8.8	8.9	
15	7.4	7.1	7.3	6.4	4.7	5.5	10.8	10.6	10.7	9.2	9.0	9.1	
16	7.5	7.3	7.4	6.4	4.3	5.5	10.6	10.3	10.4	9.2	9.1	9.1	
17	7.5	7.4	7.4	8.6	5.0	6.5	10.3	10.1	10.3	9.2	9.1	9.1	
18	7.7	7.4	7.5	7.5	6.5	6.9	10.2	9.9	10.1	9.6	9.1	9.3	
19	7.8	7.4	7.6	7.4	6.7	7.1	10.0	9.8	9.9	9.5	9.4	9.5	
20	7.7	7.3	7.6	7.7	5.1	6.9	9.8	9.1	9.4	9.6	9.1	9.4	
21	7.7	7.2	7.4	8.2	4.8	5.9	10.1	9.3	9.8	10.2	9.7	10.0	
22	8.2	7.8	7.9	7.7	5.5	6.5	9.8	9.3	9.5	10.4	10.2	10.3	
23	7.9	7.7	7.8	7.1	5.9	6.5	9.8	9.3	9.6	10.5	10.2	10.4	
24	7.7	7.2	7.4	6.6	5.9	6.2	10.1	9.8	9.9	10.6	10.3	10.4	
25	7.5	6.7	7.0	6.8	6.2	6.5	10.3	9.9	10.1	10.6	10.2	10.4	
26	6.6	6.1	6.4	---	---	---	10.3	10.1	10.2	10.3	10.0	10.2	
27	6.1	5.5	5.8	---	---	---	10.2	9.9	10.0	10.0	9.8	9.9	
28	6.5	5.5	6.1	---	---	---	9.9	9.7	9.8	10.0	9.8	9.9	
29	6.8	6.5	6.7	---	---	---	9.8	9.7	9.8	9.9	9.6	9.8	
30	6.9	6.7	6.8	---	---	---	9.8	9.6	9.7	9.6	9.4	9.5	
31	7.1	6.9	7.0	---	---	---	9.7	9.6	9.7	9.5	9.4	9.5	
MONTH	11.1	5.1	7.2	8.6	3.7	6.2	10.8	8.7	10.0	10.6	8.8	9.7	
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	
FEBRUARY			MARCH			APRIL			MAY				
1	9.4	9.1	9.3	8.6	8.5	8.5	8.7	8.2	8.5	9.2	7.9	8.5	
2	9.2	9.1	9.2	8.6	8.4	8.5	8.6	8.5	8.6	9.8	7.9	8.6	
3	9.3	9.0	9.2	8.5	7.9	8.4	8.7	8.5	8.7	9.3	7.6	8.5	
4	9.3	9.0	9.1	8.3	8.0	8.1	8.8	8.7	8.7	9.7	8.1	8.8	
5	9.2	9.0	9.1	8.0	7.7	7.8	8.8	8.6	8.7	9.2	8.0	8.6	
6	9.3	9.1	9.2	7.8	7.6	7.7	8.7	8.6	8.6	8.4	6.6	7.6	
7	9.3	8.9	9.1	7.6	7.5	7.6	8.6	8.5	8.6	6.5	4.4	5.2	
8	9.1	8.8	8.9	7.6	7.4	7.5	8.7	8.4	8.6	4.7	3.1	4.2	
9	9.1	8.8	8.9	7.7	7.5	7.5	8.7	8.5	8.5	4.5	3.2	4.0	
10	9.1	9.0	9.1	7.9	7.6	7.8	8.5	8.3	8.4	5.3	4.6	5.0	
11	9.2	8.8	9.0	8.2	7.9	8.0	8.3	8.1	8.2	5.6	5.3	5.4	
12	8.8	8.1	8.5	8.7	8.2	8.3	8.1	7.7	7.9	5.9	5.6	5.7	
13	8.1	7.9	8.0	8.8	8.5	8.7	7.7	7.4	7.5	5.9	5.7	5.8	
14	8.1	7.9	8.0	8.7	8.6	8.7	7.6	7.4	7.5	5.9	5.8	5.9	
15	8.1	7.9	8.0	8.7	8.6	8.6	7.6	7.4	7.5	5.9	5.6	5.8	
16	8.1	8.0	8.0	8.6	8.3	8.4	7.7	7.4	7.5	5.7	4.9	5.3	
17	8.4	8.1	8.3	8.3	7.7	8.0	7.5	7.3	7.4	5.9	5.6	5.8	
18	8.5	7.9	8.2	7.6	7.2	7.4	7.4	7.2	7.3	5.9	5.5	5.7	
19	8.1	7.9	8.0	7.2	6.9	7.1	7.2	7.1	7.2	5.7	5.0	5.3	
20	9.2	8.1	8.8	7.6	7.2	7.5	7.1	6.8	6.9	5.2	4.6	4.9	
21	9.2	8.8	9.1	7.5	7.0	7.2	6.9	6.8	6.8	5.2	4.6	5.1	
22	9.1	8.9	9.0	7.3	7.1	7.2	7.0	6.8	6.9	5.6	5.2	5.3	
23	9.5	9.0	9.3	7.2	7.0	7.1	7.1	6.9	7.0	6.0	5.6	5.8	
24	9.4	8.8	9.2	7.3	7.0	7.1	7.2	6.9	7.0	6.0	5.6	5.9	
25	8.9	8.7	8.8	7.6	7.3	7.4	7.5	7.0	7.2	5.8	5.4	5.6	
26	8.9	8.8	8.8	7.8	7.4	7.6	7.8	7.1	7.4	5.4	5.1	5.2	
27	8.8	8.7	8.8	7.8	7.6	7.7	7.9	7.3	7.6	5.8	5.3	5.5	
28	8.8	8.6	8.7	7.9	7.7	7.8	8.3	7.3	7.7	5.8	5.4	5.6	
29	---	---	---	7.8	7.6	7.7	8.5	7.3	7.8	6.1	5.4	5.8	
30	---	---	---	7.9	7.6	7.7	9.2	7.3	8.2	6.2	5.8	6.0	
31	---	---	---	8.2	7.8	8.0	---	---	---	6.1	5.6	5.9	
MONTH	9.5	7.9	8.8	8.8	6.9	7.8	9.2	6.8	7.8	9.8	3.1	6.0	

## TRINITY RIVER MAIN STEM

405

08065350 TRINITY RIVER NEAR CROCKETT, TX--Continued  
(National stream-quality accounting network)

DAY	OXYGEN, DISSOLVED (DO), MG/L, WATER			YEAR			OCTOBER 1986			TO SEPTEMBER 1987		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE												
1	6.0	4.8	5.3	5.2	5.0	5.1	6.9	5.6	6.1	6.2	5.7	5.9
2	4.8	3.7	4.4	5.1	5.1	5.1	6.8	5.6	6.3	6.3	5.7	5.9
3	4.7	4.6	4.7	5.2	5.1	5.2	7.2	5.9	6.4	6.7	5.8	6.1
4	4.9	4.7	4.8	5.3	5.1	5.2	7.2	5.7	6.3	7.1	6.0	6.4
5	5.0	4.9	4.9	5.4	5.2	5.3	7.3	5.8	6.4	7.2	6.1	6.5
JULY												
6	4.9	4.8	4.9	5.4	5.2	5.3	7.6	5.7	6.5	7.3	6.1	6.5
7	5.0	4.9	5.0	5.4	4.9	5.2	7.8	5.9	6.7	6.7	6.0	6.3
8	5.2	4.5	5.1	5.0	4.7	4.9	7.9	6.1	6.8	7.1	6.1	6.4
9	5.2	5.1	5.2	5.0	4.8	4.9	7.5	6.0	6.5	7.2	6.0	6.4
10	5.2	5.1	5.2	5.2	5.0	5.1	7.7	5.9	6.5	7.5	6.3	6.7
AUGUST												
11	5.3	5.1	5.2	5.4	5.2	5.3	7.6	5.7	6.5	7.6	6.5	6.9
12	5.6	5.3	5.4	5.4	5.3	5.4	7.6	5.6	6.4	7.0	6.3	6.6
13	5.7	5.5	5.6	5.4	5.3	5.4	7.9	5.8	6.6	7.1	6.1	6.4
14	5.5	5.2	5.4	5.5	5.4	5.5	7.7	5.8	6.5	6.9	5.9	6.4
15	5.2	5.1	5.1	5.6	5.5	5.5	6.7	5.8	6.2	7.0	6.1	6.4
SEPTEMBER												
16	5.2	4.5	5.0	5.6	5.5	5.5	6.8	5.4	6.0	6.6	5.5	6.0
17	5.1	4.9	5.0	5.7	5.5	5.6	7.0	5.4	6.0	5.7	5.5	5.6
18	5.1	5.0	5.0	5.8	5.6	5.7	7.2	5.4	6.1	5.5	5.3	5.4
19	5.1	5.0	5.0	5.8	5.6	5.7	7.1	5.5	6.1	5.5	5.4	5.4
20	5.0	4.8	4.9	5.8	5.6	5.7	7.1	5.6	6.1	5.9	5.5	5.7
21	5.0	4.9	5.0	5.7	5.6	5.7	7.1	5.4	6.1	5.6	5.4	5.5
22	5.1	4.9	5.0	5.7	5.6	5.7	7.0	5.5	6.0	6.1	5.5	5.8
23	5.1	5.0	5.0	5.8	5.7	5.7	7.2	5.7	6.2	6.5	6.0	6.2
24	5.2	5.0	5.1	5.8	5.7	5.7	7.2	5.5	6.2	7.2	6.3	6.7
25	5.2	5.0	5.1	5.9	5.6	5.7	7.3	5.7	6.2	7.6	6.7	7.1
26	5.2	5.0	5.1	5.9	5.5	5.6	7.3	5.6	6.2	7.9	7.0	7.4
27	5.3	5.2	5.2	5.8	5.3	5.5	7.0	5.9	6.2	8.5	7.2	7.7
28	5.4	5.2	5.3	5.6	5.2	5.4	7.2	5.7	6.2	9.0	7.4	8.0
29	5.3	5.2	5.3	5.8	5.3	5.5	6.6	5.7	6.0	9.4	7.8	8.5
30	5.2	5.2	5.2	6.2	5.4	5.7	6.4	5.8	6.0	9.8	8.3	8.9
31	---	---	---	6.3	5.4	5.8	6.5	5.7	6.0	---	---	---
MONTH	6.0	3.7	5.1	6.3	4.7	5.4	7.9	5.4	6.3	9.8	5.3	6.5

## TRINITY RIVER BASIN

08065800 BEDIAS CREEK NEAR MADISONVILLE, TX

LOCATION.--Lat 30°53'03", long 95°46'39", Madison-Walker County line, Hydrologic Unit 12030202, on right bank at downstream side of bridge on U.S. Highways 75 and 190, 0.5 mi upstream from Interstate Highway 45, 1.5 mi downstream from Caney Creek, and 9.5 mi southeast of Madisonville.

DRAINAGE AREA.--321 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder and crest-stage gages. Datum of gage is 150.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except for those for estimated daily discharges, which are poor. There are no diversions above station. Flow may be slightly affected at times by discharge from the flood-detention pools of three floodwater-retarding structures with a combined detention capacity of 1,290 acre-ft. These structures control runoff from 2.71 mi<sup>2</sup> in the upper Caney Creek and Town Branch drainage basins.

AVERAGE DISCHARGE.--20 years, 213 ft<sup>3</sup>/s (9.01 in/yr), 154,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 33,800 ft<sup>3</sup>/s Sept. 14, 1974 (gage height, 25.07 ft); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1910, 34 ft in May 1922 (discharge unknown), from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,400 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
June 12	1900	*3,310	*17.58				
Minimum discharge, no flow Aug. 24-30.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.1	1.8	e50	28	7.7	2040	13	2.7	1170	6.2	1.3	.63
2	1.8	1.5	e30	23	7.5	1490	12	2.3	825	21	1.1	1.0
3	1.3	1.5	e22	19	8.4	442	11	2.2	424	17	.92	1.0
4	1.0	e2.8	e18	17	12	122	9.5	2.2	923	23	.69	.90
5	1.0	e9.0	e16	15	17	79	8.8	2.2	2120	11	.49	.62
6	1.2	e8.0	e14	13	14	57	8.8	2.4	1680	10	.47	.44
7	1.2	e5.0	e20	12	11	45	8.7	2.8	368	12	.37	.30
8	5.2	e7.0	e25	12	9.3	37	8.7	2.8	74	20	.30	.25
9	3.5	e8.0	e22	12	8.2	32	8.5	2.8	60	20	.27	.19
10	2.1	e6.0	e20	16	7.4	28	8.3	4.9	561	22	.21	.14
11	1.5	e20	e30	37	6.9	26	8.3	5.1	1280	11	.15	.14
12	31	e90	e70	55	6.3	25	7.7	16	2720	5.5	.11	.14
13	e150	e70	e70	36	6.1	25	6.7	7.3	2410	3.6	.08	.13
14	e50	e35	e40	26	5.7	24	8.2	5.7	2170	2.8	.07	.07
15	e20	e25	e250	20	5.5	22	17	4.6	2490	2.4	.07	.05
16	e8.0	e15	e500	17	48	20	21	44	1770	2.1	.07	.03
17	e5.0	e12	e600	16	163	554	17	14	430	1.8	.07	.04
18	e4.0	e10	e450	68	62	1220	10	7.6	98	1.7	.06	.06
19	e3.0	e8.0	e300	304	33	2270	8.0	4.6	61	1.6	.03	.81
20	e2.5	e7.5	e200	297	86	1090	6.3	3.4	53	1.4	.02	.92
21	e2.1	e6.5	e130	111	581	177	4.7	2.9	39	1.3	.01	.67
22	1.8	e6.0	e155	58	1020	82	4.5	3.1	27	1.2	.01	.42
23	1.5	e300	696	39	837	57	4.2	3.2	20	1.1	.01	.26
24	1.5	e600	1080	28	386	44	3.8	3.1	15	1.2	.00	.21
25	1.5	e950	1720	21	663	36	2.9	100	13	2.9	.00	.18
26	28	e950	808	17	1160	34	2.5	84	10	1.5	.00	.15
27	25	e450	149	15	1730	27	2.5	27	7.9	6.2	.00	.15
28	9.6	e250	79	12	2810	23	2.4	11	6.3	7.4	.00	.25
29	4.8	e150	55	11	---	19	5.1	238	5.2	4.0	.00	.35
30	3.1	e80	42	9.4	---	17	3.0	802	4.4	2.5	.00	.39
31	2.3	---	34	8.4	---	15	---	931	---	1.9	.01	---
TOTAL	376.6	4085.6	7695	1372.8	9712.0	10179	243.1	2344.9	21834.8	227.3	6.89	10.89
MEAN	12.1	136	248	44.3	347	328	8.10	75.6	728	7.33	.22	.36
MAX	150	950	1720	304	2810	2270	21	931	2720	23	1.3	1.0
MIN	1.0	1.5	14	8.4	5.5	15	2.4	2.2	4.4	1.1	.00	.03
AC-FT	747	8100	15260	2720	19260	20190	482	4650	43310	451	14	22
CFSM	.0	.42	.77	.14	1.08	1.02	.0	.24	2.27	.0	.0	.0
IN.	.0	.47	.89	.16	1.13	1.18	.0	.27	2.53	.0	.0	.0

CAL YR 1986	TOTAL	36600.27	MEAN	100	MAX	2950	MIN	.00	AC-FT	72600	CFSM	.31	IN.	4.24
WTR YR 1987	TOTAL	58088.42	MEAN	159	MAX	2810	MIN	.00	AC-FT	115200	CFSM	.50	IN.	6.73

e Estimated.

08065800 BEDIAS CREEK NEAR MADISONVILLE, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: July 1962 to April 1964; January 1968 to September 1974. Chemical and biochemical analyses: September 1970 to September 1974; April 1985 to current year. Pesticide analyses: April 1985 to current year.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1984 to September 1987.

WATER TEMPERATURE: October 1984 to September 1987.

SUSPENDED SEDIMENT DISCHARGE: October 1984 to September 1986.

INSURUMENTATION.--From September 1984 to September 1987 specific conductance and water temperature was recorded continuously at this station.

REMARKS.--Interruptions in the record were due to malfunction of the instrument.

## EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 1,680 microsiemens Sept. 1, 1987; minimum, 56 microsiemens Nov. 27, 1985.

WATER TEMPERATURES: Maximum, 31.5°C Aug. 9, 10, 1985; minimum, 2.5°C Feb. 3, 1985.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 915 mg/L Oct. 19, 28, 1985; minimum daily mean, 10 mg/L July 25, 1985 and Aug. 11, 1986.

SEDIMENT LOADS: Maximum daily, 7,510 tons Nov. 26, 1985; minimum daily, no flow on many days.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM-FLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (US/CM)	PH (STANDARD UNITS)	TEMPERATURE WATER (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PERCENT SATURATION)	OXYGEN DEMAND, BIO-CHEMICAL, 5 DAY (MG/L)	HARDNESS (MG/L AS CAC03)	HARDNESS NONCARB WH WAT TOT FLD MG/L AS CAC03	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNESIUM, DIS-SOLVED (MG/L AS MG)	
OCT 22...	1233	1.8	306	7.60	17.0	9.0	92	1.4	74	41	19	6.5	
DEC 22...	1040	109	164	6.80	10.0	10.0	88	--	44	26	12	3.4	
FEB 11...	1000	7.0	664	7.00	11.0	11.2	101	--	160	120	41	14	
APR 07...	1222	8.7	658	6.90	12.0	10.0	92	--	150	110	40	13	
JUN 18...	1220	94	247	6.40	25.5	5.2	63	--	71	29	19	5.7	
AUG 03...	1120	0.92	630	7.40	27.0	4.8	60	--	140	68	37	12	
DATE		SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM, DIS-SOLVED (MG/L AS K)	ALKALINITY WH WAT TOTAL FIELD MG/L AS CAC03	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLORIDE, DIS-SOLVED (MG/L AS CL)	FLUORIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SI02)	SOLIDS, SUM OF CONSTITUENTS, DIS-SOLVED (MG/L)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C)	PHENOLS TOTAL (UG/L)
OCT 22...	27	1		6.9	33	56	34	<0.10	11	180	10	11	3
DEC 22...	13	0.9		5.3	18	32	17	<0.10	13	110	15	17	<1
FEB 11...	63	2		6.2	43	140	90	0.10	13	390	9.1	9.0	3
APR 07...	63	2		5.8	45	130	87	<0.10	16	380	8.3	8.3	2
JUN 18...	17	0.9		5.7	42	38	23	0.10	22	160	18	20	5
AUG 03...	66	2		7.8	74	96	90	0.30	18	370	14	13	<1
DATE		ARSENIC TOTAL (UG/L AS AS)	ARSENIC TOTAL IN BOTTOM MATERIAL (UG/G AS AS)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA)	BARIUM, RECOV. FM BOTTOM MATERIAL (UG/G AS BA)	COPPER, TOTAL RECOVERABLE (UG/L AS CU)	COPPER, RECOV. FM BOTTOM MATERIAL (UG/G AS CU)	IRON, TOTAL RECOVERABLE (UG/L AS FE)	LEAD, TOTAL RECOVERABLE (UG/L AS PB)	LEAD, RECOV. FM BOTTOM MATERIAL (UG/G AS PB)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)	MANGANESE, RECOV. FM BOTTOM MATERIAL (UG/G)	MERCURY TOTAL RECOVERABLE (UG/L AS HG)
OCT 22...	2	--		100	--	<10	--	2100	<100	--	130	--	<0.10
DEC 22...	2	<1		100	20	80	50	2900	300	<10	110	27	<0.10
FEB 11...	1	--		<100	--	<10	--	1300	100	--	190	--	<0.10
APR 07...	1	8		100	80	<10	2	640	<100	10	180	290	0.10
JUN 18...	3	--		200	--	10	--	3100	<100	--	280	--	<0.10
AUG 03...	4	3		200	<100	<10	2	1200	<100	<100	260	500	<0.10

WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

[illegible]

WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	SILVEX, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	TOX- APHENE, TOTAL (UG/L)	TOXA- PHENE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	TOTAL TRI- THION (UG/L)	TRI- THION, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	2,4-D, TOTAL (UG/L)	2,4-D, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	2, 4-DP TOTAL (UG/L)	2,4-DP, IN BOTTOM MAT. (UG/KG)	2,4,5-T TOTAL (UG/L)	2,4,5-T TOTAL IN BOT- TOM MA- TERIAL (UG/KG)
OCT 22...	--	--	--	--	--	--	--	--	--	--	--
DEC 22...	--	<1	<10	<0.01	<0.1	--	--	--	--	--	--
FEB 11...	--	--	--	--	--	--	--	--	--	--	--
APR 07...	<0.1	<1	<10	<0.01	<0.1	0.01	<0.1	<0.01	<0.1	<0.01	<0.1
JUN 18...	--	--	--	--	--	--	--	--	--	--	--
AUG 03...	<0.1	<1	<10	--	<0.1	0.01	<0.1	<0.01	1.3	<0.01	<0.1

DAY	SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C.			WATER YEAR			OCTOBER 1986			TO SEPTEMBER 1987		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	258	212	234	332	316	322				---	---	---
2	278	204	235	360	332	345				---	---	---
3	352	248	278	386	362	374				---	---	---
4	436	360	404	---	---	---				---	---	---
5	438	230	394	---	---	---				---	---	---
6	462	256	332	---	---	---				---	---	---
7	566	474	522	---	---	---				---	---	---
8	602	568	584	---	---	---				412	396	403
9	634	606	621	---	---	---				442	412	426
10	650	604	631	---	---	---				444	434	439
11	650	612	616	---	---	---				482	446	467
12	628	582	596	---	---	---				452	378	416
13	---	---	---	---	---	---				456	394	423
14	---	---	---	---	---	---				472	440	457
15	---	---	---	---	---	---				440	432	436
16	---	---	---	---	---	---				458	440	451
17	---	---	---	---	---	---				510	456	471
18	---	---	---	---	---	---				600	496	542
19	---	---	---	---	---	---				560	316	412
20	---	---	---	---	---	---				358	318	343
21	---	---	---	---	---	---				344	318	328
22	318	304	310	---	---	---				336	320	327
23	342	234	321	---	---	---				352	336	344
24	288	242	264	---	---	---				374	352	362
25	332	290	313	---	---	---				394	374	384
26	406	332	357	---	---	---				414	396	403
27	350	292	309	---	---	---				436	416	425
28	292	278	284	---	---	---				462	438	450
29	280	268	275	---	---	---				480	462	470
30	296	280	288	---	---	---				500	480	492
31	314	298	307	---	---	---				520	502	513
MONTH	650	204	385	386	316	347				600	316	424

## TRINITY RIVER BASIN

08065800 BEDIAS CREEK NEAR MADISONVILLE, TX--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	540	520	530									
2	554	540	548									
3	568	556	563									
4	582	570	576									
5	600	580	589									
6	618	600	609									
7	632	618	626									
8	644	634	638									
9	654	644	649									
10	660	654	658									
11	662	650	658									
12	670	660	665									
13	676	672	674									
14	684	676	680									
15	774	602	674									
16	808	732	749									
17	714	658	685									
18	670	618	641									
19	616	590	602									
20	588	470	525									
21	526	428	510									
22	396	184	218									
23	224	194	208									
24	262	226	244									
25	294	264	279									
26	304	130	206									
27	---	---	---									
28	---	---	---									
29	---	---	---									
30	---	---	---									
31	---	---	---									
MONTH	808	130	546									
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1							---	---	---	1680	1280	1470
2							---	---	---	1390	951	1080
3							---	---	---	973	943	958
4							626	596	612	973	963	967
5							656	625	641	976	962	967
6							693	653	672	976	966	971
7							731	691	705	992	979	985
8							774	726	740	1000	993	997
9							805	762	779	1020	1000	1010
10							842	789	811	1040	1020	1030
11							865	814	844	1050	1030	1040
12							896	857	874	1070	1050	1060
13							925	876	900	1090	1070	1080
14							997	908	950	1130	1090	1110
15							1040	973	1010	---	---	---
16							1080	1040	1060	885	862	874
17							1110	1080	1090	905	886	895
18							1130	1110	1120	1020	906	935
19							1150	1130	1140	1160	1030	1130
20							1160	1150	1150	1130	1050	1090
21							1160	1150	1160	1040	987	1010
22							1170	1160	1160	988	960	968
23							1170	1170	1170	966	942	950
24							---	---	---	946	909	924
25							---	---	---	913	900	907
26							---	---	---	906	900	904
27							---	---	---	905	894	899
28							---	---	---	905	731	822
29							---	---	---	960	836	902
30							---	---	---	1020	955	989
31							1290	1210	1260	---	---	---
MONTH							1290	596	945	1680	731	997



## TRINITY RIVER BASIN

08065800 BEDIAS CREEK NEAR MADISONVILLE, TX--Continued

DAY	MAX	MIN	TEMPERATURE, WATER (DEG. C), WATER YEAR			OCTOBER 1986 TO SEPTEMBER 1987			MAX	MIN	MEAN	
			MEAN	MAX	MIN	MEAN	MAX	MIN				MEAN
			JUNE			JULY						AUGUST
1							---	---	---	25.0	23.5	24.5
2							---	---	---	25.0	23.5	24.5
3							---	---	---	24.5	22.5	23.5
4							28.0	26.5	27.0	24.0	22.5	23.0
5							28.0	26.5	27.5	24.0	22.5	23.5
6							28.5	27.0	27.5	24.0	23.0	23.5
7							28.5	27.5	28.0	24.5	23.5	24.0
8							28.5	27.0	28.0	24.5	23.5	24.0
9							28.0	27.0	27.5	25.0	23.5	24.0
10							28.0	26.5	27.0	24.5	24.5	24.5
11							28.5	27.0	27.5	24.5	23.5	24.0
12							28.5	27.0	28.0	24.5	24.0	24.0
13							28.5	27.0	28.0	24.5	23.5	24.0
14							28.5	27.5	28.0	25.5	24.5	25.0
15							28.5	27.5	28.0	---	---	---
16							29.0	27.5	28.5	26.0	25.0	25.5
17							29.0	28.0	28.5	26.0	25.0	25.5
18							29.0	27.5	28.5	26.0	25.5	25.5
19							29.0	27.5	28.0	25.5	24.0	24.5
20							28.5	27.5	28.0	24.0	22.5	23.0
21							28.5	27.5	28.0	23.0	21.5	22.0
22							28.5	27.5	28.0	22.0	21.0	21.5
23							28.5	27.5	27.5	21.0	19.5	20.0
24							28.0	27.0	27.5	20.0	18.5	19.0
25							28.0	27.0	27.5	19.5	19.0	19.0
26							28.0	27.0	27.5	19.5	19.0	19.5
27							28.0	27.0	27.5	20.5	19.5	20.0
28							27.5	26.0	27.0	21.5	20.5	21.0
29							26.5	26.0	26.0	21.5	21.0	21.5
30							26.0	25.0	25.5	21.0	19.5	20.0
31							25.0	24.5	25.0	---	---	---
MONTH							29.0	24.5	27.5	26.0	18.5	23.0

## TRINITY RIVER BASIN

413

08066170 KICKAPOO CREEK NEAR ONALASKA, TX

LOCATION.--Lat 30°54'25", long 95°05'18", Polk County, Hydrologic Unit 12030202, on right bank 114 ft downstream from old bridge site, 1.2 mi downstream from Magnolia Creek, 6.2 mi upstream from Rocky Creek, 7.3 mi northeast of Onalaska, and 15.9 mi upstream from mouth.

DRAINAGE AREA.--57.0 mi<sup>2</sup>.

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

Water-quality records.--Chemical analyses: December 1963 to September 1969. Chemical and biochemical analyses: October 1969 to September 1974.

GAGE.--Water-stage recorder and crest-stage gages. Datum of gage is 139.85 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for period March through May and those for estimated discharge, which are fair. No diversion above station. Low flow is sustained by sewage effluent. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--21 years (water years 1967-87), 42.0 ft<sup>3</sup>/s (10.00 in/yr), 30,430 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,500 ft<sup>3</sup>/s June 7, 1981, from rating curve extended above 6,800 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow (gage height, 30.37 ft); minimum, 0.01 ft<sup>3</sup>/s July 19, 20, 1971.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Nov. 23	0700	*2,970	*12.98	No other peak greater than base discharge.			
Minimum daily discharge (estimated), 0.30 ft <sup>3</sup> /s Aug. 26-27.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	1.8	2.7	16	11	7.1	74	3.1	2.0	1.5	1.5	.52	1.6		
2	1.5	2.7	11	9.4	30	38	3.1	2.0	1.2	1.5	.50	.87		
3	1.3	2.7	8.6	48	18	25	2.9	2.0	15	2.6	.48	.60		
4	1.3	88	7.5	34	11	17	2.9	2.3	12	1.8	.47	.48		
5	1.9	99	6.4	17	8.5	13	2.7	2.7	2.8	1.5	.46	.43		
6	3.3	27	5.7	13	7.3	11	3.4	2.7	1.6	1.3	.45	.39		
7	2.4	452	5.5	12	6.9	9.2	3.4	3.3	1.3	1.1	.45	.38		
8	2.4	143	5.5	12	6.9	8.4	3.4	25	1.1	.00	.44	.37		
9	2.2	28	40	12	6.4	7.5	3.4	11	1.1	1.9	.44	.36		
10	2.0	11	44	14	5.5	7.3	2.9	7.2	2.6	2.2	.44	9.0		
11	1.7	177	60	11	5.2	9.3	2.9	4.7	7.2	1.4	.46	5.8		
12	260	165	40	8.5	5.2	12	2.9	4.2	36	1.1	.50	1.8		
13	91	42	23	8.1	5.1	9.4	9.5	4.6	32	1.0	.50	.95		
14	38	11	38	8.1	4.9	8.0	13	4.1	46	.91	.48	1.1		
15	16	7.7	419	8.1	148	7.7	4.2	275	9.0	.85	.44	.83		
16	9.0	6.6	154	8.5	52	7.7	2.9	68	69	.85	.41	11		
17	6.2	6.2	76	129	20	99	2.6	8.1	17	2.3	.39	4.7		
18	4.9	5.9	604	142	11	51	2.5	3.4	20	1.5	.38	19		
19	4.1	5.8	170	51	8.3	21	2.4	2.2	8.2	.93	.37	27		
20	3.6	5.0	68	25	579	14	2.3	1.7	4.4	.74	e.36	3.2		
21	3.4	4.0	43	17	221	10	2.2	1.6	3.0	.60	e.35	1.3		
22	3.4	3.6	220	13	118	8.1	2.2	1.5	2.3	.56	e.34	.75		
23	3.8	1210	357	9.9	80	32	2.2	1.4	1.8	.56	e.33	.57		
24	9.0	609	102	9.5	611	31	2.2	1.4	1.7	.56	e.32	.43		
25	6.9	1030	54	18	524	10	2.0	1.3	1.7	.59	e.31	.39		
26	5.2	127	37	14	974	6.2	1.9	1.3	1.5	1.4	e.30	.39		
27	4.1	60	30	9.6	290	4.9	2.0	1.2	1.3	.98	e.30	.39		
28	3.4	39	23	8.7	402	4.6	2.0	1.2	1.2	.71	.43	.40		
29	3.1	26	19	8.6	---	3.8	2.0	1.9	1.1	.59	16	.39		
30	2.9	20	15	7.8	---	3.4	2.0	3.6	1.5	.56	33	.39		
31	2.9	---	13	6.4	---	3.1	---	2.4	---	.54	4.7	---		
TOTAL	502.7	4416.9	2715.2	704.2	4166.3	566.6	97.1	455.0	306.1	34.63	65.32	95.26		
MEAN	16.2	147	87.6	22.7	149	18.3	3.24	14.7	10.2	1.12	2.11	3.18		
MAX	260	1210	604	142	974	99	13	275	69	2.6	33	27		
MIN	1.3	2.7	5.5	6.4	4.9	3.1	1.9	1.2	1.1	.00	.30	.36		
AC-FT	997	8760	5390	1400	8260	1120	193	902	607	69	130	189		
CFSM	.28	2.58	1.54	.40	2.61	.32	.06	.26	.18	.0	.0	.06		
IN.	.33	2.88	1.77	.46	2.72	.37	.06	.30	.20	.0	.0	.06		
CAL YR 1986	TOTAL	17403.30	MEAN	47.7	MAX	1210	MIN	.10	AC-FT	34520	CFSM	.84	IN.	11.4
WTR YR 1987	TOTAL	14125.14	MEAN	38.7	MAX	1210	MIN	.00	AC-FT	28020	CFSM	.68	IN.	9.22

e Estimated.

## 08066190 LIVINGSTON RESERVOIR NEAR GOODRICH, TX

LOCATION.--Lat 30°38'00", long 95°00'36". Polk-San Jacinto County line, Hydrologic Unit 12030202, at left end of gated spillway at Livingston Dam on Trinity River, 4.4 mi northwest of Goodrich, 7 mi southwest of Livingston, 11.7 mi upstream from Long King Creek, and at mile 129.2.

DRAINAGE AREA.--16,583 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Trinity River Authority). Prior to Feb. 26, 1969, temporary nonrecording gages at site about 200 ft upstream and at same datum.

REMARKS.--The reservoir is formed by an earthfill dam 14,400 ft long. The dam was completed Sept. 29, 1968, and deliberate impoundment began June 26, 1969. The reservoir is operated for industrial water supply in the Houston metropolitan area. The spillway has twelve 40-x 35-foot tainter gates located near the left end of dam. Low-flow releases may be made through multi-gated inlet tower. There are five gated openings at various elevations located in the tower, and all discharge into a 10-foot-diameter concrete conduit through the dam. Flow is affected at times by discharge from the flood-detention pools of 255 floodwater-retarding structures with a combined detention capacity of 184,600 acre-ft. These structures control runoff from 617 mi<sup>2</sup> in the Richland, Chambers, Tehuacana, and Bedia Creek drainage basins. 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.....	145.0	-
Design flood.....	135.0	2,136,000
Top of tainter gates.....	134.0	2,046,000
Top of conservation pool.....	131.0	1,788,000
Crest of spillway (sill of tainter gates).....	99.0	157,900
Lowest gated outlet (invert).....	58.0	335

COOPERATION.--The capacity table, furnished by the Trinity River Authority, is based on Geological Survey topographic maps.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 1,948,000 acre-ft May 23, 1983 (elevation, 132.88 ft); minimum since conservation pool capacity was reached on Nov. 2, 1971, 1,415,000 acre-ft Nov. 19, 1978 (elevation, 126.19 ft).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 1,902,000 acre-ft Feb. 28 at 1200-1900 hours (elevation, 132.35 ft); minimum, 1,699,000 acre-ft Sept. 10 (elevation, 129.90 ft).

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

129.0	1,627,000
131.0	1,788,000
133.0	1,958,000

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1784000	1813000	1822000	1797000	1803000	1896000	1816000	1772000	1817000	1807000	1768000	1714000
2	1779000	1803000	1818000	1781000	1803000	1881000	1805000	1770000	1829000	1816000	1768000	1713000
3	1780000	1793000	1818000	1793000	1803000	1865000	1798000	1776000	1839000	1812000	1763000	1711000
4	1780000	1808000	1823000	1784000	1805000	1846000	1788000	1776000	1847000	1809000	1762000	1709000
5	1783000	1816000	1825000	1781000	1809000	1828000	1793000	1778000	1854000	1807000	1758000	1708000
6	1780000	1812000	1823000	1788000	1815000	1819000	1794000	1775000	1859000	1802000	1754000	1704000
7	1777000	1834000	1811000	1792000	1807000	1813000	1794000	1780000	1859000	1796000	1749000	1706000
8	1776000	1839000	1795000	1790000	1807000	1808000	1793000	1789000	1864000	1794000	1748000	1704000
9	1779000	1838000	1794000	1798000	1798000	1807000	1791000	1800000	1862000	1794000	1749000	1702000
10	1779000	1836000	1788000	1801000	1797000	1803000	1793000	1807000	1868000	1791000	1746000	1707000
11	1781000	1836000	1797000	1800000	1797000	1802000	1788000	1809000	1865000	1788000	1744000	1705000
12	1813000	1830000	1805000	1801000	1797000	1798000	1792000	1812000	1874000	1785000	1738000	1707000
13	1813000	1815000	1817000	1805000	1792000	1794000	1798000	1812000	1881000	1788000	1735000	1704000
14	1808000	1801000	1830000	1813000	1784000	1797000	1796000	1812000	1884000	1787000	1731000	1703000
15	1801000	1801000	1856000	1816000	1803000	1797000	1795000	1818000	1881000	1783000	1730000	1701000
16	1795000	1799000	1856000	1815000	1799000	1788000	1795000	1818000	1872000	1784000	1725000	1707000
17	1792000	1794000	1850000	1822000	1797000	1827000	1793000	1809000	1868000	1783000	1725000	1717000
18	1788000	1793000	1864000	1822000	1795000	1848000	1788000	1807000	1864000	1787000	1725000	1729000
19	1785000	1791000	1863000	1818000	1797000	1855000	1788000	1813000	1847000	1788000	1724000	1729000
20	1785000	1790000	1860000	1817000	1823000	1859000	1788000	1807000	1834000	1788000	1722000	1727000
21	1782000	1786000	1852000	1823000	1837000	1862000	1794000	1811000	1820000	1784000	1718000	1728000
22	1783000	1789000	1855000	1830000	1840000	1858000	1789000	1808000	1813000	1785000	1717000	1729000
23	1785000	1840000	1865000	1835000	1837000	1867000	1788000	1805000	1808000	1781000	1716000	1725000
24	1788000	1863000	1869000	1844000	1861000	1867000	1787000	1802000	1802000	1782000	1713000	1722000
25	1789000	1882000	1873000	1837000	1875000	1866000	1784000	1799000	1803000	1783000	1708000	1720000
26	1797000	1872000	1874000	1826000	1893000	1868000	1783000	1797000	1798000	1779000	1707000	1717000
27	1804000	1855000	1868000	1815000	1895000	1862000	1780000	1793000	1793000	1779000	1713000	1717000
28	1811000	1842000	1861000	1805000	1899000	1854000	1779000	1796000	1788000	1778000	1714000	1725000
29	1818000	1832000	1849000	1803000	---	1847000	1778000	1802000	1791000	1775000	1713000	1727000
30	1820000	1823000	1831000	1801000	---	1836000	1772000	1803000	1798000	1777000	1716000	1724000
31	1818000	---	1809000	1794000	---	1830000	---	1812000	---	1771000	1716000	---
MAX	1820000	1882000	1874000	1844000	1899000	1896000	1816000	1818000	1884000	1816000	1768000	1729000
MIN	1776000	1786000	1788000	1781000	1784000	1788000	1772000	1770000	1788000	1771000	1707000	1701000
(↑)	131.35	131.42	131.25	131.07	132.32	131.50	130.80	131.28	131.12	130.79	130.11	130.21
(φ)	+32000	+5000	-14000	-15000	+105000	-69000	-58000	+40000	-14000	-27000	-55000	+8000
CAL YR 1986	MAX	1906000	MIN	1727000	(φ)	+19000						
WTR YR 1987	MAX	1899000	MIN	1701000	(φ)	-62000						

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

## TRINITY RIVER MAIN STEM

415

08066190 LIVINGSTON RESERVOIR NEAR GOODRICH, TX--Continued

## WATER-QUALITY RECORDS

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

303807095011101 - LIVINGSTON RES SITE AC

WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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 (MG/L AS CACO3)
JAN									
27...	1100	1.00	310	8.00	10.0	0.41	10.0	87	110
27...	1102	10.0	310	8.00	9.5	--	9.9	86	--
27...	1104	20.0	310	8.00	9.5	--	9.9	86	--
27...	1106	30.0	310	8.00	9.5	--	9.9	86	--
27...	1108	40.0	310	8.00	9.5	--	9.9	86	--
27...	1110	50.0	310	8.00	9.5	--	9.9	86	--
27...	1112	60.0	310	8.00	9.5	--	9.8	85	--
27...	1114	75.0	310	8.00	9.0	--	9.5	81	110
SEP									
01...	1130	1.00	375	8.20	29.0	0.82	5.0	64	130
01...	1132	10.0	375	8.10	28.5	--	4.4	56	--
01...	1134	20.0	375	8.10	28.5	--	4.1	52	--
01...	1136	30.0	375	8.00	28.5	--	3.9	49	--
01...	1138	40.0	375	8.00	28.5	--	3.7	47	--
01...	1140	45.0	375	7.90	28.5	--	3.4	43	--
01...	1142	50.0	390	7.10	25.5	--	0.1	1	--
01...	1144	55.0	390	7.10	23.0	--	0	0	--
01...	1146	60.0	390	7.00	21.5	--	0	0	--
01...	1148	70.0	410	6.80	20.0	--	0	0	130

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- LITY WH WAT TOTAL FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
JAN									
27...	20	37	3.5	21	0.9	5.1	87	32	23
27...	--	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--
27...	21	37	3.4	21	0.9	5.1	85	33	23
SEP									
01...	20	43	4.5	24	1	6.8	106	36	21
01...	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--
01...	0	46	4.7	23	0.9	5.8	143	22	21

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
JAN								
27...	0.30	7.2	180	0.700	0.50	0.170	19	2
27...	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--
27...	--	--	--	0.700	1.0	0.170	20	<10
27...	--	--	--	--	--	--	--	--
27...	--	7.2	180	0.700	1.2	0.500	57	12
SEP								
01...	0.30	5.4	200	<0.100	0.80	0.170	11	28
01...	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--
01...	--	--	--	<0.100	1.1	0.240	40	430
01...	--	--	--	--	--	--	260	1500
01...	--	--	--	--	--	--	--	--
01...	--	13	220	<0.100	3.1	1.40	140	1200

## TRINITY RIVER MAIN STEM

08066190 LIVINGSTON RESERVOIR NEAR GOODRICH, TX--Continued

303821095005001 - LIVINGSTON RES SITE AL

WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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								
27...	1040	1.00	315	8.10	9.5	0.39	10.2	88
27...	1042	10.0	315	8.10	9.5	--	10.2	88
27...	1044	20.0	315	8.10	9.5	--	10.2	88
27...	1046	30.0	315	8.10	9.0	--	10.1	86
27...	1048	41.0	315	8.10	9.0	--	9.8	84
SEP								
01...	1204	1.00	375	8.10	29.0	0.94	4.8	61
01...	1206	10.0	375	8.00	28.5	--	3.9	49
01...	1208	20.0	375	8.00	28.5	--	3.5	44
01...	1210	30.0	375	7.90	28.5	--	3.5	44
01...	1212	40.0	375	7.90	28.5	--	3.5	44

303935095055401 - LIVINGSTON RES SITE BC

WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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								
27...	1146	1.00	305	8.10	9.5	0.34	9.8	85
27...	1148	10.0	305	8.10	9.5	--	9.8	85
27...	1150	20.0	305	8.10	9.5	--	9.8	85
27...	1152	30.0	305	8.00	9.5	--	9.8	85
27...	1154	40.0	305	8.00	9.5	--	9.8	85
27...	1156	50.0	305	8.00	9.5	--	9.7	84
27...	1158	66.0	305	8.00	9.5	--	9.7	84
SEP								
01...	1100	1.00	380	8.20	29.0	0.67	5.2	67
01...	1102	10.0	380	8.20	28.5	--	4.5	57
01...	1104	20.0	380	8.10	28.5	--	4.4	56
01...	1106	30.0	380	8.10	28.5	--	4.4	56
01...	1108	40.0	380	8.20	28.5	--	4.7	60
01...	1110	50.0	380	8.10	28.0	--	4.6	58
01...	1112	60.0	430	6.80	23.5	--	0	0

304144095073001 - LIVINGSTON RES SITE CC

WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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								
27...	1210	1.00	310	8.00	9.5	0.25	10.2	88
27...	1212	10.0	310	8.00	9.5	--	10.1	88
27...	1214	20.0	310	8.00	9.5	--	10.2	88
27...	1216	30.0	315	8.00	9.0	--	10.1	86
27...	1218	40.0	315	8.00	9.0	--	10.1	86
27...	1220	50.0	315	8.00	9.0	--	10.0	86
27...	1222	57.0	315	8.00	9.0	--	9.9	85
SEP								
01...	1030	1.00	380	8.20	28.5	0.68	5.0	64
01...	1032	10.0	380	8.20	28.5	--	4.8	61
01...	1034	20.0	380	8.20	28.5	--	4.7	60
01...	1036	30.0	380	8.20	28.5	--	4.7	60
01...	1038	40.0	380	8.10	28.5	--	4.4	56
01...	1040	50.0	385	7.90	28.0	--	3.7	47
01...	1042	56.0	430	6.90	24.0	--	0	0

## TRINITY RIVER MAIN STEM

417

08066190 LIVINGSTON RESERVOIR NEAR GOODRICH, TX--Continued

304521095075501 - LIVINGSTON RES SITE DC

WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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 (MG/L AS CACO3)
JAN									
27...	1240	1.00	295	8.00	9.5	0.26	10.1	88	100
27...	1242	10.0	295	8.00	9.5	--	10.0	87	--
27...	1244	20.0	295	8.00	9.5	--	10.0	87	--
27...	1246	30.0	300	8.00	9.0	--	10.0	86	--
27...	1248	40.0	325	8.00	9.0	--	10.0	86	--
27...	1250	50.0	365	7.90	9.0	--	9.9	85	--
27...	1252	59.0	390	7.80	9.0	--	9.5	81	130
SEP									
01...	0948	1.00	380	8.30	29.0	0.61	4.8	62	130
01...	0950	10.0	380	8.20	28.5	--	4.6	59	--
01...	0952	20.0	380	8.20	28.5	--	4.5	57	--
01...	0954	30.0	380	8.20	28.5	--	4.5	57	--
01...	0956	40.0	380	8.20	28.5	--	4.5	57	--
01...	0958	56.0	395	7.50	28.0	--	0.3	4	130

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 WH WAT TOTAL FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)
JAN								
27...	21	35	3.4	20	0.9	4.9	80	34
27...	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--
27...	35	44	4.6	29	1	5.1	94	49
SEP								
01...	17	44	4.6	25	1	5.9	112	38
01...	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--
01...	14	45	4.6	25	1	5.9	117	37

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
JAN								
27...	16	8.6	170	0.800	1.8	0.230	76	2
27...	--	--	--	--	--	--	--	--
27...	--	--	--	0.800	1.4	0.170	20	<10
27...	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--
27...	33	9.5	230	1.60	0.70	0.510	21	19
SEP								
01...	23	5.9	210	<0.100	0.80	0.140	3	9
01...	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--
01...	--	--	--	<0.100	1.2	0.150	80	40
01...	--	--	--	--	--	--	--	--
01...	23	6.5	220	<0.100	1.8	0.320	19	480

304453095064901 - LIVINGSTON RES SITE DL

WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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								
27...	1000	1.00	315	8.20	9.0	0.23	10.0	86
27...	1002	10.0	315	8.20	9.0	--	10.0	86
27...	1004	21.0	315	8.30	9.0	--	10.1	86
SEP								
01...	0930	1.00	375	8.40	28.0	0.52	5.3	67
01...	0932	10.0	375	8.40	28.0	--	5.3	67
01...	0934	20.0	375	8.40	28.0	--	5.2	66

## TRINITY RIVER MAIN STEM

08066190 LIVINGSTON RESERVOIR NEAR GOODRICH, TX--Continued

304659095052001 - LIVINGSTON RES SITE EC

WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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)
JAN							
27...	0930	1.00	295	8.50	8.5	0.23	9.9
27...	0932	10.0	295	8.60	8.5	--	9.9
27...	0934	20.0	295	8.70	8.5	--	9.9
27...	0936	30.0	295	9.10	8.5	--	9.6
SEP							
01...	0850	1.00	390	8.40	28.0	0.49	5.0
01...	0852	10.0	390	8.40	28.0	--	5.0
01...	0854	20.0	390	8.40	28.0	--	5.0
01...	0856	32.0	390	8.40	28.0	--	4.7

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
JAN						
27...	84	0.800	1.1	0.200	20	<10
27...	84	--	--	--	--	--
27...	84	--	--	--	--	--
27...	81	0.800	0.90	0.210	50	10
SEP						
01...	63	<0.100	0.80	0.150	20	<10
01...	63	--	--	--	--	--
01...	63	--	--	--	--	--
01...	60	<0.100	1.2	0.140	<10	20

304843095104001 - LIVINGSTON RES SITE FC

WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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								
27...	1346	1.00	425	8.00	9.5	0.24	9.9	86
27...	1348	10.0	425	8.00	9.0	--	9.8	84
27...	1350	20.0	425	8.00	9.0	--	9.8	84
27...	1352	30.0	430	8.00	9.0	--	9.8	84
27...	1354	40.0	430	8.00	9.0	--	9.7	83
27...	1356	50.0	435	8.00	9.0	--	9.8	84
27...	1358	59.0	435	8.00	9.0	--	9.9	85
SEP								
01...	1312	1.00	410	8.50	29.0	0.48	7.4	95
01...	1314	10.0	410	8.20	28.5	--	5.2	66
01...	1316	20.0	410	8.10	28.5	--	4.8	61
01...	1318	30.0	410	8.20	28.5	--	5.0	64
01...	1320	40.0	410	8.20	28.5	--	5.3	68
01...	1322	56.0	410	8.20	28.5	--	5.3	68

305411095144901 - LIVINGSTON RES SITE GC

WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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 (MG/L AS CAC03)
JAN									
27...	1432	1.00	340	7.90	9.5	0.12	9.5	82	110
27...	1434	10.0	340	8.00	9.5	--	9.5	82	--
27...	1436	20.0	340	7.90	9.0	--	9.4	81	--
27...	1438	30.0	340	8.00	9.0	--	9.4	81	--
27...	1440	40.0	340	7.90	8.5	--	9.4	80	--
27...	1442	49.0	340	8.00	8.5	--	9.5	80	120
SEP									
01...	1402	1.00	465	8.30	29.0	0.35	7.6	98	150
01...	1404	10.0	505	7.70	27.5	--	3.1	39	--
01...	1406	20.0	515	7.70	27.5	--	3.0	38	--
01...	1408	30.0	515	7.70	27.5	--	3.0	38	--
01...	1410	40.0	515	7.60	27.5	--	2.9	36	--
01...	1412	50.0	515	7.60	27.5	--	2.5	31	160

08066190 LIVINGSTON RESERVOIR NEAR GOODRICH, TX--Continued

305411095144901 - LIVINGSTON RES SITE GC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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 WH WAT TOTAL FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)
JAN								
27...	26	39	3.9	24	1	4.9	87	43
27...	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--
27...	27	40	3.9	24	1	4.8	89	42
SEP								
01...	18	50	5.3	36	1	6.4	129	44
01...	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--
01...	24	53	5.6	43	2	6.8	131	50

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
JAN								
27...	22	7.9	200	1.20	1.0	0.390	47	2
27...	--	--	--	--	--	--	--	--
27...	--	--	--	1.20	1.6	0.360	50	<10
27...	--	--	--	--	--	--	--	--
27...	22	8.1	200	1.20	0.90	0.380	82	10
SEP								
01...	33	7.0	260	0.200	1.1	0.180	<3	5
01...	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--
01...	--	--	--	0.400	1.0	0.200	<10	40
01...	--	--	--	--	--	--	--	--
01...	40	7.8	280	0.400	1.0	0.200	5	96

305447095161401 - LIVINGSTON RES SITE HC

WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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)
JAN							
27...	1506	1.00	325	7.80	10.0	0.18	9.7
27...	1508	10.0	325	7.90	9.5	--	9.4
27...	1510	20.0	330	7.90	9.0	--	9.4
27...	1512	30.0	330	7.90	9.0	--	9.4
27...	1514	41.0	330	7.90	8.5	--	9.3
SEP							
01...	1430	1.00	475	8.40	30.0	0.43	8.2
01...	1432	10.0	480	8.00	28.5	--	5.8
01...	1434	20.0	515	7.70	27.5	--	3.8
01...	1436	30.0	515	7.70	27.5	--	3.5
01...	1438	41.0	515	7.70	27.5	--	3.3

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
JAN						
27...	85	0.700	1.0	0.210	150	10
27...	81	--	--	--	--	--
27...	81	--	--	--	--	--
27...	81	--	--	--	--	--
27...	79	1.20	0.90	0.430	20	<10
SEP						
01...	108	<0.100	1.5	0.180	<10	20
01...	74	--	--	--	--	--
01...	48	--	--	--	--	--
01...	44	--	--	--	--	--
01...	41	0.400	1.4	0.180	<10	60

## TRINITY RIVER MAIN STEM

08066190 LIVINGSTON RESERVOIR NEAR GOODRICH, TX--Continued

305135095193601 - LIVINGSTON RES SITE IC

WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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								
28...	0850	1.00	350	8.60	8.5	0.15	10.0	85
28...	0852	10.0	350	8.70	8.5	--	10.0	85
28...	0854	20.0	350	8.80	8.5	--	10.0	85
28...	0856	30.0	350	9.00	8.5	--	10.0	85
28...	0858	41.0	350	9.20	8.5	--	10.1	86
SEP								
02...	0810	1.00	670	7.90	29.0	0.35	2.3	30
02...	0812	10.0	665	7.90	29.0	--	2.2	28
02...	0814	20.0	640	7.90	29.0	--	2.1	27
02...	0816	30.0	615	7.80	28.5	--	1.3	17
02...	0818	41.0	620	7.60	27.5	--	0.5	6

305135095235401 - LIVINGSTON RES SITE JC

WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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 (MG/L AS CAC03)
JAN									
28...	0924	1.00	360	8.20	8.5	0.13	10.0	85	120
28...	0926	10.0	360	8.20	8.5	--	10.0	85	--
28...	0928	20.0	360	8.20	8.5	--	10.0	85	--
28...	0930	30.0	360	8.20	8.5	--	10.0	85	--
28...	0932	40.0	360	8.30	8.5	--	10.1	86	120
SEP									
02...	0842	1.00	715	7.90	30.0	0.34	3.3	43	180
02...	0844	10.0	715	7.90	30.0	--	3.3	43	--
02...	0846	20.0	715	7.90	29.5	--	3.3	43	--
02...	0848	30.0	690	7.90	29.0	--	2.5	32	--
02...	0850	38.0	655	7.80	28.5	--	2.4	31	170

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 WH WAT TOTAL MG/L AS CAC03	SULFATE DIS- SOLVED (MG/L AS SO4)
JAN								
28...	31	40	4.3	25	1	4.9	87	48
28...	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--
28...	34	41	4.5	25	1	4.9	87	47
SEP								
02...	26	61	6.1	75	3	9.3	151	78
02...	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--
02...	24	58	5.6	65	2	8.3	144	68

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	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- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
JAN								
28...	27	8.8	210	0.800	1.3	0.270	55	2
28...	--	--	--	--	--	--	--	--
28...	--	--	--	0.800	0.90	0.260	40	<10
28...	--	--	--	--	--	--	--	--
28...	27	8.7	210	0.800	0.80	0.490	63	5
SEP								
02...	70	8.8	400	2.60	0.70	0.660	4	3
02...	--	--	--	--	--	--	--	--
02...	--	--	--	2.60	0.90	0.620	<10	10
02...	--	--	--	--	--	--	--	--
02...	63	10	360	1.60	0.80	0.430	150	98

## TRINITY RIVER MAIN STEM

421

## 08066191 LIVINGSTON RESERVOIR AT OUTFLOW WEIR NEAR GOODRICH, TX

LOCATION.--Lat 30°37'55", long 95°01'11", San Jacinto County, Hydrologic Unit 12030202, at end of conduit into stilling basin, 1,700 ft to right of right spillway abutment, 4.8 mi northwest of Goodrich, 11.7 mi upstream from Long King Creek, and at mile 129.2.

DRAINAGE AREA.--16,583 mi<sup>2</sup>.

PERIOD OF RECORD.--August 1969 to current year.

Water-quality records.--Chemical and biochemical analyses: October 1969 to September 1972.

GAGE.--Water-stage recorder, concrete control, and crest-stage gage. Datum of gage is at National Geodetic Vertical Datum of 1929 (levels by Trinity River Authority). Oct. 1, 1974, to Jan. 30, 1976, staff gage and control only.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. For details concerning outlet works, see Livingston Reservoir (station 08066190). The purpose of this station is to record selective withdrawal releases at outflow weir, crest 61.90 ft. These releases do not constitute the total flow from Livingston Reservoir since flow through taintor gates is not included in these totals.

AVERAGE DISCHARGE.--18 years, 211 ft<sup>3</sup>/s (152,900 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 3,990 ft<sup>3</sup>/s Jan 7, 1982; maximum elevation, about 93.0 ft June 14, 1973 (backwater from Trinity River); no flow for many days.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 742 ft<sup>3</sup>/s Aug. 28; maximum elevation, 74.7 ft Feb. 28 at about 1600 hours (backwater from Trinity River); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	328	355	.00	.00	e360	e.00	e.00	e340	e440	e.00	337	538
2	328	355	.00	.00	e360	e.00	e.00	e340	e460	e.00	337	549
3	328	359	.00	.00	e360	e.00	e.00	e340	e279	e.00	337	566
4	315	359	.00	.00	e360	e.00	e.00	e340	.00	e.00	337	583
5	315	359	.00	169	e360	e.00	e.00	e340	.00	e.00	337	611
6	302	364	.00	369	e360	e.00	e.00	e340	.00	e.00	332	623
7	315	369	.00	355	e360	.00	e.00	e340	.00	e.00	337	623
8	302	364	.00	355	e360	.00	e120	e340	.00	e122	337	640
9	302	364	.00	355	e360	.00	337	e370	.00	e420	337	658
10	302	364	.00	355	e360	.00	e340	e400	.00	e420	337	652
11	302	364	.00	355	e360	.00	e340	e420	.00	e420	341	676
12	302	364	.00	355	e360	.00	e340	e420	.00	e420	341	688
13	337	364	.00	359	369	.00	e340	e420	.00	e420	341	700
14	341	359	.00	359	369	.00	337	e420	.00	e420	341	712
15	341	359	.00	369	e360	.00	337	e420	.00	e420	337	718
16	341	359	.00	369	e360	.00	337	e420	.00	e420	328	557
17	341	359	.00	369	e360	.00	337	e420	.00	e420	328	407
18	341	359	.00	355	e360	.00	337	e420	.00	e420	497	407
19	341	359	.00	355	e360	.00	337	e420	.00	e420	589	402
20	341	364	.00	355	e360	.00	337	e420	.00	e420	466	402
21	341	364	.00	369	e360	.00	337	446	.00	e420	337	402
22	341	369	.00	369	e120	.00	337	446	.00	280	324	402
23	346	378	.00	369	.00	.00	337	456	.00	337	324	402
24	346	383	.00	.00	.00	.00	337	e440	.00	337	350	407
25	346	.00	.00	.00	.00	.00	337	e420	.00	337	397	407
26	346	.00	.00	.00	.00	.00	e340	e400	.00	337	688	412
27	346	.00	.00	.00	.00	.00	e340	e380	.00	341	730	416
28	350	.00	.00	e.00	.00	e.00	e340	e360	.00	341	742	416
29	350	.00	.00	e.00	---	e.00	e340	e380	e.00	429	623	161
30	355	.00	.00	e240	---	e.00	e340	e400	e.00	337	623	.00
31	355	---	.00	e360	---	e.00	---	e420	---	337	640	---
TOTAL	10287	8716.00	.00	7265.00	7698.00	.00	7561.00	12238	1179.00	8995.00	13052	15137.00
MEAN	332	291	.00	234	275	.00	252	395	39.3	290	421	505
MAX	355	383	.00	369	369	.00	340	456	460	429	742	718
MIN	302	.00	.00	.00	.00	.00	.00	340	.00	.00	324	.00
AC-FT	20400	17290	.0	14410	15270	.0	15000	24270	2340	17840	25890	30020
CAL YR 1986	TOTAL	68159.00	MEAN	187	MAX	388	MIN	.00	AC-FT	135200		
WTR YR 1987	TOTAL	92128.00	MEAN	252	MAX	742	MIN	.00	AC-FT	182700		

e Estimated.

## TRINITY RIVER BASIN

08066200 LONG KING CREEK AT LIVINGSTON, TX

LOCATION.--Lat 30°42'58", long 94°57'31", Polk County, Hydrologic Unit 12030202, on right bank at downstream side of bridge on U.S. Highway 190, 2 mi west of Livingston, 2 mi upstream from Choates Creek, and 14.8 mi upstream from mouth.

DRAINAGE AREA.--141 mi<sup>2</sup>.

PERIOD OF RECORD.--January 1963 to current year.

Water-quality records.--Chemical analyses: January 1963 to September 1974.

GAGE.--Water-stage recorder. Datum of gage is 100.12 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are poor. No diversion above station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--24 years, 92.8 ft<sup>3</sup>/s (8.94 in/yr), 67,230 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,500 ft<sup>3</sup>/s Nov. 5, 1973 (gage height, 27.06 ft); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1870, about 41 ft in May 1929.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,600 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Nov. 25	unknown	3,000	unknown	Mar. 17	1300	*3,180	*11.30
Feb. 28	0630	3,010	11.00				

Minimum daily discharge (estimated), 0.45 ft<sup>3</sup>/s, Aug. 27.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e6.0	e5.8	31	e30	35	459	19	e7.2	e8.5	8.4	1.7	2.3
2	e5.0	e5.4	27	e27	152	123	19	e7.1	7.6	7.3	e1.4	2.2
3	e4.5	e5.2	24	e70	53	77	18	e14	7.4	21	e1.2	e1.9
4	e4.0	e5.0	22	e110	37	57	18	18	6.7	12	e1.1	e1.7
5	e5.0	29	21	e50	30	47	17	13	6.1	7.1	e1.0	e1.5
6	e7.0	43	19	e25	26	42	17	12	5.4	5.6	e.90	e1.4
7	e6.0	44	18	29	25	38	18	11	4.7	5.0	e.85	e1.3
8	e5.5	246	18	29	26	36	17	29	4.4	6.0	e.80	e1.2
9	e5.0	44	179	29	24	34	17	30	5.3	50	e.75	e1.2
10	e4.7	22	147	29	22	31	16	19	13	70	e.70	e3.0
11	e4.5	26	46	30	21	32	15	13	13	18	e1.5	4.7
12	112	34	e35	28	21	34	14	13	249	9.1	5.4	e2.0
13	309	23	e30	26	21	31	16	54	70	6.8	2.1	e1.4
14	109	17	e60	26	21	29	23	19	41	5.6	e1.5	e1.2
15	48	13	e500	26	1070	27	18	263	16	4.7	e1.1	e1.1
16	34	12	e800	26	286	27	14	165	23	8.2	e.90	e1.0
17	26	13	e200	372	77	1490	13	40	347	8.0	e.80	14
18	21	12	e800	809	47	839	12	21	544	4.9	e.70	7.6
19	19	11	e1100	201	36	110	11	14	48	4.0	e.65	13
20	15	9.9	e250	81	296	61	10	11	19	3.8	e.60	8.8
21	12	8.9	e100	56	1070	46	9.6	e9.0	11	3.6	e.55	4.5
22	e10	8.5	e500	46	178	38	9.7	e8.0	8.5	3.9	e.52	e2.6
23	8.3	507	e900	38	94	36	e9.0	e7.0	7.0	4.5	e.50	e2.1
24	12	e1270	e300	33	225	44	e8.6	e6.5	20	3.7	e.48	e1.8
25	13	e2500	e150	33	496	34	e8.2	e14	27	2.7	e.47	e1.7
26	11	e716	e100	33	1790	28	e8.0	13	11	6.4	e.46	e1.6
27	9.2	115	e75	30	881	26	e7.8	10	6.9	6.2	e.45	e1.5
28	e8.0	59	e60	28	2020	25	e7.6	e9.0	5.4	3.8	3.1	2.9
29	e7.2	44	e50	28	---	22	e7.4	e10	4.8	2.7	e1.2	5.2
30	e6.6	36	e40	27	---	20	e7.3	11	7.3	2.5	e1.0	4.3
31	e6.1	---	e35	25	---	19	---	10	---	2.1	3.4	---
TOTAL	853.6	5884.7	6637	2430	9080	3962	405.2	880.8	1548.0	307.6	37.78	100.7
MEAN	27.5	196	214	78.4	324	128	13.5	28.4	51.6	9.92	1.22	3.36
MAX	309	2500	1100	809	2020	1490	23	263	544	70	5.4	14
MIN	4.0	5.0	18	25	21	19	7.3	6.5	4.4	2.1	.45	1.0
AC-FT	1690	11670	13160	4820	18010	7860	804	1750	3070	610	75	200
CFSM	.20	1.39	1.52	.56	2.30	.91	.10	.20	.37	.07	.0	.0
IN.	.23	1.55	1.75	.64	2.40	1.05	.11	.23	.41	.08	.0	.0
CAL YR 1986	TOTAL	40460.18	MEAN	111	MAX	4980	MIN	2.7	AC-FT	80250	CFSM	.79
WTR YR 1987	TOTAL	32127.21	MEAN	88.0	MAX	2500	MIN	.45	AC-FT	63720	CFSM	.62
											IN.	10.7
												8.48

e Estimated.

## TRINITY RIVER MAIN STEM

423

08066250 TRINITY RIVER NEAR GOODRICH, TX

LOCATION.--Lat 30°34'19", long 94°56'55", Polk-San Jacinto County line, Hydrologic Unit 12030202, on left bank at downstream bridge on U.S. Highway 59, 0.2 mi downstream from Long King Creek, 3.0 mi southeast of Goodrich, and at mile 117.3.

DRAINAGE AREA.--16,844 mi<sup>2</sup>.

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

Water-quality records.--March 1966 to September 1973.

GAGE.--Water-stage recorder. Datum of gage is 40.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Flow is completely regulated except during periods of flooding by Long King Creek. Regulation by Livingston Reservoir (station 08066190) 11.9 mi upstream, with capacity of capacity of 2,046,000 acre-ft, that began Sept. 29, 1968. No diversions between Livingston Reservoir and gaging station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--21 years (water years 1967-87), 7,066 ft<sup>3</sup>/s, 5,119,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 96,200 ft<sup>3</sup>/s June 14, 1973 (gage height, 46.36 ft); minimum daily, 191 ft<sup>3</sup>/s Aug. 6, 1971 (regulation by Livingston Reservoir).

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1929, 52.0 ft in May 1942, from information by State Department of Highways and Public Transportation and by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 33,100 ft<sup>3</sup>/s Feb. 28 at 1200 hours (gage height, 30.74 ft); minimum daily, 577 ft<sup>3</sup>/s Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1780	6410	17100	12700	4850	31000	15000	1430	3960	12200	1340	1030
2	1760	6400	16500	9340	4840	29800	14800	1390	5670	12200	1330	1010
3	1580	5810	15200	7190	4820	29500	13600	1840	8060	12300	1320	978
4	1170	3840	15100	5610	4790	29300	10800	1900	10500	12100	1400	966
5	1140	3220	15100	3620	4760	28500	8830	1570	12200	12100	1410	966
6	1130	3270	15100	2340	4700	25700	7160	1510	13400	12000	1410	963
7	1130	4260	15100	2240	4710	23700	6880	1480	15000	11900	1410	960
8	1130	6650	14100	2220	4720	23400	6790	1520	16100	10700	1410	960
9	1130	8460	11100	2200	4700	22600	6760	1590	16800	10000	1400	960
10	1120	9160	8520	2190	4700	22500	6220	1850	17500	9310	1400	975
11	1120	9180	6310	2400	4700	22400	5870	2670	19000	7670	1410	1040
12	1640	9200	5590	3020	4700	21900	5840	2710	21600	5730	1440	1010
13	4790	9170	5540	3150	4640	20500	5800	2810	22400	4710	1390	997
14	6410	8410	5540	4120	4320	18500	5740	2780	22300	4250	1300	979
15	6300	6450	8460	4920	5150	16900	5660	3110	22500	2910	1270	972
16	5250	5620	14800	5620	4930	16500	5610	4500	22200	2150	1270	980
17	3900	5170	15800	6060	4170	16600	5560	4730	22300	2100	1260	990
18	3530	4390	17400	7720	3970	17200	5180	4600	23900	2090	1130	1000
19	2720	3510	19800	7260	3890	17700	4490	4530	22800	2070	944	1010
20	2080	2700	19000	6870	4050	18100	3590	4480	22400	2060	953	993
21	2030	2060	18500	6740	6860	17900	2930	4480	22100	2060	1010	976
22	2030	1670	18500	6920	8700	17900	2720	4470	20600	1980	1020	959
23	2030	1860	19900	8150	10200	17800	2030	4460	19900	1980	1020	936
24	2030	7600	19600	10200	12800	17800	1970	4460	19200	1590	1000	886
25	2020	15000	19000	11100	16800	17800	1960	4450	18300	1350	1000	831
26	2020	18500	19300	11000	24100	17800	1950	4460	17100	1340	1000	700
27	2050	17700	19300	10600	27900	17700	1950	4160	16400	1320	1000	692
28	3780	17400	19200	9630	32200	17800	1920	3730	16000	1300	1000	733
29	5380	17200	19100	8020	---	17700	1910	3710	14100	1310	1030	702
30	5800	17200	18800	6550	---	17700	1740	3720	12300	1290	1040	577
31	6380	---	16500	5550	---	16800	---	3700	---	1340	1040	---
TOTAL	86360	237470	468860	195250	231670	647000	171260	98800	516590	167410	37357	27731
MEAN	2786	7916	15120	6298	8274	20870	5709	3187	17220	5400	1205	924
MAX	6410	18500	19900	12700	32200	31000	15000	4730	23900	12300	1440	1040
MIN	1120	1670	5540	2190	3890	16500	1740	1390	3960	1290	944	577
AC-FT	171300	471000	930000	387300	459500	1283000	339700	196000	1025000	332100	74100	55000
CAL YR 1986	TOTAL	3188190	MEAN	8735	MAX	38600	MIN	983	AC-FT	6324000		
WTR YR 1987	TOTAL	2885760	MEAN	7906	MAX	32200	MIN	577	AC-FT	5724000		

## TRINITY RIVER BASIN

08066300 MENARD CREEK NEAR RYE, TX

LOCATION.--Lat 30°28'52", long 94°46'46", Liberty County, Hydrologic Unit 12030202, on left bank 20 ft downstream from bridge on State Highway 146, 2.3 mi northwest of Rye, and about 6 mi upstream from mouth.

DRAINAGE AREA.--152 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder and crest-stage gage. Datum of of gage is 62.32 ft above National Geodetic Vertical Datum of 1929. September 1974 to August 1976, wire-weight gage read twice daily.

REMARKS.--Records good except those for estimated daily discharges, which are poor. No known diversions above station. Regulation by Bear Foot Lake on Mill Creek located 0.5 mi upstream from station. A section of the dam on this lake washed out on June 26-27, 1986, and was repaired in 1987.

AVERAGE DISCHARGE.--21 years (water years 1967-87), 124 ft<sup>3</sup>/s (89,840 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,200 ft<sup>3</sup>/s June 27, 1986 (gage height, 30.78 ft); minimum daily, 2.6 ft<sup>3</sup>/s Nov. 1, 1967.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in May 1929 reached a stage of about 39.4 ft, from information by the State Department of Highways and Public Transportation. Flood in September 1961 reached a stage of about 34.0 ft, from information by local resident. Flood of May 1929 may have been equaled or exceeded by other floods during the period 1929-65.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,550 ft<sup>3</sup>/s June 19 at 1600 hours (gage height, 21.60 ft); minimum daily, 22 ft<sup>3</sup>/s Aug. 26-29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	46	42	e90	e130	e100	e920	e62	24	73	168	37	72
2	43	42	e85	e120	e115	879	e65	23	71	258	33	53
3	41	44	e80	e300	e140	e825	e61	117	72	296	31	42
4	39	64	e75	e400	e130	e387	57	1180	140	205	29	35
5	38	202	e70	e500	e120	e197	55	1090	119	174	28	31
6	37	160	e67	e430	e115	e146	54	902	81	114	26	28
7	35	e128	e65	e300	e112	e126	54	436	61	90	25	26
8	33	e99	e65	e220	e109	e111	54	238	54	82	24	25
9	29	e90	e100	e180	e106	e101	52	226	49	194	53	24
10	31	e97	e150	e150	103	e91	50	349	72	313	50	24
11	31	e78	e170	e135	e100	e87	49	272	166	334	39	23
12	55	e58	e130	e125	e98	e87	48	157	497	380	36	26
13	157	e55	e100	e120	e96	e92	47	165	714	144	46	38
14	213	e51	e80	e115	e95	e90	46	251	1700	94	36	35
15	214	e46	e300	e110	e110	e81	45	254	1390	76	33	31
16	126	e43	e700	e120	e150	e76	43	499	846	70	30	33
17	91	e41	e650	e170	e200	e88	40	628	598	70	28	35
18	77	e40	e800	e300	e270	e85	39	698	1230	61	27	37
19	69	e40	e1000	e450	e230	e338	37	349	2260	57	26	42
20	67	e40	e800	e300	e200	e576	36	157	1600	52	25	57
21	64	e40	e500	e200	223	e273	35	126	844	47	24	52
22	55	e40	e500	e170	234	e143	33	101	359	45	24	40
23	51	52	e700	e150	254	e134	31	84	175	42	23	33
24	80	e350	e800	e140	e260	e134	30	76	130	40	23	29
25	112	e500	e600	e130	e320	e116	30	73	118	43	23	27
26	85	e700	e350	e125	e690	e101	29	75	158	40	22	25
27	69	e450	e250	e120	e820	e88	28	88	248	69	22	24
28	60	e250	e200	e115	e770	e82	26	86	131	84	22	24
29	47	e150	e170	e110	---	e76	25	78	91	60	22	26
30	44	e110	e150	e105	---	e67	24	71	111	45	27	31
31	42	---	e140	e102	---	e63	---	75	---	39	69	---
TOTAL	2181	4102	9937	6142	6270	6660	1285	8948	14158	3786	963	1028
MEAN	70.4	137	321	198	224	215	42.8	289	472	122	31.1	34.3
MAX	214	700	1000	500	820	920	65	1180	2260	380	69	72
MIN	29	40	65	102	95	63	24	23	49	39	22	23
AC-FT	4330	8140	19710	12180	12440	13210	2550	17750	28080	7510	1910	2040
CAL YR 1986	TOTAL	66060	MEAN	181	MAX	7700	MIN	20	AC-FT	131000		
WTR YR 1987	TOTAL	65460	MEAN	179	MAX	2260	MIN	22	AC-FT	129800		

e Estimated.

## TRINITY RIVER BASIN

425

08066300 MENARD CREEK NEAR RYE, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: August 1950 to current year.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	TEMPER- ATURE WATER (DEG C)	HARD- NESS (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)
NOV 17...	1600	41	85	17.0	18	9	5.2	1.3	8.7
JAN 06...	1425	420	68	11.0	15	8	4.2	1.1	7.1
MAR 02...	1440	879	49	15.0	12	7	3.4	0.77	4.8
APR 13...	1415	47	97	20.0	20	9	5.8	1.3	11
JUN 01...	1645	71	84	24.5	17	7	4.8	1.3	9.1
JUL 20...	1540	51	84	27.0	19	8	5.1	1.4	9.3
SEP 08...	1525	25	103	27.0	19	10	5.4	1.4	12

DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WH WAT TOTAL 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)
NOV 17...	0.9	1.3	9	11	14	<0.10	14	61
JAN 06...	0.8	1.2	7	8.0	11	<0.10	8.9	46
MAR 02...	0.6	1.2	5	6.0	8.8	<0.10	6.4	34
APR 13...	1	0.70	11	8.4	19	<0.10	11	64
JUN 01...	1	0.90	10	5.5	15	0.10	12	55
JUL 20...	1	0.80	11	8.6	15	0.20	13	60
SEP 08...	1	1.7	9	6.8	21	0.10	14	68

## TRINITY RIVER BASIN

08066400 BIG CREEK NEAR SHEPHERD, TX

LOCATION.--Lat 30°30'59", long 94°59'06", San Jacinto County, Hydrologic Unit 12030202, on left bank at downstream side of downstream bridge on U.S. Highway 59, 1.5 mi northeast of Shepherd, and 11.6 mi upstream from mouth.

DRAINAGE AREA.--38.8 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1966 to current year.

GAGE.--Water-stage recorder. Datum of gage is 94.90 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are poor. There is no known regulation above station.

AVERAGE DISCHARGE.--21 years, 28.8 ft<sup>3</sup>/s (10.08 in/yr), 20,870 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,000 ft<sup>3</sup>/s June 13, 1973 (gage height, 25.69 ft); minimum daily, 1.0 ft<sup>3</sup>/s Aug. 7, 1967.

Maximum stage since at least 1949, that of June 13, 1973.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1957 reached a stage of 20.3 ft (discharge about 5,500 ft<sup>3</sup>/s), from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 400 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Dec. 18	2200	579	11.18	June 18	1000	649	11.54
June 10	2300	510	10.80	June 25	0500	446	10.41
June 12	1500	*1,310	*13.95				

Minimum daily (estimated), 7.0 ft<sup>3</sup>/s Aug. 28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	11	22	33	26	77	16	e10	15	39	11	15
2	16	11	20	31	33	43	16	e10	13	82	e10	e13
3	16	11	18	64	28	35	15	100	13	77	e10	e12
4	15	13	17	49	27	30	15	99	18	29	e9.5	e11
5	16	22	17	37	26	27	15	28	14	22	e9.2	e10
6	17	14	16	34	25	26	16	21	13	20	e8.9	e9.5
7	17	13	16	33	25	24	16	19	13	19	e8.6	e9.0
8	17	14	17	32	25	24	15	23	13	22	e8.4	8.8
9	17	13	44	33	24	23	14	36	14	80	e10	11
10	17	12	38	33	23	22	14	23	201	53	e9.5	10
11	16	12	24	30	24	25	14	20	219	25	e9.0	18
12	53	13	21	29	24	25	13	18	748	20	e9.0	14
13	49	12	19	29	24	22	14	28	385	18	e10	20
14	27	12	19	30	24	21	14	17	81	17	e9.2	13
15	19	12	208	30	116	21	14	15	43	16	e8.8	11
16	15	12	155	32	63	21	14	15	32	15	e8.5	21
17	14	13	52	83	33	75	13	14	63	15	e8.2	38
18	13	13	283	116	29	61	13	14	454	15	e8.0	16
19	13	12	229	48	27	28	13	14	73	14	e7.8	15
20	12	12	70	38	49	25	13	14	36	14	e7.7	14
21	12	12	51	35	58	22	e12	13	28	14	e7.6	14
22	12	12	99	32	38	21	e12	13	23	14	e7.5	12
23	14	50	293	31	31	21	e12	13	21	14	e7.4	11
24	16	162	107	30	36	21	e12	13	50	13	e7.3	11
25	14	255	60	30	43	19	e12	13	231	13	e7.2	10
26	12	58	48	29	220	18	e11	13	38	12	e7.1	10
27	12	32	42	28	113	18	e11	13	24	12	e7.1	10
28	11	29	39	28	240	17	e11	13	20	12	e7.0	13
29	11	25	37	28	---	16	e11	13	18	11	41	19
30	11	23	36	27	---	16	e11	21	25	12	33	13
31	11	---	35	26	---	16	---	14	---	12	20	---
TOTAL	532	915	2152	1168	1454	860	402	690	2939	751	333.5	412.3
MEAN	17.2	30.5	69.4	37.7	51.9	27.7	13.4	22.3	98.0	24.2	10.8	13.7
MAX	53	255	293	116	240	77	16	100	748	82	41	38
MIN	11	11	16	26	23	16	11	10	13	11	7.0	8.8
AC-FT	1060	1810	4270	2320	2880	1710	797	1370	5830	1490	661	818
CFSM	.44	.79	1.79	.97	1.34	.71	.35	.57	2.52	.62	.28	.35
IN.	.51	.88	2.06	1.12	1.39	.82	.39	.66	2.82	.72	.32	.40

CAL YR 1986	TOTAL	19267.2	MEAN	52.8	MAX	1850	MIN	8.2	AC-FT	38220	CFSM	1.36	IN.	18.5
WTR YR 1987	TOTAL	12608.8	MEAN	34.5	MAX	748	MIN	7.0	AC-FT	25010	CFSM	.89	IN.	12.1

e Estimated.

## TRINITY RIVER BASIN

427

08066400 BIG CREEK NEAR SHEPHERD, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: August 1950 to current year.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	TEMPER- ATURE WATER (DEG C)	HARD- NESS (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)
NOV 18...	0840	13	67	19.0	14	6	3.3	1.3	6.9
JAN 06...	1557	34	69	11.0	15	6	3.6	1.4	7.6
FEB 23...	1635	31	64	13.5	13	6	3.2	1.3	6.5
APR 13...	1625	14	68	21.0	14	4	3.4	1.4	7.5
JUN 02...	0850	13	65	22.5	14	4	3.3	1.4	8.6
JUL 21...	0857	14	68	23.5	15	4	3.8	1.4	7.3
SEP 08...	1718	8.8	71	25.0	16	6	4.0	1.5	7.6

DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WH WAT TOTAL 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)
NOV 18...	0.8	1.1	8	5.6	11	<0.10	16	50
JAN 06...	0.9	0.80	9	7.8	12	<0.10	15	54
FEB 23...	0.8	0.90	7	6.0	11	<0.10	14	47
APR 13...	0.9	1.0	10	8.0	10	<0.10	15	52
JUN 02...	1	1.0	10	8.8	11	<0.10	15	55
JUL 21...	0.8	0.90	11	6.0	11	0.20	16	53
SEP 08...	0.8	1.2	10	7.4	11	0.10	17	56

## TRINITY RIVER MAIN STEM

08066500 TRINITY RIVER AT ROMAYOR, TX  
(National stream-quality accounting network)

LOCATION.--Lat 30°25'30", long 94°51'02", Liberty County, Hydrologic Unit 12030202, near right bank at downstream side of bridge on State Highway 787, 1.9 mi south of Romayor, 1.9 mi downstream from Gulf, Colorado, and Santa Fe Railway Co. bridge, 3.7 mi downstream from Big Creek, and at mile 94.3.

DRAINAGE AREA.--17,186 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1924 to current year. Monthly discharge only for some periods, published in WSP 1312.

REVISED RECORDS.--WSP 1392: 1932, 1935. WSP 1922: Drainage area. WRD TX-81-1: 1980(M, m).

GAGE.--Water-stage recorder. Datum of gage is 35.92 ft above National Geodetic Vertical Datum of 1929. Prior to September 1943, nonrecording gage at datum 53.57 ft higher at railroad bridge 1.9 mi upstream. Sept. 15, 1975, to June 16, 1977, nonrecording gage at present site and datum.

REMARKS.--No estimated daily discharges. Records fair. Since Sept. 28, 1968, flow is regulated by Livingston Reservoir (station 08066190), capacity 1,788,000 acre-ft, 35 mi upstream. There are no large diversions between Livingston Reservoir and this station.

AVERAGE DISCHARGE.--44 years (water years 1925-68) unregulated, 7,155 ft<sup>3</sup>/s (5,184,000 acre-ft/yr); 19 years (water years 1969-87) flow regulated by Livingston Reservoir, 7,469 ft<sup>3</sup>/s (5,411,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 111,000 ft<sup>3</sup>/s May 9, 1942 (gage height, 35.8 ft, from floodmarks), present site and datum; minimum, 102 ft<sup>3</sup>/s Aug. 24, 25, 1956. Maximum stage since at least 1908, that of May 9, 1942.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 35,300 ft<sup>3</sup>/s Feb. 28 at 2400 hours (gage height, 21.10 ft); minimum daily, 877 ft<sup>3</sup>/s Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2030	7230	18800	15600	5340	34700	16400	1740	3980	13500	1710	1400
2	2020	7190	18400	11200	5020	33200	15700	1630	5230	13600	1680	1340
3	1970	6850	16600	8660	5060	32700	15300	2230	7720	13900	1640	1270
4	1570	4740	16300	6970	4970	32300	12400	4060	10600	13600	1660	1250
5	1450	3680	16200	5190	4910	31800	10100	3270	13000	13500	1680	1240
6	1450	3400	16100	3550	4850	29400	8150	3020	14300	13300	1660	1230
7	1450	3860	16200	3080	4800	26700	7420	2530	16200	13200	1630	1220
8	1450	6290	15800	2910	4780	25900	7280	2150	17500	12400	1630	1220
9	1460	8820	13000	2830	4750	25000	7180	2100	18500	11300	1600	1210
10	1450	9970	10100	2770	4730	24700	6940	2240	19100	11200	1610	1210
11	1450	10100	7300	2740	4720	24700	6360	3090	21300	9350	1600	1250
12	1760	10000	6030	3300	4700	24500	6280	3190	24100	7530	1620	1250
13	4270	10000	5840	3430	4680	23000	6230	3240	27600	5860	1600	1250
14	7470	9690	5680	3980	4590	21200	6160	3370	27700	5200	1540	1230
15	7660	7420	7440	4870	4700	18800	6090	3360	27900	4240	1490	1210
16	6670	6200	15700	5600	5560	18100	6050	4810	26600	3380	1460	1230
17	4690	5530	18000	6150	4540	17500	5990	5600	26300	3090	1450	1260
18	4020	4670	19300	8190	4230	18900	5870	5580	28100	3000	1400	1280
19	3270	3780	23000	8430	4020	19100	5180	5290	28000	2910	1220	1300
20	2380	2950	22300	7780	4000	20000	4430	4950	27200	2850	1160	1270
21	2230	2210	21400	7530	5900	19900	3500	4840	26000	2780	1180	1250
22	2210	1920	21000	7270	8860	19500	3280	4790	24200	2680	1200	1220
23	2210	1820	22500	8070	10100	19400	2680	4750	22700	2590	1200	1190
24	2230	6350	23100	10100	12900	19400	2370	4740	21800	2380	1190	1150
25	2270	16100	21800	11700	16900	19400	2310	4730	21300	2060	1170	1110
26	2240	22200	22100	11800	25000	19300	2280	4730	19500	1950	1170	994
27	2220	21600	21700	11700	30800	19300	2250	4670	18800	1880	1170	939
28	3190	20700	21300	10700	34200	19200	2210	4060	18000	1870	1160	942
29	5430	19800	21100	9300	---	19200	2180	3930	16600	1800	1170	971
30	6120	19200	20900	7560	---	19100	2120	3950	14000	1760	1260	877
31	7010	---	19300	6200	---	18900	---	3950	---	1710	1330	---
TOTAL	97300	264270	524290	219160	239610	714800	190690	116590	593830	200370	44240	35763
MEAN	3139	8809	16910	7070	8557	23060	6356	3761	19790	6464	1427	1192
MAX	7660	22200	23100	15600	34200	34700	16400	5600	28100	13900	1710	1400
MIN	1450	1820	5680	2740	4000	17500	2120	1630	3980	1710	1160	877
AC-FT	193000	524200	1040000	434700	475300	1418000	378200	231300	1178000	397400	87750	70940
CAL YR 1986	TOTAL	3549570	MEAN	9725	MAX	51800	MIN	1320	AC-FT	7041000		
WTR YR 1987	TOTAL	3240910	MEAN	8879	MAX	34700	MIN	877	AC-FT	6428000		

08066500 TRINITY RIVER AT ROMAYOR, TX--Continued  
(National stream-quality accounting network)

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: October 1941 to November 1949, February 1950 to September 1951, October 1953 to current year. Chemical and biochemical analyses: February 1968 to current year. Pesticide analyses: February 1968 to July 1981, August 1983 to current year. Sediment records: March 1959 to current year.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1941 to September 1942, January 1944 to September 1951, October 1953 to current year.

WATER TEMPERATURE: October 1941 to September 1950, October 1953 to current year.

SUSPENDED-SEDIMENT DISCHARGE: October 1954 to September 1955, October 1968 to September 1971.

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 (1945-50, 1953-87): Maximum daily, 3,800 microsiemens Oct. 30, 1956; minimum daily, 103 microsiemens Nov. 9, 1946.

WATER TEMPERATURES (1953-58, 1961-87): Maximum daily, 37.0°C July 18, 27, 1953; minimum daily, 3.0°C Jan. 18, 1956, Jan. 15, 16, 1968, Jan. 2, 3, 1979.

## EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily 386 microsiemens June 23; minimum daily, 218 microsiemens May 4.

WATER TEMPERATURE: Maximum daily, 32.5°C Aug. 16; minimum daily, 9.0°C Jan. 12, 26.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

		STREAM- FLOW, INSTAN- TANEOUS (CFS)	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)	
DEC	08...	1345	16000	360	7.90	14.5	--	7.9	12.8	125	0.6	K1
JAN	26...	1325	11900	318	7.70	9.5	50	16	13.2	114	1.1	32
FEB	24...	1208	13000	318	7.00	11.5	29	15	11.2	102	1.5	54
MAR	11...	1120	24700	368	8.10	14.0	--	12	11.0	105	3.3	30
APR	29...	1025	2160	358	8.20	22.0	--	2.8	9.0	102	4.3	40
JUN	11...	0745	21100	360	7.60	24.5	12	--	8.6	103	3.2	150
	22...	1110	24300	364	7.80	27.0	--	3.5	8.0	100	2.3	20
AUG	04...	1205	1680	365	8.10	31.0	--	1.7	9.2	123	3.0	84
	11...	1030	1600	364	8.20	29.5	18	3.9	8.0	105	2.4	84
DATE		STREP- TOCOCI FECAL KF AGAR (COLS. PER 100 ML)	HARD- NESS (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- LITY WH WAT TOTAL FIELD MG/L AS CAC03	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
DEC	08...	54	120	18	43	4.0	25	1	5.1	106	34	27
JAN	26...	K12	100	17	36	3.5	21	0.9	4.9	87	34	22
FEB	24...	850	100	22	36	3.5	21	0.9	4.8	82	35	23
MAR	11...	38	120	30	41	4.3	26	1	5.0	90	44	30
APR	29...	82	120	23	41	4.3	24	1	4.4	97	40	24
JUN	11...	250	120	26	41	4.2	23	1	4.7	94	40	27
	22...	190	120	27	42	4.5	26	1	4.7	97	41	27
AUG	04...	100	130	17	43	4.4	25	1	4.7	109	36	26
	11...	180	120	17	41	4.3	24	1	4.9	103	35	25
DATE		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)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDE (MG/L)	SOLIDS, VOLA- TILE, SUS- PENDE (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)
DEC	08...	0.40	5.0	217	210	--	--	0.180	0.180	0.020	0.020	0.200
JAN	26...	0.30	7.6	182	180	4	<1	--	--	<0.010	<0.010	0.700
FEB	24...	0.30	8.2	--	180	44	1	--	--	<0.010	--	0.800
MAR	11...	0.30	7.3	212	210	--	--	0.690	--	0.010	<0.010	0.700
APR	29...	0.30	5.2	207	200	--	--	0.180	0.190	0.020	0.020	0.200
JUN	11...	0.30	5.2	--	200	21	1	--	--	<0.010	--	<0.100
	22...	0.30	3.9	215	210	--	--	--	--	<0.010	<0.010	<0.100
AUG	04...	--	6.2	208	210	--	--	--	--	<0.010	<0.010	<0.100
	11...	0.30	6.1	--	200	9	<1	--	--	<0.010	--	<0.100

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	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- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS PO4)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI- MENT, SUS- PENDED (MG/L)
DEC 08...	0.200	0.050	0.050	1.7	1.7	0.100	0.120	0.080	0.25	--	16
JAN 26...	0.660	0.030	0.020	0.47	0.50	0.160	0.110	0.130	0.40	6.8	47
FEB 24...	--	0.020	--	0.58	0.60	0.170	--	--	--	6.3	--
MAR 11...	0.740	0.030	0.030	1.2	1.2	0.260	0.190	0.150	0.46	--	49
APR 29...	0.210	0.040	<0.010	0.96	1.0	0.120	0.070	0.050	0.15	--	12
JUN 11...	--	0.110	--	0.99	1.1	0.180	--	--	--	6.5	--
JUN 22...	<0.100	0.080	0.070	1.3	1.4	0.150	0.100	0.090	0.28	--	10
AUG 04...	<0.100	<0.010	0.010	--	1.4	0.200	0.110	0.090	0.28	--	9
AUG 11...	--	<0.010	--	--	1.8	0.200	--	--	--	7.5	--
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)	CHROMIUM, 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)
DEC 08...	691	90	150	3	57	<0.5	<1	<1	<3	2	11
JAN 26...	1510	55	--	3	52	--	1	<10	--	2	37
FEB 24...	--	--	--	--	--	--	--	--	--	--	--
MAR 11...	3270	37	40	2	48	<0.5	<1	<1	<3	7	31
APR 29...	70	93	--	--	--	--	--	--	--	--	--
JUN 11...	--	--	--	--	--	--	--	--	--	--	--
JUN 22...	656	94	20	4	48	<0.5	<1	<1	<3	4	20
AUG 04...	41	75	<10	4	58	<0.5	1	<1	<3	2	28
AUG 11...	--	--	--	4	53	--	<1	<10	--	2	5
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)
DEC 08...	<5	10	<1	<0.1	<10	2	<1	<1	300	<6	30
JAN 26...	<5	--	3	<0.1	--	--	<1	<1	--	--	14
FEB 24...	--	--	--	--	--	--	--	--	--	--	--
MAR 11...	<5	11	<1	<0.1	<10	2	<1	<1	300	<6	<3
APR 29...	--	--	--	--	--	--	--	--	--	--	--
JUN 11...	--	--	--	--	--	--	--	--	--	--	--
JUN 22...	<5	10	2	0.1	<10	4	<1	<1	320	<6	11
AUG 04...	42	<4	6	0.2	<10	4	<1	<1	330	<6	<3
AUG 11...	<5	--	1	0.1	--	--	<1	<1	--	--	<3
DATE	AME- TRYNE TOTAL	ATRA- ZINE, TOTAL (UG/L)	CYAN- AZINE TOTAL (UG/L)	METHO- MYL TOTAL (UG/L)	PROME- TONE TOTAL (UG/L)	PROME- TRYNE TOTAL (UG/L)	PRO- PAZINE TOTAL (UG/L)	PROPHAM TOTAL (UG/L)	SEVIN, TOTAL (UG/L)	SIMA- ZINE TOTAL (UG/L)	SIME- TRYNE TOTAL (UG/L)
DEC 08...	--	--	--	--	--	--	--	--	--	--	--
JAN 26...	<0.10	0.10	<0.10	<2.0	<0.1	<0.1	0.10	<2.0	<2.0	<0.10	<0.1
FEB 24...	--	--	--	--	--	--	--	--	--	--	--
MAR 11...	--	--	--	--	--	--	--	--	--	--	--
APR 29...	--	--	--	--	--	--	--	--	--	--	--
JUN 11...	--	--	--	--	--	--	--	--	--	--	--
JUN 22...	--	--	--	--	--	--	--	--	--	--	--
AUG 04...	--	--	--	--	--	--	--	--	--	--	--
AUG 11...	--	--	--	--	--	--	--	--	--	--	--

## TRINITY RIVER MAIN STEM

431

08066500 TRINITY RIVER AT ROMAYOR, TX--Continued  
(National stream-quality accounting network)

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1986 TO SEPTEMBER 1987

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. 1986	97300	336	191	50200	27	7040	33	8680	110
NOV. 1986	264270	342	194	139000	27	19600	34	24000	110
DEC. 1986	524290	340	193	273000	27	38500	33	47300	110
JAN. 1987	219160	316	181	107000	25	14500	31	18400	100
FEB. 1987	239610	315	180	117000	24	15800	31	20000	100
MAR. 1987	714800	343	195	376000	28	53200	34	65100	110
APR. 1987	190690	350	199	102000	28	14600	34	17700	110
MAY 1987	116590	330	188	59200	26	8270	32	10200	110
JUNE 1987	593830	359	203	325000	29	47200	35	56600	110
JULY 1987	200370	356	202	109000	29	15700	35	19000	110
AUG. 1987	44240	362	205	24400	30	3560	36	4260	110
SEPT 1987	35763	369	208	20100	31	2950	36	3510	110
TOTAL	3240913	**	**	1701000	**	241000	**	295000	**
WTD.AVG.	8879	343	194	**	28	**	34	**	110

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
EQUIVALENT MEAN

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	331	350	362	338	322	312	346	361	360	368	358	354
2	334	350	364	329	322	325	346	353	365	353	359	354
3	335	350	364	318	319	325	348	363	366	358	360	366
4	335	350	365	307	320	331	349	218	363	357	361	372
5	335	326	365	302	322	339	351	247	366	359	362	373
6	336	320	366	288	322	339	351	242	369	362	361	373
7	333	337	365	290	320	343	351	267	370	363	364	376
8	336	358	366	300	322	347	353	300	371	365	364	376
9	337	352	362	306	322	358	352	319	370	352	364	377
10	337	352	350	306	321	360	352	289	370	338	361	376
11	338	354	347	312	323	369	349	319	365	345	362	371
12	304	355	341	313	323	367	349	332	359	341	360	362
13	294	357	326	320	324	362	349	339	330	344	356	369
14	319	363	344	321	324	358	350	322	352	352	362	367
15	333	365	349	324	319	355	349	330	329	355	367	372
16	338	365	290	284	270	351	350	338	336	354	364	372
17	340	366	330	277	292	347	350	315	359	355	365	365
18	344	361	332	317	305	311	351	315	347	359	367	358
19	343	362	298	324	320	334	352	324	335	356	364	355
20	345	362	331	298	315	336	351	347	347	360	363	359
21	344	361	323	302	304	345	353	352	361	361	367	359
22	345	358	336	314	312	343	353	355	368	362	368	367
23	344	360	324	322	320	345	357	356	386	361	367	372
24	342	313	333	322	325	346	358	357	380	364	368	376
25	335	283	333	319	328	344	358	356	373	363	369	379
26	341	332	325	322	316	343	359	360	374	361	369	378
27	342	304	339	323	304	344	358	358	364	354	368	380
28	344	339	341	322	314	343	359	358	361	358	369	379
29	347	353	340	321	---	345	359	358	369	356	360	373
30	347	358	330	320	---	350	360	357	370	362	345	368
31	347	---	338	321	---	354	---	358	---	363	346	---
MEAN	336	347	341	312	316	344	352	328	361	357	363	369

## TRINITY RIVER MAIN STEM

08066500 TRINITY RIVER AT ROMAYOR, TX--Continued  
(National stream-quality accounting network)

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28.0	21.0	14.5	12.0	13.0	12.5	14.0	22.5	25.0	26.0	32.0	27.0
2	28.0	21.5	13.0	12.0	11.5	12.5	15.0	23.0	25.0	26.0	32.0	27.5
3	28.0	21.0	13.5	11.5	12.0	13.0	16.0	22.0	25.0	27.0	30.5	27.5
4	29.0	21.0	13.5	11.0	12.0	13.0	14.0	20.0	24.5	29.0	30.5	29.0
5	29.0	19.0	14.0	9.5	13.0	14.5	15.0	20.0	24.5	30.0	30.0	29.0
6	27.5	18.5	13.0	11.0	12.0	15.0	14.0	21.0	27.0	29.0	30.5	29.5
7	25.0	19.5	15.0	12.0	11.0	14.0	14.5	21.0	26.0	28.0	30.0	26.0
8	25.0	22.0	15.0	12.5	13.0	15.0	15.0	22.0	25.0	28.0	31.0	28.0
9	25.0	21.0	16.0	13.0	13.5	15.0	15.5	22.0	25.0	28.0	30.5	28.5
10	25.5	20.5	14.0	10.5	11.0	15.0	16.5	25.0	25.0	28.0	29.5	29.0
11	25.0	19.5	13.0	10.5	13.0	14.0	19.0	24.0	25.0	29.0	29.0	29.0
12	22.5	19.0	11.0	9.0	14.5	15.0	18.5	23.0	24.5	27.0	29.5	27.5
13	21.0	16.0	12.0	10.5	15.0	14.5	18.0	21.5	25.0	28.5	30.0	27.0
14	20.5	15.5	12.0	11.0	14.0	15.0	16.0	24.0	26.0	28.0	30.0	27.5
15	21.0	17.0	12.5	11.5	15.0	15.5	17.0	23.0	27.0	28.0	32.0	28.5
16	26.0	18.5	12.5	11.5	14.5	15.0	18.0	24.0	26.0	29.0	32.5	29.5
17	21.0	18.0	13.0	11.0	13.5	15.0	18.5	25.0	26.0	28.0	31.5	27.5
18	23.5	19.0	13.0	11.0	13.0	15.0	20.0	24.5	26.0	28.0	29.0	29.0
19	23.0	19.0	12.0	10.5	11.5	15.5	23.0	24.0	27.0	29.5	29.5	29.5
20	21.0	19.0	13.5	9.5	---	15.5	21.0	23.0	27.0	29.0	30.0	29.0
21	20.5	17.5	12.5	9.5	12.0	16.0	19.5	23.5	28.0	29.0	30.5	26.0
22	21.0	19.0	13.0	10.0	12.0	---	18.5	23.0	27.5	28.5	32.0	26.5
23	21.5	20.0	12.0	10.5	11.5	16.0	19.5	25.0	28.0	29.0	30.0	25.0
24	21.5	18.0	12.0	10.0	11.0	14.5	20.0	25.0	27.0	29.0	30.0	25.0
25	21.5	16.5	12.0	10.5	11.0	16.0	21.0	24.0	28.0	29.0	29.5	25.0
26	21.5	16.0	12.0	9.0	12.5	15.0	21.0	24.0	29.0	28.5	29.0	26.5
27	20.0	15.5	11.0	9.5	13.0	15.0	21.0	24.0	30.5	28.0	29.0	26.0
28	20.0	15.0	11.5	12.0	12.5	18.0	22.0	24.0	29.0	29.5	29.0	26.5
29	20.5	15.5	12.5	11.5	---	15.0	23.0	23.5	28.0	29.5	---	26.0
30	20.5	15.5	12.0	11.0	---	14.0	23.0	23.5	27.0	30.0	29.0	24.0
31	20.5	---	12.5	11.5	---	14.0	---	25.0	---	30.0	27.0	---
MEAN	23.5	18.5	13.0	11.0	12.5	15.0	18.0	23.0	26.5	28.5	30.0	27.5

## TRINITY RIVER MAIN STEM

433

08067000 TRINITY RIVER AT LIBERTY, TX

LOCATION.--Lat 30°03'27", long 94°49'05", Liberty County, Hydrologic Unit 12030203, at upstream side of upstream bridge on U.S. Highway 90 in Liberty, 345 ft downstream from Texas and New Orleans Railroad Co. bridge, and at mile 40.3.

DRAINAGE AREA.--17,468 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1938 to September 1940 (gage heights, discharge measurements, and some records of daily discharge), October 1940 to current year (high-water records only). Gage-height records collected in this vicinity since 1903 are contained in reports of the National Weather Service.  
Water-quality records.--Chemical and biochemical analyses: October 1970 to September 1972. Pesticide analyses: May 1971 to September 1972.

REVISED RECORDS.--WSP 1922: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2.22 ft below National Geodetic Vertical Datum of 1929; unadjusted for land-surface subsidence. Prior to Mar. 13, 1973, nonrecording gage at site 105 ft downstream at same datum.

REMARKS.--Records poor. Estimated discharge below 10,000 ft<sup>3</sup>/s not published. Published discharges are estimated using records for Trinity River near Romayor (station 08066500), intervening area computation, and discharge measurements. Considerable regulation of flow by Livingston Reservoir (station 08066190) 88.9 mi upstream. Many diversions above station for municipal supplies, industrial uses, and irrigation. Gage-height telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 114,000 ft<sup>3</sup>/s May 12, 1942, gage height, 29.38 ft; minimum not determined (affected by tides); minimum gage height observed, 2.32 ft Nov. 24, 1970.  
Maximum stage since at least 1903, that of May 12, 1942.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 8-11, 1922, reached a stage of 28.6 ft, present datum, from observation by the National Weather Service at nonrecording gage on railroad bridge upstream.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 32,900 ft<sup>3</sup>/s Mar. 5; maximum gage height, 26.35 ft Mar. 5 at 1500 hours; minimum discharge not determined (affected by tides); minimum gage height, 4.39 ft Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	19500	19600	---	30600	19000	---	---	15100	---	---
2	---	---	19000	16300	---	32200	18200	---	---	14500	---	---
3	---	---	18500	13200	---	32700	16300	---	---	14700	---	---
4	---	---	17000	11000	---	32800	15600	---	---	14300	---	---
5	---	---	16500	---	---	32900	14000	---	10000	13700	---	---
6	---	---	16300	---	---	32300	11500	---	11200	13300	---	---
7	---	---	16200	---	---	30800	---	---	12600	13100	---	---
8	---	---	16300	---	---	29200	---	---	14000	13000	---	---
9	---	---	16000	---	---	27600	---	---	15300	14000	---	---
10	---	---	13200	---	---	26300	---	---	16700	15200	---	---
11	---	---	10200	---	---	25500	---	---	18500	14100	---	---
12	---	---	---	---	---	24900	---	---	22800	11900	---	---
13	---	---	---	---	---	24200	---	---	27200	10100	---	---
14	---	---	---	---	---	24000	---	---	29200	---	---	---
15	---	---	---	---	---	22000	---	---	29800	---	---	---
16	---	---	---	---	---	20000	---	---	30000	---	---	---
17	---	---	13000	---	---	18500	---	---	30400	---	---	---
18	---	---	18500	---	---	18000	---	---	31100	---	---	---
19	---	---	19600	---	---	18500	---	---	31400	---	---	---
20	---	---	21800	---	---	19500	---	---	31100	---	---	---
21	---	---	21800	---	---	20000	---	---	30000	---	---	---
22	---	---	21800	---	---	20200	---	---	28400	---	---	---
23	---	---	23800	---	---	20000	---	---	26400	---	---	---
24	---	---	25200	---	10000	19700	---	---	24300	---	---	---
25	---	10700	25200	10500	12300	19600	---	---	23200	---	---	---
26	---	19500	24400	11500	17400	19500	---	---	21800	---	---	---
27	---	22600	23800	11800	24000	19500	---	---	20200	---	---	---
28	---	22100	23100	11600	27800	19500	---	---	19000	---	---	---
29	---	21400	22500	11100	---	19400	---	---	17900	---	---	---
30	---	20700	22000	10000	---	19300	---	---	16800	---	---	---
31	---	---	21300	---	---	19200	---	---	---	---	---	---
TOTAL	---	---	---	---	---	738400	---	---	---	---	---	---
MEAN	---	---	---	---	---	23820	---	---	---	---	---	---
MAX	---	---	---	---	---	32900	---	---	---	---	---	---
MIN	---	---	---	---	---	18000	---	---	---	---	---	---
AC-FT	---	---	---	---	---	1465000	---	---	---	---	---	---

1986 CAL YR TOTAL -- MEAN -- MAX -- MIN -- AC-FT --  
1987 WTR YR TOTAL -- MEAN -- MAX -- MIN -- AC-FT --

## TRINITY RIVER BASIN

08067070 CIWA CANAL NEAR DAYTON, TX

LOCATION.--Lat 29°57'40", long 94°48'36", Liberty County, Hydrologic Unit 12030203, at flume on left bank of Coastal Industrial Water Authority canal, 1,000 ft west of the Trinity River, 2 mi east of Farm Road 1409, and 7.4 mi southeast of Dayton.

PERIOD OF RECORD.--April 1981 to current year.

GAGE.--Water-stage recorder. National Geodetic Vertical Datum of gage not determined.

REMARKS.--No estimated daily discharges. Records good. No diversion between pump plant and gage. Water is pumped from Trinity River for industrial use.

AVERAGE DISCHARGE.--6 years, 296 ft<sup>3</sup>/s (214,500 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 503 ft<sup>3</sup>/s July 21, 1987; minimum daily, 52 ft<sup>3</sup>/s Aug. 18, 1983 and Nov. 10, 1985.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 503 ft<sup>3</sup>/s July 21; minimum daily, 191 ft<sup>3</sup>/s June 12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	381	408	354	336	377	354	369	478	350	473	440	444
2	313	377	362	332	373	362	396	478	350	412	461	422
3	369	354	358	325	340	347	408	482	369	343	461	428
4	369	358	369	336	377	369	412	461	384	332	445	428
5	384	350	373	328	377	369	408	424	396	332	465	420
6	404	339	373	321	381	369	404	373	408	373	444	412
7	400	336	369	328	377	369	416	336	412	420	408	404
8	400	336	373	339	377	369	436	377	420	420	369	408
9	396	339	369	339	377	369	432	388	377	365	362	420
10	384	373	369	336	377	369	428	388	325	325	362	388
11	384	381	362	362	377	369	428	392	243	328	362	347
12	392	381	373	373	377	369	428	377	191	354	373	336
13	358	384	392	373	377	369	428	362	200	392	377	321
14	325	373	388	377	381	369	424	362	369	342	381	307
15	321	369	392	350	384	381	412	373	369	388	381	354
16	332	369	396	369	384	412	453	400	321	412	384	381
17	343	365	358	365	365	396	478	408	310	432	416	381
18	339	369	362	318	384	358	490	416	310	453	416	350
19	336	362	350	325	381	373	495	436	325	469	461	332
20	332	362	332	354	384	373	490	436	325	499	473	328
21	332	358	325	365	384	392	486	400	325	503	473	332
22	332	358	325	381	377	400	478	381	343	478	469	362
23	332	392	325	381	354	404	469	400	384	436	453	373
24	343	400	325	381	343	404	457	416	384	394	457	377
25	339	339	318	388	347	396	440	416	412	424	453	377
26	339	362	332	388	336	362	428	392	412	377	444	381
27	358	354	339	388	332	358	432	336	420	377	436	384
28	369	347	339	388	336	358	436	362	440	400	432	388
29	388	343	336	388	---	362	436	369	478	412	436	373
30	392	343	336	384	---	365	457	365	478	408	440	310
31	400	---	336	381	---	384	---	350	---	416	444	---
TOTAL	11186	10881	11010	11099	10336	11600	13154	12334	10830	12489	13178	11268
MEAN	361	363	355	358	369	374	438	398	361	403	425	376
MAX	404	408	396	388	384	412	495	482	478	503	473	444
MIN	313	336	318	318	332	347	369	336	191	325	362	307
AC-FT	22190	21580	21840	22010	20500	23010	26090	24460	21480	24770	26140	22350
CAL YR 1986	TOTAL	120150	MEAN	329	MAX	469	MIN	185	AC-FT	238300		
WTR YR 1987	TOTAL	139365	MEAN	382	MAX	503	MIN	191	AC-FT	276400		

## CLEAR BAYOU MAIN STEM

435

08067500 CEDAR BAYOU NEAR CROSBY, TX

LOCATION.--Lat 29°58'21", long 94°59'08", Liberty County, Hydrologic Unit 12040203, on left bank at downstream side of bridge on U.S. Highway 90 and 6.6 mi northeast of Crosby.

DRAINAGE AREA.--64.9 mi<sup>2</sup>.

PERIOD OF RECORD.--March to August 1946, March 1963 to February 1964, May to August 1971 (discharge measurements only), October 1971 to current year.

Water-quality records.--Chemical, biochemical, and pesticide analyses: May 1971 to September 1979.

GAGE.--Water-stage recorder. Datum of gage is 31.31 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Stage discharge relationship affected by seasonal vegetal growth. Low flow is sustained by drainage from irrigated lands. Diversion for irrigation upstream from station. Several observations of water temperature were made during the year. Gage-height telemeter at station.

AVERAGE DISCHARGE.--16 years (water years 1972-87), 83.3 ft<sup>3</sup>/s, 60,350 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,760 ft<sup>3</sup>/s June 5, 1981 (gage height, 23.92 ft); maximum gage height, 24.91 ft June 13, 1973; no flow occasionally during pumping season of some years.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,400 ft<sup>3</sup>/s (revised) and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Nov. 25	1000	2,530	22.33	June 12	2200	*3,880	*24.55
Dec. 15	2300	1,600	18.75	June 17	0500	1,720	20.18
Dec. 23	0900	2,660	21.68	June 18	1800	1,800	20.46
Feb. 26	1500	2,130	20.32	July 9	2100	2,100	21.05
June 10	2100	1,950	20.90				

Minimum daily discharge, 0.74 ft<sup>3</sup>/s Apr. 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.6	11	35	11	12	251	14	9.0	2.8	205	3.3	50
2	8.2	46	16	9.4	18	114	8.6	13	2.4	217	2.4	13
3	8.1	146	9.0	17	21	74	2.1	10	2.2	425	3.1	16
4	8.6	314	7.1	26	26	48	1.1	e45	3.2	143	23	7.0
5	9.2	917	7.9	17	18	35	.74	e75	6.2	51	22	9.8
6	8.5	314	6.9	e12	12	29	2.0	e60	4.4	42	23	9.4
7	8.7	159	6.5	10	9.5	25	5.2	e85	2.7	133	23	7.2
8	9.3	99	7.4	11	9.3	21	3.0	e30	4.1	445	24	6.4
9	25	48	7.3	31	6.5	17	4.4	e15	58	1460	14	5.8
10	18	27	9.7	66	4.9	13	3.5	e30	1160	1320	12	6.8
11	12	22	10	25	3.9	10	4.9	e15	1640	436	31	12
12	422	16	9.0	18	4.5	10	7.5	e9.0	3460	178	24	9.7
13	953	13	8.4	15	4.3	e13	5.9	e35	3600	82	33	9.6
14	596	9.7	7.7	15	4.5	8.6	7.4	e15	2820	34	21	9.3
15	225	7.2	658	18	9.7	8.1	5.4	e10	2150	22	24	7.8
16	107	6.4	1080	60	13	7.3	5.9	e8.0	1450	10	17	9.1
17	51	6.0	371	571	8.5	14	8.5	e8.0	1520	9.0	10	15
18	26	6.0	412	835	6.7	24	15	e3.0	1570	7.2	8.9	10
19	19	5.8	455	273	5.3	13	6.9	e3.0	762	4.3	12	7.3
20	14	5.0	192	121	7.3	10	14	e15	360	2.8	3.8	6.3
21	11	5.2	100	77	31	8.9	5.5	e12	150	6.6	17	6.0
22	15	5.1	725	54	16	8.3	8.0	e10	48	46	40	5.6
23	35	334	2440	25	12	8.1	9.9	e12	14	29	15	4.9
24	269	1860	1120	17	13	6.1	3.4	e40	6.7	18	9.1	4.5
25	136	2390	387	15	45	4.9	1.8	e15	4.0	17	3.4	4.3
26	50	1640	161	13	1580	4.5	14	e8.0	2.3	13	2.1	4.1
27	20	714	74	13	1030	4.2	13	e10	4.7	16	1.0	4.5
28	11	435	43	12	492	4.1	8.0	e8.0	4.9	12	1.7	9.9
29	29	240	28	18	---	5.6	4.7	e4.0	4.6	7.8	1.2	11
30	21	86	22	20	---	19	5.4	e5.0	81	5.1	21	4.5
31	12	---	14	13	---	22	---	e7.0	---	4.0	150	---
TOTAL	3145.2	9887.4	8429.9	2438.4	3423.9	840.7	199.74	624.0	20898.2	5400.8	596.0	286.8
MEAN	101	330	272	78.7	122	27.1	6.66	20.1	697	174	19.2	9.56
MAX	953	2390	2440	835	1580	251	15	85	3600	1460	150	50
MIN	7.6	5.0	6.5	9.4	3.9	4.1	.74	3.0	2.2	2.8	1.0	4.1
AC-FT	6240	19610	16720	4840	6790	1670	396	1240	41450	10710	1180	569
CAL YR 1986	TOTAL	35730.61	MEAN	97.9	MAX	2440	MIN	.38	AC-FT	70870		
WTR YR 1987	TOTAL	56170.79	MEAN	154	MAX	3600	MIN	.74	AC-FT	111400		

e Estimated.

## DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

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 1987						
Station no.	Station name	Location	Drainage area (mi <sup>2</sup> )	Period of record	Measurements	
					Date	Discharge (ft <sup>3</sup> /s)
Arkansas River basin						
07227700	Chicken Creek near Amarillo, Tex.	Lat 35°28'29", long 101°45'35", Potter County, about 1.5 mi northeast of LX Ranch headquarters and about 18 mi northeast of Amarillo.	(a)	1953-87	3- 3-87 6-11-87	1.45 .74
Red River basin						
07299750	Wanderers Creek at Odell, Tex.	Lat 34°20'50", long 99°25'15", Wilbarger County, at county road bridge and 0.25 mi northwest of Odell Post Office.	199	1949-50, 1952-87	1- 7-87 6-23-87	11.2 15.0
07299890	Lelia Lake Creek below Bell Creek near Hedley, Tex.	Lat 34°56'08", long 100°41'46", Donley County, 150 ft downstream from county road crossing, 1.0 mi downstream from mouth of Bell Creek, and about 5 mi north of Hedley.	74	1964-87	1-26-87 6-11-87	9.11 4.73
07303300	Elm Creek near Shamrock, Tex.	Lat 35°07'21", long 100°17'07", Collingsworth County, at county road bridge, 1,500 ft downstream from Fort Worth and Dunver (Burlington) Railway Company bridge, and about 6 mi southwest of Shamrock.	(a)	1947-87	10- 1-86 1-27-87 6- 9-87	1.37 2.16 2.08
07307700	Roaring Springs near Roaring Springs, Tex.	Lat 33°51'12", long 100°51'53", Motley County, 3.5 mi south of Roaring Springs.	(a)	1937, 1943-87	1- 5-87	1.31
Neches River basin						
08041550	Village Creek at State Highway 327 near Silsbee, Tex.	Lat 30°20'49", long 94°14'20", Hardin County, at bridge on State Highway 327, about 1.6 mi upstream from Mill Creek, and 2.7 mi west of Silsbee.	-	1979-87	9-28-87	146
08041720	Pine Island Bayou at State Highway 105 near Sour Lake, Tex.	Lat 30°08'08", long 94°16'44", Hardin-Jefferson County line, at bridge on State Highway 105, about 2.0 mi upstream from mouth of Little Pine Island Bayou, and 7.9 mi east of Sour Lake.	-	1979-87	8-11-87	45.0

a Not applicable.

## 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 1987							
Station no.	Station name	Location	Drainage area (mi <sup>2</sup> )	Period of record	Annual maximum		
					Date	Elevation (feet)	Discharge (ft <sup>3</sup> /s)
Red River basin							
07301200	McClellan Creek near McLean, Tex.	Lat 35°19'45", long 100°36'32", Gray County, on left bank at downstream side of bridge on State Highway 273, 5 mi upstream from mouth.	759	1967-80† 1987	6-21-87	4.65	188
07308200	Pease River near Vernon, Tex.	Lat 34°10'44", long 99°16'40", Wilbarger County, near left bank on downstream side of bridge on U.S. Highway 283, 1.9 mi north of Vernon, and 10 mi upstream from mouth.	3,488	1959-82† 1984-87	5-29-87	17.30	22,000
Sabine River basin							
08017210	Long Branch at Greenville, Tex.	Lat 33°07'20", long 96°05'54", Hunt County, on left edge of low-water channel 80 ft upstream from culvert under Moulton St. (Business Route U.S. Highway 69), 0.5 mi upstream from Interstate Highway 30, 0.6 mi downstream from Wesley St. (Business Route U.S. Highway 67), and 1.3 mi southeast of Hunt County Courthouse in Greenville.	5.37	1986-87	11-25-86	8.59	-
Neches River basin							
08033000	Neches River near Diboll, Tex.	Lat 31°07'58", long 94°48'35", Angelina-Polk County line, at downstream bridge on U.S. Highway 59, 700 ft downstream from Texas and New Orleans Railroad Co. bridge, 2.9 mi downstream from Alabama Creek, 3.8 mi south of Diboll, and at mile 203.5.	2,724	1924-25† 1939-85† 1986-87	11-25-86	14.41	8,950
08038000	Attoyac Bayou near Chireno, Tex.	Lat 31°30'15", long 94°18'15", Nacogdoches-San Augustine County line, at bridge on State Highway 21, 2.2 mi upstream from Amaladeros Creek, 2.8 mi east of Chireno, 5.4 mi downstream from Arenoso Creek, and 41 mi upstream from mouth.	503	1924-25† 1939-54† 1956-85† 1986-87	11-27-86	18.38	5,280
08039100	Ayish Bayou near San Augustine, Tex.	Lat 31°23'46", long 94°09'03", San Augustine County, at bridge on State Highway 103, 3.0 mi upstream from Turkey Creek, and 9.5 mi south of San Augustine.	89.0	1959-85† 1986-87	11-25-86	15.09	7,560
Trinity River basin							
08045850	Clear Fork Trinity River near Weatherford, Tex.	Lat 32°44'25", long 97°39'06", Parker County, near left end of bridge on weigh station exit road associated with Interstate Highway 20, 150 ft downstream from Squaw Creek, 2.8 mi downstream from Lake Weatherford Dam on the Clear Fork Trinity River, 3.8 mi upstream from South Fork Trinity River, and 8.5 mi east of county courthouse in Weatherford.	121	1980-85† 1986-87	6-13-87	13.91	858
08051190	Elm Fork Trinity River above Aubrey, Tex.	Lat 33°19'12", long 97°01'34", Denton County, attached to trees on left bank, 0.1 mi downstream from Bray Branch, 1.4 mi downstream from abandoned county road bridge, 1.6 mi upstream from bridge on Farm Road 428, and 2.6 mi northwest of Aubrey.	-	1981-87	3- 1-87	538.61	-
08053010	Indian Creek at Hebron Parkway, Carrollton, Tex.	Lat 33°01'06", long 96°55'27", Denton County, Hydrologic Unit 12030103, on left bank at downstream side of downstream bridge on Hebron Parkway in Carrollton, 0.9 mi downstream from bridge on Farm Road 2281 (Old Denton Road) and 2.2 mi upstream from mouth.	14.7	1987	5-14-87	9.80	578
08053030	Furneaux Creek at Josey Lane, Carrollton, Tex.	Lat 33°00'05", long 96°53'10", Denton County, Hydrologic Unit 12030103, on right bank at downstream side of downstream bridge on Josey Lane in Carrollton, 0.5 mi upstream from bridge on Frankford Road, and 1.1 mi downstream from bridge on Rosemeade Parkway.	4.13	1987	5-28-87	6.82	434
08053050	Furneaux Creek at Dickerson Parkway, Carrollton, Tex.	Lat 32°59'10", long 96°55'09", Dallas County, Hydrologic Unit 12030103, on left bank at downstream side of downstream bridge on Dickerson Parkway in Carrollton, 0.6 mi downstream from bridge on Farm Road 2281 (Old Centon Road), and 1.5 mi upstream from mouth.	9.84	1987	5-28-87	9.78	1,140

\* Elevation.

† Operated as a continuous-record station.

Annual maximum stage and (or) discharge during water year 1987--Continued							
Station no.	Station name	Location	Drainage area (mi <sup>2</sup> )	Period of record	Annual maximum		
					Date	Elevation (feet)	Discharge (ft <sup>3</sup> /s)
Trinity River basin--Continued							
08053090	Hutton Branch at Broadway, Carrollton, Tex.	Lat 32°57'24", long 96°54'37", Dallas County, Hydrologic Unit 12030103, on right bank at downstream side of bridge on Broadway (Loop 310) in Carrollton, 100 ft downstream from M-K-T Railroad Co. bridge, 600 ft upstream from traffic bridges on Interstate Highway 35E, and 0.2 mi downstream from bridge on Denton Drive.	9.14	1987	5-28-87	9.37	1,230
Cedar Bayou basin							
08067510	Cedar Bayou near Baytown, Tex.	Lat 29°46'12", long 94°54'59", Chambers-Harris County line, at bridge on State Highway 146, 0.2 mi downstream from Cary Bayou, 0.2 mi upstream from Saw Pit Gully, and 4.3 mi north-east of Baytown.	169	1984-87	6-12-87	*6.35	-

\* Elevation.

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 1987						
Stream	Tributary to	Location	Drainage area (mi <sup>2</sup> )	Measured previously (water years)	Measurements Date	Discharge (ft <sup>3</sup> /s)
Trinity River basin						
West Fork Trinity River	Trinity River	Lat 32°47'18", long 97°08'23", Tarrant County, Hydrologic Unit 12030102, at upstream side of bridge on Arlington Bedford Road, 1.4 mi downstream from Village Creek, and 3.2 mi northwest of intersection of Interstate Highway 30 and Farm Road 157 in Arlington.	-	1974*	4-17-87 5-15-87 5-29-87 6-22-87	205 782 5,610 2,400
Elm Fork	.....do.....	Lat 32°50'52", long 96°53'34", Dallas County, Hydrologic Unit 12030103, at upstream side of upstream bridge on Spur Highway 482, 0.7 mi upstream from Frazier Dam on Elm Fork Trinity River, and 4.4 mi northeast of city hall in Irving.	-	1949, 1952-53	4-10-87	3,920
.....Do.....	.....do.....	Lat 32°49'46", long 96°53'29", Dallas County, Hydrologic Unit 12030103, at Proctor Road bridge 0.9 mi downstream from Frazier Dam on Elm Fork Trinity River, and 3.9 mi northeast of city hall in Irving.	-	-	4-21-87 4-30-87 5- 4-87 5- 5-87	385 9.84 1,260 162
Trinity River	Gulf of Mexico	Lat 32°43'41", long 96°45'29", Dallas County, Hydrologic Unit 12030105, at bridge on Central Expressway (U.S. Highway 75), 1.4 mi downstream from bridge on Interstate Highway 45, 1.5 mi upstream from White Rock Creek, and 4.5 mi southeast of county courthouse in downtown Dallas.	-	1974	5-11-87	737
.....Do.....	.....do.....	Lat 32°38'18", long 96°38'57", Dallas County, Hydrologic Unit 12030105, 2.4 mi downstream from Dowdy-Ferry Road bridge, and 3.4 mi southeast of intersection of Interstate Highway 45 and Dowdy-Ferry Road at Hutchins.	-	-	5-12-87 5-12-87	739 717
.....Do.....	.....do.....	Lat 32°35'48", long 96°35'14", Dallas County, Hydrologic Unit 12030105, at bridge on Malloy Bridge Road, 2.7 mi upstream from Tenmile Creek, and 6.3 mi northeast of Ferris.	-	1972, 1974	5-12-87 5-13-87	826 1,020
.....Do.....	.....do.....	Lat 32°29'50", long 96°30'04", Ellis-Kaufman County line, Hydrologic Unit 12030105, 200 ft upstream from East Fork Trinity River, 3.1 mi upstream from Red Oak Creek, and 3.6 mi northwest of Rosser.	-	1974	5-13-87 5-13-87	1,050 1,080
.....Do.....	.....do.....	Lat 32°29'46", long 96°30'02", Ellis-Kaufman County line, Hydrologic Unit 12030105, about 200 ft downstream from East Fork Trinity River, 3.0 mi upstream from Red Oak Creek, and 3.6 mi northwest of Rosser.	-	-	8- 3-87	703
.....Do.....	.....do.....	Lat 32°18'59", long 96°21'33", Henderson-Navarro County line, Hydrologic Unit 12030105, at bridge on Farm Road 85, 0.1 mi downstream from Bois d'Arc Creek, and 15.5 mi east of Ennis.	-	1972, 1974	8- 4-87 8- 5-87	761 767
.....Do.....	.....do.....	Lat 32°12'44", long 96°08'51", Henderson County, 1,000 ft downstream from mouth of excavated outlet channel for Cedar Creek Reservoir, 1.9 mi south of gated spillway at Cedar Creek Reservoir, and 5.5 mi northwest of intersection of Highways 31 and 274 at Trinidad.	-	-	8- 6-87 8- 6-87 8- 7-87	756 731 710
Rowlett Creek at Farm Road 2514 (Parker Road) at Plano, Tex.	Lake Ray Hubbard on the East Fork Trinity River	Lat 33°02'35", long 96°39'50", Collin County, Hydrologic Unit 12030106, at downstream side of bridge on Farm Road 2514, 0.1 mi upstream from Brown Branch, 2.9 mi upstream from sewage treatment plant outfall, 3.7 mi northeast of intersection of Farm Road 544 (14th Street) and State Highway 5 (K Ave.) in Plano, and 4.0 mi upstream from Cottonwood Creek.	-	-	3- 9-87	27.4
Rowlett Creek at Farm Road 544 at Plano, Tex.	.....do.....	Lat 33°100'38", long 96°37'54", Collin County, Hydrologic Unit 12030106, at downstream side of bridge on Farm Road 544, 0.5 mi upstream from St. Louis Southwestern Railroad Co. bridge, 0.6 mi downstream from sewage treatment plant outfall, and 4.0 mi east of intersection of Farm Road 544 (14th Street), and State Highway 5 (K Ave.) in Plano.	-	-	3- 9-87	50.2
Rowlett Creek at Blackburn Road near Sachse, Tex.	.....do.....	Lat 32°58'47", long 96°36'33", Dallas County, Hydrologic Unit 12030106, at downstream side of bridge on Blackburn Road, 0.7 mi downstream from Beck Branch, and 1.5 mi northwest of intersection of State Highway 78 and Damascus Road in Sachse.	-	-	3-10-87	76.7

\* Although measurement was at a slightly different site location, the drainage area is comparable to prior miscellaneous measurement.



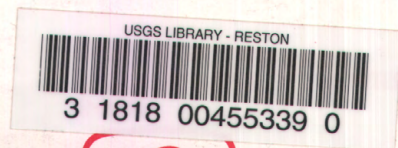
	Page		Page
Access to WATSTORE data.....	14	East Fork Trinity River near Lavon.....	323
Accuracy of the records.....	10	Ellison Creek Reservoir near Lone Star.....	141
Acre-foot, definition of.....	14	Elm Creek near Shamrock.....	436
Adenosine triphosphate (ATP), definition of.....	14	Elm Fork Trinity River, above Aubrey.....	437
Algae, definition of.....	14	at Gainesville.....	272
growth potential (AGP), definition of.....	14	near Carrollton.....	294
Angelina River near Alto.....	199	near Lewisville.....	287-290
Arkansas River basin, gaging station records in.....	25-36	near Pilot Point.....	275-276
low-flow partial-record station in.....	436	Estimated daily discharge, identification of.....	10
Arrangement of records.....	11	Explanation of the records.....	7
Artificial substrate, definition of.....	20		
Ash mass, definition of.....	15	Fecal coliform bacteria, definition of.....	15
Attoyac Bayou near Chireno.....	437	Fecal streptococcal bacteria, definition of.....	15
Ayish Bayou near San Augustine.....	437	Frazier Creek near Linden.....	152
		Furneaux Creek at Dickerson Parkway, Carrollton.....	437
B. A. Steinhagen Lake at Town Bluff.....	202		
Bacteria, definition of.....	14	Gage height, definition of.....	16
Bardwell Lake near Ennis.....	387	Gaging station, definition of.....	16
Beaver Creek near Electra.....	87	Gaging-station records.....	25-435
Bed load, definition of.....	19	Grapevine Lake near Grapevine.....	292
discharge, definition of.....	19	Green algae, definition of.....	18
Bed material, definition of.....	15	Greenbelt Lake near Clarendon.....	43
Bedias Creek near Madisonville.....	406-412	Groesbeck Creek at State Highway 6 near Quanah.....	42
Benbrook Lake near Benbrook.....	223		
Big Cow Creek near Newton.....	181	Hardness, definition of.....	16
Big Creek near Shepherd.....	426-427	Hickory Creek at Denton.....	284-285
Big Cypress Creek, near Jefferson.....	143	Hillebrandt Bayou near Lovell Lake.....	217
near Pittsburg.....	138-140	Hutton Branch at Broadway, Carrollton.....	438
near Winnsboro.....	134	Hydrologic bench-mark network.....	16
Big Sandy Creek (Sabine River basin) near Big Sandy.....	166	Hydrologic conditions.....	2
Big Sandy Creek (Trinity River basin) near Bridgeport.....	220	Hydrologic unit.....	17
Biochemical oxygen demand (BOD), definition of.....	15		
Biomass, definition of.....	15	Identifying estimated daily discharge.....	10
Black Cypress Bayou at Jefferson.....	144	Illustrations.....	3,5
Blue-green algae, definition of.....	18	Index.....	439
Bottom material, definition of.....	15	Indian Creek at Hebron Parkway, Carrollton.....	437
Brushy Creek at Scroggins.....	136	Instantaneous discharge, definition of.....	16
Burke Creek near Yantis.....	161	Introduction.....	1
Canadian River, at Logan, NM.....	25	Joe Pool Lake near Duncanville.....	264-268
near Amarillo.....	27-30		
near Canadian.....	33-35	Kickapoo Creek (Neches River basin) near Brownsboro... ..	186
Catfish Creek near Tennessee Colony.....	394	Kickapoo Creek (Trinity River basin) near Onalaska....	413
Cedar Bayou, near Baytown.....	438	Kings Creek near Kaufman.....	376
near Crosby.....	435		
Cedar Creek near Kemp.....	375	Laboratory measurements.....	13
Cedar Creek Reservoir near Trinidad.....	377	Lake Arlington at Arlington.....	245-250
Cells/volume, definition of.....	15	Lake Arrowhead near Henrietta.....	95
Chambers Creek near Rice.....	389-392	Lake Athens near Athens.....	187
Chemical oxygen demand (COD), definition of.....	15	Lake Bob Sandlin near Mount Pleasant.....	137
Chicken Creek near Amarillo.....	436	Lake Clark Outflow near Ennis.....	386
Chlorophyll, definition of.....	15	Lake Cypress Springs near Mount Vernon.....	135
CIWA Canal near Dayton.....	434	Lake Fork Creek near Quitman.....	163-165
Classification of records.....	11	Lake Fork Reservoir near Quitman.....	162
Clear Creek near Sanger.....	277-279	Lake Kemp near Mabelle.....	82
Clear Fork Trinity River, at Fort Worth.....	225	Lake Kickapoo near Archer City.....	93
near Benbrook.....	224	Lake Meredith near Sanford.....	31
near Weatherford.....	437	Lake Nacogdoches near Nacogdoches.....	200
Color unit, definition of.....	15	Lake O' the Pines near Jefferson.....	142
Computation, data collection and.....	8	Lake Palestine near Frankston.....	188
Contents, definition of.....	15	Lake Ray Hubbard near Forney.....	325
Continuous-recording station, definition of.....	11	Lake Tawakoni near Wills Point.....	155
Control, definition of.....	16	Lake Texoma near Denison.....	105
structure.....	16	Lake Worth above Fort Worth.....	222
Cooperation.....	1	Lake Surveys (Water Quality):	
Cowleech Fork Sabine River at Greenville.....	153	Arlington, Lake at Arlington.....	246-250
Crest-stage partial-record measurements.....	437-438	Joe Pool Lake near Duncanville.....	265-268
Crest-stage partial-record station, definition of.....	7	Livingston Reservoir near Goodrich.....	415-420
Cubic-foot-per-second day, definition of.....	15	Lakes and reservoirs:	
Cubic foot per second (Ft <sup>3</sup> /s, ft <sup>3</sup> /s), definition of.....	16	Arlington, Lake, at Arlington.....	245-250
Cubic foot per second per square mile (CFSM), definition of.....	16	Arrowhead, Lake, near Henrietta.....	95
		Athens, Lake, near Athens.....	187
		B. A. Steinhagen Lake at Town Bluff.....	202
		Bardwell Lake near Ennis.....	387
		Benbrook Lake near Benbrook.....	223
		Bob Sandlin, near Mount Pleasant.....	137
		Cedar Creek Reservoir near Trinidad.....	377
		Cypress Springs, Lake, near Mount Vernon.....	135
		Ellison Creek Reservoir near Lone Star.....	141
		Fork Reservoir, Lake, near Quitman.....	162
		Grapevine Lake near Grapevine.....	292
		Greenbelt Lake near Clarendon.....	43
		Joe Pool Lake near Duncanville.....	264-268
		Kemp, Lake, near Mabelle.....	82
		Kickapoo, Lake, near Archer City.....	93
		Lavon Lake near Lavon.....	322
		Lewisville Lake near Lewisville.....	286
		Livingston Reservoir near Goodrich.....	414-420
		Martin Lake near Tatum.....	173
		Meredith, Lake, near Sanford.....	31
		Moss Lake near Gainesville.....	101
		Mountain Creek Lake near Grand Prairie.....	270
		Nacogdoches, Lake, near Nacogdoches.....	200
		Navarro Mills Lake near Dawson.....	378
		O' the Pines, Lake, near Jefferson.....	142
		Palestine, Lake, near Frankston.....	188
		Pat Mayse Lake near Chicota.....	109
		Ray Hubbard, Lake, near Forney.....	325
		Sam Rayburn Reservoir near Jasper.....	201
East Fork Angelina River near Cushing.....	198		
East Fork Little Wichita River near Henrietta.....	97		
East Fork Trinity River, above Seagoville.....	336		
at McKinney.....	316-317		
at Seagoville.....	342		
near Crandall.....	348-356		
near Forney.....	327-335		

	Page	Page
Lakes and reservoirs:		
Tawakoni, Lake, near Wills Point.....	155	Radiochemical program..... 19
Texoma, Lake, near Denison.....	105	Records, accuracy of..... 10
Toledo Bend Reservoir near Burkeville.....	176	arrangement of..... 11
Truscott Brine Lake near Truscott.....	55	classification of..... 11
Wright Patman Lake near Texarkana.....	132	explanation of..... 7
Worth, Lake, above Fort Worth.....	222	of stage and water discharge..... 7
Lavon Lake near Lavon.....	322	of surface-water quality..... 11
Lelia Lake Creek below Bell Creek near Hedley.....	436	others available..... 11
Lewisville Lake near Lewisville.....	286	Recoverable from bottom material, definition of..... 19
Little Cypress Creek, near Jefferson.....	146-151	Red River, at Arthur City..... 110
near Ore City.....	145	at Denison Dam near Denison..... 106-108
Little Elm Creek near Aubrey.....	280-282	at Index, AR..... 115
Little Wichita River, above Henrietta.....	96	near Burkburnett..... 52-54
near Archer City.....	94	near De Kalb..... 111-114
Livingston Reservoir, at outflow weir near Goodrich.....	421	near Gainesville..... 102-104
near Goodrich.....	414-420	near Quannah..... 41
Long Branch at Greenville.....	437	near Terral, OK..... 98-100
Long King Creek at Livingston.....	422	Red River basin, crest-stage partial-record
Low-flow partial-record measurements.....	436	stations in..... 437
Low-flow partial-record stations, definition of.....	7	gaging-station records in..... 37-152
		low-flow partial-station records in..... 436
		Remark codes..... 13
Martin Creek near Tatum.....	174	Reservoirs. See lakes and reservoirs.
Martin Lake near Tatum.....	173	Return period, definition of..... 19
McClellan Creek near McLean.....	437	Reuelto Creek near Logan, NM..... 26
Mean concentration, definition of.....	19	Richland Creek, near Dawson..... 379
Mean discharge, definition of.....	16	near Richland..... 380-383
Menard Creek near Rye.....	424-425	Roaring Springs near Roaring Springs..... 436
Metamorphic stage, definition of.....	17	Rowlett Creek near Sachse..... 324
Methylene blue active substance, definition of.....	17	Runoff in inches, definition of..... 19
Micrograms per gram, definition of.....	17	
Micrograms per liter, definition of.....	17	Sabine River, above Longview..... 168
Milligrams of carbon per area or volume per unit		at Logansport, LA..... 175
time.....	19	at Toledo Bend Reservoir near Burkeville..... 177
Milligrams of oxygen per area or volume per unit		near Beckville..... 169-172
time.....	19	near Bon Wier..... 179-180
Milligrams per liter, definition of.....	17	near Burkeville..... 178
Miscellaneous measurements.....	439	near Gladewater..... 167
Miscellaneous sampling sites.....	11	near Mineola..... 157-160
Moss Lake near Gainesville.....	101	near Ruliff..... 182-185
Mountain Creek, above Duncanville.....	268	near Wills Point..... 156
at Grand Prairie.....	271	Sabine River basin, crest-stage partial-record
at Venus.....	261	stations in..... 437
near Duncanville.....	269	gaging-station records in..... 153-185
Mountain Creek Lake near Grand Prairie.....	270	Salt Fork Red River at Mangum, OK..... 48
Mustang Creek near Ennis.....	385	Salt Fork Red River near Wellington..... 44-47
		Sam Rayburn Reservoir near Jasper..... 201
National Geodetic Vertical Datum (NGVD), definition		Sediment, collection and examination..... 12
of.....	17	definition of..... 19
National stream-quality accounting network (NASQAN),		Sister Grove Creek near Blue Ridge..... 319-320
definition of.....	17	Sodium adsorption ration (SAR), definition of..... 20
National Trends Network (NTN), definition of.....	17	Solute, definition of..... 20
Natural substrates, definition of.....	20	South Fork Sabine River near Quinlan..... 154
Navarro Mills Lake near Dawson.....	378	South Side Canal near Dundee..... 86
Neches River, at Evadale.....	205-208	South Sulphur River, near Commerce..... 116
at Town Bluff.....	203-204	near Cooper..... 117-120
Neches River, near Diboll.....	437	South Wichita River, at dam near Guthrie..... 66-70
near Neches.....	189-194	below dam near Guthrie..... 71-75
near Rockland.....	196-197	near Benjamin..... 76-81
Neches River basin, crest-stage partial-record		Special networks and programs..... 6
stations in.....	437	Specific conductance, definition of..... 20
gaging-station records in.....	186-215	Stage, records of..... 7
low-flow partial-record records in.....	436	Stage-discharge relation, definition of..... 20
Networks and programs, special.....	7	Station identification numbers..... 7
North Fork Red River near Shamrock.....	49	Streamflow, definition of..... 20
North Sulphur River near Cooper.....	121-123	yearly summary..... 4
North Wichita River near Truscott.....	60-65	Substrate, definition of..... 20
		Sulphur River, near Talco..... 124-127
On-site measurements and sample collection.....	11	near Texarkana..... 133
Organic mass, definition of.....	15	Surface area, definition of..... 20
Organism, definition of.....	17	Surficial bed material, definition of..... 20
Organism count/area, definition of.....	17	Suspended (as used in tables of chemical analyses),
Organisms count/volume, definition of.....	17	definition of..... 20
Other records available.....	11	Suspended, recoverable, definition of..... 20
		Suspended, total, definition of..... 21
Parameter code, definition of.....	17	Suspended sediment, definition of..... 19
Partial-record station, definition of.....	11, 18	Suspended-sediment concentration, definition of..... 19
Partial-record stations, crest-stage.....	437-438	Suspended-sediment discharge, definition of..... 19
low-flow.....	436	Suspended-sediment load, definition of..... 20
Particle size, definition of.....	18	Sweetwater Creek near Kelton..... 50
Particle-size classification, definition of.....	18	
Pat Mayse Lake near Chicota.....	109	Taxonomy, definition of..... 21
Pease River, near Childress.....	51	Taylor Bayou near LaBelle..... 216
near Vernon.....	437	Taylor Bayou basin, gaging-station records in..... 216-217
Pecan Creek near Aubrey.....	283	Tehuacana Creek near Streetman..... 393
Percent composition, definition of.....	18	Temperature, collection and examination..... 15
Periphyton, definition of.....	18	Terms, definition of..... 14-22
Pesticides, definition of.....	18	Thermograph, definition of..... 21
Phytoplankton, definition of.....	18	Timber Creek near Collinsville..... 274
Picocurie, definition of.....	18	Time-weighted average, definition of..... 21
Pilot Grove Creek near Blue Ridge.....	318	Toledo Bend Reservoir near Burkeville..... 176
Pine Island Bayou, at State Highway 105 near		Tons per acre-foot, definition of..... 21
Sour Lake.....	436	Tons per day, definition of..... 21
near Sour Lake.....	210-215	Total coliform bacteria, definition of..... 15
Piney Creek near Groveton.....	195	Total (in tables of chemical analyses), definition of..... 21
Plankton, definition of.....	18	Total discharge, definition of..... 21
Polychlorinated biphenyls (PCBs), definition of.....	18	Total organism count, definition of..... 17
Prairie Creek at U.S. Highway 175, Dallas.....	315	Total, recoverable, definition of..... 21
Prairie Dog Town Fork Red River, near Childress.....	40	Total sediment discharge, definition of..... 20
near Wayside.....	37-39	Total sediment load, definition of..... 20
Primary productivity, definition of.....	19	Trigg Branch at Dallas-Fort Worth Airport near Euless..... 260
Programs, special networks and.....	6	Trinity River, at Cedar Crest Blvd., Dallas..... 297-304
Publications of techniques of water-resources		at Dallas..... 296
investigations.....	23-24	at Liberty..... 433

INDEX		443	
	Page	Page	
Trinity River, at Romayor.....	428-432	Water temperature.....	12
at Trinidad.....	366-374	Water year, definition of.....	22
below Dallas.....	306	WATSTORE data, access to.....	14
near Crockett.....	397-405	Waxahachie Creek near Bardwell.....	384
near Goodrich.....	423	WDR, definition of.....	22
near Oakwood.....	395	Weighted average, definition of.....	22
near Rosser.....	357-365	West Fork Trinity River, at Beach Street, Fort Worth.....	227-235
Trinity River basin, crest-stage partial-record		at Bridgeport.....	219
stations in.....	437	at Fort Worth.....	226
discharge measurements at miscellaneous sites.....	439	at Grand Prairie.....	251-259
gaging-station records in.....	218-434	near Boyd.....	221
Tritium network.....	21	near Jacksboro.....	218
Truscott Brine Lake near Truscott.....	55-59	Wet mass, definition of.....	15
Turtle Creek at Dallas.....	295	White Oak Creek near Talco.....	128-131
Upper Keechi Creek near Oakwood.....	396	White Rock Creek at Greenville Ave., Dallas.....	305
Village Creek, at Kennedale.....	236	Wichita River, at Wichita Falls.....	88-91
at State Highway 327 near Silsbee.....	436	near Charlie.....	92
near Kountze.....	209	near Mabelle.....	83-85
Walnut Creek near Mansfield.....	262-263	Wilson Creek at McKinney.....	321
Wanderers Creek at Odell.....	436	Wolf Creek at Lipscomb.....	36
Water discharge, records of.....	7	Wright Patman Lake near Texarkana.....	132
Water quality.....	4	WSP, definition of.....	22
		Zooplankton, definition of.....	18



1986																																	
OCTOBER							NOVEMBER							DECEMBER																			
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