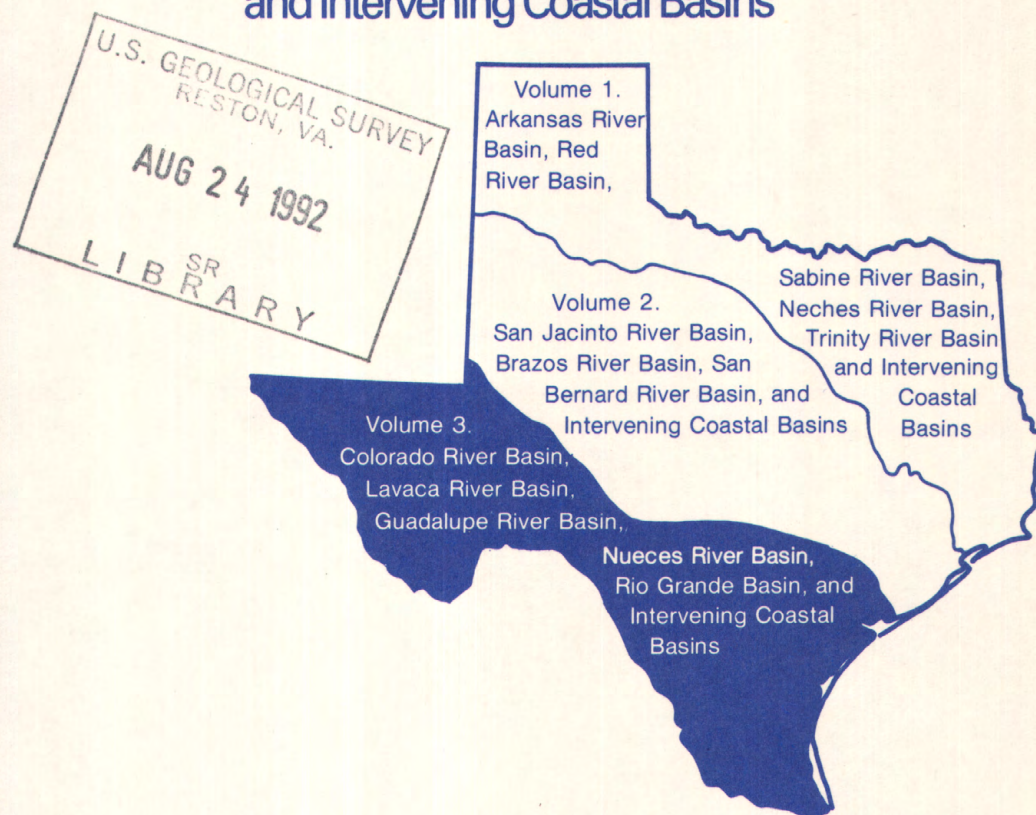


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Water Resources Data Texas Water Year 1991

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



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT TX-91-3
Prepared in cooperation with the State of Texas
and with other agencies

CALENDAR FOR WATER YEAR 1991

1990

OCTOBER							NOVEMBER							DECEMBER						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
	1	2	3	4	5	6					1	2	3							1
7	8	9	10	11	12	13	4	5	6	7	8	9	10	2	3	4	5	6	7	8
14	15	16	17	18	19	20	11	12	13	14	15	16	17	9	10	11	12	13	14	15
21	22	23	24	25	26	27	18	19	20	21	22	23	24	16	17	18	19	20	21	22
28	29	30	31				25	26	27	28	29	30		23	24	25	26	27	28	29
														30	31					

1991

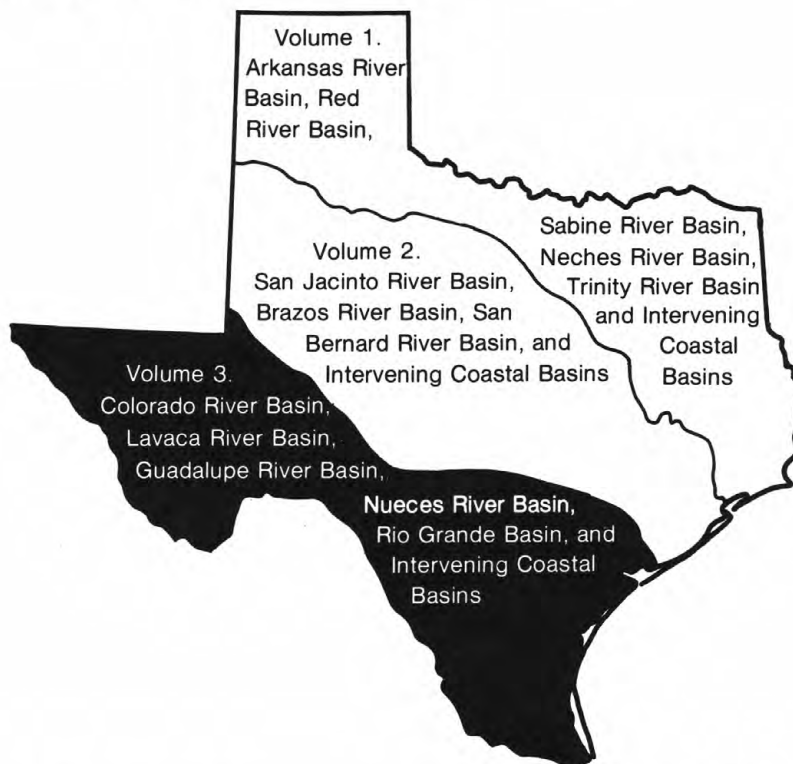
JANUARY							FEBRUARY							MARCH						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
		1	2	3	4	5						1	2						1	2
6	7	8	9	10	11	12	3	4	5	6	7	8	9	5	4	5	6	7	8	9
13	14	15	16	17	18	19	10	11	12	13	14	15	16	10	11	12	13	14	15	16
20	21	22	23	24	25	26	17	18	19	20	21	22	23	17	18	19	20	21	22	23
27	28	29	30	31			24	25	26	27	28			24	25	26	27	28	29	30
														31						
APRIL							MAY							JUNE						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
	1	2	3	4	5	6				1	2	3	4							1
7	8	9	10	11	12	13	5	6	7	8	9	10	11	2	3	4	5	6	7	8
14	15	16	17	18	19	20	12	13	14	15	16	17	18	9	10	11	12	13	14	15
21	22	23	24	25	26	27	19	20	21	22	23	24	25	16	17	18	19	20	21	22
28	29	30					26	27	28	29	30	31		23	24	25	26	27	28	29
														30						
JULY							AUGUST							SEPTEMBER						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
	1	2	3	4	5	6					1	2	3	1	2	3	4	5	6	7
7	8	9	10	11	12	13	4	5	6	7	8	9	10	8	9	10	11	12	13	14
14	15	16	17	18	19	20	11	12	13	14	15	16	17	15	16	17	18	19	20	21
21	22	23	24	25	26	27	18	19	20	21	22	23	24	22	23	24	25	26	27	28
28	29	30	31				25	26	27	28	29	30	31	29	30					



Water Resources Data Texas Water Year 1991

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

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



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT TX-91-3
Prepared in cooperation with the State of Texas
and with other agencies

UNITED STATES DEPARTMENT OF THE INTERIOR

MANUEL LUJAN, JR., Secretary

GEOLOGICAL SURVEY

Dallas L. Peck, Director

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PREFACE

This edition 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-water collection networks in each State, Puerto Rico, and the Trust Territories. These records of streamflow, ground-water levels, and quality of water providing the hydrologic information needed by Federal, State, and local agencies, and the private sector for developing and managing land and water resources in Texas are contained in 4 volumes:

- Volume 1. Arkansas River Basin, Red River Basin, Sabine River Basin, Neches River Basin, Trinity River Basin, and intervening 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
- Volume 4. Ground-Water Data

This report is the culmination of a concerted effort by dedicated personnel of the U.S. Geological Survey who collected, compiled, analyzed, verified, and organized the data, and who typed, edited, and assembled the report. In addition to the authors, who had the primary responsibility for assuring that the information contained herein is accurate, complete, and adheres to Geological Survey policy and established guidelines, most of the data were collected, computed, and processed from Subdistrict and field area offices. The following supervised the collection, processing, and tabulation of the data:

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This report was prepared in cooperation with the State of Texas and other agencies under the supervision of Richard O. Hawkinson, District Chief.

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16. Abstract (limit: 200 words) Water-resources data for the 1991 water year for Texas are presented in four volumes, and consist of records of stage, discharge, and water quality of streams and canals; and stage, contents, and water quality of lakes and reservoirs; and water levels and water quality of ground-water wells. Volume 3 contains records for water discharge at 145 gaging stations; stage only at 6 gaging stations; stage and contents at 14 lakes and reservoirs; water quality at 84 gaging stations; and data for 25 partial-record stations. Also included are lists of discontinued surface-water discharge or stage-only stations and discontinued surface-water-quality stations; crest-stage and flood-hydrograph partial-record stations, reconnaissance partial-record stations, and low-flow partial-record stations. Additional water data were collected at various sites, not part of the systematic data-collection program, and are published as miscellaneous measurements. Records for a few pertinent stations in bordering States also are included. These data represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating Federal, State, and local agencies in Texas.			
17. Document Analysis			
a. Descriptors *Texas, *Hydrologic data, *Surface water, *Water quality, Flow rate, Gaging Stations, Lakes, Reservoirs, Chemical analyses, Sediments, Water temperature, Sampling sites, Water levels, Water analyses			
b. Identifiers/Open-Ended Terms			
c. COSATI Field/Group			
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GAGING STATIONS, IN DOWNSTREAM ORDER,
FOR WHICH RECORDS ARE PUBLISHED IN THIS VOLUME

[Type of data collected: (d) discharge; (c) chemical; (b) biological; (t) water temperature;
(s) sediment; (e) elevation, gage heights, or contents.]

	Station number	Page
WESTERN GULF OF MEXICO BASINS		
COLORADO RIVER BASIN		
Colorado River near Gail (d) -----	08117995	27
Colorado River near Cuthbert (d) (c) (t) -----	08120700	28
Colorado River at Colorado City (d) (c) (t) -----	08121000	34
Morgan Creek:		
Lake Colorado City near Colorado City (e) -----	08123000	38
Beals Creek near Westbrook (d) (c) (t) -----	08123800	39
Colorado River above Silver (d) (c) (b) (t) (s) -----	08123850	45
E.V. Spence Reservoir near Robert Lee (e) -----	08123950	51
Colorado River at Robert Lee (d) -----	08124000	52
Colorado River near Ballinger (d) (c) (t) -----	08126380	53
Elm Creek at Ballinger (d) (c) (t) -----	08127000	57
South Concho River (head of Concho River):		
South Concho River at Christoval (d) -----	08128000	61
Middle Concho River above Tankersley (d) -----	08128400	62
Spring Creek above Tankersley (d) -----	08129300	63
Dove Creek at Knickerbocker (d) -----	08130500	64
Twin Buttes Reservoir near San Angelo (e) -----	08131200	65
South Concho River:		
Lake Nasworthy near San Angelo (e) -----	08132000	66
South Concho River:		
North Concho River at Sterling City (e) -----	08133500	67
North Concho River near Carlsbad (d) -----	08134000	68
O.C. Fisher Lake at San Angelo (e) -----	08134500	69
Concho River at San Angelo (d) -----	08136000	70
Concho River at Paint Rock (d) (c) (b) (t) -----	08136500	71
O.H. Ivie Reservoir near Voss (e) -----	08136600	74
Colorado River near Stacy (d) (c) (t) -----	08136700	75
Colorado River at Winchell (d) (c) (b) (t) -----	08138000	78
Pecan Bayou:		
Jim Ned Creek:		
Hords Creek:		
Hords Creek Lake near Valera (e) -----	08141000	83
Pecan Bayou near Mullin (d) (c) (t) -----	08143600	84
San Saba River at Menard (d) -----	08144500	87
San Saba River near Brady (d) -----	08144600	88
San Saba River at San Saba (d) -----	08146000	89
Colorado River near San Saba (d) (c) (b) (t) (s) -----	08147000	90
Colorado River:		
Llano River near Junction (d) -----	08150000	94
Llano River near Mason (d) -----	08150700	95
Beaver Creek near Mason (d) -----	08150800	96
Llano River at Llano (d) -----	08151500	97
Sandy Creek near Kingsland (d) -----	08152000	98
Pedernales River near Fredericksburg (d) -----	08152900	99
Pedernales River near Johnson City (d) -----	08153500	100
Colorado River below Mansfield Dam, Austin (c) (b) (t) -----	08154510	101
Bull Creek at Loop 360 near Austin (d) (c) (b) (t) -----	08154700	102
Lake Austin at Austin (c) (t) -----	08154900	104
Colorado River (Town Lake):		
Barton Creek at State Highway 71 near Oak Hill (d) (c) (b) (t) -----	08155200	113
Barton Creek at Barton Creek Boulevard near Austin (c) (b) (t) -----	08155220	116
Barton Creek at Lost Creek Boulevard, Austin (d) (c) (b) (t) -----	08155240	117
Barton Creek at Loop 360, Austin (d) (c) (b) (t) -----	08155300	120
Barton Springs at Austin (d) (c) (b) (t) -----	08155500	123
Barton Creek below Barton Springs at Austin (c) (b) -----	08155505	127
Shoal Creek at 12th Street, Austin (d) (c) (b) (t) -----	08156800	128
Town Lake at Austin (c) (t) -----	08157900	131

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

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	Station number	Page
WESTERN GULF OF MEXICO BASINS—Continued		
COLORADO RIVER BASIN—Continued		
Colorado River:		
Colorado River at Austin (d) (c) (b) (t) (s) -----	08158000	147
Walnut Creek at Webberville Road, Austin (d) (c) (b) (t) -----	08158600	151
Colorado River below Austin (c) (b) (t) -----	08158650	154
Onion Creek near Driftwood (d) (c) (b) (t) -----	08158700	155
Bear Creek below Farm Road 1826 near Driftwood (d) (c) (b) (t) -----	08158810	157
Slaughter Creek at Farm Road 1826 near Austin (d) (c) (b) (t) -----	08158840	159
Williamson Creek at Oak Hill (d) (c) (b) (t) -----	08158920	161
Onion Creek at U.S. Highway 183 near Austin (d) -----	08159000	164
Colorado River at Bastrop (d) -----	08159200	165
Colorado River above LaGrange (d) -----	08160400	174
Cummins Creek:		
Redgate Creek near Columbus (d) -----	08160800	175
Colorado River at Columbus (d) -----	08161000	176
Colorado River at Wharton (d) (c) (b) (t) (s) -----	08162000	177
Colorado River near Bay City (d) -----	08162500	182
TRES PALACIOS RIVER BASIN		
Tres Palacios River near Midfield (d) -----	08162600	183
LAVACA RIVER BASIN		
Lavaca River at Hallettsville (d) -----	08163500	184
Lavaca River near Edna (d) (c) (b) (t) (s) -----	08164000	185
Navidad River near Hallettsville (d) -----	08164300	188
Sandy Creek near Louise (d) (c) (b) (t) -----	08164450	189
Mustang Creek:		
West Mustang Creek near Ganado (d) (c) (b) (t) -----	08164503	191
Lake Texana near Edna (c) (b) (t) -----	08164525	193
GARCITAS CREEK BASIN		
Garcitas Creek near Inez (d) -----	08164600	200
PLACEDO CREEK BASIN		
Placedo Creek near Placedo (d) -----	08164800	201
GUADALUPE RIVER BASIN		
Guadalupe River:		
North Fork Guadalupe River near Hunt (d) -----	08165300	202
Guadalupe River at Hunt (d) -----	08165500	203
Johnson Creek near Ingram (d) -----	08166000	204
Guadalupe River at Kerrville (d) -----	08166200	205
Guadalupe River at Comfort (d) -----	08167000	206
Guadalupe River near Spring Branch (d) (c) (b) (t) -----	08167500	207
Canyon Lake near New Braunfels (e) (c) (b) (t) -----	08167700	210
Guadalupe River at Sattler (d) (c) (b) (t) -----	08167800	226
Guadalupe River above Comal River at New Braunfels (d) -----	08168500	228
Comal River at New Braunfels (d) -----	08169000	229
Guadalupe River below New Braunfels (c) (b) (t) -----	08169580	230
San Marcos River spring flow at San Marcos (d) -----	08170000	232
Blanco River at Wimberley (d) (c) (b) (t) -----	08171000	233
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San Marcos River at Luling (d) (c) (t) -----	08172000	237
Plum Creek at Lockhart (d) -----	08172400	240
Plum Creek near Luling (d) -----	08173000	241
Sandies Creek near Westhoff (d) (c) (t) -----	08175000	242
Guadalupe River at Cuero (d) -----	08175800	244
Guadalupe River at Victoria (d) (c) (b) (t) (s) -----	08176500	245
Coleta Creek:		
Fifteenmile Creek near Weser (e) -----	08176550	248
Coleta Creek at Arnold Road Crossing near Schroeder (d) -----	08176900	249
Coleta Creek Reservoir inflow (Guadalupe Diversion) near Schroeder (d) -----	08176990	250
Perdido Creek at Farm Road 622 near Fannin (d) -----	08177300	251
Coleta Creek Reservoir (Condenser No. 1) near Fannin (t) -----	08177360	252
Coleta Creek Reservoir near Victoria (e) -----	08177400	254
Coleta Creek Reservoir (Outflow) near Victoria (t) -----	08177410	255
Coleta Creek near Victoria (d) -----	08177500	257

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

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WESTERN GULF OF MEXICO BASINS—Continued		
GUADALUPE RIVER BASIN—Continued		
Guadalupe River:		
San Antonio River:		
Olmos Creek at Dresden Drive, San Antonio (e) (c) (b) (t) -----	08177700	258
Olmos Reservoir at San Antonio (c) (b) (t) -----	08177800	261
San Antonio River at Hildebrand Avenue, San Antonio (c) (b) (t) -----	08177820	262
San Antonio River at Woodlawn Avenue, San Antonio (c) (b) (t) -----	08177860	264
San Antonio River at San Antonio (d) (c) (b) (t) -----	08178000	266
San Antonio River at Loop 410 at San Antonio (d) (c) (b) (t) -----	08178565	269
Salado Creek (upper station) at San Antonio (d) (c) (b) (t) -----	08178700	272
Salado Creek (lower station) at San Antonio (d) (c) (b) (t) -----	08178800	276
Medina River at Bandera (d) (c) (b) (t) -----	08178880	287
Medina Lake near San Antonio (e) -----	08179500	290
Diversion Lake:		
Medina Canal near Riomedina (d) -----	08180000	291
Medina River at Lacoste (d) (c) (b) (t) -----	08180640	292
Medina River near Macdona (d) -----	08180700	301
Medio Creek at Pearsall Road at San Antonio (d) (c) (b) (t) -----	08180750	302
Medina River near Somerset (d) -----	08180800	311
Culebra Creek:		
Helotes Creek at Helotes (d) (c) (b) (t) -----	08181400	312
Leon Creek at I.H. 35 at San Antonio (d) (c) (b) (t) -----	08181480	315
Medina River at San Antonio (d) (c) (b) (t) -----	08181500	324
San Antonio River near Elmendorf (d) (c) (b) (t) -----	08181800	333
San Antonio River near Falls City (d) (c) (b) (t) -----	08183500	342
Cibolo Creek near Boerne (d) -----	08183900	351
Cibolo Creek at Selma (d) -----	08185000	352
Cibolo Creek near Falls City (d) (c) (b) (t) -----	08186000	353
San Antonio River at Goliad (d) (c) (b) (t) (s) -----	08188500	359
Guadalupe-Blanco River Authority Calhoun Canal Flume No. 1 near Long Mott (d) -----	08188600	363
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COPANO CREEK BASIN		
Copano Creek near Refugio (d) -----	08189200	368
MISSION RIVER BASIN		
Mission River at Refugio (d) (c) (b) (t) (s) -----	08189500	369
ARANSAS RIVER BASIN		
Aransas River near Skidmore (d) -----	08189700	372
Chiltipin Creek at Sinton (d) -----	08189800	373
NUECES RIVER BASIN		
Nueces River at Laguna (d) (c) (b) (t) -----	08190000	374
West Nueces River near Brackettville (d) -----	08190500	377
Nueces River below Uvalde (d) -----	08192000	378
Nueces River near Asherton (d) -----	08193000	379
Nueces River at Cotulla (d) -----	08194000	380
San Casimiro Creek near Freer (d) -----	08194200	381
Nueces River near Tilden (d) -----	08194500	382
Frio River at Concan (d) (c) (b) (t) -----	08195000	383
Dry Frio River near Reagan Wells (d) (c) (b) (t) -----	08196000	386
Frio River below Dry Frio River near Uvalde (d) -----	08197500	389
Sabinal River near Sabinal (d) (c) (b) (t) -----	08198000	390
Sabinal River at Sabinal (d) -----	08198500	393
Hondo Creek near Tarpley (d) (c) (b) (t) -----	08200000	394
Hondo Creek at King Waterhole near Hondo (d) -----	08200700	397
Seco Creek at Miller Ranch near Utopia (d) (c) (b) (t) -----	08201500	398
Seco Creek at Rowe Ranch near D'Hanis (d) -----	08202700	401
Frio River near Derby (d) -----	08205500	402
Frio River at Tilden (d) -----	08206600	403
San Miguel Creek near Tilden (d) -----	08206700	404
Choke Canyon Reservoir near Three Rivers (e) -----	08206900	405
Atascosa River at Whitsett (d) -----	08208000	406
Nueces River near Three Rivers (d) (c) (b) (t) -----	08210000	407
Lake Corpus Christi near Mathis (e) -----	08210500	410

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

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	Station number	Page
WESTERN GULF OF MEXICO BASINS—Continued		
NUECES RIVER BASIN--Continued		
Nueces River near Mathis (d) (c) (t) -----	08211000	412
OSO CREEK BASIN		
Oso Creek at Corpus Christi (d) -----	08211520	415
RIO GRANDE BASIN		
Rio Grande at El Paso (c) (t) -----	08364000	416
Rio Grande at Foster Ranch near Langtry (c) (b) (t) (s) -----	08377200	417
Pecos River at Red Bluff, NM (d) -----	08407500	419
Delaware River near Red Bluff, NM (d) -----	08408500	422
Red Bluff Reservoir near Orla (e) -----	08410000	423
Pecos River near Orla (d) (c) (t) -----	08412500	424
Pecos River near Girvin (d) -----	08446500	428
Pecos River near Langtry (c) (b) (t) (s) -----	08447410	429
Devils River at Pafford Crossing near Comstock (c) (b) (t) (s) -----	08449400	431
Rio Grande below Amistad Dam near Del Rio (c) (t) -----	08450900	433
Rio Grande at Laredo (c) (t) -----	08459000	434
Rio Grande below Falcon Dam (c) (t) -----	08461300	435
Rio Grande at Fort Ringgold, Rio Grande City (c) (t) -----	08464700	436
Rio Grande near Los Ebanos (c) (t) -----	08466300	437
Rio Grande below Anzalduas Dam (c) (t) -----	08469200	438
Arroyo Colorado at Harlingen (c) (b) (t) (s) -----	08470400	440
Rio Grande near Brownsville (c) (b) (t) (s) -----	08475000	442

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

The following continuous-record surface-water discharge or stage-only stations (gaging stations) in Texas have been discontinued. Daily streamflow or stage records were collected and published for the period of record, expressed in water years, shown for each station. Those stations with an asterisk (*) after the station number are currently operated as crest-stage partial-record stations. Discontinued project stations with less than 3 years of record have not been included. Information regarding these stations may be obtained from the District Office at the address given on the back side of the title page of this report.

[Letters after station name designate the type of data collected: (d) discharge, (e) elevation (stage only).]

Station name	Station number	Drainage area (mi ²)	Period of record (water years)
Bull Creek near Ira (d)	08118500	26.30	1947-53
Bluff Creek near Ira (d)	08119000	42.60	1958-62
Colorado River near Ira (d)	08119500	3,483	1948-65
Deep Creek near Dunn (d)	08120500	198	1959-89
Morgan Creek near Westbrook (d)	08121500	273	1953-86
Graze Creek near Westbrook (d)	08122000	21.70	1954-63
Morgan Creek near Colorado City (d)	08122500	313	1947-49
Champion Creek near Colorado City (d)	08123500	198	1948-59
Beals Creek above Big Spring (d)	08123650	9,319	1959-79
Beals Creek at Big Spring (d)	08123700	9,341	1957-58
Beals Creek near Coahoma (d)	08123720	9,383	1983-88
Colorado River near Silver (d)	08123900	14,997	1957-70
Colorado River at Ballinger (d)	08126500	16,420	1907-79
South Concho Irrigation Co. Canal at Christoval (d)	08127500	N/A	1940-83
Middle Concho River near Tankersley (d)	08128500	2,653	1930-61
Dove Creek Springs near Knickerbocker (d)	08129500*	N/A	1944-58
Spring Creek near Tankersley (d)	08131000	699	1930-60
Pecan Creek near San Angelo (d)	08131400	81.10	1961-86
Tom Green Co. WCID No. 1 Canal near San Angelo (d)	08131600	N/A	1963-81
South Concho River at San Angelo (d)	08132500	3,866	1931-53
North Concho River at San Angelo (d)	08135000	1,525	1915-31, 1947-90
Mukewater Creek at Trickham (d)	08137500	70	1952-73
Deep Creek near Mercury (d)	08139500	43.90	1954-73
Dry Prong Deep Creek near Mercury (d)	08140500	8.31	1951-71
Pecan Bayou near Cross Cut (d)	08140700	532	1968-78
Jim Ned Creek near Coleman (d)	08140800	333	1965-80
Hords Creek near Valera	08141500	54.20	1947-90
Hords Creek near Coleman (d)	08142000*	107	1941-70
Brown County WID No. 1 Canal near Brownwood (d)	08142500	N/A	1950-83
Pecan Bayou at Brownwood (d)	08143500	1,660	1924-28, 1929-83
Noyes Canal at Menard (d)	08144000	N/A	1924-83
Brady Creek near Eden (d)	08144800	101	1962-85
Brady Creek at Brady (d)	08145000	588	1939-86
Lake Buchanan near Burnet (e)	08148000	31,910	1937-89
North Llano River near Junction (d)	08148500	914	1915-77
Llano River near Castell (d)	08151000	3,747	1924-39
Pedernales River at Stonewall (d)	08153000	647	1925-34
Pedernales River near Spicewood (d)	08154000	1,294	1924-37
Lake Travis near Austin (d)	08154500	38,755	1940-89
Colorado River below Mansfield Dam, Austin (d)	08154510	38,755	1975-90
Barton Creek near Camp Craft Road near Austin (d)	08155260	109	1983-89
Shoal Creek at Northwest Park at Austin (d)	08156700	6.52	1975-84
Waller Creek at 38th Street, Austin (d)	08157000	2.31	1955-80
Waller Creek at 23rd Street, Austin (d)	08157500	4.13	1955-80
Boggy Creek at U.S. Highway 183, Austin (d)	08158050*	13.10	1976-86
Walnut Creek at Farm-Market 1325 near Austin (d)	08158100	12.60	1986
Walnut Creek at Dessau Road, Austin (d)	08158200	26.20	1986
Little Walnut Creek at Georgian Drive, Austin (d)	08158380	5.22	1986
Onion Creek at Buda (d)	08158800	N/A	1979-83
Bear Creek at Farm-Market Road 1626 near Manchaca (d)	08158820	N/A	1982-83
Little Bear Creek at Farm-Market Road 1626 near Manchaca (d)	08158825	N/A	1979-80

Station name	Station number	Drainage area (mi ²)	Period of record (water years)
Boggy Creek (South) at Circle S Road, Austin (d)	08158880	3.58	1985-86
Williamson Creek at Manchaca Road, Austin (d)	08158930	19	1984
Williamson Creek at Jimmy Clay Road, Austin (d)	08158970	27.60	1976-86
Wilbarger Creek near Pflugerville (d)	08159150	4.61	1964-80
Big Sandy Creek near McDade (d)	08159165	38.70	1979-85
Big Sandy Creek near Elgin (d)	08159170	63.80	1979-85
Colorado River at Smithville (d)	08159500	39,880	1931-75
Dry Creek at Buescher Lake near Smithville (d)	08160000	1.48	1940-66
Colorado River at La Grange (d)	08160500	40,430	1939-55
Colorado River above Columbus (d)	08160700	41,403	1984-85
Colorado River at Matagorda (e)	08162504	42,240	1977-82
Colorado River near Tiger Island Cut near Matagorda (e)	08162508	N/A	1977-82
Culver Cut near Matagorda (e)	08162512	N/A	1977-82
Matagorda Bay near Matagorda Peninsula near Matagorda (e)	08162515	N/A	1977-82
Navidad River near Speaks (d)	08164350	437	1982-89
Navidad River near Ganado (d)	08164500	826	1939-80
Lavaca River near Lolita (e)	08164530	N/A	1973-82
Lavaca River near Vanderbilt (e)	08164555	N/A	1974-82
Saluria Bayou near Port O'Connor (e)	08164985	N/A	1971-82
Guadalupe River above Bear Creek at Kerrville (d)	08166140	N/A	1978-86
Guadalupe River near Comfort (d)	08166500	762	1918-32
Rebecca Creek near Spring Branch (d)	08167600	10.90	1960-79
Guadalupe River at New Braunfels (d)	08169500*	1,652	1915-27
San Marcos River at San Marcos (d)	08170500	93	1915-21
Plum Creek near Lockhart (d)	08172500	184	1925-30
San Marcos River at Ottine (d)	08173500	1,249	1915-43
Peach Creek below Dilworth (d)	08174600	460	1960-79
Guadalupe River below Cuero (d)	08176000	4,923	1903-06
			1917-19
			1921-35
Coleta Creek near Schroeder (d)	08177000	369	1930-33
			1953-79
West Elm Creek at San Antonio (d)	08178640	2.45	1986
Medina River near Pipe Creek (d)	08179000	474	1923-35
			1953-82
Red Bluff Creek near Pipe Creek (d)	08179100	56.30	1956-81
Medina River near Riomedina (d)	08180500	650	1924-26
			1931
			1953-73
Ranch Creek near Helotes (d)	08181410		1978
Leon Creek Tributary at Kelly Air Force Base (d)	08181450	1.19	1969-79
Calaveras Creek near Elmendorf (d)	08182500	77.20	1955-71
San Antonio River at Calaveras (d)	08183000	1,786	1918-25
Cibolo Creek near Bulverde (d)	08184000	198	1946-65
Cibolo Creek above Bracken (d)	08184500	250	1946-51
Cibolo Creek at Sutherland Springs (d)	08185500	665	1924-29
Ecletto Creek near Runge (d)	08186500	239	1962-89
Escondido Creek at Kenedy (d)	08187500	72.40	1955-73
Dry Escondido Creek near Kenedy (d)	08188000	9.43	1954-59
Guadalupe-Blanco River Authority Calhoun Canal-Flume No. 2 near Long Mott (d)	08188750	N/A	1972-86
Guadalupe River at State Hwy. 35 near Tivoli (e)	08188810	N/A	1975-82
Medio Creek near Beeville (d)	08189300	204	1962-77
Nueces River near Uvalde (d)	08191500	1,930	1928-39
Nueces River near Cinonia (d)	08192500	2,150	1915-25
Nueces River at Simmons (d)	08194600	8,561	1965-77
Dry Frio River at Knippa (d)	08196500	179	1953
Frio River near Frio Town (d)	08199700	1,460	1924-27
Hondo Creek near Hondo (d)	08200500	132	1953-64
Seco Creek near Utopia (d)	08202000	53.20	1953-61
Seco Creek near D'Hanis (d)	08202500	87.40	1953-64
Leona River Spring Flow near Uvalde (d)	08204000	N/A	1939-65

Station name	Station number	Drainage area (mi ²)	Period of record (water years)
Leona River near Divot (d)	08204500	565	1924-29
Frio River at Calliham (d)	08207000	5,491	1925-26 1932-81
Atascosa River near McCoy (d)	08207500	530	1951-57
Lucas Creek near Pleasanton (d)	08207700	32.80	1967-74
Ramirena Creek near George West (d)	08210300	84.40	1968-72
Lagarto Creek near George West (d)	08210400	155	1972-89
Nueces River below Mathis (d)	08211100	16,726	1966-67
Nueces River above Calallen (d)	08211200	16,772	1966-67
San Diego Creek at Alice (d)	08211800	319	1972-90
San Fernando Creek at Alice (d)	08211900	507	1965-87
San Fernando Creek near Alice (d)	08212000	N/A	1962-63
Los Olmos Creek near Falfurrias (d)	08212400	480	1967-83
Franklin Canal at El Paso	08355550	N/A	1969-72
McKelligon Canyon at El Paso (d)	08365600	2.30	1958-77
Inlet to Fort Bliss Sump at El Paso (d)	08365700	3.50	1961
Government Ditch at El Paso (d)	08365800	6.40	1958-77
Riverside Canal near Socorro (d)	08366400	N/A	1969-72
Tornillo Drain at mouth near Tornillo (d)	08368000	N/A	1969-72
Tornillo Canal near Tornillo (d)	08368300	N/A	1969-72
Hudspeth Feeder Canal near Tornillo (d)	08368900	N/A	1969-72
Cibola Creek near Presidio (d)	08373200	276	1972-77
Alamito Creek near Presidio (d)	08374000	1,504	1932-71
Sanderson Canyon at Sanderson (d)	08376300	195	1968-80
Salt Screwbean Draw near Orla (d)	08411500	464	1939-40 1944-57
Pecos River near Mentone (d)	08414000	21,650	1922-26 1969-73
Reeves County WID No. 2 Canal near Mentone (d)	08414500	N/A	1942-57 1970-90
Ward County WID No. 3 Canal near Barstow (d)	08415000	N/A	1940-57 1970-90
Pecos River above Barstow (d)	08416500	21,800	1916-21
Ward County Irrigation District No. 1 Canal near Barstow (d)	08418000	N/A	1922-25 1939-57 1970-90
Madera Canyon near Toyahvale (d)	08424500	53.80	1932-49
Phantom Lake Spring near Toyahvale (d)	08425500	N/A	1932-33 1949-66
Giffin Springs at Toyahvale (d)	08427000	N/A	1932-33
San Solomon Springs at Toyahvale (d)	08427500	N/A	1931-33 1941-65
West Sandia Spring at Balmorhea (d)	08429000	N/A	1931-33
East Sandia Spring at Balmorhea (d)	08430000	N/A	1931-33
Toyah Creek near Pecos (d)	08431000	1,024	1940 1944-45
Salt Draw near Pecos (d)	08431500	1,882	1940 1944-45
Limpia Creek above Fort Davis (d)	08431700	52.40	1965-86
Limpia Creek below Fort Davis (d)	08431800	227	1961-77
Limpia Creek near Fort Davis (d)	08432000	303	1925-26 1927-32
Barrilla Draw near Saragosa (d)	08433000	612	1925-26 1932 1976-83
Toyah Creek below Toyah Lake near Pecos (d)	08434000	3,709	1940-51
Grandfalls-Big Valley Canal near Barstow (d)	08435000	N/A	1939-57 1970-76
Pecos River below Barstow (d)	08435500	25,980	1939-40
Toronto Creek near Alpine (d)	08435600	27.90	1971-76
Alpine Creek at Alpine (d)	08435620	18.10	1971-76
Moss Creek near Alpine (d)	08435660	11.30	1971-76

Station name	Station number	Drainage area (mi ²)	Period of record (water years)
Sunny Glen Canyon near Alpine (d)	08435700	29.70	1968-77
Coyanosa Draw near Fort Stockton (d)	08435800	1,182	1964-77
Pecos County WID No. 2 (Upper Div) Canal near Grandfalls (d)	08436500	N/A	1922-25 1939-57 1970-90
Pecos County WID No. 2 Canal near Imperial (d)	08437500	N/A	1940-90
Pecos County WID No. 3 Canal near Imperial (d)	08437600	N/A	1970-90
Ward County WID No. 2 Canal near Grandfalls (d)	08437700	N/A	1939-57 1970-90
Pecos River near Grandfalls (d)	08438100	27,810	1916-26
Comanche Springs at Fort Stockton (d)	08444500	N/A	1941-64
Pecos River near Sheffield (d)	08447000	31,600	1922-25 1940-49
Independence Creek near Sheffield (d)	08447020	763	1974-85
Pecos River near Langtry (d)	08447410	35,179	1976-78 1981-85
Devils River near Juno (d)	08449000	2,730	1925-49 1964-73
Devils River at Pafford Crossing near Comstock (d)	08449400	3,961	1978-85
Pinto Creek near Del Rio (d)	08455000	249	1929-68 1969 1971

DISCONTINUED SURFACE-WATER-QUALITY STATIONS

The following stations were discontinued as continuous-record surface-water-quality stations prior to the 1991 water year. Daily records of specific conductance, temperature, sediment, color, pH, dissolved oxygen, or chloride were collected and published for the record shown for each station.

[SC, specific conductance; T, temperature; S, sediment; C, color; pH, pH; DO, dissolved oxygen; Cl, chloride.]

Station name	Station number	Drainage area (mi ²)	Type of record	Period of record (water years)
Colorado River above Bull Creek near Knapp	08118200	N/A	SC, T	1950-52
Bull Creek near Ira	08118500	26.30	SC, T	1950
Bluff Creek near Ira	08119000	42.60	SC, T	1950
Colorado River near Ira	08119500	3,483	SC, T	1950-52
				1958-70
				1974-82
			Cl	1951-52
Deep Creek near Dunn	08120500	198	SC, T	1953-54
Morgan Creek near Westbrook	08121500	273	T	1954-55
Graze Creek near Westbrook	08122000	21.70	T	1954-55
Morgan Creek near Colorado City	08122500	313	SC, T	1947-49
Lake Colorado City near Colorado City	08123000	340	T	1954-55
Beals Creek above Big Spring	08123650	9,319	SC, T	1973-78
Beals Creek near Big Spring	08123700	9,341	SC, T	1956-57
Beals Creek near Coahoma	08123720	9,383	SC, T	1983-88
Colorado River near Silver	08123900	14,997	SC, T	1956-68
Colorado River at Robert Lee	08124000	15,307	SC, T	1947-51
			S	1949-51
Oak Creek near Blackwell	08126000	N/A	SC, T	1950
Colorado River at Ballinger	08126500	16,420	SC, T	1961-79
			S	1978-79
Pecan Bayou at Brownwood	08143500	1,660	SC, T	1948-49
San Saba River near San Saba	08145500	N/A	SC, T	1962-65
San Saba River at San Saba	08146000	3,046	SC, T	1962-69
Llano River at Llano	08151500	4,197	SC, T	1979-81
Lake Austin at Austin	08154900	N/A	SC, T	1964-80
Waller Creek at 23rd Street at Austin	08157500	4.13	T	1955-60
Colorado River above Columbus	08160700	41,403	SC, T	1983-85
Colorado River at Columbus	08161000	41,460	SC	1966-73
			T	1957-70
			S	1957-73
Lavaca River near Edna	08164000	817	SC, T	1977-81
Navidad River near Ganado	08164500	826	SC, T	1959-80
Guadalupe River near Spring Branch	08167500	1,315	SC	1942-45
Guadalupe River at Sattler	08167800	1,436	T	1984-87
Blanco River at Wimberley	08171000	355	T	1976-78
Plum Creek near Luling	08173000	309	SC, T	1967-86
Guadalupe River at Victoria	08176500	5,198	SC	1945-81
			T	1950-81
San Antonio River at Loop 419 near San Antonio	08178565	N/A	SC, pH, T, DO	1986-88
Escondido Creek SWS #1 near Kenedy	08187000	3.29	S	1955-65
Guadalupe River at Tivoli	08188800	128	SC, T	1965-82
Mission River at Refugio	08189500	690	SC, T	1961-81
Nueces River at Cotulla	08194000	5,171	SC	1942
Nueces River near Tilden	08194500	8,093	SC, T, S	1949-50
Frio River at Calliham	08207000	5,491	SC, T	1967-81
Nueces River near Three Rivers	08210000	5,427	SC	1941-52
			SC, T	1974-81
			T	1950-52
			S	1950-51
Los Olmos Creek near Falfurrias	08212400	480	SC	1974-81
			T	1974-79
Rio Grande at Fort Quitman	08370500	31,944	SC, T	1974-78
Rio Grande at Foster Ranch near Langtry	08377200	80,742	SC, T	1974-81

Station name	Station number	Drainage area (mi ²)	Type of record	Period of record (water years)
Pecos River below Red Bluff Dam near Orla	08410100	20,720	SC	1937-69
			T	1953-69
Salt Draw near Orla	08411500	464	SC, T	1943-48
Pecos River near Mentone	08414000	21,650	SC	1939
Pecos River at Pecos	08420500	22,100	SC	1939-41
Toyah Creek near Pecos	08431000	1,024	SC	1939-40
				1943-44
Salt Draw near Pecos	08431500	1,882	SC	1939-40
				1943-44
Toyah Creek below Toyah Lake near Pecos	08434000	3,709	SC	1940-50
			CI	1940
Pecos River below Grandfalls	08441500	27,820	SC	1939-42
				1946-56
Pecos River near Girvin	08446500	29,560	SC	1939-41
				1946-47
				1953-82
			T	1953-59
				1964-82
Pecos River near Sheffield	08447000	31,600	SC	1939-41
				1946-47
Pecos River near Langtry	08447410	35,179	SC, T	1970-76
				1980-85
Devils River at Pafford Crossing near Comstock	08449400	3,961	SC, T	1978-85
Rio Grande at Laredo	08459000	132,578	SC	1954-86
			T	1973-76
Rio Grande at Roma	08462500	166,464	SC	1942-43
Rio Grande at Mission Pumping Plant	08468000	N/A	SC	1945-50
Rio Grande at Cameron Co. WID #2 near San Benito	08473800	N/A	SC	1942-43
Rio Grande at Los Fresnos Pumping Plant near Brownsville	08474130	N/A	SC	1945-46
Rio Grande near Brownsville	08475000	176,333	SC	1943-44
				1967-83
			T, S	1966-83

WATER RESOURCES DATA - TEXAS, 1991

VOLUME 3

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

INTRODUCTION

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

This report series includes records of stage, discharge, and water quality of streams and canals; stage, contents, and water quality of lakes and reservoirs. Volume 3 contains records for water discharge at 145 gaging stations; stage only at 6 gaging station; stage and contents at 14 lakes and reservoirs; and water quality at 84 gaging stations. Also included are data for 25 partial-record stations. Additional water data were collected at 7 miscellaneous sites not involved in the systematic data-collection program. The data in this report represent that part of the National Water Data System collected by the U.S. Geological Survey and cooperating State and Federal agencies in Texas.

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

Prior to introduction of this series and for several water years concurrent with it, water resources data for Texas were published in U.S. Geological Survey Water-Supply Papers. Data on stream discharge and stage and on lake or reservoir contents and stage, through September 1960, were published annually under the title "Surface-Water Supply of the United

States, Parts 7 and 8." For the 1961 through 1970 water years, the data were published in two 5-year reports. Data on chemical quality, temperature, and suspended sediment for the 1941 through 1970 water years were published annually under the title "Quality of Surface Waters of the United States," and water levels for the 1935 through 1974 water years were published under the title "Ground-Water Levels in the United States." The above mentioned Water-Supply Papers may be consulted in the libraries of the principal cities of the United States and may be purchased from U.S. Geological Survey, Books and Open-File Reports, Federal Center, Bldg. 41, Box 25425, Denver, CO 80225.

Publications similar to this report are published annually by the Geological Survey for all States. These official Geological Survey reports have an identification number consisting of the two-letter State abbreviation, the last two digits of the water year, and the volume number. For example, this volume is identified as "U.S. Geological Survey Water Data Report TX-91-3." For archiving and general distribution, the reports for the 1971-74 water years also are identified as water-data reports. These water-data reports are for sale in paper copy or may be purchased on microfiche from the National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161. Beginning with the 1990 water year, all water-data reports will also be available on Compact Disc - Read Only Memory (CD-ROM). All data reports published for the current water year for the entire Nation, including Puerto Rico and the Trust Territories, will be reproduced on a single CD-ROM disc.

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) 873-3000. A limited number of CD-ROM discs will be available for sale by the Books & Open-File Reports Section, U.S. Geological Survey, Federal Center, Box 25425, Denver, Colorado 80225.

COOPERATION

Federal agencies that assisted the Geological Survey in the collection of data in this report in the form of funds or services in 1991 are:

- Corps of Engineers, U.S. Army.
- International Boundary and Water Commission, United States and Mexico, U.S. Section.
- U.S. Bureau of Reclamation.

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

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

HYDROLOGIC CONDITIONS

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

Precipitation distribution for water year 1991 did not follow the long-term precipitation pattern. Greater than normal precipitation occurred over the entire State during the current water year. The distribution was fairly uniform. Precipitation departures from normal (1951-80) for the current water year ranged from a high of 135 percent of normal in the Low Rolling Plains climatic division to a low of 107 percent of normal in Southern Texas and the Lower Rio Grande Valley divisions. In East Texas and the Upper Coast divisions, precipitation was 134 percent of normal. In the TransPecos in west Texas, precipitation was 133 percent of normal during the current water year. The remaining four climatic divisions (High Plains, North Central, Edwards Plateau, and South Central) had precipitation departures from 115 to 119 percent above normal for water year 1991.

Precipitation totals for the 10 climatic divisions (fig. 1) for water year 1991 ranged from a high of 61.64 inches in the Upper Coast division to a low of 20.38 inches in the High Plains division. The East Texas division had the second highest precipitation total of 59.86 inches, followed by South Central with 39.60 inches, North Central with 38.34 inches, the Low Rolling Plains with 30.80 inches, the Trans Pecos with 28.77 inches, the Edwards Plateau with 27.38 inches, the Lower Rio Grande Valley with 27.03 inches, and Southern Texas with 24.95 inches for the water year.

All the greatest individual annual rainfall amounts for the current water year occurred in East or Southeast Texas. The greatest maximum monthly precipitation occurred in April at Carthage with a total monthly rainfall of 17.95 inches. The greatest monthly precipitation totals for 10 months of the water year were recorded in East or Southeast Texas.

Streamflow during the current water year did not follow normal precipitation patterns. Streamflow was above normal (within the highest 25 percent) in East and Southeast Texas and in the Red River basin in extreme North Central Texas. Streamflow was near normal in all other basins.

Conservation storage in 75 selected reservoirs throughout the State, with a combined conservation

capacity of 34,570,000 acre-feet, increased from 85 percent of conservation capacity at the end of water year 1990, to 87 percent at the end of water year 1991. Records from the individual reservoirs indicate that storage increased in 41, decreased in 25, and remained the same in 9.

The area for which water-resources data are presented in volume 3 includes the entire southwestern one-half of the State, extending from the western tip of the State to the central and lower Texas Gulf Coast. Normal annual precipitation ranges from less than 8 inches in parts of west Texas to more than 40 inches along the middle Texas Gulf Coast. Average annual runoff was less than 0.1 inch in parts of west Texas to more than 10 inches in some places along the Texas Gulf Coast. The area described in volume 3 and the location of selected streamflow and water-quality stations in the area are shown in figure 2.

Streamflow

Streamflow during the current water year for the area covered by volume 3 was generally near normal, except for isolated areas. Four of six selected streamflow stations in the area had normal streamflow and two stations (Nueces River near Three Rivers and Pecos River near Girvin) had below normal streamflow. Precipitation for the area covered by volume 3 was above normal for the water year. A comparison of streamflow for water year 1991 with streamflow for the period of record at the six selected stations (fig. 2), for which data are included in volume 3, is presented in table 1.

At the four long-term hydrologic index stations in the State, streamflow during water year 1991 was normal to above normal. Monthly mean discharges and the median of the long-term monthly means for water years 1951-80 for four long-term hydrologic index stations

Table 1.—Streamflow at six selected stations for water year 1991

Station no. and name	Discharge during 1991 water year (cubic feet per second)			Discharge during period of record (cubic feet per second)		
	Max.	Min.	Avg.	Max.	Min.	Avg.
<u>Colorado River basin</u>						
08134000 North Concho River near Carlsbad, Tex. ^{2/}	1,000	0	5.56	94,600	0	31.5 (1925-91)
08147000 Colorado River near San Saba, Tex. ^{1/}	13,900	41	461	224,000	0	657 (1969-91)
<u>Guadalupe River basin</u>						
08167500 Guadalupe River near Spring Branch, Tex. ^{2/}	5,560	69	228	160,000	0	328 (1923-91)
08176500 Guadalupe River at Victoria, Tex.	17,000	419	1,650	179,000	14.0	1,926 (1935-91)
<u>Nueces River basin</u>						
08210000 Nueces River near Three Rivers, Tex. ^{1/}	2,610	36	169	141,000	0	416 (1983-91)
<u>Rio Grande basin</u>						
08446500 Pecos River near Girvin, Tex.	171	7.2	36.2	20,000	1.9	78.8 (1940-91)

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

^{2/} Hydrologic index station.

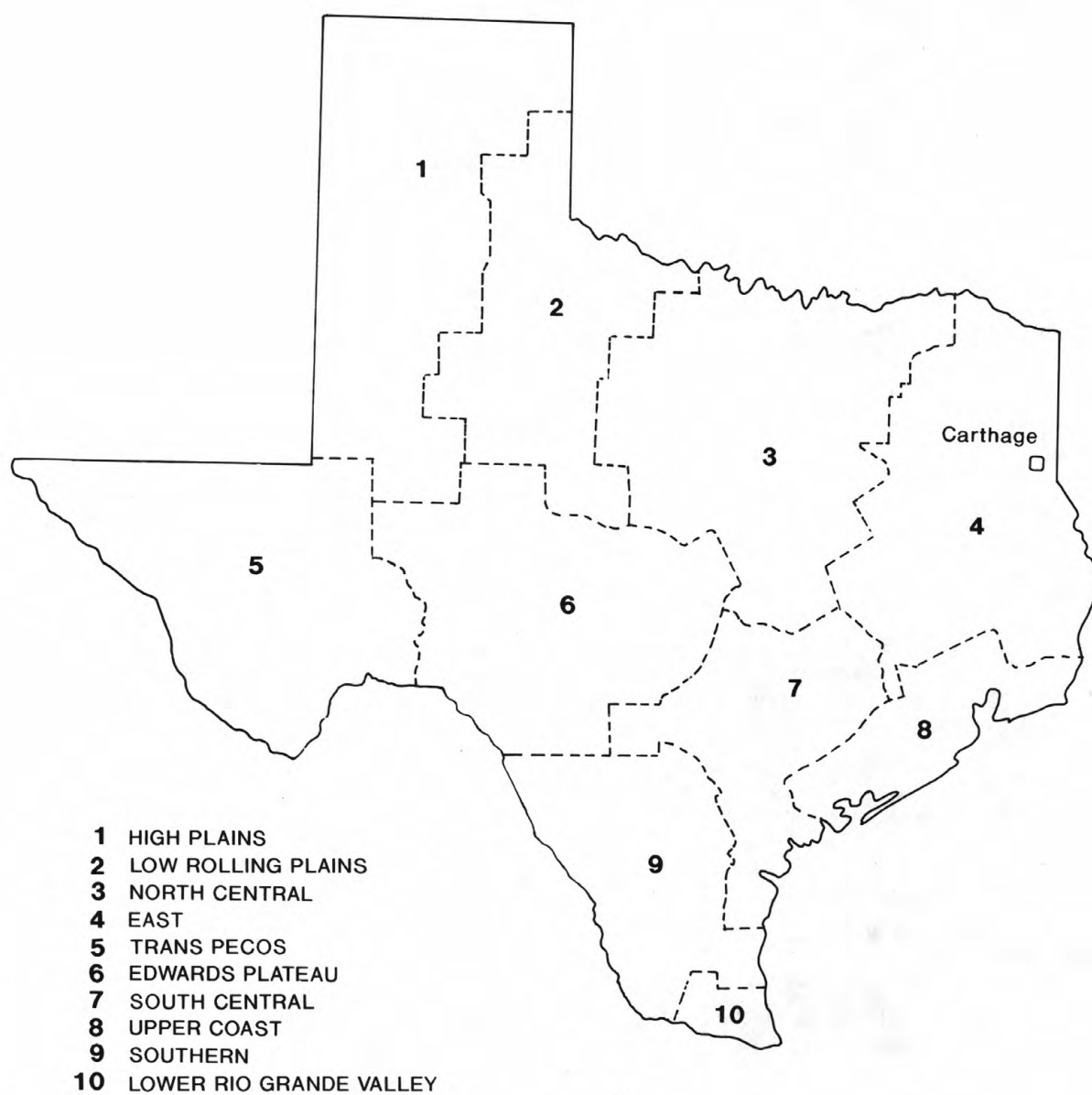


Figure 1.--Ten climatic divisions of the State (Modified from U.S. Department of Commerce, National Oceanic and Atmospheric Administration, 1991, Climatological data, Texas, 1991: National Climatic Data Center, v. 96, no. 9).

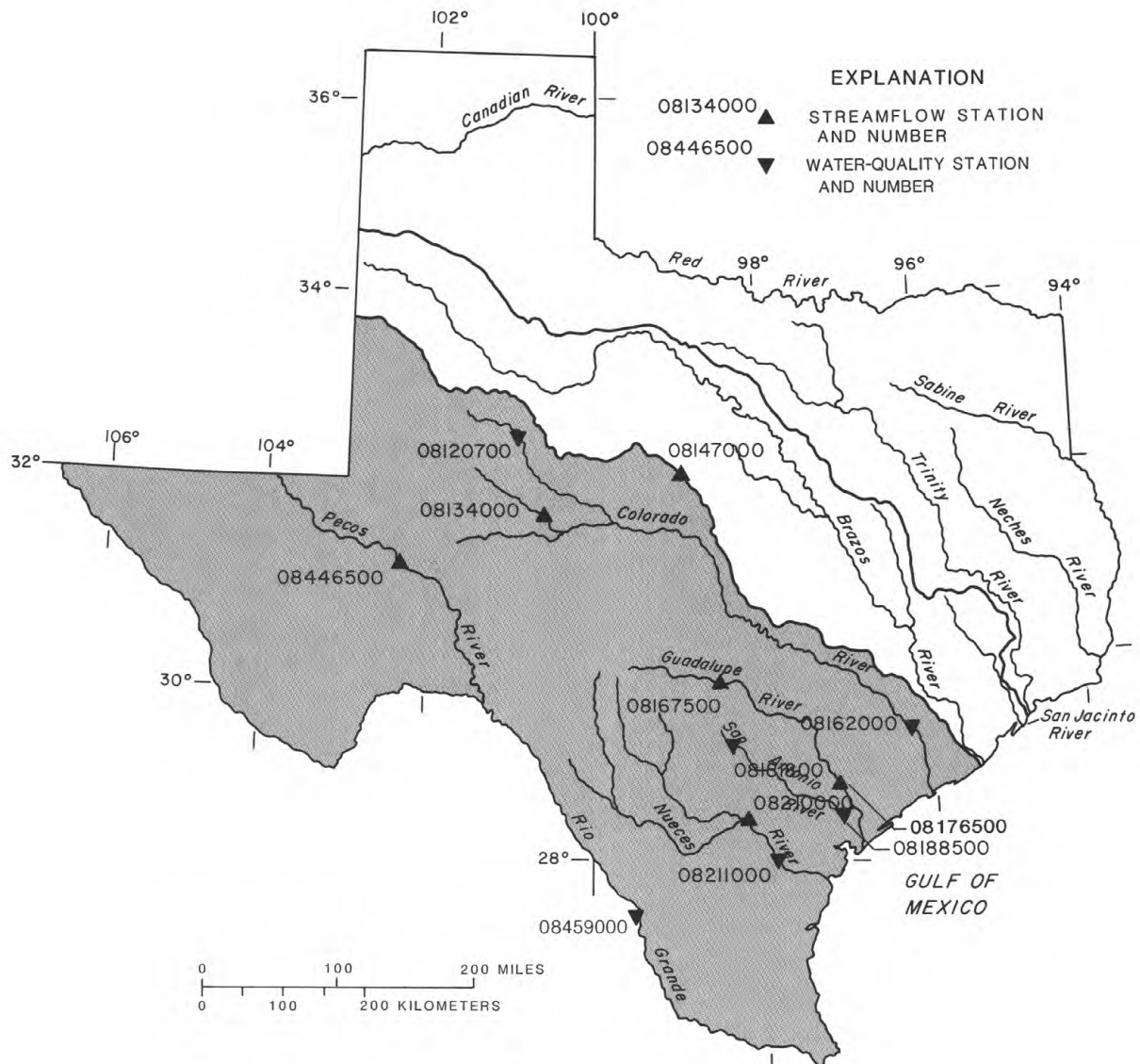


Figure 2.--Area of Texas covered by volume 3 (shaded) and location of selected streamflow and water-quality stations in volume 3.

in the State are shown in figure 3. Streamflow at the hydrologic index station Neches River near Rockland was above normal (within the highest 25 percent of record) during the water year. For the North Bosque River near Clifton, streamflow was normal from October through May, and July, and above normal during June, August and September. The North Concho River near Carlsbad had above normal streamflow from November through March, then normal for the remaining 7 months. Streamflow for the Guadalupe River near Spring Branch was normal for the entire year.

Conservation storage in 20 selected reservoirs in this area of the State, with a total combined conservation capacity of 9,340,000 acre-feet, decreased from 73 percent of capacity at the end of September 1990 to 70 percent of capacity at the end of September 1991. Records from these reservoirs indicate that storage increased in 10, and decreased in 9, and remained the same in 1.

Water Quality

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

Records of discharge-weighted-average concentrations of dissolved solids for water year 1991 are compared with those for the water years 1987-91 for selected long-term daily or continuous-record water-quality stations (fig. 2) in the Colorado River, Guadalupe River, Nueces River, and Rio Grande basins. Results are shown in table 2.

Table 2.—Comparison of records of discharge-weighted average concentrations of dissolved solids for the 1991 water year

Station no. and name	Mean discharge (cubic feet per second)		Discharge-weighted-average concentration of dissolved solids (milligrams per liter)	
	1991	1987-91	1991	1987-91
<u>Colorado River basin</u>				
08120700 Colorado River near Cuthbert, Tex.	23	30	1,480	1,330
08162000 Colorado River at Wharton, Tex.	2,022	2,372	308	287
<u>Guadalupe River basin</u>				
08181800 San Antonio River near Elmendorf, Tex.	450	*607	432	*369
08188500 San Antonio River at Goliad, Tex.	614	855	428	405
<u>Nueces River basin</u>				
08211000 Nueces River near Mathis, Tex.	254	427	281	297
<u>Rio Grande basin</u>				
08469200 Rio Grande below Anzalduas Dam, Tex.	1,530	1,745	758	764

* Period of record: February 1987 through September 1991.

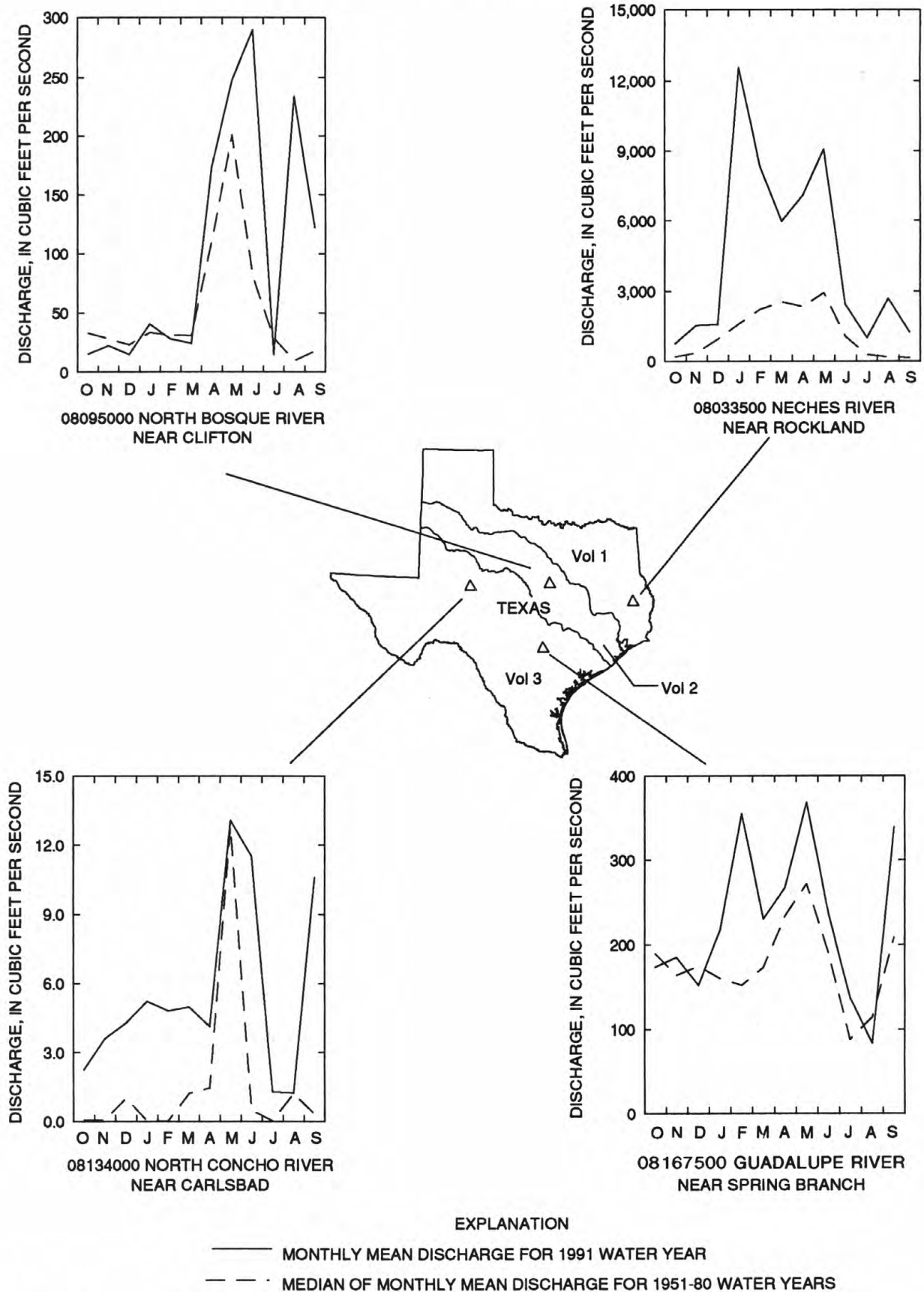


Figure 3.--Comparison of monthly mean discharges at four long-term hydrologic index gaging stations during the 1991 water year with median of the monthly mean discharges for 1951-80 water years.

SPECIAL NETWORKS AND PROGRAMS

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

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

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

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

EXPLANATION OF THE RECORDS

The surface-water records published in this report are for the 1991 water year that began October 1, 1990,

and ended September 30, 1991. 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 8-digit number for

each station, such as 08057000, which appears just to the left of the station name, includes the 2-digit Part number "08" plus the 6-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 the 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 deter-

mined 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 which the revisions apply to. 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 pub-

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

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

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

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

Identifying Estimated Daily Discharge

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

Accuracy of the Records

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

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

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

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

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

Other Records Available

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

Records of Surface-Water Quality

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

Classification of Records

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

A continuing-record station is a site where data are collected on a regularly scheduled basis. Frequency may be one 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 Region 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 (alkalinity), 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 alkalinity 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. The 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 the 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.

Historical and current (1991) dissolved trace-element concentrations are reported herein for water that was collected, processed, and analyzed by using either ultraclean or other than ultraclean techniques. If ultraclean techniques were used, then those concentrations are reported in nanograms per liter. If other than ultraclean techniques were used, then those concentrations are reported in micrograms per liter and could reflect contamination introduced during some phase of the procedure.

Data Presentation

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

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

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

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

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

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

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

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

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

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

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

Remark Codes

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

<u>PRINTED OUTPUT</u>	<u>REMARK</u>
E	Estimated value
>	Actual value is known to be greater than the value shown
<	Actual value is known to be less than the value shown
K	Results based on colony count outside the acceptance range (non-ideal colony count)

Remark codes -- Continued

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 the 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

In addition to providing direct access to WATSTORE, data can be provided in various machine-readable formats on magnetic tape or 5-1/4 inch floppy disk; and, as noted in the introduction, on CD-ROM discs. All data reports published for the current water year for the entire Nation, including Puerto Rico and the Trust Territories, will be reproduced on a single CD-ROM disc. A limited number of CD-ROM discs will be available for sale by the Books & Open-File Reports Section, U.S. Geological Survey, Federal Center, Box 25425, Denver, Colorado 80225.

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 multicelled plants, containing chlorophyll and lacking roots, stems, and leaves.

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

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

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

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

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

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

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

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

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

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

Organic mass or volatile mass of the living substance is the difference between the dry mass and ash mass and represents the actual mass of the

living matter. The organic mass is expressed in the same units as for ash mass and dry mass.

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

Bottom material: See Bed material.

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

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

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

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

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

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

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

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

Cubic-foot-per-second day [(ft³/s)/d] 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.

Cubic feet per second per square mile [(ft³/s)/mi²] is the average number of cubic feet of water flowing per second from each square mile of area drained, assuming that the runoff is distributed uniformly in time and area.

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

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

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

Dissolved refers to that material in a representative water sample which passes through a 0.45 µm 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:

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

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

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

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

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

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

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

Hydrologic unit is a geographic area representing part or all of a surface drainage basin or distinct hydrologic feature as delineated by the Office of Water Data Coordination on the State Hydrologic Unit Maps; each hydrologic unit is identified by an 8-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 (MG/L, mg/L) is a unit for expressing the concentration of chemical constituents in solution. Milligrams per liter represents the mass of solute per unit volume (liter) of water. Concentration of suspended sediment also is expressed in mg/L and is based on the mass of dry sediment per liter of water-sediment mixture.

National Geodetic Vertical Datum of 1929 (NGVD of 1929) is a geodetic datum derived from a general adjustment of the first order level nets of both the United States and Canada. It was formerly called "Sea Level Datum of 1929" or "mean sea level" in this series of reports. Although the datum was derived from the average sea level over a period of many years at 26 tide stations along the Atlantic, Gulf of Mexico, and Pacific Coasts, it does not necessarily represent local mean sea level at any particular place.

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

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

Organism is any living entity.

Organism count/area refers to the number of organisms collected and enumerated in a sample and ad-

justed to the number per area habitat, usually square meter (m²), 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	0.004 - 0.062	Sedimentation
Sand	0.062 - 2.0	Sedimentation or sieve
Gravel	2.0 - 64.0	Sieve

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

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

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

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

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

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

Phytoplankton is the plant part of the plankton. They are usually microscopic and their movement is subject to the water currents. Phytoplankton growth is dependent upon solar radiation and nutrient substances. Because they are able to incorporate as well as release materials to the surrounding water, the phytoplankton have a profound effect upon the 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 [$\text{mg C}/(\text{m}^2 \cdot \text{time})$] for periphyton and macrophytes and [$\text{mg C}/(\text{m}^3 \cdot \text{time})$] 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 [$\text{mg O}/(\text{m}^2 \cdot \text{time})$] for periphyton and macrophytes and [$\text{mg O}/(\text{m}^3 \cdot \text{time})$] 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 representa-

tive sample of bottom material has been digested by a method (usually using an acid or mixture of acids) that results in dissolution of readily soluble substances. Complete dissolution of all bottom material is not achieved by the digestion treatment and thus the determination represents less than the total amount (that is, less than 95 percent) of the constituent in the sample. To achieve comparability of analytical data, equivalent digestion procedures would be required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

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

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

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

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

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

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

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

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

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

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

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

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

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

Solute is any substance that is dissolved in water.

Specific conductance is a measure of the ability of a water to conduct an electrical current. It is expressed in microsiemens per centimeter at 25°C. Specific conductance is related to the type and concentration of ions in solution and can be used for approximating the dissolved-solids content of the water. Commonly, the concentration of dissolved solids (in milligrams per liter) is about 65 percent of the specific conductance (in microsiemens). This relation is not constant from stream to stream, and it may vary in the same source with changes in the composition of the water.

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

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

Substrate is the physical surface upon which an organism lives.

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

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

Surface area of a lake is that area outlined on the latest USGS 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 µm membrane filter has been digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all 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 μm membrane filter. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent determined. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to determine when the results should be reported as "suspended, total."

Determinations of "suspended, total" constituents are made either by analyzing portions of the material collected on the filter or, more commonly, by difference, based on determinations of (1) dissolved and (2) total concentrations of the constituent.

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, 1991, is called the "water year 1991."

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.
- 1-D2. ***Guidelines for collection and field analysis of ground-water samples for selected unstable constituents***, by W.W. Wood: USGS--TWRI Book 1, Chapter D2. 1976. 24 p.
- 2-D1. ***Application of surface geophysics to ground-water investigations***, by A.A.R. Zohdy, G.P. Eaton, and D.R. Mabey: USGS--TWRI Book 2, Chapter D1. 1974. 116 p.
- 2-D2. ***Application of seismic-refraction techniques to hydrologic studies***, by F.P. Haeni: USGS--TWRI Book 2, Chapter D2. 1988. 86 p.
- 2-E1. ***Application of borehole geophysics to water-resources investigations***, by W.S. Keys and L.M. MacCary: USGS--TWRI Book 2, Chapter E1. 1971. 126 p.
- 2-E2. ***Borehole geophysics applied to ground-water investigations***, by W. Scott Keys: USGS--TWRI Book 2, Chapter E2. 1990. 150 p.
- 2-F1. ***Application of drilling, coring, and sampling techniques to test holes and wells***, by Eugene Shuter and Warren E. Teasdale: USGS--TWRI Book 2, Chapter F1. 1989. 97 p.
- 3-A1. ***General field and office procedures for indirect discharge measurements***, by M.A. Benson and Tate Dalrymple: USGS--TWRI Book 3, Chapter A1. 1967. 30 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 in streams by dye tracing**, by F.A. Kilpatrick, and J.F. Wilson, Jr.: USGS--TWRI Book 3, Chapter A9. 1989. 27 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-A12. **Fluorometric procedures for dye tracing**, by J.F. Wilson, Jr., E.D. Cobb, and F.A. Kilpatrick: USGS--TWRI Book 3, Chapter A12, 1986. 41 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-A16. **Measurement of discharge using tracers**, by F.A. Kilpatrick and E.D. Cobb: USGS--TWRI Book 3, Chapter A16. 1985. 52 p.
- 3-A17. **Acoustic velocity meter systems**, by Antonius Laenen: USGS--TWRI Book 3, Chapter A17. 1985. 38 p.
- 3-A18. **Determination of stream reaeration coefficients by use of tracers**, by F.A. Kilpatrick, R.E. Rathbun, N. Yotsukura, G.W. Parker, and L.L. DeLong: USGS--TWRI Book 3, Chapter A18. 1989. 52 p.
- 3-A19. **Levels of streamflow gaging stations**, by E.J. Kennedy: USGS--TWRI Book 3, Chapter A19. 1990. 27 p.
- 3-B1. **Aquifer-test design, observation, and data analysis**, by R.W. Stallman: USGS--TWRI Book 3, Chapter B1. 1971. 26 p.
- 3-B2. **Introduction to ground-water hydraulics, a programmed text for self instruction**, by G.D. Bennett: USGS--TWRI Book 3, Chapter B2. 1976. 172 p.
- 3-B3. **Type curves for selected problems of flow to wells in confined aquifers**, by J.E. Reed: USGS--TWRI Book 3, Chapter B3. 1980. 106 p.
- 3-B4. **Regression modeling of ground-water flow**, by Richard L. Cooley and Richard L. Naff: USGS--TWRI Book 3, Chapter B4. 1990. 232 p.
- 3-B5. **Definition of boundary and initial conditions in the analysis of saturated ground-water flow systems--An introduction**, by O.L. Franke, T.E. Reilly, and G.D. Bennett: USGS--TWRI Book 3, Chapter B5. 1987. 15 p.
- 3-B6. **The principle of superposition and its application in ground-water hydraulics**, by T.E. Reilly, O.L. Franke, and G.D. Bennett: USGS--TWRI Book 3, Chapter B6. 1987. 28 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.
- 4-D1. **Computation of rate and volume of stream depletion by wells**, by C.T. Jenkins: USGS--TWRI Book 4, Chapter D1. 1970. 17 p.
- 5-A1. **Methods for determination of inorganic substances in water and fluvial sediments**, by M.J. Fishman and L.C. Friedman: USGS--TWRI Book 5, Chapter A1. 1989. 545 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 the determination of organic substances in water and fluvial sediments**, edited by R.L. Wershaw, M.J. Fishman, R.R. Grabbe, and L.E. Lowe: USGS--TWRI Book 5, Chapter A3. 1987. 80 p.
- 5-A4. **Methods for collection and analysis of aquatic biological and microbiological samples**, by L.J. Britton and P.E. Greeson, editors: USGS--TWRI Book 5, Chapter A4. 1989. 363 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.
- 6-A1. **A modular three-dimensional finite-difference ground-water flow model**, by M.G. McDonald and A.W. Harbaugh: USGS--TWRI Book 6, Chapter A1. 1988. 586 p.
- 7-C1. **Finite difference model for aquifer simulation in two dimensions with results of numerical experiments**, by P.C. Trescott, G.F. Pinder, and S.P. Larson: USGS--TWRI Book 7, Chapter C1. 1976. 116 p.

- 7-C2. **Computer model of two-dimensional solute transport and dispersion in ground water**, by L.F. Konikow and J.D. Bredehoeft: USGS--TWRI Book 7, Chapter C2. 1978. 90 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-A1. **Methods of measuring water levels in deep wells**, by M.S. Garber and F.C. Koopman: USGS--TWRI Book 8, Chapter A1. 1968. 23 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.

COLORADO RIVER MAIN STEM

08117995 COLORADO RIVER NEAR GAIL, TX

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

DRAINAGE AREA.--498 mi².

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

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

REMARKS.--Records good. No known regulation or diversions above station. Several observations of water temperature were made during the year.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 3	0015	*2,530	*14.81	June 3	1930	1,410	12.45

Minimum discharge, no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	3.4	.00
2	.03	.00	.00	.00	.00	.00	.00	863	.79	.00	1.8	.00
3	56	.00	.00	.00	.00	.00	.00	633	894	.00	.95	.00
4	23	2.1	.00	.00	.00	.00	.00	15	258	.00	.55	.00
5	4.2	.16	.00	.00	.00	.00	.00	3.0	31	.00	.45	25
6	1.6	.01	.00	.00	.00	.00	.00	1.4	33	.00	.21	11
7	.66	.00	.00	.00	.00	.00	.00	.94	120	.00	.03	16
8	.09	5.4	.00	.00	.00	.00	.00	.73	89	.00	.01	6.0
9	.02	1.3	.00	.00	.00	.00	.00	.35	67	.00	.00	1.5
10	.00	.15	.00	.00	.00	.00	.00	.10	18	.00	1.9	.83
11	.00	.01	.00	.00	.00	.00	.00	.05	4.8	.00	57	.53
12	.00	.00	.00	.00	.00	.00	.00	.03	3.3	.00	43	.29
13	.00	.00	.00	.00	.00	.00	.00	.05	1.8	2.3	111	1.2
14	.00	.00	.00	.00	.00	.00	.00	.02	1.1	6.6	47	.99
15	.00	.00	.00	.00	.00	.00	.00	.01	1.1	14	17	.35
16	.00	.00	.00	.00	.00	.00	.00	.00	.60	5.8	4.1	21
17	.00	.00	.00	.00	.00	.00	.00	.00	.42	1.5	7.2	81
18	.00	.00	.00	2.1	.00	.00	.00	.00	.36	.59	137	84
19	.00	.00	.00	3.1	.00	.00	.00	.00	.10	.08	26	203
20	.00	.00	.00	4.0	.00	.00	.00	.00	.05	.01	8.2	361
21	.00	.00	.00	1.8	.00	.00	.00	.00	.16	.00	4.4	83
22	.00	.00	.00	1.6	.00	.00	.00	.00	4.3	.00	2.9	40
23	.00	.00	.00	1.3	.00	.00	.00	.00	2.5	.00	1.8	24
24	.00	.00	.00	.73	.00	.00	.00	.00	.89	.00	1.2	16
25	.00	.00	.00	.11	.00	.00	.00	.00	.26	64	.80	10
26	.00	.00	.00	.01	.00	.00	.00	.00	.05	79	.52	6.5
27	.00	.00	.00	.00	.00	.00	.00	.00	.01	63	1.1	4.6
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	19	.67	3.8
29	.00	.00	.00	.00	---	.00	.00	.00	.00	8.5	.19	3.2
30	.00	.00	.00	.00	---	.00	.00	.00	.00	14	.05	2.8
31	.00	---	.00	.00	---	.00	---	.00	---	8.4	.01	---
TOTAL	85.60	9.13	0.00	14.75	0.00	0.00	0.00	1517.68	1532.59	286.78	480.44	1007.59
MEAN	2.76	.30	.000	.48	.000	.000	.000	49.0	51.1	9.25	15.5	33.6
MAX	56	5.4	.00	4.0	.00	.00	.00	863	894	79	137	361
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	170	18	.00	29	.00	.00	.00	3010	3040	569	953	2000
CAL YR 1990	TOTAL	2620.02	MEAN	7.18	MAX	892	MIN	.00	AC-FT	5200		
WTR YR 1991	TOTAL	4934.56	MEAN	13.5	MAX	894	MIN	.00	AC-FT	9790		

COLORADO RIVER MAIN STEM

08120700 COLORADO RIVER NEAR CUTHBERT, TX

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

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

WATER-DISCHARGE RECORDS

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

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

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

REMARKS.--No estimated daily discharges. Records good. Since July 1952, flow largely regulated by Lake J. B. Thomas (capacity, 203,600 acre-ft) located 27 mi upstream. There are numerous diversions from Lake J. B. Thomas for municipal use and for oil field operations.

AVERAGE DISCHARGE.--26 years (water years 1966-91), 35.3 ft³/s (25,570 acre-ft/yr).

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

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,110 ft³/s Aug. 13 at 1630 hours (gage height, 10.17 ft); no flow July 11-23.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	4.7	5.8	6.9	11	9.5	6.3	3.5	.22	.10	13	1.8
2	13	4.7	5.7	6.6	10	9.8	6.3	3.1	1.4	.06	6.2	1.6
3	127	4.9	5.7	6.6	10	9.9	6.3	13	125	.06	3.3	1.3
4	198	19	5.7	6.6	10	9.9	6.3	15	182	.05	1.9	1.1
5	97	28	5.7	6.6	10	9.6	6.3	7.3	62	.04	1.1	2.1
6	36	14	5.9	7.3	10	9.2	6.3	5.3	56	.02	.65	3.6
7	23	9.5	6.0	8.0	9.6	7.9	6.3	4.6	335	.02	.46	3.7
8	16	8.6	6.3	8.2	9.0	6.6	6.3	46	130	.01	.40	7.2
9	12	22	6.1	8.3	11	7.5	6.3	117	180	.01	.33	2.9
10	10	15	6.0	9.0	9.9	7.8	6.0	19	49	.01	.33	1.8
11	9.6	11	6.4	14	8.6	8.1	5.5	8.5	21	.00	.33	1.7
12	9.1	8.8	6.6	11	8.7	8.5	5.5	5.9	29	.00	32	1.5
13	8.6	7.8	6.5	9.1	9.0	8.9	5.5	7.6	23	.00	902	35
14	8.4	7.3	6.3	8.3	9.0	9.0	5.4	5.3	10	.00	387	107
15	7.5	6.9	6.4	7.9	8.9	8.0	5.1	3.5	12	.00	58	47
16	6.8	6.8	18	7.8	8.6	7.2	5.0	2.7	17	.00	43	28
17	6.7	6.3	29	7.7	8.4	7.2	5.0	1.9	13	.00	30	600
18	6.6	6.0	14	26	8.2	8.3	5.0	1.5	7.4	.00	26	92
19	6.1	6.0	10	52	8.2	9.8	5.0	1.2	4.6	.00	18	165
20	5.8	6.0	8.6	37	8.2	9.8	5.0	1.0	3.5	.00	12	232
21	5.3	6.0	7.9	23	8.2	10	5.0	.87	4.4	.00	8.4	122
22	5.2	5.8	7.5	16	8.5	10	5.0	.91	14	.00	7.0	72
23	5.2	5.7	6.5	14	8.6	8.1	5.0	.88	6.3	.00	5.7	47
24	5.1	5.7	6.1	13	9.2	6.7	5.0	.94	3.8	.15	4.7	34
25	5.0	5.7	5.8	12	9.4	6.3	5.0	1.0	2.5	129	3.9	27
26	5.0	5.7	5.7	11	9.4	6.4	5.0	1.0	1.7	137	3.4	22
27	5.0	6.0	5.8	11	9.4	6.9	5.0	.98	1.0	447	3.3	19
28	5.0	6.0	6.2	11	9.4	6.9	4.7	.77	.40	460	3.0	16
29	4.9	6.0	6.8	11	---	6.7	4.1	.55	.27	95	2.5	14
30	4.7	6.0	6.9	11	---	6.3	3.6	.40	.18	34	2.0	14
31	4.7	---	6.9	11	---	6.3	---	.31	---	27	1.8	---
TOTAL	676.3	261.9	242.8	398.9	258.4	253.1	162.1	281.51	1295.67	1329.53	1581.70	1723.3
MEAN	21.8	8.73	7.83	12.9	9.23	8.16	5.40	9.08	43.2	42.9	51.0	57.4
MAX	198	28	29	52	11	10	6.3	117	335	460	902	600
MIN	4.7	4.7	5.7	6.6	8.2	6.3	3.6	.31	.18	.00	.33	1.1
AC-FT	1340	519	482	791	513	502	322	558	2570	2640	3140	3420
CAL YR 1990	TOTAL	10475.47	MEAN	28.7	MAX	664	MIN	.00	AC-FT	20780		
WTR YR 1991	TOTAL	8465.21	MEAN	23.2	MAX	902	MIN	.00	AC-FT	16790		

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08120700 COLORADO RIVER NEAR CUTHBERT, TX--Continued

WATER-QUALITY RECORDS

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

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: March 1965 to current year.

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

INSTRUMENTATION.--From March 1965 to October 1987, specific conductance was recorded continuously at this station. From April 1983 to October 1987, water temperature was recorded continuously at this station. Since October 1989, specific conductance and water temperature are continuously recorded at this station.

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

EXTREMES FOR PERIOD OF DAILY RECORD.--

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

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

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 9,380 microsiemens June 5; minimum, 400 microsiemens Oct. 4, July 25, 28.

WATER TEMPERATURE: Maximum, 32.5°C July 10; minimum, 0.0°C Dec. 22-25.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB DISSOLV FLD. AS CACO3 (MG/L)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
OCT 17...	1120	6.9	5000	19.5	820	610	200	77	840
JAN 29...	1550	11	5380	8.0	980	700	230	98	820
MAR 27...	0955	6.9	5490	16.0	1100	790	250	110	840
MAY 21...	1550	0.93	2740	28.0	500	290	130	42	380
JUL 02...	1355	0.06	3040	29.0	530	330	140	45	420
AUG 21...	1715	8.3	4440	30.0	650	440	160	60	670

DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT DIS FIX END FIELD CACO3 (MG/L)	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 17...	13	7.8	210	550	1300	0.40	5.5	3110
JAN 29...	11	8.5	280	850	1200	0.90	4.1	3380
MAR 27...	11	9.3	290	880	1300	1.4	5.7	3570
MAY 21...	7	12	210	340	560	1.1	12	1600
JUL 02...	8	9.6	210	240	700	0.70	8.2	1690
AUG 21...	11	8.2	200	420	1100	0.50	9.0	2550

COLORADO RIVER MAIN STEM

08120700 COLORADO RIVER NEAR CUTHBERT, TX--Continued

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1990 TO SEPTEMBER 1991

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. 1990	676.3	2770	1750	3190	610	1110	440	801	540
NOV. 1990	261.9	5150	3230	2290	1200	834	770	546	950
DEC. 1990	242.8	5400	3390	2220	1200	818	800	525	990
JAN. 1991	398.9	5390	3380	3640	1200	1340	800	862	980
FEB. 1991	258.4	5930	3710	2590	1400	971	860	601	1100
MAR. 1991	253.1	5480	3430	2350	1300	865	810	554	1000
APR. 1991	162.1	5140	3230	1410	1200	515	770	337	950
MAY 1991	281.51	2460	1550	1180	530	401	400	301	480
JUNE 1991	1295.67	1720	1090	3800	360	1260	280	994	350
JULY 1991	1329.53	840	533	1910	170	597	150	528	180
AUG. 1991	1581.70	1070	676	2890	220	938	180	769	220
SEPT 1991	1723.3	2150	1360	6330	450	2100	360	1660	430
TOTAL	8465.21	**	**	33800	**	11700	**	8480	**
WTD.AVG.	23	2350	1480	**	510	**	370	**	450

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	5200	4600	4940	5710	5600	5650	5070	4760	4910	5540	5410	5490
2	5300	4300	5190	5710	5500	5620	5070	4970	5010	5650	5430	5520
3	5300	900	3310	5920	5710	5800	4970	4760	4870	5780	5550	5600
4	1700	400	906	6550	4650	5850	5070	4760	4880	5690	5470	5560
5	---	---	e1500	6240	4440	5100	5180	5070	5150	5500	5270	5420
6	---	---	e2500	5920	5290	5740	5180	5070	5140	5520	5390	5440
7	---	---	e3000	5810	3800	4540	5180	5070	5110	5530	5410	5450
8	---	---	e3500	5390	4120	4720	5180	4970	5080	5450	5330	5400
9	---	---	e4000	5500	4760	5180	5180	4760	5010	5460	5340	5350
10	---	---	e4500	5390	5070	5290	5180	4860	5010	5480	5350	5420
11	---	---	e4500	5500	5280	5430	5290	5070	5180	5620	5380	5460
12	---	---	e4600	5920	5180	5660	5280	5070	5180	5510	5290	5400
13	---	---	e4700	5810	4650	5430	5190	5180	5180	5770	5410	5630
14	---	---	e4800	4550	4330	4450	5310	5190	5230	5780	5560	5690
15	---	---	e4900	4550	4440	4500	5420	5320	5320	5800	5580	5720
16	---	---	e5000	4650	4330	4470	5450	5130	5300	5820	5580	5700
17	---	---	5070	4860	4550	4720	5260	4630	4860	5830	5610	5680
18	5260	5060	5140	4970	4760	4890	6420	5470	6120	5760	5290	5510
19	5270	5100	5210	5070	4860	5000	6440	6320	6360	5880	4970	5560
20	5710	5270	5480	5180	4970	5080	6440	6140	6240	5570	4740	4960
21	5810	5500	5710	5070	4860	4980	6150	5960	6070	5700	5460	5590
22	5810	5710	5770	4970	4860	4900	6070	5870	5980	5820	5480	5590
23	5920	5710	5800	4970	4860	4940	5990	5780	5890	5490	5150	5280
24	5810	5600	5690	4970	4760	4860	5800	5690	5750	5160	4930	5050
25	5810	5600	5710	5070	4760	4920	5720	5600	5660	5060	4830	4950
26	5810	5600	5710	5070	4970	5010	5640	5420	5580	5090	4850	4960
27	5920	5710	5780	5180	4860	5010	5740	5430	5540	5230	4980	5130
28	6030	5810	5920	5180	5070	5110	5560	5340	5460	5370	5230	5300
29	6030	5810	5920	5070	4970	5050	5480	5360	5450	5500	5260	5350
30	5920	5600	5760	5070	4760	4990	5490	5380	5440	5390	5190	5280
31	5710	5500	5560	---	---	---	5510	5400	5470	5300	5290	5300
MONTH	6030	400	4710	6550	3800	5100	6440	4630	5400	5880	4740	5410

e Estimated

COLORADO RIVER MAIN STEM

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08120700 COLORADO RIVER NEAR CUTHBERT, TX--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	5410	5300	5360	5750	5550	5660	---	---	5780	5500	5080	5320
2	5420	5410	5410	5770	5260	5510	5680	5580	5650	5710	5390	5530
3	5430	5320	5390	5770	5470	5650	5680	5250	5430	5700	4230	5080
4	5540	5430	5460	5680	5570	5630	5360	5140	5290	4230	3590	3810
5	5540	5440	5520	5690	5490	5610	5360	5140	5240	3490	3170	3340
6	5650	5450	5550	5600	5400	5500	5570	5350	5440	3590	3170	3430
7	5660	5550	5610	5500	5310	5420	5890	5560	5630	4740	3690	4040
8	5770	5660	5710	5510	5320	5410	5990	5670	5790	5160	1900	4310
9	5880	5770	5830	5530	5320	5430	5670	5350	5500	1790	1050	1360
10	6090	5880	5990	5440	5330	5410	5560	5130	5300	1370	1160	1250
11	6300	6090	6190	5440	5240	5320	5450	5240	5340	1160	1050	1090
12	6400	6200	6300	5450	5250	5330	5550	5340	5400	1370	1160	1250
13	6420	6310	6400	5460	5160	5310	5550	5340	5450	1790	1370	1610
14	6520	6420	6450	5670	5460	5550	5440	4910	5170	2410	1570	1890
15	6530	6420	6460	5480	5280	5400	5120	5010	5070	2730	2200	2490
16	6540	6340	6440	5790	5380	5590	5120	5010	5080	2200	1880	2040
17	6450	6250	6360	5690	5400	5560	5220	5010	5090	---	---	1940
18	6360	6250	6300	5600	5300	5430	5010	4580	4830	---	---	e2100
19	6360	6170	6260	5610	5210	5340	4900	4480	4690	---	---	e2300
20	6370	6170	6230	5520	5320	5420	4900	4580	4730	---	---	e2500
21	6280	6080	6150	5530	5320	5430	4680	4470	4560	---	---	2710
22	6190	5990	6080	5540	5330	5390	4790	4570	4700	2810	2710	2740
23	6100	5800	5960	5450	5250	5360	4890	4680	4800	2920	2810	2820
24	5910	5810	5850	5560	5250	5370	4990	4780	4850	3130	2810	2970
25	5920	5810	5840	5460	5170	5330	5310	4460	4870	3130	3020	3030
26	6030	5820	5910	5580	5170	5350	4560	4040	4310	3020	2810	2930
27	5940	5740	5880	---	---	5530	4770	4030	4360	2920	2710	2840
28	5940	5650	5790	---	---	e5560	4980	4450	4750	2920	2810	2860
29	---	---	---	---	---	5600	5080	4870	4940	2920	2810	2870
30	---	---	---	5690	5580	5640	5290	4870	5090	2920	2810	2870
31	---	---	---	---	---	5760	---	---	---	2920	2810	2870
MONTH	6540	5300	5950	5790	5160	5480	5990	4030	5100	5710	1050	2840

e Estimated

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	3020	2810	2890	---	---	e3000	---	---	e1800	4770	4670	4700
2	2920	2290	2770	---	---	3100	---	---	e2500	4870	4670	4790
3	3440	938	2020	3560	3140	3280	---	---	e2800	4980	4870	4930
4	1560	1150	1310	3670	3350	3500	---	---	e3000	5190	4770	4960
5	9380	1250	5330	3980	3460	3710	---	---	e3200	5290	5080	5180
6	6880	1980	5380	4400	3880	4050	---	---	e3400	5190	4150	4800
7	1880	521	1060	4720	4300	4420	---	---	e3600	4150	3630	3890
8	938	521	782	4930	4510	4690	---	---	e3800	4980	4250	4680
9	---	---	1200	5450	4930	5150	---	---	e3800	5390	4040	4960
10	---	---	e1400	5660	5350	5490	---	---	e4000	6120	4040	5320
11	---	---	e1800	---	---	---	---	---	e4000	5910	5500	5740
12	---	---	e1800	---	---	---	---	---	e2500	5500	4980	5380
13	---	---	e2000	---	---	---	---	---	e700	4980	3320	4350
14	---	---	e2200	---	---	---	---	---	e500	3010	1870	2470
15	---	---	e2200	---	---	---	---	---	e1500	1970	1450	1670
16	---	---	e1900	---	---	---	---	---	e2500	3420	1560	2250
17	---	---	e2000	---	---	---	---	---	e3000	3110	519	1260
18	---	---	e2200	---	---	---	---	---	e3400	3060	1720	2250
19	---	---	e2400	---	---	---	---	---	e3800	3430	1190	2370
20	---	---	e2600	---	---	---	---	---	e4200	2390	1190	1910
21	---	---	e2700	---	---	---	---	---	4500	2930	2170	2470
22	---	---	e2000	---	---	---	4870	4460	4650	2930	2170	2640
23	---	---	e2200	---	---	---	5290	4870	5070	3260	2830	3020
24	---	---	e2300	7100	7100	7100	5290	4870	5240	3590	3150	3400
25	---	---	e2400	7100	400	1740	5390	5290	5320	4020	3580	3770
26	---	---	e2500	800	500	652	5290	5190	5260	4130	3800	3980
27	---	---	e2600	1500	500	887	5390	5290	5340	4240	4020	4180
28	---	---	e2700	700	400	585	5290	4870	5070	4460	4240	4350
29	---	---	e2800	---	---	700	4980	4770	4890	4670	4340	4440
30	---	---	e2900	---	---	e1000	4870	4670	4800	4560	4350	4450
31	---	---	---	---	---	e1300	4770	4670	4750	---	---	---
MONTH	9380	521	2340	7100	400	3020	5390	4460	3640	6120	519	3820

e Estimated

COLORADO RIVER MAIN STEM

08120700 COLORADO RIVER NEAR CUTHBERT, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	22.0	20.0	21.0	19.0	15.5	17.5	11.5	8.5	10.0	5.5	2.0	3.5
2	21.5	20.5	21.0	18.5	17.0	18.0	11.0	8.5	10.0	7.5	4.0	5.5
3	21.0	19.0	20.0	18.5	15.5	17.0	10.0	7.5	8.5	6.0	3.0	4.5
4	21.5	19.0	20.0	15.0	10.0	12.5	8.0	5.0	6.5	3.0	2.0	2.5
5	22.0	19.5	20.5	12.5	9.5	11.0	7.5	3.5	5.5	4.5	2.0	3.5
6	23.5	20.5	22.0	13.5	10.5	12.0	8.5	5.5	7.0	4.5	4.0	4.5
7	23.5	21.0	22.5	12.0	8.0	9.5	7.5	4.5	6.5	4.0	3.0	3.5
8	22.0	18.0	20.5	7.5	7.0	7.5	7.5	4.0	6.0	5.5	4.0	4.5
9	18.0	15.0	16.5	10.5	7.0	9.0	8.0	4.5	6.0	6.0	5.5	6.0
10	17.0	14.0	15.5	11.0	7.5	9.5	8.0	4.5	6.5	6.0	5.0	5.5
11	18.0	14.0	16.0	10.0	7.5	9.5	8.5	5.0	7.0	7.0	4.5	5.5
12	18.5	15.5	17.0	9.5	6.5	8.5	9.5	6.0	8.0	6.5	4.5	5.5
13	19.0	15.5	17.5	8.5	6.0	7.0	8.5	7.0	8.0	7.0	4.0	5.5
14	19.5	16.5	18.0	---	---	---	9.5	7.0	8.0	6.5	5.0	6.0
15	19.5	16.0	18.0	---	---	---	9.5	8.0	8.5	7.5	5.5	6.5
16	21.0	17.0	19.0	---	---	---	8.0	7.5	8.0	7.5	5.0	6.5
17	22.0	19.5	20.5	---	---	---	9.5	8.0	9.0	7.0	6.5	6.5
18	19.0	15.5	17.0	19.5	16.5	17.5	9.0	7.0	8.0	6.5	6.0	6.5
19	18.0	14.0	16.0	18.5	15.0	17.0	8.5	6.0	7.5	8.0	5.5	7.0
20	19.5	15.5	17.5	19.5	17.0	18.5	9.5	6.5	8.0	7.5	6.0	6.5
21	17.5	13.5	15.0	19.5	18.0	19.0	8.0	2.0	5.0	6.0	5.0	5.5
22	14.5	10.5	12.5	18.0	15.0	16.5	1.5	.0	.5	5.5	3.5	4.5
23	15.0	11.0	13.0	15.0	12.5	14.0	1.5	.0	.5	6.0	4.0	5.0
24	16.5	12.0	14.5	14.0	11.0	12.5	1.5	.0	.5	7.0	4.5	6.0
25	16.5	12.5	14.5	14.0	11.0	13.0	1.5	.0	1.0	7.5	4.5	6.0
26	17.0	13.0	15.0	16.5	13.0	15.0	2.0	.5	1.0	6.0	5.0	5.5
27	18.0	14.0	16.0	16.0	13.5	15.0	4.0	1.5	2.5	8.5	5.5	6.5
28	18.0	14.5	16.5	13.0	10.5	11.5	6.5	3.0	4.5	8.5	6.0	7.5
29	18.0	14.5	16.5	---	---	---	8.0	6.0	7.0	8.0	6.5	7.5
30	17.5	14.0	16.0	12.5	9.0	11.0	5.5	2.5	3.5	6.5	4.5	5.5
31	18.0	14.0	16.5	---	---	---	3.5	1.0	2.5	7.0	4.0	5.5
MONTH	23.5	10.5	17.5	19.5	6.0	13.0	11.5	.0	6.0	8.5	2.0	5.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	7.5	4.5	6.0	14.5	11.0	13.0	17.5	11.0	14.5	24.0	18.5	21.0
2	7.0	5.5	6.5	14.5	12.5	13.5	20.0	14.5	17.0	22.5	21.0	21.5
3	10.0	6.0	7.5	14.5	11.0	12.5	20.5	15.0	18.0	27.5	21.5	23.5
4	11.5	9.5	10.5	15.0	10.5	13.0	19.5	17.0	18.5	27.0	23.0	25.0
5	10.5	9.5	10.0	16.0	11.5	14.0	21.0	17.0	19.0	24.5	20.0	22.5
6	11.5	9.5	10.5	16.0	13.5	15.0	21.0	17.5	19.5	23.0	19.5	21.5
7	11.0	8.5	10.0	14.5	11.5	13.0	23.0	18.0	20.5	24.0	20.5	22.0
8	10.5	8.5	9.5	14.5	10.0	12.5	24.0	19.5	22.0	27.5	21.5	23.5
9	11.5	9.0	10.0	14.5	10.5	12.5	22.0	18.5	20.5	23.5	18.0	21.0
10	11.0	9.0	10.0	14.5	10.5	12.5	21.5	17.0	19.5	24.5	21.5	23.0
11	11.5	10.0	10.5	16.0	12.0	14.0	23.5	19.5	21.5	28.5	24.0	26.0
12	14.0	11.0	12.5	16.5	13.0	15.0	26.0	21.5	23.5	29.5	25.5	27.5
13	14.5	13.0	14.0	14.5	11.5	13.5	24.5	20.5	22.5	30.0	25.5	28.0
14	13.5	11.5	12.5	14.0	11.0	12.5	22.5	19.0	21.0	29.0	25.0	27.0
15	12.5	10.0	11.0	15.0	10.5	12.5	21.5	17.0	19.5	30.0	26.5	28.0
16	11.5	9.0	10.0	13.5	12.0	13.0	23.0	18.5	21.0	28.5	24.5	26.5
17	13.0	10.0	11.5	14.5	9.0	12.0	24.0	21.5	22.5	30.5	25.0	27.5
18	13.0	11.0	12.0	16.0	10.5	13.5	24.0	19.5	22.0	31.0	26.0	28.0
19	12.0	10.0	11.0	14.0	12.5	13.5	24.0	20.5	22.5	31.5	26.5	28.5
20	11.0	7.5	9.5	14.5	12.0	13.5	23.0	19.5	21.5	29.5	26.0	28.0
21	9.5	8.0	9.0	18.0	12.5	15.0	24.0	20.0	22.0	28.5	25.5	27.0
22	11.5	7.5	9.5	16.5	13.5	15.0	22.5	19.5	21.0	27.5	24.5	26.0
23	13.0	9.0	11.0	16.5	11.5	14.0	23.0	19.0	21.0	29.0	24.5	26.5
24	12.0	11.0	11.5	17.0	11.5	14.5	24.0	21.0	22.5	27.5	24.5	26.0
25	11.0	8.0	9.5	19.5	14.0	17.0	24.0	19.5	22.0	29.5	24.0	26.5
26	11.0	8.0	9.5	20.0	17.0	18.5	26.5	23.0	24.5	30.5	25.5	27.5
27	12.0	8.0	10.0	20.0	16.0	18.0	25.0	21.0	23.0	30.5	25.5	27.5
28	12.5	10.0	11.5	18.5	14.5	16.5	24.0	21.0	22.5	30.5	25.0	27.5
29	---	---	---	17.5	12.5	15.0	22.0	18.0	20.0	30.5	25.5	27.5
30	---	---	---	15.5	11.5	13.0	22.0	17.5	20.0	30.5	25.5	27.5
31	---	---	---	15.0	9.5	12.5	---	---	---	29.0	25.5	27.0
MONTH	14.5	4.5	10.0	20.0	9.0	14.0	26.5	11.0	21.0	31.5	18.0	25.5

COLORADO RIVER MAIN STEM

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08120700 COLORADO RIVER NEAR CUTHBERT, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	29.5	25.0	27.0	---	---	---	30.5	25.5	28.0	25.5	24.0	25.0
2	26.5	22.5	24.5	---	---	---	30.0	25.5	28.0	28.5	23.0	25.5
3	24.0	20.5	22.0	30.0	24.0	26.5	30.0	26.0	28.5	29.5	25.0	27.0
4	25.0	20.5	22.5	30.5	23.5	26.5	30.0	26.0	28.0	28.5	25.5	26.5
5	29.5	23.0	26.0	31.0	22.5	26.5	29.0	26.0	27.5	26.0	24.5	25.0
6	28.0	25.5	27.0	31.0	23.0	27.0	29.5	26.0	27.5	27.0	24.0	25.5
7	25.0	23.5	24.0	32.0	24.5	28.0	30.5	26.5	28.5	27.0	24.5	26.0
8	24.0	22.5	23.5	31.5	25.5	28.0	31.0	26.5	28.5	27.0	24.0	25.5
9	25.0	22.5	23.5	32.0	25.5	28.5	30.5	26.5	28.0	26.5	24.0	25.5
10	---	---	---	32.5	25.5	28.5	29.0	26.0	27.0	28.0	24.0	26.0
11	---	---	---	---	---	---	28.0	25.5	26.5	28.0	24.5	26.0
12	---	---	---	---	---	---	28.0	25.0	26.0	28.0	24.5	26.0
13	---	---	---	---	---	---	25.0	22.5	23.0	26.0	23.0	24.5
14	---	---	---	---	---	---	24.0	22.5	23.0	24.0	22.5	23.5
15	---	---	---	---	---	---	27.0	22.0	24.0	26.5	22.5	24.0
16	---	---	---	---	---	---	29.0	24.0	26.5	25.5	23.0	24.5
17	---	---	---	---	---	---	28.0	25.0	26.5	23.0	21.0	22.0
18	---	---	---	---	---	---	29.5	24.5	27.0	22.5	19.0	21.5
19	---	---	---	---	---	---	30.0	25.5	27.5	18.5	14.0	16.0
20	---	---	---	---	---	---	30.5	26.0	28.0	14.0	13.0	13.5
21	---	---	---	---	---	---	30.5	26.0	28.0	17.5	14.0	15.5
22	---	---	---	---	---	---	30.0	26.0	28.0	20.5	17.0	18.5
23	---	---	---	---	---	---	30.0	26.0	28.0	21.0	18.0	19.5
24	---	---	---	25.5	25.5	25.5	27.5	25.5	26.5	20.0	18.0	19.0
25	---	---	---	26.0	22.5	23.5	28.5	24.0	26.5	21.0	16.0	18.5
26	---	---	---	24.0	22.0	23.0	29.0	24.5	27.0	21.5	17.0	19.5
27	---	---	---	24.0	23.0	23.5	28.0	24.5	26.5	22.0	17.5	19.5
28	---	---	---	26.0	23.0	24.0	28.0	24.5	26.5	22.5	18.0	20.5
29	---	---	---	29.5	25.5	27.0	29.5	25.0	27.5	22.0	18.0	20.5
30	---	---	---	30.5	25.5	28.0	29.5	26.0	27.5	21.5	18.5	20.0
31	---	---	---	30.0	25.5	28.0	27.5	25.0	26.0	---	---	---
MONTH	29.5	20.5	24.5	32.5	22.0	26.5	31.0	22.0	27.0	29.5	13.0	22.5

COLORADO RIVER MAIN STEM

08121000 COLORADO RIVER AT COLORADO CITY, TX

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

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

WATER-DISCHARGE RECORDS

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

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

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

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

AVERAGE DISCHARGE.--6 years (water years 1947-52) prior to completion of Lake J.B. Thomas, 85.4 ft³/s (61,870 acre-ft/yr); 39 years (water years 1953-91) regulated, 37.2 ft³/s (26,950 acre-ft/yr).

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

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 848 ft³/s Aug. 14 at 0630 hours (gage height, 8.62 ft); minimum daily, 0.03 ft³/s Feb. 2, July 10, 11, 17.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	8.3	.62	6.7	.04	13	9.2	.62	.31	.09	6.9	.22
2	15	8.3	.59	7.3	.03	12	9.3	.86	.51	.11	4.3	.14
3	59	8.0	.57	7.4	.04	12	9.2	1.3	411	.11	2.2	.08
4	302	12	.53	7.5	.06	12	9.2	.86	293	.15	.15	.05
5	218	19	.80	7.7	.05	11	9.1	.41	66	.13	.06	.06
6	44	14	.92	8.7	.05	11	8.8	.46	28	.10	.05	.05
7	25	11	.62	8.0	4.5	10	8.4	.66	202	.08	.06	.05
8	22	12	.69	8.3	11	11	8.5	.78	395	.04	.05	.05
9	17	11	.62	9.2	11	7.8	7.9	51	338	.04	.05	.05
10	14	16	.74	9.5	12	.70	8.2	21	105	.03	.08	2.0
11	12	12	.85	10	12	.41	7.6	9.2	17	.03	.09	2.0
12	1.4	9.5	.92	11	12	.40	7.5	14	10	.05	.08	2.1
13	.82	8.6	.77	9.7	13	.24	7.5	25	14	.06	274	45
14	.92	8.3	2.8	9.2	12	.24	7.1	8.7	8.4	.05	684	70
15	.76	7.8	5.2	9.2	12	.24	6.4	5.5	7.8	.05	62	34
16	.92	7.9	11	9.2	11	.38	5.5	4.5	7.1	.04	16	28
17	.94	8.3	13	10	11	.41	2.1	4.2	7.9	.03	11	471
18	.68	7.5	11	21	11	.41	1.8	4.1	6.6	.04	7.3	183
19	.74	7.5	8.4	33	11	.43	1.5	3.8	4.7	.05	.36	167
20	.71	7.6	7.7	29	12	.41	.92	3.6	3.5	.05	.15	304
21	.62	7.5	7.0	22	11	.40	.60	3.1	3.6	.04	.15	116
22	.35	8.3	6.6	17	11	.36	.62	1.0	.45	.06	.12	36
23	.20	7.6	6.4	15	11	7.4	.62	.92	.24	.09	.11	12
24	.24	7.4	6.1	14	12	9.9	.75	1.2	.15	.13	4.5	8.8
25	.19	7.1	6.0	14	12	10	.80	.92	.15	.15	4.4	7.1
26	.24	6.9	6.4	13	11	10	1.1	.63	.15	.60	2.9	6.2
27	3.3	6.6	6.7	13	11	11	.90	.62	.11	353	2.5	5.4
28	7.5	5.3	7.1	12	12	10	.69	.62	.09	481	2.5	5.3
29	7.8	1.0	7.5	8.1	---	9.7	.58	.43	.09	164	2.5	4.7
30	8.3	.62	7.4	.14	---	9.4	.62	.16	.09	18	2.0	4.1
31	8.3	---	6.7	.04	---	9.2	---	.21	---	8.3	.31	---
TOTAL	787.93	262.92	142.24	359.88	246.77	191.43	143.00	170.36	1930.94	1090.35	1096.47	1514.45
MEAN	25.4	8.76	4.59	11.6	8.81	6.18	4.77	5.50	64.4	35.2	35.4	50.5
MAX	302	19	13	33	13	13	9.3	51	411	481	684	471
MIN	.19	.62	.53	.04	.03	.24	.58	.16	.09	.03	.05	.05
AC-FT	1560	522	282	714	489	380	284	338	3830	2160	2170	3000
CAL YR 1990	TOTAL	9168.23	MEAN	25.1	MAX	648	MIN	.00	AC-FT	18190		
WTR YR 1991	TOTAL	7936.74	MEAN	21.7	MAX	684	MIN	.03	AC-FT	15740		

08121000 COLORADO RIVER AT COLORADO CITY, TX--Continued

WATER-QUALITY RECORDS

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

PERIOD OF DAILY RECORD.--

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

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

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

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

EXTREMES FOR PERIOD OF DAILY RECORD.--

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

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

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 11,700 microsiemens Dec. 15; minimum estimated daily, 1020 microsiemens Aug. 14.

WATER TEMPERATURE: Maximum daily, 34.5°C June 24; minimum daily, 2.0°C Jan. 4.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB DISSOLV FLD. AS CACO3 (MG/L)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
OCT 02...	1440	14	6630	21.5	860	670	210	81	1100
DEC 13...	1305	0.51	7820	9.5	1300	1000	290	140	1300
JAN 30...	1600	0.10	6130	8.5	1000	810	230	110	960
MAY 20...	1640	4.1	6750	24.5	740	590	170	76	1100
JUL 02...	1500	0.14	7160	30.0	880	730	170	110	1200
AUG 22...	0910	0.18	5750	26.0	780	590	170	87	980

DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT DIS FIX END FIELD CACO3 (MG/L)	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 02...	16	8.5	190	640	1900	0.80	8.7	4060
DEC 13...	16	8.3	270	1600	1700	0.80	2.4	5200
JAN 30...	13	7.4	220	1200	1500	0.90	2.2	4140
MAY 20...	18	9.0	150	640	1700	0.90	5.4	3790
JUL 02...	18	9.4	150	1300	1500	0.70	5.4	4390
AUG 22...	15	7.6	190	890	1300	0.80	6.4	3560

COLORADO RIVER MAIN STEM

08121000 COLORADO RIVER AT COLORADO CITY, TX--Continued

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1990 TO SEPTEMBER 1991

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. 1990	787.93	4890	3130	6660	1300	2670	690	1460	640
NOV. 1990	262.92	7260	4660	3310	1900	1360	980	698	910
DEC. 1990	142.24	7280	4670	1790	1900	739	990	378	910
JAN. 1991	359.88	6520	4180	4060	1700	1660	890	869	830
FEB. 1991	246.77	7520	4830	3220	2000	1330	1000	677	930
MAR. 1991	191.43	7990	5130	2650	2100	1100	1100	553	980
APR. 1991	143.00	8300	5330	2060	2200	856	1100	427	1000
MAY 1991	170.36	4570	2930	1350	1200	540	640	296	600
JUNE 1991	1930.94	2750	1750	9150	690	3590	400	2070	370
JULY 1991	1090.35	1300	827	2440	320	939	190	567	180
AUG. 1991	1096.47	1370	873	2580	340	995	200	602	190
SEPT 1991	1514.45	2170	1380	5660	540	2200	320	1300	300
TOTAL	7936.74	**	**	44900	**	18000	**	9900	**
WTD.AVG.	22	3280	2100	**	840	**	460	**	430

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY EQUIVALENT MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e6120	8750	7180	7280	6090	7460	8080	9030	7720	6920	2990	e6270
2	e6630	8660	7260	7290	e6140	e7400	8440	8950	7730	7010	3530	6530
3	e5820	8600	7360	7300	e6210	e7450	8300	8810	3410	7020	e3980	6690
4	e5000	8080	7490	7420	6280	7500	8120	8840	1910	7030	e4440	6860
5	e4190	8030	7520	e7400	6350	7480	8000	9070	2110	7060	4890	6920
6	e3370	6570	7480	e7390	6380	7450	8040	9250	2400	e7160	5270	6980
7	3560	6700	7430	7370	8630	e7390	8090	9290	6040	e7290	5650	e7040
8	3720	6850	e7410	7480	9610	e7320	8250	9030	e1820	7370	5910	7110
9	3960	6710	e7380	7540	7660	e7260	8170	5510	e1910	7500	6220	7120
10	4550	e6500	7360	7400	7480	e7190	8280	2480	1960	7670	6190	9070
11	4170	e6280	7550	7210	7350	7130	8310	e2720	2450	7700	6230	9620
12	e4740	6480	7600	7320	7290	7070	8340	e2960	3270	7760	6260	10300
13	e5310	6710	7690	7200	7270	7100	e8430	3200	3490	7750	1450	e4520
14	e5880	6790	9820	7120	7250	7180	e8530	3970	3730	7740	e1020	e3020
15	6450	7080	11700	7160	7270	7150	8620	4420	3930	7820	1860	e3080
16	6670	7390	8150	7150	e7310	e7180	8700	4900	4090	7880	2710	3150
17	6810	7530	7300	7140	e7340	e7210	8680	5430	4250	e8060	e3250	1620
18	6980	7430	6220	5920	7380	7240	8530	5890	4730	e8170	e3780	1850
19	7180	7650	6470	e6040	7420	7170	8480	6200	4900	e8280	4320	1940
20	7190	7470	6700	e6170	7470	7060	8460	6700	5000	e8390	4920	1910
21	7200	7160	6890	6290	7460	7170	8450	6910	5250	e8500	5520	2250
22	7410	6760	e6920	5440	7450	7360	8420	7140	e5480	e8610	5740	2990
23	7420	6990	e6940	5670	7390	9420	8410	7390	e5710	e8720	6010	3450
24	7560	e7170	e6970	5720	7420	11100	8400	7060	5940	e8830	5820	3860
25	7740	e7350	e7000	5780	7460	9180	8390	e7230	6070	8860	4510	4260
26	7760	7530	e7020	5860	7450	8250	8300	e7390	6310	3850	4650	4750
27	e8640	7610	e7050	5950	7470	8110	e8460	7560	e6440	1070	4720	5190
28	e9520	7550	e7080	6220	7530	7980	e8630	7610	e6570	1060	4810	e5440
29	10400	7440	e7110	6500	---	8270	8790	7620	e6710	1140	5150	e5690
30	9580	7330	7130	6270	---	e8130	8780	7650	6840	2080	5560	5940
31	8930	---	7180	6080	---	8020	---	7690	---	2810	6010	---
MEAN	6470	7300	7430	6710	7280	7690	8400	6710	4610	6680	4620	5180

e Estimated

COLORADO RIVER MAIN STEM

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08121000 COLORADO RIVER AT COLORADO CITY, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	18.0	9.5	4.0	4.0	12.0	18.0	24.0	26.0	31.0	28.5	---
2	---	18.0	8.5	8.0	---	---	17.0	21.0	24.0	26.5	26.0	23.0
3	---	17.5	10.0	4.5	---	---	21.0	22.0	19.0	27.0	---	26.0
4	---	11.0	9.0	2.0	11.0	16.5	20.0	23.5	21.5	27.5	---	28.5
5	---	10.5	9.5	---	9.0	19.0	17.0	17.5	23.0	27.5	25.0	25.0
6	---	12.0	10.0	---	15.5	19.0	18.0	26.0	28.0	---	27.5	25.0
7	23.0	8.0	9.5	3.0	8.5	---	18.5	20.5	24.5	---	27.0	---
8	21.0	8.0	---	5.5	9.0	---	22.5	20.0	---	27.0	27.0	24.5
9	14.0	8.5	---	7.0	10.0	---	17.5	24.5	---	29.0	25.5	25.0
10	11.5	---	5.5	5.0	10.0	---	22.0	23.0	25.0	33.5	24.5	25.0
11	19.5	---	11.5	5.0	14.0	20.0	23.0	---	24.5	27.0	25.0	25.5
12	---	10.5	13.0	4.5	14.0	14.5	21.0	---	28.0	26.0	28.5	28.0
13	---	15.0	8.5	6.0	16.5	14.0	---	26.0	25.0	26.0	25.0	---
14	---	16.0	8.5	6.5	15.5	15.5	---	23.0	24.5	27.5	---	---
15	16.0	14.0	10.0	8.0	9.0	10.5	20.5	27.5	24.0	32.5	25.0	---
16	19.0	13.5	8.5	7.5	---	---	18.5	23.5	26.5	27.0	25.0	25.5
17	20.5	13.0	11.0	8.0	---	---	22.0	23.5	25.5	---	---	23.0
18	14.0	16.0	8.0	7.5	15.5	20.0	18.0	24.0	28.0	---	---	20.5
19	15.0	15.5	9.0	---	9.5	13.5	18.0	24.5	28.0	---	26.0	13.5
20	17.5	18.5	12.0	---	12.0	16.5	17.0	27.0	29.5	---	28.0	14.0
21	12.5	15.5	4.0	5.5	9.0	13.0	18.5	24.5	25.0	---	32.0	14.5
22	10.5	16.0	---	4.0	9.0	12.0	19.5	30.0	---	---	26.0	24.0
23	13.0	12.0	---	7.0	12.0	12.0	18.5	32.5	---	---	25.5	18.5
24	13.0	---	---	6.0	11.0	14.0	19.0	23.0	34.5	---	26.5	20.5
25	19.0	---	---	6.0	12.5	21.0	20.5	---	29.0	25.5	26.0	22.0
26	10.0	16.0	---	5.0	9.5	19.5	21.5	---	32.0	22.5	25.0	22.5
27	---	15.0	---	8.0	9.5	19.5	---	23.5	---	23.0	25.5	19.0
28	---	13.0	---	6.0	15.0	18.5	---	26.5	---	24.0	25.0	---
29	17.0	6.0	---	8.0	---	13.0	24.0	32.0	---	27.5	29.0	---
30	16.5	7.0	2.5	5.0	---	---	18.0	25.0	30.5	30.0	25.5	18.5
31	20.5	---	2.5	9.5	---	15.0	---	25.0	---	29.0	24.0	---
MEAN	16.1	13.2	8.6	6.0	11.3	15.8	19.6	24.6	26.3	27.5	26.3	22.2

08123000 LAKE COLORADO CITY NEAR COLORADO CITY, TX

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

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

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

Water-quality records.--Chemical analyses: October 1969 to September 1984.

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

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

REMARKS.--The lake is formed by a rolled earthfill dam 4,800 ft long. Storage began in April 1949, and the dam was completed in September 1949. The dam and lake are owned by the Texas Electric Service Co. to operate their thermal electric powerplant. The uncontrolled spillway is an excavated cut channel through natural ground 1,200 ft wide located 600 ft upstream and to the left of left end of dam. The spillway is designed to discharge 150,000 ft³/s at the maximum design flood elevation. The service spillway is an uncontrolled rectangular drop inlet located 100 ft upstream from dam with two uncontrolled openings of 10.0 by 12.0 ft. The spillway is designed for a maximum discharge of 5,000 ft³/s. A service outlet is provided for small releases downstream through a 30-inch valve-controlled concrete pipe. Records furnished by the Texas Electric Service Co. will show pumpage from Champion Creek Reservoir, capacity 90,020 acre-ft, into Lake Colorado City. Figures given herein represent total contents. Data regarding the dam and lake are given in the following table:

	Elevation (feet)	Capacity (acre-feet)
Top of dam.....	2,090.0	-
Design flood.....	2,086.7	70,700
Crest of spillway.....	2,073.7	37,850
Crest of service spillway (top of conservation pool).....	2,070.2	31,810
Lowest gated outlet (invert).....	2,024.3	316

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

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

EXTREMES FOR CURRENT YEAR.--Maximum contents, 23,240 acre-ft Sept. 24 at 0700 hours (elevation, 2,064.32 ft); minimum, 18,830 acre-ft May 31, June 1, 2 (elevation, 2,060.75 ft).

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

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

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22150	22310	21850	21400	21490	21130	20330	19320	18830	20110	20920	21370
2	22210	22270	21830	21390	21490	21080	20300	19300	18880	20100	20920	21370
3	22280	22310	21780	21380	21480	21070	20270	19270	19790	20140	20910	21370
4	22790	22300	21760	21370	21480	21060	20260	19230	19960	20160	20910	21390
5	22950	22270	21730	21370	21470	e21050	20250	19190	20010	20140	20910	21390
6	22970	22260	21690	21390	21470	e21020	20230	19160	20020	20160	20900	21400
7	22970	22220	21670	21390	21450	e21000	20210	19160	20040	20140	20900	21440
8	23000	22230	21660	21380	21450	e20970	20170	19160	20190	20140	20910	21470
9	22940	22220	21630	21390	21440	e20950	20130	19120	20270	20110	20910	21500
10	22910	22210	21620	21390	21420	e20920	20100	19110	20290	20100	20940	21500
11	22870	22190	21600	21390	21420	e20900	20070	19070	20290	20080	20960	21520
12	22860	22180	21590	21390	21420	e20880	20050	19240	20310	20110	20990	21810
13	22830	22170	21570	21380	21390	e20850	20000	19320	20300	20120	21110	22030
14	22790	22140	21570	21380	21380	e20830	19960	19360	20310	20110	21200	22140
15	22780	22130	21590	21370	21340	e20800	19930	19330	20310	20110	21230	22170
16	22760	22120	21640	21360	21330	e20780	19890	19290	20330	20100	21260	22450
17	22740	22100	21640	21400	21310	e20750	19880	19240	20350	20100	21280	22550
18	22700	22090	21620	21550	21290	e20730	19850	19230	20330	20100	21310	22560
19	22670	22080	21620	21590	21260	e20700	19810	19190	20330	20060	21310	22770
20	22620	22060	21590	21540	21240	e20680	19770	19170	20350	20050	21310	23040
21	22560	22050	21530	21540	21240	e20650	19740	19110	20380	20050	21310	23150
22	22540	22080	21490	21550	21230	e20630	19690	19090	20360	20040	21330	23200
23	22510	22080	21470	21540	21220	e20600	19670	19060	20320	20060	21340	23220
24	22500	22050	21470	21550	21200	e20580	19640	19030	20270	20110	21340	23220
25	22470	22040	21440	21540	21170	e20560	19630	18990	20230	20120	21360	23220
26	22450	22000	21440	21540	21160	20530	19580	18940	20180	20450	21360	23190
27	22440	21960	21440	21540	21130	20480	19550	18890	20130	20690	21360	23180
28	22410	21940	21440	21530	21130	20460	19470	18850	20110	20740	21340	23150
29	22380	21900	21430	21500	---	20400	19420	18850	20160	20880	21360	23140
30	22360	21870	21400	21500	---	20360	19360	18850	20080	20900	21360	23110
31	22330	---	21400	21500	---	20360	---	18830	---	20910	21360	---
MAX	23000	22310	21850	21590	21490	21130	20330	19360	20380	20910	21360	23220
MIN	22150	21870	21400	21360	21130	20360	19360	18830	20040	20900	21370	---
(†)	2063.62	2063.26	2062.89	2062.97	2062.67	2062.04	2061.20	2060.75	2061.81	2062.49	2062.85	2064.22
(Φ)	+150	-460	-470	+100	-370	-770	-1000	-530	+1250	+830	+450	+1750
CAL YR 1990	MAX	23000	MIN	18000	(Φ)	+2550						
WTR YR 1991	MAX	23220	MIN	18830	(Φ)	+930						

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

e Estimated

COLORADO RIVER BASIN

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08123800 BEALS CREEK NEAR WESTBROOK, TX

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

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

WATER-DISCHARGE RECORDS

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

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

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

REMARKS.--Records good except those for estimated daily discharges, which are poor. Low flow is affected by diversion upstream from station.

AVERAGE DISCHARGE.--33 years, 26.1 ft³/s (18,910 acre-ft/yr).

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

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 4	0530	*927	*9.11	No other peak greater than base discharge.			
Minimum daily discharge, 0.07 ft ³ /s May 27, 28, 31.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e.70	e5.0	e4.0	.79	4.9	3.1	2.0	.48	.08	.21	e2.4	1.0
2	.75	e5.0	e3.0	.78	4.9	2.8	8.2	.61	.08	.21	e1.1	.86
3	243	e4.8	e2.0	.66	4.2	3.2	3.9	.53	290	11	e.62	.78
4	292	e25	e1.6	1.0	4.0	1.9	2.6	.40	386	2.7	e.40	.74
5	36	e50	e1.4	1.7	4.6	1.1	2.2	.31	74	.46	16	.63
6	11	e25	e1.2	3.5	4.2	.70	2.2	.28	19	.33	e4.3	.55
7	5.8	e10	e1.0	3.5	4.0	.52	2.2	.26	7.0	.31	e1.0	.82
8	75	e20	e.95	4.3	3.8	.42	2.2	.26	16	.30	e.54	3.7
9	313	e10	e.90	3.9	3.6	1.2	2.1	.25	63	.30	13	8.8
10	18	e8.0	e.85	3.4	3.1	1.3	2.1	.22	e16	.31	36	2.2
11	9.8	e7.0	.73	8.0	3.2	.88	2.0	.20	56	.31	127	.76
12	6.5	e6.0	.66	6.2	3.7	.57	2.0	.20	e18	.32	417	2.1
13	5.0	e5.5	.62	4.2	3.1	.46	2.1	.31	e8.8	13	565	68
14	5.0	e5.0	.66	3.6	2.1	.44	1.7	12	e5.6	42	305	139
15	5.3	e5.0	.79	3.5	2.1	e.34	1.4	6.0	e3.2	7.8	23	25
16	e5.1	e4.5	2.9	3.8	2.1	e.34	1.3	1.3	35	2.7	e8.8	13
17	e5.0	e4.5	7.5	4.2	1.2	e.34	1.3	.47	e11	1.1	e5.5	37
18	e4.8	e4.0	9.8	36	14	e.34	1.2	.22	e6.5	.56	57	46
19	e4.3	e4.0	3.9	135	2.6	e.34	1.1	.15	e3.7	.36	27	194
20	e5.1	e3.5	2.2	36	1.6	e.79	.96	.12	e2.0	.27	e7.3	201
21	e5.5	e3.3	1.2	14	2.5	e.79	1.0	.11	e1.6	.26	4.1	44
22	e5.3	e15	.85	11	1.9	e.79	1.0	.10	56	.24	2.8	13
23	e5.1	e10	.71	10	1.5	e.79	.92	.10	e9.7	.23	2.1	6.0
24	e4.0	e9.0	.70	8.4	1.0	e.79	.93	.10	e10	.29	17	3.9
25	e4.0	e8.0	.62	7.1	.71	e.79	.80	.10	e7.1	8.4	19	2.7
26	e3.8	e7.5	.67	6.0	.88	.79	.83	.08	e5.3	50	18	2.3
27	e3.8	e7.0	.76	5.5	1.5	.77	.68	.07	e3.8	116	13	1.7
28	e3.7	e6.5	.84	5.2	1.6	.89	.64	.07	e2.6	338	8.9	1.5
29	e3.6	e6.0	.92	5.1	---	.98	.48	.08	e1.5	75	4.0	1.5
30	e3.6	e5.0	.88	4.9	---	1.2	.48	.08	e.69	11	2.7	1.5
31	e5.1	---	.79	4.0	---	1.4	---	.07	---	e5.1	1.5	---
TOTAL	1098.65	289.1	55.60	345.23	88.59	31.06	52.52	25.53	1119.25	689.07	1711.06	824.04
MEAN	35.4	9.64	1.79	11.1	3.16	1.00	1.75	.82	37.3	22.2	55.2	27.5
MAX	313	50	9.8	135	14	3.2	8.2	12	386	338	565	201
MIN	.70	3.3	.62	.66	.71	.34	.48	.07	.08	.21	.40	.55
AC-FT	2180	573	110	685	176	62	104	51	2220	1370	3390	1630
CAL YR 1990	TOTAL	4106.82	MEAN	11.3	MAX	351	MIN	.00	AC-FT	8150		
WTR YR 1991	TOTAL	6329.70	MEAN	17.3	MAX	565	MIN	.07	AC-FT	12550		

e Estimated

08123800 BEALS CREEK NEAR WESTBROOK, TX--Continued

WATER-QUALITY RECORDS

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

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: November 1958 to current year.

WATER TEMPERATURE: November 1958 to current year.

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

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

EXTREMES FOR PERIOD OF DAILY RECORD.--

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

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

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 22,200 microsiemens May 14; minimum, 445 microsiemens Sept. 17.

WATER TEMPERATURE: Maximum, 34.5°C June 24; minimum, 0.5°C Dec. 23, 24.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
OCT 02...	1320	0.59	6400	20.5	1300	1200	200	190	890
DEC 11...	1635	0.79	13000	11.5	2900	2700	420	450	2100
JAN 29...	1215	5.0	13800	8.0	3000	2800	410	490	2100
MAY 20...	1420	0.12	19700	25.0	4000	3800	600	610	3100
JUL 16...	1425	2.5	5920	31.0	1200	1100	200	170	840
AUG 21...	1250	4.0	2960	26.0	590	470	110	77	390

DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	SULFATE DIS- SOLVED (MG/L AS S04)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)
OCT 02...	11	23	130	960	1600	0.80	2.3	3940
DEC 11...	17	42	210	2400	3500	0.60	1.0	9040
JAN 29...	17	47	280	1800	3700	0.40	6.6	8720
MAY 20...	21	42	210	3000	5500	0.90	4.1	13000
JUL 16...	11	21	110	760	1500	0.70	5.2	3560
AUG 21...	7	13	120	370	640	0.40	8.7	1680

COLORADO RIVER BASIN

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08123800 BEALS CREEK NEAR WESTBROOK, TX--Continued

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1990 TO SEPTEMBER 1991

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. 1990	1098.65	4030	2650	7860	1100	3190	620	1840	880
NOV. 1990	289.1	9430	6360	4960	2500	1970	1600	1260	2000
DEC. 1990	55.60	13000	8910	1340	3500	525	2400	357	*
JAN. 1991	345.23	7980	5320	4960	2100	1990	1300	1220	1700
FEB. 1991	88.59	13800	9520	2280	3700	889	2600	621	*
MAR. 1991	31.06	13600	9390	787	3700	307	2600	215	*
APR. 1991	52.52	15200	10700	1510	4100	586	3000	426	*
MAY 1991	25.53	15200	10800	743	4100	286	3100	214	*
JUNE 1991	1119.25	3890	2480	7480	1000	3110	520	1570	870
JULY 1991	689.07	2250	1400	2600	590	1100	270	496	510
AUG. 1991	1711.06	1790	1150	5320	470	2190	250	1180	390
SEPT 1991	824.04	2790	1770	3930	740	1640	370	813	620
TOTAL	6329.70	**	**	43800	**	17800	**	10200	**
WTD.AVG.	17	3910	2560	**	1000	**	600	**	860

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	6280	6200	6240	15000	14500	14800	14000	13900	14000	13900	13700	13800
2	6310	5730	6250	14700	14300	14400	14000	11900	13300	14200	13900	14000
3	5650	566	2830	14300	13600	14100	11800	10700	11000	14300	14200	14200
4	3710	1400	2870	20400	9850	15300	11600	10900	11300	14200	13700	13900
5	7180	3770	5030	6700	2680	4100	11600	11100	11400	14100	13600	13900
6	8420	7280	7890	12700	6820	11000	11100	10600	10800	14700	13500	14300
7	9080	8480	8810	12300	10100	11200	11800	10700	11100	14500	12600	13400
8	9070	1380	6860	10000	5280	8920	12600	11800	12300	12700	12300	12500
9	5260	900	1730	8100	5020	7300	13200	12700	12900	12400	12200	12300
10	1760	1440	1600	7850	5300	7190	13200	12800	13100	12900	12500	12700
11	2140	1780	1900	5040	2140	2900	13200	13000	13100	15800	13000	14600
12	2990	2160	2540	2570	2160	2330	13300	13000	13200	16800	15800	16400
13	3840	3010	3390	3350	2600	2940	13200	13100	13100	16600	14500	15700
14	8110	3880	5030	4310	3410	3800	13100	12700	12900	14400	14000	14100
15	15000	8510	12100	5050	4330	4730	12700	11900	12500	14000	13700	13800
16	20300	15400	18200	6760	5070	5750	14200	11900	13100	13800	13500	13600
17	---	---	e21000	7980	6830	7380	14100	8000	10500	13600	13000	13400
18	---	---	e21500	10500	8040	9070	14800	14300	14600	13100	5960	11000
19	---	---	e22000	12400	10600	11500	14700	14500	14600	8780	2700	4100
20	---	---	e21500	13100	12500	12900	14400	14100	14200	6420	5620	6100
21	---	---	e21000	13000	12500	12800	14100	13800	14000	6580	6440	6530
22	20300	19400	19900	12500	7830	11300	13900	13700	13800	6600	6440	6480
23	19500	18700	19100	11600	7220	9130	13900	13500	13700	7440	6600	6950
24	18900	18300	18500	12400	10700	11500	13700	13200	13500	8880	7480	8050
25	18300	17800	18000	13100	12400	12800	13300	12700	13000	11100	8980	9930
26	17900	17000	17300	13600	12900	13300	12900	12500	12700	12700	11300	12200
27	17000	16500	16700	14200	13500	13800	12600	12400	12500	13500	12700	13100
28	16500	16300	16400	14000	13700	13800	12700	12500	12600	14100	13600	13900
29	16400	15800	16200	14200	13900	14100	13000	12600	12800	14100	13800	14000
30	15800	15300	15600	14200	13800	14000	13600	13000	13200	14500	13900	14300
31	15400	14900	15100	---	---	---	13800	13500	13700	14300	13000	13700
MONTH	20300	566	12000	20400	2140	9940	14800	8000	12900	16800	2700	12200

e Estimated

COLORADO RIVER BASIN

08123800 BEALS CREEK NEAR WESTBROOK, TX--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	13600	13000	13200	7960	6900	7070	13500	12900	13200	10800	10600	10700
2	13800	13600	13700	13400	8170	10700	17300	13200	15900	10700	10400	10600
3	14300	13800	14100	15900	13700	14800	17100	16700	16900	10500	10300	10400
4	14400	14200	14300	15900	15600	15700	16700	16400	16600	10500	10200	10300
5	14400	14200	14300	15600	15400	15500	16400	16300	16400	10400	10200	10300
6	14500	14300	14400	15500	15000	15200	16400	16100	16300	10400	10100	10300
7	14500	14300	14400	15000	14600	14800	16600	16400	16500	10300	10000	10200
8	14700	14400	14600	14600	14100	14400	16600	16400	16500	10100	9870	10000
9	14700	14300	14500	14800	14100	14200	16600	16300	16500	9900	9620	9780
10	14400	13900	14100	15200	14800	15100	16400	16000	16200	9650	9410	9530
11	14600	13900	14100	15500	15200	15400	16000	15800	15900	9410	9130	9320
12	14600	14100	14400	15700	15300	15500	15700	15400	15600	9350	9150	9250
13	14200	13900	14100	15600	15400	15500	15400	15100	15300	9220	9020	9110
14	14200	14100	14100	15400	15100	15200	15100	14900	15100	22200	8860	12900
15	14100	13900	14000	15100	14700	14900	15000	14700	14800	21800	20600	21300
16	14200	14100	14100	14900	14400	14700	14700	14400	14600	20600	19800	20200
17	14100	13900	14000	14600	14300	14400	14500	14300	14400	20400	20000	20300
18	15200	13900	14700	14500	14200	14400	14400	14000	14200	20800	20300	20500
19	15100	14800	15000	14400	14300	14400	14200	13900	14100	20300	19900	20100
20	14900	14300	14600	14500	14300	14400	14000	13800	13900	20100	19600	19900
21	14600	14300	14400	14800	14300	14600	13800	13600	13700	19600	19200	19400
22	14800	12100	14200	15000	14800	14900	13600	13200	13500	19200	18700	19000
23	11900	8410	9830	15000	14600	14800	13200	12700	13000	19000	18500	18700
24	8410	7660	7980	14800	14500	14600	12700	12400	12500	18600	18000	18400
25	7770	7450	7630	14600	14300	14500	12400	11900	12100	18400	17800	18100
26	7450	7330	7430	14500	14100	14300	11800	11600	11700	18000	17300	17700
27	7440	7010	7200	14200	13900	14100	11600	11300	11500	17600	17100	17400
28	7220	7110	7190	14100	13900	14000	11300	11100	11200	17500	16900	17300
29	---	---	---	14100	13800	14000	11200	10800	11000	17400	16800	17100
30	---	---	---	14000	13700	13900	10900	10600	10800	17100	16500	16900
31	---	---	---	13800	13200	13500	---	---	---	16700	16000	16400
MONTH	15200	7010	12900	15900	6900	14300	17300	10600	14300	22200	8860	14900
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	16300	15800	16100	4520	4140	4340	2430	2230	2330	15600	15200	15400
2	16200	15700	15900	4970	4390	4580	2680	2430	2550	15100	14900	15000
3	15900	492	7290	5050	746	4170	2970	2680	2810	14800	14600	14700
4	4390	862	1830	1530	1120	1360	3260	2970	3070	14600	14100	14300
5	3770	2750	3270	2320	1570	1850	3750	2760	3300	14100	13900	14000
6	5210	3610	4510	2730	2150	2430	3920	3340	3550	14100	13800	14000
7	5790	5130	5490	3310	2690	2970	4450	3920	4220	14100	13600	13900
8	6200	3900	5820	3680	3020	3400	4900	4450	4670	15200	13300	13900
9	6070	1150	2030	4020	3390	3740	5480	1280	4860	17500	12000	16600
10	1520	1350	1450	4100	3600	3930	3960	865	1620	17300	16800	17100
11	10800	1230	4590	4260	3970	4110	7660	741	1690	16700	16200	16500
12	6850	1850	3710	4430	4010	4220	2220	618	1070	16200	10600	15700
13	7180	6570	7000	4430	3430	4160	947	494	667	5740	933	3580
14	6480	5700	6130	15900	910	3970	1770	618	1420	3160	527	1000
15	5660	5500	5570	5460	910	2730	---	---	1800	2920	1170	2080
16	8290	4470	5820	6200	5500	5910	---	---	e2000	1740	687	1500
17	6440	3690	4630	6120	5990	6070	---	---	e2400	8840	445	3590
18	3650	3490	3550	6120	5950	6040	---	---	e1600	5250	1610	3260
19	3690	3530	3610	6320	6030	6140	---	---	e2000	4840	726	2440
20	3940	3690	3810	6450	6200	6300	---	---	e2500	4110	685	2070
21	4140	3570	3960	6610	6360	6480	---	---	2950	3710	3340	3520
22	3900	574	1730	6690	6570	6650	3280	3080	3160	4260	3620	3950
23	985	574	694	6900	6650	6730	3490	3280	3370	4700	4260	4500
24	2050	1070	1610	6860	6400	6720	4490	3310	3630	5100	4700	4920
25	2500	2050	2270	7060	5490	6330	17200	4780	9840	5380	5140	5250
26	3000	2540	2760	5450	1530	4550	18700	17000	18300	5580	5380	5480
27	3360	3000	3160	2020	619	1250	18500	16600	18100	5770	5570	5670
28	3860	3360	3570	5940	826	1750	18100	17800	17900	5970	5770	5880
29	4270	3770	3950	3140	950	2180	17800	17400	17700	6160	5970	6060
30	4430	3940	4170	2060	1980	2010	17400	16400	17000	6360	6120	6240
31	---	---	---	2230	2020	2120	16400	15600	16000	---	---	---
MONTH	16300	492	4670	15900	619	4170	18700	494	5740	17500	445	8400

e Estimated

COLORADO RIVER BASIN

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08123800 BEALS CREEK NEAR WESTBROOK, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

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

COLORADO RIVER BASIN

08123800 BEALS CREEK NEAR WESTBROOK, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	27.0	25.0	26.0	29.5	24.0	26.5	33.0	24.5	28.5	29.5	25.0	27.0
2	26.5	24.5	25.5	31.0	23.5	27.0	32.5	24.5	28.5	30.0	24.5	27.0
3	25.0	20.0	22.5	30.0	23.5	26.5	32.5	25.0	28.5	31.5	25.5	28.0
4	27.5	21.5	24.0	30.0	22.5	25.5	33.0	25.0	28.5	29.0	25.5	27.0
5	30.0	25.5	27.5	32.0	23.5	27.5	29.5	24.0	26.5	28.0	25.0	26.5
6	30.0	25.5	27.5	31.5	24.0	27.5	31.0	25.0	27.5	28.5	25.0	26.5
7	29.5	25.5	27.5	32.0	24.5	27.5	31.5	25.5	28.0	27.5	25.0	26.5
8	28.0	25.0	26.5	31.0	24.5	27.5	31.5	25.5	28.0	28.0	24.5	26.0
9	27.0	23.0	25.0	29.5	24.0	26.5	30.0	25.5	27.5	27.5	25.0	26.0
10	27.5	24.5	26.0	30.0	24.0	26.5	28.0	24.5	26.0	29.5	24.5	26.5
11	28.0	25.0	26.0	28.0	24.0	26.0	26.5	24.0	25.0	30.0	24.5	27.0
12	31.5	24.0	27.5	26.5	24.0	25.0	25.5	23.0	24.0	29.0	24.5	26.5
13	32.0	26.5	29.0	31.0	23.5	25.5	24.0	23.0	23.5	26.0	23.0	24.5
14	32.0	26.0	28.5	30.0	25.0	27.0	25.0	23.5	24.0	25.5	22.0	23.5
15	31.5	25.0	28.0	29.5	25.0	27.0	29.5	22.5	25.5	27.5	23.5	25.5
16	33.0	26.5	29.5	31.0	25.5	28.0	31.5	25.0	28.0	26.5	23.0	25.0
17	32.5	27.0	29.5	32.0	25.0	28.0	29.0	25.0	27.5	25.0	23.0	24.0
18	33.5	27.0	30.0	31.0	25.0	28.0	31.0	25.5	27.5	24.5	20.0	23.0
19	33.0	27.5	30.0	29.5	24.5	27.0	30.5	24.5	27.5	19.5	12.5	15.5
20	32.0	27.5	29.5	30.0	24.5	27.0	31.0	25.5	28.0	13.5	12.5	13.0
21	32.0	26.0	28.5	30.0	24.5	27.0	31.5	25.5	28.5	18.5	13.5	15.5
22	29.0	23.0	26.5	29.0	23.5	26.5	31.5	26.5	29.0	21.5	17.5	19.5
23	33.0	25.0	28.5	29.0	24.0	26.5	31.0	26.5	28.5	22.0	19.0	20.5
24	34.5	27.0	30.5	27.0	24.0	25.5	28.5	26.0	27.5	21.5	19.0	20.5
25	33.5	27.0	30.5	26.0	23.5	24.5	30.0	25.5	27.5	24.0	16.0	19.5
26	32.5	27.0	29.5	26.5	22.5	24.0	29.0	25.5	27.5	25.0	18.0	21.0
27	32.5	26.0	29.0	25.0	22.5	23.5	29.0	24.5	27.0	24.5	18.5	21.5
28	32.5	25.5	28.5	26.5	22.5	24.0	29.5	25.0	27.0	25.0	19.5	22.0
29	30.0	26.0	27.5	29.5	24.5	26.5	31.0	25.5	28.0	24.5	19.5	22.0
30	28.0	25.0	26.5	32.5	25.5	28.5	31.0	26.5	28.5	24.0	19.5	21.5
31	---	---	---	32.5	24.5	28.5	29.5	25.5	27.5	---	---	---
MONTH	34.5	20.0	27.5	32.5	22.5	26.5	33.0	22.5	27.5	31.5	12.5	23.5

COLORADO RIVER MAIN STEM

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

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

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

WATER-DISCHARGE RECORDS

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

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

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

REMARKS.--Records good except those for estimated daily discharges which are fair. For affects by upstream diversions, see station 08121000. There is also upstream regulation by Lake J. B. Thomas (capacity, 203,600 acre-ft), by Lake Colorado City (see station 08123000), and by Champion Creek Reservoir (capacity, 42,500 acre-ft).

AVERAGE DISCHARGE.--24 years, 83.0 ft³/s (60,130 acre-ft/yr).

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,810 ft³/s June 3 at 2330 hours (gage height, 12.77 ft); minimum daily, 0.87 ft³/s June 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	16	17	22	28	24	16	1.6	.87	7.1	63	12
2	25	17	12	23	24	23	15	2.1	1.0	6.6	46	12
3	32	16	10	22	24	25	15	40	1720	30	36	10
4	400	21	9.6	22	23	24	16	17	1900	9.9	26	11
5	360	45	9.2	22	21	24	19	7.2	674	12	19	14
6	235	74	8.8	23	20	22	19	5.2	292	14	15	6.2
7	112	49	8.0	23	20	20	18	3.5	122	7.8	20	9.0
8	71	44	7.6	26	19	20	16	3.9	200	5.4	11	21
9	557	35	7.9	28	19	19	14	4.1	620	4.2	16	8.1
10	244	44	8.2	29	22	19	13	7.3	413	3.2	31	8.4
11	76	42	8.2	29	26	19	14	21	222	2.7	51	11
12	56	39	8.3	29	27	16	13	31	168	2.7	268	7.0
13	43	32	8.8	31	26	13	13	32	81	3.2	473	17
14	30	28	9.2	30	26	12	12	103	58	2.4	662	289
15	23	26	9.0	27	26	11	11	46	66	33	501	201
16	23	25	12	25	26	11	11	33	52	16	274	151
17	21	24	21	26	25	11	11	19	71	8.5	88	211
18	20	22	42	36	25	9.8	10	12	52	5.2	72	334
19	18	22	51	150	29	9.8	9.7	8.9	44	3.8	105	446
20	16	22	44	163	27	9.9	8.0	7.2	38	2.6	59	600
21	14	21	35	94	25	11	6.5	6.3	33	1.7	29	472
22	e11	35	28	68	25	11	5.2	5.3	45	1.4	18	267
23	e11	36	25	57	25	8.8	5.0	5.4	77	1.3	14	144
24	e11	29	26	48	24	8.8	4.8	4.6	36	14	12	93
25	11	26	25	43	22	8.2	4.3	4.5	25	8.2	36	69
26	10	25	25	40	22	9.8	3.8	3.5	19	8.3	46	54
27	9.4	23	24	37	23	15	3.3	2.5	14	304	47	46
28	9.4	21	24	34	23	14	2.8	1.7	11	504	33	40
29	9.4	21	25	33	---	13	2.3	1.4	8.8	679	25	35
30	9.1	21	22	34	---	14	2.1	1.1	7.7	309	17	31
31	14	---	22	34	---	15	---	.99	---	110	13	---
TOTAL	2507.3	901	592.8	1308	672	471.1	313.8	442.29	7071.37	2121.2	3126	3629.7
MEAN	80.9	30.0	19.1	42.2	24.0	15.2	10.5	14.3	236	68.4	101	121
MAX	557	74	51	163	29	25	19	103	1900	679	662	600
MIN	9.1	16	7.6	22	19	8.2	2.1	.99	.87	1.3	11	6.2
AC-FT	4970	1790	1180	2590	1330	934	622	877	14030	4210	6200	7200
CAL YR 1990	TOTAL	21687.36	MEAN	59.4	MAX	3220	MIN	.01	AC-FT	43020		
WTR YR 1991	TOTAL	23156.56	MEAN	63.4	MAX	1900	MIN	.87	AC-FT	45930		

e Estimated

COLORADO RIVER MAIN STEM

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

WATER-QUALITY RECORDS

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

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: December 1967 to current year.

WATER TEMPERATURE: December 1967 to current year.

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

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

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 19,900 microsiemens Sept. 10, 1988; minimum, 154 microsiemens Sept. 21, 1990.

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

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 16,700 microsiemens Nov. 6; minimum recorded, 976 microsiemens Sept. 17, minimum daily, 530 microsiemens Sept. 20.

WATER TEMPERATURE: Maximum, 34.5°C July 6; minimum, 0.0°C Dec. 22-24.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI, FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS TOTAL (MG/L AS CaCO3)
NOV 13...	1145	28	8900	8.4	12.5	7.4	11.3	115	4.7	K20	K34	1700
JAN 08...	1045	32	6890	8.2	5.0	7.0	11.6	100	2.9	21	140	1300
MAR 05...	1410	23	7830	8.3	17.0	20	10.4	119	5.5	100	K26	1600
MAY 08...	1150	3.7	2810	8.2	19.5	22	7.6	89	4.4	410	160	770
JUN 05...	1045	632	1210	7.9	23.5	900	6.5	82	6.5	3600	5000	230
AUG 07...	1130	20	3090	8.3	26.5	29	6.1	82	4.6	230	300	530

DATE	HARD-NESS NONCARB DISSOLV FLD. AS CaCO3 (MG/L)	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)	CAR-BONATE WATER DIS IT FIELD (MG/L AS CO3)	BICAR-BONATE WATER DIS IT FIELD (MG/L AS HCO3)	ALKA-LINITY WAT DIS TOT IT FIELD (MG/L AS CaCO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS Cl)
NOV 13...	1500	300	220	1300	14	23	11	194	177	1300	2100
JAN 08...	1100	280	140	1000	12	10	0	224	184	1100	1600
MAR 05...	1400	320	190	1200	13	13	0	192	158	1700	1700
MAY 08...	640	190	70	320	5	8.2	0	159	130	630	520
JUN 05...	150	58	20	140	4	6.6	0	90	74	190	190
AUG 07...	430	130	50	450	9	8.1	2	119	100	500	680

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 CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)
NOV 13...	<0.10	3.6	5590	5360	0.320	0.320	0.080	0.080	0.400	0.400	0.060
JAN 08...	0.70	1.8	4370	4250	--	--	<0.010	<0.010	<0.100	<0.100	0.020
MAR 05...	0.90	1.9	5580	5220	--	--	0.010	<0.010	<0.050	<0.050	<0.010
MAY 08...	0.70	7.7	1900	1830	--	--	0.030	0.010	<0.050	<0.050	0.030
JUN 05...	0.30	6.8	680	659	0.320	0.540	0.450	0.040	0.770	0.580	0.280
AUG 07...	0.70	5.7	1860	1890	--	--	0.020	<0.010	<0.050	<0.050	0.030

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (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- PHORUS ORTHO TOTAL (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)	SEDI- MENT, SUS- PENDE (MG/L)
NOV 13...	0.070	0.74	--	--	0.80	0.080	0.010	<0.010	0.030	--	15
JAN 08...	0.020	--	--	--	<0.20	0.020	<0.010	<0.010	<0.010	--	26
MAR 05...	0.020	--	--	--	1.1	0.080	<0.010	<0.010	0.020	--	21
MAY 08...	0.020	0.57	--	--	0.60	0.090	0.020	<0.010	0.040	--	44
JUN 05...	0.070	0.72	--	--	1.0	0.730	0.090	0.020	0.040	0.06	1760
AUG 07...	0.010	0.97	0.49	0.50	1.0	0.120	0.010	<0.010	0.030	--	43

DATE	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. 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 13...	1.1	99	20	3	100	<10	<2.0	<1	<2	4	<10
JAN 08...	2.2	91	30	<1	<100	<10	<1.0	<1	<1	1	<10
MAR 05...	1.3	97	--	--	--	--	--	--	--	--	--
MAY 08...	0.44	97	20	1	<100	<10	<1.0	2	1	<1	20
JUN 05...	3000	99	--	--	--	--	--	--	--	--	--
AUG 07...	2.3	99	<10	2	200	<10	<1.0	<1	<1	2	20

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
NOV 13...	<2	170	20	0.2	19	4	1	<2.0	5100	41	<10
JAN 08...	<1	120	20	<0.1	5	1	4	<1.0	5200	22	<10
MAR 05...	--	--	--	--	--	--	--	--	--	--	--
MAY 08...	<1	60	30	<0.1	5	1	<1	<1.0	3500	19	<10
JUN 05...	--	--	--	--	--	--	--	--	--	--	--
AUG 07...	<1	60	10	<0.1	6	3	<1	<1.0	2300	22	<10

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1990 TO SEPTEMBER 1991

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. 1990	2507.3	3060	1940	13100	690	4640	560	3760	660
NOV. 1990	901	7760	5280	12800	1900	4610	1500	3750	1700
DEC. 1990	592.8	7280	4870	7790	1700	2790	1400	2260	1600
JAN. 1991	1308	6700	4460	15800	1600	5630	1300	4570	1500
FEB. 1991	672	5930	3900	7070	1400	2520	1100	2040	1300
MAR. 1991	471.1	7590	5090	6470	1800	2320	1500	1880	1700
APR. 1991	313.8	7880	5310	4500	1900	1610	1500	1310	1700
MAY 1991	442.29	2520	1590	1900	560	670	450	543	540
JUNE 1991	7071.37	1330	821	15700	290	5500	230	4450	280
JULY 1991	2121.2	2380	1500	8570	530	3020	430	2440	510
AUG. 1991	3126	2360	1480	12500	520	4390	420	3560	500
SEPT 1991	3629.7	1560	977	9580	340	3370	280	2730	330
TOTAL	23156.56	**	**	116000	**	41000	**	33300	**
WTD.AVG.	63	2870	1850	**	660	**	530	**	620

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	3930	3600	3780	9090	8900	8980	6410	6160	6290	6830	6530	6650
2	4260	3950	4100	8960	8840	8890	6410	6010	6190	7830	6820	7200
3	4720	4110	4390	8910	8640	8820	6970	6560	6760	8570	7830	8260
4	5890	1600	3530	8600	7190	8050	7030	6840	6940	8530	7530	8030
5	5450	2150	3980	7170	6040	6740	7010	6860	6960	8210	7380	7690
6	4830	2240	3320	16700	6120	13200	7120	6990	7020	8250	7560	7810
7	2260	1910	2180	16400	10800	15200	7180	7050	7120	8000	7490	7730
8	2240	1760	2050	9820	6480	7250	7380	7180	7290	7690	6850	7060
9	3980	1490	2460	6970	6650	6820	7650	7370	7500	7320	6820	7070
10	2180	1230	1500	6690	5730	6210	7670	7570	7640	8900	7170	8150
11	1960	1650	1780	7180	6750	7060	7770	7670	7730	8610	8310	8470
12	2260	1950	2090	9000	6160	7340	7770	7660	7730	9170	7790	8500
13	2440	2260	2360	9310	7870	8830	7660	7540	7590	8900	7590	8480
14	2370	2310	2350	7780	6840	7170	7540	7410	7460	8860	7270	7760
15	2680	2350	2500	6840	6710	6770	7450	7240	7400	11300	9180	10400
16	3160	2700	2950	7030	6780	6950	7320	7190	7250	10700	9430	9960
17	3740	3190	3480	7030	6970	6990	7750	7190	7380	9450	7920	8850
18	4270	3750	4040	7080	6990	7030	7810	7210	7530	7920	6750	7070
19	4320	4200	4280	7350	7070	7250	7850	5900	7040	13400	5810	7850
20	4440	4200	4330	7290	6780	7080	7090	5680	6040	13200	3470	6720
21	4270	4200	4250	6800	6630	6690	13000	7080	9830	3910	3250	3510
22	---	---	4200	6840	6180	6680	11600	6590	7730	5160	3470	4330
23	---	---	e4400	6160	3910	5550	8430	6970	7750	5420	5080	5300
24	---	---	4700	4850	3850	4360	8500	8120	8270	5190	4860	5060
25	5240	4850	5020	5410	4550	4850	8220	7820	8010	6860	5160	5900
26	5950	5260	5540	5320	5110	5220	7710	6940	7300	6980	6860	6920
27	7020	5990	6460	6070	5370	5710	6920	6560	6720	6880	6290	6740
28	7930	7080	7520	6220	6010	6120	6630	6570	6600	6250	5380	5690
29	8360	7950	8180	6350	6130	6240	6700	6560	6620	5390	5300	5370
30	8530	8360	8440	6330	6200	6260	6690	6610	6650	5290	5180	5250
31	8950	8570	8780	---	---	---	6640	6520	6590	5250	4980	5190
MONTH	8950	1230	4160	16700	3850	7340	13000	5680	7260	13400	3250	7060

e Estimated

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	5550	5090	5230	6700	6590	6630	8060	7920	7990	6720	6360	6520
2	5990	5600	5840	7650	6590	7250	7960	7840	7900	6600	6520	6570
3	5790	3800	5270	7580	7500	7530	7980	7760	7840	---	---	e4000
4	4180	3990	4090	7650	7560	7610	8900	7700	7930	---	---	e2500
5	4490	4210	4340	---	---	7760	9160	8980	9100	---	---	e2700
6	4780	4450	4630	---	---	e7800	9060	8960	9020	---	---	e2800
7	5120	4760	4900	---	---	e8280	9000	8820	8930	---	---	e2900
8	5380	5120	5210	---	---	e8700	8840	8640	8750	---	---	2870
9	5600	5210	5400	---	---	e8600	8660	8440	8520	---	---	e2850
10	5650	5380	5480	---	---	e7810	8420	8260	8350	---	---	e2700
11	5840	5500	5670	---	---	e7230	8260	8080	8170	---	---	e2300
12	6080	5820	5910	---	---	e7070	8060	7880	7960	---	---	e2000
13	5820	5050	5380	---	---	e8300	7940	7780	7840	---	---	e1800
14	5020	4760	4900	---	---	e7740	7820	7600	7690	---	---	e1500
15	4850	4660	4720	---	---	e7590	7640	7480	7550	---	---	e1800
16	6420	4950	5900	---	---	e8330	7540	7300	7420	---	---	e2000
17	6350	5840	6010	---	---	e10200	7280	7200	7250	---	---	e2500
18	6060	5770	5910	---	---	e7810	7260	7060	7160	---	---	e3000
19	6230	5910	6100	---	---	e6810	7180	6940	7020	---	---	e4000
20	6540	6100	6330	---	---	e6870	6980	6640	6780	---	---	e4500
21	7090	6320	6530	---	---	e6780	6660	6400	6510	---	---	e5000
22	8490	7310	7990	---	---	e6610	6520	6340	6400	---	---	5140
23	8160	6990	7520	---	---	e6700	6580	6320	6400	5270	4680	5000
24	7960	7520	7770	---	---	e6820	6500	6360	6410	4800	4680	4730
25	7510	7320	7410	---	---	e6820	6480	6320	6390	4800	4620	4700
26	7310	7040	7210	---	---	e6870	6460	6360	6430	4740	4620	4680
27	7140	6930	7010	---	---	e6890	6600	6280	6430	4680	4570	4630
28	7050	6690	6850	---	---	6770	6580	6340	6430	4620	4510	4560
29	---	---	---	7820	7000	7440	6540	6360	6460	4510	4390	4450
30	---	---	---	8120	7860	8040	6600	6400	6500	4450	4160	4300
31	---	---	---	8200	7980	8080	---	---	---	4160	4040	4120
MONTH	8490	3800	5910	8200	6590	7540	9160	6280	7450	6720	4040	3650

e Estimated

COLORADO RIVER MAIN STEM

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

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	4450	3980	4150	---	---	e3700	1740	1590	1680	4460	3560	3970
2	5210	4270	4530	---	---	e3800	2040	1740	1890	5050	4500	4790
3	---	---	1500	---	---	3230	2290	2090	2160	5180	5050	5120
4	---	---	e800	3650	2160	2960	2650	2290	2470	5090	5050	5070
5	---	---	1200	3750	3650	3700	2960	2650	2760	5090	4840	4950
6	---	---	e1400	3940	3670	3770	3280	2970	3100	5130	4960	5010
7	---	---	e1700	4080	3900	3970	3250	2930	3100	5220	5010	5130
8	---	---	e1500	4530	4080	4290	3900	3200	3400	5300	4750	4920
9	---	---	e1200	4990	4580	4760	3940	3100	3750	4800	4580	4700
10	---	---	e1400	5230	4990	5110	3230	2020	2410	4840	4160	4460
11	---	---	e1500	5380	5230	5310	3860	3180	3440	4290	4120	4200
12	---	---	e1600	5480	5320	5400	4280	2060	3300	4160	3990	4070
13	---	---	e1700	5610	5360	5460	3850	2290	2940	4290	3690	3940
14	---	---	e2000	5820	5570	5680	---	---	2000	6200	1990	4170
15	---	---	e1900	5860	4840	5320	---	---	e1800	1870	1400	1670
16	---	---	e2000	5310	4550	4870	---	---	e1900	2040	1440	1740
17	---	---	e1800	5490	4830	5170	---	---	e2000	1700	976	1480
18	---	---	e2000	5740	5440	5590	---	---	e2200	---	---	900
19	---	---	e2300	5810	5610	5730	---	---	e2200	---	---	560
20	---	---	e2500	5770	5600	5700	---	---	e2400	---	---	530
21	---	---	e3000	5720	5580	5640	---	---	e2500	---	---	900
22	---	---	e2500	5590	5460	5530	2670	2590	2630	---	---	1080
23	---	---	e2000	5530	5400	5470	2720	2550	2640	---	---	1140
24	---	---	e2500	5470	3610	4780	2890	2670	2790	---	---	2580
25	---	---	e2900	4470	3510	3960	3440	2930	3180	---	---	2700
26	---	---	e3200	4550	4060	4200	3390	1910	2640	---	---	2800
27	---	---	e3300	8250	2060	3880	3480	2420	3020	---	---	e3000
28	---	---	e3400	2910	1790	2380	2720	2500	2640	---	---	e3400
29	---	---	e3500	1980	1420	1590	2670	2550	2600	---	---	e3800
30	---	---	e3600	1570	1430	1500	2970	2630	2770	---	---	e4200
31	---	---	---	1580	1480	1540	3520	3010	3220	---	---	---
MONTH	5210	3980	2290	8250	1420	4320	4280	1590	2630	6200	976	3230

e Estimated

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	23.5	21.0	22.5	22.5	17.0	19.5	13.5	9.0	11.0	8.5	4.0	6.0
2	22.5	20.5	21.5	21.0	17.5	19.0	14.0	10.0	11.5	10.5	6.5	8.0
3	25.0	19.5	22.0	20.5	16.0	18.5	11.0	8.0	10.0	8.0	4.0	6.0
4	23.0	20.5	22.0	15.5	10.5	13.0	10.5	5.5	8.0	4.0	3.0	3.5
5	24.0	21.0	22.5	14.5	9.0	11.5	10.5	5.0	8.0	6.5	3.0	4.5
6	24.0	22.0	23.0	15.0	11.0	13.0	10.0	7.0	8.5	6.5	5.0	6.0
7	25.5	22.5	23.5	14.0	9.0	11.0	10.5	5.5	8.0	6.0	4.0	5.0
8	23.0	20.0	22.5	9.0	8.0	8.5	11.0	5.5	8.0	6.5	5.0	6.0
9	19.5	16.5	17.5	13.0	8.0	10.0	12.0	6.5	9.0	7.0	6.5	7.0
10	18.5	14.5	16.5	14.0	9.5	11.5	12.5	7.5	10.0	7.0	6.0	6.5
11	19.5	14.0	17.0	15.5	10.5	13.0	13.0	8.5	10.5	7.5	5.0	6.0
12	20.5	15.5	18.0	16.0	11.5	14.0	13.5	9.0	11.5	8.5	4.5	6.0
13	21.5	16.5	19.0	17.0	12.0	14.5	12.0	9.5	10.5	9.5	5.5	7.5
14	22.5	17.5	19.5	18.0	13.5	15.5	12.5	9.5	10.5	9.0	7.0	8.0
15	23.0	17.5	20.0	19.5	15.0	16.5	12.5	11.0	11.5	10.5	6.5	8.0
16	24.5	19.5	21.5	17.0	15.0	16.0	11.0	10.0	10.0	11.0	6.5	8.5
17	24.5	20.0	22.0	18.0	14.5	15.5	13.0	10.0	11.5	8.5	8.0	8.5
18	21.5	17.0	19.0	20.5	16.0	18.0	11.0	8.5	10.0	8.0	7.5	7.5
19	21.0	15.5	18.0	21.5	17.0	19.0	10.5	7.5	9.5	9.5	6.5	8.0
20	23.0	16.0	18.5	21.5	18.5	20.0	12.5	8.5	10.5	8.0	6.0	7.0
21	18.5	14.5	16.0	21.5	19.0	20.0	10.5	2.0	6.5	6.0	5.0	5.5
22	---	---	---	19.5	17.0	18.5	2.0	.0	1.0	7.0	3.5	5.5
23	---	---	---	18.0	14.0	16.0	1.0	.0	.5	7.5	5.0	6.5
24	---	---	---	17.5	13.5	15.5	2.0	.0	1.0	9.5	5.5	7.5
25	20.0	14.0	17.0	19.0	15.0	17.0	4.0	.5	2.0	10.0	6.0	8.0
26	20.5	15.0	18.0	21.0	17.0	19.0	4.5	2.0	3.0	8.5	6.0	7.0
27	22.0	15.5	18.5	19.0	15.5	18.0	7.5	3.0	4.5	11.0	7.0	9.0
28	22.0	16.0	19.0	16.0	12.5	14.0	8.5	5.0	6.5	10.0	7.0	8.5
29	21.0	16.5	19.0	14.0	10.0	11.5	11.5	8.5	10.0	10.0	6.5	9.0
30	21.5	16.0	19.0	13.0	9.5	11.0	8.5	3.5	6.0	7.0	3.5	5.5
31	22.5	16.5	19.5	---	---	---	6.5	2.5	4.0	8.5	4.0	6.0
MONTH	25.5	14.0	19.5	22.5	8.0	15.5	14.0	.0	8.0	11.0	3.0	7.0

COLORADO RIVER MAIN STEM

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

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	10.5	5.5	7.5	17.5	11.5	14.5	20.0	11.5	15.5	23.5	17.5	20.0
2	10.0	6.5	8.0	15.5	12.5	14.5	22.5	13.5	17.5	22.5	19.0	21.0
3	13.5	8.0	10.0	16.5	11.0	13.5	23.5	15.0	18.5	26.5	21.0	23.5
4	14.0	11.5	12.5	17.5	11.5	14.5	21.5	17.5	19.5	27.0	22.0	24.0
5	13.0	11.0	12.0	19.0	13.0	16.0	22.5	18.0	19.5	23.5	17.5	21.0
6	14.5	10.5	12.0	19.0	14.0	16.5	23.0	17.5	20.0	23.0	17.5	20.5
7	14.5	9.0	11.5	18.0	13.5	15.5	25.0	17.5	21.0	23.0	16.5	20.0
8	14.5	9.0	11.5	18.0	11.5	14.5	26.0	19.0	22.0	25.0	19.0	22.0
9	14.5	9.5	12.0	18.5	11.5	14.5	24.0	18.0	21.0	27.0	20.0	23.5
10	14.5	10.0	12.0	17.0	12.0	14.5	22.5	16.0	19.0	26.0	21.0	23.5
11	14.5	12.0	13.0	19.0	12.5	15.5	25.0	18.0	21.0	27.5	22.5	25.0
12	18.0	12.5	15.0	18.5	14.0	16.0	27.5	19.5	23.0	29.5	23.0	26.0
13	18.0	14.0	15.5	17.0	11.5	14.5	26.0	19.5	22.5	29.0	23.5	26.0
14	17.0	12.0	14.5	16.0	11.5	13.5	23.0	17.5	20.5	27.0	22.0	24.5
15	14.5	11.0	12.5	17.0	8.5	12.5	23.5	15.0	19.0	28.0	22.0	25.0
16	13.5	8.5	11.0	13.0	10.5	12.0	25.0	16.0	20.5	28.0	22.0	25.0
17	16.0	11.0	13.0	17.5	9.5	13.5	24.5	20.0	22.0	30.0	23.5	26.0
18	16.0	12.0	13.5	18.5	11.5	15.0	26.0	19.0	22.5	29.5	22.5	26.0
19	13.5	10.0	12.0	16.5	13.0	14.0	24.0	19.0	22.0	29.0	23.0	26.0
20	14.0	8.0	10.5	16.0	12.5	14.0	23.5	17.5	20.5	28.0	23.0	25.5
21	12.0	10.0	11.0	21.5	14.5	17.5	24.0	16.5	20.5	29.0	23.0	25.5
22	15.5	9.0	12.0	18.0	14.0	16.0	21.5	18.0	19.5	25.5	23.0	24.5
23	16.0	10.5	13.0	18.5	11.5	15.0	23.0	17.0	20.0	27.0	23.0	25.0
24	14.0	11.0	13.0	20.5	12.5	16.5	22.0	18.5	20.0	26.0	22.5	24.5
25	13.0	8.5	10.5	22.5	14.5	18.5	25.0	17.0	21.0	27.5	22.5	25.0
26	14.0	8.5	11.0	22.0	19.5	20.5	26.5	21.5	23.5	28.0	24.0	26.0
27	15.5	9.5	12.5	22.0	16.0	19.0	24.5	19.0	22.0	27.5	23.5	25.5
28	15.0	10.5	12.5	20.0	13.5	17.0	22.5	18.0	20.5	27.0	23.5	25.5
29	---	---	---	19.0	11.0	14.5	21.5	15.0	18.5	28.0	24.0	25.5
30	---	---	---	14.0	11.0	12.0	23.0	16.0	19.5	28.0	24.0	26.0
31	---	---	---	18.0	9.5	13.0	---	---	---	27.0	24.5	25.5
MONTH	18.0	5.5	12.0	22.5	8.5	15.0	27.5	11.5	20.5	30.0	16.5	24.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	27.5	24.0	25.5	26.5	24.5	25.0	32.0	26.0	29.0	28.5	25.5	27.0
2	26.5	24.0	25.0	27.0	25.5	26.0	31.5	25.5	28.5	31.5	24.5	27.5
3	---	---	---	32.5	24.0	28.0	31.5	26.0	29.0	31.5	25.5	28.5
4	---	---	---	33.0	23.5	27.5	32.0	26.5	29.0	31.0	26.5	28.5
5	---	---	---	34.0	25.5	30.0	31.0	26.0	28.0	31.0	26.5	29.0
6	28.5	24.0	26.0	34.5	27.0	30.5	31.0	25.5	28.0	31.0	26.5	28.5
7	28.5	23.5	26.0	33.5	26.5	30.0	32.0	25.5	28.5	29.5	26.5	28.0
8	27.5	24.5	26.0	32.5	27.5	30.0	33.5	26.0	29.5	30.5	26.5	28.5
9	24.5	22.5	24.0	31.0	25.5	28.5	31.5	26.5	28.5	30.5	25.5	28.0
10	25.5	24.0	25.0	31.0	25.5	28.5	28.5	24.5	26.0	31.5	25.5	28.0
11	26.5	24.0	25.0	29.5	25.5	28.0	30.0	25.0	27.5	31.5	26.0	28.5
12	28.0	24.5	26.0	29.0	25.5	27.5	27.5	25.5	26.5	30.5	24.5	27.5
13	28.5	25.5	27.0	31.0	25.5	28.0	26.0	24.0	25.0	28.0	25.5	27.0
14	28.5	25.5	27.0	31.5	26.5	29.0	25.5	23.5	24.5	26.0	24.0	25.0
15	28.5	25.5	27.0	31.0	26.0	28.5	26.5	23.5	25.0	27.5	24.5	26.0
16	30.0	26.5	28.0	34.0	26.5	30.0	29.5	24.5	26.5	28.5	25.0	26.5
17	29.0	27.0	28.0	34.0	26.0	30.0	28.0	25.5	27.0	27.0	24.0	25.5
18	29.5	27.0	28.5	33.0	26.5	30.0	30.5	24.5	27.5	25.5	21.5	24.0
19	29.5	27.5	28.5	31.0	25.5	28.5	30.0	26.0	28.5	21.0	16.5	18.5
20	29.5	27.5	28.5	31.0	25.5	28.5	31.5	26.0	28.5	16.5	14.0	15.0
21	29.0	27.0	28.0	30.5	26.0	28.5	32.5	26.5	29.5	18.5	14.0	16.0
22	28.5	25.5	27.0	30.0	25.5	28.0	---	---	---	22.0	16.5	19.0
23	29.0	26.5	27.5	31.0	26.0	28.0	32.0	27.0	29.0	22.5	19.0	21.0
24	29.0	27.0	28.0	28.0	24.5	26.5	29.5	26.0	27.5	21.0	17.5	19.5
25	29.5	27.0	28.0	26.0	24.5	25.0	29.5	25.0	27.0	23.5	15.0	19.0
26	29.0	27.0	28.0	29.5	23.5	26.0	30.0	25.0	27.5	26.0	17.0	21.0
27	28.5	26.0	27.5	27.5	25.0	26.0	30.0	25.5	27.5	24.0	17.5	21.5
28	28.0	26.0	27.0	27.0	23.5	25.5	29.5	25.5	27.5	25.5	17.5	21.5
29	27.5	25.5	26.0	28.5	25.0	26.5	33.0	26.0	29.5	25.0	18.0	21.0
30	26.0	24.5	25.5	30.5	26.0	28.0	31.5	27.5	29.5	---	---	---
31	---	---	---	31.5	26.0	28.5	31.0	26.0	28.0	---	---	---
MONTH	30.0	22.5	27.0	34.5	23.5	28.0	33.5	23.5	28.0	31.5	14.0	24.5

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

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

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

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

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

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

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

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

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

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

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

EXTREMES FOR CURRENT YEAR.--Maximum contents, 160,700 acre-ft Oct. 10-12 (elevation, 1,864.89 ft); minimum, 135,300 acre-ft June 3 (elevation, 1,860.80 ft).

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

1,860.0	130,900	1,862.0	142,400	1,864.0	154,900
1,861.0	136,400	1,863.0	148,400	1,865.0	161,400

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	158100	157400	154900	151000	151300	149200	144600	139600	135500	146800	145600	146900
2	158000	157300	154900	150900	151300	149000	144600	139500	135600	146700	145500	146900
3	158400	157300	154500	150700	151200	148700	144600	139500	137700	146900	145300	146700
4	158500	157100	154300	150600	151200	148700	144400	139300	141900	147100	145100	146800
5	159000	156900	154100	150600	151000	148700	144400	139100	144300	146900	144900	146600
6	159400	156900	153900	150800	151000	148300	144300	138700	146100	146600	144700	146700
7	159600	156900	153700	150700	150900	148200	144200	138100	146600	146500	144400	147600
8	160300	157000	153700	150600	150900	148200	144100	138600	146800	146200	144400	147900
9	160300	156900	153500	151100	150900	148000	143800	138400	147500	145900	144400	147800
10	160700	156800	153400	150900	150700	147600	143500	138300	148200	145600	144700	147500
11	160700	156800	153300	150800	150600	147900	143500	138100	148600	145400	144600	147400
12	160700	156700	153200	150800	150700	147500	143500	138500	148700	145300	145300	147300
13	160600	156600	152900	150700	150600	147400	143200	138500	148800	145100	146200	147300
14	160500	156400	152900	150700	150400	146900	143100	138700	149100	144600	147400	147600
15	160300	156400	152800	150600	150200	146900	142800	138800	149000	144700	148100	148100
16	160100	156300	152800	150500	150200	146900	142600	138600	149100	144400	148800	148300
17	159900	156100	152800	150800	150000	146800	142600	138400	149200	144200	148900	148900
18	159600	156000	152600	151300	150000	146600	142500	138300	149200	144000	148900	149100
19	159200	155800	152400	151300	150000	146300	142300	138100	149200	143700	148900	150400
20	159200	156100	152400	151300	149900	146400	142000	137900	149000	143400	148800	151200
21	159200	156000	152100	151300	149800	146600	141900	137600	149100	143100	148600	152000
22	159000	155900	152100	151500	150000	146200	141700	137500	148700	142800	148500	152500
23	158800	155800	151700	151500	149800	146000	141400	137300	148500	142900	148200	152500
24	158800	155800	151500	151500	149600	145800	141400	137300	148200	143300	148100	152700
25	158800	155700	151500	151500	149400	145700	141100	137200	148000	143400	148100	152700
26	158500	155700	151500	151400	149400	146000	141100	136900	147900	143300	148000	152700
27	158400	155600	151300	151500	149100	145500	140800	136600	147700	143400	147900	152500
28	158300	155400	151300	151400	149400	145500	140500	136400	147300	143900	147600	152500
29	157900	155300	151400	151300	---	145000	140200	136100	147100	144900	147400	152500
30	157900	154900	151000	151500	---	144900	139900	136000	146900	145500	147300	152400
31	157700	---	151000	151400	---	144800	---	135800	---	145600	147100	---
MAX	160700	157400	154900	151500	151300	149200	144600	139600	149200	147100	148900	152700
MIN	157700	154900	151000	150500	149100	144800	139900	135800	135500	142800	144400	146600
(+)	1864.42	1864.00	1863.40	1863.46	1863.16	1862.40	1861.59	1860.88	1862.75	1862.53	1862.78	1863.61
(Φ)	-400	-2800	-3900	+400	-2000	-4600	-4900	-4100	+11100	-1300	+1500	+5300
CAL YR 1990	MAX	164300	MIN	143400	(Φ)	-9000						
WTR YR 1991	MAX	160700	MIN	135500	(Φ)	-5700						

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

08124000 COLORADO RIVER AT ROBERT LEE, TX

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

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

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

Water-quality records.--Chemical analyses: October 1947 to September 1957.

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

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

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

AVERAGE DISCHARGE.--19 years (water years 1924-27, 1940-55) prior to completion of Robert Lee Dam, 207 ft³/s (150,000 acre-ft/yr); 23 years (water years 1969-91) regulated, 19.5 ft³/s (14,130 acre-ft/yr).

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

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 219 ft³/s June 7 at 0500 hours (gage height, 4.16 ft); minimum daily, 0.74 ft³/s Sept. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	14	9.6	8.9	8.9	8.7	8.4	7.9	7.3	7.3	9.8	10
2	12	14	10	8.9	8.9	8.6	7.9	7.9	7.5	7.2	9.6	14
3	15	14	10	8.7	8.9	8.8	7.8	7.7	32	6.6	9.7	11
4	12	16	9.5	8.9	8.9	9.0	7.8	7.3	13	6.4	10	13
5	12	14	9.5	8.9	8.9	8.8	7.9	7.3	3.8	6.3	10	13
6	12	14	9.7	9.6	8.9	8.5	7.9	7.4	14	6.4	9.9	12
7	12	15	9.9	9.3	8.8	8.9	8.4	7.1	52	6.3	9.8	15
8	25	17	10	9.2	9.0	9.0	8.6	8.0	5.0	6.3	9.7	19
9	23	14	9.9	12	8.9	9.1	8.0	7.5	3.7	6.1	9.7	6.5
10	13	13	9.5	10	8.7	8.9	8.1	7.6	2.8	6.4	13	6.1
11	13	13	9.5	8.9	8.8	8.2	7.9	7.6	2.6	6.3	14	5.7
12	13	14	9.2	8.6	8.9	3.9	8.0	7.7	2.3	6.4	21	5.1
13	13	14	9.0	8.6	8.9	7.9	7.9	12	2.0	6.6	15	4.7
14	13	13	8.9	8.6	8.7	8.4	8.0	21	2.0	6.7	15	7.0
15	13	12	8.6	8.6	8.7	8.3	8.1	8.7	5.8	6.6	12	5.1
16	14	12	9.3	8.6	9.0	8.3	8.0	7.8	2.9	6.6	3.4	5.1
17	14	12	9.5	9.3	9.1	8.3	7.8	8.0	2.5	6.9	2.7	8.4
18	14	13	8.7	13	8.7	8.2	7.9	7.9	2.4	7.0	2.5	6.1
19	15	13	8.6	9.3	8.9	8.1	7.7	7.9	2.2	7.1	1.8	14
20	15	12	8.5	8.7	8.9	8.1	7.7	7.6	2.6	7.7	1.5	3.8
21	17	10	8.6	8.9	9.2	8.1	7.9	7.6	4.1	7.9	7.6	2.3
22	15	11	8.6	8.8	9.1	8.0	8.0	7.7	4.0	8.1	11	1.9
23	15	11	8.8	8.7	9.4	7.8	7.8	7.5	4.1	8.2	11	1.5
24	15	12	e8.7	8.7	9.9	8.2	8.0	8.1	5.0	11	11	1.3
25	14	12	e8.6	8.6	9.9	8.0	7.9	7.5	8.2	9.0	11	1.2
26	13	11	e8.5	8.5	9.6	8.0	8.0	7.4	7.6	9.4	11	1.1
27	13	8.3	e8.5	8.7	9.3	7.8	7.7	7.3	7.2	9.1	11	.80
28	13	8.3	e8.5	8.6	8.8	7.7	7.7	7.3	7.1	9.9	11	.75
29	14	8.6	e8.5	8.6	---	7.6	7.6	7.3	7.2	9.9	11	.82
30	13	8.6	8.5	9.7	---	8.1	7.7	7.5	7.1	9.9	11	.74
31	14	---	8.9	9.0	---	8.1	---	7.3	---	9.7	11	---
TOTAL	440	373.8	282.1	283.4	252.6	253.4	238.1	254.4	230.0	235.3	307.7	197.01
MEAN	14.2	12.5	9.10	9.14	9.02	8.17	7.94	8.21	7.67	7.59	9.93	6.57
MAX	25	17	10	13	9.9	9.1	8.6	21	52	11	21	19
MIN	11	8.3	8.5	8.5	8.7	3.9	7.6	7.1	2.0	6.1	1.5	.74
AC-FT	873	741	560	562	501	503	472	505	456	467	610	391
CAL YR 1990	TOTAL	4043.21	MEAN	11.1	MAX	59	MIN	.23	AC-FT	8020		
WTR YR 1991	TOTAL	3347.81	MEAN	9.17	MAX	52	MIN	.74	AC-FT	6640		

e Estimated

COLORADO RIVER MAIN STEM

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08126380 COLORADO RIVER NEAR BALLINGER, TX

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

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

WATER-DISCHARGE RECORDS

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

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

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

REMARKS.--Records good except those for estimated daily discharges, which are fair. There are many diversions above station for irrigation, municipal supplies, and for oil field operation. Flow is affected by E. V. Spence (station 08123950) and Oak Creek Reservoirs (capacity, 39,360 acre-ft), and at times by discharge from the floodwater-retarding structures in the Kickapoo and Valley Creeks drainage basins.

AVERAGE DISCHARGE.--61 years (water years 1908-68) prior to completion of Robert Lee Dam, 336 ft³/s (243,400 acre-ft/yr); 23 years (water years 1969-91) partially regulated, 70.7 ft³/s (51,220 acre-ft/yr).

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

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,200 ft³/s May 14 at 1430 hours (gage height, 9.63 ft); minimum daily, 2.7 ft³/s July 21.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	186	29	38	35	74	45	39	17	36	31	14	14
2	163	30	38	36	75	43	38	15	35	27	12	13
3	150	31	38	36	74	42	37	16	45	25	11	13
4	142	45	36	36	72	42	36	19	207	23	10	13
5	e126	48	35	36	70	41	41	15	132	23	7.8	12
6	106	49	37	38	69	39	38	12	235	29	7.7	14
7	93	47	36	38	68	38	37	15	655	24	6.2	22
8	e257	51	35	38	66	38	36	58	623	20	5.5	50
9	214	55	35	46	65	38	35	51	747	19	52	70
10	181	56	35	65	64	38	34	29	580	16	39	31
11	156	56	35	72	62	38	33	24	476	10	34	19
12	137	56	35	66	61	39	33	25	429	8.3	32	14
13	123	57	35	61	58	39	37	89	364	7.9	43	14
14	108	59	35	55	55	39	48	707	284	6.3	56	43
15	98	59	35	53	54	39	35	221	269	5.3	82	90
16	94	57	37	51	52	38	33	101	284	4.3	52	50
17	79	55	39	50	51	39	31	69	212	3.9	27	38
18	81	52	39	102	52	40	32	59	192	3.8	21	51
19	70	51	39	100	51	41	32	54	141	4.1	16	129
20	49	48	39	93	49	41	29	52	116	4.2	14	237
21	43	48	39	83	48	42	30	48	97	2.7	12	96
22	55	48	39	77	47	42	29	46	82	3.7	10	59
23	48	48	37	74	47	39	28	45	71	3.6	9.2	45
24	41	46	34	74	47	39	26	47	63	3.4	8.7	36
25	39	46	34	74	47	39	27	45	57	33	10	30
26	37	46	34	75	45	38	26	43	50	23	22	27
27	34	45	35	72	45	52	22	42	45	58	18	25
28	31	42	36	71	45	56	22	40	41	34	16	23
29	29	40	37	70	---	41	20	38	36	24	15	21
30	29	39	37	71	---	38	16	36	35	22	13	19
31	29	---	36	72	---	38	---	38	---	18	13	---
TOTAL	3028	1439	1129	1920	1613	1261	960	2116	6639	520.5	689.1	1318
MEAN	97.7	48.0	36.4	61.9	57.6	40.7	32.0	68.3	221	16.8	22.2	43.9
MAX	257	59	39	102	75	56	48	707	747	58	82	237
MIN	29	29	34	35	45	38	16	12	35	2.7	5.5	12
AC-FT	6010	2850	2240	3810	3200	2500	1900	4200	13170	1030	1370	2610
CAL YR 1990	TOTAL	32992.5	MEAN	90.4	MAX	5940	MIN	4.2	AC-FT	65440		
WTR YR 1991	TOTAL	22632.6	MEAN	62.0	MAX	747	MIN	2.7	AC-FT	44890		

e Estimated

08126380 COLORADO RIVER NEAR BALLINGER, TX--Continued

WATER-QUALITY RECORDS

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

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1961 to current year.

WATER TEMPERATURE: October 1961 to current year.

SUSPENDED SEDIMENT DISCHARGE: January 1978 to September 1981.

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

EXTREMES FOR PERIOD OF DAILY RECORD.--

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

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

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

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

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 4,060 microsiemens Sept. 12; minimum estimated daily, 620 microsiemens May 14.

WATER TEMPERATURE: Maximum daily, 32.0°C July 7, 31, Aug. 1-3; minimum daily, 4.0°C Jan. 3, 4.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB DISSOLV FLD. AS CACO3 (MG/L)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
OCT 04...	1715	141	1330	25.5	360	220	83	37	120
DEC 05...	1435	35	2690	13.0	750	570	170	78	280
JAN 15...	1240	54	2160	9.0	620	440	140	66	210
APR 25...	1230	27	2880	23.5	840	640	190	88	310
JUN 14...	1330	281	906	27.5	250	93	51	29	85
AUG 15...	1145	109	3350	26.5	870	740	190	95	400

DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT DIS FIX END FIELD CACO3 (MG/L)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SI02)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)
OCT 04...	3	6.2	130	240	210	0.10	11	788
DEC 05...	4	8.8	180	670	370	0.60	7.3	1690
JAN 15...	4	7.3	180	450	330	0.40	6.8	1320
APR 25...	5	9.8	200	700	490	0.60	6.2	1910
JUN 14...	2	4.4	150	110	120	0.50	7.5	500
AUG 15...	6	12	130	810	580	0.50	10	2170

COLORADO RIVER MAIN STEM

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08126380 COLORADO RIVER NEAR BALLINGER, TX--Continued

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1990 TO SEPTEMBER 1991

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. 1990	3028	1470	1050	8600	180	1460	470	3880	610
NOV. 1990	1439	2420	1730	6710	320	1240	760	2960	960
DEC. 1990	1129	2470	1770	5380	330	1010	780	2370	980
JAN. 1991	1920	2050	1470	7610	260	1360	650	3390	830
FEB. 1991	1613	2120	1510	6580	270	1170	670	2930	860
MAR. 1991	1261	2620	1880	6390	350	1200	820	2800	1000
APR. 1991	960	2590	1850	4800	350	902	810	2110	1000
MAY 1991	2116	1330	950	5430	170	948	430	2430	550
JUNE 1991	6639	952	679	12200	110	1890	310	5590	410
JULY 1991	520.5	2140	1530	2150	280	394	670	949	860
AUG. 1991	689.1	2950	2110	3930	420	780	910	1700	1100
SEPT 1991	1318	1930	1380	4900	250	882	610	2180	780
TOTAL	22632.6	**	**	74600	**	13200	**	33300	**
WTD.AVG.	62	1710	1220	**	220	**	540	**	700

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY EQUIVALENT MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1060	3490	2470	2710	1860	2480	2600	2940	1660	1290	2980	2570
2	1250	e3320	2510	2700	1840	2500	2560	e2890	1680	1310	2990	2450
3	1370	e3160	2620	2710	1850	2510	2540	e2810	1770	1380	3500	2410
4	1380	3000	2710	2720	1860	2520	2500	e2750	2250	1420	3510	2400
5	e1400	3020	2770	2730	1880	2540	2490	2690	1950	1460	3520	2390
6	1470	2660	2780	2720	1890	2550	2460	2640	1100	1500	3730	e2400
7	1480	2600	2770	2710	1900	2560	2230	2680	898	1510	3740	e2650
8	e940	2560	2780	2720	1920	2670	2400	3100	696	1520	e3760	2920
9	1020	2510	2790	2830	1960	2680	2380	3190	642	1540	e1640	3160
10	1030	2390	2780	2840	1990	2670	2370	3230	862	1580	2340	3310
11	1050	2320	2740	2730	2110	2670	2350	3500	906	1610	3370	4050
12	1110	2220	2700	2370	2120	2680	2440	3570	910	1630	3380	4060
13	1190	2180	2730	2300	2140	2670	2600	3400	913	1670	e1960	3800
14	1250	2140	2760	2220	2170	2680	2640	e620	915	1680	2440	2490
15	1340	2180	2590	2150	2220	2690	2650	e710	920	1800	3480	2150
16	1480	2200	2110	2200	2230	2720	2660	e850	942	1820	3510	1980
17	1580	2210	1370	e1900	2240	2700	2650	940	944	2190	e3520	2080
18	1720	2220	1400	1600	2260	2710	2540	1030	946	2220	e3540	2090
19	1910	2230	1520	e1610	2280	2700	2520	1140	948	3140	e3650	1930
20	2120	2240	1640	1600	2290	2690	2500	1190	953	3150	e3660	1540
21	2420	2230	e1780	1670	2330	2680	2470	1240	e955	3220	e3670	1250
22	2430	2240	e2020	1650	2380	2670	2570	1260	e957	3230	e3680	1050
23	2440	2230	e2270	1660	2400	2660	2840	1310	958	3240	e3690	1030
24	2600	2240	e2510	1670	2410	2670	2860	1360	995	3170	e3620	1010
25	2710	2230	e2750	1680	2420	2660	2870	1410	977	2860	e2410	1050
26	2960	2270	2990	1780	2430	2600	2900	1460	1020	3130	e2360	1160
27	3110	2310	2980	1790	2450	2590	2980	1480	1060	3080	2580	1170
28	3220	2350	2910	e1820	2470	2550	3000	1540	1100	3030	2560	1180
29	3310	2450	2860	e1850	---	2590	3030	1580	e1170	2150	2560	1300
30	3420	2460	2790	1880	---	2640	3060	1610	e1230	2880	2550	1310
31	3480	---	2730	1870	---	2540	---	1650	---	2890	2560	---
MEAN	1910	2460	2490	2170	2150	2630	2620	1990	1110	2200	3110	2140

e Estimated

COLORADO RIVER MAIN STEM

08126380 COLORADO RIVER NEAR BALLINGER, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25.5	18.5	15.0	10.0	8.0	13.0	17.0	20.0	29.0	30.0	32.0	29.0
2	25.0	---	13.0	10.0	10.0	16.0	18.0	---	27.0	30.0	32.0	29.0
3	25.0	---	13.0	4.0	10.0	17.0	15.5	---	22.5	30.0	32.0	29.0
4	25.5	15.0	13.0	4.0	11.0	17.0	21.0	---	26.0	30.0	31.0	27.5
5	---	17.5	12.0	6.0	13.0	18.5	23.0	24.5	27.0	30.0	28.0	27.0
6	25.5	17.0	12.0	6.0	13.0	18.0	23.0	25.0	28.0	27.5	28.0	---
7	25.5	11.5	12.0	7.0	14.0	17.0	23.0	21.5	26.5	32.0	28.0	---
8	---	11.5	12.0	7.0	14.0	17.0	23.0	20.0	25.0	29.0	---	29.0
9	21.0	11.5	12.0	7.0	11.0	18.0	22.0	21.5	23.0	30.0	---	28.0
10	20.0	14.0	11.0	7.0	15.0	18.0	19.0	23.0	26.0	30.0	25.5	27.5
11	18.0	15.0	11.0	7.0	16.0	19.0	19.0	28.0	26.0	30.0	30.5	28.0
12	18.0	16.0	11.5	8.5	16.5	20.0	22.0	28.0	27.0	31.0	27.0	24.0
13	20.0	16.5	11.0	10.0	16.0	19.5	22.0	25.0	26.5	28.0	---	24.0
14	22.0	16.0	12.0	10.0	17.0	19.0	24.0	---	28.0	29.0	25.0	24.0
15	22.0	15.0	12.0	8.5	16.0	15.0	24.0	---	26.5	27.5	29.5	27.0
16	21.5	15.0	13.0	11.0	15.0	12.0	24.0	---	26.5	30.0	30.0	27.0
17	22.0	15.0	14.0	---	15.0	14.0	25.0	24.0	27.0	29.0	30.0	27.0
18	19.0	16.0	14.0	11.0	15.0	16.0	25.0	25.0	27.0	28.0	30.0	27.0
19	21.0	17.0	14.0	---	14.5	16.0	25.0	25.0	30.0	31.0	30.0	19.0
20	19.0	18.0	14.5	8.0	15.0	16.0	24.5	25.0	30.0	28.0	30.0	16.0
21	18.0	18.0	---	7.0	15.0	16.0	24.0	25.0	---	30.0	30.0	20.0
22	18.0	18.0	---	7.0	15.5	17.0	21.0	25.0	---	28.0	30.0	22.0
23	20.0	17.5	---	7.0	14.5	18.0	23.0	26.0	30.0	28.0	30.0	20.0
24	20.0	17.0	---	10.5	14.0	19.0	21.0	26.0	29.0	28.0	---	22.0
25	20.0	18.0	---	11.0	13.5	20.0	21.0	30.0	27.0	28.0	---	21.0
26	20.0	18.0	15.0	10.0	12.0	20.0	23.0	30.0	28.0	29.0	---	21.0
27	21.0	17.0	15.0	12.0	12.0	21.0	23.0	26.0	28.0	28.0	25.0	22.0
28	22.0	14.5	18.0	---	12.5	20.0	24.5	26.0	28.0	30.0	30.0	20.5
29	20.5	14.0	10.5	---	---	19.0	21.0	26.0	---	27.0	30.0	22.0
30	20.0	15.0	5.5	10.0	---	19.0	20.0	25.0	---	30.0	30.0	22.0
31	18.0	---	7.0	8.0	---	18.0	---	25.0	---	32.0	30.0	---
MEAN	21.1	15.8	12.4	8.3	13.7	17.5	22.0	25.0	27.1	29.3	29.3	24.3

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

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

WATER-DISCHARGE RECORDS

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

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

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

REMARKS.--No estimated daily discharges. Records good except those below 10 ft³/s, which are fair. The stage-discharge relation during periods of low flow are affected by wind action and by occasional accumulation of drift on dam. The city of Winters diverts water from New Lake Winters (capacity, 8,374 acre-ft at elevation 1,790.0 ft) for municipal use. Prior to June 1982, capacity of Old Lake Winters (former dam just upstream from new dam) was 3,060 acre-ft.

AVERAGE DISCHARGE.--59 years (water years 1933-91), 44.6 ft³/s (1.35 in/yr), 32,310 acre-ft/yr.

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

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

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,730 ft³/s June 7 at 1600 hours (gage height, 5.13 ft); minimum daily, 0.05 ft³/s July 23.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	38	14	14	14	33	16	5.2	.97	.96	3.9	12	.49
2	38	12	15	14	30	15	4.4	.83	.94	3.3	7.6	.37
3	38	12	13	14	29	14	3.8	.92	27	2.8	4.2	.32
4	37	20	14	14	29	14	3.6	.92	150	2.4	3.0	.37
5	33	39	14	14	25	13	3.4	.91	75	2.0	2.4	.37
6	29	34	13	15	24	13	3.4	.79	419	1.8	1.9	.3
7	23	25	12	15	24	13	3.6	.80	905	1.7	1.7	.49
8	21	30	12	17	24	14	3.4	126	769	1.5	1.6	483
9	430	32	13	22	23	14	3.1	177	362	1.4	7.7	132
10	234	37	14	31	20	13	2.7	54	219	1.3	64	50
11	151	32	13	52	20	14	2.3	29	125	1.1	15	29
12	101	26	13	45	20	12	2.5	18	88	1.5	3.5	20
13	80	24	12	35	20	12	2.6	18	67	1.9	2.3	24
14	67	24	12	29	20	12	2.6	13	58	1.6	2.3	38
15	60	20	12	25	17	9.4	3.3	12	60	1.4	3.1	38
16	55	20	13	21	17	8.5	3.0	11	137	1.2	5.4	50
17	49	20	14	21	17	8.3	2.5	6.6	83	1.0	4.4	54
18	43	20	14	37	17	8.0	2.0	4.4	61	.99	3.1	58
19	36	20	14	43	17	8.0	1.7	3.3	53	.86	2.3	73
20	31	20	15	66	17	8.0	1.5	2.6	42	.72	1.8	89
21	34	20	14	68	17	7.4	1.3	2.2	35	.31	2.0	89
22	38	20	12	58	17	6.1	1.2	1.9	29	.11	2.3	89
23	31	20	11	52	17	4.4	1.2	1.7	23	.05	1.8	83
24	26	19	13	44	17	4.4	1.2	4.1	19	31	1.6	78
25	23	20	14	38	16	4.5	1.7	2.6	16	16	1.6	68
26	22	20	14	33	15	3.8	11	3.0	13	27	1.6	54
27	18	18	14	31	16	3.6	7.1	2.4	11	24	1.6	44
28	17	16	14	29	17	4.3	2.9	1.8	8.3	15	1.6	44
29	17	14	16	25	---	6.7	1.5	1.4	6.9	75	1.4	33
30	16	14	14	28	---	5.6	1.2	1.2	5.1	28	1.1	29
31	14	---	14	33	---	5.4	---	1.0	---	19	.55	---
TOTAL	1850	662	416	983	575	295.4	90.9	504.34	3868.20	269.84	166.45	1751.78
MEAN	59.7	22.1	13.4	31.7	20.5	9.53	3.03	16.3	129	8.70	5.37	58.4
MAX	430	39	16	68	33	16	11	177	905	75	64	483
MIN	14	12	11	14	15	3.6	1.2	.79	.94	.05	.55	.32
AC-FT	3670	1310	825	1950	1140	586	180	1000	7670	535	330	3470
CFSM	.13	.05	.03	.07	.05	.02	.01	.04	.29	.02	.01	.13
IN.	.15	.05	.03	.08	.05	.02	.01	.04	.32	.02	.01	.14
CAL YR 1990	TOTAL	12212.15	MEAN	33.5	MAX	1360	MIN	.00	AC-FT	24220	CFSM	.07
WTR YR 1991	TOTAL	11432.91	MEAN	31.3	MAX	905	MIN	.05	AC-FT	22680	CFSM	.07

COLORADO RIVER BASIN

08127000 ELM CREEK AT BALLINGER, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: October 1957 to September 1991 (discontinued).

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1967 to September 1991 .

WATER TEMPERATURE: October 1967 to September 1991 .

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, 4,220 microsiemens Sept. 12, 17, 1970; minimum daily, 244 microsiemens Aug. 4, 1978.

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

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 2,780 microsiemens May 1; minimum daily, 451 microsiemens June 7.

WATER TEMPERATURE: Maximum daily, 33.5°C July 30; minimum daily, 2.0°C Dec. 24, 26.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB DISSOLV FLD. AS CACO3 (MG/L)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
OCT 04...	1250	37	885	24.0	270	100	62	27	68
DEC 05...	1305	17	2350	9.0	650	370	130	79	240
JAN 15...	1340	23	2210	8.5	610	330	120	75	230
APR 25...	1030	1.8	2740	21.0	740	480	130	100	300
JUN 05...	1305	68	978	24.0	250	120	52	29	97
AUG 15...	0825	3.7	950	26.0	250	110	51	30	86
DATE		SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT DIS FIX END FIELD CACO3 (MG/L)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SI02)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)
OCT 04...		2	6.2	160	90	130	0.40	11	493
DEC 05...		4	4.9	280	290	430	0.70	9.9	1350
JAN 15...		4	3.7	280	230	400	1.0	10	1240
APR 25...		5	5.1	250	390	540	1.0	5.5	1620
JUN 05...		3	5.3	130	110	150	0.50	7.6	532
AUG 15...		2	5.4	140	100	140	0.40	10	507

COLORADO RIVER BASIN

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08127000 ELM CREEK AT BALLINGER, TX--Continued

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1990 TO SEPTEMBER 1991

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. 1990	1850	841	478	2390	130	645	100	501	240
NOV. 1990	662	2030	1200	2140	360	650	290	527	600
DEC. 1990	416	2290	1360	1530	420	475	350	388	680
JAN. 1991	983	2090	1230	3270	380	1010	310	817	610
FEB. 1991	575	2280	1350	2100	420	654	340	534	670
MAR. 1991	295.4	2650	1590	1270	510	408	420	336	790
APR. 1991	90.9	2700	1630	399	530	129	430	106	810
MAY 1991	504.34	1360	784	1070	220	306	180	243	390
JUNE 1991	3868.20	668	378	3950	100	1040	77	806	190
JULY 1991	269.84	1620	945	688	280	201	220	161	470
AUG. 1991	166.45	1040	596	268	160	74	130	58	300
SEPT 1991	1751.78	646	365	1720	96	453	74	349	180
TOTAL	11432.91	**	**	20800	**	6050	**	4830	**
WTD.AVG.	31	1160	673	**	200	**	160	**	340

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY EQUIVALENT MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	740	1690	e2270	2500	1930	2560	2700	2780	1670	1330	1620	1010
2	792	1770	e2250	2510	1990	2570	2690	2760	1680	1390	1480	1020
3	842	1790	2220	2500	2000	2580	2700	2750	1410	1420	1380	1030
4	902	1780	e2280	2520	2060	2590	2690	2730	1050	1460	1360	1040
5	1130	1890	2350	2510	2140	2600	2680	2750	940	1480	1350	1050
6	980	2020	e2320	2510	2180	2610	2690	2740	681	1500	1340	1160
7	1140	2130	e2300	2520	2190	2620	2680	2750	451	1540	1330	1070
8	1200	2040	e2280	2520	2240	2630	2680	1160	521	1560	1290	455
9	850	2140	e2260	2470	2260	2630	2690	1040	580	1580	1140	469
10	605	2000	e2240	2430	2250	2640	2680	1730	680	1640	922	521
11	663	1990	2210	2480	2260	2650	2670	1780	647	1630	938	563
12	617	1970	e2170	2410	2280	2640	2660	1800	702	1680	944	570
13	625	1950	e2140	2370	2300	2650	2670	1770	765	1690	948	584
14	653	1950	2030	2280	2320	2660	2670	1750	815	1730	956	586
15	692	1940	e2070	2200	2340	2650	2680	1690	871	1750	945	636
16	740	1960	e2100	2150	2360	2660	2690	1670	936	1770	906	860
17	795	1960	e2130	2050	2370	2670	2680	1660	1010	1780	865	875
18	816	1960	e2160	1340	2400	2680	2690	1640	1020	1790	849	652
19	930	2020	e2200	2240	2420	2700	2700	1630	1040	1800	836	646
20	979	2030	e2260	2250	2430	2710	2710	1620	1060	1810	834	705
21	988	2080	e2280	2070	2450	2700	2720	1630	1070	1820	860	751
22	1040	2120	e2300	1830	2470	2710	2720	1640	1110	1840	870	764
23	1140	2120	2310	1800	2510	2700	2710	1630	1160	e1850	868	787
24	1240	2160	2450	1730	2520	2710	2720	1620	1180	1350	883	812
25	1290	2190	2460	1630	2530	2720	2720	1610	1200	1380	876	818
26	1390	2200	2450	1590	2540	2760	2730	1620	1230	1570	882	826
27	1570	2240	2440	1610	2540	2710	2740	1630	1240	1720	933	845
28	1610	2250	2450	1660	2550	2720	2750	1640	1300	1870	936	862
29	1560	2270	2460	1710	---	2750	2760	1650	1310	1650	995	890
30	1600	2290	2470	2480	---	2740	2770	1650	1320	1840	1010	894
31	1600	---	2430	1840	---	2730	---	1660	---	1720	1000	---
MEAN	1020	2030	2280	2150	2320	2670	2700	1880	1020	1640	1040	792

e Estimated

COLORADO RIVER BASIN

08127000 ELM CREEK AT BALLINGER, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25.0	21.0	15.5	7.5	9.0	16.0	19.0	22.5	26.5	27.0	29.5	27.0
2	24.5	22.0	14.5	10.0	9.5	14.5	18.5	23.0	26.5	31.5	31.5	28.0
3	26.0	20.5	12.0	4.5	10.0	15.0	22.0	26.5	23.5	32.0	30.5	31.0
4	26.5	15.5	12.0	5.0	13.0	16.0	20.0	26.0	26.0	28.5	31.5	27.0
5	26.5	15.0	10.5	7.5	13.5	17.5	21.5	22.0	26.0	29.0	31.5	29.0
6	25.5	15.0	10.0	5.5	13.0	18.0	21.0	23.5	25.0	28.0	30.5	27.0
7	25.0	12.5	9.5	6.0	14.0	18.0	21.5	23.0	27.0	28.5	29.5	27.0
8	27.0	11.5	11.0	7.0	14.0	19.5	24.0	22.0	22.5	28.0	32.0	24.5
9	20.0	10.0	10.0	7.0	14.5	17.5	22.5	23.0	25.0	28.0	32.5	26.5
10	16.5	14.0	10.0	7.0	14.0	17.0	22.5	23.5	27.5	29.0	28.5	27.0
11	17.0	16.0	11.0	8.0	14.5	18.0	23.5	24.5	26.0	29.0	30.0	28.5
12	18.0	14.5	12.0	9.0	15.5	17.0	25.0	25.0	27.0	28.0	28.0	27.5
13	19.5	14.5	11.0	9.0	15.5	16.5	25.0	26.5	26.0	28.0	28.0	26.0
14	21.0	15.0	12.5	8.5	17.0	14.5	23.0	27.5	26.0	29.5	26.5	27.0
15	20.0	16.0	11.0	9.5	14.0	15.5	24.0	29.0	26.0	31.5	33.0	27.0
16	21.0	13.5	11.5	9.0	13.5	13.5	24.0	28.0	28.0	29.0	33.0	26.0
17	24.0	15.0	12.5	9.5	15.0	16.0	25.0	29.5	29.0	32.0	27.5	27.0
18	20.5	16.5	12.0	8.5	17.0	17.0	26.0	29.0	29.0	32.0	27.5	25.5
19	22.0	17.5	12.5	10.0	14.5	15.0	23.5	28.5	30.0	32.0	28.0	20.0
20	20.0	18.0	12.0	8.5	15.0	16.0	20.0	28.0	30.0	29.0	31.0	17.5
21	18.0	20.0	6.0	8.0	13.0	18.5	24.0	29.0	31.0	29.5	32.0	19.0
22	19.5	18.5	3.5	8.0	15.0	17.5	19.5	29.0	29.5	28.5	28.5	20.0
23	17.0	18.0	2.5	9.0	14.5	18.0	22.5	28.0	28.0	---	28.0	21.0
24	18.5	18.5	2.0	8.0	13.0	18.0	22.5	28.0	29.0	25.5	28.5	22.0
25	19.0	19.0	2.5	8.0	13.0	19.0	25.0	30.5	29.5	28.0	30.0	21.5
26	19.5	19.0	2.0	9.0	13.0	21.5	25.5	28.0	32.5	28.0	29.0	22.0
27	22.5	17.5	6.0	10.0	13.0	19.5	23.0	26.0	31.0	27.5	29.5	23.0
28	22.0	16.0	6.5	11.0	14.0	19.5	24.0	27.5	28.5	31.0	27.5	20.0
29	21.5	15.0	7.0	9.5	---	17.5	24.0	28.0	28.0	33.0	31.0	21.5
30	19.5	14.5	4.5	7.5	---	17.0	24.5	27.5	27.5	33.5	29.0	22.5
31	19.0	---	5.0	8.5	---	18.0	---	27.0	---	33.0	29.0	---
MEAN	21.3	16.3	9.0	8.2	13.7	17.2	22.9	26.4	27.6	29.6	29.7	24.6

COLORADO RIVER BASIN

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08128000 SOUTH CONCHO RIVER AT CHRISTOVAL, TX

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

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

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

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

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

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

AVERAGE DISCHARGE.--61 years, 31.7 ft³/s (22,970 acre-ft/yr).

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

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 7	1030	*714	*4.05	No other peak greater than base discharge.			
Minimum daily discharge, 20 ft ³ /s Aug. 31 to Sept. 3.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	44	37	39	33	38	32	27	29	24	34	25	20
2	43	37	39	33	39	33	28	28	25	35	25	20
3	46	46	37	33	39	31	28	28	29	35	25	20
4	43	45	36	33	37	30	28	28	25	34	25	21
5	44	42	38	33	31	31	30	28	24	31	25	22
6	46	43	38	33	31	33	30	28	96	30	25	21
7	47	42	37	33	31	33	29	28	138	29	25	22
8	47	42	37	33	31	33	28	28	36	28	24	24
9	47	40	37	35	31	32	26	28	33	29	27	23
10	45	38	37	32	31	31	26	28	33	30	25	22
11	45	38	37	30	31	32	28	27	35	31	24	22
12	43	39	38	30	32	31	28	26	36	31	24	22
13	44	37	38	31	33	31	28	26	36	30	24	23
14	46	39	38	31	31	31	28	25	37	30	24	26
15	46	41	39	31	31	31	29	26	39	31	24	24
16	46	37	40	31	32	31	29	27	46	31	24	25
17	46	39	40	31	33	31	28	26	40	30	24	25
18	45	43	37	34	31	31	29	26	37	30	24	24
19	43	43	38	31	31	31	30	26	37	28	24	25
20	42	42	38	31	31	31	30	25	36	28	24	25
21	44	39	38	31	31	31	32	25	35	28	22	25
22	41	42	37	32	31	31	32	26	37	28	22	26
23	39	38	37	33	31	31	31	26	35	26	22	26
24	40	37	35	33	31	31	33	28	35	29	22	26
25	51	41	33	33	31	32	32	26	35	31	23	26
26	41	39	33	33	31	31	31	25	35	29	22	26
27	45	39	33	35	31	31	31	23	35	26	22	26
28	43	39	34	35	32	31	31	22	35	26	22	26
29	36	39	35	36	---	30	31	23	31	26	22	26
30	36	40	33	37	---	28	32	23	33	26	22	26
31	37	---	33	37	---	26	---	24	---	25	20	---
TOTAL	1351	1203	1139	1017	904	963	883	812	1188	915	732	715
MEAN	43.6	40.1	36.7	32.8	32.3	31.1	29.4	26.2	39.6	29.5	23.6	23.8
MAX	51	46	40	37	39	33	33	29	138	35	27	26
MIN	36	37	33	30	31	26	26	22	24	25	20	20
AC-FT	2680	2390	2260	2020	1790	1910	1750	1610	2360	1810	1450	1420
CAL YR 1990	TOTAL	13480.9	MEAN	36.9	MAX	6340	MIN	5.1	AC-FT	26740		
WTR YR 1991	TOTAL	11822	MEAN	32.4	MAX	138	MIN	20	AC-FT	23450		

08128400 MIDDLE CONCHO RIVER ABOVE TANKERSLEY, TX

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

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

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

Water-quality records.--Chemical analyses: August 1964 to April 1965.

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

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

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

AVERAGE DISCHARGE.--30 years, 16.6 ft³/s (12,030 acre-ft/yr).

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

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 8	2400	*878	*9.95				

Minimum discharge, no flow at times.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.5	4.3	4.9	5.9	12	12	8.6	4.0	.90	.21	.71	.29
2	2.2	4.2	5.1	5.9	13	12	8.6	4.0	.81	.20	.56	.32
3	4.3	4.2	5.3	5.9	13	11	8.5	4.0	2.9	.17	.46	.32
4	2.5	7.9	5.3	5.9	12	11	7.8	4.0	1.8	.14	.42	.32
5	2.7	7.4	5.3	5.9	13	11	8.3	3.7	1.3	.13	.77	.34
6	2.7	7.4	5.6	6.6	13	11	8.6	3.3	1.2	.10	.54	.36
7	2.3	6.0	5.6	6.6	13	11	24	3.2	2.5	.09	.36	.36
8	53	6.1	5.6	6.6	13	11	26	3.0	1.8	.07	.32	.39
9	131	7.2	5.0	7.6	12	11	16	3.0	1.7	.06	.38	.93
10	9.9	8.0	4.9	8.6	12	12	12	2.8	2.0	.07	1.3	1.9
11	5.5	6.3	5.3	8.5	12	11	11	2.8	1.9	.05	.63	1.6
12	3.9	6.1	5.6	7.8	12	11	10	2.6	1.6	.05	.50	1.3
13	3.4	5.6	5.6	7.5	13	11	10	2.4	1.4	.05	.52	1.1
14	2.9	5.6	5.5	7.6	13	11	8.8	2.2	1.2	.05	1.0	39
15	2.4	5.7	5.3	7.8	12	11	7.9	2.0	1.5	.05	1.1	52
16	2.4	5.9	5.5	7.8	12	10	7.4	1.9	1.3	.05	3.7	15
17	3.1	5.8	6.1	7.9	12	10	7.4	1.9	1.1	.05	3.8	145
18	2.8	5.6	6.3	12	12	10	7.0	2.3	.95	.04	1.9	34
19	2.6	5.6	6.3	15	12	10	6.6	2.4	.78	.04	1.0	17
20	2.9	5.6	6.3	13	12	10	6.6	2.2	.63	.03	.68	16
21	5.2	5.6	6.3	11	11	10	6.6	1.9	.51	.02	.50	31
22	5.1	5.5	6.3	11	11	9.8	6.1	1.7	1.1	.01	.36	15
23	6.2	5.3	6.1	11	11	9.5	5.9	1.7	.62	.00	.36	9.4
24	6.6	5.3	5.9	10	11	8.6	5.9	1.6	.52	.01	.36	7.8
25	6.3	5.3	5.9	9.8	11	8.2	5.9	1.6	.48	.18	.42	6.8
26	5.6	5.7	5.9	10	11	8.2	5.6	1.6	.42	.14	.36	5.8
27	5.6	6.4	5.9	9.6	11	8.2	5.1	1.5	.34	.14	.45	5.1
28	5.0	5.7	5.9	9.1	11	8.1	4.6	1.3	.28	.33	.50	4.6
29	4.5	5.0	5.9	9.1	---	8.1	4.2	1.1	.27	1.0	.40	4.1
30	4.3	4.9	5.9	9.4	---	8.2	4.0	.99	.23	1.9	.32	4.0
31	4.3	---	5.9	11	---	8.4	---	.90	---	1.0	.28	---
TOTAL	302.7	175.2	176.3	271.4	336	313.3	265.0	73.59	34.04	6.43	24.96	421.13
MEAN	9.76	5.84	5.69	8.75	12.0	10.1	8.83	2.37	1.13	.21	.81	14.0
MAX	131	8.0	6.3	15	13	12	26	4.0	2.9	1.9	3.8	145
MIN	1.5	4.2	4.9	5.9	11	8.1	4.0	.90	.23	.00	.28	.29
AC-FT	600	348	350	538	666	621	526	146	68	13	50	835
CAL YR 1990	TOTAL	2150.44	MEAN	5.89	MAX	433	MIN	.00	AC-FT	4270		
WTR YR 1991	TOTAL	2400.05	MEAN	6.58	MAX	145	MIN	.00	AC-FT	4760		

COLORADO RIVER BASIN

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08129300 SPRING CREEK ABOVE TANKERSLEY, TX

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

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

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

Water-quality records.--Chemical analyses: September 1964 to May 1967.

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

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

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

AVERAGE DISCHARGE.--31 years, 13.4 ft³/s (9,710 acre-ft/yr).

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

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 8	2200	*318	*5.24				
Minimum daily discharge, 0.06 ft ³ /s July 18, 19.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	12	22	19	19	18	12	11	3.8	2.0	6.0	7.5
2	12	12	22	18	19	21	9.2	12	6.9	2.8	3.5	8.3
3	22	14	18	18	19	19	7.3	7.5	7.2	2.3	1.9	5.6
4	17	24	16	18	19	21	7.4	6.1	13	1.8	.76	3.8
5	15	22	17	18	17	21	8.6	6.2	13	2.1	.75	4.6
6	14	17	17	20	13	20	8.6	9.0	11	2.7	1.9	5.2
7	12	16	15	20	15	20	9.4	9.9	22	2.3	1.8	4.3
8	13	19	14	20	14	22	9.9	9.3	50	.88	2.5	3.3
9	35	19	16	23	14	24	7.2	9.6	63	.73	3.4	2.6
10	15	17	15	22	13	26	4.0	5.3	23	.64	7.0	2.5
11	13	17	14	18	16	22	8.8	4.6	20	.38	8.7	2.2
12	12	17	17	18	17	16	11	6.4	19	.25	7.9	1.3
13	12	17	14	17	17	15	17	5.9	18	.19	7.3	7.7
14	12	17	15	17	14	15	15	3.8	17	.17	7.1	34
15	12	18	15	17	14	17	14	5.7	18	.13	8.2	25
16	12	19	19	16	15	18	12	9.2	18	.09	6.7	23
17	11	19	19	18	17	22	13	10	15	.07	5.9	27
18	11	20	15	25	17	22	13	9.0	14	.06	4.5	21
19	12	20	15	22	15	23	12	8.7	13	.06	6.7	23
20	11	20	19	19	17	22	11	6.5	13	.07	6.8	23
21	19	19	19	19	18	22	11	7.0	12	.08	5.8	20
22	16	17	19	19	18	20	11	9.0	16	.08	4.0	19
23	14	19	18	19	17	17	13	9.3	12	.07	1.4	18
24	12	20	18	19	15	19	9.9	11	10	.09	.55	18
25	13	21	19	19	17	20	8.3	10	8.6	.18	.38	17
26	13	21	19	18	14	17	5.4	8.6	8.3	4.5	2.5	17
27	13	21	19	18	12	16	5.4	7.7	7.4	8.8	6.1	17
28	13	19	19	18	11	18	7.0	9.1	5.9	8.6	6.5	17
29	13	20	19	19	---	15	8.4	6.5	4.7	10	7.0	16
30	12	21	19	19	---	19	9.3	4.7	3.9	8.8	6.4	16
31	12	---	19	20	---	16	---	3.7	---	7.7	6.8	---
TOTAL	435	554	541	590	443	603	299.1	242.3	466.7	68.62	146.74	409.9
MEAN	14.0	18.5	17.5	19.0	15.8	19.5	9.97	7.82	15.6	2.21	4.73	13.7
MAX	35	24	22	25	19	26	17	12	63	10	8.7	34
MIN	11	12	14	16	11	15	4.0	3.7	3.8	.06	.38	1.3
AC-FT	863	1100	1070	1170	879	1200	593	481	926	136	291	813
CAL YR 1990	TOTAL	5163.52	MEAN	14.1	MAX	1070	MIN	.12	AC-FT	10240		
WTR YR 1991	TOTAL	4799.36	MEAN	13.1	MAX	63	MIN	.06	AC-FT	9520		

08130500 DOVE CREEK AT KNICKERBOCKER, TX

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

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

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

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

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

REMARKS.--No estimated daily discharges. Records good. Flow is partly regulated by storage, by diversions from two small upstream channel dams, and by small upstream diversions (for irrigation). Flow is sustained by springflow from Dove Creek Spring about 9 mi upstream. Several observations of water temperature were made during the year. Satellite telemeter at station.

AVERAGE DISCHARGE.--31 years, 16.4 ft³/s (11,880 acre-ft/yr).

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

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Sept. 14	1130	*44	*4.07				

Minimum daily discharge, 2.7 ft³/s July 23.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	13	16	14	17	15	13	11	6.5	9.1	5.3	6.3
2	12	14	16	14	16	15	13	11	5.8	9.7	5.0	7.7
3	17	15	16	14	16	15	14	11	5.6	10	5.2	7.9
4	13	21	16	14	16	15	14	10	6.0	14	5.6	7.9
5	12	17	16	14	16	15	15	9.7	6.2	10	5.0	7.9
6	12	16	16	15	16	15	13	9.7	5.1	8.0	5.9	7.9
7	11	16	16	15	16	15	14	10	12	7.3	4.4	8.6
8	12	17	16	14	15	15	14	9.8	13	7.0	4.0	8.7
9	13	17	16	16	15	15	14	8.2	20	8.4	5.4	7.6
10	12	16	16	18	15	15	14	8.4	12	9.1	6.4	6.6
11	11	16	16	17	15	15	14	8.5	11	8.9	8.0	5.9
12	11	16	16	17	15	15	13	8.4	10	8.3	8.2	6.3
13	11	16	16	16	17	13	13	8.1	8.8	7.3	8.2	12
14	11	16	16	16	17	13	13	7.9	8.8	7.9	8.2	30
15	11	16	16	16	17	13	13	7.0	9.1	7.4	8.0	15
16	11	16	16	16	17	13	13	6.4	9.3	6.7	7.5	15
17	11	15	16	16	17	14	13	5.8	9.1	5.8	7.0	17
18	11	15	16	17	17	14	12	4.5	9.0	4.4	7.0	13
19	11	15	16	17	15	14	13	3.8	9.1	5.5	7.0	14
20	11	15	16	17	15	14	13	5.0	9.0	5.7	6.8	15
21	17	15	16	17	15	14	13	5.4	6.9	5.5	6.8	14
22	13	17	16	17	15	14	13	5.6	9.4	4.6	6.6	14
23	13	17	16	17	15	14	12	6.1	8.2	2.7	6.3	14
24	13	16	16	17	15	14	12	7.2	7.3	6.8	6.4	14
25	12	16	16	17	15	15	11	6.9	6.2	8.2	6.5	14
26	12	16	16	17	15	15	8.6	6.5	7.5	12	6.5	14
27	12	16	16	17	15	15	8.2	5.1	7.0	7.1	6.9	14
28	12	17	15	17	15	14	8.1	4.7	7.0	5.7	6.8	13
29	12	16	14	17	---	13	9.5	5.8	7.3	6.1	6.5	13
30	12	16	14	17	---	13	10	6.0	7.6	7.1	6.4	13
31	13	---	14	17	---	13	---	6.4	---	6.7	6.2	---
TOTAL	377	480	489	500	440	442	373.4	229.9	259.8	233.0	200.0	357.3
MEAN	12.2	16.0	15.8	16.1	15.7	14.3	12.4	7.42	8.66	7.52	6.45	11.9
MAX	17	21	16	18	17	15	15	11	20	14	8.2	30
MIN	11	13	14	14	15	13	8.1	3.8	5.1	2.7	4.0	5.9
AC-FT	748	952	970	992	873	877	741	456	515	462	397	709
CAL YR 1990	TOTAL	3884.65	MEAN	10.6	MAX	182	MIN	.59	AC-FT	7710		
WTR YR 1991	TOTAL	4381.4	MEAN	12.0	MAX	30	MIN	2.7	AC-FT	8690		

08131200 TWIN BUTTES RESERVOIR NEAR SAN ANGELO, TX

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

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

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

Water-quality records.--Chemical analyses: October 1969 to September 1984.

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

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

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

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

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

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

EXTREMES FOR CURRENT YEAR.--Maximum contents, 101,600 acre-ft Mar. 20, 21 (elevation, 1,928.36 ft); minimum combined daily, 70,630 acre-ft Sept. 12.

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	82460	85850	89810	92610	97510	100500	101000	95430	89990	89230	78470	71660
2	82580	85930	89940	92710	97610	100500	101100	95270	89800	88840	78110	71560
3	83140	86270	89940	92760	97820	100600	101000	94960	89990	88470	77720	71490
4	83270	86650	90020	92910	97770	100700	101000	94700	90040	88090	77380	71420
5	83320	86770	90160	93010	97870	100700	101100	94390	90040	87680	76940	71350
6	83420	86810	90200	93200	98030	100700	101200	94240	90290	87330	76460	71250
7	83480	87020	90240	93350	98130	100800	101200	94040	90640	86940	76070	71150
8	83670	87190	90340	93450	98290	100900	101200	93750	91320	86350	75650	71040
9	83990	87270	90380	94040	98340	100900	101100	93600	91580	85870	75220	70940
10	84070	87340	90570	94140	98450	101100	101100	93500	91670	85420	75020	70840
11	84120	87420	90660	94290	98600	101100	101100	93450	91750	84870	74890	70700
12	84220	87540	90700	94490	98860	101000	101000	93300	91860	84330	74860	70630
13	84300	87640	90790	94700	98860	101000	100900	93150	91880	83850	74830	70970
14	84340	87750	90920	94810	98970	101200	100700	93010	91940	83320	74830	71680
15	84420	87850	91050	94810	99020	101300	100600	92810	92010	82880	74730	71920
16	84500	87980	91220	95010	99230	101400	100400	92760	92050	82520	74650	72510
17	84540	88100	91400	95270	99330	101400	100300	92610	92120	82040	74540	73610
18	84540	88230	91440	95740	99380	101500	100000	92460	92160	81650	74430	73780
19	84540	88350	91530	95950	99380	101500	99760	92360	92140	81260	74320	74140
20	84580	88560	91620	96000	99540	101500	99590	92220	92120	80910	74250	74270
21	84930	88680	91660	96210	99700	101500	99380	92070	92160	80570	74110	74390
22	84960	88930	91700	96370	99810	101200	99070	91920	92160	80140	73900	74480
23	85020	89020	91830	96470	100000	101200	98860	91720	92150	79760	73590	74580
24	85060	89100	91880	96630	100000	101100	98340	91670	91980	79610	73310	74650
25	85130	89220	91970	96780	100100	101100	97770	91520	91670	80140	73070	74720
26	85240	89430	92020	96890	100200	101200	97300	91330	91310	79800	72830	74790
27	85270	89540	92120	97090	100400	101200	96940	91130	90940	79570	72620	74850
28	85340	89550	92270	96780	100500	101100	96470	90980	90560	79350	72380	74920
29	85610	89680	92360	96940	---	100900	96110	90780	90090	79150	72140	74950
30	85700	89810	92360	97200	---	101000	95790	90540	89640	78920	71970	75010
31	85770	---	92460	97410	---	101000	---	90290	---	78690	71800	---
MAX	85770	89810	92460	97410	100500	101500	101200	95430	92160	89230	78470	75010
MIN	82460	85850	89810	92610	97510	100500	95790	90290	89640	78690	71800	70630
(↑)	1925.06	1926.02	1926.61	1927.58	1928.16	1928.26	1927.27	1926.17	1925.99	1923.26	1921.34	1922.24
(Φ)	+3430	+4040	+2650	+4950	+3090	+500	-5210	-5500	-650	-10950	-6890	+3210
CAL YR 1990	MAX	95850	MIN	68330	(Φ)	-1580						
WTR YR 1991	MAX	101500	MIN	70630	(Φ)	-7330						

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

08132000 LAKE NASWORTHY NEAR SAN ANGELO, TX

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

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

PERIOD OF RECORD.--March 1930 to current year. Prior to October 1969, monthend contents only.
Water-quality records.--Chemical analyses: October 1969 to September 1984.

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

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

REMARKS.--The lake is formed by a 6,090-foot dam with a 5,590-foot earthen section that has an earthen spillway 300 ft long, a concrete spillway 475 ft long with a bank of fifteen 25.0- by 18.0-foot tainter gates, and a 25.0- by 3.0-foot collapsible floodgate. The dam was completed and storage began Mar. 28, 1930. Since July 1966, West Texas Utilities Co. has operated a steam generating powerplant on the lake. Since September 1962, the lake has been almost totally controlled by releases or pumpage from Twin Buttes Reservoir (station 08131200). Siltation surveys in December 1938 and May 1953 by the Soil Conservation Service show that 1,191 acre-ft of silt was deposited from March 1930 to December 1938 and an additional 1,023 acre-ft was deposited from December 1938 to May 1953, totaling 2,214 acre-ft. Water is used for part of San Angelo municipal supply and for irrigation east of San Angelo. The capacity curve is based on a survey by the Soil Conservation Service in 1953 and has been used since 1955. Figures given herein represent total contents. Data regarding the dam and lake are given in the following table:

	Gage height (feet)	Capacity (acre-feet)
Top of dam.....	43.5	-
Crest of spillway (300 ft).....	39.1	27,810
Top of gates.....	33.2	13,990
Top of collapsible floodgate.....	32.2	12,390
Lowest outlet to canal (invert).....	27.5	6,370
Crest of spillway (tainter gates sill).....	15.3	435
Lowest gated outlet (invert).....	-4.0	0

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

EXTREMES FOR CURRENT YEAR.--Maximum contents, 12,120 acre-ft Oct. 3 at 1000 hours (gage height, 32.03 ft); minimum, 10,460 acre-ft Apr. 22 (gage height, 30.99 ft).

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

30.5	9,820	32.0	12,070
31.0	10,470	32.5	12,870
31.5	11,270		

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12040	11010	10790	10650	11540	11250	11270	11330	11030	11560	11410	11300
2	11990	10980	10760	10630	11540	11190	11220	11380	11060	11540	11370	11290
3	12090	11090	10690	10630	11560	11210	11130	11370	11480	11510	11350	11190
4	12040	11140	10680	10650	11560	11170	11080	11370	11410	11490	11320	11050
5	12010	11140	10650	10650	11560	11140	11060	11300	11350	11480	11300	10970
6	11970	11080	10580	10680	11560	11080	10970	11320	11430	11450	11320	10920
7	11910	11090	10600	10680	11540	11010	11030	11380	11850	11410	11330	10870
8	11880	11130	10600	10680	11540	11030	10840	11460	11940	11370	11380	10850
9	11830	11110	10610	10820	11540	11050	10740	11460	11940	11290	11430	10850
10	11780	11110	10610	10850	11540	11110	10660	11450	11910	11130	11480	10810
11	11750	11110	10660	10850	11540	11080	10580	11410	11850	11210	11410	10740
12	11700	11090	10630	10870	11540	10970	10570	11400	11800	11300	11400	10760
13	11670	11090	10600	10890	11510	10920	10650	11330	11700	11370	11350	10890
14	11620	11060	10600	10900	11490	10850	10650	11270	11650	11480	11350	11110
15	11590	11060	10580	10890	11450	10840	10650	11220	11670	11480	11370	11090
16	11560	11030	10600	10890	11450	10850	10650	11220	11670	11350	11380	11210
17	11480	11090	10650	10900	11430	10850	10630	11160	11540	11480	11370	11300
18	11450	10980	10580	11030	11400	10920	10580	11090	11480	11430	11370	11270
19	11410	10980	10550	11080	11370	11050	10530	11030	11430	11350	11370	11380
20	11380	10980	10550	11030	11350	11110	10530	10980	11350	11270	11370	11370
21	11460	10950	10500	11090	11370	11170	10520	10930	11290	11210	11320	11330
22	11430	11010	10490	11110	11350	11160	10490	10900	11190	11130	11350	11290
23	11380	11030	10470	11080	11350	11140	10490	10970	11080	11130	11400	11270
24	11330	11060	10490	11080	11320	11160	10810	11090	11160	11240	11460	11240
25	11290	11000	10520	11060	11300	11210	11210	11110	11300	11400	11490	11210
26	11240	11030	10530	11080	11290	11240	11290	11110	11350	11430	11510	11160
27	11210	10950	10550	11080	11290	11250	11300	11080	11430	11540	11480	11090
28	11190	10890	10570	11350	11250	11270	11300	11000	11450	11640	11480	11050
29	11160	10870	10600	11480	---	11210	11330	10950	11430	11670	11490	10970
30	11110	10890	10600	11540	---	11270	11350	10980	11530	11620	11430	10900
31	11090	---	10630	11540	---	11290	---	11000	---	11540	11350	---
MAX	12090	11140	10790	11540	11560	11290	11350	11460	11940	11670	11510	11380
MIN	11090	10870	10470	10630	11250	10840	10490	10900	11030	11130	11300	10740
(↑)	31.39	31.26	31.10	31.67	31.49	31.51	31.55	31.33	31.66	31.67	31.55	31.27
(Φ)	-1010	-200	-260	+910	-290	+40	+60	-350	+530	+10	-190	-450
CAL YR 1990	MAX	12710	MIN	10340	(Φ)	-80						
WTR YR 1991	MAX	12090	MIN	10470	(Φ)	-1200						

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

08133500 NORTH CONCHO RIVER AT STERLING CITY, TX
(Flood-hydrograph partial-record station)

LOCATION.--Lat 31°49'48", long 100°59'36", Sterling County, Hydrologic Unit 12090104, on right bank 100 ft upstream from bridge on State Highway 163, 0.5 mi south of Sterling City, 4.0 mi upstream from Sterling Creek, 5.1 mi downstream from Lacy Creek, and at mile 57.2.

DRAINAGE AREA.--588 mi², of which 19.6 mi² probably is noncontributing.

PERIOD OF RECORD.--September 1939 to September 1985 (continuous-record station). Annual maximum, October 1985 to current year.

REVISED RECORDS.--WSP 1512: 1945, 1948. WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,242.36 ft above National Geodetic Vertical Datum of 1929. Prior to Dec. 6, 1939, nonrecording gage at same site and datum.

REMARKS.--Records good. No estimated daily discharges. Beginning Oct. 1, 1985, only daily discharges of 100 ft³/s or greater are published. There are several small diversions above station for irrigation. One observation of water temperature was made during the water year. There was no daily discharge above 100 ft³/s during the 1991 water year.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,300 ft³/s July 6, 1948 (gage height, 23.70 ft); prior to Oct. 1, 1985, no flow at times each year.

Maximum stage since at least 1891, that of July 6, 1948.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
July 27	1900	*100	*6.10	No peak greater than base discharge.			

Minimum discharge, not determined.

08134000 NORTH CONCHO RIVER NEAR CARLSBAD, TX

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

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

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

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

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

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

REMARKS.--Records good except those for estimated daily discharges, which are fair. There are several diversions (by pumping) upstream from station.

AVERAGE DISCHARGE.--67 years, 31.5 ft³/s (22,820 acre-ft/yr).

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

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Sept. 17	0200	*1,000	*7.98				

Minimum discharge, no flow May 11-13, caused by temporary dam at control.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.1	2.2	3.6	4.6	5.3	5.1	5.1	1.7	.86	1.8	2.2	.46
2	2.0	2.2	3.9	4.5	5.0	4.9	5.1	1.6	.75	1.7	1.5	.32
3	3.5	2.5	3.9	4.5	4.9	4.8	5.2	1.8	3.5	1.6	1.1	.20
4	3.7	3.4	3.9	4.5	4.9	4.7	5.3	1.6	6.7	2.6	.90	.20
5	3.3	3.5	3.9	4.5	5.0	4.8	5.2	1.3	4.0	3.3	.68	.20
6	2.5	3.4	4.0	4.8	4.9	4.8	5.1	1.2	73	2.8	.53	.28
7	2.1	3.1	3.8	5.0	4.8	4.8	5.0	1.2	85	2.2	.32	.73
8	2.0	3.3	3.7	5.1	4.7	4.7	5.0	1.2	34	1.8	.20	1.0
9	4.7	4.0	3.8	5.5	4.7	4.8	4.7	1.1	34	1.5	.20	.91
10	3.6	4.0	3.9	5.9	4.7	4.8	4.7	1.1	19	1.3	.19	.56
11	2.4	3.8	4.1	5.5	4.7	4.8	4.7	e.46	12	1.2	.18	.41
12	2.0	3.6	4.4	5.3	4.8	4.8	4.7	e.00	8.0	1.1	1.3	.27
13	1.8	3.5	4.5	5.0	4.7	4.7	4.7	e.56	5.7	.93	2.4	.60
14	1.6	3.6	4.4	4.9	4.7	4.7	4.5	239	4.9	.73	5.6	1.7
15	1.6	3.7	4.3	5.0	4.7	4.7	4.3	82	5.4	.58	3.3	2.9
16	1.6	3.8	4.7	5.0	4.6	4.8	4.2	22	5.5	.44	2.1	4.4
17	1.6	3.9	4.9	4.9	4.7	5.0	4.2	11	4.5	.33	1.6	228
18	1.4	3.6	4.7	6.6	4.7	5.3	4.2	6.9	3.9	.27	1.5	16
19	1.4	3.8	4.6	7.0	4.7	5.3	4.0	5.0	3.5	.23	1.4	8.0
20	1.4	3.9	4.5	6.2	4.5	5.3	3.7	4.0	3.2	.20	1.2	6.7
21	2.2	3.8	4.5	5.6	4.6	5.4	3.6	3.2	3.1	.22	1.2	6.1
22	2.7	3.9	4.5	5.4	5.2	5.3	3.4	2.8	4.2	.12	1.1	5.5
23	2.5	4.0	4.2	5.3	5.1	5.1	3.4	2.6	4.0	.09	1.1	4.8
24	2.0	3.8	3.9	5.3	4.8	5.0	3.4	2.4	3.3	.34	1.0	4.5
25	1.8	3.7	4.2	5.2	4.8	5.1	3.7	2.4	2.9	.50	1.0	4.2
26	1.9	3.9	4.3	5.1	4.7	5.3	3.2	2.1	2.7	.46	.97	3.9
27	1.9	4.2	4.5	5.1	4.7	5.1	2.9	1.8	2.4	.36	1.0	3.7
28	2.1	4.1	4.6	4.9	4.8	5.0	2.4	1.6	2.2	.37	.79	3.7
29	2.2	3.8	4.8	4.9	---	4.6	1.9	1.4	2.0	1.4	.71	3.5
30	2.0	3.6	4.7	4.9	---	4.7	1.8	1.2	1.8	5.9	.65	3.5
31	2.1	---	4.7	5.3	---	5.1	---	1.0	---	3.3	.54	---
TOTAL	69.7	107.6	132.4	161.3	134.4	153.3	123.3	407.22	346.01	39.67	38.46	317.24
MEAN	2.25	3.59	4.27	5.20	4.80	4.95	4.11	13.1	11.5	1.28	1.24	10.6
MAX	4.7	4.2	4.9	7.0	5.3	5.4	5.3	239	85	5.9	5.6	228
MIN	1.4	2.2	3.6	4.5	4.5	4.6	1.8	.00	.75	.09	.18	.20
AC-FT	138	213	263	320	267	304	245	808	686	79	76	629
CAL YR 1990	TOTAL	1104.66	MEAN	3.03	MAX	47	MIN	.00	AC-FT	2190		
WTR YR 1991	TOTAL	2030.60	MEAN	5.56	MAX	239	MIN	.00	AC-FT	4030		

e Estimated

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

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

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

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

Water-quality records.--Chemical analyses: October 1969 to September 1984.

REVISED RECORDS.--WSP 1922: Drainage area.

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

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

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

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

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

EXTREMES FOR CURRENT YEAR.--Maximum daily contents, 32,170 acre-ft Feb. 13 (elevation, 1,884.20 ft); minimum daily, 28,980 acre-ft Sept. 13 (elevation, 1,882.73 ft).

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

1,882.0	28,510	1,884.0	31,710
1,883.0	29,550	1,885.0	33,940

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	31880	31710	31690	31340	31950	32100	31450	30900	30620	31250	30260	29360
2	31910	31710	31690	31360	31970	32080	31490	30880	30540	31210	30240	29340
3	32020	31710	31600	31360	32040	31950	31490	30840	30640	31160	30170	29320
4	31970	31730	31530	31360	32060	31970	31450	30790	30750	31120	30150	29300
5	31970	31770	31580	31380	32060	31990	31470	30690	30790	31080	30190	29280
6	32020	31750	31530	31380	32040	31970	31490	30620	30900	31010	30150	29240
7	31970	31710	31490	31380	32020	31880	31530	30600	31210	30970	30110	29200
8	31990	31770	31470	31420	32060	31820	31510	30580	31470	30900	30110	29170
9	32060	31730	31470	31510	32080	31730	31450	30560	31640	30880	30090	29130
10	32100	31730	31490	31600	32080	31750	31420	30540	31730	30880	30060	29090
11	32100	31710	31510	31600	32060	31820	31450	30490	31770	30820	30020	29050
12	32080	31710	31510	31600	32150	31820	31450	30470	31840	30750	30000	29030
13	32080	31710	31450	31640	32170	31750	31450	30470	31840	30690	30000	28980
14	32060	31730	31470	31690	32100	31710	31400	30510	31860	30620	29980	29320
15	32020	31730	31450	31690	32040	31690	31360	30660	31880	30580	29980	29410
16	31990	31730	31490	31660	32060	31660	31340	30820	31880	30510	29980	29410
17	31930	31730	31560	31640	32130	31640	31340	30860	31930	30490	29940	30020
18	31840	31770	31560	31770	32100	31620	31340	30860	31930	30470	29920	30410
19	31860	31770	31530	31910	32020	31640	31270	30840	31880	30380	29870	30540
20	31860	31770	31510	31860	31990	31660	31210	30820	31860	30320	29830	30620
21	31820	31750	31470	31840	32020	31710	31230	30820	31860	30280	29810	30690
22	31840	31750	31400	31910	32020	31710	31210	30790	31820	30170	29770	30710
23	31860	31750	31320	31930	32020	31580	31180	30770	31750	30090	29720	30690
24	31820	31770	31320	31930	32040	31560	31140	30840	31690	30110	29640	30690
25	31770	31800	31340	31930	32040	31580	31140	30880	31640	30240	29620	30690
26	31770	31820	31340	31930	31990	31620	31160	30880	31580	30300	29600	30660
27	31750	31800	31340	31930	32020	31640	31120	30820	31470	30320	29580	30640
28	31730	31640	31380	31990	32040	31690	31080	30770	31380	30340	29530	30620
29	31730	31600	31400	32020	---	31580	30990	30750	31340	30320	29470	30580
30	31730	31640	31320	31970	---	31470	30900	30730	31290	30320	29450	30560
31	31730	---	31320	31950	---	31450	---	30660	---	30280	29430	---
MAX	32100	31820	31690	32020	32170	32100	31530	30900	31930	31250	30260	30710
MIN	31730	31600	31320	31340	31950	31450	30900	30470	30540	30090	29430	28980
(+)	1884.01	1883.97	1883.82	1884.11	1884.15	1883.88	1883.63	1883.52	1883.81	1883.34	1883.03	1883.47
(Φ)	-180	-90	-320	+630	+90	-590	-550	-170	+630	-1010	-850	+1130

CAL YR 1990 MAX 33640 MIN 29470 (Φ) +2280
WTR YR 1991 MAX 32170 MIN 28980 (Φ) -1350

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

COLORADO RIVER BASIN

08136000 CONCHO RIVER AT SAN ANGELO, TX

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

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

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

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

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

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

AVERAGE DISCHARGE.--47 years (water years 1916-62) prior to construction of Twin Buttes Dam, 158 ft³/s (114,500 acre-ft/yr); 29 years (water years 1963-91) regulated, 21.2 ft³/s (15,360 acre-ft/yr).

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

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 970 ft³/s June 3 at 1600 hours (gage height, 4.30 ft); minimum daily, 1.1 ft³/s Mar. 29.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.5	7.7	6.6	4.5	6.9	7.5	8.1	11	3.4	42	31	9.0
2	17	6.5	6.3	4.9	6.4	5.5	5.5	20	2.9	32	18	5.0
3	115	16	4.7	4.0	5.3	2.0	4.5	24	267	32	3.8	3.5
4	25	116	5.9	4.4	5.4	4.0	5.0	8.5	75	42	16	3.7
5	17	20	8.2	4.6	5.2	4.5	10	7.1	26	38	46	4.2
6	7.4	8.4	7.1	13	4.7	4.4	5.3	13	9.8	31	6.5	4.5
7	6.7	8.7	5.9	7.0	4.6	2.2	5.0	9.6	170	32	4.5	3.9
8	21	23	9.3	5.0	5.5	3.5	3.9	8.8	172	29	4.8	4.7
9	100	20	6.0	87	5.3	3.4	3.7	5.6	101	28	5.0	3.6
10	15	9.3	5.2	48	4.3	3.8	3.7	6.8	13	26	31	2.8
11	6.9	6.9	5.2	9.6	4.4	3.3	3.7	9.6	65	28	18	3.6
12	6.8	6.1	5.1	6.1	5.1	3.5	3.0	12	69	21	9.2	3.7
13	6.5	5.7	5.5	5.8	4.3	2.3	15	8.9	29	24	6.5	2.9
14	5.6	5.7	5.3	4.5	4.0	3.5	6.1	16	17	35	29	229
15	4.4	5.4	4.8	4.1	4.2	3.1	4.1	7.8	51	25	14	34
16	5.3	5.8	12	4.1	4.1	4.3	4.1	18	13	18	6.7	17
17	5.5	7.5	8.9	16	4.3	5.1	3.8	17	38	20	4.5	159
18	4.0	8.1	6.3	111	5.9	3.2	3.1	13	15	17	5.7	71
19	5.6	8.7	5.5	31	4.1	3.3	2.9	12	7.4	13	3.5	88
20	6.2	8.7	6.0	9.7	4.6	3.8	3.1	11	5.3	11	3.2	50
21	99	6.3	5.0	10	5.7	3.6	3.1	7.0	7.1	20	3.6	15
22	20	12	3.5	9.5	4.9	5.7	2.4	8.6	5.0	19	3.5	8.7
23	8.8	11	3.7	7.0	4.8	2.9	4.9	5.2	6.0	9.6	3.6	7.0
24	6.8	7.2	3.7	6.3	4.1	3.5	21	200	5.6	179	4.0	6.3
25	5.2	5.6	4.9	5.5	4.3	3.7	30	21	5.5	150	4.4	4.7
26	6.3	6.6	4.7	4.2	5.4	3.5	13	10	6.6	40	10	5.3
27	6.8	6.6	4.6	4.9	4.3	22	9.2	3.2	4.8	49	5.9	6.6
28	5.6	3.6	5.1	4.3	4.5	10	10	3.0	4.9	66	5.4	7.1
29	5.3	5.2	7.3	4.9	---	1.1	12	4.0	16	21	4.5	5.0
30	6.1	5.3	6.8	21	---	11	10	3.9	42	16	3.0	4.7
31	7.6	---	5.0	15	---	13	---	2.9	---	34	4.2	---
TOTAL	565.9	373.6	184.1	476.9	136.6	156.2	219.2	508.5	1253.3	1147.6	319.0	799.6
MEAN	18.3	12.5	5.94	15.4	4.88	5.04	7.31	16.4	41.8	37.0	10.3	26.7
MAX	115	116	12	111	6.9	22	30	200	267	179	46	229
MIN	4.0	3.6	3.5	4.0	4.0	1.1	2.4	2.9	2.9	9.6	3.0	2.8
AC-FT	1120	741	365	946	271	310	435	1010	2490	2280	633	1590
CAL YR 1990	TOTAL	7410.7	MEAN	20.3	MAX	639	MIN	1.1	AC-FT	14700		
WTR YR 1991	TOTAL	6140.5	MEAN	16.8	MAX	267	MIN	1.1	AC-FT	12180		

COLORADO RIVER BASIN

71

08136500 CONCHO RIVER AT PAINT ROCK, TX

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

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

WATER-DISCHARGE RECORDS

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

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

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

REMARKS.--Records good except those for estimated daily discharge and those below 10 ft³/s, which are fair. There are many diversions above station for irrigation and municipal supply. Regulation is the same as that for Concho River at San Angelo (station 08136000). Flow affected at times by discharge from the flood-detention pools of two flood-water-retarding structures with a combined detention capacity of 2,690 acre-ft. These structures control runoff from 16.5 mi² in the Willow Creek drainage basin.

AVERAGE DISCHARGE.--47 years (water years 1916-62) prior to construction of Twin Buttes Dam, 210 ft³/s (152,100 acre-ft/yr); 29 years (water years 1963-91) regulated, 59.9 ft³/s (43,400 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 301,000 ft³/s Sept. 17, 1936 (gage height, 43.4 ft, from flood-marks), from rating curve extended above 98,000 ft³/s on basis of slope-area measurements of 144,000 and 301,000 ft³/s; no flow at times.
Maximum stage since at least 1853, that of Sept. 17, 1936.

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,000 ft³/s June 7 at 1230 hours (gage height, 16.73 ft, from flood-mark); minimum daily, 1.7 ft³/s July 24.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	77	72	58	58	77	64	43	8.6	23	28	40	31
2	73	76	59	58	79	64	44	8.4	24	41	47	31
3	87	76	59	56	81	61	46	8.4	39	58	43	31
4	109	96	55	55	84	61	44	8.4	543	55	41	41
5	138	122	55	58	84	58	41	e12	268	52	31	40
6	90	163	56	60	80	55	39	20	329	57	22	44
7	72	111	58	61	79	52	38	17	2350	55	31	56
8	62	92	58	62	76	52	38	21	773	53	31	50
9	59	88	59	77	76	51	36	14	598	49	21	48
10	79	89	59	92	76	49	33	13	339	42	51	47
11	110	92	61	119	73	50	31	14	245	38	85	46
12	75	84	61	116	74	52	31	15	271	35	80	49
13	62	75	61	94	75	49	29	17	204	39	70	53
14	58	66	61	78	72	47	25	18	142	40	58	71
15	56	66	61	69	67	47	22	26	417	37	56	214
16	60	68	64	63	64	49	23	29	293	46	65	173
17	61	68	65	61	66	49	24	28	254	40	62	340
18	58	72	62	101	68	49	23	24	134	27	51	163
19	58	71	61	113	65	50	18	29	101	26	42	226
20	59	68	61	146	63	52	15	30	83	18	40	137
21	70	65	61	151	63	53	13	27	68	12	38	161
22	82	80	57	133	67	51	11	26	61	8.9	38	99
23	125	76	55	116	68	45	9.6	28	53	4.5	36	67
24	95	73	53	106	68	43	8.1	31	51	1.7	36	57
25	80	74	54	100	64	43	7.6	142	51	50	37	53
26	75	72	52	93	61	45	7.1	103	48	206	37	51
27	72	71	54	90	61	46	5.2	50	41	151	37	47
28	72	62	56	85	62	44	4.3	36	35	74	37	41
29	72	58	58	83	---	41	6.2	29	31	94	39	37
30	73	58	57	77	---	41	8.5	26	31	86	37	36
31	72	---	56	76	---	42	---	22	---	55	31	---
TOTAL	2391	2404	1807	2707	1993	1555	723.6	880.8	7900	1579.1	1370	2540
MEAN	77.1	80.1	58.3	87.3	71.2	50.2	24.1	28.4	263	50.9	44.2	84.7
MAX	138	163	65	151	84	64	46	142	2350	206	85	340
MIN	56	58	52	55	61	41	4.3	8.4	23	1.7	21	31
AC-FT	4740	4770	3580	5370	3950	3080	1440	1750	15670	3130	2720	5040
CAL YR 1990	TOTAL	25500.31	MEAN	69.9	MAX	1690	MIN	.00	AC-FT	50580		
WTR YR 1991	TOTAL	27850.5	MEAN	76.3	MAX	2350	MIN	1.7	AC-FT	55240		

e Estimated

COLORADO RIVER BASIN

08136500 CONCHO RIVER AT PAINT ROCK, TX--Continued

WATER-QUALITY RECORDS

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

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: April 1946 to October 1949, October 1967 to September 1990.

WATER TEMPERATURE: April 1946 to October 1949, October 1967 to September 1990.

SUSPENDED SEDIMENT DISCHARGE: February 1978 to September 1981.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 3,690 microsiemens June 28, Aug. 12, 1984; minimum daily, 268 microsiemens Sept. 9, 1980.

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

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

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB DISSOLV FLD. AS CACO3 (MG/L)	CALCIUM DIS- SOLVED (MG/L AS CA)
NOV 15...	1015	76	2280	8.3	14.0	9.8	100	1.5	670	460	150
JAN 10...	1010	105	2560	8.3	7.0	11.3	99	0.5	770	530	180
MAR 05...	0915	58	2640	8.3	15.0	10.1	107	1.2	810	580	180
MAY 06...	1015	25	2620	8.3	22.0	9.4	113	6.1	770	650	150
JUN 03...	0920	25	2800	8.0	26.0	6.5	86	3.2	720	580	140
AUG 05...	0935	33	1800	8.2	28.5	6.5	89	3.2	480	310	99

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- LITY WAT DIS FIX END FIELD CACO3 (MG/L)	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 15...	71	200	3	4.9	210	250	450	0.70	15	1270
JAN 10...	77	220	3	4.8	230	300	490	0.60	15	1430
MAR 05...	88	230	4	5.5	230	310	510	0.50	13	1480
MAY 06...	96	250	4	6.0	120	390	600	0.60	16	1580
JUN 03...	91	300	5	5.9	150	340	640	0.50	26	1630
AUG 05...	57	180	4	5.6	170	180	360	0.50	21	1010

DATE	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)	PHOS- PHORUS ORTHO TOTAL (MG/L AS P)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)
NOV 15...	9.96	0.040	10.0	0.060	0.74	0.80	0.040	0.030	--	--
JAN 10...	16.0	0.030	16.0	0.030	0.97	1.0	0.050	0.030	3	200
MAR 05...	13.9	0.060	14.0	0.010	0.99	1.0	0.100	0.070	--	--
MAY 06...	3.03	0.070	3.10	0.020	0.88	0.90	0.120	0.050	3	200
JUN 03...	1.39	0.110	1.50	0.030	1.2	1.2	0.090	0.040	--	--
AUG 05...	2.92	0.080	3.00	0.060	1.1	1.2	0.080	0.030	--	--

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

[illegible]

COLORADO RIVER BASIN

08136600 O. H. IVIE RESERVOIR NEAR VOSS, TX

LOCATION.--Lat 31°30'00", long 99°40'05", Coleman County, Hydrologic Unit 12090106, on left bank, in outlet structure of Freeze-Nichols Dam on Colorado River, 8 mi northeast of Millersview, 10 mi southwest of Voss, and at mile 615.1.

DRAINAGE AREA.--24,038 mi², of which 11,391 mi² probably is noncontributing.

PERIOD OF RECORD.--September 1990 to current year.

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

REMARKS.--The lake is formed by a concrete dam and spillway with six 50- by 40-foot tainter gates, and a 6,000 ft overflow spillway with a 2,000 ft tapered fuse plug release feature. Total length of the dam is 12,000 ft. The dam was completed and storage began March 15, 1990. Recording equipment was installed May 30, 1990, but water did not reach the sensing point until September 21, 1990 (at an elevation of 1,502.05 ft). Water is utilized for municipal use for several West Texas communities, the city of San Angelo being the largest user. The capacity curve is based on a survey made in 1989 by Freeze and Nichols, Fort Worth, Tex. Figures given herein represent total contents. Data regarding the dam and reservoir are given in the following table:

	Elevation (feet)	Capacity (acre-feet)
Top of dam.....	1,584.0	-
Crest of overflow spillway.....	1,563.0	806,800
Top of conservation storage.....	1,551.5	554,300
Crest of spillway (tainter gates sill).....	1,528.0	216,100
Lowest gated outlet (service outlet).....	1,440.0	90

COOPERATION.--The capacity table was furnished by the Colorado River Municipal Water District, and was based on a survey made in 1989 by Freeze and Nichols, Consulting Engineers, Fort Worth, Texas.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 165,100 acre-ft Sept. 30, 1991 (elevation, 1522.34 ft); minimum recorded, 57,780 acre-ft Sept. 21, 1990 (elevation, 1502.05 ft).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 165,100 acre-ft Sept. 30 at 1700 hours (elevation, 1,522.34 ft); minimum, 84,420 acre-ft Oct. 9 (elevation, 1,509.09 ft).

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

1,509.0	84,010	1,515.0	114,900	1,521.0	154,600
1,511.0	94,430	1,517.0	127,000	1,523.0	170,400
1,513.0	103,700	1,519.0	140,300		

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	84600	89890	96490	98060	109400	114000	114600	114900	119000	152400	151300	151500
2	84470	89890	96650	98310	109600	114000	114700	114700	119000	152400	151300	151300
3	85340	90710	96610	98310	110000	114000	114800	114900	119800	152500	151300	151200
4	85340	90880	96610	98390	110400	114100	114800	114900	120500	152500	151100	151200
5	85340	90880	96610	98520	110700	114100	114900	114900	122400	152500	151000	151100
6	85250	91460	96650	98840	110900	114000	114900	114800	122900	152500	150800	151000
7	84970	91640	96610	98940	111100	114000	114900	114500	130000	152300	150700	151600
8	84740	92280	96610	99150	111400	114000	115000	115500	135100	152100	150700	152400
9	84420	92570	96610	99730	111600	114000	115400	116000	138100	152100	150300	153000
10	85340	92630	96610	100000	111700	113700	115100	116300	140500	151900	150700	153200
11	86260	92920	96610	100500	111900	113900	115100	116300	143300	151700	150800	153300
12	86770	93210	96690	101000	112200	114000	115200	116400	144800	151600	150800	153400
13	87140	93440	96770	101300	112600	114000	115400	116700	145800	151600	150800	153800
14	87460	93680	96850	101700	112600	114000	115400	117100	146700	151400	151500	154200
15	87690	93970	96980	101900	112700	113900	115400	118300	148600	151300	151600	155000
16	87920	94320	97180	102000	112700	114000	115400	118900	150500	151100	151600	155900
17	88240	94370	97420	102600	113000	114000	115400	119000	151600	150800	151900	156700
18	88240	94590	97420	103400	113100	114000	115500	119200	152200	150800	151900	157900
19	88240	94720	97420	104100	113200	114000	115500	119200	152700	150600	151900	159500
20	88670	95000	97420	104900	113200	114100	115500	119200	152900	150300	151900	160900
21	88730	95040	97500	105500	113200	114300	115400	119200	153100	150100	151900	162000
22	88730	95400	97500	105900	113300	114400	115400	119200	153200	149700	151900	163000
23	89020	95640	97460	106400	113400	114400	115300	119300	153200	149700	151800	163500
24	89190	95800	97460	106800	113600	114400	115200	119400	153200	149700	151600	164300
25	89370	95970	97460	107300	113600	114400	115200	119400	153200	150200	151600	164300
26	89420	96170	97460	107500	113600	114400	115200	119500	153200	150400	151600	164500
27	89600	96370	97460	107900	113600	114700	115200	119500	153000	150900	151600	164700
28	89600	96370	97660	108100	113700	114800	115200	119500	152700	151300	151500	164800
29	89720	96370	97820	108500	---	114700	115000	119500	152600	151300	151500	164900
30	89770	96370	98020	108900	---	114600	114900	119100	152400	151300	151600	165100
31	89890	---	98020	109000	---	114600	---	119100	---	151300	151600	---
MAX	89890	96370	98020	109000	113700	114800	115500	119500	153200	152500	151900	165100
MIN	84420	89890	96490	98060	109400	113700	114600	114500	119000	149700	150300	151000
(†)	1510.22	1511.48	1511.89	1513.97	1514.80	1514.95	1515.00	1515.71	1520.69	1520.54	1520.58	1522.34
(Φ)	+5290	+6480	+1650	+10980	+4700	+900	+300	+4200	+33300	-1100	+300	+13500

CAL YR 1990 MAX --- MIN --- (Φ) ---
WTR YR 1991 MAX 165100 MIN 84420 (Φ) +80500

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

COLORADO RIVER MAIN STEM

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08136700 COLORADO RIVER NEAR STACY, TX

LOCATION.--Lat 31°29'37", long 99°34'25", Coleman County, Hydrologic Unit 12090106, on left bank at downstream side of bridge on Farm Road 503, 1.2 mi upstream from Bois d'Arc Creek, 1.8 mi northeast of Stacy, 10.5 mi downstream from O. H. Ivie Reservoir, 24 mi downstream from Concho River, and at mile 604.8.

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

WATER-DISCHARGE RECORDS

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

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

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

REMARKS.--No estimated daily discharges. Records good. There are many diversions above station for irrigation, municipal, and oil field operations. Sewage effluent is returned to the river from numerous sewage plants above station. Flow is affected by upstream reservoirs (see stations 08126380 and 08136000), and since March 15, 1990, flow almost completely controlled by O.H. Ivie Reservoir, 10.5 mi upstream. At times flow may be slightly affected by discharge from the flood-detention pools of 42 floodwater-retarding structures with a combined detention capacity of 56,730 acre-ft. These structures control runoff from 277 mi² above this station.

AVERAGE DISCHARGE.--22 years (water years 1969-90), 215 ft³/s (155,800 acre-ft/yr), unadjusted, prior to completion of O. H. Ivie reservoir.

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

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 398 ft³/s Oct. 3 at 0900 hours (gage height, 5.53 ft); minimum, 4.0 ft³/s Oct. 14.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	249	5.8	46	14	45	73	48	15	44	15	18	21
2	251	5.8	46	14	45	73	48	16	45	15	18	19
3	308	6.0	45	15	45	75	45	16	78	15	18	21
4	263	11	44	15	45	75	45	17	73	16	18	21
5	260	9.7	44	15	45	77	46	17	52	15	18	20
6	258	7.4	45	16	44	77	46	15	52	15	18	20
7	256	6.8	46	16	47	79	46	14	109	16	18	34
8	256	9.9	71	15	48	79	45	31	56	16	18	29
9	256	11	73	18	48	79	24	21	59	15	18	20
10	209	9.2	73	25	48	81	16	15	56	15	23	20
11	25	7.6	69	20	48	79	15	16	213	17	30	20
12	7.8	7.1	22	17	48	50	16	18	153	17	20	20
13	5.0	6.5	9.4	16	46	49	15	21	74	18	18	21
14	4.2	5.7	7.6	15	46	48	14	19	92	18	24	24
15	4.3	5.8	7.6	15	46	48	14	18	82	19	24	24
16	4.6	5.8	7.6	15	63	50	15	19	79	19	20	22
17	4.9	5.8	7.6	16	73	49	17	20	75	19	19	23
18	4.9	5.8	36	32	71	49	18	19	62	19	19	23
19	5.2	5.8	48	26	71	51	16	17	58	17	19	48
20	5.2	6.2	49	19	71	49	16	17	56	16	19	48
21	6.1	6.5	49	18	73	50	15	17	52	17	19	32
22	6.2	10	51	18	73	47	15	17	52	18	19	26
23	6.3	14	48	36	75	47	16	16	54	18	19	37
24	5.8	9.7	46	42	77	48	16	13	54	18	22	30
25	5.7	8.0	47	42	75	50	15	14	54	25	31	24
26	5.9	7.8	50	42	75	49	15	35	54	20	19	23
27	6.1	7.6	65	42	75	48	14	45	54	19	18	22
28	6.1	7.2	36	42	75	46	15	45	53	19	18	21
29	5.9	7.2	18	42	---	46	14	45	39	19	18	21
30	5.8	33	16	47	---	48	15	44	16	19	18	21
31	5.8	---	14	45	---	50	---	45	---	18	19	---
TOTAL	2702.8	255.7	1236.8	770	1641	1819	715	697	2050	542	617	755
MEAN	87.2	8.52	39.9	24.8	58.6	58.7	23.8	22.5	68.3	17.5	19.9	25.2
MAX	308	33	73	47	77	81	48	45	213	25	31	48
MIN	4.2	5.7	7.6	14	44	46	14	13	16	15	18	19
AC-FT	5360	507	2450	1530	3250	3610	1420	1380	4070	1080	1220	1500
CAL YR 1990	TOTAL	19246.4	MEAN	52.7	MAX	1740	MIN	4.2	AC-FT	38180		
WTR YR 1991	TOTAL	13801.3	MEAN	37.8	MAX	308	MIN	4.2	AC-FT	27370		

08136700 COLORADO RIVER NEAR STACY, TX--Continued

WATER-QUALITY RECORDS

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

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: April 1968 to current year.

WATER TEMPERATURE: April 1968 to current year.

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

EXTREMES FOR PERIOD OF DAILY RECORD.--

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

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

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 2,030 microsiemens Jan. 30; minimum daily, 605 microsiemens June 11.

WATER TEMPERATURE: Maximum daily, 33.0°C July 5; minimum daily, 4.0°C Dec. 24.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB DISSOLV FLD. AS CACO3 (MG/L)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
OCT 02...	1200	253	1370	24.0	370	210	85	38	130
NOV 26...	1045	7.6	1140	18.5	310	180	73	32	110
JAN 14...	1200	15	1200	9.0	350	210	84	33	100
MAR 04...	1015	75	1840	15.0	530	350	120	56	170
JUN 14...	1225	101	698	28.5	220	120	62	15	51
AUG 06...	1035	18	1520	29.0	390	260	85	44	150

DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT DIS FIX END FIELD CACO3 (MG/L)	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 02...	3	8.3	160	190	220	0.10	12	778
NOV 26...	3	6.6	130	170	180	0.30	7.9	654
JAN 14...	2	6.8	140	180	190	0.30	5.9	683
MAR 04...	3	6.7	180	260	310	0.50	5.8	1040
JUN 14...	2	5.8	98	88	96	0.40	8.6	386
AUG 06...	3	8.6	140	220	270	0.30	8.4	868

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1990 TO SEPTEMBER 1991

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. 1990	2702.8	1210	732	5340	210	1510	210	1530	420
NOV. 1990	255.7	1140	689	476	190	134	200	136	400
DEC. 1990	1236.8	1260	764	2550	220	727	220	732	430
JAN. 1991	770	1610	981	2040	290	596	280	593	530
FEB. 1991	1641	1960	1190	5280	350	1570	350	1550	620
MAR. 1991	1819	1640	995	4890	290	1420	290	1420	540
APR. 1991	715	1450	876	1690	250	486	250	487	490
MAY 1991	697	1420	859	1620	250	464	250	465	480
JUNE 1991	2050	1140	689	3820	200	1080	200	1090	400
JULY 1991	542	1540	934	1370	270	395	270	395	510
AUG. 1991	617	1500	908	1510	260	437	260	437	500
SEPT 1991	755	1380	836	1700	240	488	240	490	470
TOTAL	13801.3	**	**	32300	**	9310	**	9320	**
WTD.AVG.	38	1430	866	**	250	**	250	**	480

COLORADO RIVER MAIN STEM

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08136700 COLORADO RIVER NEAR STACY, TX--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY EQUIVALENT MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1340	1150	1040	e1170	2000	1850	1520	1420	1440	1520	1530	e1490
2	1340	1150	e1080	1160	2010	1840	1500	1430	e1420	1500	1530	e1480
3	1260	1160	1120	1150	e2010	e1830	1480	1440	1390	1510	1540	1470
4	1130	e1150	1580	1150	2000	1820	1460	1430	1300	e1510	e1530	1460
5	1250	1140	1870	1160	1990	1810	1450	e1450	1390	1520	1540	1450
6	1210	1110	1890	e1150	2000	1730	1440	1470	1320	1530	1550	1450
7	e1180	1110	1860	1140	1990	1720	e1430	1450	1000	e1520	1540	1440
8	e1160	1100	1450	1140	2000	1710	1420	1400	1100	1530	1550	e1430
9	1140	1120	e1320	1130	2010	1690	1410	1410	e1220	1540	1550	1440
10	1150	1120	1190	1130	e2000	e1620	1400	1400	1350	1540	1560	1430
11	1160	e1130	1270	1160	2000	1590	1390	1400	605	1550	e1540	1400
12	1070	e1130	1050	1190	1990	1580	1400	e1380	635	1540	1530	1410
13	1070	1140	e1100	e1250	1980	1600	1410	1360	677	1550	1520	1440
14	1070	1140	1150	1230	1970	1590	e1400	1340	767	e1550	1460	1450
15	1070	1130	1170	1250	1990	1580	1400	1370	1090	1560	1450	e1440
16	1080	1130	1060	1310	2000	1560	1410	1380	e1140	1550	1470	1440
17	1090	1150	1070	1370	e1990	e1540	1420	1370	1200	1560	1490	1420
18	1090	e1150	1080	1410	e1980	1550	1430	1370	1210	1570	e1480	1410
19	1110	1160	985	1430	1970	1540	1440	e1380	1270	1560	1470	1390
20	1110	1150	930	e1520	1960	1530	1440	1370	1320	1550	1460	1380
21	1120	1150	873	e1610	1940	1520	e1450	1380	1390	e1560	1460	1390
22	e1110	e1160	703	1700	1920	1510	1450	1370	1430	1550	1450	e1370
23	1120	1150	e1150	1850	1900	1520	1460	1380	e1460	1560	1460	1360
24	1130	1160	1350	1920	e1890	e1530	1460	1390	1480	1560	1470	1310
25	1130	e1160	e1530	1910	1880	1540	1450	1400	1490	1550	e1480	1300
26	1120	1150	1470	1900	1870	1530	1450	e1420	1500	1540	1490	1240
27	1130	1150	1200	e1920	1890	1540	1460	e1440	1510	1530	1480	1210
28	e1130	1160	1200	2010	1870	1550	e1450	1460	1520	e1530	1470	1180
29	1140	1170	1190	2020	---	1550	1450	1470	1530	1520	1460	e1190
30	1150	1150	e1180	2030	---	1540	1460	1480	e1540	1530	1480	1200
31	e1160	---	1170	2020	---	e1530	---	1480	---	1520	1500	---
MEAN	1150	1140	1230	1470	1960	1620	1440	1410	1260	1540	1500	1380

e Estimated

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25.0	21.0	15.0	---	10.0	12.0	19.0	23.0	27.0	30.0	32.0	---
2	25.0	22.0	---	10.0	10.0	16.0	18.0	22.0	---	32.0	31.0	---
3	25.0	22.0	14.0	8.0	---	---	21.0	25.0	24.0	32.0	31.0	30.0
4	26.0	---	12.0	6.0	12.0	16.0	22.0	25.0	25.0	---	---	29.0
5	25.0	18.0	12.0	8.0	15.0	18.0	21.0	---	30.0	33.0	31.0	28.0
6	26.0	18.0	11.0	---	15.0	18.0	22.0	23.0	28.0	32.0	30.0	27.0
7	---	14.0	11.0	7.0	15.0	17.0	---	23.0	27.0	---	31.0	28.0
8	---	12.0	12.0	7.0	15.0	16.0	24.0	24.0	27.0	31.0	32.0	---
9	21.0	14.0	---	8.0	15.0	15.0	22.0	25.0	---	32.0	31.0	29.0
10	18.0	16.0	11.0	8.0	---	---	21.0	25.0	27.0	31.0	30.0	29.0
11	21.0	---	12.0	8.0	15.0	18.0	22.0	25.0	26.0	30.0	---	28.0
12	22.0	---	13.0	10.0	15.0	17.0	24.0	---	27.0	31.0	29.0	30.0
13	21.0	17.0	---	---	17.0	17.0	24.0	26.0	30.0	30.0	27.0	28.0
14	24.0	16.0	14.0	10.0	17.0	15.0	---	26.0	28.0	---	27.0	28.0
15	24.0	16.0	13.0	11.0	15.0	14.0	25.0	28.0	27.0	32.0	28.0	---
16	24.0	16.0	14.0	11.0	13.0	14.0	25.0	23.0	---	32.0	30.0	29.0
17	25.0	16.0	15.0	10.0	---	---	25.0	28.0	30.0	32.0	29.0	28.0
18	22.0	---	13.0	10.0	---	16.0	26.0	29.0	30.0	32.0	---	28.0
19	21.0	17.0	13.0	10.0	15.0	16.0	23.0	---	31.0	32.0	31.0	22.0
20	22.0	19.0	15.0	---	15.0	16.0	23.0	28.0	32.0	31.0	32.0	24.0
21	20.0	20.0	9.0	---	13.0	20.0	---	28.0	32.0	---	31.0	20.0
22	---	---	8.0	8.0	15.0	19.0	22.0	29.0	31.0	30.0	30.0	---
23	20.0	20.0	---	10.0	15.0	18.0	22.0	29.0	---	31.0	29.0	22.0
24	19.0	18.0	4.0	10.0	---	---	22.0	29.0	31.0	30.0	28.0	23.0
25	19.0	---	---	12.0	13.0	19.0	25.0	29.0	32.0	29.0	---	22.0
26	19.0	19.0	5.0	11.0	12.0	22.0	26.0	---	32.0	30.0	30.0	23.0
27	20.0	20.0	5.0	---	12.0	20.0	27.0	---	31.0	30.0	30.0	23.0
28	---	17.0	7.0	13.0	13.0	22.0	---	30.0	30.0	---	30.0	24.0
29	21.0	16.0	---	14.0	---	17.0	24.0	30.0	29.0	31.0	31.0	---
30	20.0	15.0	---	10.0	---	17.0	24.0	29.0	---	31.0	30.0	23.0
31	---	---	6.0	10.0	---	---	---	27.0	---	31.0	29.0	---
MEAN	22.1	17.5	11.0	9.6	14.0	17.1	23.0	26.5	29.0	31.1	30.0	26.0

COLORADO RIVER MAIN STEM

08138000 COLORADO RIVER AT WINCHELL, TX

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

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

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--November 1923 to September 1934 (published as "near Milburn"), June 1939 to current year.

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

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

REMARKS.--Records good except those for estimated daily discharges, which are fair. There are many diversions above station for irrigation, municipal supply, and for oil field operation. Since March 15, 1990, 95 percent of the drainage area above this station is controlled by O. H. Ivie Reservoir (station 08136600), 54.4 miles upstream, and by eight other upstream reservoirs, with a total combined (9 reservoirs) capacity of 1,676,000 acre-ft at conservation level. At times, flow may also be affected by discharge from the flood-detention pools of 89 floodwater-retarding structures with a combined detention capacity of 105,100 acre-ft. These flood-detention structures control runoff from 512 mi² area above this station.

AVERAGE DISCHARGE.--39 years (water years 1925-34, 1940-68) prior to completion of Robert Lee Dam, 628 ft³/s (455,000 acre-ft/yr); 22 years (water years 1969-90) prior to completion of O. H. Ivie Dam, 272 ft³/s (197,100 acre-ft/yr), unadjusted.

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

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 11,700 ft³/s Sept. 19 at 2100 hours (gage height, 18.60 ft); minimum, 6.3 ft³/s Nov. 3.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	233	7.7	21	26	82	77	45	9.0	29	41	12	9.1
2	231	7.1	19	24	82	78	48	9.6	30	30	11	10
3	398	6.9	26	21	78	75	46	12	35	21	10	14
4	889	11	44	19	77	73	46	14	74	17	9.6	12
5	484	120	44	19	79	72	47	56	147	15	8.3	12
6	344	69	43	18	81	70	47	49	97	13	8.3	13
7	292	46	43	18	76	69	46	25	793	13	7.8	29
8	268	80	43	17	70	69	46	30	920	12	7.6	33
9	287	231	43	23	70	68	43	62	414	11	30	95
10	247	133	60	133	70	69	41	47	196	11	20	70
11	224	74	64	202	71	70	35	39	281	11	14	41
12	105	55	63	98	66	70	26	33	1500	11	31	28
13	54	40	62	68	64	66	20	26	310	11	139	21
14	39	32	43	54	62	52	17	21	1040	11	652	16
15	28	27	30	48	61	47	16	33	1540	11	431	16
16	22	23	23	44	59	47	16	27	1220	11	189	57
17	18	20	20	42	59	47	16	24	745	10	140	82
18	14	18	17	594	74	49	33	24	551	9.8	92	113
19	12	16	15	836	80	50	e24	22	274	9.8	61	5000
20	10	15	13	430	78	48	e21	19	184	9.8	48	4160
21	9.4	14	25	235	79	48	e18	17	134	9.8	42	1440
22	9.0	91	40	166	79	47	e17	16	113	9.6	31	1040
23	9.6	161	39	128	79	47	e15	15	126	8.3	20	887
24	11	75	39	106	79	47	e13	13	78	7.9	17	718
25	12	47	39	101	79	45	e12	12	67	8.5	18	547
26	12	42	39	98	78	46	e11	11	60	17	18	361
27	11	40	42	90	76	46	e11	11	53	26	23	234
28	11	33	44	85	75	45	e11	8.4	49	24	25	166
29	9.8	27	56	79	---	44	e10	9.0	45	19	17	119
30	9.7	23	45	76	---	43	9.0	28	44	15	13	87
31	8.4	---	32	80	---	42	---	29	---	13	10	---
TOTAL	4311.9	1584.7	1176	3978	2063	1766	806.0	751.0	11149	447.5	2155.6	15430.1
MEAN	139	52.8	37.9	128	73.7	57.0	26.9	24.2	372	14.4	69.5	514
MAX	889	231	64	836	82	78	48	62	1540	41	652	5000
MIN	8.4	6.9	13	17	59	42	9.0	8.4	29	7.9	7.6	9.1
AC-FT	8550	3140	2330	7890	4090	3500	1600	1490	22110	888	4280	30610

CAL YR 1990 TOTAL 81861.6 MEAN 224 MAX 20600 MIN 6.9 AC-FT 162400
WTR YR 1991 TOTAL 45618.8 MEAN 125 MAX 5000 MIN 6.9 AC-FT 90480

e Estimated

COLORADO RIVER MAIN STEM

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08138000 COLORADO RIVER AT WINCHELL, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: November 1967 to September 1985. Chemical and biochemical analyses: December 1990 to September 1991.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: February to September 1991.

WATER TEMPERATURE: February to September 1991.

INSTRUMENTATION.--Since February 1991, specific conductance and water temperature are continuously recorded at this station.

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

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 1,930 microsiemens Feb. 28, Mar. 1; minimum, 162 microsiemens Sept. 19, 20.

WATER TEMPERATURE: Maximum, 36.5°C July 2.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	
DEC 05...	1130	43	791	8.2	9.0	9.6	87	1.3	230	99	66	15	
JAN 23...	0950	132	830	8.3	6.5	11.1	95	1.3	260	110	76	16	
MAR 13...	1155	67	1840	8.3	16.5	9.9	107	1.1	520	370	120	54	
MAY 15...	1115	33	1360	8.2	25.5	6.6	86	1.3	370	250	86	37	
JUL 01...	1245	47	842	8.2	29.0	7.1	97	2.9	240	120	66	18	
AUG 27...	1037	22	790	8.1	28.0	6.7	90	1.9	210	120	52	20	
DATE		SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	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)	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)
DEC 05...	65	2	5.5	130	83	120	0.30	6.2	438	--	0.020	<0.100	
JAN 23...	63	2	5.6	140	77	130	0.30	7.5	462	0.390	0.010	0.400	
MAR 13...	180	3	6.8	150	270	340	0.40	2.0	1070	2.38	0.020	2.40	
MAY 15...	140	3	8.3	120	190	250	0.50	3.6	791	0.038	0.020	0.058	
JUL 01...	75	2	6.1	110	110	140	0.30	12	496	--	0.020	<0.050	
AUG 27...	69	2	7.1	94	100	130	0.30	10	445	--	0.020	<0.050	
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)	PHOS-PHORUS ORTHO TOTAL (MG/L AS P)	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)
DEC 05...	0.030	0.37	0.40	0.030	0.040	--	--	--	--	--	--	--	--
JAN 23...	0.020	0.58	0.60	0.040	<0.010	<1	130	<0.5	<1.0	<5	<3	<10	
MAR 13...	<0.010	--	0.80	0.030	<0.010	--	--	--	--	--	--	--	--
MAY 15...	0.020	1.3	1.3	0.080	<0.010	1	200	<0.5	<1.0	<5	<3	<10	
JUL 01...	0.060	0.64	0.70	0.080	0.040	--	--	--	--	--	--	--	--
AUG 27...	0.030	0.57	0.60	0.080	<0.010	--	--	--	--	--	--	--	--

COLORADO RIVER MAIN STEM

08138000 COLORADO RIVER AT WINCHELL, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

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)
DEC 05...	--	--	--	--	--	--	--	--	--	--	--	--
JAN 23...	43	<10	18	2	0.1	<10	<10	<1	<1.0	780	<6	27
MAR 13...	--	--	--	--	--	--	--	--	--	--	--	--
MAY 15...	10	<10	30	4	0.1	<10	<10	<1	<1.0	1500	<6	5
JUL 01...	--	--	--	--	--	--	--	--	--	--	--	--
AUG 27...	--	--	--	--	--	--	--	--	--	--	--	--

MONTHLY AND ANNUAL MEANS AND LOADS FOR FEBRUARY TO SEPTEMBER 1991

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)
FEB. 1991	1097	1790	1070	3150	340	995	290	850	540
MAR. 1991	1766	1780	1060	5050	330	1590	290	1360	540
APR. 1991	806.0	1350	791	1720	240	516	210	460	410
MAY 1991	751.0	1240	728	1480	220	438	190	394	370
JUNE 1991	11149	634	364	11000	100	3020	96	2900	190
JULY 1991	447.5	1180	691	835	200	247	180	223	360
AUG. 1991	2155.6	646	372	2170	100	609	99	575	190
SEPT 1991	15430.1	421	241	10000	65	2700	63	2640	130
TOTAL	33602.2	**	**	35400	**	10100	**	9400	**
WTD.AVG.	147	673	390	**	110	**	100	**	200

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	---	---	---	1930	1850	1890	1400	1360	1380	---	---	e1400
2	---	---	---	1890	1850	1870	1380	1360	1370	---	---	e1400
3	---	---	---	1870	1850	1870	1380	1340	1360	---	---	e1400
4	---	---	---	1890	1850	1870	1360	1340	1350	---	---	e1300
5	---	---	---	1850	1830	1850	1360	1310	1330	---	---	e1200
6	---	---	---	1860	1830	1840	1330	1310	1320	---	---	e1250
7	---	---	---	1860	1840	1840	1330	1290	1320	---	---	e1300
8	---	---	---	1860	1820	1840	1410	1270	1310	---	---	e1300
9	---	---	---	1860	1820	1840	1390	1330	1360	---	---	e1200
10	---	---	---	1860	1820	1840	1350	1310	1340	---	---	e1200
11	---	---	---	1860	1820	1840	1330	1310	1320	---	---	e1250
12	---	---	---	1860	1820	1830	1470	1310	1370	---	---	e1300
13	---	---	---	1860	1820	1830	1490	1390	1430	---	---	e1300
14	---	---	1590	1880	1840	1850	1390	1350	1370	---	---	e1350
15	1630	1610	1620	1880	1860	1870	1370	1310	1340	---	---	1360
16	1690	1650	1660	1880	1840	1870	1350	1300	1330	---	---	1340
17	1710	1670	1680	1880	1830	1860	---	---	1380	---	---	1330
18	1730	1690	1700	1850	1810	1840	---	---	e1350	---	---	1300
19	1790	1710	1750	1830	1790	1810	---	---	e1300	---	---	1250
20	1830	1790	1810	1830	1790	1810	---	---	e1300	---	---	1220
21	1850	1830	1830	1810	1740	1780	---	---	e1350	---	---	1190
22	1850	1830	1840	1770	1740	1750	---	---	e1350	---	---	1160
23	1870	1830	1840	1760	1720	1750	---	---	e1350	---	---	1180
24	1870	1830	1850	1760	1680	1720	---	---	e1350	---	---	1150
25	1890	1850	1860	1720	1680	1710	---	---	e1350	---	---	1130
26	1910	1870	1890	1700	1610	1640	---	---	e1350	---	---	1140
27	1910	1890	1900	1590	1510	1560	---	---	e1400	---	---	1140
28	1930	1890	1910	1530	1470	1500	---	---	e1400	---	---	1130
29	---	---	---	1490	1440	1460	---	---	e1400	---	---	1140
30	---	---	---	1470	1420	1440	---	---	e1400	---	---	1140
31	---	---	---	1420	1380	1400	---	---	---	---	---	1120
MONTH	1930	1610	1780	1930	1380	1760	1490	1270	1350	---	---	1240

e Estimated

COLORADO RIVER MAIN STEM

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08138000 COLORADO RIVER AT WINCHELL, TX--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	---	---	1090	---	---	860	1610	1590	1600	1400	1300	1340
2	---	---	1060	940	880	913	1630	1570	1600	1460	1400	1420
3	1080	1020	1040	980	920	948	1630	1590	1610	1540	1460	1510
4	---	---	1090	980	960	967	1630	1590	1620	1560	1520	1550
5	---	---	1190	1000	960	976	1630	1590	1620	1570	1540	1560
6	---	---	1180	1020	980	1000	1660	1610	1630	1570	1450	1540
7	---	---	800	1060	1000	1030	1680	1620	1650	1530	1330	1460
8	---	---	e600	1060	1020	1040	1680	1630	1660	1430	1110	1240
9	---	---	e700	1060	1040	1050	1690	1140	1570	1510	664	1260
10	---	---	e800	1080	1040	1060	1430	1160	1340	1090	664	850
11	---	---	750	1100	1060	1080	1420	1320	1390	1150	1090	1110
12	---	---	e500	1120	1080	1110	1320	1260	1290	1150	1130	1140
13	---	---	e650	1160	1120	1130	1480	568	1170	1170	1150	1150
14	---	---	e600	1180	1140	1160	588	303	425	1170	1150	1160
15	---	---	e500	1200	1160	1180	525	384	444	1190	1170	1170
16	---	---	e550	1230	1160	1200	645	525	583	1290	1170	1240
17	---	---	e600	1250	1210	1220	645	563	604	1250	707	899
18	---	---	e650	1270	1230	1240	602	562	577	808	707	760
19	---	---	e700	1290	1250	1260	621	581	597	748	162	453
20	---	---	e750	1310	1270	1280	679	640	653	485	162	327
21	---	---	e770	1330	1270	1300	679	657	676	485	344	408
22	---	---	e780	1330	1290	1320	677	655	665	385	344	363
23	---	---	e770	1350	1330	1340	694	654	683	365	324	357
24	---	---	e780	1370	1330	1350	711	670	691	365	324	344
25	---	---	e790	1400	1350	1370	709	668	690	386	345	369
26	---	---	e800	1420	1380	1400	742	704	715	406	386	401
27	---	---	e800	1480	1420	1440	920	741	806	427	406	413
28	---	---	e810	1520	1460	1490	1080	920	1020	447	406	432
29	---	---	e820	1540	1500	1530	1180	1080	1120	489	447	461
30	---	---	e830	1580	1540	1560	1240	1160	1190	509	468	493
31	---	---	---	1610	1560	1580	1300	1240	1270	---	---	---
MONTH			792	1610	880	1210	1690	303	1070	1570	162	906
e Estimated												

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	---	---	---	15.5	13.0	14.5	17.0	15.0	16.0	---	---	---
2	---	---	---	16.0	15.0	15.5	17.0	16.0	16.5	---	---	---
3	---	---	---	15.5	14.0	14.5	19.0	16.5	17.5	---	---	---
4	---	---	---	16.0	13.5	14.5	19.5	18.5	19.0	---	---	---
5	---	---	---	---	---	---	20.5	19.5	20.0	---	---	---
6	---	---	---	17.5	15.5	16.5	20.5	19.5	20.0	---	---	---
7	---	---	---	17.0	16.0	16.5	21.0	20.0	20.5	---	---	---
8	---	---	---	17.0	15.0	16.0	---	---	---	---	---	---
9	---	---	---	16.5	14.5	15.5	22.5	21.5	22.0	---	---	---
10	---	---	---	16.0	14.5	15.5	21.5	21.0	21.5	---	---	---
11	---	---	---	17.0	14.5	16.0	21.5	21.0	21.5	---	---	---
12	---	---	---	18.0	16.5	17.5	22.5	21.0	22.0	---	---	---
13	---	---	---	17.0	16.0	16.5	23.5	22.0	22.5	---	---	---
14	---	---	---	16.5	15.5	16.0	23.0	21.5	22.5	---	---	---
15	15.5	14.0	14.5	15.0	14.0	14.5	22.0	20.5	21.5	---	---	---
16	13.5	12.5	13.0	14.0	13.0	13.5	23.5	20.5	22.0	27.0	25.5	26.0
17	14.5	12.5	13.5	14.5	12.5	13.5	---	---	---	27.0	25.0	26.0
18	16.0	14.0	15.0	15.0	13.5	14.5	---	---	---	27.5	25.5	26.5
19	16.0	14.5	15.0	16.0	14.5	15.0	---	---	---	27.0	25.5	26.5
20	15.0	13.0	14.0	16.0	15.5	16.0	---	---	---	26.5	25.5	26.0
21	14.0	13.0	13.5	---	---	---	---	---	---	27.0	25.0	26.5
22	14.5	12.5	13.5	18.5	17.5	18.0	---	---	---	28.5	26.0	27.0
23	15.0	13.0	14.0	17.5	16.5	17.0	---	---	---	28.5	26.5	27.0
24	15.0	14.0	14.5	18.0	16.0	17.0	---	---	---	28.5	26.5	27.5
25	14.5	13.0	13.5	18.0	17.0	17.5	---	---	---	29.5	26.0	27.0
26	13.0	11.5	12.5	19.5	18.0	18.5	---	---	---	30.0	27.0	28.5
27	12.5	11.5	12.0	19.5	19.5	19.5	---	---	---	31.0	28.0	29.0
28	13.5	11.5	12.5	20.0	18.5	19.0	---	---	---	30.5	27.5	28.5
29	---	---	---	18.5	17.0	17.5	---	---	---	30.5	28.0	29.0
30	---	---	---	17.0	16.0	16.5	---	---	---	29.5	28.0	28.5
31	---	---	---	16.5	15.0	15.5	---	---	---	28.5	27.5	28.0
MONTH	16.0	11.5	13.5	20.0	12.5	16.0	23.5	15.0	20.5	31.0	25.0	27.5

COLORADO RIVER MAIN STEM

08138000 COLORADO RIVER AT WINCHELL, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	28.0	27.0	27.5	34.0	28.0	29.5	31.0	26.5	29.0	30.5	27.0	28.5
2	28.0	26.5	27.5	36.5	32.5	34.0	31.5	27.0	29.0	28.5	27.0	28.0
3	26.5	24.5	25.5	35.5	31.0	33.0	31.5	28.0	29.5	30.0	26.5	28.0
4	27.0	24.5	26.0	34.0	30.5	32.0	32.0	27.0	29.5	29.5	26.5	28.0
5	29.0	27.0	28.0	35.5	30.0	32.5	31.0	28.0	29.5	28.5	27.0	28.0
6	29.5	28.0	28.5	35.5	30.0	32.0	31.0	28.0	29.5	28.0	27.0	27.5
7	28.0	27.0	27.5	34.5	30.0	32.0	32.0	27.5	29.5	27.5	26.5	27.0
8	27.5	26.5	27.0	33.5	30.5	32.0	32.0	28.0	30.0	28.0	25.5	27.0
9	27.0	26.0	26.5	33.0	30.0	31.5	30.5	26.0	28.5	28.0	26.5	27.5
10	27.0	26.0	26.5	31.0	29.0	30.0	29.0	26.0	27.0	28.5	27.0	28.0
11	27.5	26.5	27.0	30.0	27.5	28.5	29.5	26.0	27.5	29.0	27.0	28.0
12	27.5	25.5	26.5	30.5	27.0	28.5	28.5	27.0	27.5	29.0	26.5	28.0
13	27.0	26.5	27.0	31.5	27.0	29.0	27.0	26.0	26.5	29.0	27.0	28.0
14	27.0	26.5	27.0	32.5	27.5	30.0	26.5	22.5	24.5	28.0	26.5	27.5
15	27.0	26.5	27.0	32.5	28.0	30.0	25.5	23.0	24.0	28.0	26.5	27.0
16	27.0	26.5	27.0	32.5	28.0	30.0	27.0	25.5	26.0	28.0	26.5	27.5
17	27.5	27.0	27.0	33.0	28.0	30.0	27.5	26.0	26.5	28.5	27.0	27.5
18	28.0	27.5	27.5	32.0	28.0	30.0	29.0	26.5	27.5	28.5	26.0	27.5
19	28.5	28.0	28.0	32.0	28.0	30.0	29.5	27.5	28.5	26.5	12.5	19.0
20	28.5	28.5	28.5	31.0	28.0	29.5	30.5	28.0	29.0	15.5	12.5	14.0
21	29.0	28.5	28.5	32.0	28.0	29.5	31.5	28.0	29.5	17.0	15.5	16.0
22	29.0	28.5	28.5	31.5	27.5	29.5	31.5	28.5	29.5	18.5	16.5	17.5
23	28.5	28.0	28.0	31.5	27.5	29.0	30.0	28.5	29.5	19.0	18.0	18.5
24	29.0	28.5	28.5	29.0	27.5	28.5	30.0	28.0	29.0	19.5	18.5	19.0
25	29.0	28.5	28.5	30.0	27.0	28.5	31.0	27.0	28.5	20.0	18.0	19.0
26	29.0	28.5	29.0	31.0	27.0	29.0	30.5	27.0	28.5	20.5	18.5	19.5
27	29.5	29.0	29.0	30.0	28.0	29.0	30.5	27.5	28.5	21.0	19.0	20.0
28	29.5	29.0	29.0	29.0	28.0	28.5	31.0	27.5	29.0	21.5	19.0	20.5
29	29.0	28.5	29.0	30.5	27.0	28.5	31.5	28.0	29.5	21.5	20.0	21.0
30	28.5	28.0	28.5	31.0	27.5	29.0	31.5	28.0	29.0	21.5	20.0	21.0
31	---	---	---	31.0	27.0	29.0	30.5	27.5	29.0	---	---	---
MONTH	29.5	24.5	27.5	36.5	27.0	30.0	32.0	22.5	28.5	30.5	12.5	24.0

COLORADO RIVER BASIN

83

08141000 HORDS CREEK LAKE NEAR VALERA, TX

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

DRAINAGE AREA.--48 mi², approximately.

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

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

REMARKS.--The lake is formed by a rolled earthfill dam 6,800 ft long, including spillway. Deliberate impoundment of water began Apr. 7, 1948, and the dam was completed in June 1948. The spillway is an excavated channel through natural ground, 500 ft wide, located about 600 ft from the right end of dam. The spillway consists of three concrete conduits; two controlled by 5.0- by 6.0-foot slide gates, and a third uncontrolled ogee spillway 4.0 ft wide and 19.5 ft high. The lake is operated for flood control and municipal water supply for the city of Coleman. The capacity table of August 1974 is based on a sedimentation survey made in 1948. Flow is affected at times by discharge from the flood-detention pool of one floodwater-retarding structure with a detention capacity of 1,370 acre-ft. This structure controls runoff from 6.82 mi² in the Jim Ned Creek drainage basin. Figures given herein represent total contents. Data regarding the dam and lake are given in the following table:

	Elevation (feet)	Capacity (acre-feet)
Top of dam.....	1,939.0	-
Design flood.....	1,933.6	-
Crest of spillway.....	1,920.0	24,730
Crest of spillway (top of conservation pool).....	1,900.0	8,110
Lowest gated outlet (invert).....	1,856.0	3

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

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

EXTREMES FOR CURRENT YEAR.--Maximum daily contents, 4,080 acre-ft Oct. 3, 8 (elevation, 1,889.74 ft); minimum daily, 3,260 acre-ft Sept. 3-6 (elevation, 1,886.70 ft).

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

1,886.0	3,090	1,889.0	3,867
1,887.0	3,335	1,890.0	4,160
1,888.0	3,600		

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4050	3970	3930	3840	3890	3830	3710	3580	3470	3540	3360	3270
2	4050	3970	3930	3840	3880	3830	3700	3580	3470	3530	3350	3270
3	4080	3970	3920	3840	3880	3820	3700	3580	3500	3530	3350	3260
4	4070	3980	3920	3830	3880	3820	3700	3590	3510	3520	3340	3260
5	4070	3970	3920	3830	3880	3820	3690	3580	3520	3510	3330	3260
6	4060	3970	3900	3840	3880	3810	3690	3570	3540	3510	3310	3260
7	4060	3960	3900	3840	3880	3800	3690	3570	3620	3500	3300	3280
8	4080	3970	3900	3840	3880	3800	3680	3590	3620	3490	3300	3320
9	4070	3970	3900	3850	3880	3800	3670	3590	3620	3480	3290	3340
10	4070	3970	3890	3840	3880	3790	3660	3580	3620	3470	3300	3350
11	4060	3970	3890	3860	3880	3790	3660	3580	3620	3460	3300	3360
12	4060	3970	3890	3860	3880	3780	3660	3580	3620	3450	3300	3360
13	4060	3970	3880	3860	3870	3780	3650	3580	3620	3440	3310	3360
14	4050	3970	3880	3860	3870	3770	3650	3580	3620	3440	3320	3540
15	4040	3960	3880	3850	3860	3770	3640	3570	3630	3430	3330	3590
16	4040	3960	3880	3850	3860	3770	3640	3570	3630	3420	3340	3620
17	4040	3960	3880	3850	3860	3760	3630	3570	3640	3410	3340	3660
18	4020	3960	3880	3880	3860	3760	3620	3570	3640	3400	3340	3670
19	4020	3960	3880	3890	3850	3760	3620	3560	3630	3390	3340	3730
20	4010	3960	3870	3890	3850	3760	3610	3560	3630	3380	3340	3780
21	4020	3960	3870	3890	3850	3760	3610	3550	3620	3380	3330	3820
22	4020	3960	3860	3890	3850	3750	3600	3540	3610	3370	3330	3830
23	4010	3960	3850	3890	3850	3750	3600	3540	3600	3360	3320	3840
24	4010	3960	3850	3890	3850	3740	3620	3540	3600	3350	3320	3850
25	4000	3950	3850	3890	3840	3740	3630	3530	3590	3350	3320	3850
26	4000	3950	3840	3880	3840	3740	3620	3520	3580	3360	3310	3850
27	4000	3950	3840	3880	3840	3740	3610	3510	3580	3360	3310	3850
28	3990	3940	3840	3880	3830	3740	3600	3500	3570	3360	3300	3850
29	3990	3940	3840	3880	---	3720	3600	3500	3560	3360	3290	3850
30	3980	3940	3840	3880	---	3720	3590	3490	3550	3360	3280	3850
31	3980	---	3840	3890	---	3720	---	3480	---	3360	3280	---
MAX	4080	3980	3930	3890	3890	3830	3710	3590	3640	3540	3360	3850
MIN	3980	3940	3840	3830	3830	3720	3590	3480	3470	3350	3280	3260
(↑)	1889.38	1889.24	1888.90	1889.07	1888.88	1888.46	1887.97	1887.56	1887.83	1887.10	1886.76	1888.93
(Φ)	-80	-40	-100	+50	-60	-110	-130	-110	+70	-190	-80	+570

CAL YR 1990 MAX 4760 MIN 3100 (↑) +680
WTR YR 1991 MAX 4080 MIN 3260 (Φ) -210

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

COLORADO RIVER BASIN

08143600 PECAN BAYOU NEAR MULLIN, TX

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

DRAINAGE AREA.--2,073 mi².

WATER-DISCHARGE RECORDS

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

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

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

REMARKS.--No estimated daily discharges. Records good. Flow is affected by Lake Brownwood (capacity, 143,400 acre-ft) 45 miles upstream. In addition, at end of year, flow from 152 mi² (of an intervening drainage area of 641 mi²) above this station and below Lake Brownwood was partly controlled by 41 floodwater-retarding structures with a combined detention capacity of 43,420 acre-ft below the flood-spillway crests. Gage-height telemeter at station.

AVERAGE DISCHARGE.--24 years, 134 ft³/s (97,080 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 38,300 ft³/s Apr. 27, 1990 (gage height, 42.15 ft), from floodmarks; no flow at times in 1974, 1978, 1980-81, 1984-85, and 1989-90.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7,380 ft³/s Sept. 21 at 1130 hours (gage height, 19.99 ft); minimum daily 2.8 ft³/s July 21.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	110	9.4	107	7.7	240	17	9.9	6.7	31	27	10	8.6
2	89	8.3	39	7.7	237	17	9.1	6.5	16	21	7.6	7.7
3	100	8.0	22	8.2	228	18	8.4	6.2	12	16	5.8	7.3
4	586	8.8	15	8.3	238	19	7.6	9.9	122	13	5.3	6.5
5	563	20	13	8.3	244	19	54	77	242	15	5.1	5.9
6	420	25	11	8.3	235	20	13	56	253	14	4.5	8.6
7	339	78	11	8.2	234	20	12	29	376	12	3.6	13
8	280	116	10	10	230	19	8.2	578	557	9.5	4.3	46
9	270	214	9.9	12	230	17	6.6	835	679	8.8	4.8	57
10	265	148	9.7	41	230	15	5.6	672	749	8.9	4.2	28
11	237	114	9.0	247	230	13	5.3	695	700	6.8	17	20
12	220	109	8.3	153	231	12	5.4	617	617	5.1	129	16
13	201	115	8.3	49	231	12	6.5	527	518	4.9	277	13
14	182	143	8.3	30	232	11	6.5	444	433	6.8	203	11
15	171	144	8.3	23	230	11	6.2	373	435	7.5	374	10
16	165	156	8.3	21	230	11	4.4	311	457	6.8	207	12
17	168	159	8.2	18	236	11	12	283	565	5.1	140	23
18	182	158	7.7	50	237	11	13	246	558	3.5	83	247
19	182	158	7.7	420	237	11	23	214	485	3.4	77	1180
20	183	156	7.7	276	237	11	17	192	415	3.3	69	5250
21	186	156	7.6	272	161	12	11	181	344	2.8	39	7190
22	198	184	7.2	262	47	12	9.1	179	286	3.5	23	5020
23	186	86	7.2	254	30	11	6.9	175	234	7.7	15	3130
24	186	36	7.2	247	26	11	5.8	178	209	19	12	2150
25	185	22	7.2	261	22	10	5.9	194	200	16	16	1560
26	175	17	7.2	261	20	10	16	185	191	47	13	1080
27	124	17	7.2	247	18	10	20	180	188	38	11	789
28	36	108	7.2	238	17	9.4	12	174	184	36	11	611
29	19	122	7.5	223	---	9.0	9.0	176	149	24	9.0	490
30	14	122	7.7	236	---	10	7.3	182	48	20	6.8	395
31	11	---	7.7	249	---	11	---	133	---	14	8.1	---
TOTAL	6233	2917.5	410.3	4156.7	5018	410.4	336.7	8115.3	10253	426.4	1795.1	29385.6
MEAN	201	97.2	13.2	134	179	13.2	11.2	262	342	13.8	57.9	980
MAX	586	214	107	420	244	20	54	835	749	47	374	7190
MIN	11	8.0	7.2	7.7	17	9.0	4.4	6.2	12	2.8	3.6	5.9
AC-FT	12360	5790	814	8240	9950	814	668	16100	20340	846	3560	58290
CAL YR 1990	TOTAL	173053.8	MEAN	474	MAX	37000	MIN	2.2	AC-FT	343300		
WTR YR 1991	TOTAL	69458.0	MEAN	190	MAX	7190	MIN	2.8	AC-FT	137800		

08143600 PECAN BAYOU NEAR MULLIN, TX--Continued

WATER-QUALITY RECORDS

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

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1967 to September 1991 (discontinued).

WATER TEMPERATURES: October 1967 to September 1991 (discontinued).

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

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 2,230 microsiemens May 14, 1978; minimum daily, 158 microsiemens Apr. 26, 1990.

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

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,470 microsiemens May 1; minimum daily, 383 microsiemens Oct. 5, 7.

WATER TEMPERATURE: Maximum daily, 34.0°C July 7, 19; minimum daily, 5.0°C Dec. 22-24, Jan. 3, 4.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB DISSOLV FLD. AS CACO3 (MG/L)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
OCT 02...	1650	83	431	24.5	150	28	46	8.0	27
JAN 15...	0835	22	572	7.5	190	48	60	10	37
MAR 05...	0750	19	617	14.0	210	54	62	14	41
MAY 21...	0915	182	570	24.0	180	62	57	9.6	41
JUN 30...	1900	36	565	30.0	180	53	57	9.9	39
AUG 07...	0900	3.6	1070	28.0	270	110	72	21	100

DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT DIS FIX END FIELD CACO3 (MG/L)	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 02...	1	5.1	120	27	47	<0.10	9.4	241
JAN 15...	1	6.6	140	39	63	0.10	7.8	309
MAR 05...	1	4.8	160	38	74	0.20	2.3	332
MAY 21...	1	5.1	120	35	83	0.20	6.7	310
JUN 30...	1	5.3	130	35	73	0.20	8.0	305
AUG 07...	3	8.5	160	110	160	0.30	5.2	572

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1990 TO SEPTEMBER 1991

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. 1990	6233	408	227	3820	49	829	32	544	130
NOV. 1990	2917.5	496	275	2170	64	500	39	308	160
DEC. 1990	410.3	629	349	386	88	97	49	54	190
JAN. 1991	4156.7	547	304	3410	73	824	43	482	170
FEB. 1991	5018	480	267	3610	60	818	38	514	150
MAR. 1991	410.4	937	517	573	150	170	72	80	240
APR. 1991	336.7	1200	660	600	210	193	91	82	290
MAY 1991	8115.3	598	332	7260	82	1800	47	1030	180
JUNE 1991	10253	523	290	8040	67	1870	41	1140	160
JULY 1991	426.4	852	471	542	130	153	66	76	230
AUG. 1991	1795.1	527	292	1420	69	336	41	201	160
SEPT 1991	29385.6	450	250	19800	56	4440	36	2830	140
TOTAL	69458.0	**	**	51700	**	12000	**	7330	**
WTD.AVG.	190	496	276	**	64	**	39	**	150

COLORADO RIVER BASIN

08143600 PECAN BAYOU NEAR MULLIN, TX--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY EQUIVALENT MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	441	e476	516	1190	455	564	1350	1470	592	575	1020	545
2	440	489	512	1220	458	573	1340	1450	598	580	1030	548
3	389	502	509	1290	460	604	1320	1440	590	585	1040	550
4	385	497	508	1300	465	602	1300	1430	575	595	1060	550
5	383	493	530	1310	463	630	1260	1270	565	597	1080	565
6	384	519	563	1320	483	631	1190	1220	555	611	1080	566
7	383	503	561	1340	482	669	1150	1150	459	615	1070	568
8	394	484	599	1360	490	728	1010	1020	461	621	1050	574
9	400	503	600	1350	488	729	960	591	505	622	1040	759
10	405	486	603	1370	489	767	826	457	519	628	1000	726
11	410	464	607	850	478	814	880	507	522	645	919	813
12	415	455	608	530	479	924	910	511	525	658	806	847
13	416	491	612	560	478	927	950	520	528	666	506	850
14	417	492	618	580	480	960	1000	540	533	679	604	856
15	424	450	625	576	481	1050	1050	551	522	680	443	849
16	423	451	626	621	480	1060	1060	564	518	692	450	830
17	424	450	635	660	486	1110	964	569	512	711	475	910
18	426	445	661	661	487	1160	893	570	516	723	480	922
19	432	450	700	440	486	1200	1070	571	518	732	468	420
20	430	455	701	468	488	1210	1210	576	520	742	430	452
21	426	454	702	618	487	1220	1220	578	534	762	428	450
22	419	448	728	618	505	1230	1230	580	540	764	429	448
23	417	448	727	614	505	1250	1240	584	544	768	430	398
24	419	449	860	471	522	1300	1260	578	549	776	457	455
25	420	450	861	468	536	1310	1280	582	554	860	460	456
26	425	434	862	458	536	1300	1340	585	558	1000	466	449
27	433	433	970	459	544	1310	1410	580	561	1110	480	446
28	434	812	977	454	555	1320	1430	576	563	1190	493	440
29	469	811	1140	471	---	1340	1450	575	564	1200	505	442
30	470	520	1150	471	---	1330	1460	573	565	1210	515	441
31	472	---	1160	459	---	1340	---	584	---	1120	525	---
MEAN	420	494	711	792	491	1010	1170	753	539	765	685	604

e Estimated

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26.0	19.0	12.0	7.0	9.0	13.0	19.0	25.0	28.0	30.0	33.0	30.0
2	25.0	20.0	11.0	7.0	9.0	15.0	18.0	23.0	28.0	30.0	32.0	28.0
3	25.0	20.0	11.0	5.0	10.0	15.0	19.0	24.0	24.0	30.0	33.0	29.0
4	25.0	18.0	11.0	5.0	11.0	18.0	21.0	22.0	27.0	29.0	33.0	30.0
5	25.0	17.0	10.0	7.0	12.0	18.0	21.0	20.0	27.0	31.0	30.0	28.0
6	26.0	17.0	10.0	6.0	11.0	19.0	22.0	22.0	27.0	33.0	31.0	27.0
7	27.0	15.0	9.0	6.5	11.0	17.0	22.0	22.0	25.0	34.0	30.0	26.0
8	26.0	15.0	9.0	7.5	10.0	17.0	26.0	24.0	26.0	33.0	31.0	29.0
9	23.0	13.0	9.0	8.0	11.0	17.0	25.0	23.0	25.0	32.0	28.0	30.0
10	20.0	14.0	9.0	8.0	12.0	17.0	22.0	24.0	25.0	31.0	30.0	29.0
11	19.0	16.0	11.0	9.0	13.5	19.0	22.0	25.0	25.0	32.0	29.0	28.0
12	19.0	15.0	11.5	9.0	15.0	18.0	25.0	24.0	27.0	30.0	27.0	29.0
13	20.0	15.0	10.0	9.0	14.0	16.0	24.0	25.0	27.0	31.0	26.0	28.0
14	20.0	14.0	12.0	10.0	14.0	16.0	25.0	25.0	28.0	31.0	27.0	28.0
15	20.0	15.0	12.0	7.5	13.0	15.0	24.0	25.0	29.0	32.0	27.0	27.0
16	23.0	14.0	13.0	10.0	11.0	14.0	25.0	27.0	28.0	32.0	28.0	28.0
17	23.0	16.0	14.0	10.0	13.0	18.0	24.0	25.0	29.0	31.0	29.0	28.0
18	22.0	18.0	12.5	9.0	14.0	17.0	25.0	25.0	28.0	32.0	30.0	24.0
19	22.0	18.0	10.0	10.0	15.0	18.0	23.0	26.0	30.0	34.0	32.0	20.0
20	22.0	18.0	9.0	7.0	13.0	17.0	22.0	27.0	28.0	31.0	30.0	22.0
21	18.0	18.0	8.0	7.0	14.0	21.0	23.0	25.0	29.0	31.0	31.0	22.0
22	18.0	18.0	5.0	8.0	14.0	19.0	22.0	26.0	28.0	30.0	32.0	22.0
23	18.0	18.0	5.0	9.0	13.0	20.0	24.0	26.0	29.0	30.0	31.0	21.0
24	17.5	18.0	5.0	9.0	15.0	19.0	25.0	25.0	29.0	30.0	30.0	21.0
25	17.0	18.0	5.5	10.0	14.0	20.0	25.0	29.0	28.0	32.0	31.0	24.0
26	17.5	17.5	6.0	11.0	13.0	21.0	26.0	29.0	29.0	30.0	30.0	22.0
27	20.0	18.0	6.0	11.0	13.0	21.0	25.0	28.0	29.5	33.0	30.0	22.0
28	20.0	16.0	7.0	11.0	14.0	20.0	23.0	28.0	30.0	28.0	30.0	21.0
29	20.0	15.0	8.0	10.0	---	18.0	24.0	29.0	28.0	29.0	30.0	21.0
30	19.0	11.0	7.0	9.0	---	18.0	23.0	27.0	30.0	30.0	30.0	21.0
31	19.0	---	7.0	8.0	---	18.0	---	28.0	---	31.0	30.0	---
MEAN	21.4	16.5	9.2	8.4	12.6	17.7	23.1	25.3	27.7	31.1	30.0	25.5

COLORADO RIVER BASIN

87

08144500 SAN SABA RIVER AT MENARD, TX

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

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

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

Water-quality records.--Chemical analyses: Novembe 1964 to July 1967.

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

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

REMARKS.--No estimated daily discharges. Records good except those above 100 ft³/s, which are fair. Since about 1890, low flow regulated during irrigation season by diversions to Noyes Canal 4.5 mi upstream and diversions by pumping at several locations upstream. Records of the Texas Department of Water Resources show that permits have been granted to irrigate 3,338 acres above this station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--76 years, 63.3 ft³/s (45,860 acre-ft/yr).

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

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 7	1900	1,580	6.99	June 15	0800	*8,110	*11.10

Minimum daily discharge, 30 ft³/s May 31, June 1, Aug. 31 to Sept. 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	119	74	65	77	57	46	38	33	30	65	38	30
2	115	73	66	77	57	45	36	34	44	60	36	30
3	132	72	67	77	58	42	35	37	57	40	31	33
4	124	84	67	77	58	41	36	40	164	51	34	32
5	111	80	67	77	59	41	41	45	125	45	42	32
6	107	75	68	78	59	41	40	56	65	43	39	33
7	103	74	68	78	59	40	38	53	389	43	38	40
8	101	83	68	79	57	40	36	45	361	42	37	35
9	113	83	68	82	56	41	35	43	106	40	39	35
10	98	76	69	89	57	40	34	41	63	38	41	33
11	94	73	70	84	56	39	33	41	48	37	41	32
12	93	70	71	79	57	40	36	41	45	37	40	32
13	91	69	71	77	57	39	40	39	41	36	41	31
14	89	69	71	77	55	40	40	73	39	36	42	39
15	88	70	73	70	53	40	37	59	1910	35	45	50
16	88	71	74	53	53	41	35	48	243	34	45	45
17	87	70	72	54	53	40	40	46	127	35	43	46
18	86	70	51	71	54	39	44	42	91	34	35	40
19	84	71	48	69	52	38	40	39	76	34	36	40
20	84	71	48	62	49	39	37	37	70	33	32	45
21	93	71	49	57	53	39	37	38	67	31	31	45
22	89	70	49	58	53	38	37	37	64	31	31	41
23	84	71	49	59	50	36	36	37	64	31	33	39
24	82	69	50	57	48	36	38	36	62	36	32	38
25	81	68	50	57	47	36	41	36	62	41	31	37
26	81	68	50	56	46	38	39	35	63	53	32	36
27	81	67	50	57	46	38	38	34	65	42	32	36
28	80	65	51	57	45	37	37	32	64	40	31	35
29	77	64	53	57	---	35	35	31	63	42	32	35
30	76	64	55	57	---	35	33	32	63	41	31	35
31	74	---	59	56	---	39	---	30	---	39	30	---
TOTAL	2905	2155	1887	2115	1504	1219	1122	1270	4731	1245	1121	1110
MEAN	93.7	71.8	60.9	68.2	53.7	39.3	37.4	41.0	158	40.2	36.2	37.0
MAX	132	84	74	89	59	46	44	73	1910	65	45	50
MIN	74	64	48	53	45	35	33	30	30	31	30	30
AC-FT	5760	4270	3740	4200	2980	2420	2230	2520	9380	2470	2220	2200

CAL YR 1990	TOTAL	98013.6	MEAN	269	MAX	27100	MIN	5.6	AC-FT	194400
WTR YR 1991	TOTAL	22384	MEAN	61.3	MAX	1910	MIN	30	AC-FT	44400

COLORADO RIVER BASIN

08144600 SAN SABA RIVER NEAR BRADY, TX

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

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

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

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

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

AVERAGE DISCHARGE.--12 years, 83.0 ft³/s (60,130 acre-ft/yr).

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

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 15	1830	*4,900	*7.90	No other peak greater than base discharge.			
Minimum daily discharge, 31 ft ³ /s Aug. 5, 23-25.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	137	87	80	57	52	67	e62	54	43	71	43	53
2	133	87	80	62	53	62	e60	50	41	71	38	51
3	167	87	80	76	54	e61	e57	54	45	73	37	50
4	160	99	80	74	56	e61	e58	58	66	83	32	60
5	150	100	78	73	57	e61	e62	60	141	62	31	54
6	132	99	76	76	59	e61	e70	57	164	61	37	54
7	124	93	73	78	60	e61	e67	60	113	57	33	71
8	121	94	73	78	59	e60	e64	78	401	50	36	89
9	225	102	73	83	54	e60	e62	77	317	50	36	68
10	156	102	73	92	55	e60	e60	65	166	48	37	58
11	127	99	73	89	57	e59	e58	64	129	45	40	56
12	121	94	75	91	57	e59	e60	59	291	45	40	54
13	116	92	73	81	57	e59	e64	54	109	42	40	54
14	109	90	73	80	59	e59	e73	59	88	37	40	54
15	105	89	73	80	58	e60	e68	82	947	37	40	75
16	104	89	73	78	57	e60	e65	88	920	37	43	78
17	104	89	76	69	54	e60	e62	74	288	36	45	78
18	101	91	77	72	57	60	e66	69	192	35	48	75
19	99	89	72	78	61	60	e78	65	140	36	46	80
20	99	89	59	78	63	e60	e64	62	121	37	40	82
21	101	89	54	76	61	e60	e57	56	112	37	36	82
22	107	89	52	71	63	e59	e56	52	126	37	35	80
23	107	89	52	67	69	e58	e55	54	143	36	31	78
24	102	89	52	69	67	e58	e56	54	96	154	31	75
25	99	89	50	69	62	e58	e60	54	85	103	31	72
26	94	89	50	67	63	e60	67	54	82	69	32	68
27	92	89	52	67	63	e60	63	54	80	58	33	67
28	92	89	54	66	63	e57	63	50	78	62	34	67
29	91	86	58	60	---	e57	63	46	74	51	45	67
30	87	81	61	52	---	e57	57	47	71	46	48	67
31	87	---	58	52	---	e58	---	46	---	45	49	---
TOTAL	3649	2740	2083	2261	1650	1852	1877	1856	5669	1711	1187	2017
MEAN	118	91.3	67.2	72.9	58.9	59.7	62.6	59.9	189	55.2	38.3	67.2
MAX	225	102	80	92	69	67	78	88	947	154	49	89
MIN	87	81	50	52	52	57	55	46	41	35	31	50
AC-FT	7240	5430	4130	4480	3270	3670	3720	3680	11240	3390	2350	4000
CAL YR 1990	TOTAL	98999.3	MEAN	271	MAX	22200	MIN	1.9	AC-FT	196400		
WTR YR 1991	TOTAL	28552	MEAN	78.2	MAX	947	MIN	31	AC-FT	56630		

e Estimated

08146000 SAN SABA RIVER AT SAN SABA, TX

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

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

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

Water-quality records.--Chemical analyses: September 1947 to February 1949, November 1958 to September 1969. Water Temperature: September 1962 to September 1969.

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

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

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

AVERAGE DISCHARGE.--76 years, 222 ft³/s (160,800 acre-ft/yr).

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

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 16	1400	*2,430	*10.93				

Minimum discharge, 30 ft³/s Aug. 7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	198	121	107	84	99	97	70	74	55	92	50	51
2	184	120	106	86	98	100	75	68	56	91	49	54
3	287	118	106	86	98	97	79	69	65	89	45	56
4	367	124	104	92	107	94	81	73	80	99	42	54
5	255	139	104	108	115	92	84	76	74	132	41	51
6	223	140	103	112	109	89	84	76	74	110	38	54
7	197	130	102	112	104	82	94	73	192	87	35	77
8	180	133	102	110	102	85	96	86	168	80	34	65
9	198	137	103	116	102	86	92	94	263	73	37	75
10	350	140	103	125	99	86	86	116	365	67	45	86
11	252	139	103	139	96	86	82	96	222	62	58	69
12	196	136	104	132	97	87	81	80	187	59	47	60
13	177	130	104	127	101	84	84	79	386	57	48	57
14	167	125	103	125	96	83	102	233	185	55	52	57
15	161	125	104	120	92	83	106	83	186	51	57	67
16	156	123	104	113	90	86	102	78	1240	49	55	68
17	152	122	104	110	92	88	94	97	730	49	51	77
18	145	119	105	122	95	91	96	103	379	47	52	81
19	138	119	103	137	93	93	102	88	250	46	50	136
20	137	122	102	133	89	91	96	83	188	42	51	89
21	144	118	95	134	95	86	92	85	151	40	50	81
22	155	119	80	133	99	90	90	80	139	43	50	82
23	151	121	75	122	97	84	82	77	165	40	54	82
24	149	119	73	116	97	83	82	69	262	37	59	80
25	142	119	76	114	101	82	81	77	139	41	49	76
26	135	119	77	110	98	82	81	78	114	135	45	71
27	131	118	77	108	94	77	81	74	102	95	42	68
28	126	113	86	105	94	72	82	69	99	74	40	67
29	125	109	92	102	---	72	82	64	95	118	41	65
30	124	108	88	101	---	72	79	62	92	99	43	60
31	121	---	84	103	---	68	---	57	---	62	49	---
TOTAL	5623	3725	2979	3537	2749	2648	2618	2617	6703	2221	1459	2116
MEAN	181	124	96.1	114	98.2	85.4	87.3	84.4	223	71.6	47.1	70.5
MAX	367	140	107	139	115	100	106	233	1240	135	59	136
MIN	121	108	73	84	89	68	70	57	55	37	34	51
AC-FT	11150	7390	5910	7020	5450	5250	5190	5190	13300	4410	2890	4200
CAL YR 1990	TOTAL	116605.4	MEAN	319	MAX	22700	MIN	2.9	AC-FT	231300		
WTR YR 1991	TOTAL	38995	MEAN	107	MAX	1240	MIN	34	AC-FT	77350		

COLORADO RIVER MAIN STEM

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

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

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

WATER-DISCHARGE RECORDS

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

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

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

REMARKS.--No estimated daily discharges. Records good. There are many diversions above station for irrigation, municipal use, and for oil field operation. Since March 15, 1990, 66 percent of the drainage area above this station is now controlled by O. H. Ivie Reservoir (station 08136600), 140.8 miles upstream, and by an additional twelve reservoirs (8 above and 4 below Ivie Reservoir), for a total combined capacity (13 reservoirs) of 1,897,000 acre-ft at conservation level. Flow is also affected at times by discharge from the flood-detention pools of 187 floodwater-retarding structures with a combined capacity of 205,700 acre-ft. These flood-detention structures control runoff from an 944 mi² area above this station. Gage-height telemeter at station.

AVERAGE DISCHARGE.--50 years (water years 1917-19, 1921-22, 1924-68) prior to completion of Robert Lee Dam, 1,340 ft³/s (970,100 acre-ft/yr); 22 years (water years 1969-90) prior to completion of O. H. Ivie Dam, partially regulated, 657 ft³/s (476,000 acre-ft/yr).

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

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 13,900 ft³/s Sept. 21 at 0830 hours (gage height, 13.96 ft); minimum daily 41.0 ft³/s July 25.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	585	174	291	185	454	219	135	106	213	221	94	89
2	557	169	285	184	452	219	141	100	150	177	82	111
3	704	166	239	174	447	216	141	101	117	164	75	125
4	752	175	195	164	457	211	135	119	126	163	65	103
5	1710	172	179	163	468	210	141	129	144	172	56	91
6	1340	183	170	171	462	203	145	126	328	163	50	86
7	1010	181	166	168	447	194	168	146	729	140	46	102
8	856	283	183	167	441	190	163	175	1020	118	43	121
9	887	334	186	178	423	190	154	710	1800	109	44	113
10	893	469	186	204	413	192	149	770	1680	99	56	159
11	881	559	189	213	407	192	141	784	1300	92	73	181
12	727	430	190	563	409	192	136	789	1040	84	80	185
13	632	360	205	559	406	189	140	693	2270	77	71	157
14	508	328	215	388	402	187	190	783	1280	73	341	142
15	432	338	214	311	391	189	188	680	1330	70	556	131
16	392	329	211	266	381	187	155	459	2830	67	1170	124
17	368	324	200	238	385	180	135	394	3160	68	596	136
18	341	324	185	238	391	173	128	389	1830	68	431	144
19	342	314	174	519	391	171	143	357	1500	62	310	503
20	339	313	168	1610	383	172	160	324	1060	60	246	6800
21	355	314	160	1070	410	174	140	284	816	53	212	13000
22	351	332	147	832	378	168	135	264	650	49	176	10200
23	360	377	132	682	275	169	131	252	727	51	149	6180
24	344	403	127	602	238	164	121	246	658	49	147	4230
25	337	414	125	540	228	161	116	251	527	41	175	3000
26	329	316	148	522	224	164	116	270	410	46	128	2250
27	322	264	166	511	217	161	108	259	366	138	98	1710
28	300	230	167	488	211	151	116	252	342	102	84	1300
29	240	230	176	467	---	142	122	237	327	109	77	1010
30	199	295	178	446	---	138	118	230	302	155	81	804
31	183	---	179	441	---	135	---	229	---	119	89	---
TOTAL	17576	9100	5736	13264	10591	5603	4211	10908	29032	3159	5901	53287
MEAN	567	303	185	428	378	181	140	352	968	102	190	1776
MAX	1710	559	291	1610	468	219	190	789	3160	221	1170	13000
MIN	183	166	125	163	211	135	108	100	117	41	43	86
AC-FT	34860	18050	11380	26310	21010	11110	8350	21640	57580	6270	11700	105700

CAL YR 1990 TOTAL 411600 MEAN 1128 MAX 42600 MIN 19 AC-FT 816400
WTR YR 1991 TOTAL 168368 MEAN 461 MAX 13000 MIN 41 AC-FT 334000

COLORADO RIVER MAIN STEM

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

WATER-QUALITY RECORDS

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

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: September 1947 to current year.

WATER TEMPERATURE: September 1947 to current year.

SUSPENDED SEDIMENT DISCHARGE: December 1950 to September 1962.

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

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 8,120 microsiemens Aug. 16, 1988; minimum daily, 150 microsiemens Sept. 14, 1981, and Jan. 1, 1985.

WATER TEMPERATURE: Maximum daily, 37.0°C Aug. 3, 1956; minimum daily, 0.0°C Jan. 29, 1948, Jan. 30, 1951.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,290 microsiemens May 10; minimum daily, 418 microsiemens Sept. 27.

WATER TEMPERATURE: Maximum daily, 34.0°C Aug. 3; minimum daily, 5.0°C Dec. 22-24.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI, FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS TOTAL (MG/L AS CaCO3)
NOV 19...	1215	312	737	8.3	16.0	8.7	8.9	94	1.2	120	100	260
JAN 23...	1450	674	615	8.3	7.5	60	11.8	103	1.5	210	1000	210
FEB 26...	1220	228	685	8.5	13.0	16	11.9	116	1.5	50	92	250
APR 16...	1220	153	1040	8.3	22.0	25	7.5	89	2.2	K37	140	340
JUL 09...	1325	116	509	8.2	29.0	21	7.0	95	1.6	50	52	210
AUG 27...	1420	95	456	8.3	28.0	35	7.3	97	1.6	K40	56	170

DATE	HARD-NESS NONCARB DISSOLV FLD. AS CaCO3 (MG/L)	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)	CAR-BONATE WATER DIS IT FIELD MG/L AS CO3	BICAR-BONATE WATER DIS IT FIELD MG/L AS HCO3	ALKA-LINITY WAT DIS TOT IT FIELD MG/L AS CaCO3	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS Cl)
NOV 19...	77	65	23	50	1	4.5	0	220	180	59	86
JAN 23...	60	60	14	42	1	4.9	0	181	148	43	77
FEB 26...	67	65	22	41	1	3.6	6	215	187	46	77
APR 16...	140	75	37	80	2	4.3	0	249	204	110	150
JUL 09...	24	54	18	23	0.7	3.9	0	225	184	20	40
AUG 27...	22	44	15	22	0.7	4.7	7	169	150	24	41

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 CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)
NOV 19...	0.40	9.3	412	410	--	0.890	<0.010	0.010	0.900	0.900	0.060
JAN 23...	<0.10	8.4	340	342	0.580	0.690	0.020	0.010	0.600	0.700	0.060
FEB 26...	0.20	4.4	376	373	0.480	--	0.010	<0.010	0.490	0.500	0.020
APR 16...	0.20	7.1	615	589	0.420	--	0.020	<0.010	0.440	0.460	<0.010
JUL 09...	0.20	13	270	283	0.080	0.090	0.020	0.020	0.100	0.110	0.030
AUG 27...	0.20	12	269	255	0.210	0.240	0.030	0.010	0.240	0.250	0.050

COLORADO RIVER MAIN STEM

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (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 ORTHOS DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHOS TOTAL (MG/L AS P)	PHOS- PHATE, ORTHOS DIS- SOLVED (MG/L AS P04)	SEDI- MENT, SUS- PENDE (MG/L)
NOV 19...	0.050	0.44	--	--	0.50	0.050	0.010	0.010	0.020	0.03	19
JAN 23...	0.060	0.64	--	--	0.70	0.090	0.050	0.040	0.040	0.12	68
FEB 26...	<0.010	0.28	--	--	0.30	0.030	0.030	0.010	<0.010	0.03	32
APR 16...	0.020	--	--	--	0.80	0.070	<0.010	<0.010	0.010	--	43
JUL 09...	0.010	0.27	0.29	0.30	0.30	0.050	0.020	<0.010	0.020	--	61
AUG 27...	0.050	0.55	--	--	0.60	0.110	0.020	0.010	0.020	0.03	45

DATE	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. % 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 19...	16	98	10	2	130	<0.5	<1.0	2	<3	2	16
JAN 23...	124	100	10	1	100	<0.5	<1.0	<1	<3	1	14
FEB 26...	20	98	--	--	--	--	--	--	--	--	--
APR 16...	18	94	<10	1	150	<0.5	<1.0	2	<3	1	8
JUL 09...	19	97	--	--	--	--	--	--	--	--	--
AUG 27...	12	97	10	2	100	<0.5	<1.0	<1	<3	2	8

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 19...	1	16	2	<0.1	<10	2	<1	<1.0	640	<6	4
JAN 23...	1	12	2	<0.1	<10	2	<1	<1.0	510	<6	<3
FEB 26...	--	--	--	--	--	--	--	--	--	--	--
APR 16...	<1	25	5	<0.1	<10	<1	<1	<1.0	900	<6	8
JUL 09...	--	--	--	--	--	--	--	--	--	--	--
AUG 27...	<1	9	2	<0.1	<10	2	<1	<1.0	330	<6	4

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1990 TO SEPTEMBER 1991

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. 1990	17576	654	374	17700	97	4610	75	3550	220
NOV. 1990	9100	702	402	9870	100	2580	81	1990	230
DEC. 1990	5736	652	373	5780	97	1500	75	1160	220
JAN. 1991	13264	761	436	15600	110	4100	89	3180	250
FEB. 1991	10591	655	374	10700	97	2780	75	2140	220
MAR. 1991	5603	1020	586	8870	160	2390	120	1870	330
APR. 1991	4211	1000	576	6550	150	1760	120	1380	320
MAY 1991	10908	713	408	12000	110	3160	83	2450	240
JUNE 1991	29032	598	342	26800	89	6960	68	5350	200
JULY 1991	3159	532	304	2590	78	664	60	508	180
AUG. 1991	5901	608	347	5540	90	1430	69	1100	200
SEPT 1991	53287	485	277	39800	71	10200	54	7780	170
TOTAL	168368	**	**	162000	**	42100	**	32500	**
WTD.AVG.	461	623	356	**	93	**	71	**	210

COLORADO RIVER MAIN STEM

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08147000 COLORADO RIVER NEAR SAN SABA, TX--Continued
(National stream-quality accounting network)SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY EQUIVALENT MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	603	647	642	749	617	711	1110	839	670	e512	534	472
2	620	652	634	763	620	738	1100	824	659	506	548	467
3	504	655	609	e769	618	780	1080	800	650	504	560	465
4	540	647	602	775	611	832	1070	769	638	505	557	462
5	703	e650	580	771	632	911	1060	931	645	506	566	489
6	704	653	572	757	638	946	1070	943	651	504	570	e512
7	806	652	566	748	628	976	1110	922	752	508	580	534
8	589	e628	615	735	624	1000	1100	e996	840	514	577	545
9	645	604	637	807	627	1020	1040	1070	1050	524	579	523
10	604	656	582	718	636	1040	1060	1290	847	533	567	522
11	659	778	580	721	654	1050	1050	560	691	535	583	531
12	665	784	601	801	663	1060	1030	628	635	548	578	520
13	692	e861	561	924	668	1090	1010	567	622	546	571	537
14	655	938	620	959	674	1110	1080	563	605	542	633	571
15	672	868	690	995	672	1120	1180	543	544	534	725	e584
16	692	852	e661	974	676	1140	1030	548	502	528	654	596
17	713	837	632	971	672	1120	960	550	496	532	766	607
18	702	766	644	981	e676	1090	884	601	473	542	729	600
19	693	730	690	1020	680	1060	873	639	472	553	605	549
20	688	704	686	785	680	1070	1060	636	462	544	502	457
21	659	683	e694	853	668	1080	990	643	465	555	454	622
22	646	635	701	654	669	1090	930	648	471	565	436	438
23	636	631	708	619	678	1080	932	675	475	567	442	430
24	624	617	714	649	682	1090	920	682	478	565	451	422
25	620	e604	718	697	693	1080	875	690	476	561	429	421
26	e613	591	727	681	702	1090	850	680	472	572	e450	420
27	606	599	744	650	714	1100	843	680	466	553	482	418
28	611	601	743	614	713	1110	762	670	464	548	491	423
29	e624	612	734	594	---	1130	773	663	473	544	502	426
30	636	633	737	590	---	1120	861	661	519	565	516	435
31	e640	---	745	595	---	1110	---	666	---	587	473	---
MEAN	647	692	657	772	660	1030	990	728	589	539	552	500

e Estimated

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27.0	20.0	18.0	8.0	12.0	17.0	20.0	25.0	30.0	---	32.0	30.0
2	25.0	22.0	15.0	10.0	10.0	18.0	19.0	24.0	30.0	30.0	32.0	27.0
3	30.0	22.0	14.0	---	11.0	16.0	20.0	22.0	25.0	32.0	34.0	30.0
4	26.0	15.0	14.0	6.0	13.0	19.0	22.0	22.0	30.0	30.0	31.0	30.0
5	26.0	---	13.0	10.0	14.0	20.0	22.0	22.0	30.0	32.0	31.0	28.0
6	27.0	17.0	12.0	8.0	14.0	21.0	22.0	23.0	30.0	32.0	31.0	---
7	29.0	15.0	10.0	9.0	15.0	17.0	23.0	23.0	30.0	30.0	30.0	29.0
8	28.0	---	12.0	10.0	13.0	18.0	26.0	---	29.0	29.0	32.0	30.0
9	21.0	15.0	13.0	10.0	15.0	18.0	25.0	25.0	27.0	30.0	30.0	30.0
10	22.0	20.0	11.0	9.0	15.0	18.0	23.0	25.0	26.0	30.0	28.0	30.0
11	21.0	18.0	14.0	9.0	15.0	19.0	23.0	25.0	27.0	30.0	30.0	30.0
12	21.0	18.0	13.0	9.0	17.0	20.0	25.0	28.0	29.0	31.0	29.0	29.0
13	22.0	---	14.0	10.0	19.0	18.0	25.0	26.0	29.0	32.0	28.0	30.0
14	23.0	17.0	15.0	12.0	15.0	16.0	24.0	26.0	30.0	32.0	27.0	30.0
15	24.0	19.0	14.0	15.0	15.0	13.0	25.0	27.0	29.0	32.0	29.0	---
16	25.0	18.0	---	12.0	12.0	13.0	25.0	25.0	30.0	33.0	30.0	30.0
17	25.0	18.0	17.0	11.0	18.0	17.0	25.0	26.0	30.0	30.0	30.0	29.0
18	22.0	20.0	15.0	10.0	---	18.0	23.0	25.0	30.0	32.0	30.0	30.0
19	20.0	19.0	15.0	12.0	15.0	18.0	24.0	27.0	30.0	32.0	30.0	22.0
20	22.0	20.0	17.0	9.0	15.0	18.0	26.0	25.0	30.0	31.0	28.0	14.0
21	18.0	21.0	---	8.0	14.0	22.0	24.0	29.0	31.0	33.0	30.0	21.0
22	20.0	20.0	5.0	10.0	15.0	20.0	23.0	28.0	32.0	33.0	30.0	23.0
23	19.0	21.0	5.0	10.0	16.0	20.0	24.0	29.0	31.0	31.0	29.0	22.0
24	20.0	21.0	5.0	10.0	17.0	21.0	22.0	27.0	30.0	29.0	30.0	22.0
25	20.0	---	6.0	12.0	15.0	20.0	26.0	29.0	31.0	31.0	30.0	21.0
26	---	20.0	6.0	10.0	15.0	20.0	17.0	31.0	31.0	30.0	---	20.0
27	22.0	20.0	8.0	12.0	14.0	21.0	24.0	30.0	31.0	31.0	28.0	23.0
28	22.0	17.0	9.0	13.0	14.0	22.0	25.0	30.0	31.0	30.0	32.0	22.0
29	---	16.0	14.0	15.0	---	17.0	24.0	30.0	28.0	31.0	31.0	24.0
30	21.0	15.0	7.0	6.0	---	19.0	24.0	30.0	30.0	32.0	30.0	22.0
31	20.0	---	9.0	11.0	---	19.0	---	30.0	---	32.0	28.0	---
MEAN	23.0	18.6	11.7	10.2	14.6	18.5	23.3	26.5	29.6	31.1	30.0	26.0

LOCATION.--Lat 30°30'15", long 99°44'03", Kimble County, Hydrologic Unit 12090204, on right bank 960 ft upstream from low-water crossing, 1.0 mi east of Junction, 2.6 mi downstream from bridge on Interstate Highway 10, 2.8 mi downstream from confluence of North and South Llano Rivers, 5.3 mi upstream from Johnson Fork, and 114.8 mi upstream from mouth.

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

GAGE.--Water-stage recorder. Datum of gage is 1,634.32 ft above National Geodetic Vertical Datum of 1929. Prior to Aug. 14, 1925, nonrecording gage, and Aug. 14, 1925, to May 17, 1940, and Aug. 18, 1944, to Oct. 12, 1981, water-stage recorder at site 5,330 ft downstream at datum 6.0 ft lower, designated as regular gage (destroyed by flood of Oct. 13, 1981). Prior to June 13, 1990 at datum 2.0 ft higher.

AVERAGE DISCHARGE.--76 years, 195 ft³/s (1.43 in/yr), 141,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 319,000 ft³/s June 14, 1935 (gage height, 43.3 ft at regular gage, 41.4 ft at former gage 5,330 ft downstream, from floodmarks), from rating curve extended above 54,000 ft³/s on basis of slope-area measurements of 154,000 and 319,000 ft³/s; minimum, 3.1 ft³/s Aug. 16, 17, 1956. Maximum stage since at least 1875, that of June 14, 1935.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Sept. 16	1400	*24,000	*18.69	No other peak greater than base discharge.			
Minimum daily discharge, 80 ft ³ /s July 20.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP			
1	212	183	175	170	161	163	136	124	95	86	99	94			
2	208	183	175	170	160	161	136	129	95	86	94	91			
3	219	183	175	170	159	156	136	132	95	86	91	95			
4	240	211	175	170	159	156	136	137	100	102	91	94			
5	224	204	175	170	163	156	187	142	101	106	87	91			
6	215	195	175	170	167	152	159	134	101	109	89	90			
7	209	192	175	170	164	152	149	128	101	109	90	95			
8	202	198	175	170	162	149	145	134	102	103	91	99			
9	209	198	175	170	161	147	140	137	107	102	91	96			
10	202	195	175	170	161	145	138	131	108	93	100	93			
11	200	191	174	170	159	145	138	130	103	93	99	89			
12	199	188	173	170	156	145	138	127	103	93	97	87			
13	195	186	173	169	154	141	144	121	104	91	95	86			
14	195	185	173	168	154	138	144	120	99	89	94	105			
15	194	185	173	168	152	138	136	119	97	89	95	132			
16	192	185	173	165	149	136	133	119	93	87	96	4410			
17	190	183	173	166	149	136	153	126	96	87	93	773			
18	190	183	173	176	151	136	150	122	100	87	100	404			
19	186	183	172	177	154	136	141	119	96	85	102	301			
20	185	183	170	173	160	136	135	117	96	80	96	321			
21	190	183	170	168	160	137	131	114	90	420	93	332			
22	197	183	169	168	160	138	131	114	89	371	94	269			
23	198	183	168	167	157	138	131	113	91	174	103	244			
24	190	183	168	166	156	138	131	112	91	146	115	225			
25	189	181	168	166	156	138	131	112	87	129	98	212			
26	187	180	168	163	156	138	131	110	88	118	94	204			
27	187	180	168	161	156	138	130	107	84	110	91	198			
28	186	180	168	161	156	138	127	106	84	105	90	190			
29	185	176	170	161	---	136	124	101	82	105	89	188			
30	185	175	170	161	---	136	124	98	83	105	90	179			
31	185	---	170	161	---	136	---	95	---	103	92	---			
TOTAL	6145	5598	5334	5205	4412	4435	4165	3730	2861	3749	2939	9887			
MEAN	198	187	172	168	158	143	139	120	95.4	121	94.8	330			
MAX	240	211	175	177	167	163	187	142	108	420	115	4410			
MIN	185	175	168	161	149	136	124	95	82	80	87	86			
AC-FT	12190	11100	10580	10320	8750	8800	8260	7400	5670	7440	5830	19610			
AC-FT	.11	.10	.09	.09	.09	.08	.08	.07	.05	.07	.05	.18			
IN.	.12	.11	.11	.10	.09	.09	.08	.07	.06	.08	.06	.20			
CAL YR	1990	TOTAL	119579	MEAN	328	MAX	16700	MIN	90	AC-FT	237200	CFSM	.18	IN.	2.40
WTR YR	1991	TOTAL	58460	MEAN	160	MAX	4410	MIN	80	AC-FT	116000	CFSM	.09	IN.	1.17

COLORADO RIVER BASIN

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08150700 LLANO RIVER NEAR MASON, TX

LOCATION.--Lat 30°39'38", long 99°06'32", Mason County, Hydrologic Unit 12090204, on right bank 98 ft downstream from downstream bridge on U.S. Highway 87, 1.0 mi upstream from Beaver Creek, 9.1 mi southeast of Mason, 10.2 mi downstream from James River, and 61.1 mi upstream from mouth.

DRAINAGE AREA.--3,247.14 mi², of which 5.14 mi² probably is noncontributing.

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

REVISED RECORD.--WDR TX-75-3: 1968(P). WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,230.36 ft above National Geodetic Vertical Datum of 1929. Prior to Jan. 19, 1971, at site 190 ft upstream at same datum.

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

AVERAGE DISCHARGE.--23 years (water years 1969-91), 325 ft³/s (1.36 in/yr), 235,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 260,000 ft³/s Sept. 8, 1980 (gage height, 37.00 ft, from floodmark), from rating curve extended above 151,000 ft³/s on basis of slope-area measurement and discharge measurement of 145,000 ft³/s; minimum, 16 ft³/s July 23, 1971.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1875, about 46 ft June 14, 1935 (discharge, about 380,000 ft³/s), from information by State Department of Highways and Public Transportation; at site 17.0 mi downstream discharge was 388,000 ft³/s by slope-area measurement.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Sept. 17	0430	*16,400	*10.13	No other peak greater than base discharge.			
Minimum daily discharge, 79 ft ³ /s June 29.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	264	210	210	207	204	176	155	137	85	80	119	134		
2	255	208	211	205	201	175	155	129	83	81	112	148		
3	254	205	212	208	201	171	156	149	92	85	103	150		
4	265	267	211	208	201	167	158	168	105	86	99	124		
5	294	308	208	208	215	164	187	177	94	92	95	111		
6	285	276	208	208	212	161	249	174	93	106	96	111		
7	267	244	206	208	224	161	237	163	122	112	93	114		
8	252	242	205	208	216	158	198	190	115	123	93	121		
9	289	250	207	218	206	158	179	195	99	120	86	113		
10	291	249	209	234	202	158	164	179	130	109	90	114		
11	266	238	208	231	201	159	161	170	124	104	87	108		
12	252	227	207	224	201	158	160	156	178	99	90	102		
13	244	224	208	212	198	157	166	156	150	91	98	97		
14	238	221	208	207	195	158	186	217	127	87	95	97		
15	235	221	208	203	192	158	173	181	142	84	97	108		
16	231	221	208	201	189	162	159	153	122	83	128	182		
17	229	221	208	200	189	167	160	145	111	81	114	4810		
18	223	221	206	230	189	167	172	141	141	81	103	1580		
19	220	220	204	242	186	166	215	148	112	84	98	843		
20	218	219	201	240	169	164	189	146	105	83	105	585		
21	248	218	198	225	171	165	170	140	91	81	114	504		
22	244	227	201	214	180	164	160	136	102	1190	104	571		
23	250	227	200	209	182	157	154	136	157	883	131	453		
24	245	221	203	210	181	155	151	137	136	703	140	381		
25	232	219	201	209	178	156	148	136	120	307	109	340		
26	227	216	204	207	171	160	149	131	103	210	128	307		
27	221	220	205	203	170	161	148	126	89	163	109	282		
28	220	215	205	201	170	157	146	122	83	222	107	265		
29	215	213	213	201	---	149	145	111	79	151	108	252		
30	211	211	214	205	---	150	141	101	81	134	122	241		
31	211	---	211	205	---	159	---	90	---	122	155	---		
TOTAL	7596	6879	6408	6591	5394	4998	5091	4640	3371	6037	3328	13348		
MEAN	245	229	207	213	193	161	170	150	112	195	107	445		
MAX	294	308	214	242	224	176	249	217	178	1190	155	4810		
MIN	211	205	198	200	169	149	141	90	79	80	86	97		
AC-FT	15070	13640	12710	13070	10700	9910	10100	9200	6690	11970	6600	26480		
CFSM	.08	.07	.06	.07	.06	.05	.05	.05	.03	.06	.03	.14		
IN.	.09	.08	.07	.08	.06	.06	.06	.05	.04	.07	.04	.15		
CAL YR 1990	TOTAL	151324	MEAN	415	MAX	22700	MIN	96	AC-FT	300200	CFSM	.13	IN.	1.74
WTR YR 1991	TOTAL	73681	MEAN	202	MAX	4810	MIN	79	AC-FT	146100	CFSM	.06	IN.	.85

COLORADO RIVER BASIN

08150800 BEAVER CREEK NEAR MASON, TX

LOCATION.--Lat 30°38'36", long 99°05'44", Mason County, Hydrologic Unit 12090204, on left bank at downstream side of downstream bridge on U.S. Highway 87, 1.8 mi upstream from Llano River, 6.4 mi downstream from Spring Creek, and 11.1 mi southeast of Mason.

DRAINAGE AREA.--215 mi².

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

REVISED RECORDS.--WSP 2122: 1964-65. WRD TX-81-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,253.24 ft above National Geodetic Vertical Datum of 1929. Prior to Aug. 3, 1978, at site 300 ft upstream at same datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. There is no known regulation or diversion above station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--28 years, 16.6 ft³/s (1.05 in/yr), 12,030 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 66,900 ft³/s Aug. 3, 1978 (gage height, 24.0 ft, from floodmarks), from rating curve extended above 7,400 ft³/s on basis of slope-area measurements of 20,100 and 66,900 ft³/s; no flow at times most years.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Aug. 23	1800	*715	*3.62				

Minimum daily discharge, 0.13 ft³/s for several days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.70	2.6	3.4	3.6	3.6	3.1	4.2	2.3	e2.0	.38	.13	4.0
2	.66	2.5	3.3	3.1	3.7	3.3	4.1	1.6	e2.0	.30	.14	11
3	.55	2.1	3.3	3.0	3.7	3.2	3.1	1.4	e5.0	.26	.30	20
4	.55	4.5	3.3	3.5	3.7	2.8	2.7	1.8	e5.0	5.7	.26	10
5	.55	11	3.3	3.6	3.9	2.4	6.8	2.2	e3.0	16	.26	6.7
6	.55	7.3	3.3	3.7	4.8	2.1	7.7	2.2	e2.2	4.8	.26	5.1
7	.53	5.5	3.3	3.7	5.4	1.9	5.4	2.1	e8.0	2.3	.23	4.0
8	.44	5.4	3.3	3.6	4.3	1.9	4.0	4.5	e6.0	1.3	.22	1.5
9	11	7.0	3.2	4.4	3.7	1.9	3.0	12	e3.0	.73	.19	3.3
10	17	6.8	3.0	8.3	3.5	2.0	2.4	6.0	e2.5	.45	.17	2.9
11	7.6	5.4	3.0	7.8	3.5	2.1	2.0	4.0	e2.2	.33	.17	2.3
12	4.7	5.1	3.0	5.3	3.4	2.1	1.8	3.1	e9.0	.25	.15	1.8
13	3.4	4.7	3.0	4.2	3.3	2.1	1.8	3.0	e8.0	.20	.15	1.4
14	2.8	4.6	3.0	3.6	3.3	2.1	1.7	5.1	e3.0	.17	.13	1.6
15	2.2	4.6	3.0	3.4	3.0	2.1	1.5	4.3	e2.5	.17	.26	2.8
16	1.8	e4.6	3.0	3.3	2.8	2.1	1.2	3.3	e2.3	.17	.24	4.0
17	1.6	e4.6	3.2	3.3	2.8	2.5	1.4	2.7	e2.3	.15	.20	4.3
18	1.4	4.3	3.0	5.7	2.8	2.8	3.8	2.3	e2.3	.19	1.3	3.5
19	1.3	4.2	3.0	9.0	2.8	2.8	8.1	2.1	e2.3	.20	1.4	3.1
20	1.3	3.8	3.0	7.0	2.8	2.8	4.2	2.1	e2.3	.15	1.1	3.5
21	23	3.5	3.0	5.3	2.8	2.8	2.9	2.2	e2.3	.13	.70	6.4
22	23	4.7	2.7	4.8	2.8	2.8	2.5	2.0	e2.4	.13	.53	6.7
23	11	5.5	2.7	4.6	2.8	2.8	2.2	2.0	e6.0	.13	68	5.1
24	7.3	5.2	2.5	4.6	2.8	2.5	2.1	e2.0	e3.0	.46	26	3.7
25	5.5	4.5	2.4	4.6	2.8	2.3	1.8	e2.0	2.4	.23	8.9	2.7
26	4.8	4.1	2.3	4.4	2.6	2.3	1.8	e2.0	1.8	.16	5.2	2.1
27	4.2	4.0	2.4	3.9	2.6	2.3	1.7	e2.0	1.2	.13	3.2	1.7
28	3.9	4.0	2.6	3.7	2.6	2.3	1.7	e2.0	.74	.13	2.2	1.5
29	3.6	4.0	3.5	3.6	---	2.2	1.7	e2.0	.48	.14	1.6	1.3
30	3.3	3.8	3.7	3.4	---	2.2	2.4	e2.0	.44	.15	6.4	1.1
31	2.9	---	3.7	3.7	---	2.9	---	e2.0	---	.13	5.7	---
TOTAL	153.13	143.9	94.4	139.7	92.6	75.5	91.7	90.3	95.66	36.12	135.69	129.1
MEAN	4.94	4.80	3.05	4.51	3.31	2.44	3.06	2.91	3.19	1.17	4.38	4.30
MAX	23	11	3.7	9.0	5.4	3.3	8.1	12	9.0	16	68	20
MIN	.44	2.1	2.3	3.0	2.6	1.9	1.2	1.4	.44	.13	.13	1.1
AC-FT	304	285	187	277	184	150	182	179	190	72	269	256
CFSM	.02	.02	.01	.02	.02	.01	.01	.01	.01	.01	.02	.02
IN.	.03	.02	.02	.02	.02	.01	.02	.02	.02	.01	.02	.02
CAL YR 1990	TOTAL	5464.02	MEAN	15.0	MAX	2950	MIN	.00	AC-FT	10840	CFSM	.07
WTR YR 1991	TOTAL	1277.80	MEAN	3.50	MAX	68	MIN	.13	AC-FT	2530	CFSM	.02
											IN.	.22

e Estimated

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LOCATION.--Lat 30°45'04", long 98°40'10", Llano County, Hydrologic Unit 12090204, on right bank in Llano, 0.4 mi downstream from bridge on State Highway 16, 7 mi upstream from Little Llano River, and 29.3 mi upstream from mouth.

Water-quality records.--Chemical analyses: April 1948 to October 1967. Chemical and Biochemical analyses: April 1979 to September 1986. Sediment analyses: September 1964, April 1979 to September 1986.

GAGE.--Water-stage recorder. Datum of gage is 970.01 ft above National Geodetic Vertical Datum of 1929.

AVERAGE DISCHARGE.--52 years, 360 ft³/s (1.17 in/yr), 260,800 acre-ft/yr.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1879, 41.5 ft June 14, 1935 (discharge, 380,000 ft³/s), from information by local resident.

Sept. 17	1100	*9,530	*8.14	No other peak greater than base discharge.
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CAL YR 1990	TOTAL	183684	MEAN	503	MAX	35900	MIN	39	AC-FT	364300	CFSM	.12	IN.	1.63
WTR YR 1991	TOTAL	78227	MEAN	214	MAX	3390	MIN	77	AC-FT	155200	CFSM	.05	IN.	.69

08152000 SANDY CREEK NEAR KINGSLAND, TX

LOCATION.--Lat 30°33'27", long 98°28'18", Llano County, Hydrologic Unit 12090201, at right downstream end of bridge on State Highway 71, 6.6 mi upstream from mouth, and 7.3 mi south of Kingsland.

DRAINAGE AREA.--346 mi².

PERIOD OF RECORD.--October 1966 to current year.

Water-quality records.--Sediment records: January 1968 to September 1975.

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

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 862.31 ft above National Geodetic Vertical Datum of 1929. October 1966 to September 1986, at site 522 ft to the left and at same datum. October 1986 to May 19, 1988, at site 168 ft to the right and at same datum.

REMARKS.--No estimated daily discharges. Records fair. Some diversions above station for irrigation (amount unknown). Several observations of water temperature were made during the year. Gage-height telemeter at station.

AVERAGE DISCHARGE.--25 years, 58.8 ft³/s (2.31 in/yr), 42,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 27,500 ft³/s June 16, 1981 (gage height, 17.63 ft); no flow at times most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--The flood of Sept. 11, 1952, the highest since at least 1881, reached a stage of 34.2 ft (discharge, 163,000 ft³/s), from slope-area measurement at gage site.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 12	0400	*6,430	*9.60	No other peak greater than base discharge.			
Minimum daily discharge, no flow on many days.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.08	2.3	3.8	5.9	12	16	3.4	1.5	.15	4.0	.01	.02
2	.07	1.8	5.0	27	10	12	3.4	2.7	.13	3.0	.00	66
3	.05	1.5	4.9	30	10	9.2	3.5	6.4	.24	4.3	.00	5.8
4	.07	16	3.0	27	42	8.0	3.6	47	.17	3.5	.00	.10
5	.11	17	2.9	27	60	7.3	9.2	32	.11	1.4	.00	.03
6	.13	32	3.2	27	49	6.9	11	8.0	.07	.58	.00	.04
7	.08	26	2.6	22	42	6.3	8.7	5.4	.11	.20	.00	1.7
8	.01	38	2.5	19	36	6.1	7.5	15	.38	.19	.00	.30
9	10	38	2.5	65	35	4.7	6.0	36	1.1	5.8	.01	.40
10	1.8	32	2.5	168	34	4.3	4.7	30	34	.31	.02	.23
11	2.3	29	2.5	73	31	4.5	4.6	20	21	.05	.02	.06
12	1.8	20	2.9	58	30	4.4	3.9	9.7	1910	.03	.02	.01
13	1.5	12	3.0	47	27	3.5	3.1	6.7	446	.02	.01	.00
14	1.3	8.5	3.2	39	23	3.6	2.5	5.3	255	.01	.01	.00
15	1.0	7.5	6.6	32	17	4.5	1.4	3.8	823	.00	.30	.01
16	1.2	6.3	6.5	27	13	6.2	1.1	2.6	393	.00	.10	.02
17	1.6	5.9	7.2	24	14	6.5	3.6	2.2	1080	.00	.01	.00
18	.94	5.8	4.9	208	14	5.0	20	.91	279	.00	.00	.00
19	.71	5.9	4.3	323	23	4.9	95	.86	142	.00	.00	.00
20	.80	6.0	4.6	127	15	5.1	52	.67	81	.00	.00	.09
21	11	6.2	4.2	58	27	5.9	33	1.1	53	.00	.00	.55
22	7.3	17	3.3	41	30	5.1	24	1.7	44	.00	.00	.62
23	3.8	23	3.1	33	28	3.4	14	1.0	53	.01	.00	.10
24	3.3	9.2	3.5	30	27	3.4	11	1.2	41	.04	.00	.05
25	4.4	9.0	3.5	25	21	3.4	8.1	2.4	31	.01	.00	.01
26	3.8	11	4.6	21	14	3.4	7.0	3.9	23	.00	.00	.00
27	3.1	12	5.8	19	12	3.4	5.1	5.0	13	.00	.00	.00
28	2.9	7.6	5.9	15	12	2.8	7.4	1.9	9.2	.00	.00	.00
29	2.6	5.7	7.2	13	---	1.8	6.5	.61	7.6	1.0	54	.00
30	2.5	4.8	8.7	12	---	2.0	2.8	.34	6.1	.08	4.4	.00
31	2.5	---	6.0	12	---	3.9	---	.20	---	.02	.39	---
TOTAL	72.75	417.0	134.4	1654.9	708	167.5	367.1	256.09	5747.36	24.55	59.30	76.14
MEAN	2.35	13.9	4.34	53.4	25.3	5.40	12.2	8.26	192	.79	1.91	2.54
MAX	11	38	8.7	323	60	16	95	47	1910	5.8	54	66
MIN	.01	1.5	2.5	5.9	10	1.8	1.1	.20	.07	.00	.00	.00
AC-FT	144	827	267	3280	1400	332	728	508	11400	49	118	151
CFSM	.01	.04	.01	.15	.07	.02	.04	.02	.55	.00	.01	.01
IN.	.01	.04	.01	.18	.08	.02	.04	.03	.62	.00	.01	.01
CAL YR 1990	TOTAL	8157.93	MEAN	22.4	MAX	3080	MIN	.00	AC-FT	16180	CFSM	.06
WTR YR 1991	TOTAL	9685.09	MEAN	26.5	MAX	1910	MIN	.00	AC-FT	19210	CFSM	.08
											IN.	1.04

COLORADO RIVER BASIN

99

08152900 PEDERNALES RIVER NEAR FREDERICKSBURG, TX

LOCATION.--Lat 30°13'13", long 98°52'10", Gillespie County, Hydrologic Unit 12090206, on left bank at downstream side of bridge on U.S. Highway 87, 2.0 mi upstream from Mueseback Creek, 3.8 mi south of Fredericksburg, and 88.7 mi upstream from mouth.

DRAINAGE AREA.--369 mi².

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

GAGE.--Water-stage recorder. Datum of gage is 1,564.96 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. No known regulation or diversion above station. Several observations of water temperature were made during the year. Gage-height telemeter at station.

AVERAGE DISCHARGE.--12 years, 47.8 ft³/s (34,630 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,600 ft³/s May 3, 1990 (gage height, 25.68 ft); no flow July 13-18, 1984.

EXTREMES OUTSIDE PERIOD OF RECORD.--The flood of Aug. 2, 1978, which is the highest since 1907, reached a stage of 41.6 ft (discharge not determined). The highest known discharge was 64,000 ft³/s June 1, 1979 (gage height, 34.4 ft, from floodmark), from rating curve extended above a discharge measurement of 42,300 ft³/s June 1, 1979.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Sept. 15	1130	*627	*6.64				

Minimum daily discharge, 1.1 ft³/s Aug. 12-14.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.1	10	18	17	29	29	20	17	15	11	4.4	4.0
2	7.9	10	18	18	28	29	18	16	13	10	3.0	4.3
3	7.2	9.9	19	21	28	27	18	22	11	8.6	2.2	12
4	7.2	18	19	20	29	25	18	23	13	7.6	1.7	18
5	7.6	29	19	20	48	25	32	36	13	24	1.6	10
6	7.6	23	19	20	63	24	41	24	10	15	1.5	8.0
7	7.0	19	19	20	47	24	29	21	9.2	11	1.4	9.1
8	7.2	20	18	19	41	24	25	155	9.9	9.4	1.5	8.4
9	53	24	18	21	38	24	22	86	23	16	1.6	7.3
10	34	22	19	30	37	23	20	47	23	15	1.5	6.3
11	20	19	19	28	36	23	19	38	19	12	1.4	5.5
12	16	17	20	25	34	23	19	32	77	6.4	1.1	5.1
13	14	16	21	22	34	22	19	29	33	5.4	1.1	4.9
14	13	15	21	22	33	22	47	28	24	4.7	1.1	4.7
15	11	16	21	22	31	22	36	26	32	4.7	39	168
16	11	16	21	20	30	22	25	25	36	8.9	18	51
17	13	15	21	20	30	22	23	25	166	5.4	8.7	26
18	15	14	21	105	32	23	24	25	34	4.1	5.1	17
19	12	14	21	69	33	22	24	23	25	4.4	4.6	17
20	10	14	20	48	31	22	21	22	21	3.3	4.5	22
21	24	13	22	41	30	22	20	21	19	2.7	3.4	18
22	37	15	20	38	30	22	19	20	17	2.6	2.7	15
23	25	22	18	35	30	21	19	20	20	2.8	3.1	13
24	20	22	18	34	29	20	18	19	17	3.3	3.1	12
25	17	21	18	33	28	19	18	22	15	3.0	3.0	11
26	15	21	19	31	28	19	18	22	13	2.5	2.8	9.5
27	13	21	20	31	28	20	17	21	13	2.4	2.6	8.5
28	13	20	21	30	28	19	17	18	8.8	2.2	2.7	8.5
29	12	19	22	30	---	17	18	12	7.6	2.0	2.5	7.9
30	11	18	20	28	---	17	19	9.9	8.9	6.9	2.5	7.6
31	11	---	18	29	---	19	---	9.3	---	8.5	3.3	---
TOTAL	479.8	532.9	608	947	943	692	683	914.2	746.4	225.8	136.7	519.6
MEAN	15.5	17.8	19.6	30.5	33.7	22.3	22.8	29.5	24.9	7.28	4.41	17.3
MAX	53	29	22	105	63	29	47	155	166	24	39	168
MIN	7.0	9.9	18	17	28	17	17	9.3	7.6	2.0	1.1	4.0
AC-FT	952	1060	1210	1880	1870	1370	1350	1810	1480	448	271	1030
CAL YR 1990	TOTAL	14399.0	MEAN	39.4	MAX	4570	MIN	1.5	AC-FT	28560		
WTR YR 1991	TOTAL	7428.4	MEAN	20.4	MAX	168	MIN	1.1	AC-FT	14730		

COLORADO RIVER BASIN

08153500 PEDERNALES RIVER NEAR JOHNSON CITY, TX

LOCATION.--Lat 30°17'30", long 98°23'57", Blanco County, Hydrologic Unit 12090206, near left downstream end of bridge on U.S. Highway 281, 0.2 mi downstream from Towhead Creek, 1.1 mi northeast of Johnson City, 3.4 mi downstream from Buffalo Creek, and 48.0 mi upstream from mouth.

DRAINAGE AREA.--901 mi².

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

Water-quality records.--Chemical analyses: April 1948 to September 1950, October 1971 to September 1985.

REVISED RECORDS.--WSP 1632: 1953(M), 1957, 1958(M). WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,096.70 ft above National Geodetic Vertical Datum of 1929. May 4 to Sept. 13, 1939, nonrecording gage, and Sept. 14, 1939, to Sept. 10, 1952, water-stage recorder at upstream side of bridge at same datum. Sept. 11, 1952, to June 29, 1953, nonrecording gage, and June 30, 1953, to Oct. 7, 1954, water-stage recorder at site 360 ft downstream at same datum.

REMARKS.--No estimated daily discharges. Records good. There are diversions above station for irrigation. During the year, the city of Fredericksburg discharged varying amounts of sewage effluent into the river upstream from station. The city of Johnson City diverts varying amounts of water from the pool at gage and discharge sewage effluent into river below the gage. Flow is affected at times by discharge from the flood-detention pools of four floodwater-retarding structures with a combined detention capacity of 4,580 acre-ft. These structures control runoff from 15.6 mi² in the Williamson Creek drainage basin. One observations of water temperature was made during the year. Gage-height telemeter at station.

AVERAGE DISCHARGE.--52 years (water years 1940-91), 181 ft³/s (131,100 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 441,000 ft³/s Sept. 11, 1952 (gage height, 42.5 ft, from floodmark), from rating curve extended above 116,000 ft³/s on basis of slope-area measurement of 441,000 ft³/s; no flow at times in 1951-52, 1954, 1956-57, 1963-64, 1967-68, 1971, and 1984-85. Maximum stage since at least 1859, 42.5 ft Sept. 11, 1952.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 1869 reached a stage of 33 ft from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,100 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 8	2000	*7,220	*11.19	No other peaks greater than base discharge			

Minimum daily discharge, 2.0 ft³/s Aug. 14.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27	24	48	45	110	108	92	74	59	35	7.8	8.2
2	24	26	50	83	109	94	90	63	57	39	7.5	21
3	21	27	32	98	106	81	106	78	58	38	5.9	43
4	21	31	45	88	226	96	110	124	66	34	4.2	54
5	21	44	48	88	249	94	147	342	62	44	4.9	31
6	23	55	44	88	253	80	189	162	59	82	5.1	24
7	23	46	39	77	201	87	188	124	54	44	5.0	28
8	21	73	48	72	174	88	162	327	51	33	5.0	26
9	21	87	54	113	160	88	142	477	43	29	4.7	27
10	43	67	52	154	149	78	135	229	41	22	3.3	25
11	72	52	53	138	149	77	131	166	46	20	2.7	24
12	45	46	51	126	143	73	139	145	408	20	2.7	22
13	35	40	51	106	133	72	141	129	247	21	2.3	23
14	31	35	53	92	135	77	145	122	127	15	2.0	21
15	28	35	51	73	126	69	179	108	90	15	7.9	24
16	27	35	51	81	120	70	173	84	127	15	109	63
17	28	35	53	72	123	65	162	97	267	14	105	113
18	27	38	40	362	124	71	211	96	238	14	20	64
19	29	36	51	382	136	73	192	90	133	12	19	72
20	32	38	51	209	139	81	145	104	93	16	16	38
21	63	40	45	168	139	85	126	103	74	12	13	42
22	83	36	34	153	144	77	106	88	61	13	12	45
23	83	40	24	140	129	88	88	88	73	17	14	47
24	54	54	45	139	122	84	72	83	75	21	27	40
25	41	59	48	139	109	80	57	72	58	18	24	28
26	32	59	51	139	124	78	60	74	51	17	18	27
27	31	61	51	132	110	79	60	82	42	16	16	27
28	28	54	51	129	105	85	64	84	37	17	15	28
29	27	52	53	118	---	62	82	72	34	13	13	31
30	26	50	46	103	---	87	85	64	35	14	9.2	30
31	26	---	48	109	---	99	---	64	---	8.0	5.6	---
TOTAL	1093	1375	1461	4016	4047	2526	3779	4015	2866	728.0	506.8	1096.2
MEAN	35.3	45.8	47.1	130	145	81.5	126	130	95.5	23.5	16.3	36.5
MAX	83	87	54	382	253	108	211	477	408	82	109	113
MIN	21	24	24	45	105	62	57	63	34	8.0	2.0	8.2
AC-FT	2170	2730	2900	7970	8030	5010	7500	7960	5680	1440	1010	2170
CAL YR 1990	TOTAL	46569.2	MEAN	128	MAX	14700	MIN	4.0	AC-FT	92370		
WTR YR 1991	TOTAL	27509.0	MEAN	75.4	MAX	477	MIN	2.0	AC-FT	54560		

COLORADO RIVER BASIN

101

08154510 COLORADO RIVER BELOW MANSFIELD DAM, AUSTIN, TX

LOCATION.--Lat 30°23'30", long 97°54'28", Travis County, Hydrologic Unit 12090205, at the downstream side of Mansfield Dam, 12.9 mi northwest of the State Capitol at Austin, and at mile 318.0.

PERIOD OF RECORD.--Chemical and biochemical analyses: June 1980 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)
OCT 30...	1040	--	881	8.0	22.5	5.9	69	0.8	240	110
APR 18...	0930	1480	880	8.0	13.0	7.6	74	0.3	250	110
MAY 09...	1010	3000	898	7.9	13.5	6.8	66	--	240	100
JUL 16...	0800	1510	880	7.9	16.0	7.2	74	0.5	240	110
AUG 13...	0800	1150	869	7.7	17.0	3.5	37	0.8	260	110

DATE	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	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)
OCT 30...	50	29	83	2	5.5	130	100	140	<0.10	6.0
APR 18...	52	28	80	2	5.6	140	94	120	0.20	6.1
MAY 09...	53	26	72	2	5.7	140	100	130	0.20	6.5
JUL 16...	55	26	77	2	5.3	140	96	130	0.30	6.4
AUG 13...	56	28	76	2	5.3	140	99	130	0.30	7.1

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS TOTAL (MG/L AS P)	PHOS-PHORUS ORTHO TOTAL (MG/L AS P)
OCT 30...	494	--	<0.010	<0.100	0.040	0.16	0.20	<0.010	<0.010
APR 18...	467	--	<0.010	0.160	<0.010	--	0.30	0.010	<0.010
MAY 09...	476	0.190	0.010	0.200	0.020	0.28	0.30	0.020	0.030
JUL 16...	479	--	<0.010	0.160	0.070	0.33	0.40	<0.010	<0.010
AUG 13...	488	--	<0.010	0.140	<0.010	--	0.50	<0.010	<0.010

COLORADO RIVER BASIN

08154700 BULL CREEK AT LOOP 360 NEAR AUSTIN, TX

LOCATION.--Lat 30°22'19", long 97°47'04", Travis County, Hydrologic Unit 12090205, on right bank at downstream side of bridge at Loop 360, 1.0 mi upstream from West Fork Bull Creek and Farm Road 2222, and 7.1 mi northwest of the State Capitol Building in Austin.

DRAINAGE AREA.--22.3 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1976 to July 1978 (operated as a flood-hydrograph partial-record station only), July 1978 to current year.

GAGE.--Water-stage recorder, concrete control, and crest-stage gage. Datum of gage is 534.08 ft above National Geodetic Vertical Datum of 1929 (levels from city of Austin bench mark).

REMARKS.--Records good. No known regulation or diversion above station. Gage-height and rainfall telemeter at station.

AVERAGE DISCHARGE.--13 years, 11.6 ft³/s (7.06 in/yr), 8,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,700 ft³/s May 13, 1982 (gage height, 11.96 ft); no flow for several days in 1984, and 1991.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 9	1230	655	4.91	Aug. 14	2400	1,760	6.04
Jan. 9	1630	928	5.24	Aug. 15	0315	*3,200	*7.05
Aug. 14	1245	1,640	5.94				

Minimum daily discharge, no flow Aug. 2-4.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	.36	.69	3.5	4.5	15	23	11	7.2	5.1	2.7	.23	6.4		
2	.36	.69	3.5	53	16	18	11	7.5	4.7	2.6	.00	19		
3	.36	.55	4.4	25	16	15	11	13	6.0	2.4	.00	19		
4	.36	3.0	4.3	16	62	13	13	52	7.4	4.9	.00	11		
5	.36	1.9	3.4	14	40	14	47	e27	5.6	3.7	.09	12		
6	.36	1.5	3.2	13	34	13	30	e21	4.7	3.0	.11	15		
7	.36	1.5	3.1	12	29	12	32	e20	4.7	2.4	.08	13		
8	.36	13	3.0	11	27	13	24	e48	4.5	1.9	.06	10		
9	9.8	10	2.8	295	25	12	21	e30	4.4	1.8	.06	8.6		
10	1.7	5.9	2.8	90	24	11	19	e25	4.6	1.5	.09	8.5		
11	1.1	5.1	2.8	44	24	10	18	e23	4.9	1.3	.09	7.6		
12	.96	4.4	2.8	31	22	10	16	21	8.7	1.2	.06	6.5		
13	.90	4.2	3.8	25	22	9.4	15	18	5.5	1.2	.06	5.9		
14	.68	3.9	4.5	22	19	9.1	27	17	4.7	1.4	158	7.7		
15	.61	3.5	3.9	21	18	10	17	16	4.5	1.3	480	8.4		
16	.61	3.7	3.1	19	17	35	15	16	12	.91	30	6.8		
17	.58	4.2	4.1	15	17	27	13	14	18	.69	23	5.5		
18	.44	4.0	7.2	52	16	22	18	13	5.7	.65	19	5.7		
19	.44	3.4	5.5	31	23	21	20	12	4.4	.56	15	5.7		
20	.44	3.2	4.5	24	17	20	15	11	3.9	.54	12	5.0		
21	6.1	3.2	3.4	22	23	19	14	10	3.4	.52	9.9	4.4		
22	2.5	9.2	3.5	19	41	17	13	10	3.2	.52	9.4	3.7		
23	1.4	9.4	3.9	17	26	16	11	9.3	2.7	.49	8.6	3.8		
24	1.1	6.9	3.2	19	23	15	11	8.5	2.6	.44	8.1	3.2		
25	.97	6.2	2.9	16	20	12	9.9	12	2.5	.41	7.0	2.8		
26	.90	5.5	3.1	14	18	12	9.3	7.6	2.4	.39	6.0	2.6		
27	.71	5.2	3.2	13	16	11	8.8	7.0	2.2	.19	5.7	2.6		
28	.68	4.5	3.2	14	18	12	12	6.1	1.9	.16	5.3	2.5		
29	.61	3.7	3.4	14	---	14	12	6.4	3.7	.20	4.7	1.9		
30	.65	3.5	5.2	16	---	11	8.5	6.3	3.0	.32	4.2	1.5		
31	.69	---	4.8	16	---	11	---	5.6	---	.35	8.3	---		
TOTAL	37.45	135.63	116.0	997.5	668	467.5	502.5	500.5	151.6	40.64	815.13	216.3		
MEAN	1.21	4.52	3.74	32.2	23.9	15.1	16.7	16.1	5.05	1.31	26.3	7.21		
MAX	9.8	13	7.2	295	62	35	47	52	18	4.9	480	19		
MIN	.36	.55	2.8	4.5	15	9.1	8.5	5.6	1.9	.16	.00	1.5		
AC-FT	74	269	230	1980	1320	927	997	993	301	81	1620	429		
CFSM	.05	.20	.17	1.44	1.07	.68	.75	.72	.23	.06	1.18	.32		
IN.	.06	.23	.19	1.66	1.11	.78	.84	.83	.25	.07	1.36	.36		
CAL YR 1990	TOTAL	2336.12	MEAN	6.40	MAX	541	MIN	.00	AC-FT	4630	CFSM	.29	IN.	3.90
WTR YR 1991	TOTAL	4648.75	MEAN	12.7	MAX	480	MIN	.00	AC-FT	9220	CFSM	.57	IN.	7.75

e Estimated

COLORADO RIVER BASIN

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08154700 BULL CREEK AT LOOP 360 NEAR AUSTIN, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: April 1978 to current year. Pesticide analyses: June 1978 to September 1986. Radiochemical analyses: January to April 1980.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
JAN 10...	0950	74	604	8.0	11.5	13	31	--	--	0.8	K2400	K4400
FEB 27...	0940	18	712	8.1	11.0	1	1.0	11.0	101	0.3	26	41
MAY 28...	1203	6.3	665	8.0	25.5	4	1.0	7.8	97	0.3	K300	130
AUG 14...	0842	0.06	596	7.2	26.5	17	1.2	4.2	53	6.6	K14000	K43000
15...	1055	80	458	7.9	--	45	12	--	--	3.4	9600	31000

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB DISSOLV FLD. AS CACO3 (MG/L)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT DIS FIX END FIELD CACO3 (MG/L)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
JAN 10...	270	75	81	16	25	0.7	2.2	190	53	44	0.20
FEB 27...	330	83	94	22	30	0.7	1.3	240	71	56	<0.10
MAY 28...	--	--	--	--	--	--	--	--	--	--	--
AUG 14...	240	78	62	20	34	1	3.2	160	59	60	0.20
15...	190	48	58	11	22	0.7	3.0	140	42	33	0.20

DATE	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L)	RESIDUE VOLAT- ILE, SUS- PENDED (MG/L)	RESIDUE FIXED NON FILTER- ABLE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)
JAN 10...	7.9	347	9	9	0	--	<0.010	1.50	0.020	0.58	0.60
FEB 27...	4.4	426	<1	<1	--	--	<0.010	0.800	0.020	0.18	0.20
MAY 28...	--	--	<1	<1	--	--	<0.010	0.210	0.010	0.59	0.60
AUG 14...	13	349	<1	<1	--	0.180	0.030	0.210	0.010	0.49	0.50
15...	9.1	265	<1	<1	--	1.28	0.020	1.30	0.010	0.59	0.60

DATE	PHOS- PHORUS TOTAL (MG/L AS P)	PHOS- PHORUS ORTHO 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)	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)
JAN 10...	0.030	<0.010	4.9	<1	52	<0.5	3.0	<5	<3	<10	15
FEB 27...	<0.010	<0.010	2.4	<1	56	<0.5	<1.0	<5	<3	<10	4
MAY 28...	<0.010	<0.010	2.2	--	--	--	--	--	--	--	--
AUG 14...	0.040	0.020	8.5	1	57	<0.5	<1.0	<5	<3	<10	30
15...	0.060	<0.010	8.2	1	41	<0.5	<1.0	<5	<3	<10	33

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)
JAN 10...	<10	13	2	<0.1	<10	<10	<1	1.0	810	<6	7
FEB 27...	<10	9	<1	<0.1	<10	<10	<1	<1.0	1300	<6	<3
MAY 28...	--	--	--	--	--	--	--	--	--	--	--
AUG 14...	<10	11	18	<0.1	<10	<10	<1	<1.0	1100	<6	6
15...	<10	11	2	<0.1	<10	<10	<1	<1.0	710	<6	<3

COLORADO RIVER BASIN

08154900 LAKE AUSTIN AT AUSTIN, TX

LOCATION.--Lat 30°18'53", long 97°47'10", Travis County, Hydrologic Unit 12090205, at city of Austin Waterplant No. 2 and 1.5 mi upstream from Tom Miller Dam on the Colorado River at Austin.

DRAINAGE AREA.--38,846 mi², of which 11,403 mi² probably is noncontributing.

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: October 1978 to current year.

301739097471601 - LAKE AUSTIN SITE AR

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

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)
OCT							
30...	0820	1.00	872	8.1	20.0	7.7	86
30...	0822	10.0	872	8.1	20.0	7.6	85
30...	0824	20.0	873	8.1	20.0	7.6	85
30...	0826	25.0	873	8.1	20.0	7.6	85
JAN							
03...	1138	1.00	880	8.3	9.0	9.7	84
03...	1140	10.0	880	8.3	9.0	9.6	83
03...	1142	25.0	880	8.3	9.0	9.6	83
APR							
11...	0810	1.00	846	8.1	19.5	8.3	93
11...	0812	10.0	855	8.0	18.0	7.5	81
11...	0814	23.0	854	7.9	17.0	7.3	77
MAY							
09...	0835	1.00	856	8.0	17.5	7.6	81
09...	0837	10.0	865	8.0	17.0	7.5	79
09...	0839	23.0	882	7.9	16.0	7.0	72
AUG							
13...	1040	1.00	876	8.0	23.5	7.2	86
13...	1042	10.0	872	7.9	21.0	6.9	79
13...	1044	24.0	872	7.9	21.0	6.8	78
15...	0830	1.00	823	8.0	24.5	7.3	89
15...	0832	10.0	843	7.9	24.0	6.9	84
15...	0834	20.0	883	7.8	21.0	6.7	77
15...	0836	25.0	886	7.8	21.0	6.2	71

301739097471201 - LAKE AUSTIN SITE AC

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	SAMPLING DEPTH (FEET)	SPECIFIC CONDUCTANCE (US/CM)	PH (STANDARD UNITS)	TEMPERATURE WATER (DEG C)	TRANSPARENCY (SECCHI DISK) (M)	TURBIDITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATURATION)
OCT									
30...	0840	1.00	872	8.1	20.0	2.90	1.2	8.0	89
30...	0842	10.0	872	8.1	20.0	--	--	8.0	89
30...	0844	20.0	873	8.1	20.0	--	--	8.0	89
30...	0846	30.0	873	8.1	20.0	--	--	7.9	88
30...	0848	40.0	873	8.0	20.0	--	--	7.2	80
30...	0850	50.0	875	7.8	20.0	--	5.5	5.3	59
JAN									
03...	1148	1.00	880	8.3	9.0	4.60	1.0	9.7	84
03...	1150	10.0	880	8.3	9.0	--	--	9.7	84
03...	1152	20.0	880	8.3	9.0	--	--	9.7	84
03...	1154	30.0	880	8.3	9.0	--	--	9.7	84
03...	1156	40.0	880	8.3	9.0	--	--	9.7	84
03...	1158	51.0	880	8.3	9.0	--	1.0	9.7	84
APR									
11...	0820	1.00	853	8.2	19.5	2.60	1.1	8.4	94
11...	0822	10.0	868	8.0	18.0	--	--	7.4	80
11...	0824	20.0	870	7.9	17.0	--	--	7.0	74
11...	0826	30.0	872	7.9	16.5	--	--	6.8	71
11...	0828	40.0	874	7.9	16.0	--	--	6.7	70
11...	0830	50.0	874	7.9	16.0	--	1.4	6.6	69
MAY									
09...	0845	1.00	841	8.0	18.0	1.10	3.5	7.7	83
09...	0847	10.0	870	8.0	17.5	--	--	7.5	80
09...	0849	20.0	887	7.9	16.0	--	--	7.0	72
09...	0851	30.0	888	8.0	16.0	--	--	7.0	72
09...	0853	40.0	889	8.0	16.0	--	--	7.0	72
09...	0855	49.0	887	8.0	16.0	--	2.5	7.1	74
AUG									
13...	1050	1.00	873	8.0	23.0	1.80	1.4	7.3	87
13...	1052	10.0	873	7.9	21.0	--	--	6.8	78
13...	1054	20.0	873	7.9	21.0	--	--	6.7	77
13...	1056	30.0	873	7.9	20.5	--	--	6.6	75
13...	1058	40.0	874	7.8	20.5	--	--	6.2	70
13...	1059	51.0	872	7.8	20.5	--	8.7	5.8	66
15...	0840	1.00	819	8.0	24.5	0.90	5.9	7.3	89
15...	0842	10.0	832	8.0	24.0	--	--	7.4	90
15...	0844	20.0	878	7.8	21.0	--	--	6.8	78
15...	0846	30.0	879	7.7	20.5	--	--	6.3	71
15...	0848	40.0	880	7.7	20.5	--	--	5.9	67
15...	0850	50.0	882	7.7	20.5	--	5.1	5.4	61

COLORADO RIVER BASIN

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08154900 LAKE AUSTIN AT AUSTIN, TX--Continued

301739097471201 - LAKE AUSTIN SITE AC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	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)	ALKA- LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)
OCT									
30...	0.7	K11	K28	140	495	8	--	<0.010	<0.100
30...	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--
30...	0.7	--	--	140	491	11	--	<0.010	<0.100
JAN									
03...	0.5	65	260	140	504	<1	--	<0.010	<0.100
03...	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--
03...	0.6	--	--	140	505	4	--	<0.010	<0.100
APR									
11...	0.9	K6	220	130	491	7	--	<0.010	0.120
11...	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--
11...	0.3	--	--	140	509	<1	--	<0.010	0.140
MAY									
09...	0.3	300	330	130	469	2	--	<0.010	0.180
09...	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--
09...	0.1	--	--	140	495	4	--	<0.010	0.160
AUG									
13...	1.2	K2	<2	140	501	4	--	<0.010	0.058
13...	--	--	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--	--	--
13...	1.2	--	--	150	499	25	0.072	0.010	0.082
15...	1.5	K1300	K1700	130	445	11	--	0.010	<0.050
15...	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--
15...	1.1	--	--	140	490	18	--	<0.010	0.068

COLORADO RIVER BASIN

08154900 LAKE AUSTIN AT AUSTIN, TX--Continued

301739097471201 - LAKE AUSTIN SITE AC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

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)	PHOS- PHORUS ORTHO TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	COPPER, DIS- SOLVED (UG/L AS CU)	LEAD, DIS- SOLVED (UG/L AS PB)
OCT								
30...	<0.010	--	0.20	<0.010	<0.010	3.9	1	<1
30...	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--
30...	0.090	0.21	0.30	0.030	<0.010	3.9	1	<1
JAN								
03...	0.040	0.46	0.50	<0.010	<0.010	5.1	1	<1
03...	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--
03...	0.040	0.36	0.40	<0.010	<0.010	3.8	1	<1
APR								
11...	<0.010	--	0.30	<0.010	<0.010	3.3	1	1
11...	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--
11...	0.030	0.37	0.40	<0.010	<0.010	3.1	1	1
MAY								
09...	0.010	0.49	0.50	0.020	0.020	3.2	<1	<1
09...	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--
09...	0.020	0.28	0.30	<0.010	0.020	3.1	1	<1
AUG								
13...	<0.010	--	0.50	0.040	<0.010	2.9	2	<1
13...	--	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--	--
13...	0.040	0.46	0.50	0.020	<0.010	3.1	2	<1
15...	0.010	0.19	0.20	0.020	<0.010	3.2	2	<1
15...	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--
15...	0.030	0.27	0.30	0.010	0.010	3.1	2	<1

301739097470901 - LAKE AUSTIN SITE AL

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

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)
OCT							
30...	0920	1.00	872	8.0	20.0	7.3	81
30...	0922	10.0	872	8.1	20.0	7.8	87
30...	0924	20.0	874	8.0	20.0	7.4	82
JAN							
03...	1208	1.00	877	8.3	9.0	9.7	84
03...	1210	10.0	877	8.3	9.0	9.7	84
03...	1212	23.0	877	8.3	9.0	9.6	83
APR							
11...	0845	1.00	851	8.2	20.0	8.4	95
11...	0847	10.0	864	8.0	18.0	7.4	80
11...	0849	23.0	870	8.0	17.0	7.1	75
MAY							
09...	0910	1.00	856	8.0	17.5	7.6	81
09...	0912	10.0	880	8.0	16.5	7.3	76
09...	0914	21.0	888	8.0	16.0	7.1	74
AUG							
13...	1115	1.00	875	8.0	23.0	7.4	88
13...	1117	10.0	873	7.9	21.0	6.8	78
13...	1119	23.0	873	7.9	21.0	6.8	78
15...	0910	1.00	736	8.0	24.5	7.2	88
15...	0912	10.0	819	8.0	24.0	7.3	88
15...	0914	23.0	874	7.8	21.0	6.6	75

COLORADO RIVER BASIN

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08154900 LAKE AUSTIN AT AUSTIN, TX--Continued

302043097472401 - LAKE AUSTIN SITE BC

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	
OCT													
30...	0940	1.00	872	8.1	20.5	4.10	1.0	8.0	90	0.9	K2	K1	
30...	0942	10.0	872	8.1	20.5	--	--	8.0	90	--	--	--	
30...	0944	20.0	873	8.0	20.5	--	--	7.6	85	--	--	--	
30...	0946	28.0	872	7.9	20.0	--	4.0	6.5	72	0.7	--	--	
JAN													
03...	1110	1.00	861	8.3	9.5	1.40	1.7	9.3	82	0.6	310	2600	
03...	1112	10.0	861	8.3	9.5	--	--	9.3	82	--	--	--	
03...	1114	20.0	861	8.3	9.5	--	--	9.3	82	--	--	--	
03...	1116	27.0	873	8.2	9.5	--	2.1	9.2	81	0.4	--	--	
APR													
11...	0910	1.00	847	8.2	20.0	2.70	1.0	8.2	92	0.6	K3	230	
11...	0912	10.0	847	8.2	20.0	--	--	8.2	92	--	--	--	
11...	0914	20.0	853	8.1	20.0	--	--	8.0	90	--	--	--	
11...	0916	29.0	872	7.9	17.0	--	2.5	6.4	68	0.1	--	--	
MAY													
09...	0750	1.00	742	8.1	17.0	0.40	10	7.3	77	0.4	2800	5600	
09...	0752	10.0	875	8.0	15.5	--	--	7.2	74	--	--	--	
09...	0754	20.0	875	8.0	15.5	--	--	7.1	73	--	--	--	
09...	0756	28.0	876	8.0	15.5	--	2.1	7.1	73	0.1	--	--	
AUG													
13...	1012	1.00	876	8.0	25.0	1.80	1.3	7.6	94	1.2	K4	K1	
13...	1014	10.0	876	8.0	23.5	--	--	7.4	89	--	--	--	
13...	1016	20.0	872	7.8	20.5	--	--	6.5	74	--	--	--	
13...	1018	28.0	872	7.8	20.5	--	2.0	6.5	74	1.5	--	--	
15...	0935	1.00	532	7.9	24.5	0.10	63	7.0	85	2.4	16000	38000	
15...	0937	10.0	807	7.9	21.5	--	--	6.9	80	--	--	--	
15...	0939	20.0	872	7.9	21.0	--	--	7.0	80	--	--	--	
15...	0941	28.0	870	7.8	21.0	--	5.2	6.6	75	1.0	--	--	
DATE		ALKA- LITY WAT DIS FIX END FIELD CAC03 (MG/L)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS TOTAL (MG/L AS P)	PHOS- PHORUS ORTHO TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
OCT													
30...	140	503	<1	--	<0.010	<0.100	<0.010	--	0.30	0.010	<0.010	3.5	
30...	--	--	--	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--	--	--	--
30...	140	503	6	--	<0.010	<0.100	0.020	0.28	0.30	0.020	<0.010	3.4	
JAN													
03...	140	492	12	--	<0.010	<0.100	0.050	0.25	0.30	<0.010	<0.010	3.5	
03...	--	--	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--	--	--
03...	140	484	15	--	<0.010	<0.100	0.050	0.25	0.30	0.010	<0.010	3.3	
APR													
11...	140	498	1	0.110	0.010	0.120	<0.010	--	0.40	<0.010	<0.010	3.2	
11...	--	--	--	--	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--	--	--	--	--
11...	140	511	<1	--	<0.010	0.130	0.020	0.38	0.40	0.010	<0.010	3.2	
MAY													
09...	150	446	9	0.260	0.010	0.270	0.030	0.27	0.30	0.030	0.020	3.4	
09...	--	--	--	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--	--	--	--
09...	140	489	<1	--	<0.010	0.140	0.020	0.18	0.20	<0.010	0.020	3.0	
AUG													
13...	150	520	20	--	<0.010	<0.050	<0.010	--	0.30	0.020	<0.010	3.1	
13...	--	--	--	--	--	--	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--	--	--	--	--	--	--
13...	150	495	22	--	<0.010	0.086	0.010	0.39	0.40	0.040	<0.010	2.8	
15...	100	304	<1	0.320	0.010	0.330	0.020	0.58	0.60	0.090	0.020	6.4	
15...	--	--	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--	--	--
15...	140	486	17	--	<0.010	0.052	0.020	0.18	0.20	<0.010	<0.010	3.0	

COLORADO RIVER BASIN

08154900 LAKE AUSTIN AT AUSTIN, TX--Continued

302043097472401 - LAKE AUSTIN SITE BC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT												
30...	--	1	--	1	--	6	--	<1	--	<1	--	4
30...	--	--	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--	--	--
30...	--	1	--	1	--	7	--	<1	--	3	--	<3
JAN												
03...	--	<1	--	1	--	4	--	<1	--	<1	--	<3
03...	--	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--	--
03...	--	<1	--	<1	--	3	--	<1	--	<1	--	<3
APR												
11...	--	<1	--	1	--	<3	--	1	--	<1	--	<3
11...	--	--	--	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--	--	--	--
11...	--	<1	--	1	--	<3	--	<1	--	8	--	<3
MAY												
09...	<1	<1	6	<1	230	5	2	<1	10	3	<10	3
09...	--	--	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--	--	--
09...	<1	<1	6	<1	70	<3	6	<1	<10	6	<10	7
AUG												
13...	--	1	--	2	--	<3	--	<1	--	<1	--	7
13...	--	--	--	--	--	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--	--	--	--	--	--
13...	--	<1	--	2	--	<3	--	<1	--	7	--	8
15...	1	1	3	2	1200	12	4	<1	40	<1	<10	4
15...	--	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--	--
15...	<1	<1	2	2	230	<3	<1	<1	20	<1	<10	<3

302044097472301 - LAKE AUSTIN SITE BL

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

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)
OCT							
30...	1000	1.00	871	8.1	20.5	7.8	87
30...	1002	10.0	871	8.1	20.5	7.8	87
30...	1004	18.0	872	8.0	20.5	7.5	84
JAN							
03...	1125	1.00	866	8.3	9.5	9.2	81
03...	1127	15.0	866	8.3	9.5	9.1	80
APR							
11...	0905	1.00	845	8.1	20.0	8.0	90
11...	0907	10.0	845	8.1	20.0	8.1	91
11...	0909	17.0	846	8.1	20.0	7.8	88
MAY							
09...	0815	1.00	828	8.0	16.0	7.1	73
09...	0817	10.0	876	8.0	15.5	7.0	72
09...	0819	17.0	876	8.0	15.5	7.0	72
AUG							
13...	0955	1.00	876	8.0	25.0	7.4	91
13...	0957	10.0	876	7.9	23.5	6.9	83
13...	0959	15.0	874	7.8	21.0	6.2	71
15...	0925	1.00	633	7.9	24.0	6.8	82
15...	0927	10.0	813	7.9	21.5	6.8	78
15...	0929	18.0	871	7.9	21.0	6.9	79

COLORADO RIVER BASIN

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08154900 LAKE AUSTIN AT AUSTIN, TX--Continued

301926097502201 - LAKE AUSTIN SITE CC

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

			SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	
DATE	TIME	SAM- PLING DEPTH (FEET)								
OCT										
30...	1130	1.00	876	8.1	20.5	3.20	0.60	7.6	85	
30...	1132	10.0	876	8.1	20.5	--	--	7.5	84	
30...	1134	22.0	876	8.1	20.5	--	4.8	7.4	83	
JAN										
03...	1040	1.00	884	8.2	9.5	6.70	0.30	9.0	79	
03...	1042	10.0	884	8.2	9.5	--	--	9.0	79	
03...	1044	23.0	884	8.2	9.5	--	10	8.9	78	
APR										
11...	0940	1.00	863	8.1	20.5	2.30	1.0	8.1	92	
11...	0942	10.0	865	8.1	20.0	--	--	7.7	87	
11...	0944	23.0	869	7.9	18.0	--	1.2	5.9	64	
MAY										
09...	0935	1.00	884	7.9	14.5	2.20	1.9	6.3	63	
09...	0937	10.0	882	7.9	14.5	--	--	6.3	63	
09...	0939	23.0	879	7.9	14.5	--	1.8	6.4	64	
AUG										
13...	0920	1.00	871	8.0	20.5	2.80	1.0	7.5	85	
13...	0922	10.0	871	8.0	20.0	--	--	7.4	83	
13...	0924	23.0	871	8.0	20.0	--	1.1	7.3	82	
15...	1010	1.00	773	8.0	23.5	0.90	3.9	7.2	86	
15...	1012	10.0	847	7.9	20.0	--	--	6.4	72	
15...	1014	23.0	857	7.8	20.0	--	1.6	6.1	68	
DATE		OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOC- CI, FECAL, KF AGAR (COLS. PER 100 ML)	ALKA- LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, 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)
OCT										
30...	1.0	K2	73	140	498	<1	--	<0.010	<0.100	
30...	--	--	--	--	--	--	--	--	--	
30...	0.9	--	--	140	499	8	--	<0.010	<0.100	
JAN										
03...	0.4	27	50	140	504	1	--	0.010	<0.100	
03...	--	--	--	--	--	--	--	--	--	
03...	0.4	--	--	140	502	30	--	<0.010	<0.100	
APR										
11...	0.5	K1	140	140	491	<1	--	<0.010	0.100	
11...	--	--	--	--	--	--	--	--	--	
11...	0.2	--	--	140	505	5	--	<0.010	0.130	
MAY										
09...	0.1	96	96	140	493	3	--	<0.010	0.170	
09...	--	--	--	--	--	--	--	--	--	
09...	0	--	--	140	489	5	0.180	0.020	0.200	
AUG										
13...	1.3	K5	<2	150	491	5	--	<0.010	0.070	
13...	--	--	--	--	--	--	--	--	--	
13...	1.0	--	--	150	481	13	--	<0.010	0.100	
15...	0.8	K3200	K7600	130	420	15	--	<0.010	<0.050	
15...	--	--	--	--	--	--	--	--	--	
15...	0.5	--	--	140	480	10	--	<0.010	0.060	

COLORADO RIVER BASIN

08154900 LAKE AUSTIN AT AUSTIN, TX--Continued

301926097502201 - LAKE AUSTIN SITE CC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

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)	PHOS- PHORUS ORTHO TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	COPPER, DIS- SOLVED (UG/L AS CU)	LEAD, DIS- SOLVED (UG/L AS PB)
OCT								
30...	<0.010	--	0.30	<0.010	<0.010	3.7	1	<1
30...	--	--	--	--	--	--	--	--
30...	<0.010	--	0.40	0.020	<0.010	4.0	1	<1
JAN								
03...	0.080	0.42	0.50	0.020	<0.010	3.3	1	<1
03...	--	--	--	--	--	--	--	--
03...	0.070	0.33	0.40	<0.010	<0.010	5.1	1	<1
APR								
11...	<0.010	--	0.30	0.010	<0.010	3.2	1	1
11...	--	--	--	--	--	--	--	--
11...	0.040	0.36	0.40	<0.010	<0.010	3.1	1	1
MAY								
09...	0.030	1.3	1.3	<0.010	0.020	3.0	<1	<1
09...	--	--	--	--	--	--	--	--
09...	0.030	0.17	0.20	<0.010	0.020	2.9	<1	<1
AUG								
13...	<0.010	--	0.90	0.040	<0.010	2.9	2	1
13...	--	--	--	--	--	--	--	--
13...	0.010	0.29	0.30	0.040	0.010	2.8	1	<1
15...	<0.010	--	0.30	0.010	<0.010	3.2	2	<1
15...	--	--	--	--	--	--	--	--
15...	0.020	0.48	0.50	<0.010	<0.010	2.9	2	<1

302021097540001 - LAKE AUSTIN SITE DC

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT									
30...	1100	1.00	874	8.2	20.5	1.90	1.0	9.1	102
30...	1102	10.0	873	8.1	20.5	--	--	8.4	94
30...	1104	15.0	874	8.1	20.5	--	1.0	8.4	94
JAN									
03...	1010	1.00	873	8.3	9.5	5.20	0.60	9.6	84
03...	1012	17.0	882	8.3	9.5	--	2.0	9.6	84
APR									
11...	1010	1.00	870	8.0	19.5	2.40	1.2	7.6	0
11...	1012	10.0	875	8.0	18.5	--	--	7.5	82
11...	1014	15.0	876	8.0	18.0	--	2.0	7.3	79
MAY									
09...	1000	1.00	894	8.0	14.5	2.30	1.5	6.7	67
09...	1002	10.0	893	7.9	14.0	--	--	6.5	64
09...	1004	15.0	893	7.9	14.0	--	1.8	6.4	63
AUG									
13...	0850	1.00	870	8.0	19.5	4.90	0.50	7.0	78
13...	0852	10.0	871	8.0	19.5	--	--	6.9	77
13...	0854	16.0	871	8.0	19.5	--	1.5	6.8	75
15...	1030	1.00	837	7.8	20.0	3.80	4.0	5.9	66
15...	1032	10.0	865	7.8	19.0	--	--	5.1	56
15...	1034	15.0	865	7.8	19.0	--	1.1	5.2	57

COLORADO RIVER BASIN

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08154900 LAKE AUSTIN AT AUSTIN, TX--Continued

302021097540001 - LAKE AUSTIN SITE DC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOC FECAL, KF AGAR (COLS. PER 100 ML)	ALKA- LINIT WAT DIS FIX END CAC03 (MG/L)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, 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)
OCT									
30...	1.2	K1	K2	130	511	<1	--	<0.010	<0.100
30...	--	--	--	--	--	--	--	--	--
30...	0.9	--	--	140	509	3	--	<0.010	<0.100
JAN									
03...	0.5	170	2500	140	514	<1	--	<0.010	<0.100
03...	0.5	--	--	140	497	4	--	<0.010	<0.100
APR									
11...	0.2	K6	21	140	504	4	0.120	0.010	0.130
11...	--	--	--	--	--	--	--	--	--
11...	0	--	--	140	508	7	--	<0.010	0.140
MAY									
09...	0	45	51	140	498	9	--	<0.010	0.170
09...	--	--	--	--	--	--	--	--	--
09...	0.1	--	--	140	497	4	--	<0.010	0.170
AUG									
13...	0.8	K4	K2	150	489	4	--	<0.010	0.076
13...	--	--	--	--	--	--	--	--	--
13...	1.1	--	--	150	493	3	--	<0.010	0.076
15...	0.8	K360	K900	140	479	25	--	<0.010	0.066
15...	--	--	--	--	--	--	--	--	--
15...	0.7	--	--	140	474	14	--	<0.010	0.063

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)	PHOS- PHORUS ORTHO TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	COPPER, DIS- SOLVED (UG/L AS CU)	LEAD, DIS- SOLVED (UG/L AS PB)
OCT								
30...	<0.010	--	0.50	0.010	<0.010	3.9	1	1
30...	--	--	--	--	--	--	--	--
30...	0.020	0.48	0.50	0.010	<0.010	3.5	1	<1
JAN								
03...	0.060	0.34	0.40	<0.010	<0.010	3.3	1	1
03...	0.060	0.34	0.40	<0.010	<0.010	3.3	2	3
APR								
11...	0.030	0.37	0.40	0.010	<0.010	3.1	1	<1
11...	--	--	--	--	--	--	--	--
11...	0.030	0.27	0.30	0.010	<0.010	3.2	1	1
MAY								
09...	0.020	1.3	1.3	<0.010	0.020	3.0	<1	<1
09...	--	--	--	--	--	--	--	--
09...	0.020	1.3	1.3	0.010	0.020	3.0	<1	<1
AUG								
13...	<0.010	--	0.40	0.040	<0.010	2.8	1	<1
13...	--	--	--	--	--	--	--	--
13...	<0.010	--	0.40	0.040	<0.010	3.1	1	<1
15...	<0.010	--	0.30	<0.010	<0.010	2.8	1	<1
15...	--	--	--	--	--	--	--	--
15...	<0.010	--	0.20	<0.010	<0.010	2.9	1	<1

302314097544901 - LAKE AUSTIN SITE EC

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JAN									
03...	0930	1.00	840	8.3	11.0	0.60	9.3	9.1	83
03...	0932	9.00	851	8.3	11.0	--	7.1	9.3	85
DATE		OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOC FECAL, KF AGAR (COLS. PER 100 ML)	ALKA- LINIT WAT DIS FIX END CAC03 (MG/L)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)
JAN									
03...		0.4	840	2000	130	511	9	<0.010	<0.100
03...		0.9	--	--	130	486	20	<0.010	<0.100

COLORADO RIVER BASIN

08154900 LAKE AUSTIN AT AUSTIN, TX--Continued

302314097544901 - LAKE AUSTIN SITE EC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

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)	PHOS- PHORUS ORTHO TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	COPPER, DIS- SOLVED (UG/L AS CU)	LEAD, DIS- SOLVED (UG/L AS PB)
JAN								
03...	0.050	0.45	0.50	0.010	<0.010	3.5	1	<1
03...	0.050	0.25	0.30	0.020	<0.010	4.1	1	<1

08155200 BARTON CREEK AT STATE HIGHWAY 71 NEAR OAK HILL, TX

LOCATION.--Lat 30°17'46", long 97°55'31", Travis County, Hydrologic Unit 12090205, at upstream side of bridge on State Highway 71, 0.1 mi downstream from Little Barton Creek, and 5.8 mi northwest of Oak Hill.

DRAINAGE AREA.--89.7 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1975 to February 1978 (operated as a flood-hydrograph partial-record station only), February 1978 to September 1982, January 1989 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 737.04 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair above 15 ft³/s and poor below, including those for estimated daily discharges (which are poor). No known regulation or diversions above station.

AVERAGE DISCHARGE.--6 years (1979-82, 90-91), 36.5 ft³/s (5.53 in/yr), 26,440 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,120 ft³/s June 11, 1981 (gage height, 15.64 ft); no flow for many days each year except 1981.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Aug. 15	0145	*1,860	*7.45	No other peak greater than base discharge.			
Minimum daily discharge, no flow (Oct. 1 to Nov. 7).							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.08	.13	72	72	28	e60	e25	14	1.1	5.9
2	.00	.00	.08	23	68	65	29	e59	24	e12	.91	44
3	.00	.00	.08	50	65	58	29	e58	e26	e10	.95	38
4	.00	.00	.08	16	226	53	28	e70	e30	e9.0	.82	15
5	.00	.00	.08	12	172	52	120	e90	e25	e9.5	.64	15
6	.00	.00	.08	12	143	49	91	e67	e21	8.4	.63	22
7	.00	.00	.08	12	129	45	111	e58	e21	7.5	.62	20
8	.00	.15	.07	11	118	43	98	e225	e24	e9.8	.59	17
9	.00	.09	.07	194	111	42	85	e185	e23	e8.8	.58	14
10	.00	.09	.07	182	105	41	e82	e123	e21	e7.2	.55	13
11	.00	.09	.08	103	98	41	e81	e110	e33	e6.0	.51	12
12	.00	.09	.08	77	91	40	e80	e101	e44	e6.3	.51	12
13	.00	.08	.08	e65	88	38	e75	e94	e30	4.7	.51	11
14	.00	.08	.08	e56	79	36	e155	e90	e23	4.1	.78	15
15	.00	.08	.08	e51	74	36	e127	e89	e21	3.8	319	20
16	.00	.08	.08	e46	e67	50	e103	e87	e27	3.5	30	15
17	.00	.08	.11	42	e67	57	e101	e85	57	3.2	15	13
18	.00	.08	.14	157	e70	43	e122	e84	26	3.0	11	12
19	.00	.08	.09	144	e97	40	e162	e77	20	2.7	8.5	123
20	.00	.08	.11	112	e86	39	e120	e70	e17	2.3	7.2	58
21	.00	.08	.11	100	e82	39	e109	e61	e16	2.1	6.4	35
22	.00	.08	.11	96	e95	37	e103	e54	e15	2.0	5.8	27
23	.00	.09	.11	91	e82	35	e94	e50	24	1.9	9.6	25
24	.00	.08	.11	109	e80	34	e91	e48	23	1.9	8.9	31
25	.00	.08	.10	100	e77	34	e90	e44	14	1.7	7.4	24
26	.00	.08	.10	92	e76	34	e84	e41	e12	1.6	6.5	20
27	.00	.08	.11	91	73	34	e80	e36	e11	1.5	5.9	19
28	.00	.08	.11	86	70	33	e80	e34	e11	1.4	5.4	18
29	.00	.08	.13	83	---	32	e90	31	e12	1.3	5.1	16
30	.00	.08	.13	77	---	29	e66	e28	11	1.9	5.0	15
31	.00	---	.13	76	---	29	---	e27	---	1.5	5.0	---
TOTAL	0.00	1.96	2.95	2366.13	2661	1310	2714	2336	687	154.6	471.40	724.9
MEAN	.000	.065	.095	76.3	95.0	42.3	90.5	75.4	22.9	4.99	15.2	24.2
MAX	.00	.15	.14	194	226	72	162	225	57	14	319	123
MIN	.00	.00	.07	.13	65	29	28	27	11	1.3	.51	5.9
AC-FT	.00	3.9	5.9	4690	5280	2600	5380	4630	1360	307	935	1440
CFSM	.00	.00	.00	.85	1.06	.47	1.01	.84	.26	.06	.17	.27
IN.	.00	.00	.00	.98	1.10	.54	1.13	.97	.28	.06	.20	.30

CAL YR 1990	TOTAL	1895.06	MEAN	5.19	MAX	412	MIN	.00	AC-FT	3760	CFSM	.06	IN.	.79
WTR YR 1991	TOTAL	13429.94	MEAN	36.8	MAX	319	MIN	.00	AC-FT	26640	CFSM	.41	IN.	5.57

e Estimated

08155200 BARTON CREEK AT STATE HIGHWAY 71 NEAR OAK HILL, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: April 1978 to September 1982, February 1989 to current year.
 Pesticide analyses: April 1978 to September 1982. Radiochemical analyses: October 1979 to September 1980.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
JAN												
09...	1048	32	337	--	9.0	12	60	--	--	1.3	16	400
09...	1550	316	263	--	9.5	27	150	--	--	2.8	44	58000
09...	1735	512	285	--	--	42	80	--	--	2.3	39	12000
10...	0948	156	367	--	10.5	22	23	--	--	1.0	16	K1300
11...	1055	85	418	--	9.0	12	7.9	--	--	0.6	12	620
16...	1145	34	513	8.2	11.0	5	0.40	10.5	97	0.5	<10	28
MAY												
29...	1020	33	500	8.0	27.0	2	0.40	7.0	90	0.3	<10	20
AUG												
15...	0045	240	338	--	--	--	120	--	--	13	56	K6400
15...	0145	1860	152	--	--	--	--	--	--	15	120	18000
15...	0245	1560	220	--	--	32	430	--	--	12	--	--
15...	0345	717	222	--	--	--	400	--	--	12	84	42000
15...	0545	448	243	--	--	--	510	--	--	11	65	--
26...	1125	6.5	438	7.8	27.5	1	0.30	7.8	102	0.4	12	120
JAN												
09...		2100	--	--	--	--	--	--	--	--	--	--
09...		98000	--	--	--	--	--	--	--	--	--	--
09...		15000	--	--	--	--	--	--	--	--	--	--
10...		7100	--	--	--	--	--	--	--	--	--	--
11...		3400	--	--	--	--	--	--	--	--	--	--
16...		58	260	57	76	18	11	0.3	1.0	210	36	22
MAY												
29...		96	240	43	64	19	12	0.3	0.90	200	28	28
AUG												
15...		K2400	--	--	--	--	--	--	--	--	--	--
15...		58000	--	--	--	--	--	--	--	--	--	--
15...		--	--	--	--	--	--	--	--	--	--	--
15...		12000	--	--	--	--	--	--	--	--	--	--
15...		--	--	--	--	--	--	--	--	--	--	--
26...		28	210	34	59	16	10	0.3	1.2	180	24	23
JAN												
09...		--	--	--	176	39	137	--	--	<0.010	<0.010	0.200
09...		--	--	--	333	69	264	--	--	<0.010	<0.010	0.200
09...		--	--	--	268	64	204	--	0.180	<0.010	0.020	0.200
10...		--	--	--	37	11	26	--	--	<0.010	<0.010	0.300
11...		--	--	--	13	13	0	--	--	<0.010	<0.010	0.300
16...		0.20	7.3	297	3	3	0	0.280	--	0.020	<0.010	0.300
MAY												
29...		0.20	9.8	279	1	1	0	--	--	<0.010	<0.010	<0.050
AUG												
15...		--	--	--	287	61	226	0.051	0.049	0.010	0.010	0.061
15...		--	--	--	--	--	--	0.200	0.190	0.020	0.020	0.220
15...		--	--	--	1170	157	1010	--	--	--	--	--
15...		--	--	--	884	137	747	0.220	0.230	0.030	0.020	0.250
15...		--	--	--	602	104	498	0.220	0.230	0.030	0.020	0.250
26...		0.20	10	252	6	6	0	--	--	<0.010	<0.010	<0.050

COLORADO RIVER BASIN

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08155200 BARTON CREEK AT STATE HIGHWAY 71 NEAR OAK HILL, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	NITRO- GEN, NO2+N03 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- PHORUS ORTHO TOTAL (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)	CARBON, ORGANIC TOTAL (MG/L AS C)
JAN											
09...	0.200	<0.010	0.020	--	0.40	0.020	0.020	<0.010	<0.010	--	4.7
09...	0.200	0.030	0.040	0.47	0.50	0.170	0.020	0.010	0.030	0.03	11
09...	0.200	0.030	0.050	0.67	0.70	0.040	<0.010	0.010	0.010	0.03	12
10...	0.300	0.010	0.030	0.19	0.20	0.020	0.010	<0.010	<0.010	--	4.1
11...	0.500	0.020	0.010	0.28	0.30	0.020	0.010	<0.010	0.020	--	3.1
16...	0.300	0.010	0.010	--	<0.20	0.060	<0.010	<0.010	<0.010	--	2.0
MAY											
29...	<0.050	<0.010	0.010	--	0.50	<0.010	<0.010	<0.010	<0.010	--	0.9
AUG											
15...	0.059	<0.010	0.020	--	1.5	0.130	<0.010	<0.010	<0.010	--	--
15...	0.210	0.020	0.030	2.1	2.1	0.250	0.010	0.020	0.010	0.06	40
15...	--	--	--	--	--	--	--	--	--	--	--
15...	0.250	0.040	0.070	2.0	2.0	0.200	<0.010	<0.010	<0.010	--	29
15...	0.250	0.020	0.060	1.7	1.7	0.160	<0.010	<0.010	<0.010	--	19
26...	<0.050	<0.010	0.020	--	<0.20	<0.010	0.020	<0.010	<0.010	--	1.6
DATE	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)
JAN											
09...	--	--	--	--	--	--	--	--	--	--	3
09...	--	--	--	--	--	--	--	--	--	--	6
09...	--	--	--	--	--	--	--	--	--	--	8
10...	--	--	--	--	--	--	--	--	--	--	1
11...	--	--	--	--	--	--	--	--	--	--	4
16...	<0.100	<0.100	<1	27	<0.5	<1.0	<5	<3	<10	<3	1
MAY											
29...	<0.400	<0.200	<1	28	<0.5	<1.0	<5	<3	<10	<3	46
AUG											
15...	--	--	--	--	--	--	--	--	--	--	67
15...	--	--	--	--	--	--	--	--	--	--	130
15...	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	34
15...	--	--	--	--	--	--	--	--	--	--	100
26...	0.200	<0.100	<1	27	<0.5	<1.0	<5	<3	<10	3	1
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)
JAN											
09...	--	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--	--	--
16...	<10	7	1	<0.1	<10	<10	<1	<1.0	230	<6	<3
MAY											
29...	<10	6	3	<0.1	<10	<10	<1	<1.0	240	<6	5
AUG											
15...	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--
26...	<10	7	3	<0.1	<10	<10	<1	<1.0	210	<6	4

COLORADO RIVER BASIN

08155220 BARTON CREEK AT BARTON CREEK BOULEVARD NEAR AUSTIN, TX

LOCATION.--Lat 30°16'26, long 97°50'40", Travis County, Hydrologic Unit 12090205, 0.9 mi west of intersection of Ranch Road 2244 and Barton Creek Boulevard, and 7.0 mi northwest of State Capitol Building in Austin.

DRAINAGE AREA.--102 mi².

PERIOD OF RECORD.--Chemical and biochemical analyses: April 1990 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	
AUG 26...	1510	9.4	442	7.7	30.0	<1	0.50	7.6	103	0.3	11	
DATE		COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	SULFATE DIS-SOLVED (MG/L AS SO4)
AUG 26...	K76	K15	210	29	56	16	12	0.4	1.3	180	29	
DATE		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)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+N03 TOTAL (MG/L AS N)	NITRO-GEN, NO2+N03 DIS-SOLVED (MG/L AS N)	
AUG 26...	25	0.20	10	256	<1	<1	<0.010	<0.010	0.059	<0.050		
DATE		NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (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-PHORUS ORTHO TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L)	CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L)	
AUG 26...	<0.010	0.020	<0.20	<0.010	0.020	<0.010	<0.010	1.6	<0.100	<0.100		
DATE		ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	LEAD, DIS-SOLVED (UG/L AS PB)	
AUG 26...	<1	25	<0.5	<1.0	<5	<3	<10	<3	1	<10		
DATE		LITHIUM DIS-SOLVED (UG/L AS LI)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	STRON-TIUM, DIS-SOLVED (UG/L AS SR)	VANA-DIUM, DIS-SOLVED (UG/L AS V)	ZINC, DIS-SOLVED (UG/L AS ZN)	
AUG 26...	7	3	<0.1	<10	<10	<1	<1.0	210	<6	29		

COLORADO RIVER BASIN

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08155240 BARTON CREEK AT LOST CREEK BOULEVARD, AUSTIN, TX

LOCATION.--Lat 30°16'26", long 97°50'40", Travis County, Hydrologic Unit 12090205, 1.4 mi southwest of intersection of Lost Creek Boulevard and Loop 360, and 6.2 mi west of State Capitol Building in Austin.

DRAINAGE AREA.--107 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1979 to September 1980 (periodic gage heights and discharge measurements only). December 1988 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 600 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair. No known regulation or diversions. One recording rain gage in the watershed above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,090 ft³/s May 17, 1989 (gage height, 8.90 ft); minimum daily, 0.07 ft³/s Oct. 3-5, 1990.

EXTREMES OUTSIDE PERIOD OF RECORD.--The flood of May 28, 1929 was probably the highest since that date (discharge 39,40 ft³/s), based on a slope-area measurement of peak flow at a site about 2.1 mi downstream.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 9	2000	1,200	a4.88	Aug. 15	0545	*1,680	*5.40

a From floodmark.

Minimum daily discharge, 0.16 ft³/s Oct. 2, 3.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	.19	.53	1.4	1.1	83	104	36	69	33	25	2.8	4.8		
2	.16	.54	1.4	7.9	80	95	36	68	32	25	2.6	5.4		
3	.16	.56	1.4	57	77	81	36	68	33	19	2.6	67		
4	.17	1.9	1.2	32	293	74	36	76	41	19	2.5	23		
5	.30	2.0	1.1	20	304	72	125	99	41	17	2.5	16		
6	.36	1.2	1.1	18	191	68	131	82	33	16	2.4	19		
7	.25	1.0	1.1	18	160	66	133	67	33	15	2.2	25		
8	.25	8.8	1.1	17	146	62	132	250	37	18	2.4	20		
9	11	6.2	1.1	e488	137	59	114	261	35	14	2.4	16		
10	2.7	2.6	1.1	e476	128	57	107	150	31	12	2.2	13		
11	.73	2.0	1.2	e176	120	56	106	139	68	12	2.0	11		
12	.58	1.8	1.3	127	113	55	104	131	80	11	2.0	10		
13	.47	1.7	1.2	106	109	54	95	125	51	8.6	1.9	11		
14	.46	1.6	1.1	88	102	52	191	118	40	7.3	4.1	12		
15	.46	1.7	1.1	79	91	51	152	115	34	6.5	467	22		
16	.43	1.8	1.1	68	83	61	111	112	46	5.6	73	19		
17	.53	1.8	1.2	62	83	87	106	109	99	4.9	30	14		
18	.53	1.8	1.4	235	87	63	123	105	66	5.1	20	11		
19	.52	2.0	1.2	269	126	53	204	95	44	4.8	13	103		
20	.46	2.1	1.1	159	112	51	137	85	37	4.6	9.6	63		
21	1.5	1.9	1.1	133	113	51	121	75	33	4.6	8.1	39		
22	1.7	2.0	1.1	121	123	49	119	67	31	4.4	6.7	33		
23	.92	2.2	.99	112	109	47	110	62	29	4.2	6.0	31		
24	.68	1.9	.96	130	106	46	106	60	36	4.2	9.2	36		
25	.59	1.9	.96	128	102	46	105	55	33	4.2	8.8	29		
26	.56	1.9	1.3	115	103	46	97	50	29	3.8	7.4	26		
27	.56	2.0	1.5	111	97	43	91	45	26	3.6	6.0	24		
28	.58	1.8	1.1	107	94	40	91	41	23	3.5	5.3	22		
29	.68	1.6	1.1	102	---	40	105	39	25	4.8	4.7	21		
30	.65	1.4	1.1	93	---	39	81	37	24	4.2	4.3	21		
31	.57	---	1.1	92	---	38	---	34	---	3.0	4.4	---		
TOTAL	29.70	62.23	36.21	3748.0	3472	1806	3241	2889	1203	294.9	718.1	767.2		
MEAN	.96	2.07	1.17	121	124	58.3	108	93.2	40.1	9.51	23.2	25.6		
MAX	11	8.8	1.5	488	304	104	204	261	99	25	467	103		
MIN	.16	.53	.96	1.1	77	38	36	34	23	3.0	1.9	4.8		
AC-FT	59	123	72	7430	6890	3580	6430	5730	2390	585	1420	1520		
CFSM	.01	.02	.01	1.13	1.16	.54	1.01	.87	.37	.09	.22	.24		
IN.	.01	.02	.01	1.30	1.21	.63	1.13	1.00	.42	.10	.25	.27		
CAL YR 1990	TOTAL	3349.27	MEAN	9.18	MAX	715	MIN	.16	AC-FT	6640	CFSM	.09	IN.	1.16
WTR YR 1991	TOTAL	18267.34	MEAN	50.0	MAX	488	MIN	.16	AC-FT	36230	CFSM	.47	IN.	6.35

e Estimated

COLORADO RIVER BASIN

08155240 BARTON CREEK AT LOST CREEK BOULEVARD, AUSTIN, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: December 1988 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	OXYGEN DEMAND, CHEM- ICAL, (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
JAN												
09...	0910	134	390	--	9.0	25	230	--	--	2.4	40	K6000
09...	1545	735	371	--	9.5	30	110	--	--	2.3	31	K1600
09...	1710	918	351	--	10.5	32	200	--	--	2.1	40	12000
10...	0832	507	394	--	--	22	50	--	--	1.2	20	2300
11...	1020	166	469	--	9.5	12	10	--	--	0.8	12	460
16...	1055	67	576	8.3	10.5	1	1.4	10.7	97	0.5	10	25
MAY												
29...	1120	39	510	8.0	27.5	2	1.5	7.0	91	0.3	11	140
AUG												
15...	0502	386	--	--	--	--	--	--	--	17	43	22000
15...	0602	1450	--	--	--	--	--	--	--	18	56	21000
15...	0702	1010	--	--	--	30	200	--	--	9.4	--	--
15...	0802	677	--	--	--	--	--	--	--	16	56	20000
15...	0902	528	--	--	--	40	160	--	--	9.1	--	--
26...	1250	6.0	507	7.6	28.0	1	1.7	7.7	101	0.4	15	55
DATE		STREP- TOCOCCEI FECAL KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB DISSOLV FLD. AS CACO3 (MG/L)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT DIS FIX END FIELD CACO3 (MG/L)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
JAN												
09...		60000	--	--	--	--	--	--	--	--	--	--
09...		8800	--	--	--	--	--	--	--	--	--	--
09...		K6800	--	--	--	--	--	--	--	--	--	--
10...		46000	--	--	--	--	--	--	--	--	--	--
11...		2700	--	--	--	--	--	--	--	--	--	--
16...		64	270	67	80	18	16	0.4	1.2	210	49	32
MAY												
29...		120	240	49	64	19	15	0.4	1.0	190	31	32
AUG												
15...		40000	--	--	--	--	--	--	--	--	--	--
15...		K10000	--	--	--	--	--	--	--	--	--	--
15...		--	--	--	--	--	--	--	--	--	--	--
15...		20000	--	--	--	--	--	--	--	--	--	--
15...		--	--	--	--	--	--	--	--	--	--	--
26...		36	230	41	62	17	17	0.5	1.6	180	37	35
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)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	RESIDUE VOLA- TILE, SUS- PENDE (MG/L)	RESIDUE FIXED NON FILTER- ABLE (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)
JAN												
09...		--	--	--	535	103	432	--	0.480	<0.010	0.020	0.500
09...		--	--	--	280	39	241	--	0.480	<0.010	0.020	0.500
09...		--	--	--	924	73	851	--	--	<0.010	<0.010	0.400
10...		--	--	--	123	35	88	0.490	0.480	0.010	0.020	0.500
11...		--	--	--	13	13	0	0.490	0.280	0.010	0.020	0.500
16...		0.20	7.4	330	9	9	0	0.490	--	0.010	<0.010	0.500
MAY												
29...		0.20	10	286	5	4	1	--	--	<0.010	<0.010	<0.050
AUG												
15...		--	--	--	--	--	--	0.280	0.300	0.020	0.010	0.300
15...		--	--	--	--	--	--	0.340	0.360	0.020	0.010	0.360
15...		--	--	--	8	8	0	--	--	--	--	--
15...		--	--	--	--	--	--	0.430	0.420	0.010	0.010	0.440
15...		--	--	--	<1	<1	--	--	--	--	--	--
26...		0.20	11	291	2	2	0	--	--	<0.010	<0.010	0.056

COLORADO RIVER BASIN

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08155240 BARTON CREEK AT LOST CREEK BOULEVARD, AUSTIN, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

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- PHORUS ORTHO TOTAL (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS PO4)	CARBON, ORGANIC TOTAL (MG/L AS C)
JAN											
09...	0.500	0.050	0.050	0.45	0.50	0.180	0.070	0.070	0.080	0.21	12
09...	0.500	0.040	0.040	0.46	0.50	0.130	0.090	0.060	0.070	0.18	11
09...	0.400	0.040	0.040	0.56	0.60	0.080	0.040	0.020	0.030	0.06	13
10...	0.500	0.020	0.030	0.28	0.30	0.040	<0.010	<0.010	<0.010	--	6.2
11...	0.300	<0.010	0.020	--	0.20	0.010	<0.010	<0.010	<0.010	--	3.6
16...	0.500	0.020	0.020	--	<0.20	0.460	<0.010	<0.010	<0.010	--	2.1
MAY											
29...	0.057	0.020	0.020	0.28	0.30	<0.010	<0.010	<0.010	<0.010	--	1.5
AUG											
15...	0.310	0.020	0.010	0.98	1.0	0.270	0.120	0.100	0.130	0.31	9.2
15...	0.370	0.020	0.020	1.7	1.7	0.370	0.100	0.070	0.080	0.21	16
15...	--	--	--	--	--	--	--	--	--	--	--
15...	0.430	0.020	0.020	1.6	1.6	0.280	0.110	0.080	0.090	0.25	18
15...	--	--	--	--	--	--	--	--	--	--	--
26...	<0.050	<0.010	0.020	--	0.20	0.010	<0.010	<0.010	<0.010	--	2.2
DATE	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)
JAN											
09...	--	--	--	--	--	--	--	--	--	--	10
09...	--	--	--	--	--	--	--	--	--	--	5
09...	--	--	--	--	--	--	--	--	--	--	6
10...	--	--	--	--	--	--	--	--	--	--	4
11...	--	--	--	--	--	--	--	--	--	--	6
16...	0.200	<0.100	<1	29	<0.5	<1.0	<5	<3	<10	5	1
MAY											
29...	<0.400	<0.200	<1	28	<0.5	<1.0	<5	<3	<10	<3	4
AUG											
15...	--	--	--	--	--	--	--	--	--	--	7
15...	--	--	--	--	--	--	--	--	--	--	16
15...	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	13
15...	--	--	--	--	--	--	--	--	--	--	--
26...	0.400	<0.100	<1	28	<0.5	<1.0	<5	<3	<10	8	<1
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)
JAN											
09...	--	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--	--	--
16...	<10	8	3	<0.1	<10	<10	<1	<1.0	280	<6	3
MAY											
29...	<10	6	3	<0.1	<10	<10	<1	<1.0	270	<6	<3
AUG											
15...	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--
26...	<10	8	9	<0.1	<10	<10	<1	<1.0	260	<6	28

COLORADO RIVER BASIN

08155300 BARTON CREEK AT LOOP 360, AUSTIN, TX

LOCATION.--Lat 30°14'40", long 97°48'07", Travis County, Hydrologic Unit 12090205, on Loop 360, 0.9 mi west of the intersection of Ben White and Lamar Boulevards, and 4.3 mi southwest of the State Capitol Building in Austin.

DRAINAGE AREA.--116 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1975 to January 1977 (operated as a flood-hydrograph partial-record station only), February 1977 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 510.32 ft above National Geodetic Vertical Datum of 1929 (State Department of Highways and Public Transportation bench mark).

REMARKS.--No estimated daily discharges. Records fair except those below 3 ft³/s, which are poor. No known regulation or diversions. One recording rain gage in the watershed above station. Gage-height and rain gage telemeter at station.

AVERAGE DISCHARGE.--14 years, 39.9 ft³/s (4.67 in/yr), 28,910 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,100 ft³/s May 25, 1981 (gage height, 15.03 ft); no flow for many days each year.

EXTREMES OUTSIDE PERIOD OF RECORD.--The flood of May 28, 1929, was probably the highest since that date (discharge 39,400 ft³/s), based on a slope-area measurement of peak flow at a site about 2 mi upstream.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 9	1545	1,160	6.02	Aug. 15	0700	*2,080	*6.69

Minimum daily discharge, no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	.00	.00	.00	.00	54	69	1.2	49	3.1	.00	.00	.01		
2	.00	.00	.00	2.3	50	61	1.0	43	1.5	.00	.00	.99		
3	.00	.00	.00	15	48	51	.77	44	3.3	.40	.00	11		
4	.00	.00	.00	17	190	45	4.0	51	14	.00	.00	.98		
5	.00	.00	.00	.04	232	40	109	68	14	.00	.00	.02		
6	.00	.00	.00	.00	159	36	101	59	2.1	.00	.00	.02		
7	.00	.00	.00	.00	136	31	99	41	1.1	.00	.00	.02		
8	.00	2.2	.00	.00	121	29	101	164	4.0	.00	.00	.02		
9	1.7	.05	.00	489	112	26	83	203	3.5	.00	.00	.02		
10	.00	.00	.00	364	104	24	71	118	.92	.00	.00	.02		
11	.00	.00	.00	152	93	23	68	106	51	.00	.00	.02		
12	.00	.00	.00	97	86	22	65	95	76	.00	.00	.01		
13	.00	.00	.00	69	76	18	61	89	35	.00	.00	.01		
14	.00	.00	.00	52	69	14	151	84	16	.00	.66	.01		
15	.00	.00	.00	43	59	13	131	78	4.6	.00	379	.01		
16	.00	.00	.00	34	54	20	87	76	8.0	.00	50	.25		
17	.00	.00	.00	29	55	43	78	74	88	.00	2.6	.04		
18	.00	.00	.00	134	54	28	92	69	59	.00	.05	.01		
19	.00	.00	.00	176	88	20	158	59	25	.00	.00	4.6		
20	.00	.00	.00	113	82	16	116	56	10	.00	.00	77		
21	.13	.00	.00	90	78	14	99	52	4.2	.00	.00	16		
22	.00	.00	.00	82	92	12	96	48	1.4	.00	.00	1.4		
23	.00	.00	.00	75	74	9.6	88	43	.82	.00	.00	.30		
24	.00	.00	.00	97	68	7.6	81	40	3.5	.00	.00	.08		
25	.00	.00	.00	97	64	5.7	77	35	2.3	.00	.00	.38		
26	.00	.00	.00	83	66	5.7	72	28	.41	.00	.00	.03		
27	.00	.00	.00	78	62	5.3	68	23	.06	.00	.00	.00		
28	.00	.00	.00	71	60	4.4	67	16	.00	.00	.00	.00		
29	.00	.00	.00	65	---	4.0	78	13	.01	.00	.00	.00		
30	.00	.00	.00	58	---	2.8	60	8.7	.14	.00	.01	.00		
31	.00	---	.00	58	---	1.6	---	5.3	---	.00	.01	---		
TOTAL	1.83	2.25	0.00	2640.34	2486	701.7	2363.97	1938.0	432.96	0.40	432.33	113.25		
MEAN	.059	.075	.000	85.2	88.8	22.6	78.8	62.5	14.4	.013	13.9	3.77		
MAX	1.7	2.2	.00	489	232	69	158	203	88	.40	379	77		
MIN	.00	.00	.00	.00	48	1.6	.77	5.3	.00	.00	.00	.00		
AC-FT	3.6	4.5	.00	5240	4930	1390	4690	3840	859	.8	858	225		
CFSM	.00	.00	.00	.73	.77	.20	.68	.54	.12	.00	.12	.03		
IN.	.00	.00	.00	.85	.80	.23	.76	.62	.14	.00	.14	.04		
CAL YR 1990	TOTAL	1709.44	MEAN	4.68	MAX	808	MIN	.00	AC-FT	3390	CFSM	.04	IN.	.55
WTR YR 1991	TOTAL	11113.03	MEAN	30.4	MAX	489	MIN	.00	AC-FT	22040	CFSM	.26	IN.	3.56

COLORADO RIVER BASIN

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08155300 BARTON CREEK AT LOOP 360, AUSTIN, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: January 1979 to current year. Pesticide analyses: January 1979 to September 1986. Radiochemical analyses: April 1980.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)
JAN												
09...	0938	19	106	--	9.0	45	3.6	--	--	1.8	20	720
09...	1130	535	230	--	8.5	55	630	--	--	5.0	74	11000
09...	1305	1110	219	--	9.0	65	170	--	--	3.2	63	9600
10...	0905	376	379	--	--	25	51	--	--	1.2	22	5900
11...	0945	155	463	--	9.5	--	10	--	--	1.1	<10	620
16...	1015	33	563	8.4	10.0	2	1.0	11.3	101	0.4	<10	23
MAY												
29...	1215	13	479	8.1	29.0	1	1.0	7.5	99	0.3	14	23
AUG												
15...	0825	1210	279	7.5	--	28	580	--	--	7.0	74	29000
DATE		STREP-TOCOCCI, KF AGAR (COLS. PER 100 ML)	HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT DIS-FIX END FIELD CAC03 (MG/L)	SULFATE DIS-SOLVED (MG/L AS S04)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
JAN												
09...		11000	--	--	--	--	--	--	--	--	--	--
09...		76000	--	--	--	--	--	--	--	--	--	--
09...		98000	--	--	--	--	--	--	--	--	--	--
10...		93000	--	--	--	--	--	--	--	--	--	--
11...		4400	--	--	--	--	--	--	--	--	--	--
16...		84	270	70	79	18	15	0.4	1.2	200	48	32
MAY												
29...		70	220	47	57	19	15	0.4	1.1	170	32	33
AUG												
15...		12000	120	23	35	8.2	7.3	0.3	2.5	98	17	15
DATE		FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SI02)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L)	RESIDUE FIXED NON-FILTER-ABLE (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)
JAN												
09...		--	--	--	54	18	36	0.180	0.190	0.020	0.010	0.200
09...		--	--	--	818	180	638	0.490	0.490	0.010	0.010	0.500
09...		--	--	--	942	102	840	0.290	0.380	0.010	0.020	0.300
10...		--	--	--	96	28	68	0.490	--	0.010	<0.010	0.500
11...		--	--	--	16	16	0	--	--	<0.010	<0.010	0.500
16...		0.20	7.1	324	3	3	0	--	--	<0.010	<0.010	0.500
MAY												
29...		0.20	10	272	8	4	4	--	--	<0.010	<0.010	<0.050
AUG												
15...		0.10	7.1	152	10	10	0	0.220	0.240	0.030	0.010	0.250
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-PHORUS ORTHO TOTAL (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS P04)	CARBON, ORGANIC TOTAL (MG/L AS C)
JAN												
09...		0.200	0.040	0.040	0.46	0.50	0.100	0.060	0.050	0.060	0.15	5.1
09...		0.500	0.010	0.030	0.69	0.70	0.060	0.030	0.030	0.020	0.09	24
09...		0.400	0.030	0.040	0.87	0.90	0.120	0.070	0.050	0.050	0.15	34
10...		0.500	0.030	0.020	0.57	0.60	0.030	<0.010	0.010	<0.010	0.03	5.9
11...		0.500	0.020	0.020	0.28	0.30	0.010	<0.010	<0.010	<0.010	--	3.8
16...		0.500	<0.010	0.020	--	<0.20	0.020	<0.010	<0.010	<0.010	--	2.1
MAY												
29...		<0.050	0.020	0.020	--	<0.20	0.010	<0.010	<0.010	<0.010	--	1.8
AUG												
15...		0.250	0.020	0.070	2.5	2.5	0.270	0.120	0.010	0.030	0.03	24

COLORADO RIVER BASIN

08155300 BARTON CREEK AT LOOP 360, AUSTIN, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)
JAN 09...	--	--	--	--	--	--	--	--	--	--	6
09...	--	--	--	--	--	--	--	--	--	--	25
09...	--	--	--	--	--	--	--	--	--	--	<1
10...	--	--	--	--	--	--	--	--	--	--	3
11...	--	--	--	--	--	--	--	--	--	--	1
16...	0.100	<0.100	<1	30	<0.5	<1.0	<5	<3	<10	<3	1
MAY 29...	<0.400	<0.200	1	27	<0.5	<1.0	<5	<3	<10	<3	2
AUG 15...	--	--	<1	19	<0.5	<1.0	<5	<3	<10	22	12
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)
JAN 09...	--	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--	--	--
16...	<10	9	1	<0.1	<10	<10	<1	<1.0	280	<6	<3
MAY 29...	<10	6	<1	<0.1	<10	<10	<1	<1.0	260	<6	<3
AUG 15...	<10	<4	<1	<0.1	<10	<10	<1	<1.0	130	<6	<3

COLORADO RIVER BASIN

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08155500 BARTON SPRINGS AT AUSTIN, TX

LOCATION.--Lat 30°15'48", long 97°46'16", Travis County, Hydrologic Unit 12090205, at ground-water well (YD 58-42-903), on right bank 0.4 mi upstream from Barton Springs Road bridge over Barton Creek, 0.7 mi upstream from mouth, and 1.8 mi southwest of the State Capitol Building in Austin.

DRAINAGE AREA.--Not applicable. Only springflow is published for this station.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--November 1894 to April 1917, and October 1918 to February 1978 (discharge measurements only), May 1917 to September 1918 (published as "Barton Creek at Austin, Texas"), and March 1978 to current year.

GAGE.--Water-stage recorder. Datum of gage, at ground-water well (YD 58-42-903), is 462.34 ft above National Geodetic Vertical Datum of 1929. May 1917 to September 1918, nonrecording gage at site 1,000 ft downstream at different datum.

REMARKS.--Records poor. Only springflow from the Edwards and associated limestones in the Balcones Fault Zone is published for this station.

AVERAGE DISCHARGE.--14 years (water years 1918, 1979-91), 55.1 ft³/s (39,920 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD (Discharge measurements only).--Maximum measured discharge, 166 ft³/s May 10, 1941; minimum measured, 9.6 ft³/s Mar. 29, 1956.

EXTREMES FOR PERIOD OF RECORD (1917-18 and since March 1978).--Maximum daily spring discharge, 115 ft³/s June 28, 1987; minimum daily spring, 12 ft³/s Feb. 25, 1918.

EXTREMES FOR CURRENT YEAR.--Maximum daily spring discharge, 101 ft³/s Apr. 21; minimum daily, 18 ft³/s Dec. 20.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	19	21	20	81	e87	e82	99	92	e87	e76	70
2	20	19	21	e35	81	e87	e83	e99	92	e87	e75	e71
3	20	19	22	e33	e82	87	82	e99	e92	e86	e75	e71
4	e20	21	22	e31	e90	e87	e82	e99	e92	e86	75	e71
5	e19	e22	23	e30	e88	e86	e99	e99	e92	e85	e75	e71
6	19	e23	22	e29	e87	e86	e99	e99	e92	85	e75	e71
7	19	e24	22	e28	e86	e85	e98	e99	e92	85	e73	e71
8	19	e31	22	27	85	e85	e97	e99	e91	e84	e71	71
9	e23	e30	21	e65	85	e85	e95	e99	90	e84	e71	e70
10	e22	e29	21	e85	85	e85	95	e99	e91	84	e71	69
11	e21	28	20	e84	e85	85	e95	e99	e91	e83	e71	69
12	e21	27	20	e83	e84	e85	93	99	e91	e83	e71	e68
13	21	26	20	e81	e84	e85	94	e99	e91	83	71	e67
14	21	25	20	e80	e83	e84	e95	e96	e91	83	e71	67
15	21	25	20	e79	e83	e84	e99	93	91	e83	e71	67
16	20	24	20	e78	e83	e85	e99	e93	e91	e82	e71	e65
17	21	24	20	e77	e82	e85	e99	e93	e91	82	e71	65
18	e20	24	e19	e85	e82	e85	e99	e93	e91	e81	e71	67
19	e20	24	e19	e81	e86	e84	e99	92	91	e81	e71	e68
20	20	23	18	78	e86	e84	e99	e93	e91	81	e71	e69
21	23	24	19	e79	e85	e84	101	e93	e91	81	e71	e70
22	26	24	19	79	e87	e84	e100	e93	e90	e80	e71	70
23	24	25	19	79	e87	e84	100	e93	e89	e80	71	e69
24	23	25	19	80	e86	e83	99	e93	e89	80	72	68
25	e22	24	20	81	e86	e83	e99	93	e89	75	71	70
26	e20	e22	20	82	e86	e83	e99	e93	89	75	e70	e70
27	19	20	21	82	e86	e83	99	e93	e89	79	68	e69
28	19	21	20	82	e86	e83	99	93	e89	79	70	69
29	19	21	20	82	---	e83	e99	93	e88	e79	e70	68
30	19	21	20	82	---	e82	e99	e92	e88	e79	70	e68
31	19	---	20	82	---	82	---	90	---	e79	70	---
TOTAL	640	714	630	2079	2377	2620	2877	2959	2717	2541	2221	2069
MEAN	20.6	23.8	20.3	67.1	84.9	84.5	95.9	95.5	90.6	82.0	71.6	69.0
MAX	26	31	23	85	90	87	101	99	92	87	76	71
MIN	19	19	18	20	81	82	82	90	88	75	68	65
AC-FT	1270	1420	1250	4120	4710	5200	5710	5870	5390	5040	4410	4100
CAL YR 1990	TOTAL	10005	MEAN	27.4	MAX	72	MIN	15	AC-FT	19840		
WTR YR 1991	TOTAL	24444	MEAN	67.0	MAX	101	MIN	18	AC-FT	48480		

e Estimated

COLORADO RIVER BASIN

08155500 BARTON SPRINGS AT AUSTIN, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: October 1903, June 1941 to February 1959. Chemical, biochemical, and pesticide analyses: December 1978 to current year. Radiochemical analyses: January to September 1980.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

		DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	
JAN													
11...	0915	84	531	7.1	19.5	12	10	7.7	85	0.5	<10	720	
16...	0930	78	603	7.1	19.5	<1	1.8	7.1	78	0.1	<10	31	
MAY													
14...	0835	96	624	7.1	21.0	3	33	6.5	74	0.4	--	130	
29...	1027	93	612	7.4	21.5	<1	1.0	6.6	76	0.2	--	K4	
AUG													
26...	2040	70	590	7.2	21.5	1	1.0	7.4	86	0	--	K7	
DATE	TIME	STREP-TOCOCCI, KF AGAR (COLS. PER 100 ML)	HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY, WAT DIS-FIX END FIELD CAC03 (MG/L)	SULFATE DIS-SOLVED (MG/L AS S04)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)
JAN													
11...	7600	270	45	87	12	11	0.3	1.6	220	27	18	0.20	
16...	120	290	54	89	17	13	0.3	1.2	240	32	25	0.20	
MAY													
14...	80	300	63	90	19	15	0.4	1.1	240	31	30	0.20	
29...	K12	300	47	87	20	15	0.4	1.1	250	25	33	0.20	
AUG													
26...	K2	310	41	88	21	15	0.4	1.2	270	30	30	0.30	
DATE	TIME	SILICA, DIS-SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L)	RESIDUE FIXED NON FILTER-ABLE (MG/L)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)
JAN													
11...	10	308	20	14	6	<0.010	<0.010	1.40	1.50	<0.010	0.020	--	
16...	10	338	14	8	6	<0.010	<0.010	1.40	1.40	<0.010	<0.010	--	
MAY													
14...	11	347	1	1	0	<0.010	<0.010	1.10	1.10	<0.010	0.010	--	
29...	11	350	<1	<1	--	<0.010	<0.010	1.10	1.10	0.020	0.020	0.28	
AUG													
26...	11	363	<1	<1	--	<0.010	<0.010	1.40	1.40	<0.010	0.010	--	
DATE	TIME	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-PHORUS ORTHO TOTAL (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS P04)	CARBON, ORGANIC TOTAL (MG/L AS C)	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)
JAN													
11...	0.20	0.020	<0.010	<0.010	<0.010	--	2.8	<1	55	<0.5	<1.0	<5	
16...	<0.20	0.010	<0.010	0.010	<0.010	0.03	1.3	<1	50	<0.5	<1.0	<5	
MAY													
14...	0.20	0.010	<0.010	<0.010	<0.010	--	0.9	<1	53	<0.5	<1.0	<5	
29...	0.30	0.020	0.020	<0.010	<0.010	--	0.6	<1	45	<0.5	<1.0	<5	
AUG													
26...	<0.20	0.010	0.020	<0.010	<0.010	--	0.6	<1	56	<0.5	<1.0	<5	
DATE	TIME	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	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)
JAN													
11...	<3	<10	14	--	<10	9	<1	<0.1	<10	<10	<1	<1.0	
16...	<3	<10	<3	<1	<10	12	<1	<0.1	<10	<10	<1	1.0	
MAY													
14...	<3	<10	5	--	<10	9	<1	<0.1	<10	<10	<1	<1.0	
29...	<3	<10	<3	--	<10	10	<1	<0.1	<10	<10	<1	<1.0	
AUG													
26...	<3	<10	<3	--	<10	13	<1	<0.1	<10	<10	<1	<1.0	

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

[illegible]

COLORADO RIVER BASIN

08155500 BARTON SPRINGS AT AUSTIN, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	PRO- PAZINE TOTAL (UG/L)	PROPHAM TOTAL (UG/L)	SEVIN, TOTAL (UG/L)	SILVEX, TOTAL (UG/L)	SIMA- ZINE TOTAL (UG/L)	SIME- TRYNE TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)
JAN											
11...	<0.10	<0.5	<0.50	--	<0.10	<0.1	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--
MAY											
14...	--	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--	--
AUG											
26...	--	--	--	<0.01	--	--	<1	<0.01	<0.01	<0.01	<0.01

COLORADO RIVER BASIN

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08155505 BARTON CREEK BELOW BARTON SPRINGS AT AUSTIN, TX.

LOCATION.--Lat 30°15'54", long 97°45'54", Travis County, Hydrologic Unit 12090205, at bridge on Barton Springs Road and 1.6 miles southwest of the State Capitol Building in Austin.

DRAINAGE AREA.--125 mi²

GAGE.--Prior to January 1989, discharge measurements were made and water-quality samples were collected at a site 800 ft upstream.

PERIOD OF RECORD.--Chemical analyses: June 1965. Chemical and biochemical analyses: January 1975 to September 1983, May 1989 to current year. Pesticide analyses: January 1975 to September 1983. Radiochemical analyses: January 1980.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

		DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	TEMPER-ATURE WATER (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI, KF AGAR (COLS. PER 100 ML)
JAN										
09...	1402	1020	207	10.0	65	54	4.8	86	10000	62000
09...	1630	1040	251	10.0	55	120	2.8	37	8000	80000
09...	1805	1060	286	10.0	48	91	3.0	31	K6400	K9000
10...	1125	567	385	12.0	23	50	1.4	20	K5200	130000
11...	1215	270	485	14.0	12	12	0.8	11	K380	5500
DATE	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L)	RESIDUE FIXED NON-FILTER-ABLE (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+N03 TOTAL (MG/L AS N)	NITRO-GEN, NO2+N03 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)
JAN										
09...	676	128	548	0.990	--	0.010	<0.010	1.00	1.00	0.050
09...	278	45	233	0.580	0.590	0.020	0.010	0.600	0.600	0.040
09...	178	36	142	0.580	0.580	0.020	0.020	0.600	0.600	0.040
10...	108	42	66	--	--	<0.010	<0.010	0.600	0.700	0.020
11...	13	8	5	--	--	<0.010	<0.010	0.900	0.900	0.020
DATE	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS TOTAL (MG/L AS P)	PHOS-PHORUS DIS-SOLVED (MG/L AS P)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS P04)	CARBON, ORGANIC TOTAL (MG/L AS C)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)
JAN										
09...	0.060	0.75	0.80	0.120	0.040	0.030	0.040	0.09	31	29
09...	0.060	0.36	0.40	0.110	0.050	0.050	0.050	0.15	13	9
09...	0.040	0.26	0.30	0.090	0.030	0.030	0.040	0.09	10	11
10...	0.030	0.18	0.20	0.050	<0.010	<0.010	<0.010	--	6.5	22
11...	0.010	0.38	0.40	0.010	<0.010	<0.010	<0.010	--	3.4	7

COLORADO RIVER BASIN

08156800 SHOAL CREEK AT 12TH STREET, AUSTIN, TX

LOCATION.--Lat 30°16'35", long 97°45'00", Travis County, Hydrologic Unit 12090205, on left bank at downstream side of bridge at 12th Street, and 0.6 mi west of the State Capitol Building in Austin.

DRAINAGE AREA.--12.3 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1984 to current year. Periodic discharge measurements, periodic QW sample collection and associated peak discharges along with annual maximum, November 1974 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 455.33 ft above National Geodetic Vertical Datum of 1929 (city of Austin bench mark). Apr. 2, 1975 to Nov. 14, 1984, operated as a flood-hydrograph partial-record site at same location and datum.

REMARKS.--No estimated daily discharges. Records fair. There is no known regulation or diversion. The station is equipped with an automatic water-quality sampler.

AVERAGE DISCHARGE.--7 years, 7.14 ft³/s (7.88 in/yr), 5,170 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.-- Maximum discharge, 16,000 ft³/s May 24, 1981 (gage height, 23.22 ft); no flow at times.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 9	0630	1,200	8.09	May 8	0815	1,070	7.73
Jan. 9	1200	2,130	10.31	Aug. 14	2200	1,610	9.15
Apr. 14	0630	1,700	9.37	Aug. 15	0115	*3,610	*13.03

Minimum daily discharge, no flow at times.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	1.0	.00	1.0	6.7	.45	4.2	.00	.38	.00	.66
2	.00	.00	.00	.93	.72	1.6	.42	6.9	.00	.04	.00	57
3	.00	.00	.00	7.1	.58	.89	.42	11	44	1.7	.00	17
4	.00	19	.00	2.0	97	.73	9.6	62	8.9	29	.00	4.2
5	.00	1.9	.00	3.2	4.2	.58	125	9.5	1.3	1.2	.00	4.7
6	.00	.02	.00	6.4	2.5	.56	15	2.5	.04	.16	.00	12
7	.00	.00	.00	1.2	1.9	.47	27	1.3	13	.04	.00	4.1
8	.00	150	.00	.46	1.4	.35	3.6	102	2.6	23	.00	.74
9	104	7.9	.00	416	1.3	.27	1.9	11	8.2	1.6	.00	.21
10	.93	1.3	.00	20	1.2	.27	1.0	5.8	3.7	.17	.00	.02
11	.00	.30	.00	4.9	1.0	.27	1.8	4.2	9.4	.04	.00	.00
12	.00	.08	.00	3.0	.89	.34	1.0	2.8	47	.05	.00	.00
13	.00	.03	.00	2.0	.94	.35	4.7	27	4.1	.02	.00	.00
14	.00	.03	.00	1.5	.79	.35	129	11	1.8	.00	105	.00
15	.00	.01	.00	1.2	.57	1.3	14	4.4	.73	.00	443	.00
16	.00	.01	.00	.89	.50	17	11	3.3	57	.00	3.1	.00
17	.32	.00	.48	.78	.50	3.2	9.9	6.2	14	.00	.99	.00
18	.00	.00	16	92	8.9	1.2	20	17	1.6	.00	.21	.00
19	.00	.00	.26	4.6	20	.80	17	10	.93	.00	.01	.14
20	.00	.00	.00	2.6	1.5	.58	8.7	5.6	.58	.00	.00	.04
21	57	.15	.00	1.9	18	.58	7.5	2.9	.38	.00	.00	.00
22	4.5	14	.00	1.4	27	.50	7.0	2.4	.23	.00	.00	.00
23	.21	5.2	.00	1.8	2.5	.50	6.4	1.1	.29	.00	.00	.00
24	.00	.37	.00	20	1.8	.50	5.7	.26	.13	.00	.00	.11
25	.00	.01	.00	2.3	1.5	.50	5.2	45	.08	.00	.00	.00
26	.00	.00	.09	1.7	1.2	.47	4.0	3.0	.03	.00	.00	.00
27	.00	.00	.10	1.3	.99	.40	3.3	.40	.00	.00	.00	.00
28	.00	.00	.00	1.2	1.7	.51	20	.01	.49	.00	.00	.00
29	.00	.00	.00	1.0	---	2.7	12	.00	33	.00	.00	.00
30	.00	.00	.00	2.8	---	.68	6.3	.53	2.3	.00	.44	.00
31	.00	---	.00	1.8	---	.53	---	.02	---	.00	19	---
TOTAL	166.96	200.31	17.93	700.03	202.08	45.68	478.89	363.32	255.81	57.40	571.75	100.92
MEAN	5.39	6.68	.58	22.6	7.22	1.47	16.0	11.7	8.53	1.85	18.4	3.36
MAX	104	150	16	416	97	17	129	102	57	29	443	57
MIN	.00	.00	.00	.00	.50	.27	.42	.00	.00	.00	.00	.00
AC-FT	331	397	36	1390	401	91	950	721	507	114	1130	200
CFSM	.44	.54	.05	1.84	.59	.12	1.30	.95	.69	.15	1.50	.27
IN.	.50	.61	.05	2.12	.61	.14	1.45	1.10	.77	.17	1.73	.31

CAL YR 1990	TOTAL	1640.99	MEAN	4.50	MAX	261	MIN	.00	AC-FT	3250	CFSM	.37	IN.	4.96
WTR YR 1991	TOTAL	3161.08	MEAN	8.66	MAX	443	MIN	.00	AC-FT	6270	CFSM	.70	IN.	9.56

COLORADO RIVER BASIN

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08156800 SHOAL CREEK AT 12TH STREET, AUSTIN, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.-- Chemical and biochemical analyses: February 1943, January 1975 to current year. Pesticide analyses: January 1975 to September 1985. Water temperature: January 1975 to current year. Radiochemical analyses: April 1980.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI, KF AGAR (COLS. PER 100 ML)
NOV												
08...	0810	171	263	--	--	35	33	--	--	6.3	40000	62000
08...	0825	246	237	7.6	--	--	--	--	--	--	--	--
08...	0840	276	212	--	--	45	40	--	--	7.5	K20000	82000
08...	0855	278	204	--	--	--	--	--	--	--	--	--
08...	0925	224	191	--	--	45	66	--	--	9.0	48000	94000
FEB												
25...	1115	1.1	793	7.7	12.0	7	4.3	10.7	100	1.3	7300	14000
AUG												
14...	2127	139	119	--	--	25	400	--	--	8.8	310000	92000
14...	2142	819	116	--	--	35	270	--	--	--	230000	120000
15...	0253	1480	123	7.6	--	30	370	--	--	--	86000	58000
DATE		HARD-NESS TOTAL (MG/L AS CaCO3)	HARD-NESS NONCARB DISSOLV FLD. AS CaCO3 (MG/L)	CALCIUM DIS-SOLVED (MG/L AS Ca)	MAGNE-SIUM, DIS-SOLVED (MG/L AS Mg)	SODIUM, DIS-SOLVED (MG/L AS Na)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT DIS FIX END FIELD CaCO3 (MG/L)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS Cl)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)
NOV												
08...		--	--	--	--	--	--	--	--	--	--	--
08...		89	26	31	2.8	11	0.5	3.1	63	28	17	0.10
08...		--	--	--	--	--	--	--	--	--	--	--
08...		--	--	--	--	--	--	--	--	--	--	--
08...		--	--	--	--	--	--	--	--	--	--	--
FEB												
25...		310	210	110	7.5	39	1	2.9	98	110	90	0.10
AUG												
14...		--	--	--	--	--	--	--	--	--	--	--
14...		--	--	--	--	--	--	--	--	--	--	--
15...		51	12	18	1.4	2.5	0.2	2.2	39	21	4.5	0.10
DATE		SILICA, DIS-SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L)	RESIDUE FIXED NON FILTER-ABLE (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)
NOV												
08...		--	--	81	23	58	0.370	0.030	0.400	0.100	0.80	0.90
08...		2.4	133	--	--	--	--	--	--	--	--	--
08...		--	--	84	17	67	0.360	0.040	0.400	0.110	0.79	0.90
08...		--	--	--	--	--	--	--	--	--	--	--
08...		--	--	128	26	102	0.360	0.040	0.400	0.090	0.51	0.60
FEB												
25...		2.4	421	3	3	0	1.28	0.020	1.30	0.050	0.35	0.40
AUG												
14...		--	--	758	87	671	0.340	0.060	0.400	0.060	0.64	0.70
14...		--	--	627	88	539	0.380	0.050	0.430	0.060	0.64	0.70
15...		2.9	76	42	7	35	0.450	0.060	0.510	0.040	0.66	0.70
DATE		PHOS-PHORUS TOTAL (MG/L AS P)	PHOS-PHORUS ORTHO 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)	BERYL-LIUM, DIS-SOLVED (UG/L AS Be)	CADMIUM DIS-SOLVED (UG/L AS Cd)	CHRO-MIUM, DIS-SOLVED (UG/L AS Cr)	COBALT, DIS-SOLVED (UG/L AS Co)	COPPER, DIS-SOLVED (UG/L AS Cu)	IRON, DIS-SOLVED (UG/L AS Fe)
NOV												
08...		0.150	0.110	12	--	--	--	--	--	--	--	--
08...		--	--	--	--	--	--	--	--	--	--	--
08...		0.170	0.130	9.8	--	--	--	--	--	--	--	--
08...		--	--	--	1	21	<0.5	<1.0	6	<3	<10	78
08...		0.140	0.090	9.5	--	--	--	--	--	--	--	--
FEB												
25...		0.030	<0.010	4.3	<1	63	<0.5	<1.0	<5	<3	<10	5
AUG												
14...		0.220	0.110	18	--	--	--	--	--	--	--	--
14...		0.240	0.110	16	--	--	--	--	--	--	--	--
15...		0.220	0.150	9.4	2	15	<0.5	<1.0	<5	<3	<10	41

COLORADO RIVER BASIN

08156800 SHOAL CREEK AT 12TH STREET, AUSTIN, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
NOV											
08...	--	--	--	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	--	--
08...	<10	9	6	<0.1	<10	<10	<1	<1.0	110	<6	23
08...	--	--	--	--	--	--	--	--	--	--	--
FEB											
25...	<10	27	3	<0.1	<10	<10	<1	<1.0	400	<6	8
AUG											
14...	--	--	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--	--	--
15...	<10	<4	2	<0.1	<10	<10	<1	<1.0	78	<6	10

COLORADO RIVER BASIN

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08157900 TOWN LAKE AT AUSTIN, TX

LOCATION.--Lat 30°14'56", long 97°43'03", Travis County, Hydrologic Unit 12090205, at Longhorn Dam on the Colorado River at Austin, 1.5 mi downstream from Interstate Highway 35, and 2.3 mi southeast of the State Capitol Building in Austin.

DRAINAGE AREA.--39,003 mi², approximately, of which 11,403 mi² probably is noncontributing.

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: February 1975 to current year.

301559097424801 - TOWN LAKE AR

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

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)
OCT							
09...	1240	1.00	877	7.8	24.5	5.6	68
09...	1242	10.0	877	7.8	24.5	5.5	67
09...	1244	22.0	877	7.7	24.5	5.5	67
29...	0938	1.00	812	8.1	25.5	7.9	97
29...	0940	10.0	812	8.0	25.0	7.3	89
29...	0942	21.0	759	7.5	22.0	2.2	25
JAN							
10...	0930	1.00	469	7.9	10.0	9.2	82
10...	0932	10.0	471	7.9	10.0	9.2	82
10...	0934	22.0	552	8.0	9.5	8.8	78
FEB							
26...	0805	1.00	685	7.9	14.5	8.6	85
26...	0807	10.0	685	7.9	14.5	8.6	85
26...	0809	20.0	685	7.9	14.5	8.6	85
APR							
05...	1110	1.00	682	7.8	18.5	7.8	84
05...	1112	10.0	749	7.8	18.5	8.0	87
05...	1114	24.0	831	7.7	17.5	8.0	85
AUG							
14...	0815	1.00	864	7.8	23.5	6.9	83
14...	0817	10.0	866	7.8	23.5	6.5	78
14...	0819	21.0	868	7.7	23.0	5.4	64

301500097424801 - TOWN LAKE AC

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	SAMPLING DEPTH (FEET)	SPECIFIC CONDUCTANCE (US/CM)	PH (STANDARD UNITS)	TEMPERATURE WATER (DEG C)	TRANSPARANCY (SECCHI DISK (M))	TURBIDITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATURATION)	OXYGEN DEMAND, BIO-CHEMICAL, 5 DAY (MG/L)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)
OCT											
09...	1255	1.00	877	7.8	24.5	1.40	3.3	5.2	63	1.3	560
09...	1257	10.0	877	7.8	24.5	--	--	5.2	63	--	--
09...	1259	20.0	877	7.8	24.5	--	--	5.2	63	--	--
09...	1301	29.0	877	7.8	24.5	--	8.3	5.1	62	1.3	--
29...	0950	1.00	809	8.1	25.5	2.00	1.0	8.2	101	1.2	K1
29...	0952	10.0	809	8.1	25.0	--	--	7.8	95	--	--
29...	0954	20.0	763	7.5	22.0	--	--	2.0	23	--	--
29...	0956	29.0	763	7.6	22.0	--	3.8	2.0	23	1.1	--
JAN											
10...	0945	1.00	470	7.9	10.0	0.20	53	9.3	83	0.9	7600
10...	0947	10.0	470	7.9	10.0	--	--	9.2	82	--	--
10...	0949	20.0	550	7.9	9.5	--	--	8.8	78	--	--
10...	0951	29.0	639	7.9	9.5	--	27	8.3	73	0.8	--
FEB											
26...	0820	1.00	682	7.9	15.0	2.40	2.9	8.7	87	1.4	53
26...	0822	10.0	685	7.8	15.0	--	--	8.7	87	--	--
26...	0824	20.0	685	7.8	14.5	--	--	8.1	80	--	--
26...	0826	29.0	692	7.7	14.0	--	25	6.4	62	0.7	--
28...	0810	29.0	--	--	--	--	--	--	--	--	--
APR											
05...	1125	1.00	745	7.8	18.5	0.60	4.3	8.0	86	1.6	4000
05...	1127	10.0	758	7.8	18.5	--	--	7.9	85	--	--
05...	1129	20.0	828	7.9	17.5	--	--	8.0	85	--	--
05...	1131	28.0	833	7.8	17.5	--	1.6	7.8	83	0.7	--
AUG											
14...	0825	1.00	859	7.8	23.5	2.80	1.0	6.8	81	0	56
14...	0827	10.0	861	7.8	23.0	--	--	6.6	78	--	--
14...	0829	20.0	860	7.7	22.5	--	--	6.3	74	--	--
14...	0831	29.0	863	7.7	22.5	--	3.5	6.0	71	0.1	--

COLORADO RIVER BASIN

08157900 TOWN LAKE AT AUSTIN, TX--Continued

301500097424801 - TOWN LAKE AC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	STREP- TOCOCI FECAL, KF AGAR (COLS. PER 100 ML)	ALKA- LITY WAT DIS FIX END CAC03 (MG/L)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, 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)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)
OCT										
09...	340	140	482	11	--	--	<0.010	<0.010	<0.100	<0.100
09...	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--
09...	--	140	490	41	--	--	<0.010	<0.010	<0.100	<0.100
29...	48	150	450	3	--	--	<0.010	<0.010	<0.100	<0.100
29...	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--
29...	--	120	423	2	--	--	<0.010	0.010	<0.100	<0.100
JAN										
10...	84000	100	251	64	0.590	0.590	0.010	0.010	0.600	0.600
10...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--
10...	--	130	357	48	0.280	0.280	0.020	0.020	0.300	0.300
FEB										
26...	K16	200	387	<1	0.410	0.380	0.010	0.010	0.420	0.390
26...	--	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--	--
26...	--	200	397	39	--	0.390	<0.010	0.010	0.400	0.400
28...	--	--	--	--	--	--	--	--	--	--
APR										
05...	6800	140	426	7	0.210	--	0.020	<0.010	0.230	0.230
05...	--	--	--	--	--	--	--	--	--	--
05...	--	--	--	--	--	--	--	--	--	--
05...	--	150	487	4	0.150	--	0.010	<0.010	0.160	0.160
AUG										
14...	40	150	503	12	--	--	<0.010	<0.010	0.095	0.110
14...	--	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--	--
14...	--	150	493	20	--	--	<0.010	<0.010	0.100	0.110
DATE	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- PHORUS ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)	CARBON, ORGANIC TOTAL (MG/L AS C)
OCT										
09...	0.020	0.020	0.48	0.50	<0.010	<0.010	<0.010	<0.010	--	3.7
09...	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--
09...	0.020	0.020	0.48	0.50	<0.010	<0.010	0.010	0.010	0.03	3.7
29...	<0.010	0.010	--	0.30	<0.010	<0.010	<0.010	<0.010	--	3.8
29...	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--
29...	0.110	0.120	0.39	0.50	0.010	<0.010	<0.010	<0.010	--	3.8
JAN										
10...	0.080	0.070	0.62	0.70	0.120	0.060	0.050	0.060	0.15	4.2
10...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--
10...	0.090	0.090	0.41	0.50	0.090	0.030	0.030	0.030	0.09	3.7
FEB										
26...	0.050	0.040	0.35	0.40	0.020	<0.010	<0.010	<0.010	--	3.4
26...	--	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--	--
26...	0.110	0.080	0.19	0.30	0.020	0.010	<0.010	<0.010	--	2.9
28...	--	--	--	--	--	--	--	--	--	--
APR										
05...	0.040	0.040	0.36	0.40	0.060	0.010	<0.010	0.050	--	3.3
05...	--	--	--	--	--	--	--	--	--	--
05...	--	--	--	--	--	--	--	--	--	--
05...	0.040	0.020	0.36	0.40	0.020	<0.010	<0.010	<0.010	--	2.9
AUG										
14...	0.010	0.020	0.29	0.30	<0.010	<0.010	0.010	<0.010	0.03	2.9
14...	--	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--	--
14...	0.040	0.030	0.36	0.40	0.030	<0.010	<0.010	<0.010	--	2.9

COLORADO RIVER BASIN
08157900 TOWN LAKE AT AUSTIN, TX--Continued

301500097424801 - TOWN LAKE AC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	DI-ELDRIN, TOTAL IN BOT-TOM MATERIAL (UG/KG)	ENDO-SULFAN, TOTAL IN BOT-TOM MATERIAL (UG/KG)	ENDRIN, TOTAL IN BOT-TOM MATERIAL (UG/KG)	HEPTA-CHLOR, TOTAL IN BOT-TOM MATERIAL (UG/KG)	HEPTA-CHLOR EPOXIDE TOT. IN BOT-TOM MATERIAL (UG/KG)	LINDANE TOTAL IN BOT-TOM MATERIAL (UG/KG)	METH-OXY-CHLOR, TOTAL IN BOT-TOM MATERIAL (UG/KG)	MIREX, TOTAL IN BOT-TOM MATERIAL (UG/KG)	PER-THANE TOTAL IN BOT-TOM MATERIAL (UG/KG)	TOXA-PHENE, TOTAL IN BOT-TOM MATERIAL (UG/KG)
OCT										
09...	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--
JAN										
10...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--
FEB										
26...	--	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--	--
28...	1.5	<0.1	<0.1	<0.1	0.1	<0.1	<1.0	<0.1	<1.00	<10
APR										
05...	--	--	--	--	--	--	--	--	--	--
05...	--	--	--	--	--	--	--	--	--	--
05...	--	--	--	--	--	--	--	--	--	--
05...	--	--	--	--	--	--	--	--	--	--
AUG										
14...	--	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--	--

301503097424701 - TOWN LAKE AL

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

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)
OCT							
09...	1320	1.00	850	7.8	24.5	5.6	68
09...	1322	10.0	859	7.8	24.5	5.5	67
09...	1324	17.0	859	7.8	24.5	5.4	65
29...	1008	0.0	809	7.8	27.0	6.4	81
29...	1010	1.00	809	7.8	26.5	6.4	80
29...	1012	10.0	809	7.8	25.0	6.3	77
29...	1014	17.0	804	7.6	23.0	3.9	46
JAN							
10...	1005	1.00	484	7.8	12.0	9.0	84
10...	1007	10.0	476	7.9	10.0	9.3	83
10...	1009	17.0	532	7.9	9.5	8.9	79
FEB							
26...	0850	1.00	680	7.8	16.5	8.4	86
26...	0852	10.0	680	7.8	15.0	8.5	85
26...	0854	18.0	680	7.7	14.5	7.2	71
APR							
05...	1150	1.00	653	7.8	18.5	7.4	80
05...	1152	10.0	720	7.8	18.5	7.5	81
05...	1154	18.0	756	7.8	18.0	7.6	81
AUG							
14...	0905	1.00	860	7.9	23.5	7.0	84
14...	0907	10.0	860	7.8	23.0	6.7	79
14...	0909	18.0	859	7.8	23.0	6.5	77

COLORADO RIVER BASIN

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08157900 TOWN LAKE AT AUSTIN, TX--Continued

301500097440801 - TOWN LAKE BR

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

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)
OCT							
09...	1345	1.00	686	7.7	22.5	5.7	66
09...	1347	12.0	686	7.7	22.5	5.7	66
29...	0915	1.00	800	8.1	25.0	8.0	97
29...	0917	12.0	796	7.8	23.0	5.3	62
JAN							
10...	1015	1.00	577	8.0	10.0	9.4	84
10...	1017	14.0	602	8.0	10.0	9.4	84
FEB							
26...	0910	1.00	668	7.7	14.5	7.9	78
26...	0912	10.0	668	7.7	14.5	7.9	78
26...	0914	17.0	668	7.7	14.5	7.7	76
APR							
05...	1205	1.00	487	7.7	18.5	7.1	77
05...	1207	15.0	514	7.7	18.0	7.0	75
AUG							
14...	0915	1.00	860	7.9	23.0	7.0	83
14...	0917	13.0	862	7.8	22.5	6.6	78

301504097440901 - TOWN LAKE BC

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

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)	ARSENIC TOTAL IN BOT- TOM MA- TERIAL (UG/G AS AS)	CADMIUM RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CD)	CHRO- MIUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G)	COPPER, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CU)
OCT											
09...	1330	1.00	679	7.7	22.5	5.7	66	--	--	--	--
09...	1332	10.0	679	7.7	22.5	5.7	66	--	--	--	--
09...	1334	20.0	679	7.8	22.5	5.7	66	--	--	--	--
09...	1336	29.0	679	7.8	22.5	5.6	65	--	--	--	--
29...	0920	1.00	810	8.2	25.0	8.4	102	--	--	--	--
29...	0922	10.0	801	8.1	24.5	8.2	99	--	--	--	--
29...	0924	20.0	798	7.6	22.0	6.1	70	--	--	--	--
29...	0926	29.0	795	7.6	22.0	3.4	39	--	--	--	--
JAN											
10...	1025	1.00	591	8.0	10.0	9.5	85	--	--	--	--
10...	1027	10.0	600	8.0	10.0	9.5	85	--	--	--	--
10...	1029	20.0	609	8.0	10.0	9.5	85	--	--	--	--
10...	1031	29.0	616	8.0	10.0	9.5	85	--	--	--	--
FEB											
26...	0920	1.00	670	7.7	14.5	8.1	80	--	--	--	--
26...	0922	10.0	670	7.7	14.5	8.1	80	--	--	--	--
26...	0924	20.0	661	7.7	14.0	6.9	67	--	--	--	--
26...	0926	30.0	661	7.6	14.0	6.2	60	--	--	--	--
28...	0855	30.0	--	--	--	--	--	7	3	10	30
APR											
05...	1210	1.00	512	7.7	18.0	7.2	77	--	--	--	--
05...	1212	10.0	539	7.7	18.0	7.2	77	--	--	--	--
05...	1214	20.0	549	7.7	18.0	7.2	77	--	--	--	--
05...	1216	29.0	560	7.7	18.0	7.2	77	--	--	--	--
AUG											
14...	0925	1.00	859	7.9	23.5	7.1	85	--	--	--	--
14...	0927	10.0	862	7.8	22.5	6.7	79	--	--	--	--
14...	0929	20.0	863	7.8	22.0	6.6	77	--	--	--	--
14...	0931	29.0	863	7.8	22.0	6.6	77	--	--	--	--

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

[illegible]

COLORADO RIVER BASIN

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08157900 TOWN LAKE AT AUSTIN, TX--Continued

301544097445201 - TOWN LAKE CR

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

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)
OCT							
09...	1440	1.00	812	7.8	23.5	5.5	65
09...	1442	14.0	812	7.7	23.5	5.2	62
29...	0848	1.00	815	8.3	24.0	8.7	104
29...	0850	13.0	807	7.8	22.0	7.2	83
JAN							
10...	1110	1.00	515	7.9	10.5	9.4	85
10...	1112	13.0	709	8.0	9.5	9.3	82
FEB							
26...	0930	1.00	651	7.6	15.0	8.3	83
26...	0932	13.0	651	7.6	15.0	8.3	83
APR							
05...	1220	1.00	533	7.7	18.0	7.6	81
05...	1222	13.0	595	7.7	18.0	7.4	79
AUG							
14...	0945	1.00	860	7.7	22.0	6.1	71
14...	0947	13.0	854	7.8	22.0	6.1	71

301546097445101 - TOWN LAKE CC

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT												
09...	1400	1.00	811	7.7	23.5	0.60	8.2	4.9	58	1.3	K6100	2400
09...	1402	10.0	762	7.7	23.0	--	--	5.4	64	--	--	--
09...	1404	18.0	510	7.8	21.5	--	140	5.8	66	2.9	--	--
29...	0855	1.00	787	8.2	24.0	1.80	2.0	8.8	105	1.2	48	53
29...	0857	10.0	795	8.0	22.0	--	--	8.8	101	--	--	--
29...	0859	18.0	802	7.8	21.5	--	2.0	7.6	87	0.6	--	--
JAN												
10...	1040	1.00	507	7.9	10.5	0.20	40	9.5	86	0.8	1400	18000
10...	1042	10.0	621	8.0	10.0	--	--	9.5	85	--	--	--
10...	1044	18.0	707	8.0	9.5	--	15	9.4	83	0.4	--	--
FEB												
26...	0940	1.00	655	7.6	15.0	2.30	1.5	8.2	82	0.4	81	37
26...	0942	10.0	655	7.6	15.0	--	--	8.4	84	--	--	--
26...	0944	18.0	655	7.6	15.0	--	2.6	8.1	81	0.6	--	--
28...	0930	18.0	--	--	--	--	--	--	--	--	--	--
APR												
05...	1230	1.00	389	7.8	18.0	0.30	6.5	7.8	83	2.7	6200	23000
05...	1232	10.0	673	7.7	18.0	--	--	7.3	78	--	--	--
05...	1234	18.0	675	7.7	17.5	--	13	7.2	76	1.6	--	--
AUG												
14...	0955	1.00	843	7.6	21.5	2.80	1.5	5.9	68	0	310	160
14...	0957	10.0	837	7.6	21.5	--	--	5.9	68	--	--	--
14...	0959	18.0	842	7.6	21.5	--	--	5.9	68	0	--	--

COLORADO RIVER BASIN

08157900 TOWN LAKE AT AUSTIN, TX--Continued

301546097445101 - TOWN LAKE CC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	ALKA- LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, 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)	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)
OCT											
09...	130	463	11	--	--	<0.010	<0.010	0.100	<0.100	0.020	0.021
09...	--	--	--	--	--	--	--	--	--	--	--
09...	90	294	99	0.150	--	0.050	<0.010	0.200	0.200	0.080	0.060
29...	140	467	<1	--	--	<0.010	<0.010	<0.100	<0.100	<0.010	<0.010
29...	--	--	--	--	--	--	--	--	--	--	--
29...	170	463	2	--	0.190	<0.010	0.010	0.200	0.200	0.080	0.070
JAN											
10...	130	293	53	--	--	<0.010	<0.010	0.800	0.800	0.040	0.030
10...	--	--	--	--	--	--	--	--	--	--	--
10...	130	378	11	0.290	0.290	0.010	0.010	0.300	0.300	0.050	0.050
FEB											
26...	210	377	<1	--	0.390	<0.010	0.010	0.500	0.400	0.070	0.060
26...	--	--	--	--	--	--	--	--	--	--	--
26...	210	376	<1	0.490	0.290	0.010	0.010	0.500	0.300	0.080	0.060
28...	--	--	--	--	--	--	--	--	--	--	--
APR											
05...	87	318	23	0.400	0.420	0.030	0.010	0.430	0.430	0.070	0.060
05...	--	--	--	--	--	--	--	--	--	--	--
05...	130	390	16	0.220	--	0.020	<0.010	0.240	0.240	0.080	0.070
AUG											
14...	160	486	5	--	--	<0.010	<0.010	0.170	0.190	0.020	0.020
14...	--	--	--	--	--	--	--	--	--	--	--
14...	160	480	--	--	--	<0.010	<0.010	0.190	0.200	0.020	0.020
DATE	NITRO- GEN, AM- MONIA + 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- PHORUS ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)	CARBON, ORGANIC TOTAL (MG/L AS C)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	ARSENIC TOTAL (UG/L AS AS)
OCT											
09...	0.48	0.50	0.030	0.030	<0.010	<0.010	--	3.8	0.500	<0.100	1
09...	--	--	--	--	--	--	--	--	--	--	--
09...	0.52	0.60	0.110	0.070	0.040	0.100	0.12	6.3	1.10	<0.300	2
29...	--	0.80	0.010	<0.010	<0.010	<0.010	--	4.0	3.80	0.500	--
29...	--	--	--	--	--	--	--	--	--	--	--
29...	0.32	0.40	0.010	<0.010	<0.010	<0.010	--	3.2	1.20	<0.100	--
JAN											
10...	0.46	0.50	0.040	0.020	0.010	0.020	0.03	3.4	0.400	<0.300	<1
10...	--	--	--	--	--	--	--	--	--	--	--
10...	0.55	0.60	0.040	0.040	0.010	0.030	0.03	4.4	--	--	1
FEB											
26...	0.33	0.40	<0.010	<0.010	0.020	<0.010	0.06	2.6	0.300	<0.100	--
26...	--	--	--	--	--	--	--	--	--	--	--
26...	0.32	0.40	0.010	<0.010	<0.010	<0.010	--	2.4	0.300	<0.100	--
28...	--	--	--	--	--	--	--	--	--	--	--
APR											
05...	0.33	0.40	0.090	0.060	0.050	0.050	0.15	5.1	2.20	0.300	<1
05...	--	--	--	--	--	--	--	--	--	--	--
05...	0.32	0.40	0.050	0.040	0.030	0.040	0.09	3.5	0.200	<0.100	<1
AUG											
14...	0.28	0.30	<0.010	<0.010	<0.010	<0.010	--	2.7	0.300	<0.200	--
14...	--	--	--	--	--	--	--	--	--	--	--
14...	0.28	0.30	0.010	<0.010	<0.010	<0.010	--	2.6	0.300	<0.200	--

COLORADO RIVER BASIN

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08157900 TOWN LAKE AT AUSTIN, TX--Continued

301546097445101 - TOWN LAKE CC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	ARSENIC DIS- SOLVED (UG/L AS AS)	ARSENIC TOTAL IN BOT- TOM MA- TERIAL (UG/G AS AS)	CADMIUM DIS- SOLVED (UG/L AS CD)	CADMIUM RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CD)	CHRO- MIUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	COPPER, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	IRON, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS FE)
OCT											
09...	1	--	--	--	--	3	1	--	90	<3	--
09...	--	--	--	--	--	--	--	--	--	--	--
09...	<1	9	--	4	<10	8	1	40	1700	17	6700
29...	1	--	--	--	--	--	4	--	--	<3	--
29...	--	--	--	--	--	--	--	--	--	--	--
29...	1	--	--	--	--	--	1	--	--	13	--
JAN											
10...	<1	--	--	--	--	5	1	--	1200	20	--
10...	--	--	--	--	--	--	--	--	--	--	--
10...	1	--	--	--	--	4	1	--	520	6	--
FEB											
26...	<1	--	--	--	--	--	1	--	--	6	--
26...	--	--	--	--	--	--	--	--	--	--	--
26...	<1	--	--	--	--	--	1	--	--	6	--
28...	--	8	--	4	9	--	--	20	--	--	6600
APR											
05...	1	--	--	--	--	5	1	--	510	10	--
05...	--	--	--	--	--	--	--	--	--	--	--
05...	<1	--	--	--	--	4	1	--	140	11	--
AUG											
14...	1	--	<1.0	--	--	--	2	--	--	3	--
14...	--	--	--	--	--	--	--	--	--	--	--
14...	1	--	<1.0	--	--	--	2	--	--	<3	--
DATE	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LEAD, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS PB)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MANGA- NESE, RECOV. FM BOT- TOM MA- TERIAL (UG/G)	MERCURY RECOV. FM BOT- TOM MA- TERIAL (UG/G AS HG)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)	ZINC, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS ZN)	PCB, TOTAL (UG/L)
OCT											
09...	3	<1	--	30	11	--	--	10	<3	--	<0.1
09...	--	--	--	--	--	--	--	--	--	--	--
09...	8	1	120	100	7	320	0.40	30	5	110	<0.1
29...	--	<1	--	--	1	--	--	--	4	--	--
29...	--	--	--	--	--	--	--	--	--	--	--
29...	--	<1	--	--	35	--	--	--	<3	--	--
JAN											
10...	5	<1	--	40	2	--	--	20	<3	--	--
10...	--	--	--	--	--	--	--	--	--	--	--
10...	2	<1	--	30	3	--	--	<10	<3	--	--
FEB											
26...	--	2	--	--	15	--	--	--	<3	--	--
26...	--	--	--	--	--	--	--	--	--	--	--
26...	--	1	--	--	17	--	--	--	4	--	--
28...	--	--	80	--	--	300	0.06	--	--	80	--
APR											
05...	5	1	--	30	9	--	--	10	4	--	--
05...	--	--	--	--	--	--	--	--	--	--	--
05...	3	1	--	20	12	--	--	<10	8	--	--
AUG											
14...	--	<1	--	--	1	--	--	--	<3	--	--
14...	--	--	--	--	--	--	--	--	--	--	--
14...	--	<1	--	--	3	--	--	--	6	--	--

[illegible][illegible]

08157900 TOWN LAKE AT AUSTIN, TX--Continued

301546097445101 - TOWN LAKE CC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

[illegible]

301550097450001 - MOUTH OF SHOAL CREEK AT TOWN LAKE

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	SAMPLING DEPTH (FEET)	ARSENIC	CADMIUM	CHROMIUM	COPPER	IRON	LEAD	MANGANESE	MERCURY
			TOTAL IN BOT- TOM MA- TERIAL (UG/G AS AS)	RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CD)	RECOV. FM BOT- TOM MA- TERIAL (UG/G)	RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CU)	RECOV. FM BOT- TOM MA- TERIAL (UG/G AS FE)	RECOV. FM BOT- TOM MA- TERIAL (UG/G AS PB)	RECOV. FM BOT- TOM MA- TERIAL (UG/G)	RECOV. FM BOT- TOM MA- TERIAL (UG/G AS HG)
FEB 28...	1000	5.00	10	3	6	30	29000	80	230	0.07
DATE		ZINC, RECOV. FM BOT- TOM MA- TERIAL (UG/G 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)	DDT, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DI- ELDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)
FEB 28...	110	16	<1.0	<10	150	37	21	28	7.4	
DATE		ENDO- SULFAN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	ENDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	HEPTA- CHLOR, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	HEPTA- CHLOR EPOXIDE TOT. IN BOTTOM MATL. (UG/KG)	LINDANE TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	METH- OXY- CHLOR, TOT. IN BOTTOM MATL. (UG/KG)	MIREX, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	PER- THANE TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	TOXA- PHENE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)
FEB 28...		<0.1	<0.1	<10	0.8	<10	<10	<1.0	<1.00	<10

COLORADO RIVER BASIN

08157900 TOWN LAKE AT AUSTIN, TX--Continued

301556097452301 - TOWN LAKE DR

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

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)
OCT							
29...	0825	1.00	808	8.2	22.0	8.6	99
29...	0827	12.0	819	7.6	20.5	6.6	74
JAN							
10...	1125	1.00	490	7.8	11.0	9.3	85
10...	1127	12.0	494	7.8	11.0	9.3	85
FEB							
26...	1000	1.00	630	7.5	15.0	8.0	79
26...	1002	13.0	650	7.6	15.0	7.7	76
APR							
05...	1250	1.00	606	7.7	18.5	7.4	80
05...	1252	13.0	720	7.8	17.5	7.6	80
AUG							
14...	1015	1.00	842	7.6	21.5	5.8	67
14...	1017	13.0	844	7.6	21.5	5.8	67

301558097452201 - TOWN LAKE DC

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
OCT											
09...	1450	1.00	856	7.8	23.5	1.50	2.5	5.3	63	1.1	K1500
09...	1452	10.0	859	7.8	23.5	--	--	5.1	61	--	--
09...	1454	18.0	859	7.8	23.5	--	3.7	5.3	63	0.8	--
29...	0830	1.00	807	8.1	22.0	1.80	1.5	8.9	102	1.6	200
29...	0832	10.0	823	7.8	20.5	--	--	8.0	89	--	--
29...	0834	18.0	823	7.8	20.5	--	1.2	7.5	84	0.6	--
JAN											
10...	1115	1.00	473	7.8	11.0	0.20	47	9.3	85	0.7	8400
10...	1117	10.0	495	7.9	11.0	--	--	9.3	85	--	--
10...	1119	19.0	728	8.0	9.5	--	9.2	9.1	81	0.4	--
FEB											
26...	1004	1.00	625	7.5	15.0	2.90	1.2	8.0	79	0.2	48
26...	1006	10.0	710	7.7	15.0	--	--	8.4	83	--	--
26...	1008	19.0	722	7.6	15.0	--	1.3	8.1	80	0.2	--
28...	1030	19.0	--	--	--	--	--	--	--	--	--
APR											
05...	1300	1.00	609	7.6	18.5	0.40	6.0	7.4	80	1.6	3600
05...	1302	10.0	717	7.8	17.5	--	--	7.8	83	--	--
05...	1304	19.0	739	7.8	17.5	--	4.0	7.7	82	0.9	--
AUG											
14...	1025	1.00	836	7.6	21.5	2.40	1.2	5.8	67	0	190
14...	1027	10.0	853	7.7	21.5	--	--	5.9	68	--	--
14...	1029	19.0	854	7.7	21.5	--	3.0	5.9	68	0.1	--

COLORADO RIVER BASIN

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08157900 TOWN LAKE AT AUSTIN, TX--Continued

301558097452201 - TOWN LAKE DC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	STREP- TOCOCCEI FECAL KF AGAR (COLS. PER 100 ML)	ALKA- LITY WAT DIS FIX END FIELD CAC03 (MG/L)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, 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)
OCT											
09...	480	140	480	5	--	<0.010	<0.100	0.020	0.48	0.50	0.040
09...	--	--	--	--	--	--	--	--	--	--	--
09...	--	140	486	8	--	<0.010	<0.100	0.020	0.48	0.50	<0.010
29...	46	160	450	3	--	<0.010	0.100	<0.010	--	0.40	<0.010
29...	--	--	--	--	--	--	--	--	--	--	--
29...	--	160	464	<1	--	<0.010	0.100	0.050	0.35	0.40	<0.010
JAN											
10...	44000	130	267	74	0.590	0.010	0.600	0.030	0.47	0.50	0.050
10...	--	--	--	--	--	--	--	--	--	--	--
10...	--	140	414	14	--	<0.010	0.300	0.060	0.64	0.70	0.030
FEB											
26...	46	220	359	<1	--	<0.010	0.500	0.040	0.36	0.40	<0.010
26...	--	--	--	--	--	--	--	--	--	--	--
26...	--	200	413	<1	--	<0.010	0.300	0.120	2.6	2.7	0.010
28...	--	--	--	--	--	--	--	--	--	--	--
APR											
05...	6100	140	365	13	0.320	0.020	0.340	0.040	0.36	0.40	0.050
05...	--	--	--	--	--	--	--	--	--	--	--
05...	--	130	428	7	0.170	0.020	0.190	0.060	0.34	0.40	0.030
AUG											
14...	93	170	479	28	--	<0.010	0.230	0.020	0.28	0.30	<0.010
14...	--	--	--	--	--	--	--	--	--	--	--
14...	--	150	491	19	--	<0.010	0.130	0.020	0.28	0.30	0.010

DATE	PHOS- PHORUS ORTHO TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC TOTAL IN BOT- TOM MA- TERIAL (UG/G AS AS)	CADMIUM RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CD)	CHRO- MIUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G)	COPPER, DIS- SOLVED (UG/L AS CU)	COPPER, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CU)	IRON, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	LEAD, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS PB)
OCT										
09...	<0.010	3.7	--	--	--	1	--	--	<1	--
09...	--	--	--	--	--	--	--	--	--	--
09...	0.010	4.1	--	--	--	1	--	--	1	--
29...	<0.010	4.0	--	--	--	3	--	--	2	--
29...	--	--	--	--	--	--	--	--	--	--
29...	<0.010	3.2	--	--	--	1	--	--	<1	--
JAN										
10...	0.010	5.7	--	--	--	3	--	--	1	--
10...	--	--	--	--	--	--	--	--	--	--
10...	0.010	4.9	--	--	--	1	--	--	2	--
FEB										
26...	<0.010	2.0	--	--	--	1	--	--	2	--
26...	--	--	--	--	--	--	--	--	--	--
26...	<0.010	2.8	--	--	--	1	--	--	1	--
28...	--	--	6	5	6	--	20	4400	--	50
APR										
05...	0.030	3.7	--	--	--	2	--	--	2	--
05...	--	--	--	--	--	--	--	--	--	--
05...	0.030	3.3	--	--	--	1	--	--	1	--
AUG										
14...	<0.010	2.6	--	--	--	2	--	--	<1	--
14...	--	--	--	--	--	--	--	--	--	--
14...	<0.010	2.7	--	--	--	1	--	--	<1	--

WATER QUALITY DATA. WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

[illegible]

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	SAMPLING DEPTH (FEET)	ARSENIC	CADMIUM	CHROMIUM	COPPER	IRON	LEAD	MANGANESE	MERCURY
			TOTAL IN BOTTOM MATERIAL (UG/G AS AS)	RECOVERED FM BOTTOM MATERIAL (UG/G AS CD)	RECOVERED FM BOTTOM MATERIAL (UG/G)	RECOVERED FM BOTTOM MATERIAL (UG/G AS CU)	RECOVERED FM BOTTOM MATERIAL (UG/G AS FE)	RECOVERED FM BOTTOM MATERIAL (UG/G AS PB)	RECOVERED FM BOTTOM MATERIAL (UG/G)	RECOVERED FM BOTTOM MATERIAL (UG/G AS HG)
FEB 28...	1100	10.0	7	2	6	10	6400	40	770	0.03
DATE		ZINC RECOVERED FM BOTTOM MATERIAL (UG/G AS ZN)	PCB TOTAL IN BOTTOM MATERIAL (UG/KG)	PCN TOTAL IN BOTTOM MATERIAL (UG/KG)	ALDRIN TOTAL IN BOTTOM MATERIAL (UG/KG)	CHLORDANE TOTAL IN BOTTOM MATERIAL (UG/KG)	DDD TOTAL IN BOTTOM MATERIAL (UG/KG)	DDE TOTAL IN BOTTOM MATERIAL (UG/KG)	DDT TOTAL IN BOTTOM MATERIAL (UG/KG)	DI-ELDRIN TOTAL IN BOTTOM MATERIAL (UG/KG)
FEB 28...		50	13	<1.0	<1.0	18	5.8	12	5.6	1.8

08157900 TOWN LAKE AT AUSTIN, TX--Continued

301650097453501 - TOWN LAKE AT MOPAC BRIDGE--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	ENDO-SULFAN, TOTAL IN BOT-TOM MATERIAL (UG/KG)	ENDRIN, TOTAL IN BOT-TOM MATERIAL (UG/KG)	HEPTA-CHLOR, TOTAL IN BOT-TOM MATERIAL (UG/KG)	HEPTA-CHLOR EPOXIDE TOT. IN BOTTOM MATL. (UG/KG)	LINDANE TOTAL IN BOT-TOM MATERIAL (UG/KG)	METH-OXY-CHLOR, TOT. IN BOTTOM MATL. (UG/KG)	MIREX, TOTAL IN BOT-TOM MATERIAL (UG/KG)	PER-THANE TOTAL IN BOT-TOM MATERIAL (UG/KG)	TOXA-PHENE, TOTAL IN BOT-TOM MATERIAL (UG/KG)
FEB 28...	<0.1	<0.1	<0.1	0.2	<0.1	<1.0	<0.1	<1.00	<10

301712097470701 - TOWN LAKE EC

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

									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)	
DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)					
OCT													
09...	1320	1.00	883	7.9	24.5	3.20	1.2	5.8	70	1.0	40	K16	
09...	1322	16.0	880	7.9	24.5	--	1.3	5.8	70	1.1	--	--	
29...	0750	1.00	796	7.5	20.5	3.50	0.60	7.9	88	0.7	K6	K16	
29...	0752	10.0	796	7.5	20.5	--	--	7.6	85	--	--	--	
29...	0754	17.0	806	7.7	20.0	--	1.0	6.3	70	0.5	--	--	
JAN													
10...	1150	1.00	767	7.6	11.0	1.50	4.5	8.7	80	0.2	400	4700	
10...	1152	16.0	828	8.0	9.5	--	2.0	9.1	81	0.1	--	--	
FEB													
26...	1030	1.00	753	7.4	15.0	4.80	0.90	7.8	78	0.1	K3	K16	
26...	1032	10.0	783	7.6	14.5	--	--	8.0	79	--	--	--	
26...	1034	17.0	798	7.6	14.0	--	1.2	8.2	80	0.2	--	--	
APR													
05...	1325	1.00	821	7.8	17.5	2.70	1.0	8.0	85	0.6	56	91	
05...	1327	10.0	843	8.0	17.0	--	--	8.0	84	--	--	--	
05...	1329	17.0	846	7.9	17.0	--	1.5	8.0	84	0.5	--	--	
AUG													
14...	1055	1.00	869	7.9	23.0	2.30	1.3	6.7	80	0	K11	110	
14...	1057	10.0	869	7.9	23.0	--	--	6.7	80	--	--	--	
14...	1059	16.0	868	7.8	23.0	--	1.6	6.7	80	0	--	--	
DATE		ALKA- LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
OCT													
09...	140	503	10	--	--	<0.010	<0.010	<0.100	<0.100	<0.010	<0.010	--	--
09...	140	494	9	--	--	<0.010	<0.010	<0.100	<0.100	<0.010	<0.010	--	--
29...	180	450	<1	--	0.290	<0.010	0.010	0.300	0.300	0.030	0.030	0.37	0.37
29...	--	--	--	--	--	--	--	--	--	--	--	--	--
29...	180	452	<1	0.290	--	0.010	<0.010	0.300	0.300	0.060	0.050	0.24	0.24
JAN													
10...	160	441	7	--	0.290	<0.010	0.010	0.400	0.300	0.030	0.040	0.47	0.47
10...	140	474	6	--	0.090	<0.010	0.010	0.100	0.100	0.050	0.050	0.75	0.75
FEB													
26...	200	422	<1	--	--	<0.010	<0.010	0.600	0.500	0.060	0.040	0.24	0.24
26...	--	--	--	--	--	--	--	--	--	--	--	--	--
26...	180	451	<1	--	--	<0.010	<0.010	0.300	0.200	0.080	0.070	0.42	0.42
APR													
05...	160	468	<1	--	--	<0.010	<0.010	0.220	0.220	0.030	0.020	0.27	0.27
05...	--	--	--	--	--	--	--	--	--	--	--	--	--
05...	140	480	3	--	--	<0.010	<0.010	0.120	0.120	0.050	0.030	0.25	0.25
AUG													
14...	150	492	13	--	--	<0.010	<0.010	0.055	0.060	0.010	0.010	0.29	0.29
14...	--	--	--	--	--	--	--	--	--	--	--	--	--
14...	150	503	19	--	--	<0.010	<0.010	0.066	0.079	0.010	0.010	0.29	0.29

COLORADO RIVER BASIN

08157900 TOWN LAKE AT AUSTIN, TX--Continued

301712097470701 - TOWN LAKE EC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	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- PHORUS ORTHO TOTAL (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)	CARBON, ORGANIC TOTAL (MG/L AS C)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	COPPER, DIS- SOLVED (UG/L AS CU)	LEAD, DIS- SOLVED (UG/L AS PB)
OCT											
09...	0.50	<0.010	<0.010	0.010	0.010	0.03	3.6	1.10	<0.100	1	1
09...	0.40	<0.010	0.020	0.010	0.010	0.03	3.6	1.40	0.100	2	1
29...	0.40	<0.010	<0.010	<0.010	<0.010	--	2.6	0.200	<0.100	1	1
29...	--	--	--	--	--	--	--	--	--	--	--
29...	0.30	0.010	0.010	<0.010	0.010	--	2.6	0.100	<0.100	<1	<1
JAN											
10...	0.50	0.020	0.010	<0.010	0.010	--	5.0	0.100	<0.100	2	6
10...	0.80	<0.010	0.010	<0.010	<0.010	--	3.6	--	--	7	<1
FEB											
26...	0.30	<0.010	<0.010	0.010	<0.010	0.03	2.7	0.200	<0.100	1	11
26...	--	--	--	--	--	--	--	--	--	--	--
26...	0.50	<0.010	0.020	<0.010	<0.010	--	3.6	0.200	<0.100	1	1
APR											
05...	0.30	<0.010	<0.010	<0.010	0.010	--	2.6	0.700	<0.100	1	1
05...	--	--	--	--	--	--	--	--	--	--	--
05...	0.30	<0.010	0.010	<0.010	0.020	--	3.1	0.200	<0.100	1	2
AUG											
14...	0.30	<0.010	<0.010	<0.010	<0.010	--	2.9	0.500	<0.200	1	<1
14...	--	--	--	--	--	--	--	--	--	--	--
14...	0.30	<0.010	0.020	<0.010	<0.010	--	2.9	0.400	<0.200	2	<1

301601097454001 - TOWN LAKE FC

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

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)
OCT							
09...	1510	2.00	638	7.4	21.0	5.2	59
29...	0818	2.00	735	7.2	20.5	4.7	52
JAN							
10...	1135	1.50	395	7.7	12.0	9.2	86
FEB							
26...	1020	2.00	581	7.4	16.0	8.5	86
APR							
05...	1315	1.50	404	7.4	19.5	7.0	77
AUG							
14...	1045	1.50	647	7.4	22.0	6.9	80

COLORADO RIVER MAIN STEM

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08158000 COLORADO RIVER AT AUSTIN, TX
(National stream-quality accounting network)

LOCATION.--Lat 30°14'40", long 97°41'39", Travis County, Hydrologic Unit 12090205, on right bank 1,000 ft upstream from upstream bridge on U.S. Highway 183 in Austin, 1.4 mi downstream from Longhorn Dam, and at mile 290.3.

DRAINAGE AREA.--39,009 mi², approximately, of which 11,403 mi² probably is noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February 1898 to current year. Records of daily discharge for Dec. 13-26, 1914, and Feb. 9-17, 1915, published in WSP 408, have been found unreliable and should not be used.

REVISED RECORDS.--WSP 508: 1915(m). WSP 528: 1900(M), 1918(m). WSP 548: 1901-16. WSP 1342: Drainage area. WSP 1562: 1908, 1929(M), 1936.

GAGE.--Water-stage recorder. Datum of gage is 402.27 ft above National Geodetic Vertical Datum of 1929. Prior to June 19, 1939, all records collected at or near Congress Avenue bridge 3.9 mi upstream at datum 19.6 ft higher; prior to June 18, 1915, nonrecording gages, recording gages thereafter; June 20, 1939, to Oct. 16, 1963, at site 1,000 ft downstream from present site at datum 5.0 ft higher.

REMARKS.--No estimated daily discharges. Records fair. Since 1937, at least 10 percent of drainage area has been regulated by upstream reservoirs. Flow largely regulated by Lake Travis (station 08154500). The city of Austin diverts water for municipal use upstream from station and returns sewage effluent downstream. There are many other diversions above Lake Buchanan for irrigation, municipal supplies, and oil field operations. Gage-height telemeter at station.

AVERAGE DISCHARGE.--38 years (water years 1899-1936) unregulated, 2,711 ft³/s (1,964,000 acre-ft/yr); 55 years (water years 1937-91) regulated, 1,918 ft³/s (1,390,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 481,000 ft³/s June 15, 1935 (gage height, 50 ft, present site and datum, from floodmark); minimum daily, 2.4 ft³/s Feb. 28, 1984.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1833, 51 ft July 7, 1869, present site and datum (adjusted to present site on basis of record for flood of June 15, 1935), determined from information concerning stage at former site furnished by Dean T. U. Taylor.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 13,700 ft³/s Jan. 9 at 1330 hours (gage height, 13.20 ft); minimum daily, 17 ft³/s Oct. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1470	129	95	24	172	221	736	1690	1900	2460	1550	1910
2	1460	178	102	835	168	187	612	1970	1940	2400	2090	2360
3	1400	165	111	69	165	170	663	1930	2280	2510	2220	1550
4	1190	286	51	58	868	168	1030	2090	1980	2510	2200	1140
5	1200	100	114	64	545	163	1710	1780	1930	1970	2190	1710
6	1230	48	123	59	277	174	306	2850	1980	2210	2250	1150
7	1220	38	107	49	397	156	942	3440	1070	2170	2080	1000
8	1220	964	112	44	297	587	778	4290	2000	2360	2310	973
9	1580	90	114	4460	260	671	780	3840	2150	1990	2040	1250
10	1130	28	243	929	349	796	732	3630	2190	1990	2410	791
11	132	33	218	460	209	816	249	3660	2680	1980	2070	1470
12	55	40	62	219	194	817	209	3670	2170	1980	1840	1450
13	30	43	65	191	231	1310	777	1590	1930	2000	2030	1460
14	21	28	33	1240	283	1700	1510	1130	2150	1970	2240	1460
15	517	20	37	1750	379	1740	371	1320	2320	1990	4400	672
16	390	20	43	1820	418	1380	289	1290	2570	1810	1730	2240
17	59	19	402	1730	333	1270	698	1790	3170	2070	2100	1440
18	29	19	156	2190	466	1750	1280	1810	3670	1770	2060	1550
19	40	18	371	984	777	1740	2950	1810	2160	2290	1450	1470
20	21	21	47	393	941	1580	2570	1800	2110	1310	1110	1660
21	193	38	494	212	904	1700	2540	1800	2120	1510	1840	1630
22	48	51	608	334	604	1720	1720	1400	2160	1780	1680	1640
23	49	62	28	205	186	1690	205	1390	2150	1760	1850	530
24	37	44	20	399	203	1690	426	1340	2130	1830	1860	977
25	19	20	20	191	157	1700	193	1490	3640	1830	1840	1440
26	18	19	102	204	175	1700	235	1530	4380	1560	1850	1520
27	18	58	28	199	196	1700	231	1510	4410	1570	1860	474
28	18	63	49	193	187	1710	250	1560	3290	1550	1860	864
29	18	59	139	186	---	1700	1690	1850	3170	1560	1870	870
30	17	70	22	181	---	1680	1690	1880	2510	1550	1880	1280
31	18	---	22	180	---	1680	---	1860	---	1520	1970	---
TOTAL	14847	2771	4138	20052	10341	36066	28372	64990	74310	59760	62730	39931
MEAN	479	92.4	133	647	369	1163	946	2096	2477	1928	2024	1331
MAX	1580	964	608	4460	941	1750	2950	4290	4410	2510	4400	2360
MIN	17	18	20	24	157	156	193	1130	1070	1310	1110	474
AC-FT	29450	5500	8210	39770	20510	71540	56280	128900	147400	118500	124400	79200
CAL YR 1990	TOTAL	354567	MEAN	971	MAX	3440	MIN	17	AC-FT	703300		
WTR YR 1991	TOTAL	418308	MEAN	1146	MAX	4460	MIN	17	AC-FT	829700		

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

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.--

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum daily, 25.0°C Oct. 6, 7; minimum daily, 7.0°C Dec. 31.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	HARD- NESS NONCARB DISSOLV FLD. AS CACO3 (MG/L)	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)	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3	ALKA- LINITY WAT DIS TOT IT FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
DEC 03...	69	53	21	53	2	0.60	0	184	151	65	86
JAN 15...	75	61	20	44	1	3.5	0	195	160	67	77
APR 24...	100	58	26	69	2	4.8	0	184	150	100	120
JUL 30...	110	59	28	76	2	5.2	0	186	152	94	130
SEP 03...	93	52	24	61	2	4.9	--	--	--	84	110

[illegible]

COLORADO RIVER MAIN STEM

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08158000 COLORADO RIVER AT AUSTIN, TX--Continued
(National stream-quality accounting network)

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
DEC 03...	2.2	72	10	1	73	<0.5	<1.0	<1	<3	4	7
JAN 15...	43	71	<10	<1	65	<0.5	<1.0	<1	<3	7	9
APR 24...	2.5	63	<10	<1	89	<0.5	<1.0	1	<3	1	5
JUL 30...	23	76	<10	<1	96	<0.5	<1.0	<1	<3	12	3
SEP 03...	--	--	--	--	--	--	--	--	--	--	--

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 03...	5	16	11	0.1	<10	2	<1	<1.0	810	<6	11
JAN 15...	4	13	8	<0.1	<10	2	<1	<1.0	530	<6	11
APR 24...	1	14	12	<0.1	<10	<1	<1	<1.0	650	<6	8
JUL 30...	3	14	6	<0.1	<10	1	<1	<1.0	690	<6	15
SEP 03...	--	--	--	--	--	--	--	--	--	--	--

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1990 TO SEPTEMBER 1991

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. 1990	14847	883	484	19400	130	5080	99	3950	250
NOV. 1990	2771	755	415	3100	93	697	72	542	240
DEC. 1990	4138	840	460	5140	110	1280	89	998	250
JAN. 1991	20052	729	400	21700	87	4720	68	3670	240
FEB. 1991	10341	688	378	10600	78	2170	60	1680	240
MAR. 1991	36066	849	465	45300	120	11400	91	8890	250
APR. 1991	28372	800	439	33600	100	8010	81	6230	250
MAY 1991	64990	848	465	81500	120	20500	91	15900	250
JUNE 1991	74310	867	475	95300	120	24500	95	19100	250
JULY 1991	59760	863	472	76200	120	19500	94	15200	250
AUG. 1991	62730	828	454	76900	110	18900	87	14700	250
SEPT 1991	39931	812	445	48000	110	11600	83	8980	250
TOTAL	418308	**	**	517000	**	128000	**	99800	**
WTD.AVG.	1146	835	458	**	110	**	88	**	250

COLORADO RIVER MAIN STEM

08158000 COLORADO RIVER AT AUSTIN, TX--Continued
(National stream-quality accounting network)

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY EQUIVALENT MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	898	809	743	868	644	670	868	860	867	864	836	816
2	895	807	745	820	650	673	863	867	873	875	854	838
3	894	e800	754	770	659	663	858	843	872	857	852	826
4	897	e810	755	781	681	654	837	838	850	858	859	821
5	902	817	777	778	655	685	770	859	866	850	858	801
6	895	e800	789	775	638	705	728	841	879	868	859	796
7	892	795	813	770	604	720	700	856	838	873	862	807
8	860	750	824	775	684	690	768	803	840	860	810	820
9	876	600	827	800	654	800	797	821	871	875	830	822
10	875	630	830	700	613	837	827	850	876	858	864	800
11	887	649	843	577	643	838	776	850	862	872	858	700
12	882	690	854	599	681	840	736	856	850	871	863	818
13	885	685	841	602	583	826	763	844	837	869	855	821
14	858	712	843	750	655	859	721	830	851	870	858	819
15	855	721	854	806	685	862	674	827	884	859	754	828
16	847	727	839	750	655	837	696	846	872	864	700	818
17	866	719	850	700	746	844	688	859	841	879	818	819
18	864	723	841	653	728	857	788	865	869	854	816	820
19	858	732	853	652	703	872	840	855	868	841	813	819
20	849	722	869	663	764	857	800	845	864	878	773	815
21	810	730	868	656	758	851	851	854	850	882	797	814
22	780	735	876	661	708	865	846	846	e870	848	814	815
23	791	728	882	701	701	862	773	840	884	851	820	810
24	836	719	872	676	688	838	788	853	886	844	818	786
25	820	721	851	649	660	872	753	848	884	879	828	814
26	813	724	850	648	665	864	783	859	865	826	845	820
27	816	724	853	680	678	877	766	860	885	863	839	819
28	817	e730	862	670	694	872	711	862	878	857	844	805
29	812	733	848	700	---	876	800	874	875	865	838	809
30	821	741	864	673	---	872	850	870	e870	866	847	811
31	820	---	862	659	---	871	---	874	---	867	823	---
MEAN	854	733	833	708	674	810	781	850	866	863	829	811

e Estimated

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23.0	20.5	---	9.5	11.5	16.0	15.5	20.0	22.0	20.0	24.5	23.5
2	24.5	20.5	18.5	10.5	13.0	16.5	16.5	22.0	22.0	21.0	23.5	24.0
3	24.5	---	15.5	10.0	13.5	15.5	16.5	20.5	21.5	22.0	23.5	23.0
4	24.0	---	14.5	9.0	14.5	16.0	17.0	20.5	23.0	21.0	23.0	23.5
5	24.5	16.5	13.0	10.0	14.5	16.5	18.0	19.5	21.5	21.0	22.0	23.0
6	25.0	---	14.0	13.0	15.5	17.0	18.5	19.5	21.5	21.5	22.0	23.0
7	25.0	18.5	12.0	10.5	14.5	17.0	18.5	18.0	24.0	21.0	23.0	23.0
8	23.0	19.5	17.0	10.5	14.5	17.0	19.0	17.0	21.5	21.0	23.0	22.0
9	20.0	14.5	12.0	10.5	14.0	15.5	19.5	17.0	21.0	22.0	23.5	23.5
10	20.5	14.0	12.0	10.5	14.5	16.0	19.5	18.0	21.5	21.5	22.0	23.5
11	20.0	14.5	14.0	10.5	15.5	16.0	22.0	18.0	22.0	21.5	23.5	24.0
12	20.0	16.5	15.5	12.0	15.5	16.5	22.0	19.5	20.5	21.5	23.0	23.5
13	20.0	16.5	15.0	11.0	16.5	16.0	22.0	19.0	21.0	22.0	22.0	24.0
14	21.5	15.5	15.5	12.0	17.0	16.0	20.5	19.5	21.0	23.0	21.5	24.0
15	23.0	16.5	16.5	10.5	15.5	15.5	19.5	19.5	20.5	23.5	23.0	24.5
16	22.0	16.5	15.5	10.5	15.0	15.0	20.5	20.0	21.5	23.5	23.0	23.5
17	---	18.5	18.5	11.0	15.0	15.5	21.5	19.5	22.0	24.0	23.0	24.0
18	21.5	19.5	16.0	---	16.0	15.5	21.5	19.5	22.0	23.0	23.5	24.5
19	19.5	19.0	14.5	---	15.5	15.5	21.0	20.5	22.0	23.0	23.5	23.5
20	20.5	21.5	15.5	10.5	14.0	15.0	21.5	21.5	21.5	22.0	24.5	21.0
21	16.5	20.5	18.0	11.5	14.5	16.0	21.0	21.0	21.5	24.0	23.5	21.5
22	17.0	20.5	11.0	11.5	14.0	16.0	20.5	20.5	---	23.5	23.5	22.0
23	17.0	20.5	8.5	12.0	14.5	15.5	19.0	20.5	20.5	23.5	24.0	22.0
24	18.5	18.0	8.0	11.5	14.5	15.5	20.5	21.0	21.0	23.0	23.0	22.0
25	18.5	20.0	9.5	11.5	16.0	16.5	21.0	20.5	22.0	23.5	23.5	20.5
26	19.0	20.5	10.0	11.0	14.5	17.0	23.0	21.0	21.5	23.5	23.5	20.5
27	19.5	21.0	10.0	12.0	15.0	17.0	23.0	21.5	21.0	23.5	23.0	21.0
28	20.0	---	10.5	11.5	15.0	17.0	21.5	22.0	20.0	23.5	23.0	21.0
29	20.0	16.5	13.0	14.0	---	16.0	23.0	21.5	20.0	23.5	23.5	21.5
30	20.0	15.5	11.0	12.0	---	16.0	19.5	21.5	---	23.5	22.0	21.0
31	20.5	---	7.0	12.0	---	16.0	---	21.0	---	24.0	23.5	---
MEAN	20.9	18.1	13.4	11.1	14.8	16.1	20.1	20.0	21.5	22.5	23.1	22.7

COLORADO RIVER BASIN

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08158600 WALNUT CREEK AT WEBBERVILLE ROAD, AUSTIN, TX

LOCATION.--Lat 30°16'59", long 97°39'17", Travis County, Hydrologic Unit 12090205, on left bank 190 ft downstream from bridge on Farm Road 969, 0.8 mi downstream from Little Walnut Creek, 2.8 mi upstream from Colorado River, 5.2 mi east of the State Capitol Building in Austin, and 2.8 mi upstream from mouth.

DRAINAGE AREA.--51.3 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1966 to current year.

GAGE.--Water-stage recorder. Datum of gage is 425.96 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records fair. No known regulation or diversion. An automatic water-quality sampler installed Feb. 22, 1989. Gage-height and rainfall telemeter at station.

AVERAGE DISCHARGE.--25 years, 26.0 ft³/s (6.88 in/yr), 18,840 acres-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,300 ft³/s May 25, 1981 (gage height, 27.24 ft); no flow at times in 1967, 1971, and 1982-84.
Maximum stage since at least 1891, that of May 25, 1981.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 15, 1935, reached a stage of 24 ft, backwater from Colorado River. A flood in 1919 reached a stage of 22 ft, from information by local residents.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 8	1630	2,220	13.52	July 4	0645	2,010	12.94
Jan. 9	1415	6,340	21.82	Aug. 14	2215	2,330	13.82
Apr. 14	0715	1,940	12.74	Aug. 15	0245	*6,860	*22.65
May 8	0900	2,070	13.11				

Minimum daily discharge, 2.1 ft³/s Aug. 8-10.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.0	4.5	8.2	8.9	27	53	13	13	8.9	9.1	2.9	44
2	3.7	4.5	8.2	234	26	28	11	17	8.6	8.1	2.6	111
3	3.7	4.2	7.7	53	25	24	11	19	40	16	2.6	73
4	3.7	39	7.3	26	302	23	61	126	28	230	2.6	19
5	3.7	14	6.9	28	71	23	389	31	9.9	20	2.6	40
6	3.7	8.2	6.9	34	54	23	58	17	8.5	11	2.6	55
7	3.7	7.2	6.9	22	45	22	78	14	76	9.3	2.2	35
8	3.7	401	6.9	19	40	21	36	381	19	68	2.1	16
9	197	47	7.4	2010	36	21	29	59	43	14	2.1	13
10	13	19	7.6	244	34	20	27	34	18	7.3	2.1	9.9
11	7.6	15	7.6	88	31	20	25	28	28	6.5	46	9.0
12	6.6	12	7.6	62	29	20	24	25	59	6.1	4.4	8.5
13	5.4	11	7.6	47	27	19	45	22	17	5.8	2.9	8.2
14	4.9	11	7.6	43	25	19	258	21	12	5.7	137	8.2
15	4.9	10	7.6	35	24	27	43	19	10	5.5	1180	9.5
16	4.8	9.3	7.6	27	24	61	34	18	22	4.9	30	9.6
17	12	9.0	7.6	26	24	33	30	19	44	4.6	16	8.0
18	5.5	8.6	53	424	30	20	53	27	14	4.5	11	6.3
19	4.6	8.6	11	82	86	19	39	27	11	3.8	8.9	30
20	4.1	8.4	9.2	58	28	18	25	17	8.9	4.0	8.1	15
21	97	13	8.7	47	39	17	24	14	8.6	4.1	7.5	9.3
22	22	70	8.2	42	115	16	22	13	8.6	4.1	6.4	7.6
23	8.8	35	7.8	38	38	16	21	14	8.3	4.1	6.4	9.3
24	7.4	14	7.0	109	34	15	18	12	7.6	3.2	6.0	9.4
25	6.0	11	6.9	44	32	15	17	108	7.6	2.9	5.3	8.4
26	5.3	10	16	39	30	14	16	17	7.0	2.9	4.7	6.5
27	4.5	10	15	36	27	13	16	14	6.4	3.1	4.5	5.8
28	4.5	9.8	9.7	33	32	16	25	11	6.2	3.3	4.5	5.1
29	4.5	8.4	9.3	30	---	25	27	13	74	7.6	4.5	4.9
30	4.5	8.2	9.2	42	---	14	15	11	16	5.5	4.3	4.9
31	4.5	---	8.9	31	---	13	---	9.3	---	3.7	40	---
TOTAL	469.3	840.9	307.1	4061.9	1335	688	1490	1170.3	636.1	488.7	1562.8	599.4
MEAN	15.1	28.0	9.91	131	47.7	22.2	49.7	37.8	21.2	15.8	50.4	20.0
MAX	197	401	53	2010	302	61	389	381	76	230	1180	111
MIN	3.7	4.2	6.9	8.9	24	13	11	9.3	6.2	2.9	2.1	4.9
AC-FT	931	1670	609	8060	2650	1360	2960	2320	1260	969	3100	1190
CFSM	.30	.55	.19	2.55	.93	.43	.97	.74	.41	.31	.98	.39
IN.	.34	.61	.22	2.95	.97	.50	1.08	.85	.46	.35	1.13	.43

CAL YR 1990	TOTAL	8210.40	MEAN	22.5	MAX	1100	MIN	.85	AC-FT	16290	CFSM	.44	IN.	5.95
WTR YR 1991	TOTAL	13649.5	MEAN	37.4	MAX	2010	MIN	2.1	AC-FT	27070	CFSM	.73	IN.	9.90

COLORADO RIVER BASIN

08158600 WALNUT CREEK AT WEBBERVILLE ROAD, AUSTIN, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: April 1976 to current year. Pesticide analyses: November 1976 to September 1986. Sediment analyses: December 1977 to July 1982. Radiochemical analyses: January 1980.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI, FECAL, KF AGAR (COLS. PER 100 ML)
NOV												
08...	0655	208	350	--	--	13	120	--	--	11	8000	32000
08...	0725	242	331	7.6	--	--	--	--	--	--	--	--
08...	0755	238	316	--	--	10	130	--	--	8.4	11000	26000
08...	0825	218	289	--	--	--	--	--	--	--	--	--
08...	0925	187	208	--	--	200	130	--	--	7.2	12000	36000
FEB												
27...	0800	27	733	7.8	11.0	1	2.0	10.3	94	0.3	21	36
MAY												
28...	1255	11	625	8.0	25.5	4	2.0	7.7	96	0.3	110	160
AUG												
14...	0920	2.6	670	7.8	26.5	7	2.0	5.9	75	2.6	620	1500
15...	0350	5330	129	7.6	--	90	420	--	--	6.4	46000	140000

DATE	HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	SULFATE DIS-SOLVED (MG/L AS S04)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)
NOV											
08...	--	--	--	--	--	--	--	--	--	--	--
08...	130	36	46	4.0	16	0.6	2.6	95	24	28	0.20
08...	--	--	--	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	--	--
FEB											
27...	310	120	110	8.2	36	0.9	2.5	190	85	73	0.30
MAY											
28...	--	--	--	--	--	--	--	--	--	--	--
AUG											
14...	190	100	52	14	56	2	4.4	84	86	110	0.60
15...	53	5	19	1.4	3.7	0.2	2.8	48	13	3.2	0.10

DATE	SILICA, DIS-SOLVED (MG/L AS SI02)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L)	RESIDUE FIXED NON FILTER-ABLE (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)
NOV											
08...	--	--	322	81	241	0.260	0.040	0.300	0.170	1.2	1.4
08...	3.3	181	--	--	--	--	--	--	--	--	--
08...	--	--	348	97	251	0.270	0.030	0.300	0.100	0.50	0.60
08...	--	--	--	--	--	--	--	--	--	--	--
08...	--	--	294	81	213	0.250	0.050	0.300	0.100	0.80	0.90
FEB											
27...	2.6	433	2	2	0	1.58	0.020	1.60	0.060	0.24	0.30
MAY											
28...	--	--	2	3	0	0.620	0.010	0.630	0.020	3.8	3.8
AUG											
14...	7.0	381	3	3	0	0.270	0.020	0.290	0.020	0.18	0.20
15...	3.5	76	8	8	0	0.370	0.020	0.390	0.040	0.76	0.80

DATE	PHOS-PHORUS TOTAL (MG/L AS P)	PHOS-PHORUS ORTHO 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)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)
NOV											
08...	0.150	0.060	12	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	--	--
08...	0.090	0.050	11	--	--	--	--	--	--	--	--
08...	--	--	--	3	30	<0.5	<1.0	<5	<3	<10	15
08...	0.300	0.090	10	--	--	--	--	--	--	--	--
FEB											
27...	0.040	0.020	3.0	<1	74	<0.5	<1.0	<5	<3	<10	17
MAY											
28...	0.030	0.040	2.5	--	--	--	--	--	--	--	--
AUG											
14...	0.100	0.070	3.0	2	56	0.8	<1.0	<5	<3	<10	10
15...	0.140	0.050	24	2	17	<0.5	<1.0	<5	<3	<10	54

COLORADO RIVER BASIN

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08158600 WALNUT CREEK AT WEBBERVILLE ROAD, AUSTIN, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
NOV											
08...	--	--	--	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	--	--
08...	<10	8	1	<0.1	<10	20	<1	<1.0	210	<6	4
08...	--	--	--	--	--	--	--	--	--	--	--
FEB											
27...	<10	18	4	<0.1	<10	<10	<1	<1.0	640	<6	<3
MAY											
28...	--	--	--	--	--	--	--	--	--	--	--
AUG											
14...	<10	18	12	<0.1	10	<10	<1	<1.0	490	<6	<3
15...	<10	<4	2	<0.1	<10	<10	<1	<1.0	150	<6	<3

COLORADO RIVER MAIN STEM

08158650 COLORADO RIVER BELOW AUSTIN, TX

LOCATION.--Lat 30°12'28", long 97°38'15". Travis County, Hydrologic Unit 12090205, at bridge on Farm Road 973, 0.3 mi northeast of intersection of State Highway 71 and Farm Road 973, 8.8 mi downstream from Govalle Sewage Treatment Plant outfall, and 9.6 mi downstream from gaging station at Austin.

PERIOD OF RECORD.--Chemical and biochemical analyses: February 1968 to current year. Pesticide analyses: February 1975 to September 1986.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

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 (PER-CENT SATURATION)	OXYGEN DEMAND, BIO-CHEMICAL, 5 DAY (MG/L)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREPTOCOCCI, FECAL, KF AGAR (COLS./100 ML)
DEC 03...	1420	828	8.2	17.0	2	6.2	10.2	106	1.2	K15	33
JAN 15...	1335	660	7.2	12.0	8	10	10.5	99	0.5	54	45
APR 24...	1545	905	8.2	25.0	6	6.4	11.4	141	0.4	40	26
JUL 30...	1255	863	8.0	26.5	3	0.20	9.0	113	0.7	K6	88
DATE	HARDNESS TOTAL (MG/L AS CaCO3)	HARDNESS NONCARBONIC, DIS-SOLVED (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, WAT DIS-FIX END 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)
DEC 03...	220	83	52	21	77	2	3.5	130	85	110	0.40
JAN 15...	230	80	63	18	41	1	3.5	150	60	73	<0.10
APR 24...	260	110	67	23	76	2	6.2	150	100	130	0.40
JUL 30...	260	130	59	28	80	2	5.2	140	97	130	0.30
DATE	SILICA, DIS-SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS-SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUSPENDED (MG/L)	RESIDUE VOLATILE, SUSPENDED (MG/L)	RESIDUE FIXED NON-FILTERABLE (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)
DEC 03...	7.5	438	5	<1	--	4.16	0.040	4.20	0.100	0.90	1.0
JAN 15...	7.7	357	26	12	14	1.19	0.010	1.20	0.060	0.54	0.60
APR 24...	8.6	504	11	7	4	3.37	0.030	3.40	0.170	0.83	1.0
JUL 30...	7.1	490	<1	<1	--	--	<0.010	0.760	0.030	0.27	0.30
DATE	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO 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)	BERYLLIUM, 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 03...	1.70	1.60	4.7	1	61	<0.5	<1.0	<5	<3	<10	10
JAN 15...	0.150	0.140	3.6	--	--	--	--	--	--	--	--
APR 24...	0.970	0.930	4.0	1	87	<0.5	<1.0	<5	<3	<10	3
JUL 30...	0.220	0.190	3.2	1	95	0.6	<1.0	<5	<3	<10	21
DATE	LEAD, DIS-SOLVED (UG/L AS Pb)	LITHIUM, DIS-SOLVED (UG/L AS Li)	MANGANESE, DIS-SOLVED (UG/L AS Mn)	MERCURY, DIS-SOLVED (UG/L AS Hg)	MOLYBDENUM, DIS-SOLVED (UG/L AS Mo)	NICKEL, DIS-SOLVED (UG/L AS Ni)	SELENIUM, DIS-SOLVED (UG/L AS Se)	SILVER, DIS-SOLVED (UG/L AS Ag)	STRONTIUM, DIS-SOLVED (UG/L AS Sr)	VANADIUM, DIS-SOLVED (UG/L AS V)	ZINC, DIS-SOLVED (UG/L AS Zn)
DEC 03...	10	17	12	0.1	<10	<10	<1	<1.0	650	<6	12
JAN 15...	--	--	--	--	--	--	--	--	--	--	--
APR 24...	<10	16	23	<0.1	10	<10	<1	<1.0	600	<6	15
JUL 30...	<10	14	7	<0.1	<10	<10	<1	2.0	670	<6	58

COLORADO RIVER BASIN

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08158700 ONION CREEK NEAR DRIFTWOOD, TX

LOCATION.--Lat 30 04'59", long 98 00'29", Hays County, Hydrologic Unit 12090205, on left bank at upstream side of low-water crossing on Farm Road 150, 3.2 mi southeast of Driftwood, and 10 mi west of Buda.

DRAINAGE AREA.--124 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1958, November 1961 to June 1979 (periodic discharge measurements only), July 1979 to current year.

GAGE.--Water-stage recorder. Datum of gage is 878.13 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records fair above 10 ft³/s, and poor below. One recording rain gage in the watershed above station.

AVERAGE DISCHARGE.--12 years, 44.2 ft³/s (4.84 in/yr), 32,020 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,990 ft³/s June 6, 1985 (gage height, 16.38 ft); no flow for several days in August and September 1984 and Oct. 1-10, 1984. Flood of Mar. 20, 1979, reached a stage of 11.48 ft (discharge, 4,980 ft³/s), on basis of peak flow over dam, 1.5 mi downstream.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 9	1345	826	5.87	Sept. 2	1745	1,140	6.31
Apr. 14	1130	*1,580	*6.80	Sept. 19	0530	730	5.71

Minimum daily discharge, 0.10 ft³/s Oct. 1-9.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	.10	.15	.44	.68	61	80	35	101	46	33	7.3	8.8		
2	.10	.15	.44	6.4	62	75	35	102	43	30	6.9	88		
3	.10	.15	.63	7.9	64	67	35	110	46	29	6.7	23		
4	.10	.18	.66	7.0	217	64	35	104	58	29	5.3	14		
5	.10	.19	.66	8.8	202	65	211	151	45	31	4.9	11		
6	.10	.19	.66	11	163	63	171	103	41	26	4.9	10		
7	.10	.19	.66	11	146	60	207	91	47	23	5.2	8.3		
8	.10	1.9	.63	11	135	58	187	217	51	24	5.2	7.2		
9	1.7	2.6	.54	340	126	56	158	218	42	27	6.5	6.1		
10	.73	.80	.54	218	118	55	142	168	41	26	6.1	4.5		
11	.28	1.0	.54	116	107	54	138	156	40	22	5.7	5.4		
12	.24	1.0	.57	83	103	54	130	143	65	20	5.2	5.0		
13	.22	.96	.66	64	101	50	127	135	56	21	4.8	4.6		
14	.19	.92	.80	54	93	48	588	126	45	19	5.0	11		
15	.19	.96	1.2	44	86	51	273	121	41	21	58	11		
16	.19	.96	.99	36	82	58	224	119	42	19	14	11		
17	.20	.96	.76	32	85	68	223	120	67	17	14	11		
18	.14	.92	.54	169	85	59	283	108	55	16	14	12		
19	.12	.80	.54	146	118	55	223	102	44	15	14	215		
20	.12	.80	.54	114	96	52	199	100	38	14	12	53		
21	.18	.80	.54	91	90	51	188	93	35	15	12	37		
22	.19	.80	.54	89	90	49	181	88	34	12	11	32		
23	.19	.80	.54	82	83	45	164	82	43	13	11	95		
24	.19	.80	.54	104	82	44	153	77	43	12	10	81		
25	.19	.80	.62	93	81	43	147	74	40	11	9.2	65		
26	.19	.66	.86	87	80	45	138	68	41	11	8.3	51		
27	.15	.66	.96	87	77	44	134	62	34	11	7.5	45		
28	.15	.66	.96	84	75	40	130	57	31	9.8	7.0	40		
29	.15	.55	1.0	80	---	40	130	54	32	11	6.9	37		
30	.15	.44	1.0	70	---	38	109	53	35	14	6.5	35		
31	.15	---	.80	64	---	36	---	49	---	8.8	6.1	---		
TOTAL	7.00	22.75	21.36	2410.78	2908	1667	5098	3352	1321	590.6	301.2	1037.9		
MEAN	.23	.76	.69	77.8	104	53.8	170	108	44.0	19.1	9.72	34.6		
MAX	1.7	2.6	1.2	340	217	80	588	218	67	33	58	215		
MIN	.10	.15	.44	.68	61	36	35	49	31	8.8	4.8	4.5		
AC-FT	14	45	42	4780	5770	3310	10110	6650	2620	1170	597	2060		
CFSM	.00	.01	.01	.63	.84	.43	1.37	.87	.36	.15	.08	.28		
IN.	.00	.01	.01	.72	.87	.50	1.53	1.01	.40	.18	.09	.31		
CAL YR 1990	TOTAL	3944.30	MEAN	10.8	MAX	608	MIN	.10	AC-FT	7820	CFSM	.09	IN.	1.18
WTR YR 1991	TOTAL	18737.59	MEAN	51.3	MAX	588	MIN	.10	AC-FT	37170	CFSM	.41	IN.	5.62

COLORADO RIVER BASIN

08158700 ONION CREEK NEAR DRIFTWOOD, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: January 1974 to current year. Pesticide analyses: January 1978 to September 1986. Radiochemical analyses: January 1980.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCHI, KF AGAR (COLS. PER 100 ML)
JAN 10...	1455	174	361	7.8	12.0	25	20	10.4	--	0.9	2600	22000
FEB 04...	1020	231	456	8.3	13.5	7	10	9.8	96	0.6	2200	3200
26...	0810	69	498	7.5	12.5	<1	4.5	10.8	103	0.2	92	72
MAY 28...	1105	49	490	7.8	25.0	2	0.40	9.0	112	0.2	38	43
AUG 13...	0845	5.1	455	7.8	28.0	6	0.30	6.8	89	2.0	36	600
15...	1410	27	482	7.9	--	12	5.2	--	--	2.8	880	92
DATE		HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	SULFATE DIS-SOLVED (MG/L AS S04)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)
JAN 10...		190	36	59	9.7	5.6	0.2	1.8	150	22	13	0.20
FEB 04...		240	37	75	12	6.7	0.2	1.2	200	27	15	0.10
26...		250	37	77	15	7.9	0.2	0.90	220	34	17	<0.10
MAY 28...		--	--	--	--	--	--	--	--	--	--	--
AUG 13...		230	58	62	18	10	0.3	1.1	170	40	16	0.20
15...		240	48	71	15	7.7	0.2	1.7	190	41	17	0.20
DATE		SILICA, DIS-SOLVED (MG/L AS SI02)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L)	RESIDUE FIXED NON FILTER-ABLE (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)
JAN 10...		7.8	210	27	12	15	--	<0.010	0.700	0.020	0.48	0.50
FEB 04...		7.4	265	19	9	10	0.390	0.010	0.400	<0.010	--	0.40
26...		7.0	289	<1	<1	--	--	<0.010	0.300	0.020	0.28	0.30
MAY 28...		--	--	<1	<1	--	--	<0.010	0.095	<0.010	--	0.40
AUG 13...		13	263	<1	<1	--	--	0.010	<0.050	<0.010	--	<0.20
15...		9.6	279	11	11	0	--	<0.010	0.054	0.020	0.28	0.30
DATE		PHOS-PHORUS TOTAL (MG/L AS P)	PHOS-PHORUS ORTHO 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)	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)
JAN 10...		0.040	0.010	3.8	<1	24	<0.5	<1.0	<5	<3	<10	16
FEB 04...		<0.010	0.020	2.7	<1	25	<0.5	<1.0	<5	<3	<10	12
26...		<0.010	<0.010	1.4	<1	27	<0.5	<1.0	<5	<3	<10	3
MAY 28...		<0.010	<0.010	1.2	--	--	--	--	--	--	--	--
AUG 13...		<0.010	<0.010	1.7	<1	34	<0.5	<1.0	30	<3	<10	4
15...		0.020	<0.010	2.5	<1	31	<0.5	<1.0	<5	<3	<10	6
DATE		LEAD, DIS-SOLVED (UG/L AS PB)	LITHIUM DIS-SOLVED (UG/L AS LI)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	STRON-TIUM, DIS-SOLVED (UG/L AS SR)	VANA-DIUM, DIS-SOLVED (UG/L AS V)	ZINC, DIS-SOLVED (UG/L AS ZN)
JAN 10...		<10	5	3	<0.1	<10	<10	<1	<1.0	160	<6	4
FEB 04...		<10	6	4	<0.1	<10	<10	<1	<1.0	210	<6	<3
26...		<10	6	3	<0.1	<10	<10	<1	<1.0	240	<6	<3
MAY 28...		--	--	--	--	--	--	--	--	--	--	--
AUG 13...		<10	5	2	<0.1	<10	<10	<1	<1.0	370	<6	4
15...		<10	5	<1	<0.1	<10	<10	<1	<1.0	380	<6	<3

COLORADO RIVER BASIN

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08158810 BEAR CREEK BELOW FARM ROAD 1826 NEAR DRIFTWOOD, TX

LOCATION.--Lat 30°09'19", long 97°56'23", Hays County, Hydrologic Unit 12090205, 0.8 mi southeast of Farm Road 1826 and 5.9 mi northeast of Driftwood.

DRAINAGE AREA.--12.2 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1978 to July 1979 (periodic discharge measurements only), October 1978 to June 1979 (peak discharges above base only), July 1979 to current year.

GAGE.--Water-stage recorder. Datum of gage is 860 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good. One rain gage in the watershed.

AVERAGE DISCHARGE.--12 years, 5.60 ft³/s (6.23 in/yr), 4,060 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,330 ft³/s June 11, 1981 (gage height, 13.05 ft, from floodmarks), from slope-area measurements of peak flow; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 9, 1919, reached a stage of 16.2 ft (discharge unknown) and was the highest since at least 1924, from information by local resident. A flood in 1915 was 2 ft higher than the 1939 flood, from information by local resident.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 9	1300	*307	*4.58				

Minimum daily discharge, no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	.00	.00	.00	.00	12	15	6.1	12	5.4	2.7	.48	.75		
2	.00	.00	.00	.02	12	14	6.2	12	5.2	2.3	.48	2.0		
3	.00	.00	.00	2.0	12	12	5.9	14	6.1	6.5	.38	2.2		
4	.00	.00	.00	1.4	38	12	10	20	6.3	3.6	.38	1.4		
5	.00	.00	.00	1.2	25	12	79	18	4.9	2.7	.30	1.1		
6	.00	.00	.00	1.2	23	11	31	13	4.8	2.5	.29	1.2		
7	.00	.00	.00	1.2	20	11	50	12	5.1	2.3	.22	1.1		
8	.00	.01	.00	1.2	18	11	38	48	4.6	2.6	.19	1.1		
9	.03	.01	.00	91	18	10	33	29	4.6	2.2	.09	1.1		
10	.00	.00	.00	26	17	9.0	29	25	4.5	1.8	.07	1.1		
11	.00	.00	.00	17	15	8.9	29	22	4.9	1.5	.07	1.1		
12	.00	.00	.00	14	15	9.6	26	20	7.4	1.5	.06	1.1		
13	.00	.00	.00	13	14	10	24	19	5.3	1.5	.07	1.1		
14	.00	.00	.00	11	12	8.9	62	17	4.6	1.4	1.7	1.8		
15	.00	.00	.00	10	11	8.9	32	16	4.2	1.2	11	2.5		
16	.00	.00	.00	8.8	11	9.7	29	15	4.1	.97	1.1	2.2		
17	.00	.00	.00	8.1	11	11	30	15	4.3	1.1	.78	2.0		
18	.00	.00	.00	36	11	9.0	32	13	3.9	1.1	.75	2.3		
19	.00	.00	.00	23	15	8.9	30	13	3.9	.80	.71	4.7		
20	.00	.00	.00	20	11	8.5	26	12	3.7	.80	.65	4.9		
21	.01	.00	.00	17	15	8.5	24	11	3.5	.80	.61	4.9		
22	.00	.00	.00	16	15	8.2	23	10	3.4	.80	.48	4.8		
23	.00	.00	.00	15	13	7.4	20	8.1	3.7	.92	.62	5.0		
24	.00	.00	.00	20	12	7.4	20	8.1	3.3	.81	.66	5.2		
25	.00	.00	.00	17	14	7.4	19	7.7	3.2	.70	.69	4.4		
26	.00	.00	.00	17	14	7.4	16	7.4	2.9	.70	.60	4.3		
27	.00	.00	.00	17	13	7.2	16	6.8	2.7	.68	.48	4.2		
28	.00	.00	.00	15	14	6.5	15	6.0	2.6	.64	.57	4.1		
29	.00	.00	.00	15	---	6.4	14	5.7	2.9	.60	.48	3.8		
30	.00	.00	.00	13	---	6.4	12	5.8	3.0	.59	.30	3.8		
31	.00	---	.00	13	---	6.2	---	5.5	---	.44	.46	---		
TOTAL	0.04	0.02	0.00	461.12	431	289.4	787.2	447.1	129.0	48.75	25.72	81.25		
MEAN	.001	.001	.000	14.9	15.4	9.34	26.2	14.4	4.30	1.57	.83	2.71		
MAX	.03	.01	.00	91	38	15	79	48	7.4	6.5	11	5.2		
MIN	.00	.00	.00	.00	11	6.2	5.9	5.5	2.6	.44	.06	.75		
AC-FT	.08	.04	.00	915	855	574	1560	887	256	97	51	161		
CFSM	.00	.00	.00	1.22	1.26	.77	2.15	1.18	.35	.13	.07	.22		
IN.	.00	.00	.00	1.41	1.31	.88	2.40	1.36	.39	.15	.08	.25		
CAL YR 1990	TOTAL	326.44	MEAN	.89	MAX	58	MIN	.00	AC-FT	647	CFSM	.07	IN.	1.00
WTR YR 1991	TOTAL	2700.60	MEAN	7.40	MAX	91	MIN	.00	AC-FT	5360	CFSM	.61	IN.	8.23

COLORADO RIVER BASIN

08158810 BEAR CREEK BELOW FARM ROAD 1826 NEAR DRIFTWOOD, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: March 1978 to current year. Pesticide analyses: June 1978 to September 1986. Radiochemical analyses: January 1980.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECA, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI, KF AGAR (COLS. PER 100 ML)
JAN 10...	1400	28	353	8.0	11.0	25	20	10.4	96	0.9	K1900	8000
FEB 04...	0930	105	573	8.2	14.5	6	6.3	9.5	96	0.7	460	2200
26...	0920	13	590	8.0	11.5	1	1.0	10.9	102	0.2	54	41
MAY 29...	1145	5.9	558	8.0	27.0	4	1.0	9.0	116	0.3	25	190
AUG 13...	0942	0.05	552	7.6	27.5	7	1.0	4.9	64	2.2	K10	84
15...	1330	11	217	7.6	--	80	25	--	--	5.5	K9000	4500
DATE		HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	SULFATE DIS-SOLVED (MG/L AS S04)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)
JAN 10...		180	35	55	9.4	6.0	0.2	2.2	140	22	13	0.20
FEB 04...		280	56	89	15	11	0.3	1.0	230	41	23	0.10
26...		290	55	91	16	12	0.3	0.80	240	46	28	0.10
MAY 29...		--	--	--	--	--	--	--	--	--	--	--
AUG 13...		270	46	76	20	14	0.4	0.90	230	30	29	0.20
15...		100	12	33	5.1	3.0	0.1	2.5	92	13	5.6	0.10
DATE		SILICA, DIS-SOLVED (MG/L AS SI02)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L)	RESIDUE FIXED NON-FILTER-ABLE (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)
JAN 10...		8.0	200	27	14	13	--	<0.010	0.400	0.020	0.28	0.30
FEB 04...		6.8	324	20	6	14	--	<0.010	0.500	<0.010	--	0.40
26...		6.5	343	<1	<1	--	--	<0.010	0.400	0.020	--	<0.20
MAY 29...		--	--	<1	<1	--	--	<0.010	<0.050	0.020	0.48	0.50
AUG 13...		16	322	<1	<1	--	--	0.010	<0.050	<0.010	--	<0.20
15...		6.8	124	15	15	0	0.130	0.040	0.170	0.020	0.58	0.60
DATE		PHOS-PHORUS TOTAL (MG/L AS P)	PHOS-PHORUS ORTHO 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)	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)
JAN 10...		0.030	<0.010	5.1	<1	25	<0.5	<1.0	<5	<3	<10	15
FEB 04...		<0.010	0.020	2.5	<1	27	<0.5	<1.0	<5	<3	<10	5
26...		<0.010	<0.010	2.1	<1	30	<0.5	<1.0	<5	<3	<10	4
MAY 29...		<0.010	<0.010	1.7	--	--	--	--	--	--	--	--
AUG 13...		<0.010	<0.010	1.9	<1	37	<0.5	<1.0	<5	<3	<10	5
15...		0.070	<0.010	9.0	<1	20	<0.5	<1.0	<5	<3	<10	70
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)
JAN 10...		<10	5	3	<0.1	<10	<10	<1	<1.0	84	<6	<3
FEB 04...		<10	9	10	<0.1	<10	<10	<1	<1.0	170	<6	3
26...		<10	6	4	<0.1	<10	<10	<1	<1.0	180	<6	<3
MAY 29...		--	--	--	--	--	--	--	--	--	--	--
AUG 13...		<10	5	19	<0.1	<10	<10	<1	<1.0	180	<6	4
15...		<10	<4	3	<0.1	<10	<10	<1	<1.0	60	<6	5

COLORADO RIVER BASIN

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08158840 SLAUGHTER CREEK AT FARM ROAD 1826 NEAR AUSTIN, TX

LOCATION.--Lat 30°12'32", long 97°54'11", Travis County, Hydrologic Unit 12090205, 1.7 mi south of the intersection on U.S. Highway 290 and Farm Road 1826, and 11.9 mi southwest of the State Capitol Building in Austin.

DRAINAGE AREA.--8.24 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1978 to current year.

GAGE.--Water-stage recorder. Datum of gage is 876.14 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. No known regulation or diversion. Recording rain gage in the watershed.

AVERAGE DISCHARGE.--13 years (water years 1979-91), 5.18 ft³/s (8.54 in/yr), 3,750 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,080 ft³/s June 11, 1981 (gage height, 10.79 ft); no flow at times most years.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
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Apr. 14	0545	*328	*5.38				
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Minimum discharge, no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	9.4	14	2.3	5.3	2.2	1.2	.22	.49
2	.00	.00	.00	.41	9.2	11	2.3	5.5	2.1	.94	.22	2.4
3	.00	.00	.00	.00	9.2	9.2	1.8	6.4	2.9	.80	.22	2.7
4	.00	.12	.00	.00	37	8.7	3.5	7.6	3.1	.80	.22	1.6
5	.00	.00	.00	.00	20	8.2	53	8.0	2.3	.80	.22	1.4
6	.00	.00	.00	.00	15	7.7	17	5.2	2.1	.73	.17	1.9
7	.00	.00	.00	.00	12	7.1	45	4.8	2.9	.53	.17	1.9
8	.00	.56	.00	.00	11	6.6	26	38	2.3	.60	.17	1.7
9	.38	.00	.00	67	10	6.1	18	17	2.1	.68	.17	1.7
10	.00	.00	.00	26	8.9	5.9	15	13	2.1	.52	.17	1.7
11	.00	.00	.00	12	8.2	5.9	15	12	2.8	.43	.17	1.6
12	.00	.00	.00	10	7.9	5.5	13	10	16	.39	.17	1.8
13	.00	.00	.00	8.4	7.8	4.8	11	8.9	2.8	.35	.17	1.7
14	.00	.00	.00	7.4	7.2	4.3	62	8.2	1.9	.34	5.9	2.3
15	.00	.00	.00	5.7	6.6	4.1	22	7.8	1.6	.30	42	2.6
16	.00	.00	.00	4.9	6.5	5.9	17	7.3	1.5	.26	1.2	2.0
17	.00	.00	.00	4.2	7.0	6.4	15	6.9	2.2	.26	.33	1.9
18	.00	.00	.00	42	7.5	4.7	27	6.1	1.7	.26	.26	4.3
19	.00	.00	.00	23	13	4.3	30	6.1	1.4	.26	.26	21
20	.00	.00	.00	15	8.5	3.5	17	5.6	1.3	.26	.26	13
21	.24	.00	.00	13	14	3.5	15	4.9	1.2	.26	.26	9.4
22	.00	.00	.00	12	13	3.3	13	4.5	1.1	.72	.26	7.6
23	.00	.00	.00	12	12	2.8	10	4.2	1.7	.29	.31	7.0
24	.00	.00	.00	20	10	2.8	9.7	3.7	1.2	.26	.29	7.3
25	.00	.00	.00	15	14	2.7	9.0	3.5	1.1	.26	.29	6.6
26	.00	.00	.00	13	12	2.7	8.2	3.2	1.1	.26	.29	5.5
27	.00	.00	.00	12	11	2.5	7.6	2.8	.96	.26	.29	4.8
28	.00	.00	.00	11	12	2.6	7.5	2.5	.88	.26	.30	4.3
29	.00	.00	.00	11	---	2.6	7.0	2.5	1.6	.26	.30	3.8
30	.00	.00	.00	9.9	---	2.3	5.8	2.4	1.5	.22	.34	3.8
31	.00	---	.00	9.8	---	2.3	---	2.3	---	.22	.79	---
TOTAL	0.62	0.68	0.00	364.71	319.9	164.0	505.7	226.2	69.64	13.98	56.39	129.79
MEAN	.020	.023	.000	11.8	11.4	5.29	16.9	7.30	2.32	.45	1.82	4.33
MAX	.38	.56	.00	67	37	14	62	38	16	1.2	.42	.21
MIN	.00	.00	.00	.00	6.5	2.3	1.8	2.3	.88	.22	.17	.49
AC-FT	1.2	1.3	.00	723	635	325	1000	449	138	28	112	257
CFSM	.00	.00	.00	1.43	1.39	.64	2.05	.89	.28	.05	.22	.53
IN.	.00	.00	.00	1.65	1.44	.74	2.28	1.02	.31	.06	.25	.59
CAL YR 1990	TOTAL	198.69	MEAN	.54	MAX	79	MIN	.00	AC-FT	394	CFSM	.07
WTR YR 1991	TOTAL	1851.61	MEAN	5.07	MAX	67	MIN	.00	AC-FT	3670	CFSM	.62
										IN.	.90	
										IN.	8.36	

08158840 SLAUGHTER CREEK AT FARM ROAD 1826 NEAR AUSTIN, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: June 1983 to current year. Pesticide analyses: June 1983 to September 1986.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPECIFIC CONDUCTANCE (US/CM)	PH (STANDARD UNITS)	TEMPERATURE WATER (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PERCENT SATURATION)	OXYGEN DEMAND, BIO-CHEMICAL, 5 DAY (MG/L)	COLIFORM, 0.7 UM-MF (COLS./100 ML)	STREPTOCOCCI, FECAL, KF AGAR (COLS. PER 100 ML)
JAN 10...	0855	27	400	--	10.0	42	16	--	--	1.1	4300	9200
FEB 04...	0900	59	772	8.2	13.0	13	14	9.8	96	1.3	1000	17000
26...	1035	13	920	7.4	11.0	5	2.1	10.7	99	0.3	K72	140
MAY 28...	1215	2.6	820	7.7	25.0	3	1.4	8.1	100	0.3	28	21
AUG 13...	1020	0.01	736	7.7	27.0	10	1.2	5.8	75	3.7	190	1700
15...	1310	3.3	327	7.6	--	90	18	--	--	5.2	20000	K54000
DATE		HARDNESS TOTAL (MG/L AS CaCO3)	HARDNESS NONCARBONIC FLD. AS CaCO3 (MG/L)	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 WAT DIS-FIX END FIELD CaCO3 (MG/L)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLORIDE DIS-SOLVED (MG/L AS Cl)	FLUORIDE DIS-SOLVED (MG/L AS F)
JAN 10...		180	63	53	12	13	0.4	2.5	120	45	26	0.20
FEB 04...		340	150	100	23	32	0.8	1.5	200	99	70	0.20
26...		390	140	110	28	38	0.8	0.80	250	120	87	<0.10
MAY 28...		--	--	--	--	--	--	--	--	--	--	--
AUG 13...		330	110	90	25	25	0.6	0.60	220	68	67	0.20
15...		140	27	42	9.2	10	0.4	2.6	120	33	23	0.10
DATE		SILICA, DIS-SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS-SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUSPENDED (MG/L)	RESIDUE VOLATILE, SUSPENDED (MG/L)	RESIDUE FIXED NON-FILTERABLE (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)
JAN 10...		6.1	229	25	10	15	0.590	0.010	0.600	0.030	0.67	0.70
FEB 04...		6.4	449	26	8	18	0.680	0.020	0.700	0.010	0.39	0.40
26...		5.2	537	<1	<1	--	--	<0.010	0.400	0.020	--	<0.20
MAY 28...		--	--	<1	<1	--	0.065	0.010	0.075	0.020	0.78	0.80
AUG 13...		12	422	1	<1	--	--	0.010	<0.050	<0.010	--	0.50
15...		7.5	197	22	22	0	0.170	0.040	0.210	0.030	0.87	0.90
DATE		PHOSPHORUS TOTAL (MG/L AS P)	PHOSPHORUS ORTHO 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)	BERYLLIUM, 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)
JAN 10...		0.050	0.020	6.5	<1	22	<0.5	<1.0	<5	<3	<10	28
FEB 04...		0.030	0.030	4.2	<1	41	<0.5	<1.0	<5	<3	<10	13
26...		<0.010	<0.010	2.9	<1	41	<0.5	<1.0	<5	<3	<10	5
MAY 28...		<0.010	<0.010	1.6	--	--	--	--	--	--	--	--
AUG 13...		0.010	<0.010	3.5	<1	47	0.8	1.0	<5	<3	<10	8
15...		0.060	<0.010	9.5	<1	24	<0.5	<1.0	<5	<3	<10	57
DATE		LEAD, DIS-SOLVED (UG/L AS Pb)	LITHIUM DIS-SOLVED (UG/L AS Li)	MANGANESE, DIS-SOLVED (UG/L AS Mn)	MERCURY DIS-SOLVED (UG/L AS Hg)	MOLYBDENUM, DIS-SOLVED (UG/L AS Mo)	NICKEL, DIS-SOLVED (UG/L AS Ni)	SELENIUM, DIS-SOLVED (UG/L AS Se)	SILVER, DIS-SOLVED (UG/L AS Ag)	STRONTIUM, DIS-SOLVED (UG/L AS Sr)	VANADIUM, DIS-SOLVED (UG/L AS V)	ZINC, DIS-SOLVED (UG/L AS Zn)
JAN 10...		<10	6	2	<0.1	<10	<10	<1	<1.0	110	<6	3
FEB 04...		<10	8	8	<0.1	<10	<10	<1	<1.0	240	<6	14
26...		<10	8	4	<0.1	<10	<10	<1	<1.0	280	<6	3
MAY 28...		--	--	--	--	--	--	--	--	--	--	--
AUG 13...		<10	6	7	<0.1	<10	<10	<1	2.0	290	<6	<3
15...		<10	<4	6	<0.1	<10	<10	<1	<1.0	97	<6	8

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LOCATION.--Lat 30°06'06", long 97°51'36", Travis County, Hydrologic Unit 12090205, at downstream side of bridge on U.S. Highway 290 in Oak Hill, 0.8 mi east of the intersection of U.S. Highway 290 and State Highway 71, and 7.7 mi southwest of the State Capitol Building in Austin.

DRAINAGE AREA.--6.30 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1974 to February 1977 (periodic discharge measurements only), January 1978 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 798.68 ft above National Geodetic Vertical Datum of 1929 (levels from city of Austin bench mark).

REMARKS.--No estimated daily discharges. Records fair. Station is equipped with an automatic water-quality sampler. Recording rain gage in the watershed above this station (discontinued Sept. 30, 1989).

AVERAGE DISCHARGE.--13 years, 4.31 ft³/s (9.29 in/yr), 3.120 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,170 ft³/s June 11, 1981 (gage height, 8.55 ft), from rating curve extended above 105 ft³/s on basis of slope-area measurement of peak flow; no flow for many days each year.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 9	0745	545	4.33	June 11	1545	752	4.72
Jan. 9	1130	752	4.72	Aug. 15	0200	*1,030	*5.17
Apr. 14	0545	797	4.80				

Minimum daily discharge, no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	4.4	8.5	2.4	3.9	.55	.69	.00	.00
2	.00	.00	.00	29	4.2	6.7	2.6	5.1	.48	.52	.00	8.1
3	.00	.00	.00	2.0	3.7	6.0	2.4	4.7	11	.63	.00	.77
4	.00	5.4	.00	.65	40	6.0	24	10	1.9	.63	.00	.00
5	.00	.03	.00	.80	13	5.8	64	5.2	.68	.63	.00	.00
6	.00	.00	.00	1.4	9.8	5.7	12	3.4	.54	.63	.00	.14
7	.00	.00	.00	.53	7.9	5.4	32	3.1	18	.53	.00	.03
8	.00	32	.00	.38	6.9	5.6	14	68	.96	.53	.00	.00
9	36	1.7	.00	218	6.1	5.5	11	24	.75	.26	.00	.00
10	.01	.20	.00	38	5.5	5.7	8.7	15	.77	.15	.00	.00
11	.00	.02	.00	12	5.3	5.8	9.0	12	51	.08	.00	.00
12	.00	.02	.00	7.6	5.4	5.5	7.7	9.2	31	.01	.00	.00
13	.00	.01	.00	5.8	4.7	5.2	7.6	7.8	4.4	.00	.00	.00
14	.00	.00	.00	4.8	4.4	4.8	76	7.0	2.5	.00	12	4.5
15	.00	.00	.00	4.0	4.0	5.4	12	6.3	1.9	.00	107	.22
16	.00	.00	.00	3.3	3.9	7.6	9.8	7.6	4.7	.00	.21	.00
17	.00	.00	.00	2.9	3.9	5.1	8.8	5.2	5.3	.00	.00	.00
18	.00	.00	.00	48	6.6	4.5	40	4.1	1.9	.00	.00	.00
19	.00	.00	.00	15	8.7	4.4	26	6.0	1.7	.00	.00	.04
20	.00	.00	.00	9.1	4.9	4.2	13	3.3	1.7	.00	.00	.03
21	7.6	.00	.00	6.8	18	4.2	11	2.4	1.7	.00	.00	.00
22	.19	.01	.00	6.1	10	3.8	9.0	2.0	1.8	.00	.00	.00
23	.00	.00	.00	6.0	8.2	3.4	7.5	1.6	2.5	.00	.00	.01
24	.00	.00	.00	16	7.3	3.3	6.8	1.3	1.0	.00	.00	.28
25	.00	.00	.00	8.1	7.4	3.3	6.3	1.2	.95	.00	.00	.00
26	.00	.00	.00	6.9	6.3	3.5	5.6	1.0	1.1	.00	.00	.00
27	.00	.00	.00	6.4	5.9	3.2	5.3	.80	1.1	.00	.00	.00
28	.00	.00	.00	5.7	7.5	3.1	6.7	.72	1.1	.00	.00	.00
29	.00	.00	.00	5.5	---	2.8	5.0	.68	5.5	.00	.00	.00
30	.00	.00	.00	5.7	---	2.5	4.1	.62	1.0	.00	.00	.00
31	.00	---	.00	4.9	---	2.4	---	.57	---	.00	1.3	---
TOTAL	43.80	39.39	0.00	481.36	223.9	148.9	450.3	223.79	159.48	5.29	120.51	14.12
MEAN	1.41	1.31	.000	15.5	8.00	4.80	15.0	7.22	5.32	.17	3.89	.47
MAX	36	32	.00	218	40	8.5	76	68	51	.69	107	8.1
MIN	.00	.00	.00	.00	3.7	2.4	2.4	.57	.48	.00	.00	.00
AC-FT	87	78	.00	955	444	295	893	444	316	10	239	28
CFSM	.22	.21	.00	2.46	1.27	.76	2.38	1.15	.84	.03	.62	.07
IN.	.26	.23	.00	2.84	1.32	.88	2.66	1.32	.94	.03	.71	.08
CAL YR 1990	TOTAL	865.20	MEAN	2.37	MAX 291	MIN	AC-FT 1720	CFSM	.38	IN.	5.11	
WTR YR 1991	TOTAL	1910.84	MEAN	5.24	MAX 218	MIN	AC-FT 3790	CFSM	.83	IN.	11.28	

COLORADO RIVER BASIN

08158920 WILLIAMSON CREEK AT OAK HILL, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD---Chemical and biochemical analyses: January 1974 to current year. Pesticide analyses: June 1978 to September 1986. Radiochemical analyses: April 1980.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI, KF AGAR (COLS. PER 100 ML)
NOV												
08...	1150	59	284	--	--	22	39	--	--	12	K1800	16000
08...	1205	69	259	--	--	13	30	--	--	7.8	2800	15000
08...	1220	69	249	7.6	--	--	--	--	--	--	--	--
08...	1235	64	249	--	--	--	--	--	--	--	--	--
08...	1305	68	209	--	--	25	37	--	--	6.0	2400	10000
FEB												
25...	1315	9.3	600	7.5	12.5	8	8.5	11.6	111	1.4	K400	K600
MAY												
28...	1035	0.74	765	8.1	24.0	4	0.70	9.3	114	0.1	140	250
AUG												
14...	2145	38	227	7.4	--	--	--	--	--	26	K180000	160000
14...	2200	134	159	--	--	40	200	--	--	17	86000	160000
14...	2215	130	141	--	--	65	130	--	--	16	--	--
14...	2230	81	145	7.3	--	--	--	--	--	13	100000	150000
14...	2245	56	151	--	--	55	65	--	--	14	--	--
14...	2300	53	154	--	--	25	33	--	--	13	--	--

DATE	HARD-NESS TOTAL (MG/L AS CaCO3)	HARD-NESS NONCARB DISSOLV FLD. AS CaCO3 (MG/L)	CALCIUM DIS-SOLVED (MG/L AS Ca)	MAGNE-SIUM, DIS-SOLVED (MG/L AS Mg)	SODIUM, DIS-SOLVED (MG/L AS Na)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT DIS FIX END FIELD CaCO3 (MG/L)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS Cl)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)
NOV											
08...	--	--	--	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	--	--
08...	110	27	32	7.0	8.2	0.3	2.4	82	21	15	0.10
08...	110	--	32	7.0	8.0	0.3	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	--	--
FEB											
25...	280	68	79	20	18	0.5	1.2	210	56	40	<0.10
MAY											
28...	--	--	--	--	--	--	--	--	--	--	--
AUG											
14...	100	35	33	5.2	6.2	0.3	5.1	69	25	9.9	0.10
14...	--	--	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--	--	--
14...	57	11	18	2.8	3.6	0.2	4.4	46	20	8.1	0.10
14...	--	--	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--	--	--

DATE	SILICA, DIS-SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L)	RESIDUE FIXED NON FILTER-ABLE (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)
NOV											
08...	--	--	136	56	80	0.250	0.050	0.300	0.050	1.4	1.4
08...	--	--	64	33	31	0.270	0.030	0.300	0.040	0.46	0.50
08...	3.3	138	--	--	--	--	--	--	--	--	--
08...	3.6	--	--	--	--	--	--	--	--	--	--
08...	--	--	71	25	46	0.170	0.030	0.200	0.050	0.35	0.40
FEB											
25...	3.3	345	9	5	4	0.690	0.010	0.700	0.020	0.28	0.30
MAY											
28...	--	--	<1	<1	--	--	<0.010	0.066	<0.010	--	0.30
AUG											
14...	3.2	129	--	--	--	0.720	0.060	0.780	0.080	2.9	3.0
14...	--	--	30	21	9	0.570	0.060	0.630	0.070	0.53	0.60
14...	--	--	22	22	0	0.580	0.050	0.630	0.070	0.93	1.0
14...	3.3	88	--	--	--	0.570	0.040	0.610	0.070	0.83	0.90
14...	--	--	97	11	86	0.570	0.040	0.610	0.070	0.93	1.0
14...	--	--	69	27	42	0.580	0.050	0.630	0.070	0.73	0.80

08159000 ONION CREEK AT U.S. HIGHWAY 183, AUSTIN, TX

LOCATION.--Lat 30°10'40", long 97°41'18", Travis County, Hydrologic Unit 12090205, on right bank at downstream side of downstream bridge on U.S. Highway 183, 2.4 mi downstream from Williamson Creek, 3.2 mi southwest of Del Valle, and 7.5 mi southeast of the State Capitol Building in Austin.

DRAINAGE AREA.--321 mi².

PERIOD OF RECORD.--May 1924 to March 1930, March 1976 to current year. In 1924-30 station was published as "near Del Valle."

Water-quality records.--Chemical and biochemical analyses: October 1976 to September 1988. Pesticide analyses: October 1976 to September 1986. Sediment analyses: October 1976 to September 1982. Radiochemical analyses: January 1980.

GAGE.--Water-stage recorder. Datum of gage is 442.85 ft State Department of Highways and Public Transportation datum. May 15, 1924, to Mar. 15, 1930, nonrecording gage at highway bridge 1,700 ft upstream at 6.42-foot higher datum.

REMARKS.--Records good, except those for estimated daily discharges, which are fair. Flow is slightly regulated by several small ponds on mainchannel and tributaries above station. One recording rain gage in the watershed. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--20 years (water years 1925-29, 1977-91), 75.4 ft³/s (3.19 in/yr), 54,630 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 76,000 ft³/s May 28, 1929 (gage height, 30.5 ft), present datum; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1869 occurred about July 3, 1869, stage about 38 ft from newspaper accounts, and Sept. 9, 1921, stage 38.0 ft, from floodmark, present site and datum.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 2,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 9	1700	*10,900	*19.57	Apr. 14	0900	2,850	11.68
Apr. 5	0100	4,100	13.54	Aug. 15	0500	5,420	15.21

Minimum daily discharge, no flow at times.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.09	.89	51	31	11	29	14	18	.64	3.1
2	.00	.00	.28	179	50	25	11	31	12	14	.16	93
3	.00	.00	.36	114	50	20	11	51	34	12	.04	150
4	.00	.00	.11	36	417	19	121	49	49	20	.00	27
5	.00	10	.14	23	203	18	1580	211	22	19	.00	23
6	.00	1.4	.19	19	93	19	258	69	16	15	.00	31
7	.00	.27	.21	16	61	17	179	41	175	9.7	.00	19
8	.00	374	.20	13	46	17	170	313	31	18	.00	29
9	145	164	.32	4310	38	16	97	314	18	15	.00	7.3
10	37	31	.40	1060	31	16	65	128	15	8.1	.00	5.2
11	11	17	.32	173	26	18	54	87	87	5.6	.01	3.9
12	.27	8.8	.31	100	24	17	47	71	172	6.0	.00	3.4
13	.00	5.4	.51	74	22	16	40	58	47	6.6	.00	2.9
14	.00	4.0	.47	63	22	15	1200	56	23	5.8	.00	2.6
15	.00	3.1	.44	59	21	18	445	46	18	4.9	1140	3.0
16	.00	2.1	.40	53	20	45	167	44	16	3.0	36	2.5
17	.00	1.6	.43	51	21	54	124	42	32	1.3	16	29
18	.00	1.8	.50	442	21	25	317	41	16	.95	46	4.2
19	e.00	1.2	.72	174	52	19	457	42	15	.75	5.3	2.2
20	e.00	1.2	.67	116	24	18	151	39	14	.58	3.9	3.9
21	e.55	.87	.47	85	27	17	108	31	12	.43	2.6	3.1
22	e22	1.8	.38	67	47	17	100	26	10	.34	1.8	2.5
23	e2.8	2.8	.28	59	30	15	85	22	13	.33	1.4	2.1
24	.52	3.8	.27	108	23	15	67	21	14	.23	1.3	3.7
25	.18	1.1	.29	76	31	14	56	28	11	.60	1.3	6.3
26	.06	.62	.63	63	29	15	54	21	20	.46	1.1	5.9
27	.01	.44	3.2	59	21	14	45	18	14	.09	1.0	3.2
28	.00	.34	1.8	55	20	14	37	18	10	.04	.51	2.3
29	.00	.22	1.4	54	---	14	34	17	35	.02	.32	1.9
30	.00	.14	1.1	58	---	12	26	15	30	7.5	.05	1.5
31	.00	---	1.0	57	---	11	---	14	---	2.9	.26	---
TOTAL	219.39	639.00	17.89	7816.89	1521	601	6117	1993	995	197.22	1259.69	477.7
MEAN	7.08	21.3	.58	252	54.3	19.4	204	64.3	33.2	6.36	40.6	15.9
MAX	145	374	3.2	4310	417	54	1580	314	175	20	1140	150
MIN	.00	.00	.09	.89	20	11	11	14	10	.02	.00	1.5
AC-FT	435	1270	35	15500	3020	1190	12130	3950	1970	391	2500	948
CFSM	.02	.07	.00	.79	.17	.06	.64	.20	.10	.02	.13	.05
IN.	.03	.07	.00	.91	.18	.07	.71	.23	.12	.02	.15	.06
CAL YR 1990	TOTAL	2668.13	MEAN	7.31	MAX	704	MIN	.00	AC-FT	5290	CFSM	.02
WTR YR 1991	TOTAL	21854.78	MEAN	59.9	MAX	4310	MIN	.00	AC-FT	43350	CFSM	.19
											IN.	2.53

e Estimated

COLORADO RIVER MAIN STEM

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08159200 COLORADO RIVER AT BASTROP, TX

LOCATION.--Lat 30°06'16", long 97°19'09", Bastrop County, Hydrologic Unit 12090301, at the downstream side of bridge on State Highway 71 bridge, at Bastrop, 0.3 mi upstream from Gills Branch, 1.2 mi downstream from Piney Creek, and at mile 236.6.

DRAINAGE AREA.--39,979 mi², approximately, of which 11,403 mi² probably is noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1960 to current year. October 1973 to September 1975, daily discharges estimated by hydrographic comparison with streamflow stations 08158000 and 08159500.

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

GAGE.--Water-stage recorder. Datum of gage is 307.38 ft above National Geodetic Vertical Datum of 1929. Prior to May 10, 1960, nonrecording gage at a site 400 ft upstream from present site and at same datum. May 10, 1960, to Sept. 30, 1973, and Oct. 1, 1975, to Oct. 28, 1986, at a site 400 ft upstream from present site and at same datum.

REMARKS.--Records good, except those for estimated daily discharges, which are fair. There are many diversions above station for irrigation and for municipal supply. Regulation is the same as that for Colorado River at Austin (station 08158000). The city of Austin diverts water into Decker Lake (by pumpage) upstream from this station. The Lower Colorado River Authority also diverts water from the Colorado into Lake Bastrop by pumping upstream from this station. Gage-height telemeter at station.

AVERAGE DISCHARGE.--31 years, 2,076 ft³/s (1,504,000 acre-ft yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 79,600 ft³/s Oct. 29, 1960 (gage height, 34.45 ft); minimum daily, 75 ft³/s Apr. 1, 1964.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1845, 60.3 ft July 7 or 8, 1869. Flood of June 16, 1935, reached a stage of 57.0 ft, and flood of Dec. 4, 1913, reached a stage of 53.3 ft, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 40,700 ft³/s Jan. 10 at 1000 hours (gage height, 25.80 ft); minimum daily, 144 ft³/s Nov. 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1460	150	211	214	628	675	1890	1740	2090	2430	1620	1980
2	1410	144	223	223	581	792	1160	1780	2110	2380	1660	1960
3	1390	168	248	968	565	697	998	2080	2100	2240	1990	2570
4	1390	273	254	e1170	2700	617	993	2150	2500	2460	2160	2160
5	1170	310	253	e755	4560	575	11600	2550	2260	3230	2160	1330
6	1190	406	219	320	1650	563	9640	2190	2130	2060	2160	1890
7	1190	292	247	295	1170	552	1980	3020	2240	2180	2180	1460
8	1190	311	255	285	986	544	2080	3660	1910	2100	2150	1150
9	1290	1700	251	e7710	963	704	1550	5440	2030	2340	2200	1200
10	2230	897	251	e33200	831	979	1320	4310	2330	1950	2130	1370
11	1240	418	254	7180	849	1080	1230	4070	2340	1910	2410	1100
12	881	299	336	2160	733	1110	902	4070	2990	1900	2250	1580
13	408	259	336	1400	675	1110	703	3880	2600	1900	1890	1650
14	304	239	232	1170	656	1470	1140	2350	2140	1920	2060	1720
15	257	232	208	4620	729	1900	3740	1680	2290	1890	4310	1760
16	226	222	196	2800	679	2020	1370	1800	2340	1900	5620	1330
17	529	200	181	2410	792	1900	974	1850	2610	1770	3980	2100
18	472	187	201	5070	820	1690	2080	2250	3120	1870	3970	1740
19	290	184	461	7660	881	2010	2770	2270	3240	1770	3380	1840
20	231	184	418	2220	1370	2010	3300	2300	2270	2030	1680	1830
21	233	180	351	1200	1340	1870	3170	2240	2140	1480	1430	1910
22	230	176	231	917	1400	1980	2970	2170	2100	1500	1930	1890
23	409	187	e647	891	1340	1980	2300	1820	2110	1730	1800	1890
24	294	266	e525	987	888	1950	859	1810	2100	1720	1930	1260
25	225	256	271	1390	715	1960	735	2120	2080	1790	1930	982
26	206	222	224	868	664	1950	740	2110	3220	1810	1910	1540
27	182	199	217	739	658	1980	586	1920	3620	1620	1900	1660
28	169	175	250	696	642	1960	558	1860	3480	1640	1890	1040
29	160	183	227	670	---	1970	555	1910	3070	1620	1880	1110
30	160	207	216	622	---	1960	1490	2130	2960	1650	1860	1120
31	157	---	268	640	---	1930	---	2130	---	1650	1910	---
TOTAL	21173	9126	8662	91450	30465	44488	65383	77660	74520	60440	72330	48122
MEAN	683	304	279	2950	1088	1435	2179	2505	2484	1950	2333	1604
MAX	2230	1700	647	33200	4560	2020	11600	5440	3620	3230	5620	2570
MIN	157	144	181	214	565	544	555	1680	1910	1480	1430	982
AC-FT	42000	18100	17180	181400	60430	88240	129700	154000	147800	119900	143500	95450
CAL YR 1990	TOTAL	390514	MEAN	1070	MAX	6230	MIN	144	AC-FT	774600		
WTR YR 1991	TOTAL	603819	MEAN	1654	MAX	33200	MIN	144	AC-FT	1198000		

e Estimated

COLORADO RIVER MAIN STEM

08159200 COLORADO RIVER AT BASTROP, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: March 1944. Chemical and biochemical analyses: February 1968 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: November 1986 to current year.
 pH: November 1986 to current year.
 WATER TEMPERATURE: November 1986 to current year.
 DISSOLVED OXYGEN: November 1986 to current year.

INSTRUMENTATION.--Since November 1986, a four-parameter water-quality monitor continuously records specific conductance, pH, water temperature, and dissolved oxygen at this station.

REMARKS.--Interruptions in the record were due to malfunction of the instrument and probe fouling. Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request. Where there is only a mean value for conductance, it is a value estimated from available field values, flow, past data and regression relationships.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 994 microsiemens Nov. 5, 1990; minimum, 124 microsiemens Jan. 9, 1991.
 pH: Maximum, 9.2 units Feb. 13, 14, 1988, Mar. 13, 1989; minimum, 7.1 units May 8, 1990.
 WATER TEMPERATURE: Maximum, 33.5°C Aug. 12, 1987; minimum, 0.0°C Dec. 23, 24, 1989.
 DISSOLVED OXYGEN: Maximum, 19.5 mg/L Feb. 23, 1989; minimum, 3.8 mg/L May 18, 1989.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 994 microsiemens Nov. 5; minimum, 124 microsiemens Jan. 9.
 pH: Maximum, 9.1 units on Feb. 15, 19, Mar. 4, 8; minimum, 7.6 units Feb. 4, July 22.
 WATER TEMPERATURE: Maximum, 32.5°C Jul. 15; minimum, 3.0°C Dec. 24.
 DISSOLVED OXYGEN: Maximum, 18.6 mg/L Mar. 1; minimum, 6.2 mg/L Oct. 7, 8, Apr. 18.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB DISSOLV FLD. AS CACO3 (MG/L)
NOV 14...	0805	234	612	8.0	15.5	8.7	87	1.1	190	67
JAN 11...	1200	3770	367	8.0	10.0	10.1	90	2.3	130	43
MAR 27...	1100	1960	859	8.1	20.5	9.0	101	0.5	250	110
JUN 12...	0945	3010	821	8.3	25.5	7.9	97	0.4	240	100
JUL 15...	0950	1950	870	8.4	28.0	8.0	103	0.7	250	100
SEP 06...	1245	1710	777	8.0	26.5	7.0	87	0.6	240	100

DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT DIS FIX END FIELD CACO3 (MG/L)	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...	50	15	48	2	5.5	120	63	72	0.30	7.4
JAN 11...	40	7.1	20	0.8	4.2	86	40	30	0.30	8.1
MAR 27...	59	26	73	2	5.8	150	100	130	0.30	6.2
JUN 12...	57	24	74	2	4.8	140	100	130	0.20	7.1
JUL 15...	60	25	78	2	5.3	150	92	130	0.40	4.7
SEP 06...	57	23	66	2	5.4	140	82	110	0.30	7.3

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)	PHOS- PHORUS ORTHO TOTAL (MG/L AS P)
NOV 14...	333	1.68	0.020	1.70	0.090	0.51	0.60	0.540	0.500
JAN 11...	201	1.07	0.030	1.10	0.080	0.62	0.70	0.230	0.120
MAR 27...	489	--	<0.010	0.710	0.050	0.65	0.70	0.310	0.270
JUN 12...	480	0.840	0.020	0.860	0.050	0.45	0.50	0.370	0.250
JUL 15...	485	0.800	0.010	0.810	0.070	0.43	0.50	0.230	0.230
SEP 06...	433	1.38	0.020	1.40	0.040	0.36	0.40	0.420	0.310

COLORADO RIVER MAIN STEM

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MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1990 TO SEPTEMBER 1991

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. 1990	21173	884	479	27400	110	6530	89	5100	250
NOV. 1990	9126	781	424	10500	95	2350	75	1860	230
DEC. 1990	8662	879	476	11100	110	2640	88	2060	250
JAN. 1991	91450	416	230	56700	36	8980	32	7820	160
FEB. 1991	30465	644	353	29000	68	5570	56	4590	220
MAR. 1991	44488	824	448	53800	100	12100	80	9590	250
APR. 1991	65383	640	350	61800	68	12000	56	9840	220
MAY 1991	77660	808	439	92100	98	20500	77	16200	240
JUNE 1991	74520	828	449	90400	100	20400	80	16200	250
JULY 1991	60440	847	459	74900	110	17300	83	13600	250
AUG. 1991	72330	793	431	84100	96	18700	76	14800	240
SEPT 1991	48122	814	442	57400	99	12800	78	10200	250
TOTAL	603819	**	**	649000	**	140000	**	112000	**
WTD.AVG.	1654	732	398	**	86	**	69	**	230

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	916	908	910	872	848	858	872	848	855	890	884	889
2	914	908	911	900	872	886	876	850	863	892	846	879
3	914	908	911	928	902	913	900	878	889	938	778	872
4	916	908	911	954	928	936	924	902	912	740	616	638
5	918	910	913	994	956	973	932	926	929	628	624	625
6	924	914	919	---	---	993	940	934	938	636	622	629
7	928	920	923	---	---	993	940	918	929	654	636	644
8	926	922	924	988	834	924	916	898	907	686	656	669
9	920	866	892	834	444	719	898	882	891	692	124	458
10	876	712	843	496	434	462	882	858	877	262	136	201
11	792	694	729	530	496	514	882	874	877	446	270	359
12	836	796	820	560	532	546	878	866	872	570	452	508
13	838	826	832	594	562	575	880	870	873	630	574	607
14	834	824	828	632	586	611	882	858	872	666	630	644
15	838	820	832	676	634	655	868	850	859	664	332	455
16	850	834	842	736	680	709	856	840	851	628	360	510
17	882	842	859	788	738	764	852	824	841	726	634	687
18	962	882	928	826	788	807	852	838	846	736	358	585
19	968	954	963	864	828	846	926	844	887	492	364	412
20	954	926	940	884	864	875	962	928	947	628	504	597
21	922	852	891	904	884	894	956	882	920	652	622	632
22	884	868	879	922	898	911	892	846	863	706	652	677
23	908	882	889	940	922	930	878	826	845	738	708	720
24	936	910	923	964	936	949	898	866	884	748	716	741
25	952	936	944	980	952	971	864	850	855	718	632	684
26	970	952	956	992	974	984	850	838	845	716	702	710
27	952	926	944	988	976	981	844	840	842	716	692	699
28	922	866	896	982	956	976	844	840	842	770	720	745
29	864	832	845	980	942	962	850	844	848	806	772	791
30	834	822	829	942	876	909	862	848	853	810	804	806
31	846	830	838	---	---	---	884	862	871	810	806	808
MONTH	970	694	886	994	434	834	962	824	877	938	124	641

COLORADO RIVER MAIN STEM

08159200 COLORADO RIVER AT BASTROP, TX--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	812	810	810	786	772	779	872	868	870	836	784	803
2	814	810	812	790	776	783	872	868	869	822	784	796
3	816	812	814	776	768	771	886	870	876	838	794	825
4	818	316	546	774	760	768	890	886	889	844	812	833
5	480	342	423	764	756	760	890	248	527	836	766	817
6	538	426	467	784	764	778	488	326	403	818	758	780
7	618	544	584	800	782	793	598	494	543	832	792	813
8	642	620	628	806	782	790	674	604	638	832	808	824
9	710	644	683	806	780	791	672	652	660	804	650	706
10	726	710	719	812	776	802	680	652	668	768	672	719
11	726	708	714	772	718	735	730	682	714	812	770	795
12	738	726	731	722	706	714	772	728	748	860	812	823
13	744	736	741	730	710	717	786	768	773	862	762	840
14	734	722	729	782	732	757	820	756	784	868	828	846
15	752	734	742	798	784	794	826	502	623	840	808	832
16	768	754	761	822	796	809	582	544	561	836	808	823
17	768	746	758	834	822	826	648	584	619	818	792	804
18	752	744	749	840	794	815	662	422	569	820	810	814
19	750	722	736	836	806	824	670	596	629	832	816	824
20	736	712	728	844	824	831	722	616	662	834	812	831
21	722	670	688	854	840	847	792	724	759	832	828	830
22	704	694	700	870	856	863	818	786	799	834	828	832
23	720	700	713	868	858	862	828	806	814	850	832	838
24	714	638	671	866	850	860	814	810	812	858	846	850
25	706	644	673	864	856	859	818	810	814	860	650	793
26	742	708	723	864	856	859	852	818	839	828	698	785
27	776	744	761	864	856	861	882	850	868	834	770	814
28	784	768	780	868	862	865	876	846	860	842	830	834
29	---	---	---	870	862	866	878	848	867	852	838	844
30	---	---	---	874	866	869	882	842	871	850	844	848
31	---	---	---	870	866	868	---	---	---	858	848	853
MONTH	818	316	699	874	706	810	890	248	731	868	650	815
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	864	856	861	830	780	807	898	890	893	858	848	852
2	874	844	861	840	804	815	898	892	895	842	824	836
3	870	856	865	848	826	840	902	896	898	836	770	803
4	858	846	852	852	828	844	898	886	892	770	694	719
5	846	788	814	834	562	693	894	882	888	770	704	738
6	824	790	806	834	636	755	894	856	882	792	748	770
7	854	820	833	846	792	826	858	840	850	794	772	784
8	838	810	821	844	830	839	858	846	850	818	778	793
9	810	766	788	846	836	843	858	848	852	830	804	813
10	822	788	804	---	---	835	864	838	853	838	820	829
11	822	796	806	---	---	835	884	848	863	834	822	828
12	834	806	825	---	---	843	884	868	877	852	826	834
13	800	718	765	866	838	856	876	858	866	842	826	832
14	784	728	767	862	830	853	882	862	875	832	816	826
15	822	778	798	872	860	868	880	512	784	840	824	830
16	836	822	830	872	842	864	524	494	506	834	828	832
17	848	838	842	872	830	846	652	526	590	854	830	839
18	848	746	804	876	872	875	680	592	641	834	820	826
19	820	734	776	878	872	874	796	666	730	836	816	826
20	848	810	834	882	876	879	828	782	801	834	816	825
21	858	848	852	880	872	875	854	768	814	832	814	822
22	856	848	852	890	874	881	850	760	817	830	816	823
23	856	788	836	892	878	884	832	784	808	832	806	818
24	848	816	838	878	872	874	836	814	829	812	784	799
25	850	808	836	880	872	876	850	836	842	826	766	781
26	866	820	847	898	878	886	848	840	844	846	828	837
27	860	848	853	898	886	893	854	842	849	828	812	821
28	866	840	855	908	898	903	858	848	853	816	804	810
29	864	828	855	904	896	901	858	850	854	836	804	818
30	854	832	846	898	890	895	860	854	858	844	834	838
31	---	---	---	894	890	892	858	848	853	---	---	---
MONTH	874	718	827	908	562	853	902	494	823	858	694	813

COLORADO RIVER MAIN STEM

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08159200 COLORADO RIVER AT BASTROP, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	8.5	8.3	8.4	8.5	8.1	8.3	8.5	8.3	8.4	8.7	8.5	8.6
2	8.5	8.3	8.4	8.5	8.1	8.3	8.4	8.3	8.4	8.7	8.5	8.6
3	8.4	8.3	8.4	8.6	8.1	8.3	8.5	8.2	8.4	8.5	8.1	8.3
4	8.4	8.2	8.3	8.3	8.2	8.3	8.6	8.4	8.5	8.1	8.0	8.1
5	8.4	8.2	8.3	8.4	8.1	8.3	8.6	8.4	8.5	8.1	8.1	8.1
6	8.4	8.1	8.2	8.3	8.1	8.2	8.6	8.4	8.5	8.1	8.0	8.1
7	8.4	8.0	8.2	8.3	8.1	8.2	8.7	8.5	8.6	8.2	8.0	8.1
8	8.4	8.2	8.3	8.2	8.0	8.1	8.7	8.5	8.6	8.2	8.0	8.1
9	8.3	8.2	8.3	8.0	7.8	7.9	8.7	8.5	8.6	8.4	8.0	8.2
10	8.2	7.8	8.1	8.0	7.9	7.9	8.7	8.5	8.6	8.3	8.0	8.2
11	8.1	7.8	8.0	8.1	7.9	8.0	8.9	8.6	8.8	8.1	7.9	8.0
12	8.3	8.0	8.1	8.1	7.9	8.0	9.0	8.6	8.8	8.0	8.0	8.0
13	8.4	8.1	8.2	8.2	8.0	8.0	8.9	8.6	8.7	8.1	8.0	8.1
14	8.4	8.1	8.2	8.2	8.0	8.1	8.9	8.5	8.7	8.2	8.1	8.2
15	8.4	8.1	8.3	8.3	8.1	8.2	8.8	8.6	8.7	8.2	8.0	8.0
16	8.4	8.2	8.3	8.3	8.2	8.2	8.7	8.6	8.6	8.1	8.0	8.1
17	8.4	8.2	8.3	8.3	8.1	8.2	8.6	8.4	8.5	8.1	8.1	8.1
18	8.4	8.2	8.2	8.3	8.2	8.2	8.6	8.3	8.5	8.2	8.0	8.1
19	8.4	8.1	8.3	8.3	8.1	8.2	8.6	8.3	8.4	8.1	8.0	8.0
20	8.4	8.1	8.3	8.4	8.1	8.2	8.3	8.1	8.2	8.1	8.1	8.1
21	8.3	8.2	8.2	8.3	8.1	8.2	8.2	8.1	8.2	8.1	8.1	8.1
22	8.4	8.1	8.2	8.3	8.1	8.1	8.2	8.1	8.2	8.1	8.1	8.1
23	8.4	8.1	8.3	8.2	8.0	8.1	8.3	8.2	8.2	8.2	8.1	8.2
24	8.4	8.2	8.3	8.3	8.0	8.2	8.3	8.2	8.3	8.2	8.2	8.2
25	8.3	8.1	8.2	8.3	8.1	8.2	8.4	8.3	8.4	8.3	8.1	8.2
26	8.4	8.1	8.2	8.3	8.1	8.2	8.4	8.3	8.4	8.3	8.2	8.2
27	8.4	8.1	8.2	8.2	8.1	8.2	8.4	8.3	8.4	8.2	8.2	8.2
28	8.4	8.1	8.2	8.3	8.1	8.2	8.6	8.4	8.5	8.2	8.1	8.2
29	8.4	8.0	8.2	8.3	8.1	8.2	8.6	8.4	8.5	8.1	8.0	8.1
30	8.4	8.1	8.2	8.4	8.1	8.3	8.5	8.4	8.5	8.1	8.0	8.1
31	8.5	8.1	8.3	---	---	---	8.7	8.4	8.5	8.1	8.0	8.1
MONTH	8.5	7.8	8.2	8.6	7.8	8.2	9.0	8.1	8.5	8.7	7.9	8.2
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	8.3	8.1	8.2	9.0	8.6	8.8	8.2	8.1	8.2	8.2	8.1	8.2
2	8.3	8.1	8.2	9.0	8.7	8.9	8.2	8.1	8.2	8.3	8.1	8.2
3	8.3	8.1	8.2	9.0	8.8	8.9	8.2	8.1	8.1	8.3	8.2	8.2
4	8.2	7.6	7.9	9.1	8.9	9.0	8.1	8.0	8.1	8.3	8.1	8.2
5	7.9	7.7	7.8	9.0	8.9	9.0	8.1	7.8	8.0	8.2	8.1	8.1
6	8.0	7.8	7.9	9.0	8.9	9.0	7.9	7.7	7.8	8.2	8.1	8.1
7	8.1	8.0	8.0	9.0	8.9	8.9	7.8	7.7	7.8	8.2	8.1	8.2
8	8.1	8.1	8.1	9.1	8.8	9.0	7.9	7.8	7.8	8.2	8.1	8.2
9	8.2	8.1	8.1	9.0	8.8	8.9	7.9	7.8	7.8	8.1	8.0	8.1
10	8.2	8.1	8.2	8.8	8.6	8.7	7.9	7.8	7.9	8.2	8.0	8.1
11	8.3	8.1	8.2	8.7	8.5	8.6	7.9	7.9	7.9	8.3	8.1	8.2
12	8.4	8.2	8.3	8.7	8.5	8.6	8.0	7.9	7.9	8.3	8.3	8.3
13	8.6	8.3	8.4	8.8	8.5	8.6	7.9	7.9	7.9	8.4	8.3	8.3
14	8.7	8.4	8.6	8.7	8.5	8.6	8.0	7.9	7.9	8.4	8.2	8.3
15	9.1	8.6	8.9	8.5	8.2	8.3	7.9	7.7	7.8	8.2	7.9	8.0
16	9.0	8.9	8.9	8.2	8.2	8.2	7.9	7.8	7.8	8.3	8.1	8.2
17	9.0	8.8	8.9	8.2	8.1	8.1	7.9	7.8	7.9	8.2	8.1	8.1
18	8.9	8.7	8.8	8.1	8.0	8.1	7.9	7.8	7.9	8.3	8.1	8.2
19	9.1	8.7	8.9	8.1	8.0	8.1	7.9	7.8	7.9	8.3	8.2	8.3
20	9.0	8.5	8.7	8.1	8.0	8.0	7.9	7.8	7.8	8.2	7.9	8.1
21	8.5	8.3	8.4	8.1	8.0	8.1	7.9	7.8	7.9	7.9	7.7	7.8
22	8.7	8.3	8.5	8.2	8.1	8.1	8.0	7.9	8.0	8.3	7.8	8.1
23	8.6	8.3	8.5	8.2	8.2	8.2	8.0	7.9	8.0	8.3	7.8	8.0
24	8.6	8.4	8.5	8.2	8.2	8.2	8.1	7.9	8.0	8.3	7.7	8.1
25	8.6	8.4	8.5	8.3	8.1	8.2	8.1	8.0	8.0	8.3	8.1	8.2
26	8.8	8.4	8.6	8.3	8.2	8.2	8.1	8.1	8.1	8.3	8.1	8.2
27	8.9	8.6	8.8	8.2	8.0	8.1	8.2	8.1	8.2	8.4	8.2	8.3
28	8.9	8.7	8.8	8.1	8.0	8.1	8.2	8.1	8.2	8.5	8.3	8.4
29	---	---	---	8.1	8.0	8.1	8.3	8.0	8.1	8.6	8.4	8.5
30	---	---	---	8.2	8.1	8.1	8.4	8.1	8.2	8.6	8.4	8.5
31	---	---	---	8.2	8.1	8.2	---	---	---	8.5	8.4	8.4
MONTH	9.1	7.6	8.4	9.1	8.0	8.4	8.4	7.7	8.0	8.6	7.7	8.2

COLORADO RIVER MAIN STEM
08159200 COLORADO RIVER AT BASTROP, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	8.4	8.3	8.4	8.2	8.0	8.1	8.1	8.0	8.0	8.2	8.1	8.1
2	8.4	8.3	8.4	8.2	8.1	8.1	8.1	8.0	8.1	8.2	8.0	8.1
3	8.3	8.2	8.3	8.3	8.1	8.2	8.2	8.0	8.1	8.1	8.0	8.1
4	8.3	8.2	8.3	8.3	8.1	8.2	8.2	8.1	8.1	8.0	7.9	7.9
5	8.2	8.0	8.1	8.3	7.9	8.1	8.1	8.1	8.1	8.0	7.7	7.9
6	8.1	8.0	8.0	8.1	7.9	8.1	8.2	8.0	8.1	8.1	7.8	7.9
7	8.1	8.0	8.0	8.2	8.1	8.2	8.2	8.1	8.1	8.1	8.0	8.1
8	8.1	8.0	8.1	8.3	8.2	8.2	8.2	8.0	8.1	8.1	8.0	8.0
9	8.0	7.9	8.0	8.2	8.2	8.2	8.1	8.1	8.1	8.0	7.7	7.8
10	8.1	8.0	8.0	8.2	8.0	8.1	8.1	7.8	8.0	8.0	7.8	7.9
11	8.1	8.0	8.1	8.4	8.1	8.2	8.1	8.0	8.1	8.1	7.8	7.9
12	8.3	8.1	8.2	8.5	8.3	8.4	8.1	8.0	8.1	8.1	7.9	8.0
13	8.2	8.1	8.2	8.5	8.3	8.4	8.1	8.0	8.1	8.1	8.0	8.0
14	8.3	8.1	8.2	8.5	8.3	8.4	8.1	8.0	8.1	8.1	8.0	8.0
15	8.1	8.1	8.1	8.6	8.2	8.5	8.1	7.7	8.0	8.1	8.0	8.0
16	8.2	8.1	8.2	8.6	8.3	8.5	7.7	7.7	7.7	8.2	7.9	8.0
17	8.3	8.2	8.3	8.5	8.3	8.4	7.8	7.7	7.8	8.1	8.0	8.0
18	8.3	8.1	8.2	8.4	8.2	8.3	7.9	7.8	7.9	8.1	8.0	8.1
19	8.2	8.1	8.2	8.4	8.0	8.2	8.0	7.9	8.0	8.1	8.1	8.1
20	8.3	8.2	8.3	8.3	8.0	8.1	8.1	8.0	8.1	8.1	8.0	8.1
21	8.4	8.3	8.3	8.2	7.7	7.9	8.2	8.1	8.1	8.1	8.0	8.0
22	8.4	8.4	8.4	8.2	7.6	8.0	8.3	8.2	8.2	8.1	8.0	8.0
23	8.5	8.4	8.4	8.1	8.0	8.0	8.2	8.1	8.1	8.1	8.0	8.0
24	8.5	8.4	8.4	8.2	7.9	8.0	8.1	8.0	8.1	8.0	7.9	8.0
25	8.5	8.4	8.5	8.3	8.1	8.2	8.1	7.9	8.0	8.2	8.0	8.1
26	8.5	8.3	8.4	8.2	8.2	8.2	8.1	8.0	8.0	8.2	8.1	8.2
27	8.3	8.2	8.2	8.2	8.1	8.1	8.1	8.0	8.0	8.3	8.1	8.2
28	8.3	8.2	8.3	8.1	8.0	8.1	8.1	8.0	8.1	8.3	8.1	8.2
29	8.3	8.3	8.3	8.2	8.0	8.1	8.1	8.0	8.0	8.4	8.2	8.3
30	8.3	8.3	8.3	8.1	8.1	8.1	8.2	7.9	8.0	8.4	8.3	8.3
31	---	---	---	8.1	8.0	8.0	8.3	8.1	8.2	---	---	---
MONTH	8.5	7.9	8.2	8.6	7.6	8.2	8.3	7.7	8.0	8.4	7.7	8.0

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

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

COLORADO RIVER MAIN STEM

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WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	13.5	10.5	12.0	19.5	16.0	17.5	19.0	17.0	18.0	25.0	23.0	24.0
2	13.5	11.5	12.5	20.5	18.5	19.0	20.0	18.0	19.0	24.5	23.5	24.0
3	15.0	13.0	14.0	19.0	16.5	18.0	21.0	18.5	19.5	23.5	23.0	23.5
4	16.0	15.0	15.5	20.0	16.5	18.0	22.0	20.0	21.0	23.5	23.0	23.0
5	17.0	16.0	16.5	21.5	18.0	19.5	21.5	18.0	19.5	23.0	21.5	22.5
6	17.5	16.0	17.0	23.0	19.0	21.0	19.0	18.0	18.5	23.0	20.5	21.5
7	18.5	16.0	17.0	22.0	20.0	21.0	20.5	19.0	19.5	22.5	21.5	22.0
8	17.5	14.0	16.0	20.0	17.5	19.0	23.0	20.5	21.5	22.0	21.0	21.5
9	18.0	15.0	16.5	19.5	16.5	18.0	25.0	22.5	23.5	21.0	19.0	20.0
10	18.0	16.0	17.0	18.5	16.0	17.0	25.0	23.5	24.0	21.5	21.0	21.0
11	19.0	16.0	17.5	18.5	16.5	17.5	24.5	23.0	23.5	22.0	21.0	21.5
12	20.0	17.5	18.5	20.5	18.0	19.0	26.0	23.5	24.5	23.0	21.5	22.0
13	21.0	18.5	19.5	20.0	17.5	19.0	26.5	24.5	25.0	22.5	22.0	22.0
14	20.5	17.5	19.0	18.5	16.0	17.0	26.0	24.5	25.0	23.5	21.5	22.5
15	19.0	16.0	17.5	16.0	14.0	15.0	24.5	22.0	23.0	24.5	23.0	23.5
16	16.5	15.0	15.5	14.5	14.0	14.0	24.5	22.5	23.0	24.5	23.5	24.0
17	17.5	13.5	15.5	17.5	14.5	16.0	24.5	23.5	24.0	23.5	22.5	23.0
18	19.5	17.0	18.5	17.5	15.5	16.5	24.0	22.5	23.5	24.0	22.0	23.0
19	19.0	17.5	18.5	18.5	16.5	17.0	24.5	23.0	24.0	24.5	23.0	23.5
20	17.5	15.5	16.0	18.5	17.5	18.0	24.5	22.5	23.5	25.0	23.0	24.0
21	15.0	14.5	14.5	20.0	18.5	19.5	23.5	21.5	22.5	26.0	23.5	25.0
22	15.0	12.5	14.0	20.5	19.5	20.0	24.5	22.5	23.5	26.0	25.0	25.5
23	16.0	13.5	15.0	19.0	17.5	18.5	24.5	22.0	23.5	28.0	25.0	26.5
24	16.0	13.5	15.0	18.5	17.0	17.5	24.5	23.0	24.0	28.5	26.5	27.5
25	16.0	14.5	15.0	20.0	18.0	18.5	27.0	23.5	25.0	28.5	27.0	27.5
26	15.0	13.0	14.0	20.5	19.5	20.0	28.0	26.0	27.0	29.5	26.5	28.0
27	15.0	14.0	14.5	21.5	20.5	21.0	28.0	27.0	27.5	29.5	27.5	28.5
28	16.0	14.5	15.5	20.5	19.5	20.0	27.0	25.5	26.0	29.5	27.5	28.0
29	---	---	---	20.0	18.5	19.0	26.5	23.5	25.0	29.5	27.5	28.0
30	---	---	---	19.5	17.0	18.5	25.0	23.0	24.0	28.5	27.0	28.0
31	---	---	---	19.0	17.0	18.0	---	---	---	28.5	27.0	27.5
MONTH	21.0	10.5	16.0	23.0	14.0	18.5	28.0	17.0	23.0	29.5	19.0	24.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	29.0	27.0	28.0	26.5	23.0	25.0	30.5	28.0	29.0	27.5	26.0	27.0
2	29.5	27.5	28.0	27.5	25.5	26.5	31.0	29.0	30.0	27.0	26.0	26.5
3	28.5	27.0	28.0	27.5	26.0	27.0	30.5	29.0	29.5	26.0	24.5	25.5
4	26.5	25.5	26.0	26.5	25.5	26.0	30.0	28.5	29.5	26.0	24.5	25.0
5	28.0	26.0	27.0	26.5	24.5	25.5	29.5	28.0	28.5	27.0	25.5	26.0
6	29.0	27.0	28.0	28.5	25.5	27.0	29.5	27.5	28.5	26.5	26.0	26.0
7	28.5	26.5	27.5	28.0	26.5	27.5	28.5	27.5	28.0	27.5	25.5	26.5
8	27.0	26.0	26.5	28.0	26.0	27.0	29.0	26.5	28.0	27.5	26.5	27.0
9	26.5	26.0	26.5	28.0	23.5	26.5	29.0	27.5	28.0	29.5	26.5	27.5
10	25.5	24.5	25.0	---	---	---	30.0	28.0	29.0	29.0	27.5	28.0
11	26.0	24.0	25.0	---	---	---	29.0	28.0	28.5	29.0	26.0	27.5
12	25.5	25.0	25.5	---	---	---	29.0	27.5	28.0	28.5	26.5	27.5
13	27.5	24.5	26.0	---	---	---	29.0	28.0	28.5	28.0	27.0	27.5
14	28.5	26.5	27.5	---	---	---	28.0	27.5	27.5	27.5	26.5	27.0
15	27.5	26.0	27.0	---	---	---	27.0	24.5	26.0	27.5	26.0	27.0
16	27.5	25.5	26.5	31.5	29.0	30.0	26.5	24.0	25.5	29.5	26.0	27.5
17	27.0	25.0	26.0	31.0	28.0	29.5	29.0	26.5	27.5	28.0	26.5	27.5
18	27.0	25.0	26.0	31.5	29.0	30.0	29.5	27.5	28.5	28.0	26.0	27.0
19	27.0	25.0	26.0	31.0	29.0	30.0	29.5	27.5	28.5	27.5	23.0	25.0
20	28.0	25.5	27.0	30.5	28.5	29.5	30.0	27.5	28.5	23.0	20.0	21.5
21	28.5	26.5	27.5	30.0	28.0	29.0	30.5	28.0	29.5	22.0	20.0	20.5
22	28.5	26.5	27.5	29.5	28.5	29.0	30.0	29.0	29.5	24.0	21.0	22.5
23	28.0	26.0	27.0	29.5	27.5	28.5	29.5	28.0	28.5	24.0	23.5	24.0
24	27.5	25.0	26.5	29.0	27.0	28.0	29.0	27.5	28.5	25.0	23.0	24.0
25	27.0	25.0	26.0	29.5	27.5	28.5	29.0	27.5	28.0	24.0	22.0	23.0
26	26.0	25.0	25.5	30.0	28.0	29.0	28.0	27.0	27.5	23.5	21.0	22.5
27	25.5	24.5	25.0	30.0	28.0	29.0	28.5	26.5	27.5	23.0	21.5	22.5
28	25.5	24.5	25.0	30.5	28.5	29.5	29.0	26.5	27.5	24.0	21.5	22.5
29	24.5	23.0	24.0	30.0	29.0	29.5	29.0	26.0	27.5	24.5	22.0	23.0
30	23.5	22.0	22.5	30.0	27.5	29.0	28.5	27.0	28.0	24.5	22.5	23.5
31	---	---	---	30.0	27.5	29.0	28.0	26.5	27.5	---	---	---
MONTH	29.5	22.0	26.5	31.5	23.0	28.0	31.0	24.0	28.0	29.5	20.0	25.5

COLORADO RIVER MAIN STEM
08159200 COLORADO RIVER AT BASTROP, TX--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	10.7	7.6	9.0	11.8	7.5	9.1	11.1	9.4	10.1	14.3	13.1	13.6
2	10.3	7.5	8.7	11.0	7.3	8.9	10.2	9.1	9.6	13.7	12.2	13.0
3	8.3	6.7	7.6	10.6	7.0	8.5	10.9	8.8	9.7	12.1	10.3	11.3
4	8.5	6.4	7.2	8.2	7.4	7.8	11.5	9.4	10.3	10.7	10.2	10.5
5	8.7	6.4	7.4	10.1	7.4	8.6	12.0	10.0	10.9	10.8	10.5	10.6
6	8.4	6.3	7.2	10.2	8.1	9.0	12.4	10.5	11.2	11.1	10.4	10.7
7	8.4	6.2	7.1	10.3	8.0	9.1	12.5	10.6	11.4	11.9	10.7	11.2
8	8.2	6.2	7.1	8.8	8.2	8.4	13.2	10.8	11.9	12.4	11.1	11.7
9	7.7	6.5	7.0	8.6	8.0	8.3	13.7	11.2	12.3	11.7	9.2	11.0
10	7.3	6.5	7.0	8.8	8.6	8.7	14.2	11.4	12.6	10.9	10.6	10.8
11	8.0	6.5	7.2	9.2	8.6	8.8	14.4	11.5	12.8	10.8	10.0	10.3
12	8.7	7.3	7.9	9.4	8.4	8.9	14.4	10.6	12.3	10.1	10.0	10.0
13	9.2	7.2	8.0	9.6	8.6	9.0	12.5	10.0	11.3	10.0	9.8	9.9
14	9.3	7.0	8.0	9.6	8.5	9.0	13.9	10.2	11.7	9.9	9.8	9.8
15	9.2	6.8	7.9	9.6	8.4	8.9	13.3	10.5	11.7	9.9	9.6	9.8
16	9.1	6.7	7.8	9.8	8.4	8.9	12.1	9.9	10.8	10.2	9.9	10.1
17	8.2	6.6	7.3	9.9	8.1	8.9	11.7	9.3	10.1	10.4	10.2	10.3
18	9.0	6.5	7.5	9.7	8.0	8.7	11.6	8.4	9.7	10.7	10.3	10.5
19	9.5	6.9	8.1	9.4	7.7	8.4	10.7	9.2	9.9	10.7	10.4	10.6
20	9.5	7.2	8.3	9.3	7.5	8.3	10.1	8.7	9.4	10.4	10.2	10.3
21	8.1	7.3	7.7	9.1	7.2	8.0	9.5	8.5	9.0	10.4	10.2	10.3
22	9.7	7.4	8.4	8.7	6.9	7.6	11.1	9.0	10.1	10.4	10.3	10.4
23	10.0	7.9	8.8	8.6	6.6	7.4	12.6	11.1	11.8	10.5	10.3	10.4
24	10.3	7.9	9.0	9.4	7.2	8.1	13.2	12.1	12.6	10.5	10.4	10.4
25	10.4	8.1	9.1	9.0	7.2	8.0	13.2	12.3	12.8	10.8	10.3	10.6
26	10.5	8.2	9.2	8.7	7.4	7.9	12.8	12.3	12.5	10.3	10.0	10.2
27	10.7	8.2	9.2	8.3	7.1	7.6	13.2	11.8	12.4	9.9	9.6	9.9
28	11.0	8.0	9.2	9.3	7.0	8.0	13.2	12.2	12.6	9.8	9.6	9.6
29	11.2	7.8	9.1	10.2	7.9	8.9	12.4	11.5	12.1	9.7	9.4	9.6
30	11.4	7.7	9.1	10.6	8.9	9.6	12.1	10.6	11.3	10.2	9.5	9.9
31	11.4	7.5	9.1	---	---	---	14.3	11.5	12.7	10.8	10.1	10.5
MONTH	11.4	6.2	8.1	11.8	6.6	8.5	14.4	8.4	11.3	14.3	9.2	10.6
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	11.4	10.5	10.9	18.6	11.6	14.9	9.9	9.6	9.7	7.6	7.2	7.3
2	11.7	10.6	11.1	17.4	12.1	14.6	9.6	9.2	9.4	7.5	7.2	7.3
3	11.4	10.5	10.9	17.5	11.3	14.2	9.5	8.7	9.0	7.4	7.2	7.3
4	10.7	9.3	10.0	17.6	12.0	14.9	9.2	8.5	8.8	7.4	7.1	7.3
5	9.4	9.2	9.3	16.8	12.0	14.5	8.6	6.8	7.7	7.5	7.2	7.3
6	9.4	9.2	9.2	15.6	10.8	13.4	7.9	7.7	7.8	7.8	7.4	7.6
7	9.5	9.3	9.4	13.2	9.8	12.0	7.8	7.7	7.7	7.9	7.7	7.8
8	9.8	9.4	9.6	13.6	9.1	11.5	7.8	7.4	7.7	8.0	7.8	7.9
9	10.0	9.6	9.8	13.3	9.2	11.4	7.3	7.1	7.3	7.9	7.6	7.7
10	10.4	9.6	10.0	12.5	9.6	10.9	7.4	7.2	7.3	8.0	7.7	7.8
11	10.7	9.7	10.2	12.4	9.8	11.0	7.5	7.2	7.4	8.1	8.0	8.0
12	11.6	10.0	10.7	13.0	9.5	11.0	7.6	7.1	7.4	8.2	8.0	8.1
13	12.7	10.0	11.2	13.7	9.6	11.5	7.5	7.1	7.2	8.2	8.0	8.1
14	15.0	10.4	12.5	11.6	10.0	10.8	7.4	6.9	7.1	8.0	7.6	7.8
15	16.4	11.5	13.7	10.0	9.5	9.8	7.0	6.6	6.8	7.6	7.2	7.4
16	13.5	12.2	12.8	10.0	9.8	9.9	7.1	6.9	7.0	7.5	7.1	7.3
17	15.2	11.0	12.8	10.3	9.6	9.9	7.1	6.9	7.0	7.7	7.3	7.5
18	15.4	11.2	13.1	9.8	9.2	9.6	6.9	6.2	6.7	8.0	7.6	7.8
19	16.0	11.0	13.3	10.0	9.3	9.6	6.9	6.7	6.8	8.0	7.7	7.9
20	12.9	10.3	10.9	9.7	9.2	9.5	7.1	6.7	6.9	8.2	7.7	8.0
21	10.9	9.3	10.1	9.4	9.0	9.2	7.5	7.1	7.3	8.2	7.6	7.9
22	13.3	9.8	11.4	9.2	8.8	9.0	7.4	7.2	7.3	8.4	7.5	7.9
23	13.0	10.3	11.6	9.5	9.0	9.3	7.4	7.2	7.3	8.7	7.6	8.1
24	13.7	10.7	12.1	9.9	9.5	9.7	7.3	7.0	7.2	9.2	7.4	8.2
25	13.6	11.1	12.1	9.7	9.3	9.5	7.4	7.0	7.1	9.0	6.7	7.7
26	16.1	11.2	13.6	9.3	9.0	9.2	7.4	6.9	7.1	8.5	7.4	7.8
27	17.2	12.7	14.7	9.2	8.9	9.0	7.7	6.6	7.1	9.4	7.6	8.4
28	15.7	12.7	14.2	9.1	9.0	9.0	8.6	6.9	7.6	9.8	7.7	8.7
29	---	---	---	9.5	9.0	9.3	10.2	7.1	8.5	9.9	7.8	8.8
30	---	---	---	9.7	9.4	9.6	8.8	7.2	7.9	9.9	7.6	8.7
31	---	---	---	9.9	9.6	9.7	---	---	---	9.5	7.4	8.4
MONTH	17.2	9.2	11.5	18.6	8.8	10.9	10.2	6.2	7.6	9.9	6.7	7.9

COLORADO RIVER MAIN STEM

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08159200 COLORADO RIVER AT BASTROP, TX--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	9.0	7.2	8.1	9.5	8.2	8.8	8.3	7.3	7.7	8.8	7.8	8.3
2	8.9	7.0	7.9	9.6	8.6	9.1	8.2	7.1	7.6	8.6	7.8	8.1
3	8.3	7.0	7.6	9.7	8.5	9.0	7.7	6.8	7.2	7.9	7.7	7.8
4	7.8	6.9	7.3	9.2	8.2	8.6	7.4	6.7	6.9	7.7	7.1	7.5
5	7.5	6.6	7.1	8.7	7.2	7.9	7.4	6.8	7.0	7.7	7.2	7.5
6	7.4	6.6	7.0	8.1	7.4	7.8	7.4	6.7	7.0	7.6	7.3	7.4
7	7.3	6.8	7.0	8.7	8.0	8.3	7.3	6.9	7.1	7.8	7.2	7.4
8	7.6	7.0	7.3	9.0	8.2	8.5	7.5	7.0	7.2	7.9	7.3	7.5
9	7.1	6.7	6.9	9.0	8.3	8.6	7.6	7.0	7.3	8.2	7.1	7.5
10	7.5	7.0	7.3	9.2	7.8	8.5	7.6	7.0	7.2	8.4	7.0	7.5
11	7.9	7.4	7.6	9.6	8.1	8.7	7.7	7.0	7.3	9.0	7.2	7.9
12	7.9	7.5	7.7	10.3	8.2	9.1	7.8	7.1	7.4	8.2	7.2	7.6
13	7.4	7.2	7.3	10.9	8.4	9.5	7.5	6.9	7.2	8.2	7.2	7.6
14	8.3	7.4	8.0	11.8	8.4	9.8	7.2	6.9	7.0	8.2	7.4	7.7
15	8.6	8.0	8.3	11.3	7.8	9.5	---	---	---	8.3	7.4	7.8
16	8.9	8.3	8.6	11.9	7.8	9.3	---	---	---	9.0	7.5	8.1
17	9.1	8.5	8.7	11.2	7.3	9.0	---	---	---	8.1	7.4	7.8
18	8.5	8.1	8.3	10.9	7.5	9.1	---	---	---	8.6	7.6	7.9
19	8.8	8.1	8.4	11.1	7.5	9.1	---	---	---	8.3	7.8	8.1
20	9.0	8.3	8.6	9.7	7.6	8.5	---	---	---	9.0	8.2	8.6
21	9.3	8.2	8.7	10.2	7.3	8.6	---	---	---	9.4	8.7	9.0
22	9.4	8.4	8.8	9.4	7.3	8.2	---	---	---	9.5	8.6	8.9
23	9.6	8.4	8.9	9.4	7.4	8.2	---	---	---	8.6	8.3	8.5
24	10.1	8.5	9.2	9.5	7.6	8.4	8.4	7.6	7.9	9.4	8.2	8.6
25	10.2	8.8	9.4	9.3	7.7	8.4	8.6	7.8	8.1	9.6	8.2	8.8
26	9.3	8.6	8.9	9.0	7.8	8.3	8.7	7.8	8.3	9.6	8.5	8.9
27	9.0	8.5	8.7	9.1	7.6	8.2	8.9	7.9	8.3	9.7	8.6	9.0
28	9.1	8.6	8.8	8.8	7.4	8.0	9.0	7.9	8.5	10.5	8.6	9.4
29	8.9	8.6	8.8	8.4	7.3	7.8	---	7.9	8.5	10.9	8.8	9.7
30	9.5	8.9	9.2	8.5	7.4	7.8	8.8	7.8	8.3	11.2	8.9	9.9
31	---	---	---	8.4	7.4	7.8	8.9	7.8	8.3	---	---	---
MONTH	10.2	6.6	8.1	11.9	7.2	8.6	9.0	6.7	7.6	11.2	7.0	8.2

COLORADO RIVER MAIN STEM

08160400 COLORADO RIVER ABOVE LAGRANGE, TX

LOCATION.--Lat 29°54'44", long 96°54'13", Fayette County, Hydrologic Unit 12090301, at right downstream end of bridge on new State Highway 71, 1.4 mi upstream from Buckners Creek, and at mile 177.

DRAINAGE AREA.--40,874 mi², of which 11,403 mi² is noncontributing.

PERIOD OF RECORD.--1979-82 (discharge measurements only), April 1988 to current year.

GAGE.--Water-stage recorder. Datum of gage is 210.04 ft above National Geodetic Vertical Datum of 1929. Dec. 12, 1979, to Sept. 30, 1982, discharge measurements only were made at old State Highway 71 bridge, 1.0 mi downstream and at different datum.

REMARKS.--Records good, except those for estimated daily discharges, which are poor. At times, low-flow releases from Lake Travis (station 08154500) are made for generation of electric power and/or to fulfill downstream water contracts. There are many diversions above station for irrigation and for municipal supply. Regulation is the same as that for Colorado River at Austin (08158000), and Colorado River at Bastrop (08159200). Several observations of water temperature were made during the year. Gage-height telemeter located at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,500 ft³/s May 19, 1989 (gage height 13.47 ft); minimum daily, 167 ft³/s on Dec. 21, 22, 1989.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1869, about 56.7 ft on July 9, 1869 (from marble high-water marker in LaGrange). Stages of other floods are as follows: Dec. 5, 1913, 56.4 ft, from floodmark; June 17, 1935, 50.84 ft, from floodmarks (discharge 255,000 ft³/s from rating curve extended above 200,000 ft³/s); July 27, 1938, 42.95 ft (discharge, 200,000 ft³/s). This data was collected at a site 2.6 mi downstream at streamflow station Colorado River at LaGrange (discontinued) at different datum than at present site.

EXTREMES FOR CURRENT YEAR.--Maximum discharge 41,100 ft³/s Jan. 11 at 0800 hours (gage height, 29.10 ft); minimum daily, 170 ft³/s Nov. 5.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1320	183	205	259	775	561	e2000	1250	2030	2940	1400	1970
2	1340	178	222	353	756	583	e1700	1610	2000	2550	1370	2020
3	1310	176	225	1050	706	609	e1400	2240	2000	2510	1390	2220
4	1290	172	230	922	5450	586	e1200	2980	2130	2670	1610	2650
5	1280	170	250	1060	15100	515	3900	5700	2500	4720	1760	2150
6	1150	235	263	605	5160	470	13000	3400	2290	5000	1770	1560
7	1100	300	264	454	2000	e440	6510	2430	2190	2280	1810	1980
8	1070	374	248	395	1370	e425	e2300	3500	2420	2250	1830	1640
9	1090	346	259	606	1090	e420	e1700	6210	1990	2210	1820	1200
10	1130	1040	278	20700	1010	e510	e1400	5840	1990	2280	1840	1230
11	1840	1040	280	36500	864	607	e1300	3940	2260	2000	1810	1390
12	1260	590	290	7880	811	895	e1000	3510	2340	1960	1980	1190
13	1090	428	303	2490	737	918	e1100	3410	2920	1950	1860	1560
14	662	349	379	1810	651	917	6160	3530	2850	1930	1630	1700
15	477	307	369	4880	602	1240	4300	2080	2270	1850	1790	1800
16	392	278	307	6070	619	1840	2210	1570	2400	1780	3920	1770
17	365	265	283	2810	624	2180	792	1870	2420	1860	3310	1410
18	346	252	275	9460	665	1800	5450	1730	2680	1690	2140	2000
19	515	238	259	20600	703	1490	e6000	1880	3120	1710	2190	1770
20	437	225	309	8150	687	e1800	e6000	1920	3080	1630	2130	1810
21	347	217	438	2660	1100	e2050	e5300	1880	2340	1770	1790	1780
22	309	216	458	1840	1110	e2080	e4500	1820	2230	1390	1510	1800
23	291	215	357	1440	1160	e2100	e3000	1720	2180	1370	1950	1790
24	273	207	418	1540	1090	e2100	e1500	1510	2190	1590	1890	1830
25	361	210	606	1930	782	e2100	e1100	1680	2170	1570	1950	1380
26	313	260	451	1850	619	e2100	e900	2090	2160	1610	1940	879
27	260	273	360	1280	565	e2100	e800	2050	3170	1620	1930	1470
28	236	241	300	1060	554	e2100	e690	1840	3400	1440	1930	1620
29	220	221	275	1000	---	e2100	e670	1810	3260	1440	1910	1120
30	203	207	290	882	---	e2100	649	1880	3160	1440	1920	1030
31	192	---	270	816	---	e2100	---	2030	---	1430	1930	---
TOTAL	22469	9413	9721	143352	47360	41836	88531	80910	74140	64440	60010	49719
MEAN	725	314	314	4624	1691	1350	2951	2610	2471	2079	1936	1657
MAX	1840	1040	606	36500	15100	2180	13000	6210	3400	5000	3920	2650
MIN	192	170	205	259	554	420	649	1250	1990	1370	1370	879
AC-FT	44570	18670	19280	284300	93940	82980	175600	160500	147100	127800	119000	98620

CAL YR 1990 TOTAL 421370 MEAN 1154 MAX 4800 MIN 170 AC-FT 835800
WTR YR 1991 TOTAL 691901 MEAN 1896 MAX 36500 MIN 170 AC-FT 1372000

e Estimated

COLORADO RIVER BASIN

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08160800 REDGATE CREEK NEAR COLUMBUS, TX

LOCATION.--Lat 29°47'56", long 96°31'55", Colorado County, Hydrologic Unit 12090301, on left bank at downstream side of bridge on Farm Road 109, 1.9 mi upstream from Cummins Creek, and 7.0 mi north of Columbus.

DRAINAGE AREA.--17.3 mi².

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

REVISED RECORDS.--WSP 2122: Drainage area.

GAGE.--Water-stage recorder and crest-stage gages. Datum of gage is 210.82 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1975, at datum 10.00 ft higher.

REMARKS.--No estimated daily discharges. Records fair. There are no known diversions above station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--29 years, 5.24 ft³/s (4.11 in/yr), 3,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,360 ft³/s May 22, 1979 (gage height, 27.19 ft), from rating curve extended above 2,170 ft³/s on basis of slope-area measurement of peak flow of Jan. 22, 1965; no flow for many days.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1860, about 33.4 ft in late June or early July 1940, from information by State Department of Highways and Public Transportation and local resident.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 14	1900	2,690	20.98	Apr. 17	2400	1,620	18.26
Apr. 14	0900	1,790	18.71	Sept. 3	1500	1,480	17.84
Apr. 14	1300	*2,820	*21.31				

Minimum discharge, 0.03 ft³/s Oct. 3-8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	.04	.07	1.3	.82	1.1	3.1	.93	1.2	.47	.65	.31	1.1		
2	.04	.07	1.5	110	.96	1.6	.99	1.2	.47	.66	.25	.62		
3	.03	.07	1.6	14	.93	1.2	1.1	4.6	.79	.81	.24	140		
4	.03	.38	1.4	5.7	61	.99	3.8	3.5	1.2	30	.21	6.0		
5	.03	.38	1.1	5.2	7.1	.99	167	2.0	.55	5.9	.33	1.6		
6	.03	.19	1.3	4.9	3.1	.99	9.8	1.3	.45	2.1	.35	.60		
7	.03	.14	1.5	4.6	1.8	.92	21	1.2	.96	1.2	.56	.68		
8	.03	4.5	1.4	4.6	1.4	.80	6.5	2.0	.74	1.3	.61	.94		
9	.14	2.3	1.2	15	1.2	.72	3.7	2.0	.56	1.1	2.4	1.3		
10	.10	.57	1.2	119	1.1	.68	2.5	1.5	.94	.71	.62	1.2		
11	.06	.41	.99	6.5	1.0	.79	2.5	1.3	.67	.58	.29	.97		
12	.05	.40	1.0	4.3	.88	.89	2.2	1.1	.43	.51	.18	.73		
13	.05	.39	1.3	3.7	.88	.72	2.2	1.4	.44	.47	.15	.79		
14	.05	.44	1.4	303	.86	.72	618	3.7	.47	.40	.13	.98		
15	.05	.29	1.6	49	.76	1.0	31	2.1	.64	.37	6.3	.88		
16	.04	.22	1.7	10	.75	2.2	19	1.6	4.7	.63	2.2	1.0		
17	.56	.22	1.8	6.7	1.1	1.9	.99	4.1	3.0	.95	.61	.83		
18	.85	.22	1.9	198	1.1	1.0	164	1.9	1.5	.46	.44	1.1		
19	.17	.25	2.0	8.1	5.2	.93	9.9	1.8	.96	.37	.41	1.3		
20	.09	.25	2.0	4.0	1.4	.93	5.9	3.2	.93	.37	.34	1.2		
21	.10	.25	2.0	2.8	1.3	1.0	4.4	1.5	.76	.66	.33	1.1		
22	.14	.25	2.0	2.5	1.3	1.1	3.8	1.2	.68	1.3	.30	1.1		
23	.15	.28	2.0	1.9	1.0	.95	3.5	1.2	.63	1.9	.40	1.2		
24	.10	.32	2.0	2.7	.93	.93	2.7	.85	.69	.72	.40	4.6		
25	.09	.52	1.8	1.9	1.6	.96	2.5	.71	.61	.44	.38	1.3		
26	.09	.69	7.2	1.5	1.4	1.0	2.1	.59	.80	.36	.26	.73		
27	.09	.91	2.3	1.4	.94	1.1	2.1	.58	.55	.36	.23	.63		
28	.09	1.3	.89	1.4	1.2	1.1	2.0	.50	.57	.31	.21	.63		
29	.12	1.4	.86	1.2	---	1.2	1.7	.54	1.1	1.1	.22	.59		
30	.15	1.1	.87	1.4	---	.95	1.3	.54	1.1	1.6	.21	.59		
31	.08	---	.88	1.3	---	.93	---	.51	---	.67	.87	---		
TOTAL	3.67	18.78	51.99	897.12	103.29	34.29	1197.12	51.42	91.72	58.96	20.74	176.29		
MEAN	.12	.63	1.68	28.9	3.69	1.11	39.9	1.66	3.06	1.90	.67	5.88		
MAX	.85	4.5	7.2	303	61	3.1	618	4.6	64	30	6.3	140		
MIN	.03	.07	.86	.82	.75	.68	.93	.50	.43	.31	.13	.59		
AC-FT	7.3	37	103	1780	205	68	2370	102	182	117	41	350		
CFSM	.01	.04	.10	1.67	.21	.06	2.31	.10	.18	.11	.04	.34		
IN.	.01	.04	.11	1.93	.22	.07	2.57	.11	.20	.13	.04	.38		
CAL YR 1990	TOTAL	367.62	MEAN	1.01	MAX	67	MIN	.00	AC-FT	729	CFSM	.06	IN.	.79
WTR YR 1991	TOTAL	2705.39	MEAN	7.41	MAX	618	MIN	.03	AC-FT	5370	CFSM	.43	IN.	5.82

COLORADO RIVER MAIN STEM

08161000 COLORADO RIVER AT COLUMBUS, TX

LOCATION.--Lat 29°42'22", long 96°32'12", Colorado County, Hydrologic Unit 12090302, near right bank at downstream side of pier of bridge on U.S. Highway 90 at eastern edge of Columbus, 340 ft downstream from Texas and New Orleans Railroad Co. bridge, 2.6 mi downstream from Cummins Creek, and at mile 135.1.

DRAINAGE AREA.--41,640 mi², approximately, of which 11,403 mi² probably is noncontributing; 41,730 mi², approximately, at site "near Eagle Lake".

PERIOD OF RECORD.--January 1903 to December 1911 (gage heights only), May 1916 to current year. Discharge records for 1902-11, published in WSP 84, 99, 132, 174, 210, 288, and 308, have been found to be unreliable and should not be used. Records collected at site 23 mi downstream October 1930 to May 1939, published as "near Eagle Lake". Gage-height records collected in this vicinity since 1903 are contained in reports of the National Weather Service. Water-quality records.--Chemical analyses: October 1967 to September 1971. Chemical and biochemical analyses: February 1968 to September 1981. Sediment records: March 1957 to September 1973.

REVISED RECORDS.-- WSP 1562: 1920-21(M), 1922. WDR TX-81-3: Drainage area. See also PERIOD OF RECORD.

GAGE.--Water-stage recorder. Datum of gage is 145.52 ft above National Geodetic Vertical Datum of 1929. Prior to May 1, 1919, various nonrecording gages at sites in the immediate vicinity at datum 7.00 ft higher. May 1, 1919, to Nov. 23, 1930, water-stage recorder at site about 300 ft downstream at datum 7.00 ft higher. Sept. 17, 1930, to June 12, 1939 (Oct. 1, 1930, to May 31, 1939, used herein), water-stage recorder at site 23 mi downstream at different datum. May 17 to Nov. 14, 1939, nonrecording gage at present site and datum 10.00 ft higher; Nov. 15, 1939 to Dec. 31, 1988, water stage recorder at present site and at datum 10.00 ft higher.

REMARKS.--No estimated daily discharges. Records good. At times, low-flow releases from Lake Travis, 251 mi upstream, are made for the generation of electric power and (or) to fulfill downstream water contracts. During the current year, the Lower Colorado River Authority also reported that 11,500 acre-ft was diverted from the river upstream to Cedar Creek Reservoir. Cedar Creek Reservoir is located 10 mi north of the Colorado river and 3.5 mi west of Fayetteville. Flow is also affected at times by discharge from the flood-detention pools of 20 floodwater-retarding structures with a combined detention capacity of 25,570 acre-ft. These structures control runoff from an 73.1 mi² area in the Cummins Creek watershed. There are many other diversions above this station for irrigation and for municipal supply. Several observations of water temperature were made during the year. Gage-height telemeter at station.

AVERAGE DISCHARGE.--20 years (water years 1917-36) unregulated, 3,809 ft³/s (2,760,000 acre-ft/yr); 55 years (water years 1937-91) regulated, 2,814 ft³/s (2,039,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 190,000 ft³/s June 18, 1935 (gage height, 48.5 ft), present site and datum, computed on basis of records for station near Eagle Lake; minimum, 93 ft³/s Sept. 1, 1918.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1852, 51.6 ft, present datum, in July 1869 and Dec. 6, 1913, from information by local resident. River divided each time and left Columbus on an island.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 32,300 ft³/s Jan. 11 at 2400 hours (gage height, 30.12 ft); minimum daily, 249 ft³/s Dec. 3-7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1320	266	253	319	958	810	1700	851	2020	2840	1450	1800
2	1350	261	252	428	920	786	1660	1410	2010	2410	1420	1880
3	1380	260	249	1870	912	746	1510	2420	2000	2190	1360	1960
4	1350	258	249	1910	2310	753	1070	4200	2020	3260	1370	2560
5	1320	256	249	1350	14400	737	3630	5330	2120	4300	1590	2730
6	1310	253	249	1200	12900	671	15300	6180	2340	6690	1700	1980
7	1210	253	249	798	4650	611	16600	3980	2080	4010	1750	1730
8	1140	309	252	606	2500	589	7070	2940	2040	2370	1810	1920
9	1140	452	252	524	1810	566	3430	6090	2220	2350	1790	1540
10	1160	433	250	9210	1450	546	2780	7520	1690	2320	1810	1290
11	1210	953	255	26800	1280	562	2190	5920	1960	2210	1800	1290
12	1820	1060	263	25000	1130	819	1870	4490	2120	1870	1880	1380
13	1340	713	264	5530	1050	905	1650	4280	2220	1820	2000	1260
14	1170	522	271	3370	974	939	10400	4660	2660	1780	1790	1550
15	860	418	314	5500	929	952	21200	3830	2830	1760	1680	1640
16	663	363	366	7560	920	1440	8220	2400	2180	1740	1890	1680
17	542	326	324	5920	919	2350	4410	2280	2240	1740	4940	1690
18	489	301	283	8150	912	2400	11100	2420	2210	1800	2550	1460
19	451	285	264	21400	919	2030	8630	2310	2480	1640	2030	1850
20	510	271	259	17900	947	1670	4060	2420	2840	1700	2020	1670
21	558	261	257	6390	928	1850	4070	2440	2550	1620	1990	1650
22	458	259	394	3050	1200	1770	3670	2350	2070	1820	1590	1630
23	401	256	442	2280	1210	1690	3470	2260	2010	1480	1470	1650
24	366	255	409	1830	1270	1730	3240	2090	1960	1460	1740	1630
25	343	254	367	1970	1190	1730	2420	1900	1950	1580	1670	1820
26	363	253	668	2190	971	1720	1520	1900	1970	1570	1750	1310
27	397	253	597	1930	874	1700	1270	2120	2090	1610	1740	1020
28	343	274	445	1420	833	1700	1200	2020	2900	1600	1740	1320
29	308	259	364	1230	---	1710	1010	1880	3110	1470	1750	1440
30	286	253	325	1120	---	1710	911	1850	2790	1470	1740	1110
31	274	---	311	1020	---	1720	---	1950	---	1450	1790	---
TOTAL	25832	10790	9946	169775	61266	39912	151261	98691	67680	67930	57600	49440
MEAN	833	360	321	5477	2188	1287	5042	3184	2256	2191	1858	1648
MAX	1820	1060	668	26800	14400	2400	21200	7520	3110	6690	4940	2730
MIN	274	253	249	319	833	546	911	851	1690	1450	1360	1020
AC-FT	51240	21400	19730	336700	121500	79170	300000	195800	134200	134700	114200	98060
CAL YR 1990	TOTAL	391152	MEAN	1072	MAX	4930	MIN	217	AC-FT	775800		
WTR YR 1991	TOTAL	810123	MEAN	2220	MAX	26800	MIN	249	AC-FT	1607000		

08162000 COLORADO RIVER AT WHARTON, TX
(National stream-quality accounting and radiochemical network)

LOCATION.--Lat 29°18'32", long 96°06'13", Wharton County, Hydrologic Unit 12090302, near left bank at downstream side of downstream bridge on U.S. Highway 59 in Wharton, 1,100 ft downstream from Texas and New Orleans Railroad Co. bridge, 12 mi upstream from Jones Creek, and at mile 66.6.

DRAINAGE AREA.--42,003 mi², approximately, of which 11,403 mi² probably is noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1916 to August 1918 (intermittent periods), March 1919 to September 1925, July and August 1938 (flood discharge measurements only), October 1938 to current year. June to November 1901 and May to September 1902, daily records published in U.S. Department of Agriculture, Office of Experiment Stations, Bulletin Nos. 119 and 133. Gage-height records collected in this vicinity since 1935 are contained in reports of the National Weather Service.

REVISED RECORDS.--WSP 878: 1938(M). WDR TX-81-3: Drainage area. WDR TX-88-3: 1985.

GAGE.--Water-stage recorder. Datum of gage is 52.42 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1938, various types of recording and nonrecording gages 800 ft upstream at different datum. Oct. 1, 1938, to June 1, 1966, nonrecording gage 100 ft upstream at datum 13.00 ft higher. June 1, 1966, to Sept. 30, 1975, water-stage recorder at present site at datum 13 ft higher. Oct. 1, 1975, to Mar. 1, 1983, water-stage recorder at present site at datum 10 ft higher.

REMARKS.--Records good except those for estimated daily discharges, which are fair. There are many diversions above station for irrigation, municipal supply, cooling water for thermal-electric power plant, and for oil field operations. For statement regarding upstream regulation, see station 08161000. Gage-height telemeter at station.

AVERAGE DISCHARGE.--5 years (water years 1920-25) unregulated, 3,680 ft³/s (2,666,000 acre-ft/yr); 53 years (water years 1939-91) regulated, 2,595 ft³/s (1,880,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 100,000 ft³/s July 3, 1940 (gage height, 38.99 ft); no flow Aug. 6, 1925 (result of pumping). Flood of July 30, 1938, reached a stage of 50.4 ft, present datum, observed by Geological Survey engineers (discharge, 145,000 ft³/s).

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1869, 51.9 ft Dec. 8, 1913, present datum, from information by local residents; below Wharton floodwater combined with that of the Brazos River. Flood of about July 12, 1869, reached about same height. Flood of June 20, 1935, reached a stage of 51.2 ft, present datum, furnished by National Weather Service (discharge, 159,000 ft³/s), from rating curve defined by current-meter measurements below 145,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 28,800 ft³/s Jan. 12 at 2300 hours (gage height, 31.63 ft); minimum daily, 221 ft³/s Nov. 7 (result of regulation and pumping).

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	391	283	391	452	1240	860	1730	393	1280	2870	984	886
2	395	264	373	446	1150	785	1550	322	1420	2630	809	999
3	425	250	319	569	1070	771	1460	485	1500	2380	646	1120
4	545	238	274	1290	1240	781	2460	1520	1440	1980	502	1540
5	586	240	259	e1870	2870	784	3880	3230	1290	2520	395	2310
6	542	238	262	e1500	13700	805	5410	4340	1240	3770	514	2720
7	516	221	280	e1410	11600	732	14500	5180	1460	5480	793	2240
8	491	228	362	e1030	4960	693	15000	3610	1320	3840	923	1770
9	454	320	365	839	2900	653	7250	3070	1260	2190	810	1930
10	494	405	372	1870	2160	626	4250	5480	1490	2100	790	1700
11	428	446	378	10000	1760	600	3790	6730	1300	2080	778	1180
12	464	468	373	25300	1560	573	3040	5450	1130	2010	813	987
13	752	1100	373	21300	1360	708	2530	4270	1440	1720	785	860
14	861	949	356	6330	1240	886	2600	3980	1460	1600	944	758
15	668	704	337	4340	1150	959	14100	4060	1910	1450	885	741
16	725	e568	326	6090	1030	1060	19500	3350	2690	1390	724	927
17	735	e483	340	7540	972	1350	8730	2180	2580	1510	845	866
18	763	e428	371	6700	946	2110	5350	1790	2280	1590	2970	941
19	601	e404	365	12000	972	2350	10900	2040	2160	1560	2210	895
20	495	e428	321	21500	987	2070	8220	1960	1950	1370	1220	1190
21	471	e408	302	16100	1090	1800	4580	2110	2150	1350	1220	1100
22	500	e395	271	6680	999	1860	4270	2140	1980	1330	1210	1110
23	446	e386	285	3700	1180	1790	3870	2110	1380	1540	1020	1080
24	379	e343	454	2780	1320	1710	3500	2000	1180	1410	724	1130
25	334	e327	520	2270	1330	1680	3110	1820	1110	1140	820	1170
26	302	352	531	2170	1350	1650	2460	1550	1090	1230	753	1280
27	309	365	561	2370	1150	1610	1630	1390	1130	1230	792	1080
28	353	359	714	2220	947	1650	1160	1350	1210	1290	861	674
29	371	354	667	1780	---	1680	902	1370	2150	1360	836	731
30	336	384	555	1500	---	1650	622	1310	3070	1170	878	982
31	308	---	496	1360	---	1720	---	1260	---	1070	855	---
TOTAL	15440	12338	12153	175306	64233	38956	162354	81850	49050	60160	29309	36897
MEAN	498	411	392	5655	2294	1257	5412	2640	1635	1941	945	1230
MAX	861	1100	714	25300	13700	2350	19500	6730	3070	5480	2970	2720
MIN	302	221	259	446	946	573	622	322	1090	1070	395	674
AC-FT	30630	24470	24110	347700	127400	77270	322000	162300	97290	119300	58130	73190
CAL YR 1990	TOTAL	260035	MEAN	712	MAX	3470	MIN	204	AC-FT	515800		
WTR YR 1991	TOTAL	738046	MEAN	2022	MAX	25300	MIN	221	AC-FT	1464000		

e Estimated

COLORADO RIVER MAIN STEM

08162000 COLORADO RIVER AT WHARTON, TX--Continued
(National stream-quality accounting and radiochemical network)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: April 1944 to current year. Chemical and biochemical analyses: January 1968 to current year. Pesticide analyses: October 1967 to June 1982. Sediment analyses: October 1974 to current year. Radiochemical analyses: December 1973 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: April 1944 to current year.

WATER TEMPERATURE: October 1945 to September 1948, March 1950 to current year.

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

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 932 microsiemens Sept. 7, Nov. 16, 1990; minimum daily, 139 microsiemens Nov. 12, 1985.

WATER TEMPERATURE: Maximum daily, 35.0°C July 26, 1954; minimum daily, 0.0°C Dec. 26, 1983.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 932 microsiemens Nov. 16; minimum daily, 226 microsiemens Jan. 12.

WATER TEMPERATURE: Maximum daily, 31.0°C July 16, 31, Aug. 1; minimum daily, 2.0°C Dec. 24.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI, FECAL, KF AGAR (COLS. PER 100 ML)	
NOV 14...	1030	987	829	8.2	15.0	29	9.0	88	1.3	120	150	
JAN 09...	1420	795	460	8.0	10.0	65	10.6	92	2.2	550	680	
MAR 05...	1120	785	656	8.9	17.5	4.0	10.0	104	0.8	28	32	
APR 23...	1048	3850	448	7.9	23.0	45	6.9	80	0.9	220	330	
JUN 10...	1157	1540	798	8.5	26.5	35	6.8	84	2.0	88	120	
AUG 12...	1123	785	866	8.2	30.5	22	5.2	69	1.4	80	28	
DATE		HARD-NESS TOTAL (MG/L AS CaCO3)	HARD-NESS NONCARB DISSOLV FLD. AS CaCO3 (MG/L)	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)	CAR-BONATE WATER DIS IT FIELD (MG/L AS CO3)	BICAR-BONATE WATER DIS IT FIELD (MG/L AS HCO3)	ALKA-LINITY WAT DIS TOT IT FIELD (MG/L AS CaCO3)	SULFATE DIS-SOLVED (MG/L AS SO4)
NOV 14...	250	69	62	22	71	2	6.9	0	216	176	71	
JAN 09...	140	46	39	11	34	1	5.4	0	118	96	46	
MAR 05...	250	79	71	18	44	1	4.1	13	185	173	76	
APR 23...	160	55	53	7.2	25	0.9	4.5	0	131	107	42	
JUN 10...	240	88	56	23	66	2	4.9	3	173	147	90	
AUG 12...	250	100	56	26	75	2	7.1	4	166	144	110	
DATE		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 CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)
NOV 14...	93	0.50	5.2	463	448	1.78	1.79	0.020	0.010	1.80	1.80	
JAN 09...	53	0.30	5.5	261	259	1.28	--	0.020	<0.010	1.30	1.30	
MAR 05...	72	0.30	4.1	383	395	0.190	0.200	0.020	0.020	0.210	0.220	
APR 23...	35	0.40	11	268	252	2.06	2.08	0.240	0.020	2.30	2.10	
JUN 10...	110	0.20	6.0	448	447	0.490	0.460	0.030	0.040	0.520	0.500	
AUG 12...	130	0.40	8.8	481	503	0.680	--	0.010	<0.010	0.690	0.680	

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(National stream-quality accounting and radiochemical network)

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	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, ORGANIC DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (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- PHORUS ORTHO TOTAL (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)
NOV 14...	0.070	0.070	0.33	--	--	0.40	0.600	0.550	0.550	0.590	1.7
JAN 09...	0.160	0.160	0.44	--	--	0.60	0.370	0.320	0.300	0.310	0.92
MAR 05...	<0.010	0.020	--	--	--	0.40	0.120	0.110	0.110	0.120	0.34
APR 23...	0.150	0.020	0.75	--	--	0.90	0.400	0.190	0.160	0.310	0.49
JUN 10...	0.020	<0.010	0.88	--	--	0.90	0.250	0.150	0.120	0.160	0.37
AUG 12...	0.010	0.010	0.39	0.39	0.40	0.40	0.300	0.250	0.230	0.240	0.71

DATE	SEDI- MENT, DIS- SOLVED (MG/L)	SEDI- MENT, CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. STIEVE DIAM. % FINER THAN .062 MM	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)
NOV 14...	62	165	90	40	3	100	<0.5	<1.0	<1	<3	3
JAN 09...	90	193	95	--	--	--	--	--	--	--	--
MAR 05...	22	47	45	20	1	96	0.5	<1.0	<1	<3	1
APR 23...	910	9460	94	--	--	--	--	--	--	--	--
JUN 10...	133	553	80	<10	2	100	<0.5	<1.0	<1	<3	2
AUG 12...	55	117	91	20	2	110	<0.5	<1.0	1	<3	2

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)
NOV 14...	7	<1	20	1	<0.1	<10	2	<2	<1.0	570
JAN 09...	--	--	--	--	--	--	--	--	--	--
MAR 05...	5	<1	13	4	<0.1	<10	1	<1	<1.0	540
APR 23...	--	--	--	--	--	--	--	--	--	--
JUN 10...	6	<1	17	1	<0.1	<10	1	<1	<1.0	580
AUG 12...	4	<1	14	2	<0.1	<10	<1	<1	<1.0	620

DATE	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 YT-90)	GROSS BETA, SUSP. TOTAL (PCI/L AS YT-90)	RADIUM 226, DIS- SOLVED METHOD (PCI/L)	URANIUM NATURAL DIS- SOLVED (UG/L AS U)
NOV 14...	<6	3	2.2	2.9	9.7	2.3	7.4	2.1	0.15	1.1
JAN 09...	--	--	--	--	--	--	--	--	--	--
MAR 05...	<6	5	--	--	--	--	--	--	--	--
APR 23...	--	--	--	--	--	--	--	--	--	--
JUN 10...	<6	<3	--	--	--	--	--	--	--	--
AUG 12...	<6	5	1.2	1.1	9.2	1.3	6.9	1.2	0.14	0.71

COLORADO RIVER MAIN STEM

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(National stream-quality accounting and radiochemical network)

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1990 TO SEPTEMBER 1991

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. 1990	15440	874	485	20200	120	4850	83	3480	270
NOV. 1990	12338	803	447	14900	100	3320	73	2440	260
DEC. 1990	12153	855	475	15600	110	3660	81	2640	260
JAN. 1991	175306	332	189	89600	22	10300	21	9730	140
FEB. 1991	64233	434	246	42600	36	6180	30	5280	170
MAR. 1991	38956	768	428	45000	91	9610	68	7140	250
APR. 1991	162354	405	230	101000	31	13700	27	12000	170
MAY 1991	81850	643	361	79700	67	14800	52	11500	230
JUNE 1991	49050	804	448	59300	99	13100	73	9650	260
JULY 1991	60160	735	411	66700	86	14000	64	10500	250
AUG. 1991	29309	788	439	34700	97	7640	71	5630	250
SEPT 1991	36897	788	439	43800	96	9520	71	7030	260
TOTAL	738046	**	**	613000	**	111000	**	87000	**
WTD.AVG.	2022	547	308	**	56	**	44	**	200

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY EQUIVALENT MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	907	873	702	866	598	668	863	627	754	823	854	820
2	913	872	712	890	609	673	857	623	790	840	e860	819
3	919	e880	722	777	633	674	869	619	821	816	e847	833
4	915	e886	746	616	634	673	875	688	836	806	854	800
5	825	893	763	e565	547	669	424	792	843	837	853	783
6	917	900	775	505	360	658	477	635	839	683	853	782
7	e920	896	787	498	233	637	433	552	831	649	826	712
8	923	874	803	454	269	656	366	357	825	456	682	763
9	917	734	822	424	316	686	345	589	812	437	854	757
10	917	773	845	517	373	710	352	582	795	471	870	680
11	923	789	860	502	384	730	372	544	776	568	858	701
12	918	816	881	226	406	738	415	e550	777	744	862	745
13	915	868	900	241	445	754	478	545	807	734	864	755
14	922	829	912	250	495	765	e480	631	814	e777	871	778
15	925	920	e919	305	542	782	488	698	e810	808	870	784
16	e915	932	927	385	581	783	247	720	e825	777	874	791
17	901	863	931	416	606	772	243	700	e817	816	868	817
18	e855	817	925	397	627	799	246	703	e815	820	859	819
19	760	816	901	296	653	718	423	725	e810	838	808	822
20	798	799	889	269	668	698	233	734	e795	841	626	823
21	752	749	882	284	663	705	254	670	e800	834	584	836
22	775	e740	895	291	676	798	365	742	e750	819	584	832
23	819	e700	e905	230	659	e799	427	748	e749	808	601	819
24	832	e685	918	375	682	797	561	760	762	835	646	828
25	823	640	909	434	723	814	604	787	789	829	689	827
26	841	647	895	490	725	822	684	792	786	816	755	833
27	855	658	839	545	712	843	e670	790	816	829	792	846
28	852	673	863	585	696	857	664	780	833	836	799	787
29	839	685	864	513	---	852	641	795	833	862	799	810
30	834	697	845	588	---	863	637	704	789	859	810	831
31	846	---	848	603	---	858	---	776	---	844	824	---
MEAN	870	797	851	462	554	750	500	676	803	765	793	794

e Estimated

COLORADO RIVER MAIN STEM

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08162000 COLORADO RIVER AT WHARTON, TX--Continued
(National stream-quality accounting and radiochemical network)

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25.0	20.0	14.0	7.0	9.0	16.5	18.0	25.0	29.0	29.0	31.0	29.0
2	20.0	21.0	16.0	8.0	10.0	18.0	19.0	24.0	29.0	30.0	---	29.0
3	20.0	---	12.0	10.0	12.0	15.0	20.0	25.0	29.0	29.0	---	28.5
4	27.0	---	10.0	9.0	10.0	15.0	21.0	25.0	28.0	30.0	30.0	27.0
5	26.0	14.0	9.0	---	15.0	17.0	20.0	26.0	30.0	29.0	28.0	26.0
6	28.0	15.0	12.0	13.0	14.0	19.0	19.0	22.0	29.0	29.0	29.0	27.0
7	---	17.5	12.0	10.0	14.0	20.0	20.0	23.0	29.0	29.0	28.5	27.0
8	28.0	16.0	9.0	10.0	14.0	18.0	20.0	23.0	27.0	28.0	28.0	28.0
9	25.0	14.0	9.0	10.0	15.0	17.0	21.0	22.0	27.0	29.0	29.0	28.0
10	17.0	12.0	11.0	12.0	15.0	17.0	22.0	24.0	26.0	29.0	29.0	28.0
11	16.0	13.0	14.0	10.0	15.0	17.0	23.0	24.0	27.0	30.0	30.0	28.0
12	17.0	15.0	15.0	9.0	16.0	19.0	24.0	---	28.0	30.0	30.0	28.0
13	18.0	15.0	17.0	9.0	17.0	18.0	24.0	25.0	29.0	30.0	30.0	29.0
14	20.5	15.0	19.0	10.0	17.0	17.0	---	26.0	29.0	---	29.0	28.0
15	22.5	17.0	---	11.0	15.0	15.0	22.0	25.0	---	30.0	28.0	29.0
16	---	20.0	20.0	11.0	13.0	14.0	22.0	27.0	---	31.0	28.0	28.5
17	24.0	19.0	22.0	11.0	16.0	16.0	22.5	25.0	---	29.0	29.0	29.0
18	---	20.0	19.0	12.0	18.0	16.0	23.0	24.0	---	30.0	29.5	28.0
19	18.0	20.0	15.0	11.0	17.0	17.0	24.0	25.0	---	30.0	29.5	26.5
20	20.0	21.0	17.0	10.0	14.0	18.0	21.0	25.0	---	30.0	30.0	22.0
21	24.0	21.0	20.0	8.0	14.0	20.0	22.0	25.0	---	30.0	30.0	22.0
22	17.0	---	8.0	9.0	13.0	20.0	24.0	26.5	---	29.0	30.0	23.0
23	15.0	---	---	9.0	13.0	---	22.0	26.5	---	28.0	29.0	25.0
24	17.0	---	2.0	10.0	14.0	20.0	23.0	27.0	30.0	29.0	29.5	25.0
25	17.0	20.0	4.0	9.0	15.0	20.0	24.0	27.5	28.0	29.0	29.0	22.0
26	16.0	22.0	7.0	10.0	12.0	22.0	25.0	28.5	28.0	30.0	28.0	21.0
27	17.0	22.0	7.0	12.0	13.0	22.0	---	29.0	29.0	29.0	28.0	22.0
28	18.0	20.0	9.0	13.0	14.0	22.0	26.0	29.5	30.0	30.0	28.0	21.0
29	19.0	14.0	15.0	13.0	---	19.0	24.0	29.5	28.0	30.0	28.5	22.0
30	20.0	12.0	19.0	10.0	---	19.0	23.0	27.0	28.0	30.0	29.0	22.5
31	19.0	---	6.0	9.5	---	18.0	---	28.5	---	31.0	28.0	---
MEAN	20.5	17.5	12.5	10.0	14.0	18.0	22.0	25.5	28.5	29.5	29.0	26.0

COLORADO RIVER MAIN STEM

08162500 COLORADO RIVER NEAR BAY CITY, TX

LOCATION.--Lat 28°58'26", long 96°00'44", Matagorda County, Hydrologic Unit 12090302, on right bank, 6,300 ft downstream from bridge on State Highway 35, 7,100 ft downstream from Texas and New Orleans Railroad Co. bridge, 2.8 mi west of Bay City, and at mile 32.5.

DRAINAGE AREA.--42,240 mi², approximately, of which 11,403 mi² probably is noncontributing.

PERIOD OF RECORD.--July 1940 (WSP 1046), April 1948 to current year. Records of elevation collected in this vicinity since 1946 are contained in reports of the National Weather Service.
Water-quality records.--Chemical and biochemical analyses: October 1974 to September 1975.

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

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. July 2-6, 1940, nonrecording gage at highway bridge, 6,300 ft upstream at datum 30.6 ft lower.

REMARKS.--Records good except those for estimated daily discharges, which are fair. There are diversions above station for irrigation and for municipal supply. For statement regarding regulation by Soil Conservation Service floodwater-retarding structures, see station 08161000. Several observations of water temperature were made during the year.
Gage-height telemeter at station.

AVERAGE DISCHARGE.--43 years (water years 1949-91), 2,314 ft³/s (1,676,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 84,100 ft³/s June 26, 1960; maximum elevation, 48.2 ft, present datum, July 4, 1940, at site 6,300 ft upstream at bridge on State Highway 35, observed by U.S. Army Corps of Engineers (elevation 46.6 ft) adjusted to present site; no flow at times in 1951-53 and 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum elevation since 1869, 56.1 ft Dec. 10, 1913. Flood in July 1869 probably reached about same elevation. Elevation of other floods are as follows: May 8, 1922, 55.4 ft; June 1929, 55.0 ft; June 22, 1935, 54.6 ft; Oct. 5, 1936, 52.2 ft; Aug. 2, 1938, 53.4 ft; Nov. 27, 1940, 47.6 ft. All above flood data from information by Texas and New Orleans Railroad Co. and adjusted to present site.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 23,200 ft³/s Apr. 16 at 1400 hours (gage-height, 24.04 ft); minimum daily, 61 ft³/s Oct. 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	63	368	303	404	1470	1140	1810	628	579	2770	477	709
2	61	348	287	392	1370	1020	1710	534	609	2030	371	770
3	83	342	266	984	1300	924	1440	415	714	1890	290	903
4	136	352	223	1220	2830	910	1440	602	744	1470	219	1110
5	288	334	185	1440	e8220	917	12000	2150	672	1240	124	1690
6	363	325	180	1810	e13000	974	17400	3190	569	2540	107	2440
7	340	347	236	1470	e13700	926	18800	5060	559	3800	72	2620
8	298	328	254	1300	7950	854	18100	4220	748	5060	319	2070
9	284	404	306	1160	4100	817	11300	4300	715	2470	380	1840
10	335	481	308	4000	2860	786	5530	4020	778	1560	371	1780
11	312	498	300	9240	2220	777	4860	6540	927	1480	393	1310
12	243	536	297	19300	1850	722	4910	6200	630	1420	403	926
13	275	651	289	20200	1650	468	2990	4390	674	1270	424	782
14	561	959	289	10700	1470	652	2420	3740	745	996	446	678
15	556	737	287	7660	1360	975	7540	3720	875	911	615	559
16	460	566	270	6550	1300	1480	21600	3570	1280	810	600	616
17	534	494	309	7740	1210	2560	12700	2420	1720	803	503	707
18	548	441	282	9390	1140	2040	7190	1550	1330	879	983	672
19	525	404	302	13400	1100	2410	7930	1700	1080	925	2810	733
20	407	400	316	20000	1110	2320	11900	1650	720	840	1460	684
21	382	397	310	19400	1200	2050	5810	1610	657	731	1020	953
22	551	371	289	10500	1240	1860	4210	1660	834	750	1010	949
23	575	354	271	5210	1170	1900	4050	1630	641	834	1070	1010
24	425	346	274	3500	1390	1830	3560	1560	431	1120	822	1010
25	362	331	375	2770	1460	1800	3140	1410	593	874	624	1120
26	336	446	441	2300	1500	1690	2670	1110	633	736	684	1110
27	384	339	476	2480	1430	1670	1900	860	661	763	631	1170
28	412	274	483	2550	1240	1660	1210	688	697	726	701	847
29	447	253	574	2190	---	1740	908	607	1200	761	685	563
30	483	275	532	1790	---	1760	783	624	2640	753	684	689
31	398	---	450	1600	---	1820	---	578	---	568	685	---
TOTAL	11427	12701	9964	192650	81840	43452	201811	72936	25655	43780	19983	33020
MEAN	369	423	321	6215	2923	1402	6727	2353	855	1412	645	1101
MAX	575	959	574	20200	13700	2560	21600	6540	2640	5060	2810	2620
MIN	61	253	180	392	1100	468	783	415	431	568	72	559
AC-FT	22670	25190	19760	382100	162300	86190	400300	144700	50890	86840	39640	65500

CAL YR 1990 TOTAL 203734 MEAN 558 MAX 5520 MIN 37 AC-FT 404100
WTR YR 1991 TOTAL 749219 MEAN 2053 MAX 21600 MIN 61 AC-FT 1486000

e Estimated

TRES PALACIOS RIVER MAIN STEM

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08162600 TRES PALACIOS RIVER NEAR MIDFIELD, TX

LOCATION (REVISED).--Lat 28°55'40", long 96°10'15", Matagorda County, Hydrologic Unit 12100401, at left downstream end of bridge on Farm Road 456, 1.0 mi downstream from Juanita Creek, and 2.4 mi southeast of Midfield. Prior to Sept. 5, 1991, at right downstream end of bridge.

DRAINAGE AREA.--145 mi².

PERIOD OF RECORD.--June 1970 to current year. Prior to October 1973, published as Tres Palacios Creek near Midfield. Water-quality records.--Chemical, biochemical, and pesticide analyses: October 1968 to September 1981.

GAGE.--Water-stage recorder. Datum of gage is 5.38 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. There are ten known diversions above station, but amounts are unknown. An undetermined amount of water from irrigated ricefields enters the river upstream at various points. Extensive channel cleaning upstream and downstream from the gage was begun during the 1983 water year and completed during the 1984 water year.

AVERAGE DISCHARGE.--21 years, 143 ft³/s (103,600 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,000 ft³/s Oct. 17, 1984 (gage height, 32.43 ft, from floodmark); minimum daily, 1.0 ft³/s Nov. 3-5, 1978.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1885, 37 ft in June 1960 and 35 ft in August 1945, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,600 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 10	2000	4,740	26.34	Feb. 5	0400	4,750	26.36
Jan. 15	1200	2,850	22.01	Mar. 17	0200	2,310	20.30
Jan. 19	0200	3,460	23.70	Apr. 5	2300	*8,930	*29.58

Minimum daily discharge, 3.0 ft³/s Dec. 8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10	9.7	3.2	6.8	13	14	13	15	13	279	51	17
2	9.3	7.3	3.2	7.0	12	13	11	16	14	131	33	17
3	10	6.7	3.3	357	11	12	11	16	12	73	21	17
4	10	8.3	3.5	452	1360	12	11	15	12	56	18	e160
5	11	6.5	4.0	166	3690	11	3740	16	14	29	182	140
6	13	5.6	4.3	154	917	11	7760	16	13	43	125	172
7	18	12	4.0	117	298	12	3710	15	13	121	46	328
8	32	12	3.0	59	120	11	848	442	14	756	29	319
9	22	20	3.9	370	56	11	382	742	20	481	27	161
10	16	16	3.8	3550	31	11	273	204	24	195	44	e105
11	10	45	4.3	2690	21	10	686	58	20	84	31	e70
12	7.8	31	5.1	624	17	11	736	25	16	47	23	e45
13	7.1	17	4.7	241	15	10	296	16	14	30	21	e31
14	10	11	4.6	121	13	10	141	17	13	23	18	e18
15	9.5	8.6	4.2	2140	12	10	207	19	46	17	18	e16
16	8.5	6.9	4.2	808	11	484	126	19	112	14	18	e18
17	13	5.6	4.2	241	11	1550	59	18	47	13	18	e16
18	14	6.2	4.2	1150	11	386	36	37	28	13	21	e17
19	9.9	4.9	3.9	2420	11	122	25	286	27	13	20	e16
20	8.9	4.4	4.0	624	11	49	21	100	24	18	18	e15
21	15	4.2	4.4	217	11	23	19	60	17	17	18	e14
22	42	4.4	4.1	83	16	16	18	28	14	30	18	e17
23	23	4.6	5.1	43	18	13	17	21	12	290	39	e15
24	23	4.8	5.1	32	15	12	16	18	12	600	31	e14
25	22	4.4	4.3	26	12	11	14	16	13	301	22	e17
26	15	4.2	5.9	21	12	11	14	15	15	138	19	e14
27	11	3.7	19	17	16	11	15	15	16	68	17	e13
28	9.1	3.7	15	16	17	11	14	13	38	39	16	e13
29	9.9	3.7	15	14	---	11	15	12	142	26	15	e12
30	10	3.4	15	13	---	12	14	13	236	34	18	e12
31	10	---	9.6	13	---	12	---	16	---	65	20	---
TOTAL	440.0	285.8	182.1	16792.8	6758	2903	19248	2319	1011	4044	1015	1839
MEAN	14.2	9.53	5.87	542	241	93.6	642	74.8	33.7	130	32.7	61.3
MAX	42	45	19	3550	3690	1550	7760	742	236	756	182	328
MIN	7.1	3.4	3.0	6.8	11	10	11	12	12	13	15	12
AC-FT	873	567	361	33310	13400	5760	38180	4600	2010	8020	2010	3650
CAL YR 1990	TOTAL	23824.9	MEAN	65.3	MAX	4380	MIN	3.0	AC-FT	47260		
WTR YR 1991	TOTAL	56837.7	MEAN	156	MAX	7760	MIN	3.0	AC-FT	112700		

e Estimated

LAVACA RIVER MAIN STEM

08163500 LAVACA RIVER AT HALLETTSVILLE, TX

LOCATION.--Lat 29°26'35", long 96°56'39", Lavaca County, Hydrologic Unit 12100101, on left bank 75 ft downstream from bridge on U.S. Highway 77 in Hallettsville and 0.7 mi downstream from Campbell Branch.

DRAINAGE AREA.--108 mi².

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

REVISED RECORDS.--WSP 1312: 1942(M), 1944(M). WSP 1732: 1952(M). WSP 2123: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 186.72 ft above National Geodetic Vertical Datum of 1929. Prior to Apr. 19, 1960, water-stage recorder for high stages and movable nonrecording gage for stages below about 6.2 ft. Apr. 20, 1960, to June 2, 1961, movable nonrecording gage. All gages at same site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. No diversion above station. The Lavaca County Flood Control District No. 3 began channel rectification 1.6 mi downstream from gage in August 1983. This rectification reached the gage Jan. 26, 1984, and was completed in June 1984. The channel was previously rectified in 1959-60.

AVERAGE DISCHARGE.--52 years, 48.3 ft³/s (6.07 in/yr), 34,990 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 99,500 ft³/s Aug. 31, 1981 (gage height, 41.1 ft, from floodmark), from rating curve extended above 23,000 ft³/s on basis of slope-area measurement of peak flow; no flow at times in 1953, 1956, and 1990.
Maximum stage since at least 1840, that of Aug. 31, 1981.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage from about 1870 to 1940, 32.8 ft July 16, 1936, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Apr. 14	2200	*9,030	*19.54	No other peak greater than base discharge.			
Minimum daily discharge, 0.07 ft ³ /s Oct. 1-8.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.07	.26	.26	.35	1.7	2.0	.86	3.2	.94	3.5	.09	.35
2	.07	.26	.29	52	1.6	2.0	.75	3.8	.92	88	.08	.35
3	.07	.26	.33	35	1.7	2.0	.78	167	.85	20	.08	.35
4	.07	.33	.26	8.1	245	1.7	1.3	454	.88	37	.09	.35
5	.07	.31	.26	4.8	243	1.6	278	145	.95	187	.72	.35
6	.07	.30	.29	3.5	33	1.6	203	28	.95	15	.17	e2.3
7	.07	.32	.30	2.8	13	1.4	807	11	1.5	5.5	.24	e12
8	.07	17	.26	2.4	8.2	1.4	96	168	1.1	3.7	.22	e1.0
9	3.1	1.7	.26	70	6.2	1.3	18	153	.93	15	.22	e.70
10	.20	.50	.29	156	5.0	1.2	7.7	21	.91	7.2	.22	e.47
11	.13	.39	.30	154	4.4	1.3	68	9.6	.91	3.3	.22	e.44
12	.13	.31	.31	21	4.0	1.3	5.4	6.2	.84	2.2	.22	e.42
13	.12	.30	.31	9.4	3.6	1.2	2.6	8.6	.81	1.5	.22	e.40
14	.12	.30	.30	12	3.3	1.2	2750	4.9	.79	1.3	.22	e10
15	.15	.31	.30	254	2.9	1.4	1340	4.1	2.9	.97	.22	e15
16	.12	.35	.42	70	2.8	3.5	129	5.9	.93	1.1	.23	e1.0
17	.67	.35	.36	16	2.9	2.0	54	4.1	.98	1.1	.26	e.45
18	1.7	.33	1.6	1090	2.8	1.5	33	4.5	.71	.91	.26	e.41
19	.19	.32	.26	339	20	1.6	22	4.5	.67	.86	.26	e.37
20	.16	.35	.28	42	4.1	1.6	15	4.6	.69	.81	.27	e.34
21	.35	.39	.31	15	2.8	1.6	11	4.4	.71	9.2	.30	e.32
22	.26	.39	.27	8.4	2.0	1.6	9.3	4.5	.70	1.4	.30	e.45
23	.24	.36	.26	5.7	1.6	1.5	7.9	3.8	.79	.65	.35	e4.5
24	.24	.35	.26	4.6	1.5	1.3	7.3	3.3	.90	.42	.45	e40
25	.22	.36	.26	3.7	1.7	1.2	6.4	3.0	1.5	.31	.46	e12
26	.22	.33	2.3	3.1	1.6	1.2	5.8	2.6	4.9	.22	.47	e4.7
27	.22	.33	.48	2.7	1.6	1.2	5.3	2.3	12	.21	.50	e1.8
28	.23	.33	.40	2.4	1.9	2.7	4.8	1.9	4.3	.17	.43	e1.5
29	.23	.26	.37	2.4	---	1.9	4.1	11	10	.15	.35	e1.3
30	.22	.26	.42	2.1	---	1.2	3.5	1.9	4.1	.14	.35	e1.1
31	.25	---	.35	1.7	---	1.0	---	1.0	---	.11	.35	---
TOTAL	10.03	27.91	12.92	2394.15	623.9	49.2	5897.79	1250.7	60.06	408.93	8.82	114.72
MEAN	.32	.93	.42	77.2	22.3	1.59	197	40.3	2.00	13.2	.28	3.82
MAX	3.1	17	2.3	1090	245	3.5	2750	454	12	187	.72	40
MIN	.07	.26	.26	.35	1.5	1.0	.75	1.0	.67	.11	.08	.32
AC-FT	20	55	26	4750	1240	98	11700	2480	119	811	17	228
CFSM	.00	.01	.00	.72	.21	.01	1.82	.37	.02	.12	.00	.04
IN.	.00	.01	.00	.82	.21	.02	2.03	.43	.02	.14	.00	.04
CAL YR 1990	TOTAL	1827.67	MEAN	5.01	MAX	386	MIN	.00	AC-FT	3630	CFSM	.05
WTR YR 1991	TOTAL	10859.13	MEAN	29.8	MAX	2750	MIN	.07	AC-FT	21540	CFSM	.28
IN. 3.74												

e Estimated

LAVACA RIVER MAIN STEM

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08164000 LAVACA RIVER NEAR EDNA, TX
(National stream-quality accounting network)

LOCATION.--Lat 28°57'35", long 96°41'10", Jackson County, Hydrologic Unit 12100101, at downstream side near center of upstream bridge of two bridges on U.S. Highway 59, 660 ft upstream from Texas and New Orleans Railroad Co. bridge, and 2.8 mi southwest of Edna.

DRAINAGE AREA.--817 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1938 to current year.

REVISED RECORDS.--WSP 1923: 1955. WRD TX-73-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 14.10 ft above National Geodetic Vertical Datum of 1929. Prior to June 6, 1939, nonrecording gage (property of U.S. Army Corps of Engineers); June 6, 1939, to Apr. 3, 1957, nonrecording gage at site 110 ft downstream; Apr. 4, 1957, to Mar. 21, 1961, nonrecording gage; all at same datum.

REMARKS.--No estimated daily discharges. Records good. Small diversions above station for irrigation.

AVERAGE DISCHARGE.--53 years, 316 ft³/s (5.25 in/yr), 228,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 73,000 ft³/s July 1, 1940 (gage height, 32.51 ft); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1880, 33.8 ft May 25, 1936 (discharge, 83,400 ft³/s), from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,100 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 19	2200	5,360	19.66	Apr. 6	1600	*11,800	*23.73

Minimum daily discharge, 0.01 ft³/s Oct. 1-3.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	.01	.02	.02	.98	52	23	12	49	110	363	10	.23		
2	.01	.02	.03	1.4	49	23	11	79	63	155	5.2	21		
3	.01	.02	.05	53	46	20	8.8	66	46	90	3.5	16		
4	5.4	.06	.05	62	963	17	5.5	54	33	149	5.9	65		
5	1.6	.05	.05	42	1810	15	7060	452	30	214	12	61		
6	.74	.03	.06	52	1250	15	11400	383	25	397	8.9	67		
7	.15	.02	.11	32	413	14	8120	182	23	296	6.9	59		
8	.05	4.5	.09	21	220	13	3660	101	22	667	13	29		
9	.25	27	.05	376	138	12	1380	178	22	1340	5.8	15		
10	.19	20	.05	1670	97	10	509	376	23	401	5.5	9.3		
11	.06	4.1	.05	1240	71	10	553	174	20	188	4.0	5.8		
12	.44	1.1	.05	439	58	9.3	1620	95	17	108	2.7	4.0		
13	2.1	.37	.06	221	50	9.3	677	72	15	70	1.8	3.1		
14	2.1	.12	.07	111	44	9.2	384	170	13	51	1.4	2.4		
15	.97	.06	.08	226	37	8.6	683	278	11	39	1.9	84		
16	.38	.05	.10	707	33	284	2710	138	13	32	2.0	143		
17	.14	.05	.11	309	31	268	1300	78	38	28	2.1	53		
18	1.8	.05	.11	993	30	76	314	68	63	23	1.4	23		
19	.39	.05	.10	4540	29	41	223	82	24	19	.76	14		
20	.35	.04	.09	4280	62	30	172	81	14	16	.61	13		
21	.48	.03	.11	714	133	20	135	77	10	14	.46	11		
22	.16	.03	.09	339	63	16	113	60	8.1	16	.38	7.2		
23	.05	.03	.09	232	44	12	98	56	6.3	62	.33	6.5		
24	.05	.03	.09	184	31	9.3	86	51	51	66	.22	7.0		
25	.03	.03	.09	147	27	8.1	77	45	86	36	.23	56		
26	.02	.03	.40	118	27	8.1	73	42	106	39	.18	325		
27	.02	.04	.51	98	25	8.0	69	38	56	37	.18	149		
28	.02	.06	.38	83	22	6.8	65	36	31	22	.18	69		
29	.02	.03	.86	75	---	7.1	59	32	102	13	.18	43		
30	.02	.02	.98	67	---	13	54	1070	1070	8.7	.19	32		
31	.02	---	.98	58	---	12	---	301	---	11	.61	---		
TOTAL	18.03	58.04	5.96	17491.38	5855	1027.8	41631.3	4964	2151.4	4970.7	98.51	1393.53		
MEAN	.58	1.93	.19	564	209	33.2	1388	160	71.7	160	3.18	46.5		
MAX	5.4	27	.98	4540	1810	284	11400	1070	1070	1340	13	325		
MIN	.01	.02	.02	.98	22	6.8	5.5	32	6.3	8.7	.18	.23		
AC-FT	36	115	12	34690	11610	2040	82580	9850	4270	9860	195	2760		
CFSM	.00	.00	.00	.69	.26	.04	1.70	.20	.09	.20	.00	.06		
IN.	.00	.00	.00	.80	.27	.05	1.90	.23	.10	.23	.00	.06		
CAL YR 1990	TOTAL	12164.76	MEAN	33.3	MAX	1640	MIN	.00	AC-FT	24130	CFSM	.04	IN.	.55
WTR YR 1991	TOTAL	79665.65	MEAN	218	MAX	11400	MIN	.01	AC-FT	158000	CFSM	.27	IN.	3.63

LAVACA RIVER MAIN STEM

08164000 LAVACA RIVER NEAR EDNA, TX--Continued
(National stream-quality accounting network)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: August 1945 to September 1977. Chemical and biochemical analyses: February 1971 to current year. Pesticide analyses: January 1968 to August 1981. Sediment analyses: November 1977 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: November 1977 to September 1981.

WATER TEMPERATURE: November 1977 to September 1981.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 899 microsiemens April 22, 1978; minimum daily, 100 microsiemens May 5, 1979, May 20, 1980.

WATER TEMPERATURE: Maximum daily, 33.0°C July 16, 1978; minimum daily, 5.0°C Jan. 22, 1978.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI, FECAL, KF AGAR (COLS. PER 100 ML)	
OCT 30...	1035	0.02	800	7.7	21.0	11	5.9	66	2.8	K48	140	
DEC 19...	1100	0.10	773	7.5	14.0	--	7.3	71	3.4	--	--	
MAR 07...	1155	15	668	8.3	20.0	83	8.0	89	2.3	120	240	
MAY 22...	1245	59	440	7.9	25.5	22	7.4	91	2.2	200	400	
JUL 24...	0924	67	200	7.5	26.0	--	--	--	5.2	--	--	
SEP 05...	1755	86	576	7.9	26.0	120	6.4	79	3.0	1500	1600	
DATE		HARD-NESS TOTAL (MG/L AS CaCO3)	HARD-NESS NONCARB DISSOLV FLD. AS CaCO3 (MG/L)	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)	CAR-BONATE WATER DIS IT FIELD (MG/L AS CO3)	BICAR-BONATE WATER DIS IT FIELD (MG/L AS HCO3)	ALKA-LINITY WAT DIS TOT IT FIELD (MG/L AS CaCO3)	SULFATE DIS-SOLVED (MG/L AS SO4)
OCT 30...	240	0	78	9.9	74	2	5.0	0	353	290	2.5	
DEC 19...	240	0	79	9.2	64	2	5.7	--	--	--	3.6	
MAR 07...	220	0	79	5.2	50	1	6.6	0	270	222	31	
MAY 22...	160	1	58	3.6	25	0.9	5.5	0	194	159	10	
JUL 24...	70	0	24	2.4	12	0.6	4.8	--	--	--	4.1	
SEP 05...	110	0	37	3.7	72	3	7.0	0	185	152	22	
DATE		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 CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)
OCT 30...	76	0.20	19	436	439	--	--	0.010	<0.010	<0.100	<0.100	
DEC 19...	65	0.40	23	--	411	--	--	<0.010	--	<0.100	--	
MAR 07...	65	0.20	11	381	382	--	--	<0.010	<0.010	<0.050	0.058	
MAY 22...	24	0.20	18	286	243	0.320	0.370	0.050	0.010	0.370	0.380	
JUL 24...	16	0.20	9.7	--	116	0.230	--	0.020	--	0.250	--	
SEP 05...	69	0.30	17	338	321	0.210	0.210	0.020	0.020	0.230	0.230	
DATE		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-PHORUS ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS P04)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
OCT 30...	0.020	<0.010	0.58	0.60	0.130	0.040	0.060	0.110	0.18	16	0.00	
DEC 19...	0.020	--	0.38	0.40	0.120	--	--	0.110	--	--	--	
MAR 07...	0.020	0.030	--	<0.20	0.180	0.170	0.170	0.160	0.52	13	0.53	
MAY 22...	0.040	0.030	0.96	1.0	0.310	0.220	0.210	0.270	0.64	49	7.8	
JUL 24...	0.130	--	0.87	1.0	0.220	--	--	0.090	--	--	--	
SEP 05...	0.050	0.060	1.5	1.6	0.460	0.270	0.220	0.220	0.67	244	57	

LAVACA RIVER MAIN STEM

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08164000 LAVACA RIVER NEAR EDNA, TX--Continued
(National stream-quality accounting network)

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	SED. SUSP. STIEVE DIAM. % FINER THAN .062 MM	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)
OCT 30...	94	<10	3	260	<0.5	<1.0	<1	<3	1	25	<1
DEC 19...	--	--	--	--	--	--	--	--	--	--	--
MAR 07...	92	<10	4	250	<0.5	<1.0	<1	<3	2	9	<1
MAY 22...	86	20	5	180	<0.5	<1.0	<1	<3	3	23	<1
JUL 24...	--	--	--	--	--	--	--	--	--	--	--
SEP 05...	4	70	5	190	<0.5	<1.0	<1	<3	2	86	<1
DATE	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	
OCT 30...	14	250	0.1	<10	1	<3	<1.0	410	<6	6	
DEC 19...	--	--	--	--	--	--	--	--	--	--	
MAR 07...	11	15	<0.1	<10	2	<1	<1.0	260	<6	12	
MAY 22...	7	5	0.2	<10	3	<1	<1.0	190	6	4	
JUL 24...	--	--	--	--	--	--	--	--	--	--	
SEP 05...	14	3	<0.1	<10	1	<1	<1.0	170	7	21	

LAVACA RIVER BASIN

08164300 NAVIDAD RIVER NEAR HALLETTSVILLE, TX

LOCATION.--Lat 29°28'00", long 96°48'45", Lavaca County, Hydrologic Unit 12100102, on right bank 28 ft downstream from bridge on U.S. Highway 90-A, 0.8 mi downstream from Mixons Creek, 1.2 mi southwest of Sublime, and 8 mi northeast of Hallettsville.

DRAINAGE AREA.--332 mi².

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

REVISED RECORDS.--WSP 2123: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 159.28 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. No known diversion above station.

AVERAGE DISCHARGE.--30 years, 135 ft³/s (5.52 in/yr), 97,810 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 53,500 ft³/s Sept. 13, 1974 (gage height, 36.05 ft); no flow for many days in 1984 and 1990.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1860, 40 ft in June 1940; flood in July 1936 reached a stage of 39 ft, from information by local residents and Southern Pacific Railroad Co.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 18	2000	4,010	21.97	Apr. 15	1300	*12,100	*27.63

Minimum daily discharge, no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	.00	.00	.04	1.5	12	14	7.3	25	8.6	6.5	1.7	21		
2	.00	.00	.05	3.9	11	13	7.3	24	8.0	10	1.6	5.2		
3	.00	.00	.06	201	10	11	7.4	27	7.2	4.9	1.6	13		
4	.00	.00	.06	18	294	10	7.6	71	45	457	1.5	24		
5	.00	.00	.06	4.9	893	10	143	51	12	1040	1.8	7.2		
6	.00	.00	.06	2.6	111	10	285	28	8.0	93	2.0	14		
7	.00	.00	.06	1.6	47	10	1170	22	6.7	36	2.1	40		
8	.00	.10	.06	1.2	32	10	458	88	7.3	245	3.5	8.5		
9	.00	.09	.06	34	26	9.4	96	52	9.3	83	3.6	4.1		
10	.00	.04	.06	1100	22	8.9	48	29	7.7	24	1.8	2.9		
11	.00	.03	.28	161	20	8.7	277	23	7.0	14	1.7	2.3		
12	.00	.02	.67	28	18	9.2	52	19	6.2	11	1.7	2.1		
13	.00	.02	.81	13	17	9.4	31	33	5.3	9.4	1.6	2.1		
14	.00	.02	.94	44	16	8.6	1340	29	4.8	8.0	1.5	2.0		
15	.00	.02	.96	343	14	8.5	9190	19	103	7.0	2.1	3.2		
16	.00	.03	1.0	46	13	10	2410	17	57	7.6	3.0	2.7		
17	.00	.03	1.1	14	14	14	201	22	15	6.6	2.9	2.1		
18	.00	.03	1.2	1870	14	12	228	31	7.4	4.8	2.2	2.1		
19	.00	.03	1.2	3040	43	9.8	195	37	5.3	3.8	1.9	2.0		
20	.00	.04	1.2	249	33	9.8	97	24	4.3	3.6	1.7	1.9		
21	.00	.05	1.3	54	17	9.8	71	27	4.1	3.3	1.6	1.9		
22	.00	.06	1.2	35	14	9.8	59	19	3.8	3.1	1.5	1.8		
23	.00	.06	1.1	28	13	9.1	50	16	3.4	3.1	1.6	2.5		
24	.00	.05	.96	24	12	8.8	44	14	3.8	3.4	1.8	79		
25	.00	.05	.96	20	12	8.8	41	13	4.9	2.8	1.7	122		
26	.00	.06	1.4	18	12	8.8	37	12	5.2	3.0	1.5	23		
27	.00	.07	2.9	17	12	8.8	34	11	5.0	2.7	1.4	6.8		
28	.00	.07	3.8	15	12	8.8	32	9.9	3.6	2.4	1.5	3.2		
29	.00	.05	2.8	14	---	10	28	22	6.1	2.3	1.5	2.0		
30	.00	.04	2.1	13	---	8.9	26	23	8.7	2.1	1.5	1.5		
31	.00	---	1.7	12	---	8.1	---	10	---	2.0	1.6	---		
TOTAL	0.00	1.06	30.15	7426.7	1764	306.0	16672.6	847.9	383.7	2105.4	58.7	406.1		
MEAN	.000	.035	.97	240	63.0	9.87	556	27.4	12.8	67.9	1.89	13.5		
MAX	.00	.10	3.8	3040	893	14	9190	88	103	1040	3.6	122		
MIN	.00	.00	.04	1.2	10	8.1	7.3	9.9	3.4	2.0	1.4	1.5		
AC-FT	.00	2.1	60	14730	3500	607	33070	1680	761	4180	116	805		
CFSM	.00	.00	.00	.72	.19	.03	1.67	.08	.04	.20	.01	.04		
IN.	.00	.00	.00	.83	.20	.03	1.87	.10	.04	.24	.01	.05		
CAL YR 1990	TOTAL	3731.36	MEAN	10.2	MAX	447	MIN	.00	AC-FT	7400	CFSM	.03	IN.	.42
WTR YR 1991	TOTAL	30002.31	MEAN	82.2	MAX	9190	MIN	.00	AC-FT	59510	CFSM	.25	IN.	3.36

LAVACA RIVER BASIN

189

08164450 SANDY CREEK NEAR LOUISE, TX

LOCATION.--Lat 29°09'36", long 96°32'46", Jackson County, Hydrologic Unit 12100102, on left bank at downstream end of bridge on Farm Road 710, 0.9 mi upstream from Goldenrod Creek, and 9.1 mi northwest of Louise.

DRAINAGE AREA.--289 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1977 to current year.

GAGE.--Water-stage recorder. Datum of gage is 59.72 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are fair, and those for discharges below 10 ft³/s, which are poor. Much of the low flow during the irrigation season (April to September) is drainage from rice fields irrigated by water originally diverted from the Colorado River. No known diversions above station.

AVERAGE DISCHARGE.--14 years, 160 ft³/s (7.52 in/yr), 115,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,000 ft³/s Sept. 14, 1978 (gage height, 23.03 ft), from rating curve extended above 7,800 ft³/s; no flow at times.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 11	1100	2,420	13.32	Apr. 5	Unknown	*3,320	a*15.72
Jan. 19	1300	3,300	14.83	Apr. 15	1600	2,200	13.71
Feb. 5	1400	1,930	12.22				

a From floodmark.

Minimum daily discharge, no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	
1	28	3.9	.03	.00	16	2.1	.34	e5.0	336	275	2.2	17	
2	27	8.4	.03	1.2	15	2.0	.05	e4.0	121	219	1.8	68	
3	37	6.9	.01	153	12	1.3	.03	e50	49	184	1.6	276	
4	63	7.5	.00	448	258	.84	.27	e20	18	177	3.2	359	
5	82	7.9	.00	262	1500	.48	2060	e10	4.0	392	1.9	395	
6	92	23	.01	98	965	.29	2800	e8.0	.49	243	2.6	480	
7	93	17	.01	64	463	.14	1890	e6.0	.35	171	2.4	351	
8	85	22	.00	40	134	.04	884	e4.0	.35	181	1.9	215	
9	77	132	.00	96	63	.03	379	e200	9.1	224	2.9	123	
10	94	264	.00	1240	36	.03	191	e300	43	240	2.9	83	
11	114	160	.00	2190	27	.03	408	e100	101	226	1.6	53	
12	95	65	.00	1360	13	.03	633	e50	78	178	.82	39	
13	88	33	.00	607	11	.03	455	e20	41	160	.35	33	
14	82	19	.00	180	8.8	.03	387	e7.0	21	122	.41	35	
15	65	15	.00	354	7.0	.10	1690	e1.0	25	83	.69	44	
16	74	7.6	.00	614	5.1	17	899	e.20	90	58	.83	52	
17	80	2.8	.00	156	3.8	31	550	e.20	322	58	15	65	
18	119	2.7	.00	673	2.4	13	270	1.2	328	57	19	81	
19	150	2.6	.00	2920	1.9	4.7	e100	4.9	200	49	12	101	
20	124	1.1	.00	1850	24	2.7	e40	3.8	111	45	8.0	112	
21	92	.12	.00	966	47	1.8	e20	12	57	36	5.2	108	
22	68	.14	.00	405	24	.88	e8.0	29	34	48	2.7	172	
23	67	2.0	.00	160	17	.33	e5.0	56	35	136	1.1	405	
24	79	21	.00	104	9.5	.14	e4.0	29	36	124	.57	552	
25	80	11	.00	76	7.5	.08	e3.0	7.4	61	103	2.9	567	
26	55	5.7	.14	53	5.1	.07	e2.5	12	125	63	3.0	405	
27	31	3.0	.02	36	3.5	.05	e3.0	5.5	126	42	1.6	244	
28	19	1.8	.00	27	2.5	.73	e20	.28	95	22	.17	183	
29	15	.51	.00	21	---	1.4	e10	.39	118	14	.00	143	
30	9.0	.06	.00	18	---	1.7	e8.0	234	249	9.9	.00	123	
31	7.5	---	.00	16	---	1.5	---	511	---	4.2	.03	---	
TOTAL	2191.5	846.73	0.25	15188.20	3682.1	84.55	13720.19	1691.87	2834.29	3944.1	99.37	5884	
MEAN	70.7	28.2	.008	490	132	2.73	457	54.6	94.5	127	3.21	196	
MAX	150	264	.14	2920	1500	31	2800	511	336	392	19	567	
MIN	7.5	.06	.00	.00	1.9	.03	.03	.20	.35	4.2	.00	17	
AC-FT	4350	1680	.5	30130	7300	168	27210	3360	5620	7820	197	11670	
CFSM	.24	.10	.00	1.70	.46	.01	1.58	.19	.33	.44	.01	.68	
IN.	.28	.11	.00	1.96	.47	.01	1.77	.22	.36	.51	.01	.76	
CAL YR 1990	TOTAL	19571.78	MEAN	53.6	1060	MIN	.00	AC-FT	38820	CFSM	.19	IN. 2.52	
WTR YR 1991	TOTAL	50167.15	MEAN	137	MAX	2920	MIN	.00	AC-FT	99510	CFSM	.48	IN. 6.46

e Estimated

PERIOD OF RECORD.--Chemical and biochemical analyses: October 1977 to current year. Pesticide analyses: November 1977 to July 1981. Sediment analyses: September 1978 to April 1979.

[illegible]

LAVACA RIVER BASIN

191

08164503 WEST MUSTANG CREEK NEAR GANADO, TX

LOCATION.--Lat 29°04'17", long 96°28'01", Jackson County, Hydrologic Unit 12100102, on right bank at downstream end of downstream bridge on U.S. Highway 59, 2.1 mi upstream from Middle Mustang Creek, and 3.6 mi east of Ganado.

DRAINAGE AREA.--178 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1977 to current year.

GAGE.--Water-stage recorder. Datum of gage is 40.12 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Much of low flow during the irrigation season (April to September) comes from drainage from ricefields irrigated by diversions originating from the Colorado River.

AVERAGE DISCHARGE.--14 years, 129 ft³/s (9.84 in/yr), 93,460 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,400 ft³/s Jan. 21, 1980 (gage height, 24.49 ft, from floodmark), from rating curve extended above 8,800 ft³/s; minimum daily, no flow Dec. 19, 24, 25, 1990.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 11	1900	2,390	15.66	Apr. 6	1800	*4,150	*17.66
Jan. 19	1800	1,860	14.81				

Minimum daily discharge, no flow Dec. 19, 24, 25.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	11	5.5	.46	.36	6.3	12	3.0	19	300	382	37	16		
2	15	5.4	.31	.55	4.2	14	1.4	32	126	292	19	54		
3	28	6.1	.21	153	3.6	7.3	2.1	47	61	179	11	199		
4	41	4.8	.12	483	325	4.9	1.5	46	33	244	23	562		
5	121	3.4	.17	278	1160	3.5	1440	42	18	182	35	485		
6	171	2.1	.20	122	865	2.6	3660	115	10	115	39	465		
7	122	1.3	.32	82	269	2.4	2990	73	5.4	98	67	415		
8	86	6.7	.25	54	123	2.0	1600	47	9.1	203	72	324		
9	63	89	.28	87	72	1.6	727	98	23	188	71	165		
10	71	231	.18	1010	41	1.2	263	108	54	118	66	191		
11	72	135	.12	2110	25	1.1	643	74	165	106	49	97		
12	64	87	.09	1620	16	1.0	971	32	165	81	26	61		
13	57	49	.08	743	12	.92	424	20	98	77	14	56		
14	45	22	.07	220	9.1	.85	319	15	51	78	12	50		
15	42	10	.06	229	8.1	.83	1180	12	41	73	17	35		
16	36	6.1	.04	360	6.9	101	1220	9.3	112	70	26	24		
17	43	4.2	.02	159	6.7	587	409	12	285	69	32	44		
18	52	4.2	.01	434	6.3	233	185	12	371	67	38	61		
19	91	3.3	.00	1620	6.0	73	126	17	179	58	36	75		
20	101	2.3	.01	1420	5.6	22	91	26	86	40	34	75		
21	78	1.9	.02	641	5.8	9.7	70	32	45	52	32	73		
22	49	1.4	.02	229	8.5	5.4	49	40	29	99	26	58		
23	32	1.0	.01	106	10	3.3	31	48	21	350	21	223		
24	21	.85	.00	59	10	2.3	23	40	19	289	21	275		
25	21	4.7	.00	42	6.6	1.9	20	26	54	163	25	166		
26	13	7.0	.01	28	20	1.5	22	19	105	96	27	112		
27	15	5.2	.55	25	9.6	1.2	23	17	129	66	25	78		
28	12	3.4	.39	16	6.4	1.2	20	17	117	70	16	61		
29	7.8	1.9	.27	11	---	2.6	21	7.4	146	70	11	43		
30	8.1	.94	.60	9.0	---	1.4	21	78	301	63	12	78		
31	7.4	---	.49	9.3	---	4.9	---	338	---	59	13	---		
TOTAL	1596.3	706.69	5.36	12360.21	3047.7	1107.60	16556.0	1518.7	3158.5	4097	953	4621		
MEAN	51.5	23.6	.17	399	109	35.7	552	49.0	105	132	30.7	154		
MAX	171	231	.60	2110	1160	587	3660	338	371	382	72	562		
MIN	7.4	.85	.00	.36	3.6	.83	1.4	7.4	5.4	40	11	16		
AC-FT	3170	1400	11	24520	6050	2200	32840	3010	6260	8130	1890	9170		
CFSM	.29	.13	.00	2.24	.61	.20	3.10	.28	.59	.74	.17	.87		
IN.	.33	.15	.00	2.58	.64	.23	3.46	.32	.66	.86	.20	.97		
CAL YR 1990	TOTAL	17705.71	MEAN	48.5	MAX	1150	MIN	.00	AC-FT	35120	CFSM	.27	IN.	3.70
WTR YR 1991	TOTAL	49728.06	MEAN	136	MAX	3660	MIN	.00	AC-FT	98640	CFSM	.77	IN.	10.39

08164503 WEST MUSTANG CREEK NEAR GANADO, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: October 1977 to current year. Pesticide analyses: November 1977 to July 1981. Sediment analyses: September 1978 to April 1979.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

[illegible]

LAVACA RIVER BASIN

193

08164525 LAKE TEXANA NEAR EDNA, TX

LOCATION.--Lat 28°53'30", long 96°34'00", Jackson County, Hydrologic Unit 12100102, at upstream side of dam at old river channel on the Navidad River, 4.9 mi upstream from confluence with Lavaca River, 4.0 mi north of Lolita, and 7.2 mi southeast of Edna.

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: January 1988 to current year.

285331096343501 - LAKE TEXANA SITE AC

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS TOTAL (MG/L AS CAC03)	
FEB													
01...	0845	1.00	269	7.8	11.0	0.10	110	81	8.5	76	1.2	79	
01...	0847	10.0	268	7.8	11.0	--	--	--	8.5	76	--	--	
01...	0849	20.0	269	7.8	11.0	--	--	--	8.5	76	--	--	
01...	0851	30.0	268	7.8	11.0	--	--	--	8.5	76	--	--	
01...	0853	40.0	268	7.8	11.0	--	--	--	8.5	76	--	--	
01...	0855	50.0	264	7.8	11.0	--	--	--	8.5	76	--	--	
01...	0857	60.0	264	7.8	11.0	--	--	--	8.5	76	--	--	
01...	0859	69.0	264	7.8	11.0	--	180	85	8.5	76	1.4	78	
MAY													
14...	0845	1.00	102	7.5	25.5	0.20	130	85	6.5	80	0.8	37	
14...	0847	10.0	102	7.5	25.5	--	--	--	6.5	80	--	--	
14...	0849	20.0	104	7.4	25.5	--	--	--	6.4	79	--	--	
14...	0851	30.0	104	7.2	24.5	--	--	--	5.5	66	--	--	
14...	0853	40.0	104	7.2	24.0	--	--	--	5.4	65	--	--	
14...	0855	55.0	105	7.1	23.0	--	--	--	3.9	46	--	--	
14...	0857	50.0	105	7.2	24.0	--	--	--	5.3	63	--	--	
14...	0859	60.0	143	6.9	20.5	--	--	--	0	0	--	--	
14...	0901	67.0	156	7.0	20.0	--	140	140	0	0	1.0	53	
AUG													
20...	0835	1.00	204	7.8	29.5	0.20	2	65	6.0	79	0.4	69	
20...	0837	10.0	204	7.7	29.5	--	--	--	5.6	73	--	--	
20...	0839	20.0	200	7.6	29.0	--	--	--	5.4	70	--	--	
20...	0841	30.0	190	7.3	28.5	--	--	--	3.8	49	--	--	
20...	0843	40.0	190	7.2	28.5	--	--	--	3.3	42	--	--	
20...	0845	50.0	168	7.0	27.5	--	--	--	0.4	5	--	--	
20...	0847	60.0	155	7.0	25.0	--	--	--	0	0	--	--	
20...	0849	65.0	155	7.0	25.0	--	5	86	0	0	0.4	58	
DATE		HARD- NESS NONCARB DISSOLV FLD, AS CAC03 (MG/L)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	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)
FEB													
01...	12	24	4.5	20	1	5.0	67	15	28	0.10	11	148	
01...	--	--	--	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--	--	--	--
01...	12	24	4.4	20	1	5.1	66	15	28	0.20	11	147	
MAY													
14...	3	12	1.7	5.7	0.4	3.2	34	3.8	7.2	0.10	9.4	64	
14...	--	--	--	--	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--	--	--	--	--
14...	1	17	2.6	9.3	0.6	3.4	52	5.2	13	0.20	11	94	
AUG													
20...	8	22	3.4	13	0.7	4.1	61	8.0	18	0.10	15	120	
20...	--	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--	--
20...	0	19	2.5	7.0	0.4	3.0	58	5.0	9.4	0.20	16	99	

LAVACA RIVER BASIN

08164525 LAKE TEXANA NEAR EDNA, TX--Continued

285331096343501 - LAKE TEXANA SITE AC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	RESIDUE VOLA- TILE, SUS- PENDE (MG/L)	RESIDUE FIXED NON FILTER- ABLE (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)	PHOS- PHORUS ORTHO TOTAL (MG/L AS P)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)
FEB												
01...	51	9	42	0.880	0.020	0.900	0.090	0.71	0.80	0.140	0.080	1.50
01...	--	--	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--	--	--
01...	53	12	41	0.780	0.020	0.800	0.080	0.92	1.0	0.160	0.080	--
MAY												
14...	30	6	24	0.710	0.080	0.790	0.060	0.34	0.40	0.170	0.150	0.600
14...	--	--	--	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--	--	--	--
14...	--	--	--	0.680	0.090	0.770	0.070	0.33	0.40	0.190	0.170	--
14...	--	--	--	--	--	--	--	--	--	--	--	--
14...	95	19	76	0.140	0.060	0.200	0.200	0.70	0.90	0.180	0.120	--
AUG												
20...	7	7	0	0.340	0.080	0.420	0.070	0.53	0.60	0.170	0.140	4.10
20...	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	0.430	0.010	0.440	0.020	0.58	0.60	0.180	0.090	--
20...	--	--	--	0.320	0.020	0.340	0.030	0.57	0.60	0.190	0.090	--
20...	--	--	--	--	--	--	--	--	--	--	--	--
20...	45	42	3	--	<0.010	<0.050	0.320	0.58	0.90	0.460	0.180	--
CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)												
ARSENIC DIS- SOLVED (UG/L AS AS)												
BARIUM, DIS- SOLVED (UG/L AS BA)												
BERYL- LIUM, DIS- SOLVED (UG/L AS BE)												
CADMIUM DIS- SOLVED (UG/L AS CD)												
CHRO- MIUM, DIS- SOLVED (UG/L AS CR)												
COBALT, DIS- SOLVED (UG/L AS CO)												
COPPER, DIS- SOLVED (UG/L AS CU)												
IRON, DIS- SOLVED (UG/L AS FE)												
LEAD, DIS- SOLVED (UG/L AS PB)												
LITHIUM DIS- SOLVED (UG/L AS LI)												
DATE												
FEB												
01...	<0.100	2	70	<0.5	<1.0	<5	<3	<10	31	<10	<4	
01...	--	--	--	--	--	--	--	--	--	--	--	
01...	--	--	--	--	--	--	--	--	--	--	--	
01...	--	--	--	--	--	--	--	--	--	--	--	
01...	--	--	--	--	--	--	--	--	--	--	--	
01...	--	--	--	--	--	--	--	--	--	--	--	
01...	--	2	69	<0.5	<1.0	<5	<3	<10	37	<10	<4	
MAY												
14...	<0.200	2	44	<0.5	<1.0	<5	<3	<10	30	<10	<4	
14...	--	--	--	--	--	--	--	--	--	--	--	
14...	--	--	--	--	--	--	--	--	--	--	--	
14...	--	--	--	--	--	--	--	--	--	--	--	
14...	--	--	--	--	--	--	--	--	--	--	--	
14...	--	--	--	--	--	--	--	--	30	--	--	
14...	--	7	61	<0.5	<1.0	<5	<3	<10	80	<10	<4	
AUG												
20...	<0.500	4	76	<0.5	<1.0	<5	<3	<10	5	10	<4	
20...	--	--	--	--	--	--	--	--	--	--	--	
20...	--	--	--	--	--	--	--	--	--	--	--	
20...	--	--	--	--	--	--	--	--	--	--	--	
20...	--	--	--	--	--	--	--	--	20	--	--	
20...	--	--	--	--	--	--	--	--	50	--	--	
20...	--	11	84	<0.5	<1.0	<5	<3	<10	810	<10	<4	

08164525 LAKE TEXANA NEAR EDNA, TX--Continued

285331096343501 - LAKE TEXANA SITE AC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	METHYL- ENE CHLO- RIDE TOTAL (UG/L)	STYRENE TOTAL (UG/L)	TETRA- CHLORO- ETHYL- ENE TOTAL (UG/L)	TOLUENE TOTAL (UG/L)	TRANS- 1,3-DI- CHLORO- PROPENE TOTAL (UG/L)	TRI- CHLORO- ETHYL- ENE TOTAL (UG/L)	TRI- CHLORO- FLUORO- METHANE TOTAL (UG/L)	VINYL CHLO- RIDE TOTAL (UG/L)	1,1-DI- CHLORO- ETHYL- ENE TOTAL (UG/L)	1,1-DI- CHLORO- ETHANE TOTAL (UG/L)	1,1,1- TRI- CHLORO- ETHANE TOTAL (UG/L)
FEB											
01...	<0.20	<0.2	<0.20	<0.20	<0.20	<0.2	<0.20	<0.20	<0.20	<0.20	<0.20
01...	--	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--	--
01...	<0.20	<0.2	<0.20	<0.20	<0.20	<0.2	<0.20	<0.20	<0.20	<0.20	<0.20
MAY											
14...	<0.20	<0.2	<0.20	<0.20	<0.20	<0.2	<0.20	<0.20	<0.20	<0.20	<0.20
14...	--	--	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--	--	--
14...	<0.20	<0.2	<0.20	0.30	<0.20	<0.2	<0.20	<0.20	<0.20	<0.20	<0.20
AUG											
20...	<0.20	<0.2	<0.20	<0.20	<0.20	<0.2	<0.20	<0.20	<0.20	<0.20	<0.20
20...	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--
20...	<0.20	<0.2	<0.20	<0.20	<0.20	<0.2	<0.20	<0.20	<0.20	<0.20	<0.20

[illegible]

LAVACA RIVER BASIN

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08164525 LAKE TEXANA NEAR EDNA, TX--Continued

285326096342101 - LAKE TEXANA SITE AL

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
FEB							
01...	0955	1.00	249	7.8	11.0	8.4	75
01...	0957	10.0	251	7.8	11.0	8.4	75
01...	0959	20.0	247	7.8	11.0	8.4	75
01...	1001	30.0	237	7.8	10.5	8.5	75
01...	1003	35.0	232	7.8	10.5	8.5	75
MAY							
14...	1010	1.00	103	7.4	25.5	6.5	80
14...	1012	10.0	103	7.4	25.5	6.5	80
14...	1014	20.0	103	7.4	25.0	6.4	78
14...	1016	33.0	103	7.3	24.5	5.6	68
AUG							
20...	0930	1.00	200	8.0	30.0	6.2	82
20...	0932	10.0	200	7.8	29.5	5.9	77
20...	0934	20.0	200	7.6	29.0	5.4	70
20...	0936	34.0	190	7.4	28.5	3.6	46

285534096322301 - LAKE TEXANA SITE BC

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
FEB							
01...	1020	1.00	263	7.8	11.0	8.3	74
01...	1022	10.0	263	7.8	11.0	8.3	74
01...	1024	20.0	262	7.8	11.0	8.3	74
01...	1026	30.0	260	7.8	11.0	8.2	73
01...	1028	43.0	248	7.7	11.0	8.2	73
MAY							
14...	1055	1.00	124	7.5	25.5	6.4	79
14...	1057	10.0	124	7.5	25.5	6.4	79
14...	1059	20.0	125	7.4	25.5	6.3	77
14...	1101	30.0	177	7.2	25.0	4.3	52
14...	1105	45.0	178	7.2	24.5	4.0	48
AUG							
20...	0950	1.00	221	8.2	30.5	6.6	88
20...	0952	10.0	221	7.9	30.0	5.7	75
20...	0954	20.0	235	7.5	29.5	4.5	59
20...	0956	30.0	204	7.5	29.0	4.2	55
20...	0958	39.0	200	7.5	29.0	4.0	52

285816096320201 - LAKE TEXANA SITE CC

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB DISSOLV FLD. AS CACO3 (MG/L)	CALCIUM DIS- SOLVED (MG/L AS CA)
FEB											
01...	1050	1.00	137	7.5	11.5	0.10	8.0	72	44	3	14
01...	1052	10.0	138	7.5	11.0	--	8.0	71	--	--	--
01...	1054	20.0	138	7.5	11.0	--	8.0	71	--	--	--
01...	1056	30.0	141	7.5	11.0	--	8.0	71	--	--	--
01...	1058	43.0	138	7.6	11.0	--	7.9	70	44	3	14
MAY											
14...	1125	1.00	146	7.5	26.0	0.20	6.0	74	54	2	18
14...	1127	10.0	137	7.5	26.0	--	6.0	74	--	--	--
14...	1129	20.0	137	7.5	26.0	--	6.1	76	--	--	--
14...	1131	30.0	152	7.4	26.0	--	5.7	71	--	--	--
14...	1133	36.0	210	7.1	25.0	--	2.8	34	63	0	21
AUG											
20...	1035	1.00	262	8.2	31.0	0.20	6.8	91	86	0	27
20...	1037	10.0	270	7.8	30.0	--	5.4	71	--	--	--
20...	1039	20.0	322	7.5	29.5	--	3.0	39	--	--	--
20...	1041	30.0	315	7.5	29.5	--	3.0	39	--	--	--
20...	1043	40.0	315	7.5	29.5	--	3.0	39	98	15	31

LAVACA RIVER BASIN

08164525 LAKE TEXANA NEAR EDNA, TX--Continued

285816096320201 - LAKE TEXANA SITE CC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

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- LITY WAT DIS FIX END FIELD CAC03 (MG/L)	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)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)
FEB											
01...	2.2	9.2	0.6	3.9	41	5.8	12	0.10	7.3	79	0.480
01...	--	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--	--
01...	2.3	8.6	0.6	3.9	41	6.8	12	<0.10	7.2	79	0.480
MAY											
14...	2.3	7.0	0.4	4.1	52	3.9	9.6	0.10	11	87	0.670
14...	--	--	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--	--	0.690
14...	--	--	--	--	--	--	--	--	--	--	0.550
14...	2.6	8.9	0.5	4.1	69	6.1	12	0.20	14	110	
AUG											
20...	4.5	18	0.8	3.7	87	11	27	0.20	14	158	0.160
20...	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	0.080
20...	--	--	--	--	--	--	--	--	--	--	--
20...	5.1	23	1	4.0	83	13	37	0.20	13	176	0.080

DATE	NITRO- GEN, NITRATE 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)	PHOS- PHORUS ORTHO TOTAL (MG/L AS P)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
FEB											
01...	0.020	0.500	0.110	0.99	1.1	0.180	0.090	5.60	<0.300	84	3
01...	--	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--	--
01...	0.020	0.500	0.120	0.98	1.1	0.170	0.090	--	--	79	8
MAY											
14...	0.060	0.730	0.050	0.85	0.90	0.200	0.160	1.00	<0.300	61	2
14...	--	--	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--	--	--
14...	0.030	0.720	0.030	0.97	1.0	0.200	0.140	--	--	70	20
14...	0.060	0.610	0.090	1.1	1.2	0.220	0.160	--	--	49	39
AUG											
20...	0.020	0.180	0.020	0.78	0.80	0.170	0.070	13.0	1.20	10	<1
20...	--	--	--	--	--	--	--	--	--	--	--
20...	0.060	0.140	0.070	0.53	0.60	0.150	0.110	--	--	20	20
20...	--	--	--	--	--	--	--	--	--	--	--
20...	0.060	0.140	0.080	0.62	0.70	0.150	0.110	--	--	12	51

290042096331401 - LAKE TEXANA SITE DC

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	CALCIUM DIS- SOLVED (MG/L AS CA)
FEB											
01...	1200	1.00	140	7.4	11.0	0.10	8.1	72	46	0	15
01...	1202	10.0	141	7.4	10.5	--	8.0	70	--	--	--
01...	1204	24.0	139	7.3	10.5	--	7.9	70	44	0	14
MAY											
14...	1215	1.00	331	7.6	26.5	0.20	5.6	70	120	9	40
14...	1217	10.0	331	7.6	26.5	--	5.6	70	--	--	--
14...	1219	22.0	334	7.2	26.0	--	3.5	43	120	25	40
AUG											
20...	1130	1.00	345	7.9	32.5	0.50	5.8	80	110	14	33
20...	1132	10.0	356	7.1	30.5	--	0.1	1	--	--	--
20...	1134	15.0	360	7.0	30.0	--	0	0	--	--	--
20...	1136	20.0	363	7.0	29.5	--	0	0	--	--	--
20...	1138	24.0	363	7.0	29.5	--	0	0	100	3	32

08164525 LAKE TEXANA NEAR EDNA, TX--Continued

290042096331401 - LAKE TEXANA SITE DC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	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)
FEB											
01...	2.1	6.6	0.4	4.4	48	6.4	9.4	<0.10	7.5	80	0.180
01...	--	--	--	--	--	--	--	--	--	--	--
01...	2.1	7.4	0.5	4.4	48	6.2	8.5	<0.10	7.5	79	0.190
MAY											
14...	4.2	20	0.8	5.5	110	12	32	0.20	15	194	0.340
14...	--	--	--	--	--	--	--	--	--	--	--
14...	4.7	22	0.9	5.2	94	11	33	0.20	13	186	0.290
AUG											
20...	5.5	27	1	3.4	91	13	42	0.20	13	192	--
20...	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--
20...	5.3	30	1	3.9	99	12	44	0.20	15	202	--
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)	PHOS- PHORUS ORTHO TOTAL (MG/L AS P)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
FEB											
01...	0.020	0.200	0.110	1.4	1.5	0.180	0.080	1.20	<0.300	110	3
01...	--	--	--	--	--	--	--	--	--	--	--
01...	0.010	0.200	0.120	0.78	0.90	0.170	0.080	--	--	180	10
MAY											
14...	0.050	0.390	0.060	1.0	1.1	0.150	0.100	11.0	<0.600	23	8
14...	--	--	--	--	--	--	--	--	--	--	--
14...	0.040	0.330	0.150	1.2	1.4	0.150	0.090	--	--	29	78
AUG											
20...	0.030	<0.050	0.030	0.67	0.70	0.110	0.050	7.20	<0.100	16	5
20...	0.040	<0.050	0.040	0.76	0.80	0.140	0.060	--	--	30	100
20...	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--
20...	0.040	<0.050	0.160	0.64	0.80	0.190	0.110	--	--	390	230

285940096312101 - LAKE TEXANA SITE EC

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
FEB							
01...	1130	1.00	104	7.2	11.0	8.2	73
01...	1132	10.0	104	7.1	11.0	8.1	72
01...	1134	20.0	104	7.0	11.0	7.6	67
01...	1136	30.0	109	6.8	11.5	3.3	30
MAY							
14...	1200	1.00	151	7.4	26.0	5.8	72
14...	1202	10.0	154	7.4	26.0	5.7	71
14...	1204	20.0	156	7.3	26.0	5.5	68
14...	1206	27.0	176	7.0	25.0	1.9	23
AUG							
20...	1105	1.00	290	8.7	32.5	8.2	113
20...	1107	10.0	364	7.5	30.0	2.3	30
20...	1109	20.0	445	7.3	29.5	0	0
20...	1111	29.0	436	7.3	29.5	0	0

GARCITAS CREEK MAIN STEM

08164600 GARCITAS CREEK NEAR INEZ, TX

LOCATION.--Lat 28°53'28", long 96°49'08", Victoria County, Hydrologic Unit 12100402, at right downstream end of bridge on U.S. Highway 59 access road, 0.3 mi upstream from Southern Pacific Railroad bridge, 2.0 mi southwest of Inez, and 3.6 mi upstream from Casa Blanca Creek.

DRAINAGE AREA.--91.7 mi².

PERIOD OF RECORD.--June 1970 to current year.

Chemical and biochemical analyses: April 1965 to August 1988. Pesticide analyses: July 1970 to July 1981.

GAGE.--Water-stage recorder. Datum of gage is 29.16 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are poor. No known diversion above station. An undetermined amount of return water from irrigation enters the stream above this station. Recording rain gage discontinued Oct. 14, 1987.

AVERAGE DISCHARGE.--21 years, 50.1 ft³/s (7.42 in/yr), 36,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,700 ft³/s June 12, 1981 (gage height, 29.00 ft); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage during period 1903-70, 24.5 ft Oct. 26, 1960. In 1929, a flood nearly as high as the 1960 flood occurred, and a flood in September 1967 reached a stage of 23.4 ft, from information by local resident.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Apr. 5	2200	*19,100	*28.74	No other peak greater than base discharge.			
Minimum daily discharge, 0.01 ft ³ /s for several days.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	.12	.01	.04	.05	1.6	1.6	1.3	5.9	1.1	33	e4.0	e1.7		
2	.10	.01	.04	.07	1.4	1.4	1.3	16	1.0	23	e3.0	e6.0		
3	.09	.01	.04	.53	1.2	1.2	1.6	72	.97	16	e1.5	e23		
4	.43	.01	.01	.24	288	1.0	1.7	39	.87	9.6	e1.3	e66		
5	.41	.01	.01	.25	1020	1.0	8920	21	.87	5.2	e3.6	e60		
6	.17	.01	.02	.26	311	1.0	8550	14	.86	2.9	e3.9	e56		
7	.14	.01	.10	.23	88	1.0	918	9.5	.93	3.1	e5.4	e30		
8	.11	2.7	.05	.22	42	1.1	457	8.3	1.3	273	e7.9	e25		
9	1.6	1.0	.03	170	24	1.1	143	7.5	1.6	477	e8.0	e22		
10	.56	.21	.02	758	15	.93	85	6.5	1.3	121	e7.5	e20		
11	.42	.11	.01	176	11	.96	91	5.3	1.3	58	e6.8	e22		
12	.44	.06	.01	58	7.8	1.0	153	4.7	1.2	36	e4.0	e9.0		
13	.36	.05	.01	33	6.1	1.0	77	4.4	.89	24	e2.5	e6.2		
14	.29	.09	.01	23	4.8	.75	53	3.9	.73	14	e1.6	e7.1		
15	.21	.13	.01	20	3.8	.93	43	3.6	.70	8.2	e1.4	e4.5		
16	.16	.13	.01	16	3.2	180	35	3.4	.67	7.0	e2.9	e3.4		
17	.24	.13	.01	10	2.9	147	29	3.6	.55	17	e3.2	e2.9		
18	.20	.13	.03	267	2.7	43	25	3.1	.50	13	e3.7	e4.7		
19	.09	.13	.04	381	2.5	22	22	3.0	.45	8.3	e4.2	e8.5		
20	.25	.13	.04	90	2.0	13	18	3.4	.62	5.3	e3.8	e8.0		
21	.62	.13	.04	40	2.6	8.9	15	2.9	.51	6.5	e3.7	e7.5		
22	.37	.12	.03	23	2.1	6.8	14	2.6	.35	36	e3.6	e6.8		
23	.25	.18	.03	15	1.7	4.9	12	2.3	.28	40	e2.8	e27		
24	.18	.16	.01	12	1.6	3.9	11	2.2	.99	25	e2.4	e32		
25	.12	.13	.01	8.6	1.4	3.2	10	2.0	1.0	16	e2.4	e20		
26	.09	.13	.58	6.4	1.4	3.1	9.1	1.8	2.2	9.1	e2.7	e15		
27	.06	.12	.42	5.0	1.4	2.7	8.5	1.6	7.4	6.5	e2.6	e10		
28	.04	.10	.17	3.9	1.4	2.5	8.1	1.4	4.3	e6.8	e2.7	e7.0		
29	.01	.07	.11	3.4	---	2.5	7.0	1.2	16	e7.0	e1.7	e4.7		
30	.01	.05	.08	2.7	---	1.8	6.2	1.5	39	e6.5	e1.2	e3.5		
31	.01	---	.06	2.1	---	1.5	---	1.4	---	e6.0	e1.4	---		
TOTAL	8.15	6.26	2.08	2125.95	1852.6	462.77	19725.8	259.0	90.44	1320.0	107.4	519.5		
MEAN	.26	.21	.067	68.6	66.2	14.9	658	8.35	3.01	42.6	3.46	17.3		
MAX	1.6	2.7	.58	758	1020	180	8920	72	39	477	8.0	66		
MIN	.01	.01	.01	.05	1.2	.75	1.3	1.2	.28	2.9	1.2	1.7		
AC-FT	16	12	4.1	4220	3670	918	39130	514	179	2620	213	1030		
CFSM	.00	.00	.00	.75	.72	.16	7.17	.09	.03	.46	.04	.19		
IN.	.00	.00	.00	.86	.75	.19	8.00	.11	.04	.54	.04	.21		
CAL YR 1990	TOTAL	4919.36	MEAN	13.5	MAX	1390	MIN	.00	AC-FT	9760	CFSM	.15	IN.	2.00
WTR YR 1991	TOTAL	26479.95	MEAN	72.5	MAX	8920	MIN	.01	AC-FT	52520	CFSM	.79	IN.	10.74

e Estimated

PLACEDO CREEK MAIN STEM

201

08164800 PLACEDO CREEK NEAR PLACEDO, TX

LOCATION.--Lat 28°43'30", long 96°46'07", Victoria County, Hydrologic Unit 12100401, on right bank at downstream end of bridge on Farm Road 616, 0.1 mi downstream from confluence of Lone Tree Creek and Arroyo Palo Alto, 1.2 mi upstream from Ninemile Creek, and 4.4 mi northeast of Placedo.

DRAINAGE AREA.--68.3 mi².

PERIOD OF RECORD.--June 1970 to current year.

Water-quality records.--Chemical, biochemical, and pesticide analyses: October 1968 to September 1979.

GAGE.--Water-stage recorder. Datum of gage is 5.58 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records fair. No known diversion above station.

AVERAGE DISCHARGE.--21 years, 63.1 ft³/s (45,720 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,300 ft³/s Oct. 31, 1981 (gage height, 30.8 ft); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1930, 31.9 ft in September 1967 and 30.4 ft in 1960 (probably October), from information by local resident.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 9	2400	5,860	24.06	Feb. 4	2200	5,330	23.56
Jan. 18	2100	2,150	19.44	Apr. 6	0100	*14,700	*29.47

Minimum daily discharge, 0.01 ft³/s Oct. 20, Nov. 1-3, 5.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.12	.01	.19	.19	1.4	2.7	.59	1.4	1.0	73	16	.05
2	.12	.01	.21	.21	1.2	2.8	.87	6.7	1.1	25	6.3	.19
3	.11	.01	.24	.53	1.7	2.5	1.1	2.5	.91	11	3.1	.32
4	.04	.02	.24	1.7	2330	2.5	1.2	1.7	.52	4.8	2.0	.38
5	3.9	.01	.24	1.9	2140	2.6	6030	1.2	.42	2.5	1.4	.57
6	11	.02	.24	1.4	202	2.9	8620	1.1	.32	1.6	26	70
7	4.8	.02	.16	3.0	51	3.0	622	.94	.24	7.5	19	49
8	1.3	.10	.15	1.7	21	3.1	109	40	.73	102	28	30
9	.32	6.6	.15	1610	9.8	3.0	45	60	2.2	139	12	11
10	1.4	37	.15	3690	5.1	2.9	24	14	2.1	50	6.1	4.4
11	2.7	11	.15	762	3.0	3.0	432	9.5	1.4	22	3.4	2.2
12	5.9	5.4	.18	90	2.2	3.2	156	4.3	1.3	9.7	1.8	2.2
13	3.2	2.3	.19	30	1.8	3.1	38	2.2	.96	4.7	.97	1.3
14	1.4	.75	.22	13	1.6	3.1	31	1.7	.69	2.8	.43	.90
15	.47	.20	.24	114	1.4	3.2	51	1.5	.89	1.8	1.2	1.7
16	.12	.10	.24	59	1.3	9.3	25	1.2	.94	1.4	6.2	3.4
17	.05	.11	.24	16	1.5	367	12	1.7	.80	1.3	7.6	6.4
18	.02	.12	.36	757	1.6	62	6.6	1.4	.71	1.3	2.3	3.6
19	.02	.12	.31	824	1.8	20	4.1	1.1	.73	1.3	1.4	11
20	.01	.12	.31	80	1.9	8.0	2.9	.99	.77	1.0	.67	6.8
21	.04	.16	.27	26	2.4	4.3	2.4	1.3	.70	.73	.40	2.7
22	.08	.21	.20	11	2.2	2.4	2.3	3.1	.31	1.7	.22	1.5
23	.06	4.2	.19	6.6	1.9	1.3	2.2	2.6	.27	2.5	.19	1.1
24	.05	33	.19	4.1	2.1	.84	2.0	1.7	.37	136	.34	2.3
25	.04	17	.19	2.8	2.2	.72	1.9	1.1	.64	59	1.0	2.1
26	.03	7.5	.48	2.2	2.2	.69	2.1	.88	.96	20	.26	1.2
27	.03	3.9	1.1	3.0	2.2	.80	2.3	1.0	1.0	7.3	.08	.57
28	.02	2.0	.65	2.4	2.2	.79	2.0	.94	.87	3.2	.06	.29
29	.02	.69	.34	2.4	---	1.3	1.9	.62	142	1.7	.07	.19
30	.02	.25	.26	1.8	---	.96	1.6	.54	314	1.2	.07	.15
31	.02	---	.19	1.6	---	.60	---	.59	---	24	.04	---
TOTAL	37.41	132.93	8.47	8119.53	4798.7	524.60	16233.06	169.50	479.85	721.03	148.60	217.51
MEAN	1.21	4.43	.27	262	171	16.9	541	5.47	16.0	23.3	4.79	7.25
MAX	11	37	1.1	3690	2330	367	8620	60	314	139	28	70
MIN	.01	.01	.15	.19	1.2	.60	.59	.54	.24	.73	.04	.05
AC-FT	74	264	17	16110	9520	1040	32200	336	952	1430	295	431
CAL YR 1990	TOTAL	19418.82	MEAN	53.2	MAX	9370	MIN	.00	AC-FT	38520		
WTR YR 1991	TOTAL	31591.19	MEAN	86.6	MAX	8620	MIN	.01	AC-FT	62660		

GUADALUPE RIVER BASIN

08165300 NORTH FORK GUADALUPE RIVER NEAR HUNT, TX

LOCATION.--Lat 30°03'50", long 99°23'12", Kerr County, Hydrologic Unit 12100201, on right bank, 1,000 ft upstream from Ranch Road 1340, 1.9 mi downstream from Bear Creek, 3.1 mi west of Hunt, and 3.5 mi upstream from Honey Creek. Prior to June 7, 1989, at site 0.58 mi upstream at same datum.

DRAINAGE AREA.--169.0 mi².

PERIOD OF RECORD.--August 1967 to current year. Low-flow records not equivalent prior to June 7, 1989, because of undetermined channel flow loss between sites.

REVISED RECORDS.--WRD TX-74-1: 1971(P).

GAGE.--Water-stage recorder. Datum of gage is 1,800.10 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good, except for those above 200 ft³/s, which are fair. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--24 years, 41.9 ft³/s (3.37 in/yr), 30,360 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 57,000 ft³/s Oct. 19, 1985 (gage height, 29.81 ft, at site 0.58 mi upstream, from rating curve extended above 170 ft³/s on basis of slope-area measurements of 7,460 and 38,400 ft³/s); minimum, 0.47 ft³/s May 10, 1988, result of dam upstream.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1900 occurred July 1, 1932 (gage height, 37.3 ft, at site 0.58 mi upstream), discharge 140,000 ft³/s, by slope-area measurements, combined flow of North Fork Guadalupe River 5 mi upstream and Bear Creek 2 mi upstream from mouth, and adjusted for difference in drainage area.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Sept. 16	1200	*4,050	*7.45	No other peak greater than base discharge.			
Minimum daily discharge, 9.3 ft ³ /s May 29.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	22	21	21	20	21	19	17	15	12	11	11	11		
2	22	21	21	20	21	18	16	15	12	12	10	12		
3	22	21	21	20	20	14	16	15	12	12	10	12		
4	22	30	21	20	20	17	16	17	14	12	10	12		
5	22	32	21	21	31	24	20	24	14	12	9.9	12		
6	22	28	21	21	35	20	22	19	14	13	9.9	12		
7	22	27	19	21	28	19	21	17	13	13	9.9	13		
8	20	27	19	21	27	19	19	20	12	12	9.9	16		
9	28	27	19	21	25	18	18	23	12	12	9.9	14		
10	26	26	19	22	25	17	17	20	12	12	9.9	12		
11	24	24	20	23	24	17	17	18	12	12	9.9	12		
12	24	24	20	22	23	17	17	17	30	12	9.9	12		
13	24	24	20	21	22	17	17	18	22	11	9.7	11		
14	24	24	20	20	22	17	17	23	16	11	9.5	12		
15	24	23	20	20	21	17	16	17	15	10	14	30		
16	23	23	23	20	20	17	15	20	15	10	19	842		
17	24	23	23	20	20	17	15	23	15	10	13	138		
18	24	22	20	29	20	17	15	19	14	10	12	57		
19	22	24	20	29	20	17	15	17	14	10	12	48		
20	21	27	20	24	20	17	15	16	13	10	12	52		
21	25	26	20	22	19	18	15	16	13	10	12	47		
22	28	25	19	21	19	18	15	17	12	11	10	43		
23	26	27	19	21	19	18	15	17	12	11	12	39		
24	24	26	19	21	19	18	15	15	12	11	12	36		
25	23	26	19	21	19	17	15	14	12	11	11	32		
26	22	25	19	21	19	17	15	14	12	10	11	31		
27	22	25	19	21	18	17	15	14	11	10	11	30		
28	22	24	19	21	17	17	16	14	11	10	10	29		
29	21	21	20	21	---	16	15	9.3	10	10	9.6	27		
30	21	21	21	21	---	16	15	11	11	11	9.8	26		
31	21	---	21	23	---	17	---	11	---	11	10	---		
TOTAL	717	744	623	669	614	544	492	525.3	409	343	339.8	1680		
MEAN	23.1	24.8	20.1	21.6	21.9	17.5	16.4	16.9	13.6	11.1	11.0	56.0		
MAX	28	32	23	29	35	24	22	24	30	13	19	842		
MIN	20	21	19	20	17	14	15	9.3	10	10	9.5	11		
AC-FT	1420	1480	1240	1330	1220	1080	976	1040	811	680	674	3330		
CFSM	.14	.15	.12	.13	.13	.10	.10	.10	.08	.07	.07	.33		
IN.	.16	.16	.14	.15	.14	.12	.11	.12	.09	.08	.08	.37		
CAL YR 1990	TOTAL	15162	MEAN	41.5	MAX	2740	MIN	14	AC-FT	30070	CFSM	.25	IN.	3.36
WTR YR 1991	TOTAL	7700.1	MEAN	21.1	MAX	842	MIN	9.3	AC-FT	15270	CFSM	.13	IN.	1.71

GUADALUPE RIVER MAIN STEM

203

08165500 GUADALUPE RIVER AT HUNT, TX

LOCATION.--Lat 30°04'11", long 99°19'17", Kerr County, Hydrologic Unit 12100201, on left bank, 56 ft upstream and 252 ft to left of left end of bridge on State Highway 39, 0.6 mi downstream from confluence of North and South Forks, 0.8 mi east of Hunt, and at mile 430.9.

DRAINAGE AREA.--288 mi².

PERIOD OF RECORD.--October 1941 to September 1949, discharge not computed above 600 ft³/s, and April 1965 to current year. Occasional discharge measurements made 1950-64.
Water-quality records.--Chemical analyses: March 1965 to April 1966.

REVISED RECORDS.--WSP 2123: Drainage area.

GAGE.--Water-stage recorder and crest-stage gages. Datum of gage is 1,722.7 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for estimated daily discharges and those above 300 ft³/s, which are fair. There are numerous diversions for irrigation above station, but amounts are unknown. Several observations of water temperature were made during the year. Gage-height telemeter at station.

AVERAGE DISCHARGE.--26 years, 78.4 ft³/s (3.70 in/yr), 56,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 107,800 ft³/s July 17, 1987 (gage height, 28.38 ft) from rating curve extended above 3,700 ft³/s on basis of channel geometry and flow-over-dam measurement of peak flow; minimum, 6.9 ft³/s June 17, 1948.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1900, 36.6 ft July 2, 1932, from information by local resident (discharge, 206,000 ft³/s, determined by slope-area measurement 4.5 mi downstream from gage).

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Sept. 16	1415	*2,350	*10.69	No other peak greater than base discharge.			
Minimum daily discharge, 22 ft ³ /s June 28, 29, Aug. 5, 6.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	37	37	40	40	42	43	38	41	25	25	27	25
2	36	34	40	40	41	42	37	33	30	26	27	30
3	35	38	43	43	41	38	38	31	27	44	27	31
4	39	50	43	43	41	36	39	38	33	35	26	31
5	38	50	42	41	53	39	43	42	37	24	22	31
6	37	47	44	41	57	41	46	36	30	28	22	30
7	41	47	42	41	49	39	43	28	30	27	25	31
8	40	52	43	41	47	41	41	42	27	27	27	33
9	55	54	43	40	45	39	39	44	25	31	25	33
10	52	49	43	44	45	36	38	46	31	29	25	30
11	45	46	42	42	44	35	37	34	27	26	24	29
12	47	45	42	40	42	36	38	31	93	26	24	29
13	43	45	43	40	42	33	37	39	60	25	24	29
14	40	44	43	40	41	33	38	38	e37	24	24	31
15	40	39	41	39	41	36	38	43	e36	23	27	137
16	40	37	41	39	41	36	35	40	e32	23	35	571
17	45	37	42	39	42	36	35	53	e31	23	34	200
18	48	36	40	54	44	37	35	40	e30	24	33	102
19	43	35	37	53	44	36	37	35	e29	24	33	82
20	36	46	38	45	43	38	36	36	e28	24	31	86
21	53	47	40	41	43	39	34	31	e27	24	31	84
22	61	47	39	41	43	40	37	25	e27	26	30	79
23	57	48	38	41	42	39	38	38	e27	26	29	75
24	53	48	39	41	41	39	39	35	e26	27	30	71
25	48	47	39	40	41	39	36	36	e26	28	28	69
26	44	40	40	40	41	39	36	32	26	27	26	67
27	43	44	40	40	41	40	39	29	25	26	25	67
28	43	44	40	41	40	40	46	31	22	26	25	66
29	41	43	41	41	---	37	54	28	22	26	25	64
30	40	41	43	43	---	36	44	30	24	27	24	63
31	38	---	42	44	---	38	---	25	---	28	24	---
TOTAL	1358	1317	1273	1298	1217	1176	1171	1110	950	829	839	2306
MEAN	43.8	43.9	41.1	41.9	43.5	37.9	39.0	35.8	31.7	26.7	27.1	76.9
MAX	61	54	44	54	57	43	54	53	93	44	35	571
MIN	35	34	37	39	40	33	34	25	22	23	22	25
AC-FT	2690	2610	2520	2570	2410	2330	2320	2200	1880	1640	1660	4570
CFSM	.15	.15	.14	.15	.15	.13	.14	.12	.11	.09	.09	.27
IN.	.18	.17	.16	.17	.16	.15	.15	.14	.12	.11	.11	.30

CAL YR 1990	TOTAL	24328	MEAN	66.7	MAX	3200	MIN	27	AC-FT	48250	CFSM	.23	IN.	3.14
WTR YR 1991	TOTAL	14844	MEAN	40.7	MAX	571	MIN	22	AC-FT	29440	CFSM	.14	IN.	1.92

e Estimated

GUADALUPE RIVER BASIN

08166000 JOHNSON CREEK NEAR INGRAM, TX

LOCATION.--Lat 30°06'00", long 99°16'58", Kerr County, Hydrologic Unit 12100201, on right bank 1.6 mi upstream from Henderson Branch, 3.4 mi northwest of Ingram, 3.8 mi upstream from mouth, and 9.2 mi northwest of Kerrville.

DRAINAGE AREA.--114 mi².

PERIOD OF RECORD.--September 1941 to November 1959, October 1961 to current year.
Water-quality records.--Chemical analyses: June 1952 to July 1966.

REVISED RECORDS.--WSP 1058: 1942-45. WSP 2123: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,721.30 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are fair. There are numerous small diversions above station for irrigation. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--48 years (water years 1942-59, 1962-91), 22.5 ft³/s (2.68 in/yr), 16,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 95,900 ft³/s Oct. 4, 1959 (gage height, 24.25 ft), from rating curve extended above 4,400 ft³/s on basis of slope-area measurements of 9,100 and 16,000 ft³/s and conveyance study; minimum daily, 0.4 ft³/s July 26, 27, 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1852, 35 ft July 2, 1932, from information by local resident; discharge, 138,000 ft³/s, by slope-area measurement at point 0.5 mi downstream from State fish hatchery and 6 or 7 mi upstream from gage. Flood of June 14, 1935, reached a stage of 31 or 32 ft, from information by local resident.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Sept. 17	0015	*70	*0.96				

Minimum daily discharge, 9.2 ft³/s Aug. 28, 29, 31, Sept. 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	35	28	26	21	22	22	20	17	19	18	15	9.2		
2	37	28	26	22	21	21	20	18	20	18	14	16		
3	35	28	26	22	21	20	19	20	21	17	11	15		
4	35	37	25	22	21	21	19	20	24	22	11	15		
5	33	30	24	22	37	21	21	21	22	21	11	14		
6	33	27	23	22	31	21	21	19	21	20	11	12		
7	33	26	23	22	26	21	20	18	19	17	12	16		
8	31	28	22	22	24	21	19	24	20	18	17	16		
9	37	29	22	24	24	21	17	23	23	18	13	14		
10	35	27	23	26	23	21	21	22	21	17	12	14		
11	34	26	25	23	23	21	22	22	21	15	12	13		
12	33	26	27	22	23	21	19	21	24	15	11	12		
13	33	26	25	21	22	19	20	26	23	14	11	13		
14	32	26	25	21	22	19	20	24	21	14	11	16		
15	31	26	24	21	21	19	18	22	24	14	11	45		
16	31	26	24	21	21	19	17	23	23	14	12	34		
17	33	26	24	21	21	20	17	23	22	13	11	49		
18	31	26	23	29	22	19	19	23	20	12	12	32		
19	31	26	22	27	20	20	19	21	19	14	12	27		
20	30	26	23	24	22	21	16	22	18	15	11	26		
21	37	26	24	22	22	22	16	21	17	14	11	25		
22	37	27	22	22	21	21	17	20	18	14	11	23		
23	33	32	22	22	21	20	17	21	23	15	11	21		
24	31	29	22	22	21	17	17	21	20	16	11	21		
25	31	28	22	22	21	17	18	21	19	15	11	20		
26	29	28	23	22	20	20	17	19	19	12	10	17		
27	28	28	24	22	21	21	17	19	16	12	9.8	17		
28	28	28	24	22	21	20	21	19	16	11	9.2	17		
29	28	26	26	22	---	17	18	19	17	19	9.2	16		
30	28	26	24	24	---	17	17	19	19	26	10	15		
31	28	---	21	23	---	18	---	19	---	17	9.2	---		
TOTAL	1001	826	736	700	635	618	559	647	609	497	353.4	600.2		
MEAN	32.3	27.5	23.7	22.6	22.7	19.9	18.6	20.9	20.3	16.0	11.4	20.0		
MAX	37	37	27	29	37	22	22	26	24	26	17	49		
MIN	28	26	21	21	20	17	16	17	16	11	9.2	9.2		
AC-FT	1990	1640	1460	1390	1260	1230	1110	1280	1210	986	701	1190		
CFSM	.28	.24	.21	.20	.20	.17	.16	.18	.18	.14	.10	.18		
IN.	.33	.27	.24	.23	.21	.20	.18	.21	.20	.16	.12	.20		
CAL YR 1990	TOTAL	11105	MEAN	30.4	MAX	1000	MIN	12	AC-FT	22030	CFSM	.27	IN.	3.62
WTR YR 1991	TOTAL	7781.6	MEAN	21.3	MAX	49	MIN	9.2	AC-FT	15430	CFSM	.19	IN.	2.54

GUADALUPE RIVER MAIN STEM

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08166200 GUADALUPE RIVER AT KERRVILLE, TX

LOCATION.--Lat 30°03'11", long 99°09'47", Kerr County, Hydrologic Unit 12100201, on left bank 300 ft below left end of Kerrville Dam, 1.0 mi upstream from mouth of Town Creek, and 1.4 mi upstream from State Highway 16 on Guadalupe Street at Guadalupe Park in Kerrville, Texas.

DRAINAGE AREA.--510 mi².

PERIOD OF RECORD.--July 1986 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,601.00 ft above National Geodetic Vertical Datum of 1929. Prior to Apr. 4, 1989, at site 300 ft upstream, and on opposite bank at datum 1.0 ft lower.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Numerous diversions for irrigation above station, amounts unknown. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--5 years, 166 ft³/s (4.42 in/yr), 120,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 141,000 ft³/s July 17, 1987 (gage height, 28.42 ft, from floodmark), from rating curve extended above 30,000 ft³/s on basis of indirect measurement of flow over dam; minimum 7.3 ft³/s May 2, 1989, result of dam upstream.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum estimated discharge, 196,000 ft³/s July 2, 1932 (estimated gage height, 39 ft).

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Sept. 16	1830	*1,930	*3.98	No other peak greater than base discharge.			
Minimum daily discharge, 29 ft ³ /s Aug. 7, 14, 15.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e72	70	70	76	94	94	70	58	47	49	42	38
2	e71	70	72	78	90	91	67	65	49	46	38	64
3	e70	71	71	80	89	79	68	68	60	46	38	80
4	e77	94	71	81	89	78	66	67	60	55	38	56
5	e76	94	69	80	136	76	104	76	57	52	38	55
6	e75	86	72	79	143	79	83	76	64	43	32	55
7	e82	81	70	78	123	77	81	71	55	45	29	53
8	e80	91	70	77	112	76	75	90	53	43	38	60
9	e92	91	69	84	106	74	70	88	70	44	38	59
10	e86	88	71	91	107	74	66	88	55	47	34	55
11	76	82	71	87	108	74	66	82	62	41	32	51
12	73	79	72	79	109	71	65	68	92	37	30	49
13	72	77	73	77	105	70	64	95	121	36	30	49
14	70	77	72	76	103	69	118	85	76	35	29	65
15	69	77	72	75	100	69	73	77	72	34	29	473
16	69	77	72	79	102	71	63	91	59	32	36	584
17	86	78	73	91	102	72	60	85	55	34	46	419
18	78	77	72	131	107	72	62	86	52	34	43	194
19	73	74	71	120	109	69	59	71	49	33	38	157
20	70	74	71	108	109	69	53	64	48	33	39	162
21	98	80	72	100	112	73	53	65	47	33	36	154
22	106	82	73	94	100	70	52	58	47	34	35	137
23	92	85	71	91	98	67	48	53	44	38	46	125
24	83	95	70	88	96	64	50	59	44	41	39	116
25	79	81	73	88	96	63	53	63	42	42	41	108
26	76	79	74	86	99	67	54	61	40	41	40	100
27	75	80	74	85	92	68	51	55	38	37	37	94
28	75	81	75	85	90	69	64	53	38	33	35	91
29	76	74	77	85	---	64	72	52	38	36	34	85
30	75	71	80	93	---	67	67	49	47	47	33	84
31	72	---	78	98	---	69	---	45	---	49	35	---
TOTAL	2424	2416	2241	2720	2926	2245	1997	2164	1681	1250	1128	3872
MEAN	78.2	80.5	72.3	87.7	104	72.4	66.6	69.8	56.0	40.3	36.4	129
MAX	106	95	80	131	143	94	118	95	121	55	46	584
MIN	69	70	69	75	89	63	48	45	38	32	29	38
AC-FT	4810	4790	4450	5400	5800	4450	3960	4290	3330	2480	2240	7680
CFSM	.15	.16	.14	.17	.20	.14	.13	.14	.11	.08	.07	.25
IN.	.18	.18	.16	.20	.21	.16	.15	.16	.12	.09	.08	.28
CAL YR 1990	TOTAL	39271	MEAN	108	MAX	4820	MIN	49	AC-FT	77890	CFSM	.21
WTR YR 1991	TOTAL	27064	MEAN	74.1	MAX	584	MIN	29	AC-FT	53680	CFSM	.15
											IN.	2.86
											IN.	1.97

e Estimated

08167000 GUADALUPE RIVER AT COMFORT, TX

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

DRAINAGE AREA.--839 mi².

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

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

GAGE.--Water-stage recorder. Datum of gage is 1,369.83 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 27, 1939, nonrecording gage. Nov. 27, 1939, to June 2, 1980, water-stage recorder at site 0.4 mi upstream at datum 2.22 ft higher. June 2, 1980, to Sept. 30, 1986, at present site at datum 2.00 ft higher.

REMARKS.--No estimated daily discharges. Records good. Many small diversions above station for irrigation. Satellite telemeter at station.

AVERAGE DISCHARGE.--52 years (water years 1940-91), 202 ft³/s (146,300 acre-ft/yr).

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 1869 reached a stage of 42.3 ft, present datum, from report by U.S. Army Corps of Engineers. Flood of July 1, 1932, reached a stage of 38.4 ft, from floodmark, and from information by State Department of Highways and Public Transportation. Flood of July 16, 1900, reached about the same stage as that of July 1, 1932, from information by local residents. All stages are at site and datum then in use.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,600 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Sept. 15	0800	*10,000	*13.28	No other peak greater than base discharge.			
Minimum daily discharge, 51 ft ³ /s Aug. 15, 16.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	115	115	116	115	142	144	116	107	90	97	70	57
2	114	112	115	118	139	144	116	99	90	98	64	103
3	111	111	120	133	135	137	116	169	90	91	62	142
4	111	141	115	126	146	127	116	156	103	96	59	163
5	111	154	113	123	219	126	187	184	104	119	58	93
6	111	138	111	123	241	125	199	147	99	107	56	84
7	110	130	113	122	210	126	160	133	98	95	54	85
8	108	137	112	119	187	125	151	212	92	91	52	82
9	238	155	112	124	174	124	141	211	92	90	56	80
10	171	141	112	152	166	122	129	168	107	85	60	80
11	139	134	111	143	164	123	123	159	98	82	59	78
12	125	129	112	137	162	124	123	146	354	81	58	74
13	120	126	112	130	162	122	123	144	198	76	55	71
14	115	123	116	126	158	119	157	173	191	75	52	71
15	113	123	116	125	149	119	178	148	162	72	51	2540
16	111	123	116	122	146	122	137	146	161	70	51	622
17	122	124	116	122	150	129	125	220	155	69	53	811
18	138	125	117	204	152	128	120	170	128	88	76	418
19	121	121	112	216	159	127	118	155	117	74	70	388
20	115	119	112	185	151	124	113	140	109	69	59	365
21	131	118	112	165	147	125	106	130	103	67	60	375
22	191	125	110	156	148	130	106	127	100	65	58	311
23	157	141	107	151	143	127	102	120	126	66	61	283
24	139	138	106	151	142	121	100	117	107	70	67	269
25	129	136	105	145	141	117	100	123	100	72	66	239
26	123	132	107	143	139	117	101	123	96	71	62	215
27	120	131	110	141	139	120	101	115	91	70	62	196
28	119	128	111	140	138	119	102	106	85	67	60	182
29	116	122	114	140	---	118	115	102	80	65	58	178
30	115	118	120	140	---	110	115	98	85	65	56	168
31	115	---	118	142	---	115	---	94	---	67	56	---
TOTAL	3974	3870	3499	4379	4449	3856	3796	4442	3611	2470	1841	8823
MEAN	128	129	113	141	159	124	127	143	120	79.7	59.4	294
MAX	238	155	120	216	241	144	199	220	354	119	76	2540
MIN	108	111	105	115	135	110	100	94	80	65	51	57
AC-FT	7880	7680	6940	8690	8820	7650	7530	8810	7160	4900	3650	17500
CAL YR 1990	TOTAL	72988	MEAN	200	MAX	13600	MIN	35	AC-FT	144800		
WTR YR 1991	TOTAL	49010	MEAN	134	MAX	2540	MIN	51	AC-FT	97210		

GUADALUPE RIVER MAIN STEM

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08167500 GUADALUPE RIVER NEAR SPRING BRANCH, TX

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

DRAINAGE AREA.--1,315 mi².

WATER-DISCHARGE RECORDS

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

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

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

REMARKS.--Records good. Several small diversions above station for irrigation. Satellite telemeter at station.

AVERAGE DISCHARGE.--69 years, 328 ft³/s (237,600 acre-ft/yr).

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

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

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Sept. 16	0200	*5,560	*9.92	No other peak greater than base discharge.			
Minimum daily discharge, 69 ft ³ /s Aug. 16.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	151	152	164	151	237	294	188	223	214	170	96	80
2	148	151	167	156	237	291	191	221	205	182	94	e140
3	144	151	164	185	237	284	187	259	201	174	91	e200
4	144	157	158	180	393	273	189	326	202	167	86	237
5	141	164	159	177	528	261	328	457	202	198	84	215
6	143	203	157	170	560	256	313	382	202	216	83	155
7	140	183	155	168	511	248	414	313	190	190	80	137
8	138	202	154	163	464	246	324	682	189	176	80	127
9	193	261	155	172	433	240	286	860	184	163	76	122
10	326	237	152	184	408	231	261	578	175	156	74	114
11	246	216	153	206	388	231	253	489	186	147	74	111
12	197	201	154	206	377	233	244	444	294	140	76	111
13	178	192	155	195	373	228	240	413	505	136	75	107
14	167	186	153	190	361	224	409	392	322	129	72	106
15	160	185	153	184	341	220	381	414	296	124	75	177
16	156	184	157	178	323	228	357	387	266	121	69	2380
17	151	183	158	171	327	240	299	381	336	118	70	752
18	163	180	155	210	333	229	283	432	329	113	72	779
19	170	180	151	334	350	226	272	374	242	122	74	482
20	161	180	150	338	340	223	256	358	217	121	91	444
21	166	177	146	294	325	223	246	333	200	110	87	404
22	201	174	142	274	320	222	243	314	208	104	83	395
23	240	178	143	261	314	218	234	303	349	116	106	379
24	212	185	140	268	307	214	227	288	310	128	110	428
25	190	192	140	265	301	207	223	282	226	110	99	330
26	176	188	140	252	291	206	220	283	199	107	93	295
27	168	187	141	248	288	201	217	271	185	106	88	265
28	162	180	144	243	285	200	215	257	173	103	83	246
29	159	173	146	244	---	199	271	242	162	102	81	231
30	155	168	146	240	---	191	230	232	161	97	80	226
31	153	---	147	241	---	189	---	225	---	105	79	---
TOTAL	5399	5550	4699	6748	9952	7176	8001	11415	7130	4251	2581	10175
MEAN	174	185	152	218	355	231	267	368	238	137	83.3	339
MAX	326	261	167	338	560	294	414	860	505	216	110	2380
MIN	138	151	140	151	237	189	187	221	161	97	69	80
AC-FT	10710	11010	9320	13380	19740	14230	15870	22640	14140	8430	5120	20180
CAL YR 1990	TOTAL	107523	MEAN	295	MAX	10900	MIN	76	AC-FT	213300		
WTR YR 1991	TOTAL	83077	MEAN	228	MAX	2380	MIN	69	AC-FT	164800		

e Estimated

GUADALUPE RIVER MAIN STEM

08167500 GUADALUPE RIVER NEAR SPRING BRANCH, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: October 1980 to September 1982, October 1989 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	HARD-NESS TOTAL (MG/L AS CAC03)	
NOV 20...	1150	178	501	8.2	20.5	2	1.7	8.5	97	--	240	
JAN 07...	1153	178	493	8.2	9.0	2	3.2	11.6	102	2.4	240	
APR 11...	0745	267	501	8.1	21.0	5	5.2	7.5	88	0.8	240	
JUN 06...	1025	188	486	8.2	27.0	5	11	7.6	98	1.0	230	
JUL 29...	1115	105	450	8.2	28.5	7	22	7.0	92	2.6	220	
AUG 28...	0805	82	466	7.8	26.5	1	9.2	7.0	90	0.9	220	
DATE		HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	SULFATE DIS-SOLVED (MG/L AS S04)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SI02)
NOV 20...	24	63	19	12	0.3	1.8	210	22	19	0.40	10	
JAN 07...	28	63	19	12	0.3	1.9	210	26	34	0.30	9.6	
APR 11...	30	66	19	11	0.3	1.6	210	23	20	0.30	10	
JUN 06...	27	64	18	11	0.3	1.5	210	18	19	0.10	12	
JUL 29...	25	58	18	13	0.4	2.2	190	22	22	0.20	15	
AUG 28...	18	56	19	13	0.4	1.7	200	23	25	0.30	14	
DATE		SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L)	RESIDUE FIXED NON FILTER-ABLE (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 20...	274	11	7	4	--	<0.010	0.400	0.040	0.16	0.20	0.020	
JAN 07...	291	28	11	17	--	<0.010	0.700	0.040	0.16	0.20	<0.010	
APR 11...	279	21	13	8	0.400	0.030	0.430	0.040	0.26	0.30	0.030	
JUN 06...	269	18	5	13	--	<0.010	0.330	<0.010	--	0.30	0.010	
JUL 29...	267	22	10	12	1.47	0.030	1.50	0.120	1.6	1.7	0.030	
AUG 28...	273	15	12	3	--	<0.010	0.160	0.020	--	<0.20	0.030	
DATE		PHOS-PHORUS ORTHO 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)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)
NOV 20...	<0.010	1.4	--	--	--	--	--	--	--	--	--	--
JAN 07...	<0.010	<0.1	<1	37	<0.5	<1.0	<5	<3	<10	5	<10	
APR 11...	0.020	2.2	--	--	--	--	--	--	--	--	--	--
JUN 06...	<0.010	1.6	1	39	<0.5	<1.0	<5	<3	<10	11	<10	
JUL 29...	0.010	2.7	--	--	--	--	--	--	--	--	--	--
AUG 28...	<0.010	2.4	<1	30	<0.5	<1.0	<5	<3	<10	<3	<10	

GUADALUPE RIVER MAIN STEM

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08167500 GUADALUPE RIVER NEAR SPRING BRANCH, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
NOV 20...	--	--	--	--	--	--	--	--	--	--
JAN 07...	9	1	<0.1	<10	<10	<1	<1.0	510	<6	6
APR 11...	--	--	--	--	--	--	--	--	--	--
JUN 06...	6	2	<0.1	<10	<10	<1	<1.0	550	<6	5
JUL 29...	--	--	--	--	--	--	--	--	--	--
AUG 28...	8	<1	<0.1	<10	<10	<1	<1.0	530	<6	<3

GUADALUPE RIVER MAIN STEM

08167700 CANYON LAKE NEAR NEW BRAUNFELS, TX

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

DRAINAGE AREA.--1,432 mi².

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 2123: Drainage area.

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

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

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

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

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 732,600 acre-ft June 19, 1987 (elevation, 942.68 ft); minimum observed since conservation pool first reached in April 1968, 311,200 acre-ft Nov. 24, 1984 (elevation, 899.85 ft).

EXTREMES FOR CURRENT YEAR.--Maximum daily contents, 378,100 acre-ft Feb. 13-14, 19 (elevation, 908.52 ft); minimum daily, 332,000 acre-ft Sept. 1 (elevation, 902.67 ft).

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

902.0	327,000	906.0	357,800	908.0	373,800
904.0	342,200	907.0	365,800	909.0	382,000

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	364600	364600	367100	363000	370400	374600	357600	363100	359300	353100	340900	332000
2	364300	364600	367100	363600	370500	374600	357300	362700	358600	352800	340600	334600
3	364300	364600	366800	363800	370700	373700	357200	362700	358300	352500	340100	334700
4	364200	365100	366600	363800	373200	373200	358700	362800	358000	352000	339700	334900
5	364200	364900	366400	363900	374300	372700	362400	362800	357600	351900	339300	334900
6	364100	364800	366200	364000	375200	372200	363400	362400	357300	351400	339100	334900
7	363900	364800	365900	363900	375900	371600	365000	362000	357000	351100	338700	334800
8	364000	366600	365800	363900	376400	371100	365600	363400	356700	351000	338400	334700
9	365200	366500	365600	364900	376900	370400	366100	364400	356400	350600	338000	334500
10	365200	366600	365400	365000	377300	370000	366500	364900	355900	350100	337800	334300
11	365200	366600	365400	365200	377700	369100	366900	364900	355700	349700	337400	334100
12	365100	366700	365300	365200	377900	368700	367100	365000	355800	349200	336900	334000
13	365000	366800	365200	365300	378100	368000	367400	365300	356000	348800	336500	333700
14	364900	366800	365100	365500	378100	367400	368700	365800	355800	348400	336400	333700
15	364700	367000	365100	365500	377900	367000	369000	366100	355800	348100	336500	333800
16	364500	366900	365000	365500	377800	366900	369400	366700	355600	347600	336200	337700
17	364900	367000	365200	365600	377800	366400	369700	366800	355800	347200	335900	338900
18	364700	367100	365000	366800	377800	365800	369900	366700	355700	346800	335600	340500
19	364600	367100	364900	367200	378100	365400	369700	366500	355400	346300	335300	340700
20	364500	367200	364900	367700	377800	364800	369100	366100	355000	345800	334900	340800
21	365000	367300	364900	367900	377600	364200	368600	365700	354600	345300	334700	340900
22	364900	367500	364700	368200	377200	363400	368200	365300	355400	345100	334900	341200
23	365000	367600	364200	368700	376800	362900	367500	365000	355700	344700	334700	342600
24	365000	367500	363700	369000	376500	362200	367000	364500	355700	344300	334400	343000
25	365000	367600	363400	369200	376300	361800	366500	363900	355500	343700	334100	342900
26	365000	367700	363400	369500	375700	361300	366000	363300	355100	343200	333800	342700
27	364900	367800	363300	369800	375200	360700	365400	362700	354700	342800	333500	342600
28	364900	367600	363300	369900	374900	360200	365200	362200	354100	342300	333100	342300
29	364900	367400	363200	370000	---	359300	364600	361500	353900	341900	332800	342000
30	364800	367200	363200	370300	---	358800	363900	360800	353500	341600	332800	341800
31	364700	---	363000	370300	---	358000	---	360000	---	341300	332400	---
MAX	365200	367800	367100	370300	378100	374600	369900	366800	359300	353100	340900	343000
MIN	363900	364600	363000	363000	370400	358000	357200	360000	353500	341300	332400	332000
(↑)	906.87	907.18	906.65	907.57	908.13	906.02	906.77	906.28	905.46	903.89	902.72	903.95
(Φ)	+100	+2500	-4200	+7300	+4600	-16900	+5900	-3900	-6500	-12200	-8900	+9400

CAL YR 1990 MAX 389800 MIN 330300 +31800
WTR YR 1991 MAX 378100 MIN 332000 -22800

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

GUADALUPE RIVER MAIN STEM

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08167700 CANYON LAKE NEAR NEW BRAUNFELS, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: October 1969 to September 1982. February 1990 to current year.

295148098115201 - CANYON LAKE SITE AR

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

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							
31...	0930	1.00	375	8.3	11.0	8.7	80
31...	0932	10.0	375	8.3	11.0	8.6	79
31...	0934	20.0	375	8.3	11.0	8.6	79
31...	0936	30.0	375	8.3	11.0	8.6	79
31...	0938	40.0	375	8.3	11.0	8.6	79
31...	0940	50.0	375	8.3	11.0	8.6	79
31...	0942	60.0	375	8.3	11.0	8.6	79
31...	0944	70.0	377	8.3	11.0	8.6	79
31...	0946	75.0	377	8.3	11.0	8.6	79
MAY							
16...	0855	1.00	365	8.3	23.5	8.1	99
16...	0857	10.0	365	8.3	23.0	8.1	98
16...	0859	20.0	365	8.3	23.0	8.0	97
16...	0901	30.0	368	8.2	22.0	7.2	86
16...	0903	40.0	394	8.0	19.5	5.8	66
16...	0905	50.0	393	8.1	17.5	6.5	71
16...	0907	60.0	393	8.2	17.0	6.7	72
16...	0909	70.0	393	8.1	16.5	6.3	67
16...	0911	75.0	393	8.1	16.5	6.1	65
AUG							
12...	1035	1.00	369	8.2	28.5	7.0	93
12...	1037	10.0	369	8.2	28.5	6.9	92
12...	1039	20.0	369	8.1	28.5	6.7	89
12...	1041	30.0	379	7.8	27.5	3.7	48
12...	1043	40.0	390	7.6	26.5	1.4	18
12...	1045	50.0	419	7.5	22.0	0.9	11
12...	1047	60.0	422	7.6	20.0	1.5	17
12...	1049	72.0	418	7.6	19.5	1.8	20

GUADALUPE RIVER MAIN STEM

08167700 CANYON LAKE NEAR NEW BRAUNFELS, TX--Continued

295206098115501 - CANYON LAKE SITE AC

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	RESER- VOIR STORAGE (AC-FT)	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)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CAC03)
JAN												
31...	1005	370000	1.00	375	8.3	11.0	1.80	8.6	79	K12	K1	180
31...	1007	--	10.0	375	8.3	11.0	--	8.6	79	--	--	--
31...	1009	--	20.0	375	8.3	11.0	--	8.6	79	--	--	--
31...	1011	--	30.0	375	8.3	11.0	--	8.6	79	--	--	--
31...	1013	--	40.0	375	8.3	11.0	--	8.6	79	--	--	--
31...	1015	--	50.0	375	8.3	11.0	--	8.6	79	--	--	--
31...	1017	--	60.0	375	8.3	11.0	--	8.6	79	--	--	--
31...	1019	--	70.0	375	8.3	11.0	--	8.4	77	--	--	--
31...	1021	--	80.0	377	8.3	11.0	--	8.4	77	--	--	--
31...	1023	--	90.0	377	8.2	11.0	--	8.1	74	--	--	--
31...	1025	--	100	377	8.2	11.0	--	7.9	73	--	--	--
31...	1027	--	110	380	8.1	11.0	--	7.3	67	--	--	--
31...	1029	--	120	382	8.1	11.0	--	6.9	63	--	--	--
31...	1031	--	130	382	8.1	11.0	--	6.8	63	--	--	--
31...	1033	--	140	382	8.0	11.0	--	6.6	61	--	--	--
31...	1035	--	149	382	8.0	11.0	--	6.6	61	--	--	180
MAY												
16...	0925	367000	1.00	369	8.3	24.0	2.20	7.9	98	<1	K4	180
16...	0927	--	10.0	369	8.3	23.5	--	7.9	97	--	--	--
16...	0929	--	20.0	369	8.3	23.0	--	8.0	97	--	--	--
16...	0931	--	30.0	369	8.2	22.0	--	7.5	89	--	--	--
16...	0933	--	40.0	396	8.0	19.0	--	5.8	65	--	--	--
16...	0935	--	50.0	396	8.1	18.0	--	6.1	67	--	--	--
16...	0937	--	60.0	396	8.2	17.0	--	6.5	70	--	--	--
16...	0939	--	70.0	393	8.2	16.5	--	6.4	68	--	--	--
16...	0941	--	80.0	393	8.1	15.5	--	6.2	65	--	--	--
16...	0943	--	90.0	393	8.1	15.0	--	5.9	61	--	--	--
16...	0945	--	100	393	8.0	14.5	--	5.5	56	--	--	--
16...	0947	--	110	393	7.9	14.5	--	4.2	43	--	--	--
16...	0949	--	120	394	7.8	14.0	--	2.8	28	--	--	--
16...	0951	--	130	394	7.7	14.0	--	1.8	18	--	--	--
16...	0953	--	140	394	7.7	14.0	--	1.8	18	--	--	--
16...	0955	--	147	394	7.7	14.0	--	1.1	11	--	--	190
AUG												
12...	0920	337000	1.00	368	8.2	28.5	3.80	7.0	93	K2	K1	180
12...	0922	--	10.0	368	8.2	28.5	--	7.0	93	--	--	--
12...	0924	--	20.0	368	8.1	28.5	--	6.8	90	--	--	--
12...	0926	--	30.0	381	7.7	27.0	--	3.2	41	--	--	--
12...	0928	--	40.0	392	7.5	26.0	--	1.0	13	--	--	--
12...	0930	--	50.0	410	7.5	23.5	--	0.5	6	--	--	--
12...	0932	--	60.0	421	7.6	20.0	--	1.8	20	--	--	--
12...	0934	--	70.0	415	7.7	18.5	--	3.1	34	--	--	--
12...	0936	--	80.0	415	7.8	18.0	--	3.2	35	--	--	--
12...	0938	--	90.0	415	7.7	18.0	--	2.7	29	--	--	--
12...	0940	--	100	415	7.7	17.5	--	2.4	26	--	--	--
12...	0942	--	115	417	7.6	17.0	--	0	0	--	--	--
12...	0944	--	110	417	7.6	17.0	--	0.9	10	--	--	--
12...	0946	--	120	419	7.6	16.5	--	0	0	--	--	--
12...	0948	--	130	423	7.6	16.0	--	0	0	--	--	--
12...	0950	--	144	423	7.6	16.0	--	0	0	--	--	200

GUADALUPE RIVER MAIN STEM

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08167700 CANYON LAKE NEAR NEW BRAUNFELS, TX--Continued

295206098115501 - CANYON LAKE SITE AC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	HARD- NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	SULFATE DIS- SOLVED (MG/L AS S04)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SI02)
JAN											
31...	23	43	17	10	0.3	2.1	150	23	16	0.20	9.3
31...	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--
31...	27	44	17	10	0.3	2.0	150	24	16	0.20	9.1
MAY											
16...	32	43	18	11	0.4	1.8	150	22	19	0.30	8.1
16...	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--
16...	35	47	18	11	0.3	2.0	160	22	19	0.30	10
AUG											
12...	37	39	19	11	0.4	1.8	140	20	18	0.20	8.6
12...	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--	--	--
12...	31	49	19	11	0.3	1.8	170	20	18	0.20	13

GUADALUPE RIVER MAIN STEM
08167700 CANYON LAKE NEAR NEW BRAUNFELS, TX--Continued

295206098115501 - CANYON LAKE SITE AC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

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)	PHOS- PHORUS ORTHO TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
JAN											
31...	213	--	<0.010	0.100	<0.010	--	0.30	<0.010	0.010	4	<1
31...	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	<0.010	0.100	<0.010	--	0.40	<0.010	0.010	310	<10
31...	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--
31...	214	0.090	0.010	0.100	0.030	0.27	0.30	0.020	0.020	6	31
MAY											
16...	213	--	<0.010	0.062	<0.010	--	0.40	<0.010	<0.010	3	<1
16...	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	<0.010	0.190	<0.010	--	0.70	0.010	<0.010	<10	<10
16...	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--
16...	--	0.220	0.010	0.230	0.020	0.38	0.40	0.010	<0.010	20	<10
16...	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--
16...	224	0.190	0.020	0.210	0.030	0.57	0.60	0.040	0.020	67	100
AUG											
12...	201	--	<0.010	<0.050	<0.010	--	0.30	<0.010	<0.010	<3	<1
12...	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	<0.010	0.220	<0.010	--	0.20	<0.010	<0.010	<10	<10
12...	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	<0.010	0.200	<0.010	--	0.30	0.010	<0.010	20	20
12...	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--	--	--
12...	234	--	<0.010	<0.050	0.210	0.29	0.50	0.020	<0.010	170	300

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08167700 CANYON LAKE NEAR NEW BRAUNFELS, TX--Continued

295241098132101 - CANYON LAKE SITE BC

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

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							
31...	1045	1.00	375	8.3	11.0	8.6	79
31...	1047	10.0	375	8.3	11.0	8.6	79
31...	1049	20.0	375	8.3	11.0	8.6	79
31...	1051	30.0	375	8.3	11.0	8.6	79
31...	1053	40.0	375	8.3	11.0	8.6	79
31...	1055	50.0	375	8.3	11.0	8.5	78
31...	1057	60.0	375	8.3	11.0	8.5	78
31...	1059	70.0	375	8.3	11.0	8.5	78
31...	1101	80.0	375	8.3	11.0	8.5	78
31...	1103	90.0	375	8.3	11.0	8.5	78
31...	1107	100	375	8.3	11.0	8.5	78
31...	1109	110	375	8.3	11.0	8.5	78
31...	1111	120	375	8.3	11.0	8.5	78
31...	1113	130	375	8.3	10.5	8.5	77
MAY							
16...	1040	1.00	369	8.3	24.0	7.7	95
16...	1042	10.0	369	8.3	23.5	7.8	95
16...	1044	20.0	369	8.3	23.0	7.7	93
16...	1046	30.0	405	8.0	21.5	5.8	68
16...	1048	40.0	396	8.0	19.0	5.4	60
16...	1050	50.0	396	8.1	17.5	5.9	64
16...	1052	60.0	396	8.1	17.0	5.6	60
16...	1054	70.0	396	8.0	16.5	5.4	57
16...	1056	80.0	396	7.9	15.5	3.8	39
16...	1058	90.0	396	7.8	15.0	2.8	29
16...	1100	100	396	7.7	14.5	2.1	21
16...	1102	110	396	7.7	14.5	1.7	17
16...	1104	120	396	7.6	14.0	0.6	6
16...	1106	129	396	7.6	14.5	0.5	5
AUG							
12...	1110	1.00	368	8.2	29.0	6.7	90
12...	1112	10.0	368	8.2	29.0	6.7	90
12...	1114	20.0	370	8.2	29.0	6.6	88
12...	1116	30.0	370	8.1	28.5	6.4	85
12...	1118	40.0	399	7.5	25.5	0.1	1
12...	1120	50.0	423	7.5	22.0	0	0
12...	1122	60.0	428	7.5	20.0	0	0
12...	1124	70.0	425	7.5	19.0	0	0
12...	1126	80.0	425	7.5	18.5	0	0
12...	1128	90.0	425	7.5	18.0	0	0
12...	1130	100	425	7.6	17.5	0	0
12...	1132	110	425	7.6	17.5	0	0
12...	1134	123	425	7.6	17.0	0	0

295240098152001 - CANYON LAKE SITE CC

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

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							
31...	1348	1.00	375	8.4	12.0	8.9	84
31...	1350	10.0	375	8.4	11.5	8.9	83
31...	1352	20.0	375	8.4	11.5	8.9	83
31...	1354	30.0	375	8.4	11.5	8.9	83
31...	1356	40.0	375	8.4	11.5	8.8	82
31...	1358	50.0	377	8.4	11.5	8.8	82
31...	1400	60.0	377	8.4	11.5	8.7	81
31...	1402	70.0	377	8.3	11.0	8.6	79
31...	1404	77.0	377	8.3	11.0	8.5	78
AUG							
12...	1405	1.00	369	8.2	29.5	6.9	93
12...	1407	10.0	369	8.2	29.5	6.9	93
12...	1409	20.0	370	8.1	29.0	6.3	85
12...	1411	30.0	378	7.8	28.5	3.9	52
12...	1413	40.0	404	7.4	25.5	0	0
12...	1415	50.0	431	7.4	22.0	0	0
12...	1417	60.0	434	7.4	20.5	0	0
12...	1419	69.0	434	7.4	19.5	0	0

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295349098143101 - CANYON LAKE SITE DC

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

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)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CAC03)	
JAN												
31...	1230	1.00	378	8.4	11.5	1.80	8.8	82	K10	K2	180	
31...	1232	10.0	378	8.4	11.0	--	8.8	81	--	--	--	
31...	1234	20.0	378	8.4	11.0	--	8.8	81	--	--	--	
31...	1236	30.0	378	8.3	11.0	--	8.7	80	--	--	--	
31...	1238	40.0	378	8.3	11.0	--	8.6	79	--	--	--	
31...	1240	50.0	378	8.3	11.0	--	8.7	80	--	--	--	
31...	1242	60.0	381	8.3	11.0	--	8.6	79	--	--	--	
31...	1244	70.0	392	8.2	11.0	--	8.1	75	--	--	--	
31...	1246	80.0	398	8.2	10.5	--	8.0	73	--	--	--	
31...	1248	89.0	388	8.2	10.5	--	8.0	73	--	--	190	
MAY												
16...	1220	1.00	367	8.3	25.0	1.40	7.5	94	K1	K6	180	
16...	1222	10.0	367	8.3	24.5	--	7.6	94	--	--	--	
16...	1224	20.0	367	8.3	24.0	--	7.6	93	--	--	--	
16...	1226	30.0	396	8.0	22.0	--	5.9	70	--	--	--	
16...	1228	40.0	411	7.8	19.0	--	4.3	48	--	--	--	
16...	1230	50.0	405	7.9	17.0	--	4.2	45	--	--	--	
16...	1232	60.0	405	7.9	16.5	--	3.7	39	--	--	--	
16...	1234	70.0	405	7.8	16.0	--	2.8	29	--	--	--	
16...	1236	80.0	405	7.7	15.5	--	1.3	13	--	--	--	
16...	1238	88.0	405	7.7	15.5	--	0.9	9	--	--	200	
AUG												
12...	1245	1.00	370	8.2	29.5	1.70	6.7	91	22	57	170	
12...	1247	10.0	370	8.2	29.5	--	6.7	91	--	--	--	
12...	1249	20.0	370	8.2	29.5	--	6.6	89	--	--	--	
12...	1251	30.0	370	8.1	29.0	--	6.0	80	--	--	--	
12...	1253	35.0	381	7.7	28.0	--	2.8	37	--	--	--	
12...	1255	40.0	407	7.4	25.5	--	0	0	--	--	--	
12...	1257	50.0	440	7.4	21.5	--	0	0	--	--	--	
12...	1259	60.0	444	7.4	20.0	--	0	0	--	--	--	
12...	1301	70.0	440	7.4	19.0	--	0	0	--	--	--	
12...	1303	86.0	435	7.4	18.5	--	0	0	--	--	210	
DATE		HARD- NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	SULFATE DIS- SOLVED (MG/L AS S04)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
JAN												
31...	21	43	17	10	0.3	2.1	160	23	16	0.20	9.1	
31...	--	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--	--
31...	19	47	17	10	0.3	1.9	170	24	17	0.20	9.1	
MAY												
16...	27	43	17	10	0.3	1.8	150	20	17	0.40	8.0	
16...	--	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--	--
16...	30	49	18	11	0.3	2.0	170	25	21	0.30	10	
AUG												
12...	31	38	18	10	0.3	1.8	140	20	16	0.20	8.9	
12...	--	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--	--	--	--
12...	30	55	18	10	0.3	1.7	180	13	18	0.20	13	

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08167700 CANYON LAKE NEAR NEW BRAUNFELS, TX--Continued

295349098143101 - CANYON LAKE SITE DC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

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)	PHOS- PHORUS ORTHO TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
JAN											
31...	214	--	<0.010	0.100	<0.010	--	0.40	0.020	<0.010	13	<1
31...	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	<0.010	0.100	<0.010	--	0.50	0.010	<0.010	<10	<10
31...	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--
31...	227	--	<0.010	0.200	0.030	0.37	0.40	0.020	0.020	7	2
MAY											
16...	207	--	<0.010	0.061	<0.010	--	0.30	<0.010	<0.010	<3	<1
16...	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	<0.010	0.230	0.010	3.8	3.8	0.010	<0.010	20	<10
16...	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--
16...	237	0.250	0.020	0.270	0.030	0.67	0.70	0.050	0.020	9	82
AUG											
12...	196	--	<0.010	<0.050	<0.010	--	0.20	<0.010	<0.010	<3	<1
12...	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	<0.010	<0.050	<0.010	--	0.40	<0.010	<0.010	<10	<10
12...	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	<0.010	<0.050	0.040	0.36	0.40	0.010	<0.010	10	80
12...	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--	--	--
12...	238	--	<0.010	<0.050	0.270	0.23	0.50	0.010	<0.010	370	260

295329098151001 - CANYON LAKE SITE EC

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

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							
31...	1200	1.00	378	8.4	11.5	8.9	83
31...	1202	10.0	378	8.4	11.0	8.9	82
31...	1204	20.0	378	8.4	11.0	8.8	81
31...	1206	30.0	378	8.4	11.0	8.8	81
31...	1208	40.0	378	8.3	11.0	8.7	80
31...	1210	50.0	378	8.3	11.0	8.5	78
31...	1212	60.0	383	8.3	11.0	8.3	76
31...	1214	70.0	387	8.2	11.0	8.3	76
31...	1216	80.0	395	8.2	10.5	8.1	74
31...	1218	90.0	415	8.2	10.5	7.6	69
31...	1220	100	415	8.2	10.5	7.5	68
MAY							
16...	1125	1.00	369	8.3	24.5	7.6	94
16...	1127	10.0	369	8.2	24.0	7.6	94
16...	1129	20.0	375	8.2	24.0	7.4	91
16...	1131	30.0	396	8.1	23.5	6.8	83
16...	1133	40.0	430	7.6	19.0	3.3	37
16...	1135	50.0	405	7.9	17.5	4.3	47
16...	1137	60.0	405	7.9	17.0	4.3	46
16...	1139	70.0	405	7.9	16.5	3.8	40
16...	1141	80.0	405	7.8	15.5	2.5	26
16...	1143	90.0	405	7.7	15.5	1.4	15
16...	1145	99.0	405	7.7	15.5	0.7	7
AUG							
12...	1200	1.00	372	8.2	29.5	6.6	89
12...	1202	10.0	372	8.2	29.5	6.6	89
12...	1204	20.0	371	8.2	29.5	6.4	86
12...	1206	30.0	378	8.0	29.0	5.2	70
12...	1208	40.0	412	7.4	25.5	0	0
12...	1210	50.0	440	7.4	22.0	0	0
12...	1212	60.0	451	7.4	20.0	0	0
12...	1214	70.0	441	7.4	19.0	0	0
12...	1216	80.0	435	7.4	18.5	0	0
12...	1218	94.0	435	7.4	18.5	0	0

GUADALUPE RIVER MAIN STEM

08167700 CANYON LAKE NEAR NEW BRAUNFELS, TX--Continued

295349098173701 - CANYON LAKE SITE FC

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

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)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CAC03)	
JAN												
31...	1310	1.00	398	8.3	12.0	0.80	8.9	84	K6	<1	190	
31...	1312	10.0	398	8.3	11.0	--	8.8	81	--	--	--	
31...	1314	20.0	398	8.3	11.0	--	8.8	81	--	--	--	
31...	1316	30.0	398	8.3	11.0	--	8.7	80	--	--	--	
31...	1318	40.0	398	8.3	11.0	--	8.5	78	--	--	--	
31...	1320	50.0	440	8.2	11.0	--	7.8	72	--	--	--	
31...	1322	60.0	453	8.1	11.0	--	7.5	69	--	--	--	
31...	1324	65.0	456	8.1	11.0	--	7.3	67	--	--	220	
MAY												
16...	1315	1.00	385	8.2	25.5	1.40	7.4	94	<1	--	190	
16...	1317	30.0	429	7.9	23.5	--	5.3	65	--	--	--	
16...	1319	40.0	447	7.5	19.0	--	3.2	36	--	--	--	
16...	1321	50.0	429	7.6	18.0	--	2.1	23	--	--	--	
16...	1323	60.0	425	7.6	17.0	--	0.6	6	--	--	210	
AUG												
12...	1330	1.00	378	8.2	30.5	1.10	6.5	89	<2	K3	180	
12...	1332	10.0	378	8.2	30.0	--	6.5	89	--	--	--	
12...	1334	20.0	388	8.1	30.0	--	6.0	82	--	--	--	
12...	1336	30.0	406	7.7	29.5	--	2.6	35	--	--	--	
12...	1338	35.0	426	7.4	28.5	--	0	0	--	--	--	
12...	1340	40.0	452	7.2	27.0	--	0	0	--	--	--	
12...	1342	50.0	504	7.2	22.0	--	0	0	--	--	--	
12...	1344	59.0	507	7.2	21.5	--	0	0	--	--	260	
DATE		HARD- NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	SULFATE DIS- SOLVED (MG/L AS S04)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SI02)
JAN												
31...	20	47	17	10	0.3	2.0	170	23	16	0.20	8.9	
31...	--	--	--	--	--	--	--	--	--	--	--	
31...	--	--	--	--	--	--	--	--	--	--	--	
31...	--	--	--	--	--	--	--	--	--	--	--	
31...	--	--	--	--	--	--	--	--	--	--	--	
31...	--	--	--	--	--	--	--	--	--	--	--	
31...	24	59	18	11	0.3	1.6	200	26	18	0.20	9.2	
MAY												
16...	29	46	18	10	0.3	1.8	160	22	18	0.30	8.8	
16...	--	--	--	--	--	--	--	--	--	--	--	
16...	--	--	--	--	--	--	--	--	--	--	--	
16...	--	--	--	--	--	--	--	--	--	--	--	
16...	31	55	18	10	0.3	1.8	180	22	20	0.30	10	
AUG												
12...	34	40	19	11	0.4	1.8	140	24	18	0.20	10	
12...	--	--	--	--	--	--	--	--	--	--	--	
12...	--	--	--	--	--	--	--	--	--	--	--	
12...	--	--	--	--	--	--	--	--	--	--	--	
12...	--	--	--	--	--	--	--	--	--	--	--	
12...	--	--	--	--	--	--	--	--	--	--	--	
12...	--	--	--	--	--	--	--	--	--	--	--	
12...	--	--	--	--	--	--	--	--	--	--	--	
12...	32	76	16	9.2	0.3	1.5	220	14	17	0.20	14	

GUADALUPE RIVER MAIN STEM

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08167700 CANYON LAKE NEAR NEW BRAUNFELS, TX--Continued

295349098173701 - CANYON LAKE SITE FC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

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)	PHOS- PHORUS ORTHO TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
JAN											
31...	224	--	<0.010	0.200	<0.010	--	0.20	<0.010	0.010	7	<1
31...	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	<0.010	0.200	0.010	0.19	0.20	<0.010	0.020	20	<10
31...	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--
31...	261	--	<0.010	0.400	0.040	0.26	0.30	<0.010	0.020	11	5
MAY											
16...	221	--	<0.010	0.100	<0.010	--	0.40	0.010	<0.010	<3	<1
16...	--	0.220	0.020	0.240	0.030	0.37	0.40	0.020	<0.010	<10	<10
16...	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--
16...	245	0.220	0.020	0.240	0.040	0.36	0.40	0.050	0.020	6	110
AUG											
12...	210	--	<0.010	<0.050	<0.010	--	0.30	0.010	<0.010	8	<1
12...	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	0.010	<0.050	0.030	0.37	0.40	0.030	<0.010	10	20
12...	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	<0.010	<0.050	0.200	0.40	0.60	0.030	<0.010	80	190
12...	--	--	--	--	--	--	--	--	--	--	--
12...	283	--	<0.010	<0.050	0.460	0.44	0.90	0.050	<0.010	610	240

Canyon Lake AC (295206098115501)

Phytoplankton Analyses October 1990 to September 1991

Date	1-31-91
Time	1009

TOTAL CELLS/mL	57,346
NUMBER OF SPECIES	19
DEPTH COLLECTED (ft.)	3.0

<u>Organisms</u>	<u>Cells/mL</u>
BACILLARIOPHYTA (Diatoms)	
Order Centrales	
<i>Cyclotella meneghiniana</i>	262
<i>Stephanodiscus astraea</i> var. <i>minutula</i>	65
Order Pennales	
<i>Achnanthes minutissima</i>	41
<i>Nitzschia acicularis</i>	82
<i>Nitzschia palea</i>	41
<i>Nitzschia</i> sp.	41
<i>Synedra radians</i>	123
CHLOROPHYTA (Green algae)	
<i>Chlamydomonas</i> sp.	1,634
<i>Chlorella ellipsoidea</i>	2,124
<i>Chlorococcum humicola</i>	327
<i>Pediastrum simplex</i>	1,307
<i>Scenedesmus bijuga</i>	490
<i>Tetraëdron minimum</i>	653
CYANOPHYTA (Blue-green algae)	
<i>Aphanocapsa delicatissima</i>	42,313
<i>Chroococcus</i> sp.	4,738
<i>Dactylococcopsis raphidioides</i>	490
<i>Synechococcus</i> sp.	1,144
EUGLENOPHYTA (Euglenoids)	
<i>Euglena</i> sp.	327
CRYPTOPHYTA (Cryptomonads)	
<i>Rhodomonas minuta</i>	1,144

08167700 CANYON LAKE NEAR NEW BRAUNFELS, TX—Continued

Canyon Lake FC (295349098173701)

Phytoplankton Analyses October 1990 to September 1991

Date	1-31-91
Time	1310
<hr/>	
TOTAL CELLS/mL	71,065
NUMBER OF SPECIES	22
DEPTH COLLECTED (ft.)	1.2
<hr/>	

<u>Organisms</u>	<u>Cells/mL</u>
BACILLARIOPHYTA (Diatoms)	
Order Centrales	
<i>Cyclotella meneghiniana</i>	163
<i>Stephanodiscus astraea</i> var. <i>minutula</i>	163
<i>Stephanodiscus niagarae</i>	163
Order Pennales	
<i>Achnanthes minutissima</i>	77
<i>Nitzschia acicularis</i>	181
<i>Nitzschia palea</i>	52
<i>Nitzschia</i> sp.	129
<i>Synedra radians</i>	52
CHLOROPHYTA (Green algae)	
<i>Chlamydomonas</i> sp.	163
<i>Chlorella ellipsoidea</i>	3,594
<i>Chlorococcum humicola</i>	1,634
<i>Cosmarium</i> sp.	163
CHRYSOPHYTA (Golden-brown algae)	
<i>Kephyrion</i> sp.	163
<i>Mallomonas</i> sp.	163
CYANOPHYTA (Blue-green algae)	
<i>Aphanocapsa delicatissima</i>	37,902
<i>Aphanothece nidulans</i>	12,253
<i>Chroococcus multicoloratus</i>	980
<i>Chroococcus</i> sp.	1,634
<i>Dactylococcopsis raphidioides</i>	653
<i>Synechococcus</i> sp.	9,639
CRYPTOPHYTA (Cryptomonads)	
<i>Cryptomonas erosa</i>	327
<i>Rhodomonas minuta</i>	817

Canyon Lake AC (295206098115501)

Phytoplankton Analyses October 1990 to September 1991

Date	5-16-91
Time	0925

TOTAL CELLS/mL	90,943
NUMBER OF SPECIES	10
DEPTH COLLECTED (ft.)	3.6

<u>Organisms</u>	<u>Cells/mL</u>
BACILLARIOPHYTA (Diatoms)	
Order Centrales	
<i>Cyclotella meneghiniana</i>	340
<i>Cyclotella ocellata</i>	5,106
CHLOROPHYTA (Green algae)	
<i>Chlamydomonas</i> sp.	1,634
<i>Chlorella ellipsoidea</i>	1,634
<i>Scenedesmus bijuga</i>	1,089
<i>Spaerocystis Schroeteri</i>	17,426
CHRYSOPHYTA (Golden-brown algae)	
<i>Unknown flagellate</i>	545
CYANOPHYTA (Blue-green algae)	
<i>Aphanocapsa delicatissima</i>	60,446
<i>Chroococcus</i> sp.	1,089
CRYPTOPHYTA (Cryptomonads)	
<i>Cryptomonas erosa</i>	1,634

08167700 CANYON LAKE NEAR NEW BRAUNFELS, TX—Continued

Canyon Lake FC (295349098173701)

Phytoplankton Analyses October 1990 to September 1991

Date	5-16-91
Time	1315

TOTAL CELLS/mL	142,132
NUMBER OF SPECIES	13
DEPTH COLLECTED (ft.)	2.2

<u>Organisms</u>	<u>Cells/mL</u>
BACILLARIOPHYTA (Diatoms)	
Order Centrales	
<i>Cyclotella ocellata</i>	1,089
<i>Cyclotella operculata</i>	2,178
CHLOROPHYTA (Green algae)	
<i>Chlorococcum humicola</i>	5,718
<i>Chlorella ellipsoidea</i>	2,451
<i>Chlamydomonas</i> sp.	2,451
<i>Cosmarium</i> sp.	817
<i>Crucigenia tetrapedia</i>	3,267
<i>Tetraëdron minimum</i>	817
<i>Scenedesmus bijuga</i>	817
CHRYSTOPHYTA (Golden-brown algae)	
<i>Unknown flagellate</i>	817
CYANOPHYTA (Blue-green algae)	
<i>Aphanocapsa delicatissima</i>	112,724
<i>Aphanocapsa elachista</i>	6,535
<i>Chroococcus</i> sp.	2,451

Canyon Lake AC (295206098115501)

Phytoplankton Analyses October 1990 to September 1991

Date	8-12-91
Time	0920

TOTAL CELLS/mL	54,488
NUMBER OF SPECIES	11
DEPTH COLLECTED (ft.)	6.2

<u>Organisms</u>	<u>Cells/mL</u>
BACILLARIOPHYTA (Diatoms)	
Order Centrales	
<i>Stephanodiscus hantzschia</i>	981
CHLOROPHYTA (Green algae)	
<i>Chlorella vulgaris</i>	1,744
<i>Oocystis parva</i>	218
<i>Scenedesmus bijuga</i>	436
Unknown chlorophyte sp. 1	327
CHRYSTOPHYTA (Golden-brown algae)	
<i>Ochromonas granularis</i>	109
<i>Ochromonas minuscula</i>	109
<i>Ochromonas nana</i>	218
CYANOPHYTA (Blue-green algae)	
<i>Aphanocapsa elachista</i> var. <i>planctonica</i>	45,551
<i>Gloeocapsa punctata</i>	545
<i>Lyngbya limnetica</i>	4,250

08167700 CANYON LAKE NEAR NEW BRAUNFELS, TX—Continued

Canyon Lake FC (295349098173701)

Phytoplankton Analyses October 1990 to September 1991

Date	8-12-91
Time	1330
<hr/>	
TOTAL CELLS/mL	105,496
NUMBER OF SPECIES	15
DEPTH COLLECTED (ft.)	1.8
<hr/>	

<u>Organisms</u>	<u>Cells/mL</u>
BACILLARIOPHYTA (Diatoms)	
Order Pennales	
<i>Synedra ulna</i>	211
CHLOROPHYTA (Green algae)	
<i>Chlamydomonas globosa</i>	211
<i>Chlorella vulgaris</i>	4,853
<i>Cosmarium</i> sp. 1	211
<i>Golenkinia</i> sp. 1	422
<i>Oocystis parva</i>	1,055
<i>Tetraedron regulare</i>	211
CHRYSTOPHYTA (Golden-brown algae)	
<i>Mallomonas</i> sp. 1	211
<i>Ochromonas nana</i>	211
<i>Unknown statospore</i> sp. 1	211
CYANOPHYTA (Blue-green algae)	
<i>Aphanocapsa elachista</i> var. <i>planctonica</i>	66,040
<i>Lyngbya limnetica</i>	6,752
<i>Merismopedia minima</i>	23,420
<i>Raphidiopsis curvata</i>	844
PYRROPHYTA (Dinoflagellate)	
<i>Gymnodinium</i> sp. 1	633

GUADALUPE RIVER MAIN STEM

08167800 GUADALUPE RIVER AT SATTTLER, TX

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

DRAINAGE AREA.--1,436 mi², of which 1,432 mi² is above Canyon Dam.

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 2123: Drainage area.

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

REMARKS.--No estimated daily discharges. Records good. Since July 21, 1962, flow completely regulated by Canyon Lake (station 08167700) 1.8 mi upstream. Small diversions above station for irrigation. Satellite telemeter at station.

AVERAGE DISCHARGE.--29 years (water years 1963-91) since regulation began at Canyon Lake, 414 ft³/s (299,900 acre-ft/yr).

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

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 628 ft³/s Apr. 5 at 0100 hours (gage height, 5.75 ft); minimum daily, 133 ft³/s Oct. 26.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	148	143	171	184	209	567	413	594	568	374	203	178
2	149	143	173	179	209	568	296	594	568	374	218	174
3	149	143	176	187	209	562	296	595	432	374	218	176
4	144	147	176	187	230	561	299	594	355	374	218	176
5	135	148	176	187	221	561	381	591	360	374	218	176
6	150	148	178	187	247	556	327	587	360	374	203	176
7	149	148	179	185	315	555	322	587	364	374	184	176
8	149	147	179	181	320	555	314	596	365	374	200	176
9	163	143	179	186	300	555	309	601	365	374	180	176
10	150	143	179	184	283	555	309	601	365	349	174	174
11	148	143	174	183	287	555	309	601	357	296	178	174
12	156	140	174	181	339	555	309	601	360	296	184	174
13	151	142	163	181	416	555	309	423	360	296	185	174
14	152	138	176	181	425	555	314	300	360	296	196	175
15	153	141	176	181	432	555	313	300	360	288	175	170
16	148	141	176	181	432	562	313	300	360	290	191	171
17	139	144	177	180	432	568	313	419	360	300	179	174
18	140	145	181	180	433	558	414	587	360	300	179	228
19	136	145	177	179	476	555	607	587	364	300	174	258
20	134	146	176	179	525	555	601	587	365	293	165	245
21	135	155	180	179	542	555	601	587	365	292	164	241
22	136	171	180	179	550	555	601	587	366	292	170	241
23	136	168	179	179	557	555	601	587	374	292	181	262
24	136	164	179	179	566	555	598	587	374	292	181	290
25	134	163	179	179	554	555	594	587	374	292	176	309
26	133	161	179	179	541	555	594	587	374	292	177	322
27	139	165	181	179	542	555	594	582	374	292	175	313
28	139	168	184	189	545	558	594	581	374	285	176	318
29	145	170	184	204	---	568	594	485	374	281	176	318
30	146	171	184	209	---	568	594	568	374	219	176	318
31	143	---	184	209	---	568	---	568	---	182	176	---
TOTAL	4465	4534	5509	5717	11137	17315	13033	16951	11431	9681	5750	6633
MEAN	144	151	178	184	398	559	434	547	381	312	185	221
MAX	163	171	184	209	566	568	607	601	568	374	218	322
MIN	133	138	163	179	209	555	296	300	355	182	164	170
AC-FT	8860	8990	10930	11340	22090	34340	25850	33620	22670	19200	11410	13160
CAL YR 1990	TOTAL	94467	MEAN	259	MAX	581	MIN	92	AC-FT	187400		
WTR YR 1991	TOTAL	112156	MEAN	307	MAX	607	MIN	133	AC-FT	222500		

GUADALUPE RIVER MAIN STEM

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08167800 GUADALUPE RIVER AT SATTLER, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: September 1962 to August 1982. January 1990 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: June 1984 to September 1987.

INSTRUMENTATION.--From June 1984 to September 1987, water temperature was continuously recorded at this station.

EXTREMES FOR PERIOD OF RECORD.--

WATER TEMPERATURE: Maximum, 25.5°C on several days during September 1987; minimum, 9.5°C Mar. 8-10, 1985.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

		DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	HARD-NESS TOTAL (MG/L AS CAC03)
JAN 31...	1545	221	376	8.0	11.5	5	7.0	10.4	97	0.5	180
MAY 16...	1430	300	408	7.9	14.0	2	2.6	7.0	70	0.7	190
AUG 12...	1530	195	410	7.7	17.0	1	3.0	7.1	76	1.1	190
DATE	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	SULFATE DIS-SOLVED (MG/L AS S04)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SiO2)
JAN 31...	21	43	17	10	0.3	2.0	160	23	17	0.20	9.2
MAY 16...	28	48	17	11	0.3	1.9	160	18	17	0.20	10
AUG 12...	24	49	17	11	0.3	2.0	170	19	17	0.20	11
DATE	SOLIDS, SUM OF CONSTITUENTS, DIS-SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L)	RESIDUE FIXED NON FILTER-ABLE (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)	PHOS- PHORUS ORTHO TOTAL (MG/L AS P)
JAN 31...	216	6	4	2	<0.010	0.200	<0.010	--	0.20	<0.010	<0.010
MAY 16...	221	12	6	6	<0.010	0.210	<0.010	--	0.40	0.010	<0.010
AUG 12...	228	2	1	1	<0.010	0.160	0.020	0.28	0.30	0.020	<0.010
DATE	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	
JAN 31...	2.8	<1	30	<0.5	<1.0	<5	<3	<10	<3	<10	
MAY 16...	2.1	<1	34	<0.5	<1.0	<5	<3	<10	9	<10	
AUG 12...	1.9	1	35	0.6	<1.0	<5	<3	<10	<3	<10	
DATE	LITHIUM DIS-SOLVED (UG/L AS LI)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	STRON-TIUM, DIS-SOLVED (UG/L AS SR)	VANA-DIUM, DIS-SOLVED (UG/L AS V)	ZINC, DIS-SOLVED (UG/L AS ZN)	
JAN 31...	5	1	<0.1	<10	<10	<1	<1.0	390	<6	13	
MAY 16...	5	2	<0.1	<10	<10	<1	<1.0	410	<6	<3	
AUG 12...	6	58	<0.1	<10	<10	<1	<1.0	420	<6	<3	

GUADALUPE RIVER MAIN STEM

08168500 GUADALUPE RIVER ABOVE COMAL RIVER AT NEW BRAUNFELS, TX

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

DRAINAGE AREA.--1,518 mi², of which 1,432 mi² is above Canyon Dam.

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

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

GAGE.--Water-stage recorder and concrete control. Datum of gage is 586.65 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Small diversions for irrigation below station 08167800 and above this station. Since July 21, 1962, flow largely regulated by Canyon Lake (station 08167700) 21.9 mi upstream. Satellite telemeter at station.

AVERAGE DISCHARGE.--34 years (water years 1929-62) prior to regulation by Canyon Lake, 372 ft³/s (269,500 acre-ft/yr); 29 years (water years 1963-91) regulated, 500 ft³/s (362,200 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 101,000 ft³/s June 15, 1935 (gage height, 32.95 ft). Maximum discharge since closure of Canyon Dam on July 21, 1962, 92,600 ft³/s May 12, 1972 (gage height, 31.65 ft); no flow July 8, 9, July 17 to Aug. 20, 1956.

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,420 ft³/s Apr. 5 at 0600 hours (gage height, 4.48 ft); minimum daily, 144 ft³/s Oct. 26.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	161	155	201	196	273	622	524	692	683	462	237	208
2	161	155	205	204	270	616	315	692	678	460	269	211
3	159	155	206	199	270	606	313	792	613	455	267	246
4	158	168	209	205	458	602	313	763	454	457	261	249
5	147	158	210	205	492	602	1080	764	460	454	258	238
6	160	158	210	205	452	596	717	749	462	454	255	234
7	148	158	210	203	509	593	668	742	470	458	237	229
8	155	206	210	198	506	593	604	830	462	493	239	229
9	262	252	210	249	486	593	558	818	460	463	240	220
10	191	226	210	264	456	593	524	794	453	461	219	219
11	174	205	206	249	462	593	508	782	456	388	221	217
12	174	193	205	244	465	593	490	772	467	378	218	215
13	174	188	198	238	568	593	478	700	453	373	229	216
14	169	184	190	233	576	593	527	494	469	371	228	215
15	169	178	196	228	572	596	497	481	456	368	229	213
16	170	178	196	225	568	618	480	481	452	363	228	212
17	157	178	199	223	568	612	472	494	450	366	221	213
18	152	178	199	285	567	602	475	726	444	365	217	219
19	150	178	196	333	571	602	734	723	444	363	215	332
20	148	178	200	316	601	602	730	721	438	363	201	299
21	161	179	199	294	634	602	730	721	435	360	201	283
22	151	199	196	282	637	595	727	716	440	357	217	279
23	150	202	194	272	637	593	721	711	495	363	234	323
24	148	197	191	276	637	593	721	708	463	363	220	369
25	148	196	193	264	626	593	717	700	462	361	211	361
26	144	196	191	261	609	593	711	693	462	356	209	366
27	150	196	191	258	602	589	708	693	462	357	205	362
28	149	200	196	259	604	584	710	689	462	348	205	363
29	154	193	196	276	---	584	699	604	467	342	205	363
30	157	203	196	283	---	582	692	682	473	320	206	363
31	155	---	194	279	---	578	---	683	---	249	208	---
TOTAL	5006	5590	6203	7706	14676	18506	18143	21610	14345	12091	7010	8066
MEAN	161	186	200	249	524	597	605	697	478	390	226	269
MAX	262	252	210	333	637	622	1080	830	683	493	269	369
MIN	144	155	190	196	270	578	313	481	435	249	201	208
AC-FT	9930	11090	12300	15280	29110	36710	35990	42860	28450	23980	13900	16000
CAL YR 1990	TOTAL	110354	MEAN	302	MAX	773	MIN	98	AC-FT	218900		
WTR YR 1991	TOTAL	138952	MEAN	381	MAX	1080	MIN	144	AC-FT	275600		

GUADALUPE RIVER BASIN

229

08169000 COMAL RIVER AT NEW BRAUNFELS, TX

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

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

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

REVISED RECORDS.--WSP 2123: Drainage area.

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

REMARKS.--No estimated daily discharges. Records good. The flow from Comal Springs emerges from the Edwards and associated limestones in the Balcones Fault Zone. Except during periods of rainfall, flow of river is primarily from Comal Springs about 1.0 mi upstream. Flow is affected at times by cleanup operations by the city of New Braunfels at Landa Park Lake and at times by discharge from the flood-detention pools of five floodwater-retarding structures with a combined detention capacity of 17,580 acre-ft. These structures control runoff from 74.6 mi² above station. Satellite telemeter at station.

AVERAGE DISCHARGE.--59 years (water years 1933-91), 291 ft³/s (210,800 acre-ft/yr).

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

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

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,100 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 3	2000	*1,610	*6.62	No other peak greater than base discharge.			
Minimum daily discharge, 168 ft ³ /s Oct. 8.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	174	187	212	210	235	255	231	259	269	244	212	192
2	172	188	210	212	235	250	230	259	267	240	207	197
3	173	189	210	212	237	248	230	633	263	245	209	194
4	172	192	209	211	331	249	230	504	260	241	206	195
5	170	193	209	212	272	247	681	485	250	249	205	195
6	171	194	209	213	252	245	432	298	252	249	200	197
7	171	193	209	213	250	243	307	289	251	249	202	199
8	168	237	209	212	250	241	276	553	254	324	203	202
9	195	209	209	236	250	242	265	347	247	266	200	201
10	179	204	209	226	251	239	263	305	245	251	202	200
11	181	205	209	222	249	239	264	295	237	251	199	198
12	181	205	209	220	249	237	266	296	236	246	195	200
13	182	203	209	220	250	235	261	297	236	248	188	199
14	183	204	209	219	250	236	301	299	241	248	187	201
15	183	206	209	219	249	238	291	296	238	247	189	204
16	183	206	209	219	248	242	270	307	237	239	183	206
17	183	207	209	219	249	246	267	303	239	239	186	203
18	182	208	209	460	249	240	266	297	231	241	186	204
19	182	209	209	260	250	239	267	297	229	236	187	205
20	183	213	210	236	248	239	259	299	229	235	181	205
21	200	213	209	234	250	239	267	293	223	235	180	207
22	189	213	208	230	248	239	267	293	235	231	189	205
23	187	213	207	232	249	238	264	291	266	230	187	342
24	187	213	205	241	249	238	264	287	240	230	183	259
25	188	213	206	236	250	237	264	288	235	228	190	222
26	190	212	208	236	248	236	266	291	237	223	188	218
27	189	212	208	236	248	235	261	286	241	228	187	218
28	190	212	208	236	250	230	267	280	236	224	187	217
29	189	211	210	235	---	232	264	278	242	225	185	217
30	187	211	209	235	---	231	261	278	245	216	186	216
31	187	---	210	234	---	233	---	274	---	215	185	---
TOTAL	5651	6175	6474	7236	7046	7438	8502	10057	7311	7473	5974	6318
MEAN	182	206	209	233	252	240	283	324	244	241	193	211
MAX	200	237	212	460	331	255	681	633	269	324	212	342
MIN	168	187	205	210	235	230	230	259	223	215	180	192
AC-FT	11210	12250	12840	14350	13980	14750	16860	19950	14500	14820	11850	12530
CAL YR 1990	TOTAL	65361	MEAN	179	MAX	420	MIN	46	AC-FT	129600		
WTR YR 1991	TOTAL	85655	MEAN	235	MAX	681	MIN	168	AC-FT	169900		

LOCATION.--Lat 29°40'00", long 98°04'14", Comal County, Hydrologic Unit 12100202, in Lake Dunlap, 8 mi southeast of New Braunfels, and 15 mi downstream from Interstate Highway 35 bridge.

PERIOD OF RECORD.--Chemical and biochemical analyses: January 1968 to current year. Pesticide analyses: June 1986 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB DISSOLV FLD. AS CACO3 (MG/L)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
NOV 21...	1322	522	8.0	22.5	8.3	99	--	230	27	66	16	15
JAN 07...	1304	474	7.9	11.0	11.6	107	0.8	220	26	61	16	15
APR 11...	0835	496	7.9	21.5	6.8	80	1.0	240	31	69	16	13
JUN 06...	1301	492	7.7	27.0	5.8	75	0.9	230	56	66	16	14
JUL 29...	1240	426	8.5	29.0	15.8	209	8.5	200	22	57	15	14
AUG 28...	0850	483	7.8	27.0	8.4	108	3.6	220	19	61	16	15

DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT DIS FAT END FIELD CAC03 (MG/L)	SULFATE DIS- SOLVED (MG/L AS S04)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF 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)
NOV 21...	0.4	1.9	200	24	20	0.40	11	277	0.980	0.020	1.00	0.090
JAN 07...	0.4	2.4	190	29	22	0.20	10	271	0.980	0.020	1.00	0.150
APR 11...	0.4	1.7	210	24	18	0.30	10	276	0.650	0.020	0.670	0.080
JUN 06...	0.4	1.8	170	25	21	0.20	10	259	0.730	0.020	0.750	0.010
JUL 29...	0.4	1.7	180	26	21	0.20	11	255	1.35	0.050	1.40	0.060
AUG 28...	0.4	1.8	200	23	21	0.20	12	269	0.600	0.020	0.620	0.060

DATE	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 ORTHO TOTAL (MG/L AS P)	PCB, TOTAL (UG/L)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)
NOV 21...	0.31	0.40	0.100	0.080	--	--	--	--	--	--	--
JAN 07...	0.25	0.40	0.070	0.080	--	--	--	--	--	--	--
APR 11...	0.22	0.30	0.090	0.060	--	--	--	--	--	--	--
JUN 06...	0.29	0.30	0.080	0.050	--	--	--	--	--	--	--
JUL 29...	2.8	2.9	0.110	0.040	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010
AUG 28...	0.54	0.60	0.090	0.010	--	--	--	--	--	--	--

[illegible]

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

[illegible]

08170000 SAN MARCOS RIVER SPRINGFLOW AT SAN MARCOS, TX

LOCATION (REVISED).--Lat 29°50'35", long 97°58'55", Hays County, Hydrologic Unit 12100203, at ground-water well No. LR-67-09-110, 1250 ft southwest of the intersection of FM 2439 and McCarty Lane, and 3.7 mi south of San Marcos.

DRAINAGE AREA.--Normal flow of river comes from springs, drainage area of stream not applicable.

PERIOD OF RECORD.--May 1956 to current year. June 1915 to January 1916, March 1916 to September 1921, and May to September 1956, published as San Marcos River at San Marcos; records include some surface runoff. Periodic measurements of springflow were made at this location outside period of records since Nov. 14, 1894, and are published as miscellaneous measurements. October 1956 to September 1988, at site 0.7 mi downstream from bridge on Interstate Highway 35, and 2.1 mi upstream from Blanco River.

REVISED RECORDS.--WSP 1923: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 678.50 ft, which is mean land surface, above National Geodetic Vertical Datum of 1929. June 10, 1915, to Jan. 19, 1916, nonrecording gage at site 0.5 mi upstream from Interstate Highway 35, and Mar. 13, 1916, to Sept. 7, 1921, water-stage recorder about 0.7 mi downstream from Interstate Highway 35, datum relations unknown. May 1956 to September 1988, water-stage recorder, 0.7 mi downstream from Interstate Highway 35, and 2.1 mi upstream from Blanco River, datum 536.82 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily springflow. Records fair. Springflow is computed from a regression equation developed using water-level data from a water well LR-67-09-110, and measurements of springflow. Entire flow of river is from San Marcos Springs, located about 1.1 mi upstream from Interstate Highway 35, except during periods of local runoff. San Marcos Springs emerge from the Edwards and associated limestones in the Balcones Fault Zone. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--35 years (water years 1957-91), 165 ft³/s (119,500 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily spring discharge (estimated), 427 ft³/s June 14, 1987; minimum daily, 46 ft³/s Aug. 15, 16, 1956.

EXTREMES FOR CURRENT YEAR.--Maximum daily spring discharge, 225 ft³/s May 14-24; minimum daily spring, 114 ft³/s Dec. 30 to Jan. 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	120	117	121	114	187	194	193	214	222	211	198	187
2	119	117	121	115	186	195	192	214	221	210	198	187
3	119	117	121	115	186	194	192	215	220	210	197	186
4	118	116	121	115	187	194	191	216	220	210	196	186
5	118	116	120	116	190	194	192	217	220	210	196	187
6	118	116	120	116	192	193	198	217	219	209	195	186
7	117	116	119	116	192	193	203	217	218	209	195	186
8	117	117	119	116	193	193	206	218	218	208	194	186
9	116	121	119	150	194	192	207	220	218	208	194	186
10	117	122	119	174	194	192	209	222	217	208	194	186
11	118	123	119	179	194	192	210	223	217	208	193	185
12	118	123	119	180	195	192	210	223	216	208	193	185
13	118	123	119	180	195	192	211	224	216	207	192	185
14	119	123	119	180	195	191	212	225	216	207	192	185
15	119	123	119	180	194	191	214	225	216	206	191	185
16	119	123	118	180	195	191	215	225	216	205	191	184
17	119	123	118	180	195	192	216	225	216	204	191	183
18	118	123	118	180	195	193	216	225	216	204	190	183
19	118	123	118	183	195	194	216	225	215	204	190	183
20	119	123	118	183	195	194	216	225	215	203	189	183
21	118	123	118	185	195	195	216	225	214	202	188	183
22	118	123	117	185	195	194	216	225	214	202	188	183
23	118	122	117	186	195	194	216	225	213	201	187	183
24	118	122	116	186	195	194	216	225	212	201	188	183
25	118	122	116	186	195	194	216	224	212	201	188	183
26	118	122	116	187	195	194	216	224	212	200	188	184
27	118	122	116	187	195	194	216	224	212	200	188	184
28	117	121	116	187	195	194	216	224	212	200	188	184
29	117	121	116	187	---	193	216	223	211	200	187	184
30	117	121	114	187	---	193	215	223	211	199	187	184
31	117	---	114	187	---	192	---	222	---	199	187	---
TOTAL	3658	3624	3661	5102	5409	5987	6278	6879	6475	6354	5933	5539
MEAN	118	121	118	165	193	193	209	222	216	205	191	185
MAX	120	123	121	187	195	195	216	225	222	211	198	187
MIN	116	116	114	114	186	191	191	214	211	199	187	183
AC-FT	7260	7190	7260	10120	10730	11880	12450	13640	12840	12600	11770	10990
CAL YR 1990	TOTAL	41626	MEAN	114	MAX	141	MIN	81	AC-FT	82570		
WTR YR 1991	TOTAL	64899	MEAN	178	MAX	225	MIN	114	AC-FT	128700		

GUADALUPE RIVER BASIN

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08171000 BLANCO RIVER AT WIMBERLEY, TX

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

DRAINAGE AREA.--355 mi².

WATER-DISCHARGE RECORDS

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

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

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

REMARKS.--No estimated daily discharges. Records good. There are many small diversions above station. Satellite telemeter at station.

AVERAGE DISCHARGE.--65 years (water years 1925-26, 1929-91), 126 ft³/s (4.82 in/yr), 91,290 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 113,000 ft³/s May 28, 1929 (gage height, 33.3 ft, from floodmark), present site and datum, from rating curve extended above 30,000 ft³/s on basis of slope-area measurements of 95,000 and 113,000 ft³/s; minimum, 0.6 ft³/s Aug. 16, 1956. Maximum stage since at least 1869, that of May 28, 1929.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in July 1869 reached a stage of 25 ft, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,800 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Apr. 5	0200	2,870	7.50	Sept. 2	1900	3,050	7.65
Apr. 14	1430	2,660	7.31	Sept. 18	2330	2,820	7.45
June 23	0430	*3,280	*7.84				

Minimum daily discharge, 19 ft³/s Oct. 7, 8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23	26	35	31	119	153	102	187	148	73	43	40
2	23	25	35	57	118	153	103	178	140	73	42	382
3	23	26	35	72	118	148	103	290	137	83	41	128
4	22	30	33	54	445	138	103	250	134	97	39	90
5	21	27	33	54	461	136	878	567	133	84	38	78
6	20	27	34	54	362	135	527	315	130	74	38	75
7	19	30	33	51	315	130	675	251	138	71	39	71
8	19	60	33	49	288	127	486	619	126	72	38	68
9	47	57	33	170	266	122	363	723	123	70	37	66
10	28	46	33	156	254	120	309	461	120	68	36	64
11	38	46	33	119	240	120	292	397	115	66	35	64
12	37	44	34	103	228	120	274	357	134	64	35	60
13	33	41	33	97	223	118	257	329	139	62	33	63
14	30	40	33	93	197	115	1090	312	134	60	50	63
15	28	41	33	85	185	116	640	298	124	59	61	64
16	28	38	32	78	177	116	438	286	119	58	39	60
17	28	36	32	76	174	116	388	281	125	58	37	60
18	26	35	33	158	177	115	365	264	116	57	37	276
19	24	35	33	176	195	116	400	248	111	53	35	727
20	24	36	33	163	203	115	342	236	103	52	33	185
21	29	36	33	151	180	115	308	234	97	51	33	141
22	28	37	30	144	172	114	295	219	96	51	42	123
23	27	37	28	143	173	109	270	202	706	49	48	171
24	29	33	29	150	164	109	252	192	146	49	38	321
25	30	34	29	144	158	109	242	336	109	49	36	237
26	30	36	31	141	151	108	233	219	95	49	36	181
27	29	36	31	140	148	110	221	185	86	49	36	155
28	28	35	31	137	149	109	211	171	78	46	36	139
29	26	35	32	136	---	106	215	164	75	46	34	125
30	26	34	32	128	---	104	218	157	76	46	36	115
31	26	---	31	121	---	103	---	151	---	44	38	---
TOTAL	849	1099	1003	3431	6040	3725	10600	9079	4113	1883	1199	4392
MEAN	27.4	36.6	32.4	111	216	120	353	293	137	60.7	38.7	146
MAX	47	60	35	176	461	153	1090	723	706	97	61	727
MIN	19	25	28	31	118	103	102	151	75	44	33	40
AC-FT	1680	2180	1990	6810	11980	7390	21030	18010	8160	3730	2380	8710
CAL YR 1990	TOTAL	25013	MEAN	68.5	MAX	2880	MIN	15	AC-FT	49610		
WTR YR 1991	TOTAL	47413	MEAN	130	MAX	1090	MIN	19	AC-FT	94040		

GUADALUPE RIVER BASIN

08171000 BLANCO RIVER AT WIMBERLEY, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: April 1962 to December 1973. Chemical, biochemical, and pesticide analyses: January 1974 to September 1979, February 1988 to current year. Sediment analyses: November 1965 to April 1966.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: December 1976 to September 1978.

INSTRUMENTATION.--From December 1976 to September 1978 water temperature was recorded continuously at this station.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum daily, 36.0°C July 16, 1978; minimum daily, 2.5°C Jan. 20, 1978.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

	DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
	DEC 06...	0925	34	478	8.0	10.0	1	1.2	10.7	97	0.8	K16
	MAR 06...	1153	134	500	7.9	20.0	2	2.8	9.5	108	0.4	26
	JUN 12...	1108	130	444	8.1	25.5	6	2.0	8.0	101	0	180
	DATE	STREP- TOCOCCI FECAL KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	SULFATE DIS- SOLVED (MG/L AS S04)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
	DEC 06...	20	240	49	67	18	8.4	0.2	1.4	190	34	14
	MAR 06...	K15	240	30	72	15	7.9	0.2	1.2	210	23	13
	JUN 12...	80	230	25	67	14	7.6	0.2	1.1	200	22	14
	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)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	RESIDUE VOLAT- ILE, SUS- PENDE (MG/L)	RESIDUE FIXED NON FILTER- ABLE (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)
	DEC 06...	0.40	7.9	266	<1	<1	--	0.290	0.010	0.300	0.020	0.18
	MAR 06...	0.20	7.8	268	6	5	1	--	<0.010	0.400	0.020	--
	JUN 12...	0.10	10	256	1	1	0	--	<0.010	0.240	0.020	0.18
	DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS TOTAL (MG/L AS P)	PHOS- PHORUS ORTHO 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)	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)
	DEC 06...	0.20	<0.010	<0.010	1.3	--	--	--	--	--	--	--
	MAR 06...	<0.20	0.040	<0.010	1.3	<1	30	0.7	<1.0	<5	<3	<10
	JUN 12...	0.20	0.030	<0.010	1.5	<1	29	<0.5	<1.0	<5	<3	<10
	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)
	DEC 06...	--	--	--	--	--	--	--	--	--	--	--
	MAR 06...	5	20	7	3	<0.1	<10	<10	<1	<1.0	330	<6
	JUN 12...	5	<10	5	2	<0.1	<10	<10	<1	1.0	360	<6

GUADALUPE RIVER BASIN

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08171000 BLANCO RIVER AT WIMBERLEY, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	ZINC, DIS- SOLVED (UG/L AS ZN)	PCB, TOTAL (UG/L)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)	DI- ELDRIN TOTAL (UG/L)	DI- SYSTON TOTAL (UG/L)
DEC 06...	--	--	--	--	--	--	--	--	--	--	--
MAR 06...	6	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01	<0.010	<0.01
JUN 12...	5	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01	<0.010	<0.01

DATE	ENDO- SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)
DEC 06...	--	--	--	--	--	--	--	--	--	--
MAR 06...	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01	<0.01
JUN 12...	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01	<0.01

DATE	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	PHORATE TOTAL (UG/L)	SILVEX, TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)
DEC 06...	--	--	--	--	--	--	--	--	--	--
MAR 06...	<0.01	<0.01	<0.1	<0.01	<0.01	<1	<0.01	<0.01	<0.01	<0.01
JUN 12...	<0.01	<0.01	<0.1	<0.01	<0.01	<1	<0.01	<0.01	<0.01	<0.01

GUADALUPE RIVER BASIN

08171300 BLANCO RIVER NEAR KYLE, TX

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

DRAINAGE AREA.--412 mi².

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

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

GAGE.--Water-stage recorder. Datum of gage is 620.12 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--Records good except those for estimated daily discharges, which are fair. Small diversions above station for irrigation. Most of the low flow of the Blanco River enters the Edwards and associated limestones in the Balcones Fault Zone which crosses the basin upstream from this station and below the station at Wimberley. Several observations of water temperature were made during the year. Recording rain gage at this station.

AVERAGE DISCHARGE.--35 years, 148 ft³/s (4.88 in/yr), 107,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 98,000 ft³/s May 2, 1958 (gage height, 36.3 ft, from floodmark), from rating curve extended above 37,000 ft³/s on basis of slope-area measurement of 139,000 ft³/s and slope-conveyance study; no flow at times.

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

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Apr. 14	1900	*2,500	*10.70	No other peak greater than base discharge.			
Minimum daily discharge, 1.3 ft ³ /s Oct. 3, 4.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	2.2	5.2	15	14	125	156	82	183	146	84	38	28		
2	1.7	5.1	16	20	120	148	80	175	140	80	37	335		
3	1.3	5.0	16	62	118	146	81	240	141	79	37	334		
4	1.3	7.2	15	42	395	138	79	238	137	105	34	102		
5	1.5	12	15	36	417	132	692	456	132	105	34	70		
6	2.3	8.4	15	36	359	130	416	306	131	84	34	61		
7	2.3	6.6	16	33	316	127	574	239	137	76	32	60		
8	1.8	35	16	31	283	123	431	369	129	82	32	52		
9	62	74	16	387	265	119	347	805	125	81	29	47		
10	30	39	16	313	252	116	293	427	122	73	28	43		
11	12	31	16	191	236	115	276	362	118	69	26	47		
12	19	30	16	146	225	116	249	329	136	66	24	42		
13	15	27	16	123	218	112	219	303	135	64	23	38		
14	11	25	15	110	207	110	851	286	133	63	21	46		
15	9.0	24	15	100	189	114	728	272	127	61	78	63		
16	7.0	23	15	87	184	122	407	262	119	58	38	49		
17	5.9	22	14	80	181	119	360	258	127	56	29	43		
18	5.5	21	14	179	179	113	342	245	120	58	28	46		
19	4.3	20	14	229	196	111	347	232	114	53	27	e688		
20	3.3	20	14	201	196	109	324	222	108	51	24	e254		
21	5.9	21	15	179	192	108	286	217	99	49	23	173		
22	12	22	14	168	176	105	273	208	93	49	23	137		
23	9.0	22	13	160	172	99	252	196	557	48	88	e174		
24	6.4	20	13	176	166	97	240	188	198	48	39	e236		
25	8.0	18	13	163	160	96	228	254	134	46	30	e276		
26	8.4	19	14	156	154	97	219	226	115	45	26	e227		
27	8.1	19	16	152	149	94	210	182	101	48	26	e198		
28	7.7	18	15	147	149	92	201	169	92	44	25	174		
29	6.4	16	15	141	---	91	201	161	88	42	24	151		
30	5.6	15	16	138	---	86	203	156	89	42	22	135		
31	5.4	---	15	131	---	85	---	150	---	40	27	---		
TOTAL	281.3	630.5	464	4131	5979	3526	9491	8316	4143	1949	1006	4329		
MEAN	9.07	21.0	15.0	133	214	114	316	268	138	62.9	32.5	144		
MAX	62	74	16	387	417	156	851	805	557	105	88	688		
MIN	1.3	5.0	13	14	118	85	79	150	88	40	21	28		
AC-FT	558	1250	920	8190	11860	6990	18830	16490	8220	3870	2000	8590		
CFSM	.02	.05	.04	.32	.52	.28	.77	.65	.34	.15	.08	.35		
IN.	.03	.06	.04	.37	.54	.32	.86	.75	.37	.18	.09	.39		
CAL YR 1990	TOTAL	16436.70	MEAN	45.0	MAX	2180	MIN	.00	AC-FT	32600	CFSM	.11	IN.	1.48
WTR YR 1991	TOTAL	44245.8	MEAN	121	MAX	851	MIN	1.3	AC-FT	87760	CFSM	.29	IN.	4.00

e Estimated

GUADALUPE RIVER BASIN

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08172000 SAN MARCOS RIVER AT LULING, TX

LOCATION (REVISED).--Lat 29°39'58", long 97°39'02", Caldwell County line, Hydrologic Unit 12100203, on downstream side of bridge on State Highway 80, 0.9 mi south of U.S. Post Office at Luling, and 9.5 mi upstream from Plum Creek.

DRAINAGE AREA.--838 mi².

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 958: 1940. WSP 1312: 1940(M), 1945(M), 1947(M). WSP 2123: Drainage area.

GAGE.--Water-stage recorder, and data collection platform (DCP). Datum of gage is 322.05 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 21, 1988, at site 390 ft downstream at same datum.

REMARKS.--No estimated daily discharges. Records good. Flow is affected at times by discharge from the flood-detention pools of 18 floodwater-retarding structures with a combined detention capacity of 26,830 acre-ft. These structures control runoff from 105 mi² in the Town and York Creeks drainage basins. Satellite telemeter (DCP and LARC) at station.

AVERAGE DISCHARGE.--52 years, 371 ft³/s (268,800 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 57,000 ft³/s Sept. 12, 1952 (gage height, 34.95 ft); minimum daily, 43 ft³/s Aug. 12, 1951.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1859, 40.4 ft in 1869 or 1870, from information by State Department of Highways and Public Transportation. Flood of May 29, 1929, reached a stage of 37.1 ft and is the second highest known.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 18	1400	*12,600	*29.04	Apr. 14	1600	4,420	21.13
Feb. 4	1300	5,030	22.44				

Minimum daily discharge, 99 ft³/s Oct. 8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	103	113	120	109	351	395	227	469	357	288	196	145
2	103	108	123	228	334	413	228	432	352	270	193	149
3	103	105	119	339	331	372	226	726	353	278	188	256
4	102	104	117	159	2660	353	226	1220	386	381	188	501
5	101	108	116	167	1260	340	1770	994	350	331	188	253
6	100	107	118	155	833	330	1240	823	325	292	189	213
7	101	109	120	147	693	323	866	632	309	270	176	198
8	99	131	118	139	619	303	955	809	320	266	177	195
9	114	413	119	1100	578	293	777	2010	320	283	171	188
10	153	235	117	2370	555	284	642	1300	306	259	167	178
11	107	192	119	721	537	281	578	901	293	245	165	183
12	108	163	119	518	532	275	555	739	322	239	163	171
13	105	151	119	429	506	270	535	653	357	237	162	180
14	106	143	117	366	496	262	2400	605	307	231	157	169
15	105	137	118	691	484	261	1790	581	519	229	157	170
16	107	133	116	320	464	284	1120	562	358	224	167	178
17	109	132	115	262	465	319	785	553	339	217	190	176
18	107	130	116	6280	456	283	683	542	322	216	169	168
19	104	128	113	1590	454	265	639	531	306	217	168	171
20	104	129	112	676	464	261	621	521	298	212	165	803
21	113	128	111	552	475	261	600	513	282	213	157	461
22	135	135	108	494	484	258	566	503	272	217	155	319
23	115	132	105	457	435	253	546	494	270	232	150	325
24	111	131	107	488	425	255	531	481	619	212	162	576
25	111	129	108	472	410	255	518	472	496	206	171	598
26	107	130	113	457	387	259	500	494	409	204	154	571
27	107	130	113	415	376	248	490	506	325	213	145	482
28	108	125	112	393	369	241	482	451	293	213	143	404
29	109	122	112	378	---	235	478	415	305	208	142	348
30	108	119	111	367	---	230	470	389	297	216	145	313
31	109	---	108	362	---	228	---	375	---	202	150	---
TOTAL	3374	4252	3559	21601	16433	8890	22044	20696	10367	7521	5170	9042
MEAN	109	142	115	697	587	287	735	668	346	243	167	301
MAX	153	413	123	6280	2660	413	2400	2010	619	381	196	803
MIN	99	104	105	109	331	228	226	375	270	202	142	145
AC-FT	6690	8430	7060	42850	32590	17630	43720	41050	20560	14920	10250	17930

CAL YR 1990	TOTAL	56945	MEAN	156	MAX	1940	MIN	86	AC-FT	113000
WTR YR 1991	TOTAL	132949	MEAN	364	MAX	6280	MIN	99	AC-FT	263700

08172000 SAN MARCOS RIVER AT LULING, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: February 1944 to February 1959, September 1961 to April 1966, November 1968 to current year. Pesticide analyses: June 1986 to current year. Sediment analyses: October 1960 to April 1966.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS TOTAL (MG/L AS CaCO3)	HARD- NESS NONCARB DISSOLV FLD. AS CaCO3 (MG/L)	CALCIUM DIS- SOLVED (MG/L AS Ca)
NOV 26...	1100	131	595	8.1	20.5	7.9	89	270	26	79
JAN 18...	1100	8560	125	7.4	11.0	9.6	88	53	10	17
MAR 06...	0825	382	570	8.0	18.0	9.0	97	250	32	74
APR 25...	0815	453	542	8.1	23.0	10.0	119	260	38	78
JUN 12...	0920	307	506	8.2	27.0	--	--	260	33	77
AUG 02...	0825	184	538	7.9	28.0	7.5	96	270	58	80

DATE	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT DIS FIX END FIELD CACO3 (MG/L)	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 CONSTIT- UENTS, DIS- SOLVED (MG/L)
NOV 26...	17	17	0.5	2.0	240	29	28	0.30	11	328
JAN 18...	2.6	4.0	0.2	3.4	43	6.3	12	<0.10	4.1	75
MAR 06...	17	15	0.4	1.7	220	31	26	0.20	7.2	306
APR 25...	16	15	0.4	1.7	220	27	26	0.20	10	308
JUN 12...	16	13	0.4	1.5	230	25	25	0.10	10	303
AUG 02...	18	14	0.4	1.7	220	27	27	0.20	11	308

[illegible][illegible]

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WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

[illegible]

GUADALUPE RIVER BASIN

08172400 PLUM CREEK AT LOCKHART, TX

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

DRAINAGE AREA.--112 mi².

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

REVISED RECORDS.--WSP 2123: Drainage area.

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

REMARKS.--No estimated daily discharges. Records good. No known diversion above station. Flow is affected at times by discharge from the flood-detention pools of 17 floodwater-retarding structures with a combined capacity of 24,850 acre-ft. These structures control runoff from 67.8 mi² above this station. One observation of water temperature was made during the year.

AVERAGE DISCHARGE.--32 years, 45.4 ft³/s (32,890 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 27,700 ft³/s Nov. 24, 1985 (gage height, 20.89 ft); no flow at times each year.

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

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 9	2100	*4,450	*15.84	No other peaks greater than base discharge.			
Minimum daily discharge, no flow for many days.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	18	23	3.9	3.0	.95	14	.00	.00
2	.00	.00	.00	.02	16	24	3.3	2.9	.70	9.4	.00	.00
3	.00	.00	.00	49	14	17	3.1	240	.75	6.1	.00	.00
4	.00	.00	.00	53	352	14	3.4	94	21	110	.00	.00
5	.00	.00	.00	32	321	11	71	302	15	119	.00	.00
6	.00	.00	.00	23	191	9.1	135	218	9.0	83	.00	.00
7	.00	.00	.00	18	114	7.4	162	150	6.7	56	.00	.00
8	.00	.00	.00	14	69	6.1	132	337	4.6	45	.00	.00
9	.00	138	.00	1700	45	4.5	77	410	4.2	58	.00	.00
10	.00	28	.00	1500	32	3.0	48	229	3.0	31	.00	.00
11	.00	16	.00	564	25	2.8	33	149	2.2	18	.00	.00
12	.00	12	.00	456	20	2.4	25	93	242	11	.00	.00
13	.00	9.7	.00	350	17	2.0	20	58	263	5.1	.00	.00
14	.00	7.4	.00	310	15	1.8	139	39	195	2.7	.00	.00
15	.00	4.6	.00	360	12	2.7	226	29	151	1.6	.00	.00
16	.00	2.9	.00	212	10	45	123	21	117	.83	.00	.00
17	.00	2.6	.00	160	9.7	216	67	18	102	.27	.00	.00
18	.00	2.2	.00	559	10	163	103	15	104	.10	.00	.00
19	.00	1.5	.00	360	13	122	113	12	73	.02	.00	.00
20	.00	.99	.00	225	13	82	68	13	51	.00	.00	.00
21	.00	.67	.00	155	12	60	43	13	38	.00	.00	.00
22	.00	.44	.00	101	19	47	30	11	30	.00	.00	.00
23	.00	.33	.00	64	19	35	21	8.6	23	.00	.00	.00
24	.00	.22	.00	104	17	26	16	6.5	23	.00	.00	.00
25	.00	.13	.00	83	14	21	13	5.1	17	.00	.00	.00
26	.00	.10	.00	52	11	18	9.9	3.9	18	.00	.00	.00
27	.00	.10	.00	38	9.6	15	7.7	3.0	13	.00	.00	.00
28	.00	.05	.00	30	8.5	13	6.0	2.2	8.0	.00	.00	.00
29	.00	.02	.00	26	---	9.8	4.7	1.8	10	.00	.00	.00
30	.00	.00	.00	23	---	6.8	3.9	1.6	18	.00	.00	.00
31	.00	---	.00	21	---	5.0	---	1.2	---	.00	.00	---
TOTAL	0.00	227.95	0.00	7642.02	1426.8	1015.4	1710.9	2490.8	1564.10	571.12	0.00	0.00
MEAN	.000	7.60	.000	247	51.0	32.8	57.0	80.3	52.1	18.4	.000	.000
MAX	.00	138	.00	1700	352	216	226	410	263	119	.00	.00
MIN	.00	.00	.00	.00	8.5	1.8	3.1	1.2	.70	.00	.00	.00
AC-FT	.00	452	.00	15160	2830	2010	3390	4940	3100	1130	.00	.00
CAL YR 1990	TOTAL	287.72	MEAN	.79	MAX	138	MIN	.00	AC-FT	571		
WTR YR 1991	TOTAL	16649.09	MEAN	45.6	MAX	1700	MIN	.00	AC-FT	33020		

GUADALUPE RIVER BASIN

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08173000 PLUM CREEK NEAR LULING, TX

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

DRAINAGE AREA.--309 mi².

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

Water-quality records.--Chemical analysis: February 1944, April 1961 to September 1986. Sediment analysis: November 1965 to June 1966. Specific conductance: October 1967 to September 1986. Water temperatures: October 1967 to September 1986.

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

GAGE.--Water-stage recorder. Datum of gage is 321.57 ft above National Geodetic Vertical Datum of 1929. Prior to Aug. 18, 1976, at datum 5.0 ft higher. Prior to Nov. 29, 1988, at same datum, 15 ft upstream and 48 ft to the right of present gage.

REMARKS.--No estimated daily discharges. Records good. Low flow is slightly regulated by oil field operations above station. At end of year, flow from 119 mi² above this station was partly controlled by 27 floodwater-retarding structures with a combined detention capacity of 41,840 acre-ft. No other known diversion above station. Several measurements of water temperature were made during the year.

AVERAGE DISCHARGE.--61 years, 103 ft³/s (74,620 acre-ft/yr).

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in December 1913 reached about same stage as that of July 1, 1936, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 10	0700	8,410	22.24	Feb. 4	1900	7,200	21.66
Jan. 5	2000	2,300	16.90	July 5	0800	4,550	19.96
Jan. 18	1600	*11,000	*23.06				

Minimum daily discharge, 0.58 ft³/s July 14.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.7	3.1	3.0	3.9	62	19	12	14	8.5	10	5.4	6.8
2	1.7	2.9	3.0	46	54	29	11	12	4.4	8.6	4.5	4.7
3	1.7	2.7	3.2	193	49	30	11	715	7.1	13	4.1	6.8
4	1.6	2.6	3.1	80	4090	24	11	1160	35	1110	3.7	9.9
5	1.4	2.4	3.0	61	3760	22	614	491	40	3480	3.4	6.3
6	1.4	3.6	3.0	37	685	19	583	398	27	377	3.3	5.7
7	1.6	3.6	3.0	26	435	17	235	215	19	173	3.5	4.7
8	1.6	5.2	3.1	19	270	15	223	328	27	106	3.3	4.6
9	3.2	165	3.2	1660	165	14	149	1210	15	69	3.4	4.6
10	16	108	3.3	7280	119	13	97	495	12	51	3.4	4.2
11	5.6	38	3.5	2760	93	12	66	258	12	35	3.1	3.9
12	3.0	22	3.5	871	75	11	50	166	9.7	27	2.9	3.8
13	2.3	15	3.5	679	63	11	39	112	311	21	2.7	3.7
14	2.3	13	3.4	563	56	11	996	80	188	16	2.7	3.7
15	2.3	10	3.5	1620	48	11	702	62	121	12	2.9	9.7
16	2.2	8.9	3.5	851	40	23	287	56	78	9.3	2.9	7.5
17	2.5	7.5	3.5	391	36	139	157	87	55	7.1	3.2	6.4
18	2.3	6.2	3.5	5830	34	164	109	45	49	5.8	3.2	4.7
19	2.8	5.7	3.5	4280	31	175	156	36	45	5.9	11	3.8
20	2.6	5.9	3.7	813	30	64	130	31	32	4.9	6.3	3.5
21	3.1	5.6	4.5	536	28	46	87	29	24	4.5	3.7	3.4
22	11	5.9	3.9	418	28	36	61	27	18	5.7	3.1	3.8
23	7.8	5.8	3.5	281	30	30	45	25	14	5.7	2.8	7.5
24	4.6	4.9	3.5	281	30	26	36	22	12	5.2	2.7	30
25	3.2	4.5	3.5	336	27	22	30	18	12	4.8	2.7	64
26	3.0	4.3	3.8	188	24	20	25	17	10	4.6	2.7	20
27	2.7	4.1	4.3	135	20	18	22	14	8.8	4.3	2.7	6.7
28	2.6	3.9	5.9	108	17	17	19	12	8.0	4.3	2.5	4.7
29	2.6	3.4	5.5	90	---	16	20	11	8.0	4.8	2.5	4.2
30	2.7	3.1	4.7	78	---	15	17	10	17	13	2.6	3.8
31	3.2	---	4.2	68	---	13	---	9.8	---	5.5	2.9	---
TOTAL	106.3	476.8	113.3	30582.9	10399	1082	5000	6165.8	1227.5	5604.0	109.8	257.1
MEAN	3.43	15.9	3.65	987	371	34.9	167	199	40.9	181	3.54	8.57
MAX	16	165	5.9	7280	4090	175	996	1210	311	3480	11	64
MIN	1.4	2.4	3.0	3.9	17	11	11	9.8	4.4	4.3	2.5	3.4
AC-FT	211	946	225	60660	20630	2150	9920	12230	2430	11120	218	510
CAL YR 1990	TOTAL	3122.91	MEAN	8.56	MAX	264	MIN	.58	AC-FT	6190		
WTR YR 1991	TOTAL	61124.5	MEAN	167	MAX	7280	MIN	1.4	AC-FT	121200		

GUADALUPE RIVER BASIN

08175000 SANDIES CREEK NEAR WESTHOFF, TX

LOCATION.--Lat 29°12'54", long 97°26'57", De Witt County, Hydrologic Unit 12100202, on left bank 100 ft downstream from bridge on county highway, 1.9 mi upstream from Birds Creek, 2.0 mi northeast of Westhoff, and 20.4 mi upstream from mouth.

DRAINAGE AREA.--549 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1930 to November 1934, August 1959 to current year.

REVISED RECORDS.--WSP 2123: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 178.27 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 9, 1934, water-stage recorder at site 150 ft upstream at datum 0.86 ft higher. Aug. 10, 1959, to Feb. 2, 1960, non-recording gage at present site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. No known diversion above station.

AVERAGE DISCHARGE.--36 years (water years 1931-34, 1960-91), 119 ft³/s (2.94 in/yr), 86,220 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 79,700 ft³/s Sept. 22, 1967 (gage height, 32.34 ft), from rating curve extended above 21,000 ft³/s on basis of slope-area measurement of 92,700 ft³/s; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge since at least 1864, 92,700 ft³/s July 2, 1936 (gage height, 33.1 ft, from floodmarks), on basis of computation of peak flow, at present site and datum.
Flood in October 1913 reached a stage of 26.0 ft, present site and datum, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 20	1200	2,330	18.28	Apr. 8	unknown	*e6,400	*e23.2
Feb. 6	unknown	2,700	unknown				

Minimum daily discharge, 1.5 ft³/s Oct. 1, 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	1.5	4.4	4.3	5.0	11	13	8.0	6.1	2.6	174	6.3	5.9		
2	1.5	4.5	4.0	5.2	10	11	6.7	6.1	2.6	105	6.9	12		
3	3.2	3.4	3.9	25	9.6	11	6.5	6.1	3.0	74	7.4	22		
4	5.2	4.2	4.0	56	e200	11	6.5	6.0	3.5	61	7.1	113		
5	5.6	4.7	3.8	32	e1000	11	113	5.8	3.1	135	5.8	127		
6	4.7	5.8	3.5	19	e2500	9.7	e700	11	4.0	299	4.9	60		
7	2.1	6.1	3.8	12	e1100	8.6	e3500	11	4.7	388	4.5	30		
8	2.0	7.5	3.8	9.3	e700	8.4	e6000	13	4.7	256	4.3	17		
9	7.1	13	3.3	18	e500	e8.2	e2000	72	4.7	93	4.0	11		
10	5.6	13	3.2	54	e300	e8.0	e800	90	3.8	106	4.0	8.2		
11	6.4	14	3.5	153	e200	7.8	e1000	34	3.8	59	4.0	6.6		
12	7.9	11	3.9	142	e165	7.6	e700	21	3.8	27	4.0	5.5		
13	6.4	7.8	4.0	86	e140	7.5	e250	15	3.8	16	3.7	5.0		
14	5.5	6.5	4.0	41	e120	7.0	e130	11	3.8	12	3.2	4.8		
15	4.8	5.8	4.2	171	e100	6.5	e90	42	3.8	8.9	3.2	4.4		
16	4.2	5.3	4.4	276	e88	6.6	e60	24	3.3	7.8	3.2	4.5		
17	4.0	4.5	4.6	340	e76	7.2	e40	33	3.2	7.5	3.2	4.7		
18	10	4.0	4.8	393	e74	7.5	e30	119	20	6.7	4.3	4.7		
19	38	4.1	4.4	1290	e1000	14	e23	59	19	6.1	9.3	4.7		
20	33	5.2	4.4	2170	e300	14	e20	25	17	6.1	4.6	4.7		
21	15	5.6	4.2	1130	208	11	e17	16	12	5.7	3.7	4.6		
22	8.5	5.8	3.8	155	98	9.4	e15	15	6.8	5.0	3.5	4.3		
23	6.1	5.0	4.0	63	54	8.5	14	11	4.5	4.8	4.0	30		
24	5.0	3.3	4.4	42	36	8.0	14	8.0	3.9	5.0	4.4	44		
25	4.7	3.4	4.4	30	26	7.9	12	6.4	3.8	5.4	4.4	295		
26	4.4	3.6	4.4	23	20	7.5	11	4.7	10	6.3	4.3	356		
27	4.0	4.0	4.7	19	16	7.2	10	4.7	50	12	5.2	146		
28	3.8	4.0	5.0	17	14	7.2	9.4	4.2	56	7.4	5.1	47		
29	3.8	3.9	5.0	16	---	7.2	8.7	3.9	85	5.5	4.7	23		
30	3.8	4.2	5.0	13	---	7.2	6.3	3.5	183	5.4	4.7	13		
31	4.1	---	5.0	12	---	7.6	---	2.6	---	5.4	4.7	---		
TOTAL	221.9	177.6	129.7	6817.5	9065.6	274.3	15601.1	690.1	533.2	1916.0	146.6	1418.6		
MEAN	7.16	5.92	4.18	220	324	8.85	520	22.3	17.8	61.8	4.73	47.3		
MAX	38	14	5.0	2170	2500	14	6000	119	183	388	9.3	356		
MIN	1.5	3.3	3.2	5.0	9.6	6.5	6.3	2.6	2.6	4.8	3.2	4.3		
AC-FT	440	352	257	13520	17980	544	30940	1370	1060	3800	291	2810		
CFSM	.01	.01	.01	.40	.59	.02	.95	.04	.03	.11	.01	.09		
IN.	.02	.01	.01	.46	.61	.02	1.06	.05	.04	.13	.01	.10		
CAL YR 1990	TOTAL	4682.02	MEAN	12.8	MAX	368	MIN	.05	AC-FT	9290	CFSM	.02	IN.	.32
WTR YR 1991	TOTAL	36992.2	MEAN	101	MAX	6000	MIN	1.5	AC-FT	73370	CFSM	.18	IN.	2.51

e Estimated

GUADALUPE RIVER BASIN

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08175000 SANDIES CREEK NEAR WESTHOFF, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: April 1962 to current year. Sediment analyses: November 1965 to May 1966.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
OCT 31...	1025	4.8	1220	17.5	51	0	16	2.7	250
DEC 20...	1155	4.4	1780	17.0	110	0	33	5.7	340
MAR 08...	1000	7.2	1050	18.5	200	34	62	12	120
MAY 20...	1545	22	530	25.5	51	0	16	2.8	86
JUL 23...	1059	5.6	766	26.5	95	0	29	5.6	120
SEP 06...	0955	61	524	25.5	31	0	9.8	1.7	92

DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	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...	15	8.3	250	26	210	0.70	14	675
DEC 20...	14	12	460	44	270	1.2	17	1000
MAR 08...	4	11	170	110	160	0.30	17	594
MAY 20...	5	7.6	93	17	89	0.20	12	286
JUL 23...	5	9.5	180	26	120	0.40	19	440
SEP 06...	7	5.5	110	13	90	0.40	9.5	287

GUADALUPE RIVER MAIN STEM

08175800 GUADALUPE RIVER AT CUERO, TX

LOCATION.--Lat 29°03'57", long 97°19'16", De Witt County, Hydrologic Unit 12100204, on left bank at downstream side of bridge on U.S. Highways 77A, 87, and 183, 2.1 mi upstream from Gohlke Creek, 2.4 mi southwest of Cuero, 4.2 mi downstream from Sandies Creek, and at mile 100.6.

DRAINAGE AREA.--4,934 mi², of which 1,432 mi² is above Canyon Dam.

PERIOD OF RECORD.--December 1902 to December 1906, August 1916 to December 1935, and January 1964 to current year. Published as "near Cuero" 1902-6, and as "below Cuero" 1916-35. Gage-height records collected at site 7.1 mi upstream from Sandies Creek from 1941 to 1966 (published in reports of the National Weather Service) and at present site since June 12, 1968.

Water-quality records.--Chemical analyses: March 1968 to September 1985.

REVISED RECORDS.--WRD TX-68-1, TX-69-1: Drainage areas at all sites.

GAGE.--Water-stage recorder. Datum of gage is 128.64 ft above National Geodetic Vertical Datum of 1929. From Dec. 26, 1902, to June 1903, nonrecording gage at site 7.1 mi upstream at different datum, gage heights moved to site 3.3 mi upstream from present site before computation; from July 1903 to December 1906 nonrecording gage 3.3 mi upstream at different datum; and Aug. 19, 1916, to Dec. 16, 1935, water-stage recorder at site 5.0 mi downstream at datum 3.19 ft lower.

REMARKS.--No estimated daily discharges. Records good. Since July 21, 1962, flow regulated by Canyon Lake (station 08167700) 202.4 mi upstream. Flow below New Braunfels is partly regulated by a series of small power dams, combined capacity of six largest dams 33,550 acre-ft. Flow is affected at times by discharge from the flood-detention pools of 53 floodwater-retarding structures with a combined detention capacity of 87,200 acre-ft. These structures control runoff from 302 mi² in the Comal, San Marcos, and Plum Creek drainage basins. Many small diversions above station. Satellite telemeter at station.

AVERAGE DISCHARGE.--20 years (water years 1904-6, 1917, 1918, 1921-35) prior to regulation by Canyon Lake, 1,303 ft³/s (944,000 acre-ft/yr); 27 years (water years 1965-91) regulated, 1,916 ft³/s (1,388,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 132,000 ft³/s Sept. 1, 1981 (gage height, 41.83 ft); minimum daily, 28 ft³/s July 22, 1984. Floods at this station since at least 1900 occurred Mar. 1, 1903, 43.0 ft, at different site and datum; Oct. 20, 1919, 32.2 ft, site and datum then in use; May 30, 1929, 35.2 ft, site and datum then in use; all from information by local residents.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1900, probably occurred July 2, 1936, 44.33 ft, present site and datum, from information by State Department of Highways and Public Transportation. Other floods at this station occurred Oct. 4, 1913, 37.57 ft, at different site and datum; Dec. 6, 1913, 34.57 ft, at different site and datum; June 21, 1961, 37.0 ft, present site and datum; all from information by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 13,000 ft³/s Jan. 21 at 2100 hours (gage height, 20.77 ft); minimum daily, 393 ft³/s Nov. 5.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	457	454	546	550	1050	1250	1100	1890	1530	1530	906	682
2	427	466	550	623	1040	1280	1130	1650	1590	1570	859	645
3	433	459	533	638	998	1300	1060	1710	1540	1440	847	807
4	423	432	529	970	1340	1310	1030	2200	1560	1300	797	1130
5	536	393	537	1470	6420	1250	2400	5090	1620	2370	762	1270
6	466	550	544	926	11000	1240	4070	6020	1480	4320	822	1170
7	468	488	561	794	11700	1270	8500	4600	1330	3770	803	937
8	459	489	526	739	5730	1250	6770	3040	1340	2320	794	827
9	460	500	536	721	2260	1180	3940	2940	1370	1660	786	800
10	449	607	549	1040	1810	1160	3100	4700	1340	1770	811	788
11	527	1210	558	4740	1590	1150	2710	5300	1300	1840	776	761
12	609	873	555	7610	1480	1190	2300	3240	1280	1400	766	789
13	531	705	558	4680	1510	1140	2000	2730	1200	1260	637	780
14	481	639	572	1960	1380	1140	1890	2510	1320	1110	723	751
15	463	601	544	2000	1330	1150	5430	2240	1530	1090	704	755
16	455	591	586	2690	1290	1100	10300	2000	1530	1070	692	761
17	473	565	557	2880	1180	1210	10800	1870	1990	1080	695	762
18	494	567	559	2450	1320	1250	6110	2060	1570	1050	724	800
19	498	557	553	6950	1270	1340	2630	2050	1410	984	755	732
20	478	518	606	10900	1370	1330	2220	1900	1440	964	672	784
21	509	557	543	12700	1590	1280	2160	1890	1270	1000	726	792
22	472	531	575	8290	1400	1190	2210	1900	1210	973	703	1270
23	458	564	549	2130	1380	1220	2090	1860	1210	969	654	1370
24	512	526	549	1510	1380	1180	2070	1830	1480	1140	613	1600
25	490	589	569	1520	1340	1190	1960	1770	1650	1000	649	2060
26	452	567	549	1360	1320	1170	1800	1760	1630	974	679	2440
27	471	585	537	1450	1310	1180	1900	1700	1580	817	711	1760
28	442	558	559	1240	1280	1170	1880	1720	1460	988	726	1290
29	445	542	581	1160	---	1150	1800	1700	2110	953	697	1110
30	452	565	563	1070	---	1170	1750	1690	1810	891	661	1080
31	442	---	555	1070	---	1150	---	1640	---	928	686	---
TOTAL	14732	17248	17188	88831	68068	37540	99110	79200	44680	44531	22836	31503
MEAN	475	575	554	2866	2431	1211	3304	2555	1489	1436	737	1050
MAX	609	1210	606	12700	11700	1340	10800	6020	2110	4320	906	2440
MIN	423	393	526	550	998	1100	1030	1640	1200	817	613	645
AC-FT	29220	34210	34090	176200	135000	74460	196600	157100	88620	88330	45300	62490
CAL YR 1990	TOTAL	258813	MEAN	709	MAX	3990	MIN	274	AC-FT	513400		
WTR YR 1991	TOTAL	565467	MEAN	1549	MAX	12700	MIN	393	AC-FT	1122000		

GUADALUPE RIVER MAIN STEM

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08176500 GUADALUPE RIVER AT VICTORIA, TX
(National stream-quality accounting network)

LOCATION.--Lat 28°47'34", long 97°00'46", Victoria County, Hydrologic Unit 12100204, on left bank just upstream from pier of upstream bridge of two bridges on U.S. Highway 59 in Victoria, 1,300 ft upstream from Southern Pacific Railroad Co. bridge, 15 mi upstream from Coleta Creek, and at mile 50.7.

DRAINAGE AREA.--5,198 mi², of which 1,432 mi² is above Canyon Dam.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--November 1934 to current year. Gage-height records collected in this vicinity since 1904 are contained in reports of the National Weather Service.

REVISED RECORDS.--WSP 2123: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 29.15 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Since July 21, 1962, flow regulated by Canyon Lake (station 08167700) 252.3 mi upstream. There are many diversions above station. Records provided by the city of Victoria show that during the year about 6,850 acre-ft (sewage effluent) was released into the river below station. For statement regarding regulation by Soil Conservation Service floodwater-retarding structures, see station 08175800. A satellite telemeter at station.

AVERAGE DISCHARGE.--27 years (water years 1936-62) prior to regulation by Canyon Lake, 1,626 ft³/s (1,178,000 acre-ft/yr); 29 years (water years 1963-91) regulated, 1,926 ft³/s (1,395,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 179,000 ft³/s July 3, 1936 (gage height, 31.22 ft); minimum daily, 14 ft³/s Aug. 20, 1956.
Maximum stage since at least 1833, that of July 3, 1936.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 1, 1929, reached a stage of 30.2 ft, present site and datum.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 17,000 ft³/s Apr. 5 at 2000 hours (gage height, 27.83 ft); minimum daily, 419 ft³/s Nov. 6.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	545	482	574	567	1220	1420	1220	1680	1480	1710	872	637
2	517	497	556	580	1210	1380	1200	1780	1420	1400	843	640
3	490	511	557	677	1210	1420	1200	1500	1440	1400	805	607
4	495	506	540	666	1450	1420	1180	1610	1410	1270	831	916
5	488	489	540	1160	3150	1430	10400	2950	1440	1200	762	1140
6	604	419	543	1380	8360	1370	9290	6190	1450	3310	767	1250
7	533	576	550	909	10700	1360	7420	6270	1350	4960	771	1130
8	530	578	565	822	10600	1380	9410	4450	1260	4350	767	893
9	565	566	532	915	5070	1360	6440	3090	1260	2870	747	786
10	539	546	541	945	2530	1290	4260	3210	1250	1750	733	746
11	513	704	555	1800	2090	1270	3210	5980	1220	1900	746	813
12	593	1200	566	6180	1840	1260	2960	5080	1200	1650	729	734
13	653	856	577	7460	1740	1280	2250	3200	1180	1340	717	762
14	577	719	579	3820	1720	1250	1930	2720	1150	1220	590	725
15	523	656	582	2040	1580	1240	2290	2460	1240	1130	647	770
16	502	617	555	2400	1540	1440	7730	2150	1390	1050	658	742
17	499	604	593	2910	1470	1360	10200	1940	1510	1010	640	736
18	515	577	566	3060	1380	1340	10000	1810	1800	986	641	735
19	525	581	562	3920	1480	1360	5180	1970	1320	971	669	729
20	536	566	560	8340	1440	1440	2630	1960	1350	951	699	691
21	519	536	615	10600	1620	1430	2240	1830	1230	925	643	711
22	551	574	557	12100	1700	1370	2170	1800	1170	904	668	771
23	512	620	568	6530	1540	1290	2140	1800	1140	897	668	1170
24	494	584	565	2470	1530	1290	2020	1770	1200	904	615	1620
25	548	550	571	1840	1510	1280	2000	1730	1470	1010	565	1940
26	530	611	608	1710	1480	1270	1850	1650	1500	951	580	2210
27	492	596	575	1630	1460	1260	1700	1650	1470	899	607	2200
28	510	597	551	1610	1440	1260	1840	1590	1410	790	631	1600
29	482	569	573	1400	---	1250	1730	1600	1970	879	675	1160
30	480	553	594	1320	---	1240	1660	1530	3460	913	657	1100
31	491	---	575	1230	---	1230	---	1530	---	841	608	---
TOTAL	16351	18040	17545	92991	74060	41240	119750	80480	43140	46341	21551	30664
MEAN	527	601	566	3000	2645	1330	3992	2596	1438	1495	695	1022
MAX	653	1200	615	12100	10700	1440	10400	6270	3460	4960	872	2210
MIN	480	419	532	567	1210	1230	1180	1500	1140	790	565	607
AC-FT	32430	35780	34800	184400	146900	81800	237500	159600	85570	91920	42750	60820
CAL YR 1990	TOTAL	270559	MEAN	741	MAX	4630	MIN	281	AC-FT	536700		
WTR YR 1991	TOTAL	602153	MEAN	1650	MAX	12100	MIN	419	AC-FT	1194000		

GUADALUPE RIVER MAIN STEM

08176500 GUADALUPE RIVER AT VICTORIA, TX--Continued
(National stream-quality accounting network)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: August 1945 to current year. Chemical and biochemical analyses: January 1968 to current year. Pesticide analyses: February 1974 to August 1981. Sediment analyses: April 1959, August 1973 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1945 to September 1981.

WATER TEMPERATURE: November 1950 to September 1981.

INSTRUMENTATION.--From March to May 1973, specific conductance and water temperature were continuously recorded at this station.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,950 microsiemens on several days during January 1946; minimum daily, 135 microsiemens Sept. 3, 1981.

WATER TEMPERATURE: Maximum daily, 32.0°C Aug. 4, 27, 1952; minimum daily, 2.0°C Jan. 11, 12, 1962, Jan. 24, 1963.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

		DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI, KF AGAR (COLS. PER 100 ML)	
OCT 30...	1305	486	526	8.0	20.5	10	8.9	99	0.9	K20	K52	
MAR 06...	1400	1470	533	8.2	19.0	19	9.6	105	1.7	K32	K76	
MAY 21...	1650	1840	520	8.0	26.5	53	7.4	93	2.0	140	120	
SEP 05...	1205	1100	483	8.2	27.5	39	6.8	87	0.8	300	360	
DATE		HARD-NESS TOTAL (MG/L AS CaCO3)	HARD-NESS NONCARB DISSOLV FLD. AS CaCO3 (MG/L)	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)	CAR-BONATE WATER DIS IT FIELD (MG/L AS CO3)	BICAR-BONATE WATER DIS IT FIELD (MG/L AS HCO3)	ALKA-LINITY WAT DIS TOT IT FIELD (MG/L AS CaCO3)	SULFATE DIS-SOLVED (MG/L AS SO4)
OCT 30...	210	25	59	16	27	0.8	2.5	0	230	189	24	
MAR 06...	240	25	70	16	21	0.6	3.1	0	264	216	34	
MAY 21...	210	13	62	13	26	0.8	3.8	0	239	196	33	
SEP 05...	200	29	57	15	22	0.7	2.5	0	214	176	27	
DATE		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 CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)
OCT 30...	33	<0.10	9.3	306	286	--	--	<0.010	<0.010	0.300	0.300	
MAR 06...	31	0.20	8.9	300	318	--	--	<0.010	<0.010	0.660	0.820	
MAY 21...	32	0.20	14	323	306	0.780	0.830	0.050	0.020	0.830	0.850	
SEP 05...	29	0.20	12	261	273	--	--	<0.010	<0.010	0.460	0.470	
DATE		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-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)
OCT 30...	0.010	<0.010	0.29	0.30	0.070	0.050	0.040	0.050	0.12	20	26	
MAR 06...	0.010	<0.010	--	<0.20	0.100	0.060	0.050	0.060	0.15	44	175	
MAY 21...	0.040	0.040	0.56	0.60	0.180	0.090	0.050	0.110	0.15	85	422	
SEP 05...	0.020	<0.010	0.38	0.40	0.140	0.060	0.040	0.040	0.12	75	223	

GUADALUPE RIVER MAIN STEM

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08176500 GUADALUPE RIVER AT VICTORIA, TX--Continued
(National stream-quality accounting network)

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	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)	LEAD, DIS- SOLVED (UG/L AS PB)
OCT 30...	97	10	1	62	0.6	<1.0	<1	<3	1	3	<1
MAR 06...	94	20	<1	56	<0.5	<1.0	<1	<3	1	4	<1
MAY 21...	97	10	2	68	<0.5	<1.0	<1	<3	4	9	1
SEP 05...	11	20	2	64	<0.5	<1.0	<1	<3	1	9	<1
DATE	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	
OCT 30...	14	4	<0.1	<10	2	<1	<1.0	450	<6	5	
MAR 06...	10	2	1.4	<10	<1	<1	<1.0	470	<6	14	
MAY 21...	14	2	<0.1	<10	1	<1	<1.0	410	<6	10	
SEP 05...	10	<1	<0.1	<10	<1	<1	<1.0	440	<6	3	

GUADALUPE RIVER BASIN

08176550 FIFTEENMILE CREEK NEAR WESER, TX
(Flood-hydrograph partial-record station)

LOCATION.--Lat 28°53'51", long 97°21'17", De Witt County, Hydrologic Unit 12100204, at DeWitt-Goliad County line, on left downstream end of bridge on U.S. Highway 183, and 2.4 mi northeast of Weser.

DRAINAGE AREA.--167 mi².

PERIOD OF RECORD.--October 1984 to September 1989 (continuous-record station), October 1989 to current year.

GAGE.--Water-stage recorder. Datum of gage is 158.40 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. No known diversions above station. Guadalupe-Blanco River Authority gage-height telemeter at station.

AVERAGE DISCHARGE.--5 years (water years 1985-89), 18.7 ft³/s (13,550 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,380 ft³/s June 11, 1987 (gage height, 15.07 ft), from rating curve extended above 530 ft³/s; minimum daily, no flow for several days in 1989.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 5	0600	1,140	10.08	Apr. 11	2000	1,330	10.41
Apr. 5	2100	*3,420	*12.87				

Minimum discharge, not determined.

GUADALUPE RIVER BASIN

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08176900 COLETO CREEK AT ARNOLD ROAD CROSSING NEAR SCHROEDER, TX

LOCATION.--Lat 28°51'41", long 97°13'34", Goliad County, Hydrologic Unit 12100204, on right bank at downstream side of Arnold Road Crossing, 0.7 mi downstream from confluence of Twelvemile and Fifteenmile Creeks, 3.2 mi north of Schroeder, 12.8 mi upstream from Coletto Creek Reservoir, and 26.0 mi upstream from mouth.

DRAINAGE AREA.--357 mi².

PERIOD OF RECORD.--October 1978 to current year. Records equivalent for January 1930 to December 1933 and October 1952 to September 1979, published as "near Schroeder".

GAGE.--Water-stage recorder. Datum of gage is 100.43 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. No known diversions above station. Wireless telemeter at station.

AVERAGE DISCHARGE.--13 years, 64.2 ft³/s (46,510 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 32,500 ft³/s Aug. 31, 1981 (gage height, 17.78 ft); minimum daily, no flow Aug. 20 to Oct. 7, 1989.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharges since at least 1872 at site 3.5 mi downstream, 122,000 ft³/s Sept. 21, 1967 (slope-area measurement of peak flow), 63,700 ft³/s Oct. 16, 1946, and 46,700 ft³/s in October 1925, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Apr. 5	1500	*13,200	*17.40	No other peak greater than base discharge.			
Minimum daily discharge, 0.39 ft ³ /s Sept. 1.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.6	.72	1.2	2.1	3.8	4.8	3.6	11	5.1	178	4.3	.39
2	2.4	.64	1.2	2.2	3.8	4.8	3.6	12	4.8	84	3.9	.50
3	2.2	.64	1.3	3.1	4.0	4.6	3.6	11	4.6	45	3.8	.53
4	2.1	.59	1.2	3.3	11	4.4	3.7	11	4.3	28	4.0	.86
5	2.1	.60	1.2	3.0	236	4.4	6240	9.8	4.3	20	4.9	1.0
6	2.1	.61	1.2	3.0	231	4.4	2330	9.0	4.2	15	5.1	4.5
7	1.9	.61	1.3	3.1	55	4.4	1500	8.5	4.2	21	4.7	6.0
8	1.7	1.2	1.2	2.9	28	4.1	372	10	4.8	260	4.1	4.2
9	2.5	2.3	1.2	3.8	18	4.0	129	11	5.4	504	3.8	4.3
10	2.4	2.1	1.2	4.9	14	3.9	81	10	5.1	152	3.4	4.1
11	1.8	1.6	1.3	3.8	11	3.7	133	10	4.8	68	3.1	4.6
12	1.4	1.3	1.3	3.3	9.6	3.7	498	8.9	4.6	40	2.7	3.1
13	1.3	1.2	1.4	3.4	8.7	3.7	143	8.2	4.6	27	2.4	2.4
14	1.2	1.2	1.5	3.3	8.0	3.7	78	13	4.6	20	2.1	2.2
15	1.1	1.3	1.5	3.8	7.3	3.8	57	24	4.6	16	1.9	2.5
16	.99	1.3	1.5	3.0	6.6	5.1	45	12	4.5	13	1.8	2.3
17	.92	1.3	1.5	2.5	6.5	5.5	38	9.8	4.4	11	1.6	2.0
18	.96	1.3	1.6	13	6.3	4.6	33	8.6	4.5	10	1.4	1.9
19	.88	1.3	1.6	30	6.0	4.3	30	7.9	8.4	9.1	1.2	1.9
20	.87	1.3	1.6	18	5.5	4.3	26	7.4	12	8.1	1.1	1.8
21	.86	1.2	1.7	12	5.3	4.3	23	7.0	7.9	7.5	.93	1.7
22	1.7	1.2	1.6	7.8	5.0	4.1	21	6.7	6.3	7.1	.84	1.5
23	2.4	1.2	1.6	6.3	4.9	3.8	19	6.3	9.4	6.9	.74	1.3
24	2.1	1.3	1.5	5.6	4.9	3.7	17	6.2	88	6.5	.67	1.4
25	1.6	1.3	1.5	4.9	4.9	3.7	16	6.2	109	6.0	.59	1.4
26	1.3	1.3	1.8	4.6	4.8	3.7	15	6.0	122	5.7	.52	1.4
27	1.1	1.3	2.2	4.5	4.8	3.7	15	5.7	88	5.3	.49	1.3
28	.95	1.3	2.2	4.4	4.8	3.6	14	5.6	46	5.1	.47	1.3
29	.91	1.2	2.2	4.4	---	3.7	13	5.8	401	5.0	.46	2.5
30	.89	1.2	2.3	4.3	---	3.7	12	5.6	901	4.9	.41	2.6
31	.82	---	2.2	4.0	---	3.6	---	5.4	---	4.6	.40	---
TOTAL	48.05	35.61	47.8	178.3	719.5	127.8	11912.5	279.6	1882.4	1593.8	67.82	67.48
MEAN	1.55	1.19	1.54	5.75	25.7	4.12	397	9.02	62.7	51.4	2.19	2.25
MAX	2.6	2.3	2.3	30	236	5.5	6240	24	901	504	5.1	6.0
MIN	.82	.59	1.2	2.1	3.8	3.6	3.6	5.4	4.2	4.6	.40	.39
AC-FT	95	71	95	354	1430	253	23630	555	3730	3160	135	134
CAL YR 1990	TOTAL	9656.42	MEAN	26.5	MAX	2250	MIN	.09	AC-FT	19150		
WTR YR 1991	TOTAL	16960.66	MEAN	46.5	MAX	6240	MIN	.39	AC-FT	33640		

GUADALUPE RIVER BASIN

08176990 COLETO CREEK RESERVOIR INFLOW (GUADALUPE DIVERSION) NEAR SCHROEDER, TX

LOCATION.--Lat 28°50'21", long 97°11'20", Victoria County, Hydrologic Unit 12100204, on right bank of small tributary 1,200 ft upstream from Coleta Creek and 2.6 mi northeast of Schroeder.

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

GAGE.--Water-stage recorder and concrete control. Datum of gage is 100.52 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Discharge represents flow diverted by pumping from the Guadalupe River to be used as makeup water for the Central Power and Light Co. generating plant on Coleta Creek Reservoir.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 36 ft³/s Apr. 2, 11, Sept. 11, 1980; no flow most of time.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 30 ft³/s Oct. 13; no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	21	13	13	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	19	13	13	.00	.00	5.5	.00	.00	.00	.00	.00
3	.00	17	12	13	.00	.00	.19	.00	.00	.00	.00	.00
4	.00	16	11	13	.00	.00	.00	.00	.00	.00	.00	.00
5	.00	18	12	13	.00	.00	.00	.00	.00	.00	.00	.00
6	.00	22	13	13	.00	.00	.00	.00	.00	.00	.00	.00
7	.00	22	10	13	.00	.00	.00	.00	.00	.00	.00	.00
8	.00	22	15	13	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	21	15	6.2	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	20	15	.42	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	20	17	8.9	.00	.00	.00	.00	.00	.00	.00	.00
12	16	21	13	14	.00	.00	.00	.00	.00	.00	.00	.00
13	30	15	5.7	13	.00	.00	.00	.00	.00	.00	.00	.00
14	29	15	9.7	12	.00	.00	.00	.00	.00	.00	.00	.00
15	28	15	15	9.7	.00	.00	.00	.00	.00	.00	.00	.00
16	28	14	15	16	.00	.00	.00	.00	.00	.00	.00	.00
17	27	14	14	16	.00	.00	.00	.00	.00	.00	.00	.00
18	26	13	12	11	.00	.00	.00	.00	.00	.00	.00	.00
19	27	13	12	.55	.00	.00	.00	.00	.00	.00	.00	.00
20	27	13	11	.06	.00	.00	.00	.00	.00	.00	.00	.00
21	26	12	12	.00	.00	.00	.00	.00	.00	.00	.00	.00
22	26	11	4.4	.00	.00	.00	.00	.00	.00	.00	.00	.00
23	26	11	.23	.00	.00	.00	.00	.00	.00	.00	.00	.00
24	26	11	.00	.00	.00	.00	.00	.00	.00	.00	.00	5.0
25	26	11	.00	.00	.00	.00	.00	.00	.00	.00	.00	6.3
26	26	6.2	7.5	.00	.00	.00	.00	.00	9.3	.00	.00	.12
27	26	3.8	16	.00	.00	.00	.00	.00	.13	.00	.00	.00
28	26	13	16	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	25	13	15	.00	---	.00	.00	.00	.00	.00	.00	.00
30	25	13	14	.00	---	.00	.00	.00	.00	.00	.00	.00
31	23	---	13	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	519.00	456.0	351.53	211.83	0.00	0.00	5.69	0.00	9.43	0.00	0.00	11.42
MEAN	16.7	15.2	11.3	6.83	.000	.000	.19	.000	.31	.000	.000	.38
MAX	30	22	17	16	.00	.00	5.5	.00	9.3	.00	.00	6.3
MIN	.00	3.8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	1030	904	697	420	.00	.00	11	.00	19	.00	.00	23
CAL YR 1990	TOTAL	4696.77	MEAN	12.9	MAX	31	MIN	.00	AC-FT	9320		
WTR YR 1991	TOTAL	1564.90	MEAN	4.29	MAX	30	MIN	.00	AC-FT	3100		

GUADALUPE RIVER BASIN

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08177300 PERDIDO CREEK AT FARM ROAD 622 NEAR FANNIN, TX

LOCATION.--Lat 28°45'05", long 97°19'01", Goliad County, Hydrologic Unit 12100204, at right downstream end of bridge on Farm Road 622, 1.2 mi downstream from Farmer Creek, 3.1 mi upstream from Kilgore Creek, and 6.1 mi northwest of Fannin.

DRAINAGE AREA.--28.0 mi².

PERIOD OF RECORD.--June 1978 to current year.

GAGE.--Water-stage recorder. Datum of gage is 134.66 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are poor. No known diversion above gage. Gage-height telemeter at station.

AVERAGE DISCHARGE.--13 years, 5.05 ft³/s (2.45 in/yr), 3,660 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,600 ft³/s May 29, 1981 (gage height, 13.80 ft, from floodmark), from rating curve extended above 1,160 ft³/s; maximum gage height, 14.60 ft Oct. 31, 1981; no flow for many days in 1986, 1988, 1990, and 1991.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Apr. 20, 1976, reached a stage of 26.28 ft, and flood of Sept. 15, 16, 1967, reached a stage of 26.08 ft, from information by the State Department of Highways and Public Transportation.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Apr. 5	0930	*6,830	*12.13	No other peak greater than base discharge.			
Minimum daily discharge, no flow for many days.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.11	.05	e.04	.20	.35	.16	1.4	.00	.00
2	.00	.00	.00	.18	.05	e.03	.20	.59	.11	.96	.00	.00
3	.00	.00	.00	.31	.06	e.02	.20	.42	.09	3.7	.00	.00
4	.00	.00	.00	.24	38	e.02	.35	.37	.07	.84	.00	.49
5	.00	.00	.00	.32	27	e.02	1140	.43	.07	.36	1.1	.05
6	.00	.00	.00	.30	3.1	e.01	20	.37	.06	.27	.62	34
7	.00	.00	.00	.22	.83	e.01	59	.28	.06	.13	.13	2.0
8	.00	.00	.00	.20	.56	.00	8.2	.82	.08	.48	.11	.45
9	.00	.00	.00	.66	.56	.00	3.0	.76	.17	.19	.09	.14
10	.00	.00	.00	.69	.53	.00	1.8	.56	.17	2.3	.06	.09
11	.00	.00	.00	.38	.49	.00	7.6	.54	.13	.57	.06	.09
12	.00	.00	.00	.30	.49	.00	3.0	.48	.09	.24	.04	.07
13	.00	.00	.00	.28	.49	.00	1.6	.43	.06	.16	.03	.07
14	.00	.00	.00	.30	.41	.00	1.2	.43	.06	.13	.01	.06
15	.00	.00	.00	.52	.32	.00	.89	.43	.05	.11	.00	.09
16	.00	.00	.00	.30	.34	e.10	.70	.47	.05	.09	.00	.07
17	.00	.00	.00	.28	.52	e.10	.70	.52	.06	.08	.00	.08
18	.00	.00	.00	13	.50	e.2.0	.69	.56	.07	.06	.00	.09
19	.00	.00	.00	3.4	.44	e.70	.62	.56	.10	.05	.00	.08
20	.00	.00	.00	.12	.29	e.60	.50	.58	.47	.04	.00	.06
21	.00	.00	.00	.05	.39	e.50	.43	.63	.15	.05	.00	.05
22	.00	.00	.00	.05	e.30	e.40	.43	.63	.06	.08	.00	.16
23	.00	.00	.00	.05	e.20	e.35	.43	.56	.32	.09	.00	.50
24	.00	.00	.00	.09	e.10	e.30	.43	.58	1.0	.09	.00	.28
25	.00	.00	.00	.06	e.10	e.28	.43	.60	.67	.06	.00	.20
26	.00	.00	.01	.05	e.09	e.27	.43	.47	.36	.05	.00	.09
27	.00	.00	.13	.05	e.07	.26	.43	.39	.21	.05	.00	.06
28	.00	.00	.12	.06	e.05	.26	.43	.33	.11	.04	.00	.06
29	.00	.00	.14	.07	---	.42	.36	.30	12	.03	.00	.05
30	.00	.00	.15	.08	---	.21	.30	.51	16	.03	.00	.05
31	.00	---	.15	.06	---	.20	---	.28	---	.02	.00	---
TOTAL	0.00	0.00	0.70	22.78	76.33	17.00	1254.55	15.23	33.06	116.95	2.25	39.48
MEAN	.000	.000	.023	.73	2.73	.55	41.8	.49	1.10	3.77	.073	1.32
MAX	.00	.00	.15	13	38	10	1140	.82	16	48	1.1	34
MIN	.00	.00	.00	.05	.05	.00	.20	.28	.05	.02	.00	.00
AC-FT	.00	.00	1.4	45	151	34	2490	30	66	232	4.5	78
CFSM	.00	.00	.00	.03	.10	.02	1.49	.02	.04	.13	.00	.05
IN.	.00	.00	.00	.03	.10	.02	1.67	.02	.04	.16	.00	.05

CAL YR 1990	TOTAL	1458.14	MEAN	3.99	MAX	733	MIN	.00	AC-FT	2890	CFSM	.14	IN.	1.94
WTR YR 1991	TOTAL	1578.33	MEAN	4.32	MAX	1140	MIN	.00	AC-FT	3130	CFSM	.15	IN.	2.10

e Estimated

GUADALUPE RIVER BASIN

08177360 COLETO CREEK RESERVOIR (CONDENSER NO. 1) NEAR FANNIN, TX

LOCATION.--Lat 28°43'24", long 97°12'16", Goliad County, Hydrologic Unit 12100204, on right bank of discharge canal 4,000 ft below Central Power and Light powerplant, 2.7 mi northeast of Fannin, and 13.3 mi southwest of Victoria.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: May 1980 to current year.

INSTRUMENTATION.--Since May 1980, water temperature is recorded continuously at this station.

REMARKS: Prior to Feb. 19, 1982, water temperature recording site was 4,000 ft upstream at Condenser No. 1 cooling water outlet.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 42.0°C Apr. 26, 28, 1991; minimum, 4.5°C Dec. 26, 1983.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 42.0°C Apr. 26, 28; minimum, 16.0°C Dec. 27, Jan. 6.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	37.5	35.5	37.0	31.0	26.5	29.5	27.0	26.5	27.0	19.5	19.0	19.5
2	37.5	35.5	36.5	31.0	27.5	29.5	28.0	27.0	27.5	19.5	18.5	19.5
3	37.5	36.5	37.0	30.5	29.5	30.0	28.0	26.0	27.0	20.0	19.0	19.5
4	37.5	36.5	37.0	30.5	26.5	28.5	25.5	25.0	25.5	19.5	19.0	19.0
5	37.5	36.5	37.0	27.5	25.5	26.0	25.0	24.5	25.0	19.5	17.0	18.5
6	38.0	36.5	37.0	27.5	24.5	26.5	25.0	24.5	24.5	21.0	16.0	18.0
7	38.0	37.0	37.5	28.0	24.5	26.5	24.0	23.0	23.5	21.0	18.0	20.0
8	38.0	37.0	37.5	27.0	24.5	26.0	23.5	23.0	23.0	20.5	20.0	20.0
9	37.5	31.0	35.5	25.5	22.5	24.5	24.0	23.0	23.5	20.5	20.0	20.0
10	31.5	29.0	29.5	24.0	23.0	23.5	24.0	23.0	23.5	20.5	20.0	20.5
11	29.0	27.0	28.5	24.5	22.0	23.0	25.0	23.5	24.0	21.0	20.0	20.5
12	31.5	26.5	28.5	27.0	23.0	25.0	25.5	23.0	24.5	20.5	17.5	19.5
13	30.5	28.5	29.5	28.0	23.5	26.5	25.5	24.0	25.0	21.0	19.0	19.5
14	31.5	29.0	30.5	28.0	24.5	27.0	26.5	25.0	25.5	---	---	---
15	33.5	31.0	32.0	28.5	26.0	27.5	26.5	26.0	26.0	---	---	---
16	33.5	31.0	32.0	29.0	26.5	28.5	28.0	25.0	26.5	23.0	19.5	21.5
17	33.5	32.5	33.0	29.5	27.0	28.5	28.0	27.0	27.5	22.5	19.5	21.5
18	33.0	29.5	31.0	30.0	28.0	29.0	27.0	24.5	26.0	22.0	19.0	21.0
19	31.0	28.5	30.0	30.5	28.0	29.5	26.5	22.0	25.0	22.0	19.5	21.0
20	31.5	28.5	30.0	30.5	28.5	29.5	27.0	22.5	25.5	22.0	20.0	21.0
21	31.5	29.5	31.0	31.0	28.5	30.0	28.5	24.5	27.0	21.0	20.0	20.5
22	28.5	26.0	27.5	30.5	28.5	29.5	25.5	22.0	23.5	20.5	19.5	20.0
23	29.5	25.5	28.0	30.0	29.0	29.5	21.5	20.0	20.5	20.5	19.5	20.0
24	29.5	26.5	28.5	30.0	27.5	29.5	20.0	19.0	19.5	20.5	19.5	20.5
25	29.0	25.0	27.0	31.0	30.0	30.5	19.5	19.0	19.0	21.5	20.0	20.5
26	30.0	26.0	28.5	30.5	29.5	30.0	19.5	18.5	19.0	21.5	19.0	20.0
27	27.5	25.5	27.0	31.0	29.0	30.5	20.0	16.0	19.0	21.0	18.5	19.5
28	27.0	25.5	26.5	30.5	28.5	29.5	21.0	16.5	19.0	22.0	19.0	20.5
29	29.5	26.0	28.0	28.5	26.5	27.5	22.5	20.0	21.5	23.5	19.0	21.0
30	30.5	26.5	29.5	27.0	26.0	26.5	23.0	20.5	22.0	22.5	18.5	21.0
31	31.0	27.5	29.5	---	---	---	21.0	19.5	20.0	21.5	20.0	20.5
MONTH	38.0	25.0	31.5	31.0	22.0	28.0	28.5	16.0	23.5	23.5	16.0	20.0

GUADALUPE RIVER BASIN

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08177360 COLETO CREEK RESERVOIR (CONDENSER NO. 1) NEAR FANNIN, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	22.0	20.0	21.0	25.0	20.5	23.5	30.0	28.5	29.5	40.0	33.5	37.5
2	22.5	21.0	21.5	24.0	17.0	18.5	30.5	29.0	29.5	40.0	34.5	38.0
3	22.0	20.0	21.0	18.0	17.0	17.5	31.0	27.0	29.5	40.5	36.5	39.5
4	23.5	21.5	22.0	18.5	17.0	17.5	31.0	26.5	29.5	40.5	33.5	38.5
5	24.5	21.0	22.5	19.0	17.0	18.0	34.0	25.5	30.0	34.0	26.0	31.5
6	24.5	22.0	24.0	21.5	18.0	19.5	35.0	27.0	32.5	33.0	27.5	30.5
7	25.0	22.0	24.0	20.5	19.5	19.5	36.0	27.0	33.0	32.5	28.0	31.0
8	24.5	22.0	23.5	20.5	18.5	19.5	37.0	29.5	35.0	32.5	29.0	31.5
9	24.5	21.5	23.0	20.0	18.0	19.0	37.5	33.5	36.0	33.0	27.5	30.5
10	22.5	17.0	19.0	20.0	18.0	19.0	40.5	36.0	39.0	33.5	30.5	33.0
11	18.0	17.0	17.5	20.0	18.5	19.5	40.0	37.5	39.5	33.5	32.0	32.5
12	21.5	17.5	18.5	21.5	19.5	20.0	38.5	37.0	38.0	35.0	32.5	33.5
13	26.0	21.0	23.5	21.5	19.5	20.5	39.5	34.0	38.0	34.5	33.0	34.0
14	26.0	22.0	24.5	20.5	19.5	20.0	38.5	36.0	37.5	34.0	29.5	32.5
15	25.5	23.5	24.5	19.5	17.5	18.5	38.0	30.0	35.5	34.5	30.0	33.0
16	24.0	23.5	24.0	17.5	17.0	17.0	38.5	33.5	36.5	35.0	33.0	34.0
17	24.0	22.0	23.0	19.0	17.0	18.0	40.5	38.0	39.0	33.0	29.0	32.0
18	26.5	22.5	25.0	20.0	17.5	18.5	39.5	35.0	38.0	34.0	29.0	32.0
19	26.0	24.0	25.5	21.0	19.0	19.5	38.5	35.5	37.5	34.0	29.5	32.5
20	25.0	23.5	24.0	20.5	19.0	20.0	38.5	32.5	35.5	35.5	30.0	33.5
21	23.5	22.5	23.5	21.0	20.0	20.5	36.5	30.5	33.5	35.5	30.5	33.5
22	24.0	22.5	23.0	21.5	20.5	21.0	38.5	32.0	36.5	36.0	31.5	34.5
23	24.5	23.0	23.5	21.5	20.5	21.0	40.0	30.5	36.0	36.5	35.5	36.0
24	25.0	23.0	24.0	22.5	20.5	21.5	40.0	31.5	37.0	37.0	32.5	35.5
25	25.0	23.5	24.0	23.0	21.0	22.0	41.5	33.0	38.5	37.5	35.5	36.5
26	23.5	23.0	23.0	23.0	22.5	22.5	42.0	35.5	40.0	37.5	33.5	36.5
27	23.5	23.0	23.0	23.5	22.5	23.0	41.0	39.5	40.5	38.0	34.0	36.5
28	24.0	23.0	23.5	27.0	22.0	23.5	42.0	39.5	41.0	38.5	35.0	37.0
29	---	---	---	29.5	22.0	26.5	41.5	33.0	39.5	37.0	35.5	36.5
30	---	---	---	29.5	23.5	27.5	41.5	31.5	38.5	36.5	33.5	35.5
31	---	---	---	29.0	26.0	28.0	---	---	---	36.0	34.5	35.5
MONTH	26.5	17.0	23.0	29.5	17.0	20.5	42.0	25.5	36.0	40.5	26.0	34.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	36.0	35.0	35.5	38.0	34.0	36.5	41.0	37.5	39.5	39.0	36.0	37.5
2	36.5	35.5	36.0	37.5	35.0	36.5	41.0	38.5	40.0	39.0	37.0	38.0
3	37.0	35.5	36.0	37.5	33.5	36.0	39.5	36.0	38.0	38.0	36.5	37.5
4	37.0	35.0	36.0	37.0	34.0	36.0	38.5	35.0	37.0	37.5	36.5	37.0
5	37.5	35.5	36.5	39.0	33.5	36.5	39.0	36.0	37.5	37.5	36.0	37.0
6	37.0	36.0	36.5	38.5	33.5	35.5	39.0	37.0	38.0	37.5	32.5	37.0
7	36.5	35.0	36.0	37.5	36.5	37.0	39.5	35.5	38.0	30.0	29.5	29.5
8	35.0	33.0	33.5	37.5	36.5	37.0	39.5	37.0	38.5	37.0	29.5	32.0
9	33.0	32.0	32.0	37.0	35.5	36.5	39.0	36.0	38.0	38.0	36.0	37.0
10	35.5	31.5	33.5	37.5	36.0	36.5	38.5	36.5	38.0	38.0	35.5	37.0
11	36.0	33.0	35.0	38.0	36.0	37.0	39.0	37.5	38.0	38.0	34.5	36.5
12	38.0	33.0	36.0	38.0	37.0	37.5	40.0	37.5	38.5	38.0	33.0	36.0
13	37.0	34.5	36.5	38.0	37.0	37.5	39.0	37.5	38.0	38.0	33.5	36.5
14	38.5	36.0	37.0	38.5	37.0	38.0	38.5	37.5	37.5	38.0	37.0	37.5
15	37.0	35.0	36.5	40.0	37.0	38.5	38.5	37.5	37.5	38.5	37.5	37.5
16	38.0	36.0	37.0	40.0	37.5	38.5	39.0	37.0	38.0	38.0	36.5	37.5
17	38.5	34.0	37.0	39.5	38.0	38.5	39.0	37.5	38.0	38.5	36.0	37.5
18	39.0	35.0	38.0	40.5	38.0	39.0	39.5	37.5	38.5	38.5	36.0	37.5
19	39.5	36.5	38.5	40.0	38.0	38.5	40.5	38.0	39.0	35.5	33.5	34.5
20	40.0	36.0	38.5	39.5	37.5	38.0	41.0	38.5	39.5	33.0	30.0	31.0
21	40.0	35.0	38.5	38.0	37.5	38.0	40.5	38.0	39.0	30.0	29.0	29.5
22	39.5	38.0	39.0	37.5	37.0	37.5	40.5	38.0	39.5	34.5	30.0	32.0
23	39.0	35.5	38.0	37.5	36.5	37.0	39.5	37.5	39.0	35.0	31.5	34.0
24	37.5	34.5	37.0	39.0	37.0	37.5	39.5	36.5	38.5	36.0	33.0	34.5
25	37.5	34.0	36.5	39.5	37.0	37.5	38.5	35.5	37.5	35.0	27.0	32.5
26	38.0	35.0	37.0	38.5	37.0	37.5	38.5	36.0	38.0	26.5	25.5	26.0
27	38.0	34.0	37.0	38.5	37.5	38.0	39.0	36.5	38.0	27.0	26.0	26.0
28	37.5	36.5	37.0	38.5	37.0	37.5	39.5	37.0	38.0	26.5	26.0	26.0
29	37.0	35.0	35.5	40.0	37.0	38.0	39.5	37.0	38.0	36.0	26.5	32.5
30	36.0	32.0	34.5	40.0	36.5	38.0	39.5	36.5	38.0	35.5	30.5	34.0
31	---	---	---	40.5	37.5	39.5	38.0	36.5	37.5	---	---	---
MONTH	40.0	31.5	36.5	40.5	33.5	37.5	41.0	35.0	38.5	39.0	25.5	34.5

08177400 COLETO CREEK RESERVOIR NEAR VICTORIA, TX

LOCATION.--Lat 28°43'51", long 97°09'53", Victoria County, Hydrologic Unit 12100204, on right bank 175 ft upstream from right end of spillway of dam on Coleto Creek, 1.6 mi upstream from U.S. Highway 59, 11.6 mi west of Victoria, and 12.8 mi upstream from mouth.

DRAINAGE AREA.--494 mi².

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

GAGE.--Water-stage recorder. Datum of gage is 80.00 ft above National Geodetic Vertical Datum of 1929.

Supplementary gage (Turkey Creek Arm).--Water-stage recorder 2.7 mi upstream at datum 90.00 ft above National Geodetic Vertical Datum of 1929. Coleto Creek Reservoir (Turkey Creek Arm) near Schroeder (station 08177240) is locally known as Dike No. 2.

Supplementary gage (Sulphur Creek Arm).--Water-stage recorder 2.8 mi upstream at datum 90.00 ft above National Geodetic Vertical Datum of 1929. Coleto Creek Reservoir (Sulphur Creek Arm) near Fannin (station 08177380) is known locally as Dike No. 1.

REMARKS.--The reservoir system consists of the main reservoir (station 08177400), Turkey Creek Arm (station 08177240), and Sulphur Creek Arm (station 08177380). Figures shown below are the combined contents of the three stations. Cooling water is diverted from the main reservoir through a Central Power and Light coal-fired generating plant, through a canal to the Sulphur Creek Arm, and then through a canal to Turkey Creek Arm where it is released back into the main reservoir. The system was built for the Guadalupe-Blanco River Authority, and storage began in February 1980.

The main reservoir is formed by a compacted earthfill dam 20,800 ft long, including a 2,000-foot uncontrolled spillway and a 403-foot wide concrete outlet structure with seven 40- x 28-foot spillway gates. Low-flow releases are made through the dam by a controlled 8-inch pipe. Turkey Creek Arm is formed by a compacted earthfill dam 2,250 ft long, including a 186-foot wide concrete outlet structure with two 40- x 11-foot spillway gates. Sulphur Creek Arm is formed by a compacted earthfill dam 1,030 ft long, including a 186-foot wide concrete outlet structure with two 40- by 11-foot spillway gates. Data regarding the dams and reservoirs are given in the following table:

	Coleto Creek Reservoir		Turkey Creek Arm		Sulphur Creek Arm	
	Gage height (feet)	Contents (acre-feet)	Gage height (feet)	Contents (acre-feet)	Gage height (feet)	Contents (acre-feet)
Top of dam.....	39.0	140,200	17.0	7,330	17.0	2,550
Spillway.....	27.3	63,560	--	--	--	--
Top of spillway gates...	19.0	34,000	12.9	4,950	12.9	1,640
Crest of spillway.....	-9.0	954	1.89	1,400	1.91	306

COOPERATION.--Elevations and capacity tables were provided by Forrest and Cotton Engineers, Consulting Engineers for the Guadalupe-Blanco River Authority.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily contents, 40,330 acre-ft Feb. 25, 1982; minimum since reservoir was first filled in May 1980, 29,580 acre-ft Oct. 25, 27, 28, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum daily contents, 38,190 acre-ft July 8; minimum daily, 32,380 acre-ft Dec. 25.

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34200	33170	33160	32440	34030	36310	35960	35920	37490	37820	36960	35460
2	34130	33100	33160	32660	34000	36220	35910	35940	37440	38030	37010	35450
3	33990	33090	33060	32710	34000	36040	35880	35920	37290	37770	36900	35450
4	33980	33030	33000	32710	35450	36050	35960	35910	37280	37730	37030	35400
5	33970	32990	32960	32770	36360	35960	35850	35900	37160	37790	37000	35390
6	33840	32950	32900	32790	36850	36000	35320	35910	37110	38000	36990	35800
7	33780	32940	32870	32780	36960	35990	35550	35970	37060	37870	36920	35840
8	33710	33140	32850	32760	36990	35870	36030	36270	37070	38190	36870	35770
9	33700	33110	32820	32990	37020	35780	36050	36260	37060	37890	36780	35770
10	33580	33080	32800	33140	37030	35770	36090	36220	36990	38090	36710	35800
11	33510	33080	32850	33100	37020	35740	36060	36220	36910	38160	36620	35700
12	33480	33080	32850	33100	37020	35770	36200	36170	36860	38180	36480	35790
13	33440	33030	32860	33050	36990	35690	36110	36170	36730	38120	36450	35730
14	33440	33050	32830	33290	36940	35640	35990	36140	36720	38090	36350	35740
15	33440	33000	32860	33310	36840	35680	36040	36140	36890	38060	36280	35770
16	33440	33020	32880	33270	36830	36350	36140	36130	36830	38030	36180	35720
17	33510	33000	32880	33270	36820	36350	36200	36110	36780	37930	36120	35660
18	33440	33000	32880	34200	36840	36400	36290	36110	36740	37860	36020	35610
19	33460	33000	32800	34320	36770	36290	36270	36080	36870	37770	35930	35440
20	33460	32950	32810	34310	36670	36320	36040	36180	36860	37670	35850	35330
21	33450	32950	32780	34220	36670	36350	36010	36170	36750	37610	35740	35190
22	33380	32950	32650	34200	36620	36380	36050	36140	36620	37590	35630	35200
23	33350	33510	32500	34200	36580	36320	36050	36090	37100	37550	35570	35150
24	33320	33500	32400	34230	36550	36260	35980	36090	37340	37400	35500	35140
25	33320	33460	32380	34200	36480	36250	36040	36060	37530	37360	35390	35040
26	33270	33430	32470	34170	36440	36250	36060	35960	37710	37290	35310	34800
27	33250	33400	32470	34170	36420	36190	36060	35900	37920	37220	35510	34670
28	33250	33300	32500	34170	36470	36340	36070	35810	37860	37130	35420	34630
29	33250	33200	32530	34240	---	36210	36000	37590	37280	37150	35360	34570
30	33160	33140	32520	34100	---	36090	35920	37660	37450	37130	35260	34620
31	33160	---	32490	34070	---	36010	---	37570	---	37060	35240	---
MAX	34200	33510	33160	34320	37030	36400	36290	37660	37920	38190	37030	35840
MIN	33160	32940	32380	32440	34000	35640	35320	35810	36620	37060	35240	34570
(Φ)	-1100	-20	-650	+1580	+2400	-460	-90	+1650	-120	-390	-1820	-620

CAL YR 1990 MAX 40290 MIN 30370 (Φ) +2170
WTR YR 1991 MAX 38190 MIN 32380 (Φ) +360

(Φ) Change in contents, in acre-feet.

08177410 COLETO CREEK RESERVOIR (OUTFLOW) NEAR VICTORIA, TX

LOCATION.--Lat 28°43'54", Long 97°09'50", Victoria County, Hydrologic Unit 12100204, on top of Coleta Creek Dam at Pier No. 4, 1.6 mi upstream from U.S. Highway 59, and 11.6 mi west of Victoria.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: May 1980 to current year.

INSTRUMENTATION: Since May 1980, water temperature is recorded continuously at this station.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 32.5°C July 16, 1983; minimum, 7.5°C Dec. 31, 1983, Jan. 1, 2, 1984.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 28.5°C Oct. 9; minimum, 11.5°C Dec. 29, 30, Jan. 6.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	26.0	25.5	26.0	21.0	21.0	21.0	20.0	19.5	19.5	13.0	12.5	12.5
2	26.0	25.5	26.0	21.0	21.0	21.0	19.5	18.5	19.0	12.5	12.5	12.5
3	27.5	26.0	26.5	21.0	21.0	21.0	20.0	18.5	19.5	13.0	12.5	12.5
4	27.5	26.5	27.0	22.0	21.0	21.0	19.5	18.5	19.0	13.0	13.0	13.0
5	27.5	27.0	27.0	22.5	21.0	21.5	19.0	17.5	18.5	13.0	12.5	13.0
6	27.5	27.0	27.0	21.0	20.5	21.0	18.0	17.0	17.5	12.0	11.5	12.0
7	27.5	27.0	27.0	21.0	20.5	20.5	17.5	17.5	17.5	12.5	12.0	12.0
8	27.5	27.0	27.0	21.0	20.5	21.0	17.5	16.5	17.0	13.0	12.5	12.5
9	28.5	27.0	28.0	20.5	19.5	20.0	16.5	16.0	16.5	13.0	12.5	12.5
10	28.0	25.5	26.5	20.0	19.0	19.5	16.0	15.0	15.5	13.0	12.5	12.5
11	26.0	24.5	25.5	19.0	18.5	19.0	15.0	14.5	15.0	13.0	12.5	12.5
12	24.5	24.0	24.5	18.5	18.0	18.5	15.0	14.5	15.0	13.0	13.0	13.0
13	24.0	23.0	23.5	18.0	17.5	18.0	15.0	15.0	15.0	13.0	12.5	13.0
14	23.5	23.0	23.0	18.0	17.5	18.0	15.0	15.0	15.0	13.0	12.5	12.5
15	23.5	23.0	23.0	18.0	17.5	17.5	15.5	15.0	15.0	13.0	12.5	12.5
16	23.5	23.0	23.0	18.0	17.5	17.5	15.5	15.5	15.5	13.0	12.5	13.0
17	23.5	23.5	23.5	18.0	17.5	18.0	15.5	15.5	15.5	13.0	12.5	13.0
18	24.0	23.5	23.5	18.0	18.0	18.0	16.0	15.5	16.0	13.5	13.0	13.0
19	24.0	23.5	23.5	18.0	18.0	18.0	16.5	16.0	16.0	13.5	13.5	13.5
20	24.0	23.5	23.5	18.0	18.0	18.0	16.5	16.0	16.5	14.0	13.5	13.5
21	24.0	23.5	24.0	18.0	18.0	18.0	17.0	16.5	16.5	14.5	14.0	14.5
22	24.0	23.0	23.0	18.5	18.0	18.0	18.0	16.5	17.5	14.5	14.0	14.5
23	23.0	22.0	22.5	18.5	18.0	18.0	17.0	15.0	16.0	14.0	13.0	13.5
24	22.0	21.5	22.0	18.5	18.5	18.5	15.0	14.0	14.5	14.0	13.0	13.5
25	22.0	21.5	22.0	18.5	18.5	18.5	14.0	13.0	13.5	14.0	13.5	13.5
26	22.0	21.0	21.5	18.5	18.5	18.5	13.5	13.0	13.0	13.5	13.0	13.5
27	21.5	21.0	21.0	19.0	18.5	18.5	13.5	13.0	13.0	13.0	12.0	12.5
28	21.0	21.0	21.0	19.0	18.5	19.0	13.5	12.5	13.0	12.5	12.0	12.0
29	21.0	20.5	21.0	19.5	19.0	19.0	12.5	11.5	12.0	12.0	12.0	12.0
30	21.0	20.5	20.5	20.0	19.5	19.5	12.0	11.5	11.5	12.5	12.0	12.0
31	21.0	20.5	21.0	---	---	---	13.5	13.0	13.0	13.5	12.5	13.0
MONTH	28.5	20.5	24.0	22.5	17.5	19.0	20.0	11.5	15.5	14.5	11.5	13.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	13.5	13.0	13.5	16.0	15.5	16.0	19.5	19.5	19.5	20.0	19.5	19.5
2	13.0	13.0	13.0	15.5	15.5	15.5	20.0	19.5	19.5	20.0	19.5	20.0
3	---	---	---	16.0	15.5	15.5	20.0	19.5	20.0	20.0	19.5	20.0
4	---	---	---	16.0	16.0	16.0	20.0	20.0	20.0	20.0	20.0	20.0
5	---	---	---	16.0	16.0	16.0	22.0	19.5	20.5	20.5	20.0	20.0
6	---	---	---	16.5	16.0	16.0	19.5	18.5	19.0	20.5	20.0	20.0
7	---	---	---	16.5	16.5	16.5	19.0	18.5	18.5	20.5	20.0	20.0
8	---	---	---	17.0	16.5	16.5	19.0	18.5	18.5	20.5	20.0	20.5
9	---	---	---	17.5	17.0	17.0	19.0	18.5	19.0	20.5	20.5	20.5
10	---	---	---	17.5	17.0	17.0	19.0	19.0	19.0	20.5	20.5	20.5
11	---	---	---	18.0	17.0	17.5	19.0	19.0	19.0	20.5	20.5	20.5
12	13.5	13.5	13.5	18.0	17.5	18.0	19.0	19.0	19.0	20.5	20.5	20.5
13	13.5	13.5	13.5	18.0	18.0	18.0	19.0	19.0	19.0	21.0	20.5	20.5
14	13.5	13.5	13.5	18.0	18.0	18.0	19.5	19.0	19.0	21.0	20.5	20.5
15	13.5	13.5	13.5	18.0	18.0	18.0	19.5	19.0	19.0	21.0	20.5	20.5
16	14.0	13.5	13.5	18.0	17.5	17.5	19.0	19.0	19.0	21.0	20.5	20.5
17	14.0	14.0	14.0	17.5	17.5	17.5	19.0	19.0	19.0	21.0	20.5	21.0
18	14.5	14.0	14.0	17.5	17.5	17.5	19.0	19.0	19.0	21.0	20.5	21.0
19	14.5	14.0	14.5	17.5	17.5	17.5	19.5	19.0	19.0	21.0	20.5	21.0
20	15.0	14.5	14.5	17.5	17.5	17.5	19.5	19.0	19.0	21.0	21.0	21.0
21	15.0	15.0	15.0	17.5	17.5	17.5	19.5	19.0	19.0	21.0	21.0	21.0
22	16.0	15.0	15.5	18.0	17.5	17.5	19.5	19.0	19.0	21.0	21.0	21.0
23	16.0	15.5	16.0	18.0	18.0	18.0	---	---	---	21.0	21.0	21.0
24	16.0	16.0	16.0	18.0	18.0	18.0	---	---	---	21.0	21.0	21.0
25	16.0	16.0	16.0	18.0	18.0	18.0	19.5	19.5	19.5	21.0	21.0	21.0
26	16.0	16.0	16.0	18.0	18.0	18.0	19.5	19.5	19.5	21.0	21.0	21.0
27	16.0	15.5	16.0	18.5	18.0	18.0	19.5	19.5	19.5	21.0	21.0	21.0
28	15.5	15.5	15.5	18.5	18.0	18.5	19.5	19.5	19.5	21.5	21.0	21.0
29	---	---	---	19.0	18.5	18.5	20.0	19.5	19.5	21.5	21.0	21.0
30	---	---	---	19.0	18.5	19.0	20.0	19.5	19.5	21.5	21.0	21.0
31	---	---	---	19.5	19.0	19.0	---	---	---	21.5	21.0	21.0
MONTH	16.0	13.0	14.5	19.5	15.5	17.5	22.0	18.5	19.5	21.5	19.5	20.5

GUADALUPE RIVER BASIN

08177410 COLETO CREEK RESERVOIR (OUTFLOW) NEAR VICTORIA, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	21.5	21.0	21.0	24.0	23.5	24.0	25.5	25.0	25.0	25.5	25.0	25.0
2	21.5	21.0	21.5	25.5	23.5	24.0	25.5	25.0	25.0	25.5	25.0	25.0
3	21.5	21.0	21.5	25.0	24.0	24.5	25.5	25.0	25.0	26.0	25.0	25.5
4	21.5	21.5	21.5	24.5	24.0	24.5	25.5	25.0	25.0	25.5	25.0	25.5
5	22.0	21.5	21.5	24.5	24.0	24.0	25.5	25.0	25.0	25.5	25.0	25.0
6	22.0	21.5	21.5	25.0	24.0	24.5	25.5	25.0	25.0	25.5	25.0	25.0
7	22.0	21.5	21.5	25.0	24.5	24.5	25.5	25.0	25.5	25.5	25.0	25.0
8	22.0	21.5	21.5	25.5	24.5	25.0	25.5	25.0	25.0	25.5	25.0	25.0
9	22.0	21.5	21.5	25.5	24.5	25.0	25.5	25.0	25.0	25.5	25.0	25.0
10	22.0	21.5	21.5	25.0	24.5	24.5	25.5	25.0	25.0	26.0	25.0	25.0
11	22.0	21.5	21.5	25.0	24.5	24.5	25.5	25.0	25.0	26.0	25.0	25.5
12	22.0	21.5	21.5	25.0	24.5	24.5	25.5	25.0	25.0	26.0	25.0	25.5
13	22.0	21.5	21.5	25.0	24.5	24.5	25.5	25.0	25.0	25.5	25.0	25.5
14	22.0	21.5	22.0	25.0	24.5	24.5	25.5	25.0	25.0	26.0	25.0	25.5
15	22.0	21.5	22.0	25.0	24.5	24.5	25.5	25.0	25.0	25.5	25.5	25.5
16	22.0	21.5	22.0	25.0	24.5	24.5	25.5	25.0	25.5	26.0	25.5	25.5
17	22.0	22.0	22.0	25.0	24.5	24.5	25.5	25.0	25.5	26.0	25.5	25.5
18	22.0	22.0	22.0	24.5	24.5	24.5	25.5	25.0	25.5	26.0	25.5	25.5
19	22.0	22.0	22.0	25.0	24.5	24.5	25.5	25.0	25.5	26.5	25.5	26.0
20	22.0	22.0	22.0	25.5	24.5	25.0	25.5	25.0	25.5	27.0	25.5	26.0
21	22.0	22.0	22.0	25.0	24.5	25.0	25.5	25.0	25.5	27.0	26.0	26.5
22	22.5	22.0	22.0	25.0	24.5	25.0	25.5	25.0	25.5	26.0	26.0	26.0
23	22.5	22.0	22.0	25.0	24.5	25.0	25.5	25.0	25.5	26.0	25.5	25.5
24	22.5	22.0	22.5	25.0	24.5	25.0	25.5	25.0	25.0	25.5	25.5	25.5
25	22.5	22.0	22.5	25.0	24.5	25.0	25.0	25.0	25.0	25.5	25.5	25.5
26	22.5	22.0	22.5	25.0	24.5	25.0	25.5	25.0	25.0	25.5	25.5	25.5
27	22.5	22.0	22.5	25.5	24.5	25.0	25.5	25.0	25.0	25.5	25.0	25.5
28	22.5	22.0	22.5	25.5	25.0	25.0	25.5	25.0	25.0	25.5	25.0	25.5
29	25.0	22.5	23.5	25.5	25.0	25.0	25.5	25.0	25.0	25.5	25.0	25.5
30	25.0	23.5	24.0	25.5	25.0	25.0	25.5	25.0	25.0	25.5	25.5	25.5
31	---	---	---	25.5	25.0	25.0	25.5	25.0	25.0	---	---	---
MONTH	25.0	21.0	22.0	25.5	23.5	24.5	25.5	25.0	25.0	27.0	25.0	25.5

GUADALUPE RIVER BASIN

257

08177500 COLETO CREEK NEAR VICTORIA, TX

LOCATION.--Lat 28°43'51", long 97°08'18", Victoria County, Hydrologic Unit 12100204, on left bank at downstream side of westbound bridge on U.S. Highway 59, 1.6 mi downstream from Coleta Creek dam, 9.0 mi southwest of Victoria, and 11.2 mi upstream from mouth.

DRAINAGE AREA.--514 mi².

PERIOD OF RECORD.--June 1939 to September 1954, June 1978 to current year.

REVISED RECORDS.--WSP 1562: 1939-40. WSP 1732: 1941.

GAGE.--Water-stage recorder. Datum of gage is 44.18 ft above National Geodetic Vertical Datum of 1929. Prior to Jan. 17, 1955, at datum 5.0 ft higher.

REMARKS.--Records poor. Since Feb. 21, 1980, flow is completely regulated by Coleta Creek Reservoir, 1.6 mi upstream. Water is diverted from the Guadalupe River basin to the Coleta Creek basin upstream from Coleta Creek Reservoir beginning Mar. 6 1980 (see station 08176990). There are no other large diversions above station. Gage-height telemeter at station.

AVERAGE DISCHARGE.--16 years (water years 1940-54, 1979) prior to regulation by Coleta Creek Reservoir, 92.7 ft³/s (67,160 acre-ft/yr); 11 years (water years 1981-91) regulated, 77.4 ft³/s (56,080 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 89,000 ft³/s Oct. 16, 1946 (gage height, 36.64 ft, present datum, from floodmark), on basis of slope-area measurement of peak flow; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge since at least 1875, 236,000 ft³/s Sept. 22, 1967 (gage height, 42.0 ft, from floodmark), present site and datum, on basis of slope-area measurement of peak flow. Flood of Apr. 20, 1976, reached a stage of 37.85 ft, at site 0.2 mi upstream at present datum. Flood of July 1, 1936, reached a stage of 32.2 ft, present site and datum, from information by railroad company.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 37,000 ft³/s Apr. 5 at 0900 hours (gage height, 28.00 ft, from floodmark); minimum daily, 1.7 ft³/s Aug. 26, Sept. 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e2.1	e2.2	e2.1	e2.8	e4.0	e2.7	e2.7	4.2	3.1	13	4.9	1.7
2	e2.1	2.2	e2.1	e2.8	e3.9	e2.6	e2.7	4.4	3.1	129	5.1	2.6
3	e2.1	e2.1	e2.1	e3.3	e3.9	e2.5	e2.7	4.2	3.1	206	6.0	6.0
4	e2.4	e2.1	e2.2	e3.3	e6.0	e2.5	e2.7	4.1	2.9	5.9	5.9	6.4
5	3.4	e2.3	e2.2	e3.3	e4.5	e2.5	15300	3.9	2.9	4.0	6.7	5.9
6	e3.2	e2.6	e2.2	e3.3	e4.0	e2.4	2540	3.7	2.9	62	5.4	11
7	e2.8	e2.5	e2.2	e3.4	e3.7	e2.3	1750	3.7	3.0	181	5.2	6.2
8	e2.6	e2.4	e2.2	3.4	e3.5	2.3	505	4.5	3.4	223	5.1	4.3
9	e3.3	e2.4	e2.2	e4.0	e3.3	e2.3	166	4.5	4.1	617	4.9	3.9
10	e2.8	e2.3	e2.2	e4.3	e3.2	e2.3	91	3.9	3.8	23	4.4	4.1
11	e2.4	e2.2	e2.3	4.2	e3.1	e2.3	341	3.9	3.5	4.5	4.2	3.7
12	e2.3	e2.2	e2.3	e4.0	e3.0	e2.3	330	3.5	3.5	3.7	5.5	3.7
13	e2.3	e2.1	e2.3	e3.7	e2.8	e2.3	211	3.3	3.3	4.7	5.4	5.1
14	e2.3	e2.1	2.4	e3.9	e2.7	e2.3	115	3.5	3.1	5.9	4.1	3.7
15	e2.3	e2.0	e2.4	e4.3	e2.7	e2.4	42	3.5	3.4	7.0	3.9	3.5
16	e2.3	2.0	e2.4	e4.1	e2.6	e3.5	8.1	3.6	3.6	7.7	4.5	3.4
17	e2.3	e2.0	e2.4	e4.0	e2.6	e3.7	7.1	3.7	4.0	5.2	4.8	3.1
18	e2.3	e2.0	e2.4	e6.0	e2.6	e3.3	6.4	3.5	3.9	4.0	4.4	2.8
19	2.3	e2.3	e2.5	e5.0	e2.6	e3.0	22	3.3	3.0	3.5	4.1	2.7
20	e2.2	e2.0	e2.6	e4.4	e2.6	e2.8	90	4.0	3.0	5.4	3.9	2.7
21	e2.2	e2.0	e2.6	e3.7	e2.6	e2.8	5.4	4.7	3.2	6.3	3.9	2.7
22	e2.2	e2.0	e2.6	e3.5	2.6	2.8	4.6	4.1	3.1	6.5	3.9	2.8
23	e2.2	e2.0	e2.6	e3.3	e2.5	e2.8	4.6	3.5	3.5	6.0	3.8	2.8
24	e2.2	e2.0	e2.6	e3.0	e2.5	e2.8	4.2	3.5	7.4	5.6	2.4	2.7
25	e2.2	e2.0	e2.6	2.6	e2.5	e2.7	4.1	3.7	4.7	5.3	1.9	2.5
26	e2.2	e2.0	e2.7	e2.6	e2.7	e2.7	4.0	3.3	4.1	5.2	1.7	2.2
27	e2.2	e2.0	e2.7	e2.7	e2.7	2.7	4.2	3.5	3.9	5.1	3.2	2.2
28	e2.2	e2.0	2.6	e2.8	e2.7	e2.7	4.4	3.1	4.1	5.1	3.1	2.2
29	e2.2	e2.1	e2.6	e3.1	---	e2.9	4.4	4.2	2130	5.3	2.2	2.3
30	e2.2	2.1	e2.6	e4.5	---	e2.8	4.2	5.7	1190	6.2	1.9	2.4
31	e2.2	---	e2.6	4.1	---	e2.7	---	3.5	---	5.4	1.8	---
TOTAL	74.0	64.2	74.5	113.4	88.1	82.7	21579.5	119.7	3420.6	1577.5	128.2	111.3
MEAN	2.39	2.14	2.40	3.66	3.15	2.67	719	3.86	114	50.9	4.14	3.71
MAX	3.4	2.6	2.7	6.0	6.0	3.7	15300	5.7	2130	617	6.7	11
MIN	2.1	2.0	2.1	2.6	2.5	2.3	2.7	3.1	2.9	3.5	1.7	1.7
AC-FT	147	127	148	225	175	164	42800	237	6780	3130	254	221

CAL YR 1990 TOTAL 15018.3 MEAN 41.1 MAX 10400 MIN 1.5 AC-FT 29790
WTR YR 1991 TOTAL 27433.7 MEAN 75.2 MAX 15300 MIN 1.7 AC-FT 54410

e Estimated

GUADALUPE RIVER BASIN

08177700 OLMOS CREEK AT DRESDEN DRIVE, SAN ANTONIO, TX
(Flood-hydrograph partial-record station)

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

DRAINAGE AREA.--21.2 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1968 to September 1981 (continuous-record station). Annual maximum, October 1982 to current year.

GAGE.--Water-stage recorder. Datum of gage is 726.10 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Recording rain gage at station, with one additional recording rain gage in the watershed. Rain gage and gage-height telemeters at station.

AVERAGE DISCHARGE.--13 years (water years 1968-81), 4.34 ft³/s (2.78 in/yr), 3,140 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,700 ft³/s Apr. 5, 1991 (gage height, 14.38 ft, from floodmark); maximum gage height, 14.82 ft (from floodmark) Sept. 13, 1978; no flow at times.
Maximum stage since 1935, that of Sept. 13, 1978.

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 9	0515	1,790	5.97	May 4	1615	768	4.79
Jan. 18	0530	1,250	5.45	May 8	0800	1,850	6.02
Feb. 4	0745	753	4.77	June 22	2245	2,430	6.54
Apr. 5	0200	*19,700	a*14.38	July 8	1015	776	4.80
Apr. 14	0545	1,090	5.26	Aug. 18	1815	1,750	5.93
May 3	1130	2,480	6.58	Aug. 23	2045	993	5.14

a From floodmark.

Minimum discharge, no flow most of year.

GUADALUPE RIVER BASIN

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	ZINC, DIS- SOLVED (UG/L AS ZN)	PCB, TOTAL (UG/L)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)	DI- ELDRIN TOTAL (UG/L)	DI- SYSTON TOTAL (UG/L)
JAN 18...	10	--	--	--	--	--	--	--	--	--	--
APR 05...	23	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	0.37	<0.010	<0.01
MAY 05...	--	--	--	--	--	--	--	--	--	--	--
MAY 03...	--	--	--	--	--	--	--	--	--	--	--
MAY 08...	--	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	0.26	<0.010	<0.01

DATE	ENDO- SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)
JAN 18...	--	--	--	--	--	--	--	--	--	--
APR 05...	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	0.01	<0.01	<0.01	<0.01
MAY 05...	--	--	--	--	--	--	--	--	--	--
MAY 03...	--	--	--	--	--	--	--	--	--	--
MAY 08...	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	0.09	<0.01	<0.01	<0.01

DATE	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	PHORATE TOTAL (UG/L)	SILVEX, TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)
JAN 18...	--	--	--	--	--	--	--	--	--	--
APR 05...	<0.01	<0.01	<0.1	<0.01	<0.01	<1	<0.01	0.04	0.02	<0.01
MAY 05...	--	--	--	--	--	--	--	--	--	--
MAY 03...	--	--	--	--	--	--	--	--	--	--
MAY 08...	<0.01	<0.01	<0.1	<0.01	<0.01	<1	<0.01	0.07	0.02	<0.01

GUADALUPE RIVER BASIN

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08177800 OLMOS RESERVOIR AT SAN ANTONIO, TX

LOCATION.--Lat 29°28'24", Long 98°28'26", Bexar County, Hydrologic Unit 12100301, in gate house near middle of dam on Olmos Drive, 0.8 mi upstream from Hildebrand Avenue, 1.5 mi upstream from Brackenridge Park Zoo, and 4.0 mi downstream from gaging station 08177700.

DRAINAGE AREA.--32.4 mi².

PERIOD OF RECORD.--Chemical and biochemical analyses: April 1989 to current year. Sediment Analyses: April 1989 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	HARD-NESS TOTAL (MG/L AS CAC03)
MAR 29...	1115	0.90	790	7.5	18.0	21	4.5	5.0	55	2.8	260
JUN 25...	1300	0.44	320	7.5	29.0	55	3.4	3.1	41	3.5	130
AUG 27...	0900	0.10	373	7.1	25.5	27	2.8	2.5	31	1.8	160
DATE	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	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)
MAR 29...	93	87	11	58	2	6.3	170	130	72	0.50	3.5
JUN 25...	36	47	3.3	13	0.5	5.1	95	41	16	0.30	7.8
AUG 27...	34	56	3.8	12	0.4	5.9	E121	39	13	0.20	11
DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L)	RESIDUE FIXED NON FILTER-ABLE (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	
MAR 29...	471	7	7	0	--	0.036	0.030	0.012	<0.050	0.048	
JUN 25...	192	8	6	2	0.330	0.283	0.040	0.037	0.370	0.320	
AUG 27...	214	3	3	0	0.230	0.217	0.040	0.041	0.270	0.258	
DATE	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 ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS ORTHO TOTAL (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS P04)	CARBON, ORGANIC TOTAL (MG/L AS C)	CYANIDE TOTAL (MG/L AS CN)	
MAR 29...	0.120	0.120	0.68	0.80	0.070	0.045	0.050	0.14	7.7	<0.010	
JUN 25...	0.180	0.156	0.82	1.0	0.120	0.070	0.070	0.21	11	<0.010	
AUG 27...	0.170	0.104	0.63	0.80	0.148	0.060	0.070	0.18	9.4	<0.010	
DATE	ALUM-INUM, TOTAL RECOV-ERABLE (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC TOTAL IN BOT-TOM MA-TERIAL (UG/G AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	BARIUM, RECOV. FM BOT-TOM MA-TERIAL (UG/G AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CADMIUM RECOV. FM BOT-TOM MA-TERIAL (UG/G AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	CHRO-MIUM, RECOV. FM BOT-TOM MA-TERIAL (UG/G AS CR)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	
MAR 29...	270	1	7	<100	40	<1	3	2	4	3	
JUN 25...	360	3	10	<100	50	<1	3	2	4	4	
AUG 27...	120	4	11	<100	30	<1	3	<1	6	2	
DATE	COPPER, RECOV. FM BOT-TOM MA-TERIAL (UG/G AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	LEAD, RECOV. FM BOT-TOM MA-TERIAL (UG/G AS PB)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	MERCURY RECOV. FM BOT-TOM MA-TERIAL (UG/G AS HG)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	
MAR 29...	6	280	5	20	<0.10	0.07	2	<1	<1	<10	
JUN 25...	6	470	2	10	<0.10	0.04	3	<1	<1	<10	
AUG 27...	6	290	3	10	<0.10	0.04	<1	<1	<1	<10	

GUADALUPE RIVER BASIN

08177820 SAN ANTONIO RIVER AT HILDEBRAND AVENUE, SAN ANTONIO, TX

LOCATION.--Lat 29°27'56", long 98°28'01", Bexar County, Hydrologic Unit 12100301, at downstream side of bridge on Hildebrand Avenue, 0.8 mi downstream from Olmos Dam in San Antonio.

DRAINAGE AREA.--34.8 mi².

PERIOD OF RECORD.--Chemical and biochemical analyses: April 1989 to current year. Sediment Analyses: April 1989 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	HARD-NESS TOTAL (MG/L AS CAC03)
MAR 26...	1115	1.4	483	7.4	24.0	4	1.6	7.3	89	1.4	230
JUN 27...	1025	2.0	475	7.6	24.5	1	2.0	6.7	82	1.4	240
JUL 31...	1036	1.7	479	7.2	24.0	--	--	7.3	89	--	--
AUG 28...	1200	1.6	480	7.4	24.5	2	1.4	7.2	88	0.3	230

DATE	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT DIS FIX END CAC03 (MG/L)	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)
MAR 26...	32	68	15	9.3	0.3	1.2	E200	16	20	0.20	12
JUN 27...	34	69	16	9.0	0.3	6.3	204	17	17	0.20	12
JUL 31...	--	--	--	--	--	--	--	--	--	--	--
AUG 28...	30	69	15	8.8	0.3	1.1	204	14	16	0.20	12

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L)	RESIDUE FIXED NON FILTER-ABLE (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)
MAR 26...	262	7	7	0	1.59	1.59	0.010	0.010	1.60	1.60
JUN 27...	268	5	5	0	--	1.09	<0.010	0.005	2.20	1.10
JUL 31...	--	--	--	--	--	--	--	--	--	--
AUG 28...	258	2	2	0	--	1.80	<0.010	0.002	1.80	1.80

DATE	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 ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS P04)	CARBON, ORGANIC TOTAL (MG/L AS C)	CYANIDE TOTAL (MG/L AS CN)
MAR 26...	0.010	0.010	0.39	0.40	0.020	0.008	<0.010	0.02	0.5	<0.010
JUN 27...	0.040	0.015	--	<0.20	0.010	0.002	<0.010	0.01	0.4	<0.010
JUL 31...	--	--	--	--	--	--	--	--	--	--
AUG 28...	0.020	0.007	0.58	0.60	0.023	0.018	<0.018	0.05	0.3	<0.010

DATE	ALUM-INUM, TOTAL RECOV-ERABLE (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC TOTAL IN BOT-TOM MA-TERIAL (UG/G AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	BARIUM, RECOV. FM BOT-TOM MA-TERIAL (UG/G AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CADMIUM RECOV. FM BOT-TOM MA-TERIAL (UG/G AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	CHRO-MIUM, RECOV. FM BOT-TOM MA-TERIAL (UG/G AS CR)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)
MAR 26...	80	<1	4	100	20	<1	3	2	6	2
JUN 27...	40	<1	7	<100	40	<1	3	9	4	2
JUL 31...	--	--	--	--	--	--	--	--	--	--
AUG 28...	50	<1	5	<100	50	<1	4	<1	9	<1

08177820 SAN ANTONIO RIVER AT HILDEBRAND AVENUE, SAN ANTONIO, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	COPPER, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS PB)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	MERCURY RECOV. FM BOT- TOM MA- TERIAL (UG/G AS HG)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	SELE- NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)
MAR 26...	7	90	1	50	<0.10	0.02	2	<1	<1	<10
JUN 27...	7	40	<1	40	<0.10	0.04	4	<1	<1	<10
JUL 31...	--	--	--	--	--	--	--	--	--	--
AUG 28...	10	60	2	90	<0.10	0.05	5	<1	<1	<10

GUADALUPE RIVER BASIN

08177860 SAN ANTONIO RIVER AT WOODLAWN AVENUE, SAN ANTONIO, TX

LOCATION.--Lat 28°27'04", long 98°28'42", Bexar County, Hydrologic Unit 12100301, on left bank approximately 200 ft downstream from an abandoned low water crossing, 2.6 mi downstream from Olmos Dam in San Antonio.

DRAINAGE AREA.--36.4 mi².

PERIOD OF RECORD.--Chemical and biochemical analyses: April 1989 to current year. Sediment Analyses: April 1989 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

		DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	HARD-NESS TOTAL (MG/L AS CAC03)
MAR 25...	1100	7.2	500	7.4	21.0	2	4.0	6.8	78	1.7	240
JUN 26...	1150	7.8	431	7.6	27.0	13	5.4	5.8	74	1.6	210
JUL 30...	1215	6.8	487	7.6	27.0	--	--	6.3	81	--	--
AUG 29...	0820	6.2	478	7.4	26.0	1	3.3	5.8	73	1.1	250
DATE	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	SULFATE DIS-SOLVED (MG/L AS S04)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SiO2)
MAR 25...	29	71	15	10	0.3	1.8	210	17	20	0.20	12
JUN 26...	27	63	12	9.2	0.3	2.7	180	15	19	0.20	11
JUL 30...	--	--	--	--	--	--	--	--	--	--	--
AUG 29...	46	73	16	10	0.3	2.3	202	16	17	0.20	11
DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L)	RESIDUE FIXED NON FILTER-ABLE (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	
MAR 25...	273	6	6	0	1.46	1.57	0.040	0.032	1.50	1.60	
JUN 26...	240	12	6	6	1.36	1.26	0.040	0.038	1.40	1.30	
JUL 30...	--	--	--	--	--	--	--	--	--	--	
AUG 29...	266	8	8	0	1.36	1.16	0.040	0.041	1.40	1.20	
DATE	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 ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS ORTHO TOTAL (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS P04)	CARBON, ORGANIC TOTAL (MG/L AS C)	CYANIDE TOTAL (MG/L AS CN)	
MAR 25...	0.090	0.099	0.31	0.40	0.030	0.025	0.020	0.08	1.2	<0.010	
JUN 26...	0.110	0.101	0.29	0.40	0.060	0.046	0.050	0.14	2.9	<0.010	
JUL 30...	--	--	--	--	--	--	--	--	--	--	
AUG 29...	0.060	0.040	0.34	0.40	0.048	0.019	0.030	0.06	1.5	<0.010	
DATE	ALUM-INUM, TOTAL RECOV-ERABLE (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC TOTAL IN BOT-TOM MA-TERIAL (UG/G AS AS)	BARIIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	BARIIUM, RECOV. FM BOT-TOM MA-TERIAL (UG/G AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CADMIUM RECOV. FM BOT-TOM MA-TERIAL (UG/G AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	CHRO-MIUM, RECOV. FM BOT-TOM MA-TERIAL (UG/G AS CR)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	
MAR 25...	130	<1	1	<100	30	<1	3	1	1	3	
JUN 26...	160	1	2	<100	30	<1	2	<1	2	3	
JUL 30...	--	--	--	--	--	--	--	--	--	--	
AUG 29...	160	2	2	100	20	<1	1	<1	3	2	

GUADALUPE RIVER BASIN

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08177860 SAN ANTONIO RIVER AT WOODLAWN AVENUE, SAN ANTONIO, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	COPPER, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS PB)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	MERCURY RECOV. FM BOT- TOM MA- TERIAL (UG/G AS HG)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	SELE- NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)
MAR 25...	4	150	4	<10	<0.10	0.02	2	<1	<1	<10
JUN 26...	7	300	1	20	<0.10	<0.01	1	<1	<1	<10
JUL 30...	--	--	--	--	--	--	--	--	--	--
AUG 29...	4	250	3	30	0.10	0.01	<1	<1	<1	<10

GUADALUPE RIVER BASIN

08178000 SAN ANTONIO RIVER AT SAN ANTONIO, TX

LOCATION.--Lat 29°24'34", long 98°29'41", Bexar County, Hydrologic Unit 12100301, on left bank 193 ft downstream from South Alamo Street Bridge in San Antonio, 2.1 mi upstream from San Pedro Creek, and 230.6 mi upstream from mouth.

DRAINAGE AREA.--41.8 mi². Flow of river comes from intermittent spring flow and from artesian wells; drainage area of streams not applicable.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--December 1895 to June 1906 (periodic discharge measurements only), January 1915 to November 1929, February 1939 to current year. Ground-water discharge into river is discussed by Petit and George, Texas Board of Water Engineers Bull. 5608, vol. 1 (1956, p. 45).

REVISED RECORDS.--WSP 1312: 1917. WSP 1923: Drainage area. WRD TX-72-1: 1971(m).

GAGE.--Water-stage recorder and concrete control. Datum of gage is 605.26 ft above National Geodetic Vertical Datum of 1929. Jan. 26, 1915, to Feb. 27, 1916, nonrecording gage at site 1.3 mi upstream at different datum. Feb. 28, 1916, to Apr. 7, 1920, nonrecording gage at site 1.1 mi upstream at different datum. Apr. 8, 1920, to Nov. 16, 1929, and Feb. 15, 1939, to Apr. 25, 1967, water-stage recorder in vicinity of South Alamo Street Bridge at 7.00-foot higher datum. Apr. 25, 1967, to May 13, 1969, water-stage recorder at site 307 ft downstream at same datum.

REMARKS.--Records good. Flood flow is regulated by Olmos flood-control reservoir (capacity, 14,240 acre-ft), about 8.5 mi upstream. Olmos Dam was completed in 1926 and rebuilt in 1980. Springs emerge intermittently from the Edwards and associated limestones along the Balcones Fault Zone upstream from station.

AVERAGE DISCHARGE.--66 years, 54.0 ft³/s (17.54 in/yr), 39,120 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,300 ft³/s Sept. 10, 1921 (gage height, 20.14 ft, from floodmark), at former site and datum, from rating curve extended above 2,000 ft³/s on basis of slope-area measurement of peak flow; no flow at times due to regulation.
Maximum stage since 1819, that of Sept. 10, 1921.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 5, 1819, equaled or exceeded that of Sept. 10, 1921.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,210 ft³/s Jan. 18 at 0530 hours (gage height, 12.71 ft); minimum daily, 0.58 ft³/s Feb. 23.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	13	13	16	13	20	38	16	23	16	8.4	14	181		
2	14	13	16	78	20	20	15	85	16	18	12	7.0		
3	13	13	14	26	20	17	16	304	14	16	14	6.4		
4	14	118	16	25	537	37	16	362	16	31	14	13		
5	14	9.2	17	29	38	21	972	61	15	25	14	54		
6	15	.59	16	14	36	12	803	9.1	15	18	16	9.8		
7	14	10	16	5.6	32	6.5	626	11	15	16	18	17		
8	13	346	16	1.4	23	22	15	342	14	174	14	59		
9	475	36	15	87	22	21	.97	28	14	12	13	8.4		
10	12	12	15	18	21	18	23	13	16	6.9	14	7.8		
11	1.1	15	15	5.0	19	18	24	21	12	14	14	16		
12	13	15	16	2.7	18	17	25	20	51	16	14	26		
13	13	15	16	10	20	18	35	60	11	15	14	38		
14	11	15	14	13	19	17	248	24	14	15	14	34		
15	13	15	15	15	19	86	36	19	25	16	15	25		
16	13	14	16	15	19	79	18	29	107	16	13	16		
17	13	15	16	80	19	16	10	28	27	15	13	15		
18	13	14	16	783	19	17	26	21	2.4	15	70	13		
19	13	13	16	22	80	19	32	24	14	15	65	14		
20	13	13	16	16	20	17	27	35	14	15	4.9	14		
21	146	16	16	6.3	13	18	24	21	15	15	13	13		
22	7.3	17	15	3.8	.70	18	25	20	85	21	14	13		
23	1.5	17	16	58	.58	17	24	20	e700	29	68	20		
24	13	15	17	73	15	18	24	19	e30	15	128	56		
25	13	16	16	14	18	17	24	19	e16	15	13	9.0		
26	9.9	16	17	17	17	18	24	18	15	17	7.7	1.3		
27	13	16	16	19	17	17	24	20	15	15	4.0	11		
28	13	15	15	19	18	17	24	20	15	15	12	13		
29	13	15	14	20	---	17	24	20	22	15	12	13		
30	13	16	14	47	---	20	24	17	85	15	14	12		
31	13	---	13	21	---	30	---	14	---	15	23	---		
TOTAL	968.8	873.79	482	1556.8	1120.28	723.5	3224.97	1727.1	1426.4	664.3	688.6	735.7		
MEAN	31.3	29.1	15.5	50.2	40.0	23.3	107	55.7	47.5	21.4	22.2	24.5		
MAX	475	346	17	783	537	86	972	362	700	174	128	181		
MIN	1.1	.59	13	1.4	.58	6.5	.97	9.1	2.4	6.9	4.0	1.3		
AC-FT	1920	1730	956	3090	2220	1440	6400	3430	2830	1320	1370	1460		
CFSM	.75	.70	.37	1.20	.96	.56	2.57	1.33	1.14	.51	.53	.59		
IN.	.86	.78	.43	1.39	1.00	.64	2.87	1.54	1.27	.59	.61	.65		
CAL YR 1990	TOTAL	14442.13	MEAN	39.6	MAX	1260	MIN	.09	AC-FT	28650	CFSM	.95	IN.	12.85
WTR YR 1991	TOTAL	14192.24	MEAN	38.9	MAX	972	MIN	.58	AC-FT	28150	CFSM	.93	IN.	12.63

e Estimated

08178000 SAN ANTONIO RIVER AT SAN ANTONIO, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: June 1965 to current year. Sediment analyses: October 1968 to September 1973.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

		DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, BIO-FECAL, 0.7 UM-MF (COLS./100 ML)
JAN 03...	0730	25	445	7.8	13.5	6	10	8.5	84	4.3	16000
APR 05...	1010	1160	176	7.9	18.0	70	440	8.8	95	7.7	32000
06...	1240	749	135	7.9	18.5	25	190	9.4	103	3.8	60000
JUN 26...	1135	18	405	7.8	27.0	22	10	7.2	92	2.8	5200
AUG 28...	0950	20	420	7.7	27.0	10	1.7	7.3	94	1.9	3300
DATE	STREP-TOCOCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	SULFATE DIS-SOLVED (MG/L AS S04)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
JAN 03...	63000	210	27	62	14	12	0.4	2.8	190	24	14
APR 05...	88000	87	0	32	1.8	3.7	0.2	4.4	140	5.5	13
06...	17000	120	12	45	2.6	2.7	0.1	4.2	110	7.8	2.6
JUN 26...	960	160	62	51	8.5	18	0.6	3.0	100	24	27
AUG 28...	800	170	27	53	9.7	17	0.6	3.0	150	21	29
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)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L)	RESIDUE FIXED NON FILTER-ABLE (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)
JAN 03...	0.40	10	251	<1	<1	--	1.58	0.020	1.60	0.050	0.45
APR 05...	0.10	6.5	150	878	208	670	0.390	0.210	0.600	0.280	1.5
06...	<0.10	5.7	137	211	47	164	0.320	0.260	0.580	0.320	0.58
JUN 26...	0.20	8.1	200	20	3	17	1.27	0.030	1.30	0.040	0.56
AUG 28...	0.20	6.4	227	6	6	0	1.06	0.040	1.10	0.100	0.40
DATE	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS TOTAL (MG/L AS P)	PHOS-PHORUS ORTHO 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)	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)
JAN 03...	0.50	0.110	0.060	3.6	--	--	--	--	--	--	--
APR 05...	1.8	0.690	0.350	15	3	23	<0.5	<1.0	<5	<3	<10
06...	0.90	0.310	0.310	11	--	--	--	--	--	--	--
JUN 26...	0.60	0.100	0.050	4.5	--	--	--	--	--	--	--
AUG 28...	0.50	0.090	0.030	4.5	1	46	<0.5	<1.0	<5	<3	<10
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)
JAN 03...	--	--	--	--	--	--	--	--	--	--	--
APR 05...	160	<10	<4	1	<0.1	<10	<10	<1	<1.0	110	<6
06...	--	--	--	--	--	--	--	--	--	--	--
JUN 26...	--	--	--	--	--	--	--	--	--	--	--
AUG 28...	6	<10	6	<1	<0.1	20	<10	<1	<1.0	530	<6

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

[illegible]

GUADALUPE RIVER BASIN

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08178565 SAN ANTONIO RIVER AT LOOP 410 AT SAN ANTONIO, TX

LOCATION.--Lat 29°19'19", long 98°27'00", Bexar County, Hydrologic Unit 12100301, on right bank between westbound bridges on Interstate Highway 410 in San Antonio, 4.5 mi upstream from Salado Creek, and 222.3 mi upstream from mouth. Prior to Aug. 16, 1989, at site 0.2 mi downstream.

DRAINAGE AREA.--125 mi². Flow of river comes from intermittent springflow and from artesian wells; drainage area of streams not applicable.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1986 to current year.

GAGE.--Water-stage recorder. Discharges estimated prior to installation of water-stage recorder on Dec. 20, 1986. Datum of gage is 488.11 ft above National Geodetic Vertical Datum of 1929. Dec. 20, 1986, to Aug. 15, 1989, at site 0.2 mi downstream at Camino Coahuilteca crossing at same datum.

REMARKS.--Records good. Satellite telemeter at station.

AVERAGE DISCHARGE.--5 years, 128 ft³/s (92,740 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 64,300 ft³/s July 15, 1990 (gage height, 32.20 ft, from floodmark), from rating curve extended above 8,400 ft³/s; minimum daily, 6.3 ft³/s Jan. 14, 1990.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 16,200 ft³/s June 23 at 0100 hours (gage height, 21.75 ft); minimum daily, 8.3 ft³/s Jan. 8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	24	24	17	30	85	29	39	25	90	17	306
2	13	24	23	116	31	54	24	395	26	35	18	77
3	13	24	22	73	28	43	22	539	29	43	16	36
4	14	273	21	69	1310	58	22	443	23	133	19	20
5	16	44	21	71	161	42	1860	146	27	78	16	57
6	28	17	21	41	67	42	833	58	16	37	16	80
7	15	18	20	20	57	26	1010	32	22	29	69	29
8	14	805	21	8.3	52	29	121	894	20	387	23	51
9	942	179	22	156	39	35	50	149	21	102	14	37
10	96	39	23	85	40	35	49	52	25	23	14	11
11	16	44	22	30	36	36	54	67	23	25	14	20
12	16	42	22	9.6	35	38	53	58	80	26	13	73
13	22	39	22	14	38	32	62	185	e30	25	12	169
14	22	37	21	21	36	28	611	70	e40	24	13	95
15	22	35	15	24	34	153	92	51	e70	24	14	54
16	22	35	15	26	34	200	67	130	e300	25	16	23
17	19	36	17	42	39	66	41	e100	270	20	11	20
18	18	30	16	2800	37	24	52	e56	24	21	36	18
19	17	21	16	80	210	30	53	e60	33	15	162	17
20	17	23	17	43	49	29	69	88	23	10	12	23
21	347	24	18	35	38	29	51	46	21	11	12	19
22	83	24	16	17	22	24	49	44	150	11	18	18
23	23	25	16	21	16	25	44	e40	2160	37	227	130
24	21	25	19	256	22	28	44	e40	51	18	279	133
25	26	24	19	27	40	28	45	47	17	12	27	83
26	28	23	21	30	34	25	45	48	17	46	18	17
27	23	28	22	28	33	27	43	e33	24	32	9.0	12
28	24	25	20	27	34	26	40	32	26	19	12	17
29	24	22	18	27	---	27	49	32	40	18	16	16
30	24	24	19	99	---	23	41	31	125	18	17	15
31	24	---	20	44	---	e40	---	31	---	18	51	---
TOTAL	2002	2033	609	4356.9	2602	1387	5625	4036	3758	1412	1211.0	1676
MEAN	64.6	67.8	19.6	141	92.9	44.7	187	130	125	45.5	39.1	55.9
MAX	942	805	24	2800	1310	200	1860	894	2160	387	279	306
MIN	13	17	15	8.3	16	23	22	31	16	10	9.0	11
AC-FT	3970	4030	1210	8640	5160	2750	11160	8010	7450	2800	2400	3320
CAL YR 1990	TOTAL	38713.9	MEAN	106	MAX	12100	MIN	6.3	AC-FT	76790		
WTR YR 1991	TOTAL	30707.9	MEAN	84.1	MAX	2800	MIN	8.3	AC-FT	60910		

e Estimated

GUADALUPE RIVER BASIN

08178565 SAN ANTONIO RIVER AT LOOP 410 AT SAN ANTONIO, TX--Continued

WATER QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: March 1987 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: December 1986 to August 1988.

pH: December 1986 to August 1988.

WATER TEMPERATURE: December 1986 to August 1988.

DISSOLVED OXYGEN: December 1986 to August 1988.

INSTRUMENTATION.--From December 1986 to August 1988 specific conductance, pH, water temperature, and dissolved oxygen were recorded continuously at this station.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 980 microsiemens Apr. 22, 1987; minimum, 130 microsiemens Dec. 22, 1986.

pH: Maximum, 8.7 units on several days during 1988; minimum, 7.1 units June 12, 1987.

WATER TEMPERATURE: Maximum, 36.0°C Aug. 6, 9, 10, 1988; minimum, 11.5°C Dec. 15, 1987, Jan. 9, 1988.

DISSOLVED OXYGEN: Maximum, 15.3 mg/L May 25, 1988; minimum, 0.5 mg/L May 21, July 21, 1988.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	
OCT 16...	0918	23	634	7.6	22.5	8.4	100	2.1	230	54	
DEC 13...	0848	23	738	7.8	14.0	9.3	93	1.0	260	44	
27...	1327	26	726	8.1	17.0	8.5	90	--	--	--	
JAN 10...	0944	109	376	7.2	15.0	9.9	101	--	--	--	
24...	0806	383	260	7.1	14.0	10.0	100	--	--	--	
FEB 07...	0850	73	305	7.7	14.0	10.4	103	--	--	--	
21...	0810	91	590	7.7	16.0	9.7	101	--	--	--	
APR 04...	1045	22	643	8.2	21.5	12.0	139	--	--	--	
05...	1220	1380	205	7.5	18.5	8.8	95	6.4	81	0	
MAY 16...	0745	42	576	7.8	26.0	8.2	104	1.8	220	39	
31...	1030	25	672	8.1	27.5	8.3	109	--	--	--	
JUN 27...	0925	27	650	7.8	28.5	8.2	108	2.2	220	56	
AUG 27...	1110	5.5	471	8.0	28.0	9.8	128	1.4	180	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 WAT DIS FIX END FIELD CAC03 (MG/L)	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 16...	68	14	40	1	4.4	170	58	51	0.30	11	
DEC 13...	72	19	41	1	3.0	210	38	50	0.30	7.1	
27...	--	--	--	--	--	--	--	--	--	--	
JAN 10...	--	--	--	--	--	--	--	--	--	--	
24...	--	--	--	--	--	--	--	--	--	--	
FEB 07...	--	--	--	--	--	--	--	--	--	--	
21...	--	--	--	--	--	--	--	--	--	--	
APR 04...	--	--	--	--	--	--	--	--	--	--	
05...	29	2.1	7.2	0.3	3.5	130	11	7.1	0.10	5.1	
MAY 16...	65	13	28	0.8	3.7	180	53	43	0.30	8.0	
31...	--	--	--	--	--	--	--	--	--	--	
JUN 27...	68	13	44	1	4.6	170	80	53	0.30	13	
AUG 27...	55	9.9	27	0.9	3.6	140	48	35	0.30	9.4	

GUADALUPE RIVER BASIN

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08178565 SAN ANTONIO RIVER AT LOOP 410 AT SAN ANTONIO, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (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)	PHOS- PHORUS ORTHO TOTAL (MG/L AS P)
OCT 16...	350	1.37	0.030	1.40	0.050	0.45	0.50	0.070	0.010
DEC 13...	359	1.56	0.040	1.60	0.050	0.25	0.30	0.020	<0.010
27...	--	--	--	--	--	--	--	--	--
JAN 10...	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--	--	--
FEB 07...	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--
APR 04...	--	--	--	--	--	--	--	--	--
05...	142	0.390	0.180	0.570	0.230	0.67	0.90	0.300	0.260
MAY 16...	320	1.37	0.030	1.40	0.040	0.36	0.40	0.040	<0.010
31...	--	--	--	--	--	--	--	--	--
JUN 27...	376	1.06	0.040	1.10	0.060	0.44	0.50	0.040	0.020
AUG 27...	273	0.570	0.020	0.590	0.030	0.47	0.50	0.030	<0.010

GUADALUPE RIVER BASIN

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

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

DRAINAGE AREA.--137 mi².

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder with concrete control. Datum of gage is 684.60 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair. There are some diversions upstream from gage for irrigation. Flow is affected at times by discharge from the flood-detention pools of eleven floodwater-retarding structures with a combined detention capacity of 26,770 acre-ft. These structures control runoff from 74.6 mi² above this station. Recording rain gage at station with two additional recording rain gages in the watershed.

AVERAGE DISCHARGE.--31 years, 9.61 ft³/s (6,960 acre-ft/yr).

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

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 12,900 ft³/s Apr. 5 at 0600 hours (gage height, 12.04 ft); no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.09	.01	.00	.14	1.4	4.8	.53	3.3	1.5	3.2	.73	.84
2	.09	.00	.00	4.9	2.5	3.0	.25	5.1	1.5	.45	.86	1.9
3	.08	.00	.00	2.1	2.9	2.6	.18	820	1.3	.17	.93	2.9
4	.03	10	.00	1.2	174	2.5	.79	152	1.5	.17	.86	.40
5	.01	1.2	.00	1.7	27	2.6	2750	102	1.3	.15	.62	.11
6	.09	.16	.01	.81	10	2.5	328	12	.91	.14	.93	.07
7	.11	.09	.00	.32	9.0	1.5	162	8.3	5.1	.14	.92	.08
8	.09	51	.00	.16	6.9	.64	20	65	1.1	16	.93	.09
9	175	35	.00	5.3	3.5	.60	9.9	22	.32	3.0	.87	.09
10	13	3.8	.00	3.1	3.2	.51	8.4	10	.61	.78	.77	.07
11	6.6	1.8	.00	.89	2.9	.51	8.5	8.5	.28	.40	.63	.05
12	6.1	1.3	.00	.41	2.9	.60	8.4	7.6	.14	.39	.63	.10
13	5.0	e1.1	.00	.23	2.9	.40	9.2	14	.13	.26	.61	.11
14	.53	e.90	.00	.14	2.9	.32	62	8.4	.13	.24	.51	.14
15	.12	e.70	.02	.15	2.6	2.8	15	8.0	.28	.24	.76	1.8
16	.10	e.50	.05	.14	1.6	4.4	8.1	7.3	.36	.24	.77	.13
17	.08	.43	.07	.23	1.3	8.4	7.5	7.6	.29	.24	.83	.09
18	.03	.12	.01	241	2.8	2.1	7.6	7.1	.18	.75	.64	.07
19	.01	.09	.00	19	17	1.3	7.1	7.1	.14	.93	.63	.09
20	.01	.09	.01	4.2	8.2	1.2	6.6	6.5	.25	.76	.65	.16
21	8.9	.18	.04	4.8	3.0	.91	7.0	6.8	.18	.38	.61	.08
22	1.8	.36	.00	5.1	2.6	.72	8.3	8.0	.33	2.0	.53	.04
23	.33	.12	.00	5.4	1.8	.52	8.6	3.9	13	2.7	.62	.04
24	.14	.12	.00	14	1.1	.40	5.7	2.1	5.5	.67	.54	.05
25	.11	.09	.00	5.2	.66	.40	1.9	2.3	.92	.40	.16	.52
26	.08	.07	.08	1.6	2.3	.40	3.7	2.2	.25	.43	.17	.10
27	.19	.06	.06	1.2	2.9	.30	3.9	1.8	.16	.40	.17	.04
28	.11	.01	.03	1.1	2.9	.32	4.1	1.8	.21	.40	.18	.02
29	.07	.00	.05	1.1	---	.46	4.3	1.8	.25	.57	.18	.02
30	.01	.00	.11	7.0	---	.37	3.6	1.7	1.3	.77	.17	.00
31	.00	---	.12	2.1	---	.84	---	1.5	---	.72	.28	---
TOTAL	218.91	109.30	0.66	334.72	302.76	48.92	3471.15	1315.7	39.42	38.09	18.69	10.20
MEAN	7.06	3.64	.021	10.8	10.8	1.58	116	42.4	1.31	1.23	.60	.34
MAX	175	51	.12	241	174	8.4	2750	820	13	16	.93	2.9
MIN	.00	.00	.00	.14	.66	.30	.18	1.5	.13	.14	.16	.00
AC-FT	434	217	1.3	664	601	97	6890	2610	78	76	37	20

CAL YR 1990 TOTAL 2451.73 MEAN 6.72 MAX 664 MIN .00 AC-FT 4860
WTR YR 1991 TOTAL 5908.52 MEAN 16.2 MAX 2750 MIN .00 AC-FT 11720

e Estimated

GUADALUPE RIVER BASIN

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

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

		DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI, KF AGAR (COLS. PER 100 ML)	
JAN 18...	0730	598	161	8.9	10.5	120	570	10.6	97	2.7	K12000	120000	
JAN 18...	1320	258	129	8.1	10.5	10	100	10.2	94	1.8	--	170000	
MAR 28...	1100	0.20	556	7.6	20.0	20	2.6	7.0	80	3.0	--	--	
APR 05...	0920	3250	162	7.9	17.0	22	69	8.4	89	5.4	--	--	
JUN 25...	1230	0.93	346	7.6	28.0	55	3.7	6.6	86	4.0	--	--	
JUN 27...	1015	0.40	384	7.6	27.5	30	2.0	4.3	55	2.2	110	260	
JUL 31...	1030	0.77	532	7.6	27.0	--	--	4.6	59	--	--	--	
AUG 28...	1000	0.19	635	7.5	26.5	6	0.30	4.0	51	1.2	--	--	
AUG 28...	1015	0.19	635	7.5	26.5	2	0.60	4.0	51	1.2	2000	530	
DATE		HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	SULFATE DIS-SOLVED (MG/L AS S04)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SI02)
JAN 18...	160	0	60	1.8	7.9	0.3	8.1	160	17	9.7	0.20	9.8	
JAN 18...	77	0	29	1.2	3.4	0.2	5.5	81	8.4	5.0	0.10	5.2	
MAR 28...	210	37	75	6.5	23	0.7	10	180	69	31	0.40	8.5	
APR 05...	--	--	--	1.9	3.0	--	4.9	52	5.3	14	<0.10	21	
JUN 25...	140	20	51	3.4	12	0.4	9.5	120	21	15	0.20	11	
JUN 27...	150	18	55	3.8	12	0.4	9.1	130	29	16	0.30	11	
JUL 31...	--	--	--	--	--	--	--	--	--	--	--	--	
AUG 28...	270	38	96	7.1	22	0.6	10	230	58	33	0.30	15	
AUG 28...	260	34	94	7.2	23	0.6	11	230	57	33	0.30	15	
DATE		SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L)	RESIDUE FIXED NON FILTER-ABLE (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)
JAN 18...	213	1550	408	1140	0.470	--	0.030	--	0.500	--	0.050	--	
JAN 18...	106	164	39	125	0.470	--	0.030	--	0.500	--	0.050	--	
MAR 28...	330	18	8	10	--	0.026	<0.010	0.003	<0.050	0.029	0.030	0.033	
APR 05...	--	89	29	60	0.110	--	0.050	--	0.160	--	0.030	--	
JUN 25...	196	9	6	3	--	0.027	<0.010	0.010	0.150	0.037	0.040	0.014	
JUN 27...	217	2	2	0	--	--	<0.010	--	<0.050	--	0.040	--	
JUL 31...	--	--	--	--	--	--	--	--	--	--	--	--	
AUG 28...	380	<1	<1	--	--	0.032	<0.010	0.001	<0.050	0.033	0.030	0.002	
AUG 28...	380	1	1	0	--	--	<0.010	--	<0.050	--	0.030	--	

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	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 ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHO TOTAL (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS PO4)	CARBON, ORGANIC TOTAL (MG/L AS C)	CYANIDE TOTAL (MG/L AS CN)	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)
JAN 18...	0.55	0.60	0.300	--	0.180	--	12	--	--	--	2	--
JAN 18...	0.55	0.60	0.290	--	0.220	--	8.0	--	--	--	--	--
MAR 28...	0.47	0.50	0.020	<0.001	<0.010	--	5.9	<0.010	90	1	--	<100
APR 05...	0.47	0.50	0.080	--	0.020	--	4.6	--	--	--	2	--
JUN 25...	0.96	1.0	0.120	0.056	0.050	0.17	9.5	<0.010	210	3	--	<100
JUN 27...	0.56	0.60	0.080	--	0.030	--	8.4	--	--	--	--	--
JUL 31...	--	--	--	--	--	--	--	--	--	--	--	--
AUG 28...	0.37	0.40	0.021	0.020	0.010	0.06	3.7	<0.010	20	2	--	100
AUG 28...	0.37	0.40	0.030	--	<0.010	--	3.6	--	--	--	2	--
DATE	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)
JAN 18...	73	<0.5	--	<1.0	--	<5	<3	--	<10	--	590	--
JAN 18...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 28...	--	--	<1	--	2	--	--	2	--	120	--	2
APR 05...	54	0.9	--	<1.0	--	<5	<3	--	<10	--	1600	--
JUN 25...	--	--	<1	--	2	--	--	4	--	300	--	1
JUN 27...	--	--	--	--	--	--	--	--	--	--	--	--
JUL 31...	--	--	--	--	--	--	--	--	--	--	--	--
AUG 28...	--	--	<1	--	<1	--	--	<1	--	80	--	<1
AUG 28...	79	<0.5	--	2.0	--	<5	<3	--	<10	--	9	--
DATE	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG)	SILVER, DIS- SOLVED (UG/L AS AG)
JAN 18...	<10	580	57	--	0.2	<10	--	<10	--	<1	--	<1.0
JAN 18...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 28...	--	--	--	0.40	--	--	3	--	<1	--	<1	--
APR 05...	10	89	170	--	<0.1	<10	--	<10	--	<1	--	<1.0
JUN 25...	--	--	--	<0.10	--	--	3	--	<1	--	<1	--
JUN 27...	--	--	--	--	--	--	--	--	--	--	--	--
JUL 31...	--	--	--	--	--	--	--	--	--	--	--	--
AUG 28...	--	--	--	<0.10	--	--	<1	--	<1	--	<1	--
AUG 28...	<10	180	29	--	<0.1	<10	--	<10	--	<1	--	2.0
DATE	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)	PCB, TOTAL (UG/L)	NAPH- THA- LENES, POLY- CHLOR, TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)
JAN 18...	160	11	--	16	--	--	--	--	--	--	--	--
JAN 18...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 28...	--	--	<10	--	--	--	--	--	--	--	--	--
APR 05...	130	14	--	36	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	0.18
JUN 25...	--	--	<10	--	--	--	--	--	--	--	--	--
JUN 27...	--	--	--	--	--	--	--	--	--	--	--	--
JUL 31...	--	--	--	--	--	--	--	--	--	--	--	--
AUG 28...	--	--	<10	--	--	--	--	--	--	--	--	--
AUG 28...	400	6	--	10	--	--	--	--	--	--	--	--

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

[illegible]

GUADALUPE RIVER BASIN

08178800 SALADO CREEK (LOWER STATION) AT SAN ANTONIO, TX

LOCATION.--Lat 29°21'25", long 98°24'45", Bexar County, Hydrologic Unit 12100301, on right bank at upstream side of bridge on Loop 13 at San Antonio, 1.4 mi east of Brooks Air Force Base, and 3.3 mi upstream from Rosillo Creek.

DRAINAGE AREA.--189 mi².

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 526.95 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good, including those of estimated discharges. Several small diversions above station. Recording rain gages in watershed above station. Most of low flow comes from artesian wells and springs in the city of San Antonio. For statement regarding regulation by Soil Conservation Service floodwater-retarding structures, see station 08178700. Satellite telemeter at station.

AVERAGE DISCHARGE.--31 years, 42.2 ft³/s (3.03 in/yr), 30,570 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,100 ft³/s Sept. 27, 1973 (gage height, 28.83 ft); no flow Aug. 13, 1967.
Maximum stage since at least 1941, that of Sept. 27, 1973.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods of Sept. 27, 1946, and Aug. 15, 1960, were about equal magnitude. Flood of Aug. 15, 1960, reached a stage of 26.8 ft, from floodmarks.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,910 ft³/s Apr. 5 at 1600 hours (gage height, 21.19 ft, from floodmark); minimum daily, 6.9 ft³/s Sept. 21, 29, 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	18	15	12	26	25	17	23	15	41	8.4	47
2	19	17	15	15	23	27	14	27	15	32	7.7	78
3	20	17	15	38	22	20	13	122	15	16	7.9	27
4	20	30	13	22	400	18	14	857	18	13	8.3	19
5	20	55	13	19	151	17	1610	202	15	18	8.7	13
6	20	36	13	19	48	17	575	59	15	14	9.0	17
7	e20	20	13	15	36	17	673	32	20	14	10	14
8	e20	94	13	12	32	17	112	252	16	127	13	11
9	250	200	13	25	30	16	58	175	16	80	10	10
10	130	47	13	41	26	16	47	43	14	20	9.7	9.6
11	80	27	13	22	27	16	43	33	19	14	10	8.1
12	33	22	13	15	24	15	42	28	13	13	10	7.5
13	30	19	12	13	23	15	40	67	11	13	9.3	9.4
14	27	19	13	12	22	15	244	43	11	12	9.0	19
15	26	18	12	11	21	24	98	26	15	13	8.8	39
16	23	17	12	11	21	49	45	26	16	12	9.2	16
17	21	17	12	11	20	44	38	31	37	12	9.8	9.7
18	21	17	12	1500	20	25	36	26	13	12	10	7.0
19	20	17	11	160	55	18	36	24	14	11	10	7.0
20	20	16	12	46	42	16	92	23	12	12	9.6	7.4
21	50	16	12	33	26	17	37	22	10	13	11	6.9
22	81	16	12	30	23	16	33	20	15	12	9.3	8.0
23	33	16	12	28	21	15	30	23	127	63	11	14
24	27	15	12	68	20	14	30	20	34	18	27	16
25	21	16	12	46	19	14	29	18	19	12	15	19
26	21	16	12	29	19	14	28	18	15	12	10	11
27	20	15	13	25	19	15	26	17	12	12	7.7	7.7
28	19	15	12	23	19	14	26	17	12	10	13	7.7
29	18	15	12	22	---	14	25	17	13	11	11	6.9
30	18	14	12	28	---	14	25	18	28	9.5	7.6	6.9
31	18	---	12	41	---	20	---	16	---	8.3	8.3	---
TOTAL	1166	877	391	2392	1235	594	4136	2325	605	679.8	319.3	479.8
MEAN	37.6	29.2	12.6	77.2	44.1	19.2	138	75.0	20.2	21.9	10.3	16.0
MAX	250	200	15	1500	400	49	1610	857	127	127	27	78
MIN	18	14	11	11	19	14	13	16	10	8.3	7.6	6.9
AC-FT	2310	1740	776	4740	2450	1180	8200	4610	1200	1350	633	952
CAL YR 1990	TOTAL	14534.2	MEAN	39.8	MAX	2130	MIN	2.9	AC-FT	28830		
WTR YR 1991	TOTAL	15199.9	MEAN	41.6	MAX	1610	MIN	6.9	AC-FT	30150		

e Estimated

GUADALUPE RIVER BASIN

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08178800 SALADO CREEK (LOWER STATION) AT SAN ANTONIO, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: November 1968 to current year. Sediment analyses: October 1968 to September 1973.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: January 1987 to current year.

pH: January 1987 to current year.

WATER TEMPERATURE: January 1987 to current year.

DISSOLVED OXYGEN: January 1987 to current year.

INSTRUMENTATION.--Since January 1987, a four-parameter water-quality monitor continuously records specific conductance, pH, water temperature, and dissolved oxygen at this station.

REMARKS.--Interruptions in the record were due to malfunction of the instrument or probe fouling and these days were deleted from the record. Where maximum or minimum specific conductance values are not shown, mean value is estimated. Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 1090 microsiemens July 10, 11, 1990; minimum, 39 microsiemens Nov. 9, 1990, Jan. 18, 1991.

pH: Maximum, 8.6 units on several days during 1989 and 1990; minimum, 7.3 units on several days during 1988 and 1990.

WATER TEMPERATURE: Maximum, 31.0°C July 17-20, 1988; minimum, 0.0°C Dec. 24, 1989.

DISSOLVED OXYGEN: Maximum, 16.7 mg/L Jan. 27, 1988; minimum, 1.8 mg/L Sept. 1, 1990.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 980 microsiemens Feb. 25, 27, Mar. 1-3; minimum, 39 microsiemens Nov. 9, Jan. 18.

pH: Maximum, 8.5 units Jan. 18; minimum, 7.4 units May 20.

WATER TEMPERATURE: Maximum, 28.0°C on several days during summer months; minimum, 6.5°C Dec. 24, 25.

DISSOLVED OXYGEN: Maximum, 12.7 mg/L Dec. 24; minimum, 2.7 mg/L Sept. 13.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

		DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	
JAN													
03...	0655	42	640	7.9	11.5	7	14	8.5	80	4.8	1400	9700	
18...	0915	1800	209	8.1	12.0	130	270	9.4	89	2.8	14000	110000	
18...	1450	3150	128	8.5	11.0	220	300	9.0	83	3.9	--	--	
MAR													
27...	1130	15	775	7.9	21.5	14	6.5	6.4	74	2.0	--	--	
MAY													
23...	1030	30	732	7.9	24.5	13	15	7.3	90	1.0	15000	820	
JUN													
26...	1305	22	448	7.3	26.0	28	14	6.4	80	1.7	--	--	
26...	1315	22	448	7.3	26.0	25	13	6.4	81	1.4	K480	1500	
JUL													
30...	1045	9.4	550	7.7	27.0	--	--	6.2	79	--	--	--	
AUG													
27...	1230	7.8	734	7.9	26.5	6	5.0	5.6	71	1.0	--	--	
27...	1245	7.8	734	7.9	26.5	7	4.4	5.6	71	1.0	K150	460	
DATE	TIME	HARD-NESS TOTAL (MG/L AS CaCO3)	HARD-NESS NONCARB DISSOLV FLD. AS CaCO3 (MG/L)	CALCIUM DIS-SOLVED (MG/L AS Ca)	MAGNE-SIUM, DIS-SOLVED (MG/L AS Mg)	SODIUM, DIS-SOLVED (MG/L AS Na)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT DIS FIX END FIELD CaCO3 (MG/L)	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)
JAN													
03...	270	52	82	17	36	0.9	2.7	220	41	45	0.30	10	
18...	140	15	50	4.6	9.5	0.3	4.4	130	17	12	<0.10	10	
18...	110	0	40	2.5	5.9	0.2	3.6	140	11	5.0	0.10	4.5	
MAR													
27...	290	41	90	17	47	1	3.5	250	64	65	0.30	12	
MAY													
23...	300	55	96	15	39	1	6.1	250	80	50	0.10	14	
JUN													
26...	170	19	55	7.6	25	0.8	4.0	150	29	33	0.30	8.7	
26...	170	20	56	7.4	25	0.8	4.0	150	32	29	0.20	8.7	
JUL													
30...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG													
27...	270	31	83	16	46	1	2.5	240	49	70	0.30	14	
27...	270	29	82	16	45	1	2.7	240	45	66	0.30	14	

08178800 SALADO CREEK (LOWER STATION) AT SAN ANTONIO, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L)	RESIDUE VOLA- TILE, SUS- PENDED (MG/L)	RESIDUE FIXED NON FILTER- ABLE (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+N03 DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+N03 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)
JAN												
03...	368	20	<1	--	0.890	--	0.010	--	0.900	--	0.020	--
18...	187	486	96	390	0.670	--	0.030	--	0.700	--	0.100	--
18...	155	974	192	782	0.570	--	0.030	--	0.600	--	0.080	--
MAR												
27...	455	8	8	0	0.680	0.708	0.030	0.026	0.710	0.734	0.070	0.077
MAY												
23...	450	29	9	20	0.950	--	0.030	--	0.980	--	0.030	--
JUN												
26...	254	20	8	12	0.610	0.502	0.010	0.007	0.620	0.509	0.050	0.030
26...	252	25	7	18	0.520	--	0.020	--	0.540	--	0.030	--
JUL												
30...	--	--	--	--	--	--	--	--	--	--	--	--
AUG												
27...	428	1	1	0	--	0.519	<0.010	0.003	0.510	0.522	0.040	<0.002
27...	416	7	7	0	0.530	--	0.010	--	0.540	--	0.030	--

DATE	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 ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHO TOTAL (MG/L AS P)	PHOS- PHATE, ORTHO, SOLVED (MG/L AS P04)	CARBON, ORGANIC TOTAL (MG/L AS C)	CYANIDE TOTAL (MG/L AS CN)	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)
JAN											
03...	0.48	0.50	0.060	--	0.020	--	3.9	--	--	--	--
18...	0.40	0.50	0.210	--	0.100	--	9.0	--	--	--	2
18...	0.62	0.70	0.210	--	0.140	--	17	--	--	--	--
MAR											
27...	0.33	0.40	0.040	0.025	0.040	0.08	2.8	<0.010	320	1	--
MAY											
23...	0.47	0.50	0.100	--	0.040	--	3.5	--	--	--	2
JUN											
26...	0.35	0.40	0.080	0.050	0.050	0.15	5.8	<0.010	620	3	--
26...	0.57	0.60	0.090	--	0.050	--	6.5	--	--	--	--
JUL											
30...	--	--	--	--	--	--	--	--	--	--	--
AUG											
27...	0.26	0.30	0.039	0.003	0.040	0.01	3.3	<0.010	240	2	--
27...	--	<0.20	0.060	--	0.040	--	3.1	--	--	--	--

[illegible][illegible]

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	MERCURY DIS- SOLVED (UG/L AS HG)	MERCURY RECOV. FM BOT- TOM MA- TERIAL (UG/G AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG)	SILVER, DIS- SOLVED (UG/L AS AG)	STROM- TIUM, DIS- SOLVED (UG/L AS SR)
JAN 03...	--	--	--	--	--	--	--	--	--	--	--
18...	--	<0.1	--	<10	--	<10	--	<1	--	<1.0	270
18...	--	--	--	--	--	--	--	--	--	--	--
MAR 27...	<0.10	--	0.06	--	1	--	<1	--	<1	--	--
MAY 23...	--	<0.1	--	<10	--	<10	--	<1	--	<1.0	940
JUN 26...	<0.10	--	0.03	--	2	--	<1	--	<1	--	--
26...	--	--	--	--	--	--	--	--	--	--	--
JUL 30...	--	--	--	--	--	--	--	--	--	--	--
AUG 27...	<0.10	--	0.02	--	<1	--	<1	--	<1	--	--
27...	--	--	--	--	--	--	--	--	--	--	--
DATE	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)	PCB, TOTAL (UG/L)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)
JAN 03...	--	--	--	--	--	--	--	--	--	--	--
18...	9	--	52	--	--	--	--	--	--	--	--
18...	--	--	--	--	--	--	--	--	--	--	--
MAR 27...	--	10	--	--	--	--	--	--	--	--	--
MAY 23...	<6	--	<3	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	0.02
JUN 26...	--	<10	--	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	0.08
26...	--	--	--	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	0.08
JUL 30...	--	--	--	--	--	--	--	--	--	--	--
AUG 27...	--	<10	--	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--	--	--
DATE	DI- ELDRIN TOTAL (UG/L)	DI- SYSTON TOTAL (UG/L)	ENDO- SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)
JAN 03...	--	--	--	--	--	--	--	--	--	--	--
18...	--	--	--	--	--	--	--	--	--	--	--
18...	--	--	--	--	--	--	--	--	--	--	--
MAR 27...	--	--	--	--	--	--	--	--	--	--	--
MAY 23...	<0.010	<0.01	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01
JUN 26...	<0.010	<0.01	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	0.02	<0.01	<0.01
26...	--	--	--	--	--	--	--	--	--	--	--
JUL 30...	--	--	--	--	--	--	--	--	--	--	--
AUG 27...	--	--	--	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--	--	--
DATE	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	PHORATE TOTAL (UG/L)	SILVEX, TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)
JAN 03...	--	--	--	--	--	--	--	--	--	--	--
18...	--	--	--	--	--	--	--	--	--	--	--
18...	--	--	--	--	--	--	--	--	--	--	--
MAR 27...	--	--	--	--	--	--	--	--	--	--	--
MAY 23...	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<1	<0.01	<0.01	<0.01	<0.01
JUN 26...	--	--	--	--	--	--	--	--	--	--	--
26...	--	<0.01	<0.01	<0.1	<0.01	--	<1	<0.01	--	--	--
JUL 30...	--	--	--	--	--	--	--	--	--	--	--
AUG 27...	--	--	--	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--	--	--

GUADALUPE RIVER BASIN

08178800 SALADO CREEK (LOWER STATION) AT SAN ANTONIO, TX--Continued

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1990 TO SEPTEMBER 1991

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. 1990	1166	486	284	893	31	97	41	128	200
NOV. 1990	877	491	282	669	36	86	40	94	190
DEC. 1990	391	820	460	486	75	80	62	66	300
JAN. 1991	2392	349	206	1330	19	125	30	193	150
FEB. 1991	1235	543	314	1050	38	127	44	148	210
MAR. 1991	594	707	403	646	58	92	56	89	270
APR. 1991	4136	363	215	2400	19	216	31	351	150
MAY 1991	2325	425	250	1570	25	157	36	227	180
JUNE 1991	605	544	315	515	37	61	45	73	220
JULY 1991	679.8	434	256	471	23	43	37	69	180
AUG. 1991	319.3	694	397	342	55	47	55	47	270
SEPT 1991	479.8	521	303	393	34	44	43	56	210
TOTAL	15199.9	**	**	10800	**	1170	**	1540	**
WTD.AVG.	42	449	262	**	29	**	38	**	180

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	747	668	706	784	706	752	863	784	821	863	784	824
2	747	669	702	784	745	766	863	784	830	863	745	803
3	749	670	715	784	745	764	863	784	829	784	588	686
4	750	671	719	824	549	748	863	784	808	667	510	597
5	752	673	724	667	471	582	863	784	823	706	549	599
6	754	673	713	627	510	581	863	784	826	706	549	636
7	755	675	709	627	588	606	863	745	815	627	510	573
8	798	678	743	706	196	481	863	784	807	667	549	608
9	762	121	381	196	39	110	863	784	806	667	431	595
10	287	122	197	196	78	143	863	784	807	588	471	525
11	419	246	331	235	157	210	863	784	802	627	510	552
12	471	342	434	---	---	340	863	745	808	627	549	599
13	510	431	456	---	---	450	863	784	811	627	510	560
14	549	431	492	588	510	540	863	784	807	627	549	590
15	588	510	536	627	549	599	863	784	796	706	588	630
16	667	510	596	706	588	648	863	745	812	745	667	694
17	706	588	652	745	667	703	863	784	825	745	667	711
18	745	667	699	784	706	747	863	784	828	706	39	217
19	745	667	721	824	706	764	863	784	839	392	118	251
20	784	706	751	824	745	773	863	784	833	510	353	445
21	784	353	648	824	745	792	863	784	839	627	471	550
22	588	353	451	863	784	806	863	784	831	706	588	637
23	588	431	528	863	784	822	863	784	817	745	667	703
24	588	431	495	863	784	815	863	784	829	784	549	683
25	549	431	500	863	784	824	863	784	833	667	510	585
26	549	471	515	863	784	827	863	784	825	745	627	690
27	549	471	516	863	784	825	863	784	819	706	627	673
28	627	471	560	863	784	829	863	784	810	745	667	687
29	667	549	626	863	784	807	863	784	830	824	667	755
30	745	667	689	863	784	817	863	784	825	863	745	806
31	784	667	720	---	---	---	863	784	831	784	706	747
MONTH	798	121	588	863	39	649	863	745	820	863	39	620

GUADALUPE RIVER BASIN

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08178800 SALADO CREEK (LOWER STATION) AT SAN ANTONIO, TX--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	824	745	763	980	627	838	735	698	719	794	783	788
2	824	745	772	980	627	734	752	730	741	799	665	763
3	902	745	815	980	471	726	769	745	756	766	300	713
4	902	196	411	784	510	729	755	744	750	321	220	263
5	392	157	270	784	706	754	733	151	264	380	323	350
6	471	314	314	824	745	769	285	219	255	444	355	396
7	588	471	528	824	745	771	313	225	258	513	445	480
8	627	549	593	784	745	761	394	291	341	536	276	444
9	706	627	682	784	745	768	577	399	525	396	270	324
10	784	667	722	784	745	760	675	565	626	503	398	457
11	784	745	760	784	745	763	742	684	714	574	509	545
12	824	745	774	824	745	763	783	746	762	635	574	607
13	863	784	814	824	745	771	816	778	797	647	472	616
14	824	745	796	824	745	760	808	365	548	549	454	497
15	824	784	801	784	667	756	489	324	407	600	535	571
16	863	784	827	706	392	608	563	487	519	557	525	546
17	863	784	820	549	471	513	625	562	591	586	515	548
18	902	745	816	627	510	584	675	625	650	652	593	628
19	902	549	693	667	510	574	714	609	692	689	628	664
20	627	471	547	---	---	644	672	489	568	698	684	690
21	706	549	635	---	---	708	571	486	515	711	696	704
22	706	510	607	696	672	686	662	575	630	713	703	708
23	706	627	661	715	692	703	652	596	617	718	696	707
24	745	588	668	736	717	727	684	614	642	713	698	707
25	980	588	728	741	718	730	751	687	717	720	711	716
26	863	588	702	758	735	784	798	751	777	725	711	718
27	980	549	781	754	737	750	803	791	797	740	720	734
28	910	588	784	755	735	746	805	796	801	742	730	736
29	---	---	---	764	755	758	806	793	799	737	728	733
30	---	---	---	764	740	756	803	788	794	735	711	722
31	---	---	---	755	701	737	---	---	---	733	716	723
MONTH	980	157	682	980	392	724	816	151	619	799	220	606
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	735	720	728	505	410	466	640	610	621	725	312	625
2	737	718	730	454	342	395	672	626	638	386	245	324
3	733	723	727	515	386	460	679	667	672	394	358	377
4	735	720	729	537	481	516	688	668	677	411	356	375
5	764	718	742	576	527	553	711	672	692	505	414	468
6	762	740	756	571	549	561	707	666	694	518	403	480
7	745	730	738	589	567	578	719	657	691	506	413	469
8	725	615	666	615	181	436	710	636	687	523	485	501
9	718	662	699	352	225	289	707	627	672	656	518	544
10	720	706	714	325	293	306	743	591	692	593	547	571
11	720	681	705	332	313	323	752	639	699	623	571	591
12	694	650	667	344	330	337	748	668	718	662	559	637
13	713	652	680	369	342	357	740	662	722	752	476	626
14	720	703	713	405	361	382	781	711	735	759	432	645
15	718	703	710	435	391	409	757	720	732	611	366	501
16	728	672	699	471	432	452	747	696	729	513	366	448
17	686	457	592	488	464	476	760	632	715	586	515	546
18	591	562	571	498	486	492	733	694	714	650	586	617
19	591	256	497	515	496	504	723	710	717	691	645	676
20	501	271	454	525	496	507	735	717	726	745	689	722
21	574	488	530	523	498	507	737	710	721	780	745	759
22	586	166	567	510	491	500	738	715	726	813	786	798
23	415	144	309	569	371	480	747	699	736	840	166	705
24	491	315	420	420	295	354	742	544	676	777	198	472
25	418	383	395	---	---	400	660	643	649	742	532	612
26	415	396	406	---	---	460	718	663	684	552	523	538
27	457	408	429	501	456	483	756	718	737	606	540	570
28	508	454	484	530	495	507	751	674	727	686	608	654
29	545	498	522	559	529	548	669	607	621	799	691	746
30	574	303	517	577	525	552	686	609	647	784	757	773
31	---	---	---	617	575	589	717	658	688	---	---	---
MONTH	764	144	603	617	181	457	781	544	695	840	166	579

GUADALUPE RIVER BASIN

08178800 SALADO CREEK (LOWER STATION) AT SAN ANTONIO, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	8.3	7.8	7.4	8.2	8.1	8.2	8.0	7.9	8.0	8.2	8.1	8.2
2	8.3	8.2	8.2	8.2	8.1	8.2	8.0	7.9	7.9	8.2	8.0	8.1
3	8.3	8.2	8.2	8.2	8.1	8.2	8.0	7.8	7.9	8.0	7.8	7.9
4	8.3	8.1	8.2	8.2	8.0	8.1	8.0	7.8	8.0	7.9	7.7	7.8
5	8.4	8.2	8.3	8.1	7.9	8.0	8.1	8.0	8.0	7.9	7.8	7.8
6	8.4	8.3	8.3	8.1	8.0	8.0	8.1	8.0	8.0	7.9	7.7	7.8
7	8.4	8.3	8.3	8.1	8.0	8.0	8.1	8.0	8.0	8.1	7.7	7.8
8	8.4	8.3	8.4	8.1	7.8	8.0	8.1	8.0	8.1	8.1	8.0	8.0
9	8.4	7.5	8.0	8.1	7.9	8.0	8.1	8.0	8.0	8.1	8.0	8.0
10	---	---	---	8.0	7.9	7.9	8.1	8.0	8.1	8.1	8.0	8.0
11	---	---	---	8.0	7.9	7.9	8.1	8.0	8.0	8.1	8.0	8.0
12	8.0	7.9	7.9	8.0	7.9	7.9	8.0	7.8	7.9	8.1	8.0	8.0
13	8.0	7.9	7.9	8.0	7.9	8.0	8.0	7.8	7.9	8.1	8.0	8.0
14	8.0	8.0	8.0	8.0	8.0	8.0	8.1	7.9	7.9	8.1	7.9	8.0
15	8.0	8.0	8.0	8.0	7.8	8.0	8.0	7.8	7.9	8.1	8.0	8.0
16	8.1	8.0	8.0	8.0	8.0	8.0	8.0	7.8	7.9	8.1	8.0	8.0
17	8.1	8.0	8.1	8.1	8.0	8.0	7.9	7.8	7.8	8.1	8.0	8.1
18	8.2	8.0	8.1	8.1	7.8	8.0	8.0	7.6	7.8	8.5	8.0	8.2
19	8.2	8.1	8.1	8.1	8.0	8.0	8.0	7.8	7.9	8.1	7.8	7.9
20	8.2	7.8	8.1	8.0	7.8	7.9	8.0	7.8	7.9	7.8	7.8	7.8
21	8.2	8.0	8.1	8.0	7.9	7.9	8.0	7.8	7.9	7.9	7.8	7.8
22	8.1	8.0	8.0	8.0	7.8	7.9	8.1	7.9	8.0	8.0	7.8	7.9
23	8.1	8.0	8.0	8.0	7.8	7.9	8.2	8.0	8.1	8.0	7.9	8.0
24	8.0	7.7	7.9	8.0	7.9	8.0	8.2	8.1	8.2	8.1	7.9	8.0
25	8.0	8.0	8.0	8.0	7.9	8.0	8.2	8.1	8.1	8.0	7.9	7.9
26	8.0	8.0	8.0	7.9	7.9	7.9	8.2	8.0	8.1	8.0	7.9	8.0
27	8.0	8.0	8.0	7.9	7.9	7.9	8.2	8.0	8.1	7.9	7.8	7.9
28	8.1	8.0	8.0	7.9	7.8	7.9	8.1	8.0	8.1	7.9	7.8	7.8
29	8.1	8.0	8.1	8.0	7.6	8.0	8.1	8.0	8.0	8.0	7.8	7.9
30	8.2	8.1	8.1	8.0	7.8	8.0	8.1	8.0	8.0	8.0	7.9	8.0
31	8.2	8.1	8.2	---	---	---	8.2	8.0	8.1	8.0	8.0	8.0
MONTH	8.4	7.5	8.1	8.2	7.6	8.0	8.2	7.6	8.0	8.5	7.7	8.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	8.0	8.0	8.0	8.3	8.1	8.2	8.0	7.9	7.9	8.0	7.9	7.9
2	8.2	8.0	8.1	8.4	8.1	8.2	8.0	7.9	7.9	7.9	7.7	7.9
3	8.1	8.0	8.1	8.4	8.2	8.2	---	---	---	8.0	7.8	7.9
4	8.1	7.8	7.9	8.4	8.1	8.2	---	---	---	8.2	7.7	7.9
5	7.9	7.6	7.7	8.4	8.1	8.2	8.4	8.0	8.2	7.9	7.7	7.8
6	7.8	7.5	7.6	---	---	---	8.1	8.0	8.0	7.8	7.8	7.8
7	---	---	---	---	---	---	8.1	7.8	8.0	7.8	7.7	7.8
8	---	---	---	---	---	---	7.8	7.8	7.8	8.0	7.8	7.9
9	---	---	---	---	---	---	7.8	7.7	7.7	8.1	7.7	7.8
10	---	---	---	---	---	---	7.8	7.8	7.8	7.8	7.7	7.7
11	8.2	8.0	8.1	---	---	---	7.9	7.8	7.8	7.8	7.7	7.8
12	8.2	8.0	8.1	---	---	---	7.9	7.9	7.9	7.8	7.8	7.8
13	8.2	8.1	8.2	---	---	---	8.0	7.9	7.9	7.9	7.8	7.9
14	8.3	8.1	8.2	---	---	---	8.0	7.8	7.9	7.9	7.7	7.8
15	8.4	8.1	8.3	---	---	---	7.9	7.7	7.8	7.8	7.7	7.8
16	8.3	8.2	8.2	---	---	---	7.7	7.7	7.7	7.8	7.7	7.7
17	8.4	8.2	8.2	---	---	---	7.7	7.7	7.7	7.8	7.5	7.6
18	8.4	8.1	8.2	---	---	---	7.8	7.7	7.7	7.7	7.6	7.7
19	8.2	8.0	8.1	---	---	---	7.8	7.8	7.8	7.6	7.5	7.6
20	8.1	7.9	8.0	---	---	---	7.9	7.7	7.8	7.6	7.4	7.5
21	8.2	7.9	8.0	---	---	---	7.7	7.6	7.7	8.0	7.9	7.9
22	8.2	7.9	8.1	7.8	7.7	7.7	7.8	7.7	7.7	8.0	7.9	8.0
23	8.2	8.0	8.1	7.9	7.8	7.8	7.9	7.8	7.8	8.0	8.0	8.0
24	8.2	8.0	8.1	7.9	7.8	7.8	7.9	7.8	7.8	8.0	8.0	8.0
25	8.2	8.0	8.1	7.9	7.8	7.8	7.9	7.8	7.8	8.0	7.9	7.9
26	8.3	8.0	8.2	7.9	7.8	7.8	7.9	7.8	7.9	8.0	7.9	7.9
27	8.3	8.1	8.2	7.9	7.8	7.9	8.0	7.8	7.9	8.0	7.9	7.9
28	8.2	8.1	8.2	8.0	7.9	7.9	8.0	7.9	8.0	8.0	7.9	7.9
29	---	---	---	8.0	7.9	8.0	8.0	7.9	7.9	8.0	7.9	7.9
30	---	---	---	8.0	7.9	8.0	8.0	7.9	8.0	8.0	7.9	8.0
31	---	---	---	8.0	7.9	8.0	---	---	---	8.0	7.9	8.0
MONTH	8.4	7.5	8.1	8.4	7.7	8.0	8.4	7.6	7.8	8.2	7.4	7.8

GUADALUPE RIVER BASIN

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08178800 SALADO CREEK (LOWER STATION) AT SAN ANTONIO, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	8.0	8.0	8.0	7.8	7.7	7.8	8.3	8.2	8.2	8.2	7.9	8.1
2	8.0	8.0	8.0	7.8	7.7	7.7	8.3	8.2	8.3	7.8	7.7	7.8
3	8.0	8.0	8.0	7.8	7.7	7.7	8.3	8.2	8.3	7.8	7.7	7.7
4	8.0	8.0	8.0	7.8	7.8	7.8	8.3	8.3	8.3	7.7	7.7	7.7
5	8.0	8.0	8.0	7.8	7.8	7.8	8.3	8.3	8.3	7.7	7.7	7.7
6	8.0	7.9	8.0	7.9	7.8	7.8	8.3	8.3	8.3	7.7	7.5	7.7
7	8.0	7.9	8.0	7.9	7.7	7.8	8.3	8.2	8.3	7.6	7.6	7.6
8	8.0	7.7	7.8	7.9	7.7	7.8	8.3	8.2	8.3	7.7	7.6	7.6
9	7.9	7.9	7.9	7.8	7.7	7.7	8.3	8.2	8.2	7.8	7.6	7.7
10	8.0	7.9	7.9	7.7	7.6	7.6	8.2	8.2	8.2	7.8	7.7	7.7
11	8.0	7.9	7.9	7.6	7.6	7.6	8.3	8.2	8.2	7.8	7.7	7.7
12	7.9	7.8	7.9	7.7	7.6	7.6	8.3	8.2	8.3	7.8	7.7	7.8
13	8.0	7.9	7.9	7.7	7.7	7.7	8.3	8.2	8.2	7.8	7.5	7.7
14	8.0	7.9	8.0	7.8	7.7	7.8	8.2	8.2	8.2	7.8	7.5	7.7
15	8.0	7.9	8.0	7.8	7.8	7.8	8.3	8.2	8.2	7.7	7.5	7.6
16	8.0	7.9	8.0	7.9	7.8	7.9	8.2	8.2	8.2	7.6	7.5	7.5
17	8.0	7.8	7.9	7.9	7.8	7.9	8.2	8.2	8.2	7.6	7.6	7.6
18	7.9	7.8	7.9	7.9	7.8	7.8	8.2	8.1	8.2	7.7	7.6	7.7
19	7.9	7.6	7.8	7.8	7.8	7.8	8.2	8.1	8.2	7.8	7.7	7.7
20	7.7	7.6	7.7	7.9	7.8	7.9	8.2	8.2	8.2	7.9	7.7	7.8
21	7.7	7.6	7.6	8.0	7.9	8.0	8.2	8.1	8.2	7.9	7.8	7.9
22	8.1	7.6	7.7	8.1	7.9	8.0	8.2	8.1	8.2	8.0	7.9	7.9
23	8.1	7.7	7.8	8.1	7.9	8.0	8.2	8.1	8.2	8.0	7.7	7.9
24	7.9	7.7	7.8	8.0	7.8	7.9	8.2	8.0	8.1	7.8	7.5	7.7
25	7.8	7.6	7.7	7.8	7.7	7.7	8.2	8.1	8.1	7.8	7.7	7.8
26	7.7	7.6	7.6	7.9	7.7	7.8	8.2	8.1	8.2	7.7	7.7	7.7
27	7.7	7.6	7.7	7.9	7.7	7.8	8.2	8.1	8.2	7.8	7.7	7.7
28	7.8	7.7	7.8	---	---	---	8.2	8.1	8.2	7.8	7.7	7.8
29	7.9	7.8	7.9	---	---	---	8.2	8.1	8.1	7.9	7.8	7.9
30	7.8	7.8	7.8	---	---	---	8.2	8.1	8.1	8.0	7.8	7.9
31	---	---	---	8.3	8.2	8.2	8.2	8.0	8.1	---	---	---
MONTH	8.1	7.6	7.9	8.3	7.6	7.8	8.3	8.0	8.2	8.2	7.5	7.7

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	23.5	23.0	21.5	15.5	14.5	15.0	16.0	13.5	14.5	10.5	9.5	10.0
2	24.0	22.5	23.5	16.5	14.5	15.5	18.0	16.0	17.0	12.0	10.5	11.0
3	24.5	23.5	24.0	17.5	16.0	16.5	18.0	15.0	16.5	13.0	12.0	12.5
4	24.5	23.5	24.0	17.5	14.0	16.0	15.0	12.0	13.0	12.0	11.0	11.5
5	25.0	24.5	24.5	17.5	16.5	17.0	12.0	10.5	11.0	13.5	11.5	12.0
6	25.5	24.5	25.0	17.0	15.5	16.0	12.5	10.5	11.5	14.0	13.0	13.5
7	26.5	25.5	26.0	17.5	17.0	17.0	12.5	11.5	12.0	13.0	10.5	11.5
8	26.5	26.0	26.5	17.5	15.0	16.0	11.5	10.0	10.5	11.0	10.5	11.0
9	26.5	20.0	23.0	15.5	13.5	14.0	10.5	9.5	10.0	12.0	10.5	11.5
10	19.5	18.0	19.0	14.0	12.5	13.5	11.5	10.0	10.5	13.0	12.0	12.5
11	18.5	17.0	18.0	14.0	12.5	13.5	13.0	11.0	12.0	13.0	12.0	12.5
12	19.0	17.0	18.0	14.5	12.5	13.5	14.5	12.5	13.5	12.0	10.5	11.5
13	19.0	17.0	18.0	15.0	13.0	14.0	14.5	13.5	14.0	11.0	9.5	10.5
14	20.5	18.0	19.0	16.0	14.0	14.5	16.0	14.5	15.5	13.0	10.5	11.5
15	21.5	19.5	20.5	17.0	15.0	16.0	18.0	16.5	17.0	13.5	12.0	12.5
16	22.0	21.0	21.5	17.5	16.5	17.0	18.0	16.5	17.0	12.5	11.0	12.0
17	23.0	22.0	22.5	18.5	17.0	17.5	19.5	15.5	18.0	13.5	12.0	12.5
18	23.0	20.0	21.5	19.0	17.5	18.5	19.5	15.0	17.5	13.0	10.0	11.5
19	20.0	18.0	18.5	19.5	18.0	19.0	16.5	14.5	15.5	12.0	10.5	11.0
20	20.0	18.0	18.5	21.0	19.5	20.0	17.0	14.0	15.5	12.5	10.5	11.5
21	21.0	17.5	19.5	22.0	20.5	21.0	19.0	15.0	17.5	11.5	10.0	11.0
22	18.5	13.5	16.0	22.0	21.5	22.0	16.5	10.0	13.0	11.0	9.5	10.0
23	14.5	13.5	14.0	22.0	20.0	21.0	10.0	7.5	8.5	11.0	11.0	11.0
24	14.5	12.5	13.5	20.0	18.0	18.5	7.5	6.5	7.0	13.0	11.0	12.0
25	14.0	12.5	13.5	20.5	19.0	19.5	8.0	6.5	7.0	13.0	12.0	12.5
26	14.0	12.5	13.5	22.0	20.5	21.0	9.5	7.5	8.5	12.5	11.5	12.0
27	14.5	13.0	13.5	22.5	21.5	22.0	10.0	9.0	9.5	14.0	12.0	13.0
28	15.0	13.5	14.5	22.0	18.5	20.0	11.0	9.5	10.0	14.5	11.0	13.0
29	15.0	13.5	14.5	18.5	15.0	17.0	13.5	11.0	12.0	16.5	14.0	15.0
30	15.0	13.5	14.0	15.5	14.0	14.5	14.5	12.0	13.5	16.0	12.5	14.0
31	15.5	14.0	15.0	---	---	---	11.0	9.5	10.5	13.5	11.5	12.5
MONTH	26.5	12.5	19.0	22.5	12.5	17.5	19.5	6.5	13.0	16.5	9.5	12.0

GUADALUPE RIVER BASIN

08178800 SALADO CREEK (LOWER STATION) AT SAN ANTONIO, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	12.5	9.0	12.0	---	---	---	18.5	16.0	17.0	22.0	20.5	21.5
2	13.5	10.5	12.0	17.5	15.5	17.0	19.0	17.0	18.0	22.5	22.0	22.0
3	13.0	11.5	12.0	17.5	15.5	17.0	19.5	18.0	18.5	22.5	21.0	22.5
4	15.5	12.0	13.5	18.0	15.0	16.5	20.5	19.0	18.5	21.5	20.5	21.0
5	16.5	14.5	15.0	19.0	16.0	17.5	20.5	17.5	18.0	22.0	21.0	21.5
6	17.0	15.0	15.0	20.0	17.0	18.5	18.5	17.5	18.0	21.5	20.0	21.0
7	16.5	14.5	15.5	19.5	18.0	18.5	18.5	18.0	18.5	21.0	20.0	20.5
8	16.0	14.0	15.5	18.5	16.5	18.0	20.5	18.5	19.5	21.0	19.0	20.5
9	16.0	14.0	15.0	18.0	17.0	16.5	21.5	20.5	21.0	20.0	18.5	19.5
10	16.5	14.5	15.5	17.5	15.5	16.5	21.5	20.5	21.0	21.5	20.0	21.0
11	17.0	16.0	16.5	19.0	16.0	16.5	21.5	21.0	21.0	23.5	21.5	22.0
12	18.0	16.0	16.5	20.5	15.0	17.0	23.0	21.5	22.0	24.5	23.0	23.5
13	18.5	17.0	17.5	19.0	16.5	18.0	24.0	22.5	23.0	24.0	23.0	23.5
14	18.0	16.5	17.0	18.0	16.5	17.0	23.0	21.0	22.0	23.5	22.5	23.0
15	17.0	15.0	16.0	16.5	14.5	15.5	21.5	20.0	21.0	24.0	22.5	23.0
16	15.0	13.0	14.0	15.0	13.5	14.0	22.5	20.5	21.0	24.0	23.5	24.0
17	16.0	13.5	14.5	17.5	13.5	14.0	22.5	22.0	22.0	23.5	23.0	22.0
18	18.0	15.5	17.0	17.0	14.5	13.0	23.0	22.0	22.5	24.5	22.5	23.5
19	18.0	14.5	16.5	18.0	15.5	16.5	23.5	22.5	23.0	24.5	23.5	24.0
20	15.5	14.5	15.0	---	---	---	23.0	21.5	22.0	25.0	23.5	24.0
21	15.0	14.0	14.5	---	---	---	21.5	20.0	21.0	25.0	23.5	24.5
22	15.5	13.5	14.0	20.0	19.0	19.5	23.0	21.0	22.0	25.0	24.0	24.5
23	16.0	11.0	15.0	19.0	17.0	17.5	22.5	21.0	21.5	25.0	24.0	24.5
24	15.5	14.5	15.0	19.0	17.0	18.0	22.0	21.5	21.5	26.0	24.5	25.0
25	16.0	14.5	15.0	21.0	18.5	19.5	23.5	21.5	22.0	26.5	24.5	25.5
26	14.5	13.0	13.5	21.5	20.5	21.0	24.0	22.5	23.0	27.0	24.5	25.5
27	14.0	13.0	13.5	21.5	21.0	19.5	24.0	23.0	23.5	27.0	25.0	26.5
28	---	---	---	21.5	19.5	20.5	24.0	22.5	23.0	27.0	25.5	26.5
29	---	---	---	21.0	18.5	19.5	23.0	21.0	21.5	27.0	26.0	26.5
30	---	---	---	19.5	17.0	18.0	22.5	20.0	21.0	27.0	26.0	26.5
31	---	---	---	18.5	16.5	17.5	---	---	---	27.5	26.0	26.5
MONTH	18.5	9.0	15.0	21.5	13.5	17.5	24.0	16.0	21.0	27.5	18.5	23.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	27.0	26.0	26.5	27.0	25.5	26.0	27.5	27.0	27.0	27.0	26.0	26.5
2	27.0	26.5	26.5	27.0	26.0	26.5	27.5	27.0	27.0	26.5	25.5	26.0
3	27.0	26.0	26.5	27.5	26.0	26.5	27.5	27.0	27.0	26.0	25.0	25.5
4	26.5	24.5	25.5	27.5	26.0	26.5	27.5	27.0	27.5	26.0	25.0	25.5
5	27.5	26.0	26.5	27.0	25.5	26.0	27.0	26.0	27.0	26.0	25.5	26.0
6	27.5	26.5	27.0	27.0	26.0	26.5	26.5	26.0	26.5	26.5	25.5	26.0
7	27.0	26.0	26.5	27.5	26.5	27.0	26.5	26.0	26.0	26.0	25.5	26.0
8	26.5	25.5	26.0	27.0	25.5	26.5	26.5	26.0	26.0	26.0	26.0	26.0
9	26.0	25.0	25.0	26.5	25.5	26.0	27.0	26.5	27.0	26.5	26.0	26.0
10	25.0	24.5	24.5	27.5	26.0	26.5	28.0	26.5	27.5	26.5	26.0	26.0
11	26.0	24.5	25.0	27.5	26.0	27.0	28.0	27.0	27.5	26.0	25.5	26.0
12	26.0	25.0	25.5	27.5	26.5	27.0	28.0	27.5	28.0	26.0	25.0	25.5
13	26.5	25.5	26.5	27.5	26.5	27.0	28.0	27.5	28.0	26.5	25.5	26.0
14	27.0	26.5	27.0	27.5	27.0	27.0	27.5	27.0	27.5	27.0	25.5	26.0
15	27.5	26.5	26.5	27.5	27.0	27.0	27.5	27.0	27.0	27.0	26.0	26.5
16	27.5	26.5	27.0	27.5	26.5	27.0	28.0	27.0	27.5	27.0	26.0	26.5
17	27.5	26.0	27.0	27.5	27.0	27.0	28.0	27.0	27.5	27.0	26.0	26.5
18	27.5	26.0	26.5	27.5	27.0	27.0	28.0	27.5	27.5	26.5	25.5	26.0
19	28.0	26.5	27.0	27.5	27.0	27.0	28.0	27.0	27.5	26.0	22.5	24.5
20	27.5	26.0	26.5	27.5	27.0	27.5	27.5	26.5	27.0	22.5	20.0	21.0
21	27.5	27.0	27.0	27.5	27.0	27.5	28.0	26.5	27.0	20.0	19.5	20.0
22	28.0	25.0	27.5	27.5	26.5	27.0	28.0	27.0	27.5	22.0	20.0	21.0
23	26.5	24.0	25.5	26.5	26.0	26.0	27.5	26.5	27.0	25.0	22.0	22.5
24	26.5	25.0	25.5	27.0	25.5	26.0	27.0	26.0	26.5	24.5	23.5	24.0
25	26.5	25.0	26.0	27.0	26.5	26.5	27.0	26.5	26.5	24.5	22.0	23.0
26	27.0	26.0	26.5	27.5	26.5	27.0	27.0	26.0	26.5	22.0	21.0	21.5
27	27.5	26.5	27.0	27.0	26.5	26.5	26.5	26.0	26.5	21.5	20.0	21.0
28	27.5	27.0	27.0	27.5	27.0	27.0	27.0	26.0	26.5	21.5	20.0	21.0
29	27.0	25.5	26.5	27.5	27.0	27.5	27.0	26.5	27.0	21.0	19.5	20.5
30	26.0	25.0	25.5	27.5	27.0	27.0	27.5	27.0	27.5	21.0	19.5	20.5
31	---	---	---	28.0	27.0	27.5	27.5	26.5	27.0	---	---	---
MONTH	28.0	24.0	26.5	28.0	25.5	27.0	28.0	26.0	27.0	27.0	19.5	24.5

GUADALUPE RIVER BASIN

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08178800 SALADO CREEK (LOWER STATION) AT SAN ANTONIO, TX--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	8.3	5.3	2.6	7.5	6.8	7.2	10.1	8.0	8.8	12.2	10.0	10.9
2	8.4	6.8	7.5	7.3	6.6	7.0	8.7	7.3	7.9	10.7	9.4	10.1
3	7.4	6.5	7.0	7.0	6.2	6.5	9.7	6.9	8.0	9.7	8.6	9.3
4	7.8	6.4	6.9	7.0	5.4	6.0	10.6	8.0	9.1	9.2	8.4	8.8
5	7.8	6.4	6.9	7.4	6.4	6.9	11.3	9.2	10.0	9.2	8.5	8.8
6	7.8	6.4	6.9	7.3	6.5	6.9	11.4	9.3	10.1	8.8	8.3	8.5
7	7.6	6.0	6.6	6.8	6.1	6.4	11.5	9.1	10.0	10.0	8.3	8.7
8	7.5	5.9	6.5	8.1	6.2	7.0	12.0	9.6	10.5	10.3	9.3	9.7
9	7.7	6.1	6.8	9.3	7.6	8.7	12.2	9.8	10.8	10.0	9.5	9.7
10	8.6	7.3	8.2	9.6	8.5	8.9	12.4	9.7	10.8	9.8	8.9	9.5
11	8.0	7.7	7.8	8.7	8.3	8.5	12.1	9.4	10.5	9.8	8.8	9.2
12	8.0	6.9	7.5	8.7	8.2	8.5	11.7	8.6	9.8	10.2	9.1	9.7
13	7.1	6.8	7.0	8.7	8.2	8.4	11.6	8.3	9.5	10.6	9.4	10.0
14	6.9	6.5	6.8	8.5	7.8	8.2	11.9	8.1	9.5	10.0	8.3	9.1
15	6.6	6.2	6.5	8.0	7.5	7.8	11.4	7.7	9.1	8.8	7.5	8.1
16	---	---	---	7.7	7.2	7.5	10.8	7.3	8.6	9.3	7.7	8.5
17	---	---	---	7.6	7.0	7.3	10.5	7.0	8.2	9.0	7.9	8.4
18	7.1	6.2	6.6	7.5	6.8	7.0	10.2	6.5	8.0	9.6	8.1	8.9
19	7.7	7.0	7.3	7.2	6.3	6.6	11.3	7.4	9.0	9.7	8.6	9.3
20	7.7	7.2	7.5	6.9	5.8	6.2	10.6	7.7	8.8	8.8	8.1	8.5
21	8.0	6.7	7.3	6.4	5.0	5.7	9.7	6.9	8.0	9.0	8.2	8.6
22	8.2	7.5	8.0	6.6	5.0	5.8	9.8	7.5	8.5	9.3	8.8	9.0
23	7.8	7.5	7.6	6.7	4.9	5.8	12.1	9.3	10.6	8.8	8.6	8.7
24	7.5	7.2	7.4	8.2	5.7	6.8	12.7	10.6	11.5	9.2	8.5	8.8
25	7.8	7.3	7.5	7.6	6.0	6.6	12.1	10.7	11.3	8.7	8.1	8.4
26	7.8	7.4	7.6	7.1	5.3	6.1	11.5	10.3	10.8	9.1	8.2	8.6
27	7.7	7.3	7.5	7.2	5.1	5.9	12.1	9.9	10.7	8.6	8.2	8.4
28	7.7	7.1	7.4	8.4	5.2	6.6	11.0	9.8	10.3	9.0	8.1	8.5
29	7.7	7.1	7.4	9.6	6.8	7.9	10.7	9.3	9.8	8.6	8.0	8.3
30	7.8	7.1	7.5	10.1	7.8	8.7	10.3	8.2	9.1	9.6	7.8	8.6
31	7.5	7.1	7.4	---	---	---	12.2	9.0	10.4	9.8	9.2	9.5
MONTH	8.6	5.3	7.1	10.1	4.9	7.1	12.7	6.5	9.6	12.2	7.5	9.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	10.2	9.1	9.6	10.9	8.8	8.8	7.8	6.7	7.3	8.8	7.9	8.3
2	10.5	9.4	9.9	10.7	7.7	8.8	7.4	6.8	7.1	8.4	5.1	7.5
3	9.7	8.9	9.3	11.6	7.5	9.1	7.0	6.5	6.7	8.4	6.0	7.5
4	10.0	8.8	9.2	10.7	7.5	8.3	6.8	6.2	6.6	7.8	5.6	6.8
5	10.0	9.1	9.5	11.8	7.1	9.0	6.8	6.3	7.2	8.1	7.0	7.4
6	9.5	8.3	8.4	11.6	6.7	8.6	7.9	7.0	7.5	8.2	7.4	7.9
7	8.6	8.0	8.3	10.9	6.2	8.2	7.8	7.1	7.5	9.6	6.8	7.9
8	8.9	8.2	8.3	11.5	6.6	8.5	8.1	7.1	7.7	8.0	6.9	7.4
9	9.1	8.2	8.6	11.5	6.6	8.5	7.0	6.6	6.8	8.4	7.1	7.8
10	9.2	8.2	8.6	11.7	6.8	8.7	6.7	6.5	6.6	8.1	7.1	7.5
11	9.5	8.0	8.7	10.9	6.7	8.3	6.6	6.5	6.6	7.8	7.0	7.2
12	9.5	8.2	8.8	10.0	6.1	7.5	6.8	6.4	6.5	7.8	6.9	7.5
13	9.6	7.8	8.6	10.3	6.2	7.7	6.7	6.3	6.4	8.0	7.1	7.5
14	10.3	7.9	9.0	8.9	6.5	7.5	7.7	6.4	6.8	7.6	7.0	7.3
15	11.1	8.2	9.4	7.5	6.6	7.1	8.7	7.7	8.1	7.5	7.0	7.4
16	9.6	8.5	9.1	7.4	6.7	6.9	8.0	6.7	7.3	7.3	6.6	7.1
17	10.7	8.5	9.4	7.1	6.2	6.8	6.8	6.6	6.7	---	---	---
18	11.1	7.8	9.3	7.4	6.2	6.6	6.7	6.4	6.6	---	---	---
19	9.3	7.8	8.6	7.5	6.0	6.6	7.0	6.4	6.6	---	---	---
20	9.3	8.5	8.8	---	---	---	8.0	6.1	7.3	---	---	---
21	10.0	8.4	9.0	---	---	---	7.2	6.5	7.0	---	---	---
22	10.7	8.4	9.3	6.6	5.4	5.9	7.3	6.8	7.1	7.6	7.4	7.5
23	11.1	8.2	9.3	7.0	5.9	6.4	7.3	6.2	6.8	7.6	7.3	7.5
24	9.6	8.0	8.7	7.7	6.4	6.9	7.3	6.8	7.0	7.4	7.1	7.3
25	9.7	7.6	8.5	6.9	6.2	6.5	7.6	6.8	7.3	7.1	6.7	7.0
26	11.1	8.3	9.5	6.2	5.8	6.0	7.4	6.8	7.0	7.0	6.9	7.0
27	11.0	8.5	9.6	7.0	5.6	6.3	7.3	6.6	7.1	6.9	6.6	6.7
28	9.3	8.2	8.8	6.8	6.0	6.4	7.5	6.6	7.0	6.8	6.5	6.6
29	---	---	---	7.4	6.2	6.7	8.3	7.2	7.6	6.9	6.3	6.6
30	---	---	---	7.9	6.7	7.3	8.5	7.8	8.2	6.8	6.4	6.5
31	---	---	---	7.7	6.4	7.3	---	---	---	6.6	6.1	6.3
MONTH	11.1	7.6	9.0	11.8	5.4	7.5	8.7	6.1	7.1	9.6	5.1	7.3

GUADALUPE RIVER BASIN

08178800 SALADO CREEK (LOWER STATION) AT SAN ANTONIO, TX--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	6.5	6.0	6.2	6.7	6.2	6.4	6.4	6.0	6.2	7.2	5.1	5.8
2	6.4	6.0	6.2	6.5	5.9	6.3	6.4	5.8	6.2	7.1	6.2	6.8
3	6.3	5.9	6.1	5.9	5.7	5.8	6.4	5.8	6.1	7.0	6.2	6.7
4	6.5	6.1	6.3	5.7	5.4	5.6	6.3	5.8	6.0	6.7	6.3	6.6
5	6.3	5.8	6.0	6.2	5.8	6.0	6.5	6.0	6.2	6.2	5.5	5.8
6	6.1	5.6	5.8	5.8	5.5	5.6	6.6	6.0	6.3	6.5	5.6	6.1
7	6.7	5.8	6.3	5.7	5.4	5.5	6.5	5.9	6.2	5.9	5.6	5.8
8	6.3	4.9	5.7	7.1	5.4	6.0	6.6	6.0	6.3	5.6	4.9	5.2
9	6.2	5.9	6.0	7.2	6.5	6.9	6.4	5.5	6.0	5.0	4.8	4.9
10	6.3	6.0	6.2	6.5	6.0	6.2	6.5	5.5	5.9	5.0	4.6	4.8
11	6.6	5.9	6.2	5.9	5.8	5.9	6.6	5.6	6.0	5.0	4.4	4.7
12	6.1	5.4	5.8	5.9	5.7	5.8	6.7	5.6	6.1	4.8	3.6	4.6
13	5.9	5.5	5.7	5.9	5.7	5.8	6.6	5.4	5.9	5.1	2.7	3.9
14	5.8	5.4	5.6	5.9	5.7	5.7	6.0	5.3	5.6	5.8	3.5	5.2
15	5.9	5.2	5.6	5.9	5.8	5.8	6.5	5.1	5.8	6.5	5.4	6.1
16	6.1	5.5	5.7	5.9	5.6	5.8	6.6	5.2	5.8	5.5	4.9	5.1
17	6.4	5.4	5.9	5.8	5.5	5.7	6.8	5.3	5.9	4.9	4.1	4.5
18	5.5	5.1	5.3	5.9	5.5	5.7	6.2	5.1	5.7	4.6	4.1	4.4
19	5.8	3.7	5.0	6.0	5.7	5.9	6.6	5.1	5.8	4.7	4.1	4.4
20	5.2	3.7	4.8	6.1	5.7	5.9	6.9	5.3	5.9	5.6	4.6	4.9
21	5.2	4.8	5.0	6.2	5.7	6.0	6.9	5.5	6.1	5.9	5.4	5.6
22	6.8	4.7	5.0	6.0	5.4	5.7	6.6	5.2	5.7	6.4	5.5	6.0
23	7.2	6.1	6.4	7.0	5.7	6.7	5.9	5.1	5.5	7.4	5.2	5.9
24	6.4	6.0	6.3	6.6	5.9	6.2	7.0	4.9	6.1	6.4	4.8	5.6
25	6.0	5.6	5.8	5.9	5.5	5.7	6.6	5.8	6.2	6.6	5.7	6.1
26	5.6	5.3	5.5	6.2	5.4	5.8	6.4	5.5	5.8	6.0	5.0	5.6
27	5.3	5.1	5.2	6.3	4.9	5.9	6.1	5.3	5.7	5.8	5.0	5.4
28	5.3	5.0	5.1	6.2	5.8	6.0	7.0	5.3	6.1	6.3	5.2	5.8
29	5.6	5.1	5.2	6.2	5.9	6.1	6.5	5.6	6.0	6.6	5.4	6.0
30	6.9	6.2	6.3	6.3	5.9	6.1	5.9	5.0	5.5	6.9	5.4	6.2
31	---	---	---	6.3	5.9	6.1	5.7	4.6	5.2	---	---	---
MONTH	7.2	3.7	5.7	7.2	4.9	6.0	7.0	4.6	5.9	7.4	2.7	5.5

GUADALUPE RIVER BASIN

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08178880 MEDINA RIVER AT BANDERA, TX

LOCATION.--Lat 29°43'25", long 99°04'11", Bandera County, Hydrologic Unit 12100302, on left bank, 40 ft downstream from centerline of State Highway 173 at Bandera, 1.9 mi upstream from Bandera Creek, and 5.6 mi downstream from Indian Creek.

DRAINAGE AREA.--427 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1982 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,189.46 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Several small diversions upstream from station.

AVERAGE DISCHARGE.--9 years, 136 ft³/s (98,530 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 55,800 ft³/s June 3, 1987 (gage height, 24.90 ft), from rating curve extended above 27,000 ft³/s; minimum daily, 2.2 ft³/s Aug. 7, 11, 13, 14, 1984.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1880, 46.62 ft Aug. 2, 1978.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,400 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 2	2000	1,460	8.25	Sept. 15	0800	*3,510	*10.60

Minimum daily discharge, 19 ft³/s Sept. 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	60	56	53	47	64	63	50	56	72	52	30	19
2	59	56	53	52	63	62	51	245	71	52	29	20
3	58	55	53	49	62	60	51	89	68	50	29	25
4	59	60	51	48	69	58	51	127	71	54	27	30
5	59	66	51	50	71	56	210	124	69	53	26	33
6	59	65	51	50	82	55	93	101	70	49	26	33
7	58	64	49	49	86	54	89	90	68	49	26	37
8	57	68	49	49	78	53	80	113	65	51	26	33
9	76	68	49	49	75	53	75	119	69	50	25	33
10	80	66	49	52	73	52	72	116	78	52	24	35
11	80	63	49	54	71	52	72	105	74	51	23	33
12	71	61	49	53	70	53	69	95	120	49	24	31
13	66	60	49	51	69	51	67	101	117	46	23	30
14	64	58	49	49	68	51	71	108	93	44	23	37
15	62	58	49	48	66	50	64	101	88	42	22	2130
16	61	58	49	46	64	52	63	104	83	41	22	577
17	60	57	50	47	65	55	63	123	76	41	21	287
18	61	57	48	69	67	54	63	105	69	40	22	219
19	63	57	48	98	69	53	63	97	65	38	23	172
20	60	57	48	97	66	53	61	91	60	36	22	325
21	59	57	48	86	65	55	60	85	57	36	22	318
22	69	57	46	78	64	54	60	83	56	34	25	258
23	76	58	47	74	62	53	58	80	55	35	28	333
24	70	58	47	74	61	54	58	78	57	38	23	250
25	66	58	46	70	61	53	58	90	54	38	22	205
26	63	57	47	69	59	53	58	81	49	36	21	184
27	60	57	47	68	59	53	57	77	49	35	20	171
28	59	55	46	66	59	52	58	73	46	34	20	161
29	58	53	47	66	---	51	58	72	46	33	20	152
30	58	53	47	65	---	49	57	69	49	32	20	146
31	57	---	47	64	---	50	---	68	---	31	20	---
TOTAL	1968	1773	1511	1887	1888	1667	2060	3066	2064	1322	734	6317
MEAN	63.5	59.1	48.7	60.9	67.4	53.8	68.7	98.9	68.8	42.6	23.7	211
MAX	80	68	53	98	86	63	210	245	120	54	30	2130
MIN	57	53	46	46	59	49	50	56	46	31	20	19
AC-FT	3900	3520	3000	3740	3740	3310	4090	6080	4090	2620	1460	12530
CAL YR 1990	TOTAL	36108	MEAN	98.9	MAX	2900	MIN	26	AC-FT	71620		
WTR YR 1991	TOTAL	26257	MEAN	71.9	MAX	2130	MIN	19	AC-FT	52080		

GUADALUPE RIVER BASIN

08178880 MEDINA RIVER AT BANDERA, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: January 1983 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	
FEB 07...	1421	88	543	8.0	14.0	<1	0.60	10.3	104	0.4	K17	
MAY 30...	0830	67	533	8.0	26.0	1	2.1	7.6	94	0.5	K24	
AUG 13...	1125	23	582	7.8	28.0	1	3.3	7.2	95	0.8	120	
DATE		STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
FEB 07...	28	280	100	82	19	6.9	0.2	1.1	180	94	13	
MAY 30...	130	280	96	83	17	6.4	0.2	2.1	180	84	17	
AUG 13...	21	310	140	88	21	7.6	0.2	1.5	160	140	10	
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)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L)	RESIDUE FIXED NON FILTER-ABLE (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)
FEB 07...	0.20	8.7	335	5	<1	--	--	<0.010	0.220	<0.010	--	--
MAY 30...	0.30	12	330	8	4	4	0.150	0.010	0.160	0.030	0.77	--
AUG 13...	0.30	13	381	<1	<1	--	--	0.010	<0.050	0.060	--	--
DATE		NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS TOTAL (MG/L AS P)	PHOS-PHORUS ORTHO 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)	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)
FEB 07...	0.50	<0.010	<0.010	0.9	<1	29	<0.5	<1.0	<5	<3	<10	<10
MAY 30...	0.80	<0.010	<0.010	1.3	--	--	--	--	--	--	--	--
AUG 13...	<0.20	0.010	0.030	1.3	<1	37	<0.5	<1.0	<5	<3	<10	<10
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)
FEB 07...	10	<10	9	1	<0.1	<10	<10	<1	<1.0	810	<6	<6
MAY 30...	--	--	--	--	--	--	--	--	--	--	--	--
AUG 13...	5	<10	8	4	<0.1	<10	<10	<1	<1.0	1100	<6	<6
DATE		ZINC, DIS-SOLVED (UG/L AS ZN)	PCB, TOTAL (UG/L)	NAPH-THA-LENES, POLY-CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR-DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI-AZINON, TOTAL (UG/L)	DI-ELDRIN TOTAL (UG/L)	DI-SYSTON TOTAL (UG/L)
FEB 07...	<10	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01	<0.010	<0.01	<0.01
MAY 30...	--	--	--	--	--	--	--	--	--	--	--	--
AUG 13...	<3	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01	<0.010	<0.01	<0.01

GUADALUPE RIVER BASIN

289

08178880 MEDINA RIVER AT BANDERA, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	ENDO-SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA-CHLOR, TOTAL (UG/L)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA-THION, TOTAL (UG/L)	METH-OXY-CHLOR, TOTAL (UG/L)	METHYL PARA-THION, TOTAL (UG/L)	METHYL TRI-THION, TOTAL (UG/L)
FEB 07...	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01	<0.01
MAY 30...	--	--	--	--	--	--	--	--	--	--
AUG 13...	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01	--
DATE	MIREX, TOTAL (UG/L)	PARA-THION, TOTAL (UG/L)	PER-THANE TOTAL (UG/L)	PHORATE TOTAL (UG/L)	SILVEX, TOTAL (UG/L)	TOX-APHENE, TOTAL (UG/L)	TOTAL TRI-THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)
FEB 07...	<0.01	<0.01	<0.1	<0.01	<0.01	<1	<0.01	<0.01	<0.01	<0.01
MAY 30...	--	--	--	--	--	--	--	--	--	--
AUG 13...	<0.01	<0.01	<0.1	<0.01	<0.01	<1	<0.01	<0.01	<0.01	<0.01

GUADALUPE RIVER BASIN

08179500 MEDINA LAKE NEAR SAN ANTONIO, TX

LOCATION.--Lat 29°32'24", long 98°56'01", Medina County, Hydrologic Unit 12100302, at gate-operating platform, 576 ft from left end of Medina Dam on Medina River, 4.2 mi upstream from Medina diversion dam, 13 mi north of Castroville, 28 mi west of San Antonio, and 70.4 mi upstream from mouth.

DRAINAGE AREA.--634 mi².

PERIOD OF RECORD.--May 1913 to current year. Prior to October 1965, monthend contents only.
Water-quality records.--Chemical analyses: October 1969 to September 1984.

REVISED RECORDS.--WSP 1923: Drainage area.

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

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

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

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

EXTREMES (at 0800) FOR PERIOD OF RECORD.--Maximum contents observed, 289,900 acre-ft May 29, 1987 (gage height, 1,078.2 ft); minimum observed since lake first filled, 780 acre-ft about Apr. 11, 1948 (gage height, 944.0 ft).

EXTREMES (at 0800) FOR CURRENT YEAR.--Maximum contents, 104,800 acre-ft May 30 (gage height, 1,036.6 ft); minimum, 88,150 acre-ft Sept. 2, 5, 6, 10-14 (gage height, 1,030.8 ft).

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

1,030.0	85,860	1,033.0	94,460	1,036.0	103,100
1,031.0	88,730	1,034.0	97,320	1,037.0	105,900
1,032.0	91,590	1,035.0	100,200		

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY OBSERVATION AT 08:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	103600	100800	99040	95030	96180	97320	94460	94460	104200	102200	99620	89010
2	103300	100800	99040	95030	96180	97320	94460	94170	103600	102200	98760	88150
3	103300	100800	99040	95030	96460	97320	94170	97320	103300	102500	98760	88440
4	103300	100800	99040	95030	96750	97320	94170	99330	103100	102500	98470	88440
5	103100	100800	98760	95030	96750	97320	94460	99620	103100	103300	97900	88150
6	103100	100800	98760	95600	96750	97320	94740	99900	102800	103600	97610	88150
7	103100	100800	98470	95890	97320	97040	95030	100200	102500	103600	97320	88730
8	102800	101300	98470	95030	97320	97040	94740	100800	101900	103600	97040	88440
9	103100	101600	98180	95320	97320	97040	94740	101300	101600	103600	96750	88440
10	102800	101300	98180	95600	97320	96750	94740	101600	101300	103600	96460	88150
11	102500	101300	97900	95600	97320	96460	94740	101900	101000	103900	96180	88150
12	102500	100800	97900	95600	97320	96180	95030	102200	101000	103600	95600	88150
13	102500	100800	97900	95320	97320	96460	95030	102500	101000	103600	95320	88150
14	102200	100800	97900	95320	97610	96180	95030	102500	100800	103900	94740	88150
15	102200	100800	97610	95320	97610	95890	95320	103100	101000	103300	94460	88440
16	101900	100500	97610	95320	97320	95890	95030	103100	100800	103600	94170	92170
17	101900	100500	97610	95600	97320	95600	95030	103600	100500	103300	93880	93020
18	101900	100500	97610	95600	97320	95890	95030	103900	100500	103100	93310	93600
19	101600	100200	97320	95890	97610	95600	95030	103900	100200	103100	93310	93880
20	101600	100200	97040	96180	97610	95320	95030	103900	100200	103100	92740	95030
21	101600	100200	97040	96750	97610	95320	95320	104200	99900	102800	92450	95320
22	101600	100200	96750	95890	97320	95030	95030	104200	99900	102500	92170	95890
23	101300	100200	96750	95890	97610	95320	95030	104500	101600	102200	91590	96180
24	101300	99900	96750	96180	97320	95320	95030	104200	101600	101900	91590	97320
25	101300	99900	96750	96180	97320	95320	95030	104200	101900	101600	91020	98180
26	101000	99900	96460	96180	97320	95030	94740	104200	101900	101300	90730	98760
27	101000	99620	96180	96180	97320	95030	94740	104200	101900	101000	90450	98760
28	101000	99620	95600	96180	97320	94740	94740	104200	101900	100800	89870	98760
29	101000	99330	95320	95890	---	94740	94740	---	101900	100500	89590	99040
30	101000	99330	95320	96460	---	94740	94460	104800	101900	100200	89010	99330
31	100800	---	95320	96180	---	94460	---	104200	---	100200	88730	---
MAX	103600	101600	99040	96750	97610	97320	95320	---	104200	103900	99620	99330
MIN	100800	99330	95320	95030	96180	94460	94170	---	99900	100200	88730	88150
(↑)	1035.2	1034.7	1033.3	1033.6	1034.0	1033.0	1033.0	1036.4	1035.6	1035.0	1031.0	1034.7
(Φ)	-3100	-1470	-4010	+860	+1140	-2860	0	+9740	-2300	-1700	-11470	+10600

CAL YR 1990 MAX 110200 MIN 78640 (Φ) +7740
WTR YR 1991 MAX 104800 MIN 88150 (Φ) -4570

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

GUADALUPE RIVER BASIN

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08180000 MEDINA CANAL NEAR RIOMEDINA, TX

LOCATION.--Lat 29°30'19", long 98°54'11", Medina County, Hydrologic Unit 12100302, in center of canal, 350 ft downstream from county highway bridge, 1,900 ft downstream from head of canal and diversion dam, 4.6 mi downstream from Medina Dam, 4.7 mi north of Riomedina, and 25 mi northwest of San Antonio.

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

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

GAGE.--Water-stage recorder. Elevation of gage is 910 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good. Station is above all diversions from canal. Canal diverts water from right end of Medina Diversion Dam 1,900 ft upstream from gage. Water is used for irrigation downstream near La Coste and Natalia. Prior to November 1984, double-barrel flume in canal 54 ft downstream from gage. Satellite telemeter at station.

AVERAGE DISCHARGE.--45 years (water years 1923-33, 1958-91), 45.0 ft³/s (32,600 acre-ft/yr).

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

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	66	45	52	37	.00	8.5	52	78	201	29	129	130
2	62	43	51	22	.00	14	61	74	197	7.8	128	133
3	55	41	50	13	.00	13	62	45	203	17	127	123
4	58	39	40	.00	.00	29	65	40	207	29	122	72
5	64	37	45	.00	.00	37	18	41	212	36	117	56
6	69	27	47	.00	.00	42	.00	57	207	42	119	48
7	69	22	49	.00	.00	47	.00	65	203	42	120	49
8	61	7.5	49	.00	.00	47	.00	26	197	43	122	31
9	24	.00	49	.00	.00	47	.00	.00	202	42	119	31
10	25	.00	51	.00	.00	46	.00	.00	201	42	109	58
11	41	.00	51	.00	.00	46	.00	.00	193	44	108	47
12	41	.00	50	.00	.00	46	.00	.00	193	45	115	33
13	42	7.5	52	.00	.00	52	.00	.00	194	45	124	25
14	43	28	52	.00	.00	61	.00	.00	199	44	127	25
15	43	36	50	.00	.00	50	.00	.00	200	45	128	24
16	47	25	49	.00	.00	17	.00	8.0	202	59	130	29
17	51	19	52	.00	.00	3.7	.00	13	139	74	130	36
18	50	19	49	.00	11	2.5	.00	13	144	93	125	34
19	51	22	53	.00	29	27	7.7	13	153	111	111	30
20	50	30	57	.00	29	39	14	16	146	105	114	12
21	25	25	56	13	18	32	26	17	147	105	123	.00
22	9.9	19	55	25	11	32	26	30	135	109	124	.00
23	31	20	56	22	10	32	35	58	24	119	119	.66
24	37	19	53	20	.00	31	47	66	34	121	122	2.0
25	37	19	51	16	.00	36	47	64	56	129	125	1.3
26	38	32	52	.00	.00	47	45	71	68	138	128	.47
27	37	39	42	.00	.00	46	45	106	67	138	130	12
28	37	49	34	.00	.00	45	45	142	68	137	130	29
29	36	54	36	.00	---	44	49	174	48	131	135	29
30	34	53	38	.00	---	43	65	191	54	119	144	37
31	43	---	39	.00	---	42	---	204	---	121	124	---
TOTAL	1376.9	777.00	1510	168.00	108.00	1104.7	709.70	1612.00	4494	2361.8	3828	1137.43
MEAN	44.4	25.9	48.7	5.42	3.86	35.6	23.7	52.0	150	76.2	123	37.9
MAX	69	54	57	37	29	61	65	204	212	138	144	133
MIN	9.9	.00	34	.00	.00	2.5	.00	.00	24	7.8	108	.00
AC-FT	2730	1540	3000	333	214	2190	1410	3200	8910	4680	7590	2260
CAL YR 1990	TOTAL	21973.89	MEAN	60.2	MAX	193	MIN	.00	AC-FT	43590		
WTR YR 1991	TOTAL	19187.53	MEAN	52.6	MAX	212	MIN	.00	AC-FT	38060		

GUADALUPE RIVER BASIN

08180640 MEDINA RIVER AT LA COSTE, TX

LOCATION.--Lat 29°19'26", long 98°48'46", Medina County, Hydrologic Unit 12100302, at downstream side of bridge on Farm Road 471, 1.0 mi north of La Coste, 5.0 mi upstream from Sherer Creek, and 27.4 mi upstream from mouth.

DRAINAGE AREA.--805 mi², of which 634 mi² is above dam forming Medina Lake.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--December 1986 to current year.

GAGE.--Water-stage recorder. Datum of gage is 667.15 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for July 20 to Sept. 1, which are fair. Flow is regulated by Medina Lake (station 08179500) and by Medina Diversion Lake (station 08180000). A large part of the streamflow is lost into the Edwards and associated limestones where the Balcones Fault crosses the basin between the upstream end of Medina Lake and about 5 mi downstream from Medina Dam, or 0.9 mi downstream from the diversion dam. There are several small diversions below Medina Diversion Dam. Satellite telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,600 ft³/s May 30, 1987 (gage height, 24.05 ft); minimum daily, 12 ft³/s Dec. 12-14, 1989.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,610 ft³/s June 23 at 1000 hours (gage height, 10.98 ft); minimum daily, 18 ft³/s Feb. 15, 16.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	26	28	25	27	26	28	25	24	46	e24	e32
2	26	25	29	26	25	26	28	28	25	43	e24	31
3	25	25	29	28	25	25	28	30	25	38	e24	32
4	25	26	28	27	44	25	29	30	27	37	e23	42
5	25	23	28	28	39	25	76	27	28	39	e23	36
6	25	22	28	29	30	26	57	25	28	37	e23	34
7	25	22	28	28	25	27	38	23	28	35	e24	70
8	25	30	28	27	23	26	34	39	28	37	e25	46
9	36	30	27	27	22	26	31	35	28	37	e26	37
10	31	25	27	28	21	25	29	28	29	35	e25	35
11	28	22	27	27	20	25	28	27	28	34	e25	35
12	28	22	27	25	20	25	28	27	30	34	e25	39
13	28	22	27	24	20	25	28	35	32	32	e24	37
14	28	22	27	24	19	25	38	31	29	32	e23	35
15	28	23	28	24	18	25	33	28	31	30	e24	35
16	28	24	27	23	18	29	29	38	32	30	e24	34
17	28	25	26	22	19	31	29	43	37	29	e25	33
18	27	26	25	46	21	28	29	33	31	23	e26	40
19	26	26	22	35	30	28	29	31	28	22	e27	32
20	27	26	22	27	28	28	39	29	27	e21	e26	42
21	28	27	23	23	26	30	33	28	26	e22	e25	35
22	30	28	23	23	26	31	30	27	26	e23	e25	31
23	29	28	22	26	25	31	30	27	692	e23	e26	32
24	28	28	22	31	25	31	30	27	126	e24	e26	36
25	29	29	22	30	25	31	30	27	61	e24	e27	33
26	29	30	23	28	25	31	30	26	53	e24	e27	27
27	28	30	24	28	25	31	29	24	48	e24	e26	27
28	28	29	24	28	25	30	28	23	44	e24	e26	25
29	27	29	24	28	---	29	26	23	42	e24	e27	24
30	26	28	26	28	---	28	26	23	43	e24	e28	24
31	26	---	25	27	---	e28	---	23	---	e24	e33	---
TOTAL	853	778	796	850	696	857	980	890	1736	931	786	1051
MEAN	27.5	25.9	25.7	27.4	24.9	27.6	32.7	28.7	57.9	30.0	25.4	35.0
MAX	36	30	29	46	44	31	76	43	692	46	33	70
MIN	25	22	22	22	18	25	26	23	24	21	23	24
AC-FT	1690	1540	1580	1690	1380	1700	1940	1770	3440	1850	1560	2080
CAL YR 1990	TOTAL	11144	MEAN	30.5	MAX	250	MIN	13	AC-FT	22100		
WTR YR 1991	TOTAL	11204	MEAN	30.7	MAX	692	MIN	18	AC-FT	22220		

e Estimated

08180640 MEDINA RIVER AT LA COSTE, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: February 1987 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: January 1987 to current year.

pH: January 1987 to current year.

WATER TEMPERATURE: January 1987 to current year.

DISSOLVED OXYGEN: January 1987 to current year.

INSTRUMENTATION.--Since January 1987, a four-parameter water-quality monitor continuously records specific conductance, pH, water temperature, and dissolved oxygen at this station.

REMARKS.--Interruptions in the record were due to malfunctions of the instrument or probe fouling, and these days were deleted from the record. Where maximum or minimum specific conductance values are not shown, mean value is estimated. Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 720 microsiemens Sept. 3, 4, 1987; minimum, 196 microsiemens June 24, 1991.

pH: Maximum, 8.7 units June 17, 1989; minimum, 6.8 units Aug. 4, 5, 1988.

WATER TEMPERATURE: Maximum, 30.5°C June 24, 26, 27, 1990; minimum, 2.5°C Dec. 24, 1989.

DISSOLVED OXYGEN: Maximum, 13.1 mg/L Jan. 10, 11, 1988; minimum, 4.2 mg/L Jun. 23, 1991.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 610 microsiemens on April 18, 20, 23; minimum, 196 microsiemens June 24.

pH: Maximum, 8.4 units on several days during July and August; minimum, 7.6 units on several days during the water year.

WATER TEMPERATURE: Maximum, 29.5°C June 22; minimum, 8.0°C Dec. 25, 26.

DISSOLVED OXYGEN: Maximum, 11.1 mg/L Feb. 1, 2; minimum, 4.2 mg/L June 23.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

		DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB DISSOLV FLD. AS CACO3 (MG/L)
OCT 17...	1407	27	502	8.2	24.0	8.4	101	1.3	250	53
DEC 12...	1405	46	530	8.2	17.0	8.1	86	0.9	250	53
APR 10...	0750	28	529	7.9	20.5	6.9	79	1.1	240	67
23...	1018	42	528	8.1	22.0	6.4	75	2.6	250	69
JUN 28...	0945	34	267	7.6	26.0	6.2	79	1.2	120	27
AUG 27...	1205	22	517	7.9	26.5	6.9	87	1.0	250	59
DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT DIS FIX END FIELD CACO3 (MG/L)	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)
OCT 17...	71	17	15	0.4	2.1	190	48	20	0.30	12
DEC 12...	71	18	15	0.4	2.2	200	52	18	<0.10	12
APR 10...	69	17	17	0.5	2.5	170	69	21	0.30	11
23...	72	17	19	0.5	2.4	180	66	22	0.30	11
JUN 28...	39	5.7	7.0	0.3	5.3	94	19	8.6	0.10	10
AUG 27...	70	18	14	0.4	2.2	190	64	18	0.30	9.4
DATE	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS TOTAL (MG/L AS P)	PHOS- PHORUS ORTHO TOTAL (MG/L AS P)	
OCT 17...	302	1.89	0.010	1.90	0.020	0.28	0.30	0.040	<0.010	
DEC 12...	307	2.19	0.010	2.20	0.030	0.27	0.30	0.020	<0.010	
APR 10...	312	1.38	0.020	1.40	0.040	0.26	0.30	0.050	0.020	
23...	318	1.58	0.020	1.60	0.040	0.36	0.40	0.050	0.020	
JUN 28...	151	1.04	0.060	1.10	0.060	0.64	0.70	0.110	0.090	
AUG 27...	310	--	<0.010	1.50	0.010	0.39	0.40	0.020	0.010	

GUADALUPE RIVER BASIN

08180640 MEDINA RIVER AT LA COSTE, TX--Continued

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1990 TO SEPTEMBER 1991

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. 1990	853	502	274	630	16	37	48	110	220
NOV. 1990	778	513	281	589	17	36	49	102	220
DEC. 1990	796	528	290	623	18	39	50	107	230
JAN. 1991	850	503	274	630	16	37	48	110	220
FEB. 1991	696	508	278	522	17	31	48	91	220
MAR. 1991	857	503	275	636	16	38	48	111	220
APR. 1991	980	498	272	719	16	42	47	125	220
MAY 1991	890	479	260	625	15	35	46	110	210
JUNE 1991	1736	368	196	917	9.1	42	36	168	160
JULY 1991	931	461	249	627	14	34	44	111	200
AUG. 1991	786	455	246	522	13	28	44	93	200
SEPT 1991	1051	448	242	686	13	36	43	122	200
TOTAL	11204	**	**	7700	**	437	**	1360	**
WTD.AVG.	31	470	255	**	14	**	45	**	210

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	533	450	487	510	471	503	549	510	533	549	510	515
2	535	451	481	510	471	494	549	510	538	549	510	523
3	536	452	508	510	471	497	588	510	534	549	471	515
4	537	495	513	510	471	493	549	510	529	549	471	503
5	538	496	514	510	471	490	549	510	534	549	471	512
6	539	497	515	510	471	494	549	510	529	549	471	513
7	540	498	512	510	471	499	549	510	542	549	471	508
8	541	499	521	510	471	489	549	510	521	549	471	525
9	543	459	506	510	471	493	549	510	525	549	471	515
10	544	459	508	510	471	487	549	510	528	549	471	510
11	545	459	487	510	471	487	549	510	526	510	471	503
12	546	460	489	510	471	499	549	510	530	549	471	500
13	547	461	498	510	471	502	549	510	529	549	471	508
14	548	463	502	510	471	499	549	510	532	549	471	502
15	549	464	504	510	471	490	549	510	537	549	471	506
16	551	465	499	549	471	508	549	510	533	549	471	504
17	551	466	510	549	510	529	549	510	538	549	471	512
18	552	467	506	549	510	530	549	510	538	510	471	490
19	553	468	507	549	510	534	549	510	532	510	471	486
20	554	469	504	549	510	531	549	510	521	510	392	459
21	556	470	501	549	510	534	549	510	523	510	431	482
22	533	470	495	549	510	532	549	471	516	510	471	503
23	549	471	503	549	510	527	549	471	516	510	471	490
24	510	471	500	549	510	527	549	471	516	510	471	490
25	510	471	495	549	510	534	549	471	510	510	471	492
26	510	471	499	549	510	538	549	471	519	510	471	499
27	510	471	498	549	510	531	549	510	520	510	471	503
28	510	471	496	549	510	527	549	471	516	510	471	498
29	510	471	499	549	510	527	549	510	532	549	510	513
30	510	471	495	549	510	526	549	510	527	549	471	507
31	510	471	501	---	---	---	549	471	518	549	471	512
MONTH	556	450	502	549	471	512	588	471	527	549	392	503

GUADALUPE RIVER BASIN

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08180640 MEDINA RIVER AT LA COSTE, TX--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	510	471	499	549	510	529	---	---	510	510	510	510
2	510	471	498	549	510	524	---	---	500	510	510	510
3	549	471	509	549	471	518	510	471	497	510	510	510
4	510	471	497	549	471	508	---	---	502	510	510	510
5	510	431	482	549	471	510	470	380	429	510	510	510
6	510	431	472	549	510	516	500	400	442	510	471	503
7	549	471	503	549	471	512	500	440	467	510	471	505
8	510	471	497	510	471	502	540	480	487	510	471	483
9	510	471	500	549	471	505	560	480	494	471	471	471
10	549	471	502	549	471	514	590	480	516	471	431	456
11	549	471	508	549	471	505	560	530	545	471	471	471
12	549	471	510	549	471	503	560	540	549	510	471	480
13	549	471	516	510	471	499	550	540	544	510	471	478
14	549	510	525	510	471	495	600	510	529	471	471	471
15	549	510	534	510	471	503	520	500	511	471	471	471
16	549	510	529	510	471	497	560	490	504	471	471	471
17	549	510	525	510	471	493	600	500	506	471	431	466
18	549	510	533	511	471	488	610	500	512	471	431	454
19	549	510	523	514	433	479	510	500	504	471	471	471
20	549	471	514	516	435	483	610	500	518	471	471	471
21	549	471	517	521	478	490	510	500	506	471	471	471
22	549	471	505	524	442	492	520	500	508	471	471	471
23	549	471	520	526	444	499	610	500	513	490	480	483
24	549	471	513	570	446	508	520	500	508	490	460	471
25	549	471	518	572	448	507	520	500	508	471	471	471
26	510	471	505	577	493	508	510	500	503	471	471	471
27	549	471	518	581	496	521	510	500	502	472	431	470
28	549	510	515	531	490	505	500	490	497	472	472	472
29	---	---	---	510	471	500	500	490	496	472	432	470
30	---	---	---	510	471	498	510	471	508	472	432	470
31	---	---	---	---	---	505	---	---	---	473	433	471
MONTH	549	431	510	581	433	504	610	380	504	510	431	479
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	473	473	473	360	314	331	479	464	470	449	420	439
2	474	473	473	401	358	377	479	457	469	440	403	420
3	474	474	474	429	401	410	479	464	471	449	437	444
4	475	434	473	458	432	440	476	464	469	457	444	451
5	476	435	470	464	454	459	474	464	469	459	452	456
6	477	436	469	470	451	464	476	459	469	464	457	459
7	467	456	462	471	455	463	474	464	469	466	457	463
8	469	457	464	480	449	458	474	444	458	462	449	457
9	485	441	467	481	467	473	452	440	446	464	457	461
10	491	446	471	481	467	474	452	435	445	464	452	458
11	498	450	483	481	464	473	449	440	445	459	449	455
12	471	471	471	486	471	479	452	435	443	457	442	450
13	471	471	471	488	476	483	449	437	444	447	435	439
14	471	471	471	493	479	486	452	442	446	442	418	432
15	471	471	471	493	484	488	449	440	444	420	393	406
16	471	431	468	496	484	489	466	442	453	396	386	391
17	471	431	464	493	484	490	464	452	458	415	393	403
18	471	431	466	496	484	489	462	452	457	430	413	420
19	471	431	466	493	479	487	459	444	453	444	415	435
20	471	471	471	493	481	488	457	440	453	442	420	430
21	471	471	471	498	479	488	462	442	455	469	440	457
22	471	471	471	496	484	490	462	444	455	457	432	443
23	471	235	355	493	464	484	462	449	458	471	454	463
24	235	196	225	486	474	480	464	457	460	471	459	465
25	235	235	235	484	464	477	464	449	458	471	457	465
26	235	217	225	491	466	476	464	449	457	479	462	470
27	230	215	220	479	469	475	464	447	457	481	471	477
28	244	222	231	484	471	477	462	447	457	486	479	483
29	271	244	256	481	459	475	464	449	457	493	481	487
30	312	269	288	481	462	474	462	442	455	493	481	487
31	---	---	---	479	466	473	449	405	423	---	---	---
MONTH	498	196	412	498	314	467	479	405	456	493	386	449

GUADALUPE RIVER BASIN
08180640 MEDINA RIVER AT LA COSTE, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	8.2	8.1	8.1	8.2	8.1	8.1	8.0	7.9	8.0	8.2	8.0	8.1
2	8.1	7.9	8.0	8.1	8.0	8.1	8.0	7.9	7.9	8.1	8.1	8.1
3	8.1	7.9	8.0	8.1	8.0	8.1	8.0	7.8	7.9	8.1	8.0	8.1
4	8.2	7.9	8.0	8.0	8.0	8.0	8.0	7.8	7.9	8.1	8.0	8.1
5	8.2	7.6	7.8	8.1	8.0	8.0	8.0	7.8	7.9	8.1	8.0	8.0
6	7.8	7.6	7.6	8.1	8.0	8.0	8.0	7.8	7.9	8.1	8.0	8.0
7	8.1	7.7	7.8	8.0	8.0	8.0	8.0	7.9	7.9	8.1	8.0	8.0
8	8.0	7.7	7.8	8.0	8.0	8.0	7.9	7.8	7.9	8.1	8.0	8.0
9	8.2	7.7	8.0	8.0	8.0	8.0	8.0	7.8	7.9	8.1	8.0	8.0
10	8.1	7.8	8.0	8.1	8.0	8.0	8.0	7.8	7.9	8.1	8.0	8.0
11	8.3	8.0	8.1	8.0	8.0	8.0	8.0	7.8	7.9	8.2	8.0	8.1
12	8.2	8.0	8.1	8.1	8.0	8.0	8.1	7.8	7.9	8.1	8.0	8.0
13	8.2	7.9	8.1	8.1	8.0	8.0	8.0	7.9	7.9	8.1	8.0	8.1
14	8.1	7.9	8.0	8.1	8.0	8.0	8.0	7.9	7.9	8.1	8.0	8.1
15	8.0	7.9	7.9	8.0	8.0	8.0	7.9	7.8	7.9	8.1	8.0	8.1
16	8.0	7.8	7.9	8.1	7.8	8.0	7.9	7.8	7.8	8.1	8.0	8.0
17	8.0	7.8	7.9	8.1	8.0	8.0	8.0	7.8	7.9	8.1	8.0	8.0
18	8.1	7.8	7.9	8.1	8.0	8.0	8.0	7.8	7.9	8.2	8.0	8.1
19	8.1	7.9	8.0	8.0	8.0	8.0	8.0	7.8	7.9	8.1	8.0	8.0
20	8.2	8.0	8.1	8.0	8.0	8.0	8.0	7.9	8.0	8.1	8.0	8.0
21	8.2	8.0	8.1	8.0	7.9	8.0	8.0	7.9	8.0	8.1	8.0	8.0
22	---	---	---	8.0	7.9	7.9	8.0	8.0	8.0	8.2	8.0	8.0
23	---	---	---	8.0	7.9	7.9	8.1	8.0	8.0	8.1	8.0	8.1
24	8.1	8.0	8.0	8.0	7.9	7.9	8.2	8.0	8.1	8.2	8.0	8.1
25	8.2	8.0	8.1	8.0	7.9	7.9	8.2	8.0	8.1	8.2	8.0	8.1
26	8.2	8.0	8.1	7.9	7.8	7.8	8.2	8.1	8.1	8.2	8.0	8.1
27	8.2	8.1	8.1	7.8	7.8	7.8	8.2	8.0	8.1	8.2	8.0	8.1
28	8.2	8.1	8.1	7.9	7.8	7.8	8.1	8.1	8.1	8.2	8.0	8.1
29	8.2	8.1	8.1	7.9	7.8	7.9	8.1	8.0	8.0	8.2	8.0	8.1
30	8.2	8.1	8.1	8.0	7.9	7.9	8.1	8.0	8.0	8.2	8.0	8.1
31	8.2	8.1	8.1	---	---	---	8.1	8.0	8.1	8.2	8.0	8.1
MONTH	8.3	7.6	8.0	8.2	7.8	8.0	8.2	7.8	8.0	8.2	8.0	8.1
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	8.2	8.0	8.1	7.9	7.8	7.9	---	---	---	8.3	8.2	8.2
2	8.2	8.0	8.1	7.9	7.8	7.8	---	---	---	8.3	8.1	8.1
3	8.2	8.1	8.1	7.8	7.8	7.8	8.0	8.0	8.0	8.2	8.0	8.1
4	8.2	8.0	8.1	7.8	7.7	7.8	---	---	---	8.1	8.0	8.1
5	8.1	8.0	8.0	7.8	7.7	7.8	8.0	7.9	8.0	8.1	8.0	8.1
6	8.1	8.0	8.0	7.8	7.7	7.8	7.9	7.9	7.9	8.1	8.0	8.0
7	8.1	7.8	8.0	7.8	7.7	7.8	7.9	7.9	7.9	8.1	8.0	8.0
8	8.0	7.9	8.0	7.8	7.7	7.8	7.9	7.8	7.9	8.1	7.9	8.0
9	8.0	7.9	8.0	7.8	7.7	7.8	7.9	7.8	7.8	7.9	7.8	7.9
10	8.0	7.8	7.9	7.8	7.7	7.8	7.9	7.7	7.8	7.8	7.7	7.8
11	7.9	7.8	7.8	7.9	7.7	7.8	---	---	---	7.9	7.8	7.8
12	7.8	7.6	7.7	7.8	7.7	7.7	---	---	---	7.9	7.8	7.8
13	7.8	7.6	7.7	7.8	7.7	7.8	---	---	---	7.9	7.8	7.9
14	7.8	7.7	7.7	8.0	7.7	7.8	---	---	---	8.0	7.9	7.9
15	7.8	7.7	7.8	8.0	7.8	7.8	---	---	---	8.0	7.9	7.9
16	7.9	7.8	7.8	7.8	7.7	7.8	---	---	---	8.0	7.8	7.9
17	7.9	7.8	7.8	7.7	7.6	7.7	---	---	---	7.9	7.8	7.9
18	7.8	7.6	7.7	8.1	7.7	7.9	---	---	---	7.9	7.8	7.8
19	7.8	7.7	7.8	8.1	7.9	8.0	---	---	---	8.0	7.8	7.9
20	7.7	7.6	7.7	8.1	8.0	8.0	---	---	---	8.0	7.8	7.9
21	7.7	7.6	7.7	8.0	7.9	8.0	---	---	---	8.0	7.8	7.9
22	7.8	7.6	7.6	8.0	7.8	8.0	---	---	---	8.0	7.8	7.9
23	7.9	7.7	7.8	8.0	7.8	7.9	---	---	---	8.0	7.8	7.9
24	7.8	7.7	7.8	7.9	7.7	7.8	---	---	---	7.9	7.8	7.9
25	7.9	7.8	7.8	---	---	---	---	---	---	7.9	7.8	7.8
26	7.8	7.8	7.8	---	---	---	8.3	8.1	8.2	8.0	7.8	7.9
27	7.8	7.8	7.8	---	---	---	8.3	8.2	8.2	8.0	7.8	7.9
28	7.8	7.7	7.8	---	---	---	8.3	8.2	8.2	8.0	7.8	7.9
29	---	---	---	8.0	7.9	8.0	8.3	8.2	8.2	8.0	7.8	7.9
30	---	---	---	8.0	8.0	8.0	8.3	8.2	8.2	8.0	7.8	7.9
31	---	---	---	---	---	---	---	---	---	8.0	7.8	7.9
MONTH	8.2	7.6	7.9	8.1	7.6	7.8	8.3	7.7	8.0	8.3	7.7	7.9

GUADALUPE RIVER BASIN

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08180640 MEDINA RIVER AT LA COSTE, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	8.0	7.8	7.9	---	---	---	8.0	7.8	7.9	8.3	8.1	8.2
2	8.0	7.8	7.9	---	---	---	8.1	7.8	7.9	8.2	8.1	8.1
3	8.0	7.8	7.9	---	---	---	8.0	7.8	7.9	8.3	8.1	8.2
4	8.0	7.8	7.9	---	---	---	8.0	7.7	7.9	8.3	8.2	8.2
5	8.0	7.8	7.9	---	---	---	8.1	7.8	7.9	8.3	8.2	8.2
6	8.0	7.8	7.9	---	---	---	7.9	7.7	7.8	8.3	8.2	8.2
7	8.0	7.8	7.9	---	---	---	8.0	7.7	7.9	8.3	8.2	8.3
8	8.0	7.9	8.0	---	---	---	8.0	7.7	7.9	8.3	8.3	8.3
9	8.0	7.8	7.9	---	---	---	---	---	---	8.3	8.2	8.3
10	8.0	7.8	7.9	8.3	8.1	8.2	---	---	---	8.3	8.2	8.3
11	8.1	7.8	7.9	8.3	8.2	8.2	---	---	---	8.3	8.2	8.2
12	8.0	7.9	8.0	8.3	8.1	8.2	---	---	---	8.3	8.1	8.2
13	8.0	7.8	7.9	8.2	8.1	8.1	---	---	---	8.2	8.1	8.1
14	7.9	7.8	7.8	8.3	8.1	8.2	---	---	---	8.2	8.1	8.1
15	7.8	7.7	7.8	8.3	8.1	8.2	---	---	---	8.1	8.0	8.1
16	7.8	7.7	7.8	8.4	8.1	8.2	---	---	---	8.1	8.0	8.0
17	---	---	---	8.4	8.2	8.2	---	---	---	8.0	7.9	8.0
18	---	---	---	8.3	8.1	8.2	---	---	---	8.1	8.0	8.0
19	---	---	---	8.2	8.1	8.2	---	---	---	8.1	8.0	8.1
20	---	---	---	8.2	8.0	8.1	8.4	8.2	8.3	8.1	8.1	8.1
21	---	---	---	8.2	8.0	8.1	8.4	8.2	8.3	8.2	8.1	8.1
22	---	---	---	8.1	7.9	8.0	8.4	8.2	8.3	8.2	8.1	8.2
23	---	---	---	8.1	7.8	7.9	8.4	8.2	8.3	8.2	8.1	8.1
24	---	---	---	---	---	---	8.4	8.2	8.3	8.2	8.0	8.1
25	---	---	---	---	---	---	8.4	8.3	8.3	8.2	8.0	8.1
26	---	---	---	---	---	---	8.4	8.3	8.3	8.0	7.9	8.0
27	---	---	---	8.3	8.1	8.2	8.4	8.2	8.3	8.1	7.9	8.0
28	---	---	---	8.3	8.0	8.2	8.4	8.2	8.3	8.1	7.9	8.0
29	---	---	---	8.3	8.0	8.1	8.4	8.2	8.3	8.1	7.9	8.0
30	---	---	---	8.2	8.0	8.1	8.4	8.2	8.3	8.1	8.0	8.1
31	---	---	---	8.2	7.8	8.0	8.3	8.1	8.2	---	---	---
MONTH	8.1	7.7	7.9	8.4	7.8	8.1	8.4	7.7	8.1	8.3	7.9	8.1

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

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

GUADALUPE RIVER BASIN
08180640 MEDINA RIVER AT LA COSTE, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	12.0	10.5	11.5	16.0	13.5	15.0	---	---	---	23.0	21.5	22.0
2	12.0	11.0	11.5	16.5	14.5	15.5	---	---	---	22.5	22.0	22.5
3	12.5	11.5	11.5	16.5	14.5	15.5	---	---	---	23.0	22.5	22.5
4	13.5	12.5	13.0	17.0	14.5	16.0	---	---	---	23.5	23.0	23.0
5	14.5	13.5	14.0	17.5	15.0	16.0	19.0	18.0	18.5	24.0	22.5	23.5
6	16.0	13.5	14.5	18.5	15.5	17.0	18.5	18.0	18.5	23.5	22.0	22.5
7	15.0	13.5	14.5	18.5	16.5	17.5	19.5	18.0	19.0	22.5	21.5	22.0
8	14.5	13.5	14.0	18.0	16.5	17.5	21.0	19.0	20.0	22.0	21.0	22.0
9	14.5	13.0	14.0	18.0	16.5	17.0	21.5	20.5	21.0	22.5	21.0	22.0
10	14.5	13.5	14.0	17.5	15.5	16.5	21.5	20.5	21.0	23.5	22.0	22.5
11	15.0	14.5	14.5	18.0	16.0	17.0	21.5	20.5	21.0	24.5	22.5	23.5
12	16.0	14.5	15.5	19.0	17.0	18.0	23.0	21.0	22.0	25.5	23.5	24.5
13	16.5	15.5	16.0	19.0	17.0	18.0	24.0	22.0	23.0	25.0	24.0	24.5
14	16.5	15.5	16.0	18.0	16.5	17.0	24.0	22.5	23.0	25.0	23.5	24.5
15	16.0	14.5	15.0	17.0	15.5	16.0	23.0	21.0	22.0	25.5	24.0	24.5
16	14.5	13.0	14.0	15.5	14.5	15.0	23.0	21.0	22.0	25.5	24.5	24.5
17	14.0	13.0	13.5	16.5	14.5	15.5	23.0	22.0	22.5	25.0	24.0	24.5
18	15.5	13.5	14.5	17.0	15.5	16.0	23.0	22.5	22.5	25.5	23.5	24.5
19	16.0	15.0	15.5	18.0	15.5	16.5	23.5	22.5	23.0	26.0	24.0	25.0
20	15.5	14.5	15.0	18.0	17.0	17.5	23.5	22.0	22.5	25.5	24.0	25.0
21	15.0	13.5	14.5	18.5	17.5	18.0	22.5	21.5	22.0	26.0	24.5	25.0
22	15.5	13.5	14.5	19.0	18.0	18.5	23.5	21.5	22.5	26.0	24.5	25.0
23	15.5	13.5	14.5	18.0	17.0	17.5	23.0	21.5	22.5	26.0	24.5	25.5
24	15.0	14.5	15.0	18.5	16.5	17.5	22.5	21.5	22.0	26.5	25.0	25.5
25	15.0	14.5	14.5	19.5	17.5	18.5	23.5	22.5	22.5	27.0	25.5	26.0
26	14.5	13.5	14.0	20.5	19.0	19.5	24.0	22.5	23.5	27.5	25.5	26.5
27	13.5	12.5	13.0	21.0	19.5	20.5	24.5	23.5	24.0	28.0	26.0	27.0
28	14.0	13.5	13.5	---	---	---	24.0	23.0	23.5	28.0	26.0	27.0
29	---	---	---	---	---	---	23.5	22.0	23.0	28.0	26.5	27.5
30	---	---	---	---	---	---	23.0	21.5	22.5	28.0	26.5	27.5
31	---	---	---	---	---	---	---	---	---	27.5	26.5	27.0
MONTH	16.5	10.5	14.0	21.0	13.5	17.0	24.5	18.0	22.0	28.0	21.0	24.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	27.5	26.5	27.0	26.0	25.0	25.5	28.5	27.0	28.0	27.5	26.5	27.0
2	27.5	26.5	27.0	27.0	25.5	26.0	28.5	27.0	28.0	27.5	26.5	27.0
3	27.5	26.5	27.0	27.5	26.0	26.5	28.5	27.0	27.5	27.0	26.0	26.5
4	27.5	25.5	26.5	27.0	26.0	26.5	28.5	27.0	28.0	27.0	25.5	26.0
5	28.5	26.5	27.5	27.0	26.0	26.5	28.0	26.5	27.5	27.0	25.5	26.0
6	28.0	26.5	27.5	27.5	26.0	27.0	28.0	26.5	27.0	26.5	25.5	26.0
7	27.5	26.5	27.0	28.0	26.0	27.0	27.5	26.5	27.0	26.0	25.5	26.0
8	27.5	26.0	27.0	27.0	26.5	26.5	27.5	26.0	27.0	26.5	26.0	26.0
9	26.5	26.0	26.5	27.5	26.0	27.0	28.0	26.0	27.0	27.0	25.5	26.0
10	26.5	25.5	26.0	28.0	26.5	27.0	28.0	26.5	27.5	27.0	25.5	26.0
11	27.5	25.5	26.5	27.5	26.5	27.0	28.5	27.0	27.5	26.5	25.5	26.0
12	27.5	25.5	26.5	28.0	26.5	27.0	28.5	27.0	27.5	26.0	25.5	25.5
13	28.0	26.0	27.0	28.0	26.5	27.0	28.5	27.0	28.0	26.5	25.5	26.0
14	28.0	26.5	27.0	28.5	26.5	27.5	28.0	27.0	27.5	27.0	25.5	26.0
15	28.0	26.5	27.0	28.5	26.5	27.5	28.0	27.0	27.5	27.0	26.0	26.5
16	28.5	26.5	27.5	28.5	26.5	27.5	28.5	27.0	27.5	27.0	26.0	26.5
17	28.5	26.5	27.5	28.5	27.0	27.5	28.5	27.0	27.5	27.0	25.5	26.0
18	29.0	26.5	28.0	28.5	27.0	27.5	28.5	27.0	28.0	27.0	25.5	26.0
19	29.0	27.5	28.0	28.5	27.0	28.0	28.5	27.0	27.5	26.0	23.5	24.5
20	29.0	27.0	28.0	28.5	27.0	27.5	28.5	27.0	27.5	23.0	21.5	22.0
21	29.0	27.5	28.5	28.5	27.0	28.0	28.5	27.0	27.5	22.0	21.0	21.5
22	29.5	28.0	28.5	28.0	27.0	27.5	28.5	27.0	27.5	23.0	21.5	22.5
23	28.0	23.5	25.5	27.0	25.5	27.0	28.0	27.0	27.5	24.0	23.0	23.5
24	24.5	23.0	23.5	28.0	26.0	27.0	27.5	26.5	27.0	24.5	23.5	24.0
25	25.0	24.0	24.5	28.0	26.5	27.0	28.0	26.5	27.0	24.0	22.5	23.5
26	25.5	24.5	25.0	28.0	26.5	27.0	27.5	26.5	27.0	23.0	21.5	22.0
27	27.0	25.0	25.5	28.0	26.5	27.5	27.5	26.0	27.0	22.5	21.5	22.0
28	27.0	25.5	26.0	28.0	27.0	27.5	27.5	26.0	27.0	22.0	21.0	21.5
29	26.0	25.5	26.0	28.5	27.0	27.5	28.0	26.5	27.0	22.0	20.5	21.5
30	26.0	25.0	25.5	28.5	27.0	27.5	28.0	26.5	27.5	22.0	20.5	21.0
31	---	---	---	28.5	27.0	28.0	27.5	26.5	27.0	---	---	---
MONTH	29.5	23.0	26.5	28.5	25.0	27.0	28.5	26.0	27.5	27.5	20.5	24.5

GUADALUPE RIVER BASIN

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08180640 MEDINA RIVER AT LA COSTE, TX--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	7.6	6.4	6.9	8.7	7.8	8.2	8.5	7.8	8.1	10.4	9.7	10.0
2	7.7	6.4	6.9	8.4	7.7	8.0	8.3	7.7	7.9	10.0	9.6	9.8
3	8.2	6.2	7.1	8.2	7.5	7.8	8.3	7.6	7.9	10.0	9.4	9.7
4	8.2	6.5	7.3	7.5	7.1	7.3	8.8	7.8	8.3	9.9	9.4	9.6
5	8.1	6.6	7.3	7.9	7.1	7.5	9.3	8.4	8.8	10.0	9.4	9.7
6	8.2	6.3	7.2	8.4	7.6	7.9	9.4	8.8	9.1	10.0	9.4	9.6
7	7.8	6.3	7.0	8.0	7.5	7.8	9.5	8.9	9.1	10.0	9.3	9.6
8	7.7	6.3	6.9	7.9	7.5	7.7	9.7	9.0	9.3	9.9	9.3	9.5
9	7.4	6.3	6.8	8.2	7.7	7.9	9.9	9.3	9.5	9.5	9.2	9.3
10	7.9	6.6	7.2	8.7	8.0	8.3	10.0	9.4	9.6	9.7	9.0	9.3
11	8.2	7.1	7.6	8.7	8.0	8.4	9.8	9.3	9.4	9.9	9.1	9.5
12	8.6	7.1	7.8	8.9	8.3	8.6	9.6	8.9	9.2	10.0	9.3	9.6
13	8.7	7.6	8.0	9.0	8.3	8.7	9.3	8.7	9.0	10.3	9.3	9.7
14	8.8	7.5	8.0	8.9	8.5	8.7	9.3	8.6	8.9	10.4	9.4	9.8
15	8.6	7.1	7.7	9.1	8.3	8.6	9.0	8.3	8.6	10.1	9.3	9.6
16	8.7	7.1	7.8	8.6	8.1	8.3	8.8	8.2	8.4	10.1	9.1	9.6
17	8.3	6.9	7.6	8.6	8.0	8.3	8.6	7.9	8.2	9.8	9.2	9.4
18	8.4	7.3	7.7	8.5	7.9	8.1	8.5	7.8	8.1	9.3	8.9	9.2
19	8.5	7.4	7.8	8.2	7.6	7.9	8.5	7.9	8.2	9.6	8.9	9.2
20	8.7	7.5	8.0	8.2	7.5	7.8	8.7	8.0	8.3	9.9	8.9	9.3
21	8.0	7.2	7.6	7.9	7.3	7.5	8.5	7.8	8.1	10.0	9.0	9.4
22	8.5	7.2	7.8	7.6	7.0	7.3	8.5	7.9	8.2	10.5	9.3	9.9
23	8.8	7.8	8.2	7.4	6.9	7.1	9.5	8.3	9.0	10.2	9.6	9.9
24	8.9	7.9	8.3	7.9	7.1	7.5	10.1	9.3	9.7	10.6	9.4	10.0
25	9.1	8.1	8.5	8.0	7.2	7.6	10.4	9.9	10.1	10.8	9.6	10.1
26	9.1	8.2	8.5	7.8	7.1	7.4	10.4	10.0	10.1	10.8	9.6	10.1
27	9.2	8.2	8.5	7.8	7.0	7.3	10.3	9.8	10.0	10.6	9.4	9.9
28	9.1	8.1	8.5	8.1	7.2	7.6	10.0	9.6	9.8	10.4	9.3	9.8
29	9.1	8.2	8.5	8.5	7.6	7.9	9.7	9.3	9.5	10.6	9.3	9.8
30	9.1	8.1	8.5	8.3	7.6	7.9	9.6	9.1	9.3	10.2	9.0	9.6
31	8.8	8.0	8.3	---	---	---	10.0	9.3	9.6	10.5	9.2	9.8
MONTH	9.2	6.2	7.7	9.1	6.9	7.9	10.4	7.6	8.9	10.8	8.9	9.7
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	11.1	9.9	10.3	9.6	8.5	9.0	---	---	---	9.2	7.7	8.3
2	11.1	9.9	10.4	9.7	8.4	9.0	---	---	---	8.2	7.4	7.8
3	10.4	9.9	10.2	9.8	8.2	8.9	7.5	7.4	7.5	8.0	6.9	7.3
4	9.8	9.0	9.5	10.0	8.2	9.1	---	---	---	7.6	6.9	7.2
5	9.6	8.7	9.1	10.0	8.4	9.2	7.7	7.2	7.4	8.4	6.9	7.5
6	9.9	8.6	9.1	9.8	8.3	9.0	7.3	7.1	7.3	8.8	7.2	7.9
7	10.4	8.8	9.4	9.6	8.0	8.7	7.6	7.1	7.3	8.5	7.5	7.9
8	10.4	8.9	9.6	10.5	7.8	8.7	7.8	7.0	7.3	8.2	7.4	7.6
9	10.7	9.0	9.8	9.5	7.9	8.6	7.6	6.8	7.1	8.1	7.2	7.5
10	10.8	9.0	9.9	9.6	8.1	8.8	7.5	6.6	7.0	8.2	7.1	7.5
11	10.4	8.9	9.5	9.7	8.2	8.8	7.3	6.6	6.9	8.5	7.1	7.6
12	10.0	8.7	9.4	9.3	7.8	8.5	7.4	6.4	6.8	8.5	7.0	7.6
13	9.9	8.6	9.3	9.4	7.7	8.4	7.4	6.4	6.7	7.8	6.9	7.2
14	9.8	8.4	9.0	9.0	7.7	8.2	7.1	6.3	6.6	7.6	6.5	7.1
15	9.6	8.5	9.0	8.2	7.7	7.9	7.4	6.3	6.7	8.2	6.5	7.1
16	8.9	8.5	8.7	8.1	7.5	7.8	7.5	6.4	6.8	7.8	6.8	7.1
17	9.1	8.5	8.7	9.1	7.1	8.2	7.1	6.3	6.6	7.8	6.9	7.2
18	9.5	8.3	8.9	9.4	7.8	8.5	6.9	6.2	6.5	8.1	7.1	7.4
19	9.5	8.3	8.8	9.6	8.2	8.7	7.2	6.2	6.6	8.5	7.1	7.5
20	9.3	8.2	8.7	8.8	7.9	8.3	7.3	6.4	6.8	8.2	7.0	7.4
21	9.7	8.3	8.9	8.5	7.7	8.0	7.4	6.7	7.0	8.3	6.9	7.4
22	9.8	8.3	9.0	8.8	7.5	8.0	7.7	6.7	7.1	8.4	6.8	7.4
23	10.6	8.7	9.3	8.8	7.8	8.2	7.8	6.6	7.0	8.4	6.8	7.5
24	9.3	8.5	8.8	9.2	8.0	8.5	7.4	6.6	6.8	8.0	6.5	7.2
25	9.1	8.2	8.6	9.0	7.9	8.3	7.7	6.4	6.9	8.0	6.1	6.9
26	9.6	8.3	8.9	8.5	7.5	8.0	8.0	6.7	7.2	8.4	6.1	7.0
27	10.0	8.8	9.3	8.8	7.4	7.9	8.4	7.0	7.5	8.3	6.0	7.0
28	9.4	8.7	9.0	8.2	7.2	7.5	8.3	7.1	7.6	8.1	5.9	7.0
29	---	---	---	8.4	7.1	7.6	8.7	7.2	7.8	8.1	5.9	6.9
30	---	---	---	8.5	7.4	7.8	9.1	7.6	8.2	7.8	5.9	6.7
31	---	---	---	---	---	---	---	---	---	7.4	5.9	6.5
MONTH	11.1	8.2	9.3	10.5	7.1	8.4	9.1	6.2	7.1	9.2	5.9	7.3

GUADALUPE RIVER BASIN

08180640 MEDINA RIVER AT LA COSTE, TX--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	7.2	5.8	6.3	6.3	5.6	5.9	7.6	5.6	6.4	6.8	5.3	5.8
2	7.2	5.7	6.4	6.7	5.7	6.1	7.8	5.7	6.5	6.5	5.1	5.6
3	7.3	5.8	6.4	6.8	5.9	6.2	7.4	5.7	6.4	6.7	5.4	5.8
4	7.9	5.7	6.7	6.5	5.7	6.1	7.4	5.7	6.3	6.6	5.6	6.0
5	8.1	6.1	6.8	6.8	5.8	6.2	7.3	5.7	6.2	6.8	5.7	6.2
6	7.5	5.8	6.7	7.0	6.0	6.4	7.2	5.7	6.2	6.7	5.8	6.1
7	7.7	5.9	7.1	7.4	5.9	6.5	7.2	5.7	6.3	6.4	5.8	6.1
8	7.3	6.2	7.1	6.9	5.8	6.2	7.3	5.9	6.5	6.6	6.0	6.2
9	7.3	6.0	6.6	7.7	5.6	6.1	7.5	5.8	6.5	6.9	6.0	6.3
10	7.8	6.0	6.7	7.1	5.5	6.1	7.5	5.8	6.5	7.0	6.0	6.3
11	7.9	5.8	6.7	6.9	5.6	6.1	7.4	5.7	6.4	7.0	6.0	6.4
12	7.5	5.4	6.3	7.2	5.6	6.2	7.4	5.7	6.4	6.8	6.0	6.3
13	7.3	5.2	6.0	7.3	5.6	6.3	7.3	5.7	6.3	6.7	5.9	6.2
14	6.8	5.3	5.9	7.5	5.7	6.4	7.0	5.6	6.1	7.0	5.9	6.2
15	7.1	5.2	6.0	7.7	5.6	6.4	7.0	5.5	6.1	6.8	5.8	6.2
16	7.3	4.9	5.9	7.8	5.7	6.5	7.2	5.5	6.2	6.9	5.8	6.2
17	7.1	5.0	5.8	7.9	5.7	6.5	7.3	5.7	6.3	7.0	5.8	6.2
18	7.1	5.0	5.8	7.7	5.7	6.5	7.2	5.7	6.2	6.9	5.8	6.2
19	6.8	4.9	5.7	7.9	5.7	6.6	6.9	5.4	6.0	6.7	5.8	6.2
20	6.9	5.0	5.8	7.7	5.7	6.6	7.3	5.4	6.1	6.9	6.2	6.6
21	7.1	4.9	5.9	7.7	5.7	6.5	7.4	5.5	6.3	7.7	6.5	6.9
22	7.1	5.0	6.0	7.5	5.7	6.4	7.3	5.6	6.2	7.6	6.6	7.0
23	5.8	4.2	5.3	6.9	5.5	6.2	6.9	5.4	6.0	7.5	6.4	6.8
24	5.8	5.4	5.6	7.7	5.7	6.5	7.1	5.6	6.2	7.3	6.3	6.7
25	---	---	---	7.8	5.9	6.7	7.3	5.8	6.4	7.7	6.5	6.9
26	---	---	---	7.8	5.8	6.5	7.5	5.8	6.5	7.9	6.6	7.0
27	---	---	---	7.5	5.7	6.5	7.3	5.9	6.4	8.0	6.7	7.1
28	6.2	5.6	5.9	7.6	5.8	6.5	7.3	5.9	6.4	8.0	6.8	7.2
29	5.9	5.6	5.7	7.6	5.7	6.4	7.3	5.8	6.4	8.0	6.9	7.3
30	6.3	5.6	5.7	7.6	5.7	6.4	7.3	5.8	6.4	8.1	7.0	7.4
31	---	---	---	7.5	5.6	6.4	6.3	5.2	5.8	---	---	---
MONTH	8.1	4.2	6.2	7.9	5.5	6.4	7.8	5.2	6.3	8.1	5.1	6.4

GUADALUPE RIVER BASIN

301

08180700 MEDINA RIVER NEAR MACDONA, TX

LOCATION.--Lat 29°20'05", long 98°41'22", Bexar County, Hydrologic Unit 12100302, at downstream side of Loop 1604 bridge, 0.1 mi downstream from Polecat Creek, 0.7 mi north of Macdonia, 2.2 mi downstream from Potranca Creek, and 21.2 mi upstream from mouth.

DRAINAGE AREA.--885 mi², of which 634 mi² is above dam forming Medina Lake.

PERIOD OF RECORD.--January 1981 to current year.

GAGE.--Water-stage recorder. Datum of gage is 589.86 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Flow is regulated by Medina Lake (station 08179500) and by Medina Diversion Lake (capacity, 4,500 acre-ft) 41 mi upstream. For diversion of canal records, see Medina Canal near Riomedina (station 08180000). A large part of streamflow is lost into the Edwards and associated limestones where the Balcones Fault crosses the basin between the upstream end of Medina Lake and about 5 mi downstream from Medina Dam, or 0.9 mi downstream from the diversion dam. There are several small diversions below Medina Diversion Dam.

AVERAGE DISCHARGE.--10 years, 140 ft³/s (101,400 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 36,800 ft³/s May 30, 1987 (gage height, 20.58 ft); minimum daily, 14 ft³/s Jan. 11, 12, 1985.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,010 ft³/s Apr. 5 at 1200 hours (gage height, 12.08 ft); minimum daily, 27 ft³/s June 9.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	38	36	38	37	32	41	36	35	28	61	31	37
2	37	36	39	40	32	41	36	38	30	59	30	35
3	36	35	39	42	32	41	35	37	31	52	30	39
4	36	35	38	42	77	40	35	37	32	50	29	40
5	36	35	37	42	100	40	1650	37	33	49	30	44
6	36	34	37	42	61	40	188	36	33	49	31	40
7	36	33	37	42	51	40	89	35	28	46	32	43
8	35	38	37	41	47	40	66	45	28	45	33	73
9	39	42	37	41	43	40	58	58	27	46	35	49
10	47	41	37	42	41	40	52	46	28	44	34	44
11	41	37	37	42	41	40	49	41	29	42	31	e42
12	38	35	36	40	40	40	47	39	30	42	31	e43
13	37	35	34	38	39	40	45	40	30	40	30	e47
14	37	35	34	38	37	40	55	45	30	39	29	e45
15	37	35	35	37	36	40	57	41	30	37	30	e44
16	37	35	38	36	36	41	46	40	31	35	31	e44
17	37	35	37	36	37	44	43	58	40	34	31	e43
18	37	35	35	70	37	45	42	51	35	33	32	e43
19	36	35	34	64	42	43	43	43	33	28	34	e50
20	36	35	33	47	45	43	42	40	32	28	35	e46
21	41	35	33	39	43	43	49	37	30	29	31	e52
22	41	37	33	36	41	43	45	36	29	29	32	e45
23	41	37	33	35	41	43	43	36	265	30	32	e40
24	40	36	32	37	41	43	42	35	349	32	34	e40
25	40	36	33	38	41	43	42	35	102	32	33	e44
26	40	37	34	36	41	43	42	33	77	31	31	e41
27	40	38	35	36	41	42	42	31	66	32	30	e39
28	39	38	36	34	41	41	41	31	61	32	31	e37
29	38	37	37	34	---	39	38	30	57	31	32	e35
30	37	38	37	34	---	37	36	29	57	31	31	e34
31	37	---	37	33	---	36	---	28	---	31	46	---
TOTAL	1183	1086	1109	1251	1236	1272	3134	1203	1711	1199	992	1298
MEAN	38.2	36.2	35.8	40.4	44.1	41.0	104	38.8	57.0	38.7	32.0	43.3
MAX	47	42	39	70	100	45	1650	58	349	61	46	73
MIN	35	33	32	33	32	36	35	28	27	28	29	34
AC-FT	2350	2150	2200	2480	2450	2520	6220	2390	3390	2380	1970	2570
CAL YR 1990	TOTAL	19140	MEAN	52.4	MAX	1970	MIN	20	AC-FT	37960		
WTR YR 1991	TOTAL	16674	MEAN	45.7	MAX	1650	MIN	27	AC-FT	33070		

e Estimated

GUADALUPE RIVER BASIN

08180750 MEDIO CREEK AT PEARSALL ROAD AT SAN ANTONIO, TX

LOCATION.--Lat 29°19'40", long 98°38'19", Bexar County, Hydrologic Unit 12100302, on right bank 37 ft downstream from centerline of Pearsall Road and 31 ft shoreward from right abutment of culvert, 1.2 mi southwest of Loop 410, and 5.0 mi upstream from mouth.

DRAINAGE AREA.--47.9 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--December 1986 to current year.

GAGE.--Water-stage recorder. Datum of gage is 596.52 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Satellite telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,140 ft³/s June 13, 1987 (gage height, 10.09 ft); minimum daily, 2.2 ft³/s Dec. 8, 1989.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 818 ft³/s July 4 at 1900 hours (gage height, 7.59 ft); minimum daily, 2.8 ft³/s Mar. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.2	4.3	4.3	5.7	4.5	5.3	5.2	4.5	5.4	12	4.2	8.4
2	5.0	5.1	5.2	5.8	4.2	5.2	4.8	73	5.6	7.2	4.0	8.3
3	4.8	5.0	5.3	5.9	4.9	5.2	4.5	12	5.7	5.3	4.0	5.9
4	5.2	6.8	4.5	5.3	62	5.5	4.7	17	5.6	197	4.4	9.6
5	4.8	6.9	4.6	5.1	14	5.0	182	7.4	5.5	36	4.5	5.5
6	4.7	5.5	4.8	6.0	7.4	4.9	28	6.5	5.5	9.3	4.5	7.2
7	5.4	5.4	4.5	5.6	5.7	5.2	11	5.6	5.7	6.8	4.2	7.4
8	5.1	18	4.5	4.9	5.0	5.0	8.1	31	5.7	5.9	4.8	5.8
9	10	12	5.4	5.3	4.6	4.8	6.1	20	5.7	5.2	4.7	5.7
10	6.9	5.7	5.6	7.8	4.9	5.3	6.1	8.0	5.7	4.9	4.2	5.1
11	4.5	6.1	5.1	5.7	5.2	6.0	5.1	6.6	5.1	4.8	4.5	4.8
12	4.4	6.3	4.9	4.5	4.6	5.4	6.4	6.5	5.3	4.5	4.6	4.9
13	4.3	6.0	4.8	4.9	4.8	5.2	4.7	19	5.6	4.5	4.3	4.8
14	5.0	6.0	4.8	5.1	4.6	5.2	16	10	5.2	4.8	4.6	4.3
15	5.2	5.8	4.8	4.3	4.4	5.6	8.7	6.7	5.8	4.5	4.8	7.3
16	4.7	5.8	5.4	4.1	4.1	10	5.5	24	6.7	4.2	4.8	5.7
17	4.3	5.5	5.7	4.3	4.9	11	5.7	23	16	3.9	4.7	4.7
18	4.2	6.0	5.0	89	5.4	6.0	5.7	8.4	7.8	3.8	5.2	4.4
19	3.8	6.2	5.0	10	13	5.3	5.6	7.5	6.4	3.9	5.5	4.2
20	4.1	5.6	4.9	5.8	6.2	5.2	15	7.3	7.7	3.9	4.9	6.0
21	7.4	5.0	5.0	5.2	5.0	5.2	6.7	6.1	5.7	4.2	4.6	5.8
22	9.7	5.0	5.0	5.1	5.5	5.7	6.5	5.8	5.6	4.3	4.2	5.2
23	5.0	5.4	5.9	4.3	4.8	5.4	5.7	5.6	72	4.4	4.4	6.0
24	4.3	4.7	6.2	9.7	5.5	5.6	5.1	6.1	17	4.1	4.9	5.7
25	4.2	5.1	6.1	5.8	5.6	6.0	5.2	6.0	6.8	4.1	4.6	7.0
26	4.2	5.5	5.8	4.6	4.9	5.9	5.5	6.3	5.1	4.0	4.8	5.0
27	4.1	5.0	5.5	5.0	5.1	5.2	5.1	6.3	4.7	4.1	4.2	4.6
28	4.7	4.7	5.4	5.0	5.1	5.7	5.1	6.3	4.4	4.2	4.1	4.3
29	4.8	4.3	5.2	4.5	---	5.4	5.4	5.4	4.4	4.0	4.1	4.7
30	4.2	4.4	5.3	5.6	---	2.8	4.7	5.1	6.5	5.2	4.0	5.1
31	4.2	---	5.6	5.6	---	5.7	---	5.2	---	4.6	5.4	---
TOTAL	158.4	183.1	160.1	255.5	215.9	174.9	393.9	368.2	259.9	379.6	140.7	173.4
MEAN	5.11	6.10	5.16	8.24	7.71	5.64	13.1	11.9	8.66	12.2	4.54	5.78
MAX	10	18	6.2	89	62	11	182	73	72	197	5.5	9.6
MIN	3.8	4.3	4.3	4.1	4.1	2.8	4.5	4.5	4.4	3.8	4.0	4.2
AC-FT	314	363	318	507	428	347	781	730	516	753	279	344
CAL YR 1990	TOTAL	3245.3	MEAN	8.89	MAX	546	MIN	3.8	AC-FT	6440		
WTR YR 1991	TOTAL	2863.6	MEAN	7.85	MAX	197	MIN	2.8	AC-FT	5680		

08180750 MEDIO CREEK AT PEARSALL ROAD AT SAN ANTONIO, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: February 1987 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: January 1987 to current year.
 pH: January 1987 to current year.
 WATER TEMPERATURE: January 1987 to current year.
 DISSOLVED OXYGEN: January 1987 to current year.

INSTRUMENTATION.--Since January 1987, a four-parameter water-quality monitor continuously records specific conductance, pH, water temperature, and dissolved oxygen at this station.

REMARKS.--Interruptions in the record were due to malfunctions of the instrument. Where maximum or minimum specific conductance values are not shown, mean value is estimated. Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District Office upon request. There is a problem at this site with one or more probes being at least partially out of the water when the flow is low. This is due to the nature of the site and installation. Some dissolved oxygen data was lost and some conductivity data had to be estimated because of this problem.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 1,160 microsiemens Mar. 5-8, 1987; minimum, 160 microsiemens April 15, 1991.
 pH: Maximum, 8.8 units Jan. 30, Feb. 15, 1988, Mar. 9, 1989; minimum, 7.0 units on several days during period of record.
 WATER TEMPERATURE: Maximum, 30.5°C on several days during summer months; minimum, 1.0°C Dec. 24, 1989.
 DISSOLVED OXYGEN: Maximum, 17.1 mg/L Mar. 11, 1989; minimum, 3.2 mg/L Apr. 13, 1987.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 1,070 microsiemens Dec. 31; minimum, 160 microsiemens Apr. 15.
 pH: Maximum, 8.6 units Aug. 19; minimum, 7.3 units April 21, June 15, 17.
 WATER TEMPERATURE: Maximum, 30.0°C June 16, 22; minimum, 6.0°C Dec. 24, 25.
 DISSOLVED OXYGEN: Maximum, 14.0 mg/L Feb. 2; minimum, 5.0 mg/L Nov. 27, Aug. 22, 23.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	HARD-NESS TOTAL (MG/L AS CaCO3)	HARD-NESS NONCARB DISSOLV FLD. AS CaCO3 (MG/L)
OCT 17...	1520	4.5	848	8.2	25.0	8.1	100	2.4	250	32
DEC 14...	1122	5.8	924	8.1	16.0	9.3	97	2.2	250	43
APR 10...	0845	6.9	930	7.9	21.0	6.6	76	1.8	290	84
23...	1339	6.3	868	8.0	23.0	7.2	86	1.3	280	79
JUN 28...	0857	4.1	850	8.0	27.5	7.0	91	0.8	270	72
AUG 27...	1140	4.8	905	8.0	27.0	6.8	87	0.9	270	88

DATE	CALCIUM DIS-SOLVED (MG/L AS Ca)	MAGNE-SIUM, DIS-SOLVED (MG/L AS Mg)	SODIUM, DIS-SOLVED (MG/L AS Na)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT DIS-FIX END FIELD CaCO3 (MG/L)	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 17...	75	15	79	2	8.6	220	58	99	0.30	16
DEC 14...	75	16	84	2	8.9	210	45	98	0.50	14
APR 10...	94	14	73	2	8.6	210	93	89	0.30	17
23...	88	14	74	2	8.0	200	69	89	0.30	16
JUN 28...	84	14	74	2	7.7	200	71	89	0.30	17
AUG 27...	80	17	82	2	8.2	180	64	100	0.30	9.4

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS TOTAL (MG/L AS P)	PHOS-PHORUS ORTHO TOTAL (MG/L AS P)
OCT 17...	481	5.16	0.040	5.20	0.040	1.1	1.1	5.10	5.20
DEC 14...	467	6.07	0.030	6.10	0.050	1.2	1.2	5.90	5.70
APR 10...	514	8.01	0.090	8.10	0.100	1.0	1.1	3.90	4.00
23...	477	11.9	0.060	12.0	0.060	1.2	1.3	4.30	4.50
JUN 28...	474	8.96	0.040	9.00	0.040	1.1	1.1	4.00	4.20
AUG 27...	470	17.0	0.040	17.0	0.020	0.78	0.80	5.40	5.60

GUADALUPE RIVER BASIN

08180750 MEDIO CREEK AT PEARSALL ROAD AT SAN ANTONIO, TX--Continued

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1990 TO SEPTEMBER 1991

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. 1990	158.4	748	413	176	77	33	60	26	230
NOV. 1990	183.1	746	411	203	77	38	60	30	230
DEC. 1990	160.1	817	449	194	86	37	64	28	250
JAN. 1991	255.5	677	374	258	69	47	55	38	210
FEB. 1991	215.9	752	413	241	79	46	59	35	230
MAR. 1991	174.9	911	498	235	100	47	69	33	270
APR. 1991	393.9	599	332	353	60	64	49	52	180
MAY 1991	368.2	648	358	356	65	65	53	53	200
JUNE 1991	259.9	656	362	254	67	47	53	37	200
JULY 1991	379.6	620	344	352	62	63	51	53	190
AUG. 1991	140.7	840	461	175	89	34	66	25	250
SEPT 1991	173.4	791	435	204	83	39	63	29	240
TOTAL	2863.6	**	**	3000	**	561	**	437	**
WTD.AVG.	7.8	704	388	**	72	**	57	**	210

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	863	745	805	889	762	821	979	813	885	814	686	757
2	863	745	812	898	769	837	952	832	895	779	686	747
3	824	707	771	944	777	864	1010	832	912	784	694	745
4	828	669	751	867	703	768	936	803	873	790	698	740
5	831	711	759	796	666	722	988	810	878	796	703	742
6	835	674	765	803	627	701	1000	821	906	803	625	756
7	879	756	812	706	627	672	1010	874	928	852	315	696
8	883	760	806	745	510	664	979	839	917	886	766	811
9	805	403	720	588	471	521	1030	848	913	875	789	820
10	769	606	691	588	471	533	1010	857	902	883	799	843
11	690	489	627	706	510	605	1010	816	883	892	765	819
12	654	448	554	824	627	722	958	802	857	893	772	804
13	780	573	679	824	706	750	911	762	825	866	778	811
14	867	699	762	824	706	775	940	825	885	911	825	854
15	871	703	776	863	745	797	931	818	860	963	835	900
16	917	747	814	863	745	789	890	772	849	1010	885	932
17	922	752	814	863	745	820	951	772	853	974	892	927
18	842	758	813	863	745	815	910	745	849	896	214	453
19	890	676	796	824	745	775	863	745	791	649	387	521
20	894	722	795	902	745	829	863	708	778	785	563	687
21	770	640	740	902	784	812	869	748	794	878	785	823
22	732	386	666	863	745	797	796	677	741	934	835	877
23	735	551	674	902	745	815	801	679	742	941	863	887
24	676	513	574	902	745	805	808	643	730	902	785	858
25	802	599	693	863	745	805	773	688	724	828	669	758
26	854	686	780	863	745	816	739	654	703	829	632	738
27	903	775	819	883	747	810	783	657	700	874	712	785
28	910	782	827	901	769	834	749	624	709	915	834	871
29	917	748	819	874	759	819	755	587	713	960	877	900
30	872	749	795	928	759	857	761	550	712	961	880	922
31	880	755	810	---	---	---	1070	677	739	925	845	898
MONTH	922	386	752	944	471	765	1070	550	821	1010	214	796

GUADALUPE RIVER BASIN

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08180750 MEDIO CREEK AT PEARSALL ROAD AT SAN ANTONIO, TX--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	929	846	879	980	902	947	941	902	917	941	549	929
2	890	769	808	980	902	957	941	902	926	667	196	410
3	936	810	886	980	902	947	941	863	913	706	431	528
4	936	244	492	980	902	938	941	510	886	824	510	647
5	614	368	481	980	902	956	863	196	434	627	510	561
6	781	574	701	980	902	952	471	235	350	824	627	737
7	863	781	821	980	902	945	588	431	520	863	824	857
8	941	824	878	980	902	953	824	588	730	902	314	766
9	1020	902	960	980	902	952	902	784	823	471	314	404
10	1020	941	981	1020	902	951	980	824	900	627	471	564
11	1020	941	975	980	941	965	950	920	937	784	627	701
12	1020	941	989	980	902	948	970	950	962	863	784	845
13	1020	941	983	980	902	945	970	930	949	902	471	748
14	1020	941	965	980	902	936	960	310	800	706	588	659
15	1020	941	982	980	902	920	380	160	225	667	588	620
16	1020	941	979	941	863	913	---	---	450	863	392	744
17	1020	941	969	941	706	801	---	---	740	431	314	361
18	980	902	939	784	510	675	902	824	845	588	431	534
19	980	745	903	784	627	703	941	902	919	824	627	716
20	863	627	787	902	745	848	980	706	917	941	824	875
21	706	549	626	941	863	887	667	450	544	941	902	919
22	902	706	808	941	863	915	784	510	633	941	902	932
23	941	863	900	980	902	924	902	784	858	941	941	941
24	941	863	924	980	902	942	941	902	912	980	941	952
25	980	902	920	941	902	916	941	902	914	980	980	980
26	980	902	937	980	902	935	941	941	941	980	941	945
27	980	902	935	980	902	944	980	941	959	941	902	904
28	980	902	947	980	902	936	1020	980	981	902	902	902
29	---	---	---	980	902	945	980	980	980	902	902	902
30	---	---	---	---	---	940	980	941	966	941	902	908
31	---	---	---	970	950	960	---	---	---	941	941	941
MONTH	1020	244	870	1020	510	916	1020	160	794	980	196	756
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	941	941	941	838	576	693	833	791	805	828	777	813
2	941	941	941	713	630	666	860	835	847	755	374	610
3	941	902	920	737	623	662	884	857	867	713	462	573
4	941	902	911	823	168	540	911	882	899	845	725	811
5	902	902	902	400	227	313	908	889	898	852	755	835
6	902	863	899	540	408	460	894	874	886	742	574	623
7	902	863	899	720	549	647	891	811	870	716	630	679
8	902	902	902	794	723	757	864	845	854	799	628	719
9	902	863	872	840	794	821	---	---	870	799	706	748
10	863	863	863	879	840	861	---	---	860	---	---	780
11	902	863	878	889	872	880	---	---	850	---	---	840
12	902	863	886	904	877	890	---	---	840	---	---	880
13	902	863	901	926	894	912	---	---	830	---	---	880
14	902	863	893	916	906	913	---	---	840	---	---	880
15	902	863	876	906	879	893	---	---	825	---	---	880
16	902	902	902	916	889	901	847	701	815	913	886	901
17	902	549	765	911	889	900	842	813	826	899	703	781
18	510	431	450	901	884	893	830	816	824	864	713	794
19	627	392	479	921	899	909	830	808	818	877	850	867
20	784	627	718	921	906	913	821	794	812	872	852	866
21	784	549	668	913	896	906	823	794	803	872	855	863
22	863	784	830	904	884	894	821	801	812	877	723	829
23	863	275	390	904	884	893	813	759	800	789	703	738
24	471	392	419	899	874	885	835	794	811	862	774	818
25	---	---	420	886	862	873	840	803	823	869	830	853
26	---	---	524	872	857	866	862	801	833	847	696	756
27	796	645	722	872	857	864	867	847	857	850	791	824
28	847	794	818	872	857	865	867	850	858	828	769	789
29	857	825	842	867	847	857	860	845	851	867	828	846
30	864	833	851	860	838	850	862	842	851	877	847	857
31	---	---	---	860	803	833	857	723	825	---	---	---
MONTH	941	275	776	926	168	807	911	701	841	913	374	798

GUADALUPE RIVER BASIN

08180750 MEDIO CREEK AT PEARSALL ROAD AT SAN ANTONIO, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	8.4	8.2	8.3	8.4	8.2	8.3	8.2	8.0	8.1	8.3	8.0	8.2
2	8.3	8.0	8.2	8.4	8.2	8.3	8.1	7.9	8.0	8.2	8.0	8.1
3	8.4	7.9	8.1	8.3	8.2	8.2	8.1	7.9	8.0	8.2	8.0	8.1
4	8.3	8.1	8.2	8.3	8.1	8.2	8.2	8.0	8.1	8.1	8.0	8.1
5	8.2	8.0	8.1	8.3	8.2	8.2	8.2	8.1	8.1	8.1	8.0	8.0
6	8.2	8.0	8.0	8.3	8.0	8.2	8.2	8.1	8.2	8.1	7.9	8.0
7	8.2	7.8	8.0	8.2	8.0	8.1	8.2	8.1	8.2	8.3	7.9	8.1
8	8.2	7.8	7.9	8.1	8.0	8.1	8.2	8.1	8.2	8.3	8.1	8.2
9	8.2	7.8	8.1	8.0	7.9	8.0	8.2	8.1	8.2	8.3	8.1	8.2
10	8.2	7.8	8.0	7.9	7.8	7.9	8.3	8.0	8.2	8.3	8.1	8.2
11	8.0	7.6	7.8	8.1	7.9	8.0	8.3	8.1	8.2	8.3	8.1	8.2
12	7.9	7.7	7.8	8.1	7.9	8.0	8.2	8.0	8.1	8.3	8.1	8.2
13	8.2	7.9	8.1	8.1	8.0	8.1	8.2	8.0	8.1	8.4	8.1	8.2
14	8.3	8.1	8.2	8.1	8.0	8.0	8.2	8.0	8.1	8.3	8.2	8.2
15	8.2	7.8	8.1	8.1	7.9	8.0	8.2	8.0	8.0	8.3	8.1	8.2
16	8.2	7.9	8.1	8.0	7.9	7.9	8.1	7.9	8.0	8.2	8.0	8.1
17	8.3	8.0	8.1	8.0	7.8	7.9	8.0	7.8	7.9	8.1	8.0	8.0
18	8.4	8.1	8.3	7.9	7.7	7.8	8.1	7.9	8.0	8.0	7.6	7.8
19	8.4	7.9	8.1	---	---	---	8.2	8.0	8.1	7.7	7.6	7.7
20	8.1	7.8	8.0	---	---	---	8.2	8.0	8.0	7.8	7.7	7.8
21	8.0	7.6	7.8	---	---	---	8.2	7.9	8.0	8.0	7.8	7.9
22	---	---	---	---	---	---	8.2	8.0	8.1	8.0	7.8	7.9
23	---	---	---	---	---	---	8.3	8.1	8.2	8.0	7.9	8.0
24	8.3	7.5	7.9	---	---	---	8.4	8.2	8.3	8.2	7.9	8.0
25	8.4	7.9	8.1	---	---	---	8.4	8.3	8.4	8.1	7.9	8.0
26	8.4	7.9	8.1	---	---	---	8.4	8.3	8.3	8.1	7.9	8.0
27	8.5	8.0	8.2	---	---	---	8.3	8.2	8.2	8.2	7.9	8.1
28	8.5	7.9	8.1	8.2	7.8	8.0	8.2	8.1	8.2	8.4	8.0	8.2
29	8.4	7.8	8.2	8.2	8.0	8.1	8.2	8.0	8.1	8.4	8.0	8.2
30	8.5	8.2	8.3	8.3	8.1	8.2	8.2	8.0	8.1	8.4	8.0	8.2
31	8.4	8.2	8.3	---	---	---	8.3	7.7	8.1	8.5	8.1	8.3
MONTH	8.5	7.5	8.1	8.4	7.7	8.1	8.4	7.7	8.1	8.5	7.6	8.1
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	8.5	8.1	8.3	8.0	7.6	7.8	7.8	7.6	7.7	8.3	7.8	8.1
2	8.5	8.2	8.3	8.0	7.7	7.8	7.7	7.5	7.6	8.3	7.7	7.9
3	8.4	8.1	8.2	8.0	7.6	7.8	7.7	7.6	7.6	8.0	7.6	7.7
4	8.1	7.7	7.9	8.0	7.6	7.8	8.2	7.6	7.9	8.0	7.7	7.9
5	7.8	7.7	7.8	8.0	7.6	7.8	8.1	7.8	8.0	7.8	7.7	7.8
6	8.0	7.7	7.8	7.9	7.7	7.7	8.0	7.9	7.9	7.9	7.5	7.8
7	8.1	7.8	7.9	7.9	7.6	7.8	8.1	8.0	8.0	8.0	7.8	7.9
8	8.2	7.9	8.1	7.9	7.6	7.7	8.2	8.0	8.1	---	---	---
9	8.4	8.1	8.2	7.9	7.6	7.7	8.1	8.0	8.1	---	---	---
10	8.4	8.1	8.2	8.1	7.7	7.9	8.1	7.8	8.0	8.1	7.9	8.0
11	8.5	8.0	8.2	8.0	7.6	7.8	8.0	7.8	7.9	8.2	8.0	8.1
12	8.4	8.0	8.2	7.8	7.6	7.7	8.1	7.9	8.0	8.2	8.1	8.1
13	8.2	7.8	8.0	7.9	7.7	7.8	8.0	7.9	8.0	8.2	8.0	8.1
14	8.1	7.8	7.9	8.1	7.7	7.9	---	---	---	8.0	7.9	8.0
15	8.1	7.8	7.9	8.1	7.9	8.0	---	---	---	8.0	7.8	7.9
16	8.0	7.8	7.9	8.0	7.8	7.9	---	---	---	8.2	7.9	8.0
17	8.1	7.8	7.9	8.0	7.8	7.9	---	---	---	8.0	7.8	7.9
18	8.1	7.8	7.9	8.0	7.7	7.8	8.1	8.0	8.1	8.0	7.8	7.9
19	7.9	7.7	7.8	8.1	7.8	7.9	8.0	7.9	8.0	7.8	7.6	7.7
20	8.0	7.6	7.8	8.0	7.8	7.9	8.0	7.6	7.9	8.0	7.6	7.9
21	8.1	7.6	7.8	7.9	7.8	7.9	7.6	7.3	7.5	8.1	8.0	8.0
22	8.2	7.9	8.0	7.8	7.6	7.7	8.1	7.4	7.8	8.2	8.0	8.1
23	8.3	7.9	8.1	7.9	7.6	7.7	8.2	8.1	8.1	8.2	8.1	8.1
24	8.1	7.8	8.0	8.0	7.8	7.9	8.2	8.1	8.1	8.2	8.1	8.2
25	8.1	7.8	7.9	7.9	7.8	7.8	8.3	8.1	8.2	8.2	8.1	8.1
26	8.1	7.8	8.0	7.9	7.8	7.8	8.2	8.2	8.2	8.2	8.0	8.1
27	8.1	7.8	7.9	8.0	7.8	7.8	8.2	8.1	8.2	8.1	8.0	8.1
28	7.9	7.7	7.8	7.8	7.7	7.8	8.1	8.0	8.0	8.1	8.0	8.0
29	---	---	---	7.9	7.7	7.7	8.0	7.9	8.0	8.0	8.0	8.0
30	---	---	---	8.1	7.8	7.9	7.9	7.8	7.9	8.2	8.0	8.1
31	---	---	---	7.8	7.8	7.8	---	---	---	8.2	8.0	8.1
MONTH	8.5	7.6	8.0	8.1	7.6	7.8	8.3	7.3	8.0	8.3	7.5	8.0

GUADALUPE RIVER BASIN

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08180750 MEDIO CREEK AT PEARSALL ROAD AT SAN ANTONIO, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	8.2	8.1	8.1	7.8	7.7	7.8	---	---	---	8.5	8.3	8.4
2	8.2	8.0	8.1	7.9	7.7	7.8	---	---	---	8.3	7.4	7.8
3	8.1	8.0	8.1	7.9	7.8	7.8	---	---	---	7.9	7.6	7.8
4	8.2	8.0	8.1	7.8	7.5	7.6	---	---	---	8.1	7.7	7.9
5	8.2	8.1	8.2	7.6	7.5	7.5	---	---	---	8.3	7.8	8.1
6	8.2	8.1	8.2	7.7	7.5	7.6	---	---	---	8.4	8.2	8.3
7	8.2	8.1	8.2	7.8	7.7	7.8	---	---	---	8.4	8.0	8.2
8	8.2	8.1	8.2	7.9	7.7	7.8	8.0	7.9	7.9	8.0	7.9	7.9
9	8.2	8.1	8.2	8.0	7.8	7.9	---	---	---	8.1	7.9	8.0
10	8.2	8.1	8.1	8.0	7.9	8.0	---	---	---	---	---	---
11	8.2	8.0	8.1	8.0	7.9	8.0	---	---	---	---	---	---
12	8.2	8.0	8.1	8.1	7.9	8.0	---	---	---	---	---	---
13	8.0	7.9	8.0	8.0	7.8	7.9	---	---	---	8.0	7.5	7.9
14	7.8	7.6	7.8	7.9	7.8	7.8	---	---	---	---	---	---
15	7.6	7.3	7.5	8.0	7.8	7.9	---	---	---	---	---	---
16	7.5	7.4	7.4	8.0	7.9	7.9	---	---	---	---	---	---
17	7.5	7.3	7.4	8.0	7.8	7.9	8.4	8.2	8.3	---	---	---
18	7.6	7.4	7.5	8.0	7.9	7.9	8.5	8.3	8.4	---	---	---
19	7.7	7.5	7.6	8.0	7.9	7.9	8.6	8.3	8.4	8.2	8.1	8.2
20	7.9	7.7	7.8	8.0	7.9	7.9	8.5	8.4	8.5	8.3	8.2	8.2
21	7.9	7.6	7.8	8.0	7.8	7.9	8.5	8.4	8.4	8.4	8.2	8.3
22	8.0	7.9	7.9	7.9	7.8	7.9	8.5	8.3	8.4	8.4	8.2	8.3
23	7.9	7.6	7.7	8.1	7.8	7.9	8.3	8.2	8.3	8.3	8.2	8.2
24	7.8	7.7	7.7	8.1	8.0	8.0	8.2	8.0	8.2	8.3	8.1	8.2
25	---	---	---	8.0	7.9	8.0	8.1	7.9	8.0	8.3	8.2	8.3
26	---	---	---	---	---	---	8.1	7.9	8.0	8.3	8.2	8.2
27	8.0	7.9	7.9	---	---	---	8.3	8.1	8.2	8.3	8.2	8.2
28	8.0	7.9	7.9	---	---	---	8.4	8.4	8.4	8.2	8.1	8.1
29	8.0	7.9	7.9	---	---	---	8.5	8.2	8.4	8.1	8.0	8.0
30	7.9	7.8	7.9	---	---	---	8.4	8.3	8.3	8.0	7.9	8.0
31	---	---	---	---	---	---	8.5	8.3	8.4	---	---	---
MONTH	8.2	7.3	7.9	8.1	7.5	7.9	8.6	7.9	8.3	8.5	7.4	8.1

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	24.5	22.5	23.5	20.0	18.0	19.0	15.5	12.5	14.0	11.5	10.5	11.0
2	24.5	23.0	24.0	20.5	18.5	19.5	17.0	15.0	16.0	12.0	11.0	11.5
3	25.0	24.0	24.0	21.5	19.5	20.5	16.5	13.0	15.0	12.5	10.5	11.5
4	25.5	23.5	24.5	21.5	17.5	19.5	13.5	11.5	12.5	10.5	10.0	10.5
5	26.0	24.5	25.5	17.5	15.5	16.5	11.5	9.5	10.5	12.0	10.0	11.0
6	27.0	25.0	26.0	16.5	13.5	15.5	12.0	9.0	10.5	13.0	11.5	12.5
7	27.5	26.0	26.5	16.5	16.0	16.0	11.0	9.5	10.0	12.5	10.5	12.0
8	27.5	26.5	27.0	16.5	15.0	15.5	11.0	8.0	9.5	12.0	11.0	11.5
9	27.0	22.0	24.5	15.5	14.0	15.0	10.5	8.0	9.5	12.0	11.0	11.5
10	21.5	19.5	20.5	15.0	12.5	14.0	11.0	8.5	10.0	13.0	12.0	12.5
11	19.0	17.5	18.5	15.0	12.5	14.0	13.0	10.0	11.5	12.5	11.0	11.5
12	19.0	16.5	18.0	15.5	12.5	14.0	14.5	12.0	13.0	12.0	9.5	10.5
13	19.0	17.0	18.0	16.0	13.5	15.0	15.5	12.5	14.0	11.0	9.0	10.0
14	20.5	18.0	19.0	17.0	14.0	15.5	16.5	14.5	15.5	13.0	10.0	11.5
15	22.0	20.0	21.0	18.0	16.5	17.5	18.0	16.5	17.5	13.5	11.0	12.0
16	23.0	21.0	22.0	19.5	17.5	18.5	18.5	17.0	17.5	13.0	10.5	12.0
17	24.5	22.5	23.5	20.0	18.5	19.0	20.0	18.0	19.0	13.0	11.5	12.5
18	23.0	20.0	21.5	20.0	18.5	19.5	19.0	15.5	17.5	12.5	11.0	11.5
19	20.0	17.5	19.0	20.0	19.0	19.5	15.5	13.5	15.0	12.5	10.5	11.5
20	21.0	18.0	19.5	21.5	19.5	20.5	17.0	14.5	16.0	12.5	10.0	11.5
21	21.0	18.0	19.5	22.5	21.0	21.5	18.5	14.5	17.0	11.0	9.0	10.0
22	18.5	16.5	17.5	22.5	21.5	22.0	14.0	9.5	11.5	10.5	8.5	9.5
23	17.5	16.0	17.0	22.0	19.5	21.5	9.5	7.5	8.5	10.0	9.0	9.5
24	17.5	15.5	16.5	20.0	17.5	19.0	7.5	6.0	7.0	12.5	9.5	11.0
25	17.5	15.5	16.5	20.5	19.0	20.0	7.0	6.0	6.5	12.5	10.0	11.5
26	18.0	15.5	16.5	21.5	20.0	21.0	8.5	7.0	8.0	12.5	10.0	11.5
27	18.5	16.0	17.5	24.0	21.0	22.0	10.5	8.5	9.5	14.0	12.0	13.0
28	19.0	16.5	18.0	21.0	17.5	19.0	11.5	9.5	10.5	14.5	12.0	13.5
29	19.0	17.0	18.0	17.0	14.5	16.0	14.5	11.5	13.0	17.0	14.0	15.5
30	19.0	17.0	18.5	15.0	13.0	14.0	15.5	11.5	14.0	15.0	13.0	13.5
31	20.0	17.5	19.0	---	---	---	15.0	10.5	11.5	13.5	11.0	12.0
MONTH	27.5	15.5	20.5	24.0	12.5	18.0	20.0	6.0	12.5	17.0	8.5	11.5

08180750 MEDIO CREEK AT PEARSALL ROAD AT SAN ANTONIO, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	12.5	10.0	11.0	18.0	14.0	16.0	18.0	15.5	17.0	23.0	21.0	22.0
2	12.5	9.0	11.0	18.5	15.0	16.5	18.5	17.0	17.5	22.5	20.5	21.5
3	13.5	11.5	12.0	18.0	15.0	16.5	19.5	17.5	18.5	23.5	22.0	22.5
4	15.5	13.0	14.5	18.5	14.5	16.5	21.0	18.5	19.5	24.5	23.5	24.0
5	17.5	15.0	16.0	19.0	14.0	16.5	20.0	18.0	18.5	24.5	23.0	23.5
6	18.0	15.0	16.5	20.0	15.5	18.0	18.5	17.5	18.0	23.5	21.0	22.5
7	17.0	14.0	15.5	19.0	16.5	18.0	20.0	18.0	19.0	22.5	21.5	22.0
8	16.0	13.0	14.5	19.0	16.0	17.5	23.0	19.5	21.0	22.5	21.0	21.5
9	15.5	12.5	14.0	18.5	15.5	17.0	23.5	22.0	22.5	22.5	20.5	21.5
10	16.5	12.5	14.5	18.0	14.5	16.0	22.5	21.0	22.0	24.0	22.0	23.0
11	16.0	14.5	15.5	19.0	15.0	17.0	22.0	21.5	22.0	26.0	23.5	24.5
12	18.0	15.0	16.5	20.5	17.5	18.5	22.0	21.0	22.0	27.0	25.0	26.0
13	18.5	16.0	17.0	19.5	16.0	18.0	25.0	21.0	23.0	26.0	24.0	25.0
14	18.0	15.0	16.5	17.0	15.5	16.5	24.5	21.0	23.0	25.5	24.0	24.5
15	16.0	13.5	15.0	15.0	13.5	14.5	22.0	20.0	21.0	26.0	24.0	25.0
16	13.5	12.0	12.5	14.0	13.0	13.5	---	---	---	25.5	20.0	25.0
17	14.5	12.5	13.5	17.5	13.5	15.5	---	---	---	22.5	19.0	21.0
18	17.5	13.5	15.5	17.5	14.5	16.0	24.0	23.0	23.5	25.0	21.5	23.5
19	17.5	15.5	16.5	19.0	16.0	17.0	25.0	23.5	24.0	26.0	23.5	24.5
20	15.5	14.0	15.0	19.0	17.5	18.0	23.5	22.5	23.0	26.0	24.0	25.0
21	14.5	13.0	13.5	20.5	18.5	19.5	22.5	21.0	21.5	26.5	24.5	25.0
22	16.0	12.0	14.0	20.0	18.5	19.5	24.0	21.5	23.0	26.5	25.0	25.5
23	16.5	12.5	14.5	18.5	16.5	17.5	23.5	21.0	22.5	27.0	25.5	26.0
24	16.0	14.5	15.0	19.0	16.5	17.5	23.0	22.5	23.0	27.5	25.5	26.5
25	15.5	13.0	14.5	21.0	18.0	19.5	24.5	22.5	23.5	28.0	26.0	27.0
26	13.5	12.5	13.0	22.0	20.0	21.0	25.0	23.5	24.5	28.5	26.0	27.0
27	13.5	12.5	13.0	22.5	21.0	21.5	25.5	24.5	25.0	28.5	26.5	27.5
28	14.5	13.0	13.5	22.0	20.0	20.5	25.5	23.5	24.5	28.5	26.5	27.5
29	---	---	---	20.0	18.0	19.0	23.5	22.0	22.5	29.0	27.0	27.5
30	---	---	---	20.0	16.5	18.0	23.5	21.5	22.5	29.0	27.0	28.0
31	---	---	---	18.0	17.0	17.0	---	---	---	28.0	27.0	27.5
MONTH	18.5	9.0	14.5	22.5	13.0	17.5	25.5	15.5	21.5	29.0	19.0	24.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	28.0	27.0	27.5	27.5	25.0	26.0	28.5	26.5	27.5	28.5	26.5	27.0
2	28.0	26.5	27.5	28.5	26.0	27.0	28.5	26.5	27.5	28.0	26.5	27.0
3	28.0	25.5	27.0	29.0	26.5	27.5	29.0	27.0	28.0	27.5	26.0	26.5
4	28.0	25.5	26.5	27.5	24.0	26.0	29.0	27.5	28.0	27.0	25.5	26.5
5	29.0	27.0	28.0	26.5	24.5	25.5	28.0	26.5	27.0	27.5	26.0	26.5
6	28.5	27.0	27.5	28.0	25.5	27.0	28.5	26.5	27.0	27.0	26.0	26.5
7	28.0	26.5	27.5	28.5	26.5	27.5	28.0	26.0	27.0	27.0	26.0	26.5
8	27.5	26.0	26.5	28.0	26.5	27.0	28.0	26.0	27.0	27.0	26.5	26.5
9	26.5	25.5	25.5	28.5	26.5	27.5	28.5	26.5	27.5	28.0	26.5	27.0
10	26.5	24.5	25.5	28.5	27.0	27.5	29.0	27.0	28.0	---	---	---
11	27.5	25.0	26.5	28.5	27.0	27.5	29.0	27.0	28.0	---	---	---
12	28.0	25.0	26.5	28.5	26.5	27.5	---	---	---	---	---	---
13	29.0	27.0	28.0	28.5	27.0	27.5	---	---	---	27.5	26.5	27.0
14	29.0	27.0	28.0	29.5	27.0	28.0	28.5	27.5	28.0	27.5	26.5	27.0
15	29.0	26.5	27.5	29.0	27.0	28.0	28.5	27.5	28.0	28.0	26.5	27.5
16	30.0	27.5	28.5	29.0	26.5	27.5	29.0	27.5	28.0	28.0	27.0	27.5
17	28.5	26.5	27.5	29.0	27.0	28.0	29.0	27.5	28.5	28.0	26.5	27.0
18	29.0	26.0	27.5	28.5	27.0	28.0	29.5	27.5	28.5	28.0	26.5	27.0
19	28.5	26.5	27.5	29.0	26.5	27.5	29.0	27.5	28.0	26.5	21.5	24.0
20	29.0	26.5	27.5	28.5	27.0	27.5	28.5	26.5	27.5	21.0	20.5	20.5
21	29.5	27.5	28.5	29.0	27.5	28.0	29.0	27.0	28.0	22.0	20.0	20.5
22	30.0	28.0	28.5	28.5	27.0	27.5	29.0	27.0	28.0	24.0	21.5	22.5
23	28.0	23.5	25.5	28.0	26.0	26.5	28.5	27.0	27.5	24.5	23.5	24.0
24	27.5	25.5	26.5	28.0	26.0	27.0	28.0	26.5	27.5	26.5	24.5	25.0
25	---	---	---	28.0	26.5	27.5	28.5	26.5	27.5	24.5	23.0	23.5
26	---	---	---	28.5	27.0	27.5	28.0	26.5	27.0	23.5	21.0	22.5
27	29.0	27.0	28.0	28.5	26.5	27.5	28.0	26.0	27.0	23.0	21.0	22.0
28	28.5	27.0	28.0	28.5	27.0	28.0	28.0	26.0	27.0	22.5	20.5	21.5
29	27.0	26.0	26.5	29.0	27.0	28.0	28.5	26.5	27.5	22.5	20.5	21.5
30	26.5	25.5	26.0	28.5	26.5	27.5	29.0	26.5	28.0	22.5	20.5	21.5
31	---	---	---	29.0	27.0	28.0	28.0	26.5	27.5	---	---	---
MONTH	30.0	23.5	27.0	29.5	24.0	27.5	29.5	26.0	27.5	28.5	20.0	25.0

GUADALUPE RIVER BASIN

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08180750 MEDIO CREEK AT PEARSALL ROAD AT SAN ANTONIO, TX--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	8.6	5.9	6.9	9.1	6.9	7.7	9.6	7.8	8.6	10.8	8.7	9.5
2	8.6	6.1	7.0	8.9	6.7	7.5	8.8	7.3	8.1	9.7	8.6	9.0
3	7.9	5.9	6.6	8.5	6.4	7.2	9.2	7.4	8.2	9.9	8.4	9.0
4	8.3	5.9	6.8	7.8	6.4	7.0	9.6	8.2	8.8	9.9	8.6	9.1
5	8.1	5.8	6.6	8.7	7.1	7.8	10.1	8.7	9.3	10.1	8.7	9.2
6	8.1	5.7	6.6	9.0	6.9	7.8	10.4	9.0	9.5	10.1	8.5	9.1
7	7.9	5.6	6.5	8.1	6.8	7.2	10.6	9.0	9.7	10.5	8.4	9.3
8	7.6	5.4	6.3	7.5	6.9	7.2	10.7	9.4	9.9	10.4	8.6	9.4
9	7.6	5.5	6.3	7.9	7.2	7.5	10.9	9.5	10.0	10.2	8.4	9.0
10	7.8	6.3	6.9	8.2	7.3	7.8	10.7	9.1	9.9	10.3	8.5	9.1
11	8.2	6.4	7.3	8.8	7.7	8.2	10.4	8.4	9.4	10.6	8.3	9.3
12	8.9	6.9	7.8	9.0	7.9	8.4	9.9	8.0	8.8	10.9	8.6	9.6
13	9.3	7.3	8.1	9.0	7.7	8.2	9.8	7.7	8.5	11.4	9.1	10.0
14	9.2	7.3	8.0	8.7	7.4	8.0	9.7	7.3	8.2	11.1	8.6	9.8
15	8.9	7.0	7.6	8.6	7.2	7.7	9.2	6.9	7.7	10.8	8.2	9.3
16	8.8	6.7	7.4	8.4	6.9	7.5	8.8	6.7	7.4	10.7	8.2	9.2
17	8.6	6.1	7.0	8.5	6.7	7.4	8.5	6.4	7.1	10.0	7.9	8.8
18	8.8	6.2	7.3	8.2	6.5	7.3	8.8	6.4	7.5	9.3	8.1	9.0
19	9.4	6.9	7.8	7.9	6.5	7.0	9.3	7.1	8.0	9.3	8.6	8.9
20	9.4	6.8	7.7	7.9	5.7	6.8	9.4	7.2	8.0	9.4	8.6	9.0
21	8.3	6.5	7.3	7.4	5.6	6.2	8.9	6.8	7.8	9.9	8.9	9.4
22	8.9	6.7	7.8	6.9	5.1	5.8	9.4	7.5	8.5	10.4	9.4	9.8
23	9.2	7.1	8.0	6.5	5.2	5.8	10.9	8.9	10.0	10.4	9.6	10.0
24	9.3	7.1	8.1	7.5	5.6	6.5	11.6	10.2	10.9	11.3	9.3	10.1
25	10.0	7.5	8.5	7.2	5.8	6.3	11.4	10.5	11.0	10.6	9.3	9.7
26	10.2	7.8	8.7	7.3	5.6	6.1	11.1	10.0	10.6	11.1	9.1	9.9
27	10.3	7.8	8.7	8.3	5.0	5.9	10.9	9.6	10.2	11.4	9.0	9.9
28	10.3	7.6	8.6	7.9	5.3	6.5	10.0	8.6	9.4	11.8	8.7	9.9
29	10.0	7.5	8.4	8.7	6.7	7.7	9.6	8.1	8.7	11.9	8.2	9.6
30	10.0	7.3	8.3	9.1	7.8	8.3	10.8	7.6	8.6	12.2	8.2	9.6
31	9.6	7.0	8.0	---	---	---	10.5	8.5	9.6	12.7	8.6	10.3
MONTH	10.3	5.4	7.5	9.1	5.0	7.2	11.6	6.4	9.0	12.7	7.9	9.4
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	13.6	9.3	11.0	11.5	7.5	9.1	9.1	7.5	8.0	---	---	---
2	14.0	9.4	11.2	11.1	7.3	8.6	8.5	7.2	7.8	7.7	6.4	6.8
3	11.8	9.1	10.3	11.0	7.3	8.6	8.2	7.0	7.4	---	---	---
4	9.1	8.2	8.6	10.9	7.3	8.6	7.8	6.5	7.1	---	---	---
5	8.5	7.6	8.1	11.1	7.1	8.6	8.3	6.4	7.2	---	---	---
6	9.6	7.7	8.3	10.8	6.9	8.4	8.8	8.4	8.6	---	---	---
7	10.2	7.8	8.9	10.7	6.9	8.4	8.6	8.1	8.4	---	---	---
8	11.1	8.2	9.3	10.7	7.1	8.4	8.5	7.3	8.0	7.7	7.1	7.4
9	11.7	8.4	9.7	10.8	7.2	8.6	7.9	7.2	7.5	7.7	6.9	7.3
10	12.3	8.5	9.9	10.7	7.6	8.7	8.4	7.2	7.8	7.4	6.7	7.0
11	12.1	8.2	9.6	10.2	7.2	8.4	8.1	6.6	7.3	7.4	6.4	6.9
12	12.2	7.8	9.4	9.7	6.8	7.9	8.3	6.4	7.2	7.2	6.2	6.7
13	12.2	7.4	9.1	9.6	6.7	7.8	8.0	6.1	6.8	7.1	6.2	6.7
14	12.3	7.4	9.2	9.3	6.9	7.9	7.6	6.1	6.6	7.0	6.1	6.5
15	12.5	7.6	9.7	8.4	7.3	7.8	7.8	6.3	6.7	7.1	6.1	6.5
16	10.0	8.2	9.0	8.7	7.8	8.1	---	---	---	7.4	6.2	6.6
17	12.1	8.3	9.6	8.7	7.0	8.0	---	---	---	7.5	6.6	7.1
18	12.1	7.8	9.4	9.4	6.9	7.9	7.4	6.8	7.0	7.2	6.4	6.8
19	8.6	7.4	7.9	9.4	7.3	8.2	7.5	6.8	7.0	7.3	6.4	6.7
20	10.0	7.4	8.3	8.2	7.0	7.5	7.8	6.7	7.3	7.5	6.4	6.8
21	10.9	7.3	8.7	7.8	6.7	7.2	7.5	6.7	7.1	7.5	6.5	6.8
22	11.7	8.0	9.4	8.2	6.5	7.3	7.8	7.0	7.3	7.7	6.5	6.9
23	12.4	8.1	9.7	8.4	7.1	7.7	8.2	7.1	7.5	7.3	6.3	6.7
24	10.2	7.8	8.8	8.9	7.2	7.9	7.8	7.1	7.3	7.5	6.2	6.7
25	10.7	7.7	8.8	8.4	6.9	7.6	---	---	---	7.5	6.3	6.7
26	11.8	8.1	9.5	7.8	6.5	7.0	---	---	---	7.5	6.3	6.7
27	11.9	8.2	9.7	8.0	6.4	7.0	---	---	---	7.7	6.4	6.4
28	10.4	8.1	8.9	7.6	6.4	6.8	---	---	---	7.6	6.4	6.8
29	---	---	---	8.5	6.6	7.4	---	---	---	7.8	6.4	6.9
30	---	---	---	9.7	7.1	8.4	---	---	---	7.8	6.4	6.9
31	---	---	---	8.7	6.6	7.4	---	---	---	7.8	6.4	6.9
MONTH	14.0	7.3	9.3	11.5	6.4	8.0	9.1	6.1	7.4	7.8	6.1	6.8

GUADALUPE RIVER BASIN

08180750 MEDIO CREEK AT PEARSALL ROAD AT SAN ANTONIO, TX--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	7.7	6.5	6.9	7.1	6.1	6.6	7.9	5.8	6.6	7.1	5.4	6.1
2	7.7	6.6	7.0	7.2	6.0	6.5	8.0	5.8	6.6	6.2	5.2	5.7
3	7.7	6.6	7.0	7.5	5.9	6.5	7.8	5.7	6.5	6.7	5.2	5.7
4	8.0	6.5	7.2	6.6	5.6	6.1	7.6	5.7	6.4	7.2	5.6	6.3
5	7.9	6.5	7.0	6.6	6.2	6.4	7.7	5.6	6.3	7.2	5.7	6.3
6	8.0	6.5	7.0	6.8	6.1	6.4	7.5	5.7	6.4	6.8	5.6	6.0
7	8.1	6.6	7.2	7.0	6.1	6.5	---	---	---	7.3	5.8	6.3
8	8.3	6.8	7.4	7.4	6.1	6.6	---	---	---	7.2	5.8	6.3
9	8.4	7.0	7.5	7.7	6.3	6.8	---	---	---	7.5	5.8	6.5
10	8.6	7.1	7.7	7.8	6.3	6.9	---	---	---	---	---	---
11	8.4	6.7	7.5	7.9	6.2	6.9	---	---	---	---	---	---
12	8.1	6.3	7.0	8.0	6.2	6.9	---	---	---	---	---	---
13	7.8	6.0	6.7	7.9	6.2	6.9	---	---	---	---	---	---
14	8.0	6.0	6.8	7.8	6.2	6.8	7.1	5.6	6.1	6.8	5.5	5.9
15	7.8	6.0	6.7	7.7	6.2	6.7	7.2	5.6	6.2	6.6	5.5	5.9
16	7.7	6.0	6.6	7.8	6.2	6.8	7.3	5.5	6.2	6.7	5.5	5.9
17	6.7	5.6	6.1	7.8	6.1	6.7	7.2	5.4	6.0	6.5	5.4	5.8
18	6.4	5.6	5.9	7.9	6.1	6.7	7.0	5.4	5.9	6.8	5.4	6.0
19	6.7	5.6	6.0	8.0	6.0	6.7	7.1	5.4	6.1	7.0	5.8	6.3
20	7.0	5.4	6.2	8.0	5.9	6.7	7.0	5.3	6.0	7.5	6.4	6.8
21	6.9	5.3	5.9	7.8	5.9	6.6	6.8	5.2	5.8	8.3	6.8	7.3
22	7.3	5.8	6.4	7.3	5.8	6.2	6.7	5.0	5.6	8.0	6.5	7.1
23	6.4	6.0	6.2	8.0	5.8	6.7	6.9	5.0	5.7	7.3	6.1	6.6
24	6.7	6.0	6.4	9.1	6.3	7.6	6.8	5.2	5.8	7.4	6.0	6.5
25	---	---	---	9.1	6.8	7.6	6.8	5.1	5.8	7.6	6.1	6.7
26	---	---	---	8.7	6.6	7.3	7.1	5.2	6.0	8.0	6.4	7.0
27	7.3	5.9	6.4	8.5	6.4	7.2	7.2	5.5	6.1	8.6	6.7	7.5
28	7.3	5.9	6.5	8.0	5.9	6.8	7.1	5.6	6.2	8.8	6.8	7.7
29	7.3	6.1	6.5	7.6	5.8	6.5	7.3	5.6	6.2	9.2	7.2	8.0
30	7.3	6.3	6.6	7.6	5.7	6.4	7.2	5.5	6.1	9.5	7.4	8.1
31	---	---	---	7.7	5.7	6.5	6.8	5.4	6.0	---	---	---
MONTH	8.6	5.3	6.7	9.1	5.6	6.7	8.0	5.0	6.1	9.5	5.2	6.5

GUADALUPE RIVER BASIN

311

08180800 MEDINA RIVER NEAR SOMERSET, TX

LOCATION.--Lat 29°15'45", long 98°34'56", Bexar County, Hydrologic Unit 12100302, on left bank 300 ft upstream from bridge on State Highway 16, 2.1 mi upstream from Elm Creek, 4.9 mi downstream from Medio Creek, 5.2 mi northeast of Somerset, and 14.1 mi upstream from mouth.

DRAINAGE AREA.--967 mi², of which 634 mi² is above Medina Dam, forming Medina Lake.

PERIOD OF RECORD.--October 1970 to current year.

GAGE.--Water-stage recorder. Datum of gage is 493.56 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Flow is regulated by Medina Lake (station 08179500) 56 mi upstream and by Medina Diversion Lake (capacity, 4,500 acre-ft). For diversion of canal records, see Medina Canal near Riomedina (station 08180000). A large part of the streamflow is lost into the Edwards and associated limestones in the Balcones Fault Zone that crosses the basin between the upstream end of Medina Lake and about 5 mi downstream from Medina Dam, or 0.9 mi downstream from the diversion dam. There are several small diversions below Medina Diversion Dam. One observation of water temperature was made during the year. Satellite telemeter at station.

AVERAGE DISCHARGE.--21 years, 225 ft³/s (163,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,500 ft³/s July 17, 1973 (gage height, 29.39 ft); minimum daily, 16 ft³/s Sept. 19, 20, 1984.
Maximum stage since about 1890, that of July 17, 1973.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,940 ft³/s Apr. 5 at 0300 hours (gage height, 13.45 ft); minimum daily, 41 ft³/s Nov. 4, Dec. 19.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	46	44	47	50	50	64	103	123	115	129	94	99
2	46	44	48	51	54	66	103	247	114	131	92	95
3	47	43	52	54	52	78	102	159	114	126	91	99
4	47	41	52	55	192	e70	100	143	112	145	93	97
5	47	44	51	57	156	65	1000	138	111	314	93	101
6	47	43	48	61	99	63	544	130	111	148	93	102
7	46	42	48	61	80	62	246	124	109	129	92	100
8	45	50	48	59	74	64	187	138	105	121	93	110
9	50	57	48	57	69	76	170	175	106	119	94	108
10	55	56	48	59	69	81	160	152	105	117	93	100
11	51	50	48	61	67	90	153	138	106	113	93	99
12	52	45	49	59	64	72	150	134	106	112	92	100
13	49	45	49	56	62	63	147	163	106	111	89	104
14	48	47	47	56	63	81	156	157	117	109	87	104
15	47	48	47	56	62	75	158	144	118	108	88	104
16	47	49	47	55	59	69	151	141	120	106	88	105
17	49	49	49	53	61	72	145	166	124	104	88	103
18	48	50	47	180	63	73	141	164	132	101	88	102
19	48	52	41	111	65	69	140	146	127	99	88	104
20	49	52	50	72	69	91	145	138	127	96	87	105
21	54	52	47	62	71	84	149	134	122	96	86	107
22	54	51	46	56	68	66	144	132	121	97	85	102
23	53	51	45	54	65	66	137	130	167	99	87	103
24	52	50	45	54	65	64	134	129	395	99	91	103
25	48	49	46	55	65	65	133	128	207	98	91	105
26	46	49	48	56	64	66	133	135	157	97	89	105
27	47	50	49	55	64	71	132	125	139	98	88	102
28	47	49	50	52	64	109	129	122	127	97	88	99
29	46	48	51	54	---	105	126	121	120	97	89	98
30	45	47	51	53	---	105	122	119	125	96	89	96
31	44	---	50	52	---	103	---	118	---	95	91	---
TOTAL	1500	1447	1492	1926	2056	2348	5540	4413	3965	3607	2790	3061
MEAN	48.4	48.2	48.1	62.1	73.4	75.7	185	142	132	116	90.0	102
MAX	55	57	52	180	192	109	1000	247	395	314	94	110
MIN	44	41	41	50	50	62	100	118	105	95	85	95
AC-FT	2980	2870	2960	3820	4080	4660	10990	8750	7860	7150	5530	6070
CAL YR 1990	TOTAL	24091	MEAN	66.0	MAX	2020	MIN	18	AC-FT	47780		
WTR YR 1991	TOTAL	34145	MEAN	93.5	MAX	1000	MIN	41	AC-FT	67730		

e Estimated

GUADALUPE RIVER BASIN

08181400 HELOTES CREEK AT HELOTES, TX

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

DRAINAGE AREA.--15.0 mi².

WATER-DISCHARGE RECORDS

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

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

GAGE.--Water-stage recorder. Datum of gage is 1,014.82 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair. An undetermined amount of flow is diverted for domestic use above station, and some streamflow enters the Edwards and associated limestones through the Balcones Fault Zone in the vicinity of the gage. Recording rain gage at station.

AVERAGE DISCHARGE.--23 years, 4.01 ft³/s (3.63 in/yr), 2,910 acre-ft/yr.

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

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

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 140 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 3	1245	*2,460	*6.01	July 4	1445	772	4.12
June 22	2330	923	4.35				

Minimum daily discharge, no flow most of year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	.00	.00	.00	.00	.00	.01	.00	.00	.12	15	.00	.00		
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	14	.00	.00		
3	.00	.00	.00	.00	.00	.00	.00	185	.00	13	.00	.90		
4	.00	.00	.00	.00	5.8	.00	.07	59	.00	89	.00	.00		
5	.00	.00	.00	.00	13	.00	10	44	.00	69	.00	.00		
6	.00	.00	.00	.00	11	.00	3.0	33	.00	51	.00	.01		
7	.00	.00	.00	.00	4.7	.00	.00	26	.00	40	.00	.00		
8	.00	.00	.00	.00	.98	.00	.00	35	.00	34	.00	.00		
9	.00	.00	.00	.00	2.7	.00	.00	35	.00	27	.00	.00		
10	.00	.00	.00	.00	1.5	.00	.00	32	.00	23	.00	.00		
11	.00	.00	.00	.00	e.10	.00	.00	27	.00	20	.00	.00		
12	.00	.00	.00	.00	e.00	.00	.00	23	4.7	18	.00	.00		
13	.00	.00	.00	.00	.00	.00	.00	22	6.2	16	.00	.09		
14	.00	.00	.00	.00	.00	.00	9.5	20	6.8	14	.00	.00		
15	.00	.00	.00	.00	.00	.00	5.7	18	6.8	13	.00	.00		
16	.00	.00	.00	.00	.00	.00	.13	17	4.6	11	.00	.00		
17	.00	.00	.00	.00	.00	.00	.68	16	4.1	10	.05	.00		
18	.00	.00	.00	.03	.00	.00	.00	14	2.9	9.7	.00	.00		
19	.00	.00	.00	.00	.00	.00	.00	13	2.1	8.4	.00	.00		
20	.00	.00	.00	.00	.00	.00	.00	12	1.4	7.7	.00	.00		
21	.00	.00	.00	.00	.00	.00	.00	11	.47	7.0	.00	.00		
22	.00	.00	.00	.00	.00	.00	.00	9.6	46	6.6	.00	.00		
23	.00	.00	.00	.00	.00	.00	.00	8.8	69	6.5	.00	.00		
24	.00	.00	.00	.00	.00	.00	.00	8.4	35	5.2	.00	.00		
25	.00	.00	.00	.00	.00	.00	.00	8.2	24	4.0	.00	.00		
26	.00	.00	.00	.00	.00	.00	.00	7.1	19	2.9	.00	.00		
27	.00	.00	.00	.00	.00	.00	.00	5.8	16	2.4	.00	.00		
28	.00	.00	.00	.00	.00	.00	.00	4.8	14	.91	.00	.00		
29	.00	.00	.00	.00	---	.00	.00	4.1	13	.53	.00	.00		
30	.00	.00	.00	.00	---	.00	.00	2.6	16	.32	.00	.00		
31	.00	---	.00	.00	---	.00	---	.84	---	.00	.00	---		
TOTAL	0.00	0.00	0.00	0.03	39.78	0.01	29.08	702.24	292.19	539.16	0.05	1.00		
MEAN	.000	.000	.000	.001	1.42	.000	.97	22.7	9.74	17.4	.002	.033		
MAX	.00	.00	.00	.03	13	.01	10	185	69	89	.05	.90		
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		
AC-FT	.00	.00	.00	.06	79	.02	58	1390	580	1070	.1	2.0		
CFSM	.00	.00	.00	.00	.09	.00	.06	1.51	.65	1.16	.00	.00		
IN.	.00	.00	.00	.00	.10	.00	.07	1.74	.72	1.34	.00	.00		
CAL YR 1990	TOTAL	403.79	MEAN	1.11	MAX	40	MIN	.00	AC-FT	801	CFSM	.07	IN.	1.00
WTR YR 1991	TOTAL	1603.54	MEAN	4.39	MAX	185	MIN	.00	AC-FT	3180	CFSM	.29	IN.	3.98

e Estimated

08181400 HELOTES CREEK AT HELOTES, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: May 1969 to current year. Pesticide analyses: May 1969 to June 1981, October 1984 to current year. Sediment analyses: October 1968 to September 1973.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

		DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)
APR 05...	0910	22	388	7.2	18.0	130	230	8.8	96	2.2	5200
06...	1125	3.5	467	7.8	18.0	13	3.5	8.6	93	1.4	700
MAY 03...	1415	706	237	7.4	19.5	65	250	7.8	88	6.7	31000
03...	1540	292	242	7.3	20.0	70	370	7.8	89	3.8	38000
08...	0940	34	473	7.8	20.0	70	150	9.4	107	1.5	K970
DATE	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	SULFATE DIS-SOLVED (MG/L AS S04)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
APR 05...	11000	240	83	75	12	14	0.4	2.1	150	21	18
06...	1200	230	35	69	14	14	0.4	1.5	200	30	21
MAY 03...	62000	110	16	38	4.7	3.3	0.1	2.9	98	10	6.9
03...	43000	120	21	40	4.6	3.3	0.1	3.0	98	10	3.9
08...	3800	240	25	75	12	8.0	0.2	1.4	210	15	12
DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SI02)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L)	RESIDUE FIXED NON FILTER-ABLE (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)
APR 05...	<0.1C	8.4	243	492	113	379	0.350	0.150	0.500	0.120	0.78
06...	<0.10	7.6	274	7	4	3	0.200	0.010	0.210	0.020	0.28
MAY 03...	0.10	6.0	131	1920	430	1490	0.420	0.160	0.580	0.260	2.4
03...	0.10	6.7	131	832	248	584	0.660	0.110	0.770	0.150	0.65
08...	<0.10	8.7	259	408	100	308	0.330	0.070	0.400	0.350	0.25
DATE	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS TOTAL (MG/L AS P)	PHOS-PHORUS ORTHO 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)	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)
APR 05...	0.90	0.340	0.170	14	1	27	<0.5	<1.0	<5	<3	<10
06...	0.30	0.030	0.020	3.9	--	--	--	--	--	--	--
MAY 03...	2.7	0.240	0.160	13	--	--	--	--	--	--	--
03...	0.80	0.100	0.090	20	<1	12	<0.5	<1.0	<5	<3	<10
08...	0.60	0.220	0.150	3.3	--	--	--	--	--	--	--
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)
APR 05...	320	<10	5	30	<0.1	<10	<10	<1	<1.0	170	<6
06...	--	--	--	--	--	--	--	--	--	--	--
MAY 03...	--	--	--	--	--	--	--	--	--	--	--
03...	110	<10	<4	3	<0.1	<10	<10	<1	<1.0	48	<6
08...	--	--	--	--	--	--	--	--	--	--	--
DATE	ZINC, DIS-SOLVED (UG/L AS ZN)	PCB, TOTAL (UG/L)	NAPH-THA-LENES, POLY-CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR-DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI-AZINON, TOTAL (UG/L)	DI-ELDRIN TOTAL (UG/L)	DI-SYSTON TOTAL (UG/L)
APR 05...	10	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	0.30	<0.010	<0.01
06...	--	--	--	--	--	--	--	--	--	--	--
MAY 03...	--	--	--	--	--	--	--	--	--	--	--
03...	6	--	--	--	--	--	--	--	--	--	--
08...	--	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01	<0.010	<0.01

GUADALUPE RIVER BASIN

08181400 HELOTES CREEK AT HELOTES, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	ENDO-SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA-CHLOR, TOTAL (UG/L)	HEPTA-CHLOR EPOXIDE, TOTAL (UG/L)	LINDANE, TOTAL (UG/L)	MALA-THION, TOTAL (UG/L)	METH-OXY-CHLOR, TOTAL (UG/L)	METHYL-PARA-THION, TOTAL (UG/L)	METHYL-TRI-THION, TOTAL (UG/L)
APR 05...	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	0.01	<0.01	<0.01	<0.01
06...	--	--	--	--	--	--	--	--	--	--
MAY 03...	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--
08...	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01	<0.01
DATE	MIREX, TOTAL (UG/L)	PARA-THION, TOTAL (UG/L)	PER-THANE, TOTAL (UG/L)	PHORATE, TOTAL (UG/L)	SILVEX, TOTAL (UG/L)	TOX-APHENE, TOTAL (UG/L)	TOTAL TRI-THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP, TOTAL (UG/L)	2,4,5-T, TOTAL (UG/L)
APR 05...	<0.01	<0.01	<0.1	<0.01	<0.01	<1	<0.01	0.11	0.03	<0.01
06...	--	--	--	--	--	--	--	--	--	--
MAY 03...	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--
08...	<0.01	<0.01	<0.1	<0.01	<0.01	<1	<0.01	<0.01	<0.01	<0.01

GUADALUPE RIVER BASIN

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08181480 LEON CREEK AT INTERSTATE HIGHWAY 35 AT SAN ANTONIO, TX

LOCATION.--Lat 29°19'47", long 98°35'02", Bexar County, Hydrologic Unit 12100302, on left bank between bridges on Interstate Highway 35 in San Antonio, 1.7 mi northeast of the intersection of Interstate Highway 35 and Loop 410, and 11.8 mi upstream from mouth.

DRAINAGE AREA.--219 mi².

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 573.49 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Satellite telemeter at station.

AVERAGE DISCHARGE.--7 years, 35.2 ft³/s (25,500 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,100 ft³/s June 11, 1987 (gage height, 22.30 ft), from rating curve extended above 11,000 ft³/s; minimum daily, 1.1 ft³/s Sept. 4, 5, 1989.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,620 ft³/s Apr. 5 at 1345 hours (gage height, 13.24 ft); minimum daily, 3.1 ft³/s Aug. 29, 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.6	4.9	5.4	5.6	12	13	8.4	7.0	8.7	56	4.4	16
2	4.6	4.9	5.4	8.2	12	12	8.4	348	8.2	20	4.6	20
3	4.6	4.9	5.4	9.4	11	11	8.6	34	8.3	16	4.1	7.4
4	4.6	9.7	5.4	7.2	287	9.8	8.6	45	8.9	182	3.7	4.3
5	4.6	5.4	5.4	7.2	44	9.8	1430	68	8.0	120	3.9	4.1
6	4.5	4.9	5.8	6.0	18	9.6	390	35	7.5	51	4.2	23
7	4.4	4.8	5.8	5.5	15	9.3	144	20	9.0	38	9.8	8.7
8	4.3	98	5.5	5.6	13	9.6	74	161	8.7	25	9.4	4.0
9	42	21	5.2	13	13	8.9	42	51	7.4	19	5.4	3.8
10	6.7	7.2	5.4	12	12	8.7	28	34	6.5	16	4.7	4.3
11	5.6	5.7	5.6	7.2	12	9.0	25	23	6.8	15	4.0	4.7
12	5.2	5.4	5.8	6.0	12	9.5	23	17	11	13	4.1	5.4
13	4.8	5.3	5.5	5.4	12	9.0	21	30	7.0	12	4.1	6.9
14	4.5	5.4	6.0	5.4	12	8.6	72	23	6.9	11	4.1	5.8
15	4.5	5.5	5.8	5.3	11	21	22	15	9.9	11	4.2	4.7
16	4.5	5.5	5.4	5.0	11	18	16	38	7.8	10	4.1	4.5
17	4.8	5.5	5.6	5.5	11	17	15	42	58	9.5	4.0	4.6
18	4.8	5.8	5.5	517	11	12	14	18	14	9.1	3.5	5.0
19	4.7	5.5	5.4	43	26	10	12	15	8.8	8.8	3.5	6.4
20	4.7	5.6	6.1	18	18	9.5	27	14	12	8.3	3.6	5.9
21	27	5.9	6.2	14	13	9.6	14	12	7.5	7.3	3.4	4.9
22	7.6	5.8	5.8	13	12	9.2	11	13	11	6.7	3.5	4.6
23	5.3	5.4	5.8	13	11	8.9	9.3	15	804	7.3	e3.4	5.8
24	5.0	5.2	5.8	37	11	8.6	8.9	13	264	6.4	e3.4	11
25	5.0	5.3	6.0	17	11	8.6	8.9	11	78	6.0	e3.3	15
26	4.9	5.5	6.2	13	11	8.8	8.5	9.4	35	8.6	e3.3	5.2
27	4.8	5.5	6.1	12	11	8.8	8.0	8.8	22	6.8	e3.2	4.9
28	4.7	5.5	6.0	12	11	8.8	7.1	9.4	18	5.2	3.8	4.6
29	4.7	5.5	6.2	12	---	8.6	6.7	9.0	19	5.0	3.1	4.1
30	4.8	5.5	6.1	17	---	8.2	6.9	8.9	46	5.4	3.1	4.0
31	4.9	---	6.1	14	---	10	---	9.3	---	4.7	17	---
TOTAL	211.7	276.0	177.7	871.5	664	323.4	2478.3	1156.8	1527.9	720.1	143.9	213.6
MEAN	6.83	9.20	5.73	28.1	23.7	10.4	82.6	37.3	50.9	23.2	4.64	7.12
MAX	42	98	6.2	517	287	21	1430	348	804	182	17	23
MIN	4.3	4.8	5.2	5.0	11	8.2	6.7	7.0	6.5	4.7	3.1	3.8
AC-FT	420	547	352	1730	1320	641	4920	2290	3030	1430	285	424

CAL YR 1990 TOTAL 7745.8 MEAN 21.2 MAX 2260 MIN 2.2 AC-FT 15360
WTR YR 1991 TOTAL 8764.9 MEAN 24.0 MAX 1430 MIN 3.1 AC-FT 17390

e Estimated

08181480 LEON CREEK AT INTERSTATE HIGHWAY 35 AT SAN ANTONIO, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: July 1984 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: September 1984 to current year.

pH: April 1989 to current year.

WATER TEMPERATURE: September 1984 to current year.

DISSOLVED OXYGEN: April 1989 to current year.

INSTRUMENTATION.--Since September 1984, specific conductance and water temperature are recorded continuously at this station. Since April 1989, pH and dissolved oxygen are recorded continuously.

REMARKS.--Interruptions in the record were due to malfunctions of the instrument. Where maximum or minimum specific conductance values are not shown, mean value is estimated. Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 1,260 microsiemens Nov. 19, 1988; minimum, 39 microsiemens Jan. 18, 1991.

pH: Maximum, 8.5 units Mar. 29, 1990; minimum, 6.7 units June 30, 1991.

WATER TEMPERATURE: Maximum, 32.5°C July 16, 17, 1989; minimum, 4.0°C Dec. 24, 1989.

DISSOLVED OXYGEN: Maximum, 19.8 mg/L Oct. 13, 14, 1989; minimum, 1.2 mg/L Sept. 1, 1990.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 1,060 microsiemens Nov. 1; minimum, 39 microsiemens Jan. 18.

pH: Maximum, 8.2 units Jan. 18, Mar. 1; minimum, 6.7 units June 30.

WATER TEMPERATURE: Maximum, 29.0°C Jun. 21, 22, July 18, Aug. 12; minimum, 8.0°C Dec. 24, 25.

DISSOLVED OXYGEN: Maximum, 17.7 mg/L Mar. 4, 5; minimum, 2.7 mg/L June 13.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	HARD-NESS TOTAL (MG/L AS CAC03)	
OCT 17...	1338	5.0	913	7.7	23.5	13	7.0	5.7	69	2.0	290	
DEC 12...	1322	10	880	7.8	15.5	4	2.2	9.5	98	0.7	320	
JAN 18...	0930	1600	116	8.1	10.5	100	200	9.6	89	5.1	56	
JUN 04...	1335	9.0	816	8.0	26.5	12	4.5	6.6	84	1.1	310	
JUL 30...	1045	6.4	840	7.6	26.5	3	3.5	4.9	62	1.9	290	
AUG 20...	1455	3.1	824	7.9	27.5	2	2.0	7.6	100	1.7	270	
DATE		HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	SULFATE DIS-SOLVED (MG/L AS S04)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SiO2)
OCT 17...	19	90	15	89	2	3.7	270	130	45	0.70	16	
DEC 12...	34	99	17	74	2	4.0	280	110	60	0.40	14	
JAN 18...	18	19	2.1	8.2	0.5	3.4	38	10	4.9	0.10	4.0	
JUN 04...	41	97	15	54	1	3.4	260	87	52	0.30	17	
JUL 30...	17	91	15	74	2	3.5	270	110	48	0.50	16	
AUG 20...	5	84	15	74	2	3.4	270	120	43	0.70	14	
DATE		SOLIDS, SUM OF CONSTITU-ENTS, DIS-SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L)	RESIDUE FIXED NON FILTER-ABLE (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 17...	552	20	13	7	1.28	0.020	1.30	0.060	0.44	0.50	0.370	
DEC 12...	550	<1	<1	--	1.19	0.010	1.20	0.030	0.27	0.30	0.190	
JAN 18...	75	488	94	394	0.370	0.030	0.400	0.100	0.30	0.40	0.140	
JUN 04...	485	13	4	9	1.39	0.010	1.40	0.020	0.78	0.80	0.170	
JUL 30...	523	5	5	0	1.08	0.020	1.10	0.040	0.56	0.60	0.200	
AUG 20...	514	1	1	0	4.86	0.240	5.10	0.260	0.94	1.2	1.10	

GUADALUPE RIVER BASIN

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08181480 LEON CREEK AT INTERSTATE HIGHWAY 35 AT SAN ANTONIO, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	PHOS- PHORUS ORTHO 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)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)
OCT 17...	0.250	4.7	2	69	<0.5	5.0	<5	4	<10	31	10
DEC 12...	0.140	2.8	1	69	<0.5	2.0	<5	<3	<10	32	10
JAN 18...	0.130	--	--	--	--	--	--	--	--	--	--
JUN 04...	0.110	3.0	2	71	<0.5	2.0	<5	<3	10	48	10
JUL 30...	0.130	3.3	1	71	<0.5	1.0	<5	3	<10	18	<10
AUG 20...	1.00	3.7	--	--	--	--	--	--	--	--	--

DATE	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 17...	23	27	<0.1	10	30	<1	1.0	1000	<6	60
DEC 12...	26	25	<0.1	10	10	<1	1.0	1000	<6	180
JAN 18...	--	--	--	--	--	--	--	--	--	--
JUN 04...	21	21	<0.1	<10	20	<1	<1.0	930	<6	29
JUL 30...	21	13	<0.1	<10	30	<1	<1.0	890	<6	18
AUG 20...	--	--	--	--	--	--	--	--	--	--

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1990 TO SEPTEMBER 1991

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. 1990	211.7	744	450	257	52	30	95	54	270
NOV. 1990	276.0	657	395	295	44	33	82	61	240
DEC. 1990	177.7	868	528	254	64	31	120	56	310
JAN. 1991	871.5	392	232	547	23	54	44	103	150
FEB. 1991	664	592	355	636	39	70	72	129	220
MAR. 1991	323.4	816	495	432	59	51	110	93	300
APR. 1991	2478.3	367	217	1450	21	141	40	268	150
MAY 1991	1156.8	468	278	868	28	88	53	166	180
JUNE 1991	1527.9	329	194	802	19	79	36	150	130
JULY 1991	720.1	535	319	620	33	65	63	122	210
AUG. 1991	143.9	737	444	173	51	20	93	36	270
SEPT 1991	213.6	611	366	211	39	23	73	42	230
TOTAL	8764.9	**	**	6500	**	684	**	1280	**
WTD. AVG.	24	464	276	**	29	**	54	**	180

08181480 LEON CREEK AT INTERSTATE HIGHWAY 35 AT SAN ANTONIO, TX--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	980	863	912	1060	863	967	941	863	896	824	745	788
2	980	863	923	1020	902	946	941	863	901	824	745	781
3	902	863	879	941	824	880	902	824	859	784	510	620
4	941	863	902	941	510	810	902	824	853	667	510	568
5	980	902	921	588	392	487	902	824	853	745	667	719
6	941	863	900	706	431	609	902	824	867	745	667	704
7	941	863	889	784	706	754	902	784	840	745	667	710
8	941	863	895	824	196	529	941	863	888	784	745	757
9	941	118	530	314	196	249	902	824	855	784	510	698
10	745	667	699	549	314	440	902	824	870	745	353	550
11	706	588	638	667	510	605	941	824	886	706	627	683
12	706	588	640	784	667	711	902	824	840	706	627	675
13	902	706	793	863	745	803	980	824	910	784	667	731
14	980	863	919	824	745	793	941	824	891	784	745	773
15	980	863	940	863	745	804	1020	824	895	784	706	744
16	902	863	881	863	784	836	1020	902	975	748	706	725
17	941	824	887	824	745	796	980	902	937	747	592	683
18	941	824	882	863	745	800	980	902	930	632	39	249
19	941	824	891	863	784	826	941	863	917	439	199	314
20	902	824	848	824	745	817	941	863	882	523	400	460
21	941	235	695	863	784	828	863	784	852	611	484	537
22	745	627	672	902	784	837	902	784	842	661	531	592
23	667	588	633	902	824	860	941	863	892	670	580	635
24	784	627	684	941	678	911	1020	902	950	673	297	525
25	863	745	806	941	863	897	980	824	904	702	615	651
26	902	784	834	902	824	852	863	824	846	688	573	640
27	863	784	808	863	824	838	863	745	798	755	644	717
28	863	784	825	902	784	844	824	745	763	750	669	718
29	863	784	836	902	824	844	824	745	789	808	700	731
30	824	745	777	941	824	878	824	745	782	808	652	739
31	902	745	824	---	---	---	824	413	784	652	538	594
MONTH	980	118	812	1060	196	768	1020	413	869	824	39	646
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	788	645	732	863	784	841	807	721	758	784	745	769
2	783	705	747	941	706	815	824	667	732	706	118	295
3	776	699	745	902	784	853	980	863	917	471	275	386
4	769	104	383	902	824	878	941	863	889	549	431	485
5	554	431	462	902	824	853	824	130	285	549	353	464
6	667	431	558	902	824	878	353	170	246	512	431	483
7	863	588	713	941	824	874	510	275	381	555	473	529
8	941	745	821	863	784	834	627	510	550	635	120	393
9	784	706	753	941	824	870	706	588	657	642	280	428
10	784	706	747	941	824	884	745	667	706	683	484	563
11	824	745	777	902	824	868	784	706	746	649	526	575
12	824	745	774	902	784	839	784	745	759	694	568	650
13	863	784	829	---	---	830	784	745	764	696	450	606
14	941	824	878	---	---	440	784	196	573	706	615	643
15	941	863	917	---	---	610	588	431	517	706	588	663
16	941	824	874	---	---	700	784	588	652	745	353	650
17	902	824	874	---	---	780	863	745	798	706	392	514
18	902	784	860	---	---	820	824	745	804	745	431	604
19	863	431	726	---	---	840	784	745	759	784	667	736
20	863	745	815	---	---	860	784	667	735	706	549	659
21	784	706	764	---	---	865	784	667	721	745	549	651
22	863	667	750	---	---	860	784	706	750	745	667	704
23	902	824	865	---	---	855	824	745	787	745	706	729
24	902	824	878	---	---	868	824	706	749	784	706	736
25	902	824	857	---	---	865	824	706	753	784	745	765
26	863	745	821	902	824	861	863	784	804	863	745	817
27	863	784	837	879	830	856	784	745	765	863	784	863
28	863	784	842	890	799	844	824	745	781	824	745	795
29	---	---	---	903	810	864	824	745	771	824	745	785
30	---	---	---	912	870	898	784	706	752	863	784	827
31	---	---	---	896	819	869	---	---	---	902	784	823
MONTH	941	104	771	941	706	828	980	130	695	902	118	632

GUADALUPE RIVER BASIN

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08181480 LEON CREEK AT INTERSTATE HIGHWAY 35 AT SAN ANTONIO, TX--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	902	863	874	588	275	464	784	706	757	588	353	478
2	902	824	862	627	431	493	824	745	794	667	353	500
3	902	784	848	824	588	716	863	784	809	588	235	444
4	824	745	792	824	157	544	863	784	841	510	431	477
5	863	784	820	353	196	264	902	784	850	627	510	577
6	863	784	835	471	353	402	824	784	804	745	314	610
7	863	784	830	588	431	512	784	510	737	549	275	400
8	863	824	826	627	549	580	784	588	693	627	510	573
9	863	824	842	627	549	601	745	588	643	667	588	633
10	902	824	861	667	588	632	706	588	648	745	667	689
11	863	784	830	784	627	694	784	667	725	784	667	714
12	941	824	877	784	706	739	784	745	766	745	667	733
13	863	706	806	784	706	728	824	745	779	784	667	722
14	824	667	747	784	706	735	784	745	771	784	510	665
15	863	784	840	784	706	747	784	706	760	706	549	623
16	863	588	745	745	667	717	784	706	750	784	667	729
17	745	196	530	824	706	762	824	745	782	784	745	763
18	471	353	413	824	745	782	784	745	765	784	745	754
19	706	471	588	824	745	781	784	745	762	784	745	769
20	902	627	788	784	745	764	784	706	756	784	627	717
21	824	745	776	784	745	766	784	745	772	784	431	727
22	824	392	761	824	745	770	784	745	769	745	627	699
23	275	118	187	824	745	802	---	---	765	784	667	743
24	353	196	256	824	667	760	---	---	765	784	510	722
25	431	314	377	745	667	710	---	---	765	627	353	470
26	549	431	492	784	392	745	---	---	760	549	275	400
27	667	510	583	863	549	728	---	---	760	706	549	633
28	706	588	654	784	549	689	---	---	762	824	667	726
29	706	627	669	784	588	690	784	706	757	863	745	804
30	667	275	588	784	745	760	863	784	817	902	824	849
31	---	---	---	784	706	752	824	353	592	---	---	---
MONTH	941	118	697	863	157	672	902	353	757	902	235	645

PH (STANDARD UNITS), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	7.7	7.6	7.6	7.5	7.4	7.4	7.6	7.4	7.5	7.8	7.6	7.7
2	7.8	7.6	7.7	7.5	7.4	7.4	7.6	7.4	7.5	7.8	7.5	7.7
3	7.7	7.6	7.7	7.6	7.4	7.5	7.8	7.5	7.6	7.7	7.5	7.6
4	7.7	7.6	7.6	7.7	7.4	7.6	7.6	7.5	7.6	7.6	7.5	7.5
5	7.7	7.6	7.6	7.5	7.4	7.5	7.8	7.5	7.6	7.8	7.6	7.7
6	7.7	7.5	7.6	7.7	7.4	7.5	7.8	7.6	7.7	7.7	7.6	7.6
7	7.6	7.5	7.5	7.6	7.5	7.6	7.8	7.6	7.7	7.7	7.6	7.6
8	7.6	7.4	7.5	7.9	7.6	7.7	7.8	7.6	7.7	7.8	7.6	7.7
9	7.8	7.3	7.5	7.8	7.4	7.6	---	---	---	7.8	7.5	7.6
10	7.6	7.3	7.5	7.5	7.3	7.3	---	---	---	7.7	7.4	7.6
11	7.6	7.5	7.5	7.3	7.2	7.3	---	---	---	7.7	7.5	7.6
12	7.6	7.5	7.5	7.2	7.1	7.2	---	---	---	7.9	7.5	7.7
13	7.6	7.4	7.5	7.3	7.1	7.3	---	---	---	7.8	7.6	7.7
14	7.6	7.4	7.5	7.6	7.1	7.2	8.0	7.7	7.8	7.9	7.5	7.7
15	7.6	7.3	7.5	7.6	7.3	7.5	7.9	7.7	7.8	7.8	7.6	7.7
16	7.6	7.4	7.5	7.4	7.3	7.3	7.8	7.6	7.7	7.9	7.5	7.8
17	7.8	7.5	7.6	7.6	7.2	7.3	7.9	7.7	7.8	7.8	7.6	7.7
18	7.6	7.5	7.5	7.6	7.4	7.5	7.8	7.7	7.8	8.2	7.6	7.8
19	7.5	7.4	7.5	7.5	7.4	7.4	7.9	7.7	7.8	---	---	---
20	7.5	7.4	7.5	7.7	7.3	7.5	7.9	7.7	7.8	---	---	---
21	7.8	7.4	7.5	7.7	7.6	7.6	7.8	7.6	7.7	---	---	---
22	7.5	7.3	7.4	7.6	7.5	7.6	7.8	7.7	7.7	---	---	---
23	7.4	7.3	7.3	7.6	7.5	7.5	8.0	7.7	7.9	---	---	---
24	7.6	7.3	7.4	7.6	7.4	7.5	8.0	7.8	7.9	---	---	---
25	7.6	7.5	7.5	7.6	7.4	7.5	8.0	7.8	7.9	7.8	7.7	7.8
26	7.5	7.4	7.4	7.7	7.4	7.5	7.9	7.7	7.8	7.7	7.6	7.7
27	7.4	7.2	7.3	7.6	7.3	7.5	8.0	7.8	7.9	7.8	7.6	7.7
28	7.4	7.2	7.2	7.8	7.5	7.5	7.9	7.6	7.7	7.9	7.7	7.8
29	7.4	7.2	7.3	7.7	7.5	7.6	7.6	7.5	7.6	7.9	7.7	7.8
30	7.4	7.2	7.3	7.7	7.4	7.5	7.7	7.4	7.6	8.0	7.7	7.9
31	7.4	7.2	7.4	---	---	---	7.8	7.1	7.7	7.9	7.7	7.8
MONTH	7.8	7.2	7.5	7.9	7.1	7.5	8.0	7.1	7.7	8.2	7.4	7.7

GUADALUPE RIVER BASIN

08181480 LEON CREEK AT INTERSTATE HIGHWAY 35 AT SAN ANTONIO, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	8.0	7.8	7.9	8.2	7.7	7.8	---	---	---	7.6	7.0	7.4
2	8.0	7.8	7.9	8.0	7.6	7.7	---	---	---	7.9	7.3	7.6
3	7.9	7.8	7.8	7.9	7.5	7.7	7.9	7.7	7.8	7.3	7.1	7.2
4	8.1	7.7	7.9	7.8	7.5	7.6	7.9	7.7	7.8	7.4	7.2	7.3
5	7.8	7.4	7.7	7.8	7.5	7.6	8.1	7.8	7.9	7.6	7.3	7.5
6	7.8	7.7	7.8	7.9	7.5	7.7	7.9	7.6	7.8	7.7	7.5	7.6
7	7.8	7.7	7.8	7.8	7.5	7.6	7.6	7.6	7.6	7.7	7.6	7.6
8	7.8	7.7	7.7	7.7	7.5	7.6	7.7	7.6	7.6	7.9	7.5	7.6
9	7.8	7.7	7.8	---	---	---	7.7	7.6	7.7	7.7	7.4	7.6
10	7.8	7.7	7.8	---	---	---	7.7	7.6	7.7	7.7	7.2	7.4
11	7.7	7.6	7.6	---	---	---	7.8	7.6	7.7	7.6	7.5	7.5
12	7.9	7.6	7.8	---	---	---	7.8	7.7	7.7	7.8	7.5	7.6
13	7.8	7.7	7.7	---	---	---	7.7	7.6	7.7	7.9	7.7	7.8
14	7.8	7.7	7.7	---	---	---	7.7	7.5	7.6	7.7	7.5	7.6
15	7.8	7.6	7.7	---	---	---	7.6	7.4	7.5	7.7	7.6	7.6
16	7.8	7.7	7.8	---	---	---	7.6	7.5	7.6	7.8	7.6	7.7
17	7.8	7.7	7.7	---	---	---	7.7	7.6	7.7	7.8	7.5	7.6
18	7.8	7.7	7.7	---	---	---	7.7	7.5	7.6	7.7	7.5	7.6
19	7.9	7.6	7.7	---	---	---	7.6	7.6	7.6	7.7	7.6	7.7
20	7.9	7.7	7.8	---	---	---	7.8	7.6	7.7	7.8	7.4	7.6
21	7.9	7.7	7.8	---	---	---	7.8	7.5	7.6	7.5	7.4	7.5
22	7.8	7.5	7.7	---	---	---	7.7	7.5	7.6	7.7	7.5	7.6
23	7.8	7.5	7.7	---	---	---	7.6	7.5	7.6	7.7	7.6	7.7
24	7.8	7.6	7.7	---	---	---	7.6	7.4	7.5	7.7	7.6	7.7
25	7.8	7.6	7.7	---	---	---	7.6	7.4	7.5	7.7	7.6	7.6
26	7.8	7.6	7.7	---	---	---	7.6	7.4	7.5	7.7	7.6	7.6
27	7.9	7.6	7.7	---	---	---	7.5	7.2	7.4	7.7	7.5	7.6
28	7.9	7.6	7.7	---	---	---	7.6	7.1	7.5	7.6	7.5	7.6
29	---	---	---	---	---	---	7.5	7.1	7.3	7.7	7.5	7.6
30	---	---	---	---	---	---	7.7	7.0	7.4	7.7	7.5	7.6
31	---	---	---	---	---	---	---	---	---	7.7	7.5	7.6
MONTH	8.1	7.4	7.7	8.2	7.5	7.7	8.1	7.0	7.6	7.9	7.0	7.6
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	7.6	7.4	7.5	7.7	7.3	7.4	7.8	7.6	7.7	7.7	7.2	7.4
2	7.6	7.4	7.5	7.3	7.2	7.2	7.8	7.5	7.6	7.7	7.3	7.5
3	7.8	7.3	7.5	7.6	7.3	7.5	7.7	7.3	7.5	7.5	7.1	7.3
4	7.8	7.4	7.6	7.7	7.5	7.6	7.7	7.5	7.6	7.4	7.2	7.3
5	7.8	7.6	7.7	7.6	7.3	7.4	7.8	7.6	7.6	7.7	7.3	7.5
6	7.7	7.5	7.6	7.4	7.3	7.3	7.8	7.5	7.6	7.7	7.3	7.6
7	7.6	7.4	7.5	7.6	7.4	7.5	8.0	7.6	7.7	7.5	7.1	7.3
8	7.6	7.4	7.5	7.8	7.5	7.6	7.8	7.5	7.6	7.6	7.4	7.5
9	7.6	7.5	7.6	7.7	7.5	7.6	7.6	7.5	7.5	7.5	7.4	7.5
10	7.7	7.5	7.6	7.6	7.5	7.6	7.7	7.4	7.5	7.6	7.3	7.5
11	7.7	7.5	7.6	7.6	7.3	7.4	7.8	7.5	7.7	7.6	7.5	7.5
12	7.8	7.5	7.6	7.8	7.3	7.5	7.8	7.6	7.7	7.6	7.5	7.5
13	7.6	7.4	7.5	7.8	7.6	7.7	8.0	7.6	7.8	7.7	7.5	7.6
14	7.6	7.4	7.5	7.8	7.6	7.7	7.8	7.7	7.8	7.6	7.4	7.5
15	7.8	7.5	7.6	7.8	7.6	7.7	7.9	7.6	7.7	7.7	7.4	7.5
16	7.6	7.4	7.5	7.8	7.7	7.7	7.9	7.6	7.8	7.6	7.3	7.5
17	7.6	7.3	7.5	7.8	7.7	7.7	7.9	7.5	7.7	7.7	7.3	7.5
18	7.3	7.2	7.3	7.8	7.7	7.8	8.0	7.7	7.8	7.7	7.3	7.5
19	7.5	7.3	7.3	7.8	7.6	7.8	7.9	7.7	7.8	7.7	7.5	7.7
20	7.6	7.3	7.5	---	---	---	7.9	7.5	7.7	---	---	---
21	7.6	7.3	7.5	---	---	---	7.9	7.7	7.8	---	---	---
22	7.7	7.5	7.6	---	---	---	7.9	7.7	7.8	---	---	---
23	8.0	7.6	7.7	---	---	---	---	---	---	---	---	---
24	7.7	7.4	7.5	---	---	---	---	---	---	---	---	---
25	7.5	7.3	7.4	8.0	7.7	7.8	---	---	---	---	---	---
26	7.5	7.1	7.3	8.0	7.8	7.9	---	---	---	---	---	---
27	7.4	7.2	7.3	7.9	7.6	7.7	---	---	---	7.8	7.6	7.7
28	7.5	7.3	7.4	7.8	7.6	7.7	---	---	---	7.8	7.7	7.7
29	7.4	6.9	7.3	7.8	7.6	7.6	7.7	7.3	7.5	7.8	7.7	7.8
30	7.6	6.7	7.1	7.9	7.6	7.7	7.7	7.3	7.4	7.8	7.7	7.7
31	---	---	---	7.8	7.6	7.7	7.8	7.1	7.4	---	---	---
MONTH	8.0	6.7	7.5	8.0	7.2	7.6	8.0	7.1	7.7	7.8	7.1	7.5

GUADALUPE RIVER BASIN

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08181480 LEON CREEK AT INTERSTATE HIGHWAY 35 AT SAN ANTONIO, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	24.5	23.0	23.5	21.0	19.0	20.0	17.0	14.5	15.5	12.5	11.5	12.5
2	24.0	23.0	23.5	21.0	19.5	20.5	19.0	17.0	17.5	13.5	12.5	13.0
3	24.0	23.5	23.5	22.0	20.5	21.0	18.5	16.0	17.0	14.0	13.0	13.5
4	24.5	23.5	24.0	22.0	18.5	20.5	15.5	14.0	14.5	12.5	12.0	12.0
5	25.0	24.0	24.5	18.0	16.5	17.5	13.5	12.0	13.0	13.5	12.0	12.5
6	26.0	24.5	25.0	17.5	15.0	16.5	14.5	12.0	13.0	15.5	13.5	15.0
7	26.0	24.5	25.5	18.5	17.5	18.0	14.0	12.5	13.0	14.5	13.5	14.0
8	26.0	25.0	25.5	18.5	15.0	17.0	13.0	11.5	12.5	13.5	12.5	13.0
9	25.5	22.0	23.0	15.5	14.5	15.0	13.0	11.0	12.0	14.5	13.0	14.0
10	22.0	19.5	20.5	16.5	14.5	15.5	13.5	11.0	12.5	14.5	13.5	14.5
11	19.5	18.0	19.0	17.0	14.5	15.5	15.5	12.5	14.0	14.0	13.0	13.5
12	20.0	17.5	18.5	17.0	14.5	16.0	17.0	14.5	15.5	14.0	12.0	13.0
13	20.0	18.0	19.0	17.5	15.5	16.5	17.5	14.5	16.0	14.0	11.0	12.5
14	21.0	19.0	20.0	18.5	16.0	17.0	18.5	16.5	17.5	15.5	12.5	14.0
15	22.0	20.5	21.0	19.5	17.5	18.5	20.0	18.0	19.0	16.0	13.5	15.0
16	23.0	21.5	22.0	20.0	19.0	19.5	19.5	18.5	19.0	15.5	13.5	14.5
17	24.5	22.5	23.5	20.5	19.5	20.0	21.0	19.5	20.0	15.5	14.0	15.0
18	24.0	21.0	22.5	21.0	19.5	20.0	20.5	17.5	18.5	15.5	11.0	12.5
19	21.0	19.0	20.0	21.0	19.5	20.5	17.5	15.5	16.5	13.5	11.5	12.5
20	21.0	19.0	20.0	22.0	20.0	20.5	18.0	15.5	17.0	14.5	12.5	13.5
21	21.5	18.0	20.0	22.5	21.5	22.0	20.0	17.5	19.0	13.5	12.0	13.0
22	19.0	17.5	18.5	23.0	22.0	22.5	17.5	12.0	14.0	13.0	11.5	12.5
23	18.0	16.5	17.5	22.5	20.5	21.5	12.0	10.0	10.5	13.5	12.5	13.0
24	18.5	16.5	17.5	20.0	18.5	19.5	10.0	8.0	9.0	14.0	12.0	13.0
25	19.0	17.0	18.0	21.0	19.5	20.5	9.5	8.0	8.5	13.5	12.0	12.5
26	19.0	17.5	18.5	22.0	21.0	21.5	11.0	9.5	10.0	14.5	12.5	13.5
27	20.0	18.0	19.0	23.0	22.0	22.5	12.5	11.0	11.5	16.5	14.0	15.0
28	20.0	18.5	19.5	22.0	18.5	20.0	13.5	12.0	12.5	16.5	14.5	15.5
29	20.0	18.5	19.5	18.5	16.5	17.5	16.5	13.5	15.0	19.0	16.0	17.0
30	20.0	18.5	19.5	16.0	14.5	15.5	17.0	14.5	16.0	17.0	14.5	16.0
31	20.5	19.0	19.5	---	---	---	13.5	12.0	13.0	14.5	13.0	13.5
MONTH	26.0	16.5	21.0	23.0	14.5	19.0	21.0	8.0	14.5	19.0	11.0	13.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	14.5	12.0	13.0	19.5	16.5	17.5	---	---	---	23.5	21.5	22.5
2	14.5	12.5	13.5	20.0	17.5	18.5	19.5	17.0	18.5	22.5	20.0	21.0
3	15.5	14.0	15.0	19.0	16.5	18.0	20.5	18.5	19.5	22.5	21.5	21.5
4	16.0	14.5	15.5	19.5	15.5	17.5	21.0	19.5	20.5	23.5	22.5	23.0
5	17.5	15.0	16.5	20.0	16.0	18.0	21.0	17.5	18.5	24.0	23.0	23.5
6	18.5	16.5	17.5	21.5	17.0	19.0	19.0	17.5	18.0	23.5	22.0	23.0
7	18.0	16.0	17.0	20.0	18.0	19.5	19.5	18.0	19.0	27.0	22.0	22.5
8	17.5	15.5	16.5	20.5	17.5	19.0	21.5	19.5	20.5	26.5	19.0	21.0
9	17.5	15.5	16.5	20.0	17.0	18.5	22.0	21.5	22.0	22.5	20.5	21.5
10	18.0	15.5	17.0	19.5	16.0	17.5	22.0	21.0	21.5	23.5	22.5	23.0
11	18.5	17.5	18.0	20.5	16.5	18.5	21.5	21.0	21.0	25.0	23.5	24.0
12	19.5	17.5	18.0	21.5	18.5	20.0	22.5	21.0	22.0	26.0	24.5	25.0
13	20.0	18.0	18.5	---	---	---	---	---	---	25.0	24.5	25.0
14	19.5	17.5	18.5	---	---	---	---	---	---	25.5	24.0	24.5
15	18.0	16.0	17.0	---	---	---	---	---	---	25.5	24.0	24.5
16	15.5	14.5	15.0	---	---	---	---	---	---	25.5	23.5	25.0
17	17.0	14.5	15.5	---	---	---	---	---	---	24.5	22.5	23.5
18	19.0	16.5	18.0	---	---	---	---	---	---	25.0	23.0	24.0
19	18.0	16.5	17.5	---	---	---	---	---	---	25.5	24.0	24.5
20	16.5	15.0	15.5	---	---	---	23.5	22.5	23.0	25.5	24.5	25.0
21	15.5	14.5	15.0	---	---	---	22.5	21.5	22.0	26.0	24.5	25.0
22	17.5	14.0	15.5	---	---	---	24.5	22.0	23.0	26.5	24.5	25.5
23	18.0	15.5	16.5	---	---	---	24.0	22.0	23.0	27.0	25.5	26.0
24	17.5	16.0	17.0	---	---	---	23.5	22.5	23.0	27.0	25.5	26.0
25	17.5	15.5	16.5	---	---	---	24.5	23.0	23.5	28.0	25.5	26.5
26	15.5	14.5	15.0	---	---	---	25.0	23.5	24.5	28.0	25.5	26.5
27	15.5	14.5	15.0	---	---	---	25.5	24.5	25.0	28.0	25.5	26.0
28	16.5	15.0	15.5	---	---	---	25.0	23.5	24.5	28.0	25.5	27.0
29	---	---	---	---	---	---	24.0	22.0	23.0	28.0	26.0	27.0
30	---	---	---	---	---	---	23.5	21.0	22.5	28.0	26.0	27.0
31	---	---	---	---	---	---	---	---	---	28.0	26.0	27.0
MONTH	20.0	12.0	16.0	21.5	15.5	18.5	25.5	17.0	21.5	28.0	19.0	24.5

GUADALUPE RIVER BASIN

08181480 LEON CREEK AT INTERSTATE HIGHWAY 35 AT SAN ANTONIO, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	27.5	26.0	27.0	26.0	25.0	25.5	28.0	26.5	27.5	28.0	26.0	27.0
2	27.5	26.5	27.0	27.5	25.5	26.5	28.5	26.5	27.5	28.0	27.0	27.5
3	27.5	26.0	26.5	28.0	26.5	27.0	28.0	26.5	27.5	27.5	26.5	27.0
4	27.5	24.5	26.0	27.5	24.5	26.5	28.0	27.0	27.5	27.0	25.5	26.0
5	28.0	25.5	27.0	26.5	24.5	25.5	27.5	26.5	27.0	26.5	25.5	26.0
6	28.0	26.5	27.0	27.5	26.0	27.0	27.5	26.5	27.0	27.0	26.0	26.5
7	27.0	26.0	26.5	27.5	27.0	27.5	26.5	26.0	26.5	27.5	26.5	27.0
8	27.0	26.0	26.5	27.5	26.5	27.0	28.0	26.0	27.0	27.0	26.0	26.5
9	26.5	25.0	25.5	27.5	26.5	27.0	28.0	26.5	27.0	27.5	26.0	26.5
10	26.0	24.5	25.5	28.0	26.5	27.0	28.5	26.5	27.5	27.0	26.0	26.5
11	26.5	24.5	25.5	28.0	26.5	27.0	28.5	27.0	28.0	26.5	25.5	26.0
12	27.5	24.5	26.0	28.0	26.5	27.0	29.0	27.0	28.0	26.5	25.5	26.0
13	28.0	26.0	27.0	28.5	26.5	27.0	28.5	27.0	27.5	27.0	26.0	26.5
14	27.5	26.5	27.0	28.5	26.5	27.5	27.5	27.0	27.5	27.0	26.0	26.5
15	28.0	26.0	27.0	28.5	26.5	27.5	28.0	26.5	27.0	27.5	26.5	27.0
16	28.5	26.5	27.5	28.5	26.0	27.5	28.0	26.5	27.5	27.5	26.0	26.5
17	27.5	26.0	27.0	28.5	26.5	27.5	28.5	27.0	27.5	26.5	25.5	26.0
18	28.0	26.0	27.0	29.0	26.5	27.5	28.5	27.0	27.5	26.5	25.5	26.0
19	28.0	26.5	27.0	28.5	26.5	27.5	28.0	26.5	27.5	26.0	22.5	24.5
20	28.5	26.5	27.5	28.5	26.5	27.5	27.5	26.5	27.0	22.5	20.5	21.5
21	29.0	26.5	27.5	28.5	27.0	27.5	28.0	26.5	27.5	22.0	20.5	21.5
22	29.0	26.5	28.0	28.0	26.5	27.5	28.0	27.0	27.5	23.5	22.0	22.5
23	24.5	22.5	24.0	27.0	26.0	26.5	28.0	26.0	27.0	24.5	23.0	24.0
24	26.5	24.0	25.0	28.0	25.5	26.5	28.0	26.0	27.0	26.5	24.5	25.0
25	26.5	25.5	26.0	28.0	26.0	27.0	27.0	25.5	26.5	25.5	23.5	24.5
26	27.5	26.5	27.0	28.0	26.5	27.0	27.0	25.5	26.0	23.5	21.5	22.5
27	28.0	26.5	27.0	28.5	26.5	27.5	27.0	25.5	26.0	22.5	21.0	22.0
28	28.0	27.0	27.5	28.0	26.5	27.5	27.5	26.0	26.5	22.5	21.0	22.0
29	27.0	26.0	26.5	28.0	26.5	27.5	28.0	26.5	27.0	22.5	21.0	21.5
30	26.5	25.5	26.0	28.0	26.0	27.0	28.0	26.5	27.5	22.5	21.0	21.5
31	---	---	---	28.5	26.5	27.5	27.5	27.0	27.5	---	---	---
MONTH	29.0	22.5	26.5	29.0	24.5	27.0	29.0	25.5	27.0	28.0	20.5	25.0

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	7.9	4.9	5.9	8.0	5.1	6.1	10.6	7.1	8.7	12.0	7.5	9.6
2	7.6	4.7	5.8	7.8	4.9	5.9	9.0	6.4	7.6	10.1	7.4	8.7
3	6.0	4.7	5.3	7.3	4.7	5.6	10.3	6.0	8.0	8.4	7.3	7.8
4	7.5	4.9	5.7	6.1	4.5	5.2	10.7	6.6	8.6	9.2	7.4	8.1
5	7.5	4.8	5.7	6.0	4.7	5.3	11.8	7.9	9.7	10.0	7.9	8.6
6	7.9	4.6	5.8	7.8	5.3	6.3	12.0	8.1	10.0	9.4	7.1	8.1
7	7.7	4.3	5.4	6.8	5.3	5.9	11.5	7.8	9.3	11.0	6.7	8.4
8	7.3	4.1	5.1	9.2	5.7	7.3	11.8	7.8	9.7	11.3	7.6	9.1
9	7.3	4.2	6.0	8.6	7.9	8.3	12.3	8.1	10.2	9.0	7.8	8.3
10	7.2	5.9	6.4	8.2	7.2	7.7	12.7	8.2	10.4	9.6	7.6	8.3
11	7.5	6.1	6.6	8.0	7.1	7.5	12.5	8.0	10.2	10.9	7.6	8.8
12	7.8	6.2	6.7	8.1	6.9	7.4	11.9	7.0	9.3	11.6	7.9	9.3
13	8.1	6.0	6.7	8.3	6.9	7.4	11.1	5.5	8.5	11.7	7.8	9.4
14	8.1	5.8	6.5	8.3	6.8	7.4	10.6	5.9	8.4	11.8	7.4	9.2
15	8.2	5.4	6.2	8.2	6.4	7.0	9.7	5.3	7.4	11.7	6.8	8.9
16	7.8	5.2	6.1	8.0	5.6	6.6	8.2	4.5	6.5	11.4	6.7	8.7
17	7.3	4.9	5.8	8.0	5.3	6.5	8.5	4.2	6.3	10.1	6.3	8.0
18	7.6	4.6	5.6	8.1	5.1	6.4	8.7	4.2	6.5	9.4	6.8	8.8
19	7.8	4.9	5.9	7.4	4.6	5.6	9.8	5.0	7.4	8.9	7.7	8.4
20	8.2	5.1	6.1	7.6	4.4	5.8	10.0	5.8	7.9	7.9	7.5	7.7
21	8.2	5.0	6.3	7.2	4.0	5.4	9.5	4.9	7.2	8.1	7.3	7.7
22	8.3	6.7	7.3	6.4	3.9	5.1	8.1	5.3	6.7	8.7	7.8	8.2
23	8.5	6.4	7.0	6.2	3.7	4.8	11.2	7.2	9.0	8.2	8.0	8.1
24	8.7	6.4	7.1	7.5	4.5	5.9	12.5	8.9	10.7	9.6	8.1	8.8
25	8.6	6.1	7.0	7.5	5.0	6.1	11.9	9.6	10.8	8.8	7.9	8.4
26	8.9	6.0	7.0	6.9	4.7	5.8	11.4	9.4	10.3	8.6	7.7	8.0
27	8.9	6.0	6.9	7.5	4.4	5.8	12.2	8.5	10.2	8.2	7.1	7.6
28	8.7	5.7	6.8	8.3	4.8	6.4	10.2	8.0	9.1	8.6	6.9	7.6
29	8.9	5.8	6.8	9.5	5.5	7.4	9.5	6.7	8.0	9.0	6.7	7.5
30	8.7	5.7	6.8	10.5	6.7	8.4	9.8	5.6	7.5	9.3	6.8	7.7
31	8.5	5.7	6.6	---	---	---	11.4	6.5	8.7	10.3	6.7	8.3
MONTH	8.9	4.1	6.3	10.5	3.7	6.4	12.7	4.2	8.7	12.0	6.3	8.4

GUADALUPE RIVER BASIN

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08181480 LEON CREEK AT INTERSTATE HIGHWAY 35 AT SAN ANTONIO, TX--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	11.7	8.2	9.5	14.2	6.6	9.1	10.8	4.8	7.3	9.3	5.8	7.2
2	12.1	8.2	9.6	14.2	5.7	8.9	9.3	4.6	6.8	7.3	6.6	7.0
3	9.3	7.4	8.2	16.6	6.0	10.0	9.9	5.1	7.0	6.7	5.9	6.3
4	8.9	7.1	8.3	17.7	6.3	10.6	9.6	5.2	6.9	6.8	5.8	6.4
5	8.5	7.2	7.6	17.7	6.3	10.7	8.1	5.9	7.2	7.4	6.8	7.1
6	7.8	7.1	7.3	17.3	5.7	10.4	8.3	7.9	8.1	7.4	6.4	7.0
7	8.4	6.9	7.4	15.6	5.3	9.7	7.8	7.2	7.6	6.7	6.2	6.6
8	8.9	6.9	7.6	16.4	5.5	10.0	7.3	6.7	7.1	8.4	6.1	7.1
9	9.3	7.2	8.0	16.4	5.7	10.2	6.7	6.4	6.6	7.0	6.5	6.8
10	10.0	7.2	8.2	16.8	5.3	10.3	6.9	6.3	6.5	6.6	6.2	6.4
11	9.7	7.1	8.1	16.5	5.3	10.2	6.7	6.4	6.5	6.4	5.9	6.1
12	10.7	7.1	8.4	---	---	---	7.0	6.0	6.4	6.3	5.6	5.9
13	11.5	6.9	8.5	---	---	---	6.6	5.3	5.8	6.4	5.5	5.8
14	11.9	7.0	8.7	---	---	---	7.5	5.6	6.4	6.0	5.6	5.6
15	12.5	7.0	9.1	---	---	---	7.0	6.0	6.4	5.8	4.9	5.2
16	8.5	7.5	8.0	---	---	---	7.1	5.7	6.2	6.7	5.1	5.5
17	11.1	7.1	8.6	---	---	---	6.6	5.6	6.0	6.3	5.7	6.1
18	11.5	6.7	8.6	---	---	---	6.2	5.3	5.7	6.3	5.6	5.8
19	9.3	6.4	7.7	---	---	---	6.8	5.0	5.6	6.1	5.3	5.6
20	10.6	7.1	8.4	---	---	---	6.9	5.2	6.0	5.7	4.6	5.4
21	10.9	7.1	8.6	---	---	---	7.2	5.9	6.4	6.3	4.5	5.3
22	12.5	7.1	9.0	---	---	---	7.7	5.6	6.3	6.5	5.3	5.8
23	13.5	6.8	9.2	---	---	---	7.8	5.4	6.2	6.8	5.6	5.9
24	9.9	6.5	7.9	---	---	---	6.8	5.2	5.8	6.7	5.3	6.6
25	9.7	6.2	7.6	---	---	---	7.7	5.2	6.1	6.8	5.2	5.7
26	12.4	6.7	8.9	---	---	---	6.6	4.9	5.4	6.8	5.1	5.7
27	12.6	7.0	9.2	9.6	4.5	6.7	7.9	4.9	5.9	7.0	5.1	6.0
28	10.2	7.0	8.2	9.3	4.9	6.4	7.8	4.9	6.0	7.0	5.1	5.8
29	---	---	---	10.0	5.0	7.0	8.9	5.3	6.6	7.1	5.1	5.9
30	---	---	---	10.9	5.4	7.5	9.2	5.7	7.0	7.2	5.1	5.9
31	---	---	---	11.1	5.4	8.0	---	---	---	7.1	4.9	5.8
MONTH	13.5	6.2	8.4	17.7	4.5	9.1	10.8	4.6	6.5	9.3	4.5	6.1
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	6.9	4.9	5.7	6.8	5.7	6.3	8.2	4.5	6.0	6.4	3.2	4.9
2	6.8	4.8	5.6	6.1	5.4	5.7	8.6	4.5	6.1	5.6	4.1	4.8
3	6.8	4.9	5.6	6.2	5.3	5.7	7.5	4.1	5.6	5.3	3.8	4.4
4	7.5	5.2	6.1	7.1	5.3	6.1	7.6	4.1	5.6	5.8	3.7	4.5
5	7.8	5.1	6.1	7.1	6.2	6.8	7.2	4.3	5.5	6.2	4.1	4.9
6	7.3	4.8	5.8	6.5	6.0	6.3	8.0	4.2	5.7	5.4	4.2	4.8
7	7.2	4.8	5.8	6.5	6.0	6.3	7.5	4.5	5.6	5.8	4.5	5.0
8	7.2	4.8	5.8	6.4	6.0	6.1	6.4	3.5	5.1	5.6	4.0	4.7
9	7.6	5.3	6.1	6.1	5.4	5.7	7.2	3.2	4.7	6.0	3.9	4.7
10	7.5	4.9	6.0	6.5	5.6	6.0	8.0	3.5	5.2	6.3	4.1	4.9
11	8.2	5.1	6.4	6.5	5.6	5.9	8.2	3.8	5.5	6.0	4.5	5.1
12	7.7	4.8	6.2	6.9	5.6	6.1	8.4	3.9	5.7	6.8	4.5	5.3
13	6.5	2.7	4.3	7.1	5.5	6.1	8.6	3.9	5.8	6.4	4.5	5.3
14	6.5	3.1	4.5	7.1	5.4	6.1	7.5	3.9	5.3	5.8	4.1	4.8
15	7.0	3.9	5.3	7.3	5.3	6.1	8.7	4.2	5.7	6.3	3.8	4.8
16	6.4	3.5	4.8	7.5	5.3	6.1	8.2	4.2	5.7	6.3	4.0	4.9
17	6.0	5.0	5.6	7.5	5.3	6.0	8.3	4.1	5.7	6.5	4.2	5.1
18	6.0	4.5	5.0	7.8	5.2	6.1	7.4	4.0	5.3	6.8	4.3	5.3
19	5.6	4.0	4.6	7.8	5.1	6.2	8.0	3.6	5.2	6.2	4.8	5.4
20	6.9	4.4	5.4	8.1	5.1	6.2	7.9	3.8	5.4	7.5	4.3	5.8
21	7.0	4.3	5.4	8.1	4.9	6.1	9.2	4.0	5.8	9.3	6.4	7.4
22	6.9	4.1	5.3	7.2	4.8	5.7	8.5	4.0	5.4	9.1	6.5	7.5
23	6.7	5.8	6.3	7.5	4.2	5.6	6.7	3.8	4.9	7.8	6.1	6.8
24	6.7	6.2	6.5	8.5	4.6	6.1	5.4	3.8	4.9	8.2	5.6	6.5
25	6.4	6.0	6.3	8.4	4.7	6.1	5.6	3.3	4.2	7.3	5.0	5.8
26	6.0	5.6	5.8	7.8	4.8	5.9	5.6	3.2	4.1	6.2	3.9	5.0
27	5.8	5.3	5.6	6.9	4.8	5.6	6.0	3.4	4.4	7.4	4.7	5.6
28	6.0	5.2	5.5	7.2	4.3	5.4	7.1	3.6	4.9	7.7	4.5	5.6
29	6.2	5.3	5.7	7.5	4.1	5.4	7.8	4.0	5.4	7.5	4.6	5.7
30	6.7	4.7	5.4	8.3	4.5	5.9	7.5	4.1	5.4	7.5	4.6	5.8
31	---	---	---	7.9	4.1	5.7	5.4	3.1	4.5	---	---	---
MONTH	8.2	2.7	5.6	8.5	4.1	6.0	9.2	3.1	5.3	9.3	3.2	5.4

GUADALUPE RIVER BASIN

08181500 MEDINA RIVER AT SAN ANTONIO, TX

LOCATION.--Lat 29°15'14", long 98°28'20", Bexar County, Hydrologic Unit 12100302, near right bank at upstream side of pier of upstream bridge of two bridges on U.S. Highway 281 in San Antonio and 6.8 mi upstream from mouth.

DRAINAGE AREA.--1,317 mi², of which 634 mi² is above dam forming Medina Lake.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1929 to December 1930, and July 1939 to current year. October 1929 to December 1930, records below about 50 ft³/s in connection with seepage investigation (published as "at Losoya"). Published as "near San Antonio" July 1939 to September 1970.

REVISED RECORDS.--WSP 1562: 1957. WSP 1923: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 439.0 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). October 1929 to December 1930, nonrecording gage at Losoya 1.5 mi downstream at different datum. July 27, 1939, to Sept. 30, 1987, at site near left bank at downstream side of pier of upstream bridge of two bridges at same datum.

REMARKS.--No estimated daily discharges. Records good. Flow is slightly regulated by Medina Lake (station 08179500) 60 mi upstream, and by diversion dam reservoir, capacity 4,500 acre-ft. For diversion of canal records, see Medina Canal near Riomedina (station 08180000). For statement concerning losses into the Edwards and associated limestones formation, see Medina River near Somerset (station 08180800). Several small diversions below diversion dam reservoir. Records furnished by the city of San Antonio show that during the current year flow of 2,240 acre-ft from Mitchell Lake and sewage effluent in the amount of 29,080 acre-ft from the Leon Creek plant was discharged into the Medina River above this station. Satellite telemeter at station.

AVERAGE DISCHARGE.--52 years (water years 1940-91), 186 ft³/s (134,800 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 31,900 ft³/s July 17, 1973 (gage height, 43.59 ft); minimum daily, 3.3 ft³/s Apr. 18, Nov. 1, 1956, and Jan. 24, 1957.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage, 55 ft sometime prior to construction of Medina Dam in 1913, from information by State Department of Highways and Public Transportation.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,990 ft³/s Apr. 5 at 2400 hours (gage height, 20.35 ft); minimum daily, 92 ft³/s Nov. 2, 7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	101	93	100	107	105	130	141	162	150	266	162	167
2	101	92	102	113	105	124	139	643	148	224	162	181
3	101	93	104	125	103	128	139	323	151	210	158	187
4	99	100	104	124	914	129	138	259	147	282	155	168
5	99	103	103	121	739	118	3060	267	142	552	156	168
6	99	95	101	126	260	116	2310	232	144	273	149	171
7	97	92	100	124	181	116	682	200	144	240	143	179
8	98	154	101	120	158	124	425	345	139	220	156	171
9	152	187	100	121	146	123	341	339	143	217	143	172
10	122	126	102	132	140	135	291	263	149	209	137	161
11	111	109	103	123	139	145	268	227	148	200	135	160
12	108	103	104	118	134	133	253	206	145	197	134	160
13	104	99	105	115	127	119	242	226	145	194	132	163
14	103	97	103	114	125	124	339	237	148	189	132	165
15	103	101	105	112	121	137	278	209	153	186	131	163
16	101	101	105	108	116	145	243	198	153	181	131	164
17	103	102	106	107	118	144	227	256	197	179	129	160
18	102	105	103	613	122	137	217	233	182	176	128	157
19	100	105	96	343	134	129	211	199	171	174	134	159
20	99	107	101	163	137	132	215	191	165	167	130	161
21	114	105	103	133	134	145	220	179	163	160	131	168
22	134	107	103	121	127	120	210	177	159	163	127	164
23	112	100	109	114	124	118	195	174	592	165	133	167
24	112	102	111	132	126	118	188	171	820	168	198	167
25	97	102	107	124	123	120	187	168	380	166	156	177
26	99	106	105	115	117	120	185	172	262	164	152	166
27	99	105	109	114	118	121	187	164	224	167	147	157
28	97	102	109	113	123	142	181	158	212	162	147	154
29	96	100	110	114	---	144	174	156	201	164	149	150
30	93	99	109	117	---	143	168	156	214	166	148	151
31	95	---	112	112	---	142	---	155	---	165	162	---
TOTAL	3251	3192	3235	4438	5116	4021	12054	7045	6291	6346	4487	4958
MEAN	105	106	104	143	183	130	402	227	210	205	145	165
MAX	152	187	112	613	914	145	3060	643	820	552	198	187
MIN	93	92	96	107	103	116	138	155	139	160	127	150
AC-FT	6450	6330	6420	8800	10150	7980	23910	13970	12480	12590	8900	9830
CAL YR 1990	TOTAL	58246	MEAN	160	MAX	6070	MIN	46	AC-FT	115500		
WTR YR 1991	TOTAL	64434	MEAN	177	MAX	3060	MIN	92	AC-FT	127800		

08181500 MEDINA RIVER AT SAN ANTONIO, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: June 1965 to current year. Pesticide analyses: April 1971 to September 1981.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: January 1987 to current year.
pH: January 1987 to current year.
WATER TEMPERATURE: January 1987 to current year.
DISSOLVED OXYGEN: January 1987 to current year.

INSTRUMENTATION.--Since January 1987, a four-parameter water-quality monitor continuously records specific conductance, pH, water temperature, and dissolved oxygen at this station.

REMARKS.--Interruptions in the record were due to malfunction of the instrument. Where maximum or minimum specific conductance values are not shown, mean value is estimated. Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 1,150 microsiemens June 26, 1988, Feb. 15, 1990; minimum, 30 microsiemens July 16, 1990.
pH: Maximum, 8.8 units Dec. 4, 5, 1988, Mar. 22, 1989; minimum, 7.0 units Apr. 1-3, 1989, Mar. 5, 6, 1990.
WATER TEMPERATURE: Maximum, 32.0°C June 11, 1989; minimum, 9.0°C Jan. 11, 1988, Dec 23, 1989.
DISSOLVED OXYGEN: Maximum, 12.7 mg/L Jan. 16, 1989; minimum, 1.8 mg/L Oct. 17, Nov. 8, 1987.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 1,100 microsiemens Dec. 15; minimum, 157 microsiemens Feb. 4.
pH: Maximum, 8.3 units on several days during December, January, and February; minimum, 7.6 units on several days during October, November, April, and May.
WATER TEMPERATURE: Maximum, 30.0°C June 22, Aug. 12; minimum, 12.0°C Dec. 25, Jan. 18.
DISSOLVED OXYGEN: Maximum, 11.4 mg/L Feb. 2; minimum, 6.1 mg/L Sept. 18.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

		DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	
OCT 18...	0937	78	939	7.9	23.0	7.2	86	2.3	310	100	91	20	
DEC 10...	1235	92	960	8.1	15.5	10.4	105	1.1	330	92	97	22	
APR 09...	1110	308	989	7.8	23.0	7.6	90	4.7	300	120	89	20	
MAY 16...	0825	170	887	8.0	26.0	8.7	110	2.4	290	82	87	18	
JUN 26...	1045	258	572	7.8	27.0	7.2	92	3.2	220	51	65	13	
AUG 20...	1000	121	778	8.0	27.5	6.3	83	1.6	300	83	86	20	
DATE		SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	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)	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 18...	78	2	6.8	210	73	100	0.50	14	508	11.0	0.020	11.0	
DEC 10...	74	2	5.5	240	80	90	0.50	13	528	6.40	0.100	6.50	
APR 09...	83	2	8.6	190	120	110	0.40	13	556	2.25	0.050	2.30	
MAY 16...	51	1	5.4	210	82	79	0.50	13	461	6.76	0.040	6.80	
JUN 26...	33	1	5.4	170	56	41	0.40	13	326	2.77	0.030	2.80	
AUG 20...	47	1	4.4	220	85	68	0.50	13	456	--	<0.010	0.170	
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)	PHOS-PHORUS ORTHO TOTAL (MG/L AS P)	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)
OCT 18...	0.040	0.66	0.70	2.80	2.90	--	--	--	--	--	--	--	--
DEC 10...	1.40	1.0	2.4	4.40	2.20	1	53	<0.5	<1.0	<5	<3	<10	
APR 09...	0.170	1.2	1.4	0.720	0.650	--	--	--	--	--	--	--	--
MAY 16...	0.130	1.1	1.2	1.80	1.50	--	--	--	--	--	--	--	--
JUN 26...	0.060	0.94	1.0	0.740	0.640	--	--	--	--	--	--	--	--
AUG 20...	<0.010	--	0.70	0.440	0.030	--	69	2	1.0	<5	<3	<10	

GUADALUPE RIVER BASIN

08181500 MEDINA RIVER AT SAN ANTONIO, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

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)
OCT 18...	--	--	--	--	--	--	--	--	--	--	--	--
DEC 10...	7	<10	24	11	0.1	<10	<10	<1	<1.0	900	<6	11
APR 09...	--	--	--	--	--	--	--	--	--	--	--	--
MAY 16...	--	--	--	--	--	--	--	--	--	--	--	--
JUN 26...	--	--	--	--	--	--	--	--	--	--	--	--
AUG 20...	5	<10	21	3	<0.1	250	<10	1	<1.0	1600	150	11

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1990 TO SEPTEMBER 1991

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. 1990	3251	937	516	4530	87	760	92	807	310
NOV. 1990	3192	959	524	4520	91	782	93	798	320
DEC. 1990	3235	1010	543	4740	99	868	94	824	320
JAN. 1991	4438	849	476	5710	74	887	87	1040	290
FEB. 1991	5116	780	436	6020	69	952	79	1090	270
MAR. 1991	4021	1000	540	5870	98	1070	94	1020	320
APR. 1991	12054	618	357	11600	49	1590	67	2170	230
MAY 1991	7045	820	468	8890	68	1290	86	1640	290
JUNE 1991	6291	709	413	7020	54	916	78	1320	270
JULY 1991	6346	675	402	6890	47	805	77	1320	260
AUG. 1991	4487	787	454	5500	62	752	85	1030	290
SEPT 1991	4958	784	453	6060	62	824	85	1130	290
TOTAL	64434	**	**	77400	**	11500	**	14200	**
WTD.AVG.	177	784	445	**	66	**	82	**	280

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	941	902	922	1020	980	992	1020	980	1000	980	840	952
2	980	902	934	1020	980	982	1020	980	996	980	941	964
3	941	902	939	1020	980	1010	980	980	980	1020	941	986
4	980	941	963	1020	980	998	980	980	980	980	941	958
5	1020	941	974	1020	960	994	1020	980	983	980	941	960
6	980	941	952	1020	980	996	1060	980	1020	980	941	953
7	941	941	941	1020	980	994	1020	980	1020	941	824	930
8	980	941	954	1020	784	974	1020	980	1010	980	941	947
9	1060	706	937	824	588	718	1020	941	987	1020	980	981
10	863	784	822	902	784	850	1020	980	999	1020	941	970
11	863	824	852	902	863	886	1060	1020	1050	980	941	950
12	902	863	885	941	902	922	1060	1020	1030	980	941	946
13	941	902	909	941	902	931	1020	1020	1020	980	941	942
14	941	902	930	980	902	969	1060	1020	1030	980	941	973
15	941	902	927	1020	980	998	1100	1020	1060	1020	980	994
16	941	941	940	980	980	980	1060	1020	1030	1020	980	1000
17	980	941	954	1020	980	992	1060	1020	1030	1020	980	997
18	980	941	947	1020	980	988	1020	1020	1020	980	314	650
19	980	941	950	980	941	973	1060	1020	1030	510	431	472
20	980	680	948	1020	980	1000	1020	1020	1020	706	588	634
21	1000	860	928	1020	980	1000	1060	1020	1040	784	706	727
22	1000	745	870	1020	980	1010	1060	1020	1040	863	706	809
23	941	863	919	980	941	964	1060	980	1030	902	863	876
24	941	902	927	980	941	974	980	941	977	902	863	888
25	980	920	943	980	941	974	980	941	974	902	863	899
26	1020	980	1010	980	941	968	980	941	965	902	863	889
27	1020	980	990	980	902	977	980	941	973	902	902	902
28	1020	980	988	1020	980	1010	1020	980	1010	941	902	939
29	1020	941	988	1020	980	990	1020	980	989	1020	941	987
30	1020	980	990	1020	980	986	980	941	973	980	941	949
31	1020	980	992	---	---	---	980	941	969	980	941	961
MONTH	1060	680	940	1020	588	967	1100	941	1010	1020	314	903

GUADALUPE RIVER BASIN

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08181500 MEDINA RIVER AT SAN ANTONIO, TX--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	980	941	970	1020	1020	1020	941	824	916	941	941	941
2	980	980	980	1060	1020	1020	941	902	927	980	353	670
3	980	941	955	1020	980	1000	941	902	933	824	627	669
4	941	157	504	1020	980	992	----	----	946	824	745	796
5	314	196	256	1020	1020	1020	----	----	220	824	745	796
6	784	353	544	1020	1020	1020	----	----	360	824	784	804
7	902	784	843	1060	1020	1030	----	----	520	863	824	849
8	941	902	906	1060	1020	1030	----	----	740	902	510	759
9	980	941	952	1060	980	1020	----	----	850	784	588	723
10	1020	980	987	1060	980	1010	----	----	900	824	745	766
11	1020	980	998	1060	1020	1050	----	----	960	863	824	844
12	1020	1020	1020	1020	941	990	----	----	980	902	824	861
13	1020	1020	1020	980	980	980	----	----	990	902	863	868
14	1060	1020	1020	1020	980	1020	----	----	810	863	784	830
15	1020	1020	1020	1020	941	991	----	----	900	863	824	844
16	1060	1020	1030	980	941	964	----	----	980	902	863	882
17	1060	1020	1040	980	941	968	980	980	980	902	784	838
18	1060	1020	1040	980	941	950	980	980	980	863	784	829
19	1060	1020	1020	1020	980	1010	1020	980	1020	863	784	830
20	1060	1020	1030	1060	980	1010	1020	980	1010	863	824	850
21	1060	1020	1030	1020	941	967	980	941	966	902	863	870
22	1020	902	1020	980	980	980	980	941	975	902	863	895
23	1060	1020	1020	1020	1020	1020	980	941	973	902	863	884
24	1060	1020	1040	1020	1020	1020	980	941	956	902	863	895
25	1060	1020	1050	1060	1020	1030	980	941	965	902	863	900
26	1060	1020	1050	1060	1020	1050	980	941	975	902	863	892
27	1020	1020	1020	1060	1020	1050	980	941	969	902	863	889
28	1020	980	1020	1060	980	1020	980	941	977	941	863	897
29	---	---	---	1020	941	967	980	941	969	941	863	904
30	---	---	---	980	902	940	980	941	956	941	902	932
31	---	---	---	941	902	934	---	---	---	941	902	931
MONTH	1060	157	942	1060	902	1000	1020	824	887	980	353	843
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	941	902	922	723	612	670	844	771	807	834	764	796
2	941	863	900	703	671	687	799	753	781	793	755	773
3	941	902	932	700	659	684	810	761	790	774	702	743
4	941	863	908	714	478	658	806	753	784	792	726	765
5	941	863	899	537	383	472	800	757	784	821	745	792
6	941	902	912	618	541	577	829	753	792	828	767	803
7	941	902	907	656	604	623	782	746	770	853	751	799
8	902	863	895	677	626	654	852	765	788	824	754	791
9	902	863	887	694	652	676	788	746	765	802	746	775
10	902	863	892	703	666	686	759	727	746	819	766	793
11	902	862	891	716	654	680	760	725	748	838	773	808
12	---	---	901	706	659	683	772	737	761	832	767	799
13	---	---	861	706	664	688	824	774	800	822	762	797
14	901	827	867	706	662	685	796	751	777	821	766	794
15	858	804	838	708	676	693	792	752	776	810	747	779
16	867	803	834	728	679	705	803	763	787	814	766	799
17	914	746	814	716	684	705	797	762	786	818	758	788
18	787	722	755	733	686	711	789	761	778	836	774	803
19	817	756	793	720	684	704	794	757	774	845	772	810
20	809	760	789	723	676	707	793	756	775	811	756	787
21	801	759	782	713	589	689	819	774	795	817	745	779
22	811	761	787	720	686	707	813	765	788	789	736	765
23	880	252	485	742	686	721	812	759	796	797	727	760
24	508	273	412	733	689	712	945	742	794	796	727	767
25	547	469	496	730	691	714	763	705	740	783	730	766
26	638	552	580	766	729	753	775	734	756	796	741	771
27	694	621	653	767	732	753	844	770	810	792	738	771
28	708	669	690	768	717	743	853	789	823	807	751	784
29	734	679	709	766	719	739	905	796	842	807	742	780
30	738	697	718	823	776	806	854	789	828	808	752	782
31	---	---	---	826	768	802	869	778	836	---	---	---
MONTH	941	252	790	826	383	693	945	705	786	853	702	784

GUADALUPE RIVER BASIN

08181500 MEDINA RIVER AT SAN ANTONIO, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	7.9	7.7	7.8	7.9	7.8	7.8	8.1	8.1	8.1	8.3	8.1	8.2
2	8.0	7.8	7.9	7.8	7.6	7.7	8.1	8.0	8.1	8.2	8.1	8.1
3	8.0	7.8	7.9	7.8	7.6	7.7	8.1	8.0	8.1	8.2	8.1	8.1
4	8.0	7.8	7.9	7.8	7.6	7.7	8.1	8.1	8.1	8.2	8.1	8.1
5	8.0	7.9	8.0	7.9	7.8	7.8	8.2	8.1	8.1	8.2	8.0	8.1
6	8.0	7.8	7.9	8.0	7.8	7.9	8.2	8.0	8.1	8.2	8.0	8.1
7	7.9	7.8	7.9	7.9	7.8	7.8	8.2	8.0	8.1	8.2	8.0	8.1
8	7.9	7.8	7.9	7.8	7.7	7.8	8.3	8.0	8.1	8.2	8.0	8.1
9	8.0	7.9	7.9	---	---	---	8.3	8.1	8.2	8.2	8.0	8.1
10	7.9	7.9	7.9	---	---	---	8.3	8.1	8.2	8.2	8.1	8.1
11	8.0	7.9	7.9	---	---	---	8.3	8.2	8.2	8.2	8.0	8.1
12	8.0	7.9	7.9	---	---	---	8.3	8.1	8.2	8.3	8.1	8.1
13	8.0	7.8	7.9	---	---	---	8.2	8.2	8.2	8.3	8.0	8.1
14	7.9	7.8	7.8	8.0	7.7	7.9	8.2	8.1	8.2	8.2	8.0	8.1
15	7.9	7.8	7.8	8.0	7.9	7.9	8.2	8.0	8.2	8.1	8.0	8.1
16	7.9	7.8	7.8	8.0	7.9	7.9	8.2	8.0	8.1	8.2	8.0	8.1
17	7.9	7.8	7.8	8.1	8.0	8.0	8.1	8.0	8.0	8.2	8.0	8.1
18	8.0	7.8	7.8	8.1	8.0	8.0	8.1	7.9	8.0	8.1	7.8	8.0
19	8.0	7.8	7.9	8.1	7.9	8.0	8.2	8.0	8.1	8.0	7.9	8.0
20	7.9	7.7	7.8	8.1	7.9	8.0	8.2	8.0	8.1	8.0	7.9	8.0
21	7.9	7.6	7.7	8.1	7.9	8.0	8.1	8.0	8.0	8.1	7.9	8.0
22	7.8	7.7	7.8	8.1	8.0	8.0	8.2	8.1	8.2	8.1	7.9	8.0
23	7.9	7.7	7.8	8.1	7.9	8.0	8.3	8.1	8.2	8.2	8.0	8.0
24	7.9	7.8	7.8	8.2	8.0	8.1	8.3	8.2	8.2	8.0	7.9	8.0
25	7.9	7.8	7.8	8.1	8.0	8.1	8.3	8.1	8.2	8.0	7.8	8.0
26	7.9	7.8	7.8	8.1	8.0	8.0	8.3	8.1	8.2	8.0	7.8	7.9
27	8.0	7.8	7.9	8.0	7.9	7.9	8.2	8.1	8.1	7.8	7.7	7.8
28	8.0	7.8	7.9	8.1	7.9	8.0	8.2	8.0	8.1	7.8	7.7	7.8
29	8.0	7.9	7.9	8.2	7.9	8.1	8.2	8.0	8.1	7.8	7.7	7.8
30	7.9	7.8	7.9	8.2	8.0	8.1	8.2	8.0	8.1	7.8	7.7	7.8
31	7.9	7.8	7.9	---	---	---	8.3	8.1	8.2	7.9	7.7	7.8
MONTH	8.0	7.6	7.9	8.2	7.6	7.9	8.3	7.9	8.1	8.3	7.7	8.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	8.0	7.8	7.8	7.9	7.7	7.8	8.1	7.9	8.0	8.0	7.8	8.0
2	7.9	7.8	7.9	7.9	7.7	7.8	8.0	8.0	8.0	8.0	7.7	7.9
3	7.9	7.7	7.8	7.9	7.8	7.8	8.1	8.0	8.1	7.9	7.7	7.8
4	7.8	7.7	7.8	7.8	7.7	7.8	---	---	---	7.8	7.7	7.7
5	7.8	7.8	7.8	7.8	7.7	7.7	---	---	---	7.8	7.6	7.7
6	8.0	7.7	7.9	7.8	7.7	7.7	---	---	---	8.0	7.6	7.8
7	8.1	8.0	8.0	7.9	7.8	7.8	---	---	---	8.0	7.9	8.0
8	8.0	7.9	7.9	7.9	7.8	7.9	---	---	---	8.0	7.8	7.9
9	8.0	7.9	8.0	8.0	7.9	7.9	---	---	---	7.9	7.8	7.9
10	8.0	7.9	7.9	8.0	7.8	7.9	---	---	---	7.9	7.8	7.8
11	8.0	7.9	7.9	7.9	7.8	7.8	---	---	---	8.0	7.8	7.9
12	8.0	7.8	7.9	7.8	7.7	7.8	---	---	---	7.9	7.8	7.9
13	7.9	7.7	7.8	7.8	7.7	7.7	---	---	---	7.9	7.8	7.9
14	7.9	7.7	7.8	7.8	7.7	7.7	---	---	---	7.8	7.6	7.8
15	8.1	8.0	8.1	7.8	7.8	7.8	---	---	---	7.8	7.7	7.8
16	8.2	8.0	8.1	7.9	7.8	7.8	---	---	---	7.9	7.8	7.9
17	8.1	7.9	8.0	7.9	7.8	7.8	7.8	7.7	7.8	8.0	7.9	7.9
18	8.0	7.9	8.0	7.9	7.8	7.8	7.8	7.7	7.8	8.0	7.8	7.9
19	8.1	8.0	8.0	7.9	7.7	7.8	7.8	7.6	7.7	8.0	7.9	7.9
20	8.1	8.0	8.0	7.9	7.8	7.8	7.8	7.7	7.8	8.0	7.8	7.9
21	8.2	8.0	8.0	7.8	7.7	7.8	7.8	7.8	7.8	7.9	7.7	7.9
22	8.2	7.9	8.1	7.7	7.7	7.7	7.8	7.7	7.8	8.0	7.8	7.9
23	8.3	8.0	8.1	7.8	7.7	7.7	7.8	7.7	7.8	7.9	7.7	7.9
24	8.1	8.0	8.1	7.8	7.7	7.7	7.8	7.7	7.8	7.9	7.8	7.9
25	8.1	7.9	8.0	7.8	7.7	7.7	7.8	7.7	7.8	8.0	7.7	7.9
26	8.0	7.9	8.0	8.0	7.7	7.8	7.8	7.7	7.7	7.9	7.8	7.9
27	8.0	7.9	7.9	8.1	7.9	8.0	8.0	7.6	7.8	8.0	7.8	7.9
28	8.0	7.8	7.9	8.1	8.0	8.1	8.0	7.9	8.0	7.9	7.8	7.9
29	---	---	---	8.2	8.1	8.1	8.0	7.9	8.0	7.9	7.7	7.8
30	---	---	---	8.2	8.1	8.1	8.0	8.0	8.0	8.0	7.8	7.9
31	---	---	---	8.2	8.0	8.1	---	---	---	8.0	7.8	7.9
MONTH	8.3	7.7	7.9	8.2	7.7	7.8	8.1	7.6	7.9	8.0	7.6	7.9

GUADALUPE RIVER BASIN

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08181500 MEDINA RIVER AT SAN ANTONIO, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	8.0	7.8	7.9	8.1	8.1	8.1	7.9	7.9	7.9	7.9	7.8	7.8
2	7.9	7.8	7.9	8.1	8.1	8.1	7.9	7.8	7.9	7.9	7.8	7.8
3	7.9	7.8	7.9	8.1	8.1	8.1	8.0	7.8	7.9	7.9	7.8	7.8
4	7.9	7.7	7.8	8.1	7.9	8.1	8.0	7.8	7.9	7.9	7.8	7.8
5	7.9	7.7	7.8	8.1	8.0	8.0	7.9	7.8	7.9	8.0	7.8	7.9
6	7.9	7.7	7.8	8.1	8.0	8.0	8.0	7.8	7.9	8.0	7.9	7.9
7	8.0	7.7	7.8	8.1	8.0	8.1	8.0	7.9	8.0	7.9	7.8	7.8
8	7.9	7.7	7.9	8.1	8.0	8.0	7.9	7.9	7.9	8.0	7.9	7.9
9	7.9	7.8	7.8	8.1	8.0	8.0	7.9	7.9	7.9	7.9	7.9	7.9
10	8.0	7.8	7.9	8.1	8.0	8.1	7.9	7.9	7.9	8.0	7.9	7.9
11	7.9	7.8	7.9	8.1	8.0	8.0	7.9	7.9	7.9	8.0	7.9	7.9
12	---	---	---	8.1	8.0	8.0	7.9	7.9	7.9	8.0	7.9	7.9
13	---	---	---	8.1	8.0	8.0	8.0	7.9	7.9	8.0	7.9	7.9
14	7.9	7.7	7.8	8.1	8.0	8.0	8.0	7.9	7.9	8.0	7.8	7.9
15	7.9	7.8	7.9	8.1	8.0	8.0	8.0	7.9	7.9	7.9	7.9	7.9
16	7.9	7.8	7.9	8.0	8.0	8.0	7.9	7.9	7.9	7.9	7.8	7.9
17	7.9	7.8	7.8	8.0	7.9	8.0	7.9	7.9	7.9	7.9	7.8	7.9
18	7.9	7.8	7.8	8.0	8.0	8.0	8.0	7.9	7.9	7.8	7.8	7.8
19	7.9	7.8	7.8	8.0	8.0	8.0	7.9	7.9	7.9	8.0	7.8	7.9
20	7.8	7.8	7.8	8.1	8.0	8.0	8.0	7.8	7.9	8.0	7.9	7.9
21	7.8	7.7	7.8	8.0	8.0	8.0	7.9	7.9	7.9	8.0	7.9	8.0
22	8.0	7.8	7.9	8.0	7.9	8.0	7.9	7.9	7.9	8.0	7.9	7.9
23	8.0	7.7	7.8	8.0	7.9	8.0	7.9	7.9	7.9	7.9	7.8	7.9
24	7.9	7.7	7.8	8.0	7.9	7.9	8.0	7.9	7.9	7.9	7.8	7.8
25	7.8	7.7	7.8	8.0	7.9	7.9	7.9	7.9	7.9	7.9	7.8	7.9
26	8.0	7.7	7.8	8.0	7.9	7.9	7.9	7.9	7.9	7.9	7.8	7.9
27	8.0	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	8.0	7.9	7.9
28	8.1	8.0	8.1	8.0	7.9	7.9	7.9	7.9	7.9	8.0	7.9	7.9
29	8.2	8.1	8.1	7.9	7.9	7.9	7.9	7.9	7.9	8.0	7.9	7.9
30	8.2	8.1	8.1	8.0	7.8	7.9	7.9	7.8	7.9	8.0	7.9	7.9
31	---	---	---	7.9	7.9	7.9	7.9	7.8	7.9	---	---	---
MONTH	8.2	7.7	7.9	8.1	7.8	8.0	8.0	7.8	7.9	8.0	7.8	7.9

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	26.5	25.0	25.5	23.5	21.5	22.0	20.5	17.5	18.5	16.0	13.5	14.5
2	26.5	25.0	25.5	23.5	21.5	22.5	21.0	19.5	20.0	16.5	14.0	15.5
3	26.5	25.5	26.0	24.0	22.5	23.0	21.0	18.0	19.5	16.5	14.0	15.5
4	27.0	25.5	26.5	23.5	21.0	22.5	18.0	16.5	17.5	15.0	13.0	14.0
5	27.5	26.0	26.5	21.0	19.0	20.0	17.0	15.0	16.0	16.5	14.0	14.5
6	28.0	26.5	27.0	21.0	19.0	19.5	18.0	15.5	16.5	17.0	15.0	16.0
7	28.0	27.0	27.5	21.0	19.5	20.5	17.0	15.0	16.5	16.5	14.5	15.5
8	28.0	27.0	27.5	20.5	17.5	19.5	17.0	14.5	15.5	16.0	14.0	15.5
9	27.5	23.5	26.0	18.0	16.5	17.0	17.0	14.0	15.5	16.5	14.5	16.0
10	23.5	22.0	22.5	19.0	16.5	17.5	16.5	14.5	15.5	16.5	15.0	16.0
11	23.0	21.0	22.0	19.0	17.0	18.0	18.0	15.5	16.5	16.0	14.5	15.5
12	23.0	21.0	21.5	20.0	17.5	18.5	19.0	17.0	17.5	16.5	14.0	15.0
13	23.5	21.0	22.0	20.0	18.0	19.0	19.0	17.0	18.0	16.5	14.0	15.0
14	24.5	22.0	23.0	20.5	18.5	19.5	20.0	18.0	19.0	17.5	15.0	16.0
15	25.0	23.0	24.0	21.5	19.5	20.0	21.5	19.5	20.0	17.5	15.5	16.5
16	25.5	23.5	24.5	22.0	20.0	21.0	21.0	19.5	20.0	17.5	15.5	16.0
17	26.0	24.5	25.0	22.0	20.5	21.0	22.0	21.0	21.5	17.5	15.5	16.5
18	25.0	23.0	24.0	22.5	21.0	21.5	21.5	19.5	20.5	17.5	12.0	14.5
19	23.0	21.5	22.0	22.5	21.5	22.0	19.5	18.0	18.5	14.5	12.5	13.5
20	24.5	22.0	22.5	23.5	22.0	22.5	20.0	18.0	19.0	15.5	13.5	14.5
21	24.0	21.5	23.0	24.0	22.5	23.0	20.5	19.0	20.5	15.0	13.0	14.0
22	21.0	19.5	20.5	24.0	23.5	23.5	19.0	15.0	16.5	14.5	13.0	14.0
23	21.5	19.5	20.5	23.5	22.0	22.5	16.0	13.5	14.5	15.0	13.5	14.5
24	21.5	19.5	20.5	22.0	20.5	21.5	15.0	12.5	14.0	15.5	14.5	15.0
25	22.0	19.5	20.5	23.0	22.0	22.0	14.5	12.0	13.5	15.5	13.5	14.5
26	22.0	20.0	20.5	23.5	22.5	23.0	15.0	12.5	13.5	16.5	14.0	15.0
27	22.5	20.0	21.0	24.5	23.5	23.5	15.5	13.5	14.5	17.5	15.5	16.0
28	22.5	20.5	21.5	23.5	21.0	22.0	16.0	13.5	14.5	18.0	15.5	16.5
29	22.5	20.5	21.5	21.0	19.0	19.5	18.0	15.5	16.5	19.0	17.0	18.0
30	23.0	21.0	21.5	19.0	17.5	18.5	18.0	15.5	17.0	18.0	16.0	17.0
31	23.0	21.5	22.0	---	---	---	16.0	13.5	15.0	16.5	14.5	15.5
MONTH	28.0	19.5	23.5	24.5	16.5	21.0	22.0	12.0	17.0	19.0	12.0	15.5

GUADALUPE RIVER BASIN

08181500 MEDINA RIVER AT SAN ANTONIO, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	16.5	14.0	15.0	21.0	17.5	19.0	22.0	20.0	20.5	25.0	23.5	24.0
2	17.0	14.0	15.0	20.0	18.0	19.0	22.0	21.0	21.5	24.5	22.5	23.5
3	17.5	15.5	16.0	20.0	17.5	18.5	23.0	21.5	22.0	24.5	23.5	24.0
4	17.5	15.0	16.0	20.5	17.5	19.0	---	---	---	25.5	24.5	25.0
5	17.0	15.5	16.5	21.5	18.0	19.5	---	---	---	25.5	24.5	25.0
6	18.0	16.5	17.0	22.5	19.0	20.5	---	---	---	24.5	23.0	24.0
7	18.0	16.5	17.5	21.0	20.0	20.5	---	---	---	24.0	23.0	23.5
8	18.0	16.0	17.0	21.0	19.0	20.0	---	---	---	24.0	21.5	23.0
9	18.0	16.0	17.0	20.5	19.0	19.5	---	---	---	24.0	22.0	23.0
10	18.5	16.5	17.5	20.0	18.0	19.0	---	---	---	25.0	23.5	24.5
11	19.0	17.5	18.0	21.0	18.5	19.5	---	---	---	26.5	24.5	25.5
12	20.0	18.0	18.5	22.5	20.0	21.0	---	---	---	27.0	25.5	26.0
13	20.5	19.0	19.5	22.0	19.5	20.5	---	---	---	26.5	25.5	26.0
14	20.0	18.0	19.0	20.5	19.0	19.5	---	---	---	26.5	25.5	25.5
15	19.0	17.5	18.0	18.5	17.5	18.0	---	---	---	26.5	25.5	26.0
16	17.5	15.5	16.5	18.5	16.5	17.5	---	---	---	26.5	26.0	26.5
17	18.5	16.5	17.5	20.0	18.0	19.0	25.0	24.0	24.5	26.0	25.0	25.5
18	20.0	18.0	19.0	20.0	18.0	19.0	25.5	24.5	25.0	26.5	24.5	25.5
19	19.5	18.0	19.0	21.5	19.0	20.0	26.0	25.0	25.0	26.5	25.5	26.0
20	18.0	16.5	17.5	21.0	20.0	20.5	25.0	23.5	24.5	27.0	25.5	26.0
21	18.0	16.5	17.0	22.5	20.5	21.5	24.0	23.0	23.5	27.5	25.5	26.5
22	19.0	16.5	17.5	22.5	22.0	22.5	25.5	23.5	24.5	27.5	26.0	26.5
23	19.0	16.5	18.0	21.5	20.0	20.5	25.0	23.5	24.5	27.5	26.5	27.0
24	19.0	17.5	18.0	21.5	20.0	20.5	24.5	24.0	24.5	28.0	26.5	27.0
25	19.0	17.5	18.0	22.5	21.0	21.5	26.0	24.5	25.0	28.5	27.0	27.5
26	17.5	16.5	17.0	22.5	22.0	22.5	26.0	25.0	25.5	29.0	27.0	28.0
27	17.5	16.5	17.0	24.5	22.0	23.0	26.5	25.5	26.0	29.0	27.5	28.0
28	19.0	16.5	17.5	23.5	22.0	22.5	26.0	25.0	25.5	28.5	27.5	28.0
29	---	---	---	22.5	21.0	22.0	25.0	23.5	24.5	29.0	27.5	28.0
30	---	---	---	22.0	20.5	21.5	25.0	23.5	24.0	29.0	27.5	28.5
31	---	---	---	22.0	20.0	21.0	---	---	---	29.0	27.5	28.0
MONTH	20.5	14.0	17.5	24.5	16.5	20.0	26.5	20.0	24.0	29.0	21.5	26.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	29.0	27.5	28.0	28.0	26.0	27.0	29.5	28.0	28.5	29.0	27.5	28.0
2	28.5	27.5	28.0	28.5	27.0	27.5	29.5	28.0	28.5	28.5	27.5	28.0
3	28.5	27.5	28.0	29.0	27.5	28.0	29.5	28.0	28.5	28.0	27.0	27.5
4	28.5	26.5	27.5	28.5	26.5	27.5	29.5	28.5	29.0	28.0	27.0	27.5
5	29.0	27.5	28.5	27.5	25.5	27.0	28.5	27.5	28.0	28.0	27.0	27.5
6	29.0	28.0	28.0	29.0	27.0	27.5	29.0	27.5	28.0	28.0	27.0	27.5
7	28.5	27.5	28.0	28.5	27.5	28.0	28.0	27.0	27.5	28.0	27.0	27.5
8	28.0	27.0	27.5	28.5	27.5	27.5	28.5	27.0	27.5	28.0	27.0	27.5
9	27.5	26.5	27.0	29.0	27.5	28.0	29.0	27.5	28.0	28.5	27.5	28.0
10	27.5	26.5	27.0	29.0	27.5	28.0	29.5	28.0	28.5	28.5	27.5	28.0
11	28.0	26.5	27.0	28.5	27.5	28.0	29.5	28.0	29.0	28.0	27.0	27.5
12	---	---	---	29.0	27.5	28.0	30.0	28.0	29.0	28.5	27.0	27.5
13	---	---	---	29.0	27.5	28.0	29.5	28.0	29.0	28.0	27.5	27.5
14	29.0	27.5	28.0	29.5	28.0	28.5	29.0	28.0	28.5	28.0	27.5	27.5
15	28.5	27.0	28.0	29.5	28.0	28.5	29.0	28.0	28.5	28.5	27.0	28.0
16	29.5	27.5	28.5	29.5	27.5	28.5	29.5	28.0	28.5	28.5	27.5	28.0
17	29.0	27.5	28.0	29.5	28.0	28.5	29.5	28.0	29.0	28.5	27.0	27.5
18	29.5	27.5	28.5	29.5	28.0	28.5	29.5	28.0	29.0	28.5	27.0	27.5
19	28.5	28.0	28.5	29.5	28.0	28.5	29.5	28.0	29.0	27.5	24.5	26.0
20	29.0	27.5	28.0	29.5	28.0	28.5	29.0	27.5	28.5	24.5	23.0	24.0
21	29.5	28.0	28.5	29.5	28.0	28.5	29.5	28.0	28.5	24.5	22.5	23.5
22	30.0	28.5	29.0	28.5	28.0	28.5	29.5	28.0	28.5	26.0	24.0	24.5
23	28.5	24.0	26.0	28.5	27.5	28.0	28.5	28.0	28.5	26.5	25.5	26.0
24	27.5	25.0	26.0	29.0	27.0	28.0	29.0	27.0	28.0	27.5	26.0	26.5
25	28.0	26.5	27.0	29.0	27.5	28.5	29.0	27.5	28.0	26.0	24.5	25.5
26	28.5	27.0	27.5	29.0	28.0	28.5	28.5	27.5	28.0	25.5	23.5	24.5
27	29.0	27.5	28.0	29.0	27.5	28.5	28.5	27.5	28.0	25.0	23.5	24.5
28	29.0	27.5	28.0	29.5	28.0	28.5	29.0	27.5	28.0	25.5	23.5	24.5
29	28.0	27.0	27.5	29.5	28.0	29.0	29.5	27.5	28.5	25.0	23.5	24.0
30	27.0	26.5	27.0	29.5	28.0	28.5	29.5	28.0	28.5	25.5	23.5	24.5
31	---	---	---	29.5	28.0	29.0	28.5	27.5	28.0	---	---	---
MONTH	30.0	24.0	27.5	29.5	25.5	28.0	30.0	27.0	28.5	29.0	22.5	26.5

GUADALUPE RIVER BASIN

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08181500 MEDINA RIVER AT SAN ANTONIO, TX--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	7.1	6.6	6.8	8.2	7.8	7.9	8.8	8.0	8.3	10.2	9.2	9.6
2	6.9	6.7	6.8	8.2	7.8	7.9	8.5	7.7	8.1	9.7	9.2	9.3
3	6.7	6.6	6.7	---	---	---	8.7	7.7	8.1	9.5	8.9	9.1
4	6.8	6.6	6.7	---	---	---	9.3	8.3	8.7	9.6	9.2	9.3
5	6.9	6.6	6.7	---	---	---	9.7	8.8	9.1	9.7	9.0	9.3
6	6.8	6.5	6.7	---	---	---	9.7	8.8	9.1	10.0	8.9	9.3
7	6.7	6.5	6.6	7.8	7.5	7.6	9.8	8.8	9.2	10.3	9.3	9.6
8	6.7	6.4	6.6	8.2	7.5	7.7	10.0	9.0	9.4	10.0	9.4	9.7
9	6.9	6.4	6.7	8.5	7.9	8.2	10.3	9.1	9.5	9.8	9.3	9.5
10	7.5	7.0	7.3	8.5	8.1	8.3	10.0	9.1	9.5	9.7	9.3	9.5
11	7.8	7.4	7.6	8.5	8.2	8.3	9.6	9.0	9.3	10.0	9.3	9.6
12	7.9	7.5	7.6	8.5	8.1	8.3	9.2	8.6	8.9	10.4	9.6	9.8
13	8.0	7.5	7.6	8.3	8.0	8.1	9.0	8.4	8.6	10.5	9.6	9.9
14	7.8	7.3	7.6	8.2	7.8	8.0	8.8	8.2	8.4	10.3	9.4	9.7
15	7.7	7.2	7.4	8.1	7.7	7.8	8.7	8.1	8.3	10.0	9.1	9.5
16	7.6	7.1	7.3	7.8	7.5	7.7	8.5	7.9	8.1	10.0	9.2	9.6
17	7.5	7.1	7.2	7.8	7.5	7.6	8.2	7.7	7.9	10.0	9.3	9.5
18	7.7	7.1	7.3	7.7	7.3	7.5	8.4	7.7	8.0	10.6	9.1	9.8
19	8.1	7.5	7.7	7.4	7.1	7.3	8.9	8.0	8.4	10.4	9.9	10.1
20	8.1	7.5	7.7	7.3	7.1	7.2	8.9	8.2	8.4	10.0	9.8	9.9
21	7.8	7.3	7.6	7.1	6.8	7.0	8.6	7.9	8.2	10.1	9.8	10.0
22	8.4	7.9	8.1	7.0	6.7	6.8	8.9	8.1	8.5	10.4	10.0	10.1
23	8.5	8.0	8.2	7.1	6.7	6.9	10.6	8.7	9.5	10.1	9.8	9.9
24	8.5	7.9	8.1	7.5	7.0	7.2	10.9	9.9	10.3	10.0	9.7	9.9
25	8.5	8.0	8.1	7.4	7.1	7.2	10.6	9.7	10.1	10.3	9.9	10.0
26	8.4	7.8	8.0	7.2	6.9	7.0	10.4	9.5	9.9	10.4	9.9	10.1
27	8.4	7.8	8.0	7.2	6.7	6.9	10.3	9.3	9.7	10.0	9.6	9.9
28	8.3	7.8	8.0	7.7	6.9	7.3	9.7	9.1	9.4	10.1	9.6	9.8
29	8.3	7.9	8.0	8.3	7.5	7.9	9.6	8.7	9.1	10.0	9.3	9.6
30	8.3	7.9	8.1	8.7	8.0	8.3	9.3	8.6	8.9	10.0	9.4	9.7
31	8.2	7.8	8.0	---	---	---	10.1	9.0	9.4	10.7	10.0	10.3
MONTH	8.5	6.4	7.4	8.7	6.7	7.6	10.9	7.7	8.9	10.7	8.9	9.7
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	11.2	10.4	10.8	9.3	8.6	8.9	10.1	8.8	9.1	8.1	7.8	7.9
2	11.4	10.7	10.9	9.3	8.5	8.8	8.9	8.5	8.7	7.9	6.3	7.4
3	11.1	10.1	10.6	9.4	8.5	8.9	8.7	8.3	8.5	7.7	7.5	7.6
4	10.7	9.3	10.0	9.4	8.7	8.9	---	---	---	7.8	7.6	7.7
5	10.0	9.3	9.7	9.3	8.5	8.8	---	---	---	7.9	7.7	7.8
6	10.0	9.2	9.7	9.1	8.4	8.7	---	---	---	8.3	8.0	8.1
7	9.7	9.3	9.6	9.0	8.3	8.7	---	---	---	8.2	7.5	8.2
8	9.9	9.5	9.7	9.6	8.9	9.2	---	---	---	8.5	8.1	8.3
9	10.0	9.3	9.7	10.0	9.0	9.4	---	---	---	8.4	8.1	8.2
10	10.0	9.3	9.6	10.2	9.3	9.6	---	---	---	8.1	7.9	8.1
11	9.6	9.0	9.3	9.7	9.1	9.4	---	---	---	8.0	7.8	7.9
12	9.6	8.8	9.2	9.4	8.7	9.0	---	---	---	7.8	7.6	7.8
13	9.3	8.7	9.0	9.6	8.7	9.1	---	---	---	7.8	7.2	7.7
14	9.1	8.7	8.9	9.6	8.9	9.2	---	---	---	7.9	7.5	7.8
15	9.9	8.8	9.2	9.3	8.8	9.0	---	---	---	7.8	7.7	7.7
16	9.3	8.9	9.1	9.6	8.9	9.1	---	---	---	---	---	---
17	9.5	8.9	9.1	9.6	8.9	9.1	7.5	7.2	7.4	8.1	7.8	8.0
18	9.2	8.6	8.9	9.6	8.9	9.1	7.3	7.1	7.2	8.1	7.5	7.9
19	8.9	8.5	8.8	9.4	8.8	9.0	7.3	7.1	7.2	7.9	7.5	7.8
20	9.3	8.8	9.0	8.9	8.5	8.7	7.6	7.2	7.4	8.0	7.4	7.8
21	9.3	8.9	9.1	8.6	8.2	8.5	7.8	7.4	7.6	7.9	7.3	7.8
22	10.1	8.9	9.3	8.6	8.1	8.3	7.7	7.1	7.3	8.1	7.6	7.8
23	9.6	9.0	9.2	9.0	8.4	8.7	7.5	7.1	7.3	8.0	7.8	7.9
24	9.3	8.8	9.0	9.2	8.6	8.8	7.4	7.2	7.3	8.0	7.5	7.9
25	9.2	8.6	8.9	8.9	8.3	8.6	7.4	7.3	7.3	---	---	---
26	9.6	8.9	9.2	8.4	8.2	8.3	7.3	7.2	7.2	---	---	---
27	9.6	9.0	9.3	8.5	7.9	8.2	7.6	7.2	7.4	8.7	8.2	8.5
28	9.3	8.6	9.0	8.5	8.2	8.3	7.7	7.5	7.6	8.8	8.5	8.6
29	---	---	---	8.8	8.2	8.4	7.9	7.5	7.7	8.9	8.6	8.8
30	---	---	---	9.0	8.5	8.7	8.1	7.8	7.9	9.0	8.6	8.8
31	---	---	---	9.3	8.6	8.9	---	---	---	9.0	8.5	8.8
MONTH	11.4	8.5	9.4	10.2	7.9	8.8	10.1	7.1	7.7	9.0	6.3	8.0

GUADALUPE RIVER BASIN

08181500 MEDINA RIVER AT SAN ANTONIO, TX--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	9.1	8.6	8.9	7.2	7.0	7.1	7.3	6.7	7.0	7.1	6.8	6.9
2	9.1	8.6	8.9	7.1	7.0	7.0	7.3	6.7	7.0	7.1	6.9	7.0
3	9.2	8.0	8.9	7.1	7.0	7.0	7.3	6.6	6.9	7.1	6.9	7.0
4	---	---	---	7.3	6.9	7.1	7.3	6.7	7.0	7.2	7.0	7.1
5	---	---	---	7.2	6.4	6.8	7.2	6.7	7.0	7.9	7.0	7.2
6	---	---	---	7.0	6.9	6.9	7.2	6.6	6.9	7.3	7.2	7.2
7	---	---	---	7.1	7.0	7.1	7.4	6.9	7.1	7.4	7.2	7.3
8	---	---	---	7.2	7.1	7.1	7.4	7.0	7.1	7.4	7.2	7.2
9	---	---	---	7.2	7.1	7.1	7.3	7.0	7.1	7.3	7.1	7.2
10	---	---	---	7.3	7.1	7.2	7.4	6.9	7.1	7.4	7.1	7.2
11	---	---	---	7.5	7.1	7.3	7.4	6.9	7.1	7.4	7.2	7.3
12	---	---	---	7.6	7.4	7.5	7.2	6.8	7.0	7.4	7.2	7.3
13	---	---	---	7.6	7.3	7.5	7.1	6.6	6.9	7.4	7.0	7.2
14	---	---	---	7.6	7.4	7.5	7.0	6.5	6.8	7.2	6.9	7.0
15	---	---	---	7.6	7.3	7.5	7.2	6.7	6.9	7.2	6.8	7.0
16	---	---	---	7.7	7.3	7.5	7.2	6.8	7.0	6.8	6.6	6.7
17	---	---	---	7.6	7.4	7.5	7.0	6.4	6.7	6.6	6.4	6.5
18	---	---	---	7.6	7.3	7.5	7.3	6.5	6.9	6.7	6.1	6.3
19	---	---	---	7.7	7.4	7.5	7.0	6.5	6.8	7.5	6.7	7.1
20	---	---	---	7.8	7.4	7.6	7.3	6.4	6.8	8.0	7.5	7.8
21	---	---	---	7.8	7.5	7.6	7.1	6.9	7.0	8.2	7.8	8.0
22	---	---	---	7.7	7.4	7.6	7.3	6.8	7.0	7.9	7.5	7.7
23	---	---	---	7.9	7.4	7.6	7.2	6.8	7.0	7.5	7.0	7.2
24	---	---	---	7.9	7.6	7.7	7.1	6.9	7.0	7.4	6.9	7.1
25	---	---	---	7.9	7.5	7.7	7.2	6.9	7.0	7.6	7.1	7.3
26	---	---	---	7.9	7.4	7.6	7.3	6.9	7.1	7.8	7.5	7.6
27	6.9	6.8	6.8	7.9	7.3	7.5	7.3	6.9	7.1	7.8	7.5	7.6
28	6.9	6.8	6.9	8.0	7.5	7.7	7.2	6.9	7.1	7.9	7.4	7.7
29	7.0	6.9	6.9	7.7	7.3	7.6	7.3	6.9	7.1	8.0	7.4	7.7
30	7.1	7.0	7.0	7.4	6.9	7.2	7.2	6.8	7.0	7.8	7.4	7.6
31	---	---	---	7.2	6.5	6.8	7.0	6.8	6.9	---	---	---
MONTH	9.2	6.8	7.8	8.0	6.4	7.4	7.4	6.4	7.0	8.2	6.1	7.2

GUADALUPE RIVER BASIN

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08181800 SAN ANTONIO RIVER NEAR ELMENDORF, TX

LOCATION.--Lat 29°14'16", long 98°22'00", Bexar County, Hydrologic Unit 12100301, on left bank at pump station to Braunig Plant Lake, 2.4 mi southwest of Elmendorf, 4.8 mi downstream from Medina River, and 208 mi upstream from mouth.

DRAINAGE AREA.--1,743 mi².

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 393.00 ft above National Geodetic Vertical Datum of 1929. Sept. 12, 1962, to Dec. 19, 1980, at site 0.3 mi downstream at different datum. Dec. 19, 1980, to Dec. 23, 1986, at site 2.4 mi downstream at different datum.

REMARKS.--No estimated daily discharges. Records good. Flow slightly regulated by Medina Lake (station 08179500) and by Olmos flood-control reservoir (combined capacity, 269,500 acre-ft). Storage began in Medina Lake in 1913, and Olmos Dam was completed in 1926. Water is diverted above station from Medina River for irrigation in the vicinity of Devine and Lytle, with some water diverted for irrigation near San Antonio. During the current year, the city of San Antonio discharged 131,200 acre-ft of sewage effluent into the San Antonio River from the Leon Creek, Salado Creek, and Dos Rios plants, and no sewage effluent was discharged from the Mitchell Lake plant upstream from this station. The discharge from Mitchell Lake was 2,240 acre-ft. The San Antonio City Public Service Board pumped 4,890 acre-ft into Braunig Lake and 13,300 acre-ft into Calaveras Lake upstream from this station and released 140 acre-ft from Braunig Lake and 547 acre-ft from Calaveras Lake downstream from this station. For additional information relative to sewage effluent, see station 08181500. For statement regarding regulation by Soil Conservation Service floodwater-retarding structures, see station 08178700. Satellite telemeter at station.

AVERAGE DISCHARGE.--29 years, 528 ft³/s (382,500 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 40,000 ft³/s Sept. 27, 1973 (gage height, 47.60 ft), site and datum then in use; maximum gage height, 53.06 ft June 5, 1986; minimum discharge, 12 ft³/s Aug. 24-26, 1963.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1900, 61 ft in 1946. Second highest stage was 53 ft in 1913, from information by local residents. At site and datum in use prior to Dec. 19, 1980.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 7,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Apr. 6	0100	*8,540	*30.05	No other peak greater than base discharge.			
Minimum daily discharge, 160 ft ³ /s Oct. 28.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	212	201	238	243	314	389	395	457	351	559	292	611
2	209	224	239	282	294	371	385	1040	343	427	346	724
3	208	249	212	335	289	350	382	920	351	398	389	545
4	215	410	191	312	2680	366	382	1960	349	429	386	467
5	216	341	191	296	1760	350	5280	796	343	750	335	442
6	219	249	190	291	575	347	5280	548	337	443	287	526
7	212	203	208	276	469	337	2800	430	338	402	283	508
8	218	830	236	264	421	336	1210	1160	337	700	340	493
9	1240	1030	236	306	396	332	685	1360	328	700	343	465
10	864	354	227	416	381	341	592	538	343	425	388	375
11	317	282	187	325	381	357	562	463	350	402	380	364
12	249	267	186	281	372	355	547	434	363	388	310	402
13	215	260	185	268	367	339	529	528	350	375	285	474
14	211	255	210	275	360	335	1320	542	328	367	283	596
15	218	253	237	272	353	411	985	447	358	370	275	557
16	214	253	236	266	339	491	580	450	358	309	332	451
17	210	246	220	260	344	498	540	519	566	268	391	383
18	209	247	186	3950	355	402	522	458	312	264	388	367
19	202	255	182	1830	490	383	519	421	255	304	449	360
20	197	255	181	443	432	380	628	439	260	341	282	409
21	475	255	211	369	377	402	546	410	299	335	270	476
22	467	253	234	339	363	379	518	402	360	278	273	471
23	261	245	244	323	344	360	497	403	2540	346	378	441
24	176	244	251	527	340	360	491	400	1190	315	840	523
25	177	244	243	391	351	373	490	382	559	273	506	506
26	172	237	242	326	356	380	485	380	385	350	411	384
27	162	206	252	311	350	378	485	374	341	434	352	391
28	160	197	247	316	348	380	471	370	356	399	374	455
29	181	191	246	307	---	388	474	363	370	343	444	453
30	261	196	242	331	---	381	467	364	401	309	464	394
31	224	---	251	348	---	405	---	359	---	308	487	---
TOTAL	8771	8932	6841	15079	14201	11656	29047	18117	13721	12311	11563	14013
MEAN	283	298	221	486	507	376	968	584	457	397	373	467
MAX	1240	1030	252	3950	2680	498	5280	1960	2540	750	840	724
MIN	160	191	181	243	289	332	382	359	255	264	270	360
AC-FT	17400	17720	13570	29910	28170	23120	57610	35940	27220	24420	22940	27790
CAL YR 1990	TOTAL	145716	MEAN	399	MAX	14700	MIN	67	AC-FT	289000		
WTR YR 1991	TOTAL	164252	MEAN	450	MAX	5280	MIN	160	AC-FT	325800		

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WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: September 1964 to current year. Chemical and biochemical analyses: January 1968 to current year. Pesticide analyses: January 1968 to September 1981.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1966 to current year.

pH: June 1984 to current year.

WATER TEMPERATURE: October 1966 to current year.

DISSOLVED OXYGEN: June 1984 to current year.

INSTRUMENTATION.--Since June 1984, a four-parameter water-quality monitor continuously records specific conductance, pH, water temperature, and dissolved oxygen at this station.

REMARKS.--Interruptions in the record were due to malfunctions of the instruments. Where maximum or minimum specific conductance values are not shown, mean value is estimated. Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 1,240 microsiemens Jan. 29, 1973, Aug. 8, 1975; minimum, 110 microsiemens July 16, 1990.

pH: Maximum, 8.5 units Dec. 28, 29, 31, 1989, Jan. 1, 2, 1990; minimum, 7.0 units Oct. 25, 28, 1988, Jan. 11, 1989.

WATER TEMPERATURE: Maximum, 32.5°C Sept. 3, 1989, June 23, 24, 27, 1990; minimum, 5.5°C Jan. 10, 1973.

DISSOLVED OXYGEN: Maximum, 11.8 mg/L June 23, 1991; minimum, 0.0 mg/L Mar. 2, Apr. 14, 15, 1985.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 1,100 microsiemens Feb. 13; minimum, 125 microsiemens Jan. 18.

pH: Maximum, 8.3 units on many days during October, May, and June; minimum, 7.5 units July 7, 8.

WATER TEMPERATURE: Maximum, 32.0°C on several days during July and August; minimum, 11.5°C Jan. 18, 19.

DISSOLVED OXYGEN: Maximum, 11.8 mg/L June 23; minimum, 4.8 mg/L June 23.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB DISSOLV FLD. AS CACO3 (MG/L)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	
OCT 15...	1458	192	887	8.0	25.0	8.0	100	2.3	290	80	87	18	
DEC 13...	1144	173	960	8.0	20.0	8.0	91	3.0	310	130	90	20	
APR 11...	1150	2200	950	8.0	23.0	8.8	105	2.8	310	100	94	18	
29...	1409	450	918	8.0	25.0	8.2	103	1.2	310	88	92	19	
JUN 04...	1200	327	933	8.0	27.0	7.2	92	1.4	290	79	87	18	
AUG 20...	0930	269	812	7.9	28.5	6.6	87	1.4	270	62	79	18	
DATE		SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT DIS FIX END FIELD CACO3 (MG/L)	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)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)
OCT 15...	73	2	7.3	210	72	90	0.40	15	491	9.67	0.030	9.70	
DEC 13...	82	2	7.8	180	69	100	0.20	14	492	10.9	0.110	11.0	
APR 11...	79	2	8.2	210	110	100	0.40	15	548	5.46	0.040	5.50	
29...	73	2	7.0	220	88	94	0.50	14	519	7.57	0.130	7.70	
JUN 04...	68	2	6.7	210	82	90	0.40	15	494	9.65	0.150	9.80	
AUG 20...	62	2	6.7	210	68	83	0.40	14	459	8.73	0.070	8.80	
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)	PHOS- PHORUS ORTHO TOTAL (MG/L AS P)	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)
OCT 15...	0.070	0.83	0.90	3.30	3.30	2	52	<0.5	1.0	<5	<3	<10	
DEC 13...	0.280	1.1	1.4	3.40	3.30	--	--	--	--	--	--	--	
APR 11...	0.070	1.0	1.1	1.90	1.60	--	--	--	--	--	--	--	
29...	0.100	0.70	0.80	2.40	2.40	--	--	--	--	--	--	--	
JUN 04...	0.130	1.2	1.3	3.00	3.00	--	--	--	--	--	--	--	
AUG 20...	0.050	1.0	1.1	2.70	2.70	13	54	0.7	<1.0	<5	<3	<10	

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WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

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)
OCT 15...	9	<10	26	7	0.1	<10	<10	<1	<1.0	820	<6	44
DEC 13...	--	--	--	--	--	--	--	--	--	--	--	--
APR 11...	--	--	--	--	--	--	--	--	--	--	--	--
APR 29...	--	--	--	--	--	--	--	--	--	--	--	--
JUN 04...	--	--	--	--	--	--	--	--	--	--	--	--
AUG 20...	11	<10	18	2	<0.1	100	<10	<1	1.0	1200	57	15

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1990 TO SEPTEMBER 1991

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. 1990	8771	819	457	10800	76	1810	69	1630	270
NOV. 1990	8932	868	482	11600	84	2020	71	1720	280
DEC. 1990	6841	972	534	9870	99	1840	78	1430	300
JAN. 1991	15079	679	383	15600	58	2350	59	2420	230
FEB. 1991	14201	790	440	16900	74	2830	66	2540	260
MAR. 1991	11656	955	526	16600	97	3040	77	2410	290
APR. 1991	29047	637	360	28200	54	4260	56	4360	220
MAY 1991	18117	724	408	19900	63	3080	63	3070	250
JUNE 1991	13721	756	424	15700	68	2530	64	2380	250
JULY 1991	12311	799	448	14900	72	2390	68	2260	270
AUG. 1991	11563	850	474	14800	79	2480	71	2220	280
SEPT 1991	14013	796	447	16900	71	2690	68	2580	270
TOTAL	164252	**	**	192000	**	31300	**	29000	**
WTD.AVG.	450	773	432	**	71	**	65	**	250

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	---	---	910	1020	941	981	1060	980	1000	980	902	923
2	---	---	919	1020	941	972	1060	980	1010	941	863	912
3	---	---	943	1020	941	989	1020	941	1000	902	784	845
4	---	---	943	1020	627	904	1020	941	990	902	824	874
5	---	---	956	863	667	764	1060	977	1010	902	824	870
6	---	---	957	980	824	905	1050	973	1010	902	824	850
7	---	---	916	1020	941	968	1050	970	1010	942	824	878
8	---	---	907	1020	275	797	1040	959	1000	987	866	918
9	---	---	615	549	431	492	1030	954	979	991	834	927
10	---	---	473	784	549	663	992	912	958	874	755	803
11	---	---	820	902	745	815	1020	944	968	922	798	884
12	902	824	855	902	824	853	1050	937	990	967	883	918
13	941	863	906	980	863	900	1040	936	990	972	887	936
14	941	863	918	980	902	934	1020	929	983	977	892	944
15	1020	784	913	1020	902	964	1060	980	1000	1020	936	968
16	---	---	915	1020	941	990	1020	941	993	1030	943	1010
17	---	---	920	1020	941	970	1020	941	970	1030	949	998
18	---	---	940	1020	941	972	1020	941	979	992	125	462
19	---	---	950	1020	941	966	1020	941	984	501	249	384
20	1060	980	995	1020	941	971	1060	941	1000	671	459	571
21	1020	510	884	1060	980	1000	1020	941	993	760	630	686
22	784	549	677	1060	980	1010	1020	941	979	805	675	740
23	863	745	801	1020	902	995	1020	941	979	852	723	775
24	902	824	883	980	902	947	980	863	925	812	600	715
25	980	863	908	1020	941	973	941	863	905	775	600	686
26	1020	902	952	1020	941	971	941	863	888	821	733	771
27	1020	941	991	1020	941	982	941	863	904	827	737	782
28	1020	941	980	1060	980	1000	980	902	935	831	740	805
29	1020	941	973	1060	980	1020	1020	902	964	879	788	823
30	1020	941	961	1060	941	996	980	902	948	883	796	849
31	1020	941	972	---	---	---	980	902	944	844	752	806
MONTH	1060	510	892	1060	275	922	1060	863	974	1030	125	817

GUADALUPE RIVER BASIN

08181800 SAN ANTONIO RIVER NEAR ELMENDORF, TX--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	893	800	836	1020	941	983	941	863	885	980	902	946
2	943	850	888	1020	941	971	980	863	900	941	431	691
3	948	855	895	1020	941	975	980	863	946	706	392	598
4	903	226	511	980	941	960	980	902	943	510	235	374
5	548	319	421	1020	902	965	941	196	427	588	471	531
6	780	548	650	1020	941	988	392	275	322	745	549	655
7	876	688	768	1060	941	1010	431	235	350	863	706	778
8	927	785	861	1060	980	1010	745	392	601	863	275	671
9	932	836	903	1060	980	1010	902	745	837	627	353	487
10	985	886	932	1060	941	1000	1020	863	935	745	627	693
11	1030	891	964	1020	941	995	1020	941	982	863	745	789
12	1040	943	993	1020	980	1000	1020	941	991	863	784	825
13	1100	948	1020	1020	941	979	1020	960	1000	863	667	791
14	1060	980	1010	1020	941	988	1020	431	721	824	706	768
15	1060	980	1010	1020	824	972	784	510	622	902	784	821
16	1060	980	1000	902	667	838	902	745	831	941	824	887
17	1060	980	1010	863	667	778	941	863	897	863	745	822
18	1020	941	993	980	824	894	980	902	949	863	784	827
19	1020	784	929	980	863	932	980	902	959	902	824	847
20	941	784	864	1020	902	955	980	824	913	902	824	851
21	1020	902	953	980	902	949	902	784	849	941	824	885
22	1020	941	976	980	902	930	941	824	898	941	863	908
23	1060	941	998	1020	902	938	980	902	938	980	863	924
24	1060	980	1010	980	902	956	980	902	949	980	902	922
25	1020	941	1000	980	902	950	1020	902	956	980	902	940
26	1020	941	996	1020	941	970	980	902	946	980	902	926
27	1060	980	1030	1020	941	982	980	902	958	941	863	905
28	1020	941	1000	1020	941	979	980	902	942	980	863	925
29	---	---	---	1020	941	962	980	902	932	980	902	942
30	---	---	---	999	967	976	980	902	935	980	902	939
31	---	---	---	978	925	956	---	---	---	1020	902	966
MONTH	1100	226	908	1060	667	960	1020	196	844	1020	235	801
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	980	902	956	824	667	739	941	863	906	902	627	754
2	980	902	934	824	667	773	941	863	908	706	510	626
3	980	902	933	863	745	809	941	863	895	784	667	713
4	980	902	948	863	745	806	941	863	887	863	667	781
5	980	902	957	784	510	617	941	824	859	902	784	826
6	980	902	950	784	588	679	902	824	863	824	667	784
7	1020	978	995	784	706	763	941	824	877	863	745	798
8	999	978	1000	784	471	706	941	784	840	863	784	825
9	980	902	940	667	510	582	941	863	880	863	745	800
10	941	863	921	824	667	752	902	824	858	902	745	825
11	980	902	927	902	784	826	902	784	841	941	824	861
12	980	902	952	902	784	842	902	784	833	902	824	863
13	980	863	912	902	824	848	941	824	861	863	745	821
14	1020	863	935	863	784	845	941	863	895	784	588	699
15	980	824	922	902	824	849	941	863	892	784	706	751
16	941	863	882	902	824	858	941	863	879	863	745	785
17	941	549	692	941	824	887	941	824	885	902	784	842
18	902	784	827	941	863	902	902	824	875	902	824	854
19	941	824	857	941	863	899	902	667	787	902	824	869
20	941	824	870	941	863	897	905	745	815	902	824	857
21	941	824	888	941	824	872	950	830	882	902	824	845
22	980	863	903	902	824	865	957	837	908	902	824	846
23	824	157	426	941	824	870	1000	841	903	902	824	851
24	627	353	468	902	824	859	727	442	614	863	627	709
25	706	588	637	941	824	881	854	688	763	784	588	692
26	784	667	721	941	863	885	900	774	818	902	745	793
27	863	745	792	941	824	867	946	818	861	902	784	853
28	902	784	834	902	824	857	993	866	932	980	824	882
29	902	824	852	902	824	846	980	863	912	941	824	887
30	863	784	835	941	824	876	941	863	895	902	824	864
31	---	---	---	941	863	910	941	824	887	---	---	---
MONTH	1020	157	856	941	471	822	1000	442	862	980	510	805

GUADALUPE RIVER BASIN

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08181800 SAN ANTONIO RIVER NEAR ELMENDORF, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	8.2	8.1	8.2	8.1	8.0	8.0	8.2	8.1	8.2	8.1	8.0	8.0
2	8.2	8.1	8.2	8.1	8.0	8.0	8.2	8.1	8.2	8.0	7.8	8.0
3	8.2	8.1	8.2	8.1	8.0	8.0	8.2	8.1	8.2	7.8	7.6	7.7
4	8.2	8.1	8.2	8.1	7.9	8.0	8.2	8.1	8.2	8.0	7.6	7.8
5	8.3	8.1	8.2	8.1	7.9	8.0	8.2	8.0	8.1	8.0	7.9	7.9
6	8.3	8.2	8.2	---	---	---	8.1	8.0	8.1	8.0	7.8	7.9
7	8.2	8.2	8.2	---	---	---	8.2	8.0	8.1	8.0	7.9	8.0
8	8.2	8.2	8.2	---	---	---	8.1	8.0	8.1	8.0	7.9	7.9
9	8.2	8.0	8.1	---	---	---	8.1	8.0	8.1	8.0	7.9	8.0
10	8.2	8.1	8.1	---	---	---	8.1	8.0	8.0	8.0	7.9	8.0
11	8.2	7.8	8.1	---	---	---	8.0	8.0	8.0	8.0	7.9	8.0
12	8.0	7.9	7.9	---	---	---	8.0	8.0	8.0	8.0	8.0	8.0
13	8.0	7.9	8.0	---	---	---	8.0	8.0	8.0	8.0	7.9	8.0
14	8.0	7.9	7.9	---	---	---	8.1	7.9	8.0	8.0	7.9	8.0
15	8.0	7.8	7.9	8.1	8.0	8.0	8.0	7.9	8.0	8.0	7.9	8.0
16	---	---	---	8.1	8.0	8.0	8.0	7.9	8.0	8.0	7.9	8.0
17	---	---	---	8.1	8.0	8.0	8.0	7.8	7.9	8.0	7.9	8.0
18	---	---	---	8.1	8.0	8.1	8.0	7.9	8.0	8.2	7.8	8.0
19	---	---	---	8.1	8.0	8.0	8.0	7.9	8.0	7.9	7.8	7.9
20	8.0	7.9	7.9	8.1	8.0	8.1	8.0	7.9	8.0	8.0	7.9	7.9
21	8.0	7.8	7.9	8.2	8.1	8.1	8.0	7.9	8.0	8.0	7.9	8.0
22	8.0	7.8	8.0	8.2	8.1	8.2	8.1	7.9	8.0	8.0	8.0	8.0
23	8.0	7.8	8.0	8.2	8.2	8.2	8.1	7.9	8.0	8.0	8.0	8.0
24	7.8	7.7	7.8	8.2	8.1	8.2	8.1	8.0	8.1	8.0	7.9	8.0
25	7.8	7.6	7.7	8.2	8.1	8.2	8.1	8.0	8.1	8.0	8.0	8.0
26	7.9	7.6	7.8	8.2	8.1	8.2	8.1	8.0	8.1	8.0	8.0	8.0
27	7.9	7.8	7.8	8.2	8.1	8.1	8.1	8.0	8.0	8.1	8.0	8.0
28	8.0	7.8	7.9	8.2	8.1	8.2	8.1	7.9	8.0	8.1	8.0	8.0
29	8.0	7.9	8.0	8.2	8.1	8.2	8.1	8.0	8.0	8.1	8.0	8.0
30	8.0	8.0	8.0	8.2	8.1	8.2	8.2	8.0	8.1	8.1	8.0	8.1
31	8.1	8.0	8.0	---	---	---	8.1	8.0	8.1	8.2	8.0	8.1
MONTH	8.3	7.6	8.0	8.2	7.9	8.1	8.2	7.8	8.1	8.2	7.6	8.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	8.1	8.0	8.1	7.8	7.7	7.7	8.1	8.0	8.1	8.0	7.8	7.9
2	8.1	8.0	8.1	7.8	7.7	7.7	8.1	8.0	8.0	---	---	---
3	8.1	8.0	8.1	7.8	7.7	7.8	---	---	---	---	---	---
4	8.1	7.8	8.0	7.8	7.7	7.8	---	---	---	---	---	---
5	8.0	7.8	7.8	7.8	7.7	7.8	---	---	---	---	---	---
6	8.0	7.9	8.0	7.8	7.7	7.8	---	---	---	---	---	---
7	8.1	8.0	8.0	7.9	7.8	7.8	---	---	---	---	---	---
8	8.1	8.0	8.0	8.0	7.8	7.9	---	---	---	---	---	---
9	8.1	8.0	8.1	8.0	7.9	7.9	---	---	---	---	---	---
10	8.2	8.1	8.1	8.0	7.9	7.9	---	---	---	---	---	---
11	8.2	8.1	8.1	8.0	7.9	7.9	7.9	7.8	7.8	---	---	---
12	8.2	8.1	8.1	7.9	7.8	7.9	8.0	7.9	7.9	---	---	---
13	8.2	8.0	8.1	7.9	7.8	7.9	8.0	7.9	7.9	---	---	---
14	8.0	8.0	8.0	8.0	7.8	7.9	8.0	7.7	7.9	---	---	---
15	8.0	7.9	7.9	8.0	7.8	7.9	7.8	7.8	7.8	---	---	---
16	7.9	7.8	7.9	7.9	7.8	7.8	7.9	7.8	7.8	8.3	8.2	8.2
17	7.9	7.8	7.9	7.9	7.8	7.8	7.9	7.8	7.9	8.3	8.2	8.2
18	7.9	7.7	7.8	8.0	7.8	7.9	8.0	7.8	7.9	8.3	8.2	8.2
19	7.8	7.7	7.8	7.9	7.8	7.9	7.9	7.8	7.9	8.3	8.2	8.3
20	8.0	7.8	7.9	7.9	7.7	7.8	8.0	7.9	7.9	8.3	8.2	8.3
21	7.9	7.8	7.9	7.7	7.6	7.7	8.0	7.9	7.9	8.3	8.2	8.2
22	7.8	7.6	7.8	7.8	7.6	7.7	8.0	7.8	7.9	8.3	8.2	8.2
23	7.7	7.7	7.7	7.8	7.7	7.7	7.9	7.8	7.9	8.3	8.2	8.2
24	7.8	7.7	7.7	7.8	7.7	7.8	7.9	7.8	7.9	8.3	8.2	8.2
25	7.9	7.7	7.8	7.8	7.7	7.8	7.9	7.8	7.9	8.3	8.2	8.2
26	7.8	7.7	7.8	7.8	7.7	7.8	7.9	7.8	7.8	8.3	8.2	8.2
27	7.8	7.7	7.8	8.0	7.7	7.9	7.9	7.8	7.8	8.3	8.2	8.2
28	7.8	7.7	7.8	8.0	7.9	7.9	7.9	7.8	7.8	8.3	8.2	8.2
29	---	---	---	8.0	7.9	8.0	8.1	7.8	7.9	8.3	8.2	8.2
30	---	---	---	8.0	7.9	8.0	8.0	7.9	8.0	8.3	8.2	8.2
31	---	---	---	8.1	7.9	8.0	---	---	---	8.3	8.2	8.2
MONTH	8.2	7.6	7.9	8.1	7.6	7.8	8.1	7.7	7.9	8.3	7.8	8.2

GUADALUPE RIVER BASIN

08181800 SAN ANTONIO RIVER NEAR ELMENDORF, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	8.3	8.2	8.2	8.0	7.9	7.9	8.1	8.0	8.1	7.9	7.7	7.8
2	8.3	8.2	8.2	7.9	7.9	7.9	8.2	8.0	8.1	7.8	7.6	7.7
3	8.3	8.2	8.2	8.0	7.9	7.9	8.1	8.0	8.1	7.8	7.8	7.8
4	8.2	8.0	8.1	8.0	7.8	7.9	8.2	8.0	8.1	7.9	7.8	7.8
5	8.2	8.0	8.1	8.0	7.8	7.9	8.2	8.0	8.1	7.8	7.7	7.8
6	8.2	8.0	8.1	7.9	7.7	7.8	8.2	8.0	8.1	7.9	7.7	7.8
7	8.2	8.0	8.1	7.7	7.5	7.6	8.2	8.0	8.1	8.0	7.8	7.9
8	8.1	8.0	8.1	7.9	7.5	7.7	8.2	8.1	8.2	7.9	7.8	7.8
9	8.2	8.1	8.2	8.1	7.8	7.9	8.2	8.1	8.1	8.0	7.6	7.9
10	8.2	8.1	8.1	8.1	8.0	8.1	8.2	8.0	8.1	8.0	7.9	7.9
11	8.2	8.0	8.1	8.1	8.0	8.1	8.2	8.1	8.1	8.0	7.9	8.0
12	8.2	8.0	8.1	8.1	8.0	8.1	8.2	8.0	8.1	8.0	8.0	8.0
13	8.2	8.0	8.1	8.1	8.0	8.1	8.1	8.0	8.0	8.0	7.9	8.0
14	8.1	8.0	8.1	8.2	8.1	8.2	8.1	8.0	8.1	8.0	7.8	7.9
15	8.1	8.0	8.1	8.2	8.0	8.1	8.1	8.0	8.0	8.0	7.9	7.9
16	8.1	8.0	8.0	8.1	7.9	8.0	8.1	8.0	8.0	8.0	7.9	8.0
17	8.0	7.6	7.9	8.1	8.0	8.0	8.1	8.0	8.0	8.0	7.9	8.0
18	8.1	7.9	8.0	8.0	8.0	8.0	8.1	8.0	8.0	8.0	7.9	8.0
19	8.0	8.0	8.0	8.2	8.0	8.1	8.1	7.9	8.0	8.1	8.0	8.0
20	8.0	8.0	8.0	8.2	8.1	8.2	8.1	7.9	8.0	8.1	8.0	8.0
21	8.0	7.9	8.0	8.2	8.1	8.2	8.1	7.9	8.0	8.1	8.0	8.0
22	8.0	7.9	8.0	8.2	8.1	8.2	8.1	8.0	8.0	8.1	7.9	8.0
23	8.0	7.6	7.8	8.2	8.1	8.1	8.2	8.0	8.0	8.1	8.0	8.0
24	7.9	7.7	7.8	8.2	8.1	8.1	8.0	7.8	7.9	8.0	7.9	8.0
25	7.9	7.9	7.9	8.1	8.0	8.1	8.0	8.0	8.0	8.1	8.0	8.0
26	8.0	7.9	7.9	8.1	7.9	8.0	8.0	8.0	8.0	8.1	7.9	8.0
27	8.0	7.9	7.9	8.2	8.0	8.1	8.1	8.0	8.0	7.9	7.7	7.8
28	8.0	7.9	8.0	8.1	8.0	8.1	8.1	7.8	8.0	---	---	---
29	8.0	7.9	7.9	8.1	8.0	8.0	8.1	7.6	7.9	---	---	---
30	8.0	8.0	8.0	8.1	8.0	8.1	8.0	7.9	7.9	8.1	7.9	8.0
31	---	---	---	8.1	8.0	8.0	8.0	7.9	7.9	---	---	---
MONTH	8.3	7.6	8.0	8.2	7.5	8.0	8.2	7.6	8.0	8.1	7.6	7.9

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	28.0	26.0	27.0	24.5	23.0	24.0	21.5	19.0	20.0	17.0	15.0	16.0
2	27.5	26.0	27.0	24.5	23.0	24.0	22.5	21.0	21.5	18.0	15.5	16.5
3	27.5	26.5	27.0	25.0	23.5	24.5	22.5	19.5	20.5	15.5	14.5	15.0
4	28.0	26.5	27.0	25.0	20.0	23.0	20.0	18.0	19.0	15.0	14.0	14.5
5	28.5	27.0	27.5	21.0	19.0	20.0	19.0	17.0	18.0	16.5	14.5	15.0
6	29.0	27.5	28.0	22.5	19.5	20.5	19.5	17.5	18.0	17.0	15.5	16.5
7	29.0	27.5	28.0	22.5	21.0	21.5	18.5	17.0	18.0	17.0	15.0	16.0
8	29.0	27.5	28.5	21.5	16.0	19.5	18.5	16.5	17.0	17.0	15.5	16.0
9	28.5	22.0	25.0	17.5	15.5	16.5	18.5	16.0	17.0	16.5	15.0	16.0
10	22.5	18.5	21.0	19.5	16.5	18.0	19.0	16.5	17.5	16.0	14.5	15.0
11	23.5	21.0	22.5	20.5	18.0	19.0	20.0	17.5	18.5	16.5	15.0	15.5
12	24.5	22.0	23.0	21.5	18.5	20.0	21.0	19.0	19.5	16.5	14.5	15.5
13	24.5	22.0	23.5	22.0	19.5	20.5	21.0	19.0	20.0	17.0	14.5	15.5
14	25.5	22.5	24.0	22.5	20.0	21.0	21.0	19.5	20.5	18.0	15.5	16.5
15	26.0	24.0	25.0	23.0	21.5	22.0	22.0	20.0	21.0	17.5	16.0	17.0
16	---	---	---	23.5	21.5	22.5	21.5	20.0	21.0	17.5	15.5	16.5
17	---	---	---	23.5	22.0	23.0	22.5	21.0	21.5	18.5	16.5	17.5
18	---	---	---	24.0	22.5	23.0	22.0	20.0	21.0	18.0	11.5	14.0
19	---	---	---	24.0	22.5	23.0	20.0	18.5	19.5	14.0	11.5	13.0
20	26.0	23.5	24.5	24.5	23.5	23.5	21.0	19.5	20.0	15.5	14.0	14.5
21	25.5	20.0	23.5	25.0	23.5	24.5	21.5	19.5	21.0	15.5	14.0	14.5
22	21.5	20.0	20.5	25.0	24.5	24.5	19.0	15.5	17.0	16.0	14.5	15.0
23	23.0	20.0	21.5	24.5	23.5	24.0	16.0	14.0	15.0	16.5	14.5	15.5
24	23.5	21.0	22.0	23.5	21.5	22.5	16.0	13.5	14.5	15.5	13.0	15.0
25	23.5	21.5	22.5	24.5	22.5	23.5	16.0	13.5	14.5	16.5	14.5	15.0
26	24.0	21.5	22.5	25.0	23.5	24.0	16.0	14.0	15.0	17.5	15.0	16.0
27	24.5	22.0	23.0	25.0	24.0	24.5	17.0	14.5	15.5	18.0	16.5	17.0
28	24.5	22.0	23.0	24.5	22.0	23.0	18.0	15.5	16.5	19.0	16.5	17.5
29	24.5	22.0	23.0	21.5	20.0	20.5	20.0	17.5	18.0	20.0	18.0	19.0
30	24.5	22.5	23.5	20.5	19.0	19.5	19.5	17.5	18.5	19.0	16.5	17.5
31	25.0	23.0	24.0	---	---	---	17.0	15.0	16.0	17.0	15.0	16.0
MONTH	29.0	18.5	24.5	25.0	15.5	22.0	22.5	13.5	18.5	20.0	11.5	16.0

GUADALUPE RIVER BASIN

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08181800 SAN ANTONIO RIVER NEAR ELMENDORF, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	17.5	14.5	16.0	21.0	18.0	19.5	22.5	19.5	21.0	25.5	24.0	25.0
2	18.0	15.0	16.5	20.0	18.5	19.5	22.5	21.0	21.5	25.5	23.0	24.5
3	18.5	16.5	17.5	20.0	18.0	19.0	23.0	21.0	22.0	25.0	23.5	24.0
4	18.0	15.0	16.5	21.0	18.0	19.5	24.0	22.5	23.0	24.0	22.0	23.0
5	17.5	15.5	16.5	21.0	18.0	20.0	23.5	18.0	20.0	24.5	23.5	24.0
6	19.0	17.0	18.0	22.5	19.5	21.0	19.5	18.0	18.5	25.0	23.0	24.0
7	19.0	17.0	18.0	21.5	19.5	20.5	20.0	19.0	19.5	24.5	23.5	24.0
8	19.0	17.0	18.0	21.5	19.0	20.5	23.0	20.0	21.5	24.5	20.5	23.0
9	19.0	17.0	18.0	21.0	19.0	20.0	24.5	22.5	23.0	23.5	20.5	22.0
10	19.5	17.5	18.5	20.5	18.0	19.5	24.0	22.5	23.0	25.5	23.0	24.0
11	19.5	18.5	19.0	21.5	18.5	20.0	23.5	22.5	23.0	27.0	24.5	25.5
12	20.5	19.0	19.5	22.5	20.0	21.0	25.5	23.0	24.0	28.0	25.5	26.5
13	21.5	19.5	20.5	22.0	19.5	21.0	26.5	24.0	25.0	27.0	25.5	26.0
14	21.0	19.5	20.5	21.0	19.5	20.0	25.5	23.0	24.5	27.0	25.0	25.5
15	20.0	18.0	19.0	19.5	17.0	18.5	24.5	22.0	23.0	27.5	25.5	26.0
16	18.5	17.0	17.5	17.5	16.5	17.0	25.0	23.0	24.0	27.0	26.0	26.5
17	19.5	17.5	18.0	20.0	16.5	18.0	25.0	24.0	24.5	26.0	25.0	25.5
18	21.0	19.0	20.0	20.5	18.0	19.0	25.5	24.5	25.0	27.5	24.5	26.0
19	21.0	18.0	19.5	21.5	19.0	20.5	26.5	24.5	25.5	27.0	25.5	26.5
20	18.0	16.5	17.5	22.0	20.0	21.0	25.5	23.5	24.5	27.5	25.5	26.5
21	18.5	17.0	17.5	22.5	21.5	22.0	24.5	22.5	23.5	28.0	25.5	26.5
22	19.5	17.0	18.0	23.0	22.0	22.5	26.5	23.5	24.5	28.0	26.0	27.0
23	20.0	17.5	18.5	22.0	20.5	21.5	25.5	23.5	24.5	28.0	26.5	27.0
24	20.0	18.5	19.0	22.5	20.5	21.5	25.0	24.0	24.5	29.0	26.5	27.5
25	19.5	18.0	18.5	24.0	21.5	22.5	26.5	24.5	25.5	29.5	27.0	28.0
26	18.0	17.0	17.5	23.5	22.5	23.0	26.5	25.0	25.5	30.0	27.0	28.5
27	18.5	17.0	17.5	24.5	22.5	23.5	27.0	25.5	26.5	30.0	27.5	28.5
28	19.0	17.5	18.0	24.0	22.5	23.0	26.5	25.0	26.0	29.5	27.5	28.5
29	---	---	---	23.5	21.5	22.5	26.5	23.5	25.0	30.0	27.5	28.5
30	---	---	---	22.5	20.5	22.0	26.0	23.5	25.0	30.0	27.5	28.5
31	---	---	---	22.5	20.0	21.5	---	---	---	29.5	27.5	28.5
MONTH	21.5	14.5	18.0	24.5	16.5	20.5	27.0	18.0	23.5	30.0	20.5	26.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	29.5	27.5	28.5	29.0	27.0	28.0	32.0	29.0	30.5	30.0	28.5	29.5
2	29.0	27.5	28.5	29.5	27.5	28.5	31.5	29.0	30.5	29.0	28.0	28.5
3	29.0	27.5	28.0	30.5	28.0	29.0	31.5	29.0	30.0	29.0	28.0	28.5
4	30.0	26.5	28.0	29.5	28.0	28.5	31.0	29.0	30.0	30.0	27.5	28.5
5	30.5	28.0	29.0	29.0	26.5	27.5	30.0	29.0	29.5	29.5	28.0	28.5
6	29.5	28.0	29.0	30.0	27.5	28.5	30.5	28.5	29.5	29.0	28.0	28.5
7	29.5	27.5	28.5	30.0	28.0	29.0	30.5	29.0	29.5	29.0	28.0	28.5
8	29.0	27.0	28.0	29.0	27.5	28.5	30.5	28.0	29.5	29.5	28.0	28.5
9	28.0	27.0	27.5	29.5	27.5	28.5	31.5	28.5	30.0	30.0	28.0	29.0
10	28.0	26.5	27.0	30.0	28.0	29.0	32.0	29.0	30.5	30.0	28.0	29.0
11	29.0	27.0	28.0	30.5	28.5	29.0	31.5	29.5	30.5	29.0	28.5	29.0
12	30.0	27.0	28.5	31.0	28.5	29.5	32.0	29.5	30.5	30.0	28.0	28.5
13	30.5	28.0	29.0	31.0	28.5	29.5	31.5	29.0	30.5	29.5	28.0	29.0
14	30.5	28.5	29.5	31.5	28.5	30.0	30.5	29.0	30.0	29.5	28.5	29.0
15	30.0	28.0	29.0	31.0	29.0	30.0	30.5	29.0	29.5	30.0	28.0	29.0
16	31.5	28.0	29.5	31.5	29.0	30.0	31.5	29.0	30.0	30.0	28.0	29.0
17	30.0	27.5	29.0	31.5	29.0	30.0	32.0	29.0	30.5	29.5	28.0	29.0
18	31.0	27.5	29.0	31.5	29.0	30.0	32.0	30.0	30.5	30.0	28.0	29.0
19	30.0	28.5	29.0	32.0	29.0	30.0	31.5	29.5	30.5	29.0	25.5	27.0
20	31.0	28.0	29.0	31.0	29.0	30.0	31.0	29.0	30.0	25.5	24.0	24.5
21	31.0	28.5	29.5	31.5	29.0	30.0	32.0	29.0	30.0	26.0	24.0	24.5
22	31.0	29.0	30.0	30.0	29.0	29.5	31.5	29.5	30.5	27.0	25.0	26.0
23	29.5	24.5	26.0	29.5	28.0	29.0	30.0	29.5	30.0	27.5	26.5	27.0
24	28.0	25.5	26.5	31.0	28.0	29.0	29.5	27.0	28.5	28.5	26.5	27.0
25	29.0	27.0	28.0	31.0	28.5	29.5	30.5	28.0	29.5	27.5	26.0	26.5
26	30.0	27.5	28.5	30.5	29.0	29.5	30.5	28.0	29.5	27.0	24.5	25.5
27	30.5	28.0	29.0	31.0	28.5	29.5	30.5	28.0	29.5	26.5	25.0	26.0
28	30.0	28.5	29.0	31.5	29.0	30.0	30.5	28.5	29.5	26.5	25.0	26.0
29	29.0	27.5	28.0	32.0	29.0	30.0	31.0	29.0	30.0	26.5	24.5	25.5
30	28.5	27.5	28.0	32.0	29.0	30.5	31.5	29.0	30.0	26.5	24.5	25.5
31	---	---	---	32.0	29.0	30.5	30.0	29.0	29.5	---	---	---
MONTH	31.5	24.5	28.5	32.0	26.5	29.5	32.0	27.0	30.0	30.0	24.0	27.5

GUADALUPE RIVER BASIN

08181800 SAN ANTONIO RIVER NEAR ELMENDORF, TX--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	---	---	---	8.4	7.9	8.1	9.3	8.6	8.9	9.5	9.1	9.4
2	---	---	---	8.4	7.9	8.1	9.0	8.4	8.6	9.5	9.0	9.2
3	---	---	---	8.2	7.7	7.9	9.2	8.2	8.7	9.9	9.1	9.5
4	---	---	---	8.8	7.7	8.0	9.8	8.9	9.3	9.6	9.3	9.5
5	---	---	---	8.9	8.4	8.6	9.6	8.3	9.1	9.5	9.2	9.3
6	---	---	---	8.7	8.2	8.4	9.0	8.3	8.5	9.3	8.9	9.1
7	---	---	---	8.4	8.0	8.1	8.9	8.2	8.6	9.3	8.9	9.1
8	---	---	---	9.5	8.1	8.6	9.1	8.5	8.7	9.3	8.9	9.0
9	---	---	---	9.6	9.3	9.5	9.4	8.4	8.8	9.3	8.9	9.0
10	---	---	---	9.3	8.9	9.2	9.4	8.5	8.8	9.6	9.1	9.3
11	---	---	---	9.1	8.7	8.9	8.9	8.3	8.5	9.3	8.9	9.1
12	---	---	---	9.1	8.5	8.8	8.7	8.1	8.3	9.3	8.9	9.1
13	---	---	---	8.8	8.1	8.5	8.6	7.9	8.2	9.3	8.7	9.1
14	---	---	---	8.2	7.7	8.0	8.5	8.0	8.2	9.2	8.5	8.9
15	---	---	---	7.9	7.6	7.8	8.4	7.9	8.1	9.0	8.5	8.7
16	---	---	---	7.9	7.6	7.7	8.2	7.7	7.9	9.1	8.5	8.8
17	---	---	---	7.7	7.5	7.6	8.1	7.6	7.8	8.9	8.5	8.7
18	---	---	---	7.8	7.4	7.6	8.3	7.5	7.9	8.9	8.0	8.7
19	---	---	---	7.8	7.5	7.6	8.7	8.0	8.3	---	---	---
20	8.2	7.7	7.9	7.7	7.4	7.6	8.5	7.9	8.3	8.9	8.3	8.7
21	8.8	7.7	8.0	7.8	7.4	7.5	8.3	8.0	8.1	8.9	8.5	8.9
22	8.8	8.5	8.7	7.6	7.3	7.4	8.9	8.1	8.5	9.1	8.7	8.9
23	8.7	8.2	8.5	7.9	7.2	7.6	9.7	8.8	9.2	8.9	8.6	8.8
24	8.4	8.2	8.3	8.2	7.6	7.9	9.9	9.2	9.5	9.1	8.6	8.9
25	8.5	8.1	8.3	8.0	7.6	7.8	9.7	9.3	9.5	9.1	8.6	8.9
26	8.5	8.1	8.3	8.1	7.6	7.8	9.7	9.3	9.5	8.9	8.5	8.7
27	8.5	8.1	8.2	7.9	7.5	7.7	9.7	9.1	9.5	8.6	8.3	8.5
28	8.5	8.1	8.3	8.4	7.4	7.9	9.4	8.8	9.2	8.5	8.2	8.4
29	8.5	8.0	8.2	9.0	8.1	8.6	9.0	8.5	8.8	8.3	7.9	8.2
30	8.4	8.0	8.2	9.2	8.5	8.9	9.1	8.4	8.7	8.6	7.9	8.3
31	8.4	8.0	8.1	---	---	---	9.7	9.1	9.3	9.1	8.7	8.9
MONTH	8.8	7.7	8.2	9.6	7.2	8.1	9.9	7.5	8.7	9.9	7.9	8.9
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	9.1	8.7	8.9	9.2	8.5	8.8	8.8	8.0	8.3	7.9	7.1	7.4
2	9.0	8.7	8.8	9.2	8.5	8.7	8.5	7.9	8.1	7.2	5.5	6.5
3	8.8	8.5	8.6	9.5	7.0	8.7	8.5	7.5	8.0	7.0	5.8	6.7
4	8.8	8.1	8.5	9.5	8.5	8.8	8.2	7.7	7.9	7.8	6.7	7.4
5	8.5	8.2	8.3	9.4	8.2	8.7	7.7	6.3	7.4	7.7	7.5	7.6
6	8.4	8.2	8.2	9.3	8.1	8.5	8.2	6.9	7.4	7.8	7.5	7.6
7	8.4	8.2	8.3	9.3	7.8	8.5	8.2	7.8	8.0	7.6	7.4	7.5
8	8.5	8.1	8.3	9.6	8.1	8.6	7.9	7.5	7.7	8.7	7.1	7.7
9	8.5	8.2	8.3	9.6	8.2	8.7	7.6	7.3	7.4	8.7	7.5	8.0
10	8.4	8.2	8.3	9.6	8.4	8.9	7.8	7.2	7.5	7.5	7.1	7.3
11	8.3	8.2	8.2	9.3	8.2	8.6	7.6	7.3	7.4	7.3	7.1	7.2
12	8.2	8.0	8.1	9.2	7.9	8.4	7.5	7.1	7.3	---	---	---
13	8.3	7.8	8.0	9.3	7.8	8.4	7.2	7.0	7.1	---	---	---
14	8.4	7.9	8.2	8.9	7.8	8.3	7.3	6.6	7.0	---	---	---
15	8.6	8.1	8.3	8.9	8.2	8.4	7.5	7.2	7.4	---	---	---
16	8.5	8.3	8.5	8.8	8.5	8.6	7.5	7.2	7.3	7.8	7.5	7.6
17	8.5	8.2	8.4	8.9	8.4	8.7	7.3	7.1	7.2	7.9	7.7	7.8
18	8.4	8.1	8.2	8.8	8.3	8.5	7.3	7.0	7.1	7.9	7.8	7.8
19	8.5	7.9	8.2	8.6	8.2	8.4	7.2	7.0	7.1	8.0	7.7	7.8
20	8.6	8.4	8.5	8.1	7.7	7.9	7.4	7.1	7.2	8.2	7.8	7.9
21	8.7	8.4	8.5	---	---	---	7.4	7.2	7.3	8.0	7.7	7.8
22	8.7	8.3	8.4	---	---	---	7.4	6.9	7.2	8.1	7.5	7.7
23	8.5	8.2	8.3	---	---	---	7.2	7.0	7.1	8.1	7.5	7.7
24	8.4	8.1	8.2	---	---	---	7.2	7.0	7.1	8.2	7.5	7.8
25	8.5	8.0	8.2	---	---	---	7.2	7.0	7.1	8.2	7.3	7.6
26	8.9	8.3	8.5	---	---	---	7.1	6.8	7.0	8.2	7.2	7.6
27	8.9	8.3	8.5	8.3	7.7	7.9	7.3	6.7	7.0	8.3	7.1	7.6
28	9.1	8.2	8.6	8.1	7.5	7.7	7.4	6.8	7.1	8.1	7.1	7.5
29	---	---	---	8.2	7.5	7.8	7.9	6.9	7.3	8.2	7.1	7.5
30	---	---	---	8.6	7.6	8.0	7.8	7.1	7.4	8.4	7.1	7.5
31	---	---	---	8.7	7.9	8.2	---	---	---	8.3	7.0	7.5
MONTH	9.1	7.8	8.4	9.6	7.0	8.4	8.8	6.3	7.4	8.7	5.5	7.5

GUADALUPE RIVER BASIN

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08181800 SAN ANTONIO RIVER NEAR ELMENDORF, TX--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	8.5	7.0	7.6	7.3	7.1	7.1	7.5	6.4	6.8	7.6	6.7	7.1
2	8.4	7.1	7.6	7.1	7.0	7.1	7.5	6.4	6.8	7.1	6.5	6.9
3	8.3	7.1	7.5	7.1	6.9	7.1	7.4	6.4	6.7	7.1	6.8	7.0
4	8.3	7.1	7.5	7.2	6.9	7.1	7.4	6.4	6.8	7.3	6.9	7.1
5	8.2	6.7	7.3	7.1	6.6	6.9	7.9	6.4	7.0	---	---	---
6	8.1	6.6	7.2	7.1	6.7	6.9	7.5	6.7	7.0	---	---	---
7	8.1	6.7	7.3	7.1	6.8	7.0	7.5	6.5	6.9	---	---	---
8	8.0	6.7	7.2	7.1	6.7	7.0	7.4	6.6	6.9	---	---	---
9	8.1	6.8	7.4	7.2	6.8	7.0	7.4	6.5	6.9	---	---	---
10	7.9	7.0	7.4	7.0	6.7	6.9	7.5	6.5	6.9	7.4	6.9	7.1
11	8.0	6.9	7.3	6.9	6.7	6.8	7.5	6.5	6.9	7.3	6.9	7.1
12	8.0	6.8	7.3	7.0	6.7	6.8	7.6	6.5	6.9	7.3	6.8	7.0
13	7.7	6.8	7.2	7.0	6.7	6.8	---	---	---	7.3	6.8	7.0
14	7.6	6.7	7.1	7.1	6.7	6.8	---	---	---	6.9	6.5	6.7
15	7.6	6.7	7.1	7.1	6.7	6.9	---	---	---	7.1	6.7	6.8
16	7.7	6.7	7.2	7.1	6.6	6.8	---	---	---	7.1	6.7	6.8
17	7.0	5.5	6.5	7.2	6.5	6.8	---	---	---	6.8	6.5	6.7
18	7.1	6.7	6.9	7.3	6.6	6.8	---	---	---	6.9	6.4	6.6
19	7.1	6.7	6.9	7.5	6.7	7.0	---	---	---	7.2	6.4	6.7
20	7.2	6.7	7.0	7.5	6.6	7.0	---	---	---	7.7	7.1	7.3
21	7.2	6.8	7.0	7.5	6.7	7.0	---	---	---	7.8	7.3	7.5
22	7.3	6.7	7.0	7.2	6.6	6.9	---	---	---	7.6	7.0	7.3
23	11.8	4.8	8.8	7.3	6.7	6.9	---	---	---	7.3	6.8	7.0
24	7.2	6.6	6.9	7.6	6.7	7.0	6.7	5.8	6.5	7.1	6.7	6.9
25	7.1	7.0	7.1	7.6	6.6	7.0	7.0	6.6	6.7	7.1	6.7	6.9
26	7.1	6.9	7.0	7.4	6.6	6.9	7.1	6.6	6.8	7.5	7.0	7.2
27	7.1	6.8	7.0	7.4	6.6	6.9	7.1	6.5	6.7	7.5	7.0	7.2
28	7.1	6.9	7.0	7.5	6.4	6.9	7.0	6.5	6.7	7.5	7.0	7.2
29	7.3	6.9	7.1	7.5	6.5	6.9	7.7	6.4	7.0	7.6	7.1	7.3
30	7.4	7.1	7.2	7.5	6.4	6.8	7.7	6.9	7.2	8.0	7.1	7.5
31	---	---	---	7.5	6.4	6.8	7.5	6.7	7.0	---	---	---
MONTH	11.8	4.8	7.2	7.6	6.4	6.9	7.9	5.8	6.9	8.0	6.4	7.0

GUADALUPE RIVER BASIN

08183500 SAN ANTONIO RIVER NEAR FALLS CITY, TX

LOCATION.--Lat 28°57'05", long 98°03'50", Karnes County, Hydrologic Unit 12100303, on left bank 23 ft downstream from bridge on Farm Road 791, 0.9 mi upstream from Scared Dog Creek, 3.6 mi southwest of Falls City, and 150.5 mi upstream from mouth.

DRAINAGE AREA.--2,113 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1925 to current year.

REVISED RECORDS.--WSP 1732: 1947(M). WSP 1923: Drainage area. WDR TX-87-3: 1983-84.

GAGE.--Water-stage recorder. Datum of gage is 285.49 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. For diversions and regulation above station, see REMARKS paragraph for Salado Creek (upper station) at San Antonio (station 08181500), and San Antonio River near Elmendorf (station 08181800). Flow slightly regulated by Calaveras Lake on Calaveras Creek and by Braunig Lake. Both enter the San Antonio River downstream from the station near Elmendorf. Flow is affected at times by discharge from the flood-detention pools of ten floodwater-retarding structures with a combined detention capacity of 26,130 acre-ft. These structures control runoff from 73.8 mi². Records provided by the San Antonio City Public Service Board show that during the current year, 547 acre-ft was released into Calaveras Creek from Calaveras Lake and that 140 acre-ft was released from Braunig Lake. Satellite telemeter at station.

AVERAGE DISCHARGE.--66 years (water years 1926-91), 426 ft³/s (308,600 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 47,400 ft³/s Sept. 29, 1946 (gage height, 33.80 ft, from floodmark); minimum daily, 19 ft³/s June 27, 1956.

Maximum stage since at least 1875, that of Sept. 29, 1946.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in October 1913 reached a stage of 28.4 ft, from floodmark, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Apr. 7	2000	*5,210	*8.71	No other peak greater than base discharge.			

Minimum daily discharge, 139 ft³/s Oct. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	211	256	197	286	425	e350	372	404	377	424	236	311
2	203	202	227	305	401	e350	402	393	372	603	221	436
3	210	189	264	290	359	e350	374	797	358	513	206	649
4	209	236	257	415	1030	e355	369	1060	357	450	303	497
5	208	288	212	422	3070	362	663	1980	369	429	321	357
6	210	488	202	388	2850	377	2890	1220	350	787	336	307
7	209	329	196	379	941	349	4780	770	344	624	232	343
8	214	232	196	354	606	346	4320	544	331	454	198	397
9	243	465	251	338	508	332	1950	1030	347	567	235	363
10	776	1320	274	329	460	332	858	1810	338	983	236	353
11	1290	588	276	495	432	337	733	809	338	552	285	264
12	492	373	248	452	415	346	608	579	364	443	302	211
13	332	317	209	362	408	361	560	530	352	421	278	212
14	249	300	206	323	396	345	531	545	402	398	196	260
15	227	292	208	312	383	331	1150	706	343	382	182	461
16	216	286	255	318	371	344	1390	541	344	374	175	448
17	222	281	281	312	365	491	664	491	406	360	168	402
18	212	280	274	404	356	583	550	595	544	260	250	260
19	205	277	238	2340	390	459	508	554	450	238	276	214
20	205	272	207	3140	467	393	492	493	255	236	328	198
21	200	281	207	794	564	374	544	481	226	325	283	200
22	240	285	200	493	441	381	603	475	223	336	162	291
23	656	281	252	438	392	376	490	435	340	374	152	330
24	440	274	282	396	368	349	464	429	2060	275	188	325
25	227	265	296	517	344	335	445	432	1670	397	636	387
26	168	273	306	587	348	336	437	416	875	265	477	379
27	162	273	285	428	356	353	431	400	529	243	317	293
28	155	242	296	386	352	357	424	394	395	371	213	213
29	144	213	306	372	---	352	416	386	368	364	177	258
30	139	200	297	368	---	363	403	381	407	318	228	297
31	194	---	288	355	---	375	---	381	---	245	289	---
TOTAL	9068	9858	7693	17098	17798	11444	28821	20461	14434	13011	8086	9916
MEAN	293	329	248	552	636	369	961	660	481	420	261	331
MAX	1290	1320	306	3140	3070	583	4780	1980	2060	983	636	649
MIN	139	189	196	286	344	331	369	381	223	236	152	198
AC-FT	17990	19550	15260	33910	35300	22700	57170	40580	28630	25810	16040	19670
CAL YR 1990	TOTAL	154150	MEAN	422	MAX	9890	MIN	51	AC-FT	305800		
WTR YR 1991	TOTAL	167688	MEAN	459	MAX	4780	MIN	139	AC-FT	332600		

e Estimated

08183500 SAN ANTONIO RIVER NEAR FALLS CITY, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: April 1959. Chemical and biochemical analyses: May 1965 to September 1981, October 1986 to current year. Sediment analyses: November 1958 to February 1975.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: January 1987 to current year.
pH: January 1987 to current year.
WATER TEMPERATURE: January 1987 to current year.
DISSOLVED OXYGEN: January 1987 to current year.

INSTRUMENTATION.--Since January 1987, a four-parameter water-quality monitor continuously records specific conductance, pH, water temperature, and dissolved oxygen at this station.

REMARKS.--Interruptions in the record were due to malfunction of the instrument or probe fouling, and these days were deleted from the record. Where maximum or minimum specific conductance values are not shown, mean value is estimated. Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 1,270 microsiemens June 28, July 1, 1990; minimum, 100 microsiemens June 15, 1989.
WATER TEMPERATURE: Maximum, 33.5°C June 22-24, 1990; minimum, 5.5°C Dec. 24, 1989.
pH: Maximum, 8.9 units Jan. 19, 20, Dec. 11, 14, 1989; minimum, 7.0 units on many days during period of record.
DISSOLVED OXYGEN: Maximum, 15.6 mg/L July 12, 1988; minimum, 0.0 mg/L May 16, 1987, July 3, 1990.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 1,150 microsiemens on several days during October, December, February, and March; minimum, 175 microsiemens Jan. 19.
WATER TEMPERATURE: Maximum, 31.5°C Aug. 19, 20; minimum, 9.5°C Dec. 25, 26.
pH: Maximum, 8.4 units Oct. 5, Jan. 26, Feb. 1-3; minimum, 7.3 units Aug. 24.
DISSOLVED OXYGEN: Maximum, 11.0 mg/L Dec. 9; minimum, 3.7 mg/L Oct. 11.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	HARD-NESS TOTAL (MG/L AS CaCO3)	HARD-NESS NONCARB DISSOLV FLD. AS CaCO3 (MG/L)	
OCT 17...	1010	220	992	7.9	24.0	6.7	81	1.9	300	79	
DEC 18...	1205	266	1060	7.8	20.0	7.5	84	2.6	300	84	
APR 09...	1000	2030	386	7.8	20.5	6.0	68	3.5	130	23	
MAY 23...	0855	445	897	7.9	26.5	6.4	81	1.3	300	78	
JUN 26...	1310	816	440	7.7	26.0	5.2	66	3.7	150	33	
AUG 22...	1100	178	950	8.1	30.0	6.0	81	1.0	280	60	
DATE		CALCIUM DIS-SOLVED (MG/L AS Ca)	MAGNE-SIUM, DIS-SOLVED (MG/L AS Mg)	SODIUM, DIS-SOLVED (MG/L AS Na)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	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 17...	89	19	84	2	7.9	220	77	110		0.40	15
DEC 18...	87	20	90	2	8.8	220	80	120		0.70	14
APR 09...	42	6.1	25	1	6.3	110	36	32		0.30	8.9
MAY 23...	91	18	71	2	7.7	220	90	87		<0.10	14
JUN 26...	49	7.6	22	0.8	5.0	120	38	29		0.20	10
AUG 22...	84	18	78	2	7.8	220	84	110		0.50	13
DATE		SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS TOTAL (MG/L AS P)	PHOS-PHORUS ORTHO TOTAL (MG/L AS P)	
OCT 17...		535	9.46	0.040	9.50	0.070	0.83	0.90	2.60	2.70	
DEC 18...		550	9.90	0.100	10.0	0.100	1.1	1.2	3.50	3.60	
APR 09...		221	1.17	0.130	1.30	0.160	0.64	0.80	0.550	0.450	
MAY 23...		512	6.16	0.040	6.20	0.050	0.95	1.0	2.30	1.80	
JUN 26...		233	2.25	0.150	2.40	0.150	1.2	1.4	0.950	0.670	
AUG 22...		530	8.66	0.040	8.70	0.020	0.98	1.0	2.40	2.30	

GUADALUPE RIVER BASIN

08183500 SAN ANTONIO RIVER NEAR FALLS CITY, TX--Continued

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1990 TO SEPTEMBER 1991

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. 1990	9068	853	471	11500	85	2070	80	1950	270
NOV. 1990	9858	839	466	12400	82	2170	79	2100	270
DEC. 1990	7693	1040	561	11700	110	2320	94	1950	310
JAN. 1991	17098	724	408	18800	67	3070	70	3210	250
FEB. 1991	17798	736	412	19800	70	3350	70	3360	250
MAR. 1991	11444	1020	552	17100	110	3340	92	2860	310
APR. 1991	28821	602	344	26800	52	4060	59	4590	220
MAY 1991	20461	739	417	23100	67	3710	71	3930	260
JUNE 1991	14434	699	394	15300	65	2510	67	2610	240
JULY 1991	13011	801	450	15800	74	2610	77	2690	270
AUG. 1991	8086	890	493	10800	88	1910	83	1820	290
SEPT 1991	9916	779	441	11800	71	1890	75	2010	270
TOTAL	167688	**	**	195000	**	33000	**	33100	**
WTD.AVG.	459	770	430	**	73	**	73	**	260

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	1150	998	1060	1100	977	1040	1120	998	1050	1080	325	966
2	1120	1040	1060	1050	937	988	1120	1040	1050	1080	959	1020
3	1120	1040	1050	1090	974	1030	1120	998	1060	998	959	978
4	1120	1040	1060	1050	1010	1040	1040	959	1020	998	920	958
5	1150	998	1050	1050	966	997	1080	959	1030	959	880	920
6	1120	998	1050	965	924	943	1080	998	1050	920	841	873
7	1120	1040	1070	963	607	784	1080	998	1040	959	880	905
8	1120	1040	1070	802	646	729	1120	998	1050	959	880	915
9	1120	998	1060	920	763	851	1080	998	1040	959	880	907
10	998	802	924	920	292	530	1080	998	1040	959	880	917
11	606	331	457	567	410	479	1080	998	1040	998	880	936
12	527	371	445	567	449	494	1080	998	1030	959	841	898
13	684	449	569	763	528	647	1120	998	1060	880	724	814
14	841	645	746	882	724	780	1080	1040	1060	959	841	902
15	959	802	880	885	804	851	1120	1040	1060	998	880	940
16	998	880	950	926	845	887	1120	1040	1090	998	959	978
17	1080	959	1020	967	887	939	1080	998	1050	998	920	974
18	1080	998	1030	970	929	945	1080	998	1060	998	763	906
19	1080	998	1030	1050	970	992	1120	1040	1060	920	175	610
20	1080	998	1050	1050	973	1000	1120	1040	1100	371	253	303
21	1120	1040	1060	1050	975	994	1120	1040	1090	527	331	447
22	1120	1040	1070	1020	941	992	1150	1040	1100	684	527	616
23	1080	724	962	1020	941	978	1150	1040	1090	802	684	744
24	684	527	618	1020	944	993	1120	998	1070	920	763	843
25	840	684	746	1060	985	1030	1080	998	1050	998	841	904
26	955	799	854	1070	988	1040	1080	998	1030	959	763	872
27	1030	915	962	1030	952	998	1080	959	1020	802	684	757
28	1110	1030	1050	1030	953	1010	998	959	978	920	763	858
29	1110	1030	1070	1070	995	1030	998	920	966	998	880	948
30	1140	1060	1110	1080	997	1050	998	920	967	998	920	958
31	1140	1100	1120	---	---	---	1040	325	936	998	920	970
MONTH	1150	331	944	1100	292	902	1150	325	1040	1080	175	856

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08183500 SAN ANTONIO RIVER NEAR FALLS CITY, TX--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	1040	959	978	1080	1040	1050	1080	998	1040	998	998	998
2	1040	959	996	1120	1040	1070	1080	959	1010	1040	998	1020
3	998	920	966	1120	998	1040	1040	959	989	1040	920	993
4	998	371	779	1120	1040	1050	998	920	967	920	449	662
5	606	253	415	1080	998	1040	---	---	650	724	292	508
6	410	331	355	1120	998	1050	880	214	425	488	292	389
7	527	371	451	1080	998	1040	331	253	285	567	488	556
8	684	527	622	1080	998	1030	410	292	345	684	567	631
9	841	724	782	1080	1040	1060	---	---	450	841	684	768
10	920	802	880	1080	1040	1050	---	---	560	724	331	486
11	998	880	952	1120	1040	1090	---	---	670	606	449	501
12	1040	959	996	1150	1040	1080	---	---	740	763	606	691
13	1080	959	1010	1080	1040	1060	---	---	770	841	763	805
14	1080	998	1040	1080	998	1040	---	---	810	880	841	869
15	1120	1040	1050	1120	1040	1060	---	---	840	880	802	852
16	1120	1040	1060	1120	998	1050	---	---	541	841	763	790
17	1150	1040	1090	1080	998	1020	724	567	629	880	802	860
18	1150	1040	1090	1040	880	956	880	724	815	880	880	880
19	1120	1040	1060	920	724	814	959	880	944	920	802	866
20	1040	841	954	920	763	836	998	959	986	880	841	849
21	999	959	970	998	880	927	1040	998	1010	920	841	879
22	960	804	870	1040	959	984	998	920	988	920	880	890
23	1000	843	931	1080	959	1010	920	880	905	920	880	883
24	1080	962	1010	1080	998	1030	959	920	942	959	920	929
25	1080	1000	1050	1080	998	1020	998	959	978	998	920	960
26	1080	1000	1060	1080	998	1030	1040	998	1010	998	959	967
27	1120	1040	1070	1080	998	1050	1040	998	1020	998	959	959
28	1120	1000	1070	1080	998	1030	1040	998	1020	998	959	973
29	---	---	---	1080	998	1040	1040	998	1020	998	959	971
30	---	---	---	1120	1040	1060	1040	998	1020	959	920	952
31	---	---	---	1080	998	1070	---	---	---	998	920	968
MONTH	1150	253	913	1150	724	1020	1080	214	813	1040	292	816
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	998	959	974	874	816	844	972	938	957	911	847	884
2	998	959	995	864	813	842	965	928	944	894	847	868
3	998	998	998	825	711	772	1030	945	980	872	628	786
4	998	998	998	774	716	741	1010	938	988	654	501	570
5	998	959	983	835	777	802	962	933	944	662	584	621
6	998	959	965	838	764	811	950	845	909	730	667	687
7	998	959	996	764	508	612	943	864	905	801	706	742
8	1040	998	999	662	569	619	994	947	972	821	764	788
9	1040	998	1010	750	664	711	1130	950	994	791	691	752
10	998	998	998	759	496	651	1030	955	978	833	752	788
11	998	998	1000	589	508	539	987	894	963	857	777	817
12	998	998	1010	733	586	655	957	884	924	874	840	859
13	---	---	1020	847	742	801	962	916	940	874	796	846
14	---	---	1010	908	833	875	957	911	934	899	794	864
15	---	---	1030	913	857	886	982	943	954	906	786	852
16	---	---	1000	921	874	895	984	957	969	840	586	754
17	---	---	510	904	872	890	1000	979	987	737	630	688
18	---	---	640	930	874	896	1030	974	1010	772	706	731
19	---	---	750	957	933	951	977	938	955	823	720	782
20	---	---	830	1010	955	978	957	921	943	867	762	828
21	---	---	900	989	938	967	928	862	899	916	838	884
22	---	---	960	965	928	943	935	877	904	904	806	877
23	---	---	210	955	860	914	945	835	875	874	794	847
24	---	---	320	879	813	845	860	742	831	877	799	847
25	---	---	400	908	799	853	908	838	871	867	752	832
26	---	---	500	950	847	900	674	452	562	830	703	773
27	---	---	570	940	894	919	711	496	616	757	618	677
28	596	562	600	965	828	916	767	703	726	757	672	726
29	681	601	637	916	874	891	857	769	821	821	669	757
30	745	664	698	916	872	894	886	838	859	855	813	836
31	---	---	---	947	918	928	891	845	869	---	---	---
MONTH	1040	562	817	1010	496	830	1130	452	903	916	501	785

GUADALUPE RIVER BASIN

08183500 SAN ANTONIO RIVER NEAR FALLS CITY, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	8.2	8.1	8.2	8.0	7.9	7.9	8.0	7.9	7.9	7.9	7.8	7.8
2	8.3	8.1	8.2	7.9	7.8	7.9	8.0	7.9	7.9	8.0	7.9	7.9
3	8.3	8.2	8.2	7.9	7.8	7.9	8.0	7.9	8.0	8.1	8.0	8.0
4	8.3	8.2	8.3	7.9	7.7	7.8	8.0	7.9	8.0	8.1	8.0	8.1
5	8.4	8.2	8.2	8.0	7.8	7.8	8.1	8.1	8.1	8.2	8.0	8.2
6	8.2	8.1	8.2	8.0	7.8	7.8	8.1	8.1	8.1	8.2	8.1	8.2
7	8.2	8.1	8.2	7.9	7.8	7.8	8.2	8.1	8.1	8.2	8.1	8.2
8	8.2	8.1	8.2	8.1	7.8	8.0	8.2	8.1	8.1	8.2	8.1	8.2
9	8.2	8.1	8.2	---	---	---	8.2	8.1	8.1	8.2	8.1	8.2
10	8.2	7.9	8.1	---	---	---	8.2	8.1	8.1	8.2	8.1	8.1
11	7.8	7.6	7.7	---	---	---	8.2	8.1	8.2	8.3	8.1	8.2
12	7.9	7.7	7.8	---	---	---	8.2	8.1	8.1	8.2	8.1	8.1
13	7.9	7.8	7.9	---	---	---	8.2	8.0	8.1	8.1	8.0	8.1
14	8.0	7.9	8.0	8.1	7.8	7.9	8.2	8.1	8.1	8.1	8.0	8.1
15	8.1	8.0	8.0	8.2	8.1	8.2	8.2	8.0	8.1	8.1	8.0	8.1
16	8.1	8.0	8.0	8.2	8.1	8.2	8.0	8.0	8.0	8.1	7.9	8.0
17	8.1	7.9	8.0	8.2	8.1	8.2	8.1	8.0	8.0	8.2	8.0	8.1
18	8.1	8.0	8.0	8.2	8.0	8.1	8.0	7.8	8.0	8.2	8.2	8.2
19	8.1	8.0	8.0	8.1	8.0	8.1	8.2	8.0	8.1	8.2	7.8	8.1
20	8.1	8.0	8.0	8.2	8.1	8.1	8.1	8.0	8.1	8.1	7.9	8.0
21	8.1	8.0	8.0	8.2	8.1	8.1	8.1	7.8	8.0	8.0	7.8	7.9
22	8.1	8.0	8.0	8.2	8.1	8.1	8.1	8.0	8.1	8.0	7.9	7.9
23	8.1	8.0	8.0	8.1	8.0	8.0	8.2	8.0	8.1	8.1	7.9	8.0
24	8.0	7.8	7.9	8.0	7.9	8.0	8.2	8.1	8.2	8.1	8.0	8.0
25	8.0	7.8	7.9	8.0	7.8	7.9	8.2	8.1	8.2	8.3	8.1	8.2
26	8.0	7.8	7.9	---	---	---	8.3	8.2	8.3	8.4	7.8	8.2
27	8.0	7.8	7.9	---	---	---	8.3	7.9	8.1	---	---	---
28	8.0	7.8	8.0	---	---	---	8.1	7.8	7.9	---	---	---
29	8.0	7.8	7.9	---	---	---	8.0	7.7	7.9	8.2	8.1	8.1
30	8.0	7.8	7.8	7.9	7.8	7.8	7.7	7.6	7.7	8.3	8.1	8.2
31	7.9	7.8	7.9	---	---	---	7.8	7.6	7.7	8.3	8.2	8.3
MONTH	8.4	7.6	8.0	8.2	7.7	8.0	8.3	7.6	8.0	8.4	7.8	8.1
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	8.4	8.3	8.3	8.2	8.0	8.1	8.2	8.1	8.1	8.1	7.9	8.0
2	8.4	8.3	8.4	8.2	8.1	8.1	8.2	8.1	8.1	8.2	7.8	8.0
3	8.4	8.3	8.3	8.3	8.2	8.2	8.2	8.1	8.1	7.8	7.7	7.8
4	8.3	8.2	8.3	8.3	8.2	8.2	8.1	8.1	8.1	---	---	---
5	8.2	8.0	8.1	8.3	8.2	8.2	8.1	7.8	8.0	---	---	---
6	8.0	8.0	8.0	8.2	8.1	8.2	8.1	7.6	7.8	8.1	7.9	8.0
7	8.0	7.9	8.0	8.2	8.1	8.1	7.7	7.4	7.5	8.1	8.0	8.1
8	8.1	8.0	8.1	8.1	8.0	8.1	7.7	7.4	7.5	8.1	8.0	8.1
9	8.2	8.1	8.1	8.1	8.0	8.0	7.8	7.6	7.8	8.1	8.0	8.0
10	8.2	8.1	8.2	8.0	8.0	8.0	---	---	---	8.0	7.7	7.9
11	8.2	8.1	8.2	8.0	7.9	8.0	---	---	---	7.7	7.6	7.7
12	8.2	8.1	8.1	8.0	7.9	7.9	---	---	---	7.9	7.5	7.7
13	8.2	8.0	8.1	8.0	7.9	7.9	---	---	---	7.9	7.7	7.8
14	8.1	8.0	8.0	8.1	8.0	8.0	---	---	---	8.0	7.9	7.9
15	8.1	7.9	8.0	8.1	8.0	8.0	---	---	---	8.2	8.0	8.1
16	7.9	7.8	7.8	8.1	8.1	8.1	7.8	7.6	7.7	8.1	8.0	8.0
17	7.8	7.7	7.8	8.2	8.1	8.1	7.7	7.7	7.7	8.1	8.0	8.0
18	---	---	---	8.2	8.0	8.1	7.9	7.8	7.8	8.1	8.1	8.1
19	---	---	---	8.0	7.9	8.0	7.9	7.8	7.9	8.1	8.0	8.1
20	8.0	7.8	8.0	8.0	7.9	7.9	8.0	7.9	8.0	8.0	8.0	8.0
21	8.1	7.9	7.9	8.1	7.9	8.0	8.0	7.9	8.0	8.0	7.9	8.0
22	8.1	8.0	8.1	8.2	8.0	8.1	8.0	8.0	8.0	8.0	7.9	8.0
23	8.2	8.0	8.1	8.2	8.1	8.2	8.0	7.8	7.9	8.0	7.7	7.8
24	8.1	8.1	8.1	8.2	8.1	8.1	8.0	7.9	7.9	8.1	7.7	7.9
25	8.1	8.0	8.1	8.2	8.1	8.1	8.0	7.9	8.0	8.0	7.9	8.0
26	8.1	8.0	8.1	8.2	8.1	8.1	8.1	8.0	8.1	8.0	8.0	8.0
27	8.1	8.0	8.1	8.2	8.1	8.1	8.1	8.1	8.1	8.0	8.0	8.0
28	8.1	8.0	8.1	8.2	8.1	8.1	8.2	8.1	8.2	8.0	8.0	8.0
29	---	---	---	8.1	8.1	8.1	8.2	8.1	8.2	8.0	8.0	8.0
30	---	---	---	8.1	8.1	8.1	8.2	8.0	8.1	8.0	8.0	8.0
31	---	---	---	8.1	8.1	8.1	---	---	---	8.0	8.0	8.0
MONTH	8.4	7.7	8.1	8.3	7.9	8.1	8.2	7.4	7.9	8.2	7.5	8.0

GUADALUPE RIVER BASIN

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08183500 SAN ANTONIO RIVER NEAR FALLS CITY, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	8.0	8.0	8.0	8.2	8.1	8.2	7.9	7.7	7.7	8.0	7.8	7.8
2	8.1	8.0	8.0	8.1	8.0	8.1	8.0	7.7	7.8	7.9	7.8	7.9
3	8.0	8.0	8.0	8.0	7.9	8.0	8.1	7.7	7.9	7.9	7.6	7.8
4	8.0	8.0	8.0	8.0	7.8	7.9	8.1	7.8	7.9	7.8	7.6	7.7
5	8.0	7.9	7.9	8.0	7.8	7.9	8.1	7.9	8.0	8.1	7.6	7.9
6	7.9	7.8	7.9	8.1	8.0	8.1	8.1	7.8	7.9	8.1	8.0	8.0
7	7.9	7.8	7.9	8.1	7.8	7.9	8.0	7.6	7.8	8.1	7.9	8.0
8	7.8	7.8	7.8	7.9	7.9	7.9	8.0	7.6	7.7	8.0	7.9	8.0
9	7.9	7.8	7.8	8.1	7.8	8.0	7.9	7.5	7.7	7.9	7.7	7.8
10	7.9	7.8	7.8	8.1	7.7	8.0	7.9	7.6	7.8	7.9	7.7	7.8
11	---	---	---	7.8	7.7	7.7	8.0	7.7	7.9	8.3	7.7	7.9
12	---	---	---	7.9	7.7	7.8	8.1	8.0	8.1	8.3	8.1	8.3
13	---	---	---	8.1	7.8	7.9	8.2	8.0	8.1	8.3	8.0	8.1
14	---	---	---	8.1	8.0	8.1	8.3	8.2	8.2	8.2	8.0	8.1
15	---	---	---	8.1	8.0	8.0	8.2	8.1	8.1	8.3	8.1	8.2
16	---	---	---	8.0	7.9	8.0	8.2	8.0	8.1	8.1	7.8	8.0
17	---	---	---	8.0	7.9	7.9	8.0	7.8	7.9	8.2	7.7	7.9
18	---	---	---	8.1	7.9	8.0	8.0	7.7	7.8	8.2	7.9	8.1
19	---	---	---	8.1	8.0	8.0	---	---	---	8.1	8.0	8.0
20	---	---	---	8.2	8.0	8.1	---	---	---	8.1	7.8	8.0
21	---	---	---	8.1	8.0	8.1	8.3	7.8	8.0	7.9	7.7	7.8
22	---	---	---	8.1	7.9	8.0	8.3	7.8	8.1	8.0	7.8	7.9
23	---	---	---	8.2	8.0	8.1	7.9	7.5	7.7	8.0	7.9	7.9
24	---	---	---	7.9	7.8	7.9	7.7	7.3	7.5	7.9	7.7	7.8
25	---	---	---	8.1	7.8	8.0	7.9	7.5	7.8	7.8	7.6	7.7
26	---	---	---	8.1	7.9	8.0	7.8	7.5	7.6	7.7	7.5	7.6
27	---	---	---	8.1	7.9	8.0	8.0	7.6	7.9	7.7	7.5	7.6
28	7.9	7.8	7.8	8.0	7.9	8.0	8.0	7.9	8.0	7.9	7.8	7.8
29	8.0	7.8	7.9	7.9	7.7	7.8	8.1	7.8	8.0	7.9	7.7	7.8
30	8.1	7.9	8.0	7.8	7.7	7.7	8.0	7.8	7.9	7.9	7.8	7.9
31	---	---	---	7.8	7.6	7.7	7.9	7.8	7.9	---	---	---
MONTH	8.1	7.8	7.9	8.2	7.6	8.0	8.3	7.3	7.9	8.3	7.5	7.9

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	26.5	25.5	26.0	21.0	20.0	20.5	17.5	16.5	17.0	14.0	13.0	13.5
2	26.0	25.5	26.0	21.5	20.5	21.0	18.0	17.0	17.5	13.5	13.0	13.0
3	26.0	25.5	26.0	21.5	21.0	21.5	18.5	17.0	17.5	13.0	12.0	12.5
4	27.0	26.0	26.5	22.0	20.5	21.0	17.0	15.5	16.0	12.0	11.5	12.0
5	27.0	26.5	26.5	20.5	18.5	19.5	15.0	14.0	14.5	14.0	12.0	12.5
6	27.0	26.5	26.5	19.5	18.5	19.0	14.5	14.0	14.0	13.5	12.5	13.0
7	27.5	27.0	27.0	19.5	18.5	19.0	14.5	13.0	13.5	13.0	12.5	12.5
8	28.0	27.0	27.5	18.5	17.0	18.0	13.5	12.0	12.5	13.0	12.5	12.5
9	28.0	25.0	26.5	17.5	17.0	17.0	12.5	12.0	12.0	13.0	12.5	13.0
10	24.5	22.5	23.5	18.0	15.5	16.5	13.0	12.0	12.5	13.5	13.0	13.0
11	23.0	20.5	21.5	16.0	15.5	15.5	14.0	13.0	13.5	13.5	12.5	13.0
12	20.5	19.5	20.0	16.5	15.5	16.0	15.5	14.0	14.5	14.0	12.5	13.0
13	21.0	19.5	20.0	17.5	16.0	16.5	17.0	15.0	16.0	13.5	11.5	12.5
14	21.5	20.5	21.0	18.0	17.0	17.5	17.5	17.0	17.0	14.5	12.5	13.5
15	23.0	21.5	22.0	18.5	17.5	18.0	18.5	17.5	18.0	15.0	14.5	14.5
16	23.5	22.5	23.0	19.5	18.5	19.0	19.5	18.5	18.5	15.0	14.5	15.0
17	25.5	23.0	24.5	20.5	19.5	20.0	20.5	19.0	19.5	15.5	14.0	15.0
18	25.5	23.5	24.5	21.0	20.0	20.5	20.5	18.5	19.0	15.0	13.0	14.0
19	23.5	21.5	22.5	21.5	20.5	21.0	18.5	17.5	18.0	16.0	11.0	13.5
20	22.5	21.0	21.5	22.0	21.0	21.5	18.0	17.0	17.5	12.0	11.5	11.5
21	22.5	21.5	22.0	23.0	21.5	22.0	19.0	18.0	18.5	11.5	11.0	11.5
22	21.5	20.0	20.5	23.0	22.0	22.5	18.5	14.0	16.0	11.5	11.0	11.5
23	21.5	19.5	20.5	23.0	22.0	22.5	13.5	11.0	12.0	12.0	11.5	11.5
24	20.5	19.0	19.5	22.5	21.0	21.5	11.5	10.5	10.5	13.0	11.5	12.0
25	19.5	19.0	19.0	22.5	21.0	22.0	10.5	9.5	10.0	14.0	12.0	13.0
26	19.5	18.5	19.0	22.5	22.0	22.5	10.0	9.5	10.0	14.5	13.0	14.0
27	19.5	18.5	19.0	23.0	22.0	22.5	12.0	10.0	11.0	15.0	13.0	14.0
28	20.0	19.0	19.5	23.0	21.0	22.0	13.0	11.5	12.5	16.0	14.0	15.0
29	20.0	19.0	19.5	21.5	18.5	20.0	15.0	12.5	14.0	17.5	16.0	16.5
30	20.5	19.5	20.0	18.5	17.0	18.0	16.0	14.5	15.5	17.5	15.5	16.5
31	20.5	19.5	20.0	---	---	---	14.0	13.0	14.0	15.5	14.5	15.0
MONTH	28.0	18.5	22.5	23.0	15.5	20.0	20.5	9.5	15.0	17.5	11.0	13.5

GUADALUPE RIVER BASIN

08183500 SAN ANTONIO RIVER NEAR FALLS CITY, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	15.5	14.0	15.0	17.5	16.0	16.5	21.5	20.0	21.0	24.5	24.0	24.5
2	15.0	14.0	14.5	18.0	17.0	17.5	21.0	20.5	20.5	25.0	24.0	24.5
3	15.5	14.5	15.0	18.0	17.5	18.0	22.0	20.5	21.0	25.0	24.5	24.5
4	16.5	15.5	16.0	19.0	17.5	18.0	22.5	21.0	22.0	25.0	24.0	24.5
5	17.0	16.0	16.5	19.0	17.5	18.5	22.0	20.5	21.5	25.0	22.5	24.0
6	17.0	16.0	16.5	20.0	18.5	19.0	21.5	18.5	19.0	23.5	22.0	23.0
7	17.5	16.5	17.0	20.0	19.0	19.5	19.5	18.5	19.0	23.5	23.0	23.0
8	17.0	16.5	16.5	19.5	19.0	19.5	20.5	19.5	20.0	23.0	23.0	23.0
9	17.5	16.5	17.0	19.5	18.5	19.0	---	---	---	23.5	22.5	23.0
10	17.5	16.5	17.0	19.0	18.0	18.5	---	---	---	23.0	21.0	22.0
11	18.0	17.0	17.5	19.5	18.0	18.5	---	---	---	24.0	22.0	23.0
12	18.5	17.0	17.5	20.5	19.0	19.5	---	---	---	25.5	24.0	24.5
13	19.0	18.0	18.5	20.0	19.5	19.5	---	---	---	26.0	25.0	25.5
14	19.0	18.0	18.5	20.0	18.5	19.0	---	---	---	25.5	24.5	25.0
15	18.5	17.5	18.0	18.5	17.5	18.0	---	---	---	25.5	24.5	25.0
16	18.0	16.0	16.5	17.5	16.5	17.0	24.0	23.0	23.5	26.0	25.0	25.5
17	17.5	16.0	16.5	18.5	17.0	17.5	24.0	23.5	23.5	25.0	24.5	25.0
18	18.5	17.0	17.5	18.5	17.5	18.0	24.5	24.0	24.5	25.5	24.0	25.0
19	18.0	17.0	17.5	18.5	17.5	18.0	25.5	24.5	25.0	25.5	25.0	25.0
20	17.0	14.0	15.5	20.0	18.5	19.0	25.5	24.5	25.0	25.5	25.0	25.0
21	16.0	15.5	16.0	21.0	20.0	20.5	24.5	24.0	24.0	26.0	25.0	25.5
22	16.0	15.0	15.5	21.5	21.0	21.0	25.0	24.0	24.5	26.5	25.0	26.0
23	16.0	15.0	15.5	21.5	20.0	21.0	24.5	24.0	24.5	27.0	26.0	26.5
24	16.5	15.5	16.0	21.0	20.0	20.5	24.5	24.0	24.5	27.0	26.0	26.5
25	16.5	16.0	16.5	22.0	21.0	21.5	25.5	24.5	25.0	27.5	26.5	27.0
26	16.0	15.5	15.5	22.5	22.0	22.0	26.0	25.0	25.5	28.0	27.0	27.5
27	15.5	15.0	15.5	23.0	22.0	22.5	26.5	25.5	26.0	28.5	27.0	27.5
28	16.0	15.5	15.5	23.5	22.0	22.5	26.5	26.0	26.0	28.5	27.5	28.0
29	---	---	---	23.0	22.0	22.5	26.0	25.0	25.5	29.0	27.5	28.0
30	---	---	---	22.5	21.5	22.0	26.0	24.5	25.0	29.0	27.5	28.5
31	---	---	---	21.5	21.0	21.5	---	---	---	28.5	27.5	28.0
MONTH	19.0	14.0	16.5	23.5	16.0	19.5	26.5	18.5	23.5	29.0	21.0	25.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	28.5	27.5	28.0	29.0	28.0	28.5	31.0	30.5	31.0	29.5	29.0	29.5
2	28.5	28.0	28.5	29.0	28.0	28.5	31.0	30.5	30.5	30.0	29.0	29.5
3	28.5	27.5	28.0	29.0	28.5	28.5	31.0	30.0	30.5	29.0	28.0	28.5
4	28.5	27.0	27.5	29.0	28.5	28.5	31.0	30.0	30.5	28.5	27.5	28.0
5	28.5	27.5	28.0	29.5	28.5	29.0	30.0	29.5	29.5	28.5	27.5	28.0
6	28.5	27.5	28.0	29.5	28.5	29.0	29.5	29.0	29.5	28.0	27.5	28.0
7	28.5	28.0	28.0	28.5	28.0	28.0	29.0	28.5	29.0	28.0	27.5	28.0
8	28.0	27.0	28.5	28.0	28.0	28.0	29.0	28.5	29.0	28.5	27.5	28.0
9	28.0	27.0	27.5	29.0	27.5	28.0	30.0	28.5	29.0	29.0	28.0	28.5
10	27.0	26.5	27.0	29.0	28.5	29.0	30.5	29.5	30.0	29.0	28.0	28.5
11	27.5	25.5	27.0	29.0	28.5	28.5	31.0	30.0	30.5	28.5	28.0	28.5
12	---	---	---	29.5	28.5	29.0	31.0	30.0	30.5	28.0	28.0	28.0
13	---	---	---	30.0	29.0	29.5	31.0	30.0	30.5	28.5	28.0	28.5
14	---	---	---	30.5	29.0	29.5	31.0	30.0	30.5	28.5	28.0	28.5
15	---	---	---	30.5	29.5	30.0	30.5	30.0	30.0	29.0	28.0	28.5
16	---	---	---	30.5	29.5	30.0	30.5	29.5	30.0	29.0	28.5	28.5
17	---	---	---	31.0	30.0	30.5	31.0	30.0	30.5	29.0	28.0	28.5
18	---	---	---	30.5	30.0	30.5	31.0	30.0	30.5	29.0	28.0	28.5
19	---	---	---	31.0	30.0	30.5	31.5	30.5	31.0	29.0	26.0	27.5
20	---	---	---	30.5	30.0	30.0	31.5	30.5	31.0	26.0	24.0	25.0
21	---	---	---	30.5	30.0	30.5	31.0	30.0	30.5	24.0	23.0	23.5
22	---	---	---	30.5	29.5	30.0	31.0	30.0	30.5	24.5	23.5	24.0
23	---	---	---	29.5	28.5	29.0	30.5	30.0	30.0	25.0	24.5	24.5
24	---	---	---	29.0	28.0	28.5	30.0	28.5	29.5	26.5	25.0	25.5
25	---	---	---	29.5	28.5	29.0	29.5	29.0	29.5	26.5	25.5	26.0
26	---	---	---	29.5	29.0	29.0	29.0	28.5	29.0	25.5	24.5	25.0
27	---	---	---	29.5	28.5	29.0	29.5	28.0	28.5	25.0	24.0	24.5
28	28.0	27.0	27.5	30.0	29.0	29.5	29.0	28.5	28.5	25.0	24.0	24.5
29	27.5	26.5	27.0	30.5	29.0	29.5	30.0	29.0	29.5	24.5	24.0	24.0
30	28.0	26.0	27.0	31.0	29.5	30.0	30.0	29.5	30.0	24.5	23.5	24.0
31	---	---	---	31.0	30.5	30.5	30.0	29.5	29.5	---	---	---
MONTH	28.5	25.5	27.5	31.0	27.5	29.5	31.5	28.0	30.0	30.0	23.0	27.0

GUADALUPE RIVER BASIN

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08183500 SAN ANTONIO RIVER NEAR FALLS CITY, TX--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	7.8	7.0	7.4	7.4	7.1	7.3	8.9	8.4	8.7	---	---	---
2	7.9	7.1	7.5	7.3	7.0	7.2	8.9	8.4	8.6	9.3	8.8	9.0
3	8.0	7.1	7.5	7.4	7.0	7.2	9.0	8.6	8.7	9.3	9.0	9.1
4	7.7	7.0	7.3	7.3	6.9	7.0	9.6	8.8	9.0	9.4	9.1	9.3
5	10.2	6.7	8.6	7.7	6.9	7.2	9.9	9.2	9.5	9.3	9.0	9.2
6	10.3	8.7	9.4	7.8	7.6	7.7	10.1	9.6	9.9	9.4	9.0	9.1
7	9.5	7.9	8.6	7.8	6.9	7.4	10.5	9.9	10.1	9.2	9.0	9.0
8	8.6	7.2	7.8	7.4	6.9	7.1	10.8	10.1	10.3	9.1	8.9	9.0
9	7.9	6.8	7.2	8.1	7.4	7.7	11.0	10.4	10.7	9.1	8.8	9.0
10	7.0	5.1	6.3	8.0	6.7	7.5	10.9	10.2	10.7	9.1	8.8	9.0
11	6.0	3.7	5.1	8.6	8.2	8.4	10.9	10.4	10.6	9.1	8.8	9.0
12	6.9	6.0	6.6	8.9	8.5	8.6	10.6	9.7	10.1	9.0	8.7	8.9
13	7.3	7.0	7.1	9.2	8.8	8.9	10.2	9.4	9.7	9.3	8.9	9.0
14	7.3	6.7	7.0	9.0	8.2	8.7	9.8	9.3	9.4	9.4	9.2	9.3
15	---	---	---	8.2	7.9	8.1	9.3	8.4	8.8	9.2	8.9	9.1
16	---	---	---	7.9	7.4	7.6	8.8	8.2	8.5	9.2	8.8	9.0
17	6.9	6.6	6.7	7.5	7.1	7.3	8.5	8.0	8.3	9.1	8.8	8.9
18	7.0	6.5	6.7	7.3	6.9	7.1	8.2	7.5	7.8	9.2	8.8	9.0
19	7.0	6.6	6.8	7.2	6.8	7.0	8.2	7.7	7.9	9.1	5.7	8.0
20	7.1	6.8	7.0	7.1	6.8	7.0	8.2	7.5	7.9	8.9	8.1	8.6
21	7.2	7.0	7.1	7.1	6.7	6.9	---	---	---	9.3	8.8	9.1
22	7.6	7.0	7.2	7.0	6.6	6.7	---	---	---	9.6	9.3	9.4
23	7.9	6.9	7.4	6.9	6.6	6.7	---	---	---	9.6	9.4	9.5
24	8.3	6.9	7.5	7.3	6.9	7.0	---	---	---	9.7	9.4	9.5
25	7.9	7.5	7.7	7.3	7.0	7.2	---	---	---	9.5	9.2	9.4
26	7.7	7.4	7.5	7.4	7.0	7.2	---	---	---	9.7	9.2	9.4
27	7.6	7.4	7.5	7.3	6.8	7.0	---	---	---	9.6	9.0	9.2
28	7.6	7.3	7.5	7.6	7.0	7.2	---	---	---	9.4	8.9	9.1
29	7.6	7.3	7.5	8.3	7.6	7.8	---	---	---	8.9	8.4	8.7
30	7.6	7.2	7.4	8.7	8.0	8.3	---	---	---	8.5	8.3	8.4
31	7.6	7.2	7.4	---	---	---	---	---	---	9.1	8.6	8.8
MONTH	10.3	3.7	7.3	9.2	6.6	7.5	11.0	7.5	9.3	9.7	5.7	9.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	9.2	9.0	9.1	9.1	8.9	9.0	8.1	7.7	7.9	5.7	5.6	5.7
2	9.4	9.1	9.3	8.9	8.5	8.6	8.2	7.8	8.0	5.6	5.5	5.6
3	9.5	9.2	9.3	8.7	8.3	8.5	8.0	7.8	7.9	---	---	---
4	9.3	8.1	8.8	8.6	8.3	8.5	7.9	7.6	7.7	---	---	---
5	8.7	7.6	8.2	8.9	8.4	8.6	7.9	7.3	7.6	---	---	---
6	8.4	8.0	8.2	8.6	8.3	8.5	7.2	4.8	6.0	---	---	---
7	8.4	8.2	8.3	8.6	8.1	8.4	6.3	5.8	6.0	---	---	---
8	8.6	8.3	8.5	8.7	8.0	8.4	6.5	6.1	6.3	---	---	---
9	8.7	8.5	8.6	8.8	8.2	8.5	6.5	6.3	6.4	7.4	7.0	7.2
10	8.7	8.5	8.6	9.0	8.3	8.7	---	---	---	6.7	5.2	6.3
11	8.7	8.5	8.6	8.9	8.4	8.6	---	---	---	6.8	6.6	6.7
12	8.6	8.4	8.5	8.7	8.1	8.5	---	---	---	6.9	6.7	6.8
13	8.5	8.2	8.4	8.6	8.0	8.4	---	---	---	6.8	6.7	6.7
14	8.3	8.2	8.2	8.4	8.0	8.3	---	---	---	6.8	6.7	6.7
15	8.6	8.3	8.4	8.4	8.0	8.2	---	---	---	6.9	6.7	6.8
16	8.9	8.5	8.7	8.5	8.2	8.3	5.5	4.9	5.2	6.8	6.5	6.6
17	9.0	8.7	8.9	8.7	8.3	8.4	5.6	5.3	5.5	6.7	6.5	6.6
18	8.8	8.6	8.7	8.7	8.0	8.4	5.8	5.6	5.7	6.9	6.7	6.8
19	8.8	8.5	8.7	8.0	7.7	7.9	5.8	5.6	5.7	6.9	6.7	6.8
20	8.6	6.9	8.0	7.8	7.6	7.7	5.9	5.8	5.8	6.7	6.5	6.6
21	8.8	8.5	8.7	7.8	7.6	7.8	6.0	5.9	6.0	6.7	6.6	6.7
22	8.9	8.6	8.8	7.7	7.4	7.6	6.0	5.7	5.9	6.7	6.7	6.7
23	9.0	8.7	8.9	7.8	7.4	7.6	5.8	5.6	5.7	6.7	6.6	6.6
24	9.0	8.8	8.9	7.9	7.5	7.8	6.0	5.8	5.9	6.6	6.5	6.5
25	8.9	8.7	8.8	7.8	7.6	7.7	6.0	5.8	5.9	6.7	6.4	6.5
26	9.1	8.6	8.8	7.6	7.4	7.5	5.8	5.6	5.7	6.6	6.4	6.5
27	9.0	8.9	9.1	7.4	7.2	7.4	5.6	5.5	5.6	6.7	6.3	6.5
28	9.2	8.9	9.1	7.5	7.1	7.4	5.6	5.5	5.5	6.7	6.4	6.5
29	---	---	---	7.5	7.0	7.3	5.6	5.5	5.6	6.7	6.3	6.5
30	---	---	---	7.7	7.0	7.4	5.7	5.6	5.6	6.7	6.1	6.4
31	---	---	---	---	---	---	---	---	---	6.6	6.3	6.4
MONTH	9.5	6.9	8.7	9.1	7.0	8.1	8.2	4.8	6.2	7.4	5.2	6.5

GUADALUPE RIVER BASIN

08183500 SAN ANTONIO RIVER NEAR FALLS CITY, TX--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	6.5	6.1	6.3	---	---	---	6.4	5.8	6.0	6.1	5.9	5.9
2	6.4	6.0	6.2	---	---	---	6.2	5.7	5.9	6.1	5.9	6.0
3	6.4	6.0	6.1	---	---	---	6.1	5.7	5.9	6.1	5.8	6.0
4	6.3	5.7	6.1	---	---	---	6.4	5.7	5.9	5.8	5.6	5.7
5	6.3	5.9	6.1	---	---	---	6.0	5.6	5.8	6.0	5.8	5.9
6	6.3	5.9	6.1	---	---	---	6.3	4.4	5.6	6.2	5.9	6.0
7	6.3	5.9	6.1	---	---	---	5.8	5.1	5.3	6.2	5.9	6.1
8	6.3	5.9	6.1	---	---	---	6.7	5.5	5.7	6.4	6.2	6.3
9	6.1	5.9	6.0	---	---	---	6.7	5.5	5.8	6.4	6.2	6.2
10	6.3	5.8	6.0	6.6	5.6	6.2	5.8	5.3	5.5	6.5	5.7	6.3
11	7.1	6.0	6.7	6.1	5.8	6.0	6.0	5.3	5.5	6.4	6.2	6.3
12	---	---	---	6.4	6.1	6.2	6.0	5.1	5.4	6.3	6.2	6.3
13	---	---	---	6.5	6.4	6.5	5.5	5.0	5.2	6.3	6.1	6.2
14	---	---	---	6.5	6.4	6.5	6.1	4.9	5.3	6.3	6.2	6.3
15	---	---	---	6.5	6.4	6.5	5.8	4.9	5.2	6.4	6.2	6.3
16	---	---	---	6.6	6.4	6.5	6.1	5.0	5.4	6.3	6.0	6.2
17	---	---	---	6.6	6.4	6.5	6.3	5.0	5.3	6.0	5.8	5.9
18	---	---	---	6.6	6.4	6.4	5.9	5.0	5.2	6.0	5.8	5.9
19	---	---	---	6.5	6.3	6.4	5.4	4.7	4.9	6.2	5.8	5.9
20	---	---	---	6.7	6.2	6.4	5.3	4.7	5.0	6.5	6.2	6.3
21	---	---	---	6.7	6.4	6.6	7.5	4.6	5.7	6.9	6.6	6.7
22	---	---	---	6.6	6.4	6.5	7.7	5.7	6.5	7.1	6.9	7.0
23	---	---	---	6.6	5.9	6.3	6.1	5.6	5.8	7.1	6.9	7.0
24	---	---	---	6.1	5.8	6.0	6.0	4.9	5.7	6.9	6.7	6.8
25	---	---	---	7.2	6.1	6.4	5.9	5.0	5.6	6.7	6.4	6.6
26	---	---	---	7.2	6.3	6.5	5.4	4.3	4.9	6.7	6.4	6.5
27	---	---	---	6.3	6.1	6.2	5.6	5.0	5.4	6.6	6.4	6.5
28	---	---	---	6.3	6.0	6.2	5.6	5.5	5.6	6.5	6.3	6.4
29	---	---	---	6.2	6.1	6.1	5.7	5.6	5.6	6.9	6.4	6.6
30	---	---	---	6.1	6.0	6.0	5.8	5.6	5.7	6.9	6.8	6.9
31	---	---	---	6.0	5.7	5.8	6.0	5.7	5.8	---	---	---
MONTH	7.1	5.7	6.2	7.2	5.6	6.3	7.7	4.3	5.6	7.1	5.6	6.3

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

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

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

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

REMARKS.--No estimated daily discharges. Records good. No known diversion above station. Flow is affected at times by discharge from the flood-detention pools of four floodwater-retarding structures with a combined detention capacity of 8,850 acre-ft. These structures control runoff from 34.0 mi².

AVERAGE DISCHARGE.--29 years, 27.1 ft³/s (5.38 in/yr), 19,630 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 36,400 ft³/s Sept. 27, 1964 (gage height, 19.15 ft, from floodmark), from rating curve extended above 2,500 ft³/s on basis of slope-area measurement at 12,000 ft³/s and contracted-opening measurement of 36,400 ft³/s; no flow at times in 1962-64, 1966-67, 1971, and 1984. Maximum stage since at least 1892, that of Sept. 27, 1964.

EXTREMES OUTSIDE PERIOD OF RECORD.--The second highest flood occurred in 1952 and reached a stage of 16.3 ft (discharge, 25,600 ft³/s), from information by local residents.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 8	1215	*410	*3.56				

Minimum daily discharge, 1.4 ft³/s Aug. 21.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.5	7.0	8.7	7.8	17	21	14	17	28	20	4.3	2.8
2	6.9	7.2	8.7	13	17	20	14	35	28	16	4.2	4.8
3	7.3	7.1	8.7	17	17	20	14	43	28	14	4.0	10
4	8.1	16	8.7	16	90	17	14	42	28	12	3.7	6.1
5	7.2	9.5	7.6	15	46	17	28	35	30	12	3.4	5.6
6	7.6	7.7	7.6	15	37	16	22	27	27	13	3.4	6.1
7	6.5	7.2	7.4	14	33	16	30	23	26	11	3.4	5.6
8	6.0	46	7.4	13	31	17	21	129	24	9.2	3.4	4.1
9	24	18	7.4	17	30	16	18	64	19	7.8	3.4	3.5
10	8.6	12	7.4	18	29	15	16	52	20	7.8	3.2	3.2
11	6.6	10	7.4	17	30	15	18	47	17	6.6	3.3	3.1
12	6.0	8.9	7.2	15	28	15	16	43	83	4.5	3.2	3.1
13	5.6	8.7	7.0	14	29	14	16	44	47	6.2	2.9	3.1
14	5.7	8.4	7.3	13	28	14	78	42	31	6.2	2.9	3.9
15	5.8	8.3	8.3	15	26	15	34	38	27	7.0	3.1	11
16	6.2	8.9	8.1	14	24	18	28	36	25	7.4	2.5	7.6
17	6.1	9.4	8.5	15	25	20	26	38	62	7.4	2.4	6.0
18	6.0	9.7	8.2	50	25	17	26	37	40	8.5	2.0	4.9
19	5.9	9.7	8.3	27	30	17	26	35	31	8.3	2.2	14
20	6.2	9.7	8.3	24	24	16	22	34	27	7.9	1.7	20
21	24	9.7	8.5	21	23	16	21	32	26	7.6	1.4	6.7
22	12	14	9.0	19	22	16	21	30	29	8.0	1.6	5.1
23	9.9	13	9.7	19	21	15	20	29	152	8.8	5.6	29
24	8.8	11	9.7	23	20	14	20	28	59	7.7	4.0	18
25	7.6	11	9.7	20	20	14	20	40	36	7.2	3.2	14
26	7.1	11	9.7	19	18	14	20	32	27	6.8	3.1	11
27	7.0	11	8.9	19	18	14	21	29	22	6.3	3.1	9.8
28	6.7	10	8.6	19	18	15	21	27	19	5.5	2.9	8.5
29	6.6	9.3	8.7	19	---	15	20	25	17	5.8	2.9	7.2
30	6.6	8.6	9.3	21	---	13	18	26	20	5.8	5.2	6.7
31	6.6	---	9.2	18	---	16	---	26	---	4.8	6.9	---
TOTAL	252.7	338.0	259.2	566.8	776	498	683	1185	1055	267.1	102.5	244.5
MEAN	8.15	11.3	8.36	18.3	27.7	16.1	22.8	38.2	35.2	8.62	3.31	8.15
MAX	24	46	9.7	50	90	21	78	129	152	20	6.9	29
MIN	5.6	7.0	7.0	7.8	17	13	14	17	17	4.5	1.4	2.8
AC-FT	501	670	514	1120	1540	988	1350	2350	2090	530	203	485
CF5M	.12	.16	.12	.27	.41	.23	.33	.56	.51	.13	.05	.12
IN.	.14	.18	.14	.31	.42	.27	.37	.64	.57	.15	.06	.13
CAL YR	1990	TOTAL	4921.26	MEAN	13.5	MAX	449	MIN	1.4	AC-FT	9760	CF5M
WTR YR	1991	TOTAL	6227.8	MEAN	17.1	MAX	152	MIN	1.4	AC-FT	12350	CF5M
									.25	IN.	2.68	3.39

GUADALUPE RIVER BASIN

08185000 CIBOLO CREEK AT SELMA, TX

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

DRAINAGE AREA.--274 mi².

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

REVISED RECORDS.--WSP 1923: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 728.34 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Small diversion above station. For statement regarding regulation by Soil Conservation Service floodwater-retarding structures, see station 08183900. Considerable flow of Cibolo Creek enters the Edwards and associated limestones in the Balcones Fault Zone, that crosses basin between this station and the station near Boerne (station 08183900).

AVERAGE DISCHARGE.--45 years, 15.2 ft³/s (11,010 acre-ft/yr).

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

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Apr. 5	0800	*6,280	*9.92	June 23	1500	1,360	6.20

Minimum daily discharge, no flow for most of year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	68	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	47	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	2060	22	.00	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	157	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	46	.00	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	1.9	17	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.72	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	.00	303	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	81	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.06	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
31	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
TOTAL	0.00	0.00	0.00	16.00	0.00	0.00	2264.90	154.72	384.06	0.00	0.00	0.00
MEAN	.000	.000	.000	.52	.000	.000	75.5	4.99	12.8	.000	.000	.000
MAX	.00	.00	.00	16	.00	.00	2060	68	303	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	32	.00	.00	4490	307	762	.00	.00	.00
CAL YR 1990	TOTAL	0.04	MEAN	.00	MAX	0.04	MIN	.00	AC-FT	0.08		
WTR YR 1991	TOTAL	2819.68	MEAN	7.73	MAX	2060	MIN	.00	AC-FT	5590		

GUADALUPE RIVER BASIN

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08186000 CIBOLO CREEK NEAR FALLS CITY, TX

LOCATION.--Lat 29°00'50", long 97°55'48", Karnes County, Hydrologic Unit 12100304, on right bank 50 ft downstream from bridge on State Highway 123, 5.7 mi northeast of Falls City, and 10.4 mi upstream from mouth. Prior to Mar. 16, 1990, at site 50 ft upstream.

DRAINAGE AREA.--827 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1930 to current year. Monthly discharge only for some periods, published in WSP 1312.

REVISED RECORDS.--WSP 733: 1931. WSP 1058: 1935. WSP 1562: 1931(M), 1933. WSP 1923: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 264.28 ft above National Geodetic Vertical Datum of 1929. Nov. 4, 1930, to Aug. 4, 1940, water-stage recorder at site 1,600 ft upstream at datum 0.56 ft higher. Aug. 5 to Sept. 13, 1940, nonrecording gage at present site and datum.

REMARKS.--No estimated daily discharges. Records poor prior to Dec. 6, and good thereafter. There are several diversions for irrigation above station. Much of the base flow is effluent from the Carrizo Sands in the vicinity of Sutherland Springs. Flow is affected at times by discharge from the flood-detention pools of ten floodwater-retarding structures with a combined detention capacity of 16,620 acre-ft. These structures control runoff from 62.9 mi². Satellite telemeter at station.

AVERAGE DISCHARGE.--61 years, 119 ft³/s (86,220 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 33,600 ft³/s July 6, 1942 (gage height, 34.45 ft); maximum gage height, 35.44 ft Sept. 28, 1973; no flow July 30, 31, Aug. 4-22, 1956, and Aug. 1, 1971. Maximum stage since at least 1890, that of Sept. 28, 1973.

EXTREMES OUTSIDE PERIOD OF RECORD.--In October 1913, a stage of 35 ft occurred (discharge, about 35,000 ft³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,600 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 19	1900	*4,720	*18.06	Feb. 4	1800	4,170	17.19

Minimum daily discharge, 10 ft³/s Nov. 5, 6.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	13	22	22	45	31	25	47	37	45	22	18
2	13	13	18	22	42	31	25	46	35	36	20	14
3	12	11	18	25	42	31	25	45	34	35	19	17
4	12	12	19	26	2250	30	26	84	33	33	18	18
5	13	10	17	29	2190	31	1150	449	33	31	18	44
6	13	10	19	32	314	30	2670	554	33	28	18	24
7	12	12	19	32	138	30	1490	178	33	27	18	22
8	14	17	18	30	93	29	461	129	32	26	19	21
9	33	23	17	37	72	27	231	392	32	27	19	18
10	31	96	17	40	60	27	153	355	31	65	19	17
11	83	57	18	48	54	27	151	179	30	48	20	16
12	48	44	18	57	50	27	107	130	30	41	19	16
13	34	40	19	43	48	27	90	105	30	32	18	17
14	29	33	20	37	44	27	88	139	29	29	16	17
15	23	28	20	33	37	27	1030	113	29	27	16	17
16	19	24	20	31	35	28	301	87	29	25	16	17
17	17	25	20	29	35	30	152	154	82	23	15	18
18	15	23	20	295	35	31	114	130	31	23	14	18
19	14	23	19	3200	88	38	97	85	30	22	13	18
20	14	23	19	759	46	36	85	77	27	21	14	23
21	13	22	20	230	36	33	81	65	26	20	14	20
22	13	25	20	165	38	31	88	58	25	20	12	18
23	47	26	19	113	36	29	81	53	26	20	14	18
24	43	22	19	91	33	28	74	50	43	20	16	22
25	27	23	19	82	35	27	67	48	46	20	12	43
26	19	23	19	96	38	27	61	46	69	24	13	33
27	17	26	21	77	32	27	57	44	68	26	13	22
28	14	24	22	65	31	27	54	42	51	26	16	20
29	13	20	22	58	---	26	51	42	42	27	15	20
30	13	21	23	52	---	25	49	40	45	25	14	18
31	13	---	23	48	---	25	---	38	---	23	15	---
TOTAL	694	769	604	5904	5997	900	9134	4004	1121	895	505	624
MEAN	22.4	25.6	19.5	190	214	29.0	304	129	37.4	28.9	16.3	20.8
MAX	83	96	23	3200	2250	38	2670	554	82	65	22	44
MIN	12	10	17	22	31	25	25	38	25	20	12	14
AC-FT	1380	1530	1200	11710	11900	1790	18120	7940	2220	1780	1000	1240
CAL YR 1990	TOTAL	12239.8	MEAN	33.5	MAX	1230	MIN	3.4	AC-FT	24280		
WTR YR 1991	TOTAL	31151	MEAN	85.3	MAX	3200	MIN	10	AC-FT	61790		

GUADALUPE RIVER BASIN

08186000 CIBOLO CREEK NEAR FALLS CITY, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: October 1961 to current year. Chemical and biochemical analyses: December 1969 to current year. Sediment analyses: 1960, November 1965 to May 1975.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1968 to September 1991 (discontinued).

WATER TEMPERATURE: October 1968 to September 1991 (discontinued).

INSTRUMENTATION.--From March 1981 to September 1991 specific conductance and water temperature were 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, 2,270 microsiemens May 20, 21, 1971; minimum, 115 microsiemens Dec. 22, 23, 1986.

WATER TEMPERATURE: Maximum, 34.0°C July 31, Aug. 8, 9, 1980; minimum, 0.0°C Dec. 25, 26, 1983, Dec. 23, 24, 1989.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 1,410 microsiemens on several days during December, March, and April; minimum, 118 microsiemens Apr. 5.

WATER TEMPERATURE: Maximum, 32.5°C on several days during June and July; minimum, 9.0°C Feb. 1.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	
		SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT DIS FIX END CAC03 (MG/L)	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)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)
NOV 01...	1044	16	1060	8.2	20.5	9.0	101	1.1	300	79	89	18	
JAN 10...	1023	38	1080	8.0	10.5	10.0	90	2.5	290	82	88	18	
MAR 08...	1154	28	1340	8.2	18.0	12.8	137	4.4	370	160	110	22	
MAY 03...	1130	32	1190	8.1	24.0	7.7	93	1.4	380	150	120	19	
JUL 25...	1100	19	1060	8.0	28.0	--	--	--	300	93	91	17	
AUG 22...	1200	12	1190	8.1	28.5	--	--	1.9	320	84	96	19	
DATE		SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT DIS FIX END CAC03 (MG/L)	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)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)
NOV 01...	110	3	8.4	220	150	130	0.20	7.8	644	0.890	0.010	0.900	
JAN 10...	110	3	7.5	210	140	140	0.20	5.3	638	1.78	0.020	1.80	
MAR 08...	130	3	8.1	200	220	170	0.30	8.0	790	1.07	0.030	1.10	
MAY 03...	110	2	7.9	230	190	140	0.40	14	736	0.960	0.040	1.00	
JUL 25...	110	3	7.7	210	160	130	0.30	9.1	649	0.220	0.020	0.240	
AUG 22...	120	3	8.5	230	190	140	0.30	9.1	723	0.140	0.010	0.150	
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)	PHOS-PHORUS ORTHO TOTAL (MG/L AS P)	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 01...	0.020	0.48	0.50	0.440	0.370		--	--	--	--	--	--	--
JAN 10...	0.060	0.64	0.70	0.500	0.430		2	61	<0.5	1.0	<5	<3	<10
MAR 08...	0.030	0.47	0.50	0.200	0.200		--	--	--	--	--	--	--
MAY 03...	0.030	0.27	0.30	0.340	0.320		--	--	--	--	--	--	--
JUL 25...	0.050	0.45	0.50	0.350	0.300		3	79	<0.5	<1.0	<5	<3	<10
AUG 22...	0.030	0.57	0.60	0.370	0.320		--	--	--	--	--	--	--

08186000 CIBOLO CREEK NEAR FALLS CITY, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

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 01...	--	--	--	--	--	--	--	--	--	--	--	--
JAN 10...	64	<10	47	17	0.2	<10	<10	<1	<1.0	790	<6	12
MAR 08...	--	--	--	--	--	--	--	--	--	--	--	--
MAY 03...	--	--	--	--	--	--	--	--	--	--	--	--
JUL 25...	<3	<10	55	7	<0.1	<10	<10	<1	<1.0	810	8	<3
AUG 22...	--	--	--	--	--	--	--	--	--	--	--	--

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1990 TO SEPTEMBER 1991

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. 1990	694	935	567	1060	100	187	150	277	280
NOV. 1990	769	976	592	1230	100	217	150	322	290
DEC. 1990	604	1210	746	1220	140	232	200	331	350
JAN. 1991	5904	383	226	3610	33	533	55	869	120
FEB. 1991	5997	434	257	4160	39	625	62	1010	140
MAR. 1991	900	1270	786	1910	150	371	220	525	360
APR. 1991	9134	440	260	6410	38	942	62	1540	140
MAY 1991	4004	594	354	3820	55	596	87	943	190
JUNE 1991	1121	1050	642	1940	120	351	170	514	310
JULY 1991	895	1010	616	1490	110	264	160	390	300
AUG. 1991	505	1160	715	975	130	183	190	263	330
SEPT 1991	624	1050	641	1080	120	195	170	286	310
TOTAL	31151	**	**	28900	**	4690	**	7270	**
WTD.AVG.	85	574	344	**	56	**	86	**	180

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	1100	1030	1070	---	---	1060	---	---	1030	---	---	1200
2	1100	1030	1060	---	---	1040	---	---	1050	---	---	1190
3	1100	1030	1060	---	---	1020	---	---	1080	---	---	1170
4	1100	1030	1070	---	---	1020	---	---	1080	---	---	1140
5	1170	1030	1080	---	---	1010	---	---	1100	---	---	1140
6	1140	1060	1090	---	---	1020	---	---	1120	---	---	1110
7	1170	1060	1110	---	---	1020	---	---	1140	---	---	1090
8	1130	1020	1070	---	---	1020	---	---	1140	---	---	1070
9	---	---	800	---	---	1010	---	---	1160	---	---	1030
10	---	---	941	---	---	650	---	---	1170	---	---	1000
11	---	---	600	---	---	940	---	---	1180	---	---	700
12	---	---	800	---	---	1040	---	---	1170	---	---	820
13	---	---	930	---	---	1100	---	---	1180	---	---	910
14	---	---	1010	---	---	1090	---	---	1180	---	---	980
15	---	---	1100	---	---	1080	---	---	1200	---	---	1020
16	---	---	1150	---	---	1090	---	---	1210	---	---	1060
17	---	---	1200	---	---	1090	---	---	1220	---	---	1060
18	---	---	1220	---	---	1000	---	---	1240	---	---	600
19	---	---	1240	---	---	1010	---	---	1240	---	---	200
20	---	---	1230	---	---	1000	---	---	1300	---	---	300
21	---	---	1240	---	---	990	---	---	1410	---	---	400
22	---	---	1220	---	---	970	---	---	1380	---	---	500
23	---	---	500	---	---	1000	---	---	1350	---	---	600
24	---	---	840	---	---	1010	---	---	1340	---	---	640
25	---	---	983	---	---	1000	---	---	1320	---	---	676
26	---	---	1050	---	---	1010	---	---	1320	675	591	628
27	---	---	1100	---	---	1000	---	---	1260	721	597	659
28	---	---	1040	---	---	1000	---	---	1250	805	681	717
29	---	---	1080	---	---	1000	---	---	1240	814	726	768
30	---	---	1100	---	---	1020	---	---	1230	822	734	794
31	---	---	1080	---	---	---	---	---	1220	874	784	836
MONTH	1170	1020	1030	---	---	1010	---	---	1210	874	591	839

GUADALUPE RIVER BASIN

08186000 CIBOLO CREEK NEAR FALLS CITY, TX--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	927	833	886	1400	1210	1280	1370	1290	1340	1180	1060	1130
2	978	842	910	1350	1260	1300	1370	1290	1330	1180	1100	1150
3	995	897	960	1320	1260	1280	1410	1330	1370	1220	1140	1170
4	997	130	432	1320	1220	1290	1410	1330	1380	1250	1020	1190
5	261	132	195	1360	1270	1310	1370	118	620	980	353	731
6	404	221	303	1330	1250	1300	627	157	301	431	235	307
7	590	404	485	1330	1100	1220	275	157	225	431	275	354
8	672	502	606	1180	1100	1150	392	235	316	510	392	461
9	760	673	712	1330	1140	1190	471	353	395	627	353	536
10	884	761	801	1220	1140	1160	549	431	487	392	275	339
11	901	812	859	---	---	1170	588	392	507	471	353	401
12	951	862	913	---	---	1180	745	549	661	549	392	480
13	1000	912	962	---	---	1200	824	706	768	628	510	573
14	1050	964	1010	---	---	1210	863	784	822	707	588	635
15	1110	1010	1050	---	---	1220	863	196	439	707	589	636
16	1160	1070	1110	---	---	1230	353	235	287	746	628	700
17	1210	1120	1160	---	---	1230	510	353	444	746	511	673
18	1220	1170	1190	---	---	1240	667	510	584	668	511	592
19	1220	576	965	---	---	1260	745	627	687	785	628	719
20	803	620	709	1330	1250	1270	784	706	751	747	668	714
21	896	759	820	1330	1250	1280	863	745	815	786	668	732
22	1170	853	1060	1290	1250	1270	902	824	859	747	708	723
23	1170	1120	1140	1330	1250	1300	902	824	852	786	708	747
24	1230	1130	1160	1370	1290	1330	941	863	913	826	786	788
25	1230	1180	1200	1410	1330	1370	1020	902	958	905	786	845
26	1240	966	1100	1410	1370	1390	1060	941	1040	944	866	911
27	1200	1010	1100	1410	1330	1380	1100	980	1040	1020	905	957
28	1300	1160	1240	1410	1290	1360	1100	980	1050	1020	945	988
29	---	---	---	1410	1330	1360	1140	1020	1080	1060	984	1010
30	---	---	---	1370	1330	1360	1140	1060	1100	1060	984	1030
31	---	---	---	1370	1330	1360	---	---	---	1060	984	1040
MONTH	1300	130	894	1410	1100	1270	1410	118	781	1250	235	750
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	1100	1020	1060	1040	919	996	1070	989	1040	1230	1110	1160
2	1100	1020	1070	1040	920	983	1070	990	1040	1230	1020	1130
3	1140	1060	1090	1040	960	995	1110	1030	1070	1190	1070	1140
4	1140	1060	1110	1000	961	993	1150	1070	1100	1190	1110	1170
5	1140	1060	1110	1080	962	1020	1190	1070	1130	1150	1030	1100
6	1140	1070	1100	1080	963	1020	1190	1110	1160	1070	907	978
7	1140	1070	1100	1080	1000	1030	1240	1120	1170	1030	866	971
8	1140	1070	1100	1090	1000	1030	1200	1120	1160	1070	949	1040
9	1150	1070	1110	1130	1050	1070	1240	1120	1180	1120	992	1050
10	1150	1070	1110	1130	1010	1080	1240	1160	1200	1160	1030	1080
11	1180	1070	1130	1050	969	1010	1240	1120	1180	1160	1030	1110
12	1190	1070	1130	1010	929	974	1200	1120	1160	1240	995	1140
13	1190	1110	1150	1010	891	959	1200	1120	1160	1250	1080	1190
14	1190	1110	1150	1010	933	972	1200	1120	1160	1250	1120	1190
15	1190	1110	1140	1020	934	989	1210	1120	1180	1250	1120	1170
16	1230	1070	1140	1060	936	995	1210	1130	1170	1250	1120	1170
17	1070	792	929	1060	938	1000	1210	1130	1170	1210	1040	1140
18	912	753	815	1060	980	1020	1210	1130	1170	1210	1090	1140
19	1110	952	1010	1110	982	1030	1210	1090	1170	1170	1000	1100
20	1150	1030	1090	1110	985	1050	1250	1130	1200	1130	1000	1080
21	1190	1070	1130	1110	1030	1060	1260	1170	1220	1090	962	1030
22	1230	1110	1160	1080	990	1040	1260	1170	1210	1050	963	994
23	1190	1110	1170	1080	993	1030	1260	1140	1200	1050	923	995
24	1130	1040	1100	1040	980	1000	1220	1140	1190	1090	967	1030
25	1110	1000	1060	1060	942	1010	1260	1160	1200	1050	884	971
26	1110	995	1040	1060	982	1030	1220	1140	1180	926	799	843
27	1040	956	982	1060	983	1010	1300	1180	1240	969	842	913
28	997	878	943	1060	946	1010	1310	1140	1230	1010	886	951
29	958	878	928	1070	947	998	1270	1100	1200	1010	887	947
30	998	879	948	1070	948	995	1310	1180	1220	1060	930	1000
31	---	---	---	1070	949	997	1230	1190	1210	---	---	---
MONTH	1230	753	1070	1130	891	1010	1310	989	1170	1250	799	1060

GUADALUPE RIVER BASIN

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08186000 CIBOLO CREEK NEAR FALLS CITY, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

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

GUADALUPE RIVER BASIN

08186000 CIBOLO CREEK NEAR FALLS CITY, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	31.0	27.5	29.0	30.5	26.5	28.0	30.5	27.5	29.0	30.0	26.5	28.0
2	31.0	28.0	29.0	31.5	27.0	29.0	31.5	27.5	29.5	29.0	27.0	28.0
3	31.0	27.5	29.0	31.5	28.0	29.5	31.5	27.5	29.5	28.0	26.0	27.0
4	30.5	26.5	28.5	30.5	27.5	29.0	30.0	27.5	28.5	28.0	25.0	26.5
5	31.0	28.0	29.5	32.0	28.0	29.5	30.5	26.5	28.0	28.0	25.5	27.0
6	30.5	28.0	29.0	32.0	28.5	30.0	30.0	26.5	28.0	27.5	26.5	27.0
7	29.0	26.5	27.5	30.5	28.5	29.0	30.0	26.5	28.0	27.5	26.0	26.5
8	29.0	26.0	26.5	29.0	28.0	28.5	30.0	26.5	28.0	28.5	26.0	27.0
9	27.5	26.5	27.0	31.5	28.0	29.5	31.0	26.5	28.5	30.0	26.0	27.5
10	28.5	26.0	27.0	31.0	28.0	29.5	31.0	27.0	29.0	29.0	26.5	27.5
11	28.5	26.0	27.5	31.0	28.5	29.5	31.0	28.0	29.0	27.5	26.0	26.5
12	30.0	26.0	28.0	31.5	28.0	29.5	31.5	27.5	29.0	29.0	25.5	27.0
13	30.5	27.5	28.5	31.5	28.0	29.5	31.0	27.5	28.5	29.0	26.0	27.5
14	31.0	28.0	29.0	31.5	28.0	29.5	29.5	27.0	28.0	29.0	26.0	27.5
15	31.0	27.5	29.0	32.0	28.5	30.0	30.0	27.0	28.0	29.5	26.5	27.5
16	32.0	27.5	30.0	32.0	28.5	30.0	31.0	27.0	28.5	28.5	26.5	27.5
17	30.0	26.0	28.0	32.5	28.5	30.5	31.5	27.0	29.0	29.0	26.0	27.5
18	31.0	26.5	28.5	32.5	29.0	30.0	31.5	27.5	29.5	29.0	26.5	27.5
19	32.0	28.0	29.5	32.5	28.5	30.0	31.5	27.5	29.5	27.5	21.0	23.5
20	32.5	28.0	30.0	32.0	28.5	30.0	31.5	27.5	29.5	21.0	20.5	21.0
21	32.0	28.5	30.0	32.5	28.5	30.0	32.0	27.0	29.0	23.5	20.0	21.5
22	32.5	29.0	30.5	30.5	28.5	29.5	31.0	28.0	29.0	25.5	21.5	23.5
23	30.5	28.0	29.0	30.0	27.5	28.5	30.5	27.5	29.0	24.5	23.5	24.0
24	29.0	26.5	28.0	31.0	27.5	29.0	30.0	27.0	28.5	27.5	24.0	25.0
25	29.5	27.0	28.0	30.5	27.5	28.5	30.0	27.0	28.5	24.5	22.5	23.5
26	30.0	27.5	28.5	30.0	27.5	28.5	30.0	26.5	28.0	24.5	20.5	22.5
27	31.0	28.0	29.0	30.0	27.5	28.5	29.5	26.5	28.0	24.0	21.0	22.5
28	31.5	28.0	29.5	31.0	27.5	29.0	30.5	26.5	28.0	24.5	21.0	22.5
29	28.5	27.0	27.5	31.5	28.0	29.0	31.0	27.0	29.0	24.0	21.0	22.5
30	28.5	26.5	27.5	31.0	27.5	29.0	32.0	27.5	29.0	25.0	21.0	23.0
31	---	---	---	31.0	28.0	29.5	30.0	27.5	28.5	---	---	---
MONTH	32.5	26.0	28.5	32.5	26.5	29.5	32.0	26.5	28.5	30.0	20.0	25.5

GUADALUPE RIVER BASIN

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08188500 SAN ANTONIO RIVER AT GOLIAD, TX
(National stream-quality accounting network)

LOCATION.--Lat 28°38'58", long 97°23'04", Goliad County, Hydrologic Unit 12100303, on right bank at upstream side of bridge on U.S. Highway 183, 1.2 mi southeast of courthouse in Goliad, 11.7 mi upstream from Manahuilla Creek, and 66.5 mi upstream from mouth.

DRAINAGE AREA.--3,921 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1924 to March 1929, February 1939 to current year.

REVISED RECORDS.--WSP 1923: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 91.08 ft above National Geodetic Vertical Datum of 1929. Prior to Mar. 31, 1929, nonrecording gage at Texas and New Orleans Railroad Co. bridge 1.1 mi upstream at same datum.

REMARKS.--Records good. There are many diversions and regulation above station (see station 08181800). Flow is affected at times by discharge from the flood-detention pools of 36 floodwater-retarding structures, with a combined detention capacity of 66,730 acre-ft. These structures control runoff from 213 mi² in the area above this station.

AVERAGE DISCHARGE.--56 years (water years 1925-28, 1940-91), 681 ft³/s (493,400 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 138,000 ft³/s Sept. 23, 1967 (gage height, 53.7 ft, from floodmark), from rating curve extended above 26,000 ft³/s on basis of slope-area measurement of peak flow; minimum observed, 1.2 ft³/s June 16, 1956.
Maximum stage since 1869, that of Sept. 23, 1967. Flood of July 9, 1942, reached a stage of 44.9 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods in October 1913 and June 15, 1935, reached about the same stage as flood in 1942. Maximum stage since about 1800 occurred in 1869 and was several feet higher than flood of Sept. 23, 1967.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 6,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 6	2200	6,840	23.34	Apr. 6	0400	*8,330	*25.92

Minimum daily discharge, 188 ft³/s Nov. 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	243	188	257	322	448	417	378	476	423	482	333	267
2	241	221	257	317	434	380	375	743	418	473	283	318
3	235	274	253	317	474	396	380	809	416	524	266	380
4	230	241	264	322	496	415	394	548	407	629	264	555
5	232	227	302	336	2340	406	3410	1060	393	547	263	704
6	236	259	302	441	6340	419	7130	1680	385	482	297	544
7	237	340	271	427	5590	407	6150	2230	386	771	328	440
8	240	450	251	401	1920	403	6690	1300	386	942	341	394
9	240	353	248	401	951	379	6360	929	385	718	272	421
10	239	284	247	396	765	370	3710	889	372	530	239	431
11	384	854	265	520	666	358	1630	2100	371	798	250	402
12	1150	1060	289	598	586	356	1780	1450	371	792	266	386
13	920	568	302	551	552	360	1160	869	369	544	284	312
14	490	420	283	471	528	367	846	721	369	476	304	278
15	378	375	255	393	511	376	754	652	369	449	301	283
16	310	354	250	362	483	385	1490	698	379	433	289	275
17	283	342	250	360	447	365	2030	743	386	418	221	470
18	284	334	286	388	439	400	1140	634	428	412	208	454
19	276	329	309	579	440	524	800	733	475	385	210	391
20	258	321	297	2860	433	552	695	703	552	301	240	296
21	250	319	264	5080	515	457	638	624	456	282	276	269
22	247	318	246	2130	634	409	626	566	309	289	300	262
23	240	330	242	934	571	389	739	557	282	356	294	256
24	357	332	242	692	486	392	652	528	575	367	212	330
25	610	328	281	e597	444	381	594	498	1200	386	200	431
26	411	323	311	553	414	362	559	489	1920	322	238	419
27	275	315	327	572	403	352	539	482	1210	388	e700	421
28	225	315	327	596	410	356	524	466	764	306	435	401
29	216	314	316	540	---	374	506	451	586	283	341	323
30	208	271	322	491	---	386	492	444	492	379	269	269
31	195	---	327	470	---	380	---	432	---	382	235	---
TOTAL	10340	10959	8643	23417	28720	12273	53171	25504	15834	14846	8959	11382
MEAN	334	365	279	755	1026	396	1772	823	528	479	289	379
MAX	1150	1060	327	5080	6340	552	7130	2230	1920	942	700	704
MIN	195	188	242	317	403	352	375	432	282	282	200	256
AC-FT	20510	21740	17140	46450	56970	24340	105500	50590	31410	29450	17770	22580

CAL YR 1990 TOTAL 179036 MEAN 491 MAX 9290 MIN 77 AC-FT 355100
WTR YR 1991 TOTAL 224048 MEAN 614 MAX 7130 MIN 188 AC-FT 444400

e Estimated

GUADALUPE RIVER BASIN

08188500 SAN ANTONIO RIVER AT GOLIAD, TX--Continued
(National stream-quality accounting network)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: December 1941 to December 1942, November 1944 to September 1946, September 1958 to current year. Chemical and biochemical analyses: January 1968 to current year. Pesticide analyses: January 1968 to May 1982. Sediment analyses: April 1959, October 1974 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: January 1942 to September 1946, September 1958 to current year.
WATER TEMPERATURE: September 1958 to current year.

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

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,580 microsiemens July 22, 1978; minimum daily, 138 microsiemens Oct. 27, 1960.
WATER TEMPERATURE: Maximum daily, 36.0°C June 5, 1969; minimum daily, 0.0°C on many days during winter months.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,220 microsiemens Nov. 5, Dec. 25; minimum daily, 212 microsiemens June 25.
WATER TEMPERATURE: Maximum daily, 32.5°C Aug. 11, 18; minimum daily, 7.0°C Dec. 23.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	
		HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	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)	CAR-BONATE WATER DIS IT FIELD MG/L AS CO3	BICAR-BONATE WATER DIS IT FIELD MG/L AS HCO3	ALKA-LINITY WAT DIS TOT IT FIELD MG/L AS CAC03	SULFATE DIS-SOLVED (MG/L AS SO4)
OCT 29...	1150	214	823	7.9	19.0	32	8.8	95	1.0	350	K380	
JAN 31...	1015	472	867	8.3	11.5	130	10.3	94	1.8	K240	680	
MAR 06...	1000	417	1140	8.3	19.0	40	8.7	96	1.6	270	230	
MAY 21...	1010	628	893	8.1	26.0	76	8.0	100	1.3	200	400	
JUL 09...	1205	721	690	8.2	28.0	200	6.4	82	1.4	600	6200	
SEP 05...	0930	646	928	8.2	27.5	140	6.6	84	0.7	1200	1800	
DATE		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 CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)
OCT 29...	92	0.20	14	472	473	4.58	4.69	0.020	0.010	4.60	4.70	
JAN 31...	84	0.30	13	505	486	5.48	5.49	0.020	0.010	5.50	5.50	
MAR 06...	140	0.50	13	686	684	8.97	9.38	0.030	0.020	9.00	9.40	
MAY 21...	93	0.10	17	553	537	6.83	7.08	0.070	0.020	6.90	7.10	
JUL 09...	74	0.40	15	440	403	5.49	5.48	0.010	0.020	5.50	5.50	
SEP 05...	100	0.40	15	539	552	9.28	8.79	0.020	0.010	9.30	8.80	

08188500 SAN ANTONIO RIVER AT GOLIAD, TX--Continued
(National stream-quality accounting network)

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	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- PHORUS ORTHO TOTAL (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)
OCT 29...	0.020	<0.010	0.88	0.90	1.80	1.60	1.60	1.60	4.9	78	45
JAN 31...	0.050	0.050	0.95	1.0	1.30	1.20	1.40	1.40	4.3	141	180
MAR 06...	0.030	0.010	--	<0.20	2.40	2.20	1.20	2.20	3.7	83	93
MAY 21...	0.030	0.030	1.3	1.3	2.10	1.80	1.70	1.70	5.2	184	312
JUL 09...	<0.010	0.020	--	1.7	2.00	1.30	1.10	1.60	3.4	540	1050
SEP 05...	0.010	0.020	1.8	1.8	2.40	1.80	1.80	1.90	5.5	425	741
DATE	SED. SUSP. 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)	LEAD, DIS- SOLVED (UG/L AS PB)
OCT 29...	98	10	2	58	<0.5	<1.0	<1	<3	3	4	1
JAN 31...	98	--	--	--	--	--	--	--	--	--	--
MAR 06...	95	20	2	76	<0.5	<1.0	<1	<3	3	4	<1
MAY 21...	94	10	5	80	<0.5	<1.0	<1	<3	4	5	1
JUL 09...	79	--	--	--	--	--	--	--	--	--	--
SEP 05...	9	<10	14	71	<0.5	<1.0	<1	<3	2	37	<1
DATE	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	
OCT 29...	23	2	0.1	<10	3	<1	<1.0	730	7	8	
JAN 31...	--	--	--	--	--	--	--	--	--	--	
MAR 06...	37	1	<0.1	<10	3	<1	<1.0	1100	<6	21	
MAY 21...	29	<1	<0.1	30	2	<1	<1.0	930	11	11	
JUL 09...	--	--	--	--	--	--	--	--	--	--	
SEP 05...	23	<1	<0.1	90	3	<1	<1.0	1100	49	7	

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1990 TO SEPTEMBER 1991

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. 1990	10340	900	522	14600	100	2930	91	2530	280
NOV. 1990	10959	937	543	16100	110	3240	94	2800	290
DEC. 1990	8643	1160	675	15700	150	3470	120	2800	340
JAN. 1991	23417	649	375	23700	68	4300	64	4030	210
FEB. 1991	28720	622	360	27900	66	5150	61	4760	200
MAR. 1991	12273	1130	655	21700	140	4710	120	3850	340
APR. 1991	53171	512	296	42500	49	7110	49	7090	170
MAY 1991	25504	687	397	27400	71	4880	67	4630	220
JUNE 1991	15834	770	446	19100	87	3730	77	3290	240
JULY 1991	14846	850	492	19700	94	3760	85	3390	270
AUG. 1991	8959	1040	600	14500	130	3020	110	2550	320
SEPT 1991	11382	895	519	15900	100	3080	89	2750	280
TOTAL	224048	**	**	259000	**	49400	**	44500	**
WTD.AVG.	614	739	428	**	82	**	74	**	240

GUADALUPE RIVER BASIN

08188500 SAN ANTONIO RIVER AT GOLIAD, TX--Continued
(National stream-quality accounting network)

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY EQUIVALENT MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1090	1150	1120	1080	956	1130	1130	1090	1070	703	989	894
2	1080	1170	1110	1060	997	1150	1140	1090	1060	773	1010	937
3	1120	1190	1130	1060	1000	1160	1160	620	1050	849	1060	952
4	1150	1210	1160	1090	958	1160	1140	570	1080	894	1070	906
5	1170	1220	1150	1100	911	1170	537	520	1090	893	1060	877
6	1190	1130	1160	1100	267	1160	244	460	1080	888	1080	775
7	1100	1120	1150	1060	303	1150	378	412	1070	777	1060	689
8	1140	1070	1160	1020	363	1170	334	369	1090	700	1090	712
9	1150	1030	1160	961	429	1160	325	472	1070	694	1070	780
10	1150	1060	1170	938	531	1150	365	584	1070	666	1100	815
11	1160	816	1200	1010	658	1150	445	691	1090	707	1060	895
12	1020	720	1170	448	796	1150	470	478	1110	789	1120	912
13	439	545	1180	883	867	1180	519	488	1110	678	1110	917
14	350	639	1140	978	953	1190	690	578	1090	652	1090	948
15	538	589	1170	998	1000	1190	899	712	1100	708	1100	989
16	591	628	1190	968	1080	1120	1000	803	1070	856	1040	1020
17	686	736	1180	958	1130	1150	805	863	1040	929	1100	948
18	836	881	1200	987	1100	1180	513	867	1100	971	1120	975
19	1040	929	1170	936	1130	1150	600	821	844	998	1120	898
20	1110	973	1180	475	1140	1070	653	830	991	1000	1040	789
21	1120	1020	1150	313	1150	1070	854	889	1000	1050	1080	865
22	1140	1050	1160	341	1200	1000	965	896	956	1050	1120	934
23	1150	1060	1200	435	910	919	1000	910	1020	1050	1060	970
24	841	1080	1200	521	1020	1020	1030	916	271	1080	1090	980
25	739	1100	1220	636	1020	1090	1020	950	212	1020	1120	894
26	829	1090	1190	718	976	1110	965	958	310	1030	1130	988
27	918	1080	1170	853	1070	1140	977	974	512	1030	945	960
28	923	1100	1140	929	1150	1150	1030	1000	477	975	953	963
29	991	1130	1130	929	---	1140	1070	1020	545	995	945	893
30	1020	1140	1130	855	---	1150	1080	1030	651	1030	659	979
31	1110	---	1110	878	---	1150	---	1050	---	1020	746	---
MEAN	964	989	1160	855	895	1130	778	771	908	886	1040	902

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27.0	23.0	18.0	10.5	15.0	20.0	23.0	21.5	27.0	25.5	28.5	29.0
2	27.0	24.0	20.0	12.5	15.5	19.0	22.5	22.0	28.0	26.5	28.0	29.5
3	28.0	24.0	23.0	12.0	15.0	20.0	24.5	20.0	26.5	28.0	26.0	28.5
4	29.0	21.0	15.5	11.5	17.0	21.0	25.0	23.5	28.0	27.0	28.0	28.0
5	29.0	19.0	14.5	14.0	18.0	21.5	19.5	24.0	29.0	28.0	25.5	28.5
6	29.0	18.5	16.0	15.0	16.0	24.0	19.0	22.0	27.5	27.0	27.0	29.0
7	28.0	20.0	14.5	14.5	18.0	22.5	20.5	21.5	26.0	27.0	28.0	28.0
8	29.0	18.0	14.0	13.0	17.0	21.5	21.0	20.0	24.0	25.5	27.0	29.5
9	24.5	17.5	13.5	14.0	19.0	22.0	22.0	24.0	24.0	27.0	28.0	30.0
10	23.0	17.0	14.5	14.5	18.0	20.0	18.0	25.5	26.0	28.0	26.0	30.0
11	24.0	19.0	15.5	14.0	17.5	20.0	20.0	25.0	26.5	26.0	32.5	28.5
12	22.0	19.5	18.0	13.5	19.5	19.5	21.0	27.0	28.0	28.0	31.5	28.5
13	22.5	17.0	18.5	14.5	20.0	18.0	20.5	28.0	25.5	27.5	31.0	30.0
14	---	19.0	19.5	15.0	20.0	17.5	21.5	26.5	28.0	27.5	31.0	28.0
15	25.0	19.5	20.0	16.0	20.0	17.0	23.0	28.5	25.5	27.0	30.5	29.0
16	24.0	21.0	21.0	15.0	19.0	18.0	23.0	28.0	28.0	29.0	29.5	28.0
17	22.0	21.0	19.0	15.0	18.5	21.0	20.5	26.0	29.0	29.5	30.5	30.0
18	24.0	22.0	20.0	14.5	17.0	22.0	22.0	26.5	29.0	28.0	32.5	29.5
19	24.5	23.0	18.0	16.0	16.0	21.0	22.0	28.5	27.5	28.0	30.0	26.5
20	28.5	23.0	19.5	14.5	13.0	20.0	23.0	28.0	27.5	26.0	29.0	23.5
21	21.0	23.0	23.5	12.0	15.5	22.5	22.5	29.5	28.5	28.0	29.5	21.5
22	21.0	24.5	10.0	12.0	17.0	23.5	24.5	30.0	29.0	28.0	29.5	25.0
23	20.0	23.0	7.0	11.5	16.0	24.0	22.5	29.0	27.5	27.5	30.5	26.0
24	20.0	22.5	12.0	12.0	15.0	23.0	22.5	27.5	28.0	27.0	31.0	27.5
25	20.0	24.0	9.5	14.5	16.0	25.0	23.0	31.0	25.5	28.0	30.5	24.5
26	20.5	24.5	10.0	12.0	15.0	25.0	24.0	27.0	25.0	28.0	30.0	26.5
27	22.0	23.5	12.0	15.0	15.0	24.5	23.0	28.0	26.0	25.5	30.5	25.0
28	21.5	22.0	14.5	16.0	16.0	25.5	22.5	28.0	26.0	28.0	29.5	24.0
29	21.5	18.0	17.5	18.0	---	24.0	24.0	26.5	24.0	29.5	30.5	24.5
30	18.5	18.0	16.5	14.5	---	22.0	23.0	27.0	25.0	29.5	30.5	25.5
31	19.0	---	11.5	15.0	---	18.0	---	28.0	---	29.0	29.5	---
MEAN	23.8	21.0	16.0	13.9	16.9	21.4	22.1	26.0	26.8	27.5	29.4	27.4

GUADALUPE RIVER BASIN

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08188600 GUADALUPE-BLANCO RIVER AUTHORITY CALHOUN CANAL FLUME NO. 1 NEAR LONG MOTT, TX

LOCATION.--Lat 28°29'44", long 96°46'18", Calhoun County, Hydrologic Unit 12100204, on right bank at concrete Parshall flume No. 1, 518 ft upstream from State Highway 185, 1,900 ft downstream from pumping station on Goff Bayou, and 1.1 mi northwest of Long Mott.

PERIOD OF RECORD.--March 1968 to February 1970 (monthly discharge only), March 1970 to current year.

GAGE.--Water-stage and velocity recorders with duplex water-stage recorder until Oct. 5, 1989, and nonrecording gage thereafter. Parshall flume since March 1968. Datum of gage is 23.53 ft above National Geodetic Vertical Datum of 1929. Prior to Mar. 6, 1981, deflection-vane recorder.

REMARKS.--No estimated daily discharges. Records fair. Flow is diverted from Guadalupe River 550 ft upstream from Guadalupe River near Tivoli (station 08188800), and then through a system of canals, Hog Bayou, and Goff Bayou, a distance of 8.9 mi to the pumping station on Goff Bayou 1,900 ft upstream from Flume No. 1.

COOPERATION.--Log of pumping station on Goff Bayou provided by Guadalupe-Blanco River Authority.

AVERAGE DISCHARGE.--23 years (water years 1969-91), 93.0 ft³/s (67,380 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 311 ft³/s July 7, 1968; no flow at times in 1968-74 and 1977-91.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	103	80	16	48	16	44	25	112	181	74	208	56
2	96	93	16	48	13	.00	45	104	144	84	173	48
3	112	112	16	48	16	.00	96	102	120	106	138	68
4	134	112	34	48	16	41	89	92	96	112	128	80
5	118	112	73	48	36	64	33	65	95	120	129	80
6	96	112	70	48	51	64	.00	27	116	128	118	68
7	96	112	46	47	22	37	.00	16	112	122	114	64
8	106	81	16	31	.00	.00	.00	16	71	123	96	64
9	122	48	16	51	.00	.00	.00	7.2	56	138	124	64
10	115	48	16	19	.00	.00	.00	.00	46	144	144	74
11	126	48	16	.00	7.0	.00	.00	.00	34	144	144	80
12	160	48	46	.00	16	.00	.00	.00	48	166	129	88
13	151	69	64	.00	24	.00	.00	27	64	176	112	96
14	144	64	64	.00	5.3	.00	.00	67	80	184	132	104
15	144	75	64	26	27	.00	9.0	106	80	192	122	103
16	121	87	64	48	14	10	25	133	80	192	80	99
17	96	80	64	48	16	43	16	98	95	188	90	129
18	116	80	71	16	26	48	51	48	161	192	96	144
19	112	80	80	.00	32	58	58	53	177	192	96	144
20	107	70	48	.00	30	62	48	71	150	201	117	135
21	96	27	20	.00	59	.00	48	88	161	208	128	126
22	94	26	.00	5.0	50	28	33	107	177	168	136	112
23	80	32	.00	44	16	71	35	93	183	144	112	112
24	80	32	.00	64	16	80	64	70	181	144	96	105
25	80	52	.00	57	16	31	67	83	168	144	96	79
26	82	80	10	48	28	24	48	96	150	154	124	74
27	96	80	52	42	68	15	57	102	144	160	144	73
28	87	80	80	45	61	.00	54	127	144	149	139	80
29	96	80	71	36	---	.00	48	144	105	172	118	80
30	112	53	48	40	---	.00	80	154	72	181	91	109
31	100	---	48	28	---	.00	---	166	---	192	64	---
TOTAL	3378	2153	1229.00	983.00	681.30	720.00	1029.00	2374.20	3491	4794	3738	2738
MEAN	109	71.8	39.6	31.7	24.3	23.2	34.3	76.6	116	155	121	91.3
MAX	160	112	80	64	68	80	96	166	183	208	208	144
MIN	80	26	.00	.00	.00	.00	.00	.00	34	74	64	48
AC-FT	6700	4270	2440	1950	1350	1430	2040	4710	6920	9510	7410	5430
CAL YR 1990	TOTAL	31142.90	MEAN	85.3	MAX	224	MIN	.00	AC-FT	61770		
WTR YR 1991	TOTAL	27308.50	MEAN	74.8	MAX	208	MIN	.00	AC-FT	54170		

GUADALUPE RIVER MAIN STEM

08188800 GUADALUPE RIVER NEAR TIVOLI, TX

LOCATION.--Lat 28°30'20", long 96°53'04", Calhoun-Refugio County line, Hydrologic Unit 12100204, on right bank at diversion and saltwater barrier, one orifice located upstream and one downstream, 550 ft downstream from Calhoun County Irrigation Canal intake, 0.4 mi downstream from San Antonio River, 3.5 mi north of Tivoli, and at mile 10.2. Water-quality sampling site on left bank 474 ft upstream.

DRAINAGE AREA.--10,128 mi².

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WRD TX-68-1: Drainage area.

GAGE.--Duplex water-stage recorder. Datum of gage is 0.04 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Many small diversions above station. Some regulation by powerplants. Upstream regulation same as that for Guadalupe River at Cuero (station 08175800) and San Antonio River at Goliad (station 08188500).

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height (upstream from barrier), 13.7 ft Sept. 22, 1967; minimum, 1.2 ft July 2, 1984, Jan. 25, 1990. Maximum gage height (downstream from barrier), 13.6 ft Sept. 22, 1967; minimum, 0.5 ft July 12, 14, 1967.

Maximum stage since at least 1936, that of Sept. 22, 1967.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in July 1936 reached a stage of 11 ft, present site and datum. Levees along the Navigation Canal from San Antonio Bay to Victoria were built in 1961 thus decreasing the flood plain.

EXTREMES FOR CURRENT YEAR.--Maximum gage height (upstream from barrier), 8.6 ft Apr. 8, 9; minimum, 1.8 ft Dec. 24. Maximum gage height (downstream from barrier), 8.4 ft Apr. 8-11; minimum, 0.8 ft Oct. 10.

GAGE HEIGHT, IN FEET, UPSTREAM AND DOWNSTREAM FROM SALTWATER BARRIER
WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
MAXIMUM VALUES

DAY	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	2.6	2.5	3.8	2.6	3.2	3.2	---	2.3	6.2	6.2	5.7	5.6
2	2.8	2.7	3.9	2.9	3.2	3.2	---	2.4	5.9	5.9	5.6	5.5
3	3.1	3.1	3.9	3.2	3.1	3.1	---	2.5	5.8	5.7	5.4	5.3
4	3.1	3.1	3.9	3.2	2.4	2.4	2.8	2.7	6.4	6.4	5.2	5.2
5	2.5	2.4	3.8	2.5	2.4	2.4	3.0	2.9	7.0	7.0	5.3	5.2
6	2.6	2.5	3.8	2.7	2.5	2.5	3.7	3.6	7.9	7.8	5.3	5.2
7	2.8	2.8	3.9	3.1	2.2	2.2	3.9	3.7	8.1	8.0	5.2	5.1
8	2.8	2.8	3.8	3.5	2.3	2.2	3.8	3.7	8.2	8.1	5.1	5.0
9	2.8	2.8	3.8	2.9	2.2	2.2	4.4	4.2	8.2	8.1	5.0	5.0
10	3.8	1.9	3.8	2.8	2.2	2.2	4.6	4.5	8.2	8.1	5.0	5.0
11	3.8	2.3	2.4	2.4	2.2	2.2	4.8	4.6	7.9	7.8	5.1	5.0
12	3.8	2.4	3.1	3.0	2.4	2.3	5.8	5.6	7.6	7.5	5.1	5.0
13	3.8	3.4	4.9	4.8	2.4	2.4	6.4	6.3	7.4	7.3	4.9	4.8
14	4.3	3.9	4.9	4.8	2.4	2.4	6.8	6.6	7.1	7.1	4.7	4.7
15	4.7	3.7	4.0	3.9	2.4	2.4	6.8	6.7	6.9	6.9	4.9	4.9
16	4.3	2.9	3.4	3.3	2.4	2.4	6.8	6.7	6.6	6.6	5.5	5.4
17	3.8	2.8	3.0	3.0	2.6	2.6	6.8	6.6	6.5	6.5	5.6	5.6
18	3.8	2.5	3.0	2.9	2.6	2.6	6.9	6.7	6.4	6.4	5.6	5.5
19	3.8	2.5	3.1	3.1	2.5	2.5	6.9	6.8	6.2	6.2	5.4	5.3
20	3.8	3.0	3.3	3.3	2.7	2.7	7.0	6.9	5.9	5.9	5.5	5.4
21	3.0	2.9	3.3	3.3	3.0	3.0	7.9	7.7	5.8	5.8	5.8	5.7
22	3.8	2.3	3.3	3.3	2.5	2.5	8.2	8.0	5.7	5.7	5.9	5.8
23	3.8	2.7	3.2	3.2	2.1	2.1	8.2	8.1	5.9	5.8	5.5	5.4
24	3.8	2.7	3.4	3.3	1.9	1.9	8.2	8.1	5.9	5.8	5.2	5.1
25	3.8	2.5	3.4	3.4	2.1	2.0	7.8	7.8	5.9	5.8	5.1	5.0
26	3.8	3.0	3.7	3.6	2.3	2.3	7.6	7.5	5.7	5.6	5.3	5.2
27	3.8	3.1	3.6	3.6	2.6	2.6	7.4	7.3	5.6	5.5	5.4	5.3
28	3.8	2.7	3.3	3.3	2.6	2.6	7.1	7.0	5.6	5.5	5.1	5.0
29	3.8	2.6	2.8	2.8	2.6	2.6	7.1	7.0	---	---	5.1	5.0
30	2.4	2.4	3.1	3.1	---	2.8	6.9	6.9	---	---	4.8	4.7
31	2.4	2.3	---	---	---	2.2	6.5	6.4	---	---	4.8	4.7
MAX	4.7	3.9	4.9	4.8	---	3.2	---	8.1	8.2	8.1	5.9	5.8
MIN	2.4	1.9	2.4	2.4	---	1.9	---	2.3	5.6	5.5	4.7	4.7

GUADALUPE RIVER MAIN STEM

365

08188800 GUADALUPE RIVER NEAR TIVOLI, TX--Continued

GAGE HEIGHT, IN FEET, UPSTREAM AND DOWNSTREAM FROM SALTWATER BARRIER
WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
MAXIMUM VALUES

DAY	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	4.7	4.7	6.6	6.5	6.2	6.1	7.5	7.2	3.2	3.1	2.8	2.7
2	4.8	4.8	6.7	6.6	6.2	6.1	7.4	7.1	3.3	3.2	2.7	2.7
3	4.7	4.6	6.7	6.5	6.0	5.9	7.1	6.8	3.3	3.3	2.9	2.9
4	4.7	4.6	6.9	6.8	5.8	5.7	6.8	6.6	3.3	3.2	3.0	3.0
5	6.2	6.0	6.8	6.7	5.7	5.6	6.5	6.2	3.2	3.2	4.1	4.0
6	7.8	7.6	7.1	7.0	5.5	5.4	6.3	6.1	3.2	3.2	5.4	5.3
7	8.5	8.3	7.6	7.5	5.4	5.2	6.6	6.4	3.2	3.2	5.4	5.3
8	8.6	8.4	7.9	7.8	6.1	6.0	7.0	6.7	3.2	3.2	5.1	5.0
9	8.6	8.4	7.9	7.8	6.2	6.1	7.3	7.1	3.2	3.2	4.6	4.6
10	8.5	8.4	7.8	7.7	6.1	6.0	7.4	7.1	3.2	3.2	4.0	4.0
11	8.5	8.4	7.6	7.5	5.9	5.7	7.3	7.0	3.1	3.1	3.8	3.8
12	8.4	8.3	7.9	7.7	5.8	5.6	7.0	6.8	2.9	2.9	3.9	3.9
13	8.3	8.2	7.9	7.7	5.7	5.4	7.0	6.8	2.7	2.7	3.9	3.8
14	8.1	8.0	7.8	7.7	5.5	5.3	6.9	6.7	2.8	2.7	3.8	3.8
15	8.0	7.9	7.6	7.5	5.4	5.2	6.5	6.3	2.6	2.6	3.8	3.7
16	7.8	7.7	7.4	7.2	5.4	5.1	6.0	5.8	2.8	2.8	3.7	3.6
17	7.8	7.7	7.3	7.1	5.5	5.2	5.6	5.4	2.8	2.7	3.4	3.4
18	8.0	7.8	7.2	7.1	5.3	5.2	5.2	5.0	2.7	2.7	3.3	3.3
19	8.0	7.8	7.1	7.0	5.3	5.2	4.8	4.6	2.6	2.6	3.3	3.2
20	7.9	7.8	7.0	6.9	5.2	5.1	4.6	4.4	2.4	2.4	3.2	3.2
21	7.7	7.5	7.0	6.9	5.3	5.2	4.2	4.1	2.5	2.5	3.4	3.4
22	7.6	7.5	6.9	6.8	5.3	5.2	3.9	3.8	2.5	2.5	3.4	3.4
23	7.4	7.3	6.8	6.7	5.0	4.9	4.1	3.9	2.6	2.6	3.6	3.5
24	7.3	7.2	6.8	6.7	4.4	4.4	4.0	3.9	2.8	2.7	4.0	3.9
25	7.3	7.2	6.7	6.6	4.5	4.5	4.0	4.0	2.7	2.7	4.5	4.4
26	7.2	7.1	6.6	6.5	6.1	6.0	4.0	4.0	2.5	2.5	5.2	5.0
27	7.1	7.0	6.4	6.3	6.8	6.7	3.9	3.9	2.5	2.5	5.4	5.3
28	6.9	6.9	6.3	6.2	6.9	6.8	3.6	3.6	2.9	2.8	5.5	5.4
29	6.8	6.8	6.3	6.2	7.2	7.0	3.4	3.4	3.0	3.0	5.4	5.3
30	6.7	6.6	6.3	6.2	7.5	7.2	3.7	3.1	3.0	3.0	5.1	5.0
31	---	---	6.3	6.2	---	---	3.2	3.1	2.8	2.8	---	---
MAX	8.6	8.4	7.9	7.8	7.5	7.2	7.5	7.2	3.3	3.3	5.5	5.4
MIN	4.7	4.6	6.3	6.2	4.4	4.4	3.2	3.1	2.4	2.4	2.7	2.7

GUADALUPE RIVER MAIN STEM

08188800 GUADALUPE RIVER NEAR TIVOLI, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: August 1965 to current year. Chemical and biochemical analyses: January 1968 to current year. Pesticide analyses: October 1970 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: August 1965 to October 1982.

WATER TEMPERATURES: August 1965 to October 1982.

INSTRUMENTATION.--From August 1965 to October 1982 specific conductance was recorded continuously at this station. From March 1981 to October 1982 water temperature was recorded continuously at this station.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 1,000 microsiemens June 1, 1971, Aug. 3, 1978; minimum, 159 microsiemens

Apr. 28, 1980.

WATER TEMPERATURES (1965-69, 1981-82): Maximum, 32.0°C on many days during summer months; minimum, 8.0°C Jan. 15, 1968.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)
OCT 30...	1610	747	8.0	20.5	8.4	93	2.0	250	37	71	17
DEC 19...	1530	783	7.9	18.5	7.7	83	2.2	280	57	82	19
MAR 07...	1525	710	8.3	19.5	8.3	92	1.4	260	49	77	17
MAY 21...	1815	609	8.0	26.5	6.8	85	2.1	230	39	71	12
JUL 11...	0845	414	7.8	28.5	5.0	65	2.0	140	22	44	7.8
SEP 04...	1630	656	8.1	28.0	6.0	77	0.9	220	37	65	15

DATE	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT FIX END FIELD CACO3 (MG/L)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)
OCT 30...	60	2	4.9	210	46	73	0.20	13	411	3.77	0.030
DEC 19...	56	1	4.5	230	52	73	0.60	10	434	2.97	0.030
MAR 07...	44	1	5.1	210	53	62	0.20	10	396	2.27	0.030
MAY 21...	36	1	5.0	190	40	58	<0.10	14	349	2.03	0.070
JUL 11...	26	0.9	5.3	120	26	34	0.30	12	228	1.80	0.100
SEP 04...	48	1	3.4	190	48	67	0.30	14	373	1.38	0.020

DATE	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)	PHOS- PHORUS ORTHO TOTAL (MG/L AS P)	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)
OCT 30...	3.80	0.040	0.66	0.70	1.30	1.10	--	--	--	--	--
DEC 19...	3.00	0.040	0.46	0.50	0.970	0.990	2	81	<0.5	<1.0	<5
MAR 07...	2.30	0.040	0.56	0.60	0.590	0.540	--	--	--	--	--
MAY 21...	2.10	0.050	0.75	0.80	0.640	0.590	--	--	--	--	--
JUL 11...	1.90	0.110	1.1	1.2	0.540	0.560	4	62	<0.5	<1.0	<5
SEP 04...	1.40	0.040	0.66	0.70	0.580	0.420	--	--	--	--	--

[illegible]

08188800 GUADALUPE RIVER NEAR TIVOLI, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

[illegible]

COPANO CREEK MAIN STEM

08189200 COPANO CREEK NEAR REFUGIO, TX

LOCATION.--Lat 28°18'12", long 97°06'44", Refugio County, Hydrologic Unit 12100405, on right bank at downstream end of bridge on Farm Road 774, 3.6 mi upstream from Alameda Creek, 8.1 mi east of Refugio, and 11.9 mi upstream from mouth.

DRAINAGE AREA.--87.8 mi².

PERIOD OF RECORD.--June 1970 to current year.

Water-quality records.--Chemical and biochemical analyses: July 1970 to December 1988. Pesticide analyses: July 1970 to July 1981.

GAGE.--Water-stage recorder. Datum of gage is 17.25 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for days of flow prior to Feb. 7, which are fair. No known diversions above station. Recording rain gage at station.

AVERAGE DISCHARGE.--21 years, 40.4 ft³/s (6.25 in/yr), 29,270 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,300 ft³/s Sept. 12, 1971 (gage height, 21.00 ft), from rating curve extended above 3,800 ft³/s; no flow at times each year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1921, 22 ft in September 1967, from information by local residents.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 6	Unknown	*430	a*9.02				

a From floodmark.

Minimum daily discharge, no flow most of year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	108	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	62	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	58	.00	.00
4	.00	.00	.00	.00	e2.9	.00	.00	.00	.00	e40	.00	.00
5	.00	.00	.00	.00	e70	.00	12	.00	.00	e25	.00	.00
6	.00	.00	.00	.00	e300	.00	13	.00	.00	e14	.00	.00
7	.00	.00	.00	.00	353	.00	6.8	.00	.00	e9.0	.00	.00
8	.00	.00	.00	.00	253	.00	6.6	.00	1.1	e6.7	.00	.00
9	.00	.00	.00	.00	182	.00	6.9	.02	23	e5.3	.00	.00
10	.00	.00	.00	.00	113	.00	14	.02	12	e4.0	.00	.00
11	.00	.00	.00	.17	53	.00	22	.00	4.1	3.3	.00	.00
12	.00	.00	.00	.01	21	.00	24	.00	2.0	2.2	.00	.00
13	.00	.00	.00	3.1	23	.00	20	.00	1.1	1.4	.00	.00
14	.00	.00	.00	5.3	39	.00	15	.00	.76	.86	.00	.00
15	.00	.00	.00	e2.9	19	.00	10	.00	1.1	.48	.00	.00
16	.00	.00	.00	e.18	3.2	3.6	7.5	.00	.90	.26	.00	.00
17	.00	.00	.00	e.01	1.3	1.6	6.1	8.1	.78	.10	.00	.00
18	.00	.00	.00	.00	.60	.09	4.4	14	.40	.02	.00	.00
19	.00	.00	.00	.68	.23	.00	3.1	11	.12	.00	.00	.00
20	.00	.00	.00	.18	.06	.00	2.3	4.2	.02	.00	.00	.00
21	.00	.00	.00	.00	.02	.00	1.7	1.9	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	1.1	1.2	.00	.01	.00	.00
23	.00	.00	.00	.00	.00	.00	.60	2.4	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.32	4.6	5.5	.00	.00	.04
25	.00	.00	.00	.00	.00	.00	.16	2.5	2.9	.00	.00	3.3
26	.00	.00	.00	.00	.00	.00	.06	1.3	.74	.00	.00	3.3
27	.00	.00	.00	.00	.00	.00	.02	.76	.22	.00	.00	2.0
28	.00	.00	.00	.00	.00	.00	.00	.40	.02	.00	.00	.93
29	.00	.00	.00	.00	---	.00	.00	.16	44	.00	.00	.38
30	.00	.00	.00	.00	---	.00	.00	.05	176	.00	.00	.11
31	.00	---	.00	.00	---	.00	---	.01	---	.00	.00	---
TOTAL	0.00	0.00	0.00	12.53	1434.31	5.29	177.66	52.62	276.76	340.63	0.00	10.06
MEAN	.000	.000	.000	.40	51.2	.17	5.92	1.70	9.23	11.0	.000	.34
MAX	.00	.00	.00	5.3	353	3.6	24	14	176	108	.00	3.3
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	25	2840	10	352	104	549	676	.00	20
CFSM	.00	.00	.00	.00	.58	.00	.07	.02	.11	.13	.00	.00
IN.	.00	.00	.00	.01	.61	.00	.08	.02	.12	.14	.00	.00
CAL YR 1990	TOTAL	13412.91	MEAN	36.7	MAX	2540	MIN	.00	AC-FT	26600	CFSM	.42
WTR YR 1991	TOTAL	2309.86	MEAN	6.33	MAX	353	MIN	.00	AC-FT	4580	CFSM	.07
											IN.	5.68
												.98

e Estimated

MISSION RIVER MAIN STEM

369

08189500 MISSION RIVER AT REFUGIO, TX
(National stream-quality accounting network)

LOCATION.--Lat 28°17'30", long 97°16'44", Refugio County, Hydrologic Unit 12100406, on left bank at upstream side of upstream bridge of two bridges on U.S. Highway 77, 560 ft upstream from Missouri Pacific Railroad Co. bridge, and 0.2 mi southwest of Refugio.

DRAINAGE AREA.--690 mi².

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 1923: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1.00 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 25, 1958, nonrecording gage at site 59 ft downstream at same datum. Nov. 26, 1958, to Apr. 18, 1963, nonrecording gage at present site and datum.

REMARKS.--Records good. There are several small diversions above station.

AVERAGE DISCHARGE.--52 years, 115 ft³/s (2.26 in/yr), 83,320 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 79,000 ft³/s Sept. 12, 1971 (gage height, 38.25 ft); minimum daily, no flow Sept. 1-4, 1989.
Maximum stage since about 1899, that of Sept. 12, 1971.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods in August 1914 and May 17, 1938, reached a stage of 32.3 ft, from information by local residents.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Apr. 7	0400	*2,610	*17.10				

Minimum daily discharge, 4.1 ft³/s Sept. 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	15	8.7	14	15	21	8.6	15	16	203	12	4.1
2	16	15	8.7	16	15	20	8.3	15	12	106	12	4.3
3	16	15	8.2	16	15	19	8.3	14	10	83	13	4.8
4	16	15	7.7	15	57	18	8.3	13	9.0	59	13	5.2
5	16	15	7.7	15	785	17	40	25	8.6	47	13	4.4
6	18	15	8.5	15	1200	17	1630	20	8.3	41	12	5.3
7	19	15	8.6	15	386	17	2340	16	17	38	12	5.6
8	18	19	8.5	15	136	15	2200	16	9.5	38	12	4.9
9	17	17	9.0	18	77	15	625	14	14	60	11	4.3
10	16	16	9.2	20	55	14	202	14	15	80	10	4.2
11	16	16	9.6	17	45	14	112	14	11	58	11	7.8
12	16	15	10	16	40	13	80	13	9.8	43	12	108
13	16	15	10	16	37	13	94	12	8.9	37	10	354
14	16	15	11	16	34	12	108	12	8.6	33	9.0	114
15	16	15	12	16	32	12	61	11	12	28	8.4	44
16	16	15	13	15	30	15	44	11	9.2	23	8.0	27
17	16	15	14	15	29	14	36	11	14	25	7.5	19
18	20	15	14	18	28	26	30	11	216	25	6.9	15
19	18	15	14	20	27	23	27	11	76	24	6.7	14
20	17	15	14	38	25	17	24	11	28	23	17	11
21	16	16	14	27	25	15	22	11	19	22	11	e9.0
22	16	15	14	22	24	13	20	10	15	22	8.6	e8.2
23	15	16	14	19	23	12	19	10	14	23	9.4	9.2
24	15	13	14	19	22	11	18	11	28	24	8.3	20
25	15	13	14	17	23	9.9	18	11	857	21	6.4	15
26	15	13	14	17	22	9.3	17	10	463	20	6.1	16
27	15	11	14	17	21	9.0	17	9.8	144	15	5.8	13
28	15	11	14	17	20	9.5	16	9.5	79	15	5.5	11
29	15	9.2	14	17	---	11	15	9.1	77	15	5.3	9.5
30	15	8.7	14	16	---	8.6	15	13	149	14	4.8	9.1
31	15	---	14	15	---	8.7	---	18	---	13	4.4	---
TOTAL	503	433.9	360.4	549	3248	449.0	7863.5	401.4	2357.9	1278	292.1	880.9
MEAN	16.2	14.5	11.6	17.7	116	14.5	262	12.9	78.6	41.2	9.42	29.4
MAX	20	19	14	38	1200	26	2340	25	857	203	17	354
MIN	15	8.7	7.7	14	15	8.6	8.3	9.1	8.3	13	4.4	4.1
AC-FT	998	861	715	1090	6440	891	15600	796	4680	2530	579	1750
CFSM	.02	.02	.02	.03	.17	.02	.38	.02	.11	.06	.01	.04
IN.	.03	.02	.02	.03	.18	.02	.42	.02	.13	.07	.02	.05

CAL YR 1990	TOTAL	73290.23	MEAN	201	MAX	26300	MIN	.05	AC-FT	145400	CFSM	.29	IN.	3.95
WTR YR 1991	TOTAL	18617.1	MEAN	51.0	MAX	2340	MIN	4.1	AC-FT	36930	CFSM	.07	IN.	1.00

e Estimated

MISSION RIVER MAIN STEM

08189500 MISSION RIVER AT REFUGIO, TX--Continued
(National stream-quality accounting network)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: September 1961 to current year. Chemical and biochemical analyses: January 1968 to current year. Pesticide analyses: October 1970 to April 1979. Sediment analyses: January 1978 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: September 1961 to September 1981.

WATER TEMPERATURE: September 1961 to September 1981.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 100,000 microsiemens Nov. 28, 1965; minimum daily, 85 microsiemens Sept. 13, 1971.

WATER TEMPERATURE: Maximum daily, 39.0°C June 20, 1981; minimum daily, 0.0°C Jan. 18, 1977.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI, KF AGAR (COLS. PER 100 ML)	
OCT 29...	1355	15	3700	7.8	19.0	2.9	10.2	111	0.9	K72	K44	
MAR 06...	1155	3.6	2720	8.0	22.5	7.5	8.5	100	1.4	80	K56	
MAY 21...	1245	11	2430	8.0	26.0	7.0	7.4	92	1.6	140	180	
SEP 04...	1440	5.8	3410	8.0	28.0	8.5	7.3	95	1.0	K56	160	
DATE		HARD-NESS TOTAL (MG/L AS CaCO3)	HARD-NESS NONCARB DISSOLV FLD. AS CaCO3 (MG/L)	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)	CAR-BONATE WATER DIS IT FIELD (MG/L AS CO3)	BICAR-BONATE WATER DIS IT FIELD (MG/L AS HCO3)	ALKA-LINITY WAT DIS TOT IT FIELD (MG/L AS CaCO3)	SULFATE DIS-SOLVED (MG/L AS SO4)
OCT 29...	630	320	190	37	510	9	3.5	0	373	306	49	
MAR 06...	470	190	140	29	360	7	3.7	0	345	282	52	
MAY 21...	480	190	150	25	300	6	3.6	0	355	291	45	
SEP 04...	510	240	150	31	480	9	4.8	0	323	265	38	
DATE		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 CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	
OCT 29...	960	0.40	37	2010	1970	<0.010	<0.010	<0.100	<0.100	0.030		
MAR 06...	680	0.40	28	1610	1470	0.020	<0.010	<0.050	<0.050	0.040		
MAY 21...	570	0.20	37	1340	1310	0.020	<0.010	<0.050	<0.050	0.030		
SEP 04...	940	<0.10	36	1900	1840	<0.010	<0.010	<0.050	<0.050	0.020		
DATE		NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS TOTAL (MG/L AS P)	PHOS-PHORUS DIS-SOLVED (MG/L AS P)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS ORTHO TOTAL (MG/L AS P)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)	SED. SUSP. STEVE DIAM. % FINER THAN .062 MM	
OCT 29...	0.020	0.27	0.30	<0.010	<0.010	<0.010	0.010	12	0.49	52		
MAR 06...	0.050	0.46	0.50	<0.010	<0.010	<0.010	<0.010	41	0.40	80		
MAY 21...	0.030	0.47	0.50	0.040	0.010	<0.010	0.020	93	2.8	66		
SEP 04...	<0.010	0.28	0.30	<0.010	0.040	<0.010	<0.010	481	7.5	33		
DATE		ALUM-INUM, DIS-SOLVED (UG/L AS AL)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	
OCT 29...	10	4	900	<10	<1.0	<1	1	2	<10	<1		
MAR 06...	<10	4	700	<10	<1.0	<1	<1	1	30	<1		
MAY 21...	10	7	590	<1	<2.0	<1	<6	2	7	1		
SEP 04...	<10	6	800	<10	<1.0	<1	<1	1	<10	<1		

MISSION RIVER MAIN STEM

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08189500 MISSION RIVER AT REFUGIO, TX--Continued
(National stream-quality accounting network)

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 29...	70	160	0.4	2	1	<3	<1.0	290	39	<10
MAR 06...	60	200	<0.1	<1	2	<1	<1.0	2700	30	<10
MAY 21...	49	120	<0.1	<20	<1	<1	<1.0	2300	<12	9
SEP 04...	70	<10	0.1	<1	2	<1	<1.0	3300	39	<10

ARANSAS RIVER MAIN STEM

08189700 ARANSAS RIVER NEAR SKIDMORE, TX

LOCATION.--Lat 28°16'56", long 97°37'14", Bee County, Hydrologic Unit 12100407, on right bank 160 ft downstream from centerline of county road bridge, 3.8 mi downstream from confluence of West Aransas and Poesta Creeks, and 4.4 mi northeast of Skidmore.

DRAINAGE AREA.--247 mi².

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

Water-quality records: Chemical analyses: October 1965 to September 1966. Sediment records: February 1966 to September 1975.

GAGE.--Water-stage recorder. Datum of gage is 72.37 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. No known diversion. Chase Field Naval Air Station and the city of Beeville discharge sewage effluent into the stream via Poesta Creek.

AVERAGE DISCHARGE.--27 years, 35.5 ft³/s (1.95 in/yr), 25,720 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 82,800 ft³/s Sept. 22, 1967 (gage height, 42.22 ft, from floodmark), from rating curve extended above 14,000 ft³/s on basis of slope-area measurements of 29,600 and 82,800 ft³/s; no flow at times.

Maximum stage since at least 1914, that of Sept. 22, 1967.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of September 1954 reached a stage of 33 ft (discharge, 19,600 ft³/s), from information by local resident.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Apr. 7	1400	*251	*6.41				

Minimum daily discharge, no flow for many days in August.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	2.1	1.1	1.8	2.5	3.0	3.6	3.9	2.2	1.0	e80	.25	.24		
2	1.9	.82	1.8	2.5	3.0	4.3	3.2	2.2	.79	e30	.05	.39		
3	1.5	.93	2.0	2.6	2.9	5.2	3.0	2.2	.73	e15	.02	.77		
4	1.1	1.1	1.9	2.7	5.7	4.0	2.9	2.7	.61	e10	.02	.37		
5	1.7	1.5	2.0	2.7	32	3.2	71	3.0	.76	e7.0	.03	4.9		
6	2.5	1.7	2.1	2.7	36	3.0	152	2.9	.79	e6.0	.03	4.2		
7	2.3	1.7	2.1	2.7	15	3.0	177	2.4	.79	e15	.07	3.4		
8	2.3	2.5	2.1	2.7	7.5	3.0	83	2.5	.79	e40	.29	21		
9	2.3	3.2	2.1	3.5	5.5	3.0	31	4.4	.72	e30	.29	15		
10	2.3	5.6	2.1	4.7	4.9	3.0	16	13	.78	27	.22	4.8		
11	3.0	4.3	2.1	6.0	4.6	2.7	9.7	5.8	.88	11	.14	2.6		
12	3.8	2.9	2.1	4.7	4.3	2.9	7.3	3.8	.80	5.4	.06	2.0		
13	2.8	2.4	2.3	3.4	3.9	2.7	6.2	3.0	.66	3.3	.00	1.7		
14	2.3	2.1	2.4	2.9	3.7	2.7	5.6	2.8	.60	2.4	.00	2.0		
15	2.1	2.1	2.3	3.1	3.6	2.9	4.9	6.3	e.50	1.9	.00	2.5		
16	1.9	2.1	2.3	5.9	3.3	5.4	4.5	9.4	e3.0	1.5	.04	2.1		
17	1.9	2.1	2.3	5.8	3.3	33	4.4	5.1	e2.5	1.4	.00	1.6		
18	2.2	2.1	2.3	4.5	3.3	15	4.2	3.5	e2.0	1.3	.00	1.4		
19	9.8	2.0	2.3	9.3	3.8	7.7	4.0	2.7	e1.5	.95	.00	1.7		
20	7.2	1.8	2.3	9.2	3.8	6.4	3.9	2.4	e1.0	.69	.00	1.5		
21	3.9	1.9	2.3	4.8	3.5	5.4	3.6	2.2	e.80	.61	.00	1.1		
22	3.0	2.1	2.2	3.5	3.5	4.7	3.5	2.2	e.60	.99	.00	1.2		
23	3.4	2.5	2.1	3.2	3.3	6.5	3.3	2.1	e.50	.95	.00	1.2		
24	3.5	3.3	2.1	3.2	3.3	6.2	3.0	2.2	e.40	1.3	.00	4.2		
25	2.7	6.4	2.1	3.1	3.3	4.3	3.0	2.9	e.35	1.5	.02	15		
26	2.3	3.7	2.5	3.0	3.3	3.5	3.0	2.6	e.30	.89	.03	10		
27	1.8	2.8	2.7	3.2	3.3	3.3	2.9	1.8	e1.5	.64	.00	8.6		
28	1.7	2.6	2.7	3.3	3.3	3.3	2.9	1.8	e2.0	.59	.00	3.9		
29	1.7	2.3	2.8	3.2	---	4.3	2.5	1.6	e90	.82	.00	2.6		
30	1.7	2.0	2.7	3.0	---	4.9	2.2	1.3	e120	1.8	.00	1.8		
31	1.5	---	2.7	3.0	---	6.1	---	1.1	---	.84	.01	---		
TOTAL	84.2	73.65	69.6	120.6	179.9	169.2	627.6	104.1	237.65	300.77	1.57	123.77		
MEAN	2.72	2.45	2.25	3.89	6.42	5.46	20.9	3.36	7.92	9.70	.051	4.13		
MAX	9.8	6.4	2.8	9.3	36	33	177	13	120	80	.29	21		
MIN	1.1	.82	1.8	2.5	2.9	2.7	2.2	1.1	.30	.59	.00	.24		
AC-FT	167	146	138	239	357	336	1240	206	471	597	3.1	245		
CFSM	.01	.01	.01	.02	.03	.02	.08	.01	.03	.04	.00	.02		
IN.	.01	.01	.01	.02	.03	.03	.09	.02	.04	.05	.00	.02		
CAL YR 1990	TOTAL	20456.56	MEAN	56.0	MAX	10800	MIN	.00	AC-FT	40580	CFSM	.23	IN.	3.08
WTR YR 1991	TOTAL	2092.61	MEAN	5.73	MAX	177	MIN	.00	AC-FT	4150	CFSM	.02	IN.	.32

e Estimated

ARANSAS RIVER BASIN

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08189800 CHILTIPI CREEK AT SINTON, TX

LOCATION.--Lat 28°02'48", long 97°30'13", San Patricio County, Hydrologic Unit 12100407, on left bank at upstream end of bridge on U.S. Highway 77, 0.2 mi upstream from Missouri Pacific Railroad Co. bridge, and 0.8 mi northeast of Sinton.

DRAINAGE AREA.--128 mi².

PERIOD OF RECORD.--July 1970 to September 1991 (discontinued).

REVISED RECORDS.--WRD TX-72-1: 1971(P).

GAGE.--Water-stage recorder. Datum of gage is 16.74 ft above National Geodetic Vertical Datum of 1929. Prior to Jan. 23, 1985, at datum 2.00 ft higher.

REMARKS.--Records poor. No known diversions above station. An undetermined amount of water from oil field operations enters the stream upstream at various points.

AVERAGE DISCHARGE.--21 years, 40.3 ft³/s (4.28 in/yr), 29,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,800 ft³/s Apr. 11, 1985 (gage height, 29.45 ft); maximum gage height, 31.10 ft Sept. 12, 1971, present datum; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stages since 1910, 32.27 ft Sept. 22, 1967, and 30.8 ft in April 1930, present datum, from information by local residents.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 30	1400	*896	*7.44	No other peak greater than base discharge.			
Minimum daily discharge, 0.02 ft ³ /s Nov. 6, Jan. 28, May 2-28.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e.04	e.05	e.05	6.0	e.03	e.11	2.0	.19	1.2	484	1.7	e.36
2	e.04	e.03	e.06	8.5	e.03	e.10	.51	1.4	.03	464	1.8	e.22
3	e.04	e.03	e.07	8.6	e.03	e.10	.04	.05	.03	e234	3.8	e.20
4	e.11	e.03	e.06	7.1	2.5	e.10	.03	.05	.03	e120	10	1.4
5	e.26	e.02	e.06	8.8	e140	e.10	37	1.7	.03	e62	4.3	.69
6	e.08	e.02	e.10	5.8	e83	.87	118	.33	.03	e25	.58	30
7	e.08	e.22	e.07	3.6	e23	.38	49	.05	2.8	e23	1.8	110
8	e.08	e3.4	e.09	6.4	e9.7	.46	24	3.8	.05	e22	1.1	148
9	.32	e.68	e1.1	7.5	e2.4	.42	15	1.1	11	e22	.00	e81
10	e.08	e.11	e.09	4.4	e.76	.42	5.4	.05	6.5	e15	.00	e66
11	e.08	e.08	e.07	2.4	.42	e.30	2.9	.05	2.8	e14	.43	e48
12	e.08	e.07	e.06	.82	.42	e.20	2.4	.05	3.2	e9.0	.06	e29
13	e.08	e.06	e.08	.04	.42	e.10	.64	.05	.67	5.9	.01	e23
14	e.08	e.07	e.10	.37	.42	e.06	2.2	3.2	.02	5.5	.01	e20
15	e.08	e.07	e.08	3.3	.20	e.04	.21	.11	.03	5.1	.00	e15
16	e.05	e.07	e.07	.20	12	e.06	.08	.03	.03	4.8	.00	e12
17	e.05	e.07	e.07	.09	e9.7	e.07	.08	15	44	4.5	.00	e9.0
18	e1.2	e.08	e.07	.48	e6.0	e.06	.08	12	21	4.2	.01	e5.8
19	e1.4	e.15	e.11	e.06	e4.6	e.05	5.7	3.8	13	4.1	.20	e4.0
20	e1.1	e.08	e.08	e.05	7.3	e.20	1.0	5.1	4.0	3.7	.07	e3.2
21	e.48	e.07	e.09	e.05	e2.5	e.90	.05	9.0	1.8	3.4	.03	e5.4
22	e.18	e.06	e.15	e.05	e1.0	e.50	.06	3.8	.63	4.8	.01	e6.2
23	e.18	e.05	e.09	.07	e.30	e.35	.08	.10	.65	3.4	.01	e7.0
24	e.14	e.06	e.08	.24	e.25	e.60	.08	.02	1.4	3.0	.00	e4.0
25	e.14	e6.0	e.10	1.1	e.20	e.40	.08	.02	.96	2.8	.00	e9.9
26	e.08	e.06	70	e.70	e.15	e.06	.08	.02	.46	2.6	.02	e13
27	e.08	e.07	56	.43	e.12	.03	.08	.02	.58	2.5	.01	e6.2
28	e.08	e.06	1.7	.02	e.11	1.4	.05	.02	6.7	2.3	.00	e1.9
29	e.08	e.05	e.50	.03	---	5.3	.05	6.7	21	2.1	.20	e.62
30	e.05	e.05	e.40	.42	---	.03	.05	9.8	498	2.0	8.5	e.22
31	e.05	---	1.2	.03	---	4.7	---	4.8	---	1.7	e47	---
TOTAL	6.87	11.92	132.85	77.65	307.56	18.47	266.93	82.41	642.63	1562.4	81.65	661.31
MEAN	.22	.40	4.29	2.50	11.0	.60	8.90	2.66	21.4	50.4	2.63	22.0
MAX	1.4	6.0	70	8.8	140	5.3	118	15	498	484	47	148
MIN	.04	.02	.05	.02	.03	.03	.03	.02	.02	1.7	.00	.20
AC-FT	14	24	264	154	610	37	529	163	1270	3100	162	1310
CFSM	.00	.00	.03	.02	.09	.00	.07	.02	.17	.39	.02	.17
IN.	.00	.00	.04	.02	.09	.01	.08	.02	.19	.45	.02	.19
CAL YR 1990	TOTAL	757.66	MEAN	2.08	MAX	136	MIN	.00	AC-FT	1500	CFSM	.02
WTR YR 1991	TOTAL	3852.65	MEAN	10.6	MAX	498	MIN	.00	AC-FT	7640	CFSM	.08
											IN.	.22
												1.12

e Estimated

NUECES RIVER MAIN STEM

08190000 NUECES RIVER AT LAGUNA, TX

LOCATION.--Lat 29°25'42", long 99°59'49", Uvalde County, Hydrologic Unit 12110101, on right bank 0.5 mi downstream from Sycamore Creek, 1.0 mi northeast of Laguna, and at mile 370.8.

DRAINAGE AREA.--737 mi².

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 1562: 1930, 1931(M), 1932, 1939. WDR TX-83-3: Drainage area.

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

REMARKS.--No estimated daily discharges. Records good. There are many small diversions above station for irrigation.

AVERAGE DISCHARGE.--68 years, 152 ft³/s (2.80 in/yr), 110,100 acre-ft/yr.

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

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Sept. 16	0930	*36,700	*16.33	No other peak greater than base discharge.			

Minimum daily discharge, 38 ft³/s July 20.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	151	116	108	92	94	92	71	64	49	55	64	43		
2	148	114	108	93	93	88	71	71	49	57	60	43		
3	146	114	106	94	93	85	71	71	48	51	58	43		
4	144	124	105	94	96	85	72	71	47	51	55	45		
5	141	121	104	94	104	84	123	70	46	50	55	46		
6	138	117	104	94	105	84	105	68	46	48	53	48		
7	136	121	103	93	101	84	95	66	47	47	52	55		
8	137	132	102	92	98	83	88	64	45	52	51	52		
9	160	129	101	94	97	82	85	62	46	49	50	49		
10	146	125	101	96	97	81	84	62	45	45	48	48		
11	142	123	99	94	96	81	84	61	45	44	47	49		
12	136	122	99	92	95	80	84	59	55	43	46	49		
13	136	120	98	91	95	78	82	71	48	43	46	54		
14	134	119	98	91	94	77	80	72	60	49	46	78		
15	132	118	98	92	92	78	78	70	92	44	46	1240		
16	128	117	100	92	92	80	76	70	79	42	44	16800		
17	129	116	100	96	93	80	77	68	73	41	44	4550		
18	132	115	97	103	93	78	77	66	69	40	45	1940		
19	128	115	95	104	94	77	76	64	66	39	47	1620		
20	126	113	96	101	91	77	73	62	63	38	45	1450		
21	136	113	95	99	94	78	72	59	61	53	44	1150		
22	136	114	95	100	93	77	71	58	59	81	44	952		
23	130	114	95	100	91	76	70	57	57	120	44	821		
24	128	113	95	98	90	75	70	56	55	105	44	729		
25	126	112	94	97	90	75	70	55	54	92	43	648		
26	123	112	94	96	90	75	70	54	51	84	43	589		
27	122	112	94	95	89	75	70	52	49	79	42	546		
28	120	110	94	95	89	73	70	51	48	75	42	508		
29	119	109	95	94	---	72	67	51	50	72	42	481		
30	118	108	95	94	---	71	65	50	53	69	41	455		
31	117	---	93	96	---	72	---	49	---	67	41	---		
TOTAL	4145	3508	3061	2956	2639	2453	2347	1924	1655	1825	1472	35181		
MEAN	134	117	98.7	95.4	94.2	79.1	78.2	62.1	55.2	58.9	47.5	1173		
MAX	160	132	108	104	105	92	123	72	92	120	64	16800		
MIN	117	108	93	91	89	71	65	49	45	38	41	43		
AC-FT	8220	6960	6070	5860	5230	4870	4660	3820	3280	3620	2920	69780		
CFSM	.18	.16	.13	.13	.13	.11	.11	.08	.07	.08	.06	1.59		
IN.	.21	.18	.15	.15	.13	.12	.12	.10	.08	.09	.07	1.78		
CAL YR 1990	TOTAL	85830	MEAN	235	MAX	6240	MIN	49	AC-FT	170200	CFSM	.32	IN.	4.33
WTR YR 1991	TOTAL	63166	MEAN	173	MAX	16800	MIN	38	AC-FT	125300	CFSM	.23	IN.	3.19

NUECES RIVER MAIN STEM

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08190000 NUECES RIVER AT LAGUNA, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: May 1949 to June 1952, September 1964 to current year. Chemical, biochemical, and pesticide analyses: February 1970 to current year. Sediment analyses: January 1966.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI, KF AGAR (COLS. PER 100 ML)	
		HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	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)
FEB 12...	1038	96	397	8.6	16.5	5	--	9.3	99	0.9	--	K20	
MAY 29...	1240	44	386	7.9	26.5	3	0.50	9.0	113	0.6	K16	K8	
AUG 14...	0812	46	421	7.8	25.0	<1	0.50	6.6	84	4.5	43	250	
DATE		SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE (MG/L AS N)	NITRO-GEN, NITRITE (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS TOTAL (MG/L AS P)	PHOS-PHORUS ORTHO TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS-SOLVED (UG/L AS AS)
FEB 12...	200	2	58	14	7.6	0.2	0.80	200	14	14	<0.10	10	
MAY 29...	200	19	57	13	7.2	0.2	3.5	180	13	21	0.20	11	
AUG 14...	220	23	63	15	7.6	0.2	0.90	200	13	11	0.10	13	
DATE		BARIUM, DIS-SOLVED (UG/L AS BA)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	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)
FEB 12...	36	<0.5	<1.0	<5	<3	<10	<3	<10	6	<1	0.1	<10	
MAY 29...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 14...	44	0.5	<1.0	<5	<3	<10	3	<10	6	<1	<0.1	<10	
DATE		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)	PCB, TOTAL (UG/L)	NAPH-THA-LENES, POLY-CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR-DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)
FEB 12...	<10	<1	<1.0	230	<6	5	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010
MAY 29...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 14...	<10	<1	<1.0	260	<6	5	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010
DATE		DDT, TOTAL (UG/L)	DI-AZINON, TOTAL (UG/L)	DI-ELDRIN TOTAL (UG/L)	DI-SYSTON TOTAL (UG/L)	ENDO-SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA-CHLOR, TOTAL (UG/L)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA-THION, TOTAL (UG/L)	METH-OXY-CHLOR, TOTAL (UG/L)
FEB 12...	<0.010	<0.01	<0.010	<0.01	<0.010	<0.010	<0.01	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01
MAY 29...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 14...	<0.010	<0.01	<0.010	<0.01	<0.010	<0.010	<0.01	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01

NUECES RIVER MAIN STEM

08190000 NUECES RIVER AT LAGUNA, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	PHORATE TOTAL (UG/L)	SILVEX, TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)
FEB 12...	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<1	<0.01	<0.01	<0.01	<0.01
MAY 29...	--	--	--	--	--	--	--	--	--	--	--	--
AUG 14...	<0.01	--	<0.01	<0.01	<0.1	<0.01	<0.01	<1	<0.01	<0.01	<0.01	<0.01

NUECES RIVER BASIN

377

08190500 WEST NUECES RIVER NEAR BRACKETTVILLE, TX

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

DRAINAGE AREA.--694 mi².

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

REVISED RECORDS.--WSP 1312: 1949(M). WDR TX-83-3: Drainage area.

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

REMARKS.--No estimated daily discharges. Records good. In ordinary years, a large part of streamflow is lost by seepage into the Balcones Fault Zone of the Edwards and associated limestones above station. No known diversion above station.

AVERAGE DISCHARGE.--46 years (water years 1940-50, 1957-91), 34.4 ft³/s (24,920 acre-ft/yr).

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

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Sept. 16	0700	*25,100	a*16.40	No other peak greater than base discharge.			

a From floodmark.

Minimum daily discharge, 0.22 ft³/s for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.6	1.1	.78	.64	.54	.57	.71	.51	.22	.29	1.0	.26
2	4.9	1.1	.78	.64	.57	.54	.71	.47	.22	.26	.97	.30
3	4.6	1.1	.75	.64	.57	.51	.71	.49	.22	.26	.86	.30
4	4.0	1.3	.75	.64	.63	.54	.73	.66	.22	.22	.79	.43
5	3.7	1.0	.78	.64	.62	.57	1.5	.65	.22	.22	.82	.67
6	3.4	1.1	.78	.64	.57	.57	1.1	.54	.49	.22	.76	.78
7	3.2	1.2	.78	.64	.56	.57	1.1	.48	.29	.22	.68	.80
8	2.7	1.2	.78	.64	.51	.57	1.1	.35	.25	.27	.64	.80
9	2.4	1.1	.78	.64	.51	.61	1.1	.35	.22	.29	.64	.78
10	2.2	1.0	.78	.62	.51	.64	1.1	.35	.22	.30	.63	.71
11	2.2	1.0	.78	.55	.51	.64	.86	.35	.22	.29	.56	.71
12	2.2	1.0	.78	.51	.51	.62	.86	.35	.22	.26	.47	.65
13	2.0	1.0	.78	.51	.49	.64	.87	.71	.22	.26	.44	.62
14	1.9	1.0	.84	.51	.45	.67	.74	.47	.40	.30	.40	1.0
15	1.9	1.0	.86	.51	.45	.71	.71	.39	.53	.30	.40	1540
16	1.9	1.0	.86	.51	.45	.71	.71	.35	.58	.32	.40	4090
17	1.8	1.0	.86	.59	.45	.71	.71	.35	.71	.35	.40	367
18	1.7	1.0	.72	.80	.50	.71	.71	.34	.71	.35	.40	228
19	1.7	.95	.74	.61	.55	.71	.67	.30	.65	.35	.40	200
20	1.6	.89	.78	.52	.51	.71	.64	.30	.59	.30	.40	185
21	1.8	.86	.78	.51	.56	.73	.64	.30	.56	.42	.40	176
22	1.6	.86	.73	.51	.51	.70	.64	.30	.51	1.0	.39	168
23	1.5	.86	.61	.51	.51	.64	.57	.30	.45	2.1	.35	158
24	1.4	.86	.57	.51	.51	.69	.57	.30	.35	4.8	.35	146
25	1.3	.86	.57	.51	.49	.73	.57	.30	.31	4.6	.35	124
26	1.3	.86	.57	.51	.45	.78	.57	.26	.30	3.2	.35	112
27	1.3	.86	.58	.51	.45	.78	.61	.22	.26	2.2	.35	104
28	1.2	.86	.64	.51	.45	.76	.61	.22	.26	1.6	.35	94
29	1.2	.80	.67	.51	---	.59	.55	.22	.26	1.3	.35	83
30	1.2	.78	.71	.55	---	.67	.51	.22	.31	1.1	.31	70
31	1.2	---	.67	.51	---	.71	---	.22	---	1.1	.28	---
TOTAL	70.6	29.50	22.84	17.65	14.39	20.30	23.18	11.62	10.97	29.05	15.89	7853.81
MEAN	2.28	.98	.74	.57	.51	.65	.77	.37	.94	.51	.262	
MAX	5.6	1.3	.86	.80	.63	.78	1.5	.71	.71	4.8	1.0	4090
MIN	1.2	.78	.57	.51	.45	.51	.51	.22	.22	.28	.28	.26
AC-FT	140	59	45	35	29	40	46	23	22	58	32	15580
CAL YR 1990	TOTAL	30703.82	MEAN	84.1	MAX	8060	MIN	.08	AC-FT	60900		
WTR YR 1991	TOTAL	8119.80	MEAN	22.2	MAX	4090	MIN	.22	AC-FT	16110		

NUECES RIVER MAIN STEM

08192000 NUECES RIVER BELOW UVALDE, TX

LOCATION.--Lat 29°07'25", long 99°53'40", Uvalde County, Hydrologic Unit 12110103, on right bank at McDaniel Ranch, 5.7 mi upstream from bridge on U.S. Highway 83, 8.8 mi southwest of Uvalde, 18.2 mi downstream from West Nueces River, and at mile 338.7.

DRAINAGE AREA.--1,861 mi².

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

REVISED RECORDS.--WSP 1732: 1956(M). WDR TX-83-3: Drainage area.

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

REMARKS.--No estimated daily discharges. Records good. Part of the flow of the Nueces River enters the Edwards and associated limestones in the Balcones Fault Zone that crosses the basin downstream from Laguna (station 08190000) and upstream from this station. At low stage, most of headwater flow enters this formation. There are many small diversions above station for irrigation. Two observations of water temperature were made during the year.

AVERAGE DISCHARGE.--52 years, 126 ft³/s (91,290 acre-ft/yr).

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

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

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 250 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Sept. 16	2230	*36,600	*14.33	No other peak greater than base discharge.			
Minimum daily discharge, 8.4 ft ³ /s Aug. 17, 20-23, 27-30.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	95	55	47	40	35	34	28	22	16	15	9.9	11
2	92	54	46	40	35	32	28	25	16	15	9.5	9.0
3	90	53	45	40	35	32	28	25	16	14	9.2	9.1
4	88	51	45	39	37	32	28	23	15	13	9.7	9.3
5	85	51	45	40	39	32	33	22	15	13	12	9.0
6	82	51	45	40	37	31	28	22	15	12	9.9	9.0
7	79	55	45	40	36	32	29	22	15	12	10	10
8	76	57	45	39	36	32	28	23	15	14	9.8	9.8
9	83	53	45	40	36	32	27	22	14	14	9.7	9.5
10	81	56	44	39	36	32	27	22	14	12	9.5	9.5
11	80	56	44	38	36	32	27	22	14	11	9.2	9.3
12	78	55	44	37	36	31	28	21	14	11	9.0	9.0
13	76	55	44	38	36	30	28	24	14	11	8.7	9.1
14	73	55	44	38	36	31	26	21	14	11	9.0	9.6
15	72	53	44	36	36	31	27	20	17	12	8.8	15
16	70	53	43	37	36	31	27	20	14	11	8.7	13200
17	68	53	42	39	36	29	26	19	13	11	8.4	9540
18	65	51	40	43	36	29	26	19	13	10	8.5	2490
19	63	51	41	37	36	30	26	19	12	10	8.7	1450
20	62	51	42	37	35	30	25	18	12	10	8.4	1380
21	64	51	42	37	35	29	25	18	12	12	8.4	1100
22	61	50	41	36	35	28	25	18	12	15	8.4	903
23	63	50	41	36	35	29	25	18	12	11	8.4	783
24	64	50	41	36	35	29	25	18	12	11	8.7	656
25	62	50	41	36	34	29	25	18	12	11	9.1	561
26	60	49	41	36	34	29	25	18	12	11	8.8	492
27	60	48	40	36	34	29	24	17	12	11	8.4	439
28	58	48	40	36	34	28	24	17	12	10	8.4	403
29	57	47	41	36	---	26	23	16	12	11	8.4	373
30	56	47	40	35	---	28	23	16	14	10	8.4	348
31	55	---	40	35	---	28	---	16	---	10	8.8	---
TOTAL	2218	1559	1328	1172	997	937	794	621	410	365	280.8	34265.2
MEAN	71.5	52.0	42.8	37.8	35.6	30.2	26.5	20.0	13.7	11.8	9.06	1142
MAX	95	57	47	43	39	34	33	25	17	15	12	13200
MIN	55	47	40	35	34	26	23	16	12	10	8.4	9.0
AC-FT	4400	3090	2630	2320	1980	1860	1570	1230	813	724	557	67970

CAL YR 1990	TOTAL	78297.1	MEAN	215	MAX	8630	MIN	8.2	AC-FT	155300
WTR YR 1991	TOTAL	44947.0	MEAN	123	MAX	13200	MIN	8.4	AC-FT	89150

NUECES RIVER MAIN STEM

379

08193000 NUECES RIVER NEAR ASHERTON, TX

LOCATION.--Lat 28°30'00", long 99°40'54", Dimmit County, Hydrologic Unit 12110103, on right bank 28 ft downstream from bridge on Farm Road 190, 0.1 mi downstream from El Moro Creek, 5.8 mi northeast of Asherton, and at mile 266.0.

DRAINAGE AREA.--4,082 mi².

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

REVISED RECORDS.--WSP 1118: 1944.

GAGE.--Water-stage recorder. Datum of gage is 470.92 ft above National Geodetic Vertical Datum of 1929. Prior to Feb. 2, 1940, nonrecording gage at same site and datum.

REMARKS.--Records good to September 17 and poor thereafter. Part of flow of the Nueces River and its headwater tributaries enters the Edwards and associated limestones in the Balcones Fault Zone, that crosses basin between Laguna and Uvalde (stations 08190000 and 08192000, respectively). Considerable loss of flow into various permeable formations occurs downstream from the Balcones Fault Zone. Since March 1948, flow slightly regulated by Upper Nueces Reservoir (capacity, 7,590 acre-ft), 13 mi upstream. Many small diversions above station for irrigation. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--52 years, 183 ft³/s (132,600 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 28,500 ft³/s Oct. 6, 1959 (gage height, 30.88 ft); no flow for many days most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1900, 33 ft June 17, 1935; flood of June 30, 1913, reached about same stage, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Sept. 18	2400	*5,840	*25.74	No other peak greater than base discharge.			
Minimum daily discharge, no flow for many days.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	70	13	18	7.1	12	7.5	.07	.13	.02	.00	.00	.00
2	69	11	17	7.5	11	5.7	.09	.08	.02	.00	.00	.00
3	66	10	14	9.0	11	5.0	.10	.05	.02	.00	.00	.00
4	64	10	11	9.5	15	4.1	.10	.04	.02	.00	.00	.00
5	62	8.6	11	11	19	3.7	.88	.04	.01	.00	.00	.00
6	59	7.4	10	15	19	3.2	.81	.04	.00	.00	.00	.08
7	54	7.8	9.3	19	18	2.2	.43	.04	.02	.00	.00	.65
8	49	22	8.2	21	16	1.5	.38	.04	.01	.00	.00	1.4
9	58	23	7.3	22	15	.91	.36	.04	.01	.00	.00	.32
10	75	29	5.8	22	15	.64	.45	.04	.00	.00	.00	.08
11	68	32	4.9	21	16	.64	1.8	.04	.00	.00	.00	.04
12	60	33	5.0	21	18	.76	7.0	.04	.00	.00	.01	.03
13	54	32	5.0	20	17	.61	2.4	.10	.00	.00	.01	.03
14	51	31	5.0	19	16	.55	.74	.14	.00	.00	.01	.03
15	50	31	4.7	17	15	.39	.28	.04	.00	.00	.01	.03
16	51	30	4.4	14	14	.46	1.4	.36	.00	.00	.01	.03
17	49	30	5.4	8.9	14	.79	18	46	.00	.00	.00	.03
18	42	29	7.8	11	15	.81	20	24	.00	.00	.00	3280
19	36	29	12	8.4	13	.69	16	9.9	.00	.00	.00	4830
20	32	29	12	9.6	11	.62	11	1.9	.00	.00	.00	e2500
21	28	29	9.1	11	10	.56	7.1	.42	.00	.00	.00	e1500
22	24	29	7.1	13	10	.55	4.5	.11	.00	.00	.00	e800
23	21	28	5.1	15	11	.48	2.7	.04	.00	.00	.00	e1400
24	18	29	3.6	17	11	.42	1.9	.04	.00	.00	.00	e1200
25	18	31	3.4	21	12	.41	1.6	.03	.00	.00	.00	e1000
26	19	33	6.0	20	12	.44	1.4	.03	.00	.00	.00	856
27	18	34	9.4	18	12	.33	1.1	.03	.00	.00	.00	730
28	18	32	8.9	18	10	.26	.79	.03	.00	.00	.00	629
29	16	28	8.1	17	---	.15	.47	.03	.00	.00	.00	514
30	15	21	7.7	16	---	.10	.23	.03	.00	.00	.00	418
31	14	---	7.6	13	---	.07	---	.02	---	.00	.00	---
TOTAL	1328	741.8	253.8	472.0	388	44.54	104.08	83.87	0.13	0.00	0.05	19659.75
MEAN	42.8	24.7	8.19	15.2	13.9	1.44	3.47	2.71	.004	.000	.002	655
MAX	75	34	18	22	19	7.5	20	46	.02	.00	.01	4830
MIN	14	7.4	3.4	7.1	10	.07	.07	.02	.00	.00	.00	.00
AC-FT	2630	1470	503	936	770	88	206	166	.3	.00	.1	39000
CAL YR 1990	TOTAL	119379.79	MEAN	327	MAX	8440	MIN	.00	AC-FT	236800		
WTR YR 1991	TOTAL	23076.02	MEAN	63.2	MAX	4830	MIN	.00	AC-FT	45770		

e Estimated

NUECES RIVER MAIN STEM

08194000 NUECES RIVER AT COTULLA, TX

LOCATION.--Lat 28°25'34", long 99°14'23", La Salle County, Hydrologic Unit 12110105, on left bank at downstream side of bridge on U.S. Highway 81, 0.4 mi upstream from Missouri Pacific Railroad Co. bridge, 0.8 mi southwest of Cotulla, 1.0 mi upstream from Lind Dam, and at mile 216.9.

DRAINAGE AREA.--5,171 mi².

PERIOD OF RECORD.--November 1923 to current year. November 1923 to September 1926 monthly discharge only, published in WSP 1312; figures of daily discharge for Oct. 31, 1923, to Sept. 30, 1926, published in WSP 588, 608, and 628, have been found to be unreliable and should not be used. Gage-height records collected in this vicinity in 1914-17 and since 1922 are contained in reports of the National Weather Service.
Water-quality records.--Chemical analyses: April 1962 to May 1968.

REVISED RECORDS.--WSP 1732: 1957(M). WDR TX-83-3: Drainage area. See PERIOD OF RECORD.

GAGE.--Water-stage recorder. Datum of gage is 368.08 ft above National Geodetic Vertical Datum of 1929. From Oct. 31, 1923, to Aug. 3, 1924, nonrecording gage at approximate site of present gage at datum 7.28 ft higher. Aug. 4, 1924, to Nov. 19, 1934, nonrecording gage at site 5,000 ft downstream at datum 8.42 ft higher. From Nov. 20, 1934, to July 14, 1938, water-stage recorder, and July 15, 1938, to Apr. 30, 1963, nonrecording gage, at present site and datum.

REMARKS.--No estimated daily discharges. Records good. Part of the flow of the Nueces River and its headwater tributaries enters the Edwards and associated limestones in the Balcones Fault Zone, that crosses basin between Laguna and Uvalde (stations 08190000 and 08192000, respectively). Considerable loss of flow into various permeable formations occurs downstream from the Balcones Fault Zone. Low flow is slightly regulated by small storage reservoirs above station, with most diverted above station by pumping (see REMARKS for Nueces River near Asherton, station 08193000). Satellite telemeter at station.

AVERAGE DISCHARGE.--67 years (water years 1925-91), 265 ft³/s (192,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 82,600 ft³/s June 18, 1935 (gage height, 32.4 ft, from floodmark), from rating curve extended above 43,000 ft³/s on basis of slope-area measurement of peak flow; no flow at times each year.
Maximum stage since at least 1879, that of June 18, 1935.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 19, 1899, reached a stage of 29.7 ft, from information furnished by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Sept. 23	0500	*2,590	*12.79	No other peak greater than base discharge.			

Minimum daily discharge, no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	86	14	28	2.1	20	8.9	.00	3.0	2.0	.00	.00	.00
2	75	13	29	2.5	20	8.8	.00	2.4	1.4	.00	.00	.00
3	66	11	25	4.0	18	8.1	.00	2.2	1.0	.00	.00	.00
4	58	9.1	21	5.3	115	7.9	.00	1.8	.51	.00	.00	.00
5	54	7.8	18	6.0	113	7.9	4.9	1.7	.15	.00	.00	.00
6	51	6.7	15	6.3	58	7.9	9.3	1.2	.03	.00	.00	.00
7	50	5.3	13	6.6	55	6.4	2.3	.88	.00	.00	.00	.00
8	50	10	11	6.6	96	4.7	1.2	.77	.00	.00	.00	.00
9	54	8.0	8.6	7.4	111	3.2	.75	.58	.00	.00	.00	.00
10	58	7.2	7.4	9.3	108	2.6	50	.30	.00	.00	.00	.00
11	50	12	6.7	12	121	2.3	294	.13	.00	.00	.00	.00
12	52	19	5.8	15	109	2.0	277	.05	.00	.00	.00	.00
13	61	23	5.1	18	84	1.5	233	.25	.00	.00	.00	.00
14	61	27	4.3	20	59	1.1	177	.30	.00	.00	.00	.00
15	55	30	3.6	21	43	.87	129	.14	.00	.00	.00	.00
16	49	32	3.0	21	34	.77	98	.06	.00	.00	.00	.00
17	46	33	3.0	21	27	.71	73	.16	.00	.00	.00	.00
18	44	33	2.5	23	25	.50	57	.10	.00	.00	.00	.00
19	42	31	2.0	20	21	.38	44	.04	.00	.00	.00	.00
20	43	29	1.8	19	20	.32	32	.01	.00	.00	.00	76
21	40	28	1.7	17	17	.32	27	.00	.00	.00	.00	913
22	35	26	1.3	15	16	.24	26	.00	.00	.00	.00	1960
23	31	24	1.2	13	16	.17	26	.07	.00	.00	.00	2500
24	26	24	1.3	12	14	.10	22	4.3	.00	.00	.00	2100
25	22	24	2.9	10	13	.06	19	4.6	.00	.00	.00	1730
26	20	24	5.0	9.3	12	.04	17	3.6	.00	.00	.00	1460
27	17	25	5.7	10	10	.02	13	2.6	.00	.00	.00	1190
28	15	25	5.7	13	9.3	.00	10	2.9	.00	.00	.00	889
29	14	24	4.9	15	---	.00	6.9	3.1	.00	.00	.00	688
30	14	26	3.7	16	---	.00	4.4	2.8	.00	.00	.00	574
31	14	---	2.6	18	---	.00	---	2.3	---	.00	.00	---
TOTAL	1353	611.1	249.8	394.4	1364.3	77.80	1653.75	42.34	5.09	0.00	0.00	14080.00
MEAN	43.6	20.4	8.06	12.7	48.7	2.51	55.1	1.37	.17	.000	.000	469
MAX	86	33	29	23	121	8.9	294	4.6	2.0	.00	.00	2500
MIN	14	5.3	1.2	2.1	9.3	.00	.00	.00	.00	.00	.00	.00
AC-FT	2680	1210	495	782	2710	154	3280	84	10	.00	.00	27930
CAL YR 1990	TOTAL	130446.98	MEAN	357	MAX	8420	MIN	.00	AC-FT	258700		
WTR YR 1991	TOTAL	19831.58	MEAN	54.3	MAX	2500	MIN	.00	AC-FT	39340		

NUECES RIVER BASIN

381

08194200 SAN CASIMIRO CREEK NEAR FREER, TX

LOCATION.--Lat 27°57'53", long 98°58'00", Webb County, Hydrologic Unit 12110105, at downstream side of bridge on State Highway 44, 11.4 mi upstream from mouth, and 22 mi northwest of Freer.

DRAINAGE AREA.--469 mi².

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

GAGE.--Water-stage recorder. Datum of gage is 298 ft, from State Department of Highways and Public Transportation datum.

REMARKS.--No estimated daily discharges. Records good. One observation of water temperature was made during the year.

AVERAGE DISCHARGE.--29 years, 56.3 ft³/s (40,790 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 82,000 ft³/s Oct. 17, 1971 (gage height, 26.87 ft), from rating curve extended above 21,000 ft³/s on basis of flow-through-culverts, contracted opening, and flow-over-road determination of 82,000 ft³/s; no flow for many days each year.
Maximum stage since at least 1946, that of Oct. 17, 1971.

EXTREMES OUTSIDE PERIOD OF RECORD.--Second highest stage, 26 ft (discharge 65,200 ft³/s), occurred in 1954, from information by State Department of Highways and Public Transportation.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 14	2300	1,220	16.64	Aug. 7	2400	898	15.40
May 18	0200	*1,520	*17.44				

Minimum daily discharge, no flow most of year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.46	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	4.1	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.26	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.92
5	.00	.00	.00	.00	.00	.00	1.0	11	.00	.04	.00	286
6	.00	.00	.00	.00	.00	.00	12	53	.00	.00	75	76
7	.00	.00	.00	.00	.00	.00	16	16	.00	.00	201	113
8	.00	11	.00	.00	.00	.00	6.3	5.3	.00	.00	360	32
9	112	18	.00	.00	.00	.00	1.2	1.6	.00	.00	15	15
10	159	7.9	.00	.00	.00	.00	.04	.07	.00	.00	3.5	7.4
11	35	2.9	.00	.00	.00	.00	.00	.00	21	.00	.12	3.9
12	47	.48	.00	.00	.00	.00	.00	.00	2.4	.00	.00	7.4
13	25	.00	.00	.00	.00	.00	.00	312	.13	.00	.00	3.0
14	9.6	.00	.00	.00	.00	.00	.00	993	.00	.00	.00	1.0
15	4.7	.00	.00	.00	.00	.00	.00	993	.00	.00	.00	.22
16	2.0	.00	.00	.00	.00	.00	.00	406	.00	.00	.00	.02
17	.74	.00	.00	.00	.00	.00	.00	1190	101	.00	.00	.01
18	.13	.00	.00	.00	.00	.00	.00	1110	122	.00	.00	1.4
19	.00	.00	.00	.00	.00	.00	.00	544	34	.00	.00	7.3
20	.00	.00	.00	.00	.00	.00	.00	127	13	.00	.00	79
21	.00	.00	.00	.00	.00	.00	.00	27	5.4	.00	.00	15
22	.00	.00	.00	.00	.00	.00	.00	16	1.7	.00	.00	3.2
23	.00	.00	.00	.00	.00	.00	.00	11	.26	.00	.00	.57
24	.00	.00	.00	.00	.00	.00	.00	7.9	.45	.00	.00	12
25	.00	.00	.00	.00	.00	.00	.00	5.4	1.6	.00	.00	14
26	.00	.00	.00	.00	.00	.00	.00	3.2	.00	.00	.00	1.4
27	.00	.00	.00	.00	.00	.00	.00	1.4	.00	.00	.00	.10
28	.00	.00	.00	.00	.00	.00	.00	.39	.00	.00	.00	.08
29	.00	.00	.00	.00	---	.00	.00	.04	.00	.00	.00	.08
30	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.06
31	.00	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	395.17	40.28	0.00	0.00	0.00	0.00	36.54	5834.30	302.94	4.86	654.62	771.14
MEAN	12.7	1.34	.000	.000	.000	.000	1.22	188	10.1	.16	21.1	25.7
MAX	159	18	.00	.00	.00	.00	16	1190	122	4.1	360	286
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	784	80	.00	.00	.00	.00	72	11570	601	9.6	1300	1530
CAL YR 1990	TOTAL	4243.53	MEAN	11.6	MAX	711	MIN	.00	AC-FT	8420		
WTR YR 1991	TOTAL	8039.85	MEAN	22.0	MAX	1190	MIN	.00	AC-FT	15950		

NUECES RIVER MAIN STEM

08194500 NUECES RIVER NEAR TILDEN, TX

LOCATION.--Lat 28°18'31", long 98°33'25", McMullen County, Hydrologic Unit 12110105, on right bank at downstream side of bridge on State Highway 16, 1.8 mi upstream from Kings Branch, 10.5 mi south of Tilden, and at mile 135.4.

DRAINAGE AREA.--8,093 mi².

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

Water-quality records.--Chemical analyses: August 1949 to September 1950, April 1967 to May 1968.

REVISED RECORDS.--WSP 1512: 1947. WSP 1732: 1951(M). WDR TX-83-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 183.5 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Part of flow of Nueces River and its headwater tributaries enters the Edwards and associated limestones in the Balcones Fault Zone, which crosses basin between Laguna and Uvalde (stations 08190000 and 08192000, respectively). Some loss of flow into various permeable formations occurs downstream from the Balcones Fault Zone. Some diversions for irrigation above station. Two observations of water temperature made during the year. Satellite telemeter at station.

AVERAGE DISCHARGE.--48 years (water years 1944-91), 410 ft³/s (297,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 76,500 ft³/s Sept. 24, 1967 (gage height, 26.57 ft); no flow at times. Maximum stage since about 1902, that of Sept. 24, 1967. Flood of Oct. 11, 1946, reached a stage of 26.46 ft (discharge, 70,000 ft³/s).

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods in June 1935 reached a stage of 23.7 ft and in July 1942 about 22 ft, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,800 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 21	1900	*1,060	*11.33				

Minimum daily discharge, no flow July 15 to Aug. 6, 27-31, Sept. 1, 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	65	11	17	2.4	6.8	12	.27	11	5.5	9.0	.00	.00
2	66	10	16	2.3	6.3	11	.20	9.0	3.9	4.6	.00	.00
3	74	8.5	15	2.3	5.9	9.3	.16	7.0	2.5	2.3	.00	7.0
4	76	7.2	15	2.3	12	8.3	.14	5.4	3.3	1.1	.00	22
5	72	7.0	18	2.3	135	7.8	1.5	4.0	7.0	.62	.00	4.2
6	66	7.2	19	2.3	45	6.7	3.4	3.0	2.8	.43	.00	31
7	60	7.1	19	2.1	158	5.9	7.7	2.5	1.4	1.7	6.9	245
8	53	9.1	16	2.0	304	5.4	109	29	.79	1.7	161	136
9	51	11	14	2.0	139	4.9	443	37	.53	.87	563	136
10	52	13	13	2.1	73	4.0	351	14	.39	.49	763	73
11	224	67	12	1.9	71	3.6	289	7.2	.33	.31	382	35
12	257	67	12	1.8	94	3.5	151	4.0	.33	.17	83	665
13	121	67	11	1.7	96	3.1	91	2.7	.28	.08	37	367
14	112	55	9.5	1.6	98	2.9	279	2.4	.74	.03	19	50
15	84	36	8.6	1.4	97	2.6	241	339	3.9	.00	11	29
16	65	24	8.0	2.0	83	2.4	195	713	2.4	.00	7.5	11
17	60	21	7.3	3.6	67	2.3	156	817	1.7	.00	5.2	5.3
18	55	22	6.5	4.7	52	2.0	124	895	1.2	.00	3.5	3.1
19	49	24	6.0	6.0	41	1.9	101	942	118	.00	2.5	2.1
20	45	26	5.5	8.3	34	1.5	82	980	195	.00	1.7	2.1
21	41	26	5.1	9.4	28	1.4	66	1040	82	.00	1.2	1.7
22	37	26	4.9	15	23	1.2	55	698	37	.00	.80	57
23	34	26	3.9	16	19	.96	45	181	16	.00	.48	35
24	35	24	3.4	14	17	.81	37	108	46	.00	.30	39
25	35	24	3.2	12	15	.70	31	71	56	.00	.15	479
26	32	23	3.1	11	14	.55	27	50	68	.00	.04	681
27	28	20	2.9	10	12	.55	24	39	83	.00	.00	791
28	23	18	2.8	9.6	12	.64	20	30	66	.00	.00	874
29	19	17	2.7	9.5	---	.93	16	20	25	.00	.00	940
30	16	17	2.6	8.4	---	.54	13	13	13	.00	.00	1010
31	14	---	2.5	7.4	---	.33	---	8.6	---	.00	.00	---
TOTAL	2021	721.1	285.5	177.4	1758.0	109.71	2959.37	7082.8	843.99	23.40	2049.27	6731.50
MEAN	65.2	24.0	9.21	5.72	62.8	3.54	98.6	228	28.1	.75	66.1	224
MAX	257	67	19	16	304	12	443	1040	195	9.0	763	1010
MIN	14	7.0	2.5	1.4	5.9	.33	.14	2.4	.28	.00	.00	.00
AC-FT	4010	1430	566	352	3490	218	5870	14050	1670	46	4060	13350
CAL YR 1990	TOTAL	156142.42	MEAN	428	MAX	6770	MIN	.00	AC-FT	309700		
WTR YR 1991	TOTAL	24763.04	MEAN	67.8	MAX	1040	MIN	.00	AC-FT	49120		

NUECES RIVER BASIN

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08195000 FRIO RIVER AT CONCAN, TX

LOCATION.--Lat 29°29'18", long 99°42'16", Uvalde County, Hydrologic Unit 12110106, on left bank 0.7 mi southeast of Concan Post Office, 15 mi upstream from Dry Frio River, and 222.8 mi upstream from mouth.

DRAINAGE AREA.--389 mi².

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 1342: Drainage area. WSP 1512: 1926, 1931-32, 1934(M), 1935-36. WSP 1712: 1958. WSP 1923: 1954(M), 1957(M). WDR TX-83-3: Drainage area.

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

REMARKS.--No estimated daily discharges. Records good. Many small diversions for irrigation above station.

AVERAGE DISCHARGE.--66 years (water years 1925-29, 1931-91), 118 ft³/s (4.12 in/yr), 85,490 acre-ft/yr.

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
July 21	1300	6,560	8.54	Sept. 20	1030	638	4.93
Sept. 16	1100	*50,700	a*22.40	Sept. 23	1300	5,230	7.90

a From floodmark.

Minimum daily discharge, 31 ft³/s Aug. 30, 31.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	125	102	89	83	77	78	63	54	56	51	51	36		
2	126	102	91	85	76	74	64	93	56	49	49	40		
3	126	102	88	85	77	72	65	89	56	48	47	39		
4	124	109	88	85	80	72	65	68	56	46	44	38		
5	121	107	88	86	87	70	92	65	53	48	48	37		
6	118	109	89	85	95	71	77	62	54	47	46	37		
7	116	110	89	83	92	72	75	61	53	45	44	42		
8	114	114	89	83	89	72	72	69	52	52	42	45		
9	134	112	88	85	86	72	71	73	60	52	41	41		
10	125	111	87	86	84	70	70	70	54	47	40	40		
11	121	108	87	84	84	70	70	68	55	46	38	39		
12	117	106	86	83	83	70	69	65	64	45	38	40		
13	115	105	86	83	82	69	67	90	60	44	35	40		
14	113	104	86	82	80	70	66	77	68	43	35	59		
15	111	103	86	80	81	70	63	73	86	43	36	2560		
16	110	102	89	77	81	72	64	71	69	43	35	8660		
17	110	102	87	79	82	70	65	70	64	43	34	1210		
18	121	101	83	91	80	70	64	68	63	41	36	559		
19	118	100	85	84	81	70	64	65	62	40	35	444		
20	114	100	89	81	80	70	62	63	60	39	34	551		
21	122	97	89	80	80	71	61	63	59	1010	33	448		
22	120	95	86	80	77	68	59	64	57	313	32	380		
23	119	95	86	78	77	67	58	62	54	149	35	1660		
24	115	95	86	79	77	67	59	61	53	102	35	608		
25	112	95	86	77	77	67	60	62	52	81	35	472		
26	110	95	86	77	75	67	60	59	52	71	34	413		
27	108	95	85	77	75	66	59	57	46	65	32	375		
28	106	92	84	75	75	65	67	56	47	57	32	348		
29	105	92	88	75	---	63	58	56	49	53	32	330		
30	104	90	86	75	---	64	55	55	51	55	31	314		
31	102	---	83	76	---	65	---	56	---	53	31	---		
TOTAL	3602	3050	2695	2519	2270	2154	1964	2065	1721	2921	1170	19905		
MEAN	116	102	86.9	81.3	81.1	69.5	65.5	66.6	57.4	94.2	37.7	663		
MAX	134	114	91	91	95	78	92	93	86	1010	51	8660		
MIN	102	90	83	75	75	63	55	54	46	39	31	36		
AC-FT	7140	6050	5350	5000	4500	4270	3900	4100	3410	5790	2320	39480		
CFSM	.30	.26	.22	.21	.21	.18	.17	.17	.15	.24	.10	1.71		
IN.	.34	.29	.26	.24	.22	.21	.19	.20	.16	.28	.11	1.90		
CAL YR 1990	TOTAL	52517	MEAN	144	MAX	2370	MIN	46	AC-FT	104200	CFSM	.37	IN.	5.02
WTR YR 1991	TOTAL	46036	MEAN	126	MAX	8660	MIN	31	AC-FT	91310	CFSM	.32	IN.	4.40

NUECES RIVER BASIN

08195000 FRIO RIVER AT CONCAN, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: June 1952, December 1964 to July 1965. Chemical, biochemical, and pesticide analyses: August 1968 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

	DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)
FEB 13...		1028	84	397	8.0	16.5	<1	0.30	8.9	96	1.3	21
MAY 29...		0820	56	389	7.9	27.0	1	0.50	6.8	86	0.8	K68
AUG 14...		1147	35	370	7.8	27.0	<1	1.4	6.5	85	0.8	26
	DATE	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	SULFATE DIS-SOLVED (MG/L AS S04)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
FEB 13...		26	200	25	58	14	7.0	0.2	0.70	180	14	13
MAY 29...		80	200	25	56	14	6.9	0.2	1.0	170	15	17
AUG 14...		K13	190	24	52	14	7.0	0.2	0.90	160	16	11
	DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SI02)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L)	RESIDUE FIXED NON FILTER-ABLE (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+N03 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)
FEB 13...		<0.10	9.6	223	22	18	4	0.690	0.010	0.700	<0.010	--
MAY 29...		0.20	12	226	1	<1	--	0.340	0.010	0.350	0.020	0.78
AUG 14...		0.20	12	212	<1	<1	--	0.280	0.020	0.300	0.040	--
	DATE	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS TOTAL (MG/L AS P)	PHOS-PHORUS ORTHO 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)	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)
FEB 13...		0.30	0.010	0.030	--	<1	30	<0.5	<1.0	<5	<3	<10
MAY 29...		0.80	0.010	<0.010	1.5	--	--	--	--	--	--	--
AUG 14...		<0.20	<0.010	<0.010	1.7	<1	33	<0.5	<1.0	<5	<3	<10
	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)
FEB 13...		17	<10	7	<1	<0.1	<10	<10	<1	<1.0	240	<6
MAY 29...		--	--	--	--	--	--	--	--	--	--	--
AUG 14...		5	<10	5	2	0.1	<10	<10	<1	1.0	270	<6
	DATE	ZINC, DIS-SOLVED (UG/L AS ZN)	PCB, TOTAL (UG/L)	NAPH-THA-LENES, POLY-CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR-DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI-AZINON, TOTAL (UG/L)	DI-ELDRIN, TOTAL (UG/L)	DI-SYSTON, TOTAL (UG/L)
FEB 13...		15	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01	<0.010	<0.01
MAY 29...		--	--	--	--	--	--	--	--	--	--	--
AUG 14...		<3	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01	<0.010	<0.01

NUECES RIVER BASIN

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08195000 FRIO RIVER AT CONCAN, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	ENDO-SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)
FEB 13...	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01	<0.01
MAY 29...	--	--	--	--	--	--	--	--	--	--
AUG 14...	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01	--
DATE	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	PHORATE TOTAL (UG/L)	SILVEX, TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)
FEB 13...	<0.01	<0.01	<0.1	<0.01	<0.01	<1	<0.01	<0.01	<0.01	<0.01
MAY 29...	--	--	--	--	--	--	--	--	--	--
AUG 14...	<0.01	<0.01	<0.1	<0.01	<0.01	<1	<0.01	<0.01	<0.01	<0.01

NUECES RIVER BASIN

08196000 DRY FRIO RIVER NEAR REAGAN WELLS, TX

LOCATION.--Lat 29°30'16", long 99°46'52", Uvalde County, Hydrologic Unit 12110106, on right bank 2.3 mi upstream from bridge on U.S. Highway 83, 3.1 mi upstream from Rocky Creek, 4.3 mi southeast of Reagan Wells, and 25.9 mi upstream from mouth.

DRAINAGE AREA.--126 mi².

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 1712: 1953. WSP 1923: 1955(M). WDR TX-83-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,335.2 ft above National Geodetic Vertical Datum of 1929, from State Department of Highways and Public Transportation datum.

REMARKS.--No estimated daily discharges. Records good. There are several small diversions above station.

AVERAGE DISCHARGE.--39 years, 34.7 ft³/s (3.74 in/yr), 25,140 acre-ft/yr.

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

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

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Sept. 15	0615	*4,230	*8.81	Sept. 23	1300	275	3.26

Minimum daily discharge, 2.7 ft³/s Aug. 23, 24.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	17	12	11	9.5	10	11	10	7.4	5.5	7.8	5.1	3.0		
2	16	12	11	9.9	10	11	10	11	5.4	6.9	4.9	3.2		
3	16	12	11	10	10	11	10	19	5.2	6.3	4.6	3.8		
4	16	14	11	10	11	11	11	15	5.1	6.1	4.4	4.4		
5	16	13	11	10	12	11	27	12	4.9	6.6	4.5	4.4		
6	16	13	11	10	12	11	18	10	4.7	6.4	4.5	4.3		
7	15	14	11	10	12	11	14	9.4	4.7	6.2	4.2	4.5		
8	15	15	11	9.9	12	11	13	10	5.3	6.4	4.0	5.0		
9	21	15	11	10	12	10	13	11	8.4	6.2	4.0	5.0		
10	20	14	10	11	12	10	12	9.9	6.0	5.9	3.8	4.7		
11	18	14	10	11	12	10	12	9.2	5.4	5.7	3.6	4.5		
12	16	13	10	10	11	10	12	8.5	9.0	5.4	3.5	4.5		
13	16	13	9.8	9.9	11	10	11	20	30	5.3	3.3	4.5		
14	15	13	9.8	9.8	11	9.8	11	19	19	5.0	3.2	149		
15	15	12	10	9.6	11	9.8	10	15	31	5.9	3.2	1380		
16	14	12	10	9.6	11	10	9.6	14	22	7.2	3.2	1020		
17	14	12	10	10	11	11	9.4	13	18	6.1	3.1	325		
18	15	12	10	13	11	11	9.7	12	16	5.7	3.1	217		
19	15	12	9.5	12	11	11	9.5	11	15	6.3	3.2	183		
20	14	12	9.4	12	11	11	8.8	10	14	5.7	3.1	190		
21	15	12	9.4	11	11	11	8.6	9.9	13	5.6	2.9	173		
22	16	12	9.4	11	11	11	8.5	9.1	12	6.8	2.8	150		
23	16	12	9.2	11	11	11	8.2	8.5	11	9.0	2.7	184		
24	15	12	9.0	11	11	10	8.4	7.9	10	8.7	2.7	199		
25	14	12	9.0	10	11	10	8.3	7.8	9.2	7.7	2.8	152		
26	13	12	9.0	10	11	11	8.5	7.4	8.4	7.0	2.8	129		
27	12	12	9.4	10	11	11	8.9	7.1	7.6	6.4	3.1	115		
28	13	12	9.4	10	11	11	9.9	6.3	7.1	6.0	3.2	105		
29	13	11	9.8	10	---	10	9.2	5.9	7.0	5.9	3.2	95		
30	13	11	10	10	---	10	8.2	5.7	7.6	5.7	3.1	88		
31	13	---	9.8	10	---	10	---	5.5	---	5.4	3.1	---		
TOTAL	473	377	310.9	321.2	312	327.6	327.7	327.5	327.5	197.3	108.9	4909.8		
MEAN	15.3	12.6	10.0	10.4	11.1	10.6	10.9	10.6	10.9	6.36	3.51	164		
MAX	21	15	11	13	12	11	27	20	31	9.0	5.1	1380		
MIN	12	11	9.0	9.5	10	9.8	8.2	5.5	4.7	5.0	2.7	3.0		
AC-FT	938	748	617	637	619	650	650	650	650	391	216	9740		
CFSM	.12	.10	.08	.08	.09	.08	.09	.08	.09	.05	.03	1.30		
IN.	.14	.11	.09	.09	.09	.10	.10	.10	.10	.06	.03	1.45		
CAL YR 1990	TOTAL	9723.3	MEAN	26.6	MAX	599	MIN	2.9	AC-FT	19290	CFSM	.21	IN.	2.87
WTR YR 1991	TOTAL	8320.4	MEAN	22.8	MAX	1380	MIN	2.7	AC-FT	16500	CFSM	.18	IN.	2.46

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

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: January 1966 to current year. Pesticide analyses: January 1974 to current year. Sediment analyses: January 1966.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

		DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)
FEB 13...	1508	11	358	8.0	15.0	1	0.60	9.9	104	1.1	K4
MAY 29...	0925	9.4	375	7.9	25.0	3	1.0	7.9	97	0.6	K30
AUG 14...	1014	4.2	380	7.8	25.5	1	1.0	7.3	93	0.7	32
DATE	STREP-TOCOCCI, KF AGAR (COLS. PER 100 ML)	HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	SULFATE DIS-SOLVED (MG/L AS S04)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
FEB 13...	K17	180	9	51	12	6.1	0.2	0.50	170	15	9.9
MAY 29...	74	200	22	58	13	5.8	0.2	0.60	180	17	15
AUG 14...	92	190	23	55	13	6.2	0.2	0.60	170	13	12
DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SI02)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L)	RESIDUE FIXED NON FILTER-ABLE (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)
FEB 13...	<0.10	8.0	204	7	7	0	--	<0.010	0.500	<0.010	0.30
MAY 29...	0.10	11	226	<1	<1	--	0.210	0.010	0.220	<0.010	0.20
AUG 14...	0.10	13	214	<1	<1	--	0.089	0.010	0.099	0.030	<0.20
DATE	PHOS-PHORUS TOTAL (MG/L AS P)	PHOS-PHORUS ORTHO 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)	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)
FEB 13...	0.010	0.020	--	<1	31	<0.5	<1.0	<5	<3	<10	<3
MAY 29...	<0.010	<0.010	1.3	--	--	--	--	--	--	--	--
AUG 14...	<0.010	<0.010	1.4	<1	38	<0.5	<1.0	<5	<3	<10	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)
FEB 13...	<10	6	<1	<0.1	<10	<10	<1	<1.0	340	<6	4
MAY 29...	--	--	--	--	--	--	--	--	--	--	--
AUG 14...	<10	5	2	0.4	<10	<10	<1	<1.0	380	<6	3
DATE	PCB, TOTAL (UG/L)	NAPH-THA-LENES, POLY-CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR-DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI-AZINON, TOTAL (UG/L)	DI-ELDRIN, TOTAL (UG/L)	DI-SYSTON, TOTAL (UG/L)	
FEB 13...	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01	<0.010	<0.01	
MAY 29...	--	--	--	--	--	--	--	--	--	--	
AUG 14...	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01	<0.010	<0.01	

NUECES RIVER BASIN

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	ENDO-SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA-CHLOR, TOTAL (UG/L)	HEPTA-CHLOR EPOXIDE, TOTAL (UG/L)	LINDANE, TOTAL (UG/L)	MALA-THION, TOTAL (UG/L)	METH-OXY-CHLOR, TOTAL (UG/L)	METHYL PARA-THION, TOTAL (UG/L)	METHYL TRI-THION, TOTAL (UG/L)
FEB 13...	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01	<0.01
MAY 29...	--	--	--	--	--	--	--	--	--	--
AUG 14...	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01	--
DATE	MIREX, TOTAL (UG/L)	PARA-THION, TOTAL (UG/L)	PER-THANE, TOTAL (UG/L)	PHORATE, TOTAL (UG/L)	SILVEX, TOTAL (UG/L)	TOX-APHENE, TOTAL (UG/L)	TOTAL TRI-THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP, TOTAL (UG/L)	2,4,5-T, TOTAL (UG/L)
FEB 13...	<0.01	<0.01	<0.1	<0.01	<0.01	<1	<0.01	<0.01	<0.01	<0.01
MAY 29...	--	--	--	--	--	--	--	--	--	--
AUG 14...	<0.01	<0.01	<0.1	<0.01	<0.01	<1	<0.01	<0.01	<0.01	<0.01

NUECES RIVER BASIN

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08197500 FRIO RIVER BELOW DRY FRIO RIVER NEAR UVALDE, TX

LOCATION.--Lat 29°14'44", long 99°40'27", Uvalde County, Hydrologic Unit 12110106, on right bank 1.1 mi upstream from Farm Road 1023, 5.7 mi downstream from Dry Frio River, 6.3 mi downstream from bridge on U.S. Highway 90, 7.2 mi northeast of Uvalde, and 194.5 mi upstream from mouth.

DRAINAGE AREA.--631 mi².

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

REVISED RECORDS.--WDR TX-83-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 882.47 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Part of flow of Frio River enters the Edwards and associated limestones in the Balcones Fault Zone, that crosses the basin between Concan (station 08195000) and this station. Most of the low flow enters this formation. Many diversions for irrigation above station. Satellite telemeter at station.

AVERAGE DISCHARGE.--39 years, 33.4 ft³/s (24,200 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 99,600 ft³/s May 29, 1987 (gage height, 25.05 ft, from floodmark), from rating curve extended above 12,000 ft³/s on basis of slope-area measurements of 24,400, 53,000, and 88,500 ft³/s; no flow most of time each year.

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Sept. 16	1730	*36,400	*16.88	Sept. 23	1900	4,200	8.04

Minimum daily discharge, no flow most of year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	1430
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	7350
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	1730
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	466
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	280
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	283
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	283
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	110	.00	177
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	3.9	.00	1250
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.05	.00	665
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	284
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	189
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	138
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	105
29	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	81
30	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	63
31	.00	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	113.95	0.00	14774.00
MEAN	.000	.000	.000	.000	.000	.000	.000	.000	.000	3.68	.000	492
MAX	.00	.00	.00	.00	.00	.00	.00	.00	.00	110	.00	7350
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	.00	.00	.00	.00	226	.00	29300
CAL YR 1990	TOTAL	5212.69	MEAN	14.3	MAX	1240	MIN	.00	AC-FT	10340		
WTR YR 1991	TOTAL	14887.95	MEAN	40.8	MAX	7350	MIN	.00	AC-FT	29530		

NUECES RIVER BASIN

08198000 SABINAL RIVER NEAR SABINAL, TX

LOCATION.--Lat 29°29'27", long 99°29'33", Uvalde County, Hydrologic Unit 12110106, on right bank 108 ft upstream from concrete dam, 2.3 mi downstream from mouth of Onion Creek, 12.5 mi north of Sabinal, and 41.6 mi upstream from mouth.

DRAINAGE AREA.--206 mi².

WATER-DISCHARGE RECORDS

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

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

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

REMARKS.--Records good except those for estimated daily discharges, which are fair. There are several small diversions above station for irrigation.

AVERAGE DISCHARGE.--49 years, 58.9 ft³/s (3.88 in/yr), 42,670 acre-ft/yr.

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

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Sept. 15	0600	*11,600	*13.00	No other peak greater than base discharge.			
Minimum daily discharge, 15 ft ³ /s May 1.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	52	37	29	22	e23	24	19	15	24	54	30	17
2	50	35	29	22	e22	24	19	75	24	54	29	18
3	50	34	29	23	e22	23	19	73	24	49	27	33
4	50	36	28	23	e29	22	19	40	25	48	27	25
5	49	40	29	23	e32	22	47	34	26	46	26	22
6	48	41	28	24	e29	21	38	32	24	46	27	21
7	47	40	27	24	e26	20	35	30	24	46	26	28
8	46	39	27	23	e25	20	30	36	23	44	26	33
9	62	39	27	e23	e24	20	27	35	30	45	26	29
10	57	37	26	e23	e23	20	24	36	26	44	26	26
11	52	36	27	e25	24	20	24	32	33	44	24	24
12	50	35	26	e24	22	20	23	30	118	42	23	24
13	48	34	26	e24	22	20	21	39	85	40	22	23
14	46	34	26	e23	23	20	20	40	69	38	22	23
15	44	34	26	e23	22	20	19	40	90	35	22	3170
16	44	34	25	e22	22	20	19	37	78	35	22	377
17	44	34	24	e22	22	22	19	40	70	35	23	234
18	43	33	24	e36	23	22	19	42	67	35	22	205
19	44	32	23	e32	24	22	20	39	65	35	22	164
20	44	32	24	e28	23	22	19	37	63	32	20	189
21	48	32	24	e27	23	22	17	35	61	31	19	202
22	50	32	22	e26	23	22	17	34	60	70	19	181
23	47	31	22	e25	22	20	17	34	56	53	18	200
24	44	30	23	e25	22	21	17	34	56	44	19	210
25	42	30	23	e25	22	20	17	39	56	38	19	181
26	40	30	23	e24	22	20	17	33	54	35	19	167
27	40	30	23	e24	23	20	18	30	52	35	18	157
28	40	29	23	e24	23	20	17	28	50	34	18	149
29	39	29	23	e24	---	19	16	27	48	34	18	139
30	39	29	23	e23	---	19	16	24	51	36	17	135
31	39	---	22	e23	---	19	---	24	---	33	16	---
TOTAL	1438	1018	781	759	662	646	649	1124	1532	1290	692	6406
MEAN	46.4	33.9	25.2	24.5	23.6	20.8	21.6	36.3	51.1	41.6	22.3	214
MAX	62	41	29	36	32	24	47	75	118	70	30	3170
MIN	39	29	22	22	22	19	16	15	23	31	16	17
AC-FT	2850	2020	1550	1510	1310	1280	1290	2230	3040	2560	1370	12710
CFSM	.23	.16	.12	.12	.11	.10	.11	.18	.25	.20	.11	1.04
IN.	.26	.18	.14	.14	.12	.12	.12	.20	.28	.23	.12	1.16
CAL YR 1990	TOTAL	21047.0	MEAN	57.7	MAX	2640	MIN	7.8	AC-FT	41750	CFSM	.28
WTR YR 1991	TOTAL	16997	MEAN	46.6	MAX	3170	MIN	15	AC-FT	33710	CFSM	.23
IN. 3.80												
IN. 3.07												

e Estimated

NUECES RIVER BASIN

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08198000 SABINAL RIVER NEAR SABINAL, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: November 1964 to July 1965. Chemical and biochemical analyses: February 1970 to current year. Pesticide analyses: August 1971 to current year. Sediment analyses: November 1965.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

		DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)
FEB 11...	1604	25	454	8.0	16.0	<1	0.60	9.7	102	1.4	--
MAY 28...	1705	18	431	8.0	28.0	2	0.50	8.4	109	0.7	88
AUG 15...	0845	15	428	7.8	26.5	1	0.30	6.1	79	0.8	--
DATE	STREP-TOCOCICI, KF AGAR (COLS. PER 100 ML)	HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	SULFATE DIS-SOLVED (MG/L AS S04)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
FEB 11...	K1	230	29	70	13	8.3	0.2	0.90	200	32	12
MAY 28...	100	220	35	68	13	7.7	0.2	1.9	190	25	11
AUG 15...	150	210	32	62	13	8.1	0.2	1.0	180	30	14
DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SI02)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L)	RESIDUE FIXED NON FILTER-ABLE (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)
FEB 11...	0.10	10	267	11	11	0	--	<0.010	0.300	<0.010	0.30
MAY 28...	0.20	13	253	<1	<1	--	0.150	0.010	0.160	<0.010	0.30
AUG 15...	0.20	14	249	1	1	0	0.067	0.010	0.077	0.030	<0.20
DATE	PHOS-PHORUS TOTAL (MG/L AS P)	PHOS-PHORUS ORTHO 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)	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)
FEB 11...	0.030	0.020	--	<1	31	<0.5	<1.0	<5	<3	<10	5
MAY 28...	<0.010	<0.010	1.2	--	--	--	--	--	--	--	--
AUG 15...	<0.010	<0.010	--	<1	33	<0.5	<1.0	<5	<3	<10	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)
FEB 11...	<10	8	<1	<0.1	<10	<10	<1	<1.0	330	<6	12
MAY 28...	--	--	--	--	--	--	--	--	--	--	--
AUG 15...	<10	6	1	<0.1	<10	<10	<1	<1.0	320	<6	5
DATE	PCB, TOTAL (UG/L)	NAPH-THA-LENES, POLY-CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR-DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI-AZINON, TOTAL (UG/L)	DI-ELDRIN, TOTAL (UG/L)	DI-SYSTON, TOTAL (UG/L)	
FEB 11...	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01	<0.010	<0.01	
MAY 28...	--	--	--	--	--	--	--	--	--	--	
AUG 15...	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01	<0.010	<0.01	

NUECES RIVER BASIN

08198000 SABINAL RIVER NEAR SABINAL, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	ENDO-SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)
FEB 11...	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01	<0.01
MAY 28...	--	--	--	--	--	--	--	--	--	--
AUG 15...	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01	--
DATE	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	PHORATE TOTAL (UG/L)	SILVEX, TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)
FEB 11...	<0.01	<0.01	<0.1	<0.01	<0.01	<1	<0.01	<0.01	<0.01	<0.01
MAY 28...	--	--	--	--	--	--	--	--	--	--
AUG 15...	<0.01	<0.01	<0.1	<0.01	<0.01	<1	<0.01	<0.01	<0.01	<0.01

NUECES RIVER BASIN

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08198500 SABINAL RIVER AT SABINAL, TX

LOCATION.--Lat 29°18'05", long 99°28'46", Uvalde County, Hydrologic Unit 12110106, on left bank 80 ft downstream from bridge on U.S. Highway 90, 1,100 ft downstream from Southern Pacific Lines railroad bridge, 0.8 mi west of Sabinal, 5.8 mi upstream from Rancho Creek, and 223 mi upstream from mouth.

DRAINAGE AREA.--241 mi².

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

REVISED RECORDS.--WDR TX-83-3: Drainage area.

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

REMARKS.--No estimated daily discharges. Records fair. Several small diversions for irrigation above station. Most of low flow of the Sabinal River enters the Edwards and associated limestones in the Balcones Fault Zone, that crosses basin upstream from this station and downstream from Sabinal River near Sabinal (station 08198000). Satellite tele-meter at station.

AVERAGE DISCHARGE.--39 years, 32.6 ft³/s (23,620 acre-ft/yr).

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

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Sept. 15	1300	*28,100	*23.95	No other peak greater than base discharge.			

Minimum daily discharge, 0.71 ft³/s June 2, 3, Sept. 11.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.6	2.3	2.0	1.5	1.3	1.1	1.6	2.0	.75	1.3	1.1	.85
2	3.4	2.2	2.0	1.5	1.3	1.1	1.6	3.5	.71	1.1	1.2	1.0
3	3.4	2.2	2.0	1.5	1.3	1.1	1.4	2.3	.71	1.1	1.2	1.1
4	3.4	2.2	1.9	1.5	1.6	1.2	1.3	1.8	.92	1.1	1.2	1.2
5	3.4	2.2	1.9	1.5	1.3	1.3	2.6	1.8	1.0	1.1	1.2	1.1
6	3.4	2.2	1.8	1.5	1.2	1.4	2.2	1.8	1.1	1.2	1.2	1.0
7	3.3	2.2	1.8	1.5	1.2	1.4	2.5	1.7	1.1	1.2	1.2	1.0
8	3.3	2.4	1.8	1.5	1.2	1.4	2.8	2.6	1.1	1.3	1.1	1.0
9	8.9	2.2	1.8	1.5	1.2	1.4	2.9	1.9	1.3	1.2	1.1	.95
10	3.3	2.1	1.8	1.6	1.2	1.5	2.9	1.8	1.3	1.1	1.1	.85
11	3.3	2.1	1.8	1.6	1.2	1.6	3.1	1.8	1.3	1.1	1.1	.71
12	3.3	2.1	1.8	1.6	1.2	1.6	3.1	1.6	1.2	1.0	1.3	.85
13	3.2	2.1	1.8	1.6	1.2	1.6	3.2	1.6	1.2	1.0	1.3	.78
14	3.1	2.1	1.8	1.6	1.2	1.5	5.2	1.5	1.2	1.1	1.3	.77
15	3.1	2.1	1.8	1.5	1.2	1.5	2.8	1.5	2.4	1.1	1.3	2520
16	3.1	2.1	1.8	1.5	1.2	1.4	2.7	1.5	1.3	1.1	1.2	382
17	3.0	2.1	1.8	1.5	1.2	1.4	2.6	1.5	1.2	1.1	1.2	134
18	3.0	2.1	1.8	2.5	1.2	1.4	2.6	1.4	1.2	1.1	1.2	98
19	3.0	2.1	1.8	1.3	1.2	1.4	2.5	1.4	1.3	1.1	1.2	63
20	3.0	2.1	1.8	1.3	1.2	1.5	2.5	1.3	1.3	1.1	1.2	57
21	4.0	2.1	1.8	1.3	1.2	1.5	2.5	1.3	1.3	1.3	1.0	67
22	3.1	2.1	1.8	1.3	1.2	1.4	2.4	1.2	1.2	2.5	1.2	58
23	2.7	2.1	1.7	1.3	1.2	1.4	2.4	1.2	1.1	1.5	1.1	43
24	2.5	2.1	1.7	1.3	1.2	1.4	2.3	1.3	1.1	1.3	.93	75
25	2.4	2.1	1.7	1.3	1.1	1.4	2.2	1.4	1.1	1.2	.93	56
26	2.4	2.1	1.7	1.3	1.1	1.3	2.2	1.1	1.1	1.1	.93	44
27	2.4	2.1	1.5	1.3	1.1	1.3	2.1	1.0	1.1	1.0	1.1	36
28	2.4	2.1	1.5	1.3	1.1	1.3	2.1	.93	1.1	1.0	1.1	28
29	2.4	2.0	1.5	1.3	---	1.3	2.1	.91	1.1	1.0	1.1	23
30	2.4	2.0	1.5	1.3	---	1.2	2.0	.78	1.3	1.0	.97	19
31	2.4	---	1.5	1.3	---	1.3	---	.78	---	1.1	.85	---
TOTAL	99.6	64.0	54.7	45.4	34.0	42.6	74.4	48.20	35.09	36.5	35.11	3716.16
MEAN	3.21	2.13	1.76	1.46	1.21	1.37	2.48	1.55	1.17	1.18	1.13	124
MAX	8.9	2.4	2.0	2.5	1.6	1.6	5.2	3.5	2.4	2.5	1.3	2520
MIN	2.4	2.0	1.5	1.3	1.1	1.1	1.3	.78	.71	1.0	.85	.71
AC-FT	198	127	108	90	67	84	148	96	70	72	70	7370
CAL YR 1990	TOTAL	5868.70	MEAN	16.1	MAX	1650	MIN	.85	AC-FT	11640		
WTR YR 1991	TOTAL	4285.76	MEAN	11.7	MAX	2520	MIN	.71	AC-FT	8500		

NUECES RIVER BASIN

08200000 HONDO CREEK NEAR TARPLEY, TX

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

DRAINAGE AREA.--95.6 mi².

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 1712: 1957. WDR TX-83-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,169.1 ft, from Magnolia Oil Co. datum.

REMARKS.--Records good. There are several small diversions for irrigation above station.

AVERAGE DISCHARGE.--39 years, 39.4 ft³/s (5.60 in/yr), 28,550 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 69,800 ft³/s June 17, 1958 (gage height, 28.2 ft, from floodmark), from rating curve extended above 2,600 ft³/s on basis of slope-area measurements of 18,600 and 69,800 ft³/s; no flow at times.
Maximum stage since at least 1907, that of June 17, 1958.

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Apr. 5	0415	4,000	6.66	May 4	1745	861	3.79
May 2	1815	5,280	7.68	Sept. 15	0045	*5,580	*7.92

Minimum daily discharge, 3.9 ft³/s Dec. 23.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	16	9.8	6.1	4.4	7.2	8.5	5.4	17	37	50	14	6.1		
2	16	9.4	6.4	6.7	7.0	7.5	5.4	622	36	40	14	41		
3	16	9.0	6.1	6.3	7.1	7.1	5.6	105	36	35	13	18		
4	16	12	5.9	5.5	9.2	7.0	5.7	127	44	34	13	11		
5	17	11	5.6	5.8	10	6.8	580	66	34	35	13	8.4		
6	15	9.8	5.5	5.6	9.5	6.7	41	54	33	33	13	9.4		
7	14	9.7	5.3	5.2	8.6	6.6	31	52	31	31	13	11		
8	14	14	5.3	5.0	8.4	6.5	28	69	31	30	13	8.8		
9	26	11	5.2	5.9	8.4	6.4	25	65	82	31	12	8.3		
10	16	9.3	5.2	6.4	8.5	6.2	24	59	41	29	11	7.9		
11	15	9.0	5.3	5.9	8.4	6.4	33	58	81	28	11	9.4		
12	14	8.7	5.1	5.5	8.4	6.3	25	55	91	26	10	8.4		
13	13	8.6	5.2	5.2	8.7	6.1	23	77	51	26	9.9	10		
14	13	8.4	5.2	5.0	8.2	6.0	41	69	49	25	9.8	48		
15	13	8.4	5.3	5.0	7.9	6.3	29	62	64	25	9.7	1210		
16	13	8.0	5.4	4.7	8.1	6.7	27	68	54	23	9.4	80		
17	13	8.0	5.4	5.0	8.7	6.9	26	66	51	22	10	89		
18	12	8.0	4.9	14	8.7	6.4	25	60	50	22	13	66		
19	11	8.0	4.6	11	9.6	6.3	25	59	48	21	9.3	61		
20	11	7.8	4.7	8.9	8.1	6.5	23	57	46	20	8.5	209		
21	15	7.8	4.6	8.3	8.2	6.8	22	55	45	20	8.0	139		
22	14	7.5	4.1	8.2	7.9	6.5	22	54	45	29	7.9	117		
23	12	7.6	3.9	8.2	7.8	6.1	20	52	51	24	10	116		
24	11	7.3	4.0	8.9	7.8	6.0	20	50	44	22	7.6	111		
25	11	7.3	4.1	7.8	7.8	6.0	20	48	41	19	6.8	99		
26	10	7.3	4.1	7.5	7.6	6.2	20	45	39	18	6.4	91		
27	10	7.2	4.1	8.0	7.5	6.1	19	43	37	18	6.2	84		
28	10	6.7	4.4	7.8	7.5	5.9	19	41	35	17	6.2	79		
29	10	6.2	5.0	7.7	---	5.5	18	40	40	17	5.9	74		
30	9.9	6.1	5.0	8.0	---	5.4	17	38	41	17	6.0	70		
31	9.9	---	4.4	7.6	---	5.7	---	37	---	16	5.8	---		
TOTAL	416.8	258.9	155.4	215.0	230.8	199.4	1225.1	2370	1408	803	306.4	2900.7		
MEAN	13.4	8.63	5.01	6.94	8.24	6.43	40.8	76.5	46.9	25.9	9.88	96.7		
MAX	26	14	6.4	14	10	8.5	580	622	91	50	14	1210		
MIN	9.9	6.1	3.9	4.4	7.0	5.4	5.4	17	31	16	5.8	6.1		
AC-FT	827	514	308	426	458	396	2430	4700	2790	1590	608	5750		
CFSM	.14	.09	.05	.07	.09	.07	.43	.80	.49	.27	.10	1.01		
IN.	.16	.10	.06	.08	.09	.08	.48	.92	.55	.31	.12	1.13		
CAL YR 1990	TOTAL	10057.7	MEAN	27.6	MAX	638	MIN	2.8	AC-FT	19950	CFSM	.29	IN.	3.91
WTR YR 1991	TOTAL	10489.5	MEAN	28.7	MAX	1210	MIN	3.9	AC-FT	20810	CFSM	.30	IN.	4.08

NUECES RIVER BASIN

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08200000 HONDO CREEK NEAR TARPLEY, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: November 1965 to September 1969. Chemical and biochemical analyses: February 1970 to current year. Pesticide analyses: August 1971 to current year. Sediment analyses: November to December 1965.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)
FEB 08...	1303	8.4	393	8.1	13.0	1	0.40	10.1	99	0.7	--
MAY 28...	1315	38	424	7.9	27.0	3	0.40	8.2	104	0.9	K14
AUG 13...	1230	11	379	7.9	30.0	1	0.60	8.6	119	1.0	23
DATE	STREP-TOCOCCI, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CAC03)	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
FEB 08...	27	200	53	61	11	6.8	0.2	1.0	150	48	12
MAY 28...	K24	220	39	72	10	7.0	0.2	1.3	180	24	15
AUG 13...	33	180	41	56	10	8.5	0.3	1.1	140	42	11
DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SI02)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L)	RESIDUE FIXED NON FILTER-ABLE (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)
FEB 08...	0.10	8.0	235	16	4	12	--	<0.010	<0.100	0.010	0.69
MAY 28...	0.20	11	250	<1	<1	--	0.270	0.010	0.280	<0.010	--
AUG 13...	0.30	14	227	<1	<1	--	0.120	0.010	0.130	0.030	0.27
DATE	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS TOTAL (MG/L AS P)	PHOS-PHORUS ORTHO 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)	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)
FEB 08...	0.70	<0.010	<0.010	1.3	<1	23	<0.5	<1.0	<5	<3	<10
MAY 28...	0.60	<0.010	<0.010	1.3	--	--	--	--	--	--	--
AUG 13...	0.30	<0.010	<0.010	1.5	<1	27	<0.5	<1.0	<5	<3	<10
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)
FEB 08...	6	<10	6	<1	<0.1	<10	<10	<1	<1.0	380	<6
MAY 28...	--	--	--	--	--	--	--	--	--	--	--
AUG 13...	4	<10	6	2	<0.1	<10	<10	<1	<1.0	360	<6
DATE	ZINC, DIS-SOLVED (UG/L AS ZN)	PCB, TOTAL (UG/L)	NAPH-THA-LENES, POLY-CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR-DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI-AZINON, TOTAL (UG/L)	DI-ELDRIN, TOTAL (UG/L)	DI-SYSTON, TOTAL (UG/L)
FEB 08...	8	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01	<0.010	<0.01
MAY 28...	--	--	--	--	--	--	--	--	--	--	--
AUG 13...	5	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01	<0.010	<0.01

NUECES RIVER BASIN

08200000 HONDO CREEK NEAR TARPLEY, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	ENDO-SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)
FEB 08...	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01	<0.01
MAY 28...	--	--	--	--	--	--	--	--	--	--
AUG 13...	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01	--
DATE	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	PHORATE TOTAL (UG/L)	SILVEX, TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)
FEB 08...	<0.01	<0.01	<0.1	<0.01	<0.01	<1	<0.01	<0.01	<0.01	<0.01
MAY 28...	--	--	--	--	--	--	--	--	--	--
AUG 13...	<0.01	<0.01	<0.1	<0.01	<0.01	<1	<0.01	<0.01	<0.01	<0.01

NUECES RIVER MAIN STEM

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08200700 HONDO CREEK AT KING WATERHOLE NEAR HONDO, TX

LOCATION.--Lat 29°23'26", long 99°09'04", Medina County, Hydrologic Unit 12110107, on left bank 0.3 mi downstream from county road low-water crossing, 3.1 mi north of Hondo, 7.8 mi upstream from Verde Creek, and 55.4 mi upstream from mouth.

DRAINAGE AREA.--149 mi².

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

REVISED RECORDS.--WDR TX-83-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 897.87 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Most of the low flow of Hondo Creek enters the Edwards and associated limestones in the Balcones Fault Zone, that crosses the basin between Tarpley (station 08200000) and this station. There are several small diversions above station for irrigation. Satellite telemeter at station.

AVERAGE DISCHARGE.--31 years, 15.1 ft³/s (10,940 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 51,800 ft³/s May 29, 1987 (gage height, 17.19 ft), from rating curve extended above 16.0 ft; no flow most of time.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1875, 21 ft in September 1919, from information by local resident. Other floods occurred in July 1932, stage 18 ft, and June 17, 1958, stage 17 ft.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Apr. 5	0930	2,020	4.80	Sept. 15	0500	*5,090	*6.50
May 2	2200	4,520	6.23	Sept. 17	2300	516	3.23

Minimum daily discharge, no flow most of year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	261	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	163	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	21	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	252	6.3	.00	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	24	2.4	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	5.9	.71	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	1.7	.64	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.26	.76	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.18	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	784
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	24
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	27
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	80
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	2.6
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	28
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	38
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	11
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.7
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.2
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.29
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	0.00	0.00	0.00	0.00	0.00	0.00	283.86	455.99	0.00	0.00	0.00	997.80
MEAN	.000	.000	.000	.000	.000	.000	9.46	14.7	.000	.000	.000	33.3
MAX	.00	.00	.00	.00	.00	.00	252	261	.00	.00	.00	784
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	.00	563	904	.00	.00	.00	1980
CAL YR 1990	TOTAL	1097.03	MEAN	3.01	MAX	178	MIN	.00	AC-FT	2180		
WTR YR 1991	TOTAL	1737.65	MEAN	4.76	MAX	784	MIN	.00	AC-FT	3450		

NUECES RIVER BASIN

08201500 SECO CREEK AT MILLER RANCH NEAR UTOPIA, TX

LOCATION.--Lat 29°34'23", long 99°24'10", Medina County, Hydrologic Unit 12110107, on right bank 200 ft upstream from county road crossing, 4.5 mi downstream from Cascade Creek, 7.9 mi southeast of Utopia, and 58.0 mi upstream from mouth.

DRAINAGE AREA.--45.0 mi².

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WDR TX-83-3: Drainage area.

GAGE.--Water-stage recorder, crest-stage gages, and concrete control. Datum of gage is 1,265.8 ft, from Magnolia Oil Company datum, adjustment unknown.

REMARKS.--Records good. No known diversions above station.

AVERAGE DISCHARGE.--30 years, 18.7 ft³/s (5.64 in/yr), 13,550 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 38,500 ft³/s July 15, 1973 (gage height, 14.4 ft, from floodmark), from rating curve extended above 910 ft³/s on basis of field estimate of flow over and around the end of dam, 14,100 ft³/s, and slope-area measurement of 52,600 ft³/s; no flow for many days in 1963, 1964, 1989, and 1990.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1901, 16.4 ft June 17, 1958, from floodmarks (discharge, 52,600 ft³/s, by slope-area measurement of peak flow).

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 2	1630	*3,380	*5.31	Sept. 15	0500	1,600	4.22

Minimum daily discharge, 2.6 ft³/s Apr. 30, May 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	28	11	6.1	3.6	4.9	5.8	3.9	2.6	14	11	7.4	3.9		
2	27	11	6.1	4.2	4.9	5.1	3.6	237	14	11	6.5	6.4		
3	25	10	5.9	4.5	4.9	4.6	3.6	26	14	10	6.4	9.0		
4	25	14	5.7	4.6	5.9	4.6	3.6	18	15	9.5	6.0	4.4		
5	24	12	5.7	4.6	6.4	4.6	22	16	12	14	6.0	3.3		
6	24	11	5.7	4.6	6.1	4.6	6.3	15	11	12	5.6	3.1		
7	22	10	5.1	4.4	5.7	4.6	4.9	14	10	9.4	5.7	4.7		
8	20	12	4.9	4.3	5.3	4.6	4.6	25	11	9.0	6.9	3.5		
9	42	10	4.9	4.9	5.3	4.6	4.2	18	19	8.8	5.3	3.0		
10	24	9.6	4.9	5.3	5.3	4.4	3.9	16	12	7.7	5.0	2.8		
11	21	9.6	4.9	4.3	5.3	4.3	5.7	16	12	6.9	4.6	2.8		
12	20	9.1	4.9	4.3	5.3	4.3	4.6	15	48	6.5	4.6	2.8		
13	19	9.0	4.9	4.3	5.3	4.3	4.0	38	20	6.5	4.6	3.2		
14	19	9.0	4.9	4.3	5.3	4.3	6.3	24	22	6.7	4.6	6.2		
15	18	9.0	4.9	4.0	5.3	4.3	3.7	24	26	11	4.6	231		
16	18	8.5	4.9	3.9	5.3	4.6	3.6	25	21	6.4	4.6	31		
17	17	8.4	4.9	4.1	5.7	5.1	3.6	25	19	5.7	4.3	28		
18	16	8.1	4.3	12	5.7	4.3	3.6	23	18	5.6	4.3	26		
19	15	7.9	4.3	6.2	6.2	4.3	3.6	21	18	4.9	4.3	24		
20	15	7.7	4.3	5.3	5.7	4.3	3.5	20	17	4.6	4.0	57		
21	20	7.4	4.3	4.6	5.7	4.6	3.2	20	16	15	3.9	49		
22	17	7.4	4.3	4.6	5.7	4.4	3.2	19	15	49	3.8	44		
23	15	7.4	4.0	4.6	5.7	4.0	2.9	18	16	11	3.7	91		
24	14	7.4	4.2	4.9	5.7	3.9	2.9	18	15	9.8	3.8	e74		
25	14	7.4	3.9	4.9	5.6	3.9	3.2	20	13	8.3	3.6	56		
26	14	7.1	3.9	4.9	5.3	3.9	3.4	17	12	7.9	3.4	51		
27	13	7.0	3.9	4.9	5.3	3.9	3.2	16	11	7.4	3.4	47		
28	12	6.7	3.9	4.9	5.3	3.9	2.9	16	11	7.2	3.3	43		
29	12	6.1	4.2	4.9	---	3.6	3.0	16	11	10	3.1	41		
30	11	6.1	4.1	4.9	---	3.7	2.6	16	11	12	3.1	38		
31	11	---	3.7	5.1	---	3.9	---	14	---	7.9	3.1	---		
TOTAL	592	266.9	146.6	150.9	154.1	135.3	133.3	808.6	484	312.7	143.5	990.1		
MEAN	19.1	8.90	4.73	4.87	5.50	4.36	4.44	26.1	16.1	10.1	4.63	33.0		
MAX	42	14	6.1	12	6.4	5.8	22	237	48	49	7.4	231		
MIN	11	6.1	3.7	3.6	4.9	3.6	2.6	2.6	10	4.6	3.1	2.8		
AC-FT	1170	529	291	299	306	268	264	1600	960	620	285	1960		
CFSM	.42	.20	.11	.11	.12	.10	.10	.58	.36	.22	.10	.73		
IN.	.49	.22	.12	.12	.13	.11	.11	.67	.40	.26	.12	.82		
CAL YR 1990	TOTAL	6516.5	MEAN	17.9	MAX	467	MIN	1.1	AC-FT	12930	CFSM	.40	IN.	5.39
WTR YR 1991	TOTAL	4318.0	MEAN	11.8	MAX	237	MIN	2.6	AC-FT	8560	CFSM	.26	IN.	3.57

e Estimated

NUECES RIVER BASIN

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08201500 SECO CREEK AT MILLER RANCH NEAR UTOPIA, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: November 1965 to September 1969. Chemical and biochemical analyses: March 1970 to current year. Pesticide analyses: January 1974 to current year. Sediment analyses: November 1965.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

	DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)
	FEB 14...	0937	5.3	415	8.0	14.5	<1	0.70	9.2	95	1.4	K2
	MAY 28...	1545	14	377	8.2	31.5	2	3.0	8.7	121	0.6	K2
	AUG 15...	1030	3.6	364	8.2	27.0	2	0.60	8.4	110	0.8	--
	DATE	STREP-TOCOCCI, KF AGAR (COLS. PER 100 ML)	HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
	FEB 14...	160	210	58	65	12	7.4	0.2	0.90	150	51	11
	MAY 28...	68	200	44	62	10	6.4	0.2	1.1	150	34	11
	AUG 15...	150	180	45	56	10	6.9	0.2	1.0	140	38	13
	DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SI02)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L)	RESIDUE FIXED NON FILTER-ABLE (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)
	FEB 14...	0.10	9.7	250	8	8	0	0.090	0.010	0.100	<0.010	0.20
	MAY 28...	<0.10	11	227	3	3	0	0.170	0.010	0.180	<0.010	<0.20
	AUG 15...	0.20	14	221	<1	<1	--	0.081	0.010	0.091	0.030	<0.20
	DATE	PHOS-PHORUS TOTAL (MG/L AS P)	PHOS-PHORUS ORTHO 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)	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)
	FEB 14...	<0.010	0.020	--	<1	28	<0.5	<1.0	<5	<3	<10	15
	MAY 28...	<0.010	<0.010	1.3	--	--	--	--	--	--	--	--
	AUG 15...	<0.010	<0.010	1.2	<1	25	<0.5	<1.0	<5	<3	<10	4
	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)
	FEB 14...	<10	7	<1	<0.1	<10	<10	<1	<1.0	470	<6	19
	MAY 28...	--	--	--	--	--	--	--	--	--	--	--
	AUG 15...	<10	6	1	<0.1	<10	<10	<1	<1.0	380	<6	3
	DATE	PCB, TOTAL (UG/L)	NAPH-THA-LENES, POLY-CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR-DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI-AZINON, TOTAL (UG/L)	DI-ELDRIN TOTAL (UG/L)	DI-SYSTON TOTAL (UG/L)	
	FEB 14...	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01	<0.010	<0.01	
	MAY 28...	--	--	--	--	--	--	--	--	--	--	
	AUG 15...	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01	<0.010	<0.01	

NUECES RIVER BASIN

08201500 SECO CREEK AT MILLER RANCH NEAR UTOPIA, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	ENDO-SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA-CHLOR, TOTAL (UG/L)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA-THION, TOTAL (UG/L)	METH-OXY-CHLOR, TOTAL (UG/L)	METHYL PARA-THION, TOTAL (UG/L)	METHYL TRI-THION, TOTAL (UG/L)
FEB 14...	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01	<0.01
MAY 28...	--	--	--	--	--	--	--	--	--	--
AUG 15...	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01	--
DATE	MIREX, TOTAL (UG/L)	PARA-THION, TOTAL (UG/L)	PER-THANE TOTAL (UG/L)	PHORATE TOTAL (UG/L)	SILVEX, TOTAL (UG/L)	TOX-APHENE, TOTAL (UG/L)	TOTAL TRI-THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)
FEB 14...	<0.01	<0.01	<0.1	<0.01	<0.01	<1	<0.01	<0.01	<0.01	<0.01
MAY 28...	--	--	--	--	--	--	--	--	--	--
AUG 15...	<0.01	<0.01	<0.1	<0.01	<0.01	<1	<0.01	<0.01	<0.01	<0.01

NUECES RIVER BASIN

401

08202700 SECO CREEK AT ROWE RANCH NEAR D'HANIS, TX

LOCATION.--Lat 29°21'43", long 99°17'05", Medina County, Hydrologic Unit 12110107, on left bank 2.9 mi north of D'Hanis and 8.0 mi downstream from Rocky Creek.

DRAINAGE AREA.--168 mi².

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

GAGE.--Water-stage recorder. Datum of gage is 900.88 ft above National Geodetic Vertical Datum of 1929. Prior to October 1970, published as "at Crook Ranch, near D'Hanis".

REMARKS.--No estimated daily discharges. Records fair. All of the low flow of Seco Creek enters the Edwards and associated limestones in the Balcones Fault Zone that crosses the basin between Miller Ranch (station 08201500) and this station. No known diversion above station.

AVERAGE DISCHARGE.--30 years (water years 1962-91), 8.35 ft³/s (6,050 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 35,800 ft³/s May 29, 1987 (gage height, 28.20 ft), from rating curve extended above 25,100 ft³/s on basis of slope-area measurement of 35,800 ft³/s; no flow most of time each year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1852, 35.7 ft May 31, 1935, from information by local resident. Other floods occurred Aug. 31, 1894, 33 ft; September 1919, 28 ft; July 2, 1932, 28.2 ft (discharge, 35,800 ft³/s), by slope-area measurement; and June 17, 1958, 32.4 ft.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Sept. 15	1030	*3,650	*12.82	Sept. 20	1230	765	10.04

Minimum daily discharge, no flow most of year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.82	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	637
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	23
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.1
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.22
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	201
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	27
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	2.7
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.84
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.33
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	30.82	0.00	0.00	0.00	893.20
MEAN	.000	.000	.000	.000	.000	.000	.000	.99	.000	.000	.000	29.8
MAX	.00	.00	.00	.00	.00	.00	.00	30	.00	.00	.00	637
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	.00	.00	61	.00	.00	.00	1770
CAL YR 1990	TOTAL	862.01	MEAN	2.36	MAX	589	MIN	.00	AC-FT	1710		
WTR YR 1991	TOTAL	924.02	MEAN	2.53	MAX	637	MIN	.00	AC-FT	1830		

NUECES RIVER BASIN

08205500 FRIO RIVER NEAR DERBY, TX

LOCATION.--Lat 28°44'11", long 99°08'40", Frio County, Hydrologic Unit 12110106, on right bank 17 ft downstream from centerline of railroad tracks, 35 ft right of the Missouri Pacific Railroad Co. bridge abutment, 167 ft downstream from Interstate Highway 35, 917 ft downstream from Leona River, 2.5 mi south of Derby, and 115.1 mi upstream from mouth.

DRAINAGE AREA.--3,429 mi².

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

REVISED RECORDS.--WSP 568: 1915-16, 1918-22. WSP 1312: 1917-18(M). WSP 1923: 1954. WDR TX-83-3: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 449.11 ft above National Geodetic Vertical Datum of 1929. Aug. 1, 1915, to Apr. 21, 1931, nonrecording gage, and Apr. 22, 1931, to Mar. 6, 1940, water-stage recorder at same site and datum. Mar. 7, 1940, to May 4, 1972, water-stage recorder, and May 5 to Nov. 1, 1972, nonrecording gage at site 167 ft upstream at same datum.

REMARKS.--No estimated daily discharges. Records fair. Part of flow of Frio River and its headwater tributaries enters the Edwards and associated limestones in the Balcones Fault Zone upstream from U.S. Highway 90 (see REMARKS for stations 08197500, 08198500, 08200700, and 08202700). There is considerable loss of flow into various permeable formations downstream from the Balcones Fault Zone. There are many small diversions for irrigation above station. Satellite telemeter at station.

AVERAGE DISCHARGE.--76 years, 140 ft³/s (101,400 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 230,000 ft³/s July 4, 1932 (gage height, 29.45 ft, from floodmarks), from rating curve extended above 76,000 ft³/s on basis of slope-area measurement of peak flow; no flow at times most years.

Maximum stage since at least 1860, that of July 4, 1932.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,100 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Sept. 18	1300	*3,330	*7.86	Sept. 25	0900	1,110	3.90

Minimum daily discharge, no flow most of year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	5.0	8.1	2.6	5.8	.00	.00	.00	.00
2	.00	.00	.00	.00	4.3	7.9	1.9	5.2	.00	.00	.00	.00
3	.00	.00	.00	.00	4.3	7.5	1.3	170	.00	.00	.00	.00
4	.00	.00	.00	.00	10	7.0	1.1	444	.00	.00	.00	.00
5	.00	.00	.00	.00	13	6.4	13	211	.00	.00	.00	.00
6	.00	.00	.00	.83	7.4	6.3	32	65	.00	.00	.00	.00
7	.00	.00	.00	2.3	4.6	6.3	298	36	.00	.00	.00	.00
8	.00	.00	.00	3.1	3.8	6.3	111	21	.00	.00	.00	.00
9	.00	.00	.00	3.9	3.8	5.9	79	13	.00	.00	.00	.00
10	.00	.00	.00	4.2	5.8	4.7	49	10	.00	.00	.00	.00
11	.00	.00	.00	4.6	5.5	3.7	35	20	.00	.00	.00	.00
12	.00	.00	.00	5.2	4.8	3.2	19	18	.00	.00	.00	.00
13	.00	.00	.00	5.8	4.5	2.4	11	11	.00	.00	.00	.00
14	.00	.00	.00	6.6	4.5	1.8	8.2	7.0	.00	.00	.00	.00
15	.00	.00	.00	8.1	5.5	1.7	6.1	33	.00	.00	.00	.00
16	.00	.00	.00	6.1	5.8	1.7	5.8	36	.00	.00	.00	112
17	.00	.00	.00	5.0	6.1	1.9	7.9	16	.00	.00	.00	1350
18	.00	.00	.00	11	6.3	2.2	28	11	.00	.00	.00	2940
19	.00	.00	.00	13	6.3	2.7	34	7.7	.00	.00	.00	1260
20	.00	.00	.00	11	5.8	3.0	21	3.2	.00	.00	.00	573
21	.00	.00	.00	11	4.4	3.4	14	1.9	.00	.00	.00	411
22	.00	.00	.00	12	4.5	3.2	11	.83	.00	.00	.00	453
23	.00	.00	.00	13	8.2	2.8	9.2	.03	.00	.00	.00	383
24	.00	.00	.00	11	10	2.8	8.1	.00	.00	.00	.00	364
25	.00	.00	.00	10	9.0	2.2	7.5	.00	.00	.00	.00	952
26	.00	.00	.00	9.4	7.5	2.1	6.9	.00	.00	.00	.00	509
27	.00	.00	.00	9.1	6.3	2.1	6.4	.00	.00	.00	.00	319
28	.00	.00	.00	8.6	7.2	1.9	5.3	.00	.00	.00	.00	219
29	.00	.00	.00	7.8	---	1.9	6.8	.00	.00	.00	.00	164
30	.00	.00	.00	7.4	---	1.8	5.8	.00	.00	.00	.00	123
31	.00	---	.00	5.9	---	1.9	---	.00	---	.00	.00	---
TOTAL	0.00	0.00	0.00	195.93	174.2	116.8	845.9	1146.66	0.00	0.00	0.00	10132.00
MEAN	.000	.000	.000	6.32	6.22	3.77	28.2	37.0	.000	.000	.000	338
MAX	.00	.00	.00	13	13	8.1	298	444	.00	.00	.00	2940
MIN	.00	.00	.00	.00	3.8	1.7	1.1	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	389	346	232	1680	2270	.00	.00	.00	20100
CAL YR 1990	TOTAL	26248.32	MEAN	71.9	MAX	7100	MIN	.00	AC-FT	52060		
WTR YR 1991	TOTAL	12611.49	MEAN	34.6	MAX	2940	MIN	.00	AC-FT	25010		

NUECES RIVER BASIN

403

08206600 FRIO RIVER AT TILDEN, TX

LOCATION.--Lat 28°28'02", long 98°32'50", McMullen County, Hydrologic Unit 12110108, on left end at downstream side of bridge on State Highway 16 in Tilden, 300 ft downstream from Leoncita Creek, 1.3 mi upstream from Salt Branch, 1.8 mi downstream from Big Slough, and 44.2 mi upstream from mouth.

DRAINAGE AREA.--4,493 mi².

PERIOD OF RECORD.--July 1978 to current year.

Water-quality records.--Chemical, biochemical, and pesticide analyses: July 1978 to October 1983.

GAGE.--Water-stage recorder. Datum of gage is 216.04 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good except those for discharges below 1.0 ft³/s, which are fair. Part of the flow of the Frio River and its headwater tributaries enters the Edwards and associated limestones in the Balcones Fault Zone that crosses basin upstream from U.S. Highway 90 (see REMARKS paragraph for station 08205500). Considerable flow into various permeable formations also occurs downstream from the Balcones Fault Zone. There are many small diversions above station for irrigation. Satellite telemeter at station.

AVERAGE DISCHARGE.--13 years, 191 ft³/s (138,400 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,900 ft³/s June 9, 1987 at 1600 hours (gage height, 29.18 ft); no flow for many days in 1984, 1985, 1989, and 1991.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 1932 reached a stage of 38.44 ft, from information by local resident.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Sept. 23	0100	*1,910	*16.56	No other peak greater than base discharge.			
Minimum daily discharge, no flow Aug. 1-4, 28.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.33	.13	.17	.37	.40	5.3	2.6	3.0	.35	.98	.00	.07
2	.23	.16	.21	.38	.34	7.0	2.8	2.8	.23	.88	.00	.10
3	.16	.16	.24	.42	.30	7.2	2.9	2.6	.16	.75	.00	1.0
4	.14	.31	.22	.47	.43	6.4	3.0	2.4	.16	.49	.00	1.3
5	.12	.34	.22	.55	93	5.3	6.9	2.1	.10	.32	.01	1.2
6	.10	.33	.19	.56	470	4.9	14	96	.07	.27	.05	3.3
7	.10	.26	.19	.56	660	4.9	9.7	351	.02	.52	.08	1.6
8	.09	.56	.23	.52	584	5.1	22	201	.03	.43	.13	1.8
9	.17	.58	.24	.59	183	5.1	24	57	.04	.31	.52	1.1
10	.27	.46	.24	.59	58	5.3	199	28	.04	.22	.33	.74
11	.38	.40	.24	.56	28	5.8	139	17	.03	.14	.15	.52
12	.24	.30	.28	.56	16	5.6	116	11	.01	.13	.10	.54
13	.14	.23	.30	.49	11	5.0	85	8.1	.01	.15	.05	1.0
14	.13	.17	.30	.46	7.6	4.8	40	6.5	.01	.14	.02	1.1
15	.10	.13	.30	.44	5.8	4.3	22	5.5	.02	.16	.03	.91
16	.10	.13	.28	.40	5.0	4.0	14	7.9	.16	.17	.03	.68
17	.09	.14	.27	.36	4.9	4.0	9.4	7.3	1.1	.17	.04	.53
18	.09	.16	.27	.45	5.0	4.0	7.4	5.5	.10	.14	.05	.74
19	.08	.19	.27	.39	5.4	4.0	6.2	8.8	.06	.11	.06	90
20	.06	.19	.27	.30	5.1	3.9	23	14	.08	.09	.06	504
21	.04	.15	.27	.31	4.6	3.8	95	9.0	.09	.14	.04	735
22	.03	.15	.26	.36	5.1	3.7	27	6.4	.06	.19	.03	1510
23	.03	.23	.24	.37	5.5	3.5	19	4.8	.06	.59	.03	1690
24	.03	.24	.24	.36	6.4	3.3	12	3.8	.07	1.4	.04	1080
25	.03	.26	.24	.33	6.0	3.0	8.7	3.1	.08	2.8	.03	658
26	.02	.25	.27	.36	5.7	3.0	6.8	2.1	.07	1.6	.01	581
27	.02	.19	.31	.36	5.4	3.1	5.4	1.7	.07	.79	.01	527
28	.08	.19	.36	.39	5.2	2.9	4.5	1.3	.06	.24	.00	720
29	.11	.19	.42	.51	---	3.2	3.8	.91	.10	.14	.02	826
30	.11	.17	.42	.56	---	3.2	3.4	.67	.33	.09	.01	516
31	.12	---	.40	.48	---	2.7	---	.51	---	.06	.02	---
TOTAL	3.74	7.35	8.36	13.81	2187.17	137.3	934.5	871.79	3.77	14.61	1.95	9455.23
MEAN	.12	.24	.27	.45	78.1	4.43	31.1	28.1	.13	.47	.063	315
MAX	.38	.58	.42	.59	660	7.2	199	351	1.1	2.8	.52	1690
MIN	.02	.13	.17	.30	.30	2.7	2.6	.51	.01	.06	.00	.07
AC-FT	7.4	15	17	27	4340	272	1850	1730	7.5	29	3.9	18750
CAL YR 1990	TOTAL	46160.69	MEAN	126	MAX	7320	MIN	.02	AC-FT	91560		
WTR YR 1991	TOTAL	13639.58	MEAN	37.4	MAX	1690	MIN	.00	AC-FT	27050		

NUECES RIVER BASIN

08206700 SAN MIGUEL CREEK NEAR TILDEN, TX

LOCATION.--Lat 28°35'14", long 98°32'44", McMullen County, Hydrologic Unit 12110109, on left bank 25 ft downstream from State Highway 16, 0.3 mi upstream from mouth of Bruce Branch, 0.9 mi downstream from mouth of Far Live Oak Creek, 3 mi upstream from San Patricio Creek, 7 mi downstream from Clear Creek, 8.7 mi north of Tilden, and 12.9 mi upstream from mouth.

DRAINAGE AREA.--783 mi².

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

Water-quality records.--Chemical and biochemical analyses: July 1978 to September 1983.

REVISED RECORDS.--WDR TX-83-3: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 242.95 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. There are five diversions above station (amounts unknown). At times, excess water from Bexar-Medina-Atascosa Counties Water Improvement District No. 1 system enters San Miguel Creek basin via Chacon Creek 52 mi upstream (amounts unknown). Satellite telemeter at station.

AVERAGE DISCHARGE.--27 years, 60.3 ft³/s (43,690 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,600 ft³/s May 16, 1980 (gage height, 27.31 ft); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1919, 32.6 ft in 1942; stage of 1919 flood not known, from information by local residents.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 5	1300	*4,130	*18.05	No other peak greater than base discharge.			
Minimum daily discharge, no flow for many days.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.4	1.5	1.4	.97	2.0	7.1	2.4	.85	.00	16	.00	.00
2	1.4	1.6	1.4	1.1	1.4	7.1	2.4	1.2	.00	.82	.00	50
3	1.2	1.6	1.4	1.5	1.2	7.0	2.4	1.1	.00	.00	.00	41
4	1.2	1.9	1.4	1.6	232	6.4	2.4	.84	.00	.00	.00	2.3
5	1.6	2.1	1.2	1.6	3040	6.2	26	.49	.00	.00	.00	.05
6	1.4	2.0	1.2	1.6	2080	6.3	87	.32	.00	4.0	.00	.01
7	1.2	2.0	1.2	1.6	536	6.5	78	.24	.00	6.2	.00	.00
8	1.4	3.0	1.2	1.6	95	6.5	252	6.0	.00	8.9	.00	.00
9	2.0	2.9	1.0	1.6	54	6.2	92	55	.00	6.6	.00	.00
10	1.2	2.6	1.1	1.7	36	5.9	46	15	.00	2.7	.00	.00
11	1.2	2.6	1.2	1.5	28	5.8	88	6.7	.00	.85	.00	.52
12	2.9	2.6	1.2	1.4	23	5.6	76	5.8	.00	.13	.00	.00
13	3.0	2.6	1.2	1.3	19	5.4	27	13	.00	.03	.00	.00
14	2.1	2.4	1.3	1.1	16	5.1	13	10	.00	.01	.00	.47
15	1.6	2.4	1.4	.91	14	5.1	8.3	6.6	.00	.00	.00	.03
16	1.2	2.4	1.4	.74	12	4.8	6.0	4.2	.00	.00	.00	.00
17	.96	2.4	1.4	.74	12	4.8	4.5	3.1	.00	.00	.00	.00
18	.70	2.5	1.4	7.1	11	4.8	3.9	2.0	.00	.00	.00	.00
19	.48	2.6	1.4	57	10	4.7	3.6	1.2	.00	.00	.00	.00
20	.35	2.6	1.4	37	9.0	4.6	3.2	.58	.00	.00	.00	.00
21	.37	2.6	1.4	11	8.5	4.3	2.4	.21	.00	.00	.00	.00
22	.51	2.6	1.3	7.1	8.4	4.2	2.2	.20	.00	.00	.00	.00
23	.51	2.6	1.1	4.4	8.7	3.9	2.5	.20	.00	.02	.00	2.7
24	.77	2.3	.97	3.1	8.3	3.9	2.0	.07	.00	.00	.00	124
25	.97	2.2	.97	2.3	7.9	3.5	2.0	.04	.00	.00	.00	.58
26	.97	2.2	1.1	1.8	7.6	3.4	1.8	.03	.00	.00	.00	14
27	.97	2.1	1.2	1.6	7.4	3.4	1.5	.02	.00	.00	.00	5.5
28	.97	1.8	1.2	2.0	7.1	3.0	3.0	.01	.00	.00	.00	2.5
29	1.1	1.5	1.2	2.4	---	3.0	2.0	.01	.00	.00	.00	6.0
30	1.2	1.4	1.2	2.4	---	2.8	1.4	.00	.00	.00	.00	5.1
31	1.3	---	1.2	2.4	---	2.6	---	.00	---	.00	.00	---
TOTAL	38.13	67.6	38.64	164.16	6295.5	153.9	844.9	135.01	0.00	46.26	0.00	312.18
MEAN	1.23	2.25	1.25	5.30	225	4.96	28.2	4.36	.000	1.49	.000	10.4
MAX	3.0	3.0	1.4	57	3040	7.1	252	55	.00	16	.00	124
MIN	.35	1.4	.97	.74	1.2	2.6	1.4	.00	.00	.00	.00	.00
AC-FT	76	134	77	326	12490	305	1680	268	.00	92	.00	619

CAL YR 1990	TOTAL	26863.53	MEAN	73.6	MAX	11700	MIN	.00	AC-FT	53280
WTR YR 1991	TOTAL	8096.28	MEAN	22.2	MAX	3040	MIN	.00	AC-FT	16060

NUECES RIVER BASIN

405

08206900 CHOKE CANYON RESERVOIR NEAR THREE RIVERS, TX

LOCATION.--Lat 28°29'01", long 98°14'44", Live Oak County, Hydrologic Unit 12110108, at Choke Canyon Dam on Frio River, 3.9 mi upstream from Atascosa River, and 4.0 mi west of Three Rivers.

DRAINAGE AREA.--5,490 mi².

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

GAGE.--Nonrecording gage read twice daily. Supplemental water-stage recorder operated by city of Corpus Christi. Datum of gage is National Geodetic Vertical Datum of 1929.

REMARKS.-- The reservoir is formed by a rolled earthfill dam, 3.5 mi long. The dam was completed and deliberate impoundment began on Oct. 12, 1982. The spillway has seven radial gates, each 50 ft long and 24 ft high. Water for municipal and industrial use to meet the needs of the Coastal Bend area is released downstream through a 5.0- x 5.0-foot square slide gate. Satellite telemeters at station. Figures given herein represent total contents. Data regarding the dam and lake are given in the following table:

	Elevation (feet)	Capacity (acre-feet)
Top of dam.....	241.1	-
Top of spillway gates.....	222.5	743,900
Crest of spillway.....	199.5	269,600
Lowest gated outlet (invert).....	136.3	52

COOPERATION.--Capacity table computed June 1, 1983, provided by the city of Corpus Christi. Elevation and reservoir contents record provided by the city of Corpus Christi.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 733,100 acre-ft June 21, 1987 (elevation, 222.1 ft); minimum, 4,500 acre-ft Oct. 1-9, 1984 (elevation, 156.9 ft).

EXTREMES (AT 0600 HOURS) FOR CURRENT YEAR.--Maximum contents, 421,300 acre-ft Oct. 1 (elevation, 208.4 ft); minimum, 332,900 acre-ft Sept. 19, 20 (elevation, 203.5 ft).

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

203.0	324,800	207.0	395,000
205.0	358,900	209.0	433,100

RESERVOIR STORAGE (ACRE-Feet), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY OBSERVATION AT 06:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	421300	409300	402900	395500	394700	408900	401600	402200	399200	365900	354200	336300
2	421000	409100	402700	395300	394500	408800	400700	401800	398800	365800	353300	336000
3	420600	408800	403100	395600	394400	408400	400500	401600	396200	365600	352400	336000
4	420400	409100	401800	395800	394900	407600	400300	401600	395600	365400	351600	336000
5	420000	407800	401400	396000	399200	407400	401200	401400	395500	364900	350900	335500
6	420000	407100	401200	395800	403900	407100	402900	401000	394900	364500	351200	335300
7	419600	407100	401000	395300	408400	406900	403500	400700	394500	364500	350500	335800
8	419200	407200	400300	395600	409900	406500	403900	401200	394000	365100	350500	336000
9	419000	408600	400100	395600	410800	405900	404000	403100	393100	365400	349800	335300
10	418800	407200	399700	396600	411200	405700	403900	402900	391600	364900	349000	334900
11	417500	406500	399700	396200	411200	405500	405700	402700	390100	364300	348100	334600
12	417100	406500	399400	396400	411000	405700	405900	402700	389000	363800	346900	334800
13	416700	406100	399600	396400	411200	405500	406100	402500	387200	363300	346000	334600
14	416600	405900	398800	396000	411000	404800	406700	402400	385500	362900	345000	334100
15	416200	405400	398800	396800	410300	404200	406500	402900	384300	362600	344300	334400
16	415800	405900	399000	395600	410100	404600	406100	402700	382600	362200	343600	334300
17	415400	405700	399000	394900	410600	405000	405900	402500	384600	362000	342900	334000
18	415000	405700	398800	396900	410500	404400	405700	402400	382600	361500	342300	333600
19	413900	405500	398300	397100	410300	404200	405400	402000	380800	361000	341600	332900
20	413700	405500	398100	396900	409900	404000	405500	401200	379000	360300	340900	332900
21	413500	405400	398100	396600	410300	404200	405200	401000	377000	359800	340400	333100
22	413100	405500	399000	396400	409900	404200	404800	400900	375400	359200	339900	334100
23	412000	406300	398100	396000	409500	403900	404400	400500	374000	358900	339500	336800
24	411400	405700	396600	396400	409300	403300	404000	400300	373400	358700	339200	340200
25	411200	405900	396400	396000	409500	403100	403900	399900	371600	358200	338700	343000
26	410800	405400	396400	395600	408900	402900	403700	399700	370000	357800	338300	342900
27	410600	405500	396400	395800	408600	403100	403500	399600	368200	357300	337800	343500
28	410500	405000	396200	395600	407800	402500	403300	399400	366600	356600	337300	343800
29	410100	404000	396000	395600	---	403300	403100	399200	366500	355900	337000	344500
30	409900	403300	396200	395800	---	402200	402900	399600	366600	355400	336500	345300
31	409700	---	396600	394400	---	401800	---	398800	---	355000	336600	---
MAX	421300	409300	403100	397100	411200	408900	406700	403100	399200	365900	354200	345300
MIN	409700	403300	396000	394400	394400	401800	400300	398800	366500	355000	336500	332900
(↑)	207.8	207.5	207.1	207.0	207.7	207.4	207.4	207.2	205.4	204.8	203.7	204.2
(Φ)	-12400	-6400	-6700	-2200	+13400	-6000	+1100	-4100	-32200	-11600	-18400	+8700
CAL YR 1990	MAX	435900	MIN	311300	(Φ)	+48500						
WTR YR 1991	MAX	421300	MIN	332900	(Φ)	-76800						

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

NUECES RIVER BASIN

08208000 ATASCOSA RIVER AT WHITSETT, TX

LOCATION.--Lat 28°37'19", long 98°16'52", Live Oak County, Hydrologic Unit 12110110, on right bank at downstream side of bridge on Farm Road 99, 1.1 mi southwest of Whitsett, 4.2 mi downstream from La Parita Creek, and 12.9 mi upstream from mouth.

DRAINAGE AREA.--1,171 mi².

PERIOD OF RECORD.--September 1924 to May 1926, May 1932 to current year.

Water-quality records.--Chemical analyses: March 1942 to January 1951, April 1962 to May 1980.

Sediment records: September 1976 to September 1978, October 1979 to September 1980.

GAGE.--Water-stage recorder. Datum of gage is 159.04 ft above National Geodetic Vertical Datum of 1929. Prior to May 8, 1926, nonrecording gage at bridge at site 200 ft upstream at 1.38 ft higher datum. May 8, 1926, to Feb. 16, 1983, water-stage recorder at site 1,000 ft upstream at same datum.

REMARKS.--Records good. Considerable loss of flow into various permeable formations occurs upstream from this station. The Campbellton water wells discharge into the Atascosa River 12 mi upstream from this station to supplement stream-flow during dry periods; however, records furnished by the city of Corpus Christi indicate that during the current year, the Campbellton water wells did not discharge into the Atascosa River. There are several small diversions above station. One observation of water temperature was made during the year.

AVERAGE DISCHARGE.--60 years (water years 1925, 1933-91), 124 ft³/s (89,840 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 121,000 ft³/s Sept. 23, 1967 (gage height, 41.3 ft, from floodmark), from rating curve extended above 24,000 ft³/s on basis of slope-area measurement of peak flow; no flow at times. Maximum stage since at least 1881, that of Sept. 23, 1967.

EXTREMES OUTSIDE PERIOD OF RECORD.--Second highest stage, 41 ft (discharge 106,000 ft³/s), occurred in September 1919.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 7	0100	*3,900	*22.09	No other peak greater than base discharge.			

Minimum daily discharge, 0.49 ft³/s Aug. 23.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.3	3.3	3.1	5.4	7.8	30	20	7.9	6.1	87	2.6	3.5
2	4.0	3.0	3.3	5.4	7.7	30	19	9.2	4.7	92	1.7	23
3	3.9	2.9	3.3	5.4	7.8	29	19	8.8	4.2	105	1.3	22
4	3.7	2.7	3.0	5.8	31	28	19	8.3	4.3	49	.96	27
5	3.6	2.6	3.0	6.5	404	28	23	9.7	4.4	23	.91	31
6	4.0	2.6	3.2	6.8	2580	27	127	15	3.8	58	2.7	22
7	4.2	2.6	3.1	6.8	3100	27	185	11	3.0	28	40	102
8	4.0	3.3	3.1	6.9	959	27	153	9.6	2.4	159	28	57
9	4.0	5.0	3.2	7.3	114	26	199	9.6	2.3	139	57	30
10	4.6	6.6	3.6	7.8	78	26	75	14	2.3	56	35	38
11	21	15	3.4	8.0	64	25	72	24	2.3	24	21	22
12	13	12	3.4	7.8	56	25	175	21	2.2	14	9.5	14
13	8.7	7.5	3.4	8.0	51	24	113	17	2.3	9.5	5.1	7.1
14	6.1	6.5	3.4	8.4	47	24	48	14	2.3	7.4	2.7	3.9
15	4.7	6.1	3.5	7.7	44	24	30	18	2.2	5.5	1.5	2.4
16	3.9	5.5	3.5	7.2	43	23	23	15	2.4	5.2	1.1	1.5
17	3.6	4.8	3.7	6.9	42	23	20	11	23	4.9	.69	2.6
18	3.3	4.1	3.8	8.2	39	23	17	8.9	13	e4.8	.56	23
19	3.1	3.7	3.8	76	35	23	16	7.9	7.4	e4.8	2.1	24
20	3.2	3.6	4.0	200	35	23	15	8.2	12	e4.8	3.2	15
21	3.1	3.4	4.3	111	46	23	13	8.3	8.5	e4.7	1.2	14
22	3.0	3.3	4.4	37	43	23	14	8.6	5.3	e4.7	.61	20
23	3.0	3.0	4.5	23	40	22	13	9.2	4.0	11	.49	14
24	2.9	2.9	4.5	17	36	22	13	9.7	61	20	16	33
25	3.0	2.9	4.6	14	34	22	13	9.6	61	18	47	41
26	3.8	3.2	4.7	11	32	21	13	12	97	11	17	95
27	3.5	3.3	4.7	10	31	21	12	41	62	10	6.0	43
28	3.2	3.1	4.9	9.3	31	20	12	34	22	7.7	3.0	28
29	3.7	3.2	5.6	9.0	---	22	9.6	23	57	17	1.6	21
30	3.6	3.1	5.5	8.4	---	21	8.4	21	50	8.8	.74	15
31	3.4	---	5.4	8.0	---	20	---	16	---	4.3	.94	---
TOTAL	147.1	134.8	120.9	660.0	8038.3	752	1489.0	440.5	534.4	998.1	312.20	795.0
MEAN	4.75	4.49	3.90	21.3	287	24.3	49.6	14.2	17.8	32.2	10.1	26.5
MAX	21	15	5.6	200	3100	30	199	41	97	159	57	102
MIN	2.9	2.6	3.0	5.4	7.7	20	8.4	7.9	2.2	4.3	.49	1.5
AC-FT	292	267	240	1310	15940	1490	2950	874	1060	1980	619	1580

CAL YR 1990	TOTAL	41007.26	MEAN	112	MAX	13900	MIN	.00	AC-FT	81340
WTR YR 1991	TOTAL	14422.30	MEAN	39.5	MAX	3100	MIN	.49	AC-FT	28610

e Estimated

NUECES RIVER MAIN STEM

407

08210000 NUECES RIVER NEAR THREE RIVERS, TX
(National stream-gaging accounting network)

LOCATION.--Lat 28°25'38", long 98°10'40", Live Oak County, Hydrologic Unit 12110111, on right bank at U.S. Highway 281, 1.0 mi downstream from Frio River, 2.2 mi south of Three Rivers, and at mile 100.2.

DRAINAGE AREA.--15,427 mi², of which 5,490 mi² is above Choke Canyon Dam. See Remarks.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1915 to current year. Monthly discharge only for November 1919 to January 1920, published in WSP 1312.

REVISED RECORDS.--WSP 548: 1920-21. WSP 1562: 1916, 1918-21, 1922(M), 1923, 1929. WDR TX-83-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 99.26 ft above National Geodetic Vertical Datum of 1929. Prior to Apr. 5, 1932, nonrecording gage at railroad bridge 0.8 mi upstream at datum 1.87 ft higher. Apr. 5, 1932, to Aug. 9, 1983, recording gage at a site 0.8 mi upstream at datum 1.87 ft higher.

REMARKS.--No estimated daily discharges. Records good. Flow of the Frio River is impounded in Choke Canyon Reservoir (see station 08206900), about 11 mi upstream from this station on the Frio River. Part of the flow of the Nueces and Frio Rivers and their headwater tributaries enters the Edwards and associated limestones in the Balcones Fault Zone upstream from U.S. Highway 90 (see REMARKS for station 08205500). Considerable loss of flow into various permeable formations also occurs downstream from the Balcones Fault Zone. There are many small diversions for irrigation and for municipal supply above this station. There is some minor upstream regulation by small reservoirs and by ground-water supplements (see station 08208000, Atascosa River at Whitsett). Satellite telemeter at station.

AVERAGE DISCHARGE.--67 years (water years 1916-82) prior to partial regulation by Choke Canyon Reservoir, 857 ft³/s (620,900 acre-ft/yr); 9 years (water years 1983-91) partly regulated, 416 ft³/s (301,400 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 141,000 ft³/s Sept. 23, 1967 (gage height, 49.21 ft), site and datum then in use; no flow at times. Maximum stage since about 1875, that of Sept. 23, 1967.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,610 ft³/s Feb. 8 at 0200 hours (gage height, 16.26 ft); minimum daily, 36 ft³/s Aug. 29-31, Sept. 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	107	55	54	45	49	80	62	50	47	464	148	37
2	101	54	54	45	48	79	62	48	44	166	147	36
3	99	52	53	45	48	77	61	48	42	165	147	45
4	104	51	53	45	130	75	61	47	40	151	147	47
5	111	50	52	45	323	74	173	46	40	92	165	50
6	107	49	52	45	961	73	172	44	57	71	220	54
7	101	49	53	45	2140	72	305	48	139	119	244	47
8	95	51	54	45	2370	71	209	56	152	126	263	275
9	90	52	54	45	857	69	345	73	291	266	253	175
10	89	52	54	45	271	68	579	63	312	151	727	149
11	85	54	53	45	199	67	467	60	457	104	875	123
12	277	85	53	45	176	66	468	62	480	65	537	80
13	292	112	52	45	180	66	395	69	591	53	262	470
14	168	105	52	45	177	65	211	55	588	47	218	177
15	153	96	51	45	172	63	299	49	561	44	201	77
16	126	79	50	45	168	63	256	265	560	43	193	64
17	104	68	49	45	159	63	213	590	625	41	187	51
18	96	62	48	72	145	63	181	686	657	40	184	44
19	91	60	47	69	129	64	153	752	615	39	183	51
20	85	60	47	153	114	64	131	800	654	39	146	54
21	81	61	47	235	108	64	114	837	779	38	45	47
22	77	60	46	139	119	63	100	878	675	38	42	45
23	71	105	45	85	108	63	89	571	627	37	40	52
24	68	74	44	71	100	63	80	191	624	47	37	95
25	67	62	44	65	93	63	72	133	730	48	50	113
26	66	60	44	60	87	61	67	97	712	70	65	456
27	66	59	44	56	85	61	64	78	789	148	44	668
28	65	58	44	54	82	62	61	94	645	147	39	702
29	62	55	44	53	---	63	57	77	569	147	36	755
30	60	54	45	50	---	63	53	60	599	153	36	802
31	57	---	45	49	---	62	---	53	---	151	36	---
TOTAL	3221	1944	1527	1976	9598	2070	5560	6980	13701	3310	5917	5841
MEAN	104	64.8	49.3	63.7	343	66.8	185	225	457	107	191	195
MAX	292	112	54	235	2370	80	579	878	789	464	875	802
MIN	57	49	44	45	48	61	53	44	40	37	36	36
AC-FT	6390	3860	3030	3920	19040	4110	11030	13840	27180	6570	11740	11590
CAL YR 1990	TOTAL	223861	MEAN	613	MAX	12000	MIN	32	AC-FT	444000		
WTR YR 1991	TOTAL	61645	MEAN	169	MAX	2370	MIN	36	AC-FT	122300		

NUECES RIVER MAIN STEM

08210000 NUECES RIVER NEAR THREE RIVERS, TX--Continued
(National stream-gaging accounting network)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: August 1941 to September 1952. Chemical and biochemical analyses: May 1965 to current year. Pesticide analyses: January 1968 to May 1982. Sediment analyses: October 1941 to August 1945, March 1951 to September 1952, October 1974 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1941 to September 1952, October 1974 to September 1981.

WATER TEMPERATURE: October 1950 to September 1952, October 1974 to September 1981.

SUSPENDED-SEDIMENT DISCHARGE: October 1950 to September 1951.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 4,310 microsiemens Jan. 17, 1977; minimum daily, 157 microsiemens May 26, 1975.
WATER TEMPERATURE: Maximum daily, 32.0°C on several days during summers of 1977, 1978, and 1981; minimum daily, 7.0°C Jan. 2, 3, 1979.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	
OCT 29...	1215	63	735	7.9	19.5	10	9.3	100	0.8	K70	K2600	
JAN 07...	1322	44	950	8.2	12.0	19	12.0	110	2.1	M73	98	
MAR 05...	1200	74	1150	8.2	18.5	15	11.0	119	5.0	--	--	
APR 30...	1330	54	887	8.1	25.0	18	9.1	111	3.9	100	69	
JUL 09...	1520	351	248	7.9	27.5	460	6.6	84	3.0	2100	3700	
SEP 03...	0935	46	753	7.9	28.0	11	6.3	81	1.6	260	220	
DATE		HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	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)	CAR-BONATE WATER DIS IT FIELD MG/L AS CO3	BICAR-BONATE WATER DIS IT FIELD MG/L AS HCO3	ALKA-LINITY WAT DIS TOT IT FIELD MG/L AS CAC03	SULFATE DIS-SOLVED (MG/L AS SO4)	
OCT 29...	190	28	59	11	69	2	9.1	0	201	164	66	
JAN 07...	220	52	66	14	110	3	12	0	208	171	91	
MAR 05...	300	120	89	19	130	3	10	0	224	183	170	
APR 30...	230	64	69	13	89	3	11	0	198	162	110	
JUL 09...	62	10	19	3.5	22	1	6.9	0	63	52	25	
SEP 03...	190	50	55	13	72	2	12	0	173	142	75	
DATE		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 CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)
OCT 29...	100	0.20	9.9	428	424	--	--	0.010	<0.010	<0.100	<0.100	
JAN 07...	140	0.20	11	553	547	0.180	0.090	0.020	0.010	0.200	0.100	
MAR 05...	170	0.30	12	722	712	--	--	0.020	<0.010	<0.050	<0.050	
APR 30...	120	0.20	13	464	524	0.130	--	0.040	<0.010	0.170	0.170	
JUL 09...	18	0.30	8.7	133	138	0.750	0.730	0.040	0.040	0.790	0.770	
SEP 03...	110	<0.10	13	439	437	0.200	0.260	0.030	0.020	0.230	0.280	
DATE		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-PHORUS ORTHO TOTAL (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)
OCT 29...	0.040	0.050	0.56	0.60	0.100	0.060	0.060	0.060	0.18	16	2.7	
JAN 07...	0.080	0.070	0.82	0.90	0.100	0.070	0.050	0.050	0.15	25	3.0	
MAR 05...	0.050	0.050	0.75	0.80	0.060	0.040	0.040	0.040	0.12	32	6.4	
APR 30...	0.050	0.040	0.75	0.80	0.130	0.090	0.070	0.080	0.21	40	5.8	
JUL 09...	0.100	0.080	1.4	1.5	0.330	0.180	0.120	0.120	0.37	907	860	
SEP 03...	0.090	0.100	0.71	0.80	0.130	0.100	0.070	0.080	0.21	33	4.1	

NUECES RIVER MAIN STEM

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08210000 NUECES RIVER NEAR THREE RIVERS, TX--Continued
(National stream-gaging accounting network)

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	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)	LEAD, DIS- SOLVED (UG/L AS PB)
OCT 29...	96	20	4	110	<0.5	<1.0	<1	<3	3	11	<1
JAN 07...	98	--	--	--	--	--	--	--	--	--	--
MAR 05...	87	10	2	130	0.5	<1.0	<1	<3	3	11	1
APR 30...	90	20	3	120	<0.5	<1.0	<1	<3	2	15	<1
JUL 09...	98	--	--	--	--	--	--	--	--	--	--
SEP 03...	25	<10	3	110	<0.5	<1.0	<1	<3	1	14	<1
DATE	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	
OCT 29...	22	13	<0.1	<10	2	<1	<1.0	420	6	15	
JAN 07...	--	--	--	--	--	--	--	--	--	--	
MAR 05...	55	17	0.2	<10	2	<1	<1.0	790	<6	19	
APR 30...	32	15	0.1	<10	2	<1	<1.0	520	<6	7	
JUL 09...	--	--	--	--	--	--	--	--	--	--	
SEP 03...	20	5	<0.1	<10	<1	<1	<1.0	430	<6	14	

NUECES RIVER MAIN STEM

08210500 LAKE CORPUS CHRISTI NEAR MATHIS, TX

LOCATION.--Lat 28°02'17", long 97°52'15", San Patricio-Jim Wells County line, Hydrologic Unit 12110111, on right upstream corner of outlet tower at right end of Wesley E. Seale Dam on Nueces River, 0.6 mi upstream from bridge on State Highway 359, and 4.5 mi southwest of Mathis.

DRAINAGE AREA.--16,656 mi².

PERIOD OF RECORD.--September 1948 to current year. Prior to October 1960, month end records only. The Soil Conservation Service, U.S. Department of Agriculture, in cooperation with the Texas Board of Water Engineers (now Texas Department of Water Resources), collected fragmentary gage-height records in connection with sedimentation studies from Feb. 2, 1942, to July 10, 1947.

REVISED RECORDS.--WSP 1923: 1953(M), 1957(M).

GAGE.--Nonrecording gage read twice daily. Supplemental water-stage recorder operated by city of Corpus Christi. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1957, nonrecording gage at various sites 0.2 mi upstream at datum 0.52 ft higher. Oct. 1, 1957, to Apr. 3, 1961, nonrecording gage near left end of Mathis Dam 0.2 mi upstream at present datum.

REMARKS.--Mathis Dam was completed and storage began July 24, 1934. The original capacity at spillway crest (elevation, 74.5 ft) was 54,000 acre-ft, but by March 1948 had decreased to 39,400 acre-ft because of sedimentation. Wesley E. Seale Dam was completed and deliberate impoundment began on Apr. 26, 1958, submerging the old Mathis Dam. Wesley E. Seale Dam is a rolled earthfill dam, 5,930 ft long, including two spillways. The 1,320-foot north spillway has 33 gates that are operated by movable hydraulic lifts. The 1,080-foot south spillway has 27 gates that are electrically operated from the control tower. The gates were repaired and modified in August 1966. All gates in both spillways are 37.5 by 8.75 ft wide. Water for municipal supply for the city of Corpus Christi is released downstream through a 4.0-foot-diameter cylinder valve and three 2.5- by 4.0-foot rectangular openings. The releases are diverted from the river at Calallen 35 mi downstream for domestic, municipal, irrigation, mining, and industrial uses in the Corpus Christi area. The cities of Alice, Beeville, and Mathis withdrew 6,700 acre-ft from the lake during the current year for municipal use. Figures given herein represent total contents. Data regarding the dam and lake are given in the following table:

	Elevation (feet)	Capacity (acre-feet)
Top of dam.....	106.0	-
Top of north spillway gates.....	94.46	-
Top of south spillway gates.....	94.0	241,200
Crest of spillways.....	88.0	137,100
Lowest gated outlet (invert).....	55.5	-

COOPERATION.--Capacity curve 5-C is from a January 1987 survey furnished by the city of Corpus Christi. Figures for new capacity curve were used beginning Oct. 1, 1989. Elevation and content records were provided by the city of Corpus Christi.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 320,000 acre-ft Sept. 22, 1967, and Sept. 12, 1971; maximum elevation, 94.82 ft Sept. 22, 1967; minimum contents, 14,740 acre-ft May 5, 1951 (elevation, 67.62 ft).

EXTREMES (AT 0600) FOR CURRENT YEAR.--Maximum contents, 217,100 acre-ft Oct. 1 (elevation, 92.7 ft); minimum, 120,800 acre-ft Sept. 28, 29 (elevation, 86.9 ft).

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

86.0	107,900	89.0	152,800	92.0	204,000
87.0	122,100	90.0	169,200	93.0	222,300
88.0	137,100	91.0	186,300		

NUECES RIVER MAIN STEM

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08210500 LAKE CORPUS CHRISTI NEAR MATHIS, TX--Continued

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY OBSERVATION AT 06:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	217100	197700	188000	176400	172500	185900	172000	167500	141400	147500	137100	130000
2	216700	196500	187700	176400	172200	186300	171000	166800	140600	148400	136800	129200
3	216400	195600	188000	177100	171900	186600	170700	166300	140600	148400	135900	129100
4	215400	195600	187300	177300	171400	185600	170500	164000	139800	148100	135600	129400
5	215800	195600	186300	176400	175400	184700	170000	163800	138800	148000	135700	128500
6	215400	194700	185900	175900	176600	184500	172200	166200	138800	147800	135400	128000
7	214500	194700	186300	177000	178300	184500	174100	165000	137100	147300	135600	128200
8	214500	194500	185000	175900	182100	183500	173700	164500	136300	148300	135600	128500
9	213600	195400	184400	175900	186300	184000	174700	165200	135200	148000	135200	128600
10	216200	194500	184000	175900	188400	183300	175400	164200	134600	147800	134500	129100
11	214500	193800	183300	175800	188700	181900	175600	162200	134000	147800	135200	129500
12	213600	193600	182800	175600	188700	181100	175900	160200	133900	147300	136300	129400
13	214300	193300	182600	174900	188500	181900	177600	159100	133400	146700	136600	129200
14	213600	193300	182400	174400	190100	181800	178500	157600	133300	146200	136800	129400
15	213600	192900	182100	175800	189100	181100	179400	156000	133700	145900	136500	129700
16	213600	192700	182100	174600	188900	181400	179400	153900	133000	145300	136600	129500
17	213200	192400	181800	174700	187800	181100	179400	153700	136200	144500	136000	129200
18	213600	192200	183700	173900	187700	181900	179400	152900	136900	145100	135900	128600
19	213200	191900	181200	174600	189800	180900	179500	152300	137100	142800	135700	128300
20	212300	191300	180400	173900	188900	179400	179700	151500	137100	142200	136200	128200
21	212000	191200	179700	174600	188700	178200	178200	150800	137100	141700	135600	126400
22	212900	190800	182600	174200	188000	177300	177300	150700	137100	141200	134800	124500
23	211200	191000	182300	174200	187800	177100	176300	150500	137100	140900	134500	124300
24	210900	191200	180700	174600	187500	176100	174100	150000	137800	140200	134200	123300
25	208900	189900	178000	173900	187700	175800	172200	149200	138900	139400	133600	123900
26	206300	189800	178000	173900	187100	174100	170500	147700	139400	138900	133100	122000
27	204000	189100	178200	173700	184200	172500	168800	146400	139400	138600	132500	121000
28	202500	190300	177300	173400	186800	173600	168700	145300	140300	138200	131900	120800
29	200700	191200	176300	173000	---	174900	169500	144500	140900	136900	131000	120800
30	199100	188900	176300	177500	---	173200	167800	143300	145000	137400	130600	121400
31	198200	---	178200	172700	---	172400	---	142000	---	137200	130100	---
MAX	217100	197700	188000	177500	190100	186600	179700	167500	145000	148400	137100	130000
MIN	198200	188900	176300	172700	171400	172400	167800	142000	133000	136900	130100	120800
(↑)	91.7	91.2	90.5	90.2	91.0	90.2	89.9	88.3	88.5	88.0	87.5	87.0
(Φ)	-19600	-9300	-10700	-5500	+14100	-14400	-4600	-25800	+3000	-7800	-7100	-8700
CAL YR 1990	MAX	241200	MIN	129100	(Φ)	+38200						
WTR YR 1991	MAX	217100	MIN	120800	(Φ)	-96400						

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

NUECES RIVER MAIN STEM

08211000 NUECES RIVER NEAR MATHIS, TX

LOCATION.--Lat 28°02'17", long 97°51'36", San Patricio-Jim Wells County line, Hydrologic Unit 12110111, at downstream side of bridge on State Highway 359, 0.6 mi downstream from Wesley E. Seale Dam, 4 mi southwest of Mathis, and at mile 46.7.

DRAINAGE AREA.--16,660 mi².

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 26.53 ft above National Geodetic Vertical Datum of 1929. Aug. 5, 1939, to Aug. 29, 1984, on left bank 9 ft upstream at datum 1.0 ft higher. Aug. 29 to Nov. 5, 1984, on left bank 9 ft upstream at present datum. Nov. 5, 1984, to Aug. 5, 1987, on left bank 154 ft downstream at present datum.

REMARKS.--No estimated daily discharges. Records good. Flow is regulated by Lake Corpus Christi (station 08210500) 0.6 mi upstream. Upstream from Lake Corpus Christi, flow is affected by recharge to permeable formations, small diversions, and minor regulation. Water for municipal and industrial uses at Corpus Christi is released from Lake Corpus Christi above gage and is diverted from river at Calallen 34 mi downstream. Satellite telemeter at station.

AVERAGE DISCHARGE.--52 years, 765 ft³/s (554,200 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 138,000 ft³/s Sept. 24, 1967 (gage height, 48.7 ft, from floodmark), present datum; minimum daily, 6.8 ft³/s Aug. 15, 1940.
Maximum stage since at least 1888, that of Sept. 24, 1967.

EXTREMES OUTSIDE PERIOD OF RECORD.--A stage of about 41 ft, present datum, occurred Sept. 20, 1919, from information by Texas and New Orleans Railroad Co. and is the second highest known.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,070 ft³/s May 17 at 2100 hours (gage height, 7.74 ft); minimum daily, 97 ft³/s Jan. 25.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	166	135	139	132	137	166	168	174	278	142	177	119
2	164	155	139	133	138	193	168	174	278	140	191	125
3	164	149	141	134	138	175	169	176	277	140	205	152
4	164	144	138	135	133	163	170	176	275	140	205	167
5	165	138	136	135	110	151	154	170	274	140	200	172
6	165	138	133	135	108	151	138	149	385	139	193	146
7	165	138	134	135	108	151	149	145	470	140	186	135
8	164	142	146	120	111	152	148	143	471	141	181	129
9	224	140	154	117	131	162	148	491	471	140	180	120
10	190	139	165	118	136	172	149	746	472	140	180	136
11	166	138	155	118	136	179	148	723	471	165	182	139
12	164	138	154	119	136	172	147	720	470	182	187	115
13	163	138	141	119	136	168	147	822	470	181	199	105
14	161	143	141	120	136	176	146	909	471	177	200	116
15	165	159	141	119	143	196	146	872	471	163	200	136
16	175	160	140	119	163	218	146	783	470	163	201	160
17	176	159	141	119	145	218	153	911	481	168	201	214
18	172	158	142	119	145	364	163	1040	476	169	200	301
19	152	159	141	118	145	567	327	985	477	170	199	440
20	152	158	142	118	144	542	433	935	479	181	198	503
21	166	158	152	119	146	512	380	883	478	181	197	586
22	157	158	152	118	146	364	519	855	479	180	196	592
23	152	157	168	118	145	178	900	843	478	177	199	609
24	807	155	212	99	145	171	984	793	478	176	183	618
25	952	142	216	97	145	260	924	721	478	175	180	606
26	887	142	141	141	144	380	716	628	477	175	181	600
27	845	141	162	158	104	391	215	526	347	176	173	596
28	847	139	163	157	107	331	150	396	194	175	166	580
29	747	139	163	158	---	218	148	269	146	175	157	597
30	557	139	152	158	---	169	160	243	145	175	154	608
31	140	---	132	143	---	169	---	253	---	177	146	---
TOTAL	9634	4398	4676	3948	3761	7579	8613	17654	12087	5063	5797	9622
MEAN	311	147	151	127	134	244	287	569	403	163	187	321
MAX	952	160	216	158	163	567	984	1040	481	182	205	618
MIN	140	135	132	97	104	151	138	143	145	139	146	105
AC-FT	19110	8720	9270	7830	7460	15030	17080	35020	23970	10040	11500	19090
CAL YR 1990	TOTAL	177480	MEAN	486	MAX	7530	MIN	81	AC-FT	352000		
WTR YR 1991	TOTAL	92832	MEAN	254	MAX	1040	MIN	97	AC-FT	184100		

08211000 NUECES RIVER NEAR MATHIS, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: October 1947 to September 1991 (discontinued).

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1947 to September 1991.

WATER TEMPERATURE: October 1947 to September 1991.

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

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,580 microsiemens Apr. 19, 20, 1977; minimum daily, 216 microsiemens Sept. 19, 1971.

WATER TEMPERATURE: Maximum daily, 36.0°C Aug. 8, 1964; minimum daily, 3.0°C Jan. 19, 1968.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 620 microsiemens Sept. 20, 29, 30; minimum daily, 292 microsiemens Oct. 4.

WATER TEMPERATURE: Maximum daily, 31.0°C Jul 29, 31, Aug. 22; minimum daily, 8.0°C Jan. 8-10.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	TEMPER-ATURE WATER (DEG C)	HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
OCT 29...	1630	668	394	22.0	150	2	51	6.3	24
JAN 07...	1749	135	428	11.0	160	2	52	6.9	30
MAR 05...	1604	151	441	18.5	160	0	52	6.6	29
APR 30...	1740	172	483	26.0	170	13	56	7.5	32
JUL 12...	1140	185	546	29.5	170	7	56	7.6	40
SEP 03...	1155	154	602	29.0	180	15	59	8.8	48

DATE	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	SULFATE DIS-SOLVED (MG/L AS S04)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)
OCT 29...	0.8	9.0	150	22	27	0.20	16	246
JAN 07...	1	9.3	160	21	32	<0.10	16	261
MAR 05...	1	9.0	160	29	36	0.10	15	271
APR 30...	1	9.4	160	27	41	0.20	16	284
JUL 12...	1	9.4	160	--	--	0.20	17	--
SEP 03...	2	9.6	170	47	68	<0.10	17	359

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1990 TO SEPTEMBER 1991

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. 1990	9634	386	223	5800	36	943	20	514	130
NOV. 1990	4398	417	241	2860	41	487	22	262	140
DEC. 1990	4676	425	245	3100	42	536	23	287	140
JAN. 1991	3948	444	256	2730	45	485	24	258	150
FEB. 1991	3761	448	258	2620	46	469	25	249	150
MAR. 1991	7579	455	262	5370	48	973	25	516	150
APR. 1991	8613	476	275	6390	51	1190	27	627	150
MAY 1991	17654	483	278	13300	53	2510	28	1320	160
JUNE 1991	12087	519	299	9750	59	1940	31	1000	160
JULY 1991	5063	547	314	4300	65	887	33	456	170
AUG. 1991	5797	582	334	5230	72	1130	37	575	180
SEPT 1991	9622	608	349	9070	78	2020	39	1020	180
TOTAL	92832	**	**	70500	**	13600	**	7090	**
WTD.AVG.	254	488	281	**	54	**	28	**	160

NUECES RIVER MAIN STEM

08211000 NUECES RIVER NEAR MATHIS, TX--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY EQUIVALENT MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	336	409	368	442	445	311	463	435	477	538	560	593
2	316	408	337	439	444	443	468	453	476	531	567	594
3	330	408	423	438	445	476	470	411	482	522	553	582
4	292	409	420	438	438	414	467	450	497	526	553	596
5	336	411	420	439	437	488	473	415	492	541	553	592
6	314	418	418	439	444	427	472	486	512	519	565	574
7	339	425	424	439	443	415	470	460	515	526	560	574
8	303	412	419	438	440	426	477	446	511	540	567	575
9	306	413	424	442	451	428	477	444	508	532	573	580
10	346	413	425	443	446	452	471	459	518	537	572	574
11	316	414	427	445	444	457	473	462	514	548	571	570
12	359	413	428	441	446	448	477	464	517	543	579	568
13	396	413	428	442	446	449	478	479	522	544	583	572
14	400	415	429	442	445	460	479	446	515	547	585	580
15	394	417	432	443	445	455	477	470	524	550	585	591
16	401	412	428	445	446	458	477	475	524	551	586	590
17	398	416	428	446	448	462	477	485	526	550	588	608
18	402	417	430	443	448	460	480	488	525	550	589	614
19	403	418	430	439	449	462	477	494	514	553	596	612
20	404	419	431	438	454	460	476	504	519	551	594	620
21	402	420	431	446	453	461	475	503	528	552	597	617
22	405	424	433	447	450	467	476	502	528	555	597	618
23	403	426	433	451	450	465	476	502	530	555	595	616
24	401	415	433	449	450	465	477	506	537	554	598	618
25	402	417	430	450	453	464	479	501	538	550	600	605
26	401	427	441	446	456	465	479	503	537	557	600	608
27	401	428	437	445	460	467	483	506	543	551	602	619
28	402	422	441	449	461	468	483	512	546	557	601	619
29	404	423	438	448	---	469	485	516	542	557	597	620
30	405	429	438	449	---	468	485	514	544	566	600	620
31	443	---	441	452	---	471	---	516	---	572	600	---
MEAN	373	417	425	444	448	451	476	478	519	546	583	597

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27.0	20.0	18.0	12.0	13.5	16.0	22.0	26.0	28.0	28.0	27.0	28.0
2	27.0	20.0	18.0	12.0	14.5	16.5	21.0	25.0	28.0	29.0	27.0	28.0
3	27.0	20.0	18.0	12.0	14.0	16.0	19.0	26.0	28.0	29.0	27.0	28.0
4	27.0	20.0	17.5	12.0	15.0	16.0	21.0	26.0	29.0	27.0	27.0	28.0
5	27.0	20.0	17.5	12.0	15.0	16.0	18.0	25.0	29.0	27.0	27.0	28.0
6	27.0	19.0	18.0	12.0	16.0	17.0	18.0	26.0	27.0	27.0	27.0	27.0
7	27.0	18.5	17.5	12.0	16.0	18.0	18.0	26.0	27.0	27.0	27.0	27.0
8	27.0	18.0	17.5	8.0	16.0	17.0	18.0	26.0	26.0	27.0	27.0	27.0
9	26.5	18.0	17.5	8.0	16.0	17.0	19.0	27.2	26.0	27.0	27.0	28.0
10	24.0	18.0	16.0	8.0	16.0	17.0	16.0	26.0	27.0	27.0	27.0	28.0
11	25.5	18.0	17.0	12.0	17.0	17.0	21.0	26.7	27.0	27.0	27.0	27.0
12	25.0	18.0	16.5	12.0	17.0	17.0	22.0	26.7	27.0	27.0	27.0	28.0
13	26.0	18.0	16.0	12.0	17.0	17.0	23.0	26.0	27.0	27.0	28.0	28.0
14	26.0	18.0	16.0	13.0	16.0	17.0	22.0	26.0	27.0	27.0	28.0	27.0
15	26.0	18.0	16.0	13.0	16.0	16.0	23.0	26.0	27.0	27.0	27.0	27.5
16	26.0	20.0	16.0	13.0	15.0	17.0	23.0	26.0	27.0	27.0	27.0	28.0
17	26.0	19.0	17.0	13.0	16.0	17.0	23.0	26.0	27.0	27.0	27.0	28.0
18	26.0	20.0	17.0	13.0	16.0	17.0	23.0	26.0	27.0	27.0	27.0	28.0
19	24.0	19.0	16.0	12.0	16.0	17.0	23.5	26.0	27.0	27.0	27.5	27.0
20	25.0	19.5	16.5	13.0	15.0	17.0	23.0	26.0	27.0	27.0	27.5	27.0
21	22.0	20.0	17.0	11.5	15.6	18.0	23.0	26.0	27.0	27.0	27.5	26.0
22	21.0	18.5	13.0	11.5	16.5	18.0	24.0	26.0	28.0	27.0	31.0	27.0
23	23.0	18.0	12.0	11.0	16.0	18.0	24.0	26.5	28.0	27.0	28.0	27.0
24	23.0	18.0	13.0	11.5	16.0	18.0	24.5	26.5	26.0	27.0	28.0	28.0
25	22.5	18.5	13.0	11.5	15.6	18.5	25.5	26.5	27.0	29.0	30.0	27.0
26	23.0	18.0	12.0	11.5	15.6	18.5	25.5	27.0	28.0	29.0	29.0	26.0
27	23.0	19.0	12.0	11.5	15.6	18.5	26.0	27.0	29.0	29.0	20.5	26.0
28	23.0	20.0	12.5	11.5	16.0	19.0	26.0	27.0	29.0	30.0	28.0	26.0
29	22.0	18.0	12.5	12.0	---	18.0	26.0	27.0	28.0	31.0	27.0	24.0
30	22.0	18.0	12.5	11.5	---	19.0	26.0	27.0	28.0	30.0	28.0	27.0
31	23.0	---	12.0	11.5	---	20.0	---	28.0	---	31.0	28.0	---
MEAN	24.8	18.8	15.5	11.6	15.7	17.4	22.2	26.3	27.4	27.8	27.4	27.2

OSO CREEK MAIN STEM

415

08211520 OSO CREEK AT CORPUS CHRISTI, TX

LOCATION.--Lat 27°42'40", long 97°30'06", Nueces County, Hydrologic Unit 12110202, on left downstream end of bridge on Farm Road 763, 1.5 mi south of intersection of Farm Roads 763 and 665, 1.6 mi downstream from mouth of West Oso Creek, and 1.9 mi southwest of intersection of Farm Road 665 and State Highway 357.

DRAINAGE AREA.--90.3 mi².

PERIOD OF RECORD.--September 1972 to current year.

Water-quality records.--Chemical and biochemical analyses: July 1972 to August 1988. Pesticide analyses: July 1972 to July 1981.

GAGE.--Water-stage recorder. Datum of gage is 1.91 ft below National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. No known diversions above station. An undetermined amount of water from oil-field operations enters the stream upstream from station at various points.

AVERAGE DISCHARGE.--19 years, 28.5 ft³/s (20,650 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,100 ft³/s Aug. 10, 1980 (gage height, 29.37 ft); minimum daily, 0.27 ft³/s Mar. 12, 1988.

EXTREMES OUTSIDE PERIOD OF RECORD.--A stage of 24.5 ft occurred in May 1968, from information by local resident.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Apr. 5	2000	*1,480	*18.23	No other peak greater than base discharge.			
Minimum daily discharge, 0.78 ft ³ /s Dec. 25.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.0	1.3	1.3	1.0	1.4	2.0	1.5	1.3	2.7	291	.95	4.2
2	.99	1.2	1.4	.99	1.4	2.0	3.3	125	2.6	151	.85	2.3
3	1.8	1.8	1.2	1.6	1.4	2.0	2.4	34	2.4	46	.91	3.4
4	1.2	1.3	1.1	1.8	5.5	2.0	1.9	12	2.1	23	1.0	2.5
5	1.2	1.2	1.0	1.4	15	1.9	532	5.8	2.1	10	.92	14
6	1.2	1.2	1.1	1.6	49	1.8	940	3.9	2.1	5.6	.99	16
7	1.0	2.1	1.1	1.6	32	1.7	426	2.9	2.0	5.3	1.6	51
8	.89	3.9	1.0	1.5	14	1.9	102	3.0	2.1	4.2	4.4	51
9	1.0	1.6	1.0	1.6	7.2	1.8	31	3.3	23	6.0	2.9	27
10	1.2	1.4	1.1	1.6	4.4	1.8	14	5.6	9.6	4.8	1.4	12
11	1.2	1.5	1.1	2.1	3.2	2.3	6.8	6.2	11	3.0	1.2	28
12	1.2	1.5	1.2	2.3	2.7	1.9	4.0	4.5	7.0	2.2	1.1	45
13	1.2	1.4	1.2	1.9	2.5	1.7	3.1	10	4.2	1.6	1.1	28
14	1.1	1.4	1.5	1.6	2.4	1.7	2.0	29	2.9	1.6	.92	20
15	1.1	1.4	1.7	2.2	2.4	2.2	1.5	24	2.6	1.4	.95	13
16	.99	1.4	1.5	1.3	2.4	34	1.6	13	2.4	1.2	.91	7.9
17	.99	1.4	2.1	1.4	2.8	8.8	1.5	75	2.6	1.2	.82	4.2
18	1.3	1.4	1.5	1.6	2.4	5.9	1.2	65	2.4	1.2	.90	2.7
19	1.1	1.4	1.4	1.5	2.3	5.2	1.2	29	2.5	1.4	.92	6.9
20	1.2	1.6	1.4	1.5	2.2	4.0	1.2	12	2.5	1.5	.86	4.2
21	1.4	1.8	1.6	1.6	2.5	3.4	1.2	6.8	2.4	1.3	.87	3.7
22	1.4	1.6	1.2	1.5	2.3	2.7	1.2	3.8	2.3	1.2	1.0	3.1
23	1.4	2.1	.99	1.5	2.5	1.9	.83	4.5	2.1	3.2	3.3	15
24	1.3	2.1	.82	1.5	2.5	1.7	1.1	4.7	13	2.7	2.0	19
25	1.3	2.2	.78	1.5	2.3	2.0	.96	3.4	30	1.5	1.4	23
26	1.8	2.9	1.4	1.5	2.2	5.6	.95	7.1	12	1.4	1.7	25
27	1.8	2.2	1.6	1.5	2.0	3.4	1.0	12	4.9	1.4	9.7	16
28	1.5	1.6	1.3	1.6	2.0	1.8	.99	5.6	3.4	1.3	2.3	7.3
29	1.5	6.0	1.6	1.6	---	2.0	1.1	3.6	120	1.1	1.4	3.6
30	1.4	1.7	1.2	1.5	---	1.7	1.4	3.9	719	1.0	1.2	2.3
31	1.3	---	1.0	1.5	---	1.7	---	3.3	---	1.0	3.3	---
TOTAL	38.96	55.6	39.39	48.89	174.9	114.5	2088.93	523.2	999.9	580.3	53.77	461.3
MEAN	1.26	1.85	1.27	1.58	6.25	3.69	69.6	16.9	33.3	18.7	1.73	15.4
MAX	1.8	6.0	2.1	2.3	49	34	940	125	719	291	9.7	51
MIN	.89	1.2	.78	.99	1.4	1.7	.83	1.3	2.0	1.0	.82	2.3
AC-FT	77	110	78	97	347	227	4140	1040	1980	1150	107	915
CAL YR 1990	TOTAL	6805.53	MEAN	18.6	MAX	1240	MIN	.73	AC-FT	13500		
WTR YR 1991	TOTAL	5179.64	MEAN	14.2	MAX	940	MIN	.78	AC-FT	10270		

RIO GRANDE MAIN STEM

08364000 RIO GRANDE AT EL PASO, TX

LOCATION.--Lat 31°48'10", long 106°32'25", El Paso County, Hydrologic Unit 13030102, at gaging station on the downstream side of the Courchesne Bridge, 5.6 mi upstream from the Santa Fe Street-Juarez Avenue bridge between El Paso, Tex., and Cd. Juarez, Mex., and 1.7 mi upstream from the American Dam.

DRAINAGE AREA.--29,267 mi².

PERIOD OF RECORD.--Chemical analyses: February 1930 to current year.

REMARKS.--Records of specific conductance and discharge for water year 1991 are given in International Boundary and Water Commission Water Bulletins Nos. 60 and 61.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB DISSOLV FLD. AS CACO3 (MG/L)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)
OCT									
19...	0820	255	1940	8.1	14.5	410	150	120	27
NOV									
16...	0715	173	2020	8.1	11.0	420	150	120	28
DEC									
11...	0715	135	2060	8.0	0.0	420	160	120	29
JAN									
17...	0720	106	2190	8.0	0.0	420	160	120	30
FEB									
22...	0830	80	2360	8.1	8.0	440	160	120	33
MAR									
21...	0840	840	1080	8.0	11.0	230	58	69	15
APR									
19...	0715	510	1330	7.9	10.0	280	75	80	20
MAY									
16...	0830	580	1190	8.0	14.5	260	71	78	17
JUN									
20...	0720	880	1110	7.8	28.0	240	64	73	15
JUL									
18...	0840	991	1070	7.8	24.5	240	61	70	16
AUG									
15...	0810	1150	1030	7.9	19.0	220	70	65	15
SEP									
19...	0850	685	1290	7.8	10.0	270	95	77	18

DATE	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT DIS FIX END FIELD CACO3 (MG/L)	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									
19...	270	6	11	260	440	210	0.60	25	1260
NOV									
16...	280	6	9.1	260	430	220	0.70	24	1270
DEC									
11...	290	6	11	260	440	230	0.70	24	1300
JAN									
17...	320	7	11	270	540	260	0.80	22	1460
FEB									
22...	350	7	10	280	540	290	0.80	25	1530
MAR									
21...	130	4	6.4	180	230	110	0.60	14	681
APR									
19...	180	5	8.3	210	280	140	0.70	15	848
MAY									
16...	150	4	8.0	190	240	110	0.70	13	733
JUN									
20...	140	4	7.7	180	210	94	0.60	13	661
JUL									
18...	120	3	8.2	180	230	96	0.60	14	663
AUG									
15...	130	4	7.8	150	220	100	0.60	15	646
SEP									
19...	170	5	7.7	170	280	140	0.60	16	812

RIO GRANDE MAIN STEM

417

08377200 RIO GRANDE AT FOSTER RANCH NEAR LANGTRY, TX
(National stream-quality accounting network)

LOCATION.--Lat 29°46'50", long 101°45'20", Val Verde County, Hydrologic Unit 13040212, at gaging station 0.1 mi downstream from Terrell-Val Verde County line, 16.9 mi from Langtry, and 597.2 mi downstream from the American Dam at El Paso.

DRAINAGE AREA.--80,742 mi², United States and Mexico; from International Boundary and Water Commission Water Bulletin No. 44.

PERIOD OF RECORD.--Chemical analyses: April 1944 to current year. Chemical and biochemical analyses: October 1974 to current year. Pesticide analyses: July 1975 to June 1982. Sediment analyses: October 1974 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1974 to September 1981.
WATER TEMPERATURE: October 1974 to September 1981.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 2,110 microsiemens Dec. 4, 1974; minimum daily, 225 microsiemens May 2, 1981.
WATER TEMPERATURE: Maximum daily, 32.0°C June 13, 1977, July 25, 26 1979, July 4, 1980, and June 8, 1981; minimum daily, 9.0°C Jan. 12, 1975, Jan. 8, 1976, and Jan. 18, 1981.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPECIFIC CONDUCTANCE (US/CM)	PH (STANDARD UNITS)	TEMPERATURE WATER (DEG C)	TURBIDITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATURATION)	OXYGEN DEMAND, BIO-CHEMICAL, 5 DAY (MG/L)	COLIFORM, FECA, 0.7 UM-MF (COLS./100 ML)	STREPTOCOCCI, FECA, KF AGAR (COLS. PER 100 ML)	HARDNESS TOTAL (MG/L AS CaCO3)
NOV 07...	1100	6790	1040	8.4	17.5	140	8.8	95	1.9	520	560	270
FEB 06...	1045	1630	1600	8.4	15.0	35	11.0	114	2.6	K3	21	370
MAY 22...	1045	986	1230	8.3	24.5	66	7.9	99	1.7	260	180	270
AUG 21...	1150	8920	835	8.1	28.0	950	7.3	97	0.7	4000	2600	210
DATE		HARDNESS NONCARB DISSOLV FLD. AS CaCO3 (MG/L)	CALCIUM DIS-SOLVED (MG/L AS Ca)	MAGNESIUM, DIS-SOLVED (MG/L AS Mg)	SODIUM, DIS-SOLVED (MG/L AS Na)	SODIUM AD-SORPTION RATIO	POTASSIUM, DIS-SOLVED (MG/L AS K)	CARBONATE WATER DIS IT FIELD (MG/L AS CO3)	BICARBONATE WATER DIS IT FIELD (MG/L AS HCO3)	ALKALINITY WAT DIS TOT IT FIELD (MG/L AS CaCO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLORIDE, DIS-SOLVED (MG/L AS Cl)
NOV 07...		110	86	13	120	3	5.4	5	181	157	230	89
FEB 06...		190	110	22	190	4	6.4	8	198	176	360	180
MAY 22...		130	77	19	150	4	7.1	5	160	140	330	96
AUG 21...		82	69	8.9	93	3	5.7	0	156	128	220	40
DATE		FLUORIDE, 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 CONSTITUENTS, DIS-SOLVED (MG/L)	NITROGEN, NITRATE DIS-SOLVED (MG/L AS N)	NITROGEN, NITRATE DIS-SOLVED (MG/L AS N)	NITROGEN, NITRITE DIS-SOLVED (MG/L AS N)	NITROGEN, NITRITE DIS-SOLVED (MG/L AS N)	NITROGEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITROGEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITROGEN, AMMONIA DIS-SOLVED (MG/L AS N)
NOV 07...		1.0	25	654	668	0.870	--	0.030	<0.010	0.900	0.800	0.020
FEB 06...		1.1	21	1000	1000	--	--	<0.010	<0.010	0.600	0.600	<0.010
MAY 22...		1.6	26	802	795	0.650	0.660	0.050	0.010	0.700	0.670	0.020
AUG 21...		1.3	23	562	545	--	--	<0.010	<0.010	1.30	1.30	<0.010
DATE		NITROGEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, ORGANIC DIS-SOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC DIS-SOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHORUS, PHOSPHORUS DIS-SOLVED (MG/L AS P)	PHOSPHORUS, PHOSPHORUS DIS-SOLVED (MG/L AS P)	PHOSPHORUS, PHOSPHORUS DIS-SOLVED (MG/L AS P)	PHOSPHORUS, PHOSPHORUS DIS-SOLVED (MG/L AS P)	PHOSPHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)	SEDIMENT, SUSPENDED (MG/L)
NOV 07...		0.010	0.68	--	--	0.70	0.120	0.010	0.010	0.030	0.03	654
FEB 06...		<0.010	--	--	--	0.70	0.050	<0.010	<0.010	0.020	--	107
MAY 22...		0.020	0.88	--	--	0.90	0.100	<0.010	<0.010	0.040	--	164
AUG 21...		0.020	--	0.38	0.40	1.1	0.190	0.020	<0.010	<0.010	--	7850

RIO GRANDE MAIN STEM

08377200 RIO GRANDE AT FOSTER RANCH NEAR LANGTRY, TX--Continued
(National stream-quality accounting network)

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
NOV 07...	12000	64	20	15	73	<0.5	<1.0	1	<3	<1	7
FEB 06...	471	87	<10	10	75	<0.5	1.0	<1	<3	1	9
MAY 22...	437	96	20	12	80	<0.5	<1.0	1	<3	1	8
AUG 21...	189000	74	<10	12	61	2	<1.0	<1	<3	3	9
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 07...	1	57	1	<0.1	10	1	<1	<1.0	1300	12	<3
FEB 06...	<1	93	3	<0.1	<10	2	<1	<1.0	1800	9	5
MAY 22...	<1	85	<1	<0.1	<10	1	<1	<1.0	1600	12	<3
AUG 21...	<1	48	<1	0.2	<10	<1	3	<1.0	1100	12	<3

08407500 PECOS RIVER AT RED BLUFF, NM

(National stream-quality accounting network station)

LOCATION.--Lat 32°04'30", long 104°02'21", in SW1/4NW1/4NE1/4 sec.1, T.26 S., R.28 E., Eddy County, Hydrologic Unit 13060011 on right bank at Red Bluff, 0.2 mi downstream from Red Bluff Draw. 1.6 mi northwest of the El Paso Natural Gas (Pecos River) compressor station, 5.2 mi north of the New Mexico-Texas state line. 5.5 mi upstream from the Delaware River, and at mile 411.2.

DRAINAGE AREA.--19,540 mi², approximately (contributing area).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1937 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,850.05 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Water-discharge records good. Flow regulated by many reservoirs and diversion dams. Diversions and ground-water withdrawals upstream from station for irrigation of about 202,000 acres, 1959 determination. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--54 years, 159 ft³/s (115,200 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 111,000 ft³/s Aug. 23, 1966 (gage height, 33.32 ft), from rating curve extended above 32,000 ft³/s on basis of slope-area measurement of peak flow; minimum, 0.19 ft³/s Aug. 1, 1966.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in October 1904 reached a stage of 28.0 ft, from information by Panhandle and Santa Fe Railway Co.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,730 ft³/s Sept. 7 (gage height, unknown); minimum, 5.6 ft³/s May 20-22.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	90	82	75	72	72	57	35	20	12	9.3	43	27
2	164	134	72	70	71	58	32	16	13	9.8	40	26
3	149	175	62	70	70	54	30	14	13	11	34	27
4	139	145	57	69	68	48	25	14	13	13	29	26
5	109	113	56	64	70	46	23	14	13	18	27	31
6	83	99	56	60	70	40	21	12	14	18	28	59
7	73	97	54	60	69	36	20	11	13	16	28	843
8	70	104	56	64	68	38	20	11	62	13	28	143
9	68	105	55	73	65	37	18	9.9	168	12	38	76
10	66	105	55	76	68	36	17	8.5	18	12	37	178
11	60	101	56	77	68	35	16	7.9	64	11	68	280
12	57	98	56	76	69	34	16	8.1	52	10	42	175
13	54	97	57	74	70	34	16	8.5	27	90	36	136
14	62	96	57	72	71	36	14	9.1	18	148	61	282
15	65	92	57	71	70	35	9.0	8.7	13	116	55	194
16	69	95	55	71	68	33	7.9	8.8	11	111	50	262
17	67	92	58	73	62	32	11	8.8	9.8	58	50	523
18	59	90	60	79	58	31	12	8.6	9.2	31	41	713
19	56	90	63	80	64	32	14	7.5	8.8	23	36	850
20	56	92	66	85	64	32	14	6.0	8.7	19	38	804
21	54	93	65	84	56	30	13	5.8	8.7	17	34	714
22	55	91	64	77	57	33	13	6.2	8.8	15	31	714
23	55	91	65	75	57	34	12	7.5	9.1	14	31	721
24	55	82	67	76	58	29	12	8.4	9.3	19	31	717
25	56	79	67	75	58	34	13	8.4	8.9	59	30	718
26	59	85	68	74	57	37	15	8.7	8.8	99	28	719
27	57	86	70	73	56	37	19	8.6	8.9	192	25	698
28	53	84	71	73	57	37	22	8.5	8.8	107	21	703
29	53	77	72	73	---	37	32	8.3	8.8	63	19	696
30	56	74	72	73	---	37	26	8.5	9.2	40	19	689
31	54	---	72	72	---	35	---	11	---	38	24	---
TOTAL	2223	2944	1936	2261	1811	1164	547.9	302.3	649.8	1412.1	1102	12744
MEAN	71.7	98.1	62.5	72.9	64.7	37.5	18.3	9.75	21.7	45.6	35.5	425
MAX	164	175	75	85	72	58	35	20	168	192	68	850
MIN	53	74	54	60	56	29	7.9	5.8	8.7	9.3	19	26
AC-FT	4410	5840	3840	4480	3590	2310	1090	600	1290	2800	2190	25280
CAL YR 1990	TOTAL	16532.8	MEAN	45.3	MAX	546	MIN	1.4	AC-FT	32790		
WTR YR 1991	TOTAL	29097.1	MEAN	79.7	MAX	850	MIN	5.8	AC-FT	57710		

08407500 PECOS RIVER AT RED BLUFF, NM--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1937 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	TUR- BID- ITY (NTU) (00076)	OXYGEN, DIS- SOLVED (MG/L) (00300)	HARD- NESS TOTAL (MG/L AS CAC03) (00900)	HARD- NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L) (00904)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)
OCT 30...	1400	57	13700	8.1	28.0	17.0	2.5	12.0	2200	2100	480
JAN 31...	1300	71	9500	8.2	14.5	8.0	1.5	13.8	1900	1800	450
FEB 28...	1345	56	12300	8.1	18.5	12.0	3.0	9.0	2100	2000	470
APR 29...	1415	37	27300	8.7	24.0	21.0	3.4	11.0	3100	3000	590
JUN 27...	1145	8.8	23500	8.8	35.0	26.0	5.0	--	3000	2900	650
SEP 20...	1230	816	4100	8.1	12.0	15.0	8.5	8.6	1200	1100	330
DATE		MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	ALKA- LINITY WAT DIS TOT IT FIELD MG/L AS CAC03 (39086)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)
OCT 30...	240	2000	19	67	178	0	146	1700	3700	1.4	
JAN 31...	200	1700	17	48	160	0	131	1200	2700	1.5	
FEB 28...	230	2100	20	61	164	0	134	2000	3000	1.6	
APR 29...	390	6300	49	230	107	12	108	3200	11000	<0.10	
JUN 27...	330	4500	36	150	39	10	48	3000	7600	1.6	
SEP 20...	98	450	6	7.7	131	0	107	990	620	0.70	
DATE		SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	NITRO- GEN, NITRATE TOTAL (MG/L AS N) (00620)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NITRITE TOTAL (MG/L AS N) (00615)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)
OCT 30...		7.1	8910	8300	0.840	0.840	0.060	0.060	0.900	0.900	0.090
JAN 31...		5.0	8300	6390	0.820	0.750	0.030	0.030	0.850	0.780	0.130
FEB 28...		4.3	8110	7950	0.690	0.630	0.060	0.060	0.750	0.690	0.320
APR 29...		0.20	20500	21800	--	--	0.020	0.010	<0.050	<0.050	0.050
JUN 27...		1.9	15800	16300	--	--	<0.010	<0.010	<0.050	<0.050	0.070
SEP 20...		12	2950	2580	0.290	0.260	0.020	0.020	0.310	0.280	0.110
DATE		NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN, TOTAL (MG/L AS N) (00600)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS ORTHOPHOSPHATE, DIS- SOLVED (MG/L AS P) (00671)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)
OCT 30...		0.090	--	--	0.030	<0.010	20	<1	200	<10	<2.0
JAN 31...		0.120	0.67	1.7	0.050	<0.010	--	--	--	--	--
FEB 28...		0.330	0.48	1.5	0.050	<0.010	--	--	--	--	--
APR 29...		0.060	0.95	--	0.040	<0.010	30	1	<100	<10	<3.0
JUN 27...		0.060	0.83	--	0.040	<0.010	<10	3	<100	<10	<2.0
SEP 20...		0.100	0.49	0.91	0.080	<0.010	<10	1	200	<10	<1.0

08407500 PECOS RIVER AT RED BLUFF, NM--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	CHROMIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)
OCT 30...	<1	<2	2	<10	<2	90	30	0.1	<4	2
APR 29...	1	<3	6	20	<3	120	60	0.6	5	<3
JUN 27...	<2	2	<1	20	<2	120	40	<0.1	3	2
SEP 20...	<1	<1	<1	<10	<1	50	<10	<0.1	3	<1
DATE	SELENIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	STRONTIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANADIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	SEDIMENT, DIS- CHARGE, SUS- PENDE (MG/L) (80154)	SEDIMENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)
OCT 30...	<2	<2.0	7800	47	10	1030	159	94	K16	29
JAN 31...	--	--	--	--	--	235	45	95	>600	K1
FEB 28...	--	--	--	--	--	626	94	98	K2	K4
APR 29...	<4	<3.0	10000	170	40	679	67	98	K3	K1
JUN 27...	<1	<1.0	11000	120	<10	850	20	97	K4	590
SEP 20...	<1	<1.0	4900	15	<10	167	368	95	140	350

08408500 DELAWARE RIVER NEAR RED BLUFF, NM

LOCATION.--32°01'23", long 104°03'15", in NE1/4SW1/4SE1/4 sec.23, T.26 S., R.28., Eddy County, Hydrologic Unit 13070002, near center of channel at downstream side of pier of bridge on U.S. Highway 285, 2.1 mi north of the New Mexico-Texas state line, 3.6 mi southwest of Red Bluff, 3.7 mi upstream from mouth, 14 mi south of Malaga, mouth at Pecos River mile 405.6.

DRAINAGE AREA.--689 mi².

PERIOD OF RECORD.--April 1912 to September 1913, May 1914 to June 1915, October 1937 to current year. Published as "near Malaga" 1912-13, and as "near Angeles, Tex." 1914-15.

GAGE.--Water-stage recorder. Elevation of gage is 2,900.66 ft above National Geodetic Vertical Datum of 1929 (U.S. Boundary Commission post). Prior to May 1914, at site 3.0 mi upstream at different datum. May 1914 to June 1915, at site 2.5 mi downstream at different datum.

REMARKS.--No estimated daily discharges. Records good. One small upstream diversion. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--54 years (water years 1938-91), 12.3 ft³/s (8,910 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 81,400 ft³/s Oct. 2, 1955 (gage height, 27.0 ft, from floodmarks, from rating curve extended above 6,500 ft³/s on basis of slope-area measurements at gage heights, 12.84 ft, 17.55 ft, and 27.0 ft; no flow many days most years.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 3	0045	*701	*5.83				

Minimum discharge, no flow at times.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.0	2.5	2.9	2.5	2.9	2.5	2.4	1.3	.47	.00	1.9	1.1
2	297	2.5	2.9	2.6	2.9	2.4	2.6	1.2	.43	.00	.96	1.3
3	171	3.0	2.7	2.6	3.0	2.2	2.8	1.1	.37	35	1.8	1.1
4	17	3.5	2.7	2.7	3.0	2.3	2.9	1.1	.30	31	6.9	7.5
5	9.6	3.3	2.7	2.7	2.7	2.2	3.1	1.0	.52	17	6.3	20
6	6.4	2.9	2.8	2.7	2.7	2.1	3.0	1.0	12	14	4.8	7.0
7	4.9	2.8	2.6	2.7	2.7	2.1	3.1	.99	1.2	12	4.6	4.8
8	3.9	3.1	2.7	2.7	2.6	2.1	3.0	.96	1.2	11	4.6	5.0
9	3.2	3.1	2.7	2.8	2.6	2.0	2.8	.91	.84	10	8.5	6.4
10	2.7	3.0	2.7	2.8	2.7	2.1	2.9	.83	7.2	10	6.7	12
11	2.7	2.9	2.8	2.6	2.7	2.1	2.6	.81	14	10	8.6	63
12	2.6	2.9	2.8	2.6	2.8	2.1	2.3	.78	1.5	11	21	8.6
13	2.4	2.9	2.7	2.6	2.9	2.1	2.2	.68	.83	94	18	6.4
14	2.5	2.9	2.7	2.7	2.6	2.1	2.2	.58	.57	52	8.5	6.3
15	2.5	2.9	2.7	2.7	2.5	2.1	2.4	.53	.39	40	26	5.5
16	2.4	2.9	2.9	2.7	2.5	2.2	2.4	.49	.32	20	10	5.0
17	2.3	2.9	2.8	2.8	2.5	1.9	2.2	.46	.25	14	7.1	3.8
18	2.3	2.9	2.8	3.2	2.5	2.0	1.9	.45	.19	9.6	6.6	6.9
19	2.3	3.0	2.7	3.2	2.5	2.0	1.8	.44	.07	8.3	6.7	12
20	2.3	2.9	2.7	3.0	2.5	2.1	1.8	.43	.00	7.6	6.7	12
21	2.1	2.8	2.8	3.1	2.6	2.2	1.7	.44	1.5	7.2	6.2	7.1
22	2.1	2.7	2.9	3.0	2.5	2.1	1.5	8.3	1.6	7.1	5.2	5.1
23	2.2	2.8	2.7	3.0	2.6	2.1	1.7	33	.42	8.1	e4.5	4.4
24	2.2	2.8	2.5	3.0	2.5	2.2	1.6	11	.07	7.2	e3.5	3.9
25	2.2	2.8	2.4	2.9	2.3	2.3	1.6	3.6	.02	58	e3.0	3.7
26	2.1	2.7	2.4	2.9	2.4	2.4	1.5	2.0	.00	92	e2.0	3.3
27	2.1	2.6	2.5	2.9	2.5	2.3	1.3	1.4	.00	20	e1.7	2.8
28	2.1	2.5	2.6	2.9	2.7	2.4	1.3	1.0	.00	16	e1.5	3.0
29	2.1	2.5	2.6	2.9	---	2.1	1.2	.89	.00	10	e1.2	2.8
30	2.3	2.6	2.5	2.9	---	2.0	1.3	.76	.00	4.4	.85	2.7
31	2.5	---	2.4	2.9	---	2.2	---	.57	---	3.1	.96	---
TOTAL	569.0	85.6	83.3	87.3	73.9	67.0	65.1	79.00	46.26	639.60	196.87	234.5
MEAN	18.4	2.85	2.69	2.82	2.64	2.16	2.17	2.55	1.54	20.6	6.35	7.82
MAX	297	3.5	2.9	3.2	3.0	2.5	3.1	33	14	94	26	63
MIN	2.1	2.5	2.4	2.5	2.3	1.9	1.2	.43	.00	.00	.85	1.1
AC-FT	1130	170	165	173	147	133	129	157	92	1270	390	465
CAL YR 1990	TOTAL	2201.03	MEAN	6.03	MAX	297	MIN	.00	AC-FT	4370		
WTR YR 1991	TOTAL	2227.43	MEAN	6.10	MAX	297	MIN	.00	AC-FT	4420		

e Estimated

08410000 RED BLUFF RESERVOIR NEAR ORLA, TX

LOCATION.--Lat 31°54'04", long 103°54'35", Reeves County, Hydrologic Unit 13070001, at right end of Red Bluff Dam on the Pecos River, 2.8 mi upstream from Salt Creek, and 5.2 mi north of Orla.

DRAINAGE AREA.--20,720 mi², approximately (contributing area).

PERIOD OF RECORD.--February 1937 to current year. Monthly contents only for some periods, published in WSP 1312.

GAGE.--Nonrecording gage. Datum of gage is 0.43 ft below National Geodetic Vertical Datum of 1929.

REMARKS.--The reservoir is formed by a rock-faced earthfill dam 9,200 ft long. The dam was completed and storage began in September 1936. The dam and reservoir are owned and operated by the Red Bluff Water Power Control District. The water is used for power development and for irrigation from Mentone to Grandfalls. The uncontrolled emergency spillway 790-foot wide, is a cut through natural ground located to the right of right end of dam. The controlled service spillway is equipped with 12 tainter gates that are 25- by 15-foot high. Inflow is regulated by many reservoirs and diversions dams. The capacity curve is based on Geological Survey topographic map and aerial photography, survey of 1986. Figures given herein represent total contents. Data regarding the dam and reservoir are given in the following table:

	Gage height (feet)	Capacity (acre-feet)
Top of dam.....	2,856.0	-
Crest of emergency spillway.....	2,845.0	324,000
Top of gates (top of conservation pool).....	2,842.0	289,700
Crest of service spillway and bottom of tainter gates.....	2,827.0	155,700
Lowest gated outlet (invert).....	2,764.0	2,800

COOPERATION.--Gage-height records and capacity curve were furnished by the Red Bluff Water Power and Control District.

EXTREMES (AT 0800) FOR PERIOD OF RECORD.--Maximum contents observed, 352,000 acre-ft Sept. 27, 28, 1941 (gage height, 2,846.2 ft), observed on nonrecording gage at service spillway (affected by variable drawdown due to flow through tainter gates); minimum observed, 11,080 acre-ft May 13, 1948 (gage height, 2,781.4 ft).

EXTREMES (AT 0800) FOR CURRENT YEAR.--Maximum contents observed, 77,440 acre-ft Mar. 1-15 (gage height, 2,812.8 ft); minimum observed, 50,950 acre-ft Sept. 3 (gage height, 2,805.5 ft).

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

2,805.0	49,440	2,808.0	59,010	2,811.0	70,070
2,806.0	52,460	2,809.0	62,530	2,812.0	74,090
2,807.0	55,650	2,810.0	66,220	2,813.0	78,280

RESERVOIR STORAGE (ACRE-Feet), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY OBSERVATION AT 08:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	64370	65480	70070	72080	75350	77440	76600	69680	59360	54050	56990	51250
2	64740	65480	70070	72080	75770	77440	76600	69300	59010	53740	56990	51250
3	65480	65480	70070	72080	75770	77440	76600	69300	59010	53740	56990	50950
4	65850	65480	70070	72080	75770	77440	76600	68910	59010	53740	56990	51250
5	66220	65480	70070	72480	75770	77440	76600	68530	58670	53740	56990	51250
6	66220	65480	70470	72480	75770	77440	76600	68140	58340	53420	56990	51250
7	66220	65850	70470	72480	75770	77440	76600	67760	58340	53420	56990	51860
8	66600	66220	70470	72480	76180	77440	76600	67370	58000	53420	56660	53100
9	66600	66600	70470	72880	76180	77440	76600	66600	58000	53100	56320	53420
10	66990	66990	70470	72880	76180	77440	76600	66220	58000	53100	56320	53420
11	66990	66990	70470	73290	76180	77440	76180	65850	58000	53100	56320	54690
12	66990	67370	70470	73290	76600	77440	76180	65110	58000	53740	55990	55010
13	66990	67370	70470	73290	76600	77440	75770	64370	58000	53740	55990	55650
14	66990	67370	70870	73290	76600	77440	75350	64000	58000	55010	56320	52780
15	67370	67760	70870	73690	76600	77440	74930	63260	57660	55010	56320	53100
16	67370	68140	70870	73690	76600	77020	74930	62530	57660	55650	55990	53740
17	67370	68140	70870	73690	76600	77020	74510	61820	57660	55650	55650	54370
18	67370	68530	70870	74090	76600	77020	74510	61470	57660	55650	55010	59010
19	67370	68530	70870	74090	76600	77020	74510	61120	57660	55650	54370	60420
20	66990	68910	71280	74090	77020	77020	74090	60770	57330	55650	54050	61820
21	66990	68910	71280	74090	77020	77020	74090	60420	56990	55650	53740	63260
22	66600	69300	71280	74510	77020	77020	73690	60420	56660	55650	53100	64370
23	66220	69300	71280	74510	77020	77020	73290	60060	56320	55650	53100	65850
24	66220	69300	71280	74510	77020	77020	72480	60060	55990	55330	52780	67370
25	66220	69300	71280	74930	77020	77020	71680	60060	55650	55330	52780	68530
26	66220	69680	71680	74930	77020	77020	71280	60060	55010	55330	52460	69680
27	66220	69680	71680	74930	77020	76600	70870	59710	54690	56320	52160	70870
28	66220	69680	71680	74930	77020	76600	70470	59710	54370	56660	52160	72080
29	66600	69680	71680	75350	---	76600	70470	59710	54050	56990	51860	73290
30	66600	69680	71680	75350	---	76600	70070	59710	54050	56990	51860	74510
31	66220	---	72080	75350	---	76600	---	59360	---	56990	51550	---
MAX	67370	69680	72080	75350	77020	77440	76600	69680	59360	56990	56990	74510
MIN	64370	65480	70070	72080	75350	76600	70070	59360	54050	53100	51550	50950
(+)	2810.0	2810.9	2811.5	2812.3	2812.7	2812.6	2811.0	2808.1	2806.5	2807.4	2805.7	2812.1
(φ)	+1850	+3460	+2400	+3270	+1670	-420	-6530	-10710	-5310	+2940	-5440	+22960

CAL YR 1990 MAX 102700 MIN 58330 (φ) -25600
WTR YR 1991 MAX 77440 MIN 50950 (φ) +10140

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

RIO GRANDE BASIN

08412500 PECOS RIVER NEAR ORLA, TX

LOCATION.--Lat 31°52'21", long 103°49'52", Reeves County, Hydrologic Unit 13070001, on right bank at bridge on Farm Road 652, 5.5 mi downstream from Salt Creek (Screw Bean Arroyo), 5.9 mi northeast of Orla, and 8.5 mi downstream from Red Bluff Reservoir.

DRAINAGE AREA.--21,210 mi², approximately (contributing area).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1937 to current year.

REVISED RECORDS.--WSP 928: 1937.

GAGE.--Water-stage recorder. Datum of gage is 2,730.86 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 16, 1969, at site 6.9 mi downstream at datum 12.81 ft lower.

REMARKS.--No estimated daily discharges. Records good. Most of flow is releases from storage in Red Bluff Reservoir (station 08410000) 8.5 mi upstream. Occasional runoff occurs from draws between dam and station. There are many diversions above Red Bluff Reservoir for irrigation and other uses.

AVERAGE DISCHARGE.--54 years (water years 1938-91), 151 ft³/s (109,400 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,700 ft³/s Sept. 29, 1941 (gage height, 20.74 ft), site and datum then in use; no flow at times in 1946 and 1965.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 646 ft³/s July 14 at 0800 hours (gage height, 6.35 ft); minimum daily, 7.4 ft³/s on several days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	233	11	11	7.9	10	7.9	123	70	11	13	113
2	58	30	11	11	7.8	10	8.8	124	68	9.6	11	102
3	27	10	11	10	7.4	10	9.6	123	57	59	10	92
4	17	10	11	12	7.4	10	8.4	122	28	64	9.3	17
5	15	10	11	11	7.5	9.9	8.4	123	93	65	8.4	34
6	14	9.7	11	11	10	10	8.4	128	94	65	13	24
7	12	9.5	12	11	8.9	8.5	8.4	240	111	51	80	14
8	12	11	12	11	8.9	8.8	8.2	246	76	10	88	9.6
9	11	11	12	11	8.9	7.9	7.4	247	15	7.4	89	13
10	11	11	12	12	8.9	7.9	7.4	247	14	7.4	89	9.0
11	11	11	12	12	8.9	7.9	7.4	247	72	7.5	90	171
12	10	11	13	11	8.9	7.9	63	250	28	90	78	31
13	10	9.5	13	11	9.5	8.2	225	336	70	22	11	19
14	10	9.5	12	8.4	9.5	8.4	191	341	70	311	7.8	14
15	10	9.5	12	7.7	9.5	8.4	86	340	59	31	74	11
16	10	9.5	11	7.7	9.3	8.8	82	340	13	19	329	9.7
17	10	9.5	10	7.4	9.3	8.9	15	333	11	15	336	23
18	10	9.5	10	9.2	8.9	8.9	10	137	10	13	273	26
19	20	9.5	11	10	8.9	8.9	20	124	10	11	133	25
20	63	9.5	9.3	11	9.3	8.9	133	118	82	10	217	23
21	60	9.5	8.6	11	9.5	8.9	96	95	103	10	207	20
22	61	9.5	8.9	11	9.5	8.9	108	138	141	40	98	18
23	60	9.5	9.0	10	9.5	8.9	175	90	142	21	95	15
24	14	9.5	9.5	10	9.5	8.9	361	20	142	81	94	13
25	8.9	9.5	9.6	10	9.0	8.6	328	16	142	150	94	12
26	8.4	9.5	10	9.7	8.9	8.4	199	15	142	250	94	11
27	8.4	9.4	10	9.2	9.4	8.2	120	15	144	115	93	11
28	8.4	9.1	11	8.2	9.5	7.7	121	32	127	32	93	10
29	8.3	8.7	11	7.7	---	7.6	122	69	18	23	94	9.9
30	49	13	11	7.9	---	7.9	123	70	11	23	95	9.2
31	234	---	11	7.9	---	7.9	---	71	---	15	101	---
TOTAL	873.4	540.4	336.9	309.0	250.4	270.1	2668.3	4920	2163	1638.9	3117.5	909.4
MEAN	28.2	18.0	10.9	9.97	8.94	8.71	88.9	159	72.1	52.9	101	30.3
MAX	234	233	13	12	10	10	361	341	144	311	336	171
MIN	8.3	8.7	8.6	7.4	7.4	7.6	7.4	15	10	7.4	7.8	9.0
AC-FT	1730	1070	668	613	497	536	5290	9760	4290	3250	6180	1800
CAL YR 1990	TOTAL	28893.0	MEAN	79.2	MAX	390	MIN	4.8	AC-FT	57310		
WTR YR 1991	TOTAL	17997.3	MEAN	49.3	MAX	361	MIN	7.4	AC-FT	35700		

08412500 PECOS RIVER NEAR ORLA, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: July 1937 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: July 1937 to current year.

WATER TEMPERATURE: March 1953 to current year.

REMARKS.--October 1937 to September 1969, this station was published as 08410100 Pecos River below Red Bluff Dam, near Orla. Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 29,400 microsiemens May 16, 1978; minimum daily, 1,600 microsiemens June 19, 1984.

WATER TEMPERATURE: Maximum daily, 32.0°C Aug. 4, 1991; minimum daily, 0.0°C on many days during winter months .

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 20,800 microsiemens Oct. 1; minimum daily, 4,010 microsiemens July 26.

WATER TEMPERATURE: Maximum daily, 32.0°C Aug. 4; minimum daily, 0.0°C Dec. 23-25.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
OCT									
03...	1030	26	8920	19.5	1400	1300	360	110	1400
NOV									
06...	1200	9.2	15600	12.0	2900	2800	710	280	2700
MAR									
20...	1030	9.0	16200	14.0	3000	2900	720	290	2700
MAY									
07...	1500	235	13100	20.5	2500	2400	600	240	2000
JUN									
26...	0900	142	14100	23.0	2800	2700	660	280	2300
AUG									
14...	1045	7.9	15300	25.0	3000	2900	720	300	2400

DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	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								
03...	17	18	80	1300	2300	1.2	5.8	5540
NOV								
06...	22	44	120	2600	4200	1.3	9.9	10600
MAR								
20...	21	47	110	2600	4000	2.1	4.3	10400
MAY								
07...	17	56	94	2200	3000	1.2	0.20	8150
JUN								
26...	19	63	98	2600	3800	1.1	5.8	9770
AUG								
14...	19	57	95	2900	4100	1.1	7.1	10500

RIO GRANDE BASIN

08412500 PECOS RIVER NEAR ORLA, TX--Continued

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1990 TO SEPTEMBER 1991

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. 1990	873.4	13300	9040	21300	3600	8570	2200	5260	*
NOV. 1990	540.4	14700	10100	14700	4100	6040	2400	3480	*
DEC. 1990	336.9	15500	10600	9640	4400	3990	2500	2250	*
JAN. 1991	309.0	17800	12200	10200	5200	4340	2700	2250	*
FEB. 1991	250.4	16800	11500	7790	4800	3270	2600	1760	*
MAR. 1991	270.1	16500	11300	8270	4700	3460	2600	1880	*
APR. 1991	2668.3	13100	8880	64000	3500	25600	2200	15900	*
MAY 1991	4920	13200	8990	119000	3600	47800	2200	29700	*
JUNE 1991	2163	14200	9650	56400	3900	22900	2300	13600	*
JULY 1991	1638.9	9360	6340	28000	2500	11000	1600	7230	1800
AUG. 1991	3117.5	14600	9980	84000	4100	34300	2400	20100	*
SEPT 1991	909.4	13200	9020	22100	3700	9030	2200	5310	*
TOTAL	17997.3	**	**	446000	**	180000	**	109000	**
WTD.AVG.	49	13500	9180	**	3700	**	2200	**	**

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY EQUIVALENT MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20800	12300	e14600	17300	17800	16600	16200	12900	13900	14900	11500	e15000
2	16900	12500	13000	17200	17700	16700	16300	13000	13800	15100	12800	15300
3	9060	e13800	13100	17000	17500	17000	16200	13000	13800	14200	e13300	15600
4	10400	15000	12600	16900	17400	16900	16000	13100	13900	14600	13800	16400
5	14500	15200	12400	16800	17500	17100	16100	13100	13800	14600	14300	19800
6	14500	15600	12800	16700	17400	17000	16200	13000	13700	14500	14800	18600
7	14600	16800	14700	16800	16900	16700	16300	13100	13800	14600	14600	14900
8	14500	16600	15000	17300	16500	16600	16400	13200	13800	14700	14500	13900
9	14300	16200	15100	17600	16400	16300	16600	13100	14700	14800	14400	14800
10	14200	17500	15000	17500	16300	e16200	16700	13200	15800	15100	14500	10700
11	14100	17900	14800	17600	16400	16100	16500	13300	8810	15400	14600	5450
12	14000	18900	16100	17700	16300	16200	15500	13200	10600	8650	14700	10200
13	14800	18600	15600	17900	16400	16300	12800	13100	13500	12300	14800	10500
14	13800	18300	15000	17400	16500	16200	12800	13000	16300	4500	15200	10700
15	13900	17900	15100	17500	16600	16300	12900	13100	16600	6870	15000	11800
16	e13800	17700	15200	17900	16700	16400	12800	13200	16800	8970	14600	12000
17	13900	17500	15900	e17600	16600	16300	12900	13200	16800	10800	14500	12200
18	13900	e17400	15500	17300	16500	16300	13300	13300	16900	11900	14600	11200
19	14000	17300	17000	17500	16500	16200	13600	13200	16800	13000	14800	14000
20	12500	17200	16300	17700	16400	16200	12900	13100	15600	13700	14600	15800
21	12500	17100	16000	18300	16500	16300	12900	13200	15000	14100	14700	16100
22	12400	17200	17000	18500	16600	16500	12800	13300	14400	14300	14800	16400
23	12500	17200	16800	18800	16700	16600	12800	14100	14200	16800	14700	16600
24	12600	17200	17100	18500	16800	16700	12900	14000	14100	14500	14700	16900
25	13000	17200	17000	18700	16900	16600	12800	15800	14100	14600	14600	17100
26	14500	17100	16800	19300	16800	16700	12900	16100	14200	4010	14500	17200
27	14700	17200	16900	19100	16700	e16600	13000	15600	14100	4380	e14600	17100
28	15000	17200	16800	18700	16800	16500	13100	15500	14200	5800	14700	17000
29	15000	17200	17200	18500	---	16600	13000	13500	14400	8400	14700	16900
30	15200	16800	17400	18100	---	e16500	13100	13800	14500	10400	14800	17000
31	12300	---	17600	e18000	---	16400	---	14000	---	10700	14900	---
MEAN	13900	16700	15500	17800	16800	16500	14300	13600	14500	12000	14400	14600

e Estimated

RIO GRANDE BASIN

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08412500 PECOS RIVER NEAR ORLA, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21.5	14.5	---	4.0	6.0	11.0	13.0	15.0	22.0	20.0	27.0	---
2	20.5	14.0	---	6.0	7.0	12.0	15.5	16.0	21.5	25.0	28.0	24.0
3	18.5	---	7.0	5.5	10.5	---	15.0	15.5	22.0	25.0	---	24.5
4	19.5	15.0	8.0	5.0	9.0	10.5	16.5	16.0	24.0	24.0	32.0	26.0
5	21.0	12.0	4.0	5.0	8.0	14.0	16.0	16.5	23.0	25.0	26.0	24.0
6	21.0	12.0	5.0	6.0	6.5	15.0	14.0	16.5	22.5	25.0	26.0	25.0
7	22.5	10.0	9.0	6.5	9.0	14.0	17.0	17.0	23.0	25.0	25.0	26.0
8	23.5	8.0	5.0	7.0	8.0	15.0	18.0	18.0	23.0	27.0	25.0	28.0
9	19.0	8.0	5.0	8.0	10.0	10.0	17.0	18.0	27.0	25.0	24.0	26.0
10	16.0	10.0	4.0	7.5	12.0	---	15.5	21.0	23.0	26.0	24.5	25.0
11	---	11.0	5.5	7.0	10.5	13.5	16.5	19.0	22.0	27.0	27.0	22.0
12	15.0	9.0	6.0	6.0	11.0	15.5	17.0	20.0	25.0	23.0	25.5	27.0
13	15.0	9.0	8.5	5.5	14.0	15.5	14.5	19.0	25.0	25.0	27.0	26.0
14	15.0	9.0	8.5	5.5	17.5	12.0	15.0	19.0	24.0	23.0	25.5	24.0
15	20.0	11.0	9.5	4.5	11.0	14.0	12.5	18.0	22.0	24.5	25.0	28.0
16	---	11.5	10.0	5.0	10.0	14.0	14.5	20.0	25.0	26.0	26.0	25.0
17	18.0	13.0	10.0	---	13.5	11.0	17.0	18.0	24.5	27.0	25.5	23.0
18	15.0	---	8.0	6.0	11.5	12.0	17.0	23.5	25.5	26.0	27.0	24.0
19	15.0	14.0	7.0	5.5	10.0	15.0	16.5	20.0	26.0	26.0	25.0	17.0
20	15.0	14.0	6.0	6.5	8.0	13.0	17.0	20.0	24.5	27.0	25.5	14.0
21	---	---	5.0	5.0	10.0	12.0	20.0	21.0	24.0	26.0	25.5	14.0
22	13.0	15.0	2.0	4.0	8.5	13.0	16.0	20.0	23.0	24.0	25.5	17.0
23	14.0	---	.0	5.0	13.5	12.0	16.0	22.0	25.0	26.0	25.0	20.0
24	14.5	---	.0	5.0	11.0	13.0	16.0	23.0	24.0	25.0	25.0	20.5
25	14.5	---	.0	4.0	10.0	19.0	17.0	24.0	24.0	26.5	25.0	19.0
26	13.5	---	3.0	6.0	9.0	15.0	17.0	26.5	27.0	28.0	25.0	19.5
27	13.5	---	2.0	6.0	7.0	---	16.5	25.5	23.5	27.0	---	20.5
28	14.0	---	5.0	6.0	10.5	14.0	16.5	25.5	24.0	24.0	24.0	20.0
29	13.0	---	7.0	8.0	---	12.0	15.0	25.0	29.0	26.0	24.0	21.5
30	14.5	---	7.5	7.0	---	---	15.5	23.0	26.0	26.0	24.0	20.0
31	15.0	---	6.0	---	---	12.0	---	21.0	---	27.0	25.0	---
MEAN	16.8	11.6	5.6	5.8	10.1	13.3	16.0	20.1	24.1	25.4	25.7	22.4

RIO GRANDE BASIN

08446500 PECOS RIVER NEAR GIRVIN, TX

LOCATION.--Lat 31°06'47", long 102°25'02", Pecos County, Hydrologic Unit 13070008, on right bank 2.1 mi upstream from Comanche Creek, 3.8 mi northwest of Girvin, and 7.2 mi upstream from bridge on U.S. Highway 67.

DRAINAGE AREA.--29,560 mi² approximately, for contributing area of supplementary gage 7.2 mi downstream.

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

Water-quality records.--Chemical analyses: October 1939 to June 1941, October 1946 to September 1947, October 1953 to September 1982. Pesticide analyses: October 1968 to September 1974.

GAGE.--Water-stage recorder with concrete control and measuring flume. Datum of gage not determined. Supplementary water-stage recorder, used as regular gage prior to July 17, 1951, is now used only for peaks exceeding about 400 ft³/s, 7.2 mi downstream at datum 2,269.65 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Flow is largely regulated by Red Bluff Reservoir (station 08410000). Numerous diversions above station for irrigation.

AVERAGE DISCHARGE.--52 years, 78.8 ft³/s (57,090 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,000 ft³/s Oct. 5, 1941 (gage height, 20.49 ft, at supplementary gage); minimum daily, 1.9 ft³/s June 19, July 14, 1982.
Maximum stage since at least 1932, that of Oct. 5, 1941.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 171 ft³/s Sept. 23 at 0800 hours (gage height, 2.14 ft); minimum daily, 7.2 ft³/s on July 10.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	57	81	48	42	41	39	27	15	14	11	18	13
2	54	80	48	42	40	39	26	15	13	11	21	15
3	64	90	47	42	40	39	26	14	12	10	25	25
4	82	95	46	42	40	38	28	14	13	10	20	17
5	66	94	46	41	41	37	37	14	13	9.7	17	21
6	63	89	46	42	41	37	40	13	12	9.2	16	18
7	73	84	44	42	41	37	37	12	12	8.8	16	15
8	68	92	43	41	40	36	31	12	12	8.3	17	14
9	63	110	43	41	40	36	26	12	12	7.4	16	15
10	55	113	43	43	40	36	30	11	12	7.2	14	22
11	50	108	43	43	40	36	27	11	19	7.3	14	32
12	49	99	43	42	40	36	22	10	29	8.6	13	29
13	48	89	43	42	40	36	20	11	27	9.5	22	34
14	48	82	43	42	39	35	19	12	24	8.6	27	38
15	48	77	44	41	39	35	17	12	23	45	18	73
16	48	74	44	41	39	34	17	14	21	42	18	71
17	50	70	44	41	39	34	17	26	24	16	18	57
18	49	67	45	45	39	34	16	23	35	11	18	48
19	52	65	45	46	39	34	15	20	28	9.1	21	67
20	55	64	44	46	39	34	15	20	23	8.3	15	69
21	60	63	43	46	38	34	17	22	20	8.4	13	68
22	62	62	42	45	38	34	35	23	18	8.1	13	84
23	63	60	42	44	38	33	49	24	20	7.8	12	164
24	65	58	42	44	38	32	38	22	21	8.4	12	138
25	66	56	42	44	38	30	27	19	21	23	12	97
26	66	54	42	43	38	28	21	18	17	12	12	71
27	66	53	42	42	38	27	17	16	14	15	11	59
28	67	51	42	42	38	27	14	14	13	13	12	54
29	66	50	44	42	---	28	15	15	13	36	11	52
30	67	49	44	42	---	27	15	18	12	26	13	50
31	77	---	43	42	---	27	---	18	---	20	13	---
TOTAL	1867	2279	1360	1323	1101	1049	741	500	547	435.7	498	1530
MEAN	60.2	76.0	43.9	42.7	39.3	33.8	24.7	16.1	18.2	14.1	16.1	51.0
MAX	82	113	48	46	41	39	49	26	35	45	27	164
MIN	48	49	42	41	38	27	14	10	12	7.2	11	13
AC-FT	3700	4520	2700	2620	2180	2080	1470	992	1080	864	988	3030
CAL YR 1990	TOTAL	14163.0	MEAN	38.8	MAX	239	MIN	6.6	AC-FT	28090		
WTR YR 1991	TOTAL	13230.7	MEAN	36.2	MAX	164	MIN	7.2	AC-FT	26240		

RIO GRANDE BASIN

429

08447410 PECOS RIVER NEAR LANGTRY, TX
(National stream-quality accounting network)

LOCATION.--Lat 29°48'10", long 101°26'45", Val Verde County, Hydrologic Unit 13040212, at gaging station 7.4 mi east of Langtry, 15.0 mi upstream from confluence with the Rio Grande.

DRAINAGE AREA.--35,179 mi².

PERIOD OF RECORD.--Chemical analyses: October 1954 to current year. Chemical and biochemical analyses: October 1974 to current year. Pesticide analyses: July 1975 to June 1982. Sediment analyses: October 1974 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1970 to September 1976, October 1980 to September 1985.

WATER TEMPERATURE: October 1970 to September 1985.

INSTRUMENTATION.--Specific conductance and water temperature were recorded continuously from November 1980 to September 1985.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 6,000 microsiemens Mar. 21, 22, 1981; minimum daily, 230 microsiemens Oct. 11, 1981.

WATER TEMPERATURE: Maximum daily, 32.5°C June 8, 1981; minimum daily, 1.5°C Dec. 26, 27, 1983.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

		DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI, KF AGAR (COLS. PER 100 ML)	
DATE	TIME											
NOV 07...	1615	264	3160	8.3	15.0	0.40	9.0	94	1.4	K13	42	
FEB 06...	1520	201	5100	8.2	15.5	1.8	9.9	105	1.3	K5	K16	
MAR 19...	1300	169	5210	8.2	16.0	1.9	10.2	110	0.5	K5	K14	
MAY 22...	1520	107	3940	8.3	27.5	3.0	7.4	99	1.3	21	K7	
JUL 02...	1400	112	3260	8.2	27.5	2.0	7.4	99	1.5	K4	K8	
AUG 20...	1215	139	3270	8.2	30.0	1.5	6.9	96	0.9	K12	K22	
DATE		HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	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)	CAR-BONATE WATER DIS IT FIELD (MG/L AS C03)	BICAR-BONATE WATER DIS IT FIELD (MG/L AS HC03)	ALKA-LINITY WAT DIS TOT IT FIELD (MG/L AS CAC03)	SULFATE DIS-SOLVED (MG/L AS S04)
NOV 07...		650	490	150	67	410	7	7.9	0	196	161	410
FEB 06...		990	840	230	100	730	10	11	0	189	155	660
MAR 19...		1000	880	230	110	760	10	12	0	183	150	810
MAY 22...		710	610	150	81	570	9	9.2	0	122	100	550
JUL 02...		580	490	120	69	460	8	7.8	0	119	98	470
AUG 20...		610	500	130	68	460	8	8.3	0	130	107	430
DATE		CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SI02)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)
NOV 07...		650	0.70	15	1860	1810	--	1.09	<0.010	0.010	1.10	1.10
FEB 06...	1300		1.1	12	3160	3150	--	--	<0.010	<0.010	0.900	0.900
MAR 19...	1200		1.0	11	3220	3230	0.690	--	0.020	<0.010	0.710	0.770
MAY 22...	910		0.80	8.7	2460	2340	0.140	--	0.020	<0.010	0.160	0.150
JUL 02...	720		0.90	9.9	1960	1920	--	--	<0.010	<0.010	0.055	0.062
AUG 20...	740		0.90	13	2000	1920	--	--	<0.010	<0.010	0.120	0.130

RIO GRANDE BASIN

08447410 PECOS RIVER NEAR LANGTRY, TX--Continued
(National stream-quality accounting network)

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	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, ORGANIC DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (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- PHORUS ORTHO TOTAL (MG/L AS P)	SEDI- MENT, SUS- PENDE (MG/L)
NOV 07...	0.010	0.020	0.39	--	--	0.40	<0.010	<0.010	<0.010	<0.010	10
FEB 06...	0.010	0.020	0.19	--	--	0.20	<0.010	<0.010	<0.010	<0.010	10
MAR 19...	0.030	0.010	0.37	--	--	0.40	<0.010	<0.010	<0.010	<0.010	13
MAY 22...	0.060	0.060	0.64	--	--	0.70	0.020	<0.010	<0.010	<0.010	19
JUL 02...	0.080	0.070	--	--	--	<0.20	0.010	0.020	<0.010	<0.010	13
AUG 20...	0.040	0.030	0.36	0.27	0.30	0.40	0.010	<0.010	<0.010	<0.010	6
DATE	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. STEE 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 07...	7.1	89	<10	1	100	<10	<1.0	2	<1	<1	40
FEB 06...	5.4	74	<10	<1	<100	<10	<1.0	2	<1	1	30
MAR 19...	5.9	91	--	--	--	--	--	--	--	--	--
MAY 22...	5.5	93	10	1	200	<10	<1.0	<1	1	1	20
JUL 02...	3.9	81	--	--	--	--	--	--	--	--	--
AUG 20...	2.3	78	<10	1	<100	<10	<1.0	1	<1	<1	<10
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 07...	<1	60	10	<0.1	6	<1	<1	<1.0	2600	20	<10
FEB 06...	<1	110	10	0.5	8	1	<1	<1.0	4100	40	<10
MAR 19...	--	--	--	--	--	--	--	--	--	--	--
MAY 22...	<1	80	<10	<0.1	5	<1	<1	<1.0	3200	24	<10
JUL 02...	--	--	--	--	--	--	--	--	--	--	--
AUG 20...	<1	70	<10	0.6	5	<1	<1	<1.0	2700	22	<10

RIO GRANDE BASIN

431

08449400 DEVILS RIVER AT PAFFORD CROSSING NEAR COMSTOCK, TX

LOCATION.--Lat 29°40'35", long 101°00'00", Val Verde County, Hydrologic Unit 13040302, on left bank 10 mi east of Comstock, and 25.5 mi upstream from mouth.

DRAINAGE AREA.--3,961 mi².

PERIOD OF RECORD.--Chemical and biochemical analyses: January 1967 to current year. Sediment analyses: January 1978 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: February 1978 to September 1985.

WATER TEMPERATURE: February 1978 to September 1985.

INSTRUMENTATION.--From August 1980 to September 1985, specific conductance and water temperature were continuously recorded at this station.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 763 microsiemens Oct. 18, 1984; minimum daily, 105 microsiemens Oct. 20, 1983.

WATER TEMPERATURE: Maximum daily, 38.0°C May 6, 1984; minimum daily, 0.0 °C Feb. 1, 2, 1985.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPECIFIC CONDUCTANCE (US/CM)	PH (STANDARD UNITS)	TEMPERATURE WATER (DEG C)	TURBIDITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATURATION)	OXYGEN DEMAND, BIO-CHEMICAL, 5 DAY (MG/L)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREPTOCOCCI, FECAL, KF AGAR (COLS. PER 100 ML)
NOV 06...	1320	511	394	8.3	16.5	0.60	10.1	108	1.4	K1	K5
FEB 05...	1345	432	409	8.3	17.5	0.30	10.3	112	1.2	K1	K4
MAY 21...	1325	324	382	8.2	26.0	0.60	9.4	121	0.5	K1	K9
AUG 22...	0932	290	391	8.2	27.0	0.30	7.6	99	0.5	38	110

DATE	HARDNESS TOTAL (MG/L AS CaCO3)	HARDNESS NONCARB DISSOLV FLD. AS CaCO3 (MG/L)	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)	CARBONATE WATER DIS IT FIELD (MG/L AS CO3)	BICARBONATE WATER DIS IT FIELD (MG/L AS HCO3)	ALKALINITY WAT DIS TOT IT FIELD (MG/L AS CaCO3)	SULFATE DIS-SOLVED (MG/L AS SO4)
NOV 06...	190	18	58	12	7.5	0.2	1.3	0	215	176	5.9
FEB 05...	200	21	59	13	8.2	0.3	1.3	0	220	180	10
MAY 21...	190	25	54	14	8.6	0.3	1.4	0	205	168	8.7
AUG 22...	190	18	53	14	9.1	0.3	1.3	0	210	172	8.4

DATE	CHLORIDE, DIS-SOLVED (MG/L AS CL)	FLUORIDE, 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 CONSTITUENTS, DIS-SOLVED (MG/L)	NITROGEN, NITRATE TOTAL (MG/L AS N)	NITROGEN, NITRATE DIS-SOLVED (MG/L AS N)	NITROGEN, NITRITE TOTAL (MG/L AS N)	NITROGEN, NITRITE DIS-SOLVED (MG/L AS N)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 DIS-SOLVED (MG/L AS N)
NOV 06...	12	0.20	14	211	224	--	1.59	<0.010	0.010	1.50	1.60
FEB 05...	14	0.30	13	218	235	--	--	<0.010	<0.010	1.70	1.70
MAY 21...	17	0.30	16	199	227	1.37	1.28	0.030	0.020	1.40	1.30
AUG 22...	16	0.30	16	211	227	1.18	1.18	0.020	0.020	1.20	1.20

DATE	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, ORGANIC DIS-SOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC DIS-SOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHORUS TOTAL (MG/L AS P)	PHOSPHORUS DIS-SOLVED (MG/L AS P)	PHOSPHORUS ORTHO, DIS-SOLVED (MG/L AS P)	PHOSPHORUS ORTHO TOTAL (MG/L AS P)	SEDIMENT, SUSPENDED (MG/L)
NOV 06...	0.010	0.020	--	--	--	<0.20	<0.010	<0.010	<0.010	<0.010	9
FEB 05...	<0.010	0.010	--	--	--	0.40	0.020	<0.010	<0.010	<0.010	4
MAY 21...	0.020	0.030	0.38	--	--	0.40	<0.010	<0.010	<0.010	<0.010	17
AUG 22...	0.020	0.020	0.38	0.18	0.20	0.40	<0.010	<0.010	<0.010	<0.010	8

RIO GRANDE BASIN

08449400 DEVILS RIVER AT PAFFORD CROSSING NEAR COMSTOCK, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)
NOV 06...	12	99	<10	1	100	<0.5	<1.0	1	<3	<1
FEB 05...	4.7	90	<10	<1	110	<0.5	<1.0	<1	<3	<1
MAY 21...	15	87	10	<1	110	<0.5	<1.0	<1	<3	1
AUG 22...	6.3	73	10	<1	110	<0.5	<1.0	2	<3	<1
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)
NOV 06...	6	<1	10	2	<0.1	<10	<1	<1	<1.0	460
FEB 05...	6	<1	9	<1	<0.1	<10	1	<1	<1.0	480
MAY 21...	66	<1	<4	1	0.1	<10	1	<1	<1.0	500
AUG 22...	8	<1	7	<1	<0.1	<10	<1	<1	<1.0	510
DATE	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	GROSS ALPHA, DIS- SOLVED (UG/L AS U-NAT)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT)	GROSS BETA, DIS- SOLVED (PCI/L AS CS-137)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137)	GROSS BETA, DIS- SOLVED (PCI/L AS SR/ YT-90)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/ YT-90)	RADIUM 226, DIS- SOLVED, RADON METHOD (PCI/L)	URANIUM NATURAL DIS- SOLVED (UG/L AS U)
NOV 06...	9	14	--	--	--	--	--	--	--	--
FEB 05...	8	3	1.7	<0.4	1.9	<0.4	1.4	<0.4	0.20	1.2
MAY 21...	9	3	--	--	--	--	--	--	--	--
AUG 22...	10	<3	2.8	<0.6	0.8	<0.6	<0.6	<0.6	0.20	1.0

RIO GRANDE MAIN STEM

433

08450900 RIO GRANDE BELOW AMISTAD DAM NEAR DEL RIO, TX

LOCATION.--Lat 29°25'30", long 101°27'00", Val Verde County, Hydrologic Unit 13080001, 2.2 mi downstream from Amistad Dam and 10 mi northwest of Del Rio.

DRAINAGE AREA.--123,143 mi².

PERIOD OF RECORD.--Chemical analyses: July 1968 to current year.

REMARKS.--The flow is controlled largely by releases from Amistad Reservoir. Records of daily mean discharge for water year 1991 are given in International Boundary and Water Commission Water Bulletins Nos. 60 and 61.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

		DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	
OCT	30...	0955	4170	1040	8.0	20.0	250	120	74	15
NOV	21...	0755	1500	1060	8.0	19.0	250	120	75	16
DEC	20...	0750	1500	1050	7.9	13.0	250	120	73	16
JAN	24...	0830	1720	1100	8.0	11.0	270	130	80	16
FEB	21...	0745	1470	1210	8.1	11.0	290	150	85	18
MAR	20...	0750	3960	1130	8.0	13.0	260	130	78	17
APR	17...	0740	1940	1110	7.9	20.0	270	130	80	17
MAY	23...	0755	5120	1140	8.0	16.0	280	140	83	17
JUN	19...	0930	1940	1140	7.8	23.0	280	140	84	16
JUL	19...	0655	2010	1160	7.8	18.0	290	150	84	19
AUG	21...	0800	2040	1160	7.9	21.0	290	140	84	19
SEP	18...	0650	13200	1090	7.7	23.0	260	130	75	17
DATE		SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	SULFATE DIS-SOLVED (MG/L AS S04)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)
OCT	30...	110	3	5.5	120	230	100	0.80	17	627
NOV	21...	120	3	4.7	130	220	100	0.80	17	632
DEC	20...	120	3	5.6	120	220	120	0.80	16	646
JAN	24...	120	3	5.5	130	250	120	1.0	15	688
FEB	21...	140	4	5.6	140	270	140	0.90	16	758
MAR	20...	120	3	5.5	130	250	130	0.90	16	698
APR	17...	130	3	5.3	140	240	120	0.80	16	691
MAY	23...	130	3	5.6	140	240	120	0.90	16	695
JUN	19...	130	3	5.5	140	240	120	0.90	16	695
JUL	19...	130	3	5.6	140	260	140	0.90	16	738
AUG	21...	130	3	5.4	140	260	130	1.0	17	733
SEP	18...	130	4	5.2	130	250	120	0.90	17	691

RIO GRANDE BASIN

08459000 RIO GRANDE AT LAREDO, TX
(National stream-quality accounting network)

LOCATION.--Lat 27°29'45", long 99°29'30", Webb County, Hydrologic Unit 13080002, at gaging station 1.1 mi downstream from the highway bridge between Laredo and Nuevo Laredo, Tamaulipas, Mex., and 891.0 mi downstream from the American Dam at El Paso.

DRAINAGE AREA.--132,578 mi², United States and Mexico; from International Boundary and Water Commission Water Bulletin No. 44.

PERIOD OF RECORD.--Chemical analyses: April 1952, July 1955 to September 1986, October 1989 to current year. Chemical, biochemical, and sediment analyses: January 1973 to September 1986. Pesticide analyses: March to May 1979. Sediment analyses: May 1973 to September 1986.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: January 1954 to September 1986.

WATER TEMPERATURE: February 1973 to August 1976.

REMARKS.--Records of discharge for water year 1991 are given in International Boundary and Water Commission Water Bulletin Nos. 60 and 61.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,690 microsiemens June 1, 1963; minimum daily, 214 microsiemens Sept. 26, 1964.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)
OCT 24...	1230	13500	1030	8.0	20.0	260	130	77	16
NOV 21...	1000	3400	1010	8.0	21.0	270	120	81	16
DEC 18...	1110	4500	1010	7.9	16.0	270	130	80	16
JAN 15...	1045	4390	1040	8.1	11.0	280	130	84	16
FEB 20...	1100	2300	1080	8.0	7.0	270	140	79	18
MAR 19...	1145	2400	1130	8.1	19.0	280	130	81	18
APR 16...	1135	4200	1100	7.8	22.0	280	140	81	18
MAY 14...	1350	6100	1030	8.0	19.0	250	130	75	16
JUN 18...	1230	4500	1030	7.7	28.5	250	130	75	15
JUL 19...	1205	3950	1160	7.9	30.5	280	150	82	19
AUG 20...	1145	3310	1130	7.9	30.5	280	150	81	20
SEP 17...	1210	12500	998	7.8	25.5	250	130	72	16

DATE	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT DIS FIX END FIELD CAC03 (MG/L)	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 24...	110	3	5.2	130	220	100	0.70	16	623
NOV 21...	100	3	4.0	140	200	100	0.60	14	602
DEC 18...	110	3	4.8	140	200	100	0.90	14	609
JAN 15...	110	3	4.5	150	240	110	0.90	14	668
FEB 20...	120	3	4.6	130	240	120	0.70	8.4	669
MAR 19...	120	3	5.0	140	250	130	0.80	11	702
APR 16...	120	3	5.4	140	240	120	0.80	15	685
MAY 14...	110	3	5.1	120	210	110	0.80	12	613
JUN 18...	120	3	4.9	120	210	110	0.80	14	622
JUL 19...	130	3	5.5	130	270	130	0.90	15	731
AUG 20...	130	3	5.0	140	260	130	0.90	17	727
SEP 17...	110	3	5.5	120	230	110	0.80	16	632

RIO GRANDE MAIN STEM

435

08461300 RIO GRANDE BELOW FALCON DAM, TX

LOCATION.--Lat 26°33'25", long 99°10'05", Starr County, Hydrologic Unit 13090001, U.S. Tailrace at Falcon Dam.

DRAINAGE AREA.--159,270 mi², United States and Mexico; from International Boundary and Water Commission Water Bulletin No. 44.

PERIOD OF RECORD.--Chemical analyses: July 1955 to current year.

REMARKS.--Records of specific conductance and discharge for water year 1991 are given in International Boundary and Water Commission Water Bulletins Nos. 60 and 61.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB DISSOLV FLD. AS CACO3 (MG/L)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)
OCT 18...	1330	2350	1130	7.8	25.0	260	150	69	21
NOV 23...	1130	1350	1090	7.9	20.0	260	150	74	19
DEC 18...	1130	2580	1110	7.8	18.0	260	140	71	20
JAN 16...	1130	10800	1120	7.9	15.0	260	140	74	19
FEB 19...	1130	1000	1120	8.0	15.5	270	150	76	20
MAR 19...	1115	2430	1120	8.0	18.5	260	140	74	19
APR 17...	1550	1860	1120	7.8	21.5	270	140	75	19
MAY 15...	1130	3390	1120	7.9	24.5	270	140	77	19
JUN 18...	1300	3010	1110	8.0	27.0	250	140	72	18
JUL 16...	0930	200	1100	7.8	26.5	260	150	73	20
AUG 15...	1300	2590	1100	7.8	26.5	260	150	71	20
SEP 17...	1140	280	1110	7.7	26.5	250	150	68	19

DATE	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT DIS FIX END FIELD CACO3 (MG/L)	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 18...	140	4	5.7	100	250	150	0.70	13	712
NOV 23...	120	3	5.1	120	230	120	0.70	13	653
DEC 18...	130	4	6.0	120	230	130	0.70	13	670
JAN 16...	130	3	5.9	120	270	130	0.80	12	715
FEB 19...	130	3	5.6	120	250	130	0.80	13	700
MAR 19...	120	3	5.6	130	240	120	0.80	13	668
APR 17...	130	3	5.4	130	250	130	0.70	14	701
MAY 15...	130	3	5.7	130	240	120	0.80	14	683
JUN 18...	130	4	5.4	110	250	120	0.80	14	677
JUL 16...	120	3	5.8	110	250	130	0.70	14	682
AUG 15...	130	4	5.5	110	260	130	0.90	15	700
SEP 17...	130	4	5.9	100	260	130	0.80	15	690

RIO GRANDE MAIN STEM

08464700 RIO GRANDE AT FORT RINGGOLD, RIO GRANDE CITY, TX

LOCATION.--Lat 26°22'05", long 98°48'20", Starr County, Hydrologic Unit 13090001, at gaging station about 1 mi downstream from Rio Grande City, 3.9 mi downstream from mouth of Rio San Juan, and 1,014.3 mi downstream from the American Dam at El Paso.

DRAINAGE AREA.--174,362 mi², United States and Mexico; from International Boundary and Water Commission Water Bulletin No. 44.

PERIOD OF RECORD.--Chemical analyses: January 1959 to current year.

REMARKS.--Records of specific conductance and discharge for water year 1991 are given in International Boundary and Water Commission Water Bulletins Nos. 60 and 61.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB DISSOLV FLD. AS CACO3 (MG/L)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)
OCT 26...	0900	2010	1190	7.9	22.0	270	160	72	22
NOV 19...	1100	2090	1180	7.9	22.0	270	150	72	21
DEC 17...	1245	2920	1130	7.8	23.5	260	140	71	20
JAN 17...	1030	1100	1130	7.9	15.0	260	140	74	19
FEB 25...	1145	1010	1280	8.0	20.0	290	160	78	22
MAR 18...	1055	2750	1190	8.0	20.0	270	140	76	19
APR 17...	1120	2170	1190	8.0	25.5	270	150	75	21
MAY 16...	1020	3390	1180	8.0	27.0	280	150	80	19
JUN 19...	1100	4120	1140	8.0	30.0	260	150	75	18
JUL 15...	1015	490	1350	7.9	31.0	280	190	71	24
AUG 20...	0930	5230	1120	7.8	30.0	260	160	71	21
SEP 16...	0900	759	1310	7.8	22.0	270	150	76	20

DATE	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT DIS FIX END FIELD CACO3 (MG/L)	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 26...	140	4	5.9	110	250	150	0.50	13	721
NOV 19...	140	4	5.3	110	240	150	0.70	12	709
DEC 17...	130	4	5.8	120	230	140	0.80	13	680
JAN 17...	120	3	5.9	120	270	130	0.80	12	704
FEB 25...	160	4	5.6	120	300	160	0.80	5.9	805
MAR 18...	130	3	5.7	130	250	150	0.70	12	720
APR 17...	140	4	5.3	120	260	140	0.70	9.4	726
MAY 16...	140	4	5.6	130	250	140	0.80	14	728
JUN 19...	140	4	5.7	110	250	130	0.80	14	701
JUL 15...	180	5	6.3	85	310	190	0.70	12	845
AUG 20...	130	3	5.7	110	240	120	0.80	15	668
SEP 16...	160	4	6.3	120	290	170	0.70	14	808

RIO GRANDE MAIN STEM

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08466300 RIO GRANDE NEAR LOS EBANOS, TX

LOCATION.--Lat 26°14'15", long 98°33'49", Hidalgo County, Hydrologic Unit 13090001, on Farm Road 886 at U.S. Border Port of Entry near Los Ebanos and at mile 204.37.

PERIOD OF RECORD.--Chemical analyses: June 1977 to current year.

REMARKS.--Records of specific conductance and discharge for water year 1991 are given in International Boundary and Water Commission Water Bulletins Nos. 60 and 61.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)
		SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	SULFATE DIS-SOLVED (MG/L AS S04)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SiO2)
OCT 26...	1400	1550	1250	8.2	24.0	280	170	74	23
NOV 19...	1400	1150	1380	8.0	23.0	310	180	81	25
DEC 17...	1700	1800	1150	7.9	22.0	260	150	73	20
JAN 14...	1330	8490	1160	7.7	17.0	280	150	80	19
FEB 25...	1315	1420	1690	8.0	22.0	360	210	99	28
MAR 18...	1340	3050	1180	8.0	22.0	270	140	76	20
APR 17...	1350	1540	1450	7.8	29.0	320	180	88	25
MAY 16...	1400	5440	1180	8.0	28.5	260	130	75	17
JUN 19...	1205	3710	1180	8.0	30.0	260	150	76	17
JUL 15...	1430	530	1600	7.8	31.5	350	220	95	28
AUG 19...	1315	4480	1140	7.8	31.5	270	160	74	21
SEP 16...	1230	1300	1500	7.7	32.0	310	170	90	21
OCT 26...	150	4	5.8	110	270	160	0.60	13	762
NOV 19...	170	4	5.7	120	310	180	0.50	12	858
DEC 17...	130	3	6.1	120	240	140	0.80	13	692
JAN 14...	130	3	7.4	120	280	130	0.80	14	736
FEB 25...	200	5	6.3	150	380	230	0.70	9.4	1040
MAR 18...	130	3	5.6	130	260	140	0.70	13	724
APR 17...	180	4	5.7	140	320	190	0.70	11	903
MAY 16...	140	4	6.0	130	230	150	0.70	13	707
JUN 19...	140	4	6.1	110	250	150	0.70	13	721
JUL 15...	200	5	6.2	130	350	230	0.70	14	1000
AUG 19...	130	3	5.9	110	270	140	0.80	16	724
SEP 16...	180	4	7.5	140	270	240	0.50	14	906

RIO GRANDE MAIN STEM

08469200 RIO GRANDE BELOW ANZALDUAS DAM, TX

LOCATION.--Lat 26°08'00", long 98°20'05", Hidalgo County, Hydrologic Unit 13090002, at gaging station 0.5 mi downstream from Anzalduas Dam, 12.2 mi from Hidalgo, and 1,077.1 mi downstream from the American Dam at El Paso.

DRAINAGE AREA.--176,112 mi², United States and Mexico; from International Boundary and Water Commission Water Bulletin No. 44.

PERIOD OF RECORD.--Chemical analyses: March 1959 to current year. Pesticide analyses: October 1967 to July 1972.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1977 to current year.

REMARKS.--Records of specific conductance and discharge for water year 1991 are given in International Boundary and Water Commission Water Bulletins Nos. 60 and 61. Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations for this station may be obtained from the Geological Survey District office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 3,310 microsiemens Feb. 12, 1984; minimum daily, 368 microsiemens Sept. 6, 1987.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 2,170 microsiemens Feb. 20; minimum daily, 583 microsiemens July 3.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)
OCT 19...	0845	1510	1310	8.0	26.0	300	180	77	25
NOV 21...	0945	600	1870	8.1	24.0	410	260	110	32
DEC 19...	0810	1990	1290	8.0	20.0	280	160	75	22
JAN 16...	0905	2350	1190	7.9	16.0	270	150	76	20
FEB 20...	1130	620	2030	8.1	20.0	410	260	110	34
MAR 22...	0900	1360	1230	8.1	24.0	270	140	77	20
APR 17...	0810	540	1490	7.9	27.0	330	190	89	26
MAY 15...	0830	8750	1170	8.0	26.0	270	150	78	19
JUN 21...	0810	1780	1160	7.9	31.0	250	150	74	17
JUL 19...	0745	220	1800	8.0	30.0	390	240	110	29
AUG 21...	0750	1780	1160	7.9	31.0	270	160	73	21
SEP 13...	0750	230	731	7.6	27.0	170	74	51	10

DATE	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	SULFATE DIS-SOLVED (MG/L AS S04)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SI02)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)
OCT 19...	170	4	6.1	110	290	180	0.70	13	829
NOV 21...	250	5	5.9	150	410	290	0.60	15	1200
DEC 19...	150	4	5.7	120	260	170	0.80	13	768
JAN 16...	140	4	5.7	120	260	140	0.80	13	730
FEB 20...	280	6	6.1	160	440	320	0.80	15	1300
MAR 22...	130	3	5.5	130	270	150	0.80	13	745
APR 17...	190	5	5.9	140	330	200	0.70	15	939
MAY 15...	140	4	5.2	130	240	130	0.80	14	703
JUN 21...	140	4	5.8	110	250	150	0.70	13	715
JUL 19...	230	5	7.4	160	370	300	0.60	16	1160
AUG 21...	140	4	5.6	110	300	150	0.90	15	773
SEP 13...	83	3	5.2	95	130	88	0.40	8.2	433

RIO GRANDE MAIN STEM

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08469200 RIO GRANDE BELOW ANZALDUAS DAM, TX--Continued

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1990 TO SEPTEMBER 1991

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. 1990	35768	1330	814	78700	180	17100	280	27400	300
NOV. 1990	24095	1410	860	55900	190	12400	300	19300	320
DEC. 1990	38571	1340	817	85100	180	18500	280	29600	310
JAN. 1991	72150	1210	736	143000	150	30100	260	50400	280
FEB. 1991	24137	1500	921	60000	210	13800	310	20400	340
MAR. 1991	45823	1320	808	99900	180	21700	280	34700	300
APR. 1991	32937	1240	758	67400	160	14300	270	23600	290
MAY 1991	75834	1170	716	147000	150	30600	250	51600	270
JUNE 1991	106230	1150	700	201000	140	41500	250	71000	270
JULY 1991	29326	1220	744	58900	160	12800	260	20500	280
AUG. 1991	53622	1210	738	107000	160	22500	260	37600	280
SEPT 1991	19900	1220	746	40100	160	8510	260	14100	280
TOTAL	558393	**	**	1143000	**	244000	**	400000	**
WTD.AVG.	1530	1240	758	**	160	**	270	**	290

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY EQUIVALENT MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1280	1340	1340	1210	1190	1790	1160	1160	1150	1130	1380	1190
2	1070	1280	1350	1230	1200	1790	1150	1160	1160	1180	1360	1240
3	1370	1290	1340	1260	1210	1860	1180	1160	1200	583	1290	1250
4	1490	1270	1400	1240	1210	1960	1170	1180	1160	594	1240	1220
5	1570	1280	1480	1230	1210	1770	1180	1210	1160	635	1180	1170
6	1530	1340	1470	1240	1220	1600	1170	1140	1150	720	1160	1230
7	1430	1390	1490	1240	1270	1680	1160	1180	1140	955	1150	1220
8	1330	1420	1540	1260	1500	1610	1160	1210	1130	925	1180	1260
9	1280	1440	1580	1270	1400	1390	1170	1240	1140	880	1200	1190
10	937	1290	1490	1240	1490	1300	1170	1180	1140	886	1180	1030
11	910	1270	1470	1210	1490	1270	1200	1170	1160	923	1190	769
12	958	1250	1540	1210	1520	1260	1210	1170	1140	1090	1180	697
13	1120	1260	1590	1210	1490	1270	1420	1160	1060	1260	1200	733
14	1330	1270	1670	1210	1620	1270	1540	1140	1130	1450	1180	766
15	1450	1290	1520	1200	1860	1240	1590	1180	1150	1730	1190	899
16	1570	1260	1340	1200	1680	1220	1550	1080	1160	1960	1200	880
17	1430	1250	1280	1200	1780	1210	1520	1120	1170	1950	1180	905
18	1390	1320	1290	1190	2110	1240	1490	1340	1140	1870	1190	999
19	1330	1340	1260	1190	2100	1230	1460	1320	1120	1410	1220	1240
20	1300	1620	1250	1190	2170	1220	1710	1410	1090	1810	1250	1330
21	1400	1940	1250	1210	2060	1200	1510	1400	1100	1740	1380	1350
22	1280	1860	1250	1190	2000	1250	1370	1190	1060	1760	1180	1560
23	1260	1770	1240	1200	1900	1250	1290	1240	1130	1880	1190	1680
24	1320	1600	1250	1200	1890	1250	1260	1330	1210	2070	1160	1710
25	1260	1500	1240	1190	1920	1240	1190	1340	1190	1990	1160	1750
26	1290	1410	1330	1190	1910	1260	1210	1370	1190	1650	1160	1800
27	1300	1420	1230	1190	2040	1220	1200	1440	1210	1470	1190	1720
28	1340	1370	1230	1200	1980	1210	1190	1180	1160	1360	1200	1440
29	1360	1380	1230	1200	---	1220	1200	680	1140	1380	1220	1430
30	1310	1390	1230	1200	---	1200	1180	1160	1140	1410	1200	1590
31	1350	---	1210	1200	---	1170	---	1150	---	1390	1190	---
MEAN	1310	1400	1370	1210	1660	1380	1300	1210	1150	1360	1210	1240

08470400 ARROYO COLORADO AT HARLINGEN, TX

LOCATION.--Lat 26°10'24", long 97°42'01", Cameron County, Hydrologic Unit 13090002, on downstream side of northbound service road on U.S. Highways 83 & 77, about 18 mi from point of main floodway that divides into North Floodway and Arroyo Colorado.

PERIOD OF RECORD.--Chemical and biochemical analyses: November 1986 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	
OCT 30...	1554	127	4420	8.0	23.5	120	11.5	136	6.3	330	280	
JAN 09...	0920	187	4230	7.5	13.0	95	9.2	87	3.9	100	390	
MAR 07...	0811	202	4980	7.9	21.0	100	7.6	88	7.0	200	360	
MAY 02...	1402	216	4330	7.9	27.0	100	7.7	98	5.6	700	500	
JUL 10...	1055	280	3560	7.9	29.0	130	6.6	87	3.4	K12000	600	
SEP 03...	1620	274	3810	7.9	30.5	130	6.7	91	2.7	1000	720	
DATE		HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	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)	CAR-BONATE WATER DIS IT FIELD MG/L AS C03	BICAR-BONATE WATER DIS IT FIELD MG/L AS HC03	ALKA-LINITY WAT DIS TOT IT FIELD MG/L AS CAC03	SULFATE DIS-SOLVED (MG/L AS S04)
OCT 30...	980	760	230	97	690	10	12	0	262	215	830	
JAN 09...	890	680	220	83	620	9	9.5	0	260	213	770	
MAR 07...	1000	790	250	100	700	9	11	0	309	354	1000	
MAY 02...	890	660	210	88	610	9	12	0	281	230	740	
JUL 10...	700	500	170	66	500	8	9.7	0	243	199	670	
SEP 03...	790	590	190	75	540	8	11	0	244	200	660	
DATE		CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SI02)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)
OCT 30...	930	0.50	25	3100	2970	4.26	3.97	0.140	0.130	4.40	4.10	
JAN 09...	850	0.20	24	2820	2730	4.25	4.26	0.150	0.140	4.40	4.40	
MAR 07...	1000	0.90	25	3240	3260	3.73	4.03	0.170	0.170	3.90	4.20	
MAY 02...	900	0.80	26	2910	2750	3.34	3.20	0.260	0.200	3.60	3.40	
JUL 10...	710	0.60	24	2330	2280	2.04	1.95	0.060	0.050	2.10	2.00	
SEP 03...	690	1.0	24	2460	2330	1.94	2.25	0.060	0.050	2.00	2.30	
DATE		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-PHORUS ORTHO TOTAL (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS P04)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
OCT 30...	0.010	0.020	1.3	1.3	0.620	0.440	0.460	0.430	1.4	214	73	
JAN 09...	0.140	0.120	1.1	1.2	0.830	0.690	0.700	0.750	2.1	123	62	
MAR 07...	0.040	0.030	1.5	1.5	0.590	0.530	0.520	0.540	1.6	200	109	
MAY 02...	0.230	0.220	1.3	1.5	0.620	0.390	0.330	0.430	1.0	251	146	
JUL 10...	0.020	0.030	1.4	1.4	0.420	0.360	0.380	0.420	1.2	237	179	
SEP 03...	0.030	0.020	1.8	1.8	0.720	0.420	0.380	0.370	1.2	182	135	

RIO GRANDE BASIN

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08470400 ARROYO COLORADO AT HARLINGEN, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	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)	LEAD, DIS- SOLVED (UG/L AS PB)
OCT 30...	99	30	6	<100	<10	<1.0	2	1	6	20	1
JAN 09...	91	--	--	--	--	--	--	--	--	--	--
MAR 07...	98	30	5	<100	<10	<1.0	2	<1	4	30	<1
MAY 02...	99	20	7	200	<10	<1.0	1	1	3	20	<1
JUL 10...	92	--	--	--	--	--	--	--	--	--	--
SEP 03...	12	<10	10	100	<10	<1.0	<1	<1	3	<10	<1
DATE	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	
OCT 30...	130	20	0.2	15	3	1	<1.0	5000	20	20	
JAN 09...	--	--	--	--	--	--	--	--	--	--	
MAR 07...	150	20	0.4	17	4	2	<1.0	4600	43	10	
MAY 02...	130	10	0.1	19	2	1	<1.0	4600	41	10	
JUL 10...	--	--	--	--	--	--	--	--	--	--	
SEP 03...	110	<10	<0.1	15	2	1	<1.0	3800	37	<10	

RIO GRANDE MAIN STEM

08475000 RIO GRANDE NEAR BROWNSVILLE, TX
(National stream-quality accounting network)

LOCATION.--Lat 25°52'35", Long 97°27'15", Cameron County, Hydrologic Unit 13090002, at International Boundary and Water Commission gaging station, 1,000 ft downstream from El Jardin pumping plant, 6.8 mi below International Bridge between Brownsville and Matamoros, Tamps., Mex., and 48.8 mi above the Gulf of Mexico.

DRAINAGE AREA.--176,333 mi².

PERIOD OF RECORD.--Chemical analyses: January 1932, March 1943 to February 1944, February 1966 to September 1974. Chemical and biochemical analyses: October 1974 to current year. Pesticide analyses: May 1975 to May 1982. Sediment analyses: February 1966 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: March 1943 to February 1944, April 1967 to September 1983.

WATER TEMPERATURE: October 1966 to September 1983.

SUSPENDED-SEDIMENT DISCHARGE: February 1966 to September 1983.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 4,130 microsiemens May 29, 1972; minimum daily, 337 microsiemens Sept. 3, 1967.

WATER TEMPERATURE (1966-69, 1970-75, 1977-83): Maximum daily, 35.0°C on several days during summer months of 1982

and 1983; minimum daily, 8.0°C Jan. 10, 1967.

SEDIMENT CONCENTRATION: Maximum daily mean, 6,000 mg/L Feb. 28, 1983; minimum daily mean, 4 mg/L Apr. 26, 1970, Aug.

16, 18, 24, 27, 1977.

SEDIMENT LOAD: Maximum daily, 181,000 tons Feb. 28, 1983; minimum daily, 0.12 tons Aug. 26, 1983.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	
		HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	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)	CAR-BONATE WATER DIS IT FIELD (MG/L AS C03)	BICAR-BONATE WATER DIS IT FIELD (MG/L AS HC03)	ALKA-LINITY WAT DIS TOT IT FIELD (MG/L AS CAC03)	SULFATE DIS-SOLVED (MG/L AS S04)
OCT 31...	0829	79	1470	8.0	23.0	22	8.3	96	3.0	320	360	
JAN 08...	1606	94	1250	8.1	13.0	45	10.2	96	3.4	560	80	
MAR 06...	1512	89	2060	8.2	22.5	15	10.3	121	5.2	--	--	
MAY 02...	0905	10	1780	8.0	27.5	20	6.4	82	4.6	210	140	
JUL 10...	1245	255	998	8.2	28.0	30	6.7	86	3.0	2000	K68	
SEP 04...	0825	378	1220	8.0	29.0	17	6.3	83	2.0	K10000	4000	
DATE		CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SI02)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)
OCT 31...	200	0.60	14	930	916	--	--	0.010	0.010	<0.100	<0.100	
JAN 08...	160	0.50	14	790	781	0.480	0.480	0.020	0.020	0.500	0.500	
MAR 06...	340	0.90	16	1390	1360	0.280	0.280	0.050	0.040	0.330	0.320	
MAY 02...	250	0.70	19	1130	1100	--	--	0.030	<0.010	<0.050	<0.050	
JUL 10...	120	0.50	13	598	613	0.210	0.210	0.040	0.030	0.250	0.240	
SEP 04...	150	0.70	15	776	762	0.160	0.160	0.020	0.020	0.180	0.180	

RIO GRANDE MAIN STEM

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08475000 RIO GRANDE NEAR BROWNSVILLE, TX--Continued
(National stream-quality accounting network)

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	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- PHORUS ORTHO TOTAL (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY)
OCT 31...	0.030	0.020	0.77	0.80	0.070	0.030	<0.010	<0.010	--	37	7.9
JAN 08...	0.170	0.160	0.83	1.0	0.120	0.060	0.050	0.050	0.15	35	8.9
MAR 06...	0.040	0.050	0.76	0.80	0.030	0.030	0.020	<0.010	0.06	23	5.5
MAY 02...	0.020	0.010	0.78	0.80	0.110	0.020	<0.010	0.020	--	95	2.6
JUL 10...	0.030	0.020	0.87	0.90	0.090	<0.010	0.020	0.030	0.06	39	27
SEP 04...	0.110	0.140	0.89	1.0	0.140	0.060	0.040	0.040	0.12	46	47
DATE	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)	LEAD, DIS- SOLVED (UG/L AS PB)
OCT 31...	93	30	4	110	<0.5	<1.0	<1	<1	2	18	1
JAN 08...	72	--	--	--	--	--	--	--	--	--	--
MAR 06...	90	40	4	100	<10	<1.0	2	<1	3	30	<1
MAY 02...	71	20	7	120	<0.5	<1.0	<1	<3	2	11	<1
JUL 10...	97	--	--	--	--	--	--	--	--	--	--
SEP 04...	7	20	4	100	<0.5	<1.0	<1	<3	2	9	<1
DATE	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	
OCT 31...	62	3	<0.1	4	2	<1	<1.0	1600	8	13	
JAN 08...	--	--	--	--	--	--	--	--	--	--	
MAR 06...	70	<10	0.1	10	<1	<1	<1.0	2400	13	<10	
MAY 02...	59	4	<0.1	<10	2	<1	<1.0	2100	<6	16	
JUL 10...	--	--	--	--	--	--	--	--	--	--	
SEP 04...	51	<1	<0.1	<10	<1	<1	<1.0	1400	7	16	

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 1991

Station no.	Station name	Location	Drainage area (mi ²)	Period of record	Measurements	
					Date	Discharge (ft ³ /s)
Colorado River basin						
08129500	Dove Creek Spring near Knickerbocker, Tex.	Lat 31°11'06", long 100°43'51", Irion County, at headquarters ranchhouse, 500 ft upstream from Dove Creek, 1.8 mi upstream from Stilson Dam on Dove Creek, and 8.5 mi southwest of Knickerbocker.	a	1944-58† 1959-91	10-22-90 12-04-90 02-01-91 03-29-91 05-22-91 07-11-91 08-22-91 09-04-91	12.6 11.2 12.5 11.8 11.8 14.3 13.4 11.9
08143900	Springs at Fort McKavett, Tex.	Lat 30°50'03", long 100°05'37", Menard County, at Fort McKavett.	a	1902, 1905, 1922, 1942, 1948-49, 1951-52, 1955-56, 1958-91	03-21-91 08-09-91	24.4 28.0
08146500	San Saba Springs, at San Saba, Tex.	Lat 31°11'44", long 98°42'42", San Saba County, 150 ft upstream from bridge on U.S. Highway 190 at San Saba and 0.8 mi east of courthouse.	a	1939, 1952, 1957, 1959-91	03-21-91 08-15-91	7.49 6.84
08149400	South Llano River near Telegraph, Tex.	Lat 30°15'43", long 99°56'01", Edwards County, 3.7 mi upstream from Paint Creek, 5.7 mi south of Telegraph, and 18.7 mi southwest of Junction.	a	1939, 1952, 1956, 1959-91	03-20-91 08-09-91	22.7 21.7
08149500	Seven Hundred Springs near Telegraph, Tex.	Lat 30°16'12", long 99°55'22", Edwards County, about 3 mi upstream from Paint Creek, about 5 mi south of Telegraph, and about 18 mi southwest of Junction.	a	1939, 1952, 1955-56, 1959-91	03-20-91 08-09-91	16.9 17.9
08155400	Barton Creek above Barton Springs at Austin, Tex.	Lat 30°15'48", long 97°46'19", Travis County, just upstream from upper dam of Barton Creek swimming pool in Zilker Park and upstream from all springs known as Barton Springs at Austin.	125	1919-91	11-13-90 01-17-91 04-12-91 05-30-91 06-04-91	0 19.9 61.7 7.46 5.02
Guadalupe River basin						
08168000	Hueco Springs near New Braunfels, Tex.	Lat 29°45'33", long 98°08'23", Comal County, two springs located 400 and 500 ft west of the Guadalupe River, 600 ft downstream from the mouth of Elm Creek, and 4.2 mi north of New Braunfels.	a	1944-91	11-23-90 01-17-91 04-03-91 05-20-91 07-22-91 09-27-91	17.0 13.1 19.1 82.1 55.1 26.2
Nueces River basin						
08204000	Leona River spring flow near Uvalde, Tex.	Lat 29°09'15", long 99°44'35", Uvalde County, at old road crossing on White's Ranch, 2.0 mi downstream from Cooks Slough, and 4.7 mi southeast of Uvalde.	a	1935-65† 1966-91	10-23-90 12-17-90 02-20-91 04-09-91 08-27-91	14.0 19.4 17.2 10.4 .17

See footnotes at end of table.

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at low-flow partial-record station during water year 1991—Continued

Station no.	Station name	Location	Drainage area (mi ²)	Period of record	Measurements	
					Date	Discharge (ft ³ /s)
Rio Grande basin						
08425500	Phantom Lake Springs near Toyahvale, Tex.	Lat 30°09'15", long 103°50'43", Jeff Davis County, 375 ft downstream from source of spring, 3.5 mi southwest of Toyahvale, and 7.0 mi southwest of Balmorhea.	a	1931-33† 1942-66† 1967-91	11-05-90 01-09-91 04-05-91 06-26-91 08-15-91 09-06-91	20.7 9.44 5.06 4.14 69.5 25.9
08427000	Giffin Springs at Toyahvale, Tex.	Lat 30°56'51", long 103°47'19", Reeves County, 2,000 ft northwest of post office in Toyahvale.	a	1919, 1922-23, 1925, 1932-33† 1941-66, 1968-91	01-09-91 06-26-91	4.79 5.65
08456300	Las Moras Springs at Brackettville, Tex. b/	Lat 29°18'33", long 100°25'13", Kinney County, in springflow pool at Brackettville, 160 ft south of U.S. Highway 90, and 1,550 ft upstream from bridge on Brackettville-Fort Clark Road.	a	1896, 1899- 1900, 1902, 1904-06, 1910, 1912, 1925, 1928, 1951-91	11-13-90 12-11-90 01-15-91 02-12-91 03-12-91 04-10-91 06-11-91 07-09-91 08-13-91 09-10-91	34.8 21.2 12.8 19.0 14.2 18.2 8.0 7.4 7.5 7.4

† Operated as a continuous-record station.

a Not applicable.

b Records furnished by the International Boundary and Water Commission.

Crest-stage partial-record stations

The following table contains annual maximum stage and (or) discharge at partial-record stations operated primarily for the purpose of defining the flooding characteristics of the streams. At stations where discharge is given, or is footnoted "to be determined", a stage-discharge relation has been, or will be, defined by discharge measurements obtained by current meter or by indirect procedures. Water-stage recorders are located at these flood-hydrograph stations to facilitate complete hydrograph definition. At stations where only the maximum stage is given (discharge column is dashed), data are generally collected for use in stage-frequency studies of flood-profile definition. Gages at these stations usually consist of a device that will register the peak stage occurring between inspections of the gage. The years used in the column "Period of record" identify the years in which the annual maximum has been determined.

Annual maximum stage and (or) discharge during water year 1991

Station no.	Station name	Location	Drainage area (mi ²)	Period of record	Annual maximum		
					Date	Gage height	Discharge (ft ³ /s)
Colorado River basin							
08142000	Hords Creek at Coleman, Tex.	Lat 31°50'50", long 99°25'25", Coleman County, on right bank in city park, 1,250 ft downstream from bridge on U.S. Highway 84 and 283 and State Highway 206, 1 mi north of courthouse in Coleman, 3.9 mi downstream from Bachelor Creek, 12 mi downstream from Hords Creek Dam, and at mile 14.3.	107	1941-70† 1971-91	09-19-91	8.89	3,040
08158050	Boggy Creek at U.S. Highway 183, Austin, Tex.	Lat 30°15'47", long 97°40'20", Travis County, on U.S. Highway 183, 1.6 mi south of intersection at Webberville Road and U.S. Highway, 183, 4.1 mi east of State Capitol Building in Austin, and 0.7 mi upstream from mouth.	13.1	1975-86† 1987-91	08-15-91	12.26	2,720
Guadalupe River basin							
08169500	Guadalupe River at New Braunfels, Tex.	Lat 29°41'52", long 98°06'23", Comal County, Comal Mills in New Braunfels and 0.4 mi upstream from Interregional Highway 35.	1,652	1898-1902, 1915-27† 1974-91	04-05-91	11.64	3,670
08173900	Guadalupe River at Gonzales, Tex.	Lat 29°29'49", long 97°27'17", Gonzales County, at Gonzales Hydro Station in Gonzales and 1.4 mi upstream from U.S. Highway 183.	--	1977-91	01-19-91	27.94	--
08177900	San Antonio River at Navarro Street, San Antonio, Tex.	Lat 29°25'50", long 98°29'24", Bexar County, at bridge on Navarro Street in San Antonio.	--	1973-91	01-18-91	*638.24	--
08177920	San Antonio River at Dolorosa Street, San Antonio, Tex.	Lat 29°25'24", long 98°29'32", Bexar County, just downstream Dolorosa Street in San Antonio.	--	1980-91	10-09-91	21.60	--
08178100	San Pedro Creek at Santa Rosa Street, San Antonio, Tex.	Lat 29°25'51", long 98°29'49", Bexar County, at bridge on Santa Rosa Street in San Antonio.	--	1973-91	01-18-91	*643.22	--
08178350	Martinez Creek at Fredericksburg Road, San Antonio, Tex.	Lat 29°27'22", long 98°31'04", Bexar County, at bridge on Fredericksburg Road in San Antonio.	--	1973-91	04-05-91	*682.21	--
08178400	Alazan Creek at West Martin Street, San Antonio, Tex.	Lat 29°25'51", long 98°30'51", Bexar County, at bridge on West Martin Street in San Antonio.	--	1973-91	01-18-91	*636.45	--
08178450	Apache Creek at South Zarzamora Street, San Antonio, Tex.	Lat 29°24'47", long 98°31'42", Bexar County, at bridge on South Zarzamora Street in San Antonio.	--	1973-91	08-03-91	*628.05	--
08178500	San Pedro Creek at Furnish Street, San Antonio, Tex.	Lat 29°24'22", long 98°30'38", Bexar County, at bridge on Furnish Street in San Antonio.	--	1973-91	04-05-91	*608.23	--
08178550	San Antonio River at Ashley Street (Berg's Mill), San Antonio, Tex.	Lat 29°20'04", long 98°27'20", Bexar County, at bridge on Ashley Street in San Antonio.	--	1973-91	04-05-91	*517.55	--
Nueces River basin							
08207220	Rutledge Hollow at 7th Street, Poteet, Tex.	Lat 29°02'07", long 98°34'18", Atascosa County, in city of Poteet at 7th Street and 2.0 mi above Atascosa River.	9.74	1979-91	02-04-91	*423.70	--
08207300	Atascosa River at U.S. Highway 281, Pleasanton, Tex.	Lat 28°57'44", long 98°28'51", Atascosa County, at bridge on U.S. Highway 281 in Pleasanton.	--	1973-91	02-04-91	*349.72	--

* Elevation, in feet.

† Operated as a continuous-record station.

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

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 1991

Station no.	Tributary to	Location	Drainage area (mi²)	Measured previously (water years)	Measurements	
					Date	Dis-charge (ft³/s)
Colorado River basin						
Clear Creek near Menard	San Saba River	Lat 30°54'13", long 99°55'27", Menard County, at bridge on U.S. Highway 190, about 9 mi west of Menard.		1984-90	03-21-91	24.2
Tanner Spring near Telegraph	South Llano River	Lat 30°15'45", long 99°56'03", Edwards County, about 5.6 mi south of Telegraph, Kimble County, and 18.6 mi southwest of Junction, at mouth.	--	1939, 1962, 1989-90	03-20-91	9.56
Garwood Irr. Co. Canal near Garwood	Colorado River	Lat 29°30'55", long 96°24'33", Colorado County, on right bank of Colorado River, 1.8 mi east of State Highway 71, 5.7 mi downstream from U.S. Highway 90A crossing, and 4.7 mi north of Garwood.	--	1990	05-01-91	402 398 302 308 308 308 392 302 362 368 05-03-91 387 381 06-05-91 437 427 382 393 06-06-91 370 380 315 318 326 326 06-07-91 319 322 442
Guadalupe River basin						
San Antonio Springs	San Antonio River	Lat 29°27'56", long 98°28'04", Bexar County, just below Hildebrandt Street in San Antonio, Tex.	--	1951-52, 1959-62, 1972, 1974-77, 1979-90	12-12-90 04-15-91 06-03-91 08-08-91	0 4.90 1.74 2.02
San Pedro Springs	San Pedro Creek	Lat 29°26'42", long 98°30'06", Bexar County, at San Pedro Park in San Antonio.	--	1933-35, 1951-52, 1958-61, 1966, 1971, 1974-77, 1979-90	04-15-91 06-03-91	4.58 1.00
Rio Grande basin						
Mud Springs 1/	Mud Creek	Lat 29°27'10", long 100°37'30", Kinney County, on Mays Ranch about 16 mi northwest of Brackettville.	--	1939-41, 1952-53, 1962, 1965-90	11-03-90 12-11-90 01-15-91 02-12-91 02-12-91 03-12-91 04-10-91 06-11-91 07-09-91 08-13-91 09-10-91	18.2 21.7 22.0 22.4 24.1 21.5 21.8 18.3 18.4 14.8 13.8
Pinto Springs 1/	Pinto Creek	Lat 29°24'10", long 100°27'15", Kinney County, on C.C. Belcher Ranch 7.5 mi northwest of Brackettville.	--	1939-41, 1952-53, 1965-90	11-13-90 12-11-90 01-15-91 06-11-91 07-09-91 08-13-91 09-10-91	3.00 1.80 .20 0 0 0 0

1/ Measurements by International Boundary and Water Commission.

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FACTORS FOR CONVERTING INCH-POUND UNITS TO INTERNATIONAL SYSTEM UNITS (SI)

The following factors may be used to convert the inch-pound units published herein to the International System of Units (SI).

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

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