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UNITED STATES AND MEXICO

WATER BULLETIN NUMBER 59

Flow of the Rio Grande and Related Data

From Elephant Butte Dam, New Mexico to the Gulf of Mexico

1989

INTERNATIONAL BOUNDARY AND WATER COMMISSION
UNITED STATES AND MEXICO

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STORAGE IN MAJOR RESERVOIRS
SOURCES OF RIVER FLOW
DIVERSIONS
QUALITY OF WATER
CLIMATOLOGICAL DATA
DRAINAGE BASIN AND IRRIGATED AREAS

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FOREWORD

This bulletin presents the fifty-ninth compilation of the stream discharges and related data concerning the international portion of the Rio Grande, prepared jointly by the United States and Mexican Sections of the International Boundary and Water Commission. The streamflow data and kindred subjects pertain to the Rio Grande and its important tributaries near their confluence with the main stream from Elephant Butte, New Mexico to Gulf of Mexico. The first publication in the series was Water Bulletin No. 1 for the year 1931. The present volume contains information for the year 1989.

International stream gaging on the Rio Grande was initiated in 1889, when the station at El Paso, Texas was established. Several stations on the Rio Grande and its tributaries downstream from El Paso were established in 1900 and operated until 1914. Between 1914 and 1923, except for a few months in 1919 and 1920, all stream-gaging work on the international reach of the river was suspended. In 1923 the work was resumed and carried on independently by the two countries until 1931, when the present joint program of stream measurements was adopted.

During 1989 the United States Section of the Commission operated the stream-gaging stations on the Rio Grande at El Paso, below American Dam, Fort Quitman, Candelaria, Above Rio Conchos, Below Rio Conchos, Johnson Ranch, Foster Ranch, Del Rio, El Indio, Laredo, Rio Grande City, San Benito, and Brownsville. The Mexican Section operated the stream-gaging stations on the Rio Grande at Below Amistad Dam, Jimenez, Piedras Negras, and Below Anzalduas Dam. The station at Falcon Dam was operated jointly by the two Sections. Each Section operated the gaging stations on tributary streams, floodways, and diversions within its own country.

In 1976 the names of several gaging stations were changed, pursuant to agreement between the two Sections of the Commission. Where it was decided that some confusion might result from this change, a note giving the former name was added to the descriptive heading of the gaging station.

The total drainage area within the outer rim of the Rio Grande Basin is 335,500 square miles. However, about half of this area yields no runoff to the river, the estimated productive area of the watershed being 176,333 square miles. Reservoirs in the basin have a total storage capacity of approximately 11,966,300 acre-feet, in addition to the International Amistad and Falcon Reservoirs, which have a combined conservation capacity of 6,051,436 acre-feet. In the Rio Grande basin, a total of 2,055,419 acres is irrigated below Elephant Butte Dam on the Rio Grande and above Girvin on the Pecos River. The flow of the Rio Grande to the Gulf of Mexico below Brownsville prior to construction of Falcon Dam averaged 2,600,000 acre-feet per year for the period 1934-1952. For the period 1954-1989, this flow has averaged 800,676 acre-feet per year.

The mean sea level datum, referred to as the U. S. C. & G. S. datum in the description of the stream-gaging stations, is the North American Vertical Datum of 1927.

ACKNOWLEDGMENTS

Other agencies which have contributed to some part of the data published herein include: The Agricultural Research Service and the Soil Conservation Service of the U. S. Department of Agriculture; the Bureau of Reclamation, the National Park Service, and the Geological Survey of the U. S. Department of the Interior; the National Weather Service of the U. S. Department of Commerce; the Texas Board of Health; the Texas Water Commission; the Middle Rio Grande Conservancy District; the Red Bluff Water Power Control District; State of Colorado; Division of Water Resources; the Rio Grande Compact Commission; the Delta Lake Irrigation District; the Del Rio City Water Department; the Eagle Pass City Water Department; the Laredo City Water Department; the Del Mar Conservation District; Central Power and Light Company; the El Paso Department of Water and Sewerage; the Maverick County Control and Improvement District No. 1; the Ministry of Agriculture and Hydraulic Resources of Mexico; the Meteorological Service of Mexico; Meteorological Service of the State of Chihuahua, Mexico; Federal Power Commission of Mexico; Potable Water Board of Piedras Negras, Coahuila; Federal Board of Public Improvement Works of Nuevo Laredo, Tamaulipas; and the Water and Drainage Board of Cd. Acuna, Coahuila.

Additional contributions have been made by individuals and corporations; and specific notation is made for such, as well as for those of the above-named agencies, where the data appear. The courtesy and cooperation of those who made these contributions are acknowledged with appreciation.

PERIOD AVERAGES

In Water Bulletins Nos. 1 through 29, normal or average discharge volumes shown for the various gaging stations were based on a period beginning in 1924, or thereafter when records became available.

Beginning with Water Bulletin No. 30, the periods have been revised to include only the years following completion of major projects below which the flow of the Rio Grande or a major tributary was modified, or later when records became available. The revised periods are based on the completion of Caballo Dam in 1938, irrigation projects on the Rio Conchos and its tributaries in 1947, International Falcon Dam in 1953, and International Amistad Dam and Luis L. Leon Dam in 1968.

For purposes of comparison with the average flows in the Rio Grande below Caballo Dam, records of average discharge in the Rio Grande below Elephant Butte Dam have also been revised to include the same period.

The period of record used to determine the average diversions from the Rio Grande to the United States below Falcon Dam published herein was restricted to begin in 1957, the first complete year of record after United States' waters in Falcon Reservoir were placed under the jurisdiction of the 93rd District Court of Texas.

FOREWORD

UNITS OF MEASURE

Data collected by the Mexican Section are computed and published in a Spanish version of the water bulletin in metric units. The Mexican data are converted and reported in this bulletin in English units. Conversion factors conform generally to those in the National Bureau of Standards Miscellaneous Publication 286 "Units of Weight and Measure (United States Customary and Metric) - Definitions and Tables of Equivalents." However, for convenience some of the factors have been shortened and modified to facilitate conversion, reconversion to the original units when necessary, and checking of data. Conversion of the mean daily discharges, the monthly average discharge, and the monthly volumes from metric to English units is direct. For this reason the monthly average discharge in cubic feet per second and monthly volumes in acre-feet shown for gaging stations operated by the Mexican Section cannot necessarily be obtained in the usual manner from total monthly flow in second-foot-days. For this reason, evaporation and rainfall data, when totaled, may not be equivalent to the direct conversion from metric to English units. The following factors have been used for data in this bulletin.

METRIC UNITS		ENGLISH UNITS	
	LENGTHS		
1	Centimeter	0.39370	Inch
1	Meter	3.28084	Feet
1	Kilometer	0.62137	Mile
	AREAS		
1	Square Meter	10.76391	Square Feet
1	Hectare	2.47105	Acres
1	Square Kilometer	0.38610	Square Mile
	VOLUMES		
1	Cubic Meter	61023.74	Cubic Inches
1	Cubic Meter	35.31467	Cubic Feet
1	Cubic Meter	1.30795	Cubic Yards
1000	Cubic Meters	0.81071	Acre-Feet
1	Liter	0.26417	U. S. Gallon
	WEIGHTS		
1	Kilogram	2.20462	Pounds
1	Metric Ton	2204.623	Pounds
1	Metric Ton	1.10231	Short Tons (2,000 lbs.)

Both English and metric units are used to report the figures in the descriptive headings and for the yearly figures of the annual and period summaries of all gaging station pages. The yearly figures for the summaries are obtained by direct conversion from English to metric system of units, except for those stations operated by the Mexican Section, where the figures furnished in the metric system of units are used.

GENERAL HYDROLOGIC CONDITIONS FOR 1989

ALONG AND ADJACENT TO THE INTERNATIONAL PORTION OF THE RIO GRANDE

During the year 1989, temperatures were 101% of average on the watershed of the Rio Grande below El Paso, Texas. Evaporation was 102% of average. Precipitation was 50% of average from El Paso to Amistad Dam, 79% of average from Amistad Dam to Falcon Dam, 76% of average from Falcon Dam to Rio Grande City, and 58% of average in the Lower Rio Grande Valley on the United States side.

The yearly volume of flow of the Rio Grande was average from El Paso to the confluence of the Rio Conchos with the Rio Grande and below average from the Rio Conchos confluence to the Gulf of Mexico. In the reach between El Paso and the confluence of the Rio Conchos, the flow was 100% of average, ranging from 59% of average at Below American Dam to 129% at Fort Quitman; in the reach between the confluence of the Rio Conchos and Amistad Reservoir, where most of the flows originate from releases from Luis L. Leon Reservoir (El Granero) on the Rio Conchos, the flow was 65% of average; and in the reach between Amistad Dam and Falcon Reservoir, where flows mostly originate from releases from Amistad Reservoir, the flow was 94% of average. Most of the flows passing the Rio Grande stations below Falcon Dam originated from releases from Falcon Reservoir, which in 1989 amounted to 3,182,748 acre-feet, or 134% of the average for the thirty-six years of operation, 1954-1989. The volume of flow wasted to the Gulf of Mexico was 180,155 acre-feet, which is 23% of the average for this thirty-six year period.

The total annual flow of all measured tributaries below Fort Quitman was 45% of average. The total flow of these tributaries in the United States was 394,685 acre-feet, or 58% of average. For Mexico, the measured tributary flow, excluding Rio Alamo and Rio San Juan, was 632,894 acre-feet, or 49% of average. The flows of the Rio Alamo and Rio San Juan were 19% and 16% of their respective averages.

Return flow to the Rio Grande at Maverick Power Plant near Eagle Pass was 797,509 acre-feet, or 119% of the twenty-two year average. Return flow to the Rio Grande through various drains in the Maverick County Irrigation District, excluding storm inflow, amounted to 58,388 acre-feet, or 53% of the twenty-two year average.

There were no floods of consequence on the Rio Grande in 1989. The highest peak flows recorded on the Rio Grande were, above Falcon Dam, 13,100 second-feet at Laredo; and, below Falcon Dam, 16,500 second-feet at Below Falcon Dam.

For all reservoirs in the Rio Grande basin having a capacity greater than 15,000 acre-feet, excepting Amistad and Falcon International Reservoirs, the average amount of water in storage in 1989 was 6,082,700 acre-feet, or 126% of the average 4,829,000 acre-feet. In the United States, stored water in these reservoirs was 171% of average, while in Mexico it was 100% of average.

In International Amistad Reservoir there was a decrease in storage during the year of 730,800 acre-feet. Storage ranged from a high of 3,593,200 acre-feet on January 3 and other days to a low of 2,860,200 acre-feet on December 31 and averaged 3,195,200 acre-feet during the year, or 107% of the average for the period 1969 through 1989. In International Falcon Reservoir, there was a net decrease in storage during the year of 1,430,300 acre-feet. The storage varied from a high of 2,769,700 acre-feet on January 1 to a low of 1,215,400 acre-feet on November 16 and averaged 1,805,300 acre-feet during the year, or 92% of the average for the thirty-six years of operation, 1954 through 1989.

Diversions from the Rio Grande in the United States were 133% of average. Diversions into the American Canal were 127% of average, into the Maverick Canal, 111% of average and in the United States below Falcon Dam, 156% of the average for the thirty-three years, 1957-1989. In Mexico, diversions were 168% of average. Diversions into the Acequia Madre were 118% of average, while diversions through the Anzalduas Canal for irrigation in Mexico were 171% of the thirty-six year average.

In 1989, the total reported irrigated acreage from the Rio Grande and its tributaries below El Paso, Texas showed an inappreciable change from the previous year. On the United States side, there was an increase of about 1% above Falcon Dam and a decrease of about 1% below Falcon Dam, for an inappreciable change overall. On the Mexican side, there was no change above Falcon Dam and no change below Falcon Dam.

08-3610.00 RIO GRANDE BELOW ELEPHANT BUTTE DAM, NEW MEXICO

DESCRIPTION: Concrete wall control, bubbler gage, and water-stage recorder located on the left bank 100 feet (30.5 m) upstream from the cableway at latitude 33°08'45", longitude 107°12'20", and river mile 1,389.1 (2,235.5 km); 0.7 river mile (1.1 km) downstream from Elephant Butte Dam, 1.5 river miles (2.4 km) upstream from Cuchillo Negro River, and 135.1 river miles (217.4 km) upstream from the American Dam at El Paso, Texas. The zero of the gage is 4,242.09 feet (1,292.99 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 24 discharge measurements during the year and a continuous record of gage heights. Records were furnished by the United States Geological Survey. Records available: 1915 through 1989.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. Beginning December 1940, hydroelectric power generation facilities for 27,000 kva were placed in operation at Elephant Butte Dam.

EXTREME FLOWS FROM RECORDS:

Average Flow in Second-Feet (Cubic Meters per Second)

Daily:	Max. 8,220 (233)	May 22, 1942	Min. 0	Occasionally
Monthly:	Max. 7,600 (215)	May 1942	Min. 1.2 (0.03)	Nov. 1971
Yearly:	Max. 2,510 (71.1)	1942	Min. 253 (7.16)	1964

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	680	108	1,860	2,020	1,980	1,930	1,300	1,920	658	8.3	11	13
2	682	108	1,870 *	2,020	1,980 *	1,880	1,310	1,820	659	* 8.5	12	13
3	684 *	109 *	1,870 *	2,020 *	1,990	641	1,320	1,890	656	8.7	11	14
4	117	109	1,870	2,010	1,970	645	1,330	1,780	656	8.4	12	14 *
5	93	110	1,870	2,000	1,960	1,540	1,760	648	1,030	20	13	14
6	96	110	1,860	2,000	1,950	1,910	1,980	644	1,210	8.5	13	14
7	99	110	1,870	2,010	1,940	1,900	1,940	1,520	1,200	8.8	13	13
8	98	111	1,860	2,000	1,940	1,880	709	1,880	992	9.5	13	13
9	97	165	1,860	2,000	1,950	1,830	712	1,880	597	8.6	13	13
10	97	112	1,860	2,010	1,960	627	1,560	1,880	594	9.3	13	13
11	98	110	1,860	2,020	1,960	630	2,000	1,380	595	11	12	13
12	102	109	1,870	2,010	1,950	1,530	1,980	634	591	35	12	12
13	104	109	1,870	2,020	737	1,870	1,990	635	947	9.7	12	12
14	102	110	1,880	2,020	722	1,850	1,950	1,500	1,130	9.0	14	13
15	102	901	1,890 *	2,020	1,570 *	1,860	708	1,910	913 *	8.6	17	12
16	102	1,270	1,890	2,030	1,950	1,820	707	1,900 *	555	8.0	18	13
17	102	1,270	2,320	2,030 *	1,950	626	1,540	1,890	556	* 9.0	18	13
18	104	1,280	3,120	2,020	1,950	656	1,990	1,820	938	12	18	13
19	99	1,270	3,120	1,990	1,900	1,130	2,000	649	1,140	14	19	13 *
20	96	1,280	3,100	1,990	682	1,390 *	1,990	655	1,140	6.8	21	12
21	96	1,280	3,200	1,990	689	1,660	1,970 *	1,070	1,140	10	22	12
22	96	1,350	3,140	1,980	1,550	2,020	710	1,260	921	9.5	8.2	13
23	96	1,660	3,140 *	1,990	1,910	1,850	703	1,260	577	7.5	8.6	13
24	96	1,860	3,150	1,990	1,900	727	1,550	1,260	581	7.7	9.0	13
25	98	1,860	3,160	1,980	1,890	1,080	1,990	1,240	229	8.0	9.8	13
26	100	1,870	3,160	1,990	1,860	1,930	1,990	662	18	9.4	10	14
27	104	1,850	2,630	1,980	660	1,920	1,980	296	14	9.0	11	14
28	107	1,840	1,990	1,980	664	1,920	1,940	659	16	9.6	11	14
29	106		2,000	1,980	683	1,920	688	660	11	10	11	14
30	107		2,000	1,980	1,580 *	1,900 *	685	665	12	10 *	12	14
31	112		2,010		1,950		1,480 *	659 *		9.6		14
Sum	4,872	22,431	71,150	60,080	50,327	45,072	46,462	38,526	20,276	322.0	397.6	408

Month	Current Year 1989								Period 1938-1989		
	Extreme Gage Feet		ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low						
	High	Low	Day		Day				Average	Maximum	Minimum
Jan.			3	684	5	93	157	9,663	26,263	119,504	200
Feb.			26	1,870	! 1	108	801	44,491	43,100	168,059	188
Mar.			21	3,200	! 1	1,860	2,300	141,124	69,869	141,124	1,022
Apr.			!16	2,030	!22	1,980	2,000	119,167	83,837	162,000	11,207
May			3	1,990	27	660	1,620	99,822	89,673	467,000	512
June			22	2,020	17	626	1,500	89,399	96,438	363,000	16,913
July			!11	2,000	30	685	1,500	92,156	96,369	211,636	41,352
Aug.			1	1,920	27	296	1,240	76,415	76,131	140,668	9,530
Sept.			6	1,210	29	11	676	40,217	33,252	129,000	163
Oct.			12	35	20	6.8	10	639	15,908	125,443	148
Nov.			21	22	22	8.2	13	789	15,755	158,000	74.2
Dec.			! 3	14	!12	12	13	809	21,245	129,759	138
Yearly				3,200		6.8	987	714,691	667,840	1,818,800	183,415
	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
				90.6		0.19	28.0	881,557	823,767	2,243,453	226,239

* Discharge measurement made on this day ø Mean daily ! And other days

08-3625.00 RIO GRANDE BELOW CABALLO DAM, NEW MEXICO

DESCRIPTION: Cableway, gravity well, and water-stage recorder located on the left bank at latitude 32°53'05", longitude 107°17'30", and river mile 1,360.8 (2,190.0); 0.8 river mile (1.3 km) downstream from Caballo Dam, about 3 miles (5 km) northeast of Arrey, New Mexico, 5 miles (8.0 km) south of Caballo, New Mexico, and 106.8 river miles (171.9 km) upstream from the American Dam at El Paso, Texas. The zero of the gage is 4,140.90 feet (1,262.15 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 42 discharge measurements during the year and a continuous record of gage heights. Records were furnished by the El Paso office of the United States Bureau of Reclamation. Records available: 1938 through 1989.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. In addition to the outflow from Caballo Dam listed below, 607 acre-feet (749,000 m3) of water were diverted in 1989 into Bonita Lateral, a small irrigation canal just below Caballo Dam. Prior to 1938, discharge records were kept at Percha Dam, a low diversion dam about 1.5 miles (2.4 km) downstream from this station. Small accretions to the river take place between the station and Percha Dam.

EXTREME FLOWS FROM RECORDS:

		Average Flow in Second-Feet (Cubic Meters per Second)		
Daily:	Max. 7,650 (217)	May 20, 1942	Min. 0.1 (0.003)	Several days 1954, 1955 and 1972
Monthly:	Max. 6,710 (190)	May 1942	Min. 0.1 (0.003)	Nov. & Dec. 1955
Yearly:	Max. 2,480 (70.2)	1942	Min. 284 (8.04)	1964

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.0	2.0	1,100 *	1,560	1,220	1,790	2,430	1,180	1,080	4.0	2.0	2.0
2	2.0	2.0	1,120 *	1,570	1,400	1,860	2,420	626 *	1,210	4.0	* 2.0	2.0
3	* 2.0	2.0	1,290	1,480	1,420 *	1,930	2,420	486	1,220	4.0	2.0	2.0
4	2.0	2.0	1,460	1,520	1,400	1,930	2,440	1,310	1,210	4.0	2.0	* 2.0
5	2.0	2.0	1,480	1,590	1,340	1,910	2,340	1,520	1,130	4.0	2.0	2.0
6	3.0	2.0	1,510	1,600	1,320	1,940	2,310 *	1,590	1,040	4.0	2.0	2.0
7	3.0	2.0	1,540	1,610	1,320	1,970 *	2,510	1,630	928	4.0	2.0	2.0
8	3.0	2.0	1,570 *	1,590	1,310	1,980	2,610 *	1,610	969	4.0	2.0	2.0
9	3.0	2.0	1,560 *	1,560	1,640	2,020	2,520	1,570 *	1,010	4.0	2.0	2.0
10	2.0	2.0	1,890	1,560	1,770 *	2,050 *	2,510	1,570	1,010	4.0	2.0	2.0
11	2.0	2.0	2,170 *	1,450	1,720	2,050	2,450	1,750	1,010	4.0	2.0	2.0
12	2.0	2.0	2,180	1,460 *	1,690	2,050	2,410	1,880	1,280	4.0	2.0	2.0
13	2.0	135	2,170	1,490	1,610	2,130	2,410 *	1,870	1,370 *	* 4.0	2.0	2.0
14	2.0	244 *	2,250	1,300	1,580	2,250 *	2,360	1,580	1,290	3.0	2.0	* 2.0
15	2.0	262	2,620 *	1,120	1,580	2,260	2,340	1,380	1,130	3.0	2.0	2.0
16	2.0	260	2,780 *	1,110	1,640	2,410	2,350	1,280 *	1,030	3.0	2.0	2.0
17	* 2.0	265	2,790	1,110	1,640	2,520	2,180	1,350	1,030	3.0	* 2.0	2.0
18	2.0	271	2,790	1,250	1,580	2,510	2,190	1,460	1,110	3.0	2.0	2.0
19	2.0	280	2,820	1,420 *	1,460	2,510	2,180 *	1,560	1,290	3.0	2.0	2.0
20	2.0	269	2,800	1,460	1,250	2,510	2,030	1,430	1,380	2.0	2.0	2.0
21	2.0	505	2,680	1,400	1,190	2,540 *	1,980	1,220	1,360	2.0	2.0	2.0
22	2.0	727 *	2,580 *	1,300	1,190	2,520	1,980	1,320	954	2.0	2.0	2.0
23	2.0	1,150	2,580	1,290	1,550	2,540	1,990	1,380 *	496	2.0	2.0	2.0
24	2.0	1,210 *	2,480	1,270	1,850 *	2,540	1,890	1,420	392	2.0	2.0	2.0
25	2.0	1,210	2,300	1,260	1,930	2,550	1,740	1,650	300	2.0	2.0	2.0
26	2.0	1,160	2,250	1,300 *	2,080	2,550	1,610 *	1,770	446	2.0	2.0	2.0
27	2.0	1,120	1,850	1,290	2,160	2,480	1,610	1,450	554 *	2.0	2.0	2.0
28	2.0	1,120	1,700	1,290	2,150	2,420 *	1,690	1,180	500	2.0	2.0	2.0
29	2.0		1,740 *	1,250	2,180	2,420	1,750	1,040	219	2.0	2.0	2.0
30	2.0		1,760	1,220	2,050	2,430	1,680	1,140 *	5.0	2.0	2.0	2.0
31	2.0		1,650		1,790		1,650	1,040		2.0		2.0
Sum	66.0	10,212.0	63,460	41,680	50,010	67,570	66,980	43,242	27,953.0	94.0	60.0	62.0

Month	Current Year 1989								Period 1938-1989		
	Extreme Gage Feet		Ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low						
	High	Low	Day		Day				Average	Maximum	Minimum
Jan.			! 6	3.0	! 1	2.0	2.1	131	4,116	118,691	19.2
Feb.			!24	1,210	! 1	2.0	365	20,255	12,203	112,046	11.7
Mar.			19	2,820	1	1,100	2,050	125,871	87,908	162,823	24,900
Apr.			7	1,610	!16	1,110	1,390	82,671	81,588	212,000	25,470
May			29	2,180	!21	1,190	1,610	99,193	80,128	412,000	75.2
June			!25	2,550	1	1,790	2,250	134,023	106,504	354,000	25,289
July			8	2,610	!26	1,610	2,160	132,853	114,344	237,283	28,200
Aug.			12	1,880	3	486	1,390	85,769	103,492	179,000	20,500
Sept.			20	1,380	30	5.0	932	55,444	50,497	181,000	6,757
Oct.			! 1	4.0	!20	2.0	3.0	186	6,871	122,717	15.5
Nov.			! 1	2.0	! 1	2.0	2.0	119	3,446	82,403	7.0
Dec.			! 1	2.0	! 1	2.0	2.0	123	4,737	146,380	6.0
Yearly				2,820		2.0	1,020	736,638	655,834	1,795,670	206,085
	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
				79.9		0.06	28.9	908,628	808,958	2,214,923	254,202

* Discharge measurement made on this day Ø Mean daily ! And other days

08-3640.00 RIO GRANDE AT EL PASO, TEXAS

DESCRIPTION: Gravity well and water-stage recorder located on the downstream side of the first pier from the left abutment of the Courchesne Bridge at latitude 31°48'10", longitude 106°32'25", and river mile 1,255.7 (2,020.8 km); 5.5 river miles (8.9 km) upstream from the Paso del Norte Bridge between El Paso, Texas and Cd. Juarez, Chihuahua and 1.7 miles (2.7 km) upstream from the American Dam at El Paso, Texas. The zero of the gage is 3,722.30 feet (1,134.56 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Mean daily discharges in 1989 were computed by adding the flows in the American Canal and the flows at the river station below the American Dam. Because the mean daily discharges are rounded, the monthly sum for this station may not equal the sum of the monthly sums of the other two stations. Extreme discharges are those passing the El Paso station. In 1989, 17 discharge measurements were made at this station. Records available: 1889 through 1989.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 24,000 second-feet (680 m3/sec) on June 12, 1905. Min. occasionally no flow. Since Elephant Butte Dam was closed in 1915, the largest peak flow to pass this station was 13,500 second-feet (382 m3/sec) on September 3, 1925.

Average Flow in Second-Feet (Cubic Meters per Second)

Daily:	Max. 23,680 (671)	June 12, 1905	Min. 0	Occasionally
Monthly:	Max. 14,300 (405)	June 1905	Min. 0	Occasionally
Yearly:	Max. 2,780 (78.7)	1905	Min. 70.1 (1.99)	1902

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	139	121	388	896	631	1,130	1,130	1,270	1,000	612	161	119
2	140	107	360	856	653	967	1,220	1,420	908	437	158	116
3	137	87.4	359	793	633	986	1,270	1,070	803	367	161	114
4	139	89.1	395	747	657	1,060	1,250	865	934	354	168	118
5	144	87.5	556	704	714	1,150	1,180	843	890	342	166	122
6	141	84.5	748	608	672	1,140	1,240	916	892	333	164	126 *
7	136	80.3	761	548	669	1,030	1,110	1,020	848	319	157	124
8	129	81.0	768	567	633	975	1,100	1,020	768	302	148 *	118
9	127	83.6	708	601	615 *	903	1,290	1,050	696	297	146	118
10	126	96.2	605	618	593	942	1,330	892 *	541	296	143	117
11	127 *	115	597	663	590	1,100	1,310 *	783	571	302	143	118
12	129	125	965	688	793	1,080	1,300	775	522	279	142	107
13	124	105	1,050	757	821	1,070	1,160	896	499	266	141	110
14	122	76.5	983 *	747 *	888	1,040	1,100	1,030	484	257	138	108
15	127	74.4	935	789	963	996	1,110	1,350 *	642	253	135	108
16	127	85.3	966	876	893	987	1,220	1,110	583	237	131	104
17	125	148	985	744	841	965	1,270	967	551	223 *	135	108
18	123	173	1,000	709	860	1,230	1,230	893	391	206	134	108
19	122	173	1,100	645	800	1,310	1,160	891	360	209	130	106
20	116	180	1,240	625	803	1,230	1,080	1,020	353	210	131	106
21	103	196	1,230	764	890	1,190	1,050	1,010	382	219	137 *	112
22	110	176	1,240	782	789	1,100	1,100	1,110	476	222	133	97.0
23	113	146 *	1,050	746	656 *	1,020 *	1,100	883	442	189	128	89.6
24	109 *	210	974	661	627	1,010	1,200	845	653	180	130	99.6
25	104	538	990	678	671	1,180	1,190 *	780	770	183	134	99.4
26	95.5	645	1,090	571	833	1,270	1,190	820	664	176	131	99.2
27	105	576	1,280	531	889	1,190	1,120	1,040	535	179	130	101
28	103	464	1,350	562	1,090	1,150	1,010	1,230 *	521	169	123	102
29	104		1,020	557	1,190	1,070	986	1,040	662	187	112	114
30	104		894	587	1,210	1,060	1,150	915	602	180	111	113
31	105		889		1,200		1,220	792		167		115
Sum	3,755.5	5,123.8	27,476	20,620	24,767	32,531	36,376	30,546	18,943	8,152	4,201	3,416.8

Current Year 1989									Period 1938-1989		
Month	Extreme Gage Feet		Ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum
Jan.	4.88	2.85	5	144	26	95.5	121	7,449	8,775	121,646	220
Feb.	4.30	2.75	26	645	15	74.4	183	10,163	10,016	99,154	136
Mar.	5.86	3.56	28	1,350	3	359	886	54,498	37,319	113,851	1,790
Apr.	4.88	3.90	1	896	27	531	687	40,899	42,449	139,000	6,820
May	5.70	3.90	30	1,210	11	590	799	49,125	46,202	357,000	522
June	5.87	4.75	19	1,310	9	993	1,080	64,524	53,928	304,000	6,020
July	5.91	4.90	10	1,330	29	986	1,170	72,151	61,333	198,000	9,652
Aug.	6.38	4.52	2	1,420	12	775	985	60,587	57,570	158,000	4,870
Sept.	5.43	3.64	1	1,000	20	353	631	37,573	38,676	171,000	2,430
Oct.	4.29	3.08	1	612	31	167	263	16,169	16,841	132,722	151
Nov.	3.09	2.87	4	168	30	111	140	8,333	10,131	100,899	229
Dec.	2.93	2.82	6	126	23	89.6	110	6,777	10,612	159,987	206
Yearly	6.38	2.75		1,420		74.4	592	428,248	393,852	1,559,200	57,481
	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
	1.94	0.84		40.2		2.11	16.8	528,235	485,809	1,923,242	70,902

* Discharge measurement made on this day Ø Mean daily ! And other days

08-3645.00 DIVERSIONS FROM THE RIO GRANDE AMERICAN CANAL AT EL PASO, TEXAS

DESCRIPTION: Concrete control consisting of two triangular-shaped wingwalls extending toward the center of the canal about one-fourth of the canal width and downstream at a 30° angle with the canal side walls, bubbler gage, water-stage recorders (graphic and digital), and binary decimal transmitter located on the right bank of the concrete-lined canal at El Paso, Texas, latitude 31°46'40", longitude 106°31'35", and about 2,400 feet (700 m) downstream from the headgates of the American Dam, which are located at river mile 1,254.0 (2,018.0 km). The zero of the gage is 3,712.09 feet (1,131.45 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 12 discharge measurements during the year, a stable rating curve at medium and high flows, and a continuous record of gage heights. Records available: June 2, 1938 through 1989.

REMARKS: This canal diverts water from the Rio Grande at the American Dam at El Paso, Texas, 2.1 river miles (3.4 km) upstream from the International Dam at Cd. Juarez, Chihuahua. Water from this canal discharges into the Franklin Canal from which water is frequently returned to the Rio Grande at spillways 2.2 (3.5), 2.7 (4.3), and 3.6 (5.8) river miles (km) downstream from the American Dam. The transmitter relays gage height data upon interrogation by telephone via commercial circuits.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 1,840 second-feet (52.1 m3/sec) on March 27, 1944. Min. frequently no flow.

Average Flow in Second-Feet (Cubic Meters per Second)

Daily:	Max. 1,510 (42.8)	Aug. 13, 1945	Min. 0		
Monthly:	Max. 1,210 (34.3)	Aug. 1943	Min. 0	Frequently	
Yearly:	Max. 748 (21.2)	1943	Min. 65.6 (1.86)	Frequently since 1952	1956

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	120	27.7	355	720	448 *	927	939	1,040 *	825	608	161	119
2	121	46.6	330 *	677	461	785	988	1,050	721	433	158 *	116
3	117	65.0	331	596 *	440	805	1,020	861	612	364	161	114
4	118	68.4	367	536	465	873	1,010	667	776	351	168	118 *
5	119 *	65.9	525	495	523	956 *	969	640	725	340 *	166	122
6	117	62.2	713	387	483	956	979	711	715	331	164	126
7	114	57.9	725	326	471	849	921 *	825	670	317	157	124
8	108	* 59.6	734	351	443	792	917	836	597	300	148	118
9	107	62.8	673	396	420	723	1,000	867	522	295	146	118
10	106	47.3	571	395	402	759	1,020	714	474	295	143	117
11	107	32.8	562	464	391	890	1,000	608	551 *	301	143	118
12	109	32.1	929	476	595	876	1,060	596	502	278	142	107
13	105	21.0	1,010	546	631	882	978	703	480	265	141	110
14	103	18.2	947	549	702	858	913	835	466	256	138	108
15	108	33.1	901	586	778	816	922	924	625	252	135	108
16	108	45.5	929	677	712	805	1,020	902	566	236	131	104
17	106	49.8	951	547	659	780	1,070	800	535	222	135	108
18	98.9	.8	969	502	680	986	1,040	721	376	205	134	108
19	93.1	.7	1,040	445	631	1,040	972	711	346	208	130	106
20	88.8	.7	1,030	415	634	1,030	895	817	340	209	131	106
21	76.6	.7	973	543	731	1,010	867	822	370	219	137	112
22	83.5	66.9	981	574	633	933	909	919	464	222	133	97.0
23	88.9	99.5	868	550	503	848	922	711	431	189	128	89.6
24	85.1	165	817	463	461	830	1,020	655	643	180	130	99.6
25	82.9	494	831	465	480	983	1,010	597	760	183	134	99.4
26	75.1	604	926	371	651	1,080	1,010	632	656	176	131	99.2
27	85.2	539	983	331	717	1,010	922	824	528	179	130	101
28	83.6	431	995	360	905	973	817	1,030	515	169	123	102
29	84.9		856	361	1,020	898	795	872	656	187	112	114
30	84.3		733	403	1,050	877	926	731	597	180	111	113
31	46.4		715		1,020		1,020	610		167		115
Sum	3,050.3	3,198.2	24,270	14,507	19,140	26,830	29,851	24,231	17,044	8,117	4,201	3,416.8

Month	Current Year 1989								Period 1939-1989		
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	High Day	High	Low Day	Low			Average	Maximum	Minimum
Jan.	4.26	3.15	! 1	132	31	26.8	98.4	6,050	3,712	41,542	0
Feb.	7.75	2.40	26	628	22	.6	114	6,344	6,706	50,755	0
Mar.	9.81	5.72	20	1,130	1	288	783	48,139	31,632	56,045	1,700
Apr.	8.14	3.41	1	743	7	292	484	28,774	29,959	70,900	4,560
May	9.40	5.65	!28	1,080	11	309	617	37,964	28,140	69,000	392
June	9.69	7.78	!25	1,090	! 8	696	894	53,217	36,601	65,700	5,990
July	9.86	8.18	17	1,110	29	721	963	59,209	43,139	70,700	8,673
Aug.	9.85	7.36	1	1,110	12	545	782	48,061	42,083	74,600	4,840
Sept.	9.48	5.98	1	974	20	290	568	33,806	28,608	63,100	2,230
Oct.	7.87	4.61	1	622	31	154	262	16,100	13,132	47,938	0
Nov.	4.81	4.15	4	178	30	102	140	8,333	6,948	30,165	0
Dec.	4.52	3.65	22	142	22	55.8	110	6,777	6,978	44,680	0
Yearly	9.86	2.40		1,130		0.6	487	352,774	277,638	541,610	47,397
	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
	3.01	0.73		32.0		0.02	13.8	435,140	342,461	668,065	58,463

* Discharge measurement made on this day ! And other days

08-3650.00 RIO GRANDE BELOW AMERICAN DAM AT EL PASO, TEXAS AND CD. JUAREZ, CHIHUAHUA

DESCRIPTION: Cableway, gravity well, and water-stage recorder located on the left bank of the river at latitude 31° 46'35", longitude 106° 31'20", and river mile 1,253.4 (2,017.1 km); 1.5 river miles (2.4 km) upstream from the International Dam, 3.1 river miles (5.0 km) upstream from the Paso del Norte Bridge between El Paso, Texas and Cd. Juarez, Chihuahua, and 0.6 river mile (1.0 km) downstream from the American Dam. The zero of the gage is 3,712.30 feet (1,131.51 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 66 discharge measurements during the year, and a continuous record of gage heights. Computations by shifting control methods. Records available: June 1938 through 1989.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. The operation of the American Dam began June 2, 1938. Part of the flow above the dam is diverted into the American Canal, and the remainder, including excess flood flows, passes below the dam.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 11,300 second-feet (320 m3/sec) on September 14, 1958 with a gage height of 14.50 feet (4.42 m). Min. occasionally no flow.

Average Flow in Second-Feet (Cubic Meters per Second)

Daily:	Max. 6,040 (171)	May 20, 1942	Min. 0	Occasionally
Monthly:	Max. 4,880 (138)	May 1942	Min. 0	Occasionally
Yearly:	Max. 1,510 (42.8)	1942	Min. 13.8 (0.39)	1956

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	18.6	93.0	32.6	176	183 *	198	187	226	175 *	4.4	0	0
2	19.2	60.5	* 30.3	179	192	182 *	232	372	187	3.6	0	0
3	19.7	22.4	28.4	197 *	193	181	249	208	191	3.0	0	0
4	20.8	20.7	28.0	211	192	188	235	198 *	158	2.6	0	0
5	* 25.0	21.6	31.3	209 *	191 *	194 *	213 *	203	165 *	* 2.3	0	0
6	23.8	22.3	35.2	221	189	181	262	205	177	2.2	0	0
7	21.9	22.4	36.0	222 *	198	178 *	192	190 *	178	1.9	0	0
8	21.2	* 21.4	33.9	216	190 *	183	185	182	171 *	1.7	0	0
9	20.0	20.8	35.2	205	195	180 *	292	180 *	174	1.5	0	0
10	20.1	48.9	34.0	223	191	183	311	178	67.1	1.4	0	0
11	19.9	81.9	35.0	199 *	199	210	310	175 *	19.7	1.3	0	0
12	19.8	93.3	36.3	212 *	198 *	203 *	237	179	* 20.2	1.1	0	0
13	19.4	83.8	39.2	211	190	184 *	179 *	193	19.2	1.0	0	0
14	19.2	58.3	35.7	198 *	186	184	183	194 *	18.2	.9	0	0
15	19.1	41.3	33.5	203	185 *	180	192	430	17.3	.8	0	0
16	19.0	39.8	36.8	199	181	182 *	202	208	16.6	.8	0	0
17	18.8	97.7	34.1	197 *	182	185	199	167	15.9	.6	0	0
18	23.7	172	35.8	207	180	246	189 *	172 *	15.1	.6	0	0
19	28.9	172	56.9	200 *	169 *	272	184 *	180	14.0	.6	0	0
20	27.1	179	209	210	169	195 *	188	198	13.1	.5	0	0
21	26.3	195	256	221 *	159	178 *	186 *	191	12.4	.4	0	0
22	26.2	109	255	208	156 *	169	186	189	11.8	.3	0	0
23	24.3	46.7	178 *	196	153	171 *	179	172 *	10.9	.3	0	0
24	23.5	45.3	157	198 *	166 *	179	183 *	190	10.2	.3	0	0
25	20.6	43.7	159	213	191 *	200	176	183	9.5	.2	0	0
26	20.4	40.6	165	200 *	182 *	191 *	184 *	188	8.3	.1	0	0
27	20.0	36.5	296	200	172	184	197	212	7.3	.1	0	0
28	19.5	33.3	354	202 *	185	179 *	194 *	202	6.2	.1	0	0
29	19.4		167 *	196	165	171	191	169	5.7	.1	0	0
30	19.2		161 *	184	162 *	184 *	221	184 *	5.0	0	0	0
31	58.3		174		182 *		201 *	182		0		0
Sum	702.9	1,923.2	3,199.2	6,113	5,626	5,695	6,519	6,300	1,899.7	34.7	0	0

Month	Current Year 1989								Period 1939-1989		
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low						
	High	Low	Day		Day				Average	Maximum	Minimum
Jan.	5.75	5.03	31	89.0	1	18.4	22.7	1,394	5,025	80,083	0
Feb.	6.12	5.22	121	221	3	19.7	68.7	3,815	18,347	48,676	0
Mar.	8.15	5.25	27	840	3	25.3	103	6,346	5,558	64,510	81.9
Apr.	7.23	5.99	10	457	! 1	170	204	12,125	12,026	74,500	2,230
May	6.60	5.90	30	315	21	134	181	11,159	17,579	300,000	25.2
June	6.90	5.95	19	383	29	151	190	11,296	16,840	250,000	0
July	7.44	5.95	11	517	19	155	210	12,930	17,857	155,000	967
Aug.	7.88	5.89	15	696	23	127	203	12,496	15,256	114,000	37.5
Sept.	6.38	4.87	2	272	30	4.8	63.3	3,768	9,644	124,000	53.8
Oct.	4.88	4.59	1	4.5	!30	0	1.1	68.8	3,505	84,865	18.0
Nov.	4.59	4.59	! 1	0	! 1	0	0	0	3,052	70,740	0
Dec.	4.59	4.59	! 1	0	! 1	0	0	0	3,522	115,279	0
Yearly	8.15	4.59		840		0	104	75,398	128,211	1,093,553	10,001
	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
	2.48	1.40		23.8		0	2.95	93,002	158,146	1,348,876	12,336

* Discharge measurement made on this day ! And other days

08-3655.00 DIVERSIONS FROM THE RIO GRANDE
ACEQUIA MADRE AT CD. JUAREZ, CHIHUAHUA

DESCRIPTION: Bridge for making discharge measurements, gravity well, and water-stage recorder located on the right bank of the canal at Cd. Juarez, Chihuahua, latitude 31°45'40", longitude 106°30'30", about 260 feet (80 m) downstream from the canal intake at the International Dam at Cd. Juarez, Chihuahua, which is located at river mile 1,251.8 (2,014.7 km) and 2.1 river miles (3.4 km) downstream from the American Dam at El Paso, Texas.

RECORDS: Flow records provided by Mexican Section. Records available: 1938 through 1989. These records, showing the water diverted by Mexico, do not necessarily reflect the quantities of water made available to Mexico in the bed of the river by the United States under the terms of the Convention of 1906. Such quantities of water are included in the record of "Rio Grande below American Dam at El Paso, Texas" on the preceding page of this bulletin.

REMARKS: In 1989 all of the 58,854 acre-feet (72,596,000 m3) tabulated below were distributed to land irrigated in the first unit under the canal.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 480 second-feet (13.6 m3/sec) on July 21, 1944 with a gage height of 6.00 feet (1.83 m). Min. no flow during several months throughout the year.

	Average Flow in Second-Feet (Cubic Meters per Second)			
Daily:	Max. 339 (9.61)	May 10, 1942	Min. 0	Several months each year
Monthly:	Max. 283 (8.00)	May 1938	Min. 0	Several months each year
Yearly:	Max. 116 (3.28)	1942	Min. 9.2 (0.26)	1964

Mean Daily Discharge in Second-Feet 1989 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	0	167 *	168	179 *	181	169 *	153 *	0	0	0
2	0	0	0	162	161 *	173 *	175	180 *	156	0	0	0
3	0	0	0	161	169 *	172	179 *	174 *	165	0	0	0
4	0	0	0	161 *	170 *	177	179	171 *	143 *	0	0	0
5	0	0	0	166 *	170	171 *	174	177	135	0	0	0
6	0	0	0	174 *	168	176 *	184	183	157 *	0	0	0
7	0	0	0	179 *	165	174 *	169 *	186 *	164 *	0	0	0
8	0	0	0	180	178 *	179 *	169	179 *	160 *	0	0	0
9	0	0	0	177	183 *	175 *	187	185 *	152	0	0	0
10	0	0	0	173 *	187 *	177	189 *	179 *	66.0	0	0	0
11	0	0	0	170 *	179 *	175	183 *	180 *	0	0	0	0
12	0	0	0	182 *	176 *	178 *	173 *	186	0	0	0	0
13	0	0	0	183 *	170	175 *	167 *	187	0	0	0	0
14	0	0	0	182 *	173	175 *	172 *	184	0	0	0	0
15	0	0	0	185	174 *	174 *	178	175 *	0	0	0	0
16	0	0	0	188	177 *	176 *	183	166 *	0	0	0	0
17	0	0	0	185 *	178 *	180	178 *	178 *	0	0	0	0
18	0	0	0	189 *	182 *	181	176 *	183 *	0	0	0	0
19	0	0	0	185 *	174 *	186 *	182 *	178	0	0	0	0
20	0	0	0	183 *	175	170 *	188 *	178	0	0	0	0
21	0	0	0	190 *	170	170 *	193 *	181 *	0	0	0	0
22	0	0	14.8	184	164 *	173 *	192	174 *	0	0	0	0
23	0	0	0	184	171 *	177 *	186	164	0	0	0	0
24	0	0	* 64.3	183 *	179 *	179	181 *	181	0	0	0	0
25	0	0	132 *	189 *	185 *	180	172 *	178 *	0	0	0	0
26	0	0	133	189 *	178 *	183 *	176 *	178	0	0	0	0
27	0	0	141 *	184 *	170	182 *	190 *	177	0	0	0	0
28	0	0	152 *	186 *	178	180 *	188 *	170 *	0	0	0	0
29	0		157 *	180	164 *	172 *	182	167 *	0	0	0	0
30	0		162 *	180	160 *	177 *	195	167 *	0	0	0	0
31	0		160 *		162		174 *	166 *		0		0
Sum	0	0	1,116.1	5,381	5,358	5,296	5,595	5,481	1,451.0	0	0	0

Month	Current Year 1989								Period 1938-1989		
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	High Day	High	Low Day	Low			Average	Maximum	Minimum
Jan.	0	0	! 1	0	! 1	0	0	0	39.0	2,030	0
Feb.	0	0	! 1	0	! 1	0	0	0	144	7,510	0
Mar.	5.81	2.82	29	168	! 1	0	36.0	2,214	1,653	7,951	0
Apr.	6.40	5.28	21	194	! 3	161	179	10,670	8,343	12,383	2,020
May	6.50	5.77	12	198	31	147	173	10,627	8,873	17,380	0
June	6.63	5.74	26	200	20	155	177	10,501	8,632	15,700	0
July	6.69	5.81	6	201	2	161	180	11,096	8,843	15,170	0
Aug.	6.66	5.54	7	194	23	145	177	10,870	8,619	12,620	0
Sept.	6.23	0	4	172	!11	0	48.4	2,876	4,535	12,380	0
Oct.	0	0	! 1	0	! 1	0	0	0	56.6	1,413	0
Nov.	0	0	! 1	0	! 1	0	0	0	0	0	0
Dec.	0	0	! 1	0	! 1	0	0	0	0	0	0
Yearly	6.69	0		201		0	81.2	58,854	49,738	83,930	6,653
	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
	2.04	0		5.68		0	2.30	72,596	61,354	103,511	8,207

* Discharge measurement made on this day

! And other days

08-3705.00 RIO GRANDE AT FORT QUITMAN, TEXAS

NEAR COLONIA LUIS LEON, CHIHUAHUA

DESCRIPTION: Cableway, gravity well, and water-stage recorder located on the left bank of the rectified channel of the Rio Grande at latitude 31°05'10", longitude 105°36'30", and river mile 1,173.2 (1,888.1 km); 1.5 river miles (2.4 km) downstream from Old Fort Quitman, 9 miles (14.5 km) southeast of Esperanza, Texas, and 17.5 miles (28.2 km) southeast of McNary, Texas. The zero of the gage is 3,450.57 feet (1,051.73 m) above mean sea level, U. S. C. & G. S. datum prior to July 11, 1989. On July 11, 1989, a new gage was established 105 feet (32.0 m), upstream from the old gage. The cableway remained the same as before. The new gage is a bubbler type with a water stage recorder and triton system transmitter. The new zero of the gage is 3,452.60 feet (1,052.35 m) above mean sea level U. S. C. & G. S. datum, effective July 11, 1989.

RECORDS: Based on 24 discharge measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: 1889 through 1989.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station.

EXTREME FLOWS FROM RECORDS**: Momentary: Max. 10,600 second-feet (300 m3/sec) October 5, 1946 with a gage height of 10.00 feet (3.05 m). Min. frequently no flow.

Average Flow in Second-Feet (Cubic Meters per Second)**

Daily:	Max. 5,890 (167)	May 19, 1942	Min. 0		Frequently
Monthly:	Max. 5,030 (142)	May 1942	Min. 0		Several months since 1951
Yearly:	Max. 1,750 (49.6)	1942	Min. 2.3 (0.07)		1965

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	193	142	295	464	257	147	65.0	505	921	475	193 *	194 *
2	186	163	225	370	221 *	136	70.6	349	824	466	199	194
3	188	102 *	143 *	482	219	146	83.3	239	800	352	201	211
4	225 *	82.3	111	491	205	157	80.9	499	790	346	226	204
5	221	92.8	104	378	190	165	74.2	295	784	323	225	199
6	225	95.8	83.5	303	182	187 *	77.7	292	769	363	217	170
7	215	104	91.8	276 *	224	189	62.3	296	762	328	223	165
8	218	108	107	222	206	163	60.2	271	745	322	215	153
9	198	110	79.7	180	154	115	72.1	283	709	342	212	171
10	193	118	72.4	223	170	91.7	91.1	195	704	342 *	200	194
11	203	114	61.6	192	140	95.8	* 85.4	211	646	301	204	193
12	207	121	58.9	233	159	90.4	127	212	440 *	347	204	157
13	193	152 *	63.1	258	194	65.6	121	214	371	324	190	122
14	194	178	91.4	262	199	60.4	113	201	446	306	181	119
15	162	110	113 *	331	236	67.5	120	151	294	345	168	132
16	170	109	83.9	318	286	* 53.0	138	116 *	298	323	169	145
17	166	106	74.2	384	283	66.0	162	304	354	274	168 *	152
18	156 *	143	95.3	387 *	300 *	72.4	168	186	477	244	198	154
19	147	280	88.2	221	346	81.5	146	276	591	232	199	145
20	144	233	83.3	201	375	* 91.1	161	312	394	219	191	151
21	135	185	90.0	197	332	110	168	330	298	260	172	174
22	151	123	211	152	291	95.4	137	333	308	280	168	173
23	138	75.5	289	177	299	74.5	131	274	260	277	200	165
24	118	* 60.7	320	204	257	71.4	134	242	264	246	236	161
25	115	94.7	237	157	193 *	86.1	149	332	294	256	214	167
26	105	82.0	165	161	129	80.2	149	493	481	248	203	170
27	93.0	157	458	209	63.0	68.2	149	442	633	235	208	167
28	88.4	306	818	187	72.3	82.1	195	647	386	248	203	151
29	96.4		721	195	133	75.8	201	920	339	231	175	152
30	99.6		508 *	245	134	70.5	224	1,070	320	231	199	153
31	133		427		131		300	1,120 *		201		160
Sum	5,075.4	3,747.8	6,369.3	8,060	6,580.3	3,054.6	4,015.8	11,610	15,702	9,287	5,961	5,118

Month	Current Year 1989							Period 1938-1989		
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low						
	High	Low	Day		Day				Average	Maximum	Minimum
Jan.	6.95	6.36	4	252	128	86.4	164	10,069	7,705	78,375	0
Feb.	7.26	6.12	19	466	23	51.7	134	7,434	6,333	55,712	0
Mar.	8.46	6.08	27	1,120	11	52.7	205	12,633	6,182	59,092	0
Apr.	7.65	6.70	15	545	22	131	269	15,987	7,531	77,000	0
May	7.25	6.11	20	387	28	55.7	212	13,052	12,802	309,000	0
June	7.04	6.12	6	306	16	50.7	102	6,059	10,946	240,000	0
July	6.47	3.73	31	352	11	55.7	130	7,965	14,395	140,000	3.8
Aug.	7.82	4.05	4	2,160	16	94.0	375	23,028	13,020	127,000	16.7
Sept.	5.73	4.55	1	1,000	24	227	523	31,144	16,369	147,000	0
Oct.	5.44	4.59	2	555	31	185	300	18,420	14,180	92,727	0
Nov.	4.90	4.34	! 4	259	17	156	199	11,823	9,758	86,360	0
Dec.	4.70	4.04	11	234	14	103	165	10,151	10,293	123,709	0
Yearly	8.46	3.73		2,160		50.7	232	167,765	130,414	1,270,400	1,662
	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
	2.58	1.14		61.2		1.44	6.57	206,935	160,863	1,567,013	2,050

** Period 1924-1989 * Discharge measurement made on this day ! And other days

08-3712.00 RIO GRANDE NEAR CANDELARIA, TEXAS AND SAN ANTONIO DEL BRAVO, CHIHUAHUA

DESCRIPTION: Cableway, gravity well, and digital recorder located on the left bank of the Rio Grande at San Antonio Diversion Dam, latitude 30°10'30", longitude 104°41'10" and river mile 1,038.8 (1,671.8 km), 0.5 river mile (0.8 km) upstream from Capote Creek and about 2.5 miles (4.0 km) north of Candelaria, Texas and San Antonio, Chihuahua. The zero of the gage is 2,857.96 feet (871.11 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 30 discharge measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: November 19, 1975 through 1989.

REMARKS: Reservoirs, diversions, and drainage returns modify the flow at this station. Prior to June 1979 the zero of the gage was 2,857.84 feet (871.07 m) above mean sea level, U. S. C. & G. S. datum.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 19,800 second-feet (561 m3/sec) on September 30, 1978 with a gage height of 10.86 feet (3.31 m). Min. frequently no flow.

Average Flow in Second Feet (Cubic Meters per Second)**

Daily:	Max. 4,400 (124.6)	Dec. 23, 1986	Min. 0	Frequently
Monthly:	Max. 2,550 (72.2)	Dec. 1986	Min. 0	Frequently
Yearly:	Max. 1,090 (30.9)	1986	Min. 20.9 (0.59)	1977

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	220	124	101	281	125	74.5	19.4	90.4	462	233	193	182
2	214	126	107	416	117	71.0	16.2	* 86.1	471	257	193 *	178
3	212	127 *	115 *	482	104 *	84.8	17.1	111	490	249	192	164
4	205	136	144	394	111	78.8	15.9	127	481	226 *	181	167 *
5	197	146	161	336	112	* 71.9	14.3	155	563	228	171	167
6	197	146	166	324 *	102	73.2	13.6	185	671 *	248	170	167
7	202	127	134	297	98.7	65.3	* 12.5	239	745	267	172	173
8	207	109	112	288	95.3	64.6	14.1	251	673	263	183	170
9	206 *	108	102	248	92.4	61.0	15.2	296	672	233	185	166
10	203	108	93.1	223	91.6	59.8	15.6	327	737	214	189	153
11	204	112	89.4	204	122	59.4	17.1	300	742	206	190	144
12	204	115	95.0	193	116	53.6	19.7	606	666	217	189	134
13	205	121	86.3	164	203	44.4	19.7	269	577	244	189	140
14	195	125	73.9	153	158	35.8	21.6	411	362	262	189 *	151
15	201	126	* 66.6	146	107	32.4	29.9	220 *	358	269	189	152
16	204	143 *	62.2	138	93.2	30.1	31.8	161	368	260	189	137
17	208	156	60.6	159	* 97.9	27.2	37.9	153	314	263 *	187	119
18	208	161	64.4	160	101	24.0	39.3	148	257	259	177	111
19	202	147	75.9	168 *	105	20.9	* 47.2	134	236	250	167	112 *
20	202 *	144	71.5	186 *	116	18.7	42.1	174	214 *	254	162	115
21	192	133	65.8	178 *	124	* 19.3	68.3	404	231	259	165	120
22	186	143	66.3	176	134	22.3	54.1	208	270	230	179	120
23	184	165	72.0	178	146	25.2	58.8	292	238	220	181	121
24	172	161	69.6	170	163	25.1	60.6	225	247	208	181	120
25	164	150	73.0	164	153	42.5	65.0	253	218	212	170	130
26	164	132	95.3	144 *	140	122	62.0	240	196	229	163	134
27	156	111	119	136 *	139	31.1	53.2	251	184	228	176	133
28	147	93.4	143	160 *	125	31.6	69.6	501	173	223	195	135
29	146		153	143	98.6	39.2	72.0	679	188	209	191	139
30	136		135	130	109	42.5	74.7	409 *	204	202	186	142
31	128		162		133		80.4	522		196		146
Sum	5,871	3,695.4	3,134.9	6,539	3,732.7	1,452.2	1,178.9	8,427.5	12,208	7,318	5,444	4,442

Month	Current Year 1989								Period 1975-1989		
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum
Jan.	4.45	4.31	1	224	31	125	189	11,645	17,334	148,701	0
Feb.	4.55	4.25	23	178	28	90.6	132	7,330	12,843	99,630	0
Mar.	4.70	4.20	31	222	17	58.6	101	6,218	11,716	82,627	0
Apr.	5.15	4.23	3	505	!27	125	218	12,970	12,376	74,400	8.4
May	4.57	4.08	13	236	30	78.1	120	7,404	16,641	137,018	0
June	4.88	3.76	26	280	21	17.1	48.4	2,880	19,140	151,380	143
July	4.35	3.75	21	115	7	12.0	38.0	2,338	21,776	120,337	79.1
Aug.	8.08	3.94	12	4,270	! 1	80.1	272	16,716	20,289	59,936	611
Sept.	5.92	4.09	13	1,630	!27	170	407	24,214	26,269	135,232	362
Oct.	4.32	4.15	7	280	31	193	236	14,515	23,924	101,887	435
Nov.	4.24	4.11	28	205	120	160	181	10,798	17,166	107,502	0
Dec.	4.20	4.01	! 1	185	18	109	143	8,811	17,929	151,934	0
Yearly	8.08	3.75		4,270		12.0	174	125,839	217,403	966,039	15,148
	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
	2.46	1.14		121		0.34	4.93	155,220	268,162	1,191,590	18,685

* Discharge measurement made on this day ! And other days

** Period November 1975-1989

08-3715.00 RIO GRANDE ABOVE RIO CONCHOS NEAR PRESIDIO, TEXAS AND OJINAGA, CHIHUAHUA

DESCRIPTION: Cableway, bubbler gage, and water-stage recorder (graphic and digital) located on the left bank at latitude 29°36'15", longitude 104°27'05", and river mile 963.7 (1,551.0 km); 5.0 river miles (8.0 km) upstream from the international highway bridge between Presidio, Texas and Ojinaga, Chihuahua and 2.4 river miles (3.8 km) upstream from the Rio Conchos. The zero of the gage is 2,573.14 feet (784.29 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 50 discharge measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: 1889 through 1989.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. Prior to 1978 the zero of the gage was 2,576.66 feet (785.37 m) above mean sea level, U. S. C. & G. S. datum.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 14,000 second-feet (396 m3/sec) on June 14, 1905. Highest flow recorded since 1924 was 5,160 second-feet (146 m3/sec), with a gage height of 10.57 feet (3.22 m), on May 26, 1942. Min. frequently no flow.

Average Flow in Second-Feet (Cubic Meters per Second)**

Daily:	Max. 13,700 (388)	June 13 & 14, 1905	Min. 0	Frequently
Monthly:	Max. 10,150 (287)	June 1905	Min. 0	Frequently
Yearly:	Max. 1,970 (55.8)	1907	Min. 1.3 (0.04)	1964

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	224	164	130	141	142	92.6	16.1	27.2	379	152	163	163
2	223	159	114 *	147	141 *	107 *	19.7	* 26.0	331	170	159 *	159
3	221	159 *	122	181	135	82.7	25.2	28.2	343	189 *	166	160
4	214	161	132	231	124	75.5	16.7	25.1	340	211	168	149 *
5	212	165	139	313 *	131	82.4	34.1	28.8	343	202	168	133
6	209 *	170	163	262	132	77.0	* 18.3	38.1	346 *	190	152	131
7	199	170	175	227	134	65.2	10.6	71.8	379	192	143	134
8	196	169	179	221	128	57.4	33.9	98.7	425	200	146	144
9	196	152	164	213	118	54.0	36.4	115	470	224	158	154
10	193	143	144	205	116	57.1	31.6	101	489	237	156	159
11	195	138	133	187	125	72.4	23.7	107	457	195	161	152
12	197	144	130	177	134	70.2	55.4	109	457	177	164	121
13	197	145	132 *	176	138	60.7	23.4	118	494	155	167	130
14	198	142	131	164	135	57.4	26.9	153	491	161	165 *	122
15	194	146 *	121	154	150	49.9	21.4	219 *	499	183	161	130
16	182	206	116	153	140 *	41.5	18.6	216	376	200	154	145
17	177	184	113	150	107	35.0	14.4	156	353	205 *	155	146
18	177	168	110	143 *	102	34.6	* 17.9	97.4	344	200	154	130
19	173 *	160	113	147	111	41.8	14.5	87.2	295 *	191	150	115 *
20	168	153	111	147	112	* 38.4	* 12.5	83.2	264	191	145	113
21	169	142	114	152	108	39.8	21.0	118	232	201	138	117
22	167	133	108	164	113	36.4	12.3	415	207	208	133	128
23	167	127	105	171	125	31.3	12.3	339	227	204	123	136
24	164	137	113	175	120	33.8	18.8	159 *	223	189	131	116
25	165	156	120	171	117	40.6	18.7	224	220	182	137	107
26	163	162	118	160	121	52.0	17.0	155	219	161	136	111
27	169	160	124	151	115	23.8	15.1	163	201	167	138	122
28	172	144	123	142	108	52.8	23.3	222	172	176	141	125
29	170		135	138	113	50.0	29.6	613	149	178	152	124
30	169		147	141	113	30.2	36.4	537	144	173	161	124
31	171		155		88.5		29.5	516		164		125
Sum	5,791	4,359	4,034	5,304	3,796.5	1,643.5	705.3	5,366.7	9,869	5,828	4,545	4,125

Month	Current Year 1989							Period 1938-1989		
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum
Jan.	2.40	1.95	! 1	226	!24	161	187	11,486	8,686	148,641	0
Feb.	3.01	1.72	16	398	23	124	156	8,646	6,721	96,873	0
Mar.	2.19	1.45	8	188	!22	102	130	8,001	5,313	74,406	0
Apr.	2.67	1.56	5	333	30	114	177	10,520	4,893	71,278	0
May	1.94	1.26	15	158	31	77.1	122	7,530	9,994	240,000	0
June	1.55	.62	2	112	27	10.5	54.8	3,260	11,207	216,000	0
July	1.33	.48	12	93.7	7	6.0	22.8	1,399	13,876	156,000	0
Aug.	4.50	.78	29	834	3	22.1	173	10,645	13,712	133,000	0
Sept.	3.54	1.77	13	550	!29	139	329	19,575	17,057	151,000	0
Oct.	2.44	1.82	10	262	1	146	188	11,560	16,088	105,000	0
Nov.	2.01	1.67	3	177	!22	119	152	9,015	8,539	101,617	0
Dec.	2.01	1.60	1	165	25	105	133	8,182	8,908	136,155	0
Yearly	4.50	0.48		834		6.0	152	109,819	124,994	1,176,700	952
	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
	1.37	0.15		23.6		0.17	4.30	135,460	154,178	1,451,436	1,174

* Discharge measurement made on this day ! And other days

** Period June 1900-March 1914; September 1919-March 1920; and 1924-1989

08-3730.00 RIO CONCHOS NEAR OJINAGA, CHIHUAHUA

DESCRIPTION: Cableway, gravity well, and water-stage recorder located on the right bank at latitude 29°34'55", longitude 104°25'50", 0.6 river mile (1.0 km) from the confluence with the Rio Grande, 2.5 miles (4 km) northwest of Ojinaga, Chihuahua, and 3.7 miles (6 km) northwest of Presidio, Texas. This stream enters the Rio Grande at river mile 961.4 (1,547.2 km), 11.6 river miles (18.7 km) upstream from the "Rio Grande below Rio Conchos" Gaging Station. The zero of the gage is 2,560.37 feet (780.40 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 152 discharge measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: 1896 through 1989. Prior to April 4, 1954, flow records were determined from records of the Rio Grande at stations located upstream and downstream from the Rio Conchos confluence.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. La Boquilla Reservoir, La Colina Reservoir, La Rosetilla Reservoir, and Luis L. Leon Reservoir are located 252 (405), 244 (393), 188 (302), and 114 (183) river miles (km), respectively, upstream from this station. Francisco I. Madero Reservoir is located on the Rio San Pedro, a tributary which enters the Rio Conchos 176 river miles (283 km) upstream from this station. Power generation facilities: La Boquilla 14,647 kw., La Colina 3,620 kw., La Rosetilla 5,150 kw., Francisco I. Madero and Luis L. Leon, none. The station was relocated on January 20, 1978 incident to the Rio Grande channel rectification in the Presidio-Ojinaga area.

EXTREME FLOWS FROM RECORDS: Momentary: Max. (period 1968-1989) 71,300 second-feet (2,020 m3/sec), on September 30, 1978. The greatest recorded flow occurred September 11, 1904 with a peak flow estimated at 162,000 second-feet (4,590 m3/ sec).

Average Flow in Second-Feet (Cubic Meters per Second)**

Daily:	Max. ‡ 52,600 (‡1,490)	Oct. 1, 1978	Min. 23.0 (0.65)	Dec. 19, 1973
Monthly:	Max. 10,700 (302)	Oct. 1978	Min. 57.9 (1.64)	Feb. 1968
Yearly:	Max. 2,340 (66.4)	1978	Min. 491 (13.9)	1983

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	445	388	392 *	247	420	371	456	675	1,160 *	985	964	287 *
2	459	388	367	247	406 *	374 *	448	629 *	982	999 *	964	285
3	459	388	374 *	238 *	403 *	385	445 *	625	915	985	770	291
4	445 *	388	374	212	388	371	434	671 *	823 *	1,010 *	643	288 *
5	445	388	388	207 *	378 *	381 *	367 *	840	788	1,020	632	271
6	431 *	388	399 *	190	360	381	347 *	678	738 *	992 *	583 *	280
7	431	388 *	399	181 *	381	364 *	342 *	625 *	766	1,000	519	282 *
8	438	388 *	374 *	190	427 *	346	351	660	1,450 *	1,920	487 *	283
9	452 *	385	374	208	406	353 *	360	646 *	1,280	1,410 *	473	280 *
10	427	374 *	335 *	256 *	381 *	344	392 *	562	1,150	1,100	466 *	282
11	420 *	388	274	256	388	342	1,120 *	611 *	1,120 *	1,060	434	284 *
12	424	417	267	247 *	519 *	374 *	544 *	607	1,240	1,030	360	325
13	420	424 *	325 *	243	410	378	347 *	2,420	1,200 *	999 *	340 *	286 *
14	441	399	335	220 *	388	357 *	196 *	901 *	1,250	1,000	326	272
15	448	403 *	311 *	233	388 *	318	244	597	1,170	1,010	302 *	282 *
16	431 *	1,150	283	212	388	296 *	565	657 *	1,120	1,020 *	304	291
17	410	766 *	283 *	234 *	381 *	278	470 *	636	1,090	992	309 *	287
18	378 *	579	298	243	371	331	459	614 *	1,060 *	978 *	325	300
19	371	565	298	212 *	381 *	399 *	470 *	593	1,040	978	316	300
20	371 *	509 *	327 *	212	388	396	1,110 *	597	1,030 *	989 *	315 *	283
21	374	526	285	203 *	399	371 *	452 *	1,390 *	1,030	992	314	277
22	385	519 *	238 *	221	417 *	385	456	3,880 *	1,010 *	982	305 *	237
23	410 *	523	269	234	406	392 *	459	3,420 *	975	989	299	276
24	396	498 *	276	247 *	406 *	385	487 *	1,470 *	946	978	295 *	364
25	403 *	459	293	234	396	344	523	1,160 *	939 *	961	288	388
26	403	459	298	238 *	392	622 *	473 *	1,230	932	932	288	257
27	410 *	459 *	283 *	227	392	501	477 *	2,000	922 *	918	313 *	381
28	406	410	269	324 *	445	410 *	530 *	2,420 *	908	901	297	385
29	392		258 *	392	463 *	388	632	7,800 *	904 *	883	296 *	353
30	399 *		272	406	491	371 *	1,050	2,840 *	886	879	296	350
31	388		259 *		456 *		742 *	1,320		869		339
Sum	12,912	13,316	9,777	7,214	12,615	11,308	15,748	43,774	30,824	31,761	12,823	9,346

Month	Current Year 1989							Period 1968-1989		
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	High		Low				Average	Maximum	Minimum
			Day		Day						
Jan.	3.58	2.99	! 2	459	4	194	417	25,609	32,908	131,293	11,374
Feb.	7.02	3.38	16	3,230	10	371	477	26,421	31,351	124,386	3,336
Mar.	3.44	3.05	1	406	31	212	315	19,395	46,897	201,219	4,171
Apr.	3.64	2.69	14	494	15	106	240	14,310	42,059	89,875	5,565
May	3.94	2.99	28	671	31	187	406	25,027	48,655	123,749	10,932
June	4.36	3.15	26	936	18	265	378	22,432	55,117	139,972	6,008
July	6.36	2.72	11	2,930	15	150	509	31,229	62,551	154,562	16,654
Aug.	13.19	3.58	29	10,700	15	540	1,410	86,842	101,083	243,660	31,728
Sept.	6.14	3.64	8	2,530	4	558	1,030	61,136	145,065	468,680	17,892
Oct.	7.15	4.04	8	3,920	31	865	1,020	63,041	102,381	655,967	16,883
Nov.	4.04	2.95	!	985	26	288	427	25,439	41,165	137,415	7,484
Dec.	3.41	2.13	23	545	5	26.5	302	18,534	28,134	65,969	7,383
Yearly	13.19	2.13		10,700		26.5	579	419,415	737,326	1,698,395	356,533
	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
	4.02	0.65		302		0.75	16.4	517,344	909,481	2,094,945	439,780

* Discharge measurement made on this day ! And other days ‡ Estimated

** Period 1968-1989

08-3740.00 ALAMITO CREEK NEAR PRESIDIO, TEXAS

DESCRIPTION: Gravity well and digital water-stage recorder located on the left bank 300 feet (91.4 m) upstream from the highway bridge on Farm-to-Market Road 170 at latitude 29° 31'25", longitude 104° 17'15", about 2,000 feet (610 m) from the confluence with the Rio Grande, and about 6 miles (9.7 km) southeast of Presidio, Texas. This stream enters the Rio Grande near the lower end of the Presidio Valley at river mile 950.1 (1,529.1 km) 8.6 river miles (13.8 km) downstream from the international highway bridge between Presidio, Texas and Ojinaga, Chihuahua. Measurements of high flows are made from the highway bridge. The zero of the gage is 2,541.61 feet (774.68 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 64 discharge measurements during the year at low and medium flows, a high flow rating curve determined by slope-area calculations, and a continuous record of gage heights. Computations by shifting control methods. Records available: 1932 through 1989.

REMARKS: A small irrigation reservoir (San Esteban) 10.5 miles (16.9 km) south of Marfa, Texas and irrigation diversions below the reservoir modify the flow of this spring-fed creek. Backwater from the Rio Grande begins to affect the station record when the flow at the station on the Rio Grande below Rio Conchos reaches about 35,000 second-feet (991 m3/sec).

EXTREME FLOWS FROM RECORDS: Momentary: Max. 56,400 second-feet (1,600 m3/sec), determined by slope-area calculations, on September 2, 1962, with a gage height of 13.54 feet (4.13 m). Min. no flow on May 10, 1989.

Average Flow in Second-Feet (Cubic Meters per Second)

Daily:	Max.	12,400 (351)	Sept. 21, 1974	Min. 0.1 (0.003)	May 10, 1989
Monthly:	Max.	998 (28.3)	Sept. 1974	Min. 0.2 (0.005)	July 1980
Yearly:	Max.	97.1 (2.75)	1974	Min. 3.1 (.09)	1989

Mean Daily Discharge in Second-Feet 1989 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.4	* 1.4	1.3	1.6	* 1.5	1.0	1.2	0.6	1.3	0.7	* 0.9	1.1
2	1.4	1.4	* 1.3	1.6	1.4	* 1.1	1.2	* .5	1.3	* .7	.9	1.1
3	* 1.2	1.4	1.3	* 1.6	1.4	.9	* 1.2	.6	1.0	.7	.9	1.1
4	1.1	1.6	1.1	1.5	1.3	1.1	1.2	.5	1.0	.7	.7	* 1.1
5	1.1	1.6	1.1	1.5	1.3	* 1.1	1.1	13.9	* 1.0	.6	.7	1.1
6	1.3	* 1.5	* 1.1	1.6	1.2	1.1	1.1	.4	1.0	.7	* .8	1.0
7	1.3	1.5	1.1	1.7	1.2	1.1	.7	* .8	1.0	.7	.7	1.0
8	1.3	1.4	1.3	1.7	* 1.1	1.1	.5	.9	1.2	.8	.7	1.0
9	* 1.3	1.5	1.3	1.7	1.1	1.1	.7	.9	.9	1.0	.7	1.0
10	1.2	1.4	1.3	* 1.7	1.1	1.0	* .8	.9	.9	* 1.0	1.1	1.0
11	1.4	1.3	1.3	1.8	1.1	1.0	1.1	1.0	* 1.0	1.0	1.1	.9
12	1.4	1.3	1.4	1.8	1.1	* 1.0	* 1.6	1.0	1.0	1.0	.9	* .9
13	1.4	* 1.3	* 1.5	1.7	1.1	1.0	* 1.0	1.1	5.4	.9	* .9	.9
14	1.4	1.3	1.6	1.6	1.1	1.0	1.0	* 1.1	* 1.0	.9	1.0	1.0
15	1.6	1.3	1.7	1.7	* 1.1	1.0	.9	1.0	.9	.9	1.0	1.2
16	1.6	30.6	1.7	1.7	1.1	1.0	.9	1.0	1.0	* .9	1.0	1.1
17	* 1.5	* 66.1	1.8	* 1.2	1.1	.8	* .9	1.0	1.1	.7	1.2	1.1
18	1.4	1.5	1.8	1.0	1.1	.8	.5	.9	* 1.2	.9	1.2	* 1.2
19	1.5	1.3	1.7	1.0	1.0	* 1.0	.8	.9	1.3	1.0	1.1	1.1
20	1.4	1.3	* 1.7	1.2	1.0	1.0	1.1	.7	1.1	1.0	* 1.2	1.1
21	1.4	* 1.4	1.7	1.3	1.0	1.0	1.0	* 17.3	1.1	1.1	1.3	1.1
22	1.4	1.4	1.7	1.3	* 1.0	1.0	1.0	398 *	1.1	1.1	1.1	1.1
23	* 1.3	1.3	1.7	1.4	1.0	1.0	.7	* 72.6	1.0	* 1.2	1.0	1.1
24	1.3	1.3	1.7	* 1.4	1.1	.8	* .8	.9	.9	1.1	.9	1.1
25	1.4	1.3	1.7	1.2	1.1	.8	1.0	.9	* .9	1.1	.9	1.1
26	1.4	1.3	1.5	1.2	1.1	* .9	1.1	.7	1.0	1.1	.7	* 1.1
27	1.6	1.3	1.6	1.3	1.1	1.0	1.3	.7	.9	1.1	* .8	1.0
28	1.6	1.3	1.6	1.5	1.2	1.2	5.4	* .7	.9	1.0	.9	1.0
29	1.6		1.7	1.6	1.2	1.1	.9	125 *	.9	.9	.9	1.0
30	* 1.6		1.7	1.7	* 1.2	1.3	.7	* 5.9	.9	* 1.0	1.0	1.1
31	1.4		1.6		1.2		* 1.0	* 1.4		.9		1.1
Sum	43.2	132.6	46.6	44.8	35.6	30.3	34.4	653.8	35.2	28.4	28.2	32.8

Month	Current Year 1989							Period 1932-1989		
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum
Jan.	4.23	4.19	!15	1.6	! 3	1.1	1.4	85.7	130	271	46.4
Feb.	6.08	4.19	16	316	27	1.1	4.7	263	176	3,120	41.5
Mar.	4.23	4.19	!17	1.9	! 3	1.0	1.5	92.4	147	1,018	46.4
Apr.	4.21	4.16	!11	1.9	!17	1.0	1.5	88.9	254	3,690	40.3
May	4.24	4.16	! 1	2.0	10	0	1.1	70.6	838	8,520	34.7
June	4.35	4.13	30	Ø 1.3	!17	Ø .8	1.0	60.1	1,808	12,653	24.2
July	4.83	4.21	28	Ø 5.4	! 8	Ø .5	1.1	68.2	2,759	18,500	9.5
Aug.	7.91	3.91	22	2,210	6	.1	21.1	1,297	2,911	16,330	49.0
Sept.	5.45	4.41	13	88.8	! 8	.9	1.2	69.8	4,259	59,380	37.1
Oct.	4.63	4.51	8	2.7	! 4	.6	.9	56.3	1,766	19,200	36.9
Nov.	4.60	4.56	!17	1.3	! 4	.7	.9	55.9	184	2,554	35.7
Dec.	4.62	4.59	18	1.4	!11	.9	1.1	65.1	137	408	39.3
Yearly	7.91	3.91		2,210		0	3.1	2,273	15,369	70,274	2,273
	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
	2.41	1.19		62.6		0	0.09	2,804	18,957	86,682	2,804

* Discharge measurement made on this day Ø Mean daily ! And other days

08-3742.00 RIO GRANDE BELOW RIO CONCHOS NEAR PRESIDIO, TEXAS AND OJINAGA, CHIHUAHUA

DESCRIPTION: Cableway, bubbler gage, concrete control weir, water-stage recorders (graphic and digital), and data collection platform located on the left bank at latitude 29°31'10", longitude 104°17'10", and river mile 949.8 (1,528.5 km); 0.4 river mile (0.6 km) downstream from Alamito Creek and 9.0 river miles (14.4 km) downstream from the international highway bridge between Presidio, Texas and Ojinaga, Chihuahua. The zero of the gage is 2,532.00 feet (771.75 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 35 discharge measurements during the year and a continuous record of gage heights. Computations for high flows by shifting control methods. Low and medium flow computations based on a stable control weir rating curve defined by meter measurements. Records available: 1955 through 1989. Records are also available from 1896 through June 13, 1932 for a station located about 12.1 river miles (19.5 km) downstream from the Rio Conchos and 1.3 miles (2.1 km) upstream from Alamito Creek; and from June 14, 1932 through 1954 for a station about 2.0 river miles (3.2 km) downstream from the Rio Conchos and 11.4 river miles (18.3 km) upstream from Alamito Creek.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. The data collection platform, operated in cooperation with the National Weather Service, relays gage height data upon interrogation by telephone via commercial circuits. Prior to December 1, 1979, the zero of the gage was 2,536.00 feet (772.97 m) above mean sea level, U. S. C. & G. S. datum.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 61,200 second-feet (1,730 m3/sec) on September 30, 1978 with a gage height of 15.41 feet (4.70 m). The greatest recorded flow occurred September 11, 1904, with a peak flow estimated at 162,000 second-feet (4,590 m3/sec) at a station 11.8 miles (19.0 km) upstream. Min. 0.2 second-foot (0.01 m3/sec) several days in July 1955, and on June 30, 1958.

Average Flow in Second-Feet (Cubic Meters per Second)**

Daily:	Max. 53,300 (1,510)	Oct. 1, 1978	Min. 12.9 (0.37)	March 27, 1968
Monthly:	Max. 11,500 (326)	Oct. 1978	Min. 74.5 (2.11)	March 1968
Yearly:	Max. 2,440 (69.1)	1986	Min. 602 (17.0)	1983

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	789	589	610	465	718	546	423	777	2,190	1,220	1,250	465
2	823	583	559 *	455	691 *	572 *	408	734 *	1,780	1,250	1,250 *	452
3	822	592 *	546	490	670	572	396	711	1,560	1,250 *	1,060	448
4	804	598	552	505	641	543	387	766	1,390	1,290	839	450 *
5	764	597	583	567 *	625	533	371	942	1,300	1,300	803	434 *
6	750 *	638	637	571	587	550	344	865	1,180 *	1,250	801	435 *
7	731	634	672	516	623	523	336 *	783	1,190	1,260	740	437 *
8	717	642	664	513	673	491	341	831	1,910	2,000	686	435
9	730	602	653	524	618	492	357	810	1,890	2,090	679	440
10	747	556	548	570	563	490	383	706	1,800	1,520	652	444
11	710	563	415	559	553	499	1,150	753	1,780	1,410	634	443 *
12	704	594	496	520	696	536	635	722	1,840	1,350	528	442
13	692	616	541	497	627	520	442	2,670	1,950	1,280	519	410
14	726	597	534 *	457	585	494	295	1,080	1,950	1,270	492 *	403 *
15	736	598 *	508	511	585	447	271	1,100 *	1,930	1,320	446	420
16	715	1,590	474	472	573 *	411	611	936	1,760	1,350	440	434
17	672	1,810 *	479	489	516	394	557	846	1,720	1,320 *	467	444
18	643	951	471	487 *	494	407	518 *	717	1,700	1,310	489	441
19	607 *	897	472	442	530	496	505	681	1,620 *	1,330	492	424 *
20	596	861	486	449	556	517 *	498	936	1,510	1,350	469	401
21	610	817	474	453	576	480	457	1,620	1,480	1,370	468	401
22	615	785	446	489	613	488	476	6,100	1,420	1,370	457	394
23	645	761	447	520	620	504	485	4,820	1,380	1,380	416	402
24	623	757	464	551	615	516	551	1,610	1,380	1,360	423	439
25	629	723	512	527	591	423	584	1,390	1,350	1,330	442	422
26	628	727	513	509	603	703	542	1,390	1,340	1,280	430	411
27	635	724	487	491	608	622	543	1,720	1,320	1,280	473	420
28	649	659	465	546	612	478	604	2,860	1,250	1,280	458 *	428
29	630		463	657	751	447	707	10,900 *	1,230	1,280	461 *	412
30	617		487	693	717	431	1,230	5,110 *	1,210	1,290	478 *	420
31	603		484		728		871	2,520		1,260		422
Sum	21,062	21,062	15,495		15,125		58,406		42,200		13,273	
	21,362		16,142		19,158		16,278		47,310		18,242	

Month	Current Year 1989								Period 1968-1989		
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	High		Low				Average	Maximum	Minimum
			Day		Day						
Jan.	3.77	3.28	2	839	120	583	689	42,371	44,740	182,935	16,068
Feb.	6.78	3.21	16	4,940	10	541	752	41,774	39,468	129,302	4,745
Mar.	3.49	2.73	7	687	11	375	521	32,017	54,078	223,755	4,583
Apr.	3.49	2.77	30	719	15	391	517	30,734	50,227	162,069	6,497
May	3.87	3.15	29	890	18	483	618	37,999	58,411	197,236	12,147
June	4.40	2.73	24	1,240	18	381	504	30,000	69,269	254,916	5,927
July	5.77	2.31	11	2,670	15	264	525	32,287	79,425	223,914	18,744
Aug.	9.19	3.48	29	1,330	20	637	1,880	115,847	122,291	270,367	30,365
Sept.	5.80	4.39	8	2,600	6	1,170	1,580	93,838	171,639	469,832	22,489
Oct.	6.61	4.33	8	4,340	1	1,200	1,360	83,702	128,067	706,691	16,772
Nov.	4.34	2.84	! 1	1,270	23	396	608	36,182	53,526	160,145	8,741
Dec.	3.19	2.92	123	478	122	386	428	26,327	41,166	185,911	11,038
Yearly	9.19	2.31		4,940		264	833	603,078	912,307	1,770,650	483,092
	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
	2.80	0.70		140		7.48	23.6	743,885	1,125,312	2,184,061	595,884

* Discharge measurement made on this day ! And other days ** Period 1968-1989

08-3745.00 TERLINGUA CREEK NEAR TERLINGUA, TEXAS

DESCRIPTION: Cableway, gravity well, and water-stage recorder (graphic and digital) located on the left bank at latitude 29°11'50", longitude 103°36'20", 2.6 creek miles (4.2 km) from the confluence with the Rio Grande, and about 8.5 miles (13.7 km) south of Terlingua, Brewster County, Texas. This creek enters the Rio Grande at river mile 885.2 (1,424.6 km), the lower end of Santa Helena Canyon. The zero of the gage is 2,200.64 feet (670.76 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 55 discharge measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: 1932 through 1989.

REMARKS: Irrigation diversions modify the flow of this spring-fed creek at this station.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 34,900 second-feet (988 m3/sec) on May 24, 1935 with a gage height of 17.59 feet (5.36 m) on a gage 0.3 mile (0.5 km) downstream. Min. no flow on several occasions in 1986.

Average Flow in Second-Feet (Cubic Meters per Second)

Daily:	Max.	17,200 (487)	June 1, 1937	Min. 0	August 14 and 15, 1986
Monthly:	Max.	1,150 (32.6)	Sept. 1974	Min. 0.8 (0.02)	October 1934
Yearly:	Max.	146 (4.13)	1937	Min. 5.5 (0.16)	1943

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.2	* 2.2	* 2.0	1.8	* 1.7	110 *	1.3	* 1.0	3.2	1.1	* 1.5	1.6
2	2.2	2.2	2.2	1.8	1.6	125 *	1.2	1.0	1.2	* 1.1	1.4	1.6
3	2.2	2.2	2.2	* 1.8	1.7	28.6	1.2	1.0	1.3	1.1	1.4	1.6
4	2.2	2.2	2.2	1.8	1.7	6.3	3.3	22.9	1.7	1.1	1.4	1.6
5	* 2.2	2.2	2.2	1.8	1.7	2.2	* 3.7	50.4	* 2.0	1.2	1.4	* 1.6
6	2.2	2.2	2.2	1.8	1.7	1.5	1.4	214	1.8	1.2	1.4	1.6
7	2.2	2.0	2.2	2.0	1.8	* 1.6	1.5	147 *	1.6	1.3	1.4	1.6
8	2.2	2.0	2.0	1.9	1.8	1.4	1.6	233 *	1.4	1.3	1.5	1.6
9	2.3	2.0	2.2	1.8	1.8	1.4	1.8	39.7	52.2	1.3	1.5	1.6
10	2.4	2.0	2.2	1.8	5.2	1.3	* 1.9	* 9.8	2.4	* 1.3	1.5	1.6
11	2.4	2.0	2.2	1.8	135 *	1.3	95.0	13.1	298 *	1.3	1.5	* 1.6
12	2.3	2.1	2.2	1.8	80.3	1.2	426	.7	429	1.3	1.5	1.6
13	2.2	* 2.0	* 2.3	1.8	18.0	* 1.2	* 18.1	52.3	188	1.2	* 1.5	1.6
14	2.3	2.0	2.6	2.0	3.3	1.1	3.3	118 *	* 26.4	1.2	1.5	1.6
15	2.4	2.4	2.5	2.0	* 2.7	1.2	2.6	.6	3.4	1.1	1.5	1.6
16	2.4	2.4	* 2.7	2.0	2.6	1.3	2.4	85.4	1.2	* 1.1	1.5	1.6
17	* 2.4	133	2.4	* 2.0	2.4	1.3	* 2.3	* 15.7	1.1	1.1	1.5	1.6
18	2.5	123	2.4	2.0	2.4	1.3	2.2	.8	* 2.2	1.1	1.6	1.6
19	2.7	40.0	2.2	2.0	2.2	* 1.3	2.1	.7	2.0	1.1	1.6	1.6
20	2.6	11.0	2.2	2.0	2.4	1.3	* 2.2	1.3	1.7	1.1	* 1.6	* 1.6
21	2.3	* 4.0	2.0	1.8	2.6	1.3	2.4	1,670 *	1.5	1.1	1.6	1.6
22	2.4	2.6	2.0	1.8	2.7	1.3	2.0	488 *	1.3	1.1	1.5	1.6
23	2.4	2.2	1.8	1.8	2.9	1.4	1.8	120 *	1.1	* 1.1	1.5	1.6
24	2.4	2.2	1.8	1.9	2.9	1.3	* 1.7	* 93.7	1.0	1.2	1.6	1.6
25	2.4	2.2	1.6	1.9	3.0	1.3	1.7	73.8	* 1.1	1.2	1.6	1.6
26	2.4	2.2	1.7	1.9	2.7	* 32.8	1.7	134	1.1	1.2	1.6	1.6
27	2.4	2.2	1.5	1.9	2.8	31.9	29.1	629	1.1	3.2	* 1.6	1.5
28	2.4	2.0	1.6	1.7	2.9	20.2	52.4	915	* 1.3	5.9	1.5	1.5
29	2.2		* 1.8	1.7	22.8	6.5	21.2	2,240	1.3	1.4	1.6	1.6
30	2.2		1.7	1.7	54.5	2.0	1.2	316 *	1.1	1.4	1.6	1.6
31	2.2		1.6		3.4		1.1	* 36.3		1.4		1.5
Sum	72.2	360.7	64.4	55.8	375.2	391.8	691.4	7,724.2	1,033.7	43.8	45.4	49.3

Month	Current Year 1989								Period 1932-1989		
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum
Jan.	3.59	3.57	!12	2.7	! 7	2.0	2.3	143	192	875	82.7
Feb.	4.79	3.57	17	389	! 7	2.0	12.9	715	232	4,400	73.4
Mar.	3.62	3.56	!14	2.7	27	1.3	2.1	128	244	2,410	72.4
Apr.	3.62	3.59	!14	2.2	!22	1.6	1.9	111	1,424	18,659	55.1
May	5.50	3.60	11	983	29	1.4	12.1	744	3,533	26,000	81.3
June	4.96	3.63	1	422	!12	1.1	13.1	777	6,934	54,800	59.5
July	5.97	3.52	12	1,550	!28	1.0	22.3	1,371	7,938	28,700	113
Aug.	7.10	2.08	28	8,520	21	.1	249	15,321	6,434	33,617	123
Sept.	6.77	1.66	11	9,600	16	.9	34.5	2,050	8,872	68,373	123
Oct.	2.49	1.65	27	36.9	! 1	1.1	1.4	86.9	3,574	27,900	50.8
Nov.	1.68	1.65	12	1.7	! 1	1.4	1.5	90.0	485	5,687	64.9
Dec.	1.74	1.66	21	2.4	!27	1.5	1.6	97.8	305	3,080	90.0
Yearly	7.10	1.65		9,600		0.1	29.9	21,635	40,167	105,807	3,958
	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
	2.16	0.50		272		0	0.85	26,686	49,545	130,511	4,882

* Discharge measurement made on this day ! And other days

08-3750.00 RIO GRANDE AT JOHNSON RANCH NEAR CASTOLON, TEXAS AND SANTA ELENA, CHIHUAHUA

DESCRIPTION: Cableway, gravity well, digital water-stage recorder, and G.O.E.S. Data Collection Platform located on the left bank at latitude 29°02'05", longitude 103°23'25", and river mile 862.4 (1,388.0 km); 1.3 river miles (2.2 km) upstream from the old Johnson Ranch headquarters, 6.0 river miles (9.7 km) downstream from Smoky Creek, and 9.2 river miles (14.8 km) upstream from Chizos Crossing and the Chihuahua-Coahuila state line. The zero of the gage is 2,045.30 feet (623.41 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 18 discharge measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: April 1936 through 1989.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station.
The Data Collection Platform transmits gage heights by radio via NWS G.O.E.S. satellite to NWS computer bank.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 71,900 second-feet (2,040 m3/sec), on September 30, 1978 with a gage height of 28.40 feet (8.66 m). A flow estimated at 97,000 second-feet (2,750 m3/sec) with a stage of 24.6 feet (7.50 m) occurred at this station site on October 3, 1932. Min. no flow several days in 1953, 1955, 1957, and 1958.

Average Flow in Second-Feet (Cubic Meters per Second)**

Daily:	Max. 65,300 (1,850)	Oct. 1, 1978	Min. 27.5 (0.78)	Sept. 9, 1968
Monthly:	Max. 12,200 (345)	Oct. 1978	Min. 96.9 (2.74)	April 1976
Yearly:	Max. 2,490 (70.5)	1978	Min. 559 (15.8)	1983

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	760	605 *	692 *	484	519 *	873 *	483	841 *	2,540	1,140	1,100 *	516
2	764	601	631	484	557	778	461	678	2,180	1,160 *	1,060	537
3	773	595	590	462	564	835	451	646	1,650	1,180	1,030	542
4	772	589	560	478 *	549	647	450	738	1,470	1,180	964	542
5	750 *	602	576	501	544	608	736 *	795	1,380 *	1,210	811	563 *
6	726	597	612	538	528	593	473	1,120	1,310	1,250	742	533
7	701	614	627	496	516	578	454	899	1,250	1,200	726	503
8	689	625	644	466	521	548	413	1,120	1,600	1,190	701	490
9	682	625	643	476	573	509	374	787	1,720	2,120	664	484
10	691	616	626	490	573	457	473	714	1,770	1,940	643	490
11	692	580	598	501	826	461	458	669	1,790	1,480	631	503
12	688	580	513	519	799	482	1,290	612	2,560	1,370	617	510
13	671	594	464	497	597	506	797	707	2,080	1,300	604 *	523
14	667	618	517	462	649	509	574	2,400 *	1,990	1,230	600	498
15	679	604	516	454	597	504	425	1,000	1,870	1,190	572	473
16	679	590	497	454	605	490	321	947	1,740	1,220 *	496	445
17	675	1,330	482	432	600	456	343	885	1,540	1,250	461	450
18	647	1,550	482	443	579	423	526	781	1,490 *	1,210	487	462 *
19	633	966	479	446	550	402	476	725	1,470	1,200	510	467
20	598	890	484	417	545	445	483	711	1,410	1,200	527	456
21	576	852	473	406	570	494	463	2,680	1,350	1,220	536	434
22	578	800	463	408	596	490	454	3,710	1,320	1,250	523	412
23	590	789	498	408	615	470	449	6,120	1,280	1,240	513	411
24	618	772	505	432	615	499	471	3,730	1,250	1,240	495	418
25	603	748	500	451	609	522	485	1,830	1,250	1,210	476	474
26	605	725	479	461	592	631	497	1,580	1,220	1,170	483	500
27	612	714	477	453	563	560	518	1,490	1,200	1,540	495	509
28	613	713	477	426	572	722	561	2,460	1,200	1,270	494	501
29	620		484	401	588	575	771	4,880	1,180	1,220	516	512
30	614		471	466	813	502	637	8,460 *	1,160	1,140	497	505
31	608		479		679		855	3,820		1,100		482
Sum	20,574	20,484	16,539	13,812	18,603	16,569	16,622	58,535	47,220	39,820	18,974	15,145

Month	Current Year 1989								Period 1968-1989		
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low						
	High	Low	Day		Day				Average	Maximum	Minimum
Jan.	2.71	2.27	3	783	21	565	664	40,808	44,876	178,909	15,003
Feb.	4.94	2.22	17	3,030	11	551	732	40,629	38,713	120,476	7,743
Mar.	2.52	1.93	1	714	13	441	534	32,805	51,798	211,676	6,067
Apr.	2.17	1.83	6	560	!22	397	460	27,396	47,604	148,840	5,765
May	3.86	2.06	11	1,590	1	488	600	36,898	59,571	185,276	14,454
June	3.50	1.70	3	1,390	!19	397	552	32,864	73,509	209,177	5,839
July	4.31	1.43	12	2,270	17	284	536	32,969	85,514	197,593	12,460
Aug.	10.67	2.31	30	10,600	13	598	1,890	116,102	128,187	242,539	30,689
Sept.	8.03	3.13	11	6,550	30	1,140	1,570	93,659	174,459	472,093	27,759
Oct.	6.25	3.07	27	4,420	!27	1,090	1,280	78,982	139,172	751,755	17,776
Nov.	3.10	2.02	1	1,110	16	450	632	37,634	56,065	148,820	13,267
Dec.	2.17	1.90	5	570	!23	405	489	30,040	42,760	178,730	12,107
Yearly	10.67	1.43		10,600		284	830	600,786	942,228	1,801,958	404,776
	Meters		Cubic Meters per Second						Thousands of Cubic Meters		
	3.25	0.44		300		8.04	23.5	741,058	1,162,219	2,222,679	499,283

* Discharge measurement made on this day ! And other days ** Period 1968-1989

08-3772.00 RIO GRANDE AT FOSTER RANCH NEAR LANGTRY, TEXAS AND RANCHO SANTA ROSA, COAHUILA

DESCRIPTION: Cableway, bubbler gage, concrete control weir, and water-stage recorders (graphic and digital) located on the left bank at latitude 29°46'50", longitude 101°45'30", and river mile 657.5 (1,058.2 km); 500 feet (152 m) downstream from the Terrell-Val Verde County Line, 5.4 river miles (8.8 km) downstream from Lozier Canyon, and about 12.3 miles (19.8 km) west of Langtry, Texas. The zero of the gage is 1,157.17 feet (352.71 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 33 discharge measurements during the year, 9 by the United States Section and 24 by the Mexican Section of the Commission, and a continuous record of gage heights. Computations for high flows by shifting control methods. Low and medium flow computations based on a stable control weir rating curve defined by meter measurements. Records available: September 1961 through 1989.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. The concrete control weir was placed in operation on February 21, 1967. A computerized radio telemetry system relays gage height data to the Amistad Dam office.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 148,000 second-feet (4,190 m3/sec) on November 5, 1978 with a gage height of 38.14 feet (11.63 m). Min. 188 second-feet (5.32 m3/sec) on August 19, 1965.

Average Flow in Second-Feet (Cubic Meters per Second)**

Daily:	Max. 81,600 (2,310)	Sept. 20, 1974	Min. 217 (6.15)	July 1, 1968
Monthly:	Max. 14,700 (416)	Oct. 1978	Min. 322 (9.12)	March 1968
Yearly:	Max. 3,030 (85.8)	1978	Min. 845 (23.9)	1983

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,080	903	1,100	697	629	692	814	871	7,440	1,370	1,420	710
2	1,090	894	1,090	680	609	1,050	747	799	3,560	1,330	1,370	728
3	1,080	887	1,050	683	662	1,340	676	961	2,180	1,300	1,360	735
4	1,060	876	983	680	749	1,060	654	988	1,960	1,310	1,320	741
5	1,060	862	916	698	741	967	620	871	1,850	1,360	1,300	754
6	1,070	867	876	696	745	982	602	896	1,680	1,370	1,290	765
7	1,070	889	876	679	743	820	606	960	1,620	1,360	1,220	772
8	1,040	889	876	656	766	751	976	1,070	1,540	1,380	1,120	778
9	1,010	903	884	617	750	688	709	1,500	1,520	1,380	1,090	782
10	1,010	931	883	644	804	684	634	1,170	1,750	1,370	1,020	772
11	1,020	965	897	658	713	681	623	1,240	1,740	1,870	986	772
12	1,000	972	903	638	786	656	825	1,040	1,950	2,070 *	976	763
13	1,000	983	903	665	930	662	767	1,000	2,680	1,710	957	759
14	976	985	888	652	1,080	656	811	967	2,590	1,600	944	759
15	983	1,000	842	675	1,010 *	628	1,290	990	2,230	1,530	963	759
16	968	1,020	801	682	855	634	934	1,520	2,110	1,480	916	759
17	967	1,070	793	690 *	1,120	644	756	1,610	2,080	1,400	856	759
18	983	1,050	795	718	858	634	648	1,210	2,000	1,370	826	754 *
19	981	1,060	784	703	852	645 *	584	1,190	1,870	1,380	795	747
20	974	2,030	760 *	703	849	627	504	1,120	1,760	1,380	747 *	747
21	958	1,630 *	723	721	823	598	573	1,030 *	1,710	1,360	749	747
22	944	1,450	731	717	815	579	639	958	1,660	1,380	774	747
23	932	1,370	718	701	774	572	625	2,360	1,560	1,370	785	747
24	930	1,320	729	662	785	613	626	5,100	1,500	1,370	782	735
25	916	1,270	727	685	763	628	614	6,210	1,480	1,400	765	735
26	909	1,220	713	666	737	615	588	2,950	1,440	1,370	765	739
27	896	1,190	722	674	728	616	596	1,950	1,430	1,400	753	740
28	903	1,160	696	701	710	639	612	1,620	1,400	4,020	736	757
29	903		681	688	695	750	640	1,540	1,380	4,340	716	781
30	889		708	667	674	688	657	2,310	1,370	1,750	710	797
31	896		706		663		760	6,140		1,550		797
Sum	30,498	30,646	25,754	20,396	24,418	21,799	21,710	54,141	61,040	50,630	29,011	23,437

Month	Current Year 1989								Period 1968-1989		
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low						
	High	Low	Day		Day				Average	Maximum	Minimum
Jan.	2.39	2.25	! 1	1,090	!27	889	984	60,492	61,559	194,023	31,343
Feb.	3.00	2.21	20	2,160	6	836	1,090	60,785	53,088	128,767	22,436
Mar.	2.40	2.07	1	1,100	29	663	831	51,082	67,293	224,767	19,789
Apr.	2.21	1.99	18	836	8	572	680	40,455	65,160	156,218	20,200
May	2.73	2.00	17	1,640	! 2	583	788	48,432	78,424	200,707	28,616
June	3.34	1.99	3	2,960	!22	572	727	43,238	97,040	260,985	22,463
July	2.57	1.89	15	1,370	!20	468	700	43,061	103,824	218,916	23,871
Aug.	5.67	2.07	31	9,220	15	663	1,750	107,387	145,345	233,664	45,474
Sept.	5.67	2.56	1	9,220	30	1,350	2,030	121,071	196,405	590,037	48,619
Oct.	5.29	2.51	28	8,470	4	1,270	1,630	100,423	178,951	901,825	32,134
Nov.	2.77	2.11	1	1,720	!29	710	967	57,542	83,242	357,878	30,399
Dec.	2.18	2.11	!29	797	1	710	756	46,487	59,587	176,379	32,025
Yearly	5.67	1.89		9,220		468	1,080	780,455	1,189,918	2,196,111	611,666
	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
	1.73	0.58		261		13.3	30.6	962,676	1,467,740	2,708,859	754,478

* Discharge measurement made on this day ! And other days ** Period 1968-1989

08-4474.10 PECOS RIVER NEAR LANGTRY, TEXAS

DESCRIPTION: Cableway, concrete control weir, bubbler gage, and water-stage recorders (graphic and digital) located on the right bank at latitude 29°48'10", longitude 101°26'45", about 7.5 miles (12.1 km) east of Langtry, Texas, 9.5 river miles (15.3 km) upstream from the Pecos High Railroad Bridge, and 15.0 river miles (24.1 km) from the confluence with the Rio Grande. This stream enters the Rio Grande at river mile 616.0 (991.4 km); 23.6 river miles (38.0 km) downstream from Langtry, Texas. The zero of the gage is 1,133.08 feet (345.36 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 33 discharge measurements during the year, 9 by the United States Section and 24 by the Mexican Section of the Commission, and a continuous record of gage heights. Computations for high flows by shifting control methods. Low and medium flow computations based on stable control weir rating curves defined by meter measurements. Records available: July 1967 through 1989. Records are also available for Pecos River near Comstock, 9.5 river miles (15.3 km) downstream, from March 17 through December 3, 1898 and May 1900 through October 7, 1954; for Pecos River near Shumla, 3.5 river miles (5.6 km) upstream, from October 8, 1954 through June 1967; and for Pecos River at Mouth near Comstock, from March 1961 through July 2, 1968.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. A computerized radio telemetry system relays gage height data to the Amistad Dam office.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 577,000 second-feet (16,300 m3/sec) on September 20, 1974 with a gage height of 75.30 feet (22.95 m). The greatest flood of record, which exceeded a gage height of 100 feet (30.5 m) at this station, occurred on June 28, 1954. The peak discharge was 948,000 second-feet (26,800 m3/sec) at the gaging station located near the railroad bridge 9.5 river miles (15.3 km) downstream. Min. 58.3 second-feet (1.65 m3/sec) on July 27, 1974 with a gage height of 1.47 feet (0.45 m).

Average Flow in Second-Feet (Cubic Meters per Second)

Daily:	Max.	153,000 (4,330)	Sept. 20, 1974	Min.	59.5 (1.69)	Aug. 20, 21, & 22, 1970
Monthly:	Max.	13,500 (382)	Sept. 1974	Min.	68.0 (1.93)	August 1970
Yearly:	Max.	1,500 (42.5)	1974	Min.	131 (3.71)	1970

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	194	182	208	209	147	305	104	93.7	79.9	125	136	139
2	194	182	206	199	145	146	104	94.1	80.9	123	125	139
3	194	177	204	201	138	131	99.4	92.9	81.9	119	125	139
4	193	174	195	201	141	137	105	88.2	77.4	118	125	141
5	191	172	194	195	140	134	108	86.9	75.8	116	129	142
6	191	176	194	194	133	129	110	86.9	75.3	115	135	145
7	191	175	194	195	129	124	113	86.5	73.5	118	135	147
8	190	175	193	190	132	115	108	86.9	75.4	117	136	139
9	188	175	189	186	134	110	103	92.1	79.6	115	128	142
10	185	175	188	182	135	107	98.2	95.7	79.9	115	128	142
11	185	175	188	180	145	195	99.1	96.6	79.6	115	128	145
12	185	175	185	182	145	117	102	92.0	80.9	115	131	148
13	184	175	185	182	139	112	103	89.3	86.2	112	133	145
14	177	178	183	184	134	117	102	86.9	102	117	136	148
15	185	181	179	187	132 *	118	102	91.1	98.4	117	136	148
16	185	199	173	178	136	138	99.7	92.0	104	117	130	151
17	184 *	308	172	170 *	171	126	98.0	89.3	120	112	130	151
18	185	429	176	166	206	185	97.1	89.3	136 *	112	140	153 *
19	196	290	176	168	155	161 *	96.6	89.3	136	112	144	154
20	198	274	176 *	163	151	143	96.6	87.5	125	115	146	154
21	191	259 *	185	161	144	129	96.6	* 88.3	119	117	148	154
22	187	240	182	157	137	120	98.2	91.4	114	112	149	154
23	183	232	178	154	133	113	95.0	91.7	117	112	151	150
24	182	224	175	153	124	111	91.7	90.8	118	115	151	148
25	183	224	171	154	123	109	89.8	87.6	126	115	151	148
26	185	224	170	152	126	111	91.8	86.9	136	116	150	146
27	182	220	192	149	124	110	94.9	86.6	135	117	154	150
28	187	211	360	155	122	107	96.6	86.9	132	433	150	149
29	188		336	152	118	106	96.6	86.9	128	140	139	147
30	188		261	148	118	104	95.6	86.9	126	139	139	145
31	182		228		119		92.4	81.2		139		145
Sum	5,813	5,981	6,196	5,247	4,276	3,970	3,087.9	2,772.4	3,098.7	3,980	4,138	4,548

Month	Current Year 1989								Period 1967-1989		
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low						
	High	Low	Day		Day				Average	Maximum	Minimum
Jan.	2.00	1.79	!19	201	!14	136	188	11,530	13,118	29,240	7,559
Feb.	2.65	1.91	18	601	! 4	172	214	11,863	11,549	25,414	7,012
Mar.	2.63	1.89	28	581	26	166	200	12,290	11,689	22,124	6,929
Apr.	2.05	1.82	1	218	27	145	175	10,407	14,266	51,960	6,999
May	2.29	1.70	!17	305	29	112	138	8,481	15,669	46,055	6,330
June	2.99	1.66	1	1,010	!10	102	132	7,874	13,333	57,856	5,458
July	1.71	1.61	! 7	115	!25	89.3	99.6	6,125	15,992	76,891	4,289
Aug.	1.65	1.57	1	99.1	31	79.9	89.4	5,499	19,546	162,055	4,178
Sept.	1.81	1.54	!18	142	! 7	73.1	103	6,146	50,368	804,466	5,188
Oct.	3.62	1.69	28	2,180	6	109	128	7,894	24,071	113,911	7,123
Nov.	1.91	1.75	17	172	! 1	125	138	8,208	15,714	59,734	6,589
Dec.	1.85	1.79	!18	154	3	136	147	9,021	13,651	37,859	7,662
Yearly	3.62	1.54		2,180		73.1	146	105,338	218,966	1,087,822	94,683
	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
	1.10	0.47		61.7		2.07	4.13	129,932	270,090	1,341,807	116,790

* Discharge measurement made on this day ! And other days

08-4474.20 DEAD MANS CANYON NEAR COMSTOCK, TEXAS

In order to determine storm runoff formerly included with measured flows at a gaging station on the Pecos River before its relocation upstream incident to the completion of Amistad Dam, a gaging station was established during 1968 on Dead Mans Canyon.

DESCRIPTION: Cableway, control weir, bubbler gage, and digital recorder located on the left bank of the canyon at latitude 29°47'05", longitude 101°19'25", 2.3 miles (3.7 km) upstream from its confluence with the Pecos River, which is 9.5 miles (15.3 km) upstream from the Pecos River confluence with the Rio Grande. The zero of the gage is 1,178.00 feet (359.05 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on current meter measurements, a continuous record of gage heights, and the weir discharge rating. Records available: March 1968 through 1989.

REMARKS: This stream is normally dry, its flow being confined to periods of storm runoff from its 88 square miles (228 km2) of watershed area. Only the days of flow are shown below.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 37,800 second-feet (1,070 m3/sec) on September 17, 1974 with a gage height of 12.78 feet (3.90 m). Maximum volumes: Monthly, 29,164 acre-feet (35,974,000 m3) in September 1974; yearly, 30,527 acre-feet (37,655,000 m3) in 1974.

Average Flow in Second-Feet (Cubic Meters per Second)

Daily:	Max.	5,850	(166)	Sept. 18, 1974	Min.	
Monthly:	Max.	490	(13.9)	Sept. 1974	Min.	see REMARKS
Yearly:	Max.	42.2	(1.20)	1974	Min.	

MEAN DAILY DISCHARGE IN SECOND-FEET 1989

Month and Day			
	No flow during 1989		

ANNUAL SUMMARY

Month	Maximum Gage and Discharge			Total Acre-Feet
	Day	Feet	Second-Feet	
Yearly		Meters	Cubic Meters per Second	Thousands of Cubic Meters

08-4494.00 DEVILS RIVER AT PAFFORD CROSSING NEAR COMSTOCK, TEXAS

DESCRIPTION: Concrete control wall with rectangular notch opening of 900 second-foot (25.5 m3/sec) capacity, cableway, bubbler gage, water-stage recorders (graphic & digital), located on the left bank at latitude 29°40'35", longitude 101°00'00", about 11.5 miles (18.5 km) east of Comstock, Val Verde County, Texas, and 25.5 river miles (41.0 km) from the confluence with the Rio Grande. The confluence is located at river mile 574.6 (924.7 km), 0.7 river mile (1.1 km) upstream from Amistad Dam. The zero of the gage is 1,131.88 feet (345.00 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 32 discharge measurements during the year, 10 by the United States Section and 22 by the Mexican Section of the Commission, a stable rating curve based on meter measurements, and a continuous record of gage heights. Records available: 1960 through 1989. Records are also available from May 1900 through March 1914 for a station 23.8 river miles (38.3 km) downstream; from December 1923 through September 1932 for a station 22.8 river miles (36.7 km) downstream; from September 2, 1932 through August 1957 for a station 21.0 river miles (33.8 km) downstream; from August 7, 1954 through January 1958 for a station 5.4 river miles (8.7 km) upstream; and from August 1954 through May 31, 1968 for a station at the mouth 24.7 river miles (39.8 km) downstream.

REMARKS: At this station the flow of this spring-fed stream is very uniform during periods of dry weather and is not modified by diversions or storage. A computerized radio telemetry system relays gage height data to the Amistad Dam office.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 250,000 second-feet (7,080 m3/sec) on September 18, 1974 with a gage height of 19.82 feet (6.04 m). Min. 48.6 second-feet (1.38 m3/sec) on August 20, 1969.

Average Flow in Second-Feet (Cubic Meters per Second)

Daily:	Max. 123,000 (3,480)	Sept. 18, 1974	Min. 53.7 (1.52)	August 20, 1969
Monthly:	Max. 8,460 (240)	Sept. 1974	Min. 64.3 (1.82)	August 1964
Yearly:	Max. 977 (27.7)	1974	Min. 99.9 (2.83)	1968

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	346	318	330	294	264	256	242	227	222	250	230	227
2	343	317	332	296	266	261	237	226	223	232	230	227
3	342	299	328	296	266	260	234	222	223	227	230	223
4	338	307	296	284	266	261	237	226	223	228	230	224
5	335	313	293	291	266	265	243	223	223	227	229	223
6	334	308	310	294	266	254	243	225	221	227	230	223
7	332	314	316	301	266	249	242	225	218	227	232	223
8	331	318	316	294	262	245	247	225	217	227	232	223
9	326	317	313	301	257	246	238	227	221	227	232	223
10	326	313	307	296	298	250	236	227	221	229	232	223
11	329	313	307	301	275	256	234	227	221	223	232	223
12	310	317	307	312	261	252	233	227	218	224	232	223
13	318	319	307	327	257	255	232	227	449	223	232	223
14	327	318	302	329	257	256	234	227	238	223	232	225
15	329	344	294	326	258	256	232	227	193	224	232	225
16	323	406	298	325	263	251	232	226	196	223 *	232	223
17	319 *	510	303	322 *	350	246	232	223	213	223	232	223
18	321	429	303	321	295	247	229	223 *	225 *	223	232	223 *
19	337	403	305	310	282	249 *	229	222	238	223	232	223
20	344	390	304	304	270	249	223	223	232	223	232	223
21	326	368 *	272	297	262	247	224	224	225	223	232	223
22	318	362	292 *	287	262	245	227	226	217	227	232 *	223
23	319	355	295	286	262	248	223	224	209	227	232	223
24	319	343	297	281	257	247	220	223	201	227	232	223
25	322	343	294	282	253	249	222	223	198	227	232	223
26	314	343	293	280	253	249	226	223	270	227	232	223
27	322	340	292	281	253	249	228	224	290	227	232	223
28	328	332	332	279	252	246	228	225	278	227	232	223
29	321		320	269	249	240	228	224	264	227	227	223
30	317		307	266	249	240	227	222	252	226	227	223
31	318		306		253		226	221		226		223
Sum	10,134	9,659	9,471	8,932	8,250	7,524	7,188	6,964	7,039	7,024	6,937	6,926

Month	Current Year 1989								Period 1960-1989		
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low						
	High	Low	Day		Day				Average	Maximum	Minimum
Jan.	1.99	1.83	20	370	!12	289	327	20,100	15,583	28,842	4,647
Feb.	2.37	1.81	16	590	3	280	345	19,158	13,500	26,577	3,999
Mar.	1.97	1.75	27	359	!21	253	306	18,785	13,385	26,404	4,186
Apr.	1.96	1.71	6	354	26	236	298	17,716	13,922	38,777	4,520
May	2.21	1.71	17	498	30	236	266	16,364	15,141	35,344	4,517
June	1.89	1.67	!10	318	10	219	251	14,924	18,174	54,328	4,259
July	1.76	1.65	8	257	24	211	232	14,257	21,305	186,522	4,034
Aug.	1.69	1.66	! 1	227	!24	215	225	13,813	37,850	408,908	3,955
Sept.	2.75	1.56	13	1,000	!23	177	235	13,962	43,372	503,506	5,000
Oct.	1.75	1.67	1	253	! 4	219	227	13,932	32,026	220,590	5,004
Nov.	1.70	1.69	! 1	232	! 1	227	231	13,759	16,681	33,013	4,532
Dec.	1.70	1.68	4	232	! 3	223	223	13,738	16,066	31,063	4,697
Yearly	2.75	1.56		1,000		177	263	190,508	257,005	707,092	72,494
	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
	0.84	0.48		28.3		5.01	7.45	234,988	317,011	872,184	89,420

* Discharge measurement made on this day ! And other days

08-4494.40 BIG SATAN CREEK NEAR COMSTOCK, TEXAS

In order to determine storm runoff formerly included with measured flows at a gaging station on the Devils River before its relocation upstream incident to the completion of Amistad Dam, a gaging station was established during 1968 on Big Satan Creek.

DESCRIPTION: Cableway, control weir, bubbler gage, and digital recorder located on the right bank of the creek at latitude 29°39'50", longitude 100°57'50", 1.1 miles (1.8 km) upstream from its confluence with the Devils River, which is 21.1 miles (34.1 km) upstream from the Devils River confluence with the Rio Grande. The zero of the gage is 1,134.00 feet (345.64 m) above mean sea level, U. S. C. & G. S. datum.
RECORDS: Based on current meter measurements, a continuous record of gage heights, and the weir discharge rating. Records available: May 1968 through 1989.
REMARKS: This creek is normally dry, its flow being confined to periods of storm runoff from its 42 square miles (109 km2) of watershed area. Only the days of flow are shown below.
EXTREME FLOWS FROM RECORDS: Momentary: Max. 56,100 second-feet (1,590 m3/sec) on August 15, 1971 with a gage height of 12.31 feet (3.75 m). Maximum volumes: Monthly, 12,204 acre-feet (15,054,000 m3) in August 1971; yearly 12,525 acre-feet (15,450,000 m3) in 1971.

Average Flow in Second-Feet (Cubic Meters per Second)

Daily:	Max.	4,480	(127)	Aug. 15, 1971	Min.	
Monthly:	Max.	198	(5.61)	Aug. 1971	Min.	see REMARKS
Yearly:	Max.	17.3	(0.49)	1971	Min.	

MEAN DAILY DISCHARGE IN SECOND-FEET 1989

Month and Day			
	No flow during 1989		

ANNUAL SUMMARY

Month	Maximum Gage and Discharge			Total Acre-Feet
	Day	Feet	Second-Feet	
Yearly		Meters	Cubic Meters per Second	Thousands of Cubic Meters

08-4494.80 ROUGH CANYON NEAR DEL RIO, TEXAS

In order to determine storm runoff formerly included with measured flows at a gaging station on the Devils River before its relocation upstream incident to the completion of Amistad Dam, a gaging station was established during 1968 on Rough Canyon.

DESCRIPTION: Cableway, control weir, bubbler gage, and digital recorder located on the right bank at latitude 29°34'40", longitude 100°56'00", 3.9 miles (6.3 km) upstream from its confluence with the Devils River, which is 11.1 miles (17.9 km) upstream from the Devils River confluence with the Rio Grande. The zero of the gage is 1,129.00 feet (344.12 m) above mean sea level, U. S. C. & G. S. datum.
RECORDS: Based on current meter measurements, a continuous record of gage heights, and the weir discharge rating. Records available: January 1968 through 1989.
REMARKS: This stream is normally dry, its flow being confined to periods of storm runoff from its 24 square miles (62.2 km2) of watershed area. Only the days of flow are shown below.
EXTREME FLOWS FROM RECORDS: Momentary: Max. 7,040 second-feet (199 m3/sec) on August 12, 1972 with a gage height of 6.80 feet (2.07 m). Maximum volumes: Monthly, 8,230 acre-feet (10,152,000 m3) in August 1971; yearly 8,232.2 acre-feet (10,154,000 m3) in 1971.

Average Flow in Second-Feet (Cubic Meters per Second)

Daily:	Max.	2,140	(60.6)	Aug. 16, 1971	Min.	
Monthly:	Max.	134	(3.79)	Aug. 1971	Min.	see REMARKS
Yearly:	Max.	11.4	(0.32)	1971	Min.	

MEAN DAILY DISCHARGE IN SECOND-FEET 1989

Month and Day			
Jun. 11 24.4			

ANNUAL SUMMARY

Month	Maximum Gage and Discharge			Total Acre-Feet
	Day	Feet	Second-Feet	
Jun.	11	1.37	102	48.4
Yearly		1.37	102	48.4
		Meters	Cubic Meters per Second	Thousands of Cubic Meters
		0.42	2.89	59.7

08-4494.85 NORTH FORK SAN PEDRO CREEK NEAR DEL RIO, TEXAS

In order to determine storm runoff formerly included with measured flows at a gaging station on the Devils River before its relocation upstream incident to the completion of Amistad Dam, a gaging station was established during 1968 on the north fork of San Pedro Creek.

DESCRIPTION: Cableway, control weir, bubbler gage, and digital recorder located on the right bank of the creek at latitude 29°31'20", longitude 100°53'00", 3 miles (4.8 km) upstream from its confluence with the Middle Fork Branch, which is 6.3 miles (10.1 km) upstream from its confluence with Devils River which itself is 4.5 river miles (7.2 km) above Devils River confluence with the Rio Grande. The zero of the gage is 1,126.92 feet (343.49 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on current meter measurements, a continuous record of gage heights, and the weir discharge rating. Records available: January 1968 through 1989.

REMARKS: This creek is normally dry, its flow being confined to periods of storm runoff from its 17 square miles (44 km2) of watershed area. Only the days of flow are shown below.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 5,070 second-feet (144 m3/sec) on August 12, 1972 with a gage height of 8.44 feet (2.57 m). Maximum volumes: Monthly, 3,403 acre-feet (4,198,000 m3) in October 1969; yearly, 4,061.7 acre-feet (5,010,000 m3) in 1969.

Average Flow in Second-Feet (Cubic Meters per Second)

Daily:	Max.	1,240	(35.1)	Oct. 4, 1969	Min.	
Monthly:	Max.	55.3	(1.57)	Oct. 1969	Min.	see REMARKS
Yearly:	Max.	5.6	(0.16)	1969	Min.	

MEAN DAILY DISCHARGE IN SECOND-FEET 1989

Month and Day				
May 11	2.6			
12	22.8			

ANNUAL SUMMARY

Month	Maximum Gage and Discharge			Total Acre-Feet
	Day	Feet	Second-Feet	
May	12	1.96	309	50.4
Yearly		1.96	309	50.4
		Meters	Cubic Meters per Second	Thousands of Cubic Meters
		0.60	8.75	62.2

08-4494.90 MIDDLE FORK SAN PEDRO CREEK NEAR DEL RIO, TEXAS

In order to determine storm runoff formerly included with measured flows at a gaging station on the Devils River before its relocation upstream incident to the completion of Amistad Dam, a gaging station was established during 1968 on the middle fork of San Pedro Creek.

DESCRIPTION: Cableway, control weir, bubbler gage, and digital recorder located on the right bank of the creek at latitude 29°29'30", longitude 100°52'50", 3.2 miles (5.1 km) upstream from its confluence with the North Fork Branch, which is 6.3 miles (10.1 km) above the confluence with Devils River, which itself is 4.5 river miles (7.2 km) above the Devils River confluence with the Rio Grande. The zero of the gage is 1,137.02 feet (346.56 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on current meter measurements, a continuous record of gage heights, and the weir discharge rating. Records available: December 1967 through 1989.

REMARKS: This creek is normally dry, its flow being confined to periods of storm runoff from its 12 square miles (31 km2) of watershed area. Only the days of flow are shown below.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 10,200 second-feet (289 m3/sec) on July 17, 1975 with a gage height of 5.84 feet (1.78 m). Maximum volumes: Monthly, 3,726 acre-feet (4,596,000 m3)in July 1975; yearly, 3,726 acre-feet (4,596,000 m3) in 1975.

Average Flow in Second-Feet (Cubic Meters per Second)

Daily:	Max.	1,390	(39.4)	July 17, 1975	Min.	
Monthly:	Max.	60.6	(1.72)	July 1975	Min.	see REMARKS
Yearly:	Max.	5.1	(0.14)	1975	Min.	

MEAN DAILY DISCHARGE IN SECOND-FEET 1989

Month and Day				
May 12	20.9			
13	2.7			
14	0.1			
17	17.3			
18	13.9			
19	14.3			
20	14.8			
21	11.7			
22	11.5			
23	8.6			
24	4.3			
25	.8			

ANNUAL SUMMARY

Month	Maximum Gage and Discharge			Total Acre-Feet
	Day	Feet	Second-Feet	
May	12	1.40	109	240
Yearly		1.40	109	240
		Meters	Cubic Meters per Second	Thousands of Cubic Meters
		0.43	3.09	296

08-4495.90 EVANS CREEK NEAR COMSTOCK, TEXAS

In order to determine storm runoff formerly included with measured flows at a gaging station on the Devils River before its relocation upstream incident to the completion of Amistad Dam, a gaging station was established during 1968 on Evans Creek.

DESCRIPTION: Cableway, control weir, bubbler gage, and digital recorder located on the left bank of the creek at latitude 29°32'15", longitude 101°06'10", 11.0 miles (17.7 km) upstream from its confluence with the Devils River, which is 3.2 miles (5.1 km) upstream from the Devils River confluence with the Rio Grande. The zero of the gage is 1,162.54 feet (354.34 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on current meter measurements, a continuous record of gage heights, and the weir discharge rating. Records available: December 1967 through 1989.

REMARKS: This creek is normally dry, its flow being confined to periods of storm runoff from its 74 square miles (192 km2) of watershed area. Only the days of flow are shown below.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 17,400 second-feet (493 m3/sec) on June 2, 1971 with a gage height of 5.99 feet (1.83 m). Maximum volumes: Monthly, 9,281 acre-feet (11,448,000 m3)in August 1971; yearly,14,404 acre-feet (17,767,000 m3) in 1971.

Average Flow in Second-Feet (Cubic Meters per Second)

Daily:	Max.	3,940	(112)	Aug. 15, 1971		Min.	
Monthly:	Max.	151	(4.28)	Aug.	1971	Min.	see REMARKS
Yearly:	Max.	19.9	(0.56)		1971	Min.	

MEAN DAILY DISCHARGE IN SECOND-FEET 1989

Month and Day				
Sep. 13	163			
14	8.7			

ANNUAL SUMMARY

Month	Maximum Gage and Discharge			Total Acre-Feet
	Day	Feet	Second-Feet	
Sep.	13	1.72	565	341
Yearly		1.72	565	341
		Meters	Cubic Meters per Second	Thousands of Cubic Meters
		0.52	16.0	421

08-4608.05 CARMINA SPRINGS NEAR CD. ACUNA, COAHUILA

DESCRIPTION: Cipolletti weir of 70.6 second-foot (2.0 m3/sec) capacity and staff gage located on a creek that runs almost parallel to Amistad Dam, about 130 feet (40 m) from the confluence with the Rio Grande, at latitude 29°26'50", longitude 101°03'35", and about 11.0 miles (17.7 km) northwest of Cd. Acuna, Coahuila. This creek enters the Rio Grande from the Mexican side at river mile 573.7 (923.2 km), 0.2 river mile (400 m) downstream from Amistad Dam and 12.6 river miles (20.3 km) upstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila. The elevation of the zero of the gage has not been determined.

RECORDS: Based on periodic staff gage readings and the weir discharge table. Mean daily discharges determined by prorating between readings. Records available: 1969 through 1989.

REMARKS: At least six separate springs have emerged on the watershed of this small creek since operation of Amistad Dam began in May 1968. Prior to this time, flow in this creek was exclusively from storm runoff. All storm water from surface runoff passing this station is deducted and is not included in the tabulation below. On September 24, 1971, a flood destroyed part of the weir.

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	67.5	67.8	66.4	59.3	°	55.1	53.0	53.3	52.6	51.6	52.6	54.4
2	67.5	67.8	66.4	59.3	°	55.1	53.0	53.3	52.6	51.6	52.6	53.7
3	67.8	* 67.8	* 66.4	59.3	°	55.1	53.0	53.3	52.6	51.9	52.6	53.3
4	67.8	67.8	66.0	59.3	°	55.1	53.0	53.3	53.0	53.0	52.6	53.3
5	67.8	68.2	65.7	59.3	°	55.1	53.3	53.3	52.6	53.0	52.6	53.7
6	67.8	68.5	66.4	59.3	°	54.7	53.3	53.0	53.3	53.3	52.6	53.3
7	67.8	* 68.5	66.4	59.3	°	* 54.7	53.3	53.3	53.3	53.0	52.6	53.3
8	67.8	68.5	* 66.4	59.3	°	54.7	53.3	53.3	53.3	53.0	* 52.6	53.0
9	67.8	68.5	66.4	59.3	°	55.1	53.0	* 53.3	53.3	53.0	52.6	52.6
10	67.8	* 66.7	* 66.4	59.3	* 60.0	56.9	53.3	53.0	53.3	53.0	52.6	52.6
11	67.8	66.4	67.1	59.3	60.4	55.1	53.3	53.0	53.3	* 53.0	52.6	53.3
12	67.8	66.4	67.1	* 59.3	60.4	54.7	* 53.3	52.6	53.3	53.0	52.6	53.3
13	67.8	66.4	67.1	59.3	60.7	55.1	53.3	53.0	53.3	53.0	54.4	* 53.3
14	67.8	67.1	67.1	59.3	60.7	54.7	53.3	52.6	* 53.3	53.0	52.6	53.3
15	67.8	67.1	67.1	59.3	61.1	54.4	53.3	52.6	53.3	53.3	52.6	53.3
16	67.8	67.8	67.1	59.3	60.4	54.4	53.0	52.6	53.3	53.3	52.6	52.6
17	67.8	* 67.8	* 66.7	59.3	59.7	54.0	51.2	52.6	53.3	52.6	52.6	52.6
18	* 67.8	67.1	66.4	59.3	59.0	54.0	53.0	52.6	53.3	52.6	52.6	52.6
19	67.8	67.1	66.4	59.3	57.9	53.7	53.3	52.6	53.3	53.0	52.6	53.3
20	67.8	67.1	66.7	59.3	57.2	53.7	53.3	52.6	53.3	53.3	52.6	53.3
21	67.8	66.4	66.4	59.3	56.5	53.7	53.3	52.6	53.3	53.3	52.6	53.3
22	68.2	66.4	66.4	59.3	55.8	53.7	53.3	52.6	53.3	53.3	52.3	52.6
23	68.2	66.4	66.4	59.3	55.1	53.3	53.3	52.6	53.3	53.0	52.6	52.6
24	68.2	* 66.4	66.4	59.3	55.1	53.3	53.3	52.6	53.3	53.3	52.6	52.6
25	68.5	66.4	66.4	59.3	55.1	53.3	53.3	52.6	53.3	53.3	52.6	53.0
26	68.5	66.4	66.4	* 59.3	55.1	53.3	53.3	53.0	53.3	53.3	52.3	53.3
27	68.5	66.4	66.4	59.3	55.1	53.3	53.3	52.6	52.3	53.7	51.9	53.3
28	68.5	66.4	66.7	59.3	55.1	* 53.0	53.3	52.6	51.9	53.3	52.6	53.3
29	68.5		66.4	59.3	55.1	53.0	53.7	52.6	52.3	53.3	52.6	53.3
30	* 68.5		66.4	59.3	55.1	53.0	53.3	52.6	51.9	53.0	54.4	53.3
31	68.5		* 66.4		* 55.1		53.3	52.6		52.6		53.3
Sum	2,107.3	1,881.6	2,062.4	1,779.0		1,628.3	1,648.5	1,638.2	1,591.1	1,641.9	1,580.3	1,648.0

Month	Current Year 1989								# Period 1969-1989		
	Extreme Gage Feet		Ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	High Day	High	Low Day	Low			Average	Maximum	Minimum
Jan.	1.61	1.61	!25	68.5	! 1	67.5	67.8	4,179	2,854	4,179	364
Feb.	1.61	1.57	! 6	68.5	!11	66.4	67.1	3,732	2,581	3,732	373
Mar.	1.57	1.54	!11	67.1	5	65.7	66.4	4,091	2,812	4,091	525
Apr.			! 1	59.3	! 1	59.3	59.3	3,531	2,655	3,572	629
May									2,638	3,691	709
June	1.80	1.28	10	56.9	!28	53.0	54.4	3,230	2,593	3,572	598
July	1.41	1.28	29	53.7	17	51.2	53.3	3,270	2,669	3,691	533
Aug.	1.35	1.28	! 1	53.3	!12	52.6	53.0	3,250	2,689	3,616	540
Sept.	1.35	1.21	! 6	53.3	!28	51.9	53.0	3,157	2,687	3,404	593
Oct.	1.38	1.28	27	53.7	! 1	51.6	53.0	3,257	2,927	3,816	830
Nov.	1.61	1.28	!13	54.4	27	51.9	52.6	3,135	2,870	3,811	964
Dec.	1.38	1.31	1	54.4	! 9	52.6	53.3	3,270	3,003	4,069	1,077
Yearly									32,978	41,290	9,080
	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
									40,671	50,932	11,201

* Discharge measurement made on this day Ø Mean daily ! And other days
° Unable to determine flow
\# Some months missing

LOURDES AND HILDA SPRINGS NEAR CD. ACUNA, COAHUILA

08-4508.20 LOURDES SPRING

DESCRIPTION: Rectangular sharp-crested weir of 28.8 second-foot (815 l/sec) capacity and staff gage located at latitude 29°26'35", longitude 101°03'30", at the base of the high bank of the Rio Grande, and about 11.1 miles (17.9 km) northwest of Cd. Acuna, Coahuila. This creek enters the Rio Grande from the Mexican side at river mile 573.2 (922.5 km), 12.2 river miles (19.6 km) upstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila. The zero of the gage is 926.28 feet (282.33 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on periodic staff gage readings and the weir discharge table. Mean daily discharges determined by prorating between readings. Records available: 1969 through 1989.

REMARKS: This spring emerged since operation of Amistad Dam began in May 1968. All storm water from surface runoff passing this station is deducted. The daily flow throughout the year ranged from 2.1 (0.06) to 2.5 second-feet (0.07 m3/sec) and averaged 2.1 second-feet (0.06 m3/sec). The volume for the year amounted to 1,621 acre-feet (1,997,000 m3).

08-4508.30 HILDA SPRING

DESCRIPTION: Rectangular sharp-crested weir of 53.0 second-foot (1.50 m3/sec) capacity and staff gage located at latitude 29°26'20", longitude 101°03'35", about 328 feet (100 m) from the confluence with the Rio Grande and about 11.0 miles (17.7 km) northwest of Cd. Acuna, Coahuila. This creek enters the Rio Grande from the Mexican side at river mile 572.8 (921.8 km), 11.8 river miles (19.0 km) upstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila. The zero of the gage is 908.14 feet (276.80 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on periodic staff gage readings and the weir discharge table. Mean daily discharges determined by prorating between readings. Records available: 1969 through 1989.

REMARKS: This spring emerged since operation of Amistad Dam began in May 1968. All storm water from surface runoff passing this station is deducted. The daily flow throughout the year ranged from 2.1 (0.06) to 3.2 second-feet (0.09 m3/sec) and averaged 2.5 second-feet (0.07 m3/sec). The volume for the year amounted to 1,853 acre-feet (2,286,000 m3).

08-4509.00 RIO GRANDE BELOW AMISTAD DAM NEAR CD. ACUNA, COAHUILA AND DEL RIO, TEXAS

DESCRIPTION: Cableway, gravity well, concrete control weir, and water-stage recorders (graphic and digital), and binary decimal transmitter located on the left bank at latitude 29°25'30", longitude 101°02'25", and river mile 571.8 (920.3 km), 2.2 river miles (3.4 km) downstream from Amistad Dam and 10.8 river miles (17.4 km) upstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila. The zero of the gage is 898.94 feet (274.00 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 44 discharge measurements during the year, 34 by the Mexican Section and 10 by the United States Section of the Commission, and a continuous record of gage heights. Computations for high flows by shifting control methods. Low and medium flow computations based on a stable control weir rating curve defined by meter measurements. Records available: September 1954 through 1989. Records are also available from May 1900 through April 1915 for a station 1.9 miles (3 km) upstream; from December 1919 through March 1920 for a station 1.7 miles (3 km) downstream near McKee's Switch;from July 2, 1941 through August 1954 and October 1960 through 1967 for a station at the international highway bridge; and from December 1923 through July 2, 1941, and 1968 through 1989 for a station approximately 10.6 miles (17.0 km) downstream.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. On May 31, 1968 Amistad Dam started impounding water. After this day, flow at this station is controlled largely by releases from Amistad Reservoir, 2.1 river miles (3.3 km) upstream. A computerized radio telemetry system relays gage height data to the Amistad Dam office.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 1,158,000 second-feet (32,800 m3/sec) on June 28, 1954, determined by slope-area computation, with a gage height of 55.72 feet (16.98 m) at the old station site 500 feet (152 m) downstream. This is the greatest rate of discharge recorded at any point on the Rio Grande. Max. since Amistad Dam, 62,200 second-feet (1,760 m3/sec) on Sept. 21, 1974. Min. 22.2 second-feet (0.63 m3/sec) on February 14, 1969 with a gage height of 1.08 feet (0.33 m).

Average Flow in Second-Feet (Cubic Meters per Second)

Daily:	Max.	61,100 (1,730)	Sept. 22, 1974	Min.	46.6 (1.32)	April 13, 1971
Monthly:	Max.	21,500 (609)	Sept. 1974	Min.	60.7 (1.72)	Oct. 1971
Yearly:	Max.	4,910 (139)	1974	Min.	576 (16.3)	1972

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,350	2,390	2,410	2,440	2,510	1,680	1,650	1,670	1,580	1,680	2,300	2,390
2	1,370	2,450	2,440	2,440	2,500	1,660	1,660	1,660	1,610	1,600	2,310	2,360
3	1,360	2,440	2,400	2,600	2,490	1,710	1,600	1,620	1,610	1,600	2,350	2,340
4	1,390	2,440	2,430	2,210	2,450	1,680	1,630	1,620	1,620	1,610	1,480	2,370
5	1,430	2,490	2,270	2,440	2,530	1,600	1,700	1,650	1,620	1,590	1,500	2,380
6	4,200	2,470	2,460	2,420	2,460	1,610	1,590	1,650	1,640	1,580	2,300	2,380
7	4,270	2,380	2,420	2,480	2,570	1,600 *	1,610	1,660	1,630	1,580	2,370	2,350
8	4,310	2,430 *	2,450 *	2,440	2,480	1,590	1,620	1,650	1,630	1,580	2,360 *	2,340
9	1,560	2,420	2,410	2,460	2,500	6,570	1,610	1,660 *	1,630	1,600	2,370	2,330
10	1,270	2,200	2,450	2,470	2,530 *	9,320	1,630	1,660	1,630	1,570 *	2,370	2,340
11	1,440	2,450	2,400	2,390	2,510	9,220	1,630	1,630	1,590	1,580 *	2,360	2,360
12	1,400	2,550	2,460	2,480 *	2,470	6,640	1,620	1,640	1,670	1,560	2,390	2,350
13	1,400	2,400	2,400	2,490	2,510	6,600	1,630	1,700	1,720	1,550	2,270	2,400 *
14	1,420	2,470	2,440	2,510	2,450	6,670 *	1,600	1,830	1,620	1,560	2,340	2,390
15	1,410	2,320 *	2,420 *	6,640	2,520	6,750	1,600	1,930	1,620	1,570	2,360 *	2,390
16	1,400	2,460	2,400	6,820	2,490	6,780	1,600	1,930 *	1,620	2,220	2,340	2,380
17	1,420	2,420	2,460	8,760	2,320 *	9,290	1,620	1,960	1,630	2,200	2,380	2,360
18	1,420 *	2,460	2,500	8,790	2,480	9,290	1,580	1,950	1,610	2,330	2,370	2,360
19	2,060	2,410	2,260	8,830 *	2,490	6,710	1,580	1,980	1,610	2,240	2,410	2,380
20	1,450	2,430	2,500	8,510	2,510	2,220	1,560	1,640	1,630	2,310	2,360	2,390 *
21	1,400	2,420	2,460	8,720	2,510	1,650 *	1,600	1,610	1,580	2,330	2,400	2,410
22	1,420	2,420 *	2,490 *	7,100	2,530	1,670	1,630	1,630	1,600	2,330	2,370 *	4,060
23	1,390	2,400	2,420	6,820	2,570	1,650	1,600	1,600 *	1,620	2,360	2,390	6,390
24	1,430	2,430	2,450	8,580	2,510 *	1,610	1,640	1,610	1,580	2,330	2,400	3,850
25	2,480 *	2,530	2,440	6,750	2,520	1,650	1,640	1,620	1,600	2,320 *	2,400	1,820
26	2,500	2,450	2,430	9,250 *	2,540	1,600	1,650 *	1,600	1,620	2,320	2,400	1,910
27	2,490	2,400	2,450	9,250	2,590	1,640	1,660	1,630	1,600 *	2,280	2,410	1,980 *
28	2,470	2,480	2,430	9,290	2,530	1,650	1,710	1,610	1,590	2,280	2,400	2,070
29	2,520		2,440 *	2,820	2,510	1,650	1,700	1,630	1,600	2,310	2,410	2,070
30	2,450		2,410	2,500	2,600	1,640	1,620	1,610 *	1,600	2,320	2,360	2,090
31	2,440		2,440		2,460 *		1,650	1,620		2,310		2,080
Sum	60,320	68,010	75,240	153,700	77,640	115,600	50,420	52,460	48,510	60,600	69,230	78,070

Current Year 1989									Period 1968-1989		
Month	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	High		Low				Average	Maximum	Minimum
			Day		Day						
Jan.	2.43	0.33	8	4,380	10	87.2	1,950	119,666	92,131	209,814	5,318
Feb.	2.72	.36	27	5,510	! 3	108	2,430	134,928	120,857	467,202	12,467
Mar.	2.49	.36	22	4,590	! 5	97.1	2,430	149,274	143,632	396,457	7,271
Apr.	3.61	.39	!25	9,360	! 1	118	5,120	304,837	132,352	383,554	27,570
May	2.62	.39	14	5,090	! 6	108	2,500	154,015	204,403	539,699	24,137
June	3.61	.33	! 9	9,360	!21	77.3	3,850	229,266	158,324	327,602	16,418
July	2.49	.36	21	4,590	! 1	87.2	1,620	99,982	137,636	366,470	23,182
Aug.	2.40	.36	! 5	4,270	! 2	87.2	1,690	103,996	160,498	662,215	15,589
Sept.	2.82	.36	11	5,790	1	87.2	1,620	96,222	194,408	1,280,079	17,606
Oct.	2.92	.33	21	6,250	11	77.3	1,960	120,254	147,951	812,596	3,734
Nov.	2.89	.39	29	6,110	! 1	108	2,310	137,317	98,122	502,295	4,539
Dec.	3.15	.39	23	7,200	! 1	108	2,520	154,842	82,440	216,286	4,859
Yearly	3.61	0.33		9,360		77.3	2,490	1,804,599	1,672,754	3,566,065	416,789
	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
	1.10	0.10		265		2.19	70.6	2,225,950	2,063,318	4,398,694	514,104

* Discharge measurement made on this day ! And other days

08-4509.04 SPRING M-15 NEAR CD. ACUNA, COAHUILA

DESCRIPTION: Rectangular sharp-crested weir of 8.1 second-foot (230 l/sec) capacity and staff gage located at latitude 29°25'20", longitude 101°02'40", about 1,300 feet (400 m) from the confluence with the Rio Grande and about 9.4 miles (15.1 km) northwest of Cd. Acuna, Coahuila. This creek enters the Rio Grande from the Mexican side at river mile 571.3 (919.4 km), 10.3 river miles (16.6 km) upstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila. The zero of the gage is 925.13 feet (281.98 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on periodic staff gage readings and the weir discharge table. Mean daily discharges determined by prorating between readings. Records available: 1969 through 1989.

REMARKS: This spring emerged since operation of Amistad Dam began in May 1968. All storm water from surface runoff passing this station is deducted and is not included in the tabulation below.

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.1	1.4	1.8	1.1	0.7	1.4	0.7	0.7	0.7	1.1	0.7	1.1
2	1.1	1.4	1.8	1.1	.7	1.4	.7	.7	.7	1.1	.7	1.1
3	1.1	1.4	1.8	1.1	.7	1.4	.7	.7	.7	1.1	.7	1.1
4	1.1	1.4	1.8	1.1	.7	1.4	.7	.7	.7	1.1	.7	1.1
5	1.1	1.4	1.8	1.1	.7	1.4	.7	.7	.7	1.1	.7	1.1
6	1.1	1.4	1.8	1.1	.7	1.4	.7	.7	.7	1.1	.7	1.1
7	1.1	1.4	1.8	1.1	.7	1.4	.7	.7	.7	1.1	.7	1.1
8	1.1	1.4	1.8	1.1	.7	1.4	.7	.7	.7	1.1	.7	1.1
9	1.1	1.4	1.8	1.1	.7	1.4	.7	.7	.7	1.1	.7	1.1
10	1.1	1.4	1.4	1.1	.7	1.4	.7	.7	.7	1.1	.7	1.1
11	1.1	1.4	1.4	1.1	1.1	1.1	.7	.7	.7	1.1	.7	1.1
12	1.1	1.4	1.4	1.1	1.1	1.1	.7	.7	.7	1.1	.7	1.1
13	1.1	1.4	1.4	1.1	1.1	1.1	.7	.7	.7	1.1	.7	1.1
14	1.1	1.4	1.4	1.1	1.1	1.1	.7	.7	.7	1.1	.7	1.1
15	1.1	1.8	1.4	1.1	1.1	1.1	.7	.7	.7	1.1	.7	1.1
16	1.1	1.8	1.4	1.1	1.1	1.1	.7	.7	.7	1.1	.7	1.1
17	1.1	1.8	1.4	1.1	1.1	1.1	.7	.7	.7	1.1	.7	1.1
18	1.4	1.8	1.4	1.1	1.1	1.1	.7	.7	.7	1.1	.7	1.1
19	1.4	1.8	1.4	.7	1.1	1.1	.7	.7	.7	1.1	1.1	1.1
20	1.4	1.8	1.4	.7	1.1	1.1	.7	.7	.7	.7	1.1	1.4
21	1.4	1.8	1.4	.7	1.1	1.1	.7	.7	.7	.7	1.1	1.4
22	1.4	1.8	1.4	.7	1.1	1.1	.7	.7	1.1	.7	1.1	1.4
23	1.4	1.8	1.4	.7	1.1	1.1	.7	.7	1.1	.7	1.1	1.4
24	1.4	1.8	1.4	.7	1.1	1.1	.7	.7	1.1	.7	1.1	1.4
25	1.4	1.8	1.4	.7	1.1	1.1	.7	.7	1.1	.7	1.1	1.4
26	1.4	1.8	1.4	.7	1.4	1.1	.7	.7	1.1	.7	1.1	1.4
27	1.4	1.8	1.4	.7	1.4	1.1	.7	.7	1.1	.7	1.1	1.4
28	1.4	1.8	1.1	.7	1.4	.7	.7	.7	1.1	.7	1.1	1.4
29	1.4		1.1	.7	1.4	.7	.7	.7	1.1	.7	1.1	1.4
30	1.4		1.1	.7	1.4	.7	.7	.7	1.1	.7	1.1	1.4
31	1.4		1.1		1.4		.7	.7		.7		1.4
Sum	38.3	44.8	45.8	28.2	31.9	34.8	21.7	21.7	24.6	29.3	25.8	37.7

Current Year 1989									Period 1969-1989		
Month	Extreme Gage Feet		ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
				High		Low					
	High	Low	Day		Day				Average	Maximum	Minimum
Jan.	0.43	0.36	!18	1.4	! 1	1.1	1.1	74.9	76.9	131	21.1
Feb.	.49	.43	!15	1.8	! 1	1.4	1.8	88.4	68.6	123	19.5
Mar.	.49	.33	! 1	1.8	!28	1.1	1.4	90.0	68.7	122	21.9
Apr.	.33	.30	! 1	1.1	!19	.7	1.1	54.6	63.1	105	21.1
May	.39	.30	!26	1.4	! 1	.7	1.1	62.3	67.1	109	21.9
June	.39	.26	! 1	1.4	!28	.7	1.1	67.9	60.8	121	21.1
July	.26	.26	! 1	.7	! 1	.7	.7	43.5	61.6	106	21.1
Aug.	.26	.26	! 1	.7	! 1	.7	.7	43.5	62.2	122	0
Sept.	.33	.26	!22	1.1	! 1	.7	.7	48.3	66.5	165	0
Oct.	.33	.26	! 1	1.1	!20	.7	1.1	56.7	79.2	326	0
Nov.	.36	.26	!19	1.1	! 1	.7	.7	50.4	75.3	202	21.1
Dec.	.39	.36	!20	1.4	! 1	1.1	1.1	73.5	79.4	131	21.9
Yearly	0.49	0.26		1.8		0.7	1.1	754	824	1,362	257
	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
	0.15	0.08		0.05		0.02	0.03	930	1,016	1,679	317

ø Mean daily ! And other days

08-4509.05 ARROYO DE LOS JABONCILLOS NEAR CD. ACUNA, COAHUILA

DESCRIPTION: Cipolletti weir of 70.6 second-foot (2 m3/sec) capacity and staff gage located at latitude 29°24'25", longitude 101°02'20", about 660 feet (200 m) from the confluence with the Rio Grande, and about 8.6 miles (13.8 km) northwest of Cd. Acuna, Coahuila. This creek enters the Rio Grande from the Mexican side at river mile 570.5 (918.2 km), 9.5 river miles (15.3 km) upstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila. The elevation of the zero of the gage has not been determined.

RECORDS: Based on periodic staff gage readings and the weir discharge table. Mean daily discharges determined by prorating between readings. Records available: 1969 through 1989.

REMARKS: At least 9 separate springs have emerged along this creek since operation of Amistad Dam began in May 1968. Prior to this time, flow in this creek was exclusively from storm runoff. All storm water from surface runoff passing this station is deducted and is not included in the tabulation below.

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	61.1	61.1	61.8	61.4	58.6	54.7	51.9	45.6	48.0	48.7	52.3	55.1
2	61.1	61.1	61.8	61.1	58.6	54.4	51.6	45.2	48.4	48.7	52.6	55.1
3	61.1	61.1	61.4	60.4	58.6	54.0	51.6	45.9	48.4	48.4	52.6	55.1
4	61.1	61.1	61.4	60.0	58.3	54.0	51.2	46.6	48.7	48.4	53.0	55.1
5	61.1	61.1	61.4	59.3	58.3	53.7	51.2	47.3	48.7	48.7	53.0	55.1
6	61.1	61.1	61.4	59.3	57.9	53.3	50.9	48.4	49.1	49.1	53.3	55.1
7	61.1	61.1	61.1	59.0	57.9	53.0	50.9	49.1	50.1	49.4	53.3	54.0
8	61.1	61.1	61.1	59.0	57.6	53.0	50.5	49.8	51.2	50.1	53.7	53.0
9	61.1	60.4	61.1	59.0	57.6	53.3	50.5	50.5	52.3	50.5	53.7	53.3
10	61.1	60.4	60.7	59.0	57.2	53.3	50.1	50.1	53.3	50.9	53.7	53.7
11	61.1	60.4	60.7	58.6	57.9	53.3	50.1	50.1	54.4	51.2	53.7	53.3
12	61.1	59.3	60.7	58.6	58.6	53.3	49.8	49.8	55.4	51.2	53.7	52.3
13	61.1	59.3	60.7	58.6	59.3	53.7	49.4	49.8	56.5	50.9	53.7	53.0
14	61.1	59.3	60.4	58.6	59.7	* 53.7	49.1	49.4	56.5	50.9	53.7	53.0
15	61.1	* 60.4	* 60.4	58.6	60.4	53.3	48.7	49.4	55.8	50.9	* 53.7	52.6
16	61.1	60.4	60.4	58.6	61.1	53.3	48.7	* 49.1	54.7	50.9	54.0	52.3
17	61.1	60.4	60.4	58.6	* 61.8	53.0	48.4	49.1	53.7	50.5	54.4	51.2
18	61.1	60.4	60.4	58.6	61.1	53.0	48.0	49.1	53.0	* 50.5	54.7	51.2
19	61.1	60.4	60.4	* 58.6	60.0	52.6	* 47.7	49.1	52.3	50.9	54.7	51.2
20	61.4	60.4	60.4	58.6	59.3	52.6	47.7	49.1	51.2	50.9	55.1	* 51.6
21	61.4	60.4	60.4	58.6	58.3	52.3	47.7	49.1	50.9	51.2	55.4	52.3
22	61.4	61.4	60.4	58.6	57.6	52.3	47.7	49.1	50.5	51.6	55.8	52.6
23	61.4	61.4	60.7	58.6	56.5	52.3	47.7	49.1	50.1	51.9	55.8	52.6
24	61.8	61.4	61.1	58.6	55.8	52.3	47.7	48.7	50.1	51.9	55.4	52.6
25	61.8	61.4	61.4	58.6	55.8	52.3	47.7	48.7	49.8	52.3	55.4	52.6
26	61.8	61.8	62.2	58.6	55.4	52.3	47.7	48.4	49.4	52.3	55.4	53.0
27	61.4	61.8	62.5	58.6	55.4	52.3	47.3	48.4	* 49.1	52.3	55.4	53.0
28	61.4	61.8	62.9	58.6	55.4	52.3	47.0	48.0	49.1	52.3	55.1	53.0
29	61.4		63.2	58.6	55.4	52.3	46.6	48.0	48.7	52.3	55.1	53.0
30	61.4		62.5	58.6	55.1	51.9	46.3	47.7	48.7	52.3	55.1	53.0
31	61.1		62.2		55.1		45.9	48.0		52.3		53.0
Sum	1,898.6	1,701.7	1,897.6	1,769.5	1,795.6	1,591.1	1,517.3	1,505.7	1,538.1	1,574.4	1,626.5	1,647.0

Month	Current Year 1989								Period 1969-1989		
	Extreme Gage Feet		Ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	High Day	High	Low Day	Low			Average	Maximum	Minimum
Jan.	1.97	1.97	!24	61.8	! 1	61.1	61.1	3,767	3,397	4,720	349
Feb.	1.97	1.97	!26	61.8	!12	59.3	60.7	3,376	3,088	4,207	381
Mar.	2.03	1.94	29	63.2	!14	60.4	61.1	3,764	3,342	4,574	526
Apr.	1.97	1.94	1	61.4	!11	58.6	59.0	3,510	3,168	4,345	636
May	2.00	1.84	17	61.3	!30	55.1	57.9	3,561	3,192	4,540	721
June	1.84	1.77	1	54.7	30	51.9	53.0	3,155	2,987	4,071	678
July	1.77	1.64	1	51.9	31	45.9	49.1	3,009	3,015	4,367	769
Aug.	1.74	1.61	9	50.5	2	45.2	48.7	2,987	3,024	4,321	782
Sept.	1.87	1.67	!13	56.5	1	48.0	51.2	3,052	3,079	4,417	782
Oct.	1.77	1.67	!25	52.3	! 3	48.4	50.9	3,122	3,402	5,211	1,097
Nov.	1.87	1.77	!22	55.8	1	52.3	54.4	3,227	3,384	4,847	1,282
Dec.	1.84	1.77	1	55.1	!17	51.2	53.0	3,266	3,508	4,709	1,398
Yearly	2.03	1.61		63.2		45.2	55.1	39,796	38,586	51,839	9,850
	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
	0.62	0.49		1.79		1.28	1.56	49,088	47,595	63,943	12,152

* Discharge measurement made on this day Ø Mean daily ! And other days

08-4509.06 SPRING M-5 NEAR CD. ACUNA, COAHUILA

DESCRIPTION: Rectangular sharp-crested weir of 17.7 second-foot (0.5 m3/sec) capacity and staff gage located at latitude 29°25'20", longitude 101°02'35", at the base of the high bank of the Rio Grande, and about 9.2 miles (14.8 km) northwest of Cd. Acuna, Coahuila. This creek enters the Rio Grande from the Mexican side at river mile 571.1 (919.1 km), 10.1 river miles (16.3 km) upstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila. The zero of the gage is 932.38 feet (284.19 m) above mean sea level U. S. C. & G. S. datum.

RECORDS: Based on periodic staff gage readings and the weir discharge table. Mean daily discharges determined by prorating between readings. Records available: 1969 through 1989.

REMARKS: This spring emerged since operation of Amistad Dam began in May 1968. All storm water from surface runoff passing this station is deducted and is not included in the tabulation below.

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.1	2.1	1.8	2.1	2.5	2.1	2.5	2.5	2.5	2.1	2.1	2.5
2	2.1	2.1	1.8	2.1	2.5	2.1	2.5	2.5	2.5	2.1	2.1	2.5
3	2.1	2.1	1.8	2.1	2.5	2.1	2.5	2.5	2.5	2.1	2.1	2.5
4	2.1	2.1	1.8	2.1	2.5	2.1	2.5	2.5	2.5	2.1	2.1	2.5
5	2.1	2.1	1.8	2.1	2.5	2.1	2.5	2.5	2.5	2.1	2.1	2.5
6	2.1	2.1	1.8	2.1	2.5	2.1	2.5	2.5	2.5	2.1	2.1	2.5
7	2.1	2.1	1.8	2.1	2.5	2.1	2.5	2.5	2.5	2.1	2.1	2.5
8	2.1	2.1	1.8	2.1	2.5	2.1	2.5	2.5	2.5	2.1	2.1	2.5
9	2.1	2.1	1.8	2.1	2.5	2.1	2.5	2.5	2.5	2.1	2.1	2.5
10	2.1	2.1	1.8	2.1	2.5	2.1	2.5	2.5	2.5	2.1	2.1	2.5
11	2.1	2.1	1.8	2.1	2.5	2.1	2.5	2.5	2.5	2.1	2.1	2.5
12	2.1	2.1	1.8	2.1	2.5	2.1	2.5	2.5	2.5	2.1	2.1	2.5
13	2.1	2.1	1.8	2.1	2.5	2.1	2.5	2.5	2.5	2.1	2.1	2.5
14	2.1	2.1	1.8	2.1	2.5	2.1	2.5	2.5	2.5	2.1	2.1	2.5
15	2.1	1.8	1.8	2.1	2.5	2.1	2.5	2.5	2.5	2.1	2.1	2.5
16	2.1	1.8	1.8	2.1	2.5	2.1	2.5	2.5	2.5	2.1	2.1	2.5
17	2.1	1.8	1.8	2.1	2.5	2.1	2.5	2.5	2.5	2.1	2.1	2.5
18	2.1	1.8	1.8	2.1	2.5	2.1	2.5	2.5	2.5	2.1	2.1	2.5
19	2.1	1.8	2.1	2.5	2.1	2.1	2.5	2.5	2.5	2.1	2.5	2.5
20	2.1	1.8	2.1	2.5	2.1	2.5	2.5	2.5	2.5	2.1	2.5	2.1
21	2.1	1.8	2.1	2.5	2.1	2.5	2.5	2.5	2.5	2.1	2.5	2.1
22	2.1	1.8	2.1	2.5	2.1	2.5	2.5	2.5	2.1	2.1	2.5	2.1
23	2.1	1.8	2.1	2.5	2.1	2.5	2.5	2.5	2.1	2.1	2.5	2.1
24	2.1	1.8	2.1	2.5	2.1	2.5	2.5	2.5	2.1	2.1	2.5	2.1
25	2.1	1.8	2.1	2.5	2.1	2.5	2.5	2.5	2.1	2.1	2.5	2.1
26	2.1	1.8	2.1	2.5	2.1	2.5	2.5	2.5	2.1	2.1	2.5	2.1
27	2.1	1.8	2.1	2.5	2.1	2.5	2.5	2.5	2.1	2.1	2.5	2.1
28	2.1	1.8	2.1	2.5	2.1	2.5	2.5	2.5	2.1	2.1	2.5	2.1
29	2.1		2.1	2.5	2.1	2.5	2.5	2.5	2.1	2.1	2.5	2.1
30	2.1		2.1	2.5	2.1	2.5	2.5	2.5	2.1	2.1	2.5	2.1
31	2.1		2.1		2.1		2.5	2.5		2.1		2.1
Sum	65.1	54.6	59.7	67.8	72.3	67.4	77.5	77.5	71.4	65.1	67.8	72.7

Month	Current Year 1989								Period 1969-1989		
	Extreme Gage Feet		Ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low						
	High	Low	Day		Day				Average	Maximum	Minimum
Jan.	0.33	0.33	! 1	2.1	! 1	2.1	2.1	131	158	195	86.7
Feb.	.33	.30	! 1	2.1	!15	1.8	2.1	108	142	173	78.6
Mar.	.33	.30	!19	2.1	! 1	1.8	1.8	118	153	184	64.9
Apr.	.36	.33	!19	2.5	! 1	2.1	2.1	135	149	178	63.2
May	.36	.33	! 1	2.5	!19	2.1	2.5	143	155	186	64.9
June	.36	.33	!20	2.5	! 1	2.1	2.1	134	146	181	63.2
July	.36	.36	! 1	2.5	! 1	2.5	2.5	152	147	173	43.8
Aug.	.36	.36	! 1	2.5	! 1	2.5	2.5	152	151	195	43.8
Sept.	.39	.33	! 1	2.5	!22	2.1	2.5	141	150	189	42.2
Oct.	.33	.33	! 1	2.1	! 1	2.1	2.1	131	156	195	43.8
Nov.	.39	.33	!19	2.5	! 1	2.1	2.1	135	152	189	63.2
Dec.	.39	.33	! 1	2.5	!20	2.1	2.5	143	157	195	64.9
Yearly	0.39	0.30		2.5		1.8	2.1	1,623	1,816	2,148	723
	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
	0.12	0.09		0.07		0.05	0.06	1,998	2,240	2,653	892

Ø Mean daily ! And other days

08-4509.10 ARROYO DEL BUEY NEAR CD. ACUNA, COAHUILA

DESCRIPTION: Cipolletti weir of 35.3 second-foot (1 m3/sec) capacity, located at latitude 29°24'20", longitude 101°02'25", 0.2 creek mile (300 m) from the confluence with the Rio Grande, and about 8.5 miles (13.7 km) northwest of Cd. Acuna, Coahuila. This stream enters the Rio Grande from the Mexican side at river mile 570.4 (918.0 km), 3.5 river miles (5.6 km) downstream from Amistad Dam and 9.4 river miles (15.2 km) upstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila. The elevation of the zero of the gage has not been determined.

RECORDS: Based on periodic staff gage readings and the weir discharge table. Mean daily discharges determined by prorating between readings. Records available: November 1961 through 1989.

REMARKS: The flow of this stream is not modified by diversions or storage. Prior to 1969 discharges were based on a continuous record of gage heights and the weir discharge table. Storm flow is deducted and not included in the tabulation below. This station was established for investigational purposes in connection with Amistad Dam to determine what effect storage in Amistad Reservoir will have on the flow of this stream. At approximately 0.3 creek mile (0.5 km) upstream from the weir, four springs have emerged since Amistad Reservoir Storage began. Backwater from the Rio Grande will affect the flow of this stream when the flow in the river is approximately 20,000 second-feet (566 m3/sec).

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	7.1	7.4	7.4	7.1	7.4	7.4	7.1	7.1	7.4	7.1	7.4	7.4
2	7.1	7.4	7.4	7.1	7.4	7.4	7.1	7.1	7.4	7.1	7.4	7.4
3	7.1	7.4	7.4	7.1	7.4	7.4	7.1	7.1	7.4	7.1	7.4	7.4
4	7.1	7.4	7.4	7.1	7.4	7.4	7.1	7.1	7.4	7.1	7.4	7.4
5	7.1	7.4	7.4	7.1	7.4	7.4	7.1	7.1	7.4	7.1	7.4	7.4
6	7.1	7.4	7.4	7.1	7.4	7.4	7.1	7.1	7.4	7.1	7.4	7.4
7	7.1	7.4	7.4	7.1	7.4	7.4	7.1	7.1	7.4	7.1	7.4	7.4
8	7.1	7.4	7.4	7.1	7.4	7.4	7.1	7.1	7.4	7.1	7.4	7.4
9	7.1	7.4	7.4	7.1	7.4	7.4	7.1	7.1	7.4	7.1	7.4	7.4
10	7.1	7.4	7.4	7.1	7.4	7.4	7.1	7.1	7.4	7.1	7.4	7.4
11	7.1	7.4	7.4	7.1	7.4	7.4	7.1	7.1	7.4	7.1	7.4	7.4
12	7.1	7.4	7.4	7.1	7.4	7.4	7.1	7.1	7.4	7.1	7.4	7.4
13	7.1	7.4	7.4	7.1	7.4	7.4	7.1	7.1	7.4	7.1	7.4	7.4
14	7.1	7.4	7.4	7.1	7.4	7.4	7.1	7.1	7.4	7.1	7.4	7.4
15	7.1	7.4	7.4	7.1	7.4	7.4	7.1	7.1	7.4	7.1	7.4	7.4
16	7.1	7.4	7.4	7.1	7.4	7.4	7.1	7.1	7.4	7.1	7.4	7.4
17	7.1	7.4	7.4	7.1	7.4	7.4	7.1	7.1	7.4	7.1	7.4	7.4
18	7.4	7.4	7.4	7.1	7.4	7.4	7.1	7.1	7.4	7.1	7.4	7.4
19	7.4	7.4	7.1	7.4	7.4	7.4	7.1	7.1	7.4	7.1	7.4	7.4
20	7.4	7.4	7.1	7.4	7.4	7.1	7.1	7.1	7.4	7.4	7.4	7.1
21	7.4	7.4	7.1	7.4	7.4	7.1	7.1	7.4	7.4	7.4	7.4	7.1
22	7.4	7.4	7.1	7.4	7.4	7.1	7.1	7.4	7.1	7.4	7.4	7.1
23	7.4	7.4	7.1	7.4	7.4	7.1	7.1	7.4	7.1	7.4	7.4	7.1
24	7.4	7.4	7.1	7.4	7.4	7.1	7.1	7.4	7.1	7.4	7.4	7.1
25	7.4	7.4	7.1	7.4	7.4	7.1	7.1	7.4	7.1	7.4	7.4	7.1
26	7.4	7.4	7.1	7.4	7.4	7.1	7.1	7.4	7.1	7.4	7.4	7.1
27	7.4	7.4	7.1	7.4	7.4	7.1	7.1	7.4	7.1	7.4	7.4	7.1
28	7.4	7.4	7.1	7.4	7.4	7.1	7.1	7.4	7.1	7.4	7.4	7.1
29	7.4		7.1	7.4	7.4	7.1	7.1	7.4	7.1	7.4	7.4	7.1
30	7.4		7.1	7.4	7.4	7.1	7.1	7.4	7.1	7.4	7.4	7.1
31	7.4		7.1		7.4		7.1	7.4		7.4		7.1
Sum	224.3	207.2	225.5	216.6	229.4	218.7	220.1	223.4	219.3	223.7	222.0	225.8

Month	Current Year 1989								Period 1961-1989		
	Extreme Gage Feet		Ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	High Day	High	Low Day	Low			Average	Maximum	Minimum
Jan.	0.79	0.75	!18	7.4	! 1	7.1	7.1	444	339	528	6.8
Feb.	.79	.79	! 1	7.4	! 1	7.1	7.4	412	306	477	5.4
Mar.	.75	.75	! 1	7.4	!19	7.1	7.4	447	334	520	9.3
Apr.	.79	.75	!19	7.4	! 1	7.1	7.1	429	348	540	6.3
May	.79	.79	! 1	7.4	! 1	7.4	7.4	456	341	544	10.9
June	.79	.75	! 1	7.4	!20	7.1	7.4	434	333	538	6.3
July	.75	.75	! 1	7.1	! 1	7.1	7.1	435	330	533	6.5
Aug.	.79	.75	!21	7.4	! 1	7.1	7.1	442	348	529	6.7
Sept.	.79	.75	! 1	7.4	!22	7.1	7.4	435	353	525	6.6
Oct.	.75	.75	!20	7.4	! 1	7.1	7.1	443	375	544	6.5
Nov.	.75	.75	! 1	7.4	! 1	7.4	7.4	441	345	517	6.3
Dec.	.79	.75	! 1	7.4	!20	7.1	7.4	448	350	538	6.5
Yearly	0.79	0.75		7.4		7.1	7.4	5,266	4,102	6,191	217
	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
	0.24	0.23		0.21		0.20	0.21	6,493	5,060	7,636	267

Ø Mean daily ! And other days

08-4511.20 MARIS SPRING NEAR CD. ACUNA, COAHUILA

DESCRIPTION: Cipolletti weir of 106 second-foot (3.0 m3/sec) capacity and staff gage located at the spring about 100 feet (30 m) from the right bank of the Rio Grande at latitude 29°24'00", longitude 101°01'40", and about 8 miles (12.9 km) northwest of Cd. Acuna, Coahuila. This spring enters the Rio Grande at river mile 569.9 (917.2 km), 8.9 river miles (14.3 km) upstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila and 4.0 river miles (6 km) downstream from Amistad Dam. The elevation of the zero of the gage has not been determined.

RECORDS: Based on periodic staff gage readings and the weir discharge table. Mean daily discharges determined by prorating between readings. Records available: November 14, 1961 through February 1984 and September 1985 through 1989.

REMARKS: The flow of this spring is very uniform during periods of dry weather and is not modified by diversions or storage. This station was established for investigational purposes in connection with Amistad Dam to determine what effect storage in Amistad Reservoir will have on the flow of this spring. All storm water from surface runoff passing this station is deducted and is not included in the tabulation below. Prior to May 1969 the weir had an 11.1 second-foot (315 l/sec) capacity. Beginning March 1, 1984, discharge computations were temporarily discontinued due to leakage under the weir. Discharge computations were resumed on August 14, 1985.

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	14.1	13.8	13.8	13.8	13.8	13.4	13.1	12.7	12.7	12.7	11.7	12.4
2	14.1	13.8	13.8	13.8	13.4	13.4	13.1	12.7	12.7	12.7	11.7	12.4
3	14.1	13.8	13.8	13.8	13.4	13.4	12.7	13.1	12.7	12.7	11.7	12.0
4	14.1	13.8	13.8	13.4	13.4	13.4	12.7	12.7	12.7	12.7	11.7	12.0
5	14.1	13.8	14.1	14.1	13.4	13.4	12.7	12.7	12.7	12.7	12.0	12.0
6	14.1	13.8	14.1	14.1	13.4	13.4	12.7	12.7	12.7	12.7	12.0	12.0
7	14.1	13.8	14.1	14.1	13.4	13.4	12.7	12.7	13.1	12.7	12.0	12.0
8	14.1	13.8	14.1	14.1	13.4	13.4	12.7	12.7	13.1	12.7	12.0	12.0
9	14.1	14.5	14.1	14.1	13.4	13.4	12.7	12.7	13.1	12.7	12.0	12.0
10	14.1	14.5	14.1	13.8	13.4	13.4	12.7	12.7	12.7	12.4	12.0	12.0
11	14.1	14.1	14.1	14.1	13.4	13.1	12.7	12.7	12.7	12.0	12.0	12.0
12	14.1	14.1	14.1	13.8	13.4	13.1	12.7	12.7	12.7	12.0	12.4	12.0
13	14.1	14.1	14.1	14.1	13.4	13.1	12.7	12.4	13.4	12.0	12.4	12.0
14	14.1	14.1	14.1	14.1	13.8	13.1	12.7	12.4	13.4	12.0	12.4	12.0
15	14.1	14.1	14.1	14.1	13.8	13.1	12.7	12.4	13.4	12.0	12.4	12.4
16	14.1	14.1	13.8	14.1	13.8	13.1	12.7	12.4	13.4	12.0	12.4	12.4
17	14.1	14.1	13.8	14.1	13.8	13.1	12.7	12.4	13.4	12.0	12.4	12.4
18	14.1	14.1	13.4	14.1	13.8	12.7	12.7	12.4	13.1	12.0	12.4	12.4
19	14.1	13.8	13.4	14.1	13.8	12.7	12.7	12.4	13.1	12.0	12.0	12.7
20	14.1	13.8	13.4	14.1	13.8	12.7	12.7	12.7	* 12.7	12.0	12.0	12.7
21	14.1	13.8	13.4	14.1	14.1	* 12.7	12.7	12.7	12.7	12.0	12.0	12.7
22	13.8	* 13.8	* 13.4	14.1	14.1	12.7	12.7	12.7	12.7	12.0	* 12.0	12.7
23	13.8	13.8	13.4	14.1	14.1	12.7	12.7	* 12.7	12.7	12.0	12.0	12.7
24	13.8	13.8	13.4	14.1	* 14.1	12.7	12.7	12.7	12.7	12.0	12.0	12.4
25	13.8	13.8	13.4	14.1	14.1	12.7	12.7	12.7	12.7	* 12.0	12.0	12.4
26	* 13.8	13.8	13.1	14.1	14.1	12.4	* 12.7	12.7	12.7	12.0	12.4	12.4
27	13.8	13.8	13.1	14.1	13.4	12.4	12.7	12.7	12.7	12.0	12.4	* 12.4
28	13.8	13.8	13.4	13.8	13.4	12.7	12.7	12.7	13.1	12.0	12.4	12.4
29	13.8		14.1	13.8	13.4	13.1	12.7	12.7	13.1	11.7	12.4	12.4
30	13.8		14.1	13.8	13.4	13.1	12.7	12.7	12.7	11.7	12.4	12.4
31	13.8		14.1		13.4		12.7	12.7		11.7		12.4
Sum	434.1	390.2	427.0	419.9	422.8	391.0	394.5	392.0	387.3	377.8	363.6	381.1

Month	Current Year 1989								Period 1961-1989		
	Extreme Gage Feet		Ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low						
	High	Low	Day		Day				Average	Maximum	Minimum
Jan.	0.62	0.59	! 1	14.1	!22	13.8	14.1	862	532	934	4.4
Feb.	.66	.59	! 9	14.5	! 1	13.8	13.8	773	474	921	4.1
Mar.	.66	.56	! 5	14.1	!26	13.1	13.8	847	519	956	4.9
Apr.	.62	.59	! 5	14.1	! 4	13.4	14.1	833	528	987	4.2
May	.62	.59	!21	14.1	! 2	13.4	13.8	839	610	1,317	8.7
June	.59	.56	! 1	13.4	!26	12.4	13.1	775	584	1,394	6.0
July	.59	.56	! 1	13.1	! 3	12.7	12.7	783	589	1,373	7.9
Aug.	.59	.56	! 3	13.1	!13	12.4	12.7	777	611	1,236	6.2
Sept.	.62	.56	!13	13.4	! 1	12.7	13.1	769	561	1,163	5.4
Oct.	.56	.52	! 1	12.7	!29	11.7	12.4	749	705	1,420	4.6
Nov.	.56	.52	!12	12.4	! 1	11.7	12.0	720	639	1,338	4.2
Dec.	.56	.52	!19	12.7	! 3	12.0	12.4	755	565	1,187	4.4
Yearly	0.66	0.52		14.5		11.7	13.1	9,482	7,017	13,020	146
	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
	0.20	0.16		0.41		0.33	0.37	11,697	8,517	16,058	180

* Discharge measurement made on this day Ø Mean daily ! And other days

08-4511.30 EIGHT MILE CREEK NEAR DEL RIO, TEXAS

DESCRIPTION: Concrete wall with 90 V-notch weir of 6.9 second-foot (0.2 m3/sec) capacity at latitude 29°24'00", longitude 101°00'55", 0.8 creek mile (1.3 km) from the confluence with the Rio Grande, and about 8 miles (12.9 km) northwest of Del Rio, Texas. This stream enters the Rio Grande from the United States side at river mile 569.3 (916.2 km), 4.6 river miles (7.4 km) downstream from Amistad Dam, and 8.3 river miles (13.4 km) upstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila. The elevation of the zero of the gage is 913.97 feet (278.58 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 12 measurements during the year. Mean daily discharges determined by prorating between measurements. Records available: March 1961 through 1989.

REMARKS: The source of flow of this stream is from surface runoff during rainy periods and the subsequent flow from underground seepage as a result of such rains. All storm water from surface runoff passing this station is deducted and is not included in the tabulation below. This station was established for investigational purposes in connection with Amistad Dam to determine what effect storage in Amistad Reservoir may have on the flow of this stream. Bubbler gage and water-stage recorder were removed April 1, 1985.

EXTREME FLOWS FROM RECORDS:

Average Flow in Second-Feet (Cubic Meters per Second)

Daily:	Max. 15.9 (0.45)	July 23 & 24, 1976	Min. 0	Occasionally
Monthly:	Max. 6.3 (0.18)	July 1976	Min. 0	Occasionally
Yearly:	Max. 4.0 (0.11)	1974 & 1975	Min. 0	Several years

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.4	2.5	2.5	2.5	2.5	1.9	1.7	2.1	1.7	1.7	1.5	1.8
2	2.4	* 2.5	* 2.5	2.5	2.5	1.9	1.7	* 2.1	1.7	1.7	* 1.5	1.8
3	2.4	2.5	2.5	2.5	* 2.5	1.9	1.7	2.1	1.6	1.7	1.5	1.8
4	2.5	2.5	2.5	2.5	2.5	1.9	1.7	2.1	1.6	1.7	1.5	1.8
5	2.5	2.5	2.5	* 2.5	2.5	1.9	1.7	2.1	1.6	* 1.7	1.5	1.8
6	* 2.5	2.5	2.5	2.5	2.4	1.8	* 1.7	2.0	1.6	1.7	1.5	* 1.8
7	2.5	2.5	2.5	2.5	2.4	1.8	1.7	2.0	1.6	1.7	1.5	1.8
8	2.5	2.5	2.5	2.5	2.4	* 1.8	1.7	2.0	1.6	1.7	1.6	1.8
9	2.5	2.5	2.5	2.5	2.4	1.8	1.7	2.0	1.6	1.7	1.6	1.8
10	2.5	2.5	2.5	2.5	2.4	1.8	1.8	2.0	1.5	1.7	1.6	1.8
11	2.5	2.5	2.5	2.5	2.3	1.8	1.8	2.0	1.5	1.7	1.6	1.8
12	2.5	2.5	2.5	2.5	2.3	1.8	1.8	2.0	1.5	1.7	1.6	1.8
13	2.5	2.5	2.5	2.5	2.3	1.8	1.8	1.9	* 1.5	1.6	1.6	1.8
14	2.5	2.5	2.5	2.5	2.3	1.8	1.8	1.9	1.5	1.6	1.6	1.7
15	2.5	2.5	2.5	2.5	2.3	1.8	1.8	1.9	1.5	1.6	1.6	1.7
16	2.5	2.5	2.5	2.5	2.2	1.8	1.8	1.9	1.5	1.6	1.6	1.7
17	2.5	2.5	2.5	2.5	2.2	1.8	1.9	1.9	1.5	1.6	1.6	1.7
18	2.5	2.5	2.5	2.5	2.2	1.8	1.9	1.9	1.5	1.6	1.6	1.7
19	2.5	2.5	2.5	2.5	2.2	1.8	1.9	1.9	1.6	1.6	1.7	1.7
20	2.5	2.5	2.5	2.5	2.2	1.8	1.9	1.8	1.6	1.6	1.7	1.7
21	2.5	2.5	2.5	2.5	2.2	1.8	1.9	1.8	1.6	1.6	1.7	1.7
22	2.5	2.5	2.5	2.5	2.1	1.8	1.9	1.8	1.6	1.6	1.7	1.7
23	2.5	2.5	2.5	2.5	2.1	1.7	2.0	1.8	1.6	1.6	1.7	1.7
24	2.5	2.5	2.5	2.5	2.1	1.7	2.0	1.8	1.6	1.6	1.7	1.7
25	2.5	2.5	2.5	2.5	2.1	1.7	2.0	1.8	1.6	1.6	1.7	1.7
26	2.5	2.5	2.5	2.5	2.1	1.7	2.0	1.8	1.6	1.6	1.7	1.7
27	2.5	2.5	2.5	2.5	2.0	1.7	2.0	1.7	1.6	1.5	1.7	1.7
28	2.5	2.5	2.5	2.5	2.0	1.7	2.0	1.7	1.6	1.5	1.7	1.6
29	2.5		2.5	2.5	2.0	1.7	2.0	1.7	1.6	1.5	1.7	1.6
30	2.5		2.5	2.5	2.0	1.7	2.1	1.7	1.7	1.5	1.7	1.6
31	2.5		2.5		2.0		2.1	1.7		1.5		1.6
Sum	77.2	70.0	77.5	75.0	69.7	53.7	57.5	58.9	47.4	50.3	48.5	53.6

Month	Current Year 1989: Extreme Gage Feet High	Extreme Gage Feet Low	Ø Extreme Second-Feet High Day	High	Low Day	Low	Average Second-Feet	Total Acre-Feet	Period #March 1961-1989: Acre-Feet Average	Maximum	Minimum
Jan.			! 4	2.5	! 1	2.4	2.5	153	117	294	0
Feb.			! 1	2.5	! 1	2.5	2.5	139	105	273	0
Mar.			! 1	2.5	! 1	2.5	2.5	154	111	271	0
Apr.			! 1	2.5	! 1	2.5	2.5	149	106	244	0
May			! 1	2.5	!27	2.0	2.2	138	106	224	0
June			! 1	1.9	!23	1.7	1.8	107	98.0	214	0
July			!30	2.1	! 1	1.7	1.9	114	99.0	390	0
Aug.			! 1	2.1	!28	1.7	1.9	117	101	299	0
Sept.			! 1	1.7	!10	1.5	1.6	94.0	94.0	240	0
Oct.			! 1	1.7	!27	1.5	1.6	99.8	113	334	0
Nov.			!19	1.7	! 1	1.5	1.6	96.2	107	321	0
Dec.			! 1	1.8	!28	1.6	1.7	106	114	283	0
Yearly				2.5		1.5	2.0	1,467	1,271	2,892	3.4
	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
				0.07		0.04	0.06	1,810	1,568	3,567	4.2

* Discharge measurement made on this day Ø Mean daily ! And other days

\# Some months missing

08-4511.40 MOKEE SPRING NEAR DEL RIO, TEXAS

DESCRIPTION: This spring is located on the left flood plain of the Rio Grande at latitude 29°23'35", longitude 101°01'15", about 150 feet (45.7 m) from the edge of the low-flow channel and about 8 miles (12.9 km) northwest of Del Rio, Texas. Water from this spring enters the Rio Grande at river mile 569.1 (915.9 km) 4.8 river miles (7.7 km) downstream from Amistad Dam. The zero of the gage is 894.59 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 12 discharge measurements during the year. Mean daily discharges determined by prorating between measurements. Records available: November 1961 through 1989.

REMARKS: The flow of this spring is uniform during periods of dry weather and is modified by periodic residential pumping. It is estimated that backwater from the Rio Grande will reach the emergence of this spring when the river flow is approximately 14,000 second-feet (396 m3/sec). This station was established for investigational purposes in connection with Amistad Dam to determine what effect storage in Amistad Reservoir may have on the flow of this spring.

EXTREME FLOWS FROM RECORDS:

		Average Flow in Second-Feet (Cubic Meters per Second)			
Daily:	Max. 11.0 (0.31)	Feb. 16, 1983	Min. 0	Occasionally
Monthly:	Max. 9.2 (0.26)	Feb. 1983	Min. 0	Occasionally
Yearly:	Max. 7.8 (0.22)	1979	Min. 0	1963

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.2	1.8	1.8	2.2	2.1	1.9	1.7	1.6	1.4	1.8	1.7	1.6
2	1.2	* 1.8	* 1.8	2.3	2.1	1.9	1.7	* 1.6	1.4	1.8	* 1.7	1.6
3	1.2	1.8	1.8	2.3	* 2.1	1.9	1.7	1.6	1.4	1.9	1.7	1.6
4	1.1	1.8	1.8	2.3	2.1	1.9	1.7	1.6	1.4	1.9	1.7	1.6
5	* 1.1	1.8	1.8	* 2.3	2.1	* 1.9	1.7	1.6	1.4	* 1.9	1.7	1.6
6	1.1	1.8	1.9	2.3	2.1	1.9	* 1.7	1.6	1.4	1.9	1.7	* 1.6
7	1.2	1.8	1.9	2.3	2.1	1.9	1.7	1.6	1.4	1.9	1.7	1.6
8	1.2	1.8	1.9	2.3	2.1	1.9	1.7	1.6	* 1.4	1.9	1.7	1.6
9	1.2	1.8	1.9	2.3	2.1	1.9	1.7	1.6	1.4	1.9	1.7	1.5
10	1.2	1.8	1.9	2.3	2.1	1.9	1.7	1.6	1.5	1.9	1.7	1.5
11	1.3	1.8	1.9	2.3	2.1	1.9	1.7	1.6	1.5	1.9	1.7	1.5
12	1.3	1.8	1.9	2.3	2.0	1.9	1.7	1.5	1.5	1.9	1.7	1.5
13	1.3	1.8	2.0	2.2	2.0	1.8	1.7	1.5	1.5	1.8	1.7	1.5
14	1.3	1.8	2.0	2.2	2.0	1.8	1.7	1.5	1.5	1.8	1.7	1.4
15	1.4	1.8	2.0	2.2	2.0	1.8	1.7	1.5	1.5	1.8	1.7	1.4
16	1.4	1.8	2.0	2.2	2.0	1.8	1.7	1.5	1.5	1.8	1.7	1.4
17	1.4	1.8	2.0	2.2	2.0	1.8	1.7	1.5	1.6	1.8	1.7	1.4
18	1.4	1.8	2.0	2.2	2.0	1.8	1.7	1.5	1.6	1.8	1.7	1.3
19	1.5	1.8	2.0	2.2	2.0	1.8	1.7	1.5	1.6	1.8	1.6	1.3
20	1.5	1.8	2.1	2.2	2.0	1.8	1.6	1.5	1.6	1.8	1.6	1.3
21	1.5	1.8	2.1	2.2	2.0	1.8	1.6	1.5	1.6	1.8	1.6	1.3
22	1.5	1.8	2.1	2.2	2.0	1.8	1.6	1.5	1.7	1.8	1.6	1.3
23	1.6	1.8	2.1	2.2	2.0	1.8	1.6	1.5	1.7	1.8	1.6	1.2
24	1.6	1.8	2.1	2.2	2.0	1.8	1.6	1.5	1.7	1.8	1.6	1.2
25	1.6	1.8	2.1	2.2	2.0	1.8	1.6	1.5	1.7	1.8	1.6	1.2
26	1.6	1.8	2.2	2.2	2.0	1.8	1.6	1.5	1.7	1.8	1.6	1.2
27	1.7	1.8	2.2	2.1	2.0	1.8	1.6	1.5	1.8	1.7	1.6	1.2
28	1.7	1.8	2.2	2.1	1.9	1.8	1.6	1.5	1.8	1.7	1.6	1.1
29	1.7		2.2	2.1	1.9	1.7	1.6	1.5	1.8	1.7	1.6	1.1
30	1.7		2.2	2.1	1.9	1.7	1.6	1.4	1.8	1.7	1.6	1.1
31	1.8		2.2		1.9		1.6	1.4		1.7		1.1
Sum	43.5	50.4	62.1	66.7	62.7	55.0	51.5	47.4	46.8	56.3	49.8	42.8

Month	Current Year 1989								Period Nov. 1961-1989		
	Extreme Gage Feet		Ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low						
	High	Low	Day		Day				Average	Maximum	Minimum
Jan.			31	1.8	! 6	1.1	1.4	86.3	279	526	0
Feb.			! 1	1.8	! 1	1.8	1.8	100	260	509	0
Mar.			!26	2.2	! 1	1.8	2.0	123	283	527	0
Apr.			! 2	2.3	!27	2.1	2.2	132	277	490	0
May			! 1	2.1	!28	1.9	2.0	124	301	513	.7
June			! 1	1.9	!29	1.7	1.8	109	276	470	0
July			! 1	1.7	!20	1.6	1.7	102	283	561	0
Aug.			! 1	1.6	!30	1.4	1.5	94.0	277	504	0
Sept.			!27	1.8	! 1	1.4	1.6	92.8	271	479	0
Oct.			! 3	1.9	!27	1.7	1.8	112	286	519	0
Nov.			! 1	1.7	!19	1.6	1.7	98.8	271	516	0
Dec.			! 1	1.6	!28	1.1	1.4	84.9	273	483	0
Yearly				2.3		1.1	1.7	1,259	3,337	5,657	0.7
	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
				0.07		0.03	0.05	1,553	4,116	6,978	0.9

* Discharge measurement made on this day Ø Mean daily ! And other days

08-4511.50 ARROYO DE LA TREINTA Y UNA NEAR CD. ACUNA, COAHUILA

DESCRIPTION: Cipolletti weir of 35.3 second-foot (1 m3/sec) capacity, located at latitude 29°22'35", longitude 101°01'15", 0.6 creek mile (900 m) from the confluence with the Rio Grande, and about 6.5 miles (10.5 km) northwest of Cd. Acuna, Coahuila. This stream enters the Rio Grande from the Mexican side at river mile 567.6 (913.5 km), 6.3 river miles (10 km) downstream from Amistad Dam and 6.6 river miles (10.6 km) upstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila. The elevation of the zero of the gage has not been determined.

RECORDS: Based on periodic staff gage readings and the weir discharge table. Mean daily discharges determined by prorating between readings. Records available: November 1961 through 1989.

REMARKS: The flow of this stream is very uniform during periods of dry weather and is not modified by diversions or storage. Prior to 1969 discharges were based on a continuous record of gage heights and the weir discharge table. Storm flow is deducted and not included in the tabulation below. This station was established for investigational purposes in connection with Amistad Dam to determine what effect storage in Amistad Reservoir will have on the flow of this stream. It is estimated that backwater from the Rio Grande will affect the flow at this station only during times of extremely high releases.

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.5	2.8	2.8	2.8	2.8	2.5	3.2	2.8	2.1	2.8	1.8	2.1
2	2.5	2.8	2.8	2.8	2.8	2.5	3.2	2.8	1.8	2.8	1.8	2.1
3	2.5	2.8	2.8	2.8	2.8	2.5	3.2	2.8	1.8	3.2	1.8	2.1
4	2.5	2.8	2.8	2.8	2.8	2.5	3.2	2.8	1.8	3.2	1.8	2.1
5	2.5	2.8	2.8	2.8	2.8	2.5	3.2	2.8	1.8	3.2	1.8	2.1
6	2.5	2.8	2.8	2.8	2.8	2.5	3.2	2.8	1.8	3.2	1.8	2.1
7	2.5	2.8	2.8	2.8	2.8	2.5	3.2	2.8	1.8	3.2	1.8	2.1
8	2.5	2.8	2.8	2.8	2.8	2.5	3.2	2.8	1.8	3.2	1.8	2.1
9	2.5	2.8	2.8	2.8	2.8	2.5	3.2	2.5	1.8	3.2	1.8	2.1
10	2.5	2.8	2.8	2.8	2.8	2.5	3.2	2.5	1.8	2.8	1.8	2.1
11	2.5	2.8	2.8	2.8	2.8	2.8	3.2	2.5	2.1	2.8	1.8	2.1
12	2.5	2.8	2.8	2.8	2.8	2.8	3.2	2.5	2.1	2.8	1.8	2.1
13	2.5	2.8	2.8	2.8	2.8	2.8	3.2	2.5	2.1	2.8	1.8	2.1
14	2.5	2.8	2.8	2.8	2.8	2.8	3.2	2.5	2.1	2.8	1.8	2.1
15	2.5	2.8	2.8	2.8	2.8	2.8	3.2	2.5	2.1	2.8	1.8	2.1
16	2.5	2.8	2.8	2.8	2.8	2.8	3.2	2.5	2.1	2.5	1.8	2.1
17	2.5	2.8	2.8	2.8	2.8	2.8	3.2	2.5	2.1	2.5	1.8	2.1
18	2.8	2.8	2.8	2.8	2.8	2.8	3.2	2.5	2.5	2.5	1.8	2.1
19	2.8	2.8	2.8	2.8	2.5	2.8	3.2	2.5	2.5	2.5	2.1	2.1
20	2.8	2.8	2.8	2.8	2.5	2.8	2.8	2.5	2.5	2.5	2.1	2.1
21	2.8	2.8	2.8	2.8	2.5	2.8	2.8	2.1	2.5	2.5	2.1	2.1
22	2.8	2.8	2.8	2.8	2.5	2.8	2.8	2.1	2.5	2.5	2.1	2.1
23	2.8	2.8	2.8	2.8	2.5	2.8	2.8	2.1	2.5	2.1	2.1	2.1
24	2.8	2.8	2.8	2.8	2.5	2.8	2.8	2.1	2.5	2.1	2.1	2.1
25	2.8	2.8	2.8	2.8	2.5	2.8	2.8	2.1	2.5	2.1	2.1	2.1
26	2.8	2.8	2.8	2.8	2.5	2.8	2.8	2.1	2.8	2.1	2.1	2.1
27	2.8	2.8	2.8	2.8	2.5	2.8	2.8	2.1	2.8	2.1	2.1	2.1
28	2.8	2.8	2.8	2.8	2.5	3.2	2.8	2.1	2.8	2.1	2.1	2.1
29	2.8		2.8	2.8	2.5	3.2	2.8	2.1	2.8	1.8	2.1	2.1
30	2.8		2.8	2.8	2.5	3.2	2.8	2.1	2.8	1.8	2.1	2.1
31	2.8		2.8		2.5		2.8	2.1		1.8		2.1
Sum	81.7	78.4	86.8	84.0	82.9	82.2	94.4	75.5	67.0	80.3	57.6	65.1

Month	Current Year 1989							Period 1961-1989		
	Extreme Gage Feet		Ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	High Day	High	Low Day	Low			Average	Maximum	Minimum
Jan.	0.39	0.36	!18	2.8	! 1	2.5	2.5	162	169	282	15.2
Feb.	.39	.39	! 1	2.8	! 1	2.8	2.8	157	152	257	13.9
Mar.	.39	.39	! 1	2.8	! 1	2.8	2.8	173	166	327	14.2
Apr.	.43	.43	! 1	2.8	! 1	2.8	2.8	168	174	302	10.5
May	.43	.39	! 1	2.8	!19	2.5	2.8	165	170	262	5.9
June	.43	.39	!28	3.2	! 1	2.5	2.8	163	155	254	4.2
July	.43	.39	! 1	3.2	!20	2.8	3.2	187	159	253	0
Aug.	.39	.33	! 1	2.8	!21	2.1	2.5	150	162	323	0
Sept.	.39	.30	!26	2.8	! 2	1.8	2.1	132	171	273	13.1
Oct.	.43	.30	! 3	3.2	!29	1.8	2.5	159	182	282	12.1
Nov.	.33	.30	!19	2.1	! 1	1.8	1.8	113	172	310	14.2
Dec.	.33	.33	! 1	2.1	! 1	2.1	2.1	131	172	310	15.2
Yearly	0.43	0.30		3.2		1.8	2.5	1,860	2,004	3,264	250
	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
	0.13	0.09		0.09		0.05	0.07	2,295	2,472	4,025	309

Ø Mean daily ! And other days

08-4513.00 CANTU SPRING NEAR DEL RIO, TEXAS

DESCRIPTION: Concrete enclosure located at the spring source in the channel of a small tributary to Cienegas Creek at latitude 29°23'15",longitude 100°56'00", about 2.5 miles (4.0 km) northwest of Del Rio, Texas and 3.5 creek miles (5.6 km) from the confluence with the Rio Grande. Cienegas Creek enters the Rio Grande at river mile 562.9 (905.8 km) 1.8 river miles (3.0 km) upstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila. The elevation of the zero of the gage has not been determined.

RECORDS: Based on 12 discharge measurements during the year. Mean daily discharges determined by prorating between measurements. Records available: March 1961 through 1989.

REMARKS: The flow of this spring is very uniform and is not modified by diversions or storage. A weir was installed on May 24, 1961 and removed November 21, 1962. This station was established for investigational purposes in connection with Amistad Dam to determine what effect storage in Amistad Reservoir may have on the flow of this spring.

EXTREME FLOWS FROM RECORDS:

Average Flow in Second-Feet (Cubic Meters per Second)

Daily:	Max. 13.2 (0.37)	March 2, 1989	Min. 0	Occasionally
Monthly:	Max. 12.0 (0.34)	March 1989	Min. 0	Occasionally
Yearly:	Max. 8.5 (0.24)	1989	Min. 0	1963

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	9.3	9.1	13.1	10.6	11.1	8.3	8.0	8.6	6.9	7.5	6.4	6.0
2	9.3	* 9.1	* 13.2	10.5	11.2	8.2	8.0	8.6	6.8	7.6	* 6.3	5.9
3	9.3	9.2	13.1	10.4	* 11.2	8.1	8.0	* 8.5	6.8	7.6	6.3	5.9
4	9.2	9.4	13.0	10.3	11.1	8.0	8.0	8.5	6.7	7.7	6.3	5.9
5	* 9.2	9.5	12.9	* 10.2	11.0	* 7.9	8.0	8.4	6.7	* 7.7	6.3	5.9
6	9.2	9.7	12.8	10.2	10.9	7.9	* 8.0	8.4	6.6	7.7	6.3	* 5.9
7	9.2	9.8	12.8	10.3	10.8	7.9	8.0	8.3	6.6	7.6	6.2	5.9
8	9.2	10.0	12.7	10.3	10.7	7.9	8.0	8.3	* 6.5	7.6	6.2	5.8
9	9.2	10.1	12.6	10.3	10.6	7.9	8.1	8.2	6.5	7.5	6.2	5.8
10	9.2	10.3	12.5	10.4	10.5	7.9	8.1	8.1	6.6	7.5	6.2	5.7
11	9.2	10.4	12.4	10.4	10.4	7.9	8.1	8.1	6.6	7.4	6.2	5.7
12	9.2	10.6	12.3	10.4	10.3	7.9	8.1	8.0	6.7	7.4	6.2	5.6
13	9.2	10.7	12.2	10.5	10.2	7.9	8.2	8.0	6.7	7.3	6.2	5.6
14	9.2	10.9	12.1	10.5	10.1	7.9	8.2	7.9	6.8	7.3	6.2	5.5
15	9.2	11.0	12.1	10.6	10.0	7.9	8.2	7.9	6.8	7.2	6.1	5.5
16	9.2	11.1	12.0	10.6	9.9	7.9	8.2	7.8	6.9	7.2	6.1	5.4
17	9.2	11.3	11.9	10.6	9.8	7.9	8.2	7.7	6.9	7.1	6.1	5.4
18	9.2	11.4	11.8	10.7	9.7	7.9	8.3	7.7	6.9	7.1	6.1	5.3
19	9.2	11.6	11.7	10.7	9.6	7.9	8.3	7.6	7.0	7.0	6.1	5.3
20	9.1	11.7	11.6	10.7	9.5	7.9	8.3	7.6	7.0	7.0	6.1	5.2
21	9.1	11.9	11.5	10.8	9.4	8.0	8.3	7.5	7.1	6.9	6.1	5.2
22	9.1	12.0	11.4	10.8	9.3	8.0	8.4	7.5	7.1	6.9	6.1	5.1
23	9.1	12.2	11.3	10.8	9.2	8.0	8.4	7.4	7.2	6.8	6.1	5.1
24	9.1	12.3	11.3	10.9	9.1	8.0	8.4	7.4	7.2	6.8	6.0	5.0
25	9.1	12.5	11.2	10.9	9.0	8.0	8.4	7.3	7.3	6.7	6.0	5.0
26	9.1	12.6	11.1	10.9	8.9	8.0	8.4	7.2	7.3	6.7	6.0	4.9
27	9.1	12.8	11.0	11.0	8.8	8.0	8.5	7.2	7.3	6.6	6.0	4.9
28	9.1	12.9	10.9	11.0	8.7	8.0	8.5	7.1	7.4	6.6	6.0	4.8
29	9.1		10.8	11.1	8.6	8.0	8.5	7.1	7.4	6.5	6.0	4.8
30	9.1		10.7	11.1	8.5	8.0	8.5	7.0	7.5	6.5	6.0	4.7
31	9.1		10.6		8.4		8.6	7.0		6.4		4.7
Sum	284.3	306.1	370.6	318.5	306.5	239.0	255.2	241.9	207.8	221.4	184.4	167.4

Month	Current Year 1989								Period March 1961-1989		
	Extreme Gage Feet		Ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low						
	High	Low	Day		Day				Average	Maximum	Minimum
Jan.			! 1	9.3	120	9.1	9.2	564	336	565	0
Feb.			28	12.9	! 1	9.1	10.9	607	298	607	0
Mar.			2	13.2	31	10.6	12.0	735	324	735	0
Apr.			129	11.1	! 5	10.2	10.6	632	307	632	0
May			! 2	11.2	31	8.4	9.9	608	313	608	0
June			1	8.3	! 5	7.9	8.0	474	293	547	0
July			31	8.6	! 1	8.0	8.2	506	300	544	0
Aug.			! 1	8.6	130	7.0	7.8	480	299	532	0
Sept.			30	7.5	! 8	6.5	6.9	412	304	528	0
Oct.			! 4	7.7	31	6.4	7.1	439	337	601	0
Nov.			1	6.4	124	6.0	6.1	366	318	577	0
Dec.			1	6.0	130	4.7	5.4	332	333	595	0
Yearly				13.2		4.7	8.5	6,155	3,762	6,155	0
	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
				0.37		0.13	0.24	7,592	4,640	7,592	0

* Discharge measurement made on this day Ø Mean daily ! And other days

08-4515.00 CIENEGAS CREEK NEAR DEL RIO, TEXAS

DESCRIPTION: Measurement sections located, one each, on the right bank of the Cienegas Creek at latitude 29°21'10", longitude 100°56'35", 0.5 creek mile (0.8 km) from the confluence with the Rio Grande; and for the Briggs Farm ditch, on the right bank at latitude 29°21'40", longitude 100°56'30", 2,900 feet (884 m) from the ditch intake which branches off the right bank of Cienegas Creek immediately upstream from a small diversion dam across the creek, and about 2.5 miles (4.0 km) west of Del Rio, Texas. The point of diversion is 1.8 creek miles (2.9 km) from the confluence with the Rio Grande. Cienegas Creek enters the Rio Grande at river mile 562.9 (905.8 km) 1.8 river miles (3.0 km) upstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila.

RECORDS: Based on 12 and 12 discharge measurements at Cienegas Creek and Briggs Farm ditch, respectively, during the year. Mean daily discharge computations determined by combining the two records for the total yield of the springs. Records available: March 1965 through 1989. Discharge measurement data available since November 1962. Records are also available from September 1931 through June 1935 for a station 0.3 creek mile (0.5 km) downstream. The station was moved 0.2 creek mile (0.3 km) upstream in June 1983.

REMARKS: Low flow of this stream is from springs, one of which is Cantu Spring, whose discharge is shown on page 39. The flow of this stream is modified by irrigation diversions through the Briggs Farm ditch. All storm flow passing this station is deducted and is not included in the tabulation. These stations were established for investigational purposes in connection with Amistad Dam to determine what effect storage in Amistad Reservoir may have on the flow of these springs.

EXTREME FLOWS FROM RECORDS:

	Average Flow in Second-Feet (Cubic Meters per Second)					
Daily:	Max. 42.7 (1.21)	August 12, 1972		Min. 0.5 (0.01)	April 21, 1966	
Monthly:	Max. 24.8 (0.70)	July	1976	Min. 0.8 (0.02)	August	1967
Yearly:	Max. 17.9 (0.51)		1977	Min. 2.2 (0.06)		1968

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	16.3	15.5	16.6	17.1	15.2	11.7	13.3	12.6	11.1	12.8	11.5	10.6
2	16.3	* 15.5	* 16.6	17.1	15.0	11.6	13.3	* 12.6	11.0	12.8	* 11.4	10.6
3	16.3	15.5	16.6	17.1	* 15.0	11.5	13.4	12.6	10.9	12.9	11.4	10.6
4	16.3	15.6	16.6	17.1	14.9	11.3	13.5	12.5	10.9	13.0	11.4	10.5
5	* 16.3	15.6	16.6	* 17.1	14.8	11.2	13.6	12.4	10.9	* 13.1	11.3	10.5
6	16.3	15.7	16.6	17.1	14.7	11.1	* 13.7	12.4	10.8	13.0	11.3	* 10.5
7	16.3	15.7	16.6	16.9	14.5	* 11.0	13.7	12.4	10.7	13.0	11.3	10.4
8	16.2	15.8	16.7	16.9	14.4	11.1	13.6	12.3	* 10.7	12.9	11.2	10.4
9	16.2	15.8	16.7	16.8	14.3	11.2	13.6	12.2	10.8	12.8	11.2	10.3
10	16.2	15.8	16.7	16.8	14.2	11.3	13.6	12.2	10.9	12.8	11.2	10.3
11	16.2	15.8	16.8	16.6	14.1	11.4	13.5	12.1	11.0	12.7	11.1	10.2
12	16.1	15.9	16.8	16.6	14.0	11.5	13.5	12.1	11.0	12.6	11.1	10.2
13	16.1	16.0	16.8	16.5	13.9	11.5	13.4	12.1	11.2	12.7	11.1	10.1
14	16.1	16.0	16.8	16.4	13.7	11.7	13.3	11.9	11.2	12.6	11.1	10.0
15	16.1	16.0	16.8	16.3	13.6	11.7	13.3	11.9	11.4	12.5	11.1	10.0
16	16.0	16.1	16.8	16.3	13.5	11.8	13.3	11.9	11.4	12.5	11.1	9.9
17	16.0	16.1	16.8	16.2	13.4	12.0	13.2	11.9	11.5	12.4	11.0	9.9
18	16.0	16.1	16.8	16.1	13.3	12.0	13.2	11.8	11.6	12.3	11.0	9.8
19	16.0	16.1	16.8	16.1	13.2	12.2	13.2	11.7	11.7	12.3	10.9	9.8
20	15.8	16.3	16.9	16.0	13.1	12.2	13.1	11.7	11.7	12.2	10.9	9.7
21	15.8	16.3	16.9	15.9	12.9	12.3	13.1	11.6	11.9	12.1	10.9	9.5
22	15.8	16.3	16.9	15.8	12.8	12.4	13.1	11.6	11.9	12.0	10.8	9.5
23	15.8	16.3	16.9	15.8	12.7	12.5	13.0	11.5	12.1	12.0	10.8	9.4
24	15.7	16.4	16.9	15.7	12.6	12.5	13.0	11.4	12.1	11.9	10.8	9.4
25	15.7	16.4	16.9	15.6	12.5	12.7	13.0	11.4	12.2	11.8	10.8	9.3
26	15.7	16.4	16.9	15.5	12.4	12.7	12.9	11.4	12.3	11.8	10.8	9.3
27	15.7	16.5	16.9	15.5	12.3	12.9	12.8	11.4	12.4	11.8	10.8	9.2
28	15.6	16.6	17.0	15.3	12.1	13.0	12.8	11.2	12.4	11.7	10.7	9.1
29	15.6		17.0	15.3	12.0	13.0	12.7	11.2	12.6	11.7	10.7	9.1
30	15.6		17.0	15.2	11.9	13.2	12.7	11.2	12.6	11.6	10.7	9.0
31	15.6		17.1		11.8		12.7	11.1		11.5		9.0
Sum	495.7	448.1	520.8	488.7	418.8	358.2	410.1	368.3	344.9	383.8	331.4	306.1

Month	Current Year 1989								Period March 1965-1989		
	Extreme Gage Feet		Ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	High		Low				Average	Maximum	Minimum
			Day		Day						
Jan.			! 1	16.3	!28	15.6	16.0	983	813	1,242	134
Feb.			28	16.6	! 1	15.5	16.0	889	753	1,157	98.0
Mar.			31	17.1	! 1	16.6	16.8	1,033	786	1,185	102
Apr.			! 1	17.1	30	15.2	16.3	969	723	1,125	100
May			! 1	15.2	31	11.8	13.5	831	712	1,159	109
June			30	13.2	7	11.0	11.9	710	664	1,072	86.3
July			! 6	13.7	!29	12.7	13.2	813	666	1,527	85.5
Aug.			! 1	12.6	31	11.1	11.9	731	665	1,241	48.4
Sept.			!29	12.6	! 7	10.7	11.5	684	650	1,043	84.1
Oct.			5	13.1	31	11.5	12.4	761	773	1,135	150
Nov.			1	11.5	!28	10.7	11.0	657	767	1,117	152
Dec.			! 1	10.6	!30	9.0	9.9	607	795	1,168	133
Yearly				17.1		9.0	13.4	9,668	8,767	12,965	1,531
	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
				0.48		0.25	0.38	11,925	10,814	15,992	1,888

* Discharge measurement made on this day Ø Mean daily ! And other days

08-4518.00 RIO GRANDE AT DEL RIO, TEXAS AND CD. ACUNA, COAHUILA

DESCRIPTION: Cableway, bubbler gage, concrete control weir, water-stage recorders (graphic and digital) and data collection platform located on the left bank at latitude 29°20'07", longitude 100°55'41", and river mile 561.2 (903.2 km), 1,200 feet (366 m) upstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila and 12.7 river miles (20.4 km) downstream from Amistad Dam. The zero of the gage is 869.20 feet (264.93 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 27 discharge measurements during the year, 9 by the United States Section and 18 by the Mexican Section of the Commission, and a continuous record of gage heights. Computations for high flows by shifting control methods. Low and medium flow computations based on a stable control weir rating curve defined by meter measurements. Records available: December 1923 through July 2, 1941 and January 1968 through 1989. Records are available from May 1900 through April 1915 for a station 12.2 miles (19.6 km) upstream; for December 1919 through March 1920 for a station 8.7 miles (14.0 km) upstream near McKee's Switch; from July 2, 1941 through 1954 and October 1960 through 1967 for a station 1,200 feet (366 m) downstream at the international highway bridge; and from September 1954 through 1989 for a station, Rio Grande below Amistad Dam, 10.6 miles (17.0 km) upstream.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. Except for tributary inflows and small intervening diversions below Amistad Dam, flow at this station after May 31, 1968 is controlled largely by releases from Amistad Reservoir. The data collection platform, operated in cooperation with the National Weather Service, relays gage height data upon interrogation by telephone via commercial circuits.

EXTREME FLOWS FROM RECORDS: The greatest recorded flow of 1,140,000 second-feet (32,300 m3/sec) occurred on June 28, 1954, with a gage height of 38.25 feet (11.66 m) at a station 1,200 feet (366 m) downstream. The lowest recorded flow was 124 second-feet (3.51 m3/sec) which occurred March 5 and 6, 1969, with a gage height of 1.24 feet (0.38 m).

Average Flow in Second-Feet (Cubic Meters per Second)**

Daily:	Max. 63,800 (1,810)	Sept. 22, 1974	Min. 164 (4.64)	Aug. 13, 1971
Monthly:	Max. 22,300 (632)	Sept. 1974	Min. 188 (5.32)	October 1971
Yearly:	Max. 5,170 (146)	1974	Min. 701 (19.9)	1972

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,410	2,230	2,370	2,370	2,340	1,720	1,590	1,460	1,440	1,500	2,300	2,420
2	1,420	2,280	2,380 *	2,450	2,330	1,650	1,600	1,470	1,470	1,430	2,380	2,400
3	1,420	2,290	2,400	2,400	2,330	1,660	1,510	1,460	1,460	1,430	2,420	2,480
4	1,410	2,320	2,410	2,360	2,350	1,640	1,570	1,460 *	1,450	1,430	1,450	2,450
5	1,420	2,310	2,300	2,220	2,440	1,610	1,560	1,470	1,440	1,430	1,510	2,510
6	3,590 *	2,370	2,470	2,330	2,370	1,590	1,540	1,480	1,470	1,420	2,430	2,500
7	3,950	2,290	2,390	2,430	2,480	1,620	1,530 *	1,480	1,420	1,430	2,500	2,440
8	3,920	2,340	2,410	2,410	2,370	1,580 *	1,540	1,500	1,420	1,420	2,330	2,440
9	1,660	2,340	2,390	2,380	2,430	5,340	1,540	1,490	1,440	1,440	2,530	2,370
10	1,190	2,140	2,420	2,380	2,480	8,420	1,550	1,510	1,450	1,420	2,500	2,440
11	1,310	2,350	2,400	2,330	2,430	8,330	1,550	1,470	1,380	1,410	2,500	2,430
12	1,320	2,470	2,460	2,410	2,440	6,120	1,540	1,480	1,430	1,430	2,520	2,410
13	1,290	2,280	2,390	2,370	2,470	6,040	1,550	1,690	1,870	1,420	2,540	2,450
14	1,320	2,370	2,320	2,640	2,210	6,180	1,530	1,640	1,450	1,430	2,480	2,450
15	1,330	2,290	2,520	5,690	2,720	6,300	1,550	1,820	1,450	1,450	2,490	2,420
16	1,330	2,420	2,340	6,280	2,470	6,200	1,520	1,820	1,430	2,040	2,450	2,420
17	1,310	2,370	2,390	7,760	2,330	8,560	1,550	1,860	1,460	1,990	2,460	2,440
18	1,330	2,390	2,520	7,940	2,450	8,640	1,530	1,860	1,470	2,090	2,460	2,440
19	1,860	2,370	2,290	7,940	2,470	6,320	1,540	1,900	1,450	2,030	2,520	2,420
20	1,400	2,450	2,470	7,900	2,510	2,770	1,500	1,490	1,440	2,140	2,540	2,410 *
21	1,310	2,410	2,440	7,810	2,480	1,680	1,470	1,460	1,430	2,060	2,540	2,440
22	1,350	2,410	2,470	6,470	2,490	1,640	1,600	1,480	1,450	2,140	2,600	3,630
23	1,360	2,370	2,390	6,130	2,510	1,650	1,510	1,470	1,470	2,090	2,540	6,300
24	1,350	2,360	2,400	7,440	2,480	1,600	1,480	1,480	1,450	2,370	2,560	4,500
25	2,230	2,450	2,400	5,980	2,510	1,630	1,510	1,480	1,430	2,420	2,570	1,780
26	2,290	2,460	2,400	8,350	2,490	1,590	1,470	1,470	1,460	2,420	2,590	1,970
27	2,300	2,400	2,410	8,360	2,560	1,600	1,480	1,460	1,450 *	2,390	2,520	2,090
28	2,300	2,420	2,420	8,330 *	2,490	1,610	1,510	1,460	1,440	2,390	2,470	2,160
29	2,320		2,390	3,180	2,440	1,600	1,490	1,460	1,450	2,370	2,500	2,190
30	2,300		2,390	2,570	2,480	1,600	1,480	1,450	1,430	2,260 *	2,530	2,160
31	2,270		2,390		2,500		1,480	1,450		2,300		2,120
Sum	56,570	65,950	74,540	141,610	75,850	108,490	47,370	47,930	43,750	56,990	72,730	80,080

Month	Current Year 1989							Period #1968-1989		
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	High		Low				Average	Maximum	Minimum
			Day		Day						
Jan.	2.89	1.44	6	4,070	10	304	1,820	112,205	97,592	221,105	14,497
Feb.	2.99	1.52	25	4,500	! 1	401	2,360	130,810	124,706	448,205	18,633
Mar.	2.95	1.54	25	4,330	! 5	427	2,400	147,848	148,747	382,036	17,298
Apr.	3.74	1.53	!26	8,430	1	414	4,720	280,879	137,196	380,707	33,846
May	3.00	1.52	14	4,550	! 2	401	2,450	150,446	208,100	542,598	30,928
June	3.78	1.47	!17	8,670	! 7	339	3,620	215,187	162,298	338,718	23,143
July	2.89	1.46	21	4,070	22	327	1,530	93,957	143,124	367,024	31,474
Aug.	2.84	1.46	27	3,860	! 2	327	1,550	95,068	165,777	670,572	28,826
Sept.	2.83	1.45	!13	3,820	11	316	1,460	86,777	203,098	1,327,497	38,850
Oct.	3.43	1.45	27	6,660	! 3	316	1,840	113,038	154,784	815,207	11,578
Nov.	3.41	1.49	1	6,550	! 3	363	2,420	144,258	104,881	527,524	13,644
Dec.	3.56	1.44	24	7,380	22	304	2,580	158,836	87,947	228,774	13,918
Yearly	3.78	1.44		8,670		304	2,390	1,729,309	1,738,250	3,743,795	508,583
	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
	1.15	0.44		246		8.61	67.7	2,133,068	2,144,097	4,617,896	627,327

* Discharge measurement made on this day ! And other days ** Period 1968-1989

\# Values for January 1968 are Rio Grande near Del Rio less Arroyo de las Vacas flow

08-4520.00 ARROYO DE LAS VACAS AT CD. ACUNA, COAHUILA

DESCRIPTION: Cableway with sit-down cable car, concrete wall with a V-shape concrete control weir of 353 second-foot (10 m3/sec) capacity, gravity well, and water-stage recorder located on the left bank at Cd. Acuna, Coahuila, latitude 29°19'45", longitude 100°57'20" and 1.8 creek miles (3 km) from the confluence with the Rio Grande. This stream enters the Rio Grande at river mile 561.0 (902.9 km) on the upstream side of the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila and 12.9 river miles (20.7 km) downstream from Amistad Dam. The zero of the gage is 885.82 feet (270 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 12 discharge measurements during the year, a stable rating curve up to 353 second-feet (10 m3/sec), which is the capacity of the weir, and a continuous record of gage heights. Computations by shifting control methods for flows exceeding the capacity of the weir. Records available: Occasional estimates from June 1935 to March 19, 1938 and a continuous record from March 20, 1938 through 1989.

REMARKS: Low flow of this stream is from springs and is modified by irrigation diversions upstream. On June 17,1961, a flood destroyed the station, leaving the control wall under several feet of silt. The station was reconstructed in September and a V-shape concrete control weir with a capacity of 353 second-feet (10 m3/sec), constructed at this station, started operating December 14, 1961. On June 28, 1954, backwater from the Rio Grande reached an elevation of 902.49 feet (275.08 m) at this station. Records prior to 1965 were published under the title "Arroyo Las Vacas near Cd. Acuna, Coahuila."

EXTREME FLOWS FROM RECORDS: Momentary: Max. 63,570 second-feet (1,800 m3/sec) with a gage height of 25.26 feet (7.70 m) on June 17, 1961. Min. no flow on several occasions.

Average Flow in Second-Feet (Cubic Meters per Second)**

Daily:	Max. 23,940 (678)	June 17, 1961	Min. 0	December 23, 1956
Monthly:	Max. 1,050 (29.8)	June 1961	Min. 0.4 (0.01)	October 1952
Yearly:	Max. 96.7 (2.74)	1961	Min. 2.8 (0.08)	1952

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	9.5	7.1	7.1	7.8	3.5	2.1	1.4	1.1	1.1	1.4	2.5	2.8
2	9.2	7.4	7.1	7.4	3.5	2.1	1.4	1.1	1.1	1.4	2.1	2.8
3	9.2	9.9	7.4	7.4	3.5	2.1	1.4	1.1	1.1	1.4	2.1	2.5
4	9.2	8.8	7.1	7.1	3.2	2.1	1.4	1.1	1.1	* 1.4	2.5	2.8
5	8.5	9.9	6.7	7.1	3.2	2.1	1.4	1.1	1.1	1.4	2.5	3.9
6	7.4	8.5	6.4	6.4	3.2	2.1	1.4	1.1	1.1	1.4	2.1	2.8
7	7.1	7.8	6.4	6.0	2.8	2.1	1.4	1.1	.7	25.4	2.1	2.8
8	7.1	7.1	7.1	5.7	2.8	1.8	1.4	1.4	1.1	2.1	1.8	2.8
9	7.1	6.4	6.7	5.7	2.8	2.1	1.4	1.4	1.1	2.5	1.8	2.8
10	7.1	6.0	6.0	6.4	2.8	2.5	1.4	1.1	1.1	2.1	1.8	2.8
11	7.1	6.4	5.7	5.7	2.8	2.5	1.4	* 1.1	.7	1.8	1.8	2.8
12	7.1	6.7	5.7	5.7	2.8	2.1	1.4	1.1	.7	1.8	1.8	2.8
13	10.6	6.4	5.7	6.0	2.8	2.5	1.4	1.4	1,450 *	1.8	13.8	2.8
14	11.7	6.4	5.7	5.7	11.3	2.1	1.4	1.4	19.8	1.8	2.1	2.8
15	12.0	6.4	5.7	5.7	* 5.7	* 2.1	1.4	1.4	3.5	1.8	2.1	2.8
16	12.4	7.1	5.7	6.0	3.5	1.8	1.4	1.4	2.1	1.8	2.1	2.8
17	9.9	7.1	5.7	6.4	3.5	1.8	1.4	1.4	1.8	2.1	2.1	2.8
18	7.1	6.7	6.0	6.4	2.8	1.8	1.4	1.4	1.4	2.1	2.5	2.8
19	8.1	7.1	6.0	6.4	2.8	1.8	1.4	1.4	1.4	* 2.1	2.5	2.5
20	7.4	7.1	6.4	5.7	2.8	2.8	1.4	1.4	2.1	2.1	2.5	2.5
21	7.1	7.1	6.7	5.3	2.8	2.1	1.4	1.4	1.8	2.1	2.1	2.8
22	6.7	6.7	6.7	5.3	2.8	1.8	1.4	1.4	1.4	2.5	2.8	2.5
23	6.0	7.1	7.1	5.3	2.5	1.4	1.4	1.4	1.4	2.1	2.5	2.8
24	6.0	7.1	7.4	4.9	2.5	1.4	1.4	1.4	1.4	2.8	* 2.5	2.8
25	6.0	7.1	7.4	3.9	2.1	1.4	1.4	1.4	1.4	2.5	2.5	3.2
26	6.7	7.4	7.4	3.9	2.1	1.4	1.4	1.4	1.4	2.5	2.5	2.8
27	8.1	7.1	7.4	3.5	2.1	1.4	1.4	1.4	1.4	2.5	2.5	2.8
28	9.2	* 7.1	69.9	3.5	2.1	1.4	* 1.4	1.4	1.4	2.8	2.5	2.5
29	9.9		14.1	3.5	2.1	1.4	1.1	1.1	1.4	2.5	2.1	* 2.5
30	9.9		10.9	3.5	2.1	1.4	1.4	1.1	1.4	2.5	2.8	2.5
31	* 7.8		* 9.9		2.1		1.1	1.1		2.5		2.5
Sum	258.2	203.0	281.2	169.3	97.4	57.5	42.8	39.5	1,508.5	87.0	79.4	85.9

Month	Current Year 1989							Period 1938-1989		
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	High Day	High	Low Day	Low			Average	Maximum	Minimum
Jan.	0.59	0.46	!16	12.7	!18	6.0	8.5	512	394	910	31.5
Feb.	.56	.46	! 3	10.2	! 9	6.0	7.1	401	479	5,950	33.3
Mar.	1.74	.43	28	246	! 7	5.7	9.2	557	521	2,600	59.2
Apr.	.52	.36	1	8.5	28	3.2	5.7	335	1,328	16,610	75.4
May	1.02	.26	14	55.8	29	1.4	3.2	194	1,242	9,080	90.0
June	.62	.26	20	12.7	8	1.1	1.8	114	2,388	65,520	43.8
July	.30	.23	! 4	1.8	!13	1.1	1.4	85.1	1,331	16,409	26.8
Aug.	.33	.23	14	2.5	! 1	1.1	1.4	77.7	1,271	19,888	42.2
Sept.	9.02	.20	13	10,200	! 7	.7	50.5	2,995	2,381	49,566	37.3
Oct.	1.61	.30	7	198	! 1	1.4	2.8	173	1,629	20,444	22.6
Nov.	1.18	.30	13	84.8	! 7	1.8	2.5	157	419	2,855	21.0
Dec.	.43	.33	! 4	4.9	! 1	2.5	2.8	171	360	1,066	22.0
Yearly	9.02	0.20		10,200		0.7	8.1	5,772	13,743	70,026	2,067
	Meters			Cubic Meters per Second				Thousands of Cubic Meters			
	2.75	0.06		288		0.02	0.23	7,119	17,385	86,384	2,555

* Discharge measurement made on this day

! And other days

** Period 1938-1989

08-4528.00 SAN FELIPE SPRINGS AT DEL RIO, TEXAS

DESCRIPTION: Two large and at least two smaller springs rise near the northeast city limits of Del Rio, Texas in or near the channel of San Felipe Creek at latitude 29°22'20" and longitude 100°53'00". The total yield of these springs consists of waters measured in the Val Verde Canal at Del Rio, Texas and in San Felipe Creek at Moore Park, Del Rio, Texas and diversions by the city of Del Rio. Diversions by the San Felipe Irrigation Company through the Val Verde Canal are measured at a gaging station consisting of a paved measuring section and gravity well and water-stage recorder located on the left side of the canal under the U. S. Highway 277 Bridge across San Felipe Creek at latitude 29°21'55" and longitude 100°53'10". The bridge is located about 0.6 creek mile (1.0 km) downstream from the source of the springs and 3.9 creek miles (6.3 km) from the confluence of the creek with the Rio Grande. The gaging station on San Felipe Creek at Moore Park consists of gravity well and water-stage recorder located on the left bank about 300 feet (91 m) downstream from the U. S. Highway 277 Bridge at latitude 29°21'50" and longitude 100°53'10". This stream enters the Rio Grande at river mile 560.5 (902.1 km), 0.5 river mile (0.8 km) downstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila. The zeros of the gages for the two stations are, respectively, 942.58 feet (287.30 m) and 930.77 feet (283.70 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Records for the Val Verde Canal and San Felipe Creek at Moore Park are based on 23 and 23 discharge measurements, respectively, by wading during the year, and continuous records of gage heights. Computations by shifting control methods. Records for the Del Rio Pumping Plant are furnished by the city of Del Rio Water Department. Records available: Total yield of the springs, February 1961 through 1989.

REMARKS: The flows tabulated below represent only the total yield of the springs. All storm runoff has been eliminated from the tabulations.

Average Flow in Second-Feet (Cubic Meters per Second)

Daily:	Max. 171 (4.84)	July 23, 1976	Min. 29.2 (0.83)	July 29, 1964
Monthly:	Max. 153 (4.33)	December 1976	Min. 34.4 (0.97)	August 1964
Yearly:	Max. 149 (4.22)	1977	Min. 50.5 (1.43)	1963

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	129	138	158	134	131	144	126	116	115	113	112	113
2	130	139	159	133	131 *	139	123	114	116	116	110	112
3	130	138	160	137	133	141	132	115	116	116	108	111
4	129 *	142	157	136 *	139	121	129	118 *	117	116 *	119	112
5	134	138	156	137	138	136	110 *	121	117	118	110	112 *
6	130	140	158	134	142	129 *	133	124	116 *	118	112	113
7	133	136 *	149 *	138	140	142	121	125	115	118	111	112
8	129	137	136	142	143	144	114	121	117	117	110 *	110
9	130	139	139	140	143	137	114	125	121	119	112	111
10	130	137	136	140	139	118	122	128	120	117	113	111
11	133	139	142	142	140	104	122	121	119	116	113	112
12	125	137	142	143	143	110	121	115	121	116	113	111
13	126	138	144	144	142	112	118	118	111	118	110	112
14	129	137	143	142	144	111	117	118	111	119	111	110
15	134	138	142	146	137	110	113	121 *	112	119	114	106
16	137	137	143	148	139 *	128	114	116	112	128	118	110
17	131	138	142	142	137	118	120	116	113	113	114	106
18	131 *	135	144	140 *	137	117	123 *	116	113	117 *	115	110
19	136	134	144	149	137	123	119	114	114 *	121	115	110 *
20	133	135	138	156	136	125	128	116	113	120	115	109
21	135	136	139	148	136	126	122	117	113	115	115 *	109
22	134	133	143	141	134	137	120	117	111	125	112	111
23	133	132	139	138	136	147	113	116	107	121	112	108
24	134	131	140	146	138	143	114	109	107	120	114	110
25	134	130	138	152	141	138	126	115	106	120	114	108
26	133	136	137	138	145	144	121	114	109	122	114	113
27	133	148	134	138	141	149	119	114	111	119	110	111
28	131	155	135	138	141	150	112	109	110	119	110	105
29	136		135	134	146	142	109	120	110	116	124	107
30	136		135	132	149	135	112	108	109	113	112	107
31	136		135		152		115	120		113		108
Sum	4,094	3,853	4,442	4,228	4,330	3,920	3,702	3,637	3,402	3,658	3,392	3,410

Month	Current Year 1989								Period Feb. 1961-1989		
	Extreme Gage Feet		Ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low						
	High	Low	Day		Day				Average	Maximum	Minimum
Jan.			16	137	12	125	132	8,120	6,930	9,370	2,274
Feb.			28	155	25	130	138	7,642	6,184	8,212	2,119
Mar.			3	160	27	134	143	8,811	6,768	9,029	2,365
Apr.			20	156	30	132	141	8,386	6,510	8,602	2,291
May			31	152	! 1	131	140	8,588	6,819	9,300	2,842
June			28	150	11	104	131	7,775	6,585	9,049	2,481
July			6	133	29	109	119	7,343	6,802	9,342	2,214
Aug.			10	128	30	108	117	7,214	6,773	9,527	2,114
Sept.			! 9	121	25	106	113	6,748	6,593	8,949	2,555
Oct.			16	128	! 1	113	118	7,256	6,961	9,249	2,508
Nov.			29	124	3	108	113	6,728	6,720	8,965	2,384
Dec.			! 1	113	28	105	110	6,764	6,996	9,431	2,390
Yearly				160		104	126	91,375	80,641	107,892	36,580
	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
				4.53		2.95	3.57	112,709	99,469	133,083	45,121

* Discharge measurement made on this day Ø Mean daily ! And other days

08-4530.00 SAN FELIPE CREEK NEAR DEL RIO, TEXAS

DESCRIPTION: Bubbler gage, and water-stage recorders (graphic and digital) located on the left bank at latitude 29°19'50", longitude 100°53'20", immediately upstream from the Silos Farm road bridge, 1.1 creek miles (1.8 km) from the confluence with the Rio Grande, and about 2 miles (3.2 km) south-southeast of Del Rio, Texas. This stream enters the Rio Grande at river mile 560.5 (902.1 km), 0.5 river mile (0.8 km) downstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila. The zero of the gage is 877.43 feet (267.44 m) above mean sea level, U.S.C.& G.S. datum.

RECORDS: Based on 40 discharge measurements during the year, 23 by the United States Section and 17 by the Mexican Section of the Commission, and a continuous record of gage heights. Computations by shifting control methods. Records available: September 1931 through 1989.

REMARKS: Municipal diversions at Del Rio and irrigation diversions greatly modify the flow of this spring-fed creek at this station. Backwater from the Rio Grande reaches this station when the Rio Grande near Del Rio reaches a stage of 15 feet (4.6 m), or a flow of about 60,000 second-feet (1,700 m3/sec). On June 28, 1954 combined creek flow and backwater from the Rio Grande reached a stage of 24.51 feet (7.47 m), the highest of record, at this station.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 45,000 second-feet (1,270 m3/sec) on June 14, 1935 with a gage height of 23.20 feet (7.07 m). Min. 0.4 second-foot (0.01 m3/sec) on July 20, 1953.

Average Flow in Second-Feet (Cubic Meters per Second)

Daily:	Max.	16,200 (459)	June 14, 1935	Min.	1.5 (0.04)	July 21, 1953
Monthly:	Max.	805 (22.8)	June 1935	Min.	4.6 (0.13)	July 1953
Yearly:	Max.	136 (3.85)	1935	Min.	25.1 (0.71)	1953

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	140	132	135	123	106	88.5	80.2	85.6	79.8	78.0	86.1	87.6
2	139	130	136	124	102 *	91.0	82.6	85.1	80.2	74.4	88.1	86.2
3	137	132	135	120	102	95.2	82.7	85.9	80.3	72.5	89.9	87.0
4	138	132	136	119 *	98.1	88.2	78.4	* 75.1	80.4	* 72.5	88.3	86.5
5	134 *	132	137	119	101	85.8	* 76.7	71.6	80.0	72.5	89.1	* 82.7
6	133	132	139	117	108	* 85.1	91.9	72.5	79.5	71.5	87.0	88.2
7	133	132 *	138 *	108	105	79.5	80.5	76.0	78.2	117	86.4	89.0
8	133	134	135	106	103	72.1	80.0	93.0	* 79.5	85.1	* 88.6	88.9
9	132	135	136	106	100	77.2	83.2	93.3	75.0	82.3	82.9	91.5
10	131	137	134	108	111	93.6	81.4	89.1	69.7	80.8	81.3	92.0
11	131	137	132	105	109	99.1	80.0	90.2	72.4	81.5	83.0	93.1
12	129	141	133	109	115	92.9	78.7	98.7	71.8	87.0	86.5	95.1
13	130	140	124	113	116	91.3	78.4	99.0	135	86.1	115	96.2
14	128	140	120	116	123	93.3	78.1	100	96.2	85.1	91.3	97.7
15	128	139	119	117	122	89.0	81.3	* 94.0	92.6	86.3	91.3	104
16	127	143	118	113	126 *	85.4	84.7	87.2	88.4	85.4	93.9	105
17	128	141	117	110	127	84.2	79.8	88.5	85.7	90.5	97.7	107
18	128 *	141	116	119 *	119	87.3	76.9	83.5	83.5	* 84.3	97.9	105
19	133	140	115	113	113	83.8	* 79.5	84.0	* 81.4	85.4	100	106 *
20	132	139	114	105	111	77.2	77.6	88.1	80.7	82.6	100	108
21	131	139	114	111	112	* 82.4	78.5	82.9	80.5	85.5	106 *	109
22	131	140	112 *	108	106	82.7	84.6	77.6	83.4	81.8	104	109
23	129	143	115	110	100	70.3	84.6	75.8	94.4	80.6	103	112
24	133	142	114	105	101	70.6	79.9	77.6	94.2	80.9	100	107
25	133	138	114	106	100	76.3	77.3	79.2	94.4	83.0	98.1	105
26	133	137	118	106	96.4	76.3	79.6	79.6	85.7	84.0	98.5	105
27	137	133	119	111	92.9	70.9	75.9	80.7	82.3	86.4	97.4	105
28	136	131	126	107	97.0	67.7	77.0	79.8	80.9	89.4	95.9	107
29	136		125	109	91.1	70.1	74.8	78.2	79.3	90.4	92.6	106
30	133		119	109	92.1	74.0	73.5	77.5	80.3	87.5	89.9	106
31	132		120		89.5		73.5	78.4		88.1		108
Sum	4,108	3,832	3,865	3,352	3,295.1	2,481.0	2,471.8	2,607.7	2,525.7	2,598.4	2,809.7	3,075.7

Month	Current Year 1989								Period 1932-1989		
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low						
	High	Low	Day		Day				Average	Maximum	Minimum
Jan.	1.55	1.20	19	164	!16	122	133	8,148	5,276	8,906	934
Feb.	1.40	1.19	16	151	!27	129	137	7,601	4,405	8,630	487
Mar.	1.59	1.10	28	168	19	109	125	7,666	4,209	8,354	689
Apr.	1.27	.99	1	131	! 7	101	112	6,649	4,489	10,407	566
May	1.88	.87	14	215	!30	85.1	106	6,536	5,218	17,600	739
June	1.07	.70	12	105	!23	66.4	82.7	4,921	5,382	47,900	301
July	1.10	.70	6	109	5	72.5	79.7	4,903	4,510	22,077	285
Aug.	1.13	.70	14	117	6	65.4	84.1	5,172	4,103	7,584	350
Sept.	3.37	.70	13	434	11	67.4	84.2	5,010	5,300	28,678	872
Oct.	3.63	.34	7	479	18	31.3	83.8	5,154	5,413	14,229	1,000
Nov.	2.08	.85	13	230	! 9	77.7	93.7	5,573	4,652	8,567	526
Dec.	1.11	.86	23	120	5	77.7	99.2	6,101	4,824	8,642	496
Yearly	3.63	0.34		479		31.3	101	73,434	57,781	98,137	18,201
	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
	1.11	0.10		13.6		0.89	2.86	90,579	71,272	121,050	22,451

* Discharge measurement made on this day ! And other days

08-4539.00 DIVERSIONS FROM THE RIO GRANDE
MAVERICK CANAL AT MILE 13 NEAR QUEMADO, TEXAS

DESCRIPTION: Light-weight cableway for making current meter measurements from the bank, bubbler gage, and water-stage recorders (graphic and digital), located on the left bank of a gunnite-lined section of the canal at latitude 29°03'00", longitude 100°39'40", 0.5 canal mile (0.8 km) downstream from the Tequesquite Creek Siphon, 3.5 canal miles (5.6 km) upstream from the Las Moras Creek Siphon, about 7.5 miles (12.1 km) north-northwest of Quemado, Maverick County, Texas and 12.8 canal miles (20.6 km) from the canal intake. The canal intake is at river mile 543.6 (874.9 km), 17.4 river miles (28.0 km) downstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila. The elevation of the zero of the gage has not been determined.

RECORDS: Based on 24 discharge measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Gage heights at this station are affected by gate operation at Las Moras Siphon. Records available: June 21, 1949 through 1989.

REMARKS: At canal mile 31.8 (51.2 km) a portion of the diverted water returns to the river through the Maverick Power Plant, and the remainder enters the Maverick Canal Extension. In 1989, 12,609 acres (5,103 ha) of land were irrigated between this station and the power plant, and 25,220 acres (10,206 ha) were irrigated from the extension, making a total of 37,829 acres (15,309 ha). A total of 855,897 acre-feet (1,055,732,000 m3) returned to the Rio Grande at the power plant and through the irrigation system (see pages 50, 52, and 55).

EXTREME FLOWS FROM RECORDS: Momentary: Max. 1,850 second-feet (52.4 m3/sec) on February 15, 1989. Min. no flow several days in June, July, and November 1954; and October 1978.

Average Flow in Second-Feet (Cubic Meters per Second)**

Daily:	Max. 1,730 (49.0)	August 29, 1973	Min. 0	Oct. 2 & 3, 1978
Monthly:	Max. 1,600 (45.4)	September 1981	Min. 295 (8.35)	February 1977
Yearly:	Max. 1,490 (42.2)	1980 & 1981	Min. 632 (17.9)	1972

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,470	1,590 *	1,600	1,610	1,520 *	1,540	1,350	1,260	1,200 *	1,280	1,160	1,220
2	1,450	1,520	1,560	1,640	1,500	1,450	1,370	1,260 *	1,180	1,270	1,130 *	1,190
3	1,470	1,540	1,480	1,630 *	1,540	1,400	1,360 *	1,230	1,190	1,300 *	1,130	1,140
4	1,380 *	1,560	1,460	1,610	1,520	1,390	1,340	1,270	1,200	1,320	1,120	1,140 *
5	1,340	1,570	1,480	1,580	1,520	1,380	1,340	1,280	1,250	1,290	1,070	1,130
6	1,400	1,630	1,600 *	1,530	1,540	1,370 *	1,350	1,300	1,290	1,270	1,090	1,130
7	1,590	1,620	1,590	1,470	1,530	1,370	1,380	1,320	1,220	1,290	1,160	1,170
8	1,610	1,600	1,610	1,480	1,460	1,350	1,380	1,260	1,190	1,340	1,180	1,160
9	1,560	1,600	1,600	1,500	1,430	1,420	1,380	1,160	1,210	1,220	1,190	1,130
10	1,430	1,610	1,610	1,470	1,420	1,570	1,410	1,170	1,210	1,270	1,210	1,140
11	1,420	1,640	1,610	1,440	1,400	1,580	1,380	1,190	1,180	1,220	1,220	1,150
12	1,450	1,670	1,630	1,440	1,390	1,590	1,330	1,220	1,190	1,220	1,220	1,210
13	1,470	1,660	1,640	1,460	1,400	1,630	1,340	1,250	1,180	1,310	1,250	1,210
14	1,400	1,620	1,680	1,470	1,390	1,590	1,370	1,280	1,220	1,300	1,240	1,190
15	1,450	1,600 *	1,640	1,540	1,460 *	1,570	1,330	1,420 *	1,280	1,270	1,250	1,180
16	1,480	1,580	1,550	1,580	1,490	1,620	1,330	1,360	1,300	1,250	1,250	1,190
17	1,480 *	1,530	1,570	1,600	1,500	1,640	1,290 *	1,360	1,320	1,320	1,250	1,170
18	1,450	1,450	1,620	1,580	1,490	1,640	1,300	1,370	1,300 *	1,360	1,260	1,190 *
19	1,490	1,420	1,620	1,590 *	1,510	1,650 *	1,330	1,380	1,230	1,360	1,260	1,180
20	1,500	1,640	1,610 *	1,570	1,530	1,590	1,290	1,320	1,260	1,340 *	1,250 *	1,160
21	1,470	1,640	1,630	1,600	1,540	1,460	1,250	1,120	1,260	1,290	1,240	1,160
22	1,470	1,630	1,440	1,620	1,550	1,370	1,250	1,200	1,240	1,290	1,180	1,190
23	1,460	1,630	1,630	1,660	1,560	1,320	1,290	1,200	1,230	1,310	1,210	1,160
24	1,440	1,590	1,650	1,670	1,550	1,310	1,270	1,240	1,230	1,260	1,200	1,130
25	1,440	1,520	1,650	1,660	1,540	1,340	1,220	1,250	1,210	1,320	1,170	1,150
26	1,460	1,430	1,680	1,610	1,540	1,390	1,310	1,220	1,170	1,330	1,180	1,150
27	1,530	1,430	1,640	1,600	1,560	1,420	1,300	1,210	1,210	1,290	1,170	1,160
28	1,550	1,540	1,600	1,600	1,550	1,360	1,290	1,190	1,260	1,310	1,170	1,160
29	1,560		1,610	1,550	1,540	1,430	1,280	1,190	1,260	1,260	1,160	1,190
30	1,610		1,610	1,530	1,540	1,450	1,260	1,180	1,270	1,240	1,180	1,210
31	1,600		1,620		1,560		1,260	1,190		1,200		1,210
Sum	45,880	44,060	49,520	46,890	46,570	44,190	40,930	38,850	36,940	39,900	35,750	36,250

Month	Current Year 1989: Extreme Gage Feet High	Extreme Gage Feet Low	Extreme Second-Feet High Day	High	Low Day	Low	Average Second-Feet	Total Acre-Feet	Period 1968-1989: Acre-Feet Average	Maximum	Minimum
Jan.	9.50	7.79	30	1,680	10	1,200	1,480	91,002	71,558	97,468	20,860
Feb.	10.13	8.08	15	1,850	!18	1,260	1,570	87,392	67,775	88,166	16,403
Mar.	9.92	6.42	26	1,800	22	865	1,600	98,221	75,943	98,221	27,679
Apr.	9.90	8.36	1	1,710	10	1,310	1,560	93,005	76,505	93,005	40,721
May	9.98	8.80	3	1,630	12	1,290	1,500	92,370	81,317	97,573	40,463
June	9.99	7.45	!13	1,660	23	1,080	1,470	87,650	79,849	94,260	31,210
July	9.04	7.26	10	1,550	22	1,040	1,320	81,183	81,018	97,657	35,776
Aug.	8.97	7.26	7	1,450	10	997	1,250	77,058	81,263	97,111	36,708
Sept.	9.08	7.40	18	1,470	4	1,010	1,230	73,269	77,792	95,485	32,963
Oct.	9.03	7.50	14	1,460	4	1,080	1,290	79,140	77,314	97,931	22,235
Nov.	8.74	7.32	11	1,350	5	974	1,190	70,909	67,530	93,391	22,487
Dec.	8.31	7.67	12	1,280	! 3	1,110	1,170	71,901	67,459	97,665	23,516
Yearly	10.13	6.42		1,850		865	1,390	1,003,100	905,323	1,084,048	458,631
	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
	3.09	1.96		52.4		24.5	39.4	1,237,304	1,116,698	1,337,152	565,712

* Discharge measurement made on this day ! And other days ** Period 1968-1989

08-4550.00 PINTO CREEK NEAR DEL RIO, TEXAS

DESCRIPTION: Solid ledge rock and concrete control, bubbler gage, and digital water-stage recorder located on the right bank at latitude 29°08'45", longitude 100°43'05", 1.6 creek miles (2.6 km) from the confluence with the Rio Grande, and about 19 miles (30.6 km) southeast of Del Rio, Texas. This stream enters the Rio Grande at river mile 536.9 (864.1 km) 5.6 river miles (9.1 km) downstream from the Maverick County Water Control and Improvement District No. 1 diversion dam. The zero of the gage is 813.68 feet (248.01 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 20 discharge measurements during the year, 12 by the United States Section and 8 by the Mexican Section of the Commission, and a continuous record of gage heights. Records available: September 1955 through 1989 at this station, and November 22, 1928 through August 1955 at a site 3.9 miles (6.3 km) upstream.

REMARKS: Small irrigation diversions modify the flow of this spring-fed creek at this station. When the flow in the Rio Grande at the confluence of this creek exceeds about 80,000 second-feet (2,270 m3/sec), backwater may reach this station. Backwater from the Rio Grande flood of June 1954 reached a gage height of 28.8 feet (8.78 m), or an elevation of 842.50 feet (256.79 m) above mean sea level, at this station.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 186,000 second-feet (5,270 m3/sec) on June 24, 1948 with a gage height of 32.0 feet (9.75 m). Min. frequently no flow.

Average Flow in Second-Feet (Cubic Meters per Second)

Daily:	Max.	28,200 (799)	June 24, 1948	Min.	0	Frequently
Monthly:	Max.	953 (27.0)	June 1948	Min.	0	Frequently
Yearly:	Max.	105 (2.97)	1932	Min.	1.3 (0.04)	1980

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.9	5.3	4.9	4.4	1.5	0.7	0.4	0	0	0	0	0
2	3.0	* 5.3	4.7	4.0	* 1.4	.7	.4	* 0	0	0	0	0
3	3.1	5.3	4.7	3.7	1.3	.7	.3	* 0	0	0	0	0
4	* 3.2	5.0	4.6	* 3.4	1.3	.6	.2	0	0	* 0	0	0
5	3.3	4.9	4.5	3.3	1.2	.6	* .2	0	0	0	0	0
6	3.4	4.8	3.8	3.1	1.2	* .6	.3	0	0	0	0	0
7	3.5	4.5	3.8	3.0	1.1	.6	.3	0	0	0	0	* 0
8	3.5	4.5	4.1	2.9	1.1	.5	.2	3.9	* 0	0	* 0	0
9	3.5	4.5	4.4	2.8	1.0	.5	.1	11.5	0	0	0	0
10	3.7	4.7	* 4.4	2.7	1.0	112	.1	3.9	0	0	0	0
11	3.8	4.9	4.3	2.7	* 1.0	20.7	.1	2.4	0	0	0	0
12	3.6	5.1	4.0	2.6	1.0	4.2	0	1.4	0	0	0	0
13	3.6	5.3	4.3	2.6	1.1	2.0	0	.8	.2	0	0	0
14	3.6	5.3	4.2	2.6	1.1	1.8	0	.5	0	0	0	0
15	3.6	5.1	4.1	2.6	1.1	1.6	0	.3	0	0	0	0
16	3.7	6.5	3.8	2.6	1.1	1.3	0	.2	0	0	0	0
17	3.8	7.3	3.8	2.5	11.1	1.1	0	.1	0	0	0	0
18	3.9	7.0	3.9	2.6	4.9	1.0	0	.1	0	0	0	0
19	4.5	6.2	4.1	3.3	2.6	1.0	0	0	0	0	0	0
20	* 5.9	5.7	4.0	* 2.6	1.9	.9	* 0	0	0	0	0	0
21	5.8	5.4	4.7	2.4	1.7	.8	0	0	0	0	0	.3
22	5.2	5.1	4.5	2.2	1.6	* .8	0	0	0	0	0	.3
23	5.1	* 4.8	3.6	2.0	1.5	.7	0	0	0	0	0	.3
24	5.1	4.7	3.5	1.7	1.4	.7	0	0	0	0	0	.4
25	5.1	4.5	3.5	1.6	1.3	.7	0	0	0	0	0	.5
26	4.9	4.6	3.9	1.6	1.2	.7	0	0	0	0	0	.8
27	6.2	4.8	4.3	1.5	1.1	.7	0	0	0	0	0	1.1
28	6.6	4.7	11.7	1.5	1.0	.6	0	0	0	0	0	1.0
29	6.0		13.4	1.5	.9	.6	0	0	0	0	0	.9
30	5.6		* 7.0	1.5	.8	.5	0	0	0	0	0	.9
31	5.3		5.2		.8		0	0		0		.8
Sum	134.0	145.8	149.7	77.5	52.3	159.9	2.6	25.1	0.2	0	0	7.3

Month	Current Year 1989								Period 1929-1989		
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum
Jan.	0.97	0.79	!27	6.6	1	Ø 2.9	4.3	266	560	2,270	0
Feb.	1.05	.87	!16	8.2	! 8	4.3	5.2	289	587	5,760	0
Mar.	1.45	.86	28	22.6	! 7	3.5	4.8	297	522	2,500	0
Apr.	.95	.74	1	4.5	!26	1.5	2.6	154	1,175	27,100	0
May	1.76	.69	17	33.5	31	.7	1.7	104	1,840	29,400	0
June	3.60	.62	10	541	! 9	.4	5.3	317	4,044	56,700	0
July	.64	.45	! 1	.5	!12	0	.1	5.2	1,404	30,000	0
Aug.	1.47	.37	8	33.1	! 1	0	.8	49.8	1,478	48,700	0
Sept.	.68	.34	13	1.9	! 8	.1	0	.4	2,043	48,965	0
Oct.	.55	.27	7	.1	! 1	0	0	0	1,032	8,940	0
Nov.	.43	.30		0		0	0	0	489	3,590	0
Dec.	.68	.32	27	Ø 1.1	! 1	0	.2	14.5	564	2,470	0
Yearly	3.60	0.27		541		0	2.1	1,497	15,738	76,259	948
	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
	1.10	0.08		15.3		0	0.06	1,847	19,413	94,064	1,169

* Measurement or observation of zero flow Ø Mean daily ! And other days

08-4555.00 RIO SAN DIEGO NEAR JIMENEZ, COAHUILA

DESCRIPTION: Cableway, masonry and concrete Cipolletti weir of 777 second-foot (22 m3/sec) capacity, gravity well, and water-stage recorder located on the left bank of Rio San Diego, and gravity well and water-stage recorder on Acequia de Dolores, an irrigation canal that runs along the left bank of the river under the cable, located at latitude 29°04'20", longitude 100°47'35", about 3.5 miles (6 km) west of Jimenez, Coahuila, and 4.1 river miles (7 km) from the confluence with the Rio Grande. Part of the canal flow measured here returns to the river downstream. This stream enters the Rio Grande at river mile 532.2 (856.4 km), 10.4 river miles (16.8 km) downstream from Maverick County Water Control and Improvement District No. 1 diversion dam and 28.9 river miles (46.4 km) downstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila. The zero of the gage is 831.73 feet (253.51 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: For the river, based on the weir discharge table and a continuous record of gage heights; and for the canal, on 36 discharge measurements during the year, and a continuous record of gage heights. The flow tabulated below includes the flow of the canal, and prior to 1964, records do not include this flow. Records available: 1922 through 1989. Records from 1922 through September 1932 are considered doubtful.

REMARKS: Reservoirs and irrigation diversions upstream from these stations modify the flow of this spring-fed stream. On December 24, 1955, the zero of the gage was raised 2.62 feet (0.80 m); in November 1961 an additional 0.20 foot (0.06 m), and the capacity of the weir was increased from 706 (20 m3/sec) to 777 second-feet (22 m3/sec).

EXTREME FLOWS FROM RECORDS** Momentary: Max. 81,930 second-feet (2,320 m3/sec) on June 17, 1961 with a gage height of 20.70 feet (6.31 m). Min. no flow occurred on several occasions.

Average Flow in Second-Feet (Cubic Meters per Second)**

Daily:	Max. 36,700 (1,040)	July 18, 1975	Min. 0	Occasionally
Monthly:	Max. 2,380 (67.5)	Oct. 1932	Min. 8.0 (0.23)	July 1956
Yearly:	Max. 622 (17.6)	1976	Min. 24.0 (0.68)	1956

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	231	155	112	70.6	65.0	53.0	30.0	79.8	24.0	38.1	33.9	43.1
2	234	155	98.5	70.6	60.7	51.9	30.0	60.0	24.0	38.1	33.9	53.3
3	231	152	102	70.6	60.7	49.4	30.0	43.4	24.0	35.3	29.3	53.3
4	217	147	98.5	70.6	57.2	50.9	30.0	39.6	24.0	30.7	29.3	50.1
5	198	147	93.6	70.6	54.7	43.4	30.0	34.6	24.4	27.9	29.3	44.1
6	196	151	93.6	70.6	54.7	40.6	32.1	34.6	24.0	77.3	33.9	41.0
7	196	145 *	* 98.5	71.3	56.2	40.6	36.7	75.2	24.0	57.2	* 29.3	41.0
8	196	145	96.4	72.4	54.4	39.9	31.8	163 *	24.0	45.2	29.7	36.0
9	195	139	91.8	75.6	* 54.4	35.3	29.3	68.5	24.0	44.1	29.7	41.0
10	195 *	135	90.8	71.3	54.0	35.7	29.0	53.7	24.0	* 38.1	29.7	41.0
11	195	130	85.8	* 68.5	53.7	40.3	* 29.0	50.9	27.9	38.1	29.7	41.0
12	192	130	85.8	69.9	1,970	40.3	39.2	45.2	* 26.5	38.1	35.0	* 38.5
13	186	130	85.8	75.6	240	* 40.3	43.8	45.2	223	38.1	35.3	41.0
14	186	130 *	* 85.8	77.0	155	42.7	43.8	42.4	153	36.4	* 40.3	41.0
15	186	130	83.7	72.0	164	49.1	43.8	* 39.6	71.3	33.5	40.3	41.0
16	186	143	85.1	72.0	141 *	43.8	43.8	39.6	53.3	33.5	35.3	41.0
17	179 *	145	82.6	72.0	424	40.3	44.8	39.6	46.3	* 33.5	35.3	41.0
18	178	143	77.7	* 74.2	194	44.5	* 44.5	39.6	43.4	33.5	35.3	41.0
19	179	138	77.0	72.0	145	43.1	41.7	36.7	* 40.6	31.4	35.3	* 41.0
20	186	135	86.2	72.0	122	* 40.3	40.6	34.3	38.1	29.0	40.3	41.0
21	180	130 *	* 78.0	68.9	104	39.9	36.4	34.3	38.1	29.0	* 37.8	41.0
22	173	130	80.5	63.9	94.3	37.8	30.7	* 33.9	38.1	29.0	38.5	41.0
23	170	127	78.0	60.4	* 83.3	35.3	28.6	38.8	38.1	33.5	36.0	47.0
24	174 *	123	75.9	60.4	76.3	35.0	26.5	33.5	38.1	* 33.5	36.0	47.0
25	171	118	73.8	* 63.6	68.9	35.0	* 26.5	33.5	38.1	29.0	36.0	47.0
26	170	115	72.7	65.3	66.4	35.0	30.0	38.5	38.1	29.0	36.4	47.0
27	174	115	71.0	61.4	63.6	* 35.0	29.7	33.5	38.1	29.3	41.7	44.5
28	171	115	* 80.9	60.0	63.6	32.8	29.3	* 31.1	38.1	47.7	37.1	41.7
29	167		85.8	60.0	60.0	30.4	29.3	28.6	38.1	42.0	30.7	41.7
30	169		77.3	60.0	52.3	30.4	29.3	28.6	38.1	39.2	36.0	40.6
31	164		72.4		51.9		49.1	26.8		33.9		40.3
Sum	5,825	3,798	2,657.5	2,063.3	4,965.3	1,212.0	1,069.3	1,426.6	1,344.8	1,152.2	1,036.3	1,330.2

Month	Current Year 1989: Extreme Gage Feet High	Low	Extreme Second-Feet High Day	High	Low Day	Low	Average Second-Feet	Total Acre-Feet	Period 1933-1989: Acre-Feet Average	Maximum	Minimum
Jan.	0.59	0.43	! 2	Ø 234	31	Ø 164	188	11,553	8,465	36,430	1,860
Feb.	.43	.36	! 1	Ø 155	!25	115	136	7,532	6,623	25,760	1,060
Mar.	.36	.23	1	115	!25	69.9	85.8	5,271	5,771	27,040	1,340
Apr.	.23	.20	! 8	77.3	!22	60.0	68.9	4,093	6,671	40,270	1,110
May	6.43	.16	12	11,100	! 9	49.1	160	9,850	11,762	120,200	861
June	.20	.10	1	57.6	!28	30.4	40.3	2,403	11,758	108,300	543
July	.23	.10	31	76.3	!23	26.5	34.6	2,121	13,720	136,149	490
Aug.	.89	.10	8	456	31	24.7	45.9	2,830	11,502	91,248	738
Sept.	1.61	.10	13	1,110	! 1	Ø 24.0	44.8	2,669	16,639	94,667	1,183
Oct.	.49	.98	6	180	! 4	27.9	37.1	2,286	18,811	71,830	1,698
Nov.	.13	.10	!14	41.7	! 3	Ø 29.3	34.6	2,055	13,485	64,060	803
Dec.	.16	.13	! 2	Ø 53.3	! 8	Ø 36.0	42.7	2,537	9,641	45,320	1,130
Yearly	6.43	0.10		11,100		24.0	76.3	55,300	134,848	451,952	17,430
	Meters			Cubic Meters per Second				Thousands of Cubic Meters			
	1.96	0.03		314		0.68	2.16	68,274	166,331	557,477	21,508

* Discharge measurement made on this day Ø Mean daily ! And other days

** Period 1932-1989

08-4557.00 RIO GRANDE NEAR JIMENEZ, COAHUILA AND QUEMADO, TEXAS

DESCRIPTION: Cableway, control weir of 1,270 second-foot (36 m3/sec) capacity, gravity well, and water-stage recorder located on the right bank at latitude 29°03'00", longitude 100°39'50", and river mile 530.3 (853.5 km); 1.5 miles (2.4 km) south-southeast of Jimenez, Coahuila, 1.8 river miles (3.0 km) downstream from Rio San Diego, about 7.5 miles (12.1 km) north-northwest of Quemado, Maverick County, Texas, 12.3 river miles (19.8 km) downstream from the Maverick County Water Control and Improvement District No. 1 diversion dam, and 30.7 river miles (49.4 km) downstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila. The zero of the gage is 769.00 feet (234.39 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 31 discharge measurements during the year, 23 by the Mexican Section and 8 by the United States Section of the Commission, and a continuous record of gage heights. Computations by shifting control methods prior to completion of the weir and for flows exceeding the capacity of the weir thereafter. Computations for flows within the capacity of the weir were based on a stable control weir rating curve defined by meter measurements. Records available: 1965 through 1989. Records, excluding some high flow periods, are also available from 1956 through May 1965 for a station 8.1 river miles (14 km) upstream. Records prior to 1976 were published under title "Rio Grande below Maverick Dam near Quemado, Texas."

REMARKS: This station was placed in operation January 1, 1965 and replaces the station "Rio Grande below Maverick Dam near Del Rio, Texas," which stopped operating June 1, 1965. Irrigation diversions 13.3 river miles (21.5 km) upstream largely control the flow at this station. The weir was placed in operation June 1, 1967, and the zero of the gage was set 3.28 feet (1 m) higher.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 79,800 second-feet (2,260 m3/sec) on July 18, 1975 with a gage height of 25.20 feet (7.68 m). Min. 2.8 second-feet (0.08 m3/sec) several days in April 1983 with a gage height of 0.20 foot (0.06 m).

Average Flow in Second-Feet (Cubic Meters per Second)

Daily:	Max. 67,100 (1,900)	July 18, 1975	Min. 2.8 (0.08)	April 25 and 26, 1983
Monthly:	Max. 21,300 (602)	Sept. 1974	Min. 28.3 (0.80)	June 1969
Yearly:	Max. 4,380 (124)	1974	Min. 286 (8.11)	1968

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	583	1,020	1,310	1,260	1,350	1,320	501	618	590	579	1,430	1,450
2	639	1,180	1,270	1,260	1,310	664	509	554	607	593	1,430	1,540
3	618	1,050	1,300	1,210	1,230	643	516	562	593	519	1,420	1,500
4	607	1,370	1,270	1,330	1,260	671	494	551	593	558	1,410	1,490
5	611	1,370	1,310	1,040	1,250	622	572	562	512	569	636	1,460
6	1,590	1,380	1,180	1,190	1,270	600	590	558	558	593	611	1,480
7	3,070	1,310	1,420	1,280	1,260	597	530	558	554	840	1,380	1,440
8	3,090	1,330	1,270	1,290	1,260 *	586	523	1,060	576	727	1,400	1,580
9	2,010 *	1,300	1,270	1,280	1,260	2,580	523	742	558	622 *	1,320	1,540
10	463	1,300	1,290	1,280 *	1,330	7,590	487 *	696	586	614	1,350	1,510
11	434	1,090	1,320	1,270	1,270	8,260	491	653	551 *	614	1,360	1,470 *
12	480	1,350	1,270	1,260	3,110	6,360 *	491	604	501	597 *	1,380	1,940
13	452	1,350 *	1,300 *	1,310	1,500	5,370	491	597	1,520	600	1,440 *	1,910
14	448	1,320	1,230	1,310	1,420	5,510	480	745 *	1,800	579	1,410	1,940
15	448	1,380	1,190	3,280	1,410	5,510	494	770	682	583	1,360	1,900
16	445	1,260	1,210	5,510	1,440	5,620	509	840	625	604	1,370	1,920
17	438	1,360	1,200	7,030	2,080	7,030	523	862	572	1,160	1,350	1,910
18	445	1,340	1,250	7,450	1,210 *	8,120	516	862	572	1,120	1,360	1,920
19	720	1,320	1,240	7,490	1,450	6,430	498	876	572	1,220	1,380	1,940 *
20	261	1,320	1,190	7,450	1,420	3,410	494	759	579	1,130	1,380	1,910
21	180	1,310	1,230	7,350	1,400	643	466	724	579	1,160	1,380	1,950
22	251	1,320	1,210	5,900	1,370	569	505	639	572	1,240	1,500	2,250
23	279 *	1,320 *	1,240	5,300	1,350	530	523	671	537	1,260	1,450	6,360
24	304	1,330	1,220	6,640	1,380	565	487 *	562	572	1,300 *	1,450	5,510
25	1,190	1,350	1,230	6,990	1,310	537	537	579	572	1,250	1,460	1,120
26	1,260	1,440	1,240	5,720	1,310	523 *	530 *	586	576 *	1,230	1,470	1,380 *
27	1,180	1,350 *	1,250 *	7,310	1,320	544	576	583	593 *	1,300	1,470 *	1,360
28	1,160	1,320	1,430	7,350	1,320	551	572	611 *	614	1,330	1,460 *	1,380
29	1,160		1,320	4,130	1,280 *	547	597	590	576	1,380	1,430	1,480
30	1,080		1,260	1,470	1,340	501	597	597	586	1,370	1,460	1,480
31	1,100		1,240		1,330		579	576		1,300		1,500
Sum	26,996	36,440	39,160	113,940	43,800	83,003	16,201	20,747	19,478	28,541	40,707	59,520

Month	Current Year 1989								Period 1968-1989		
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	High Day	High	Low Day	Low			Average	Maximum	Minimum
Jan.	2.56	0.56	! 6	3,230	21	ø 180	872	53,550	48,890	175,590	5,236
Feb.	2.49	.59	26	3,050	11	244	1,300	72,210	78,050	401,339	5,788
Mar.	2.59	.46	28	3,340	22	166	1,260	77,673	89,376	292,726	5,874
Apr.	4.10	.46	!17	7,700	! 7	155	3,810	225,973	80,453	320,444	5,030
May	5.54	.49	12	11,500	! 1	177	1,410	86,898	148,259	493,189	6,574
June	4.43	.26	10	8,620	!28	41.3	2,770	164,635	106,597	291,767	1,671
July	2.00	.26	6	1,870	! 4	21.5	523	32,130	99,897	311,781	2,322
Aug.	2.40	.30	8	2,690	! 4	61.1	667	41,138	121,029	710,869	11,855
Sept.	3.22	.30	13	5,090	! 6	41.3	650	38,637	156,061	1,264,108	13,678
Oct.	2.66	.30	31	3,490	! 4	41.3	922	56,604	126,748	831,298	11,210
Nov.	2.76	.30	29	3,740	! 5	61.1	1,360	80,797	70,360	499,143	8,863
Dec.	3.77	.49	23	6,820	! 3	177	1,920	118,047	47,423	181,109	7,486
Yearly	5.54	0.26		11,500		21.5	1,450	1,048,292	1,173,143	3,169,805	207,998
	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
	1.69	0.08		326		0.61	41.0	1,293,055	1,447,055	3,909,913	256,561

* Discharge measurement made on this day ø Mean daily ! And other days

08-4571.00 RIO SAN RODRIGO AT EL MORAL, COAHUILA

DESCRIPTION: Bubbler gage and water-stage recorder located on the left bank of El Moral, Coahuila, latitude 28°53'20", longitude 100°37'55", 1.0 river mile (1.6 km) from the confluence with the Rio Grande, and about 15.5 miles (25 km) northwest of Piedras Negras, Coahuila. This stream enters the Rio Grande at river mile 518.2 (834.0 km), 24.4 river miles (39.3 km) downstream from the Maverick County Water Control and Improvement District No. 1 diversion dam and 21.9 river miles (35.2 km) upstream from the international highway bridge between Eagle Pass, Texas and Piedras Negras, Coahuila. The zero of the gage is 750.95 feet (228.89 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 17 discharge measurements during the year, 16 by the Mexican Section and 1 by the United States Section of the Commission, and a continuous record of gage heights. Computations by shifting control methods. Records available: 1962 through 1989.

REMARKS: Prior to 1976 this station was published under the heading "Rio San Rodrigo near Mouth at El Moral, Coahuila." The flow of this spring-fed stream is modified by diversions above this station. The concrete control weir, placed in operation on November 25, 1969, was destroyed by the flood of July 12, 1976, and the station was relocated on October 15, 1976.

EXTREME FLOWS FROM RECORDS**: Momentary: Max. 140,000 second-feet (3,970 m3/sec) on July 18, 1975 with a gage height of 18.44 feet (5.62 m). Min. frequently no flow.

Average Flow in Second-Feet (Cubic Meters per Second)

Daily:	Max.	44,500 (1,260)	July 18, 1975	Min.	0	Frequently
Monthly:	Max.	7,380 (209)	July 1976	Min.	0	Frequently
Yearly:	Max.	837 (23.7)	1976	Min.	5.3 (0.15)	1963

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	179	174	141	109	13.8	10.2	4.6	0	0	0	0	0
2	174	162	138	109	12.0	12.7	4.6	0	0	0	0	0
3	174	162	133	109	11.3	12.7	4.6	0	0	0	0	0
4	174	162	129	103	11.3	12.4	4.6	0	0	0	0	0
5	174	162	126	96.1	11.3	9.9	4.6	0	0	0	0	0
6	170	162	126	96.8	10.2	9.2	4.6	0	0	0	0	0
7	168	162	126	96.8	9.5	7.8	4.6	0	0	326	0	0
8	168	162	126	96.8	* 9.2	6.7	4.6	144	0	26.1	0	0
9	168 *	162	126	95.7	8.1	6.7	4.2	94.3	0	* 4.2	0	0
10	168	162	126	* 95.0	8.1	6.7	* 3.5	20.8	0	0	0	0
11	168	162	126	96.8	8.1	6.7	3.5	2.1	0	0	0	0
12	165	158	126	96.8	66.0	6.7	3.5	0	0	0	0	0
13	162	152 *	124 *	96.8	41.7	* 6.7	2.8	0	0	0	0	0
14	162	152	121	94.6	133	6.7	2.1	0	0	0	0	0
15	162	154	119	92.9	498	6.7	2.1	0	0	0	0	0
16	164	157	117	92.9	41.7	6.7	1.4	0	0	0	0	0
17	168	157	117	92.9	24.0	6.7	1.1	0	0	0	0	0
18	168	157	117	92.9	14.1	6.7	0	0	0	0	0	0
19	168	157	117	91.1	10.6	6.7	0	0	0	0	0	0
20	168	157	117	89.0	9.5	6.7	0	0	0	0	0	0
21	168	157	117	89.0	9.5	6.7	0	0	0	0	0	0
22	168	154	113	89.0	10.9	6.7	0	0	0	0	0	0
23	168 *	147	113	89.0	11.3	6.7	0	0	0	0	0	1.8
24	168	146	113	* 89.0	* 11.3	5.7	0	0	0	0	0	5.3
25	168	141	113	89.0	11.3	5.7	0	0	0	0	0	2.8
26	168	141	113	89.0	11.3	* 5.7	0	0	0	0	0	0
27	168	141 *	112 *	89.0	11.3	5.7	0	0	0	0	0	0
28	174	141	165	86.5	9.5	5.7	0	0	0	0	0	0
29	174		119	86.5	* 9.5	5.7	0	0	0	227	0	0
30	174		111	81.2	9.5	4.9	0	0	0	22.2	0	0
31	174		109		9.5		0	0		4.6		0
Sum	5,244	4,363	3,796	2,819.1	1,066.4	221.2	61.0	261.2	0	610.1	0	9.9

Month	Current Year 1989								Period 1962-1989		
	Extreme Gage Feet		Extreme Second-Feet					Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low							
	High	Low	Day		Day					Average	Maximum	Minimum
Jan.	1.51	1.48	! 1	Ø 179	!12	162		169	10,405	4,015	13,281	0
Feb.	1.51	1.41	1	Ø 174	!24	141		156	8,666	2,939	9,932	0
Mar.	1.77	1.28	28	278	28	109		123	7,531	2,299	7,826	0
Apr.	1.28	1.15	! 1	Ø 109	30	79.1		93.9	5,591	3,774	29,072	81.1
May	4.69	1.12	15	2,150	! 9	Ø 8.1		34.3	2,116	4,047	29,277	17.0
June	1.15	1.05	! 2	Ø 12.7	30	4.6		7.4	439	6,359	103,142	0
July	1.05	0	! 1	Ø 4.6	!18	Ø 0		2.1	121	30,295	454,643	0
Aug.	2.53	0	8	526	! 1	Ø 0		8.5	519	11,274	89,017	0
Sept.	0	0	! 1	Ø 0	! 1	Ø 0		0	0	16,700	52,839	0
Oct.	3.61	0	7	1,260	! 1	Ø 0		19.8	1,210	13,518	53,088	0
Nov.	0	0	! 1	Ø 0	! 1	Ø 0		0	0	9,319	84,015	0
Dec.	1.12	0	23	8.1	! 1	Ø 0		.4	19.6	5,521	19,970	0
Yearly	4.69	0		2,150		0		50.5	36,618	110,060	606,526	3,851
	Meters		Cubic Meters per Second						Thousands of Cubic Meters			
	1.43	0		61.0		0		1.43	45,166	138,301	748,140	4,750

* Discharge measurement made on this day Ø Mean daily ! And other days

** Period 1961-1989

08-4575.00 RETURN FLOW TO THE RIO GRANDE FROM THE MAVERICK CANAL AT MAVERICK POWER PLANT NEAR EAGLE PASS, TEXAS

DESCRIPTION: A part of the water diverted from the river into the Maverick Canal is returned to the Rio Grande through the hydroelectric power plant located on the left bank of the Rio Grande at latitude 28°49'50", longitude 100°33'10", about 9 miles (14.5 km) north-northwest of Eagle Pass, Texas, and about 32.2 canal miles (51.8 km) downstream from the point of diversion. The return enters the Rio Grande at river mile 506.8 (815.6 km).

RECORDS: Based on records furnished by the Maverick County Water Control and Improvement District No. 1, showing hourly discharge in cubic feet per second based on hourly manometer readings, through each turbine at the Central Power and Light Company hydroelectric power plant. The mean daily discharges computed from the manometer readings have been multiplied by a factor to make them agree with periodic current meter measurements of flows made under stable flow conditions by hydrographers of the Commission. There were 49 discharge measurements made during the year. Records available: 1949 through 1989.

REMARKS: This power plant began operating April 16, 1932 with hydroelectric power generating facilities for 12,000 kw. Because the September 1932 flood washed out the upper end of the Maverick Canal, this plant did not operate from September 2, 1932 until March 17, 1937. Since then it has operated continuously except for 44 days in 1953 when shortage of water prevented operation, and from June 30 through July 19 during flood of 1954, and while the canal was being repaired. The plant's operation is now governed by the amount of water released from Amistad Reservoir, which began operations on May 31, 1968.

Average Flow in Second-Feet (Cubic Meters per Second)**

Daily:	Max. 1,580 (44.7)	February 28, 1982	Min. 0		Occasionally
Monthly:	Max. 1,530 (43.3)	January 1985	Min. 42.4 (1.20)		December 1971
Yearly:	Max. 1,230 (34.8)	1981	Min. 232 (6.57)		1972

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,160	1,410	1,310	1,130	1,450	1,080	992	902 *	808	902	1,030	1,020
2	1,150	1,360 *	1,270	1,170	1,420	981	1,000	905	777	895	1,000	1,010
3	1,100	1,340	1,250	1,190	1,390 *	929	1,020	895	772	869 *	997	1,020
4	1,070 *	1,380	1,260	1,150 *	1,370	969	977	890	799	892	1,040	1,030
5	1,060	1,400	1,290	1,100	1,370	932	983	873	839	904	993	1,040 *
6	1,100	1,440	1,330 *	1,130	1,360	874 *	913 *	892	804 *	914	986	1,050
7	1,230	1,470	1,280	1,110	1,380	857	946	889	819	996	992	1,050
8	1,330	1,440	1,250	1,110	1,300	865	942	953	807	1,100	1,010 *	1,040
9	1,330	1,430 *	1,250	1,110	1,230	886	983	884	791	1,060	995	1,030
10	1,250	1,400	1,230	1,100 *	1,210 *	1,080	1,000 *	975 *	811	1,060 *	1,000	1,050
11	1,210 *	1,430	1,200	1,070	1,190	1,150	957	859	839 *	1,050	1,030	1,060
12	1,220	1,460	1,250	1,120	1,190	1,170 *	924	898	806	1,060	1,030	1,030
13	1,190	1,450 *	1,240 *	1,150	1,180	1,220	965	926	828	1,060	1,070	1,050
14	1,210	1,360	1,210	1,210	1,210	1,350	966	917 *	949	1,080	1,050 *	1,070 *
15	1,250	1,350	1,170	1,250	1,230	1,450	964	1,050	904	1,080	1,040	1,030
16	1,280	1,410	1,150	1,320	1,280 *	1,500	973	1,050	906	1,030 *	1,040	1,020
17	1,240	1,450	1,130	1,330 *	1,300	1,500	955	1,000	961	1,030	1,060	1,030
18	1,260 *	1,460	1,130	1,210	1,340	1,530	930 *	998	948 *	1,030	1,070	995
19	1,270	1,460	1,160	1,190	1,310	1,460 *	885	996	900	1,080	1,090	967 *
20	1,320	1,460	1,130	1,180	1,310	1,320	909	1,010	894	1,050	1,070	947
21	1,330	1,460 *	1,140	1,180	1,340	1,210	903	808 *	891	1,090	1,050 *	972
22	1,340	1,450	1,100	1,190	1,310 *	1,110	911	764	904	1,100	1,020	1,020
23	1,340 *	1,460	1,060 *	1,250	1,200	1,040	981	795	884	1,100 *	988	1,010
24	1,320	1,450	1,050	1,270 *	1,170	1,040	948 *	830	910	1,030	1,010	972
25	1,320	1,440	1,070	1,230	1,170	1,090	904	876	916 *	1,070	1,020	1,020
26	1,340	1,480	1,160	1,210	1,140	1,100 *	912	862	896	1,120	1,020	1,030 *
27	1,360	1,400	1,170 *	1,370	1,110	1,050	885	879	875	1,100	1,030	933
28	1,390	1,300	1,130	1,460	1,110	1,020	849	878	849	1,110	974	926
29	1,400		1,160	1,460	1,120	982	881	845 *	845	1,130	970 *	958
30	1,420		1,160	1,430	1,090	966	941	842	833	1,090	1,040	1,010
31	1,420		1,140		1,080		938	826		1,060		1,070
Sum	39,210	39,800	36,830	36,380	38,860	33,711	29,237	27,967	25,765	32,142	30,715	31,460

Month	Current Year 1989								Period 1968-1989		
	Extreme Gage Feet		Ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum
Jan.			!30	1,420	5	1,060	1,260	77,772	57,013	94,116	4,952
Feb.			26	1,480	28	1,300	1,420	78,942	53,951	79,617	4,871
Mar.			6	1,330	24	1,050	1,190	73,051	54,454	85,904	5,713
Apr.			!28	1,460	11	1,070	1,210	72,159	52,918	81,937	4,301
May			1	1,450	31	1,080	1,250	77,078	60,839	85,686	13,888
June			18	1,530	7	857	1,120	66,865	55,328	82,750	6,618
July			3	1,020	28	849	943	57,991	54,163	78,637	5,537
Aug.			!15	1,050	22	764	902	55,472	55,862	77,970	18,457
Sept.			17	961	3	772	859	51,104	60,067	80,112	13,741
Oct.			29	1,130	3	869	1,040	63,753	61,772	85,547	11,147
Nov.			19	1,090	29	970	1,020	60,922	52,937	80,073	3,203
Dec.			!14	1,070	28	926	1,010	62,400	53,222	91,260	2,608
Yearly				1,530		764	1,100	797,509	672,526	889,049	168,354
	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
				43.3		21.6	31.2	983,711	829,547	1,096,624	207,661

* Discharge measurement made on this day Ø Mean daily ! And other days

** Period 1968-1989

08-4576.00 MAVERICK CANAL EXTENSION BELOW THE POWER PLANT NEAR EAGLE PASS, TEXAS

DESCRIPTION: Gage well and digital water-stage recorder located on the downstream side of a wooden pile bridge at latitude 28°49'50", longitude 100°32'40", about 1 mile (1.6 km) downstream from the heading of this canal extension, about 9 miles (14.5 km) north-northwest of Eagle Pass, Texas, and about 32.8 canal miles (52.8 km) downstream from the point of diversion from the Rio Grande, which is located at river mile 543.6 (874.9 km). The elevation of the zero of the gage has not been determined.

RECORDS: Based on 24 discharge measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: 1939 through 1989.

REMARKS: The main Maverick Canal divides into two branches at a point about 9 miles (14.5 km) north-northwest of Eagle Pass, Texas, and about 31.8 canal miles (51.2 km) downstream from the point at which water from the Rio Grande is diverted. One branch leads to the Maverick Power Plant and back to the Rio Grande, while the other branch forms this Maverick Canal Extension, which is used to transmit irrigation water. Irrigation from this canal extension began in June 1938. In 1989, 25,220 acres (10,206 ha) of land north and south of Eagle Pass were irrigated. A total of 29,885 acre-feet (36,863,000 m3) of water from this canal extension returned to the river through the irrigation system which extends approximately 67 canal miles (108 km) downstream.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 580 second-feet (16.4 m3) on July 25, 1964. Min. occasionally no flow.

Average Flow in Second-Feet (Cubic Meters per Second)**

Daily:	Max.	552 (15.6)	June 6 & 7, 1968	Min.	0		Occasionally
Monthly:	Max.	507 (14.9)	June 1968	Min.	18.0	(0.51)	January 1985
Yearly:	Max.	294 (8.33)	1972	Min.	58.2	(1.65)	1986

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	69.4	60.2	121	218	6.2	213	184	175 *	208	202	112	102
2	71.7	* 84.5	117	216	11.3	211	186	197	225	201	111	90.4
3	75.8	90.2	117	222	* 54.2	204	182	217	228	199 *	87.8	53.4
4	* 82.8	74.7	115	220 *	68.5	202	176	251	232	199	57.3	53.7
5	86.1	67.0	96.7	227	82.4	202	173	286	237	199	57.4	* 53.9
6	86.2	62.1	* 99.5	227	92.3	206 *	175 *	310	250 *	199	80.9	55.1
7	85.5	57.4	120	210	81.1	210	185	327	257	138	110	54.3
8	87.7	58.0	129	209	91.4	208	187	350	255	81.8	118 *	53.5
9	76.3	59.8	136	221	110	209	186	367	252	80.3	117	58.9
10	61.9	69.6	142	229	111	213	185	226	249	83.9	115	62.8
11	80.2	70.7	151	219	119	216	183	182	247	95.9	115	65.2
12	105	71.8	161	211	122	209	181	171	236	95.0	114	67.8
13	116	* 93.5	162	210	123	203	180	173	215	94.0	119	73.8
14	118	116	162	197	116	84.4	182	178 *	214	93.5	127	65.1
15	117	108	173	189	109	3.2	188	176	211	93.9	125	61.0
16	104	82.8	185	189	110 *	.9	186	150	208	* 91.7	124	77.8
17	99.2	69.0	197	192 *	90.6	.6	183	142	197	91.5	122	77.2
18	* 99.1	68.8	198	201	80.5	.5	181 *	140	181 *	92.6	136	78.0
19	101	68.5	199	195	87.9	* 25.5	178	148	180	94.3	128	* 90.4
20	74.0	68.2	211	193	87.3	134	179	159	181	96.6	117	88.8
21	30.1	63.0	223	199	87.7	151	190	165	190	97.4	115 *	80.8
22	34.0	55.1	235	203	96.4	137	188	169	190	98.2	115	57.5
23	34.6	55.1	237 *	202	107	147	186	172	188	98.6	116	59.3
24	38.0	54.1	240	201	117	150	183	175	188	99.2	102	67.4
25	40.5	54.1	248	199	125	143	179	178	188	101	79.7	89.1
26	45.0	53.9	248	199	135	149	181	173	176	102	66.3	91.1
27	54.7	77.6	234	79.1	154	155	183	167	171	104	73.6	61.1
28	59.0	122	227	9.4	167	153	183	169	170	106	84.9	52.7
29	34.2		224	7.8	166	160	180	174	188	109	95.4	51.9
30	5.9		222	6.8	168	170	177	180	202	110	98.0	48.8
31	5.7		221		182		172	190		111		47.8
Sum	2,178.6	2,035.7	5,551.2	5,501.1	3,258.8	4,470.1	5,642	6,237	6,314	3,658.4	3,139.3	2,090.6

Month	Current Year 1989: Average Rainfall Inches*** 1989	1939-1989	Extreme Second-Feet: High Day	High	Low Day	Low	Average Second-Feet	Total Acre-Feet	Period 1968-1989: Acre-Feet Average	Maximum	Minimum
Jan.	1.42	0.78	15	119	31	4.7	70.3	4,321	8,884	18,236	1,110
Feb.	.62	.87	!13	117	27	5.3	72.7	4,038	80,290	18,006	1,265
Mar.	.23	.62	24	249	6	88.4	179	11,011	13,113	23,397	1,441
Apr.	2.65	1.78	! 5	232	30	6.6	183	10,911	14,782	25,900	3,654
May	1.46	3.04	31	212	2	5.6	105	6,464	12,705	28,191	2,279
June	2.71	2.34	12	218	14	0	149	8,866	14,906	30,173	2,006
July	.15	1.39	! 1	192	31	169	182	11,191	16,656	28,854	6,437
Aug.	1.15	1.98	8	354	10	82.6	201	12,371	15,333	24,335	5,625
Sept.	.15	2.74	6	262	29	167	210	12,524	10,313	17,691	1,549
Oct.	2.90	2.22	1	204	10	77.9	118	7,256	9,107	16,504	1,349
Nov.	.63	.76	19	137	4	56.6	105	6,227	8,946	18,794	1,310
Dec.	.48	.71	2	104	31	47.3	67.4	4,147	8,621	16,824	2,344
Yearly	14.55	19.23		354		0	137	99,327	213,656	213,138	42,170
	Millimeters		Cubic Meters per Second					Thousands of Cubic Meters			
	370	488		10.0		0	3.88	122,518	263,540	262,901	52,016

* Discharge measurement made on this day ! And other days ** Period 1968-1989

*** On the United States side from Maverick Power Plant to Cuervo Creek

08-4577.00 RETURN FLOW TO THE RIO GRANDE FROM THE MAVERICK IRRIGATION DISTRICT ABOVE EAGLE PASS, TEXAS

DESCRIPTION: Part of the water diverted from the Rio Grande into the Maverick Canal is returned to the river through various drains and spillways of the irrigation system located between Maverick Diversion Dam and Eagle Pass, Texas. These return flows are measured at gaging stations consisting of sharp-crested Cipolletti weirs or control structures equipped with continuous water-stage recorders located at Hughes Ranch, gate leakage at Las Moras Creek, Lateral 1, Lateral 2 Spill, Canon Grande, Quemado Creek, Lateral 15 Spill, Houchin Spill, and Elm Creek; and a Parshall flume at the Lateral 2 Sand Trap Spill into Las Moras Creek immediately below the canal siphon.

RECORDS: Based on the weir discharge table and a continuous record of gage heights. All storm flow occurring at these stations is deducted from the records and is not shown below. Records available: April 1959 through 1989. Records prior to 1976 were published under the title "Return Flow to the Rio Grande from Maverick Canal-Maverick Dam to Eagle Pass, Texas."

REMARKS: In addition to the flows listed below, water from the Maverick Canal is returned to the Rio Grande in this reach at the Maverick Power Plant (see page 50).

EXTREME FLOWS FROM RECORDS:

Average Flow in Second-Feet (Cubic Meters per Second)**

Daily:	Max.	929 (26.3)	Sept. 29, 1975	Min.	2.4 (0.07)	August 4 & 8,	1985
Monthly:	Max.	154 (4.36)	June 1968	Min.	4.9 (0.14)	September	1985
Yearly:	Max.	126 (3.57)	1968	Min.	14.4 (0.41)		1985

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	43.4	36.2	41.0	57.8	38.4	55.9	50.5	41.4	54.2	63.7	23.7	23.6
2	41.4	36.2	48.8	58.9	34.2	68.0	65.6	45.9	59.9	48.0	27.7	21.1
3	62.1	34.9	60.9	61.5	31.6	72.4	53.2	38.1	51.2	53.0	34.1	20.6
4	67.8	31.4	51.9	58.2	29.6	79.7	53.7	39.3	45.4	49.0	32.6	19.9
5	56.2	30.5	43.0	71.2	32.0	62.9	48.1	40.0	39.2	50.4	30.3	25.5
6	50.4	29.0	45.6	60.5	32.5	54.1	44.2	32.5	43.3	35.0	26.0	24.6
7	56.1	29.6	56.0	52.2	29.7	64.4	43.6	32.5	46.4	29.0	33.6	25.4
8	53.4	32.9	57.5	48.2	35.5	53.4	49.5	44.8	49.7	26.3	33.3	30.8
9	54.6	37.9	48.7	48.1	55.7	49.0	48.9	39.9	52.0	26.7	36.4	29.4
10	49.7	37.3	45.0	48.0	69.8	56.1	43.9	42.6	58.7	27.4	43.9	25.6
11	47.0	38.2	64.7	48.9	75.4	47.6	46.7	46.3	47.3	26.5	35.5	25.7
12	47.6	31.8	54.5	52.5	82.4	43.6	45.2	42.8	47.6	26.9	34.4	28.9
13	46.9	34.9	56.5	63.0	70.0	42.2	46.3	44.1	51.8	24.9	28.4	27.4
14	42.7	39.6	45.1	69.4	64.5	37.9	45.1	44.1	50.3	25.8	28.1	28.5
15	43.3	48.7	46.5	67.1	58.1	37.0	38.6	40.1	56.6	23.1	32.5	33.8
16	43.0	51.9	57.9	68.5	58.2	36.5	39.6	37.8	48.2	22.6	31.3	37.1
17	42.5	33.7	51.4	73.3	44.4	46.4	46.8	37.7	44.7	32.5	35.6	29.6
18	44.4	31.0	50.4	70.8	32.1	42.2	47.3	47.9	44.4	44.5	27.7	26.4
19	43.6	29.7	53.6	74.0	29.4	53.6	59.5	44.3	52.6	44.8	23.5	33.5
20	43.3	30.2	53.2	63.0	31.5	63.1	57.3	43.2	50.0	42.4	26.0	39.3
21	35.8	30.6	56.5	45.3	31.6	60.0	50.9	35.7	49.5	37.6	28.5	31.3
22	32.0	27.7	59.3	51.0	36.1	55.7	55.6	38.6	47.1	33.4	37.1	25.5
23	31.7	28.0	57.9	61.7	52.8	60.1	46.9	42.3	52.0	30.1	31.0	22.8
24	35.6	28.4	56.9	49.5	57.5	57.0	43.7	42.0	61.9	44.5	27.8	20.6
25	39.5	39.4	62.7	55.9	52.1	57.5	38.6	35.8	59.3	52.3	28.9	21.2
26	36.2	30.1	58.6	49.4	45.0	49.8	38.7	37.0	62.3	41.4	29.7	29.1
27	40.4	32.3	66.5	38.5	40.8	42.9	37.6	45.1	54.1	40.8	23.4	62.0
28	36.3	43.5	57.8	38.1	41.7	42.5	42.9	34.8	62.5	48.0	29.6	75.1
29	30.4		55.2	43.0	40.9	50.7	35.2	43.6	60.2	41.2	41.1	62.0
30	30.3		53.6	43.9	43.8	48.6	35.1	48.3	54.9	24.1	35.4	56.4
31	31.9		55.3		48.7		46.6	56.7		23.7		38.9
Sum	1,359.5	964.6	1,672.5	1,697.4	1,426.0	1,590.8	1,445.4	1,285.2	1,557.3	1,139.6	937.1	1,001.6

Month	Current Year 1989: Extreme Gage Feet High	Extreme Gage Feet Low	Extreme Second-Feet High Day	Extreme Second-Feet High	Extreme Second-Feet Low Day	Extreme Second-Feet Low	Average Second-Feet	Total Acre-Feet	Period 1968-1989: Acre-Feet Average	Acre-Feet Maximum	Acre-Feet Minimum
Jan.			4	67.8	30	30.3	43.9	2,697	3,086	7,640	1,015
Feb.			16	51.9	22	27.7	34.5	1,913	2,795	6,126	939
Mar.			27	66.5	1	41.0	54.0	3,317	3,742	6,437	1,121
Apr.			19	74.0	28	38.1	56.4	3,355	3,821	7,795	824
May			12	82.4	19	29.4	46.0	2,828	3,617	8,178	850
June			4	79.7	16	36.5	53.0	3,155	3,764	9,190	519
July			2	65.6	30	35.1	46.6	2,867	3,928	8,157	328
Aug.			31	56.7	! 6	32.5	41.5	2,549	3,916	9,261	394
Sept.			28	62.5	5	39.2	51.9	3,089	3,299	7,680	289
Oct.			1	63.7	16	22.6	36.8	2,260	3,279	6,564	1,084
Nov.			10	43.9	27	23.4	31.2	1,859	3,121	8,696	826
Dec.			28	75.1	4	19.9	32.3	1,987	2,799	5,774	1,035
Yearly				82.4		19.9	44.0	31,876	41,167	91,498	10,405
	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
				2.33		0.56	1.25	39,318	50,779	112,861	12,834

Ø Mean daily ! And other days ** Period 1968-1989

08-4580.00 RIO GRANDE AT PIEDRAS NEGRAS, COAHUILA AND EAGLE PASS, TEXAS

DESCRIPTION: Cableway, gravity well, water-stage recorder, and Data collection platform located on the left bank at latitude 28°42'50", longitude 100°30'25", and river mile 497.0 (799.8 km), 0.6 river mile (1.0 km) upstream from the international highway bridge between Eagle Pass, Texas and Piedras Negras, Coahuila and 77.0 river miles (123.8 km) downstream from Amistad Dam. The zero of the gage is 682.91 feet (208.15 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 28 discharge measurements during the year, 22 by the Mexican Section and 6 by the United States Section of the Commission, and a continuous record of gage heights. Computations by shifting control methods. Records available: May 1900 through March 1914; August 1914 through April 1916; September 1916; September and October 1917; October 1918; September and October 1919; August and September 1920; June 1922; September, November, and December 1923; and 1924 through 1989. Records prior to 1976 were published under the title "Rio Grande at Eagle Pass, Texas."

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. The Data collection platform is coupled to leased telephone circuits. This system is operated in cooperation with the National Weather Service.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 964,100 second-feet (27,300 m3/sec), determined by slope-area calculations, on June 29, 1954 with a gage height of 53.51 feet (16.31 m). Well-authenticated information indicates the occurrence of a flood in June 1865 with an estimated discharge of 1,236,000 second-feet (35,000 m3/sec) and a gage height of 56.00 feet (17.07 m) on the present gage, and also that these were the only floods since 1745 with flows greater than 825,000 second-feet (23,400 m3/sec). Min. 24.4 second-feet (0.69 m3/sec) on June 22, 1953 with a gage height of 0.07 foot (0.02 m).

Average Flow in Second-Feet (Cubic Meters per Second)**

Daily:	Max.	101,400 (2,870)	July 19, 1975	Min.	173 (4.90)	April 25, 1984
Monthly:	Max.	22,000 (622)	Sept. 1974	Min.	323 (9.16)	June 1969
Yearly:	Max.	5,190 (147)	1974	Min.	971 (27.5)	1972

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,890	4,100	2,620	2,310	2,790	2,220	1,650	1,400	1,410	1,480	2,320	2,440
2	1,910 *	4,170	2,520	2,340	2,620	1,610	1,660	1,490	1,400	1,540	2,290	2,490
3	1,850	4,170	2,520	2,370 *	2,520	1,530	1,690 *	1,440	1,410	1,470	2,270	2,490
4	1,850	4,170	2,500	2,220	2,450 *	1,600	1,580	1,430	1,460 *	1,510	2,300	2,440 *
5	1,820	4,130	2,540	2,120	2,440	1,640 *	1,570	1,400	1,440	1,500	1,600	2,390
6	1,840	"o	2,420 *	2,150	2,490	1,570	1,580	1,430	1,410	1,530	1,620 *	2,400
7	4,100	"o	2,510	2,220	2,420	1,650	1,580	1,430 *	1,420	2,380	2,290	2,390
8	4,310	"o	2,450	2,280	2,450	1,720	1,560	1,990	1,410	1,980	2,360	2,370
9	4,240	"o	2,430	2,270	2,300	2,270	1,590	1,700	1,400	1,700	2,250	2,360
10	2,200	"o	2,410	2,240	2,330	6,820	1,600	1,590	1,410	1,680	2,340	2,390
11	1,780	"o	2,430	2,240	2,360	9,430	1,550	1,520	1,440	1,650 *	2,350	2,390
12	1,800	"o	2,420	2,240	3,570	9,150	1,490	1,480	1,360	1,650	2,390	2,340
13	1,780	"o	2,440	2,350	3,010	6,890	1,510	1,490	1,370	1,640	2,420	2,340
14	1,770	"o	2,360	2,400	2,560	6,780	1,510	1,610	3,450	1,630	2,470	2,380
15	1,790	"o	2,250	2,570	3,200	6,750	1,490	1,680	1,690	1,610	2,360	2,320
16	1,780 *	"o	2,330	6,180	2,710	6,670	1,500	1,750	1,570	1,600 *	2,380	2,310
17	1,750	"o	2,240	6,990 *	2,910 *	6,500	1,480 *	1,760	1,560	2,080	2,360	2,320
18	1,740	"o	2,280	8,230	2,680	8,970	1,470	1,770	1,550 *	2,060	2,390	2,260 *
19	1,760	"o	2,360	8,190	2,530	8,860 *	1,430	1,770	1,490	2,160	2,390	2,200
20	2,250	"o	2,230 *	8,190	2,510	5,580	1,430	1,830	1,480	2,120	2,400	2,200 *
21	1,940	2,710	2,290	8,160	2,560	2,210	1,580	1,460 *	1,470	2,180	2,370	2,240
22	1,790	2,700	2,250	7,560	2,460 *	1,740	1,480	1,420	1,480	2,170	2,430	2,280
23	1,760	2,700	2,300	6,430	2,390	1,650	1,470	1,410 *	1,460	2,240	2,390	4,200
24	1,760	2,710	2,230	6,640	2,320	1,680	1,460	1,430	1,500	2,180	2,410	5,540
25	1,760	2,720	2,250	8,050	2,330	1,720	1,450	1,460	1,500	2,230	2,400	3,510
26	2,540	2,800	2,320	6,220	2,280	1,780	1,440	1,450	1,470	2,240	2,430	1,670
27	2,780	2,730	2,330	9,290 *	2,210	1,730	1,440 *	1,480	1,470	2,250	2,530 *	1,810
28	2,780	2,590	2,560	9,110	2,270	1,720	1,430	1,470	1,430	2,380	2,390	1,830
29	2,750		2,430	8,260	2,250	1,690	1,420	1,460	1,450	2,690	2,300 *	1,890
30	3,180		2,340	3,130	2,200	1,660	1,410	1,450	1,430	2,370	2,500	1,980
31	4,590		2,380		2,240		1,410	1,420		2,320		2,000
Sum	71,840	73,940		144,950	78,360	115,790	46,910	47,870	45,790	60,220	69,700	76,170

Month	Current Year 1989								Period 1968-1989		
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
				High		Low					
	High	Low	Day		Day				Average	Maximum	Minimum
Jan.	5.41	2.95	31	5,860	6	1,600	2,320	142,479	117,632	286,079	26,191
Feb.									139,221	448,150	35,604
Mar.	4.30	2.95	28	3,780	!17	1,570	2,380	146,605	153,484	397,213	20,899
Apr.	7.12	2.89	27	9,850	7	1,480	4,840	287,480	144,580	386,265	24,030
May	6.23	2.92	12	7,630	!27	1,540	2,530	155,403	219,631	588,871	36,193
June	7.25	2.69	13	10,100	3	1,210	3,850	229,630	183,186	476,028	19,254
July	3.38	2.66	3	2,210	18	1,170	1,510	92,992	194,156	779,878	26,100
Aug.	3.97	2.56	8	3,230	21	1,020	1,540	94,904	188,603	743,286	56,856
Sept.	4.72	2.59	14	4,520	12	1,080	1,530	90,800	236,475	1,306,836	80,699
Oct.	4.43	2.69	7	4,030	! 1	1,190	1,940	119,399	210,817	891,747	58,642
Nov.	4.30	2.72	30	3,780	5	1,240	2,320	138,220	139,268	570,870	45,803
Dec.	5.64	2.76	!23	6,320	!28	1,310	2,460	151,053	112,811	288,937	26,197
Yearly									2,039,864	3,753,089	705,670
	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
									2,516,143	4,629,385	870,435

* Discharge measurement made on this day ! And other days "o Unable to determine flow

** Period 1968-1989

08-4581.50 RIO ESCONDIDO AT VILLA DE FUENTE, COAHUILA

DESCRIPTION: Cableway, gravity well, concrete control weir of 1,750 second-foot (50 m3/sec) capacity, and water-stage recorder located on the right bank of the Rio Escondido on the outskirts of Villa de Fuente, Coahuila, at latitude 28°40'05", longitude 100°31'00", about 3 miles (5 km) southwest of Piedras Negras, Coahuila, 3.7 river miles (6.0 km) from the confluence with the Rio Grande, and 6.8 river miles (10.9 km) downstream from the confluence of Rio San Antonio with with Rio Escondido. Rio Escondido enters the Rio Grande at river mile 493.2 (793.8 km), 3.1 river miles (5.0 km) downstream from the international highway bridge between Eagle Pass, Texas and Piedras Negras, Coahuila. The zero of the gage is 718.37 feet (218.96 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 23 discharge measurements during the year, 21 by the Mexican Section and 2 by the United States Section of the Commission, and a continuous record of gage heights. Records available: 1922 through 1989. Records from 1922 through September 1932 are considered doubtful.

REMARKS: Diversions and drainage returns modify the flow of this spring-fed stream at this station. Backwater from the Rio Grande reached an elevation of 729.92 feet (222.48 m) during the flood of June 1954. Prior to November 1954, the gage well was located at the present cableway site. The weir was destroyed by a flood on September 24, 1964. On November 25, 1969, the concrete control weir was finished and placed in operation.

EXTREME FLOWS FROM RECORDS**: Momentary: Max. 24,000 second-feet (680 m3/sec) on June 29, 1936 with a gage height of 19.13 feet (5.83 m). Min. frequently no flow.

Average Flow in Second-Feet (Cubic Meters per Second)**

Daily:	Max. 13,100 (371)	Sept. 24, 1964	Min. 0	Occasionally
Monthly:	Max. 827 (23.4)	Sept. 1964	Min. 0.3 (0.01)	September 1965
Yearly:	Max. 257 (7.28)	1987	Min. 2.4 (0.07)	1956

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	115	102	104	50.1	52.6	31.1	24.7	13.8	9.9	11.3	21.9	22.6
2	115 *	102	99.2	50.5	47.7	31.8	26.5	13.4	9.9	10.9	20.5	22.2
3	115	101	99.2	* 51.6	54.0	31.1	* 21.5	12.7	9.9	10.6	20.1	22.2
4	113	102	97.5	53.3	57.2	31.1	20.1	13.4	* 10.9	10.2	20.1	* 22.6
5	112	105	93.9	51.6	57.2	* 30.4	19.8	11.3	11.3	10.6	19.8	22.6
6	112	108	* 89.3	51.6	57.9	31.8	19.1	12.0	10.6	10.2	* 28.3	22.2
7	115	105	87.9	50.9	56.5	31.4	19.4	* 14.1	10.2	31.4	31.8	22.2
8	118	105	86.2	49.4	53.7	30.4	18.7	32.5	10.6	47.3	31.1	21.2
9	117	110	75.9	47.3	54.4	29.7	18.4	44.5	10.2	24.0	30.0	21.9
10	118	114	68.5	46.3	44.5	31.1	17.3	27.5	10.6	18.0	30.0	22.2
11	118	107	67.5	46.3	36.7	84.8	17.0	20.8	10.6	16.6	30.7	22.2
12	118	100	65.0	48.0	269	45.9	16.2	19.8	10.6	16.2	30.4	22.6
13	118	99.2	63.9	49.1	58.6	43.8	16.2	18.7	19.4	15.5	30.4	23.3
14	121	106	62.9	51.2	47.0	45.6	16.6	17.7	21.2	15.5	30.4	23.3
15	124	108	64.6	49.8	44.8	44.1	23.7	19.4	13.1	15.5	31.8	24.7
16	124 *	113	64.3	48.7	45.9	43.8	17.0	21.5	15.5	* 18.4	30.4	32.8
17	121	114	59.3	* 48.0	47.7	34.6	* 14.1	16.6	17.0	15.2	30.4	26.8
18	113	116	59.3	47.3	45.9	33.5	14.1	21.2	* 21.5	17.0	31.1	* 25.4
19	112	121	60.0	45.2	44.1	* 32.5	14.8	17.0	22.2	23.0	26.8	25.8
20	113	121 *	* 71.0	44.1	42.7	31.4	13.4	12.7	22.6	23.3	23.3	25.8
21	112	120	63.9	41.7	41.0	29.3	14.1	* 11.3	21.2	22.6	21.9	26.5
22	107	118	59.3	41.0	* 41.0	28.3	15.5	11.3	14.5	17.3	20.8	26.1
23	105	118	59.3	40.6	39.2	28.3	14.8	10.9	12.7	14.8	20.1	26.1
24	105	118	57.6	39.6	* 37.4	29.3	14.1	11.3	12.4	13.1	20.5	26.8
25	105	118	56.5	38.8	35.3	29.7	14.5	17.0	12.0	12.4	20.5	26.8
26	103	116	55.8	88.3	34.3	29.7	15.5	12.0	12.0	12.4	20.1	27.5
27	116	114	54.7	149	32.5	28.3	15.5	11.3	12.0	12.7	* 19.8	* 26.8
28	108	109	56.9	57.9	31.8	26.8	16.2	11.3	11.7	41.3	19.8	26.8
29	105		55.1	57.6	31.4	26.1	16.2	10.6	11.3	113	18.7	26.1
30	102		53.0	51.6	31.8	25.4	15.2	10.6	11.3	31.8	22.2	25.4
31	102		51.6		32.1		14.8	10.2		24.4		25.4
Sum	3,502	3,090.2	2,163.1	1,586.4	1,605.9	1,031.1	535.0	508.4	408.9	676.5	753.7	764.9

Month	Current Year 1989								Period 1933-1989		
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low						
	High	Low	Day		Day				Average	Maximum	Minimum
Jan.	1.64	1.48	27	135	!26	102	113	6,945	3,370	18,930	43.8
Feb.	1.57	1.48	!18	121	! 3	99.2	111	6,132	2,545	14,433	38.9
Mar.	1.51	1.15	1	108	30	51.6	69.9	4,291	2,098	11,407	92.4
Apr.	3.18	1.02	!25	731	24	37.8	53.0	3,147	2,325	21,950	81.1
May	3.97	.95	12	1,270	29	30.7	51.9	3,185	3,829	25,470	154
June	2.07	.85	11	237	30	24.4	34.3	2,045	2,962	25,852	60.3
July	1.08	.66	2	42.7	!19	12.0	17.3	1,062	2,393	26,505	52.7
Aug.	1.12	.56	9	49.8	31	Ø 10.2	16.2	1,009	3,627	30,106	19.5
Sept.	1.15	.52	13	51.6	4	9.2	13.8	812	5,224	49,182	17.8
Oct.	2.23	.56	29	288	4	9.9	21.9	1,342	4,773	28,620	43.8
Nov.	.98	.75	15	33.2	29	18.0	25.1	1,495	3,727	25,730	43.8
Dec.	.98	.82	16	34.6	! 8	Ø 21.2	24.7	1,518	3,278	22,003	67.3
Yearly	3.97	0.52		1,270		9.2	45.6	32,983	40,151	186,461	1,755
	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
	1.21	0.16		36.1		0.26	1.29	40,684	49,522	229,999	2,164

** Period 1932-1989 * Discharge measurement made on this day Ø Mean daily
! And other days

08-4586.00 RETURN FLOW TO THE RIO GRANDE FROM THE MAVERICK IRRIGATION DISTRICT BELOW EAGLE PASS, TEXAS

DESCRIPTION: Part of the water diverted from the Rio Grande into the Maverick Canal is returned to the river through various drains and spillways of the irrigation system located between Eagle Pass, Texas and the El Indio Gaging Station. These return flows are measured at gaging stations consisting of sharp-crested Cipolletti weirs or control structures equipped with continuous water-stage recorders located at Canon Diablo, Lateral 50 Spill, Rosita Creek, Lateral 60-K Spill, Sauz Creek, Indio Creek, and Cuervo Creek.

RECORDS: Based on the weir discharge table, stable station control rating tables, and a continuous record of gage heights. All storm flow occurring at these stations is deducted from the records and is not shown below. Records available: April 1959 through 1989. Records prior to 1976 were published under the title "Return Flow to the Rio Grande from Maverick Canal, Eagle Pass to San Antonio Crossing."

EXTREME FLOWS FROM RECORDS:

		Average Flow in Second-Feet (Cubic Meters per Second)**			
Daily:	Max. 350 (9.91)	July 5, 1968	Min. 1.4 (0.04)	April 22, 1986
Monthly:	Max. 247 (7.00)	July 1968	Min. 4.3 (0.12)	April 1986
Yearly:	Max. 180 (5.10)	1971	Min. 14.8 (0.42)	1986

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	46.1	46.6	29.1	55.4	19.1	28.3	15.3	19.4	28.8	27.0	17.3	35.3
2	34.7	48.6	29.8	65.4	18.3	24.8	19.7	18.5	34.9	23.8	16.3	34.6
3	29.0	53.8	28.5	64.6	17.4	29.6	18.1	18.4	35.2	22.1	17.4	41.1
4	32.0	63.5	26.2	64.4	14.7	20.8	43.4	20.3	28.1	21.1	35.2	43.8
5	31.3	66.7	27.6	58.4	12.4	28.6	26.5	25.8	22.7	27.6	53.3	38.6
6	29.9	65.6	23.8	46.0	11.2	42.4	15.7	27.7	24.9	26.8	51.6	32.6
7	30.5	62.6	22.1	47.5	23.9	38.8	18.9	27.3	41.9	30.5	50.6	29.1
8	33.7	55.9	26.9	49.7	61.4	36.1	18.8	33.0	36.1	23.7	49.9	30.7
9	31.1	50.6	25.6	47.1	59.0	33.4	19.9	29.0	38.5	22.9	49.1	28.4
10	29.3	52.9	34.0	45.4	49.8	33.9	25.0	50.5	48.8	22.5	50.1	27.5
11	28.0	44.8	40.6	64.3	27.3	41.2	24.5	48.3	63.7	19.6	57.0	27.1
12	32.3	42.8	40.0	77.5	27.9	45.0	28.1	21.9	56.5	18.4	56.7	26.7
13	30.7	41.7	36.1	57.4	23.3	44.0	35.6	34.1	71.4	21.3	56.4	24.6
14	30.5	47.3	31.1	76.3	23.3	43.4	23.4	50.7	79.4	8.4	49.4	25.6
15	36.8	49.6	28.7	78.4	46.2	38.0	28.7	24.9	78.8	45.1	46.2	26.0
16	47.0	51.3	42.1	94.4	33.7	35.1	25.9	34.3	69.7	40.6	45.9	27.2
17	45.5	45.9	43.3	60.5	48.6	30.6	45.8	53.3	59.8	21.1	49.2	28.3
18	40.1	33.8	41.0	59.4	25.2	23.3	36.8	37.1	69.9	22.2	48.7	24.9
19	47.1	29.2	41.9	52.8	44.2	21.2	33.8	29.9	68.3	27.1	50.1	23.1
20	64.9	26.3	47.5	51.2	29.0	14.5	25.5	27.9	56.9	21.5	53.2	24.5
21	69.2	23.9	46.0	49.3	33.0	7.9	23.2	30.2	48.4	17.0	50.5	32.0
22	60.2	22.2	61.3	36.2	38.3	7.4	23.7	32.4	41.1	15.6	40.5	36.4
23	47.2	21.2	66.4	31.2	36.5	7.2	25.5	35.0	36.9	17.0	38.0	35.7
24	49.8	20.1	69.0	28.1	36.7	11.3	29.5	35.2	35.1	14.9	39.4	33.3
25	60.0	20.1	70.0	32.2	40.9	10.0	29.0	39.7	41.7	9.5	38.9	30.9
26	39.8	21.1	77.3	32.2	27.2	17.8	23.0	46.4	44.1	8.7	51.5	30.1
27	56.0	21.5	86.5	27.2	20.5	48.2	21.6	56.4	31.4	12.5	47.3	27.0
28	54.5	23.7	83.3	21.6	31.9	20.9	19.5	60.3	28.3	16.5	41.6	25.3
29	50.0		77.8	19.1	23.7	11.8	18.1	57.9	21.2	24.4	34.2	25.2
30	43.9		63.2	18.7	33.1	7.6	20.7	46.0	24.1	29.5	38.1	23.2
31	55.1		60.3		24.8		21.8	27.3		35.0		25.3
Sum	1,316.2	1,153.3	1,427.0	1,511.9	962.5	803.1	785.0	1,099.1	1,366.6	693.9	1,323.6	924.1

Month	Current Year 1989: Extreme Gage Feet High	Extreme Gage Feet Low	Ø Extreme Second-Feet High Day	High	Low Day	Low	Average Second-Feet	Total Acre-Feet	Period 1968-1989: Acre-Feet Average	Maximum	Minimum
Jan.			21	69.2	11	28.0	42.5	2,611	5,815	12,728	1,082
Feb.			5	66.7	124	20.1	41.2	2,288	4,852	10,704	745
Mar.			27	86.5	7	22.1	46.0	2,830	6,367	11,675	318
Apr.			16	94.4	30	18.7	50.4	2,999	6,963	14,646	257
May			8	61.4	6	11.2	31.0	1,909	6,417	14,327	566
June			27	48.2	23	7.2	26.8	1,593	6,710	14,384	531
July			17	45.8	1	15.3	25.3	1,557	6,556	15,180	784
Aug.			28	60.3	3	18.4	35.5	2,180	6,077	11,586	613
Sept.			14	79.4	29	21.2	45.6	2,711	5,150	9,162	620
Oct.			15	46.1	14	8.4	22.4	1,376	4,728	8,220	881
Nov.			11	57.0	2	16.3	44.1	2,625	4,947	10,790	367
Dec.			4	43.8	19	23.1	29.8	1,833	5,233	12,797	1,061
Yearly				94.4		7.2	36.6	26,512	69,815	130,563	10,715
	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
				2.67		0.20	1.04	32,702	86,115	161,047	13,217

Ø Mean daily ! And other days ** Period 1968-1989

08-4587.00 RIO GRANDE NEAR EL INDIO, TEXAS AND VILLA GUERRERO, COAHUILA

DESCRIPTION: Cableway, bubbler gage, concrete control weir, and water-stage recorders (graphic and digital) located on the left bank at latitude 28°20'45", longitude 100°18'35",and river mile 460.4 (741.0 km), 0.6 river mile (0.9 km) downstream from Cuervo Creek,which marks the lower end of the Maverick County Water Control and Improvement District No. 1, 1.9 river miles (3.1 km) upstream from Tovar Creek, 5 miles (8.0 km) northeast of Villa Guerrero, Coahuila, about 11.5 miles (18.5 km) south of El Indio,Texas, and 35.9 river miles (57.8 km) downstream from the international highway bridge between Eagle Pass, Texas and Piedras Negras, Coahuila. The zero of the gage is 580.00 feet (176.78 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 24 discharge measurements during the year and a continuous record of gage heights. Computations for high flows by shifting control methods. Low and medium flow computations based on a stable control weir rating curve defined by meter measurements. Records available: March, April, May, October, November, and December 1952 with some days missing; January through August 20, 1953; September 23, 1953 through June 14, 1954; and May 27, 1955 through 1989 with several days missing prior to September 1955. Records prior to 1976 were published under the title "Rio Grande at San Antonio Crossing near El Indio, Texas."

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 912,000 second-feet (25,800 m3/sec) in June 1954, determined by slope-area computation, with an elevation of 624.31 feet (190.29 m). Min. 54.4 second-feet (1.54 m3/sec) on June 24, 1953 with an elevation of 581.96 feet (177.38 m) at a station 1,700 feet (518 m) upstream from the present site.

Average Flow in Second-Feet (Cubic Meters per Second)**

Daily:	Max.	96,400 (2,730)	July 19, 1975	Min.	327 (9.26)	June 29 & 30, 1972
Monthly:	Max.	21,800 (617)	Sept. 1974	Min.	501 (14.2)	June 1969
Yearly:	Max.	5,300 (150)	1974	Min.	1,230 (34.8)	1972

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2,120	3,110	2,810	2,550	3,220	2,500	1,640	1,630	1,490	1,470	2,530 *	2,840
2	2,120	3,080 *	2,800	2,630	2,950	2,440	1,570	1,630	1,510	1,540	2,570	2,830
3	2,130	3,010	2,760	2,700	2,840	1,790	1,590	1,610 *	1,490	1,490	2,570	2,890
4	2,070	3,020	2,740	2,600 *	2,770	1,770	1,630	1,580	1,500	1,500 *	2,590	2,880
5	2,060 *	3,090	2,690	2,620	2,790	1,800	1,600	1,530	1,510	1,480	2,630	2,850
6	2,060	3,060	2,740	2,300	2,790	1,730	1,620 *	1,550	1,490 *	1,450	1,860	2,800 *
7	3,170	3,140	2,660 *	2,440	2,800	1,680 *	1,600	1,580	1,460	3,400	1,830	2,830
8	4,560	2,970	2,700	2,500	2,830	1,610	1,560	1,790	1,450	1,460	2,570	2,790
9	4,640	2,990	2,690	2,510	2,780	1,600	1,560	2,390	1,450	1,520	2,590	2,750
10	3,560	2,970	2,670	2,500	2,700	3,910	1,600	1,830	1,450	1,450	2,510	2,770
11	2,180	2,910	2,670	2,430	2,730	9,200	1,570	1,780	1,510	1,390	2,620	2,790
12	2,020	2,800	2,720	2,520	3,110	9,100	1,530	1,650	1,450	1,490	2,640	2,760
13	2,030	3,040	2,720	2,500	5,510	7,070	1,520	1,630	1,360	1,310	2,730	2,720
14	2,010	2,930 *	2,740	2,620	2,950	8,190	1,530	1,680	2,450	1,840	2,750	2,740
15	2,030	2,980	2,600	2,740	3,550	7,040	1,530	1,800	2,810	1,830	2,720	2,740
16	2,100	3,090	2,580	5,550	3,340	6,980	1,520	1,830 *	1,750	1,790	2,640	2,700
17	2,100	3,180	2,530	6,750 *	3,990	6,770	1,580	1,960	1,670	1,660 *	2,680 *	2,720
18	2,040 *	3,110	2,520	8,390	3,620	8,840	1,530	1,930	1,660	2,160	2,720	2,710 *
19	2,080	3,090	2,570	8,640	2,960	9,040	1,510 *	1,940	1,570 *	2,300	2,750	2,680
20	2,140	3,090	2,660	8,570	3,010	6,630 *	1,520	1,930	1,520	2,420	2,750	2,660
21	2,750	3,050	2,420	8,490	3,040	4,000	1,560	1,940	1,480	2,400	2,760	2,640
22	2,230	3,030	2,550	8,490	3,000	2,000	1,530	1,610	1,490	2,440	2,750	2,710
23	2,150	3,000	2,520 *	6,970	2,920	1,750	1,550	1,530	1,470	2,400	2,760	3,200
24	2,110	3,010	2,550	6,580	2,760	1,710	1,640	1,570	1,480	2,370	2,720	6,150
25	2,120	2,960	2,500	7,870	2,730	1,750	1,620	1,540	1,530	2,440	2,750	5,470
26	2,160	3,000	2,590	7,080	2,630	1,760	1,560	1,600	1,500	2,350	2,790	2,350
27	3,210	3,080	2,660	10,000	2,510	1,790	1,520	1,620	1,500	2,370	2,790	2,140
28	3,290	2,870	2,720	9,200	2,550	1,690	1,530	1,650	1,470	2,340	2,750	2,150
29	3,230		2,820	9,200	2,530	1,670	1,540	1,610	1,470	2,370	2,690	2,210
30	3,570		2,660	4,610	2,530	1,630	1,600	1,570	1,450	2,430	2,760	2,310
31	3,160		2,610		2,480		1,650	1,570		2,530		2,400
Sum	79,200	84,660	82,170	154,550	92,920	119,440	48,610	53,060	47,390	61,390	78,770	89,180

Current Year 1989									Period 1968-1989		
Month	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum
Jan.	7.85	6.69	! 9	4,690	! 6	1,880	2,550	157,091	129,226	221,917	47,179
Feb.	7.64	6.91	! 1	3,920	28	2,200	3,020	167,921	147,131	444,879	51,336
Mar.	7.52	6.75	29	3,650	18	1,880	2,650	162,982	161,981	423,055	37,442
Apr.	8.86	6.73	27	10,800	! 8	1,820	5,150	306,545	154,844	361,567	37,386
May	8.61	6.68	13	9,340	31	1,840	3,000	184,304	235,973	600,198	50,723
June	8.93	6.29	14	11,800	4	1,140	3,980	236,906	204,335	552,218	29,808
July	6.77	6.34	!25	1,980	!19	1,270	1,570	96,416	207,262	788,688	37,228
Aug.	7.27	6.36	8	3,100	23	1,250	1,710	105,243	206,084	824,033	66,822
Sept.	7.74	6.29	14	4,350	13	1,170	1,580	93,997	250,991	1,296,059	83,327
Oct.	8.19	6.27	7	6,520	13	1,140	1,980	121,765	225,282	863,008	65,885
Nov.	7.35	6.55	27	3,420	! 6	1,600	2,630	156,238	153,369	552,893	47,778
Dec.	8.16	6.64	24	6,390	!26	1,780	2,880	176,886	124,904	276,555	49,819
Yearly	8.93	6.27		11,800		1,140	2,720	1,966,294	2,201,382	3,835,752	896,415
	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
	2.72	1.91		334		32.3	77.0	2,425,384	2,715,361	4,731,323	1,105,710

* Discharge measurement made on this day ! And other days ** Period 1968-1989

08-4590.00 RIO GRANDE AT LAREDO, TEXAS AND NUEVO LAREDO, TAMAULIPAS

DESCRIPTION: Bubbler gage and water stage recorder located on the left bank at the old international highway bridge between Laredo, Texas and Nuevo Laredo, Tamaulipas at latitude 27°29'58", longitude 99°30'25" and river mile 360.9 (580.81 km). The zero of the gage is 352.72 feet (107.21 m) above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 24 discharge measurements during the year made from Bridge #2, and a continuous record of gage heights. Computations by shifting control methods. Records available: May 1900 through 1913 ; (gage height records only) January through March 1914 ; May, June, and October 1914 ; September 1916; September and October 1917; October 1918; September and October 1919 ; August and September 1920; June, November, and December 1922; and 1923 through March 2, 1989 at a station 1.1 river miles (1.8 km) downstream from the present site; March 3,1989 through December 1989 at present site.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. This station was established in November 1956 as a flood warning station for the National Weather Service. It was put into operation as a water accounting station on March 3, 1989 to replace the old station located 1.1 river miles (1.8 km) downstream.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 716,900 second-feet (20,300 m3/sec) on June 30, 1954, determined by slope-area calculations, with a gage height at this site of 60.5 feet (18.44m). Much well-authenticated information established the occurrence of a greater flood in June 1865 with a gage height of 62.5 feet (19.05m) on a gage 1.1 miles (1.8 km) downstream with a discharge of approximately 950,000 second-feet (27,000 m3/sec), and also that these were the only floods since 1745 with flows greater than 600,000 second-feet (17,000 m3/sec). Min. no flow several days in June and July 1953 and on July 24, 1956.

Average Flow in Second-Feet (Cubic Meters per Second)**

Daily:	Max.	115,000 (3,270)	June 30, 1971	Min.	247 (7.00)	July 2, 1972
Monthly:	Max.	20,400 (579)	Sept. 1974	Min.	498 (14.1)	June 1969
Yearly:	Max.	5,370 (152)	1974	Min.	1,350 (38.3)	1972

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2,230	3,380 *	3,020 *	3,330	4,760	2,440 *	1,470	1,470 *	1,240 *	1,300	2,930 *	2,520
2	2,220	3,350	2,960	3,440	3,340 *	2,450	1,300	1,470	1,210	1,310	2,630	2,830
3	2,210	3,560	2,960	3,430	3,190	2,570	1,270	1,410	1,190	1,320 *	2,570	2,730
4	2,190 *	3,190	2,930	2,880 *	2,950	1,820	1,360	1,420	1,250	1,350	2,550	2,670
5	2,140	3,170	2,920	2,590	2,890	1,860	1,360	1,370	1,260	1,220	2,550	2,680 *
6	2,110	3,250	2,870	2,790	3,080	1,680	1,270 *	1,320	1,290	1,270	2,540	2,680
7	2,110	3,290	2,930	2,370	2,970	1,340	1,280	1,230	1,270	2,890	1,970	2,670
8	2,760	3,270	2,860	2,430	2,960	1,240	1,110	1,340	1,280	9,810	1,950	2,650
9	4,750	3,270	2,900	2,660	3,070	1,180	1,230	2,680	1,280	7,470	2,330	2,600
10	4,920	3,180	2,900	2,700	2,980	1,090	1,080	2,790	1,280	2,690	2,420	2,580
11	4,050	3,170	2,890	2,680	2,850	2,970	1,080	1,860	1,260	1,840	2,670	2,570
12	2,400	3,170	2,900	2,650	2,930	9,280	1,140	1,790	1,210	1,640	2,730	2,630
13	2,080	2,980	2,950	2,730	3,220	9,200 *	1,070	1,760	1,230	1,710	2,760	2,550
14	2,080	3,200	2,960 *	2,930	5,710	10,700	995	1,670	1,410	1,730	2,750	2,490
15	2,070	3,230	2,980	3,090	3,100	8,410	978	1,590 *	1,480	1,630	2,720 *	2,500
16	2,090	3,070	2,980	2,950	3,750 *	6,910	1,030	1,670	3,360	1,410	2,700	2,560
17	2,150	3,250	2,950	5,790	3,490	7,060	1,100	1,860	1,800	1,620 *	2,620	2,470
18	2,200 *	3,260	3,110	6,990	4,140	7,010	1,120	1,850	1,580	1,630	2,640	2,470
19	2,230	3,310	2,980	8,630 *	3,740	9,280	1,130	1,800	1,560 *	2,160	2,580	2,490 *
20	2,210	3,210	3,130	9,120	3,070	9,330	1,050 *	1,820	1,400	2,140	2,590	2,460
21	2,260	3,180	3,280	9,080	3,110	6,630	997	1,850	1,280	2,340	2,600	2,390
22	2,840	3,170 *	3,030	9,320	3,160	4,490	1,020	1,730	1,250	2,430	2,610	2,430
23	2,410	3,140	3,280	9,200	3,110	2,310	1,130	1,400	1,230	2,550	2,590	2,470
24	2,290	3,110	3,170	7,610	3,030	1,870	1,150	1,240	1,210	2,450	2,610	2,620
25	2,250	3,150	3,260	6,980	2,860	1,740	1,460	1,290	1,190	2,500	2,580	4,850
26	2,270	3,140	3,270	8,620	2,840	1,790	1,400	1,540	1,230	2,410	2,600	4,710
27	2,330	3,160	3,370	7,880	2,710	1,680	1,610	1,490	1,290	2,560	2,580	2,780
28	3,240	3,220	3,410	10,700	2,600	1,780	1,300	1,460	1,250	2,530	2,660	1,900
29	3,460		3,430	9,900	2,650	1,740	1,290	1,480	1,230	4,190	2,590	2,020
30	3,410		3,570	9,900	2,630	1,450	1,320	1,490	1,230	5,430	2,550	2,040
31	3,350		3,450		2,630		1,370	1,510		4,090		2,120
Sum	81,310	90,030	95,600	165,370	99,520	123,300	37,470	50,650	41,230	81,620	77,170	82,130

Month	Current Year 1989								Period 1968-1989		
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum
Jan.	5.60	3.26	1	5,000	13	1,980	2,620	161,276	130,316	286,116	49,774
Feb.	5.14	3.84	14	4,350	13	2,600	3,220	178,572	149,399	450,602	39,225
Mar.			30	3,570 ø	8	2,860 ø	3,080	189,620	164,080	395,686	37,096
Apr.			28	10,700 ø	7	2,370 ø	5,510	328,006	158,981	369,202	35,107
May			14	5,710 ø	28	2,600 ø	3,210	197,395	252,715	662,839	89,917
June	6.35	.24	114	13,100	10	861	4,110	244,562	235,861	695,494	29,635
July	1.22	.02	5	2,270	6	580	1,210	74,321	212,568	838,520	32,270
Aug.	2.04	.25	9	3,790	24	981	1,630	100,463	213,433	794,314	65,681
Sept.	2.45	.23	16	4,300	15	848	1,370	81,778	258,382	1,216,757	81,778
Oct.	5.44	.23	8	10,900	15	835	2,630	161,891	260,587	956,960	56,155
Nov.	1.88	.91	1	3,310	7	1,750	2,570	153,064	157,037	586,280	45,172
Dec.	2.82	1.02	25	4,990	28	1,680	2,650	162,902	128,038	307,569	51,316
Yearly	6.35	0.02		13,100		580	2,810	2,033,850	2,321,397	3,891,074	980,740
	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
	1.94	0.01		371		16.4	79.6	2,508,713	2,863,397	4,799,562	1,209,723

* Discharge measurement made on this day ø Mean daily ! And other days

** Period 1968-1989

08-4597.00 RIO SALADO NEAR LAS TORTILLAS, TAMAULIPAS

DESCRIPTION: Cableway, control weir with notch opening of 2,500 second-foot (72 m3/sec) capacity, gravity well, and water-stage recorder located on the right bank at latitude 26°50'10", longitude 99°33'50", 2.0 river miles (3 km) downstream from the confluence of Rio Sabinas with Rio Salado, 6 miles (10 km) southeast of the town of Las Tortillas, Tamaulipas, and 24.8 river miles (39.9 km) from the confluence with the Rio Grande. This stream enters the Rio Grande at river mile 299.5 (482.0 km), 24.7 river miles (39.8 km) upstream from Falcon Dam. The zero of the gage is 325.72 feet (99.28 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 22 discharge measurements during the year by the Mexican Section of the Commission, a stable rating curve up to 2,500 second-feet (72 m3/sec), and a continuous record of gage heights. Computations by shifting control methods for flows greater than 2,500 second-feet (72 m3/sec). Records available: September 9, 1953 through 1989. Records are also available for a station at old Cd. Guerrero, 21.7 miles (35 km) downstream, from 1900 through 1913 and 1923 through September 8, 1953.

REMARKS: Reservoirs and irrigation diversions modify the flow at this station.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 65,000 second-feet (1,840 m3/sec) on September 16, 1971 with a gage height of 40.39 feet (12.31 m). Min. frequently no flow. The maximum discharge was measured at the highway bridge 13.0 river miles (20.9 km) downstream from the station. Extreme flow data for the Rio Salado at Cd. Guerrero prior to September 8, 1953 may be found in previous bulletins.

Average Flow in Second-Feet (Cubic Meters per Second)**

Daily:	Max. 62,900 (1,780)	Sept. 16, 1971	Min. 0	Frequently
Monthly:	Max. 13,600 (384)	Sept. 1971	Min. 0	Frequently
Yearly:	Max. 3,310 (93.6)	1971	Min. 56.8 (1.61)	1956

Mean Daily Discharge in Second-Feet 1989 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	188	171 *	115 *	80.9	150	* 78.8	105	* 72.7	62.2	53.3	50.1	48.0
2	203 *	182	117	84.4	124	84.8	114	82.3	56.9	* 57.6	* 52.3	54.7
3	192	182	115	111 *	117	69.6	132 *	89.0	55.8	65.3	55.8	99.6
4	196	182	106	91.8	92.5	74.2	122	93.6	72.4	52.3	57.2	109
5	190	182	124	107	60.4	84.0	126	98.2	66.4	46.6	56.2	112 *
6	167	182	130	127	67.1	93.9	131	76.3	70.6	50.1	58.3	108
7	163	182	125	96.8	74.2	89.0	117	62.9	65.0	50.1	54.7	105
8	160	182	126	87.2	90.1	92.5	109	67.5	85.5	173	54.4	104
9	158	182	114	108	94.3	77.3	84.0	28.3	84.8	427	53.7	101
10	157	182	111	120	96.4	98.2	79.8	43.8	60.0	304	53.0	99.6
11	160	182	104	115	96.1	120	82.3	43.8	65.7	218	52.3	97.1
12	160	182	106	94.6	103 *	130	89.3	47.3	58.3	152	55.4	97.1
13	160	179	126	85.1	96.1	112	* 84.4	83.0	53.0	115	58.3	96.1
14	160	160	123	99.2	94.3	131	82.6	127	2,360	101	* 53.0	93.2
15	160	167 *	132 *	121	87.9	214	80.5	132 *	622	92.9	54.4	93.2
16	160	160	117	130	70.6	142	82.6	118	232	* 98.5	50.5	91.1
17	157	171	117	123	77.3	168	80.9	115	162	87.9	43.8	89.0
18	155	182	120	115 *	60.0	120	84.8	109	130	85.8	40.6	89.0
19	160	174	122	108	63.6	111	93.9	106	117	82.3	49.1	87.6
20	165	177	126	105	62.5	103 *	94.3	96.1	112 *	77.7	55.4	83.7
21	165	160	126	105	57.9	78.8	105	95.0	110	69.9	53.3	* 78.0
22	165	154	137	106	54.7	77.0	105	91.1	130	52.3	51.6	75.6
23	165	139	128	109	65.3	76.6	118	152	137	50.5	52.3	72.7
24	167	125	126	105	78.4	80.5	111	136	110	55.8	50.1	72.7
25	171	119	133	101	87.6	103	105	230	95.3	45.9	50.1	72.7
26	171 *	123	141	97.1	78.4	134	96.8	234	87.9	46.6	50.1	66.4
27	171	125	143	94.6	67.5	125	89.7	199	84.8	45.6	50.1	48.0
28	171	116	138	205	63.6	110	82.3	117	65.0	49.1	50.1	35.3
29	171		126	441	63.6	107	75.2	99.2	64.6	53.0	50.1	30.4
30	171		121	204	63.6	107	68.2	85.8	55.1	54.4	48.0	32.1
31	171		102		63.6		61.1	71.3		55.1		34.3
Sum	5,230	4,604	3,797	3,677.7	2,521.6	3,192.2	2,992.7	3,202.2	5,531.3	2,968.6	1,564.3	2,476.2

Month	Current Year 1989								Period 1954-1989		
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	High		Low				Average	Maximum	Minimum
			Day		Day						
Jan.	1.18	1.05	! 1	203	! 9	154	168	10,358	9,746	59,812	0
Feb.	1.12	.89	1	214	28	113	164	9,114	8,116	66,880	0
Mar.	.98	.82	126	143	31	97.1	123	7,537	4,892	29,690	0
Apr.	2.00	.72	29	706	1	72.7	123	7,296	12,238	202,979	0
May	1.05	.59	1	165	22	50.1	81.2	5,003	27,760	362,793	0
June	1.67	.69	15	452	! 1	63.6	106	6,331	30,937	246,821	0
July	.98	.69	3	138	31	Ø 61.1	96.4	5,936	28,963	441,541	0
Aug.	1.48	.03	25	337	9	.4	103	6,354	21,892	210,031	0
Sept.	3.74	.56	14	3,710	13	43.8	184	10,971	88,344	807,616	2,149
Oct.	1.84	.52	8	586	25	39.6	95.7	5,890	55,321	550,739	110
Nov.	.69	.52	3	63.6	17	39.6	52.3	3,103	28,253	338,000	0
Dec.	.89	.43	5	113	29	26.8	79.8	4,913	17,231	176,100	0
Yearly	3.74	0.03		3,710		0.4	114	82,806	333,693	2,400,554	41,238
	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
	1.14	0.01		105		0.01	3.24	102,140	411,602	2,961,050	50,859

* Discharge measurement made on this day Ø Mean daily ! And other days

** Period September 1953-1989

08-4613.00 RIO GRANDE BELOW FALCON DAM NEAR FALCON, TEXAS AND NUEVA CD. GUERRERO, TAMAULIPAS

DESCRIPTION: The discharges reported below represent water measured as it leaves Falcon Reservoir through turbine penstocks, bypass valves, spillway gates, and leakage. Falcon Dam, astride the Rio Grande, is located at latitude 26°33'35", longitude 99°10'00", and river mile 274.8 (442.3 km); about 7 miles (11.3 km) southwest of Falcon, Texas and 86.1 river miles (138.6 km) downstream from the old international highway bridge between Laredo, Texas and Nuevo Laredo, Tamaulipas. A gravity well and water-stage recorder located 2.5 river miles (4.1 km) downstream and a cableway located one mile (1.6 km) farther downstream are used to measure the flow of this station at times when spillway gates are in operation.

RECORDS: Based on daily Simplex meter records of releases through the six turbines, established rating curves for the four hollow-jet bypass valves, estimates of gate leakage, and measurements of flow at the cable during spillgate operations. During 1989 there were 5 discharge measurements made by the United States Section of the Commission. Records available: 1958 through 1989. Records are also available from December 17, 1952 through 1957 for a station at Chapeno, 2.6 miles (4.1 km) downstream, where discharges included arroyo inflow below Falcon Dam, which inflow is eliminated from the records reported below.

REMARKS: Computation of flow was made jointly by the United States and Mexican Sections of the Commission from a consolidation of the basic data gathered by each Section incident to the international operation of Falcon Reservoir.

EXTREME FLOWS FROM RECORDS:** Momentary: Max. 82,600 second-feet (2,340 m3/sec) on September 18, 1971. Min. 1.5 second-feet (0.04 m3/sec) on March 24 and 25, 1957 (at Chapeno gaging station).

Average Flow in Second-Feet (Cubic Meters per Second)**

Daily:	Max.	76,400 (2,160)	Sept. 18, 1971	Min.	1.5 (0.04)	March 24 & 25, 1957
Monthly:	Max.	32,500 (920)	Oct. 1958	Min.	23.5 (0.67)	November 1973
Yearly:	Max.	6,930 (196)	1958	Min.	1,580 (44.7)	1970

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	4,800	7,380	3,340	3,420	4,910	14,400	1,610	1,940	2,870	3,460	2,880	1,270
2	5,540	7,100	3,340	4,470	4,910	12,800	1,620	2,310	3,050	2,960	1,720	1,570
3	4,420	5,800	3,000	4,850	4,300	11,700	1,790	1,980	3,040	3,480	1,700	1,070
4	4,350	5,000	2,670	3,990	3,930	12,200	2,200	2,060	2,920	3,740	2,520	561
5	4,840	4,780	2,630	5,080	3,580	12,500	2,340	3,070	3,860	3,730	2,490	529
6	5,800	3,350	2,950	4,650	3,900	11,900	2,470	3,190	2,800	3,630	2,360	472
7	5,670	2,380	2,960	4,850	4,300	11,200	2,980	3,910	2,320	4,470	1,460	497
8	6,290	2,120	2,850	4,980	4,840	10,200 *	2,790	6,460	2,420	4,280	2,020	453
9	6,550	2,490	2,740	5,200	5,930	10,500	2,960	3,370	3,060	4,170	2,180	487
10	6,500	2,830	2,960	5,650	6,280	10,300	3,100	2,910	3,360	3,530	2,180	464
11	6,540	3,290	3,380	5,680	7,570	9,530	3,330	3,150	3,280	3,340	2,150	461
12	8,000	3,480	3,380	5,340	9,230	8,760	2,730	3,360	2,860	3,160	2,140	458
13	8,720	3,580	3,370	4,860	10,000	7,060	2,380	3,800	2,600	3,150	2,370	366
14	9,140	4,630	3,570	4,180	10,700	5,560	3,270	3,790	1,600	3,850	2,150	462
15	9,550	4,200	3,560	3,900	10,800	4,880	3,330	3,170	1,000	3,800	2,130	484
16	9,210	4,400	3,180	4,340	11,000	3,820	3,340	2,910	1,400	3,980	2,330	959
17	8,850	4,160	2,770	4,800	11,200	4,200	3,330	2,680	2,030	4,590	2,110	961
18	8,580	3,990	2,760	5,590	12,200 *	4,090	3,010	2,350	3,170	3,460	2,150	881
19	8,570	4,000	3,340	5,810	13,700	3,730	2,500	1,990	4,650	2,720	1,850	779
20	8,700	3,470	3,450	6,900	13,500	2,740	2,830	1,980	3,200	3,380	1,580	765
21	8,630	3,280	3,620	8,900	13,600	2,770	3,790	2,040	3,330	4,010	1,520	544
22	8,920	3,040	3,640	10,800	14,000	2,770	4,100	2,330	3,270	4,210	743	793
23	8,700 *	2,200	2,690	11,400	15,600	1,950	3,840	2,220	3,640	4,170	1,360	757
24	8,330	2,510	4,140	11,200	14,700	2,020	3,610	1,720	3,820	4,220	1,250	759
25	8,760	3,100	4,460	13,100	13,900 *	1,610	2,500	1,820	3,940	3,670	1,150	774
26	8,750	2,760	4,470	13,500 *	16,400	1,610	1,880	2,540	2,940	3,830	1,070	915
27	8,700	2,480	3,840	10,300	16,500	1,860	1,770	2,590	2,620	3,360	1,760	1,160
28	7,770	2,780	3,220	9,720	15,300	1,520	1,240	2,530	2,800	3,400	1,760	1,360
29	7,970		3,230	8,220	15,500	1,220	926	2,390	3,020	3,860	1,100	1,380
30	8,230		3,390	5,780	15,700	1,240	1,230	2,540	3,900	3,820	755	1,380
31	7,390		3,420		15,400		1,550	2,340		3,470		1,360
Sum	232,770	104,540	102,320	201,460	323,380	190,640	80,346	85,440	88,770	114,900	54,938	25,131

Month	Current Year 1989							Period #1954-1989		
	Extreme Gage Feet		ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	High		Low				Average	Maximum	Minimum
			Day		Day						
Jan.			15	9,550	4	4,350	7,510	461,692	213,678	462,369	10,379
Feb.			1	7,380	8	2,120	3,730	207,352	152,612	367,384	11,185
Mar.			26	4,470	5	2,630	3,300	202,949	132,966	374,142	2,390
Apr.			26	13,500	1	3,420	6,720	399,590	291,444	608,707	19,530
May			27	16,500	5	3,580	10,400	641,415	367,878	715,233	21,574
June			1	14,400	29	1,220	6,350	378,129	257,574	672,976	19,718
July			22	4,100	29	926	2,590	159,364	150,063	391,071	12,839
Aug.			8	6,460	24	1,720	2,760	169,468	214,497	1,478,678	25,900
Sept.			19	4,650	15	1,000	2,960	176,073	166,048	1,080,871	1,428
Oct.			17	4,590	17	2,720	3,710	227,901	218,167	1,997,000	1,932
Nov.			1	2,880	22	743	1,830	108,968	113,583	1,128,000	1,400
Dec.			2	1,570	13	366	811	49,847	103,993	465,000	8,761
Yearly				16,500		366	4,400	3,182,748	2,382,503	5,016,800	1,143,806
	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
				467		10.4	125	3,925,856	2,938,770	6,188,122	1,410,862

* Discharge measurement made on this day ø Mean daily ** Period 1968-1989

\# Values prior to 1958 are Chapeno discharge less arroyo flow

08-4620.00 RIO ALAMO AT CD. MIER, TAMAULIPAS

DESCRIPTION: Cableway, reinforced concrete weir of 177 second-foot (5 m3/sec) capacity, gravity well, and water-stage recorder located on the right bank at a point called "El Paso del Cantaro," latitude 26°27'00", longitude 99°09'05", about 0.5 mile (1 km) north of Cd. Mier, Tamaulipas, and 5.0 river miles (8 km) from the confluence with the Rio Grande. This stream enters the Rio Grande at river mile 262.4 (422.3 km), 12.4 river miles (20.0 km) downstream from Falcon Dam. The weir is located about 300 feet (91 m) downstream from the recorder. The zero of the gage is at mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 8 discharge measurements made at high flows during the year, 8 by the Mexican Section and 0 by the United States Section of the Commission, the weir discharge table at low flows, and a continuous record of gage heights. High flow computations by shifting control methods. Records available: July 1923 through 1989.

REMARKS: Small reservoirs and irrigation diversions modify the flow of this spring-fed stream at this station. On June 11, 1952, the zero of the gage was raised 1.31 feet (0.40 m) to make it coincide with the weir crest elevation. Prior to January 1, 1969, the zero of the gage was 188.35 feet (57.41 m) above mean sea level, U. S. C. & G. S. datum.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 144,800 second-feet (4,100 m3/sec) on September 11, 1948 with a gage height of 33.56 feet (10.23 m). Min. periods of no flow have occurred at times during all years of record except 1934, 1935, 1968, 1972, 1974, 1976, 1977, 1979, and 1981.

Average Flow in Second-Feet (Cubic Meters per Second)**

Daily:	Max. 87,230 (2,470)	Sept. 11, 1948	Min. 0	Frequently
Monthly:	Max. 7,310 (207)	Sept. 1967	Min. 0	Frequently
Yearly:	Max. 837 (23.7)	1967	Min. 16.4 (0.47)	1929

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	40.6	31.8	21.5	13.1	115	0	4.2	1.8	6.4	0	0	0
2	40.6	31.1	21.5	13.1	28.3	0	3.9	1.1	5.7	0	0	0
3	40.6	31.1	20.8	13.1	17.7	0	3.5	0	3.9	0	0	0
4	* 40.6	31.1	20.1	13.1	15.5	0	3.5	0	1.4	0	0	0
5	40.6	31.1	19.4	13.1	15.5	0	3.2	0	.7	0	0	0
6	40.6	28.6	18.7	13.1	77.0	0	1.4	0	0	0	0	0
7	40.6	27.9	18.7	13.1	80.5	0	1.1	0	0	0	0	0
8	40.6	27.9	18.0	13.1	25.4	0	.7	17.0	0	0	0	0
9	40.6	26.5	17.3	13.1	16.6	0	0	9.2	0	0	0	0
10	40.6	26.1	17.3	13.1	12.7	0	0	611	0	0	0	0
11	37.1	26.1	16.6	13.1	10.2	0	0	285	0	0	0	0
12	37.1	26.1	15.9	13.1	7.1	0	0	60.7	0	0	0	0
13	37.1	* 25.8	* 15.9	13.1	5.7	0	0	29.7	0	0	0	0
14	37.1	24.7	15.9	13.1	4.6	39.9	0	17.7	833	0	0	0
15	37.1	24.7	15.9	13.1	6.4	519	0	10.6	274	0	0	0
16	37.1	24.7	15.9	12.0	10.2	121	0	7.4	53.3	0	0	0
17	37.1	24.7	15.9	12.0	14.5	30.7	0	4.6	22.6	0	0	0
18	* 34.6	24.7	15.9	12.0	15.2	15.5	0	32.1	12.0	0	0	0
19	33.9	24.4	15.9	12.0	10.6	10.9	0	4.2	7.8	0	0	0
20	33.9	23.3	15.9	12.0	8.1	* 9.2	3.2	1.4	4.6	0	0	2.1
21	33.9	23.3	15.9	10.6	8.5	6.0	.7	.7	4.2	0	0	4.9
22	33.9	23.3	15.9	10.6	5.3	3.9	0	0	33.5	0	0	5.7
23	33.9	23.0	15.9	10.6	3.9	2.5	0	.4	50.1	0	0	4.9
24	33.9	21.5	15.9	10.6	2.8	2.5	0	1,150 *	15.5	0	0	4.9
25	33.9	21.5	15.9	10.6	3.5	5.7	0	625	7.1	0	0	4.9
26	33.9	21.5	15.2	10.6	2.8	7.4	111	340	3.9	0	0	4.9
27	33.9	21.5	14.5	463 *	1.1	7.8	402	137	1.8	0	0	4.9
28	33.9	21.5	14.1	1,060 *	.7	6.0	89.7	45.9	.7	0	0	6.4
29	33.9		13.1	165	.4	4.6	28.3	20.5	.4	0	0	7.4
30	33.9		13.1	251	0	4.2	12.7	15.5	0	0	0	8.1
31	33.9		13.1		0		5.7	12.0		0		7.1
Sum	1,141.0	719.5	515.6	2,259.1	525.8	796.8	674.8	3,440.5	1,342.6	0	0	66.2

Month	Current Year 1989								Period 1924-1989		
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low						
	High	Low	Day		Day				Average	Maximum	Minimum
Jan.	188.85	188.78	! 1	Ø 40.6	!19	Ø 33.9	36.7	2,264	3,056	34,920	0
Feb.	188.78	188.68	1	33.9	!24	Ø 21.5	25.8	1,428	3,089	53,474	0
Mar.	188.68	188.58	! 1	Ø 21.5	!29	Ø 13.1	16.6	1,022	2,280	19,830	0
Apr.	191.34	188.55	28	1,410	!21	Ø 10.6	75.2	4,470	5,648	36,210	0
May	189.83	188.35	1	279	28	0	17.0	1,043	11,428	137,000	0
June	191.01	188.32	15	1,070	! 1	Ø 0	26.5	1,581	11,938	83,240	0
July	191.50	188.12	26	1,590	26	0	21.9	1,337	7,224	62,246	0
Aug.	191.99	188.35	24	2,170	! 3	Ø 0	111	6,818	14,772	205,700	0
Sept.	193.31	188.32	14	4,030	! 6	Ø 0	44.8	2,665	37,592	434,387	135
Oct.	188.32	187.89	! 1	Ø 0	! 1	Ø 0	0	0	16,716	193,700	0
Nov.	187.89	187.89	! 1	Ø 0	! 1	Ø 0	0	0	3,905	25,165	0
Dec.	188.52	187.86	!29	8.1	! 1	Ø 0	2.1	131	3,183	15,982	0
Yearly	193.31	187.86		4,030		0	31.4	22,759	120,831	605,678	11,899
	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
	58.92	57.26		114		0	0.89	28,072	149,018	747,096	14,686

* Discharge measurement made on this day Ø Mean daily ! And other days

** Period 1924-1989

08-4642.00 RIO SAN JUAN AT CAMARGO, TAMAULIPAS

DESCRIPTION: Cableway, gravity well, and water-stage recorder located on the left bank opposite Camargo, Tamaulipas at latitude 26°18'40", longitude 98°50'15", 3.1 river miles (5 km) from the confluence with the Rio Grande, and 9.3 river miles (15 km) downstream from Marte R. Gomez Dam. This stream enters the Rio Grande at river mile 238.7 (384.1 km); 3.7 river miles (6.0 km) upstream from the Rio Grande gaging station at Rio Grande City, 36.1 river miles (58.1 km) downstream from Falcon Dam. The zero of the gage is at mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 26 discharge measurements during the year, 23 by the Mexican Section and 3 by the United States Section of the Commission, and a continuous record of gage heights. Computations by shifting control methods. Discharge prorated between measurements during times of extremely low flow. Records available: January 1954 through 1989.

REMARKS: Except for storm inflow, diversions, and drainage returns below Marte R. Gomez Dam, the flow at this station is controlled by spills from Marte R. Gomez Reservoir and leakage through the dam. Backwater from the Rio Grande frequently reaches this station. Prior to July 1, 1968 the zero of the gage was 130.45 feet (39.76 m) above mean sea level, U. S. C. & G. S. datum.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 115,000 second-feet (3,270 m3/sec) on September 25, 1967 with a gage height of 42.03 feet (12.81 m). Min. no flow on several occasions in 1989.

Average Flow in Second-Feet (Cubic Meters per Second)

Daily:	Max.	115,000 (3,250)	Sept. 25, 1967	Min.	0	July 5, & Sept. 4, 1989
Monthly:	Max.	31,600 (894)	Sept. 1967	Min.	1.1 (0.03)	May 1979
Yearly:	Max.	3,990 (113)	1967	Min.	8.5 (0.24)	1989

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	156	7.4	5.7	5.3	8.1	9.5	1.1	4.9	0.7	2.8	2.5	* 0.7
2	138	* 7.1	* 5.3	5.3	8.5	* 9.5	.7	* 4.9	.4	2.8	2.5	.7
3	119	7.1	5.3	5.7	* 8.5	9.2	.7	4.9	.4	* 2.8	* 2.5	.7
4	101 *	7.4	5.7	5.7	8.5	8.8	.4	4.9	0	2.8	2.5	.7
5	91.1	7.4	5.7	5.7	8.5	8.8	0	4.9	.4	2.8	2.5	.7
6	* 81.2	7.8	5.7	5.7	8.5	8.5	.4	4.6	.4	2.8	2.5	1.1
7	80.2	7.8	6.0	5.7	8.5	8.1	.7	4.6	.7	2.8	2.1	1.1
8	79.1	7.8	6.0	6.0	8.5	7.8	.7	4.6	1.1	2.5	2.1	1.1
9	78.0	8.1	6.0	6.0	8.8	7.4	1.1	4.6	1.1	2.5	2.1	1.1
10	77.0	8.1	6.4	6.0	8.8	7.1	1.4	4.6	1.4	2.5	2.1	1.1
11	* 75.9	8.5	6.4	6.0	8.8	7.1	1.8	4.6	1.8	2.5	2.1	1.1
12	69.6	8.5	6.4	6.4	8.8	6.7	2.1	4.6	1.8	2.5	1.8	1.1
13	63.6	8.5	6.7	6.4	8.8	6.4	2.5	4.2	2.1	2.5	1.8	* 1.1
14	57.2	8.8	6.7	* 6.4	8.8	6.0	2.5	4.2	2.5	2.5	1.8	1.1
15	51.2	8.8	6.7	6.4	8.8	5.7	2.8	4.2	2.5	2.1	1.8	1.4
16	44.8	9.2	7.1	6.7	* 8.8	5.7	3.2	* 4.2	2.8	2.1	1.8	1.4
17	38.8	* 9.2	7.1	6.7	8.8	5.3	3.5	3.9	3.2	2.1	1.8	1.4
18	* 32.5	8.8	7.1	6.7	8.8	4.9	3.9	3.9	3.2	2.1	1.4	1.4
19	29.0	8.5	7.4	7.1	9.2	4.6	3.9	3.5	3.5	* 2.1	1.4	* 1.4
20	25.8	8.1	* 7.4	7.1	9.2	4.2	4.2	3.2	3.5	2.1	1.4	1.4
21	22.2	8.1	7.1	7.1	9.2	3.9	* 4.6	3.2	3.5	2.1	1.4	1.4
22	19.1	7.8	7.1	7.4	9.2	3.9	4.6	2.8	3.5	2.1	1.4	1.4
23	15.5	7.4	6.7	7.4	9.2	3.5	4.6	2.8	3.2	2.1	1.1	1.4
24	12.4	7.1	6.7	7.4	9.2	3.2	4.6	2.5	3.2	2.1	1.1	1.4
25	* 8.8	6.7	6.4	7.4	9.2	2.8	4.6	2.1	3.2	2.1	1.1	1.8
26	8.5	6.4	6.4	7.8	9.2	2.5	4.6	2.1	3.2	2.1	1.1	1.8
27	8.5	6.4	6.0	7.8	9.2	2.5	4.6	1.8	3.2	2.5	1.1	1.8
28	8.1	6.0	6.0	7.8	9.2	2.1	4.9	1.4	3.2	2.5	1.1	1.8
29	7.8		5.7	8.1	9.5	1.8	4.9	1.4	3.2	2.5	.7	1.8
30	7.8		5.7	8.1	9.5	1.4	4.9	1.1	2.8	2.5	.7	1.8
31	7.4		* 5.3		9.5		4.9	1.1		2.5		1.8
Sum	1,615.1	218.8	195.9	199.3	276.1	168.9	89.4	110.3	65.7	74.8	51.3	40.0

Month	Current Year 1989							Period 1954-1989		
	Extreme Gage Feet		Ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	High		Low				Average	Maximum	Minimum
			Day		Day						
Jan.			1	156	31	7.4	52.3	3,204	9,326	95,871	88.4
Feb.			!16	9.2	28	6.0	7.8	434	5,504	64,323	72.9
Mar.			!19	7.4	! 2	5.3	6.4	388	2,816	24,513	70.0
Apr.			!29	8.1	! 1	5.3	6.7	394	2,512	35,876	153
May			!29	9.5	1	8.1	8.8	548	3,441	28,709	73.0
June			! 1	9.5	30	1.4	5.7	335	14,856	334,608	74.6
July			!28	4.9	5	0	2.8	178	25,815	341,429	143
Aug.			! 1	4.9	!30	1.1	3.5	219	19,095	273,904	77.0
Sept.			!19	3.5	! 4	0	2.1	130	116,718	1,878,406	62.3
Oct.			! 1	2.8	!15	2.1	2.5	148	99,598	901,500	148
Nov.			! 1	2.5	!29	.7	1.8	101	27,590	230,100	101
Dec.			!25	1.8	! 1	.7	1.4	78.5	16,471	154,765	78.5
Yearly				156		0	8.5	6,158	343,742	2,891,093	6,158
	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
				4.43		0	0.24	7,593	431,504	3,566,125	7,593

* Discharge measurement made on this day Ø Mean daily ! And other days

08-4645.00 CONTRIBUTIONS TO THE RIO GRANDE FROM THE LOWER RIO SAN JUAN IRRIGATION DISTRICT FALCON DAM TO RIO GRANDE CITY

DESCRIPTION: The Lower Rio San Juan Irrigation District in Mexico lies along the Rio Grande between Cd. Miguel Aleman and Rio Bravo, Tamaulipas and is irrigated with water impounded by Marte R. Gomez Dam situated on the Rio San Juan 12.4 river miles (20 km) upstream from the confluence with the Rio Grande. The Rio San Juan enters the Rio Grande at river mile 238.7 (384.1 km). Drain water from this Irrigation district enters the Rio Grande between Falcon Dam and the Rio Grande City Gaging Station through the Rio San Juan channel, Rancherias Drain, and Los Fresnos Drain; and between this station and Anzalduas Dam through Puertecitos, Los Indios, Huizache, and Morillo Drains. Only the portion of water reaching the Rio Grande via drains located upstream from the Rio Grande City Gaging Station is shown below. Drain water reaching the Rio Grande through the Rio San Juan channel is included in the Rio San Juan tabulation.

RECORDS: Water entering the Rio Grande through the Rio San Juan Channel, composed of spills and leakage from Marte R. Gomez Dam, storm inflow and drainage below the dam, is measured at the Rio San Juan Gaging Station at Camargo, Tamaulipas, 3.1 river miles (5 km) upstream from the confluence with the Rio Grande. The discharge through Rancherias Drain was determined by prorating between 22 current meter measurements made during the year. There were no drainage flows through Los Fresnos Drain in 1989. All storm water measured at these two drains was deducted and is not included in the tabulation below. Records available: 1953 through 1989. Records prior to 1976 include Rio San Juan flow.

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.4	19.4	11.3	7.4	18.4	21.2	9.9	7.1	2.5	2.5	2.5	* 0.7
2	1.4	* 19.1	* 10.9	8.8	18.0	* 21.2	9.5	* 7.1	2.1	2.5	2.5	.7
3	1.4	18.7	10.6	9.9	* 17.7	20.8	9.2	6.7	2.1	* 2.5	* 2.5	.7
4	1.4	18.4	10.6	10.9	17.7	20.5	8.8	6.7	* 2.1	2.5	2.5	.7
5	1.4	18.0	10.2	12.4	18.0	20.1	* 8.5	6.4	2.1	2.5	2.1	.7
6	* 1.4	17.7	10.2	13.4	18.0	19.8	8.5	6.0	2.1	2.5	2.1	.7
7	2.8	17.3	9.9	14.5	18.0	19.4	8.5	5.7	2.1	2.5	1.8	.7
8	4.2	17.0	9.9	15.9	18.4	18.7	8.1	5.7	2.5	2.5	1.8	.7
9	6.0	16.6	9.5	17.0	18.4	18.4	8.1	5.3	2.5	2.5	1.8	.7
10	7.4	15.9	9.5	18.4	18.4	18.0	8.1	4.9	2.5	2.5	1.4	.7
11	8.8	15.5	9.2	19.4	18.7	17.7	8.1	4.9	2.5	2.1	1.4	1.1
12	10.2	15.2	8.8	20.5	18.7	17.3	8.1	4.6	2.5	2.1	1.4	1.1
13	11.7	14.8	8.8	21.9	18.7	17.0	7.8	4.2	2.5	2.1	1.1	1.1
14	13.4	14.5	8.5	* 23.0	19.1	16.6	7.8	3.9	2.5	2.1	1.1	1.1
15	14.8	14.1	8.5	23.0	19.1	16.2	7.8	3.9	2.8	2.1	.7	1.1
16	16.2	13.8	8.1	22.6	19.1	15.9	7.8	* 3.5	2.8	2.1	* .7	1.1
17	17.7	* 13.4	8.1	22.2	19.4	15.5	7.8	3.5	2.8	2.1	.7	1.1
18	19.4	13.1	7.8	22.2	19.4	15.2	7.8	3.5	2.8	2.1	.7	1.1
19	20.8	13.1	7.8	21.9	19.4	14.5	7.4	3.2	* 2.8	* 2.1	.7	* 1.1
20	* 22.2	12.7	* 7.4	21.5	19.8	14.1	7.4	3.2	2.8	2.1	.7	1.1
21	21.9	12.7	7.4	21.2	19.8	13.8	* 7.4	3.2	2.8	2.1	.7	1.1
22	21.9	12.4	7.1	20.8	19.8	13.4	7.4	3.2	2.8	2.1	.7	1.1
23	21.5	12.4	7.1	20.8	20.1	13.1	7.4	3.2	2.8	2.1	.7	1.1
24	21.2	12.0	7.1	20.5	20.1	12.7	7.4	2.8	2.8	2.1	.7	1.1
25	21.2	12.0	7.1	20.1	20.1	12.4	7.4	2.8	2.8	2.1	.7	1.1
26	20.8	11.7	6.7	19.8	20.5	12.0	7.4	2.8	2.8	2.1	.7	1.1
27	20.5	11.7	6.7	19.8	20.5	11.7	7.4	2.8	2.5	2.5	.7	1.1
28	20.1	11.3	6.7	19.4	20.5	11.3	7.1	2.5	2.5	2.5	.7	1.1
29	20.1		6.7	19.1	20.8	10.6	7.1	2.5	2.5	2.5	.7	1.1
30	19.8		6.4	18.7	20.8	10.2	7.1	2.5	2.5	2.5	.7	1.4
31	19.4		* 6.4		20.8		7.1	2.5		2.5		1.4
Sum	412.4	414.5	261.0	547.0	596.2	479.3	245.2	130.8	76.2	71.1	37.2	30.7

Month	Current Year 1989								Period 1954-1989		
	Extreme Gage Feet		Ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	High Day	High	Low Day	Low			Average	Maximum	Minimum
Jan.			20	22.2	! 1	1.4	13.4	819	235	914	0
Feb.			1	19.4	28	11.3	14.8	821	341	938	0
Mar.			1	11.3	!30	6.4	8.5	517	254	772	25.9
Apr.			!14	23.0	1	7.4	18.4	1,085	325	1,085	19.4
May			!29	20.8	! 3	17.7	19.1	1,182	637	1,441	62.5
June			! 1	21.2	30	10.2	15.9	950	573	1,257	55.7
July			1	9.9	!28	7.1	7.8	486	278	561	32.5
Aug.			! 1	7.1	!28	2.5	4.2	259	215	496	26.0
Sept.			!15	2.8	! 2	2.1	2.5	152	203	697	0
Oct.			! 1	2.5	!11	2.1	2.1	141	217	1,071	19.4
Nov.			! 1	2.5	!15	.7	1.4	73.5	171	635	6.5
Dec.			!30	1.4	! 1	.7	1.1	59.5	148	516	17.8
Yearly				23.0		0.7	9.2	6,545	3,597	6,678	495
	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
				0.65		0.02	0.26	8,074	306,639	8,370	605

* Discharge measurement made on this day Ø Mean daily ! And other days

08-4646.00 DIVERSIONS FROM THE RIO GRANDE
UNITED STATES SIDE, FALCON DAM TO RIO GRANDE CITY

Beginning June 1971, the Texas Water Rights Commission, now the Texas Water Commission, assumed control of the United States portion of the water in Falcon Reservoir and in the Rio Grande below Falcon Dam, the disposition of such waters being made by its Rio Grande Watermaster. Previous to that, since June 1956, such waters had been under the jurisdiction of the 93rd District Court of Texas administered by its Special Water Master.

During 1989, 4,430 irrigable acres (1,793 ha) and several towns and rural homes were allotted Rio Grande water in the river reach between Falcon Dam and the Rio Grande City gaging station. Such irrigable area was 0.6% of the total irrigable acres (ha) below Falcon Dam allotted Rio Grande water.

The total diversion during 1989 in this river reach was 16,618 acre-feet (20,498,000 m3), or 1.1% of the total water diverted from the Rio Grande below Falcon Dam. Records of diversions in this river reach were determined by means of flow meters. More than one crop per year is often grown on parts of this land.

Records prior to 1976 were published under the title "Diversions from the Rio Grande, United States Side-Falcon Dam to Fort Ringgold."

EXTREME FLOWS FROM RECORDS:

	Average Flow in Second-Feet (Cubic Meters per Second)				
Daily:	Max. 124 (3.51)	April 6-9, 1984	Min. 0	Occasionally
Monthly:	Max. 55.7 (1.58)	April 1984	Min. 2.2 (0.06)	March 1957
Yearly:	Max. 23.0 (0.65)	1989	Min. 6.9 (0.20)	1968

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	8.0	37.1	49.1	118	6.6	25.7	13.9	17.3	46.2	12.3	60.4	21.3
2	23.5	36.8	38.5	42.5	6.6	32.5	13.9	18.6	31.5	19.9	41.5	17.6
3	20.6	31.3	42.4	42.2	8.8	31.8	26.2	19.3	19.6	22.6	45.7	7.7
4	25.7	28.3	40.9	43.9	9.0	22.7	21.5	12.3	23.5	23.5	44.1	9.9
5	22.8	12.2	20.4	47.9	15.3	16.9	22.1	17.4	23.4	20.7	32.2	12.0
6	22.8	12.2	20.3	43.2	15.3	25.4	26.3	12.7	29.9	17.1	39.1	11.4
7	28.3	10.2	24.4	50.1	12.9	29.0	28.4	18.8	29.0	19.1	31.8	9.3
8	15.2	9.2	39.1	55.7	26.8	37.6	28.8	17.2	24.9	15.4	38.4	7.7
9	21.9	11.4	35.6	34.5	28.0	39.1	19.0	19.4	25.3	19.3	30.1	7.7
10	21.0	18.7	40.6	35.7	30.9	24.9	28.6	14.4	17.5	20.8	32.3	7.8
11	23.7	17.4	49.6	31.3	31.7	17.3	29.9	10.9	25.8	20.8	27.5	11.6
12	24.6	12.6	33.5	33.8	37.4	36.5	26.2	13.1	27.6	23.6	13.2	12.7
13	22.6	27.5	42.9	29.8	30.6	40.9	38.0	12.9	26.5	28.5	28.1	19.0
14	22.9	27.5	50.5	27.1	18.5	34.9	28.9	12.1	22.3	21.6	24.8	18.1
15	10.6	25.6	42.4	26.5	25.4	35.0	26.9	14.6	13.0	23.7	29.5	17.8
16	14.3	25.8	47.4	21.3	30.7	20.5	20.7	17.5	17.8	43.0	31.0	16.0
17	15.8	25.9	50.7	34.7	31.1	21.4	18.8	22.7	13.6	37.4	34.8	10.9
18	16.0	26.7	43.7	30.9	29.5	16.7	22.8	20.5	13.0	30.6	19.4	10.8
19	15.0	15.8	37.3	37.2	38.9	23.5	33.7	20.1	16.4	33.9	11.5	14.7
20	14.9	25.5	34.9	36.3	31.9	25.8	25.0	10.2	17.5	33.8	20.4	19.1
21	15.3	19.6	33.1	40.6	24.9	30.7	19.8	14.6	16.1	34.1	23.4	17.8
22	10.0	23.2	41.6	50.2	25.6	46.4	11.3	14.2	16.1	19.2	22.6	11.1
23	18.2	26.8	34.3	36.2	29.3	46.3	12.2	19.0	16.4	32.3	9.7	11.1
24	21.7	21.5	34.8	32.7	32.9	39.1	23.7	18.4	17.0	29.3	16.9	8.2
25	24.9	27.1	36.2	43.1	21.8	10.6	27.0	12.2	22.2	39.2	19.0	8.2
26	25.9	1.3	1.4	34.2	15.7	10.6	28.2	12.5	24.6	43.6	.9	17.3
27	24.3	1.3	1.4	22.9	19.3	10.6	18.3	7.2	34.8	34.7	1.9	21.1
28	23.0	1.3	1.4	20.7	.1	10.6	19.1	6.7	33.3	34.1	.9	22.0
29	0		1.4	16.3	.1	6.5	19.1	3.6	36.2	1.2	.9	22.6
30	0		1.4	3.5	.1	2.4	8.9	.2	32.3	1.2	.9	26.8
31	0		1.4		.1		8.9	.2		1.2		1.4
Sum	553.5	559.8	972.6	1,123.0	635.8	771.9	696.1	430.8	713.3	757.7	732.9	430.7

Month	Current Year 1989: Average Rainfall Inches** 1989	1957-1989	Ø Extreme Second-Feet High Day	High	Low Day	Low	Average Second-Feet	Total Acre-Feet	Period 1957-1989: Acre-Feet Average	Maximum	Minimum
Jan.	0.97	1.10	7	28.3	!29	0	17.9	1,098	685	1,482	159
Feb.	.70	1.16	1	37.1	!26	1.3	20.0	1,110	806	1,782	223
Mar.	.04	.52	11	50.7	!26	1.4	31.4	1,929	1,108	1,929	158
Apr.	2.86	1.52	1	118	30	3.5	37.4	2,227	1,283	3,314	357
May	0	2.66	20	38.9	!28	.1	20.5	1,261	991	2,624	211
June	2.11	2.66	22	46.4	30	2.4	25.7	1,531	943	2,610	209
July	.83	1.46	13	38.0	!30	8.9	22.5	1,381	755	1,620	278
Aug.	2.66	2.24	17	22.7	!30	.2	13.9	854	710	1,458	278
Sept.	3.85	4.40	1	46.2	!15	13.0	23.8	1,415	611	1,415	178
Oct.	.17	2.10	26	43.5	!29	1.2	24.4	1,503	799	1,710	131
Nov.	.13	1.06	1	60.4	!26	.9	24.4	1,454	606	1,454	211
Dec.	1.83	.89	30	26.8	31	1.4	13.9	854	602	1,580	145
Yearly	16.15	21.77		118		0	23.0	16,617	9,899	16,617	4,989
	Millimeters		Cubic Meters per Second					Thousands of Cubic Meters			
	410	553		3.34		0	0.65	20,497	12,210	20,497	6,154

Ø Mean daily ! And other days ** United States side - average of several stations in the reach

08-4647.00 RIO GRANDE AT RIO GRANDE CITY, TEXAS
NEAR CAMARGO, TAMAULIPAS

DESCRIPTION: Cableway, bubbler gage, gravity well, water-stage recorders (graphic and digital), and digital transmitter located on the left bank at Fort Ringgold, latitude 26°22'00", longitude 98°48'10", and river mile 235.0 (378.1 km); about 1 mile (1.6 km) downstream from Rio Grande City, Texas, and 3.7 river miles (6.0 km) downstream from Rio San Juan. The zero of the gage is 100.00 feet (30.48 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 25 discharge measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: January 1955 through 1989. Records prior to 1976 were published under the title "Rio Grande at Fort Ringgold, Rio Grande City, Texas." Records composed of the addition of discharges of the Rio Grande at Roma, Texas and the Rio San Juan at Santa Rosalia, Tamaulipas are available for May, June, and October 1914; September 1916; September and October 1917; October 1918; September and October 1919; August and September 1920; June 1922; September 1923; and 1924 through 1931. Records are also available for the station "Rio Grande near Rio Grande City," 3.0 miles (4.8 km) downstream, for 1932 through 1954.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. Except for tributary inflows and intervening diversions below Falcon Dam, flow at this station is controlled largely by releases from Falcon Reservoir, 39.9 river miles (64.1 km) upstream. The transmitter relays gage height data via radio to the Mercedes Office of the Commission, and to the Anzalduas Dam control room, where it is recorded automatically.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 220,000 second-feet (6,230 m3/sec) on September 22 and 23, 1967 with a gage height of 61.40 feet (18.71 m). Min. no flow occurred several days in June and July 1953.

Average Flow in Second-Feet (Cubic Meters per Second)**

Daily:	Max. 207,000 (5,860)	Sept. 23, 1967	Min. 12.7 (0.36)	March 5, 1985
Monthly:	Max. 49,600 (1,400)	Oct. 1958	Min. 235 (6.66)	March 1957
Yearly:	Max. 9,140 (259)	1958	Min. 1,750 (49.6)	1970

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	4,040	7,220 *	2,850 *	3,300	5,040 *	13,900 *	1,560	1,750 *	2,270 *	3,650	2,870 *	814 *
2	5,610	7,330	3,280	3,460	4,930	13,300	1,660	2,150	2,600	3,150 *	2,630	1,260
3	5,370 *	6,410	3,290	4,570 *	4,690	11,600	1,850 *	2,400	2,580	3,180	1,490	1,760
4	3,930	4,990	2,640	4,450	4,140	11,200	1,970	1,990	2,590	3,350	1,730	1,340
5	4,630	4,760	2,600	4,280	3,720	11,800	2,250	2,420	2,760	3,840	2,390	626
6	5,390	4,540	2,670	4,720	3,700	11,700	2,410	2,910	2,990	3,490	2,360	649
7	5,100	3,280	2,940	4,490	3,760	11,500	2,540	3,080	2,450	3,760	2,130	546
8	6,160	2,080	2,870	4,780	4,710	10,900	2,870	3,990	2,160	5,360	1,530	512
9	6,590	2,390	2,830	4,940	4,430	10,900	2,860	5,410	2,100	4,340	1,910	544
10	6,670	2,510	2,720	4,900	5,760	10,500	2,870	3,570	2,880	3,880	2,030	559
11	6,110	3,030	3,170	5,760	6,390	10,300	3,120	3,210	3,050	3,330	2,130	588
12	7,650	3,320	3,330	4,970	7,990	9,300	3,190	3,240	2,910	3,220	2,090	563
13	8,400	3,480 *	3,360	4,830	8,950	7,670	2,420	3,480	2,730	2,820	2,090 *	565
14	8,880	4,090	3,400	4,450	9,710	7,040	2,570 *	3,660	3,340	3,300	2,280	548
15	9,070	4,380	3,670 *	4,390	10,200 *	5,320 *	3,010	3,170	2,870	3,650	2,070	518
16	9,390	4,030	3,330	3,800	10,300	4,840	3,190	3,090 *	1,450	3,630	2,100	492
17	8,990 *	4,210	3,240	3,800	10,500	4,070	3,260	2,730	1,510	3,770 *	2,290	613
18	8,680	3,970	2,620	4,890 *	10,900	4,150	2,940	2,470	2,140 *	4,140	2,140	819
19	8,390	3,880	3,020	6,070	11,400	4,110	2,860	2,300	2,560	2,910	2,180	874 *
20	8,760	3,960	3,310	5,760	12,200	3,100	2,570	1,960	3,050	2,790	1,810	928
21	8,600	3,090	3,520	7,300	12,100	2,840	2,910	1,850	2,900	3,410	1,680	999
22	8,720	3,040	3,580	9,160	12,100	2,850	3,930	2,100	3,110	3,850	1,620	995
23	8,730	2,460	3,130	9,730	12,700	2,800	3,950	2,200	3,430	3,960	866	979
24	8,560	2,570	2,790	10,000	13,600	1,960	3,750	2,290	3,370	3,950	1,390	1,050
25	8,480	2,710	4,660	9,990	12,600	2,090	3,160	2,330	3,740	3,840	1,380	1,130
26	8,660	2,780	4,430	11,400	12,500	1,800	2,390	2,390	3,420	3,450	1,250	1,230
27	8,640	2,600	4,370	12,100	14,300	1,840	2,370	2,500	2,730	3,420	1,170	1,330
28	8,320	2,530	3,170	10,700	13,900	1,940	2,150	2,420	2,690	3,170	1,740	1,520
29	7,850		3,210	9,410	13,500	1,650	1,460	2,230	2,530	3,400	1,720	1,730
30	7,960		3,280	9,170	13,[illegible]	[illegible],400	1,110	2,180	3,410	3,620	1,190	1,850
31	7,930		3,160		14,100		1,380	2,230		3,530		1,850
Sum	230,260	105,640	100,440	191,570	288,520	198,370	80,530	83,700	82,320	111,160	56,256	29,781

Month	Current Year 1989								Period #1954-1989		
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	High Day	High	Low Day	Low			Average	Maximum	Minimum
Jan.	30.98	27.65	16	9,430	4	2,990	7,430	456,714	219,129	456,714	16,721
Feb.	30.00	26.29	2	7,540	23	1,660	3,770	209,534	165,956	376,607	25,500
Mar.	29.05	26.99	25	5,510	! 9	2,070	3,240	199,220	136,471	378,000	14,400
Apr.	33.25	27.53	27	12,600	17	2,690	6,390	379,973	287,493	575,484	75,100
May	34.23	27.59	27	14,500	7	2,850	9,310	572,271	377,261	689,109	36,702
June	33.51	26.27	! 1	13,900	30	1,210	6,610	393,461	285,737	658,255	78,662
July	28.61	25.99	22	4,580	30	930	2,600	159,729	183,996	573,798	22,300
Aug.	29.88	26.45	9	6,930	21	1,540	2,700	166,016	237,344	1,502,678	25,000
Sept.	28.60	26.49	15	4,200	16	1,230	2,740	163,279	325,796	2,712,754	42,423
Oct.	29.36	27.11	8	5,760	19	2,130	3,590	220,483	335,599	3,047,000	30,000
Nov.	28.06	25.82	1	3,470	23	681	1,880	111,582	149,204	1,442,000	29,274
Dec.	26.77	25.49	3	1,900	17	477	961	59,070	121,909	540,000	31,970
Yearly	34.23	25.49		14,500		477	4,270	3,091,332	2,825,895	6,619,700	1,269,259
	Meters			Cubic Meters per Second					Thousands of Cubic Meters		
	10.43	7.77		411		13.5	121	3,813,096	3,485,685	8,165,268	1,565,606

* Discharge measurement made on this day ! And other days ** Period 1955-1989

\# 1954 values are Rio Grande City less arroyo inflow

08-4683.00 CONTRIBUTIONS TO THE RIO GRANDE FROM THE LOWER RIO SAN JUAN IRRIGATION DISTRICT RIO GRANDE CITY TO ANZALDUAS DAM

DESCRIPTION: The Lower Rio San Juan Irrigation District in Mexico lies along the Rio Grande between Cd. Miguel Aleman and Rio Bravo, Tamaulipas and is irrigated with water impounded by Marte R. Gomez Dam situated on the Rio San Juan 12.4 river miles (20 km) upstream from the confluence with the Rio Grande. The Rio San Juan enters the Rio Grande at river mile 238.7 (384.1 km). Drain water from this irrigation district enters the Rio Grande between Falcon Dam and the Rio Grande City Gaging Station through the Rio San Juan channel, Rancherias Drain, and Los Fresnos Drain; and between this station and Anzalduas Dam through Puertecitos, Los Indios, Huizache, and Morillo Drains. Only the portion of drain water from this irrigation district reaching the Rio Grande via drains located downstream from Rio Grande City Gaging Station is shown below.

RECORDS: Drain water reaching the Rio Grande through Morillo Drain was determined by hourly staff gage readings and the weir discharge table, and through Puertecitos and Los Indios Drains by prorating between frequent current meter measurements. All storm water measured at these drains was deducted and is not included in the tabulation below. In 1989, 46% of the drain water from this irrigation district reaching the Rio Grande between the Rio Grande City Gaging Station and Anzalduas Dam was contributed by Morillo Drain. Records available: 1953 through 1989.

REMARKS: Since July 9, 1969, some water has been diverted from Morillo Drain directly to the gulf via the Morillo Drain Diversion Canal to reduce the salinity of Rio Grande waters. In 1989, 56,094 acre-feet (69,191,000 m3) were diverted.

Mean Daily Discharge in Second-Feet 1989 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	39.9	107	43.8	22.2	264	283	35.7	29.0	13.1	12.7	40.6	9.2
2	42.0	83.3	39.2	24.4	164	318	39.2	26.8	12.7	12.7	38.5	9.2
3	45.2	125	38.1	26.8	146	267	34.3	27.5	12.0	12.7	38.8	9.2
4	54.7	124	37.4	29.0	143	177	33.5	26.8	11.7	13.1	38.5	8.8
5	66.4	129	36.4	31.1	140	158	32.8	25.4	11.7	13.8	37.8	8.8
6	65.7	106	35.7	33.2	143	219	32.5	25.1	12.0	14.1	33.9	8.8
7	66.4	102	34.6	35.3	158	253	32.1	24.4	12.0	17.0	29.0	8.8
8	95.3	105	33.5	38.1	168	205	31.4	24.4	12.4	15.2	28.3	8.8
9	100	103	32.8	40.3	162	183	31.1	23.7	12.4	15.5	16.6	8.8
10	98.9	106	31.8	42.4	169	167	31.1	23.0	12.7	44.8	10.6	8.5
11	106	109	30.7	45.6	175	202	30.7	24.4	12.7	16.6	13.8	8.5
12	104	115	30.0	61.8	186	206	30.4	43.4	12.7	15.9	17.7	8.5
13	107	115	29.0	65.0	182	140	30.0	22.2	13.1	18.4	23.7	8.5
14	121	112	28.3	67.5	206	165	29.3	21.2	13.1	40.6	17.3	8.5
15	132	112	27.2	74.9	249	122	29.0	21.2	13.4	38.8	16.6	8.5
16	130	114	26.1	78.0	242	113	28.6	20.5	13.4	37.8	16.2	8.1
17	149	116	25.4	74.5	213	71.7	28.6	20.1	13.8	34.3	17.3	8.1
18	141	111	24.4	79.1	207	55.4	28.3	19.4	13.8	30.7	24.4	8.1
19	148	103	23.7	90.4	200	58.6	27.5	19.1	13.8	24.0	24.7	8.1
20	143	95.0	22.6	93.2	177	55.1	27.2	18.7	13.8	24.4	22.2	8.5
21	168	87.6	22.6	85.8	207	47.3	26.8	18.0	13.8	27.9	19.8	8.8
22	181	76.6	22.2	83.3	217	44.8	26.8	17.7	13.4	28.3	14.1	9.5
23	204	71.7	21.9	104	192	43.4	26.8	17.3	13.4	28.3	8.5	9.9
24	212	66.7	21.5	111	217	42.7	27.2	16.6	13.4	28.3	8.5	10.2
25	203	62.2	21.5	113	228	53.7	26.8	16.2	13.4	27.5	8.5	10.6
26	158	57.6	21.2	114	191	40.6	26.8	15.9	13.4	29.0	10.6	10.9
27	174	53.0	21.2	196	184	38.5	36.0	15.5	13.1	32.8	14.5	11.7
28	171	48.4	20.8	221	299	37.8	48.0	14.8	13.1	36.7	10.9	12.0
29	166		20.5	162	325	43.4	31.4	14.5	13.1	37.8	10.2	12.4
30	139		20.1	145	241	39.9	26.8	14.1	12.7	44.8	9.2	12.7
31	112		20.1		233		28.3	13.4		52.6		13.1
Sum	3,843.5	2,716.1	864.3	2,387.9	6,228	3,850.9	955.0	660.3	389.1	827.1	621.3	294.1

Month	Current Year 1989							Period 1954-1989		
	Extreme Gage Feet		Ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	High		Low				Average	Maximum	Minimum
			Day		Day						
Jan.			24	212	1	39.9	124	7,625	2,482	7,625	466
Feb.			5	129	28	48.4	97.1	5,386	3,131	7,059	465
Mar.			1	43.8	!30	20.1	27.9	1,715	2,095	5,291	521
Apr.			28	221	1	22.2	79.8	4,739	3,245	6,111	899
May			29	325	5	140	201	12,353	7,837	30,179	1,557
June			2	318	28	37.8	129	7,639	8,520	85,952	2,027
July			28	48.0	!21	26.8	30.7	1,895	4,457	48,782	899
Aug.			12	43.4	31	13.4	21.2	1,310	2,309	13,292	661
Sept.			!17	13.8	! 4	11.7	13.1	771	2,276	11,273	612
Oct.			31	52.6	! 1	12.7	26.8	1,640	2,781	9,831	541
Nov.			1	40.6	!23	8.5	20.8	1,232	1,935	10,461	430
Dec.			31	13.1	!16	8.1	9.5	584	2,323	31,043	466
				325		8.1	64.6	46,889	43,391	179,482	13,462
Yearly	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
				9.21		0.23	1.83	57,835	53,552	221,389	16,608

Ø Mean daily ! And other days

08-4684.00 DIVERSIONS FROM THE RIO GRANDE
UNITED STATES SIDE, RIO GRANDE CITY TO ANZALDUAS DAM

Beginning June 1971, the Texas Water Rights Commission, now the Texas Water Commission, assumed control of the United States portion of the water in Falcon Reservoir and in the Rio Grande below Falcon Dam, the disposition of such waters being made by its Rio Grande Watermaster. Previous to that, since June 1956, such waters had been under the jurisdiction of the 93rd District Court of Texas administered by its Special Water Master.

During 1989, 174,026 irrigable acres (70,427 ha) and several towns and rural homes were allotted Rio Grande water in the river reach between the gaging station at Rio Grande City and Anzalduas Dam. Such irrigable area was 24.2% of the total irrigable acres (ha) below Falcon Dam allotted Rio Grande water.

The total diversion during 1989 in this river reach was 344,421 acre-feet (424,836,000 m3), or 22.6% of the total water diverted from the Rio Grande below Falcon Dam. Records of diversions in this river reach were determined by means of flow-meters and by a deflection meter developed by the International Boundary and Water Commission. More than one crop per year is often grown on parts of this land.

EXTREME FLOWS FROM RECORDS:

		Average Flow in Second-Feet (Cubic Meters per Second)		
Daily:	Max. 1,220 (34.6)	June 21, 1960	Min. 0	Occasionally
Monthly:	Max. 1,010 (28.6)	June 1960	Min. 10.3 (0.29)	March 1957
Yearly:	Max. 476 (13.5)	1989	Min. 188 (5.32)	1966

Mean Daily Discharge in Second-Feet 1989 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	184	503	601	691	253	916	205	188	694	363	633	434
2	300	493	619	470	252	825	239	227	571	546	568	141
3	468	533	502	845	258	778	432	229	503	634	492	199
4	573	390	498	861	321	706	367	293	581	694	294	240
5	578	399	600	845	349	860	468	291	595	660	293	269
6	571	346	726	863	290	843	455	243	640	607	457	252
7	410	316	726	806	256	851	371	495	640	395	508	280
8	384	272	729	600	502	810	287	505	589	428	584	216
9	497	268	763	583	512	784	294	554	464	641	576	91.4
10	554	295	734	784	589	703	495	545	469	655	425	37.4
11	543	199	691	801	623	665	499	541	544	615	424	150
12	566	178	636	665	623	721	593	301	592	641	407	74.1
13	474	324	806	596	371	759	603	315	575	623	558	125
14	364	470	827	475	340	499	587	574	399	444	579	86.7
15	350	469	917	318	618	589	560	621	387	443	563	153
16	507	442	845	315	662	339	504	631	308	718	561	85.5
17	520	332	906	505	760	190	591	616	338	665	250	120
18	535	198	776	595	786	198	542	581	460	661	172	227
19	494	191	681	570	706	292	507	393	485	612	189	248
20	410	266	774	706	538	380	615	397	606	518	495	210
21	259	407	725	658	559	472	484	592	556	427	578	202
22	289	484	738	538	808	479	381	595	547	455	451	135
23	406	546	722	481	774	416	413	550	510	694	20.3	85.4
24	400	465	677	695	848	191	535	664	479	683	216	67.6
25	458	299	522	710	845	189	417	502	591	642	225	3.5
26	463	206	370	731	771	173	379	404	547	570	263	82.5
27	432	403	510	440	614	260	325	432	576	570	430	203
28	283	444	629	299	527	245	262	571	554	451	545	209
29	263		616	182	581	220	215	607	460	425	548	146
30	307		682	137	693	223	131	651	412	528	528	98.3
31	346		500		697		155	617		493		78.2
Sum	13,188	10,138	21,048	17,765	17,327	15,576	12,911	14,725	15,672	17,501	12,832.3	4,949.6

Month	Current Year 1989: Average Rainfall Inches** 1989	1957-1989	Ø Extreme Second-Feet High Day	High	Low Day	Low	Average Second-Feet	Total Acre-Feet	Period 1957-1989 Acre-Feet Average	Maximum	Minimum
Jan.	0.48	1.31	5	578	1	184	425	26,158	12,494	28,747	2,010
Feb.	.76	1.22	3	533	12	178	362	20,108	13,055	38,599	1,640
Mar.	.04	.65	15	917	26	370	679	41,748	21,608	41,748	637
Apr.	1.76	1.38	6	863	30	137	592	35,236	27,188	43,037	5,760
May	.27	2.50	24	848	2	252	559	34,368	24,402	48,400	3,177
June	1.66	2.67	1	916	26	173	519	30,895	23,289	59,900	5,011
July	1.02	1.50	20	615	30	131	416	25,609	23,014	46,423	6,753
Aug.	.38	2.12	24	664	1	188	475	29,207	22,917	36,280	6,866
Sept.	.72	3.65	1	694	16	308	522	31,085	15,959	35,000	4,136
Oct.	.66	2.41	16	718	1	363	565	34,713	17,836	37,755	2,830
Nov.	.29	.94	1	633	23	20.3	428	25,452	15,253	27,516	2,930
Dec.	2.21	.98	1	434	25	3.5	160	9,817	12,705	25,000	2,506
Yearly	10.25	21.33		917		3.5	476	344,396	229,720	344,396	136,460
	Millimeters		Cubic Meters per Second					Thousands of Cubic Meters			
	260	542		26.0		0.10	13.5	424,806	283,355	424,806	168,321

Ø Mean daily ** United States side - average of several stations in the reach

08-4686.00 DIVERSIONS FROM THE RIO GRANDE
ANZALDUAS CANAL NEAR REYNOSA, TAMAULIPAS

DESCRIPTION: Cableway, gravity well, and water-stage recorder located on the left bank at latitude 26°07'50", longitude 98°20'10", 0.5 canal mile (0.8 km) from the canal intake, and about 5 miles (8 km) northwest of Reynosa, Tamaulipas. The canal intake is immediately upstream from Anzalduas Dam at river mile 170.3 (274.1 km), 102.2 river miles (164.5 km) downstream from Falcon Dam. The zero of the gage is 86.32 feet (26.31 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 215 discharge measurements during the year, 202 by the Mexican Section and 13 by the United States Section of the Commission, and a continuous record of gage heights. Computations by shifting control methods. Records available: 1952 through 1989.

REMARKS: Diversions by this canal are for irrigation and domestic use in Mexico and for conveying water for storage in Culebron, Villa Cardenas, and Palito Blanco Reservoirs about 23 canal miles (37.0 km) downstream from this station. For acreage irrigated during 1989 see the tabulation under the heading of " Drainage Basin and Irrigated Areas " in this Bulletin. Flow at this canal station is affected by backwater from the operation of canal gates 4.5 miles (7.2 km), 11.3 miles (18.2 km), and 22.5 miles (36.2 km) below this station.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 10,950 second-feet (310 m3/sec) on June 2, 1957 with a gage height of 16.01 feet (4.88 m). Min. no flow occurs frequently.

Average Flow in Second-Feet (Cubic Meters per Second)

Daily:	Max. 9,360 (265)	April 23, 1983	Min. 0		Frequently
Monthly:	Max. 6,990 (198)	May 1988	Min. 0		Several months
Yearly:	Max. 2,130 (60.4)	1989	Min. 150 (4.26)		1952

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,050	5,970 *	326 *	1,330	4,800	8,400 *	406	879 *	420	1,180	1,080	0
2	1,290 *	5,650 *	512 *	1,320	4,800 *	8,190 *	406	999 *	431	1,260 *	717	0
3	1,480	5,010	501 *	1,370 *	4,660 *	7,770	321 *	1,130 *	438	1,370 *	770	0
4	1,430 *	4,770	448	1,350 *	4,170 *	7,350	297 *	1,020 *	350 *	1,520 *	777	0
5	1,480	4,590	371	1,230 *	3,530	6,180 *	300 *	922	74.2	1,520 *	784	0
6	1,640 *	4,450	371 *	1,310 *	3,180	5,830 *	378	1,090 *	0	1,560 *	777	0
7	1,960	3,920	346 *	1,510 *	3,040	6,000 *	279 *	1,230 *	477	1,470	766	0
8	2,250	3,250	357 *	1,770	3,040 *	5,830 *	350 *	1,280 *	420 *	1,830	770	177
9	2,750 *	2,720	357 *	1,800	3,140 *	5,760 *	371	1,530 *	448	1,860 *	597	275
10	3,090 *	2,100 *	335 *	1,810 *	3,170 *	5,720	367 *	1,820 *	445	1,780 *	424	272
11	3,380 *	1,760	335	1,730 *	3,520 *	5,720	367 *	1,720 *	353 *	1,660 *	427	268
12	3,740 *	1,600	325	1,890 *	4,480 *	5,510 *	477 *	1,700	353 *	1,580	427	251
13	4,240 *	1,770 *	357 *	2,330 *	5,620	4,980 *	526 *	1,530 *	413 *	1,520 *	420	219
14	4,770	1,850 *	357 *	2,540 *	6,320	2,830 *	544 *	1,290 *	512 *	1,410	420	222
15	5,090	2,010 *	325 *	2,630	6,530 *	2,480 *	604	1,610 *	1,110 *	1,430	420	222
16	5,720 *	2,590 *	297 *	2,630	6,710 *	2,000 *	611	1,540 *	791	1,390 *	420	222
17	6,000 *	3,000 *	325 *	2,630 *	6,820 *	1,470	562 *	1,230 *	784	1,520 *	431	222
18	6,220 *	2,840	399	2,810 *	6,890 *	1,260	614 *	830 *	607 *	1,420 *	438	222
19	6,430 *	2,840	639	3,000 *	6,530 *	1,040 *	890 *	689	357 *	1,490 *	441	222
20	6,430 *	2,750 *	780 *	3,640 *	6,750	798 *	1,070 *	650 *	706 *	1,520 *	417	222
21	6,110	2,750 *	893	4,590 *	7,240	526 *	1,020 *	604 *	1,370 *	1,520	417	222
22	6,180	2,770 *	893 *	5,650	7,700 *	364 *	953	371 *	1,410 *	1,530	424	222
23	6,360 *	2,150 *	982	6,530	8,160 *	367 *	1,060	424 *	1,400	1,440 *	434	222
24	6,530 *	1,350 *	1,080	7,170 *	8,300 *	364	961 *	516 *	1,430	1,450 *	431	222
25	6,530 *	1,090	1,110	7,170 *	8,370 *	360 *	915 *	1,210 *	1,410 *	1,470 *	431	222
26	6,390 *	883	1,150	7,590 *	7,770 *	551 *	1,090 *	1,200	1,420 *	1,440 *	427	222
27	6,060 *	706 *	1,150 *	8,790 *	7,950	332 *	992 *	540	1,320 *	1,460	74.2	222
28	6,460	569 *	1,270 *	9,010 *	8,620	343 *	939 *	735 *	1,190 *	1,460	0	219
29	6,460		1,320 *	8,790	8,480 *	350 *	939	710 *	1,160 *	1,460	0	219
30	6,180 *		1,250 *	6,750	8,120 *	332	922	576 *	1,170	1,420	0	219
31	5,930 *		1,330 *		8,230 *		911 *	420 *		1,430		215
Sum	140,030	77,708	20,491	112,720	186,640	99,007	20,442	31,995	22,759.2	46,370	14,361.2	5,442

Month	Current Year 1989: Extreme Gage Feet High	Extreme Gage Feet Low	Ø Extreme Second-Feet High Day	High	Low Day	Low	Average Second-Feet	Total Acre-Feet	Period 1954-1989 Acre-Feet Average	Maximum	Minimum
Jan.			124	6,530	1	1,050	4,520	277,765	107,177	277,765	1,520
Feb.			1	5,970	28	569	2,780	154,142	91,042	251,519	1,086
Mar.			31	1,330	16	297	660	40,650	37,025	147,900	1,128
Apr.			28	9,010	5	1,230	3,740	223,564	143,158	370,715	23,381
May			28	8,620	! 7	3,040	6,000	370,141	223,504	430,919	28,291
June			1	8,400	127	332	3,300	196,358	102,286	270,700	14,221
July			26	1,090	7	279	660	40,542	44,643	162,400	5,730
Aug.			10	1,820	22	371	1,030	63,433	85,893	270,487	6,709
Sept.			24	1,430	6	0	759	45,144	56,357	165,800	2,177
Oct.			9	1,860	1	1,180	1,500	91,969	54,038	209,590	0
Nov.			1	1,080	128	0	480	28,480	12,928	83,690	0
Dec.			9	275	! 1	0	176	10,808	21,425	166,700	651
Yearly				9,010		0	2,130	1,542,996	979,476	1,542,996	551,946
	Meters			Cubic Meters per Second				Thousands of Cubic Meters			
				255		0	60.4	1,903,266	1,240,830	1,903,266	680,817

* Discharge measurement made on this day Ø Mean daily ! And other days
** Average of several stations

08-4692.00 RIO GRANDE BELOW ANZALDUAS DAM NEAR REYNOSA, TAMAULIPAS AND MISSION, TEXAS

DESCRIPTION: Cableway, gravity well, water-stage recorder, and selsyn-type transmitter, located on the right bank at latitude 26°07'50", longitude 98°19'55", and river mile 169.8 (273.3 km); 0.5 river mile (0.8 km) downstream from Anzalduas Dam, about 4.5 miles (7 km) northwest of Reynosa, Tamaulipas, and 10.3 river miles (16.6 km) upstream from the international highway bridge between Hidalgo, Texas and Reynosa, Tamaulipas. The zero of the gage is at mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 94 discharge measurements during the year, 85 by the Mexican Section and 9 by the United States Section of the Commission, and a continuous record of gage heights. Records available: 1952 through 1989.

REMARKS: Except during local storms, flow at this station is controlled largely by releases from Falcon Reservoir and by diversions into Anzalduas Canal. Excessive upstream flood flows are partly diverted into the United States floodway system inlet at Anzalduas Dam before reaching this station. Prior to January 1, 1968 the zero of the gage was 82.61 feet (25.18 m) above mean sea level, U. S. C. & G. S. datum. The transmitter relays gage height data to the Anzalduas Dam control room.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 131,000 second-feet (3,700 m3/sec) on September 24, 1967 with a gage height of 30.51 feet (9.30 m). Min. periods of no flow have occurred on several occasions in 1953, 1954, 1956, and 1957.

Average Flow in Second-Feet (Cubic Meters per Second)

Daily:	Max. 121,000 (3,440)	Sept. 25, 1967	Min. 0		Occasionally
Monthly:	Max. 37,830 (1,070)	Oct. 1958	Min. 5.5 (0.16)		March 1957
Yearly:	Max. 6,410 (182)	1958	Min. 158 (4.49)		1957

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2,110	1,880	1,980	1,580	4,030	4,630	844	537	1,550 *	1,650	1,360	600
2	2,360	1,680 *	2,060	1,720	964 *	5,330 *	1,300	720 *	1,550	1,560 *	1,260	780
3	2,530 *	1,790	2,000 *	1,830 *	501	4,770	1,430	572 *	1,790	1,270	1,400 *	1,390
4	2,900	1,560	1,710	1,820	526 *	4,240	1,410 *	406 *	2,010 *	1,260	798	1,370
5	2,540 *	971	1,740	2,230	484	4,240 *	1,640	385	1,960	1,200	1,150	946
6	2,350	742	1,770 *	2,390	399	4,170	2,150 *	1,140	1,870	1,130	1,310	590
7	2,510	604	1,800	2,310 *	614	4,130	1,960	1,550 *	1,800	1,010	1,050 *	632
8	2,500	551	1,830	2,410	876 *	4,270	1,870	1,530 *	1,680 *	1,940	929	364
9	2,590	494	1,880	2,780	911	3,850 *	2,040	1,690	1,380	2,750 *	865	283
10	2,490 *	413 *	1,790 *	2,560 *	1,060	3,920	2,050 *	2,490	1,670	1,880	738	339
11	2,260	604	1,980	2,440	1,550	3,880	2,010	1,460 *	1,710 *	1,310	689	279
12	2,140	745	2,170	2,450	1,930 *	3,740 *	1,920	1,330	2,030 *	1,160	964	268
13	2,270 *	869	2,260 *	2,390	2,380	3,640	1,810	1,520	1,970	953 *	1,210	215
14	2,180	911 *	2,230 *	1,680 *	2,630	3,740	1,560 *	1,650	1,690	971	1,220	219
15	2,390	869	2,150	1,320	2,620 *	4,030	1,510	1,490 *	3,020	1,320	1,210 *	177
16	2,460	901 *	2,110	1,420	2,500	3,220 *	2,050	1,370	1,780	1,460 *	1,150	201
17	2,570 *	999 *	1,900 *	1,220 *	2,600	3,080	2,140 *	1,210	996	1,470	1,310	272
18	2,170 *	858	1,850	1,370	2,930	2,940	2,160	1,090 *	1,160 *	1,560	1,300	466
19	1,940 *	953	1,900	1,270	3,230 *	2,810 *	1,780	1,090	1,400	1,760	1,070	526
20	1,550	1,010	1,980 *	1,320	3,490	2,780	1,690	1,110	1,580	1,060 *	798	509
21	1,380	1,110 *	1,920	1,430 *	3,570	2,240	1,490	961 *	1,640	1,130	752	448
22	1,550	1,120	1,890	1,700	3,740 *	2,210	1,720	1,020	1,100 *	1,640	491	487
23	1,730	1,180	1,750	2,020	2,880	2,110 *	2,040	1,010	1,090	1,940 *	463	325
24	1,780 *	1,100	1,410	2,090 *	3,960 *	1,740	2,240 *	922	1,170	1,840	540	494
25	1,840	1,310	1,690	2,360	3,990	1,740	2,260	795	1,360 *	1,650	410	565
26	1,700 *	1,720	2,250	2,440 *	4,130 *	1,380 *	1,740	724	1,360	1,430	565	554
27	1,690	1,850 *	2,610 *	2,740	4,170	1,270	915	1,100	1,180	1,150 *	625	597
28	1,700	1,920	2,260	3,710 *	4,380	1,230	1,240	1,260 *	1,010	1,090	731	646
29	1,710		1,680	2,580	4,480 *	1,250	848	1,270	1,020 *	1,410	922	622
30	1,810		1,360	3,110	4,410	1,170 *	346	1,330 *	1,260	1,500 *	939	763
31	1,840 *		1,260 *		4,240		353 *	1,390		1,380		876
Sum	65,540	30,714	59,170	62,690	80,175	93,750	50,516	36,122	46,786	44,834	28,219	16,803

Current Year 1989									Period 1954-1989		
Month	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	High		Low				Average	Maximum	Minimum
			Day		Day						
Jan.	83.73	80.91	4	3,230	20	1,330	2,120	129,969	96,317	325,550	1,090
Feb.	81.99	79.46	28	2,040	10	360	1,100	60,905	71,513	276,539	830
Mar.	83.17	80.61	27	2,840	30	1,140	1,910	117,291	78,418	243,477	339
Apr.	89.17	80.68	28	7,030	16	1,180	2,090	124,330	114,120	319,470	3,160
May	87.43	78.97	22	6,780	! 5	392	2,590	159,045	150,648	479,551	35,360
June	86.42	80.02	2	5,760	30	851	3,130	185,936	181,308	680,021	7,850
July	82.51	78.31	25	2,390	30	187	1,630	100,213	132,292	557,022	2,000
Aug.	83.33	78.64	10	2,950	6	357	1,170	71,656	131,587	1,207,862	943
Sept.	84.68	79.76	15	3,850	17	809	1,560	92,789	229,744	1,862,856	3,920
Oct.	83.40	79.56	9	2,940	13	735	1,450	88,950	264,248	2,326,000	1,730
Nov.	81.50	78.08	! 5	1,680	22	247	939	55,959	129,617	1,438,000	1,430
Dec.	81.43	77.66	! 3	1,650	16	120	540	33,327	93,720	540,100	1,500
Yearly	89.17	77.66		7,030		120	1,680	1,220,370	1,673,532	4,640,968	114,749
	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
	27.18	23.67		199		3.40	47.7	1,505,312	2,064,281	5,724,004	141,538

* Discharge measurement made on this day ! And other days

RIO GRANDE FLOODWAY DISCHARGES

LOWER RIO GRANDE VALLEY

On the United States Side

Part of the excess water from floods entering the Lower Rio Grande Valley is diverted from the river through the United States floodway system with the inlet located at Anzalduas Dam near Mission, Texas.

Floodwater entering the system is measured first at the Banker Floodway Station at Anzalduas Dam near Mission and again 25.2 miles (40.6 km) downstream at the Main Floodway Station on Farm Road No. 88 bridge south of Weslaco. At a point 3 miles (4.8 km) southwest of Mercedes the floodway divides, one channel going northeastward through the Arroyo Colorado Floodway to the Gulf of Mexico, and the other going to the gulf via the North Floodway, traveling first northward and then eastward to the Gulf. At the point of diversion, a divisor dike, which runs longitudinally in the Main Floodway, divides and controls the flows into the Arroyo Colorado Floodway and the North Floodway. The flow of the Arroyo Colorado is measured at El Fuste Siphon south of Mercedes and farther downstream at the bridge on U. S. Highway No. 83 south of Harlingen. The North Floodway flow is measured at the bridge on old U. S. Highway No. 83 west of Mercedes and farther downstream at the bridge on U. S. Highway No. 77 near Sebastian.

In 1989, no flood flow was diverted through this floodway system.

On the Mexican Side

Part of the excess water from floods entering the Lower Rio Grande Valley is diverted from the river through the Mexican floodway system, with the inlet located 37.1 miles (59.7 km) downstream from Anzalduas Dam and, when necessary, through Anzalduas Canal located at Anzalduas Dam.

Floodwater entering the system through the Retamal Inlet flows into Culebron and Villa Cardenas Lakes through the Retamal Floodway, while flood flows entering the canal at Anzalduas Dam reach these lakes via the Culebron and Retamal Canals from where it flows in a southeastwardly direction via Floodway No. 1 into the Gulf of Mexico.

The Retamal Floodway replaces the previously used floodway system, which consisted of Retamal Canal, San Rafael Floodway and Floodway No. 2.

In 1989, no flood flow was diverted through Retamal Floodway or Anzalduas Canal.

08-4732.00 DIVERSIONS FROM THE RIO GRANDE
UNITED STATES SIDE, ANZALDUAS DAM TO PROGRESO

Beginning June 1971, the Texas Water Rights Commission, now the Texas Water Commission, assumed control of the United States portion of the water in Falcon Reservoir and in the Rio Grande below Falcon Dam, the disposition of such waters being made by its Rio Grande Watermaster. Previous to that, since June 1956, such waters had been under the jurisdiction of the 93rd District Court of Texas administered by its Special Water Master.

During 1989, 124,318 irrigable acres (50,310 ha) and several towns and rural homes were allotted Rio Grande water in the river reach between Anzalduas Dam and the Progreso International Bridge. Such irrigable area was 17.3% of the total irrigable acres (ha) below Falcon Dam allotted Rio Grande water.

The total diversion during 1989 in this river reach was 323,079 acre-feet (398,511,000 m3), or 21.2% of the total water diverted from the Rio Grande below Falcon Dam. Records of diversions in this river reach were determined by means of flow-meters and by deflection meters which were developed by the International Boundary and Water Commission. More than one crop per year is often grown on parts of this land.

EXTREME FLOWS FROM RECORDS:

		Average Flow in Second-Feet (Cubic Meters per Second)		
Daily:	Max. 1,120 (31.7)	June 16 & 17, 1965	Min. 0	Occasionally
Monthly:	Max. 749 (21.2)	June 1969	Min. 13.3 (0.38)	May 1972
Yearly:	Max. 446 (12.6)	1989	Min. 167 (4.73)	1970

Mean Daily Discharge in Second-Feet 1989 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	40.2	489	675	585	128	890	145	263	642	297	338	318
2	346	505	624	515	330	782	308	295	262	546	352	22.4
3	500	510	462	633	292	723	539	320	416	499	247	7.5
4	564	462	448	630	210	767	424	305	647	558	101	123
5	591	363	533	652	157	905	694	192	630	575	282	39.0
6	629	237	600	658	113	874	738	247	625	583	407	95.5
7	562	152	620	645	239	850	722	462	609	374	413	55.8
8	490	156	651	544	418	852	284	498	608	518	432	36.3
9	540	168	557	542	487	768	443	497	243	737	417	21.2
10	579	134	441	567	555	632	569	510	464	699	290	3.9
11	617	78.8	491	576	644	663	592	370	512	708	117	171
12	620	72.1	541	530	718	816	609	187	574	650	259	134
13	610	318	635	627	713	822	596	305	546	471	435	126
14	387	346	614	336	771	802	613	449	510	246	460	63.4
15	364	351	677	150	749	715	274	513	387	416	521	58.8
16	504	352	702	189	770	515	406	505	169	596	535	47.5
17	527	362	614	317	828	349	629	549	294	557	516	5.3
18	512	241	578	377	985	330	597	407	472	665	185	160
19	500	230	622	414	932	610	614	295	535	541	268	215
20	369	360	682	464	976	613	579	412	577	439	463	184
21	225	389	606	450	913	657	388	467	564	223	333	202
22	320	395	666	394	802	633	275	466	437	385	197	202
23	389	428	474	487	809	509	419	461	217	550	11.0	104
24	474	327	284	601	878	361	585	472	357	670	256	18.4
25	477	194	278	673	983	394	541	497	546	647	66.2	3.6
26	467	261	463	707	1,010	412	434	198	549	684	45.3	212
27	471	407	501	657	999	408	233	303	552	432	306	231
28	430	445	438	635	765	395	108	481	548	257	406	244
29	368		450	355	864	464	84.7	498	543	361	405	161
30	427		441	136	853	465	48.7	499	224	423	152	57.7
31	443		1.1		865		204	510		433		1.7
Sum	14,342.2	8,732.9	16,369.1	15,046	20,756	18,976	13,695.4	12,433	14,259	15,740	9,215.5	3,325.0

Current Year 1989									Period 1957-1989		
Month	Average Rainfall Inches**		Ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low						
	1989	1957-1989	Day		Day				Average	Maximum	Minimum
Jan.	0.54	1.50	6	629	1	40.2	463	28,447	12,329	34,959	723
Feb.	.66	1.40	2	510	12	72.1	312	17,321	10,064	28,535	1,140
Mar.	.02	.66	16	702	31	1.1	528	32,468	17,179	36,100	1,050
Apr.	1.81	1.42	26	707	30	136	502	29,843	21,272	39,277	3,630
May	.26	2.73	26	1,010	6	113	670	41,169	22,529	43,150	817
June	1.87	2.65	5	905	18	330	633	37,638	26,241	44,541	4,203
July	1.56	1.70	6	738	30	48.7	442	27,164	23,606	41,100	6,597
Aug.	.52	2.35	17	549	12	187	401	24,660	17,356	27,542	7,452
Sept.	.38	4.13	4	647	16	169	475	28,282	12,991	28,282	3,214
Oct.	.15	2.51	9	737	21	223	508	31,220	15,038	31,220	2,059
Nov.	.24	1.16	16	535	23	11.0	307	18,279	11,685	22,818	1,015
Dec.	2.54	1.16	1	318	31	1.7	107	6,595	10,442	19,962	1,852
Yearly	10.55	23.37		1,010		1.1	446	323,086	200,732	323,086	121,008
	Millimeters		Cubic Meters per Second					Thousands of Cubic Meters			
	268	594		28.6		0.03	12.6	398,520	247,599	398,520	149,261

Ø Mean daily ** United States side - average of several stations in the reach

08-4736.00 DIVERSIONS FROM THE RIO GRANDE
UNITED STATES SIDE, PROGRESO TO SAN BENITO

Beginning June 1971, the Texas Water Rights Commission, now the Texas Water Commission, assumed control of the United States portion of the water in Falcon Reservoir and in the Rio Grande below Falcon Dam, the disposition of such waters being made by its Rio Grande Watermaster. Previous to that, since June 1956, such waters had been under the jurisdiction of the 93rd District Court of Texas administered by its Special Water Master.

During 1989, 319,110 irrigable acres (129,141 ha) and several towns and rural homes were allotted Rio Grande water in the river reach between Progreso and the gaging station at San Benito. Such irrigable area was 44.5% of the total irrigable acres (ha) below Falcon Dam allotted Rio Grande water.

The total diversion during 1989 in this river reach was 704,032 acre-feet (868,410,000 m3), or 46.2% of the total water diverted from the Rio Grande below Falcon Dam. Records of diversions in this river reach were determined by means of flow-meters, by open channel rating stations, and by deflection meters which were developed by the International Boundary and Water Commission. More than one crop per year is often grown on parts of this land.

EXTREME FLOWS FROM RECORDS:

Average Flow in Second-Feet (Cubic Meters per Second)

Daily:	Max.	2,830 (80.1)	May 30, 1989	Min.	0	Occasionally
Monthly:	Max.	2,060 (58.9)	June 1960	Min.	53.5 (1.52)	March 1957
Yearly:	Max.	973 (27.6)	1989	Min.	367 (10.4)	1968

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,130	1,270	1,220	779	227	2,700	839	119	971	592	1,050	708
2	1,380	1,170	1,250	759	135	2,740	835	133	997	686	910	338
3	1,510	841	1,240	1,030	133	2,540	988	362	1,030	677	854	308
4	1,580	521	1,120	1,170	125	2,470	933	395	1,130	690	746	668
5	1,570	419	1,120	1,130	95.5	2,290	1,120	273	1,120	689	635	726
6	1,490	408	1,160	1,240	76.8	2,400	1,170	343	1,200	729	746	270
7	1,500	303	1,130	1,350	1.2	2,380	1,220	604	1,180	567	734	253
8	1,470	402	1,140	1,280	214	2,420	1,090	849	1,180	568	771	302
9	1,450	440	1,150	1,180	358	2,440	1,050	835	1,030	1,110	690	81.2
10	1,530	477	1,070	1,500	508	2,220	1,150	907	885	1,380	635	80.7
11	1,570	422	1,190	1,480	688	2,230	1,200	925	995	1,290	619	80.9
12	1,580	423	1,240	1,300	986	2,320	1,210	761	1,040	740	623	94.4
13	1,550	642	1,300	1,180	1,010	2,320	1,080	757	1,060	774	782	5.4
14	1,430	726	1,310	722	1,200	1,950	1,120	800	981	682	884	5.3
15	1,510	676	1,250	701	1,490	2,010	915	850	1,060	514	790	183
16	1,390	672	1,220	600	1,560	2,000	821	809	860	752	899	110
17	1,430	754	1,130	735	1,530	1,740	1,050	830	698	889	910	3.2
18	1,420	733	1,120	705	1,520	1,490	1,070	799	840	880	751	5.2
19	1,320	724	1,110	789	1,790	1,410	1,160	723	829	895	742	124
20	1,290	645	1,220	825	1,830	1,700	1,120	460	819	901	521	241
21	967	758	1,270	881	1,930	1,480	1,110	520	871	758	428	477
22	1,030	915	1,250	741	2,140	1,560	1,110	539	953	735	374	449
23	1,030	873	1,240	993	2,400	1,430	1,100	513	834	958	253	324
24	1,190	900	1,040	1,120	2,310	1,170	1,100	584	916	1,120	247	194
25	1,280	888	784	1,190	2,360	868	1,100	650	897	1,130	235	266
26	1,290	884	1,000	1,160	2,480	1,060	935	628	880	1,060	223	342
27	1,340	1,080	981	1,330	2,670	599	721	490	885	903	399	394
28	1,220	1,160	991	1,060	2,580	685	590	849	706	957	388	320
29	1,060		1,180	887	2,650	778	510	883	729	873	326	203
30	1,210		1,160	428	2,830	807	463	831	553	937	571	207
31	1,290		98.5		2,760		249	811		965		159
Sum	42,007	20,126	34,684.5	30,245	42,587.5	54,207	30,129	19,832	28,127	26,401	18,736	7,922.3

Month	Current Year 1989: Average Rainfall Inches** 1989	1957-1989	Ø Extreme Second-Feet High Day	High	Low Day	Low	Average Second-Feet	Total Acre-Feet	Period 1957-1989: Acre-Feet Average	Maximum	Minimum
Jan.	0.81	1.68	! 4	1,580	21	967	1,360	83,320	37,564	97,130	4,872
Feb.	.18	1.76	1	1,270	7	303	719	39,919	20,504	49,859	4,807
Mar.	.04	.82	14	1,310	31	98.5	1,120	68,796	26,891	68,796	3,280
Apr.	2.67	1.57	10	1,500	30	428	1,010	59,990	49,498	101,651	12,900
May	.36	2.93	30	2,830	7	1.2	1,370	84,471	55,756	110,440	9,277
June	1.53	3.05	2	2,740	27	599	1,810	107,518	66,509	123,000	11,126
July	1.73	2.09	7	1,220	31	249	972	59,760	45,827	89,373	11,307
Aug.	1.62	2.76	11	925	1	119	640	39,336	33,771	64,223	12,736
Sept.	1.19	5.02	6	1,200	30	551	938	55,789	24,835	59,400	4,308
Oct.	.59	2.88	10	1,380	15	514	852	52,366	35,181	58,164	5,146
Nov.	.40	1.53	1	1,050	26	223	625	37,162	19,969	44,359	4,853
Dec.	1.76	1.35	5	726	17	3.2	256	15,714	20,537	37,500	6,663
Yearly	12.88	27.44		2,830		1.2	973	704,141	426,842	704,141	266,680
	Millimeters			Cubic Meters per Second				Thousands of Cubic Meters			
	327	697		80.1		0.03	27.6	868,544	526,501	868,544	328,944

Ø Mean daily ! And other days ** United States side - average of several stations in the reach

08-4737.00 RIO GRANDE NEAR SAN BENITO, TEXAS AND RAMIREZ, TAMAULIPAS

DESCRIPTION: Cableway, concrete control weir, bubbler gage, water-stage recorders (graphic and digital), and digital transmitter, located on the left bank at latitude 26°01'50", longitude 97°43'40", and river mile 96.8 (155.8 km), 3.9 river miles (6.3 km) downstream from San Benito pumping plant and about 9.5 miles (15.3 km) southwest of San Benito, Texas. The zero of the gage is at mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 30 discharge measurements during the year and a continuous record of gage heights. Computations for high flows by shifting control methods. Low and medium flow computations based on a stable control weir rating curve defined by meter measurements. Records available: November 26, 1952 through August 25, 1953, and December 1953 through 1989.

REMARKS: Except for diversions, tributary inflows, and drainage returns below Falcon Dam, flow at this station after August 25, 1953 was controlled largely by releases from Falcon Reservoir, 178.0 river miles (286.4 km) upstream. Excessive upstream flood flows are partly diverted through the United States and Mexican floodway systems before reaching this station. The transmitter relays gage height data via radio to the Mercedes office of the Commission, and to the Anzalduas Dam Control Room, where it is recorded automatically. The concrete control weir was constructed in December 1965, and the gage was moved to its present location just above the weir on January 4, 1967.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 25,000 second-feet (708 m3/sec) on September 29, 1967 with a gage height of 61.05 feet (18.61 m). Min. no flow occurs frequently.

Average Flow in Second-Feet (Cubic Meters per Second)**

Daily:	Max. 24,800 (702)	Sept. 29, 1967	Min. 0		Frequently
Monthly:	Max. 14,300 (405)	Oct. 1971	Min. 39.5 (1.12)		December 1956
Yearly:	Max. 3,780 (107)	1976	Min. 200 (5.66)		1956

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	203	145 *	213	15.5	2,620 *	805	209	357 *	3.6	263	257 *	35.4
2	533	300	266 *	132	3,470	833 *	118	294	6.1	756	299	111
3	454	426	259	180 *	1,990	1,580	144 *	254	45.8	645 *	394	413
4	397 *	766	256	98.5	627	1,810	145	148	438	377	398	864
5	672	1,020	268	65.6	440	1,330	94.9	111	490 *	168	467	738
6	483	781	228	280	520	897	47.7	72.4	421	143	265	740
7	214	696	204	331	482	783	66.7	90.9	276	219	380	567
8	345	639	132	301	367	771	177	362	281	185	245	372 *
9	588	472	110	501	220	838	397	403	275	481	110	481
10	568	326	124	705	112	726	662	458	308	755	106	368
11	487	289	163	455	56.8	948	468	1,230	370	286	89.7	314
12	286	260	263	485	36.6	819	362	770	401	214	74.1	299
13	177	288	374	588	97.7	622	336	724	487	85.5	65.9	286
14	233	136	357	1,050	352	797	294	783	670	86.0	61.3	251
15	347	* 62.7	352 *	1,040	389 *	1,210	154	778	525	207	* 61.1	127
16	603	63.3	335	818	279	1,420	465	723	1,510	340	116	89.0
17	646	67.5	272	792	122	1,070	558	771	1,510	224	72.7	215
18	735	79.2	288	483 *	167	1,650	513	794	482	180 *	146	238
19	465 *	142	183	350	270	1,500	548 *	1,260	174	420	360	282
20	388	217	182	232	331	1,020	378	2,270	144	1,140	485	199 *
21	454	220	159	112	478	708	248	1,240	399	1,220	350	144
22	386	109	78.1	123	612	395	210	247	333	1,600	283	43.2
23	368	55.7	41.3	277	542	331 *	311	161 *	225	985	282	24.2
24	323	36.0	21.4	307	160	447	604	182	135	437	277	25.9
25	192	29.4	10.2	226	317	764	693	84.5	121	353	274	49.5
26	163	28.6	239	254	662	877	1,010	52.0	114	238	229	171
27	89.5	153	813	285	522	478	866	58.6	115	194	140	207
28	94.1	214	1,070	646	621	535	513	62.2	160	133	158	191
29	233		881	2,090	1,150	322	736	63.8	113	100	149	236
30	248		319	2,210	905	283	835	* 52.2	143	177	96.5	370
31	114		51.5		1,080		478	1.9		310		513
Sum	11,488.6	8,021.4	8,512.5	15,432.6	19,998.1	26,569	12,641.3	14,858.5	10,675.5	12,921.5	6,691.3	8,964.2

Month	Current Year 1989								Period 1954-1989		
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum
Jan.	35.71	34.31	5	743	1	36.3	371	22,787	48,367	319,002	2,920
Feb.	36.07	34.22	5	1,080	26	21.6	286	15,910	44,891	363,000	3,380
Mar.	36.33	34.15	28	1,360	25	6.5	275	16,884	37,344	360,000	2,560
Apr.	39.14	34.20	30	2,360	1	10.2	514	30,610	42,563	251,919	7,855
May	43.66	34.22	2	3,690	24	24.1	645	39,666	69,401	382,973	16,873
June	37.51	34.86	4	1,930	30	245	886	52,699	77,512	525,330	16,100
July	36.03	34.23	126	1,060	6	24.1	408	25,074	72,759	447,886	4,690
Aug.	41.08	34.01	21	3,070	31	.5	479	29,471	75,870	827,107	3,100
Sept.	37.60	34.04	!16	1,970	1	5.5	356	21,175	135,006	638,757	7,710
Oct.	38.46	32.54	23	2,250	13	62.7	417	25,629	168,976	880,859	3,840
Nov.	35.42	34.24	20	556	15	32.9	223	13,272	81,043	662,000	5,640
Dec.	35.98	34.24	4	996	!23	21.6	289	17,780	65,889	479,000	2,430
Yearly	43.66	32.54		3,690		0.5	430	310,957	919,621	2,743,424	145,520
	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
	13.31	9.92		105		0.01	12.2	383,559	1,134,334	3,383,959	179,496

* Discharge measurement made on this day ! And other days ** Period 1954-1989

08-4749.00 DIVERSIONS FROM THE RIO GRANDE
UNITED STATES SIDE, SAN BENITO TO BROWNSVILLE

Beginning June 1971, the Texas Water Rights Commission, now the Texas Water Commission, assumed control of the United States portion of the water in Falcon Reservoir and in the Rio Grande below Falcon Dam, the disposition of such waters being made by its Rio Grande Watermaster. Previous to that, since June 1956, such waters had been under the jurisdiction of the 93rd District Court of Texas administered by its Special Water Master.

During 1989, 90,196 irrigable acres (36,501 ha) and several towns and rural homes were allotted Rio Grande water in the river reach between the gaging stations near San Benito and Brownsville. Such irrigable area was 12.6% of the total irrigable acres (ha) below Falcon Dam allotted Rio Grande water.

The total diversion during 1989 in this river reach was 132,496 acre-feet (163,432,000 m3), or 8.7% of the total water diverted from the Rio Grande below Falcon Dam. Records of diversion in this river reach were determined by means of flowmeters, and by deflection meters which were developed by the International Boundary and Water Commission. More than one crop per year is often grown on parts of this land.

EXTREME FLOWS FROM RECORDS:

	Average Flow in Second-Feet (Cubic Meters per Second)				
Daily:	Max. 782 (22.1)	June 14, 1963	Min. 0	Occasionally	
Monthly:	Max. 542 (15.3)	June 1965	Min. 18.5 (0.52)	February 1966	
Yearly:	Max. 223 (6.32)	1965	Min. 98.3 (2.78)	1981	

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	48.2	189	296	186	20.1	655	121	87.6	67.0	140	240	39.8
2	156	132	304	170	22.0	562	74.2	106	88.5	77.6	214	49.1
3	368	52.2	290	180	63.1	649	82.3	60.6	83.5	416	199	39.4
4	445	98.4	226	169	77.2	659	72.5	62.2	80.6	476	179	32.2
5	400	89.2	44.6	153	66.9	644	222	55.3	300	417	30.6	35.7
6	385	41.6	59.9	153	30.8	561	302	58.5	409	213	33.1	31.5
7	372	74.2	114	265	28.0	521	127	64.7	408	116	42.6	31.3
8	367	34.6	97.0	376	38.9	563	150	109	272	103	40.0	27.6
9	321	34.4	105	387	37.7	563	88.1	268	115	134	37.0	29.8
10	256	33.9	91.5	392	90.7	481	247	360	93.1	135	76.8	25.6
11	318	38.0	94.9	484	89.2	432	352	296	111	353	50.1	29.7
12	369	37.0	91.9	515	46.3	356	325	145	112	356	33.6	24.6
13	285	166	102	379	41.0	432	334	67.2	88.4	135	47.2	197
14	240	290	259	202	34.5	415	261	74.3	97.4	101	54.0	274
15	150	204	354	153	219	375	108	315	319	93.6	43.0	47.1
16	310	37.3	356	130	350	377	92.9	256	404	150	41.5	26.7
17	423	45.9	359	264	356	245	288	103	404	298	49.0	29.6
18	380	31.3	310	169	302	158	398	109	417	239	30.2	29.3
19	188	80.1	180	118	259	305	446	81.4	344	109	24.9	29.9
20	86.1	79.8	186	98.9	235	415	364	57.6	139	112	206	27.5
21	106	89.0	92.6	143	221	393	254	54.1	144	121	361	30.7
22	96.3	75.5	123	133	276	315	136	62.5	310	116	208	36.2
23	105	90.8	123	129	384	304	119	60.0	195	119	55.0	37.6
24	241	82.7	123	269	411	175	218	59.4	56.5	250	43.1	36.7
25	268	78.1	128	341	387	118	402	37.8	101	338	30.2	29.3
26	186	72.8	92.4	343	320	214	311	38.2	111	319	28.5	39.6
27	115	65.8	100	297	483	211	177	30.6	128	264	156	39.0
28	87.7	208	305	172	398	210	87.2	31.5	62.7	103	156	33.7
29	31.2		349	78.3	483	273	54.1	42.7	54.6	59.5	45.1	254
30	22.5		251	21.4	547	218	46.1	51.9	66.5	32.7	49.2	165
31	29.8		165		573		41.0	56.3		31.4		26.6
Sum	7,155.8	2,551.6	5,772.8	6,870.6	6,890.4	11,799	6,300.4	3,261.4	5,581.8	5,927.8	2,803.7	1,785.8

Month	Current Year 1989								Period 1954-1989		
	Average Rainfall Inches**		Ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	1989	1957-1989	Day	High	Day	Low			Average	Maximum	Minimum
Jan.	2.20	1.88	4	445	30	22.5	231	14,193	10,124	24,568	1,290
Feb.	.33	1.70	14	290	18	31.3	91.1	5,061	6,798	20,626	1,028
Mar.	.11	.71	17	359	5	44.6	186	11,450	6,942	15,200	705
Apr.	2.68	1.73	12	515	30	21.4	229	13,628	11,731	27,753	2,180
May	.94	2.85	31	573	1	20.1	222	13,667	15,089	28,027	1,586
June	1.93	3.02	4	659	25	118	393	23,403	16,492	32,279	3,739
July	1.95	2.01	19	446	31	41.0	203	12,497	12,092	24,083	3,687
Aug.	3.70	2.98	10	360	27	30.6	105	6,469	8,740	14,556	3,260
Sept.	1.37	5.55	18	417	29	54.6	186	11,071	6,149	12,600	876
Oct.	.86	2.95	4	476	31	31.4	191	11,758	6,005	11,758	1,591
Nov.	1.02	1.58	21	361	19	24.9	93.5	5,561	4,741	9,021	1,796
Dec.	1.34	1.53	14	274	12	24.6	57.6	3,542	5,309	11,200	2,014
Yearly	18.43	28.49		659		20.1	183	132,300	110,212	161,503	71,171
	Millimeters		Cubic Meters per Second					Thousands of Cubic Meters			
	468	724		18.7		0.57	5.18	163,189	135,944	199,211	87,788

Ø Mean daily

** United States side - average of several stations in the reach

08-4750.00 RIO GRANDE NEAR BROWNSVILLE, TEXAS AND MATAMOROS, TAMAULIPAS

DESCRIPTION: Cableway, bubbler gage, water-stage recorders (graphic and digital), and digital transmitter located on the left bank at latitude 25°52'35", longitude 97°27'20", and river mile 48.7 (78.3 km), 0.2 river mile (0.3 km) downstream from El Jardin pumping plant, and 7.0 river miles (11.2 km) downstream from the international highway bridge (Gateway) between Brownsville, Texas and Matamoros, Tamaulipas. The zero of the gage is at mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 24 discharge measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: 1934 through 1989.

REMARKS: Except for diversions, tributary inflows, and drainage returns below Falcon Dam, flow at this station after August 25, 1953 was controlled largely by releases from Falcon Reservoir, 226.1 miles (363.9 km) upstream. Excessive upstream flood flows are partly diverted into the United States and Mexican floodway systems before reaching this station. The transmitter relays gage height data via radio to the Mercedes office of the Commission, and to the Anzalduas Dam Control Room, where it is recorded automatically.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 31,700 second-feet (898 m3/sec) on October 8, 1945 with a gage height of 31.48 feet (9.60 m). Min. no flow occurs frequently.

Average Flow in Second-Feet (Cubic Meters per Second)**

Daily:	Max. 16,200 (459)	Oct. 19 & 20, 1971	Min. 0	Frequently
Monthly:	Max. 14,400 (408)	Oct. 1971	Min. 3.5 (0.10)	August 1957
Yearly:	Max. 3,640 (103)	1976	Min. 42.1 (1.19)	1956

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	43.4	149 *	* 59.3	26.3	1,990	224 *	175	472 *	* 19.9	91.3	230 *	134
2	154	62.5	9.6	1.0	2,690 *	197	187	373	17.4	110 *	117	114
3	259 *	148	2.9	* .1	2,900	233	137 *	298	14.6	257	140	122
4	177	400	15.9	34.3	1,710	644	96.8	262	9.5	171	155	303
5	107	688	131	29.6	917	834	53.6	201	52.1	104	273	623
6	289	913	198	4.0	637	707	16.3	159	123	105	378	631
7	252	778	182	36.0	599	538	1.0	120	89.5	131	280	628
8	109	707	144	55.4	593	458	0	95.6	31.6	122	280	535
9	48.5	596	102	5.8	522	384	0	172	36.1	115	242	413
10	250	473	77.0	45.7	369	430	59.6	132	168	231	139	425
11	370	363	73.4	185	287	421	178	110	212	399	107	402 *
12	246	319	77.3	69.2	222	615	120	477	266	184	92.4	339
13	169	278	138	50.2	172	574	47.3	504	293	28.4	84.8	288
14	100	163	224	229	163	413	31.2	479	360	49.1	* 64.3	116
15	113	* 45.8	114 *	641	242 *	493	80.8	454	448 *	69.1	47.6	158
16	227	38.7	63.6	706	174	729	95.5	242	249	* 73.2	40.7	197
17	231	72.7	30.3	583	97.0	824	176	273	761	127	56.6	142
18	283	71.6	11.8	412 *	35.9	940	136	312	775	57.5	89.7	181
19	421 *	50.0	48.8	373	9.7	1,100	* 77.6	253	280	26.6	117	225
20	466	86.3	54.5	307	9.7	858	133	180	134	62.5	200	261 *
21	404	135	62.0	215	40.7	612	112	196	167	163	176	235
22	444	163	103	129	198	449	106	371 *	163	139	152	215
23	392	118	70.9	88.3	259	305 *	133	318	128	91.4	165	141
24	344	85.8	13.4	169	156	216	170	216	173	173	218	104
25	195	56.7	.4	163	43.6	363	262	200	116	137	248	92.9
26	129	46.1	0	116	8.2	529	338	167	100	80.7	265	94.2
27	134	42.5	23.5	97.9	51.7	477	577	126	97.5	19.5	247	134
28	143	91.0	401	200	99.8	343	662	102	61.2	6.5	117	165
29	133		417	512	113	298	513	77.0	87.0	92.8	75.1	132
30	192		395	1,230	211	170	618	47.7	104	118	126	68.2
31	251		19[illegible]		190		674	29.5		178		202
Sum	7,072.9	7,140.7	3,434.6	6,713.8	15,710.3	15,378	5,966.7	7,418.8	5,536.4	3,712.6	4,923.2	7,820.3

Current Year 1989									Period 1954-1989		
Month	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low				Average	Maximum	Minimum
	High	Low	Day		Day						
Jan.	5.39	2.35	20	498	1	20.0	228	14,029	39,047	330,268	283
Feb.	8.01	2.42	6	967	16	31.9	255	14,163	39,121	362,000	1,060
Mar.	5.65	1.72	28	483	125	0	111	6,812	31,763	361,000	2,050
Apr.	10.00	1.70	30	1,670	1 2	0	224	13,317	29,543	219,590	875
May	14.42	1.71	3	3,090	27	.9	507	31,161	53,628	355,795	4,140
June	8.56	3.07	19	1,170	30	132	513	30,502	60,111	486,551	2,430
July	6.41	1.78	31	708	1 7	0	192	11,835	62,929	437,546	1,120
Aug.	5.77	2.10	1	577	31	29.5	239	14,715	65,741	812,033	218
Sept.	7.75	1.79	17	1,030	4	5.1	185	10,981	121,419	635,722	950
Oct.	5.15	1.74	11	434	27	2.8	120	7,364	157,805	887,207	756
Nov.	4.76	2.25	6	389	16	31.9	164	9,765	75,953	528,000	1,290
Dec.	6.30	1.86	5	674	30	50.6	252	15,511	63,616	480,000	524
Yearly	14.42	1.70		3,090		0	249	180,155	800,676	2,645,434	30,596
	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
	4.40	0.52		87.5		0	7.05	222,218	987,618	3,263,090	37,740

* Discharge measurement made on this day ! And other days ** Period 1954-1989

08-4753.00 DIVERSIONS FROM THE RIO GRANDE
UNITED STATES SIDE, BROWNSVILLE TO THE GULF OF MEXICO

Beginning June 1971, the Texas Water Rights Commission, now the Texas Water Commission, assumed control of the United States portion of the water in Falcon Reservoir and in the Rio Grande below Falcon Dam, the disposition of such waters being made by its Rio Grande Watermaster. Previous to that, since June 1956, such waters had been under the jurisdiction of the 93rd District Court of Texas administered by its Special Water Master.

During 1989, 5,613 irrigable acres (2,272 ha) were allotted Rio Grande water in the river reach between the gaging station near Brownsville and the mouth of the Rio Grande. Such irrigable area was 0.8% of the total irrigable acres (ha) below Falcon Dam allotted Rio Grande water.

The total diversion during 1989 in this river reach was 3,524 acre-feet (4,346,000 m3), or 0.2% of the total water diverted from the Rio Grande below Falcon Dam. Records of diversions in this river reach were determined by means of flow meters. More than one crop per year is often grown on parts of this land.

EXTREME FLOWS FROM RECORDS:

		Average Flow in Second-Feet (Cubic Meters per Second)			
Daily:	Max. 67.7 (1.92)	May 1, 1984	Min. 0		Frequently
Monthly:	Max. 23.4 (0.66)	June 1965	Min. 0		Occasionally
Yearly:	Max. 7.0 (0.20)	1965	Min. 0.7 (0.02)		1976

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.1	30.1	0.1	31.2	20.9	22.6	0.2	0.5	0	0	0	0
2	10.7	10.4	.1	13.3	.1	28.2	.2	.5	0	0	0	0
3	14.1	10.4	.1	14.1	.1	27.7	.2	.5	0	0	0	0
4	15.4	10.4	.1	12.7	.1	25.8	.2	0	0	0	0	0
5	11.1	4.9	5.0	11.1	.1	32.1	.2	0	0	0	0	0
6	7.9	4.9	9.9	5.4	.1	34.8	.2	0	0	0	0	4.4
7	12.7	4.4	12.6	5.4	.1	35.6	.2	4.7	0	0	0	4.4
8	.9	8.5	12.6	5.4	.1	34.3	1.9	4.7	0	0	0	4.4
9	8.9	5.4	12.6	2.7	.1	36.4	1.9	4.7	0	0	0	4.4
10	11.5	6.9	7.7	5.2	.1	32.9	.2	4.7	0	2.8	0	4.4
11	11.5	6.9	7.7	4.9	.1	25.6	.2	0	.9	4.1	0	0
12	16.6	6.9	.1	4.9	.1	20.4	3.9	0	.9	4.1	0	0
13	16.6	7.4	.1	7.5	1.6	17.2	8.8	0	.9	3.7	0	0
14	12.9	7.4	4.1	5.3	.1	16.3	11.6	0	.9	2.4	0	0
15	8.4	8.6	4.1	5.0	1.9	18.7	7.9	0	4.1	0	0	0
16	13.7	4.5	4.1	5.1	1.9	17.4	7.9	0	4.1	.8	2.5	0
17	11.1	3.0	4.1	11.5	1.9	14.9	7.6	0	4.1	.8	2.5	0
18	11.8	3.0	.1	13.8	1.9	11.4	4.8	0	4.9	.8	2.5	0
19	7.3	0	.1	11.4	4.7	14.3	6.3	0	2.6	.8	2.5	0
20	7.3	0	.4	14.9	10.8	13.3	3.4	0	6.6	.8	2.5	0
21	6.4	0	.4	16.7	10.4	12.0	3.4	0	6.6	3.5	2.5	0
22	2.2	0	1.5	18.4	11.4	12.8	2.5	0	6.6	.8	0	0
23	11.2	0	1.5	13.4	14.8	10.8	2.5	0	2.6	.8	0	0
24	12.3	0	1.5	16.7	18.9	5.1	2.5	0	.8	.8	0	0
25	15.2	0	1.5	18.1	18.8	1.9	2.5	0	0	0	0	0
26	15.2	0	0	15.0	23.2	1.9	2.9	0	4.9	0	0	0
27	16.9	0	0	14.0	16.7	1.9	1.5	0	0	0	0	0
28	10.0	0	0	10.4	0	1.9	.2	0	1.4	0	0	0
29	0		0	7.8	0	1.8	.2	0	1.4	0	0	0
30	0		0	0	0	1.8	.2	0	1.4	0	0	0
31	0		0		0		.2	0		0		0
Sum	299.9	144.0	92.1	321.3	161.0	531.8	86.4	20.3	55.7	27.0	15.0	22.0

Month	Current Year 1989: Average Rainfall Inches** 1989	1957-1989	Extreme Second-Feet ∅ High Day	High	Low Day	Low	Average Second-Feet	Total Acre-Feet	Period 1957-1989 Acre-Feet Average	Maximum	Minimum
Jan.	3.76	1.96	27	16.9	!29	0	9.7	595	357	1,275	0
Feb.	.41	1.67	1	30.1	!19	0	5.1	286	219	902	0
Mar.	.07	.63	! 7	12.6	!26	0	3.0	183	130	634	0
Apr.	4.20	1.81	1	31.2	30	0	10.7	637	265	962	0
May	.72	2.65	26	23.2	!28	0	5.2	319	397	1,356	0
June	1.48	2.85	9	36.4	!29	1.8	17.7	1,055	440	1,393	0
July	3.32	2.03	14	11.6	! 1	.2	2.8	171	189	778	0
Aug.	1.57	2.86	! 7	4.7	! 4	0	.7	40.3	106	317	13.7
Sept.	1.73	5.72	!20	6.6	! 1	0	1.9	110	54.0	190	0
Oct.	2.55	2.99	!11	4.1	! 1	0	.9	53.6	61.0	218	0
Nov.	1.96	1.70	!16	2.5	! 1	0	.5	29.8	58.0	252	0
Dec.	1.78	1.60	! 6	4.4	! 1	0	.7	43.6	89.0	497	0
Yearly	24.05	28.47		36.4		0	4.9	3,523	2,365	5,036	543
	Millimeters		Cubic Meters per Second					Thousands of Cubic Meters			
	611	723		1.03		0	0.14	4,346	2,917	6,212	670

∅ Mean daily ! And other days ** United States side - average of several stations in the reach

08-4754.00 DIVERSIONS FROM THE RIO GRANDE UNITED STATES SIDE, FALCON DAM TO THE GULF OF MEXICO

Beginning June 1971 the Texas Water Rights Commission, now the Texas Water Commission, assumed control of the United States portion of the water in Falcon Reservoir and in the Rio Grande below Falcon Dam, the disposition of such waters being made by its Rio Grande Watermaster. Previous to that, since June 1956, such waters had been under the jurisdiction of the 93rd District Court of Texas administered by its Special Water Master.

In 1989, 717,693 irrigable acres (290,443 ha), several towns and many rural homes were allotted Rio Grande water between Falcon Dam and the Gulf of Mexico. The total diversion from the river was 1,524,170 acre-feet (1,880,033,000 m3). Records of diversion from the Rio Grande were determined by means of flowmeters, by open channel rating stations and by deflection meters developed by the International Boundary and Water Commission. Drainage from more than 90% of this area does not return to the Rio Grande, but some of it is reused within the area. More than one crop per year is often grown on parts of this land.

Diversion data pertaining to "Diversions from the Rio Grande-United States Side below Rio Grande City" for the period 1922 through 1957 may be found in previous issues of these Water Bulletins. The area irrigated below Rio Grande City is about 99% of the total acreage irrigated on the United States side below Falcon Dam.

A breakdown by river reaches of the total diversion below Falcon Dam shown in the tabulation below may be found in appropriate downstream order in preceding pages of this Water Bulletin. Because the mean daily discharges are rounded, the total acre-feet shown in the summary below may not equal the sum of the acre-feet of the individual reaches.

EXTREME FLOWS FROM RECORDS:

		Average Flow in Second-Feet (Cubic Meters per Second)		
Daily:	Max. 5,380 (152)	June 20 & 21, 1960	Min. 2.8 (0.08)	Aug. 10, 1980
Monthly:	Max. 4,350 (123)	June 1960	Min. 102 (2.89)	March 1957
Yearly:	Max. 2,110 (59.8)	1989	Min. 880 (24.9)	1970

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,410	2,520	2,840	2,390	656	5,210	1,320	675	2,420	1,400	2,320	1,520
2	2,220	2,350	2,840	1,970	746	4,970	1,470	780	1,950	1,880	2,090	568
3	2,880	1,980	2,540	2,740	755	4,750	2,070	991	2,050	2,250	1,840	562
4	3,200	1,510	2,330	2,890	742	4,650	1,820	1,070	2,460	2,440	1,360	1,070
5	3,170	1,290	2,320	2,840	684	4,750	2,530	829	2,670	2,360	1,270	1,080
6	3,110	1,050	2,580	2,960	526	4,740	2,690	904	2,900	2,150	1,680	665
7	2,890	860	2,630	3,120	537	4,670	2,470	1,650	2,870	1,470	1,730	634
8	2,730	882	2,670	2,860	1,200	4,720	1,840	1,980	2,670	1,630	1,870	594
9	2,840	927	2,620	2,730	1,420	4,630	1,900	2,180	1,880	2,640	1,750	236
10	2,950	966	2,380	3,280	1,770	4,090	2,490	2,340	1,930	2,890	1,460	160
11	3,080	762	2,520	3,380	2,080	4,030	2,670	2,140	2,190	2,990	1,240	443
12	3,180	730	2,540	3,050	2,410	4,270	2,770	1,410	2,350	2,410	1,340	340
13	2,960	1,480	2,890	2,820	2,170	4,390	2,660	1,460	2,300	2,040	1,850	472
14	2,460	1,870	3,060	1,770	2,360	3,720	2,620	1,910	2,010	1,500	2,000	448
15	2,390	1,730	3,240	1,350	3,100	3,740	1,890	2,310	2,170	1,490	1,950	460
16	2,740	1,530	3,170	1,260	3,370	3,270	1,850	2,220	1,760	2,260	2,070	286
17	2,930	1,520	3,060	1,870	3,510	2,560	2,580	2,120	1,750	2,450	1,760	169
18	2,870	1,230	2,830	1,990	3,520	2,200	2,630	1,920	2,210	2,480	1,160	432
19	2,520	1,240	2,630	1,940	3,730	2,650	2,770	1,510	2,210	2,190	1,240	632
20	2,180	1,380	2,900	2,150	3,620	3,150	2,710	1,340	2,170	2,000	1,710	682
21	1,580	1,660	2,730	2,190	3,660	3,040	2,260	1,650	2,160	1,570	1,730	930
22	1,750	1,890	2,820	1,870	4,060	3,050	1,920	1,680	2,270	1,710	1,250	833
23	1,960	1,960	2,590	2,140	4,410	2,720	2,070	1,600	1,780	2,350	349	562
24	2,340	1,800	2,160	2,730	4,500	1,940	2,460	1,800	1,830	2,750	779	325
25	2,520	1,490	1,750	2,980	4,620	1,580	2,490	1,700	2,160	2,800	575	311
26	2,450	1,430	1,930	2,990	4,620	1,870	2,090	1,280	2,120	2,680	561	693
27	2,400	1,960	2,090	2,760	4,800	1,490	1,480	1,260	2,180	2,200	1,290	888
28	2,050	2,260	2,360	2,200	4,270	1,550	1,070	1,940	1,910	1,800	1,500	829
29	1,720		2,600	1,530	4,580	1,740	883	2,030	1,820	1,720	1,320	787
30	1,970		2,540	726	4,920	1,730	698	2,030	1,290	1,920	1,300	555
31	2,110		766		4,900		658	1,990		1,920		267
Sum	77,560	42,257	78,926	71,476	88,246	101,870	63,829	50,699	64,440	66,340	44,344	18,433

Month	Current Year 1989: Average Rainfall Inches** 1989	1957-1989	Ø Extreme Second-Feet: High Day	High	Low Day	Low	Average Second-Feet	Total Acre-Feet	Period 1957-1989: Acre-Feet Average	Maximum	Minimum
Jan.	1.08	1.49	4	3,200	1	1,410	2,500	153,838	73,548	182,403	9,717
Feb.	.48	1.44	1	2,520	12	730	1,510	83,815	51,448	126,230	11,785
Mar.	.05	.68	15	3,240	31	766	2,550	156,547	73,923	156,547	6,280
Apr.	2.45	1.51	11	3,380	30	726	2,380	141,771	111,234	209,970	25,100
May	.36	2.69	30	4,920	6	526	2,850	175,033	118,875	228,833	16,071
June	1.83	2.81	1	5,210	27	1,490	3,400	202,056	133,941	259,000	26,487
July	1.62	1.74	!12	2,770	31	658	2,060	126,603	105,497	196,205	31,502
Aug.	1.28	2.43	10	2,340	1	675	1,640	100,560	83,592	143,286	36,208
Sept.	1.26	4.40	6	2,900	30	1,290	2,150	127,815	60,581	136,000	12,709
Oct.	.72	2.58	11	2,990	1	1,400	2,140	131,583	64,925	131,583	12,991
Nov.	.55	1.21	1	2,320	23	349	1,480	87,955	52,308	97,969	12,674
Dec.	2.01	1.18	1	1,520	10	160	595	36,561	49,688	85,305	14,034
Yearly	13.69	24.16		5,210		160	2,110	1,524,137	979,560	1,524,137	636,835
	Millimeters		Cubic Meters per Second					Thousands of Cubic Meters			
	348	614		148		4.53	59.8	1,879,993	1,208,268	1,879,993	785,523

Ø Mean daily ! And other days ** United States side - average of several stations in the reach

OUTFALLS FROM SEWERS INTO THE RIO GRANDE

IN ACRE-FEET

EL PASO SEWAGE OUTFALL

Treated sewage effluent enters the Rio Grande through the outfall of the Haskell Street Wastewater Treatment Plant located 7.1 river miles downstream from the American Dam. The outfall from this plant consists of flows measured by a Sparling propeller meter and estimates of amounts which bypass the meter. The records are furnished by the City of El Paso, Texas.

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Yearly
1989	1,759	1,698	1,862	1,876	2,003	1,945	2,216	2,145	2,159	1,941	1,832	1,868	23,304
* Average	2,001	1,864	2,002	1,924	2,007	2,036	2,171	2,222	2,137	2,043	1,973	1,971	24,351

EAGLE PASS SEWAGE OUTFALL

Treated sewage effluent enters the Rio Grande at river mile 495.8 and about 600 feet upstream from the Eagle Pass-Piedras Negras International Railroad Bridge. The records are based on weekly current meter measurements and estimates by personnel of the International Boundary and Water Commission.

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Yearly
1989	161	170	169	172	186	180	133	166	146	165	170	166	1,984
* Average	174	150	167	166	179	176	173	173	172	187	173	178	2,068

LAREDO SEWAGE OUTFALL

Treated sewage effluent enters the Rio Grande from two sewage treatment plants, Zacate Creek Sewage Treatment Plant and Southside Sewage Treatment Plant. These sewage outfalls enter the Rio Grande at river miles 360.0 and 356.0, 0.9 and 4.9 river miles respectively downstream from the old international highway bridge between Laredo, Texas and Nuevo Laredo, Tamaulipas. The record is furnished by the Laredo Water Treatment Plant in Laredo, Texas.

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Yearly
1989	1,070	921	1,039	988	1,071	1,042	1,068	1,102	1,043	1,020	971	956	12,291
* Average	880	787	861	847	944	920	948	953	960	959	896	872	10,827

BROWNSVILLE SEWAGE OUTFALL

Treated sewage effluent enters the Rio Grande at river mile 46.8, 8.9 river miles downstream from the Gateway Bridge between Brownsville, Texas and Matamoros, Tamaulipas and 1.9 river miles downstream from the Brownsville Gaging station. Records are furnished by the City of Brownsville.

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Yearly
1989	533	481	524	526	564	529	559	582	552	562	548	579	6,539
* Average	624	567	607	582	641	623	647	631	652	637	579	588	7,378

* Period averages are for past 10 years

MUNICIPAL AND INDUSTRIAL WATER USES

IN ACRE-FEET

Tabulated below are monthly and yearly amounts of water pumped from the Rio Grande directly into municipal distribution systems of cities along the border, except for the city of Del Rio, whose main supply is derived from San Felipe Springs; and the city of El Paso, whose supply is derived mainly from deep wells. The amount shown below for the city of El Paso is Rio Grande water pumped from the Franklin Canal at the El Paso Water Plant for municipal use. Ciudad Acuna, Coahuila, whose municipal diversion from the Rio Grande started in 1971, may at times use an alternate source from Arroyo Las Vacas, which was its previous source of supply. Such use would be reflected in the tabulations below.

All Rio Grande water used by U. S. municipalities below Falcon Dam is also included in the figures shown under "Diversions from the Rio Grande - United States Side..." (by river reaches and total below Falcon Dam) on pages 63, 66, 70, 71, 73, 75, and 76 herein. Population data was provided by the Chamber of Commerce for each city in the United States, except El Paso,which was provided by the City Planning Office; Falcon Village, estimated by the International Boundary and Water Commission; Del Rio, by the Middle Rio Grande Development Counsel; Laughlin Air Force Base, by the U.S. Air Force; Laredo, by the Laredo Development Foundation; and Rio Bravo and San Ygnacio, which are based on utilities connections.

IN THE UNITED STATES

Month	EL PASO (Pop. 533,454)				DEL RIO (Pop. 35,000)			
	1989	Period 1980 - 1989			1989	Period 1980 - 1989		
		Average	Maximum	Minimum		Average	Maximum	Minimum
Jan.	0	59.0	337	0	639	613	837	459
Feb.	0	156	477	0	560	592	836	463
Mar.	795	636	1,256	110	964	845	1,211	658
Apr.	2,774	1,942	2,774	814	898	952	1,390	688
May	4,123	3,618	4,123	3,131	1,268	963	1,365	750
June	4,365	3,849	4,365	3,373	1,421	995	1,421	611
July	4,478	4,065	4,478	3,213	1,257	1,269	1,618	764
Aug.	4,331	3,811	4,331	3,137	1,366	1,341	1,883	824
Sept.	4,241	3,370	4,251	1,778	1,202	1,011	1,260	702
Oct.	567	647	1,794	0	925	774	1,113	452
Nov.	0	70.0	334	0	614	641	861	361
Dec.	0	32.9	329	0	521	599	757	489
Yearly	25,674	22,256	25,674	18,923	11,635	10,595	12,367	8,229

Month	EAGLE PASS (Pop. 27,000)				LAREDO (Pop. 138,000)			
	1989	Period 1980 - 1989			1989	Period 1980 - 1989		
		Average	Maximum	Minimum		Average	Maximum	Minimum
Jan.	253	257	297	191	1,080	1,401	1,524	1,080
Feb.	216	247	294	195	1,575	1,346	1,575	1,236
Mar.	290	303	354	251	1,977	1,719	1,977	1,537
Apr.	310	329	401	268	2,614	1,908	2,614	1,573
May	343	329	390	248	2,967	1,975	2,967	1,640
June	452	363	452	245	2,635	2,091	2,676	1,638
July	475	438	555	326	2,765	2,397	2,765	2,019
Aug.	433	443	527	340	2,674	2,430	2,902	2,108
Sept.	398	394	483	274	2,422	2,056	2,422	1,825
Oct.	333	328	422	217	2,251	1,811	2,251	1,513
Nov.	284	275	330	196	1,999	1,641	1,999	1,426
Dec.	296	263	297	189	1,996	1,574	1,996	1,336
Yearly	4,083	3,969	4,544	3,171	26,955	22,349	26,955	20,317

Month	LAREDO POWER STATION				RIO BRAVO (Pop. 3,000)			
	1989	Period 1980 - 1989			1989	Period 1984 - 1989		
		Average	Maximum	Minimum		Average	Maximum	Minimum
Jan.	68.3	63.9	113	30.0	20.0	15.0	29.0	4.5
Feb.	72.7	67.4	101	39.7	24.2	12.0	24.2	0.0
Mar.	128	85.3	128	44.8	34.7	16.4	34.7	0.8
Apr.	125	100	133	54.4	28.4	18.0	28.4	4.3
May	137	112	137	73.4	41.7	19.8	41.7	5.5
June	155	143	199	80.4	53.0	21.0	53.0	8.5
July	156	144	176	101	45.2	17.2	45.2	4.7
Aug.	151	151	176	120	44.6	27.3	44.6	11.0
Sept.	168	128	168	79.0	40.8	24.0	40.8	9.9
Oct.	92.2	90.5	118	61.4	37.4	20.5	37.4	6.0
Nov.	34.9	64.0	101	30.3	31.9	19.0	31.9	3.3
Dec.	112	61.3	112	6.6	27.9	13.5	27.9	0.0
Yearly	1,400	1,210	1,432	776	430	224	430	92.4

MUNICIPAL AND INDUSTRIAL WATER USES

IN ACRE-FEET

IN THE UNITED STATES

Month	SAN YGNACIO (Pop. 815)				NEW ZAPATA (Pop. 8,000)			
	1989	Period 1980 - 1989			1989	Period 1980 - 1989		
		Average	Maximum	Minimum		Average	Maximum	Minimum
Jan.	9.2	10.2	21.5	4.0	91.0	77.2	105	41.6
Feb.	9.9	10.4	18.7	4.1	77.3	77.2	109	52.0
Mar.	14.2	13.2	24.7	4.7	125	97.5	125	68.8
Apr.	11.5	14.5	26.6	4.8	147	121	202	74.0
May	16.0	14.7	26.2	4.7	137	102	137	78.4
June	13.6	14.5	23.4	7.8	138	111	143	73.1
July	14.9	15.6	27.8	8.3	179	130	179	88.3
Aug.	16.1	16.4	31.1	6.7	125	134	219	85.3
Sept.	13.7	14.9	20.4	8.6	144	114	144	85.1
Oct.	15.4	12.5	20.2	6.4	121	107	165	77.9
Nov.	12.5	11.0	18.0	4.7	113	88.1	113	40.5
Dec.	10.6	10.4	17.1	3.6	124	88.4	124	53.2
Yearly	158	158	245	76.4	1,521	1,247	1,521	914

Month	FALCON VILLAGE (Pop. 82)				ROMA (Pop. 5,500)			
	1989	Period 1980 - 1989			1989	Period 1980 - 1989		
		Average	Maximum	Minimum		Average	Maximum	Minimum
Jan.	7.0	8.5	10.6	5.6	113	78.3	113	29.1
Feb.	6.7	7.9	9.8	5.3	110	76.9	110	48.3
Mar.	9.4	9.4	11.3	5.3	143	98.6	143	68.7
Apr.	9.1	10.3	13.8	7.4	145	105	145	71.9
May	11.3	10.5	12.5	7.4	188	113	188	73.0
June	13.3	11.4	17.6	7.5	190	115	190	71.7
July	14.1	12.1	18.0	8.9	206	127	206	81.4
Aug.	12.2	12.2	15.6	8.8	195	129	195	84.6
Sept.	11.6	10.5	13.0	7.4	189	116	189	87.6
Oct.	10.2	10.1	11.6	8.3	175	107	175	73.9
Nov.	9.3	9.2	10.8	6.9	154	98.8	154	67.1
Dec.	7.5	8.8	10.7	6.7	140	92.8	140	58.4
Yearly	122	121	147	91.6	1,948	1,257	1,948	854

Month	RIO GRANDE CITY (Pop. 18,000)				BROWNSVILLE (Pop. 115,000)			
	1989	Period 1980 - 1989			1989	Period 1980 - 1989		
		Average	Maximum	Minimum		Average	Maximum	Minimum
Jan.	128	139	165	107	1,501	1,359	1,501	1,251
Feb.	115	137	190	101	1,415	1,233	1,415	1,144
Mar.	163	173	204	154	1,848	1,479	1,848	1,308
Apr.	151	176	226	109	1,774	1,589	1,774	1,446
May	162	195	354	98	800	1,504	1,776	800
June	173	194	278	143	1,656	1,611	1,907	1,434
July	181	208	246	180	1,673	1,799	2,221	1,481
Aug.	189	208	269	158	1,815	1,849	2,014	1,518
Sept.	197	201	297	122	1,732	1,598	1,870	1,270
Oct.	198	190	289	140	1,754	1,575	1,754	1,331
Nov.	170	156	189	129	1,441	1,464	1,642	1,330
Dec.	143	146	169	109	1,551	1,399	1,551	1,272
Yearly	1,970	2,123	2,493	1,655	18,960	18,459	19,945	16,888

MUNICIPAL AND INDUSTRIAL WATER USES

IN ACRE-FEET

IN MEXICO

Month	CD. ACUNA, COAHUILA				PIEDRAS NEGRAS, COAHUILA			
	1989	Period 1980 - 1989			1989	Period 1980 - 1989		
		Average	Maximum	Minimum		Average	Maximum	Minimum
Jan.	249	229	251	198	616	542	647	318
Feb.	225	215	239	199	594	496	606	279
Mar.	250	234	251	220	699	565	699	359
Apr.	242	228	244	214	654	551	689	297
May	250	236	252	222	764	587	764	295
June	243	231	245	215	713	594	804	285
July	251	238	259	221	848	642	848	302
Aug.	240	237	256	222	837	696	854	348
Sept.	243	232	247	215	739	650	774	321
Oct.	247	237	251	222	788	635	788	371
Nov.	239	230	248	214	696	584	720	351
Dec.	246	239	256	221	697	586	697	361
Yearly	2,925	2,786	2,960	2,590	8,645	7,128	8,645	4,391

Month	NUEVO LAREDO, TAMAULIPAS				NUEVA CD. GUERRERO, TAMAULIPAS			
	1989	Period 1980 - 1989			1989	Period 1980 - 1989		
		Average	Maximum	Minimum		Average	Maximum	Minimum
Jan.	1,570	2,076	2,399	1,570	35.8	44.3	59.3	34.0
Feb.	1,479	1,904	2,581	1,479	31.5	39.1	53.8	26.8
Mar.	1,515	2,173	2,913	1,515	39.0	41.2	59.6	31.6
Apr.	2,017	2,297	2,831	1,901	43.0	47.3	60.0	34.5
May	1,588	2,272	2,896	1,470	49.9	48.2	58.4	34.9
June	1,746	2,351	2,933	1,626	45.0	48.9	76.4	33.6
July	1,920	2,510	2,935	1,825	55.2	44.5	58.4	35.6
Aug.	1,950	2,527	2,933	1,864	56.7	44.0	56.7	35.8
Sept.	1,988	2,420	2,822	1,922	54.4	41.9	56.4	33.5
Oct.	1,883	2,383	2,733	1,822	54.6	45.7	54.8	33.4
Nov.	1,808	2,308	2,850	1,724	54.3	43.9	56.7	32.8
Dec.	1,838	2,291	2,800	1,810	41.2	43.4	58.5	33.1
Yearly	21,302	27,512	32,320	21,302	561	532	664	459

Month	CD. MIER, TAMAULIPAS				CD. MIGUEL ALEMAN, TAMAULIPAS			
	1989	Period 1980 - 1989			1989	Period 1980 - 1989		
		Average	Maximum	Minimum		Average	Maximum	Minimum
Jan.	30.8	41.3	55.5	30.8	141	80.4	141	39.8
Feb.	25.5	33.0	57.1	11.2	127	82.9	127	35.3
Mar.	29.4	45.4	76.5	28.7	128	96.5	131	42.6
Apr.	34.2	45.4	61.0	34.2	137	95.2	137	41.5
May	41.2	47.2	59.7	33.0	152	103.0	152	42.0
June	40.0	42.5	59.3	34.1	138	104.0	138	48.5
July	42.6	42.2	64.5	29.8	148	107.0	152	47.2
Aug.	49.9	48.6	63.2	33.2	152	107.0	152	49.2
Sept.	48.9	44.7	58.5	33.0	136	99.3	136	47.4
Oct.	28.6	45.7	60.2	28.6	148	101.0	150	43.7
Nov.	33.4	43.3	60.4	30.3	135	97.2	142	46.3
Dec.	35.7	41.4	57.2	35.4	124	90.4	143	38.4
Yearly	440	521	704	413	1,666	1,164	1,666	545

STORED WATER IN LARGE RESERVOIRS OF THE RIO GRANDE BASIN

IN THOUSANDS OF ACRE-FEET

Data are presented below for all storage reservoirs in the Rio Grande basin in the United States and Mexico that exceed 15,000 acre-feet in capacity. The monthly figures represent the water in storage on the last day of each month, in thousands of acre-feet. The capacities indicated are at spillway level. Storage figures greater than the capacity indicate that the water surface was above spillway level.

The reservoirs and the agencies providing the data are: Rio Grande, Continental, Santa Maria, Terrace, Mountain Home, and Sanchez from the State of Colorado, Division of Water Resources; Platoro, Heron, El Vado, Elephant Butte, and Caballo from the United States Bureau of Reclamation; Costilla from the New Mexico Interstate Stream Commission; Abiquiu, Cochiti, and Santa Rosa from the United States Corps of Engineers; Bluewater, Lake Sumner, McMillan, Avalon and Brantley from the United States Geological Survey; Storrie from the State Engineer Office of New Mexico; Red Bluff from the Red Bluff Water Power Control District; Lake Casa Blanca from Webb County Office; Delta Lake from the Delta Lake Irrigation District; La Boquilla, La Colina, and Rosetilla from the Federal Power Commission of Mexico; Francisco I. Madero, Chihuahua, Luis L. Leon, Centenario, San Miguel, Venustiano Carranza, Laguna de Salinillas, Rodrigo Gomez (La Boca), Marte R. Gomez, Culebron, Villa Cardenas, and Palito Blanco from the Ministry of Agriculture and Hydraulic Resources of Mexico; Amistad Reservoir (International) and Falcon Reservoir (International) from the International Boundary and Water Commission.

IN THE UNITED STATES

Month	RIO GRANDE (Capacity 51.1)		CONTINENTAL (Capacity 22.7)		SANTA MARIA (Capacity 45.1)		TERRACE (Capacity 17.2)		MOUNTAIN HOME (Capacity 18.6)	
	1989	Average 1927-1989	1989	Average 1928-1989	1989	Average 1928-1989	1989	Average 1925-1989	1989	Average 1924-1989
Jan.	13.4	14.4	3.6	5.0	8.9	7.8	3.7	4.2	3.3	3.7
Feb.	15.0	15.6	4.3	5.4	9.0	8.3	4.5	4.6	3.6	4.0
Mar.	17.9	17.0	5.1	5.9	9.3	8.9	6.7	5.1	4.1	4.4
Apr.	25.6	17.9	7.1	6.4	10.2	10.0	6.7	5.8	4.8	4.9
May	25.8	22.2	7.1	8.1	10.2	13.2	6.6	7.2	5.2	6.5
June	5.6	23.4	2.3	8.3	10.2	14.8	4.6	8.4	4.5	6.8
July	0	13.7	0	5.7	10.0	10.6	2.2	5.8	1.4	5.0
Aug.	0	8.0	0	3.9	10.1	6.7	1.7	3.7	1.1	3.1
Sep.	0	8.2	0.1	3.7	9.9	6.4	1.8	3.3	1.1	2.7
Oct.	0	9.0	0.6	3.7	9.4	6.6	1.7	3.4	1.3	2.8
Nov.	1.0	11.3	1.3	4.0	9.5	7.2	2.5	3.5	1.4	3.1
Dec.	1.6	13.0	1.7	4.5	9.5	7.6	2.9	3.9	1.6	3.4
Avg.	8.8	14.5	2.8	5.4	9.7	9.0	3.8	4.9	2.8	4.2
Max.	25.8	54.8	7.1	26.7	10.2	42.1	6.7	17.7	5.2	16.4
Min.	0	0	0	0	8.9	0	1.7	0	1.1	0

Month	SANCHEZ (Capacity 103.2)		PLATORO (Capacity 60.0)		COSTILLA (Capacity 15.7)		HERON (Capacity 401.3)		EL VADO (Capacity 186.3)	
	1989	Average 1927-1989	1989	Average 1952-1989	1989	Average 1922-1989	1989	Average 1971-1989	1989	Average 1935-1989
Jan.	32.2	14.0	29.5	13.5	4.6	4.6	336.8	229.1	165.4	54.6
Feb.	32.1	14.1	29.8	13.3	5.1	5.0	367.2	227.5	165.7	52.9
Mar.	33.7	14.6	30.8	13.5	5.6	5.5	365.6	223.9	174.5	54.2
Apr.	33.8	15.8	33.5	13.6	6.0	6.6	369.0	227.2	167.6	84.8
May	29.7	19.0	33.6	15.5	5.7	8.4	387.5	256.5	173.5	119.5
June	23.6	19.1	30.0	21.3	3.8	7.8	396.5	283.7	156.7	112.7
July	18.0	15.0	21.9	20.1	1.7	5.3	396.9	287.0	123.2	96.7
Aug.	14.9	12.6	20.3	18.7	0	3.5	391.9	285.8	108.9	78.8
Sep.	14.0	12.8	19.4	18.8	0	3.0	374.3	282.5	107.5	67.8
Oct.	14.4	13.3	18.1	18.6	0	3.4	373.7	282.1	104.5	63.8
Nov.	15.2	13.4	18.3	15.0	0	3.8	371.9	279.8	99.0	55.9
Dec.	15.3	13.9	18.2	14.9	0	4.2	370.5	253.9	93.1	55.6
Avg.	23.1	14.8	25.3	16.4	2.7	5.1	375.2	259.9	136.6	74.8
Max.	33.8	62.4	33.6	55.3	6.0	15.1	396.9	401.3	174.5	203.5
Min.	14.0	0	18.1	0	0	0	336.8	0.6	93.1	0

STORED WATER IN LARGE RESERVOIRS OF THE RIO GRANDE BASIN

IN THOUSANDS OF ACRE-FEET

IN THE UNITED STATES

Month	ABIQUIU (Capacity 1,212.0)		COCHITI (Capacity 505.7)		BLUEWATER (Capacity 43.5)		ELEPHANT BUTTE (Capacity 2,110.3)		CABALLO (Capacity 331.5)	
	1989	Average 1965-1989	1989	Average 1973-1989	1989	Average 1927-1989	1989	Average 1915-1989	1989	Average 1938-1989
Jan.	189.6	63.0	50.8	62.0	10.3	8.9	2,023.9	825.7	109.2	102.1
Feb.	194.6	60.2	51.0	55.4	10.6	9.5	2,020.3	829.5	131.6	127.0
Mar.	186.4	57.2	58.1	54.2	11.2	13.3	1,953.3	812.0	143.2	105.8
Apr.	194.0	65.4	49.5	64.3	9.8	16.8	1,983.7	806.4	174.8	105.2
May	180.7	108.3	50.2	91.1	6.5	15.1	1,934.3	889.5	170.1	110.3
June	177.5	104.0	48.4	103.2	3.9	12.7	1,837.9	916.7	122.0	96.4
July	167.1	91.6	50.9	74.6	3.8	11.1	1,751.5	865.0	80.0	77.6
Aug.	157.2	87.7	50.1	64.5	3.9	10.0	1,688.2	811.8	71.3	53.4
Sep.	156.6	85.0	50.7	63.6	3.7	9.5	1,642.7	789.2	63.0	41.0
Oct.	158.2	82.4	52.2	67.6	3.6	9.1	1,639.6	790.7	65.7	52.2
Nov.	161.9	73.9	60.1	67.3	3.4	8.9	1,643.9	810.0	67.8	64.7
Dec.	163.0	71.9	50.9	66.1	3.3	8.7	1,675.3	831.4	69.9	81.4
Avg.	173.9	79.2	51.9	69.5	6.2	11.1	1,816.2	831.5	105.7	84.8
Max.	194.6	400.3	60.1	382.0	11.2	47.1	2,023.9	2,302.8	174.8	346.6
Min.	156.6	0	48.4	3.6	3.3	0	1,639.6	3.3	63.0	0.1

Month	STORRIE (Capacity 23.3)		SANTA ROSA (Capacity 447.1)		LAKE SUMNER (Capacity 101.6)		McMILLAN & AVALON (Capacity 37.4)		BRANTLEY (Capacity 348.5)	
	1989	Average 1939-1989	1989	Average 1980-1989	1989	Average 1937-1989	1989	Average 1908-1989	1989	Average 1988-1989
Jan.	18.8	8.1	82.5	51.9	30.6	60.6	11.2	25.8	19.1	19.1
Feb.	18.7	8.1	83.6	52.4	33.9	64.5	13.5	26.0	19.1	19.1
Mar.	18.8	8.9	86.7	54.2	34.6	55.0	1.0	25.2	22.3	22.3
Apr.	18.9	9.4	51.2	55.7	30.6	47.9	1.0	17.1	25.1	25.1
May	17.8	9.8	10.5	56.8	20.7	47.8	5.9	19.0	42.3	42.3
June	16.2	8.7	7.8	60.3	15.7	42.7	0.7	18.2	37.0	37.0
July	15.1	8.6	12.5	51.0	14.1	40.9	1.2	17.4	23.3	23.3
Aug.	14.4	9.3	20.8	53.8	15.4	44.1	1.0	16.2	13.9	7.4
Sep.	14.2	8.8	22.9	50.7	15.9	45.9	1.0	17.9	10.1	11.5
Oct.	13.7	8.4	24.3	52.7	14.2	48.4	0.6	19.4	5.4	12.3
Nov.	12.7	8.5	25.0	53.3	18.8	51.6	1.1	21.1	6.6	12.9
Dec.	12.3	8.0	26.0	54.0	23.6	56.2	1.6	24.0	7.5	13.3
Avg.	16.0	8.7	37.8	53.9	22.3	50.5	3.3	20.6	19.3	20.5
Max.	18.9	26.3	86.7	116.3	34.6	156.3	13.5	85.5	42.3	42.3
Min.	12.3	0	7.8	0	14.1	0.4	0.6	0	5.4	0.9

Month	RED BLUFF (Capacity 310.0)		LAKE CASA BLANCA (Capacity 19.1)		DELTA LAKE (Capacity 25.0)				TOTAL IN U.S. RESERVOIRS (Capacity 6,436.2)	
	1989	Average 1936-1989	1989	Average 1962-1989	1989	Average 1939-1989			1989	Estimated ! Average
Jan.	182.5	98.7	14.4	13.1	18.8	15.5			3,363.1	1,705.4
Feb.	185.8	100.6	14.9	12.9	17.3	14.9			3,431.2	1,730.8
Mar.	177.1	98.0	15.3	12.8	18.1	14.3			3,379.4	1,686.2
Apr.	161.0	86.5	15.6	13.0	17.7	14.4			3,397.2	1,720.2
May	150.3	87.5	15.9	13.7	13.0	15.0			3,303.1	1,982.3
June	136.6	89.0	15.1	13.9	18.3	15.1			3,074.9	2,024.2
July	111.1	80.4	14.6	13.4	18.3	15.0			2,838.8	1,834.8
Aug.	98.6	76.9	10.5	13.4	16.8	14.1			2,711.0	1,687.4
Sep.	97.2	80.4	9.9	14.3	18.8	15.4			2,634.8	1,642.4
Oct.	95.0	88.1	15.9	14.3	16.1	15.4			2,628.2	1,667.7
Nov.	96.1	91.1	15.3	13.9	17.2	15.2			2,650.0	1,689.4
Dec.	97.8	95.3	14.8	13.6	16.6	14.9			2,677.0	1,713.7
Avg.	132.4	89.4	14.4	13.5	17.3	14.9			3,007.4	1,757.0
Max.	185.8	327.5	15.9	28.2	18.8	22.6			3,431.2	
Min.	95.0	10.0	9.9	3.5	13.0	0			2,628.2	

! Total of period averages in all reservoirs

STORED WATER IN LARGE RESERVOIRS OF THE RIO GRANDE BASIN

IN THOUSANDS OF ACRE-FEET

IN MEXICO

Month	LA BOQUILLA (Capacity 2,417.5)		LA COLINA (Capacity 19.5)		ROSETILLA (Capacity 15.4)		FRANCISCO I. MADERO (Capacity 282.1)		CHIHUAHUA (Capacity 25.9)	
	1989	Average 1914-1989	1989	Average 1940-1989	1989	Average 1940-1989	1989	Average 1948-1989	1989	Average 1961-1989
Jan.	1,603.9	1,506.2	20.3	18.3	13.9	12.8	194.4	219.1	1.5	7.6
Feb.	1,529.2	1,466.5	20.2	18.7	13.9	12.7	185.9	214.9	1.1	7.3
Mar.	1,387.3	1,408.0	20.3	18.8	13.9	12.2	156.0	200.3	0.8	6.8
Apr.	1,241.0	1,329.8	20.3	19.2	13.9	11.9	107.3	167.3	0.6	6.4
May	928.7	1,254.2	20.3	18.9	13.9	12.0	86.6	138.4	0.6	5.8
June	1,075.3	1,177.5	20.3	19.0	13.9	12.3	49.3	122.3	0.6	5.4
July	783.6	1,213.2	20.3	19.0	13.9	12.2	34.5	137.3	0.8	5.6
Aug.	1,004.1	1,388.8	19.8	18.7	13.9	13.0	84.4	172.0	4.1	6.9
Sep.	1,312.2	1,563.6	20.3	18.5	13.9	13.3	139.2	210.2	5.1	8.9
Oct.	1,280.3	1,570.9	19.9	18.3	13.9	13.2	141.1	217.1	5.0	8.7
Nov.	1,273.1	1,539.8	19.9	16.9	13.9	12.6	142.6	217.9	5.0	8.4
Dec.	1,276.8	1,527.9	19.9	18.4	13.9	13.0	145.3	217.0	5.0	8.0
Avg.	1,224.6	1,412.2	20.2	18.6	13.9	12.6	122.2	186.1	2.5	7.1
Max.	1,603.9	2,758.1	20.3	22.5	13.9	19.4	194.4	366.6	5.1	26.5
Min.	783.6	16.9	19.8	11.6	13.9	0	34.5	1.4	0.6	0.2

Month	LUIS L. LEON (Capacity 689.1)		CENTENARIO and SAN MIGUEL (Capacity 19.9)		VENUSTIANO CARRANZA (Capacity 1,122.8)		LAGUNA DE SALINILLAS (Capacity 15.4)		RODRIGO GOMEZ (Capacity 33.2)	
	1989	Average 1968-1989	1989	Average 1934-1989	1989	Average 1930-1989	1989	Average 1931-1989	1989	Average 1963-1989
Jan.	283.7	385.7	16.7	13.9	1,121.2	500.0	13.2	7.6	31.2	27.1
Feb.	292.7	382.4	20.5	13.8	1,092.5	480.2	13.5	9.1	28.0	26.8
Mar.	304.8	360.5	21.2	11.1	1,031.5	453.6	13.1	7.6	18.2	25.8
Apr.	308.9	334.0	19.3	9.5	1,001.9	440.0	11.6	8.9	24.2	25.0
May	302.1	311.3	20.1	10.1	934.4	421.6	10.9	8.9	22.0	24.6
June	292.9	308.0	17.7	8.7	853.6	403.7	10.7	8.1	19.4	24.4
July	302.7	318.9	15.2	8.2	797.8	414.2	11.0	7.7	17.5	24.0
Aug.	335.1	321.2	12.4	8.7	740.7	419.7	10.2	7.8	16.7	24.2
Sep.	312.4	367.2	12.0	10.6	691.0	472.4	11.3	8.4	21.1	27.6
Oct.	303.1	388.6	11.3	12.5	669.8	506.8	10.9	7.9	22.2	28.5
Nov.	311.6	394.8	11.5	12.9	657.0	515.2	9.7	7.5	21.2	28.1
Dec.	323.3	402.7	11.8	13.2	643.1	512.8	8.9	7.3	21.8	27.7
Avg.	306.1	356.3	15.8	11.1	852.9	461.7	11.3	8.1	22.0	26.1
Max.	335.1	753.1	21.2	21.2	1,121.2	1,167.8	13.5	15.8	31.2	36.8
Min.	283.7	3.8	11.3	0	643.1	1.0	8.9	0	16.7	0

Month	MARTE R. GOMEZ (Capacity 889.3)								TOTAL IN MEXICAN RESERVOIRS (Capacity 5,530.1)	
	1989	Average 1943-1989							1989	Estimated ! Average
Jan.	758.3	626.7							4,058.3	3,325.0
Feb.	740.3	588.3							3,937.8	3,220.7
Mar.	732.6	562.7							3,699.7	3,067.4
Apr.	617.8	516.9							3,366.8	2,868.9
May	440.8	474.9							2,780.4	2,680.7
June	334.1	480.7							2,687.8	2,570.1
July	303.9	471.2							2,301.2	2,631.5
Aug.	339.9	506.0							2,581.3	2,887.0
Sep.	368.9	631.8							2,907.4	3,332.5
Oct.	387.9	668.3							2,865.4	3,440.8
Nov.	385.5	670.1							2,851.0	3,424.2
Dec.	396.2	667.5							2,866.0	3,415.6
Avg.	483.9	572.1							3,075.3	3,072.0
Max.	758.3	1,465.4							4,058.3	
Min.	303.9	17.8							2,301.2	

STORED WATER IN LARGE RESERVOIRS OF THE RIO GRANDE BASIN

INTERNATIONAL AMISTAD RESERVOIR

Amistad Dam is the second of the major international storage dams constructed on the Rio Grande as authorized by the Water Treaty of 1944 between the United States and Mexico. It is located at river mile 573.9, 12.9 river miles upstream from Del Rio, Texas and Cd. Acuna, Coahuila.

Maximum storage for period of record: 4,859,900 acre-feet on September 22, 1974 with an elevation of 1,135.66 feet above mean sea level, U. S. C. & G. S. datum. The elevation-area-capacity table, based on the 1980 survey, became effective November 1, 1981.

STORAGE CAPACITIES

(1980 Survey)

Elevation	Description	At Indicated Elevation		Between Indicated Elevations	
		Reservoir Capacity Acre-Feet	Reservoir Area Acres	Storage Volume Acre-Feet	Type of Storage
898.0	Original River Bed at Dam Axis	0	0		
				0	
930.0	Lowest Outlet(United States Penstocks)	0	0		
				3,383,848	Silt & Conservation
1,117.0	Top of Conservation Storage *	3,383,848	64,857		
				1,744,085	Ordinary Flood
1,140.4	Top of Spillway Gates	5,127,933	84,357		
				406,852	Surcharge
1,145.1	Maximum Water Surface	5,534,785	88,981		

STORAGE IN THOUSANDS OF ACRE-FEET AT 24:00 HOURS 1989 - ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	3,589.9	3,578.8	3,547.9	3,496.6	3,269.8	3,206.6	3,043.6	2,985.3	2,995.1	3,021.8	3,005.9	2,947.1
2	3,591.0	3,577.7	3,546.9	3,494.4	3,267.7	3,205.6	3,041.6	2,982.3	2,999.0	3,019.8	3,001.0	2,945.1
3	3,593.2	3,575.5	3,546.9	3,492.2	3,264.6	3,205.6	3,039.6	2,980.3	3,002.0	3,019.8	2,998.1	2,943.2
4	3,593.2	3,573.3	3,550.1	3,490.0	3,263.6	3,207.7	3,038.6	2,978.4	3,003.0	3,019.8	2,999.0	2,939.3
5	3,592.1	3,568.9	3,541.4	3,487.8	3,261.5	3,205.6	3,036.6	2,977.4	3,003.0	3,019.8	2,999.0	2,938.3
6	3,588.8	3,565.6	3,538.1	3,485.7	3,258.4	3,203.6	3,036.6	2,977.4	3,003.0	3,021.8	3,000.0	2,937.4
7	3,585.5	3,562.3	3,535.9	3,482.4	3,255.2	3,203.6	3,032.7	2,977.4	3,003.0	3,020.8	3,000.0	2,936.4
8	3,579.9	3,561.2	3,532.6	3,481.3	3,252.1	3,200.5	3,030.7	2,977.4	3,002.0	3,020.8	2,998.1	2,931.6
9	3,578.8	3,559.0	3,530.4	3,480.3	3,250.1	3,190.2	3,027.7	2,976.4	3,003.0	3,020.8	2,996.1	2,928.6
10	3,578.8	3,556.8	3,527.1	3,474.8	3,249.0	3,178.9	3,024.7	2,975.4	3,003.0	3,019.8	2,994.1	2,927.7
11	3,578.8	3,555.6	3,527.1	3,468.3	3,246.9	3,164.6	3,021.8	2,974.5	3,003.0	3,019.8	2,992.2	2,925.7
12	3,578.8	3,554.6	3,524.9	3,467.3	3,246.9	3,153.4	3,020.8	2,973.5	3,004.0	3,021.8	2,990.2	2,918.9
13	3,578.8	3,554.6	3,523.9	3,466.2	3,246.9	3,143.2	3,018.8	2,972.5	3,019.8	3,021.8	2,987.2	2,916.0
14	3,576.6	3,554.6	3,523.9	3,461.9	3,246.9	3,132.0	3,017.8	2,970.5	3,019.8	3,022.8	2,986.3	2,914.1
15	3,577.7	3,556.8	3,521.6	3,451.0	3,244.9	3,119.8	3,016.8	2,967.6	3,020.8	3,022.8	2,984.3	2,912.2
16	3,577.7	3,559.0	3,520.5	3,440.3	3,248.0	3,107.7	3,016.8	2,966.6	3,021.8	3,020.8	2,980.3	2,907.3
17	3,578.8	3,557.9	3,520.5	3,428.5	3,249.0	3,089.6	3,014.8	2,966.6	3,021.8	3,017.8	2,976.4	2,904.4
18	3,579.9	3,554.6	3,519.5	3,422.6	3,246.9	3,073.5	3,013.8	2,964.7	3,022.8	3,014.8	2,974.5	2,899.6
19	3,585.5	3,554.6	3,518.4	3,400.6	3,243.8	3,062.5	3,011.9	2,963.7	3,022.8	3,010.9	2,972.5	2,896.7
20	3,585.5	3,555.6	3,516.2	3,385.6	3,242.8	3,060.5	3,009.9	2,963.7	3,023.7	3,007.9	2,970.5	2,894.8
21	3,585.5	3,556.8	3,511.8	3,370.8	3,240.7	3,057.5	3,007.9	2,962.7	3,023.7	3,005.9	2,970.5	2,892.9
22	3,585.5	3,555.6	3,508.5	3,360.2	3,238.6	3,055.6	3,004.9	2,961.8	3,023.7	3,004.9	2,968.6	2,885.2
23	3,585.5	3,553.5	3,505.3	3,348.5	3,235.5	3,053.6	3,002.0	2,961.8	3,023.7	3,003.0	2,964.7	2,873.7
24	3,585.5	3,553.5	3,503.1	3,335.9	3,232.4	3,053.6	3,000.0	2,964.7	3,022.8	3,002.0	2,960.8	2,868.9
25	3,585.5	3,552.4	3,499.8	3,324.3	3,230.4	3,051.6	2,997.1	2,972.5	3,020.8	3,000.0	2,958.8	2,867.9
26	3,585.5	3,551.3	3,500.9	3,311.7	3,228.3	3,049.6	2,994.1	2,976.4	3,020.8	2,999.0	2,956.9	2,866.9
27	3,584.3	3,550.1	3,504.2	3,292.8	3,224.1	3,048.6	2,992.2	2,978.4	3,020.8	3,000.0	2,956.9	2,866.0
28	3,583.2	3,550.1	3,503.1	3,278.2	3,220.0	3,047.6	2,990.2	2,980.3	3,021.8	3,003.0	2,955.9	2,866.0
29	3,583.2		3,502.0	3,276.1	3,215.9	3,046.6	2,988.2	2,979.4	3,021.8	3,005.9	2,951.0	2,866.0
30	3,581.0		3,500.9	3,274.0	3,211.8	3,044.6	2,987.2	2,980.3	3,021.8	3,006.9	2,949.0	2,863.1
31	3,578.8		3,497.7		3,207.7		2,986.3	2,984.3		3,004.9		2,860.2

Month	1989						Period 1969 - 1989			
	MOMENTARY MAXIMUM			MOMENTARY MINIMUM			Average Storage	Mean Monthly Storage		
	Elevation	Storage	Day	Elevation	Storage	Day		Average	Maximum	Minimum
Jan.	1,120.16	3,593.2	! 3	1,119.92	3,576.6	14	3,583.6	3,032.7	4,030.4	722.6
Feb.	1,119.95	3,578.8	1	1,119.52	3,550.1	! 27	3,559.3	3,015.5	4,014.7	787.7
Mar.	1,119.52	3,550.1	4	1,118.74	3,497.7	31	3,521.0	2,979.8	4,016.4	861.7
Apr.	1,118.74	3,497.7	1	1,115.29	3,274.0	30	3,414.3	2,947.4	3,981.0	962.8
May	1,115.29	3,274.0	1	1,114.24	3,207.7	31	3,243.2	2,890.5	3,829.5	1,038.6
June	1,114.24	3,207.7	4	1,111.60	3,044.6	30	3,120.8	2,848.2	3,807.8	914.4
July	1,111.60	3,044.6	1	1,110.64	2,986.3	31	3,015.0	2,832.3	3,847.3	949.6
Aug.	1,110.64	2,986.3	1	1,110.22	2,961.8	! 23	2,973.4	2,892.1	3,941.3	963.9
Sept.	1,111.26	3,023.7	! 20	1,110.60	2,984.3	1	3,013.9	2,944.1	4,177.2	1,034.0
Oct.	1,111.24	3,022.8	! 14	1,110.85	2,999.0	26	3,013.6	3,082.8	4,471.2	1,207.2
Nov.	1,110.96	3,005.9	1	1,110.01	2,949.0	30	2,980.0	3,115.0	4,241.4	1,263.2
Dec.	1,110.01	2,949.0	1	1,108.50	2,860.2	31	2,904.6	3,123.0	4,029.7	1,290.4
Yearly	1,120.16	3,593.2		1,108.50	2,860.2		3,195.2	2,975.3	3,950.8	1,047.6

* When necessary, the Commission may set temporary conservations levels

! And other days

STORED WATER IN LARGE RESERVOIRS OF THE RIO GRANDE BASIN

INTERNATIONAL FALCON RESERVOIR

Falcon Dam is the lowermost of the major international storage dams authorized for construction on the Rio Grande by the Water Treaty of 1944 between the United States and Mexico and was the first dam constructed. It is located 86.1 river miles downstream from the old international highway bridge between Laredo, Texas and Nuevo Laredo, Tamaulipas and 274.8 river miles upstream from the Gulf of Mexico.

Maximum storage for period of record: 3,490,600 acre-feet on October 19, 1958 with an elevation of 308.11 feet above mean sea level, U. S. C. & G. S. datum.

STORAGE CAPACITIES

(1971 - 1972 Survey)

Elevation	Description	At Indicated Elevation		Between Indicated Elevations	
		Reservoir Capacity Acre-Feet	Reservoir Area Acres	Storage Volume Acre-Feet	Type of Storage
175.0	Original River Bed at Dam Axis	0	0		
				67	Dead
203.3	Lowest Outlet (Mexican Penstock)	67	89		
				2,667,521	Silt & Conservation
301.2	Top of Conservation Storage *	2,667,588	86,843		
				509,505	Ordinary Flood
306.7	Top of Spillway Gates	3,177,093	98,512		
				801,323	Surcharge
314.2	Maximum Water Surface	3,978,416	115,406		

STORAGE IN THOUSANDS OF ACRE-FEET AT 24:00 HOURS 1989 - ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2,763.5	2,456.9	2,421.2	2,347.8	2,256.1	1,769.8	1,628.5	1,508.3	1,415.9	1,329.8	1,224.4	1,236.9
2	2,757.2	2,452.0	2,417.2	2,344.6	2,251.5	1,746.9	1,624.8	1,504.2	1,412.0	1,324.5	1,224.4	1,243.0
3	2,751.0	2,446.3	2,418.0	2,339.9	2,248.4	1,721.7	1,623.6	1,500.7	1,407.0	1,320.2	1,223.4	1,244.5
4	2,743.9	2,443.1	2,418.0	2,339.9	2,245.4	1,708.6	1,622.3	1,497.2	1,401.5	1,314.4	1,221.9	1,248.6
5	2,742.2	2,436.6	2,417.2	2,336.7	2,245.4	1,690.1	1,619.2	1,492.0	1,395.9	1,308.1	1,220.9	1,252.2
6	2,734.2	2,438.2	2,413.9	2,334.4	2,243.1	1,668.5	1,616.2	1,488.5	1,394.8	1,304.4	1,220.9	1,256.8
7	2,728.9	2,435.8	2,410.7	2,326.5	2,237.0	1,650.3	1,611.2	1,483.3	1,390.4	1,298.7	1,220.9	1,260.3
8	2,721.8	2,436.6	2,407.5	2,324.2	2,230.9	1,632.8	1,606.9	1,478.7	1,386.6	1,298.7	1,220.9	1,264.4
9	2,713.0	2,435.0	2,406.7	2,319.5	2,224.9	1,612.5	1,600.2	1,478.7	1,381.6	1,304.4	1,219.9	1,268.6
10	2,708.6	2,434.1	2,405.1	2,308.6	2,218.1	1,592.3	1,595.3	1,479.9	1,375.6	1,306.5	1,219.4	1,271.6
11	2,703.4	2,435.0	2,402.7	2,301.6	2,206.8	1,573.5	1,588.0	1,479.9	1,371.3	1,304.9	1,218.4	1,275.8
12	2,698.1	2,434.1	2,400.3	2,295.4	2,190.3	1,568.1	1,582.0	1,477.0	1,365.3	1,302.8	1,217.4	1,279.4
13	2,680.6	2,434.1	2,398.7	2,293.8	2,176.1	1,575.3	1,577.1	1,471.8	1,364.2	1,299.2	1,217.4	1,282.5
14	2,663.2	2,431.7	2,397.1	2,289.2	2,163.5	1,582.6	1,571.1	1,466.7	1,392.6	1,293.4	1,216.9	1,285.6
15	2,650.3	2,430.9	2,395.5	2,284.5	2,148.7	1,588.0	1,565.1	1,461.6	1,397.0	1,286.7	1,216.9	1,287.7
16	2,634.7	2,430.1	2,392.3	2,283.0	2,134.0	1,592.9	1,559.1	1,455.9	1,399.8	1,282.0	1,215.4	1,290.3
17	2,622.7	2,430.1	2,390.7	2,281.4	2,120.0	1,595.9	1,553.7	1,452.4	1,401.5	1,275.8	1,216.4	1,292.9
18	2,613.3	2,427.7	2,389.1	2,281.4	2,102.5	1,602.0	1,548.3	1,450.7	1,399.8	1,271.1	1,217.4	1,296.0
19	2,606.5	2,424.4	2,387.5	2,282.2	2,082.1	1,608.2	1,545.4	1,447.9	1,394.3	1,264.4	1,217.4	1,299.2
20	2,592.0	2,424.4	2,386.7	2,282.2	2,063.3	1,618.0	1,540.6	1,445.6	1,391.5	1,257.8	1,217.4	1,299.7
21	2,575.8	2,422.8	2,387.5	2,279.1	2,040.3	1,625.4	1,534.7	1,442.8	1,387.1	1,252.7	1,217.4	1,303.4
22	2,562.3	2,422.0	2,379.5	2,274.5	2,017.4	1,631.6	1,527.6	1,441.1	1,382.2	1,246.6	1,220.4	1,307.0
23	2,549.7	2,420.4	2,376.3	2,267.6	1,993.3	1,636.6	1,520.5	1,441.1	1,377.3	1,242.0	1,222.9	1,310.7
24	2,535.5	2,420.4	2,373.9	2,250.0	1,970.0	1,640.3	1,515.3	1,440.0	1,365.8	1,238.0	1,224.4	1,313.4
25	2,523.8	2,418.8	2,370.7	2,243.1	1,944.0	1,637.8	1,511.8	1,439.4	1,359.9	1,233.4	1,225.9	1,317.6
26	2,513.8	2,418.8	2,365.2	2,237.8	1,920.4	1,634.1	1,512.3	1,437.2	1,355.5	1,231.9	1,227.4	1,324.5
27	2,503.8	2,422.0	2,363.6	2,236.3	1,893.4	1,632.2	1,513.5	1,434.9	1,350.7	1,228.9	1,229.9	1,329.8
28	2,493.1	2,422.0	2,362.0	2,245.4	1,868.1	1,631.6	1,513.5	1,431.6	1,345.8	1,225.9	1,231.9	1,333.0
29	2,486.5		2,358.8	2,256.1	1,841.5	1,631.0	1,512.9	1,426.5	1,341.0	1,222.9	1,232.9	1,334.1
30	2,475.8		2,358.0	2,256.1	1,815.2	1,629.7	1,512.9	1,423.7	1,334.6	1,223.4	1,233.4	1,337.8
31	2,466.8		2,350.9		1,792.4		1,512.3	1,419.8		1,224.4		1,339.4

Month	1989						Period 1954 - 1989			
	MOMENTARY MAXIMUM			MOMENTARY MINIMUM			Average Storage	Mean Monthly Storage		
	Elevation	Storage	Day	Elevation	Storage	Day		Average	Maximum	Minimum
Jan.	302.36	2,769.7	1	298.82	2,466.8	31	2,629.5	2,130.4	3,070.8	218.7
Feb.	298.82	2,466.8	1	298.23	2,418.8	! 25	2,431.6	2,041.4	3,009.6	156.2
Mar.	298.27	2,422.0	1	297.38	2,350.9	31	2,391.0	2,034.9	2,990.8	226.7
Apr.	297.38	2,350.9	1	295.90	2,236.3	27	2,291.4	1,948.1	2,954.6	325.6
May	296.16	2,256.1	1	289.66	1,792.4	31	2,093.0	1,801.7	2,869.9	490.1
June	289.66	1,792.4	1	286.12	1,568.1	12	1,634.3	1,730.7	2,212.8	273.7
July	287.13	1,629.7	1	285.17	1,511.8	25	1,563.4	1,800.9	2,692.7	209.9
Aug.	285.18	1,512.3	1	283.56	1,419.8	31	1,461.3	1,778.8	2,771.4	208.0
Sept.	283.56	1,419.8	1	282.00	1,334.6	30	1,381.3	1,868.6	2,871.1	256.2
Oct.	282.00	1,334.6	1	279.84	1,222.9	29	1,274.8	2,075.2	3,250.2	308.3
Nov.	280.05	1,233.4	30	279.69	1,215.4	16	1,221.8	2,141.8	3,124.5	390.9
Dec.	282.09	1,339.4	31	280.05	1,233.4	1	1,289.9	2,173.7	3,129.7	343.4
Yearly	302.36	2,769.7		279.69	1,215.4		1,805.3	1,960.5	2,764.2	544.3

* When necessary, the Commission may set temporary conservations levels

! And other days

QUALITY OF WATER - 1989

08-3640.00 Rio Grande at El Paso, Texas

LOCATION: At gaging station on Courchesne Bridge at river mile 1,255.7 (2,020.8 km), 1.7 river miles (2.7 km) upstream from American Dam, and 5.5 miles (8.9 km) upstream from Paso del Norte Bridge between El Paso, Texas and Cd. Juarez, Chihuahua.

RECORDS: Chemical analyses, February 1930 through current year (prior to July 1986 sampling at American Dam); biochemical analyses, September 1943 through 1972 and February 1976 through current year (prior to 1976 samples taken from Franklin Canal at El Paso,Texas); specific conductance, 1930 through 1932 and 1937 through current year (prior to July 1986 samples taken at American Dam); suspended silt, 1947 through 1976 (samples taken at American Dam).

REMARKS: Sampling by International Boundary and Water Commission; chemical analyses by U. S. Geological Survey, biochemical analyses by Haskell R. Street Wastewater Treatment Plant laboratory in El Paso; specific conductance and silt determinations by International Boundary and Water Commission. Additional water quality parameters, including heavy metals, nutrients, pesticides, and biological indices, determined and published by U. S. Geological Survey.

1989 Date	Time Standard	Streamflow Momentary Second-Feet	Specific Conductance Micromhos	pH Units	Water Temperature Deg C	Hardness, Total (as CaCO3) mg/L	Hardness, Noncarbonate (as CaCO3) mg/L	Calcium ion (Ca), Dissolved mg/L	Magnesium ion (Mg), Dissolved mg/L
Jan. 11	1500	122	2,010	8.4	10.5	420	160	120	29
25	1030	70.0	2,040	8.6	9.5	420	160	120	30
31	0730	96.0	2,020	8.3	4.5	430	180	120	31
Feb. 16	0715	92.0	2,070	8	10	430	180	120	31
Mar. 16	0705	590	917	7.6	12	220	65	65	14
21	1300	1,240	854	8.3	14	230	72	70	14
Apr. 20	0715	680	1,250	7.9	19	290	87	84	19
May 16	0915	906	958	8.3	18	240	63	71	16
18	0705	686	1,080	7.9	14.5	250	78	72	16
June 22	0705	950	1,010	8	22	240	55	71	16
July 11	1130	1,400	885	8.6	24.5	210	46	62	14
20	0705	1,600	1,020	7.7	25.5	230	58	67	16
Aug. 17	0715	1,050	1,030	7.7	24.5	240	68	70	15
Sept. 6	1130	820	1,030	9	25	230	53	67	15
21	0720	198	1,540	7.9	19	330	94	96	22
Oct. 19	0725	275	1,930	8.4	9	410	150	120	28
Nov. 8	1030	84.0	2,020	8.5	13	410	150	120	28
16	0720	76.0	2,240	8.1	6.5	420	150	120	30
Dec. 19	1215	102	2,170	8.3	2	450	170	130	30

1989 Date	Sodium ion (Na), Dissolved mg/L	Sodium Adsorption Ratio(SAR)	Potassium ion (K) Dissolved mg/L	Alkalinity Total (as CaCO3) mg/L	Sulfate ion (SO4) Dissolved mg/L	Chloride ion (Cl), Dissolved mg/L	Silica (SiO2) Dissolved mg/L	Solids Dissolved (Calculated) mg/L
Jan. 11	280	6	10	262	470	220	25	1,310
25	290	6	11	260	470	240	21	1,340
31	290	6	11	251	470	250	20	1,340
Feb. 16	310	7	10	255	480	250	23	1,380
Mar. 16	100	3	6.6	155	160	93	12	544
21	97	3	8.8	158	150	84	18	537
Apr. 20	150	4	8	203	260	120	13	776
May 16	110	3	6.7	177	200	79	8.4	597
18	120	3	6.7	172	210	91	12	631
June 22	120	3	6.6	185	200	84	12	621
July 11	100	3	6.5	164	170	71	9.6	532
20	120	3	7.5	172	210	88	13	625
Aug. 17	120	3	7.6	172	210	84	16	626
Sept. 6	120	3	7.1	177	210	91	14	630
21	200	6	8.7	236	340	150	22	980
Oct. 19	270	6	10	262	450	210	27	1,270
Nov. 8	290	6	10	265	460	230	27	1,320
16	330	7	11	269	530	250	29	1,460
Dec. 19	310	6	9.5	276	500	240	27	1,410

QUALITY OF WATER - 1989

08-3640.00 RIO GRANDE AT EL PASO, TEXAS

1989 Date	Water Temperature Deg C	Oxygen Dissolved (DO) mg/L	pH Units	Coliform, Fecal Colonies /100 mL	Oxygen Demand Bio-Chemical (BOD) 5 Day mg/L
Jan. 5	5.6	11.1	8.4	68	1
12	3.9	11.3	8.3	< 1	1
19	0	11.7	8.3	500	1
26	4.4	9	8.2	96	2
Feb. 2	6.7	8.2	8.2	110	2
9	3.3	12	8.3	40	2
16	10	9.8	8.3	58	2
23	3.3	10	8.1	62	2
Mar. 2	10	9.8	8	30	2
9	6.7	9.4	7.9	< 1	2
16	12.2	9.2	7.9	68	2
23	11.1	9.6	7.8	40	2
30	15	9	8.2	118	2
Apr. 6	14.4	8.7	8.2	12	2
13	14.4	9	8	160	1
20	18.9	8.2	8	96	1
27	14.4	8.8	8	300	1
May 4	17.8	8.2	8	300	2
11	16.7	8.2	8	340	1
18	14.4	9	8	320	1
25	18.9	8.1	8.2	200	1
June 1	21.1	7.7	8	540	2
8	20	7.7	8.2	120	2
15	20	7.9	8	140	2
22	22.2	7.4	8	170	2
29	23.3	7.3	8.1	110	3
July 6	23.3	7.4	8.3	< 1	2
13	24.4	7.4	8	110	2
20	25.6	7.5	8.1	110	3
27	21.1	7.7	8	120	3
Aug. 3	23.3	7.2	7.8	320	2
10	22.2	7.6	8	210	2
17	24.4	7.2	7.9	250	1
24	22.2	7.4	8	260	1
31	21.1	7.8	8	270	2
Sept. 7	21.1	7.4	8	180	5
14	16.7	8.4	8.1	550	2
21	18.9	7.6	8.1	130	2
28	15.6	8.6	8.2	151	6
Oct. 5	17.8	8.2	8.3	1,000	1
12	15.6	8.6	8.2	150	1
19	8.9	10	8.3	700	1
26	15.6	8.8	8.1	470	2
Nov. 2	6.7	10.5	8.2	580	2
9	4.4	10	8.1	560	2
16	6.7	10.3	8.2	620	2
30	1.1	11.7	8.2	1,740	3
Dec. 7	2.2	10.5	8.1	3,530	2
14	1.1	12	8.1	1,790	4
21	2.2	10.7	8.2	780	4
28	8.9	10.3	8.2	230	3

< Actual value is known to be less than the value shown

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROMHOS/CM @ 25 DEG C - 1989

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1			1,200		1,290	950			890			
2			1,230					1,040		1,820		
3			1,230	1,040	1,200			1,010		1,840		
4				1,100	1,270					1,850		2,160
5				1,090						1,860		1,080
6				1,130		970	980					2,010
7			1,020				990		1,150			2,180
8						980						
9			990		1,290							
10				1,120						1,800		
11				1,170	1,340					1,840		
12				1,170					1,280	1,900		
13			960				950					
14			940						1,370			
15			910			1,000						
16		1,920	870							1,890		
17		2,050		1,070						1,890		
18				1,190	1,070		980			1,900		
19				1,200					1,460	1,910		
20				1,120		930	990					
21		1,830		1,140					1,500			
22												
23			1,000		1,210							
24				1,170						1,900		
25				1,160	1,280		980					
26				1,200								
27				1,230			1,110					
28		1,240	920	1,190								
29						980					1,960	
30			960					1,190			2,090	
31			950				1,010	1,190				

QUALITY OF WATER - 1989

RIO GRANDE AT RIVERSIDE CANAL HEADING NEAR EL PASO, TEXAS AND CD. JUAREZ, CHIHUAHUA

LOCATION: At river mile 1,237.3 (1,991.2 km), 9.5 miles (15.3 km) downstream from the Haskell R. Street Wastewater Treatment Plant and 16.7 river miles (26.8 km) downstream from the American Dam at El Paso, Texas.
RECORDS: Biochemical analyses, February 1976 through current year. Samples also collected quarterly and analyses made by the Texas Water Commission at a location one mile upstream at Ysleta-Zaragoza Bridge, 1937 through 1972 and May 1975 through current year.
REMARKS: Sampling by International Boundary and Water Commission. Analyses by the Haskell R. Street Wastewater Treatment Plant laboratory in El Paso.

1989 Date	Water Temperature Deg C	Oxygen Dissolved (DO) mg/L	pH Units	Coliform, Fecal Colonies /100 mL	Oxygen Demand Biochemical (BOD) 5 Day mg/L
Jan. 5	6.7	10	7.7	49	6
12	5.6	10.8	7.6	28	6
19	7.8	10.5	7.7	7	5
26	7.2	9.2	7.6	13	7
Feb. 2	12.2	7.9	7.5	12	8
9	4.4	11.4	7.6	5	8
16	11.1	9.6	7.7	30	9
23	11.1	10	7.6	30	6
Mar. 2	12.2	9.4	7.6	28	7
9	13.3	9.2	7.6	45	6
16	13.3	9.2	7.8	6	4
23	12.2	9.4	7.6	13	3
30	15	8.8	8	10	4
Apr. 6	16.7	8.6	7.8	6	4
13	15.6	8.8	7.6	46	5
20	20	7.9	7.6	40	4
27	14.4	8.8	7.7	20	6
May 4	17.8	8.2	7.7	20	> 10
11	20	7.7	7.5	700	10
18	15.6	8.8	7.6	1,200	4
25	21.1	7.7	7.7	90	3
June 1	22.2	7.4	7.7	40	4
8	23.3	7.6	7.7	160	6
15	22.2	7.7	7.8	120	4
22	24.4	7.3	7.8	180	3
29	25.6	7.2	7.7	520	7
July 6	24.4	7.2	8.1	5	4
13	24.4	7.2	7.8	190	4
20	24.4	7.3	7.8	190	7
27	24.4	7.4	7.8	160	5
Aug. 3	25.6	7.2	7.6	210	3
10	22.2	7.4	7.5	560	4
17	24.4	7.2	7.6	520	1
24	23.3	7.4	7.6	530	5
31	22.2	7.6	7.5	510	5
Sept. 7	24.4	7.3	7.6	600	1
14	16.7	7.9	8	500	6
21	23.3	7.4	7.5	180	5
28	17.8	8.2	7.7	250	3
Oct. 5	18.9	7.9	7.9	200	4
12	17.8	7.7	7	280	3
19	11.1	9.7	7.6	300	4
26	17.8	8.4	7.5	200	3
Nov. 8	8.9	9.8	7.6	10	5
9	8.3	10.2	7.6	30	6
16	11.1	10	7.7	10	7
30	5.6	11.4	7.6	10	7
Dec. 7	10	9.8	7.6	70	8
14	5.6	10.8	7.6	140	11
21	5.6	10	7.6	10	14
28	11.1	9.8	7.6	< 1	17

> Actual value is known to be greater than the value shown
< Actual value is known to be less than the value shown

08-3705.00 RIO GRANDE AT FORT QUITMAN, TEXAS NEAR COLONIA LUIS LEON, CHIHUAHUA

LOCATION: Gaging station at river mile 1,173.2 (1,888.1 km), 1.5 river miles (2.4 km) downstream from old Fort Quitman.
RECORDS: Chemical analyses, February 1938 through current year; biochemical analyses, October 1974 through current year; specific conductance (daily), October 1974 through 1977.
REMARKS: Sampling and analyses by U. S. Geological Survey. Additional water quality parameters, including heavy metals, nutrients, pesticides, and biological indices, determined and published by the U. S. Geological Survey. Sampling prior to 1977 by the International Boundary and Water Commission.

1989 Date	Time Std.	Stream flow, Momentary Sec.-Ft.	Specific Conductance Micromhos	pH Units	Water Temperature Deg C	Hardness, Total (as CaCO3) mg/L	Hardness, Noncarbonate (as CaCO3) mg/L	Calcium ion (Ca), Dissolved mg/L	Magnesium ion (Mg) mg/L	Sodium ion (Na), Dissolved mg/L	Sodium Adsorption Ratio (SAR)	Potassium ion (K) Dissolved mg/L
Jan. 27	1100	94.0	4,100	7.8	9.5	690	440	190	53	590	10	12
Mar. 22	1100	190	3,200	8.3	14	540	320	150	41	480	9	9.3
May 17	1045	318	2,650	8.2	16.5	500	290	140	37	410	8	9.6
Jul. 12	1000	86.0	3,550	8.5	26.5	560	380	150	45	490	9	12
Sept. 7	1100	990	2,680	8.2	27	490	280	140	34	390	8	11
Nov. 7	1145	227	3,200	8	14.5	600	360	170	42	520	9	11

1989 Date	Alkalinity Total (as CaCO3) mg/L	Sulfate ion (SO4) Dissolved mg/L	Chloride ion (Cl), Dissolved mg/L	Silica (SiO2), Dissolved mg/L	Oxygen, Dissolved (DO) mg/L	Coliform, Fecal Cols./100 mL	Turbidity NTU	Solids Dissolved (Calculated) mg/L	Solids Dissolved (Residue @ 180 Deg C) mg/L	Suspended Sediment mg/L
Jan. 27	250	680	780	27	11.2	32	15	2,480	2,510	203
Mar. 22	219	550	630	17	9.9	51	28	2,010	2,030	487
May 17	214	470	490	17	8.7	600	73	1,700	1,740	301
Jul. 12	184	600	620	18	10.8	K 5	52	2,050	2,170	332
Sept. 7	213	460	470	22	6.7	K 560	200	1,660	1,690	912
Nov. 7	241	590	600	28	8.1	87	38	2,110	2,180	

K Results based on colony count outside the acceptance range (non-ideal colony count)

QUALITY OF WATER - 1989

08-3715.00 Rio Grande Above Rio Conchos near Presidio, Texas and Ojinaga, Chihuahua

LOCATION: Gaging station at river mile 966.4 (1,555.3 km); 5.1 river miles (10.5 km) upstream from the Rio Conchos.
RECORDS: Chemical analyses, February 1933 through 1981; specific conductance, 1931 and 1935 through current year.
REMARKS: Sampling by the International Boundary and Water Commission; chemical analyses by the U.S. Geological Survey; determinations for specific conductance by International Boundary and Water Commission. Results of biochemical analyses by Texas Water Commission, November 1977 through current year, available on request.

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROMHOS/CM @ 25 DEG C - 1989

January		April		June		August		September		November	
6	2,940	5	4,140	20	3,000	2	3,220	14	2,410	2	3,080
19	3,250	18	3,350	29	3,080	3	3,450	19	2,550	9	3,020
February		May		July		10	2,560	21	2,890	14	3,290
3	3,470	2	2,650	6	3,600	15	2,210	October		16	3,340
15	3,310	16	2,950	13	2,390	17	2,140	3	3,200	December	
March		June		18	2,650	23	1,480	5	2,990	4	2,970
2	3,970	2	2,760	20	3,270	September		12	2,480	7	3,050
13	3,220	15	3,790	27	3,760	6	2,260	17	2,980	18	3,370
						7	2,220	19	2,780	19	3,590

08-3730.00 Rio Conchos near Ojinaga, Chihuahua

LOCATION: At gaging station, 1.5 river miles (2.5 km) from the confluence with the Rio Grande, which is located at river mile 961.4 (1,547.2 km).
RECORDS: Chemical analyses, February 1935 through 1981; suspended silt, 1956 through 1979, specific conductance, 1935 through current year.
REMARKS: Sampling and determinations for suspended silt and specific conductance by the International Boundary and Water Commission; chemical analyses by the U. S. Geological Survey.

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROMHOS/CM @ 25 DEG C - 1989

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1		1,350	1,360			1,430			1,100			1,730
2								1,270		1,060		
3		1,350	1,380	1,600			1,520					
4	1,330								1,230	1,120		1,650
5				1,700	1,450	1,450	1,550					
6			1,390						1,260	1,110		1,690
7	1,340	1,370		1,750			1,620	1,240				
8		1,370	1,400		1,430				1,080			1,650
9	1,320					1,460		1,330		720		
10		1,360	1,410	1,670	1,420		1,580				1,420	
11	1,350						1,140	1,340	1,100	1,080		1,650
12				1,640	1,400	1,450	1,010					
13		1,340	1,430								1,620	1,590
14				1,680		1,450	1,820	990				
15		1,360	1,440		1,550						1,700	
16	1,330					1,570		1,270		1,100		
17		1,370	1,420	1,660	1,470		1,430					
18	1,370									1,120		
19				1,760	1,470	1,440	1,450					
20	1,350	1,370	1,450						1,100	1,110		
21				1,720			1,510	1,320				
22					1,420	2,980		820				1,600
23	1,360							700				
24				1,680	1,430		1,480	980				
25	1,370							1,120		1,100		
26				1,590		1,390	1,440					
27		1,340	1,580							1,120	1,590	
28				1,610		1,450	1,480					
29			1,560					1,040		1,090	1,600	
30	1,380					1,480		730				
31					1,370		1,100					

08-3742.00 Rio Grande below Rio Conchos near Presidio, Texas and Ojinaga, Chihuahua

LOCATION: Gaging station at river mile 949.8 (1,258.5 km); 0.4 river mile (0.6 km) downstream from Alamito Creek and 11.6 river miles (18.7 km) downstream from the Rio Conchos.
RECORDS: Specific conductance, 1956 through current year.
REMARKS: Sampling and determinations for specific conductance by the International Boundary and Water Commission. Results of biochemical analyses by Texas Water Commission, November 1977 through current year, available on request.

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROMHOS/CM @ 25 DEG C - 1989

January		March		May		July		September		November	
6	1,940	2	2,080	2	1,770	7	1,760	6	1,590	2	1,540
19	2,100	14	2,040	16	1,930	18	1,600	19	1,480	14	2,270
February		April		June		August		October		28	2,200
3	2,100	5	2,980	2	1,740	2	1,500	3	1,480	December	
15	2,080	18	2,250	20	1,620	15	1,520	17	1,490	4	2,290

QUALITY OF WATER - 1989

08-3772.00 RIO GRANDE AT FOSTER RANCH NEAR LANGTRY, TEXAS AND RANCHO SANTA ROSA, COAHUILA

LOCATION: Gaging station at river mile 657.5 (1,058.2 km), about 12.3 miles (19.8 km) west of Langtry, Texas.
RECORDS: Chemical analyses, March 1969 through 1970 and October 1974 through current year; biochemical, October 1974 through current year; suspended silt, 1969 through current year; specific conductance, 1969 through 1981, 1983, 1985 through current year.
REMARKS: Sampling and analyses by U. S. Geological Survey; sampling and determinations for suspended silt and specific conductance by the International Boundary and Water Commission. Additional water quality parameters, including heavy metals, nutrients, pesticides, and biological indices, determined and published by the U. S. Geological Survey.

1989 Date	Time Std.	Stream flow, Momentary Sec.-Ft.	Specific Conductance Micromhos	pH Units	Water Temperature Deg C	Hardness, Total (as CaCO3) mg/L	Hardness, Noncarbonate (as CaCO3) mg/L	Calcium ion (Ca), Dissolved mg/L	Magnesium ion (Mg) mg/L	Sodium ion (Na), Dissolved mg/L	Sodium Adsorption Ratio (SAR)	Potassium ion (K) Dissolved mg/L
Feb. 8	1525	903	1,580	8.4	10	340	170	94	26	200	5	6.2
June 7	1310	930	1,500	7.7	28.5	300	150	89	20	200	5	7.6
Aug. 16	1330	1,130	1,240	8.2	27	300	140	91	17	150	4	6.8
Nov. 8	1435	1,130	1,370	8.3	19.5	290	130	86	19	180	5	6.1

1989 Date	Alkalinity Total (as CaCO3) mg/L	Sulfate ion (SO4) Dissolved mg/L	Chloride ion (Cl), Dissolved mg/L	Silica (SiO2), Dissolved mg/L	Oxygen, Dissolved (DO) mg/L	Coliform, Fecal Cols./100 mL	Oxygen Demand, Biochemical (BOD) 5 Day mg/L	Turbidity NTU	Solids Dissolved (Calculated) mg/L	Solids Dissolved (Residue @ 180 Deg C) mg/L	Suspended Sediment mg/L
Feb. 8	166	360	180	18	11.8	K 6	5.3	130	984	1,010	78
June 7	153	400	150	20	9.6	2,200	1.7	360	978	999	526
Aug. 16	158	350	100	23	8.8	280	1.2	0.3	833	832	1,580
Nov. 8	163	360	120	26	11.6	K 1,100	2.3	85	895	888	217

K Results based on colony count outside the acceptance range (non-ideal colony count)

SUSPENDED SILT - 1989

1989 Date	Time Std.	Streamflow, Momentary Sec.-Ft.	Gravimetric Percent	1989 Date	Time Std.	Streamflow, Momentary Sec.-Ft.	Gravimetric Percent	1989 Date	Time Std.	Streamflow, Momentary Sec.-Ft.	Gravimetric Percent
Jan. 3	1000	1,070	0.01040	17	1300	710	0.00980	Sept.18	0925	2,040	0.58960
Feb. 6	1200	862	0.00900	May 1	1400	639	0.01030	Oct. 16	0945	1,490	0.20950
21	1200	1,590	0.07080	July 3	1000	674	0.01690	Nov. 6	1200	1,270	0.02730
Mar. 6	1400	876	0.02280	17	1045	772	0.10590	20	1400	747	0.02260
20	1300	759	0.01600	Aug. 7	1000	903	0.06690	Dec. 4	1300	747	0.00500
Apr. 3	1430	698	0.01060	21	1110	1,010	0.25890	18	1200	747	0.00270

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROMHOS/CM @ 25 DEG C - 1989

January		March		May		July		September		November	
3	1,490	6	1,720	1	1,590	3	1,410	18	1,200	20	1,340
February		20	1,540	15	1,310	17	1,300	October		December	
6	1,540	April		June		August		16	1,130	4	1,540
21	1,740	3	1,530	5	1,430	7	1,360	November		18	1,560
		17	1,880			21	990	16	1,370		

QUALITY OF WATER - 1989

08-4474.10 PECOS RIVER NEAR LANGTRY, TEXAS

LOCATION: At gaging station, 15.0 river miles (24.1 km) from the confluence with the Rio Grande, which is located at river mile 616.0 (991.4 km).
RECORDS: Chemical analyses, 1967 through current year; biochemical analyses, October 1974 through current year; suspended silt, November 1954 through 1976; specific conductance daily, 1969 through September 1985 and biweekly through current year.
REMARKS: Sampling and analyses by U. S. Geological Survey; sampling and determinations for specific conductance by the International Boundary and Water Commission. Additional water quality parameters, including heavy metals, nutrients, pesticides, and biological indices, determined and published by the U. S. Geological Survey.

1989 Date	Time Std.	Stream flow, Momentary Sec.-Ft.	Specific Conductance Micromhos	pH Units	Water Temperature Deg C	Hardness, Total (as CaCO3) mg/L	Hardness, Noncarbonate (as CaCO3) mg/L	Calcium ion (Ca), Dissolved mg/L	Magnesium ion (Mg) mg/L	Sodium ion (Na), Dissolved mg/L	Sodium Adsorption Ratio (SAR)	Potassium ion (K) Dissolved mg/L
Feb. 8	1100	178	4,530	8.4	6	900	730	200	96	640	9	11
Mar. 14	1240	180	4,770	8.2	20.5	880	720	190	98	670	10	10
June 7	0930	123	3,460	7.6	28	650	520	140	71	480	8	8.3
July 18	1255	89.0	3,450	8.3	29	620	510	130	72	440	8	8.2
Aug. 16	1000	109	3,010	8	26	570	460	120	65	410	7	7.6
Nov. 8	0910	134	3,670	8.1	19.5	720	570	160	76	500	8	8.4

1989 Date	Alkalinity Total (as CaCO3) mg/L	Sulfate ion (SO4) Dissolved mg/L	Chloride ion (Cl), Dissolved mg/L	Silica (SiO2), Dissolved mg/L	Oxygen, Dissolved (DO) mg/L	Coliform, Fecal Cols./100 mL	Oxygen Demand, Biochemical (BOD) 5 Day mg/L	Turbidity NTU	Solids Dissolved (Calculated) mg/L	Solids Dissolved (Residue @ 180 Deg C) mg/L	Suspended Sediment mg/L
Feb. 8	172	650	1,000	15	12.1	< 1	0.3	1.5	2,720	2,860	17
Mar. 14	154	720	1,100	13	13	K 12	0.2	7.6	2,900	3,040	16
June 7	122	480	790	16	11.9	21	1.5	3.7	2,060	2,240	28
July 18	109	450	750	14	7.8	K 4	1	1.5	1,930	2,130	9
Aug. 16	112	410	700	14	8.4	K 8	1.1	7.5	1,800	1,800	12
Nov. 8	145	540	830	13	8.9	120	0.6	5	2,220	2,320	33

K Results based on colony count outside the acceptance range (non-ideal colony count)
< Actual value is known to be less than the value shown

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROMHOS/CM @ 25 DEG C - 1989

January		March		May		July		September		November	
3	4,080	6	4,620	1	4,020	3	3,570	5	2,860	6	3,640
February		20	4,650	15	3,610	August		18	2,770	20	3,530
6	4,060	April		June		7	2,990	October		December	
21	3,840	3	4,320	7	3,210			16	3,540	4	3,880
		17	4,420	19	3,590					18	4,000

08-4494.00 DEVILS RIVER AT PAFFORD CROSSING NEAR COMSTOCK, TEXAS

LOCATION: At gaging station 25.5 river miles (41.0 km) from the confluence with the Rio Grande, which is located at river mile 574.6 (924.7 km).
RECORDS: Daily specific conductance, 1968 through September 1985; biweekly specific conductance through current year.
REMARKS: Sampling and determinations for specific conductance by the U. S. Geological Survey through September 1985. Sampling prior to 1978 and since October 1985 by the International Boundary and Water Commission. Chemical and biochemical analyses, 1978 through current year, available from U. S. Geological Survey.

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROMHOS/CM @ 25 DEG C - 1989

January		March		May		August		October		December	
3	416	6	408	19	380	7	373	2	380	4	330
17	419	20	356			18	380	16	590	18	330
February		April		June		September		November			
6	373	3	380	5	374	5	370	27	420		
21	404	17	394			18	370				

QUALITY OF WATER - 1989

08-4509.00 RIO GRANDE BELOW AMISTAD DAM NEAR CD. ACUNA, COAHUILA AND DEL RIO, TEXAS

LOCATION: Gaging station at river mile 571.8 (920.3 km), 2.2 river miles (3.4 km) downstream from Amistad Dam.
RECORDS: Chemical analyses, July 1968 through current year; suspended silt, 1969 through 1976; specific conductance 1968 through current year.
REMARKS: Sampling for chemical analyses by the International Boundary and Water Commission, analyses by the U. S. Geological Survey. Sampling and determinations for specific conductance by the International Boundary and Water Commission.

1989 Date	Time Standard	Streamflow Momentary Second-Feet	Specific Conductance Micromhos	pH Units	Water Temperature Deg C	Hardness, Total (as CaCO3) mg/L	Hardness, Noncarbonate (as CaCO3) mg/L	Calcium ion (Ca), Dissolved mg/L	Magnesium ion (Mg), Dissolved mg/L
Jan. 31	0800	2,430	1,330	7.9	9	290	170	77	23
Feb. 27	0750	1,650	1,340	7.9	10	290	160	78	23
Mar. 16	0800	1,470	1,340	7.9	12	290	160	79	22
Apr. 21	0700	8,790	1,340	7.8	24	300	170	81	23
May 17	0745	250	1,350	7.9		290	150	80	22
June 21	0700	918	1,350	7.7	19	290	150	81	22
July 26	0700	1,650	1,370	7.9	17	300	160	82	23
Aug. 23	0700	967	1,360	7.9	23	300	160	82	22
Sept.20	0700	1,440	1,360	8.1	22	300	160	84	23
Oct. 18	0645	118	1,370	8.1	18	290	160	80	23
Nov. 15	0800	141	1,380	8.1	20	290	170	77	24
Dec. 20	0800	141	1,380	8	5.5	300	170	80	24

1989 Date	Sodium ion (Na), Dissolved mg/L	Sodium Adsorption Ratio(SAR)	Potassium ion (K) Dissolved mg/L	Alkalinity Total (as CaCO3) mg/L	Sulfate ion (SO4) Dissolved mg/L	Chloride ion (Cl), Dissolved mg/L	Silica (SiO2) Dissolved mg/L	Solids Dissolved (Calculated) mg/L
Jan. 31	170	4	5.8	125	270	180	15	816
Feb. 27	170	4	5.8	130	280	180	15	830
Mar. 16	170	4	6.1	134	270	180	15	823
Apr. 21	160	4	6	130	270	180	15	813
May 17	160	4	5.9	138	270	180	15	816
June 21	160	4	6	140	270	180	15	818
July 26	170	4	6.2	141	270	180	16	832
Aug. 23	170	4	6.4	136	270	170	15	817
Sept.20	170	4	6	138	270	170	16	822
Oct. 18	170	4	5.8	131	270	180	17	824
Nov. 15	170	4	6.1	125	290	180	16	838
Dec. 20	170	4	5.9	128	290	190	16	853

QUALITY OF WATER - 1989

08-4509.00 RIO GRANDE BELOW AMISTAD DAM NEAR CO. ACUNA, COAHUILA AND DEL RIO, TEXAS

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROMHOS/CM @ 25 DEG C - 1989

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1		1,320	1,330		1,310				1,310		1,330	1,330
2								1,340		1,340		
3	1,330	1,320	1,340	1,320	1,320		1,350					
4								1,340		1,360	1,350	1,330
5	1,330			1,330	1,350	1,320	1,360		1,360			
6	1,640	1,310	1,300							1,340	1,350	1,340
7				1,310		1,330	1,340	1,340	1,360			
8		1,290			1,320						1,360	1,330
9	1,360					1,330		1,360				
10		1,310		1,320	1,320							
11	1,340							1,340	1,350	1,350		1,340
12				1,330	1,320	1,320	1,340					
13	1,320	1,320							1,320	1,340	1,360	1,330
14				1,300		1,340	1,350	1,340				
15									1,340		1,320	1,340
16						1,320		1,310		1,340		
17				1,320	1,310		1,350				1,340	
18								1,350	1,350	1,340		1,340
19				1,320	1,300	1,340	1,350					
20			1,310						1,320	1,330	1,320	1,340
21				1,310		1,340	1,340				1,340	
22		1,310	1,310		1,320				1,310		1,330	1,350
23						1,340		1,340		1,350		
24		1,320	1,320	1,340	1,330		1,350				1,340	
25	1,310								1,320	1,350		
26				1,330	1,330	1,350	1,340					1,340
27	1,290	1,330	1,320						1,330	1,360	1,340	
28				1,320		1,360	1,330	1,340				
29			1,310						1,330		1,330	1,340
30	1,320				1,330	1,360		1,340		1,340		
31			1,310				1,340					

QUALITY OF WATER - 1989

08-4557.00 Rio Grande near Jimenez, Coahuila and Quemado, Texas

LOCATION: Near gaging station at Maverick Canal Headgates. The canal intake is at river mile 543.6 (874.9 km) 13.3 river miles (21.5 km) above the gaging station.
RECORDS: Specific conductance, 1954 through current year.
REMARKS: Sampling and determinations by the International Boundary and Water Commission.

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROMHOS/CM @ 25 DEG C - 1989

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,270	1,280	1,290	1,270	1,217	1,280	1,310	1,200	1,240	1,250	1,320	1,260
2	1,280	1,260	1,280	1,270	1,259	1,280	1,280	1,190	1,300	1,240	1,310	610
3	1,280	1,250	1,280	1,260	1,294	1,230	1,250	1,180	1,300	1,330	1,310	1,040
4	1,290	1,270	1,280	1,290	1,278	1,270	1,310	1,300	1,310	1,350	1,310	1,100
5	1,300	1,270	1,270	1,280	1,282	1,290	1,310	1,310	1,230	1,330	1,300	990
6	1,260	1,270	1,270	1,280	1,287	1,280	1,310	1,280	1,190	1,340	1,330	1,170
7	1,300	1,270	1,260	1,290	1,270	1,280	1,260	1,260	1,200	1,300	1,330	1,080
8	1,270	1,270	1,260	1,290	1,285	1,350	1,270	1,300	1,250	1,240	1,320	1,280
9	1,300	1,270	1,250	1,270	1,297	1,310	1,280	1,300	1,290	1,230	1,310	1,280
10	1,260	1,280	1,250	1,290	1,299	1,320	1,230	1,300	1,320	1,260	1,310	1,280
11	1,300	1,280	1,240	1,310	1,296	1,300	1,300	1,300	1,290	1,330	1,310	1,210
12	1,250	1,270	1,260	1,300	1,295	1,310	1,310	1,200	1,310	1,330	1,320	1,170
13	1,250	1,280	1,270	1,260	1,266	1,310	1,310	1,230	1,270	1,270	1,320	1,310
14	1,260	1,280	1,270	1,310	1,298	1,320	1,310	1,280	1,260	1,260	1,310	1,300
15	1,250	1,280	1,280	1,280	1,296	1,320	1,310	1,230	1,260	1,240	1,310	1,300
16	1,250	1,270	1,280	1,290	1,289	1,310	1,310	1,280	1,260	1,260	1,300	850
17	1,290	1,270	1,280	1,290	1,298	1,320	1,320	1,280	1,260	1,310	1,300	1,260
18	1,550	1,280	1,290	1,280	1,292	1,320	1,310	1,280	1,250	1,310	1,310	1,000
19	1,780	1,270	1,290	1,310	1,302	1,300	1,260	1,280	1,250	1,340	1,310	1,280
20	1,790	1,290	1,300	1,300	1,284	1,320	1,260	1,310	1,260	1,340	1,310	720
21	1,670	1,280	1,280	1,280	1,295	1,310	1,260	1,300	1,260	1,340	1,300	1,100
22	1,840	1,280	1,300	1,300	1,259	1,310	1,230	1,300	1,260	1,340	1,310	770
23	1,280	1,280	1,300	1,310	1,298	1,310	1,310	1,300	1,250	1,340	1,320	1,300
24	1,270	1,280	1,290	1,300	1,299	1,310	1,310	1,260	1,260	1,330	1,310	1,300
25	1,280	1,270	1,290	1,300	1,303	1,310	1,310	1,230	1,260	1,330	1,310	1,310
26	1,260	1,280	1,280	1,300		1,300	1,320	1,220	1,260	1,330	1,310	1,310
27	1,270	1,290	1,270	1,290	1,307	1,300	1,310	1,270	1,260	1,340	1,310	1,310
28	1,250	1,300	1,270	1,280	1,312	1,290	1,310	1,240	1,270	1,320	1,300	1,320
29	1,250		1,270	1,280	1,309	1,290	1,310	1,230	1,230	1,330	1,300	1,320
30	1,250		1,270	1,280	1,313	1,260	1,310	1,240	1,250	1,330	1,310	1,310
31	1,260				1,311		1,270	1,230		1,340		1,310

08-4587.00 Rio Grande near El Indio, Texas and Villa Guerrero, Coahuila

LOCATION: Gaging station at river mile 460.4 (741.0 km), 35.9 river miles (57.8 km) downstream from the international highway bridge between Eagle Pass, Texas and Piedras Negras, Coahuila.
RECORDS: Specific conductance 1954 through current year.
REMARKS: Sampling and determinations by the International Boundary and Water Commission.

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROMHOS/CM @ 25 DEG C - 1989

January		March		May		July		September		November	
5	1,160	7	1,270	2	1,280	6	1,290	6	1,330	1	1,310
18	1,180	23	1,240	17	1,200	19	1,300	19	1,280	17	1,340
February		April		June		August		October		December	
2	1,230	4	1,280	7	1,290	3	1,300	4	1,310	6	1,310
14	1,250	18	1,290	20	1,320	16	1,280	17	1,310	18	1,330

QUALITY OF WATER - 1989

08-4590.00 RIO GRANDE AT LAREDO, TEXAS AND NUEVO LAREDO TAMAULIPAS

LOCATION: Samples for biochemical analyses, specific conductance, and suspended silt collected at the Laredo Water Plant, river mile 364.0 (585.8 km); for chemical and biochemical analyses at International Bridge II, river mile 360.6 (580.3 km).

RECORDS: Chemical analyses, 1955 through 1976; chemical and biochemical analyses, 1973 through September 1986; biochemical analyses, September 1968 through current year; suspended silt, 1953 through current year; specific conductance, 1948-1949 and 1955 through current year.

REMARKS: Field parameter samples for biochemical analyses, suspended silt and specific conductance collected and analyzed by the International Boundary and Water Commission and the Texas Water Commission. Additional water quality parameters, including heavy metals, nutrients, pesticides, and biological indices, available from U. S. Geological Survey through September 1986.

1989 Date	Time Std.	Stream-flow, Momen-tary Sec-Ft.	Specific Conduct-ance Micro-mhos	pH Units	Water Tem-pera-ture Deg C	Oxygen, Dis-solved (DO) mg/L	Coli-form, Fecal Cols./ 100 mL	Oxygen, Demand, Bio-Chemical (BOD) 5 Day mg/L	Alka-linity Total (as CaCO3) mg/L	Sulfate ion (SO4), Dis-solved mg/L	Chloride ion (Cl), Dis-solved mg/L	Solids Dis-solved (Residue @ 180 Deg C) mg/L	Sus-pended Sedi-ment mg/L
Jan. 11	1155	4,500	1,239	8.3	11.3	8.6	45	2	135	257	164	798	50
Feb. 8	1145	3,500	1,182	9.1	3.5	11	20	1	141	247	157	808	31
Mar. 13	1027		1,870	8.1	18.9	8.9	90		119	194	132		20
Apr. 11	1100	2,500	1,295	10.2	19.2	8.2	20	2	132	267	170	792	66
May 9	1110	3,500	1,252	9	25.5	7.5	80	2	128	249	171	770	52
June 7							21			480			
12	1700		1,370	7.9	29	6.1	< 9		131	154	227		197
July 11	1105	1,400	1,295	7.8	27	7.8	60	0.5	121	294	183	854	45
18							K 4			450		2,130	
Aug. 8	1100	1,300	1,263	7.8	26.9	7.2	80	2.5	119	275	171	922	17
16							K 8						
Sept. 7	1345		1,570	8.2	29.8	7.5	18		120	320	144		44
Oct. 11	1100	1,800	1,075	8.1	21.3	7.8	75	2	126	223	139	726	115
17	1100	1,600	1,320	7.9	25.5				130	270	170	809	
Nov. 14	1105	2,900	1,342	8.3	23.2	7.7	120						
15	1105	2,900	1,370	8	24				130	290	180	845	
Dec. 19	1040	2,850	1,370	8	3				130	290	180	835	

K Results based on colony count outside the acceptance range (non-ideal colony count)
< Actual value is known to be less than the value shown

SUSPENDED SILT - 1989

Month	Tons Water	Tons Silt	Number of Samples	Gravimetric Percentages Average	Maximum Sample	Minimum Sample	Acre-Feet at 1,452 Tons / AF	1968-1989 Period of Record Average	Maximum	Minimum
Jan.	219,174,000	8,770	31	0.00400	0.00870	0.00640	6.0	5.6	20.9	0.93
Feb.	242,679,000	16,020	28	0.00660			11.0	11.1	109.0	0.88
Mar.	257,694,000	15,200	31	0.00590			10.5	11.3	62.7	1.80
Apr.	445,760,000	37,440	30	0.00840	0.03230	0.01210	25.8	27.4	251.0	0.69
May	268,260,000	11,800	31	0.00440			8.1	42.7	165.0	1.10
June	332,360,000	35,560	30	0.01070	0.05340		24.5	62.1	688.0	0.56
July	101,002,000	3,430	31	0.00340			2.4	52.9	418.0	1.30
Aug.	136,529,000	6,280	31	0.00460	0.05100		4.3	46.2	313.0	2.30
Sept.	111,136,000	9,000	30	0.00810			6.2	63.7	700.0	3.30
Oct.	220,010,000	35,860	31	0.01630			24.7	52.8	286.0	1.70
Nov.	208,014,000	5,620	30	0.00270			3.9	8.2	27.3	0.81
Dec.	221,384,000	4,650	31	0.00210			3.2	9.8	77.4	0.66
Year	2,764,002,000	189,630	365	0.00642			130.6	393.8	1,626.9	95.07

QUALITY OF WATER - 1989

08-4590.00 RIO GRANDE AT LAREDO, TEXAS AND NUEVO LAREDO TAMAULIPAS

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROMHOS/CM @ 25 DEG C - 1989

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,120	1,250	1,230	1,270	1,240	1,280	1,310	1,340	1,080	1,260	1,090	1,300
2	1,130	1,260	1,210	1,240		1,320	1,320	1,330	1,090	1,300	1,140	1,300
3	1,120	1,250	1,210	1,260	1,270	1,290	1,320	1,270	1,310	1,280	1,170	1,300
4	1,130	1,220	1,280	1,320	1,300	1,320	1,320	1,270	1,100	1,280	1,270	1,300
5	1,120	1,220	1,230	1,260	1,290	1,320	1,310	1,270	1,300	1,290	1,300	1,300
6	1,150	1,210	1,240	1,290	1,290	1,320	1,330	1,340	1,100	1,300	1,300	1,310
7	1,120	1,210	1,260	1,280	1,280	1,330	1,320	1,330	1,070	1,320	1,320	1,310
8	1,120	1,200	1,270	1,270	1,290	1,340	1,330	1,270	850		1,310	1,320
9	1,150	1,200	1,280	1,280	1,280	1,380	1,340	880	1,100	560	1,310	1,320
10	1,120	1,200	1,290	1,280	1,290	1,340	1,340	1,280	1,080	750	1,280	1,320
11	1,130	1,200	1,240	1,280	1,300	1,330	1,340	1,110	1,080	1,040	1,330	1,330
12	1,170	1,210	1,240	1,280	1,300	1,310	1,350	1,280	1,090	1,140	1,320	1,330
13	1,260	1,200	1,250	1,280	1,290	1,290	1,350	1,280	1,080	1,120	1,320	1,330
14	1,130	1,200	1,240	1,280	1,260	1,230	1,350	1,280	1,110	1,030	1,320	1,330
15	1,260	1,200	1,240	1,260	1,270	1,230	1,370	1,340	1,110	1,180	1,310	1,330
16	1,120	1,210	1,240	1,270	1,180	1,180	1,340	1,340	1,100	1,230	1,320	1,320
17	1,120	1,200	1,250	1,270	910	1,270	1,340	1,270	1,100	1,270	1,340	1,330
18	1,130	1,210	1,240	1,270	1,130	1,340	1,360	1,270	1,120	1,300	1,310	1,330
19	1,150	1,210	1,240	1,310	1,100	1,330	1,350	1,280	1,120	1,300	1,310	1,330
20	1,150	1,220	1,240	1,300	1,170	1,310	1,340	1,290	1,140	1,320	1,300	1,330
21	1,130	1,210	1,240	1,310	1,160	1,350	1,350	1,270	1,020	1,320	1,320	1,330
22	1,130	1,210	1,250	1,310	1,210	1,330	1,340	1,290	940	1,300	1,320	1,330
23	1,120	1,210	1,250	1,310	1,190	1,320	1,340	1,280	1,130	1,320	1,320	1,320
24	1,120	1,210	1,260	1,310	1,250	1,360	1,340	990	1,240	1,320	1,320	1,320
25	1,120	1,220	1,270	1,300	1,130	1,370	1,340	1,270	1,300	1,320	1,320	1,330
26	1,130	1,220	1,270	1,320	1,270	1,350	1,280	1,280	1,110	1,240	1,330	1,340
27	1,140	1,230	1,270	1,270	1,270	1,330	1,280	1,250	1,080	1,310	1,320	1,340
28	1,130	1,210	1,280	1,240	1,280	1,340	1,330	1,330	1,310	1,330	1,320	1,340
29	1,160		1,270	1,100	1,300	1,320	1,300	1,310	1,310	1,320	1,330	1,340
30	1,130		1,280	1,250	1,300	1,320	1,310	1,270	1,310	1,140	1,340	1,340
31	1,160		1,280		1,310		1,320	1,290		1,010		1,350

QUALITY OF WATER - 1989

08-4613.00 RIO GRANDE BELOW FALCON DAM NEAR FALCON, TEXAS AND NUEVA CD. GUERRERO, TAMAULIPAS

LOCATION: Chemical and specific conductance samples from Falcon Reservoir at Falcon Dam, river mile 274.8 (442.3 km), and biochemical sampling at the Chapeno gaging station 2.5 river miles (4.1 km) below Falcon Dam; latitude 26°31'45", longitude 99°09'30".

RECORDS: Chemical analyses, July 1955 through current year; biochemical analyses, July 1975 through current year; suspended silt, July 1955 through 1976; specific conductance 1955 through current year.

REMARKS: Sampling for chemical analyses by the International Boundary and Water Commission at Falcon Village Water Plant, analyses by the U. S. Geological Survey; sampling and determinations for specific conductance by the International Boundary and Water Commission at Falcon Dam Power Plant tailrace; biochemical analyses, collected and analyzed by the International Boundary and Water Commission and the Texas Water Commission.

1989 Date	Time Standard	Streamflow Momentary Second-Feet	Specific Conductance Micromhos	pH Units	Water Temperature Deg C	Hardness, Total (as CaCO3) mg/L	Hardness, Noncarbonate (as CaCO3) mg/L	Calcium ion (Ca), Dissolved mg/L	Magnesium ion (Mg), Dissolved mg/L
Jan. 20	1100	8,890	1,170	7.7	15.5	270	150	73	22
Feb. 14	1100	1,600	1,140	7.7	15	270	150	74	21
Mar. 14	1115	3,350	1,140	7.7	16.5	270	150	75	21
Apr. 19	0900	6,270	1,160	7.6	20	280	160	77	22
May 15	0945	3,400	1,180	7.8	22	270	140	75	21
June 23	0945	2,950	1,230	7.7	26.5	280	170	74	23
July 17	1400	3,330	1,270	7.8	27	280	170	74	23
Aug. 16	1120	3,260	1,290	7.6	27	280	170	74	24
Sept.18	0945	2,000	1,310	7.7	26.5	290	190	74	25
Oct. 16	1115	3,990	1,330	7.9	25.5	290	190	75	25
Nov. 15	0930	1,930	1,350	7.9	21.5	290	190	75	25
Dec. 20	0920	400	1,360	7.8	12	300	200	77	26

1989 Date	Sodium ion (Na), Dissolved mg/L	Sodium Adsorption Ratio(SAR)	Potassium ion (K) Dissolved mg/L	Alkalinity Total (as CaCO3) mg/L	Sulfate ion (SO4) Dissolved mg/L	Chloride ion (Cl), Dissolved mg/L	Silica (SiO2) Dissolved mg/L	Solids Dissolved (Calculated) mg/L
Jan. 20	140	4	5.5	121	240	150	13	716
Feb. 14	130	3	5.3	125	230	150	13	698
Mar. 14	130	3	5.3	123	240	150	12	707
Apr. 19	130	3	5.2	119	240	150	12	708
May 15	130	3	5.3	128	240	150	12	710
June 23	150	4	5.9	115	260	160	13	755
July 17	150	4	6	113	270	170	13	774
Aug. 16	160	4	6.2	107	280	160	13	781
Sept.18	170	4	6.3	105	290	170	13	811
Oct. 16	170	4	6	103	290	170	14	812
Nov. 15	160	4	5.9	98	300	170	13	808
Dec. 20	160	4	6.1	103	300	180	13	824

1989 Date	Time Std.	Streamflow, Momentary Sec-Ft.	Specific Conductance Micromhos	pH Units	Water Temperature Deg C	Oxygen, Dissolved (DO) mg/L	Coliform, Fecal Cols./ 100 mL	Oxygen, Demand, Biochemical (BOD) 5 Day mg/L	Alkalinity Total (as CaCO3) mg/L	Sulfate ion (SO4), Dissolved mg/L	Chloride ion (Cl), Dissolved mg/L	Solids Dissolved (Residue @ 180 Deg C) mg/L	Suspended Sediment mg/L
Mar. 13	1445	3,235	1,261	8.3	18.2	10.2	< 9		125	232	141	702	7
June 12	1225	11,220	1,334	7.9	28.3	6.2	< 7		115	259	154	754	11
Sept.13	1105	6,225	1,453	8.1	28.8	7.1	< 7		106	245	165		12

< Actual value is known to be less than the value shown

QUALITY OF WATER - 1989

08-4613.00 RIO GRANDE BELOW FALCON DAM NEAR FALCON, TEXAS AND NUEVA CO. GUERRERO, TAMAULIPAS

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROMHOS/CM @ 25 DEG C - 1989

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1		1,140	1,120		1,140				1,280		1,300	1,300
2	1,170					1,190		1,250		1,300		
3		1,130	1,130	1,130			1,230				1,300	
4	1,160							1,260	1,300	1,290		1,300
5				1,140		1,190	1,230					
6	1,160	1,130	1,130						1,280	1,280	1,300	1,300
7				1,140		1,200	1,220	1,260				
8		1,130	1,120		1,140				1,280		1,300	1,310
9	1,160					1,210		1,260		1,300		
10		1,130	1,120	1,140	1,150		1,230				1,310	
11	1,150							1,260	1,290	1,300		1,310
12				1,140	1,160	1,210	1,230					
13	1,150	1,130	1,120						1,300	1,300	1,300	1,320
14				1,140		1,200	1,230	1,260				
15		1,120	1,140		1,170				1,280		1,270	1,300
16	1,150					1,200		1,270		1,310		
17		1,120	1,140	1,140	1,150		1,240				1,290	
18	1,140							1,270	1,280	1,300		1,310
19				1,130	1,150	1,210	1,240					
20	1,150	1,120	1,130						1,290	1,300	1,300	1,310
21				1,130		1,210	1,240	1,270				
22		1,130	1,120		1,180				1,280		1,300	1,310
23	1,140					1,250		1,280		1,300		
24		1,130	1,120	1,160	1,170		1,250				1,310	
25	1,160							1,280	1,280	1,310		1,320
26				1,140	1,160	1,220	1,250					
27	1,150	1,120	1,140						1,290	1,320	1,310	1,320
28				1,150		1,230	1,260	1,280				
29			1,120		1,180				1,310		1,310	1,320
30	1,140					1,220		1,290		1,300		
31			1,130		1,240		1,250					

08-4642.00 RIO SAN JUAN AT CAMARGO, TAMAULIPAS

LOCATION: At gaging station, 3.1 river miles (5 km) from the confluence with the Rio Grande, which is located at river mile 238.7 (384.1 km).
RECORDS: Specific conductance, 1960 through current year.
REMARKS: Sampling and determinations by the International Boundary and Water Commission.

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROMHOS/CM @ 25 DEG C - 1989

January		March		May		July		September		November	
6	993	2	2,780	3	2,090	21	2,100	19	2,270	3	2,700
February		20	2,570	June		August		October		December	
2	2,650	April		2	2,420	2	2,200	3	2,210	1	2,820
17	2,500	14	2,550			16	2,200	19	2,670	19	2,480

QUALITY OF WATER - 1989

08-4645.00 RANCHERIAS DRAIN NEAR CAMARGO, TAMAULIPAS

LOCATION: At a point about 1,950 feet (600 m) from the confluence with the Rio Grande, which is located at river mile 241.6 (388.8 km). This drain carries waste water from the Lower Rio San Juan Irrigation District in Mexico.
RECORDS: Specific conductance, 1948 and 1960 through current year.
REMARKS: Sampling and determinations by the International Boundary and Water Commission.

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROMHOS/CM @ 25 DEG C - 1989

January		March		May		July		September		November	
6	5,160	2	5,500	5	5,570	5	5,180	4	4,400	3	4,820
20	3,030	20	5,280			21	5,280	19	4,900	16	4,940
		31	5,180								
February		April		June		August		October		December	
2	3,910	14	3,720	2	3,900	2	5,070	3	4,950	1	5,170
17	4,920					16	4,960	19	5,040		

08-4647.00 RIO GRANDE AT RIO GRANDE CITY, TEXAS NEAR CAMARGO, TAMAULIPAS

LOCATION: Gaging station at river mile 235.0 (378.1 km), 3.7 river miles (6.0 km) downstream from Rio San Juan.
RECORDS: Chemical analyses, 1959 through current year; specific conductance, 1958 through current year; suspended silt, 1959 through 1977.
REMARKS: Sampling by the International Boundary and Water Commission; chemical analyses by the U.S. Geological Survey; specific conductance determinations by the International Boundary and Water Commission.

1989 Date	Time Standard	Streamflow Momentary Second-Feet	Specific Conductance Micromhos	pH Units	Water Temperature Deg C	Hardness, Total (as CaCO3) mg/L	Hardness, Noncarbonate (as CaCO3) mg/L	Calcium ion (Ca), Dissolved mg/L	Magnesium ion (Mg), Dissolved mg/L
Jan. 24	0930	8,970	1,180	7.5	18	280	160	75	22
Feb. 13	1114	3,380	1,170	7.7	19	280	150	76	22
Mar. 15	1055	3,420	1,170	7.8	19	280	150	76	21
Apr. 19	1040	5,670	1,170	7.6	23	280	160	77	21
May 15	0900	10,400	1,180	7.8	26	280	150	75	22
June 15	0930	4,860	1,300	7.8	28.5	290	170	75	24
July 14	0930	2,620	1,310	7.9	28.5	290	180	75	24
Aug. 16	0930	3,560	1,310	7.8	28.5	290	180	75	24
Sept.18	0800	2,070	1,360	7.7	30	300	190	78	25
Oct. 17	0900	4,070	1,340	7.7	25	290	190	75	25
Nov. 13	1145	2,280	1,380	7.9	25	290	190	76	25
Dec. 19	1300	820	1,470	8	8	310	200	81	27

1989 Date	Sodium ion (Na), Dissolved mg/L	Sodium Adsorption Ratio(SAR)	Potassium ion (K) Dissolved mg/L	Alkalinity Total (as CaCO3) mg/L	Sulfate ion (SO4) Dissolved mg/L	Chloride ion (Cl), Dissolved mg/L	Silica (SiO2) Dissolved mg/L	Solids Dissolved (Calculated) mg/L
Jan. 24	140	4	5.6	120	240	160	13	728
Feb. 13	130	3	5.3	126	240	150	13	712
Mar. 15	130	3	5.3	126	240	150	11	709
Apr. 19	130	3	5.5	123	240	150	12	709
May 15	130	3	5.4	135	250	140	12	715
June 15	160	4	5.8	116	280	170	13	797
July 14	160	4	6.1	112	280	180	10	802
Aug. 16	160	4	6.5	108	280	160	13	783
Sept.18	170	4	6.4	110	300	180	13	838
Oct. 17	170	4	6.1	105	290	180	13	822
Nov. 13	170	4	5.7	105	310	180	13	843
Dec. 19	180	4	6.5	112	320	200	12	894

QUALITY OF WATER - 1989

08-4647.00 Rio Grande at Rio Grande City, Texas near Camargo, Tamaulipas

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROMHOS/CM @ 25 DEG C - 1989

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1		1,460	1,260		1,310				1,360		1,440	1,410
2	1,290					1,240		1,370		1,360		
3		1,520	1,280	1,210	1,300		1,400				1,510	
4	1,280							1,300	1,330	1,330		1,410
5				1,220	1,290	1,260	1,350					
6	1,260	1,280	1,280						1,330	1,330	1,380	1,560
7				1,230		1,280	1,330	1,300				
8		1,240	1,270		1,290						1,500	1,650
9	1,250					1,270		1,340	1,340	1,350		
10		1,210	1,220	1,230	1,260		1,310				1,400	
11	1,230							1,270	1,340	1,360		1,620
12				1,240	1,300	1,290	1,400					
13	1,280	1,220	1,230						1,350	1,450	1,400	1,620
14				1,260		1,280	1,330	1,320				
15		1,230	1,250		1,230				980		1,470	1,490
16	1,290					1,390		1,390		1,390		
17		1,240		1,210	1,230		1,300				1,410	
18	1,300		1,280					1,350	1,360	1,370		1,480
19				1,210	1,220	1,300	1,310					
20	1,220	1,230	1,260						1,340	1,390	1,450	1,510
21				1,210		1,340	1,320	1,250				
22		1,260	1,240		1,230				1,320		1,420	1,540
23	1,260					1,460		1,420		1,380		
24		1,260	1,240	1,240	1,240		1,460				1,450	
25	1,270							1,130	1,330	1,360		1,540
26				780	1,240	1,450	1,380					
27	1,280	1,260	1,230						1,400	1,360	1,480	1,520
28				1,240		1,460	1,420	1,310				
29			1,230		1,230				1,370		1,440	1,430
30	1,300					1,510		1,370		1,360		
31			1,220		1,220		1,440					

Puertecitos Drain and Los Indios Drain near Cd. Diaz Ordaz, Tamaulipas

LOCATION: For Puertecitos Drain, at a point about 8,500 feet (2,600 m) from the confluence with the Rio Grande, which is located at river mile 219.3 (352.9 km; and, for Los Indios Drain, at a point about 2,150 feet (650 m) from its confluence with Puertecitos Drain. These two drains join at a point about 4,250 feet (1,300 m) from the confluence with the Rio Grande. These drains carry waste water from the lower Rio San Juan Irrigation District in Mexico.
RECORDS: Specific conductance, 1960 through current year.
REMARKS: Sampling and determinations by the International Boundary and Water Commission.

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROMHOS/CM @ 25 DEG C - 1989

Date	Puerte-citos Drain	Los Indios Drain	Date	Puerte-citos Drain	Los Indios Drain	Date	Puerte-citos Drain	Los Indios Drain	Date	Puerte-citos Drain	Los Indios Drain
Jan. 6	1,820	1,970	Mar. 31	2,940	2,220	Aug. 2	2,390	2,250	Oct. 19	2,530	2,270
20	2,070	2,030	Apr. 14	2,120	2,280	16	2,500	2,430	Nov. 3	2,210	2,230
Feb. 2	2,350	2,290	May 3	2,680	2,470	Sept. 4	2,310	2,320	16	2,370	2,220
17	2,450	2,030	June 2	2,470	2,040	19	2,000	2,240	Dec. 1	2,450	2,140
Mar. 2	2,550	2,330	July 5	2,730	2,370	Oct. 3	1,890	2,260	19	2,410	2,090
20	2,830	2,120	21	2,520	2,300	11	2,040	2,200			

QUALITY OF WATER - 1989

08-4663.00 Rio Grande at Los Ebanos, Texas near Co. Diaz Ordaz, Tamaulipas

LOCATION: Gaging station at river mile 204.3 (328.8 km) 34.0 river miles (54.7 km) upstream from Anzalduas Dam.
RECORDS: Chemical analyses, June 1977 through current year; specific conductance, 1956 through current year.
REMARKS: Sampling by the International Boundary and Water Commission; chemical analyses by the U. S. Geological Survey; specific conductance determinations by the International Boundary and Water Commission.

1989 Date	Time Standard	Streamflow Momentary Second-Feet	Specific Conductance Micromhos	pH Units	Water Temperature Deg C	Hardness, Total (as CaCO3) mg/L	Hardness, Noncarbonate (as CaCO3) mg/L	Calcium ion (Ca), Dissolved mg/L	Magnesium ion (Mg), Dissolved mg/L
Jan. 24	1047	8,910	1,190	7.7	18.5	280	160	75	22
Feb. 13	1352	3,650	1,270	7.7	19	300	170	81	23
Mar. 17	1215	3,580	1,240	7.9	22	290	150	80	22
Apr. 19	1215	5,750	1,220	7.7	24	300	170	81	23
May 15	1250	9,640	1,210	7.7	26	280	150	77	22
June 16	1300	5,920	1,330	7.6	29.5	290	170	77	24
July 14	1245	1,620	1,420	7.9	29.5	320	200	84	26
Aug. 16	1215	2,680	1,360	7.9	29.5	300	190	78	25
Sept.18	1200	1,390	1,310	7.7	30	300	180	82	23
Oct. 17	1205	3,890	1,390	7.9	26	300	200	77	26
Nov. 13	1330	2,710	1,440	8.1	34	310	200	81	27
Dec. 20	1400	1,190	1,640	8	12	350	220	92	30

1989 Date	Sodium ion (Na), Dissolved mg/L	Sodium Adsorption Ratio(SAR)	Potassium ion (K) Dissolved mg/L	Alkalinity Total (as CaCO3) mg/L	Sulfate ion (SO4) Dissolved mg/L	Chloride ion (Cl), Dissolved mg/L	Silica (SiO2) Dissolved mg/L	Solids Dissolved (Calculated) mg/L
Jan. 24	140	4	5.5	125	240	160	14	732
Feb. 13	150	4	5.5	135	260	170	14	785
Mar. 17	150	4	5.6	136	260	160	11	770
Apr. 19	140	4	5.4	126	250	160	13	748
May 15	140	4	5.9	130	250	150	13	736
June 16	160	4	5.8	123	280	170	13	804
July 14	170	4	6.2	125	300	190	12	863
Aug. 16	170	4	6.2	110	300	170	14	829
Sept.18	160	4	6.7	118	270	170	13	796
Oct. 17	180	5	6.1	103	310	190	14	865
Nov. 13	180	4	5.5	112	320	190	13	884
Dec. 20	200	5	6	128	360	220	12	997

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROMHOS/CM @ 25 DEG C - 1989

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,200	1,280	1,290	1,240	1,270	1,220	1,350	1,610	1,360	1,350	1,330	1,470
2	1,170	1,290	1,300	1,250	1,270	1,220	1,350	1,620	1,360	1,370	1,350	1,470
3	1,170	1,280	1,320	1,240	1,260	1,220	1,330	1,640	1,360	1,340	1,480	1,470
4	1,200	1,290	1,280	1,170	1,270	1,260	1,350	1,430	1,360	1,360	1,480	1,470
5	1,170	1,290	1,320	1,160	1,210	1,230	1,350	1,420	1,370	1,360	1,490	1,470
6	1,170	1,290	1,300	1,170	1,200	1,230	1,350	1,400	1,310	1,380	1,490	1,470
7	1,170	1,280	1,290	1,210	1,210	1,230	1,350	1,400	1,370	1,370	1,490	1,470
8	1,200	1,290	1,230	1,180	1,200	1,230	1,350	1,400	1,370	1,360	1,490	1,470
9	1,180	1,280	1,230	1,170	1,170	1,340	1,350	1,400	1,310	1,370	1,490	1,470
10	1,170	1,280	1,220	1,170	1,160	1,320	1,340	1,370	1,370	1,350	1,490	1,940
11	1,180	1,270	1,220	1,170	1,270	1,320	1,350	1,370	1,370	1,360	1,540	1,980
12	1,200	1,260	1,220	1,210	1,180	1,320	1,350	1,370	1,370	1,350	1,570	1,980
13	1,180	1,270	1,240	1,210	1,180	1,320	1,360	1,370	1,390	1,350	1,570	1,990
14	1,170	1,270	1,210	1,220	1,190	1,320	1,350	1,380	1,380	1,360	1,570	1,990
15	1,170	1,280	1,190	1,210	1,190	1,380	1,340	1,370	1,370	1,350	1,560	2,000
16	1,170	1,270	1,220	1,210	1,200	1,380	1,360	1,370	1,370	1,330	1,570	1,680
17	1,200	1,260	1,210	1,210	1,200	1,380	1,380	1,380	1,330	1,360	1,560	1,670
18	1,180	1,250	1,230	1,210	1,190	1,380	1,370	1,370	1,330	1,370	1,560	1,670
19	1,170	1,250	1,220	1,210	1,200	1,310	1,370	1,380	1,350	1,360	1,560	1,670
20	1,200	1,240	1,240	1,210	1,200	1,390	1,370	1,380	1,340	1,350	1,560	1,670
21	1,170	1,270	1,230	1,180	1,190	1,380	1,370	1,380	1,360	1,340	1,570	1,670
22	1,190	1,280	1,230	1,210	1,190	1,390	1,370	1,370	1,340	1,350	1,550	1,670
23	1,170	1,290	1,220	1,160	1,200	1,340	1,450	1,370	1,350	1,360	1,570	1,780
24	1,160	1,290	1,210	1,200	1,260	1,340	1,440	1,370	1,370	1,350	1,570	1,990
25	1,180	1,280	1,200	1,160	1,230	1,350	1,450	1,390	1,350	1,350	1,470	1,990
26	1,170	1,300	1,220	1,170	1,220	1,360	1,460	1,370	1,350	1,350	1,480	1,690
27	1,170	1,290	1,220	1,170	1,220	1,350	1,450	1,370	1,330	1,360	1,470	1,970
28	1,190	1,300	1,210	1,220	1,230	1,390	1,470	1,360	1,320	1,350	1,470	1,990
29	1,170		1,200	1,210	1,220	1,350	1,600	1,360	1,350	1,350	1,470	1,990
30	1,170		1,210	1,280	1,220	1,390	1,620	1,370	1,340	1,350	1,470	2,000
31	1,330		1,200		1,220		1,600	1,360		1,350		1,990

QUALITY OF WATER - 1989

08-4675.00 Rio Grande at Penitas, Texas and Reynosa Diaz, Tamaulipas

LOCATION: At the H.C.W.C. & I. District No. 1 (Edinburg) pumping plant, river mile 186.6 (300.4 km), 16.3 river miles (26.2 km) upstream from Anzalduas Dam.
RECORDS: Specific conductance, 1963 through current year.
REMARKS: Sampling and determinations by the International Boundary and Water Commission.

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROMHOS/CM @ 25 DEG C - 1989

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1		1,180	1,370		1,150				1,400		1,360	1,480
2	1,210					1,200		1,480				
3		1,180	1,220	1,380	1,170		1,700				1,380	
4	1,200							1,340	1,330			1,630
5				1,250	1,160	1,220	1,620					
6	1,190	1,280	1,310						1,430		1,630	1,590
7				1,190		1,220	1,470					
8		1,260	1,340		1,230				1,390		1,430	1,500
9	1,190					1,230						
10		1,280	1,320	1,180	1,260		1,380				1,500	
11	1,180								1,350			1,790
12				1,210	1,230	1,250	1,380					
13	1,170	1,280	1,340						1,390		1,420	1,950
14				1,210		1,250	1,440					
15		1,270	1,350		1,180				1,380		1,410	2,040
16	1,180					1,280				1,360		
17		1,260	1,240	1,270	1,190		1,360				1,430	
18	1,170								1,420	1,360		2,010
19				1,170	1,190	1,300	1,370					
20	1,170	1,220	1,420						1,340	1,350	1,450	1,970
21				1,170		1,360	1,400	1,290				
22		1,250	1,250		1,190				1,340		1,440	1,750
23	1,410					1,410		1,530		1,360		
24		1,300	1,230	1,160	1,190		1,330		1,340		1,620	
25	1,180							1,430		1,370		1,680
26				1,170	1,200	1,520	1,330					
27	1,180	1,340	1,250						1,350	1,370	1,710	1,730
28				1,180		1,560	1,390	1,180				
29			1,270		1,190				1,390		1,580	1,710
30	1,190					1,560		1,360		1,370		
31			1,280		1,200		1,450	1,450				

08-4678.00 Morillo Drain near Anzalduas Dam

LOCATION: At the Morillo Drain Project pumping plant located about 0.4 river mile (0.6 km) from the confluence with the Rio Grande or at the gaging station on the bypass canal 0.4 mile (0.6 km) from the pumping plant. Morillo Drain enters the Rio Grande at river mile 179.1 (288.3 km), 8.8 river miles (14.2 km) upstream from Anzalduas Dam. This drain carries waste water from the lower Rio San Juan Irrigation District in Mexico and surface runoff during periods of heavy precipitation.
RECORDS: Chemical analyses, 1962 through current year; specific conductance, 1956 through current year.
REMARKS: Sampling by the International Boundary and Water Commission and chemical analyses by the U. S. Geological Survey. Determinations for specific conductance by International Boundary and Water Commission.

1989 Date	Time Standard	Streamflow Momentary Second-Feet	Specific Conductance Micromhos	pH Units	Water Temperature Deg C	Hardness, Total (as CaCO3) mg/L	Hardness, Noncarbonate (as CaCO3) mg/L	Calcium ion (Ca), Dissolved mg/L	Magnesium ion (Mg), Dissolved mg/L
Jan. 25	0830	131	4,460	8	21	700	470	170	67
Feb. 15	0830	18.0	5,690	7.9	23	810	560	190	81
Mar. 13	0820		7,110	7.9	19	1,000	750	250	95
Apr. 19	0825		4,550	7.7	25	770	570	190	71
May 17	0810		3,690	8	26	620	430	160	54
June 21	0725	75.0	6,010	8.2	30	890	640	230	77
July 17	0830	0	6,630	7.9	27	960	720	230	93
Aug. 18	0730		6,130	8	26	910	680	220	88
Sept.18	0745		5,560	8	22	830	620	200	80
Oct. 16	0930	33.0	5,340	8.1	28	780	570	200	69
Nov. 15	0900	10.0	6,760	8.1		860	630	200	88
Dec. 20	1015	0.2	7,100	8.2	9	990	740	240	94

QUALITY OF WATER - 1989

08-4678.00 MORILLO DRAIN NEAR ANZALDUAS DAM

1989 Date	Sodium ion (Na), Dissolved mg/L	Sodium Adsorption Ratio(SAR)	Potassium ion (K) Dissolved mg/L	Alkalinity Total (as CaCO3) mg/L	Sulfate ion (SO4) Dissolved mg/L	Chloride ion (Cl), Dissolved mg/L	Silica (SiO2) Dissolved mg/L	Solids Dissolved (Calculated) mg/L
Jan. 25	760	12	7	226	1,000	800	30	2,970
Feb. 15	970	15	7.4	253	1,300	1,100	38	3,840
Mar. 13	1,200	16	7.6	251	1,500	1,400	42	4,650
Apr. 19	730	11	7	203	970	840	29	2,960
May 17	550	10	6.9	190	790	620	28	2,320
June 21	1,000	15	7.6	253	1,300	1,100	42	3,910
July 17	1,200	17	9	239	1,400	1,300	43	4,420
Aug. 18	1,100	16	18	233	1,400	1,200	39	4,210
Sept.18	940	14	7.5	210	1,200	1,100	35	3,690
Oct. 16	900	14	6.5	210	1,200	990	32	3,520
Nov. 15	1,200	18	5.5	233	1,500	1,300	38	4,470
Dec. 20	1,300	18	6	250	1,500	1,400	38	4,730

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROMHOS/CM @ 25 DEG C - 1989

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1												6,580
2	4,040	4,720	5,980							4,730		
3							6,420	5,080		4,730		
4					4,670				6,390			6,530
5	4,190		6,170			3,710				4,470		6,630
6		4,800		6,910							6,040	6,680
7									6,340			6,800
8					3,960	3,830					6,340	6,730
9	3,670	4,890	6,430							1,590		
10				4,360			6,430	5,620			6,430	
11					4,080					2,030		6,870
12	3,940					4,020				4,510		6,880
13		5,340	6,690	4,330			6,510				6,400	6,690
14												6,600
15		5,320			3,740	4,200					6,460	6,670
16	3,890	5,570								5,200	6,610	
17				4,360	3,580	3,580	6,450	5,930			6,490	
18					3,810			5,950	5,480			6,760
19	3,990			4,370		5,500						
20		6,070	7,100	4,230			5,790					6,840
21									5,080		5,920	6,800
22					4,130	6,050		6,460			6,010	6,670
23	4,250	6,070	6,520								6,240	
24				4,170				6,410		5,910	6,500	
25					4,210		4,940					
26	4,590					6,260			4,790			6,790
27		6,010	6,490	4,010			4,750				6,780	6,760
28									4,260			6,930
29					3,840	6,320		6,630			6,590	6,990
30	4,570		6,720					6,660			6,610	
31												

QUALITY OF WATER - 1989

08-4692.00 Rio Grande Below Anzalduas Dam Near Reynosa, Tamaulipas and Mission, Texas

LOCATION: At Anzalduas Dam, 0.5 river mile (0.8 km) above the gaging station, located at river mile 169.8 (273.3 km).
RECORDS: Chemical analyses, March 1959 through current year; specific conductance 1948 and 1956 through current year; suspended silt, May 1956 through 1977.
REMARKS: Sampling by the International Boundary and Water Commission; chemical analyses by the U. S. Geological Survey; determinations for specific conductance by the International Boundary and Water Commission.

1989 Date	Time Standard	Streamflow Momentary Second-Feet	Specific Conductance Micromhos	pH Units	Water Temperature Deg C	Hardness, Total (as CaCO3) mg/L	Hardness, Noncarbonate (as CaCO3) mg/L	Calcium ion (Ca), Dissolved mg/L	Magnesium ion (Mg), Dissolved mg/L
Jan. 25	0900	1,820	1,260	7.8	19	300	180	82	24
Feb. 15	0900	890	1,360	7.7	21	310	170	86	24
Mar. 13	0840	2,280	1,410	7.8	19	320	180	87	25
Apr. 19	0910	1,350	1,320	7.7	24	310	180	85	24
May 17	0905	2,620	1,280	7.7	27	290	160	79	23
June 21	0745	2,500	1,420	7.7	30	310	190	83	26
July 17	0845	2,180	1,480	7.9	29	320	200	85	27
Aug. 18	0745	1,050	1,400	7.9	29	300	190	80	25
Sept.18	0900	1,210	1,090	7.6	22	240	140	65	18
Oct. 16	1020	1,430	1,550	8	29	330	220	85	29
Nov. 15	0930	1,240	1,610	8.1		330	210	85	29
Dec. 20	1000	508	2,350	8.1	11	500	340	130	42

1989 Date	Sodium ion (Na), Dissolved mg/L	Sodium Adsorption Ratio(SAR)	Potassium ion (K) Dissolved mg/L	Alkalinity Total (as CaCO3) mg/L	Sulfate ion (SO4) Dissolved mg/L	Chloride ion (Cl), Dissolved mg/L	Silica (SiO2) Dissolved mg/L	Solids Dissolved (Calculated) mg/L
Jan. 25	160	4	6.2	125	260	170	15	792
Feb. 15	160	4	5.5	138	270	180	14	822
Mar. 13	170	4	5.7	139	290	190	12	863
Apr. 19	160	4	5.4	130	270	180	13	815
May 17	150	4	5.5	128	260	160	13	767
June 21	170	4	6	125	300	190	14	864
July 17	180	4	6.4	125	310	200	12	895
Aug. 18	170	4	6.3	113	300	180	14	843
Sept.18	140	4	6.3	97	220	140	11	659
Oct. 16	210	5	6.2	115	340	210	15	964
Nov. 15	200	5	6.4	118	360	220	13	984
Dec. 20	320	6	6.5	164	490	380	15	1,480

08-4692.00 Rio Grande Below Anzalduas Dam Near Reynosa, Tamaulipas and Mission, Texas

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROMHOS/CM @ 25 DEG C - 1989

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,350	1,220	1,350	1,300	1,320	1,240	1,570	1,600	1,410	1,420	1,420	1,890
2	1,320	1,220	1,420	1,300	1,230	1,240	1,670	1,610	1,460	1,430	1,430	1,820
3	1,250	1,240	1,430	1,280	1,180	1,240	1,550	1,710	1,480	1,350	1,450	1,680
4	1,220	1,230	1,390	1,310	1,310	1,260	1,610	1,790	1,460	1,360	1,470	1,750
5	1,200	1,230	1,340	1,270	1,360	1,280	1,690	1,680	1,420	1,360	1,490	1,860
6	1,230	1,270	1,300	1,220	1,360	1,260	1,670	1,550	1,430	1,370	1,660	1,690
7	1,270	1,320	1,310	1,220	1,350	1,290	1,600	1,470	1,420	1,390	1,510	1,700
8	1,250	1,280	1,350	1,230	1,400	1,290	1,530	1,430	1,400	1,350	1,700	1,750
9	1,250	1,290	1,370	1,230	1,440	1,280	1,500	1,400	1,370	1,310	1,550	1,710
10	1,250	1,370	1,350	1,230	1,410	1,290	1,490	1,330	1,410	1,340	1,560	1,690
11	1,240	1,420	1,310	1,240	1,400	1,290	1,430	1,290	1,480	1,050	1,570	1,710
12	1,240	1,560	1,330	1,230	1,320	1,300	1,430	1,290	1,440	1,330	1,600	1,820
13	1,240	1,490	1,350	1,230	1,320	1,300	1,430	1,430	1,380	1,340	1,700	1,860
14	1,230	1,450	1,330	1,200	1,280	1,320	1,430	1,300	1,360	1,340	1,580	1,860
15	1,220	1,340	1,300	1,240	1,260	1,350	1,380	1,300	1,430	1,460	1,570	1,730
16	1,210	1,310	1,300	1,290	1,270	1,330	1,410	1,340	1,390	1,470	1,580	1,910
17	1,210	1,310	1,270	1,290	1,250	1,360	1,560	1,360	1,360	1,450	1,560	2,040
18	1,210	1,290	1,270	1,410	1,250	1,420	1,390	1,340	1,180	1,450	1,560	1,940
19	1,220	1,270	1,250	1,330	1,250	1,370	1,380	1,410	830	1,440	1,600	2,210
20	1,250	1,240	1,290	1,330	1,240	1,390	1,370	1,400	1,230	1,420	1,600	2,200
21	1,360	1,230	1,320	1,250	1,240	1,350	1,390	1,400	1,470	1,450	1,540	2,210
22	1,250	1,240	1,310	1,250	1,240	1,360	1,440	1,440	1,360	1,470	1,540	2,270
23	1,240	1,230	1,290	1,220	1,270	1,390	1,450	1,470	1,320	1,490	1,570	2,140
24	1,270	1,280	1,270	1,210	1,240	1,410	1,430	1,510	1,360	1,450	1,600	2,110
25	1,230	1,340	1,270	1,210	1,230	1,430	1,340	1,550	1,370	1,440	1,710	2,240
26	1,230	1,390	1,260	1,210	1,240	1,460	1,330	1,490	1,380	1,450	1,610	2,140
27	1,230	1,470	1,320	1,210	1,240	1,550	1,340	1,450	1,360	1,450	1,680	1,900
28	1,230	1,410	1,340	1,210	1,220	1,490	1,360	1,450	1,340	1,450	1,710	1,870
29	1,220		1,210	1,230	1,220	1,550	1,450	1,320	1,340	1,440	1,670	1,870
30	1,230		1,190	1,160	1,240	1,550	1,500	1,210	1,400	1,450	1,780	2,070
31	1,230		1,230		1,250		1,510	1,330		1,430		2,030

08-4733.90 Rio Grande at Mercedes Irrigation District Pumps near Mercedes, Texas and Rio Rico, Tamaulipas

LOCATION: At river mile 117.8 (189.5 km), 52.6 river miles (84.6 km) downstream from Anzalduas Dam.
RECORDS: Specific conductance, 1945 through current year.
REMARKS: Sampling and determinations by the International Boundary and Water Commission.

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROMHOS/CM @ 25 DEG C - 1989

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,410	1,290	1,520	1,280	1,340	1,250	1,630	1,510	1,450	1,410	1,490	1,790
2	1,390	1,290	1,500	1,330	1,530	1,240	1,600	1,680	1,440	1,440	1,500	1,740
3	1,330	1,290	1,500	1,290	1,530	1,240	1,630	1,630	1,350	1,450	1,510	1,860
4	1,270	1,290	1,480	1,310	1,490	1,250	1,700	1,700	1,230	1,450	1,480	1,850
5	1,250	1,290	1,480	1,330	1,510	1,270	1,640	1,680	1,460	1,480	1,500	1,740
6	1,270	1,310	1,470	1,320	1,410	1,300	1,650	1,690	1,450	1,420	1,510	1,730
7	1,210	1,330	1,460	1,320	1,290	1,290	1,750	1,780	1,470	1,460	1,540	1,850
8	1,280	1,370	1,450	1,300	1,220	1,290	1,660	1,690	1,460	1,440	1,530	1,910
9	1,250	1,450	1,430	1,280	1,350	1,300	1,640	1,420	1,460	1,450	1,700	1,780
10	1,260	1,460	1,430	1,280	1,500	1,300	1,550	1,500	1,450	1,420	1,610	1,780
11	1,310	1,480	1,420	1,260	1,490	1,300	1,520	1,500	1,400	1,380	1,690	1,820
12	1,260	1,480	1,430	1,250	1,490	1,300	1,510	1,360	1,410	1,420	1,770	1,880
13	1,250	1,540	1,440	1,250	1,430	1,300	1,460	1,340	1,480	1,330	1,670	1,940
14	1,220	1,580	1,440	1,240	1,350	1,300	1,460	1,410	1,440	1,230	1,650	1,940
15	1,280	1,620	1,430	1,240	1,330	1,290	1,480	1,300	1,400	1,440	1,660	1,920
16	1,300	1,610	1,420	1,230	1,300	1,350	1,480	1,500	1,400	1,470	1,670	1,980
17	1,280	1,590	1,410	1,220	1,290	1,380	1,430	1,380	1,420	1,540	1,630	1,960
18	1,260	1,500	1,390	1,220	1,290	1,370	1,470	1,330	1,410	1,540	1,600	2,020
19	1,290	1,440	1,360	1,220	1,270	1,390	1,490	1,410	1,420	1,540	1,600	2,140
20	1,270	1,390	1,300	1,360	1,260	1,370	1,410	1,440	1,310	1,560	1,590	2,090
21	1,280	1,390	1,310	1,380	1,270	1,400	1,410	1,440	900	1,510	1,560	2,080
22	1,230	1,380	1,320	1,390	1,250	1,420	1,400	1,430	1,290	1,520	1,680	2,100
23	1,270	1,370	1,330	1,400	1,250	1,430	1,430	1,500	1,500	1,510	1,630	2,310
24	1,260	1,390	1,340	1,410	1,250	1,380	1,470	1,510	1,400	1,530	1,650	2,340
25	1,260	1,370	1,360	1,260	1,260	1,510	1,470	1,560	1,380	1,520	1,690	2,360
26	1,360	1,390	1,370	1,250	1,240	1,400	1,400	1,520	1,410	1,490	1,700	2,360
27	1,290	1,410	1,320	1,240	1,260	1,450	1,370	1,640	1,410	1,500	1,710	2,280
28	1,270	1,420	1,300	1,230	1,250	1,610	1,370	1,600	1,420	1,510	1,740	2,320
29	1,280		1,280	1,230	1,240	1,470	1,420	1,500	1,400	1,530	1,780	2,310
30	1,250		1,270	1,230	1,230	1,530	1,400	1,510	1,420	1,540	1,750	2,080
31	1,280		1,260		1,250		1,490	1,500		1,490		1,960

QUALITY OF WATER - 1989

08-4750.00 Rio Grande near Brownsville, Texas and Matamoros, Tamaulipas

LOCATION: Gaging station at river mile 48.7 (78.3 km), 0.2 river mile (0.3 km) downstream from El Jardin pumping plant and 7.0 river miles (11.2 km) downstream from the international highway bridge between Brownsville, Texas and Matamoros, Tamaulipas.

RECORDS: Chemical and biochemical analyses, October 1967 through January 1968 and October 1974 through current year; biochemical, December 1976 through current year; specific conductance, 1955 through September 1983; suspended silt, 1955 through 1977.

REMARKS: Sampling and analyses by the U. S. Geological Survey. Additional water quality parameters, including heavy metals, nutrients, pesticides, and biological indices, determined and published by the U. S. Geological Survey. Sampling and determinations for specific conductance prior to 1978 by the International Boundary and Water Commission.

1989 Date	Time Standard	Streamflow Momentary Second-Feet	Specific Conductance Micromhos	pH Units	Water Temperature Deg C	Hardness, Total (as CaCO3) mg/L	Hardness, Noncarbonate (as CaCO3) mg/L	Calcium ion (Ca), Dissolved mg/L	Magnesium ion (Mg), Dissolved mg/L
Feb. 22	1430	163	1,620	8.3	20.5	400	220	110	31
Apr. 26	0810	116	1,330	8.1	26	320	180	86	26
June 29	0750	298	1,420	8.2	30.5	320	190	83	27
Aug. 21	1040	196	1,400	8.2	30	310	190	83	25
Oct. 19	0830	13.0	1,450	8.2	18	330	200	88	28
Dec. 7	0800	564	1,750	8.1	15	380	250	99	32

1989 Date	Sodium ion (Na), Dissolved mg/L	Sodium Adsorption Ratio(SAR)	Potassium ion (K) Dissolved mg/L	Alkalinity Total (as CaCO3) mg/L	Sulfate ion (SO4) Dissolved mg/L	Chloride ion (Cl), Dissolved mg/L	Silica (SiO2) Dissolved mg/L	Solids Dissolved (Calculated) mg/L
Feb. 22	170	4	6.1	184	320	220	18	986
Apr. 26	150	4	6.2	141	270	180	14	817
June 29	180	4	5.7	130	300	200	14	888
Aug. 21	160	4	6.4	118	290	190	14	839
Oct. 19	180	4	6.5	131	310	190	13	894
Dec. 7	220	5	6.1	135	400	260	14	1,110

RAINFALL ON THE RIO GRANDE WATERSHED

IN THE UNITED STATES

IN INCHES

Tabulated below, in approximate downstream order, are monthly records of United States rainfall stations with averages for their periods of record. With the exception of Las Cruces, New Mexico, all stations are located in Texas. For location, elevation, period of record, type of gage in use, watershed subdivision in which the station is located, and the observer, see alphabetical listing of these stations following rainfall data in this bulletin. These rainfall records have not been published elsewhere. Records of daily rainfall amounts, where available, are on file in the office of the United States Section of the Commission. Daily records for years prior to 1953 may also be found in corresponding water bulletins.

Detailed listings of the months and years for which records are available through 1970 may be found under "Index to Precipitation Records" in Water Bulletins 10, 14, 26, and Supplement 40A.

	Las Cruces, New Mexico		American Dam		Fort Hancock Bridge		Guayuco Arroyo		Neely Ranch	
Month	1989	Average	1989	Average	1989	Average	1989	Average	1989	Average
Jan.	0.35	0.64	0.25	0.41	0.31	0.39	0.14	0.31	0.06	0.33
Feb.	.73	.48	.52	.37	.77	.31	.23	.22	.81	.24
Mar.	.76	.24	.68	.31	.26	.26	.48	.23	.20	.19
Apr.	T	.28	T	.21	T	.28	0	.19	0	.19
May	.27	.51	.97	.28	.53	.47	.52	.45	.86	.41
June	0	.84	0	.62	.18	.86	0	.61	0	.86
July	.29	.98	.56	1.48	.88	1.30	.77	1.34	1.31	1.71
Aug.	1.80	2.90	.86	1.52	2.48	1.63	1.79	1.63	2.40	1.85
Sep.	.25	1.27	.52	1.09	.47	1.39	.28	1.16	.53	1.52
Oct.	.14	1.07	.05	.79	.15	.97	.44	.92	.23	1.02
Nov.	T	.74	T	.31	T	.37	0	.25	0	.30
Dec.	0	.86	.24	.46	T	.46	T	.35	.17	.44
Yearly	4.59	10.81	4.65	7.85	6.03	8.69	4.65	7.66	6.57	9.06

	Bill Shannon Ranch		H. T. Fletcher Ranch		Adobes Ranch		Shafter		Kerr Mitchell Ranch	
Month	1989	Average	1989	Average	1989	Average	1989	Average	1989	Average
Jan.	0	0.45	0.20	0.67	0	0.35	0	0.19	0.25	0.50
Feb.	.50	.35	1.60	.37	1.25	.26	2.14	.44	2.13	.37
Mar.	.10	.30	.10	.33	0	.16	.13	.32	.33	.20
Apr.	0	.29	0	.49	0	.18	0	.79	0	.50
May	0	.76	0	1.10	0	.66	.18	.85	.40	1.20
June	.50	1.74	.60	1.87	0	1.40	.60	2.70	.30	1.92
July	.90	2.01	.15	2.89	0	1.92	.54	3.06	1.00	2.07
Aug.	4.85	2.66	5.90	3.30	1.40	1.87	0	2.74	3.82	2.30
Sep.	1.40	2.58	2.00	2.53	.40	2.24	.53	3.27	.60	2.09
Oct.	.60	1.36	.50	1.47	0	.77	.57	1.51	.60	1.36
Nov.	0	.44	0	.45	0	.28	0	.38	0	.37
Dec.	0	.46	0	.47	0	.32	.13	.47	.25	.44
Yearly	8.85	13.40	11.05	15.94	3.05	10.41	4.82	16.72	9.68	13.32

	Presidio (IB&WC Gage)		Redford		Yarborough Ranch		La Mota Ranch		Study Butte	
Month	1989	Average	1989	Average	1989	Average	1989	Average	1989	Average
Jan.	0.09	0.31	0	0.31	0.69	0.29	0.20	0.60	0.07	0.47
Feb.	1.38	.23	.90	.23	1.65	.46	1.00	.17	.64	.20
Mar.	.04	.15	0	.17	.08	.36	.10	.20	0	.07
Apr.	.12	.27	0	.28	.22	.33	0	.70	.50	.52
May	.14	.57	T	.61	.87	1.10	.55	.95	.69	1.32
June	.16	1.37	0	1.04	.91	2.10	.30	1.69	0	1.44
July	T	1.44	T	1.40	.55	2.50	.50	1.34	0	1.67
Aug.	2.82	1.42	.30	1.34	5.39	2.73	2.20	1.94	2.33	1.88
Sep.	.05	1.48	T	1.79	.72	3.07	.40	2.12	.38	1.26
Oct.	.20	.81	.10	.88	.72	1.70	0	1.02	.14	1.07
Nov.	.06	.32	0	.35	.31	.54	0	.42	0	.29
Dec.	.20	.37	T	.31	.39	.56	0	.40	.21	.29
Yearly	5.26	8.74	1.30	8.71	12.50	15.74	5.25	11.55	4.96	10.48

T Trace

RAINFALL ON THE RIO GRANDE WATERSHED

IN THE UNITED STATES

IN INCHES

Month	Terlingua Creek Station		Johnson Ranch		Owens Ranch		Lewis James Ranch		Rio Grande near Dryden	
	1989	Average	1989	Average	1989	Average	1989	Average	1989	Average
Jan.	0	0.30	0	0.34	0.60	0.45	0.45	0.49	0.51	0.64
Feb.	.90	.22	.70	.20	2.35	.75	1.99	.63	1.38	.35
Mar.	0	.12	0	.15	.70	.91	0	.29	.05	.13
Apr.	0	.34	0	.43	.48	1.75	0	1.10	.01	.77
May	.70	.73	.20	.99	.75	2.10	.71	1.75	1.19	1.18
June	0	1.13	.30	1.14	1.80	2.12	1.15	1.31	.45	1.34
July	.50	1.22	.40	1.18	.10	1.21	.35	1.32	.15	.87
Aug.	1.50	1.27	1.00	.96	1.39	1.97	.14	1.83	.15	1.66
Sep.	.40	1.23	.70	1.35	4.31	2.41	.94	2.95	.45	2.09
Oct.	.30	.81	1.70	.77	.90	2.33	.80	1.60	1.50	1.07
Nov.	0	.24	0	.23	.60	1.18	.57	.73	.01	.56
Dec.	T	.26	T	.31	.20	.64	.15	.50	.19	.51
Yearly	4.30	7.87	5.00	8.05	14.18	17.82	7.25	14.50	6.04	11.17

Month	Ross Foster Ranch		Eugene Miller Ranch		Prosser Ranch No. 3		Pecos River near Langtry Station		Prosser Ranch No. 2	
	1989	Average	1989	Average	1989	Average	1989	Average	1989	Average
Jan.	0	0.38	1.13	0.60	0	0.38		0.39		0.36
Feb.	1.90	.53	4.06	.87	0	.87	1.20	.76	2.20	.98
Mar.	0	.24	3.22	.84		.56		.43		.58
Apr.	.10	.84	.46	1.45		1.27	1.90	.98		1.26
May	.80	1.21	1.28	3.22		2.20	.80	1.47		2.45
June	T	1.39	.80	2.07		1.66	1.90	2.08		1.85
July	0	.60	0	2.32		1.35		1.44		1.66
Aug.	0	1.23	.33	1.94		1.97		1.51		2.30
Sep.	0	1.51	1.75	2.78		3.21	.30	2.33		2.99
Oct.	0	1.08	2.55	2.66		2.04		1.70	.30	1.82
Nov.	0	.48	.80	.88	.20	.64	.20	.70	.20	.69
Dec.	.30	.49	.11	.64	.20	.53	.30	.51	.20	.47
Yearly	3.10	9.98	16.49	20.27		16.68		14.30		17.41

Month	W. E. Sawyer Ranch		Devils River at Cauthorn Ranch		Dead Man's Canyon near Comstock		Martin King Ranch		Prosser Ranch No. 1	
	1989	Average	1989	Average	1989	Average	1989	Average	1989	Average
Jan.	1.30	0.53	0.90	0.40		0.47	1.23	0.53		0.38
Feb.	3.60	1.13	1.46	.77	1.60	.72	1.29	.73	3.10	.82
Mar.	2.10	1.08	1.42	.64		.52	1.99	.37	.90	.49
Apr.	.65	1.77	.03	.88	2.20	1.19	.07	.92		1.22
May	.80	2.51	.78	2.15		2.27	.32	1.69		2.44
June	1.36	2.11	1.69	2.15		2.29	1.30	1.80		1.80
July	.10	1.78	.03	.77		2.15	0	1.42		1.83
Aug.	.60	2.66	.17	1.15		1.66	0	1.53		1.88
Sep.	1.20	2.94	1.63	1.60		2.44	1.24	2.55	.80	2.70
Oct.	5.20	2.76	.72	2.60		2.07	.20	2.06	.10	1.87
Nov.	1.40	.95	.31	.57		.77	.28	.59	.30	.75
Dec.	.60	.81	.69	.60		.59	.13	.52	.30	.50
Yearly	18.91	21.03	9.83	14.28		17.14	8.05	14.71		16.68

Month	Walker Ranch		Brotherton Ranch		Harlow Ranch		Zuberbueler Ranch		Ed Crane Ranch	
	1989	Average	1989	Average	1989	Average	1989	Average	1989	Average
Jan.	0.84	0.42	1.42	0.62	1.19	0.39	1.77	0.58	1.75	0.78
Feb.	3.50	.83	1.55	.92	3.00	.68	2.46	1.05	3.21	1.05
Mar.	1.50	.49	1.43	.54	.40	.33	1.75	.55	1.44	.57
Apr.		1.03	.10	.93		1.08	.13	1.05	.18	1.48
May		2.64	.65	1.76		2.00	1.67	2.24	3.07	2.60
June		2.37	1.10	1.86		2.47	.92	2.31	.30	2.16
July		1.51	0	1.45		1.28	0	2.11	0	1.64
Aug.		1.20	0	1.63		1.61	0	.94	0	1.12
Sep.	.30	2.79	1.08	2.55		2.51	3.14	2.66	1.86	2.76
Oct.	1.40	1.70	.25	1.75	.85	1.87	0	1.56	.51	2.13
Nov.	.20	.79	.32	.58	.50	.62	.38	.78	.68	.84
Dec.	.20	.52	0	.44		.52	.04	.77	.20	.77
Yearly		16.29	7.90	15.03		15.36	12.26	16.60	13.20	17.90

T Trace

RAINFALL ON THE RIO GRANDE WATERSHED

IN THE UNITED STATES

IN INCHES

Month	A. A. Baker Ranch		Cow Creek near Comstock		Comstock		Amistad Reservoir near Comstock		Tuffy Whitehead Ranch	
	1989	Average	1989	Average	1989	Average	1989	Average	1989	Average
Jan.	1.14	0.45	1.70	0.36	1.05	0.56	0.60	0.37	0	0.38
Feb.	1.94	.75		.42	1.71	.81	1.90	.64	1.51	.76
Mar.	2.25	.58		.38	2.29	.60	1.25	.41	1.78	.64
Apr.	.11	1.11		1.09	0	1.29	.30	1.15	.07	1.21
May	1.39	1.94		1.33	1.53	1.91	1.84	1.36	.75	1.79
June	.34	1.91		1.42	.50	2.15	1.31	1.64	.86	1.90
July	0	1.57		1.70	0	1.43	0	1.18	0	1.47
Aug.	0	1.58		1.72	0	1.64	0	1.37	0	1.38
Sep.	2.00	2.91		2.20	3.48	2.41	2.20	1.94	4.72	2.77
Oct.	.30	1.79		1.82	.25	1.79	0	1.77	.23	1.71
Nov.	.45	.67		.72	0	.63	0	.62	1.02	.67
Dec.	.07	.49		.55	0	.64	0	.30	.12	.51
Yearly	9.99	15.75		13.71	10.81	15.86	9.40	12.75	11.06	15.19

Month	Gillis Ranch		Goldwire Ranch		H. K. Fawcett Ranch		Pafford Crossing		Feely	
	1989	Average	1989	Average	1989	Average	1989	Average	1989	Average
Jan.	1.10	0.48	1.10	0.58	0.99	0.64	1.30	0.55	0.80	0.37
Feb.	1.95	.94	1.85	.72	1.57	.76	1.80	.78		.69
Mar.	1.95	.76	1.35	.70	1.57	.73	1.45	.55		.43
Apr.	0	1.43	0	1.49	.18	1.57	0	1.24		1.27
May	1.84	2.43	4.10	2.55	1.37	2.35	2.45	1.98	2.80	1.88
June	1.33	2.28	1.40	2.20	.11	1.52	1.40	2.21	.40	1.86
July	0	1.81	.20	2.13	.73	1.65		1.99		1.58
Aug.	0	1.47	0	2.38	.05	2.17		2.01		1.67
Sep.	3.88	2.88	0	2.36	2.22	2.71		2.75		1.97
Oct.	.37	1.92	0	2.24	.56	2.35		2.17		1.82
Nov.	1.00	.85	1.00	1.08	.75	.81	1.50	.88		.58
Dec.	.18	.63	0	.61	.20	.57		.59		.45
Yearly	13.60	17.88	11.00	19.04	10.30	17.83		17.70		14.57

Month	Buoy No. 11		H. T. Miers Ranch No. 2		Vinegarone		Evans Creek near Comstock		H. T. Miers Ranch Headquarters	
	1989	Average	1989	Average	1989	Average	1989	Average	1989	Average
Jan.	0.50	0.41	1.39	0.50	1.00	0.61	0.95	0.33	1.25	0.60
Feb.	1.20	.65	1.85	.87	0	.80	.80	.77	1.95	1.01
Mar.	.85	.43	1.55	.83		.64	.40	.48	2.11	.74
Apr.	.23	1.51	0	1.47	0	1.41	T	1.07	0	1.64
May	1.50	1.90	5.24	2.59	1.60	2.64	.20	1.64	3.20	2.53
June	1.60	2.14	1.55	2.30	0	2.20	0	1.88	.75	2.64
July	0	1.47	.13	1.64	0	2.27	0	1.70		1.57
Aug.	0	1.49	.35	2.14	2.30	2.80	0	1.93		1.89
Sep.	0	2.00		2.69	0	2.31	0	2.62		2.49
Oct.	0	1.70		2.26	0	2.67	.30	1.91		2.71
Nov.	.75	.61		.98	.86	.96	1.50	.87	1.00	.92
Dec.	1.50	.39		.73	.25	.68	0	.48		.64
Yearly	8.13	14.70		19.00		19.99	4.15	15.68		19.38

Month	J. G. Brite Ranch		Big Satan Creek Station		Sellers Ranch		Lowry Ranch No. 2		Devils Lake	
	1989	Average	1989	Average	1989	Average	1989	Average	1989	Average
Jan.	1.12	0.42	1.07	0.61	1.05	0.39	1.41	0.47	1.15	0.62
Feb.	1.29	.84	1.32	.69	.90	.73	1.37	.80	1.47	.83
Mar.	1.25	.64	1.65	.82	.40	.46	1.49	.73	1.07	.59
Apr.	.08	1.34	0	1.53	.10	1.22	.13	1.47	.15	1.54
May	3.57	2.19	3.85	2.38	2.00	1.89	3.51	2.23	3.85	2.08
June	1.78	2.31	1.60	2.18		2.55	3.31	2.36	4.10	2.48
July	0	1.55	0	2.01		1.37	0	1.75	.09	1.39
Aug.	.06	1.78	0	2.57	T	1.52	.65	2.17	.38	1.62
Sep.	2.40	3.00	0	2.25		2.36	1.20	2.25	2.45	2.33
Oct.	.25	2.05	2.30	2.44	.25	1.96	.19	2.06	.28	1.97
Nov.	0	.73	0	1.03	2.20	.75	1.25	.96	1.30	.77
Dec.	.08	.56	0	.67	.20	.52	.36	.64	.20	.72
Yearly	11.88	17.41	11.79	19.18		15.72	14.87	17.89	16.49	16.94

T Trace

RAINFALL ON THE RIO GRANDE WATERSHED

IN THE UNITED STATES

IN INCHES

Month	Rough Canyon near Del Rio		Cliff Lowry Ranch No. 1		Amistad Dam		Stewart Ranch		North Fork San Pedro	
	1989	Average	1989	Average	1989	Average	1989	Average	1989	Average
Jan.		0.39	1.32	0.53	0.32	0.51	0.89	0.48		0.44
Feb.	2.20	.95	1.84	1.02	1.77	.89	1.79	.89	1.90	.85
Mar.	.55	.62	1.23	.77	1.10	.72	.91	.63	.60	.64
Apr.	.15	1.29	.22	1.56	.16	1.65	.02	1.49		1.63
May	3.90	2.41	3.68	2.56	2.31	2.25	0	1.86	5.20	2.37
June		2.43	3.17	2.40	.77	2.27	1.50	2.34		2.54
July	2.70	2.13	0	1.67	.04	1.83	0	1.69	1.60	2.33
Aug.	.45	1.88	.17	2.03	.19	1.94	.13	1.59		1.86
Sep.	2.00	2.50	1.15	3.01	3.66	3.38	1.40	2.44	1.50	2.16
Oct.	.10	2.42	.25	2.26	.27	1.98	.38	2.10	.10	2.34
Nov.		.99	1.52	1.03	1.25	.90	1.52	.89		1.01
Dec.		.68	.36	.63	.30	.65	.27	.58		.67
Yearly		18.69	14.91	19.47	12.14	18.97	8.81	16.98		18.84

Month	Long Ranch		Middle Fork San Pedro		Hutto Ranch No. 2		Gillis Headquarters Ranch		Hutto Ranch No. 1	
	1989	Average	1989	Average	1989	Average	1989	Average	1989	Average
Jan.	0.92	0.55		0.46	1.11	0.55	1.44	0.68	0.51	0.53
Feb.	1.94	.91	1.95	.99	1.63	.98	2.74	1.08	1.09	.88
Mar.	.97	.70	.30	.65	.83	.66	.89	.81	.08	.63
Apr.	.11	1.44	.10	1.54	.14	1.76	.30	1.77	0	1.69
May	1.69	2.27	3.20	2.33	2.19	1.98	3.19	2.91	3.26	2.19
June	1.10	2.51	0	2.48	1.84	2.48	1.80	2.87	1.30	2.41
July	.16	2.06	1.40	2.31	.45	1.85	.40	2.08	0	1.93
Aug.	.45	1.48	0	1.79	.11	1.92	0	2.31	.07	1.76
Sep.	1.93	2.11	1.30	1.82	1.12	3.09	3.10	2.10	3.20	2.74
Oct.	.29	2.01	.40	2.65	.23	2.07	.63	2.63	.45	2.22
Nov.	1.27	.88	0	.92	1.10	.94	1.43	1.30	1.25	.85
Dec.	0	.63	0	.64	.35	.58	0	.81	.21	.59
Yearly	10.83	17.55		18.58	11.10	18.86	15.92	21.35	11.42	18.42

Month	Lewis Ranch		Laughlin Air Force Base		Maverick County Canal Headgate		Wardlaw Standart Ranch		Pinto Creek Station	
	1989	Average	1989	Average	1989	Average	1989	Average	1989	Average
Jan.	1.12	0.59	1.24	0.56	0.75	0.57	1.16	0.79		0.49
Feb.	1.27	1.11	.87	.92	.80	.95	1.43	1.09	1.00	.75
Mar.	.90	.80	1.24	.55	.75	.56	2.10	1.02	.80	.52
Apr.	.40	1.93	.36	1.87	.20	1.60	.43	1.41		1.52
May	1.20	2.38	1.33	2.19	2.10	2.19	1.73	2.82		2.34
June	.50	3.00	1.07	2.90	0	2.28	1.60	3.43		2.42
July	0	1.37	.26	2.22	0	1.68	0	.94		1.33
Aug.	0	2.04	.80	1.80	2.90	1.53	4.32	1.12	.40	1.49
Sep.	1.40	2.62	3.23	2.50	1.50	2.53	1.54	2.19	3.70	2.68
Oct.	1.50	2.78	1.30	2.62	2.90	2.26	3.50	2.29	0	2.00
Nov.	1.62	1.18	1.63	1.04	1.30	1.00	1.13	1.61		1.11
Dec.	0	.77	.16	.62	0	.68	.30	.77	.90	.61
Yearly	9.91	20.57	13.49	19.79	13.20	17.83	19.24	19.48		17.26

Month	Las Moras Creek		Normandy		Lateral No. 12 Headgate		Coal Mine		Eagle Pass	
	1989	Average	1989	Average	1989	Average	1989	Average	1989	Average
Jan.	1.30	0.74	1.06	0.79	1.60	0.59	1.39	0.63	1.59	0.76
Feb.	.80	.96	.65	.80	.70	.65	.30	.76	.62	.85
Mar.	1.10	.65	.90	.70	.40	.54	.30	.65	.56	.72
Apr.	.70	1.39	2.00	1.86	1.85	1.73	.67	1.67	2.41	1.78
May	1.50	2.11	1.74	2.81	2.20	2.52	2.25	2.64	2.41	3.72
June	1.10	2.65	.53	2.45	1.60	2.39	2.00	2.41	2.57	3.21
July		1.32		1.83	.20	1.36	.05	1.86	0	1.75
Aug.	.10	1.80	1.82	1.92	0	1.56	.50	1.60	1.42	2.41
Sep.	.70	3.10	.49	2.92	1.20	2.65	.10	2.91	.67	2.90
Oct.	3.60	2.44	2.90	2.49	2.50	2.53	1.60	2.52	2.24	2.45
Nov.	.80	1.04	.87	1.07	.60	.90	.35	.78	.68	.97
Dec.	.20	.76	.14	.75	.70	.67	.12	.60	.39	.84
Yearly		18.96		20.39	13.55	18.09	9.63	19.03	15.56	22.36

RAINFALL ON THE RIO GRANDE WATERSHED

IN THE UNITED STATES

IN INCHES

Month	Trees Farm		Farias Ranch		Indio Ranch		El Indio		Van Dalsem Farm	
	1989	Average	1989	Average	1989	Average	1989	Average	1989	Average
Jan.	1.43	0.60	1.43	0.68	2.03	0.70	1.08	0.77	1.05	0.63
Feb.	.50	.73	.45	.93	.65	.78	.84	.95	.60	.82
Mar.	.44	.44	.10	.52	.14	.55	.24	.54	0	.46
Apr.	2.45	1.81	2.85	1.94	3.23	2.00	3.00	1.83	4.00	2.13
May	2.70	3.03	1.00	3.09	1.45	3.03	.92	3.32	.40	3.10
June	3.75	2.38	2.60	2.41	2.93	2.52	2.72	2.36	3.25	2.17
July	.10	1.45	0	1.70	.24	1.69	.20	1.24	0	1.36
Aug.	2.25	1.74	1.85	1.87	1.40	1.65	1.40	1.88	.10	1.65
Sep.	.30	2.50	.15	3.14	0	3.01	T	2.86	0	2.77
Oct.	3.00	2.76	3.65	2.75	2.50	2.49	4.32	2.36	3.50	2.45
Nov.	.70	.80	.60	.81	.70	.84	.70	.78	.60	.78
Dec.	.42	.71	.50	.80	.60	.78	.70	.72	.50	.76
Yearly	18.04	18.95	15.18	20.64	15.87	20.04	16.12	19.61	14.00	19.08

Month	Keisling Farm		Apache Ranch		Laredo Water Plant		Corralitos Ranch		Huisache Ranch	
	1989	Average	1989	Average	1989	Average	1989	Average	1989	Average
Jan.	1.33	0.70	1.70	0.60	1.54	0.76	1.10	0.74	1.05	0.81
Feb.	1.02	.86	.80	.77	1.37	.86	.80	.72	.50	.85
Mar.	.03	.62	.20	.36	.19	.56	0	.51	0	.58
Apr.	2.60	1.97	3.50	1.62	.29	1.16	2.50	1.13	2.20	1.28
May	.54	2.87	1.00	2.43	.06	2.41	0	2.09	0	2.16
June	1.89	2.71	3.00	2.06	.17	2.17	2.40	2.16	2.10	2.48
July	.60	1.27	.70	2.02	.22	1.16	1.50	1.36	1.20	1.44
Aug.	.28	1.66	1.70	1.74	1.07	1.88	2.30	1.99	2.10	1.56
Sep.	0	2.49	.70	3.09	1.14	2.83	4.50	2.96	4.00	3.70
Oct.	2.38	2.40	6.00	2.55	.52	1.82	.90	2.05	.50	2.17
Nov.	.70	.76	3.30	.76	.80	.86	.50	.78	.20	.75
Dec.	.63	.87	1.90	.75	.55	.87	2.25	.66	2.30	.82
Yearly	12.00	19.18	24.50	18.75	7.92	17.34	18.75	17.15	16.15	18.60

Month	Zapata Water Plant		Falcon Dam		Roma (Int'l. Bridge)		Garciasville		Los Ebanos	
	1989	Average	1989	Average	1989	Average	1989	Average	1989	Average
Jan.	1.00	0.88	0.98	0.91	1.50	0.88	0.23	0.94	0.73	1.02
Feb.	.60	.82	.44	.97	.80	1.00	.48	1.06	.69	.99
Mar.	0	.55	0	.58	0	.54	0	.46	0	.42
Apr.	1.00	1.48	2.45	1.34	3.00	1.38	1.64	1.15	1.13	1.29
May	0	2.60	0	2.55	0	1.95	0	2.47	1.15	2.33
June	2.20	2.36	1.62	2.53	2.30	2.28	1.16	2.56	.95	2.54
July	1.28	1.61	1.28	1.32	1.00	1.29	.69	1.35	.65	1.20
Aug.	2.70	1.92	2.64	2.40	2.70	1.90	.30	1.89	0	1.85
Sep.	4.40	4.13	3.24	4.19	3.50	4.19	1.12	3.23	0	3.08
Oct.	.30	1.87	.20	2.02	.10	1.97	0	1.74	1.70	1.83
Nov.	.10	.85	.02	1.05	.05	.79	.70	.90	0	.77
Dec.	2.20	.92	1.88	.79	1.50	.53	2.35	.77	2.53	.81
Yearly	15.78	19.99	14.75	20.65	16.45	18.70	8.67	18.52	9.53	18.13

Month	La Joya		Penitas (Edinburg Pumping Plant)		HCWCID #6 Goodwin Pump No. 4B		HCWCID #6 Goodwin Pump No. 3		United Irrigation District *	
	1989	Average	1989	Average	1989	Average	1989	Average	1989	Average
Jan.	0.06	1.08	0.23	1.32	0.20	1.31	1.30	1.40	0.65	1.26
Feb.	.45	1.05	.93	1.10	.40	1.03	1.00	1.24	1.40	1.19
Mar.	0	.45	0	.61	0	.53	.20	.66	0	.94
Apr.	1.20	.90	1.46	1.26	1.90	1.14	3.00	1.48	1.31	1.27
May	0	2.30	.06	2.39	.50	2.24	.70	2.52	0	2.93
June	1.30	2.73	1.12	2.90	2.50	2.57	2.70	2.64	.70	2.59
July	.58	1.10	1.97	1.56	.75	1.34	1.50	1.71	1.50	1.65
Aug.	0	1.48	0	2.28	.20	1.58	0	1.81	0	2.16
Sep.	0	3.05	.06	3.51	0	3.28	0	3.12	.45	3.06
Oct.	1.10	1.78	1.20	2.60	.20	2.57	0	2.82	0	2.37
Nov.	0	.79	.11	.86	.20	.89	1.00	.94	.15	.75
Dec.	2.48	.90	2.50	1.05	2.50	1.05	0	1.08	2.75	1.00
Yearly	7.17	17.61	9.64	21.44	9.35	19.53	11.40	21.42	8.91	21.17

T Trace

* Formerly New Mission Pumping Plant

RAINFALL ON THE RIO GRANDE WATERSHED

IN THE UNITED STATES

IN INCHES

Month	Edinburg Filtration Plant		La Feria Materials Yard		La Feria Pumping Plant		CCWCID #19 (Adams Gardens)		San Benito Pump	
	1989	Average	1989	Average	1989	Average	1989	Average	1989	Average
Jan.	0.55	1.50	0.40	1.79	0.59	1.84	1.31	1.38	1.50	1.48
Feb.	.46	1.14	.03	2.14	.04	1.85	.38	1.61	0	1.07
Mar.	.01	.72	0	.85	0	.92	.03	.83	0	.79
Apr.	1.88	1.47	3.93	1.59	3.93	2.02	3.56	1.49	0	1.35
May	1.30	2.37	.30	2.71	.20	2.99	.07	2.63	1.94	2.70
June	2.53	2.49	2.35	3.57	1.10	3.24	3.24	2.82	0	2.48
July	2.17	1.67	2.80	2.59	1.05	2.37	1.67	1.89	0	1.67
Aug.	.48	2.29	.03	2.94	1.50	3.36	.49	2.86	4.11	2.44
Sep.	0	3.62	1.83	5.03	.80	6.20	1.21	4.22	0	4.33
Oct.	.01	2.13	.80	3.12	1.50	3.86	.49	2.67		2.63
Nov.	.14	.94	.45	1.40	.50	1.89	.47	1.43		1.25
Dec.	2.55	1.22	2.40	1.62	2.70	1.59	1.52	1.17		1.36
Yearly	12.08	21.56	15.32	29.35	13.91	32.13	14.44	25.00		23.55

Month	CCWCID #11 (Bayview Dist. Off.									
	1989	Average								
Jan.	4.50	1.85								
Feb.	.80	1.61								
Mar.	0	.70								
Apr.	4.70	1.83								
May	.90	2.56								
June	1.00	2.27								
July	3.45	1.94								
Aug.	3.22	2.69								
Sep.	0	5.61								
Oct.	2.95	2.40								
Nov.	1.70	1.50								
Dec.	1.67	1.52								
Yearly	24.89	26.48								

RAINFALL ON THE RIO GRANDE WATERSHED

IN MEXICO

IN INCHES

Tabulated below, in approximate downstream order, are monthly records of Mexican rainfall stations with averages for their periods of record. For location, elevation, period of record, type of gage in use, watershed subdivision in which the station in located, and the observer, see alphabetical listing of these stations following rainfall data. These rainfall records have not been published elsewhere. Records of daily rainfall amounts, where available, are on file in the offices of the Mexican Section of the Commission.

Detailed listings of the months and years for which records are available through 1970 may be found under "Index to Precipitation Records" in Water Bulletins 10, 14, 22, 26, and Supplement 40A.

Month	Cd. Juarez, Chihuahua		Esc. Superior de Agricul., Chih.		Samalayuca, Chihuahua		Cd. Guerrero, Chihuahua		Bachiniva, Chihuahua	
	1989	Average	1989	Average	1989	Average	1989	Average	1989	Average
Jan.	0.16	0.42	0.04	0.55	0.16	0.46	1.97	0.64	1.18	0.52
Feb.	.98	.45	.98	.48	.87	.46	.83	.40	.75	.19
Mar.	.59	.35	.43	.29	.51	.37	.28	.25	.20	.29
Apr.	T	.29	0	.46		.17	T	.21	.04	.20
May	.63	.36	.39	.34		.25	.31	.34	0	.29
June	T	.65		1.45		.81		1.57		1.61
July	1.14	1.53		1.12		1.98		4.91		5.19
Aug.	2.95	1.65		2.42		2.00		5.14		4.83
Sep.	.87	1.41		1.48		1.96		3.14		2.75
Oct.	.43	1.04		1.44		.90	.35	1.15		1.10
Nov.	0	.49		.46		.47		.49		.33
Dec.	.24	.59		.74		.44	.16	.73		.48
Yearly	7.99	9.23		11.23		10.27		18.97		17.78

Month	San Juanito, Chihuahua		Majalca, Chihuahua		Cuauhtemoc, Chihuahua		Estacion Rosario, Durango		Villa Coronado, Chihuahua	
	1989	Average	1989	Average	1989	Average	1989	Average	1989	Average
Jan.	3.31	2.00	0.28	0.52	0.91	0.37	0	0.39	0.04	0.66
Feb.	5.35	1.26	1.42	.39	.79	.17	0	.21	.04	.29
Mar.	.87	.61	T	.33	.12	.16	0	.12	.16	.16
Apr.	0	.95	0	.48	.04	.24		.32	0	.59
May	.04	.69	.08	.81	.08	.42		.67	.59	.77
June		2.44		2.56		1.58		2.28		3.24
July		9.07		6.03		4.57		4.63		4.49
Aug.		7.32		6.34		4.41		4.87		5.66
Sep.		4.24		4.70		2.91		4.53		4.32
Oct.		2.37		1.19		1.16		1.11		1.45
Nov.		1.31		.42		.30		.31		.47
Dec.		2.07		.45		.44		.43		.50
Yearly		34.33		24.22		16.73		19.87		22.60

Month	Jimenez, Chihuahua		Balleza, Chihuahua		La Boquilla, Chihuahua		Ojo Caliente, Chihuahua		Camargo, Chihuahua	
	1989	Average	1989	Average	1989	Average	1989	Average	1989	Average
Jan.	0.04	0.33	0.08	0.45	T	0.30	0	0.30	T	0.42
Feb.	.16	.16	.35	.33	.28	.18	0	.21	.20	.25
Mar.	.24	.11	0	.16	.16	.14	.71	.16	.39	.19
Apr.	T	.19	0	.24	T	.24	.08	.18	T	.23
May	T	.55	T	.27	0	.54	0	.48	.04	.53
June		1.52		1.70	0	1.42	.63	1.71		1.58
July		3.32		4.84	1.10	2.86	2.36	3.29		3.00
Aug.		2.65		4.87	2.99	2.99	4.17	2.92		2.78
Sep.		2.29	1.14	3.29	1.06	2.94	.63	2.68		2.61
Oct.		1.12		.91	.75	.86	1.50	1.09		.99
Nov.		.24	.39	.46	.12	.31	.39	.23		.43
Dec.		.25	1.02	.47	.51	.35	.51	.29		.45
Yearly		12.73		17.99	6.97	13.13	10.98	13.54		13.46

T Trace

RAINFALL ON THE RIO GRANDE WATERSHED

IN MEXICO

IN INCHES

Month	El Sitio, Chihuahua		Nonoava, Chihuahua		Carichic, Chihuahua		Villalba, Chihuahua		Las Virgenes, Chihuahua	
	1989	Average	1989	Average	1989	Average	1989	Average	1989	Average
Jan.		0.33	1.22	0.50	1.69	0.61	0.24	0.36	0.24	0.29
Feb.	.35	.30	.31	.34	1.02	.44	.16	.14	.28	.13
Mar.	T	.16	.04	.26	.47	.26	0	.08	T	.09
Apr.	0	.26	T	.25	.04	.25	0	.21	0	.28
May		.48	.08	.36	.04	.42	0	.36	0	.34
June		1.70		2.27		1.86	0	1.27	0	1.20
July		4.36		5.03		5.96	0	3.33	1.81	2.72
Aug.		4.93		4.06		5.25	4.17	3.17	2.91	2.67
Sep.		3.39		2.87		3.75		2.90	.20	2.39
Oct.		.96		1.05		1.09	0	.98	.28	.85
Nov.		.36		.44		.55	0	.29	0	.23
Dec.		.37		.54		.81	.63	.34	.39	.36
Yearly		17.60		17.97		21.25		13.43	6.11	11.55

Month	Delicias, Chihuahua		Presa Chihuahua, Chihuahua		Lazaro Cardenas, Chihuahua		Chihuahua, Chihuahua		Km. 135, Chihuahua	
	1989	Average	1989	Average	1989	Average	1989	Average	1989	Average
Jan.	0.16	0.36	0.47	0.30	0.24	0.27	0.75	0.32	0.24	0.25
Feb.	.39	.16	.55	.19	.24	.23	.83	.20	.20	.22
Mar.	.08	.13	T	.15	.12	.11	.08	.19	.16	.11
Apr.	T	.34	0	.36	0	.35	.16	.26	0	.32
May	.04	.37	0	.87	.08	.59	.08	.52	0	.48
June		1.26	.20	2.09		1.33		1.54	0	1.07
July		2.49	3.35	3.93		2.77		3.59	1.97	2.35
Aug.		2.55	7.87	4.71		2.69		3.57	3.07	2.76
Sep.		2.33	.75	3.36		2.75		2.94	0	2.99
Oct.		.84	0	1.05		.82		.94	.75	.97
Nov.		.27	0	.32		.32		.41	0	.31
Dec.		.38	.08	.39		.24		.42	.16	.36
Yearly		11.48	13.27	17.72		12.47		14.90	6.55	12.19

Month	Meoqui, Chihuahua		Posta Zootecnica, Chihuahua		Las Burras, Chihuahua		Villa Aldama, Chihuahua		Presa Luis L. Leon, Chihuahua	
	1989	Average	1989	Average	1989	Average	1989	Average	1989	Average
Jan.	0.20	0.37	1.14	0.40	0.20	0.31	0.20	0.25	0.31	0.26
Feb.	.24	.17	.35	.21	.28	.19	.31	.18	.24	.15
Mar.	.12	.13	.16	.16	.12	.11	T	.20	.08	.12
Apr.	T	.44	.20	.45	0	.32	T	.37	T	.30
May	T	.53	.04	.77	.08	.47	T	.44	.71	.60
June		1.34		1.52	.47	1.23		1.47	.55	1.42
July		2.60		3.24	2.48	2.86		2.80	2.13	2.30
Aug.	3.27	2.78		4.02	3.27	2.53		2.98	4.61	2.92
Sep.	.71	2.33		3.17	0	2.34		2.93	.08	2.22
Oct.	.94	.96		1.22	.98	.82		1.03	0	.88
Nov.	.04	.28		.33	0	.22		.50		.32
Dec.	.59	.45		.35	.79	.38		.36		.37
Yearly		12.38		15.84	8.67	11.78		13.51		11.86

Month	Maclovio Herrera, Chihuahua		Coyame, Chihuahua		Ojinaga (IB&WC), Chihuahua		Maijoma, Chihuahua		Manuel Benavides, Chihuahua	
	1989	Average	1989	Average	1989	Average	1989	Average	1989	Average
Jan.	0.28	0.34	0.31	0.29	0.08	0.34	0.04	0.45	T	0.19
Feb.	.47	.20	.71	.30	1.54	.28	.43	.34	.63	.24
Mar.	T	.11	.12	.14	.12	.15	.24	.19	.08	.19
Apr.	T	.37	0	.38	T	.36	.08	.35	T	.34
May	.43	.58	.83	.65	.12	.53	.98	.85	.98	1.15
June		1.37		1.83	.20	1.45		1.72		1.70
July		2.70		2.41	T	1.57		2.78		2.05
Aug.		2.79		2.47	3.43	1.76		3.22		2.59
Sep.		3.06		2.75	.16	1.70		2.71		2.66
Oct.		.88	.98	1.04	.24	1.04		1.07		1.04
Nov.		.37	T	.41	T	.42		.44		.35
Dec.		.59	.55	.33		.37		.45		.39
Yearly		13.36		13.00		9.97		14.57		12.89

T Trace

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Month	Escalon, Chihuahua		Sierra Mojada, Coahuila		La Chuparrosa, Coahuila		Progreso, Coahuila		La Amistad, Coahuila	
	1989	Average	1989	Average	1989	Average	1989	Average	1989	Average
Jan.	0.20	0.43	0.47	0.65	0.62	0.30	0.59	0.51	1.14	0.65
Feb.	.75	.22	.08	.29		.54	.24	.65	2.17	.94
Mar.	.04	.11	.12	.25	.60	.40	.04	.34	1.34	.73
Apr.	0	.50	0	.35	.11	1.11	.28	1.23	.12	1.45
May	1.34	.79	.12	1.04	1.33	1.40	.39	2.13	1.26	2.24
June		1.84	0	2.25	.83	1.50	21.06	2.21	.67	2.66
July		2.47	.16	2.80	0	1.56	.91	1.16	T	1.51
Aug.		3.04	.67	3.00	0	1.89	3.62	1.93	.16	.58
Sep.		2.82	0	2.98	.28	2.23	.24	2.91	2.95	2.37
Oct.		1.27	.47	1.35	0	1.58	.39	1.78	.35	2.10
Nov.		.29	.43	.52	.42	.64	.39	.59	1.14	1.20
Dec.		.39	.31	.68	0	.30	.87	.53	.24	.66
Yearly		14.17	2.83	16.16		13.45	29.02	15.97	11.54	17.09

Month	Amistad Res. near Tlaloc, Coahuila		Represa Amistad, Coahuila		Cd. Acuna, Coahuila		Palestina, Coahuila		Emiliano Zapata, Coahuila	
	1989	Average	1989	Average	1989	Average	1989	Average	1989	Average
Jan.		0.41	0.67	0.37	1.14	0.58		0.82		1.16
Feb.	1.30	.73	1.34	.64	.91	.89		.95		1.04
Mar.	1.15	.68	.71	.49	1.10	.70	1.65	.72	.79	1.06
Apr.	.10	1.04	T	.94	.16	1.75		1.81		1.89
May	.80	1.72	1.30	1.61	2.01	2.35		2.54		3.93
June	.50	2.11	.51	1.63	.28	2.26		2.39		3.75
July	0	2.58	0	1.88	T	1.65		1.91		2.03
Aug.	.50	1.86	0	1.37	.43	1.64		2.23	3.31	1.91
Sep.	0	2.48	2.44	2.31	3.23	2.91		3.12	1.81	2.41
Oct.	0	1.91	.08	1.99	.55	2.51	.63	2.25	2.56	1.70
Nov.	.90	.79	.75	.70	1.42	.78	1.61	.91	1.54	1.73
Dec.	.80	.66	.08	.35	.39	.63	.47	.76	.39	1.03
Yearly		16.97	7.88	14.28	11.62	18.65		20.41		23.64

Month	Jimenez, Coahuila		Zaragoza, Coahuila		Allende, Coahuila		Muzquiz, Coahuila		Presa Carranza, Coahuila	
	1989	Average	1989	Average	1989	Average	1989	Average	1989	Average
Jan.	1.50	0.70	0.83	1.29	T	0.48	0.91	0.84	0.75	0.70
Feb.	.87	.86	.94	.77	.24	.81	.28	.62	.31	.67
Mar.	1.38	.73	.75	.67	.28	.37	.28	.72	.16	.46
Apr.	.87	1.66	2.01	2.05	0	1.45	.35	1.16	1.06	1.29
May	1.38	2.47	.79	3.56	.16	2.66	1.65	3.64	.39	2.12
June	.08	2.50	1.77	3.26		2.17	1.46	3.35	1.26	1.82
July	.08	1.56	.24	1.48		1.65	.91	2.90	.16	1.00
Aug.	2.44	1.69	4.21	2.20		2.36	3.07	2.96	.31	1.95
Sep.	1.10	2.87	.79	2.22		3.03	.63	4.85		3.03
Oct.	2.52	2.48		1.99		1.82	1.57	2.12	1.30	1.70
Nov.	.71	1.08	1.50	1.22		.80	.71	1.14	.39	.58
Dec.	T	.69		.89		.70	.55	.81	1.26	.63
Yearly	12.93	19.29		21.60		18.30	12.37	25.11		15.95

Month	Cuatro Cienegas, Coahuila		Ejido 1o de Mayo, Coahuila		Lag. de Salinillas, Nuevo Leon		Villa Hidalgo, Coahuila		San Nicolas, Nuevo Leon	
	1989	Average	1989	Average	1989	Average	1989	Average	1989	Average
Jan.	0.24	0.33	0.31	1.08	1.02	0.70	1.38	0.75	1.06	0.98
Feb.	0	.33	.12	.23	.47	.75	.39	.83	.47	.91
Mar.	.35	.16	.24	.11	.04	.51	.71	.68	.67	.72
Apr.	.20	.39	1.54	1.91	.51	1.33	2.83	1.78	.98	1.85
May	.43	.76	.35	1.48	.39	2.39	.16	2.73	.08	3.18
June	1.18	.75	2.56	1.74	2.60	1.99	1.18	2.30	2.40	2.62
July	0	.99	2.48	1.74	.04	.97	1.18	1.21	.24	1.21
Aug.	2.36	1.22	1.65	.82	.71	2.17	1.54	2.12	3.58	2.07
Sep.	.31	1.45	.28	.37	.59	3.14	0	3.17	.20	1.93
Oct.	.71	.77	1.57	1.42	2.13	2.06	1.26	2.09	3.31	2.49
Nov.	.98	.44	.28	.29	.43	.68	.47	.89	.87	.52
Dec.	.75	.47		.13	1.57	.64	.79	.78	1.30	.83
Yearly	7.51	8.06		11.32	10.50	17.33	11.89	19.33	15.16	19.31

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Month	Nv. Laredo (M. S. of Mexico), Tamps.		Nv. Laredo (IB&WC), Tamaulipas		Candela, Coahuila		La Popa, Nuevo Leon		Garza Ayala, Nuevo Leon	
	1989	Average	1989	Average	1989	Average	1989	Average	1989	Average
Jan.	1.46	0.83	1.46	0.77		0.85	0	0.48	1.22	0.90
Feb.	.35	.90	.35	.96		.52	0	.57	.47	.66
Mar.	.04	.64	.04	.54	0	.08	0	.21	0	.41
Apr.	.83	1.33	.83	1.40	.71	1.33	.12	.54	1.10	1.75
May	.08	2.52	.08	3.06		1.60	T	.98	0	2.07
June	1.81	2.26	1.81	2.70		2.06	.16	1.43	.35	2.18
July	.98	1.26	.98	1.40		2.23	.24	1.16	3.19	3.74
Aug.	3.46	1.68	3.46	2.25		1.80	1.57	1.57	3.90	2.59
Sep.	1.73	2.79	1.73	3.04		2.66	.28	2.65	3.46	4.07
Oct.	.83	1.97	.83	2.37		1.40	0	.70	.12	2.26
Nov.	.47	.99	.39	1.08		.63	.87	.58	.67	1.48
Dec.	2.20	.92	1.81	.85		.52	.98	.64	1.61	.54
Yearly	14.24	18.09	13.77	20.42		15.68	4.22	11.51	16.09	22.65

Month	Fresnillo, Nuevo Leon		Mina, Nuevo Leon		Icamole, Nuevo Leon		General Cepeda, Coahuila		Hacienda Mamulique, Nuevo Leon	
	1989	Average	1989	Average	1989	Average	1989	Average	1989	Average
Jan.		1.23	0.24	0.62	0.12	0.43	0	0.52		1.00
Feb.		.51	.43	.41	0	.30	.04	.47		.40
Mar.		.99	0	.15	0	.14	0	.26		.45
Apr.		.56	.59	.65	0	.40	.04	.50		1.79
May		1.12	.16	.83	0	.77	.75	.90	1.77	1.73
June	0	.55	.67	1.37	0	.85	1.18	2.07	10.16	3.25
July	.98	.52	0	1.18	.04	.60		3.08	3.15	2.87
Aug.	1.77	.57	2.20	1.67	.91	.82		2.83	3.43	3.07
Sep.		1.81	3.35	3.16	1.38	1.99		2.83	2.09	4.27
Oct.		.41	0	.92	0	.92		1.18	.79	1.69
Nov.		.34	.20	.60	.51	.61		.51	0	1.06
Dec.		.66	2.09	.51	2.17	.51		.56	0	.96
Yearly		9.27	9.93	12.07	5.13	8.34		15.71		22.54

Month	Paras, Nuevo Leon		Nueva Cd. Guerrero, Tamaulipas		La Escondida, Nuevo Leon		Rinconada, Nuevo Leon		Ramos Arizpe, Coahuila	
	1989	Average	1989	Average	1989	Average	1989	Average	1989	Average
Jan.	0.47	0.83	0.71	0.98	0.79	1.63	0.43	0.43	0.43	0.51
Feb.	.67	.76	.59	1.03	.94	1.16	.16	.31	.16	.36
Mar.	0	.54	0	.50	0	.76	0	.18	0	.27
Apr.	2.28	1.00	3.35	1.55	3.31	3.10	.39	.56	.63	.53
May	.24	2.07	.12	2.71	1.42	2.02	0	.65	0	.92
June	0	2.68	1.06	2.55	.51	3.22	0	1.03	.20	1.04
July	.43	1.63	5.16	1.42	2.72	2.03	0	.60	1.38	1.40
Aug.	.98	2.27	1.26	2.12	8.86	4.71	.67	1.19	1.34	1.32
Sep.	2.28	3.33		3.87	2.48	4.23	.91	2.12	6.14	1.85
Oct.	0	2.09	T	1.93	.16	1.97	.28	.87	.35	.82
Nov.	.35	.81	.31	1.00	.43	.66	.79	.37	.87	.47
Dec.	1.42	.65	1.69	.81	1.34	1.76	1.61	.40	2.05	.50
Yearly	9.12	18.66		20.47	22.96	27.25	5.24	8.71	13.55	9.99

Month	Gomez Farias, Coahuila		Cienega de Flores, Nuevo Leon		Saltillo, Coahuila		San Juan de Vaqueria, Coahuila		Agualeguas, Nuevo Leon	
	1989	Average	1989	Average	1989	Average	1989	Average	1989	Average
Jan.	0.20	1.63	0.87	1.19	0.24	0.62	0	1.16	0.43	1.79
Feb.	0	.68	.51	.93	.04	.50	0	.51	.51	.84
Mar.	0	.14	0	.95	0	.33	0	.20	0	.59
Apr.	0	1.14	.55	1.46	.16	.69	0	1.09	2.83	2.10
May	1.22	1.58	.94	2.56	0	1.14	.47	1.68	T	2.86
June	1.69	2.10	T	3.23	.16	2.00	.87	2.07	1.54	2.08
July	1.57	1.98	2.87	2.31	.79	2.57	3.50	3.24	.28	1.77
Aug.	2.91	2.34	1.77	4.23	1.54	2.44	2.64	3.29	2.68	3.40
Sep.	1.42	2.19	1.93	5.38	1.89	2.54	1.50	2.40	.47	2.25
Oct.	.16	.99	1.30	2.48	.31	1.22	1.57	1.99	.04	2.09
Nov.	1.26	.51	.39	1.08	.91	.78		.39	.39	.76
Dec.	2.95	1.00	1.38	1.15	2.40	.64		.36	1.69	.77
Yearly	13.38	16.28	12.51	26.95	8.44	15.47		18.38	10.86	21.30

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IN MEXICO

IN INCHES

Month	Higueras, Nuevo Leon		Topo Chico, Nuevo Leon		San Antonio de las Alazanas, Coahuila		Apodaca, Nuevo Leon		Monterrey, Nuevo Leon	
	1989	Average	1989	Average	1989	Average	1989	Average	1989	Average
Jan.	0.67	0.77	0.75	0.56	0	1.16	0	0.71	1.26	0.65
Feb.	.47	.62	.91	.57	0	.70	.67	.80	.67	.69
Mar.	0	.66	.12	.48	0	.40	0	.58	.08	.72
Apr.	1.26	1.27	1.50	1.18	.71	1.07	T	1.30	1.14	1.18
May	.28	2.10	.31	1.67	.59	1.90	.31	2.30	.94	1.82
June	2.09	2.66	.63	2.28	.39	2.56	0	2.88	.04	2.76
July	2.68	2.19	4.09	1.61	0	3.28	1.26	1.94	2.91	2.31
Aug.	5.08	3.38	2.17	2.99	4.25	3.12	2.56	3.07	2.44	3.20
Sep.	5.39	4.87	3.70	4.84	0	2.62	2.44	4.92	6.97	6.09
Oct.	.31	1.84	.08	2.95	1.93	1.74	.91	2.06	.67	3.06
Nov.	.51	.78	.35	.70	0	.93	.63	.83	.28	1.15
Dec.	1.81	.76	1.42	.49	2.48	1.01	1.42	.82	1.26	.71
Yearly	20.55	21.90	16.03	20.32	10.35	20.49	10.20	22.21	18.66	24.34

Month	La Huasteca, Nuevo Leon		Ejido Marin, Nuevo Leon		Las Comitas, Nuevo Leon		La Cruz, Nuevo Leon		Huachichil, Coahuila	
	1989	Average	1989	Average	1989	Average	1989	Average	1989	Average
Jan.	0.24	0.70	0.94	1.38		0.41	T	1.23	0.98	2.98
Feb.	0	.13	.59	.77	.63	.42	0	.66	0	1.42
Mar.	0	.22	0	.48	.71	.22	T	.36	0	.40
Apr.	1.38	.59	.04	1.43	.83	.78	0	1.34	.98	1.48
May	.08	1.99	.63	2.72	1.02	1.20	.79	2.04	.87	2.86
June	.91	1.36	.24	2.54	1.06	2.29	.83	3.10	2.95	2.70
July	.98	1.43	2.72	1.91	1.02	1.70	2.64	3.20	2.17	3.94
Aug.	1.26	1.50	2.24	2.55	.98	3.07		4.22	3.23	1.95
Sep.	6.42	3.78	.87	3.68	.87	4.93	7.24	6.66		2.52
Oct.	.87	1.09	T	1.42	.75	1.67	3.74	2.21		1.43
Nov.	0	.24	.39	.54	.63	.48	3.15	.85		.64
Dec.	2.20	.64	1.69	1.42	.39	.38	2.40	.60		1.38
Yearly	14.34	13.67	10.35	20.84		17.55		26.47		23.70

Month	Cd. Mier, Tamaulipas		General Trevino, Nuevo Leon		Cerralvo, Nuevo Leon		La Arena, Nuevo Leon		Pajonal, Nuevo Leon	
	1989	Average	1989	Average	1989	Average	1989	Average	1989	Average
Jan.	0.75	1.06	0.39	1.39	0.51	0.82	1.02	0.91	0.63	0.72
Feb.	.39	1.17	.63	1.12	.87	.66	.79	.76	.71	.63
Mar.	0	.58	0	.66	T	.67	T	.56	.87	.32
Apr.	2.52	1.54	3.82	2.30	1.89	1.70	.71	1.33	.87	1.17
May	0	2.64	3.15	3.59	.12	3.45	.24	2.88	.91	2.09
June	1.61	2.60	1.54	2.45	1.22	3.52	.83	3.13	.91	2.56
July	.55	1.30	.91	1.20	2.05	2.00	6.46	2.94	.94	2.47
Aug.	2.76	2.54	2.99	2.66	4.72	3.65	1.34	3.27	.87	3.45
Sep.		4.42	1.50	3.99	1.46	5.23	2.36	5.16	.79	5.53
Oct.	0	2.02	0	1.76	0	2.44	.75	2.46	.71	1.84
Nov.	.20	.99	0	.69	.51	.66	.39	.76	.67	.52
Dec.	2.05	.86	2.36	1.26	1.93	.56	1.50	.70	.51	.54
Yearly		21.72	17.29	23.07	15.28	25.36	16.39	24.86	9.39	21.84

Month	Tepehuaje, Nuevo Leon		Santa Catarina, Nuevo Leon		Una de Gato, Nuevo Leon		Cerritos, Nuevo Leon		Cienega de La Purisima, Coahuila	
	1989	Average	1989	Average	1989	Average	1989	Average	1989	Average
Jan.	1.42	1.70		0.73		1.37	0.16	1.00	0.31	2.49
Feb.	.79	.73	.43	.42		.59	.39	.62	0	1.79
Mar.	.04	.60	.08	.30		.43	.08	.53	0	.44
Apr.	.71	2.03	1.34	.79	.55	2.26	2.05	1.74	1.69	1.39
May	.59	4.03	0	1.05	.24	3.75	.08	4.02	.71	3.20
June	0	3.54	.98	1.88	.47	4.60	.47	6.29	2.36	3.15
July	3.98	2.04	.55	1.64	5.16	1.82	6.77	5.15	3.27	3.44
Aug.	1.77	3.60	4.45	2.69	4.57	3.25	6.73	5.66	6.42	4.37
Sep.	1.97	5.28	6.65	4.72	1.22	4.54	11.14	11.73	3.11	5.20
Oct.	.24	1.46	.08	1.59	.63	3.35	2.36	3.82	2.87	3.58
Nov.	.28	.69	.20	.53	.43	.70	.59	.69	1.06	1.42
Dec.	1.57	1.13	1.34	.56	1.65	1.64	1.89	.54	5.51	2.04
Yearly	13.36	26.83		16.90		28.30	32.71	41.79	27.31	32.51

T Trace

RAINFALL ON THE RIO GRANDE WATERSHED

IN MEXICO

IN INCHES

Month	Cabezones, Nuevo Leon		El Cuchillo, Nuevo Leon		Linares, Nuevo Leon		El Realito, Nuevo Leon		General Bravo, Nuevo Leon	
	1989	Average	1989	Average	1989	Average	1989	Average	1989	Average
Jan.	1.34	1.16	0.24	0.75	0.67	0.94	1.30	1.25	0.63	0.85
Feb.	.67	.83	.43	.58	.71	.84	.28	.50	.47	.61
Mar.	0	1.06	.04	.49	.16	1.01	0	.55	0	.54
Apr.	1.18	2.49	1.46	1.39	.94	2.25	.55	1.66	1.65	1.47
May	.63	4.01	T	2.45	.20	3.69	.35	3.03	0	2.93
June	3.74	4.17	1.18	2.62	2.28	4.04	2.36	3.11	1.50	2.68
July	2.13	2.87	3.07	1.89	2.09	2.69	2.13	2.26	2.28	2.16
Aug.	10.39	5.66	3.07	2.87	2.52	3.86	3.03	3.59	5.63	2.72
Sep.	6.54	8.44	.04	4.43	3.70	6.37	.55	4.85	.20	4.43
Oct.	4.61	3.31	.67	2.25	.98	3.28	.79	1.66	0	1.91
Nov.	.47	1.02	.28	.55	.28	1.12	.31	.41	.35	.84
Dec.	0	.81	2.52	.62	3.43	1.09	2.48	.96	2.95	.82
Yearly	31.70	35.83	13.00	20.89	17.96	31.18	14.13	23.83	15.66	21.96

Month	San Diego, Nuevo Leon		Comales, Tamaulipas		El Brasil, Nuevo Leon		Camargo, Tamaulipas		Valadeces, Tamaulipas	
	1989	Average	1989	Average	1989	Average	1989	Average	1989	Average
Jan.	0	2.12	0.59	0.93	0.28	1.29	0.35	1.05	1.10	1.30
Feb.	0	.37	.91	.90	.24	1.10	1.50	1.09	1.18	1.13
Mar.	.24	.52	0	.58	0	.37	0	.69	0	.53
Apr.	.51	4.78	2.72	1.59	1.69	1.75	3.78	1.47	.98	1.43
May	0	5.11	0	2.20	0	2.66	0	2.63	.08	2.83
June	0	4.46	1.81	2.33	1.73	1.56	2.32	2.90	2.95	3.43
July	2.09	1.65	.98	1.50	4.02	2.06	.98	1.42	.31	1.65
Aug.	3.46	4.69	.79	2.57	2.44	2.25	.39	1.81	1.10	2.12
Sep.	.08	5.34	0	4.17	.43	3.56	5.39	4.50	.98	4.19
Oct.	0	.99	.12	2.45	0	1.23	.31	2.14	1.26	2.25
Nov.	0	.61	.20	.82	0	.46	.20	1.15	.24	1.07
Dec.	2.95	1.56	2.52	.95	0	.78	2.87	1.17	3.11	1.02
Yearly	9.33	32.20	10.64	20.99	10.83	19.07	18.09	22.02	13.29	22.95

Month	La Pomona, Nuevo Leon		Cd. Diaz Ordaz, Tamaulipas		Vaqueria, Nuevo Leon		Bajo Rio San Juan, Tamps., No. 2-38		Bajo Rio San Juan, Tamps., No. 2-33	
	1989	Average	1989	Average	1989	Average	1989	Average	1989	Average
Jan.	0.28	1.55	1.38	1.24	0.20	1.76	1.10	1.36	0.91	1.36
Feb.	.43	.64	.98	1.19	.47	.94	.83	.98	.83	1.02
Mar.	0	.83	0	.56	0	1.10	0	.49	0	.48
Apr.	1.50	2.29	2.01	1.49	1.46	1.67	2.40	1.38	1.50	1.50
May	.16	4.60	0	2.93	.04	3.84	.12	3.39	.28	4.07
June	1.38	3.08	2.40	2.82	2.28	2.71	2.52	3.25	2.76	2.91
July	2.20	2.14	1.30	1.44	.39	1.29	2.52	1.81	2.48	1.75
Aug.	3.03	2.82	.47	2.05	2.52	2.74	0	2.94	0	2.69
Sep.	1.85	4.87	.39	3.61	1.77	4.17	1.38	3.64	.51	3.79
Oct.	1.34	1.10	2.20	2.57	1.22	1.56	2.09	1.96	.98	2.22
Nov.	.67	.61		1.14	.20	.63	.43	1.11	.04	.99
Dec.	3.82	1.38		1.08	3.23	1.84	3.11	1.13	2.99	1.17
Yearly	16.66	25.91		22.12	13.78	24.25	16.50	23.44	13.28	23.95

Month	Reynosa, Tamaulipas		Bajo Rio San Juan, Tamps., No. 3-55		Bajo Rio San Juan, Tamps., No. 3-47		Bajo Rio San Juan, Tamps., 3-48A		Bajo Rio San Juan, Tamps., No. 3-63	
	1989	Average	1989	Average	1989	Average	1989	Average	1989	Average
Jan.	0.51	1.25	1.89	1.90	0.51	1.78	1.14	1.76	5.28	1.86
Feb.	1.18	1.12	.51	1.61	.55	1.34	.55	1.54	.67	1.73
Mar.	0	.71	0	.66	0	.60	0	.80	0	.54
Apr.	1.02	1.22	1.34	1.82	2.48	1.59	1.89	.95	1.57	1.34
May	.20	2.81	0	2.70	0	3.30	0	2.42		2.72
June	2.28	2.28	2.05	3.18		3.20	1.57	3.18	1.97	3.40
July	1.69	1.60	3.23	2.49	2.76	2.29	2.05	1.37	3.50	1.98
Aug.	T	1.92	.31	2.59		2.47		1.90	0	2.78
Sep.	.39	3.64	0	4.17		4.22	0	2.42	0	4.81
Oct.	4.29	2.30	3.15	2.78	.35	2.13	T	1.19	3.54	2.40
Nov.	.20	.88	.47	.82	1.06	.88	.83	.79		.80
Dec.	3.15	1.00	3.23	1.25	2.36	1.21		1.60		1.17
Yearly	14.91	20.73	16.18	25.97		25.01		19.92		25.53

T Trace

RAINFALL ON THE RIO GRANDE WATERSHED

IN MEXICO

IN INCHES

Month	Laguna de Sanchez, Nuevo Leon		Potrero de Abrego, Coahuila		Tunel San Fco., Nuevo Leon		Rodrigo Gomez Res., Nuevo Leon		Carbonera, Nuevo Leon	
	1989	Average	1989	Average	1989	Average	1989	Average	1989	Average
Jan.	0	0.78		1.44	0.75	1.27	0.47	0.99		1.00
Feb.	0	.60	0	.61	.59	1.15	.35	.94		.58
Mar.	.08	.38	0	.26	.20	1.30	.12	1.02		.49
Apr.	0	1.18	0	1.53	1.61	2.31	1.42	1.82		1.17
May	.20	1.89	0	1.52	.75	3.81	.08	2.90		1.91
June	.08	3.30	.08	1.29	2.13	6.14	2.17	5.51		2.58
July	.12	2.47		.57	3.23	4.03	4.06	4.02		2.86
Aug.	1.69	4.21		2.32	4.57	6.65	2.56	6.01	9.84	3.19
Sep.	5.87	6.63	.75	2.56	8.98	11.34	11.06	9.87	6.38	2.66
Oct.	1.77	2.49	1.10	.88	6.18	5.56	4.17	4.86		1.78
Nov.	1.14	.67	4.25	1.62	.35	1.56	.31	1.27		.95
Dec.	4.41	.62	6.26	1.85	2.20	1.09	1.50	.89		.94
Yearly	15.36	25.22		16.45	31.54	46.21	28.27	40.10		20.11

Month	Miguel Aleman, Tamaulipas		Cienega del Toro, Nuevo Leon		Los Ramones, Nuevo Leon		Villa Allende, Nuevo Leon		San Juan, Nuevo Leon	
	1989	Average	1989	Average	1989	Average	1989	Average	1989	Average
Jan.	0.71	1.00	0	1.29	0.71	0.86	1.18	1.17	1.73	0.63
Feb.	.47	1.02	0	.50	.59	.73	1.65	1.26	.91	.92
Mar.	0	.50	.71	.70	0	.65	.35	1.22	.04	.68
Apr.	3.15	1.66	1.26	1.67	1.97	1.46	2.13	2.65	.91	2.19
May	0	2.30	.16	2.38	.75	2.86	.63	3.83	.47	2.60
June	1.02	2.81	.87	2.35	.79	3.24	2.01	5.56	.94	3.13
July	.31	1.63	.51	2.82	3.90	1.90	0	3.49	3.46	2.25
Aug.	0	2.10	1.73	3.06	2.28	3.46	1.77	5.39	2.36	3.55
Sep.	1.38	4.65	1.14	3.28	4.61	5.59	9.88	9.29	4.37	5.46
Oct.	.83	2.25	0	1.84	.83	2.56	7.56	5.12	.24	3.04
Nov.	.31	.88	0	.76	.59	.69	1.14	1.57	.67	.99
Dec.	2.52	.82	0	.71	2.01	.66	2.91	1.09	2.17	.71
Yearly	10.70	21.62	6.38	21.36	19.03	24.66	31.21	41.64	18.27	26.15

Month	Mimbres, Nuevo Leon		Potosi, Nuevo Leon		Rusio, Nuevo Leon		Cerro Prieto, Nuevo Leon		Bayones, Nuevo Leon	
	1989	Average	1989	Average	1989	Average	1989	Average	1989	Average
Jan.	0.47	1.59	0.31	0.87	0.12	0.77	0.59	1.09	0.20	0.51
Feb.	0	1.08	0	.63	0	.60	.55	.61	0	.39
Mar.	.24	1.04	.20	.36	.16	.52	0	.53	.39	.32
Apr.	.63	1.66	.87	1.31	1.06	1.35	.83	1.49	.12	1.09
May	.94	2.67	1.22	1.62	.31	1.70	.24	4.34	.31	1.81
June	2.36	3.31	0	1.17	1.54	2.05	2.44	4.06	1.34	2.10
July	1.77	2.73	.63	1.39	.59	1.72	1.42	2.05	1.18	1.21
Aug.	1.89	3.37	2.05	1.40	1.85	1.98	2.09	3.38	1.61	2.79
Sep.	.98	3.76	.51	1.48	.31	1.97	2.56	5.14	2.24	3.53
Oct.	.43	1.98	.04	1.38	0	1.31	1.57	2.34	1.14	1.52
Nov.	2.44	1.24	1.54	1.22	1.61	.76	.35	.74	1.14	.44
Dec.	4.09	1.27	1.57	1.52	2.13	.87	3.66	1.07	2.87	.42
Yearly	16.24	25.70	8.94	14.35	9.68	15.60	16.30	26.84	12.54	16.13

Month	Madero(Los Aldamas) Nuevo Leon		Montemorelos, Nuevo Leon		Galeana, Nuevo Leon		Las Enramadas, Nuevo Leon		Iturbide, Nuevo Leon	
	1989	Average	1989	Average	1989	Average	1989	Average	1989	Average
Jan.	0.75	1.24	1.57	0.95	0.24	0.72	0.39	0.97	0.63	0.71
Feb.	.47	.80	.91	.94	0	.60	0	.69	.24	.63
Mar.	0	.69	.16	1.09	.16	.44	0	.67	0	.59
Apr.	1.85	1.36	1.22	2.31	.31	1.25	.20	1.79	.55	1.29
May	.43	3.20	.83	3.41	.71	1.79	0	2.92	.91	2.15
June	2.09	3.48	2.91	3.98	.83	2.27	0	3.22	3.15	3.40
July	1.77	2.39	5.31	2.47	.79	1.94	3.03	2.27	2.40	2.67
Aug.	1.69	4.17	8.50	4.22	2.36	2.42	2.40	3.73	5.67	4.24
Sep.	1.30	5.07	5.39	6.88	4.17	3.40	3.66	6.23	6.30	6.24
Oct.	.12	1.54	1.93	3.69	.79	1.59	.16	2.60	1.38	2.35
Nov.	.43	.47	.55	1.57	1.34	.68	.51	.73	.94	.53
Dec.	2.60	1.09	2.17	.94	2.99	.78	1.93	.82	1.69	.62
Yearly	13.50	25.50	31.45	32.45	14.69	17.88	12.28	26.64	23.86	25.42

T Trace

RAINFALL ON THE RIO GRANDE WATERSHED

IN MEXICO

IN INCHES

Month	Retamal, Tamaulipas		Bajo Río Bravo, Tamps., No. 3-15		Bajo Río Bravo, Tamps., No. 4-16		Bajo Río Bravo, Tamps., No. 3-14		Bajo Río Bravo, Tamps., No. 3-17	
	1989	Average	1989	Average	1989	Average	1989	Average	1989	Average
Jan.	0.63	1.18	2.95	1.79	4.41	1.87	2.09	1.50	2.48	1.76
Feb.	.51	1.18	0	1.39	.59	1.40	.55	1.42	.47	1.36
Mar.	.47	.66	0	.74	.12	.74	0	.53	0	.63
Apr.	1.93	1.43	.59	1.84	3.15	2.04	1.42	1.41	1.26	1.39
May	.08	2.65	0	2.70	.51	2.78	0	3.34	0	2.68
June	2.09	2.48	1.97	3.47	2.68	3.68	2.05	2.79	1.26	2.88
July	1.14	1.58	1.06	2.46	5.12	2.23	2.05	2.38	1.18	2.33
Aug.	.20	2.52	.98	3.47	2.72	3.45	1.89	2.51	3.19	3.23
Sep.	0	3.58	.31	4.20	.59	4.96	.31	3.81	.91	4.79
Oct.	2.95	2.41	0	2.48	2.09	2.55	2.83	2.35	.12	2.32
Nov.	1.54	1.16	0	1.05	0	1.19	.35	.85	0	1.20
Dec.	3.19	1.14		1.44	3.35	1.30	3.35	1.41		1.40
Yearly	14.73	21.97		27.03	25.33	28.19	16.89	24.30		25.97

Month	Bajo Río Bravo, Tamps., No. 4-8		Bajo Río Bravo, Tamps., No. 2-6		Bajo Río Bravo, Tamps., No. 4-10		Control, Tamaulipas		Bajo Río Bravo, Tamps., No. 2-5	
	1989	Average	1989	Average	1989	Average	1989	Average	1989	Average
Jan.	1.77	1.84	1.89	2.02	1.89	1.84	1.10	1.41	1.85	2.15
Feb.	.31	1.35	.59	1.45	.51	1.73	.47	1.13	1.22	1.45
Mar.	0	.80	.08	.74	.12	.95	0	.62	0	.98
Apr.	1.69	2.15	2.32	1.58	1.77	2.09	1.81	1.62	2.80	1.88
May	0	2.94	.12	2.83	.39	2.49	0	2.86	0	2.41
June	1.18	2.83	1.89	2.65	2.52	2.76	1.46	2.78	1.89	2.86
July	2.95	2.69	1.26	2.30	.83	2.24	.51	1.79	1.97	2.07
Aug.	3.03	4.06	2.68	3.38	2.60	3.32	1.46	3.15	4.84	3.51
Sep.	0	4.93	1.06	4.76	.39	5.35	2.09	5.06	3.66	4.87
Oct.	4.72	2.70	1.65	2.78	0	2.44	1.85	2.68	.51	2.63
Nov.	0	1.18	.35	1.36	.39	1.07	.43	1.23	.43	1.15
Dec.	2.64	1.21	.04	1.13	3.19	1.10	2.09	1.17	2.76	1.30
Yearly	18.29	28.68	13.93	26.98	14.60	27.38	13.27	25.50	21.93	27.26

Month	Valle Hermoso, Tamaulipas		Bajo Río Bravo Tamps., No. 1-2		Bajo Río Bravo, Tamps., No. 1-4		Bajo Río Bravo, Tamps., No. 1-3		Bajo Río Bravo, Tamps., No. 1-12	
	1989	Average	1989	Average	1989	Average	1989	Average	1989	Average
Jan.	1.18	1.25	1.97	1.71	1.22	1.94		1.80	1.50	1.89
Feb.	.39	1.24	.59	1.67	.71	1.26		1.30		1.36
Mar.	.12	.67	0	.59	.16	.76		.65		.59
Apr.	2.52	1.92	3.78	1.64	3.39	1.99	.79	1.69		1.95
May	.39	2.56	.24	3.05	1.30	2.68	.51	2.54		3.10
June	2.36	3.04	.55	2.93	1.10	2.99	0	2.73		2.73
July	1.81	2.09	1.61	1.94	1.89	1.97	1.22	1.75		2.68
Aug.	1.10	2.67	.94	3.57	3.82	3.16	1.18	2.70		3.10
Sep.	1.34	4.95	.83	4.47	3.82	5.11	2.48	5.22		5.45
Oct.	4.53	2.68	.67	2.72	1.06	2.62	3.94	2.79		3.24
Nov.	.35	1.29	.47	1.27	.47	1.08	.79	1.31		1.26
Dec.	2.91	1.04	2.05	1.11	2.56	1.35	2.28	1.46		1.36
Yearly	19.00	25.40	13.70	26.67	21.50	26.91		25.94		28.71

Month	Bajo Río Bravo, Tamps., No. 1-13		Bajo Río Bravo, Tamps., No. 2-7		Bajo Río Bravo, Tamps., No. 2-11		Matamoros, Tamaulipas			
	1989	Average	1989	Average	1989	Average	1989	Average		
Jan.	0.31	1.85	0.51	1.70	1.54	1.84	2.17	1.95		
Feb.	.31	1.20	0	1.22	.51	1.51	.24	1.71		
Mar.	0	.50	0	.73	.20	.68		.57		
Apr.	2.01	1.63	4.33	2.61	1.65	2.35		1.97		
May	1.42	1.92	.55	2.66	.20	2.51		2.76		
June	.79	2.76	1.69	3.16	3.74	3.67		3.41		
July	.43	1.88	1.22	2.21	.91	2.55		2.54		
Aug.	4.76	3.43	2.48	4.01	5.08	4.07		4.13		
Sep.	1.10	4.89	1.22	5.01	1.50	5.25		6.43		
Oct.	1.18	2.40	2.64	2.39	5.91	2.92		3.44		
Nov.	0	.90	.16	1.19	.24	1.12		1.44		
Dec.	1.38	1.07	1.97	1.09	2.40	1.32		1.82		
Yearly	13.69	24.43	16.77	27.98	23.88	29.79		32.17		

T Trace

AVERAGE RAINFALL ON SUBDIVISIONS OF THE RIO GRANDE WATERSHED

WITH AVERAGES FOR THE 119 YEARS 1871 - 1989, INCLUSIVE

IN INCHES

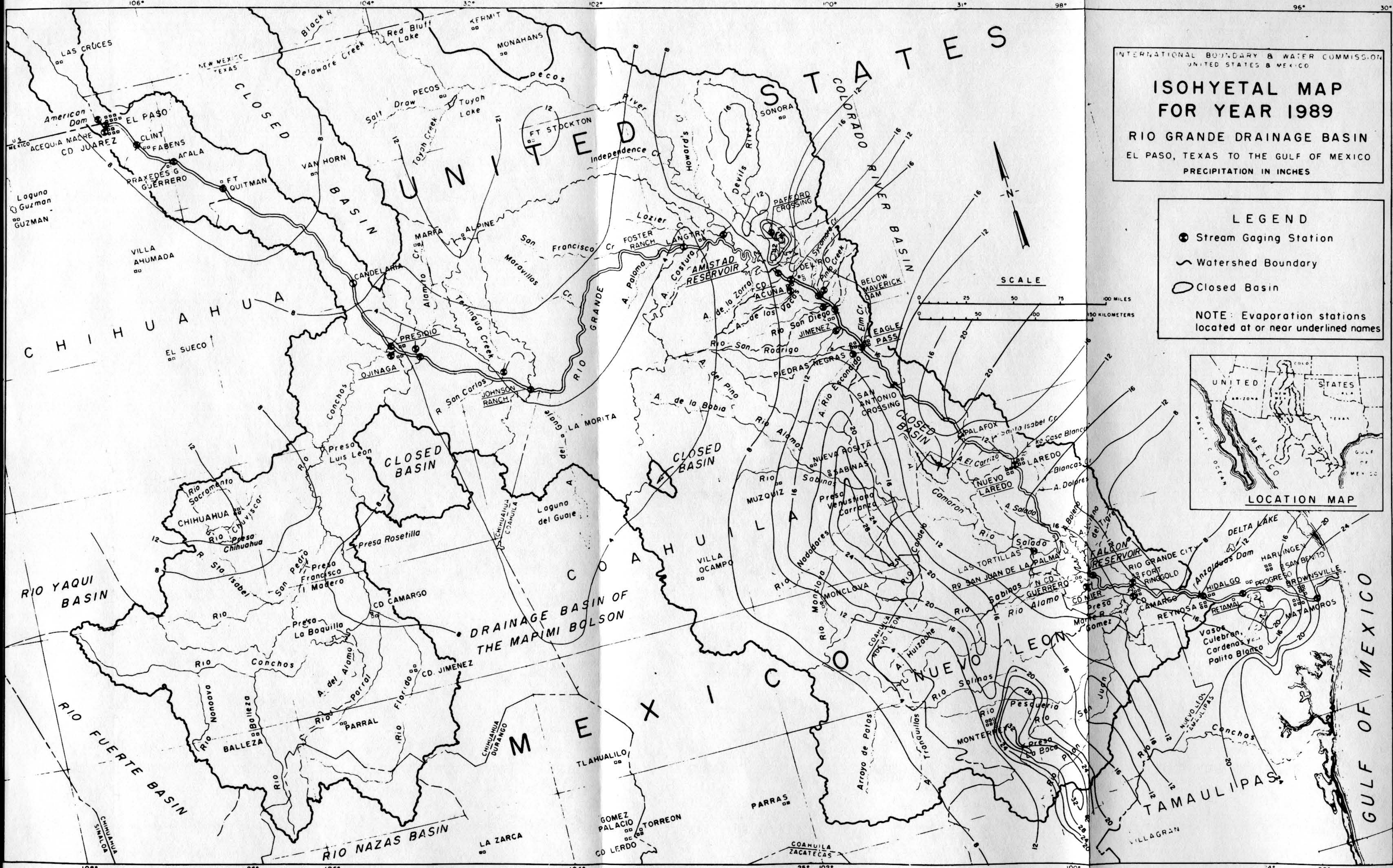
The Precipitation records of all stations on or adjacent to the watershed subdivisions listed below have been used, with proper weighting for area, in calculating the average rainfalls shown here. The drainage area for each subdivision is shown in parentheses. The hundreds of individual records are delineated in the various "Indexes to Precipitation Records" shown in Water Bulletins Nos. 10, 14, 22, 26, and Supplement 40A.

Month	El Paso to Fort Quitman (2,677 Square Miles)		Fort Quitman to Above Rio Conchos (3,056 Square Miles)		* Above Rio Conchos to Johnson Ranch (3,782 Square Miles)		Johnson Ranch to Foster Ranch (12,982 Square Miles)	
	1989	Period Average	1989	Period Average	1989	Period Average	1989	Period Average
Jan.	0.21	0.45	0.02	0.39	0.05	0.35	0.47	0.48
Feb.	0.52	0.37	1.03	0.28	0.78	0.29	1.28	0.38
Mar.	0.32	0.32	0.12	0.24	0.09	0.19	0.11	0.39
Apr.	0.06	0.27	0.00	0.35	0.02	0.40	0.08	0.78
May	0.51	0.43	0.28	0.62	0.64	0.80	0.83	1.49
June	0.12	0.81	0.16	1.25	0.13	1.19	0.70	1.70
July	0.74	2.18	0.63	2.84	0.28	1.86	0.42	1.82
Aug.	1.85	1.88	2.17	2.42	0.89	1.94	1.78	2.06
Sept.	0.45	1.43	0.88	2.00	0.18	1.63	0.74	2.17
Oct.	0.25	0.92	0.18	1.05	0.19	0.89	0.86	1.25
Nov.	0.04	0.43	0.00	0.41	0.02	0.35	0.25	0.58
Dec.	0.01	0.58	0.08	0.53	0.04	0.41	0.23	0.54
Yearly	5.08	10.07	5.55	12.38	3.31	10.30	7.75	13.64

Month	Pecos River below Sheffield (3,390 Square Miles)		# Foster Ranch to Amistad Dam (2,799 Square Miles)		Devils River (4,305 Square Miles)		+ Amistad Dam to Eagle Pass (1,625 Square Miles)	
	1989	Period Average	1989	Period Average	1989	Period Average	1989	Period Average
Jan.	0.36	0.67	0.62	0.73	1.18	0.68	1.16	0.74
Feb.	1.45	0.86	0.61	0.90	2.70	0.75	1.05	0.90
Mar.	0.40	0.74	0.70	0.96	1.53	1.04	0.97	0.96
Apr.	0.23	1.79	0.17	1.69	0.19	1.73	0.74	1.69
May	0.79	1.85	1.19	2.87	1.44	2.60	1.73	2.87
June	0.98	2.40	0.82	2.53	0.86	2.63	0.81	2.53
July	0.20	1.79	0.00	1.83	0.08	1.78	0.05	1.83
Aug.	0.73	1.98	0.02	1.90	0.88	2.12	0.92	1.91
Sept.	1.20	2.49	0.57	3.00	1.01	2.90	1.35	3.01
Oct.	0.58	1.88	0.11	2.08	2.89	2.24	1.88	2.10
Nov.	0.43	0.91	0.45	1.04	0.71	1.46	0.97	1.04
Dec.	0.18	0.74	0.09	0.86	0.23	0.97	0.19	0.86
Yearly	7.53	18.10	5.35	20.39	13.70	20.90	11.82	20.44

Month	! Eagle Pass to Laredo (3,795 Square Miles)		** Laredo to Falcon Dam (3,369 Square Miles)		## Falcon Dam to Rio Grande City (468 Square Miles)		United States Side Below Rio Grande City (986 Square Miles)	
	1989	Period Average	1989	Period Average	1989	Period Average	1989	Period Average
Jan.	1.52	0.72	1.11	0.78	0.89	0.91	1.07	1.30
Feb.	0.79	0.79	0.78	0.81	0.57	0.86	0.47	1.14
Mar.	0.26	0.88	0.04	0.77	0.01	0.88	0.05	1.00
Apr.	2.54	1.62	1.96	1.43	2.62	1.23	2.42	1.38
May	0.83	3.08	0.03	3.16	0.07	2.42	0.39	2.81
June	2.18	2.48	1.61	2.03	1.83	2.13	1.82	2.54
July	0.55	1.47	1.58	2.05	1.07	1.86	1.66	1.80
Aug.	1.61	2.24	1.92	1.89	2.15	2.10	1.16	2.35
Sept.	0.68	2.95	3.41	3.01	2.99	3.49	1.08	4.34
Oct.	3.82	1.92	0.51	1.73	0.43	1.93	0.76	2.51
Nov.	2.02	0.95	0.40	1.47	0.10	0.78	0.59	1.34
Dec.	1.25	0.96	1.80	0.85	2.02	0.70	2.04	1.25
Yearly	18.05	20.06	15.15	19.98	14.75	19.29	13.51	23.76

* Excluding Rio Conchos, Alamito Creek, and Terlingua Creek
\# Excluding Pecos and Devils Rivers
\+ Excluding Arroyo Las Vacas, San Felipe Creek, Pinto Creek, Rio San Diego and Rio San Rodrigo
! Excluding Rio Escondido
** Excluding Rio Salado above old Cd. Guerrero
Excluding Rio Alamo and Rio San Juan


INTERNATIONAL BOUNDARY & WATER COMMISSION
UNITED STATES & MEXICO
ISOHYETAL MAP
FOR YEAR 1989
RIO GRANDE DRAINAGE BASIN
EL PASO, TEXAS TO THE GULF OF MEXICO
PRECIPITATION IN INCHES
LEGEND
Stream Gaging Station
Watershed Boundary
Closed Basin
NOTE: Evaporation stations located at or near underlined names
SCALE
0 25 50 75 100 MILES
0 50 100 150 KILOMETERS
LOCATION MAP
UNITED STATES
MEXICO
CHIHUAHUA
COAHUILA
NUEVO LEON
TAMAULIPAS
GULF OF MEXICO
CLOSED BASIN
DRAINAGE BASIN OF THE MAPIMI BOLSON
RIO YAQUI BASIN
RIO FUERTE BASIN
RIO NAZAS BASIN
COLORADO RIVER BASIN
EL PASO
CD JUAREZ
AMISTAD RESERVOIR
FALCON RESERVOIR
LAREDO
NUEVO LAREDO
EAGLE PASS
PIEDRAS NEGRAS
PRESIDIO
OJINAGA
MONTERREY
BROWNSVILLE
MATAMOROS

LOCATION OF RAINFALL STATIONS ON THE RIO GRANDE WATERSHED

The precipitation records of stations listed below began on the date shown and extend through 1989. For detailed information regarding sources of data, specific periods of record, and other pertinent matters relative to these and additional rainfall stations on the Rio Grande watershed, see "Index to Precipitation Records" in Water Bulletins Nos. 10, 14, 22, 26, and Supplement 40A. With the exception of Las Cruces, New Mexico, all United States precipitation stations listed below are in Texas, while those in Mexico are in the indicated state as shown.

IN THE UNITED STATES

NAME OF STATION	TYPE GAGE	LATI-TUDE	LONGI-TUDE	ELEV. (FT.)	RECORD BEGAN	WATERSHED SUBDIVISION	OBSERVER
Adobes Ranch	S	29° 46'	104° 34'	2,550	# 1950	Fort Quitman - Above Rio Conchos	T. C. Davis
American Dam	S	31° 47'	106° 32'	3,730	# 1938	El Paso - Fort Quitman	I. B. & W. C.
Amistad Dam	R	29° 28'	101° 02'	1,150	July 1962	Foster Ranch - Amistad Dam	I. B. & W. C.
Amistad Reservoir near Comstock	C	29° 33'	101° 13'	1,128	# 1970	Foster Ranch - Amistad Dam	I. B. & W. C.
Apache Ranch	C	27° 56'	99° 56'	500	# 1953	Eagle Pass - Laredo	Ranch Foreman
Baker, A. A. Ranch	R	29° 44'	101° 09'	1,720	July 1962	Devils River	I. B. & W. C.
Big Satan Creek Station	C	29° 35'	100° 58'	1,150	Nov. 1968	Devils River	I. B. & W. C.
Brite, J. G. Ranch	R	29° 33'	101° 01'	1,150	#Sept.1962	Devils River	I. B. & W. C.
Brotherton Ranch	S	29° 42'	101° 19'	1,400	1961	Foster Ranch - Amistad Dam	Perry Calk
Buoy No. 11	C	29° 31'	101° 10'	**	#Dec. 1969	Foster Ranch - Amistad Dam	I. B. & W. C.
CCWID #11 (Bayview Dist. Off.) Avg. 11 Gages	S	26° 08'	97° 21'	25	# 1952	Lower Rio Grande Valley	CCWID #11
CCWCID #19 (Adams Garden)	S	26° 10'	97° 47'	50	1952	Lower Rio Grande Valley	CCWCID #19
Coal Mine	R	28° 48'	100° 28'	770	#Mar. 1959	Amistad Dam - Eagle Pass	I. B. & W. C.
Comstock	R	29° 41'	101° 10'	1,530	May 1939	Foster Ranch - Amistad Dam	I. B. & W. C.
Corralitos Ranch	C	27° 07'	99° 25'	346	1953	Laredo - Falcon Dam	I. B. & W. C.
Cow Creek near Comstock	C	29° 37'	101° 12'	1,310	Apr. 1965	Foster Ranch - Amistad Dam	I. B. & W. C.
Crane, Ed Ranch	S	29° 51'	101° 05'	1,630	# 1955	Devils River	Ed Crane
Dead Mans Canyon near Comstock	C	29° 47'	101° 19'	1,310	Sept.1967	Pecos River Below Sheffield	I. B. & W. C.
Devils Lake	R	29° 34'	100° 59'	1,146	#May 1939	Devils River	I. B. & W. C.
Devils River at Cauthorn Ranch	C	30° 05'	101° 07'	1,656	#Apr. 1976	Devils River	I. B. & W. C.
Eagle Pass	S	28° 42'	100° 30'	815	1964	Eagle Pass - Laredo	I. B. & W. C.
Edinburg Filtration Plant	S	26° 18'	98° 10'	100	1934	Lower Rio Grande Valley	City of Edinburg
El Indio	S	28° 31'	100° 19'	725	# 1941	Eagle Pass - Laredo	Mrs. Courtney
Evans Creek near Comstock	C	29° 32'	101° 06'	1,180	July 1969	Devils River	I. B. & W. C.
Falcon Dam	S	26° 33'	99° 08'	323	Apr. 1950	Laredo - Falcon Dam	I. B. & W. C.
Farias Ranch	R	28° 36'	100° 20'	720	#Mar. 1959	Eagle Pass - Laredo	I. B. & W. C.
Fawcett, H. K. Ranch	C	29° 53'	100° 54'	1,600	# 1941	Devils River	I. B. & W. C.
Feely	C	29° 34'	101° 07'	1,250	#Apr. 1965	Foster Ranch - Amistad Dam	I. B. & W. C.
Fletcher, H. T. Ranch	S	30° 12'	104° 16'	5,100	# 1939	Alamito Creek	H. Mitchell, Jr.
Fort Hancock Bridge	S	31° 16'	105° 51'	3,500	#Apr. 1940	El Paso - Fort Quitman	I. B. & W. C.
Foster, Ross Ranch	C	29° 45'	101° 47'	1,230	May 1961	Johnson Ranch - Foster Ranch	I. B. & W. C.
Garciasville	R	26° 20'	98° 41'	200	#Apr. 1957	Lower Rio Grande Valley	I. B. & W. C.
Gillis Headquarters Ranch	S	29° 37'	100° 47'	1,410	1968	Amistad Dam - Eagle Pass	Jake Schiller
Gillis Ranch	S	29° 41'	101° 03'	1,440	# 1965	Devils River	Walter Gillis
Goldwire Ranch	C	29° 44'	100° 57'	1,685	Nov. 1968	Devils River	I. B. & W. C.
Guayuco Arroyo	R	31° 10'	105° 40'	3,600	#May 1940	El Paso - Fort Quitman	I. B. & W. C.
Harlow Ranch	C	29° 50'	101° 11'	1,696	Mar. 1969	Devils River	I. B. & W. C.
HCWCID #6, Goodwin Pump No. 3	S	26° 16'	98° 24'	175	# 1953	Lower Rio Grande Valley	HCWCID #6
HCWCID #6, Goodwin Pump No. 4B	S	26° 19'	98° 23'	210	# 1953	Lower Rio Grande Valley	HCWCID #6
Huisache Ranch	C	26° 57'	99° 21'	383	Aug. 1953	Laredo - Falcon Dam	I. B. & W. C.
Hutto Ranch No. 1	R	29° 30'	100° 50'	1,240	1964	Devils River	I. B. & W. C.
Hutto Ranch No. 2	R	29° 39'	100° 54'	1,210	1964	Devils River	I. B. & W. C.
Indio Ranch	S	28° 31'	100° 22'	700	1959	Eagle Pass - Laredo	Earnest Scales
James, Lewis Ranch	S	30° 11'	102° 07'	3,273	# 1966	Johnson Ranch - Foster Ranch	Lewis James
Johnson Ranch	C	29° 01'	103° 23'	2,050	#July 1933	Johnson Ranch - Foster Ranch	I. B. & W. C.
Keisling Farm	S	28° 23'	100° 17'	740	Dec. 1958	Eagle Pass - Laredo	I. B. & W. C.
King, Martin Ranch	R	29° 44'	101° 02'	1,460	Nov. 1954	Foster Ranch - Amistad Dam	I. B. & W. C.
La Feria Materials Yard	V	26° 10'	97° 50'	60	# 1960	Lower Rio Grande Valley	CCWCID #3

S Standard R Recording C Cumulative V Visual ** Reservoir surface
Some months missing

LOCATION OF RAINFALL STATIONS ON THE RIO GRANDE WATERSHED

IN THE UNITED STATES

NAME OF STATION	TYPE GAGE	LATI-TUDE	LONGI-TUDE	ELEV. (FT.)	RECORD BEGAN	WATERSHED SUBDIVISION	OBSERVER
La Feria Pumping Plant	S	26° 03'	97° 50'	60	# 1952	Lower Rio Grande Valley	CCWCID #3
La Joya	C	26° 15'	98° 29'	150	# 1957	Lower Rio Grande Valley	I. B. & W. C.
La Mota Ranch	S	29° 33'	103° 59'	3,854	# 1943	Alamito Creek	John Rice
Laredo Water Plant	S	27° 33'	99° 31'	410	# 1930	Eagle Pass - Laredo	Laredo Wtr. Plt.
Las Cruces, New Mexico	S	32° 19'	106° 47'	3,893	1975	Caballo Dam - El Paso	I. B. & W. C.
Las Moras Creek	S	29° 00'	100° 38'	800	1958	Amistad Dam - Eagle Pass	I. B. & W. C.
Lateral No. 12 Headgate	C	28° 54'	100° 34'	800	1959	Amistad Dam - Eagle Pass	I. B. & W. C.
Laughlin Air Force Base	S	29° 21'	100° 47'	1,080	Dec. 1958	Amistad Dam - Eagle Pass	U. S. A. F.
Lewis, Billie C., Jr. Ranch	S	29° 33'	100° 40'	1,400	# 1964	Amistad Dam - Eagle Pass	Billie C. Lewis, Jr.
Long Ranch	R	29° 28'	100° 57'	1,140	Oct. 1971	Devils River	I. B. & W. C.
Los Ebanos	C	26° 14'	98° 34'	150	#Apr. 1957	Lower Rio Grande Valley	I. B. & W. C.
Lowry, Cliff Ranch	R	29° 29'	100° 52'	1,490	June 1962	Devils River	I. B. & W. C.
Lowry Ranch No. 2	R	29° 37'	100° 56'	1,160	May 1965	Devils River	I. B. & W. C.
Maverick County Canal Headgate	S	29° 10'	100° 46'	870	#Mar. 1948	Amistad Dam - Eagle Pass	MCWCID #1
Middle Fork San Pedro	C	29° 30'	100° 53'	1,170	#June 1969	Devils River	I. B. & W. C.
Miers, H. T. Ranch Hdqts.	C	29° 44'	100° 51'	1,760	# 1957	Devils River	I. B. & W. C.
Miers, H. T. Ranch No. 2.	R	29° 44'	100° 53'	1,600	Apr. 1964	Devils River	I. B. & W. C.
Miller, Eugene Ranch	S	30° 26'	101° 10'	2,150	July 1975	Devils River	Eugene Miller
Mitchell, Kerr Ranch	S	30° 13'	104° 00'	4,450	# 1941	Alamito Creek	Mrs. K. Mitchell
Neely Ranch	S	30° 59'	105° 32'	3,350	#Aug. 1941	Fort Quitman - Above Rio Conchos	Mrs. Tom Neely
Normandy	S	28° 55'	100° 36'	780	#Dec. 1958	Amistad Dam - Eagle Pass	Fannin G. Lowe
North Fork San Pedro	C	29° 31'	100° 53'	1,144	June 1969	Devils River	I. B. & W. C.
Owens Ranch	S	30° 48'	102° 43'	2,250	#July 1963	Pecos River Below Sheffield	Mrs. W. Owens
Pafford Crossing	C	29° 41'	101° 00'	1,180	Feb. 1960	Devils River	I. B. & W. C.
Pecos River Near Langtry Station	C	29° 48'	101° 27'	1,260	July 1967	Pecos River Below Sheffield	I. B. & W. C.
Penitas (Edinburg Pumping Plant)	S	26° 14'	98° 27'	100	July 1957	Lower Rio Grande Valley	M. Stevens
Pinto Creek Station	C	29° 09'	100° 43'	870	#Dec. 1958	Amistad Dam - Eagle Pass	I. B. & W. C.
Presidio (I. B. & W. C. Gage)	S	29° 34'	104° 23'	2,599	#Oct. 1949	Above Rio Conchos - Johnson Ranch	I. B. & W. C.
Prosser Ranch No. 1	C	29° 54'	101° 14'	1,710	Mar. 1965	Pecos River Below Sheffield	I. B. & W. C.
Prosser Ranch No. 2	C	29° 49'	101° 15'	1,850	#Mar. 1965	Devils River	I. B. & W. C.
Prosser Ranch No. 3	C	30° 02'	101° 17'	2,020	#Mar. 1965	Pecos River Below Sheffield	I. B. & W. C.
Redford	C	29° 29'	104° 13'	2,500	July 1954	Above Rio Conchos - Johnson Ranch	I. B. & W. C.
Rio Grande near Dryden	R	29° 49'	102° 09'	1,350	May 1976	Johnson Ranch - Foster Ranch	National Weather Service
Roma (International Bridge)	S	26° 24'	99° 01'	230	# 1941	Falcon Dam - Rio Grande City	I. B. & W. C.
Rough Canyon nr Del Rio	C	29° 35'	100° 56'	1,147	June 1969	Devils River	I. B. & W. C.
San Benito Pump	S	26° 03'	97° 45'	50	Oct. 1933	Lower Rio Grande Valley	I. B. & W. C.
Sawyer, W. E. Ranch	S	30° 28'	100° 47'	2,100	#July 1966	Devils River	Zane Powers and Kenneth Hayes
Sellers Ranch	C	29° 34'	101° 02'	1,190	#Feb. 1960	Devils River	I. B. & W. C.
Shafter	V	29° 49'	104° 19'	3,920	#July 1968	Above Rio Conchos - Johnson Ranch	Raymond Wylie
Shannon, Bill Ranch	C	29° 57'	104° 40'	2,680	#July 1956	Fort Quitman - Above Rio Conchos	Bill Shannon
Stewart Ranch	R	29° 35'	100° 52'	1,330	#Feb. 1960	Devils River	I. B. & W. C.
Study Butte	S	29° 19'	103° 32'	2,550	July 1977	Terlingua Creek	Shirley Willard
Terlingua Creek Station	C	29° 12'	103° 36'	2,215	Mar. 1952	Above Rio Conchos - Johnson Ranch	I. B. & W. C.
Trees Farm	R	28° 38'	100° 25'	720	#Mar. 1959	Eagle Pass - Laredo	I. B. & W. C.
United Irrigation District	S	26° 11'	98° 24'		#Aug. 1961	Lower Rio Grande Valley	United Irrigation District
Van Dalsen Farm	C	28° 27'	100° 19'	700	# 1959	Eagle Pass - Laredo	I. B. & W. C.
Vinegarone	C	29° 57'	100° 46'	1,780	May 1966	Devils River	I. B. & W. C.
Walker Ranch	C	29° 50'	101° 14'	1,530	July 1969	Devils River	I. B. & W. C.
Wardlaw Standart Ranch	S	29° 19'	100° 38'	1,070	Apr. 1977	Pinto Creek	Hadley Wardlaw
Whitehead, Tuffy Ranch	R	29° 38'	101° 07'	1,420	July 1962	Devils River	I. B. & W. C.
Yarborough Ranch	S	30° 06'	103° 36'	4,550	# 1966	Johnson Ranch - Foster Ranch	H. D. Smith
Zapata Water Plant	S	26° 54'	99° 16'	380	#May 1953	Laredo - Falcon Dam	I. B. & W. C.
Zuberbuler Ranch	S	29° 41'	101° 14'	1,460	Feb. 1975	Foster Ranch - Amistad Dam	J.U. Zuberbueler

S Standard R Recording C Cumulative V Visual ** Reservoir surface

Some months missing

LOCATION OF RAINFALL STATIONS ON THE RIO GRANDE WATERSHED

IN MEXICO

NAME OF STATION	TYPE GAGE	LATI-TUDE	LONGI-TUDE	ELEV. (FT.)	RECORD BEGAN	WATERSHED SUBDIVISION	OBSERVER
Agualeguas, Nuevo leon	S	26° 19'	99° 33'	604	# 1979	Rio Alamo	S. A. R. H.
Allende, Coahuila	S	25° 21'	100° 51'	1,170	# 1947	Eagle Pass - Laredo	S. A. R. H.
Amistad Reservoir near Tlaloc, Coahuila	C	29° 26'	101° 07'	1,250	# 1970	Foster Ranch - Amistad Dam	I. B. & W. C.
Apodaca, Nuevo Leon	S	25° 46'	100° 11'	1,330	#Feb. 1964	Rio San Juan	S. A. R. H.
Bachiniva, Chihuahua	S	28° 46'	107° 15'	6,250	# 1952	Adjacent to Rio Conchos	Meteor. Service of Mexico
Bajo Rio Bravo, Tamps.							
No. 1-2	S	25° 56'	97° 46'	!	# 1964	Lower Rio Grande Valley	S. A. R. H.
No. 1-3	S	25° 50'	97° 42'	!	# 1964	Lower Rio Grande Valley	S. A. R. H.
No. 1-4	S	25° 51'	97° 45'	!	# 1964	Lower Rio Grande Valley	S. A. R. H.
No. 1-12	S	25° 56'	97° 38'	!	# 1964	Lower Rio Grande Valley	S. A. R. H.
No. 1-13	S	25° 44'	97° 40'	!	# 1964	Lower Rio Grande Valley	S. A. R. H.
No. 2-5	S	25° 48'	97° 49'	!	# 1964	Lower Rio Grande Valley	S. A. R. H.
No. 2-6	S	25° 44'	97° 53'	!	# 1964	Lower Rio Grande Valley	S. A. R. H.
No. 2-7	S	25° 39'	97° 42'	!	# 1964	Lower Rio Grande Valley	S. A. R. H.
No. 2-11	S	25° 35'	97° 46'	!	# 1964	Lower Rio Grande Valley	S. A. R. H.
No. 3-14	S	25° 56'	97° 59'	!	# 1964	Lower Rio Grande Valley	S. A. R. H.
No. 3-15	S	25° 46'	98° 01'	!	# 1964	Lower Rio Grande Valley	S. A. R. H.
No. 3-17	S	25° 49'	97° 58'	!	# 1964	Lower Rio Grande Valley	S. A. R. H.
No. 4-8	S	25° 40'	97° 55'	!	# 1964	Lower Rio Grande Valley	S. A. R. H.
No. 4-10	S	25° 36'	97° 52'	!	# 1964	Lower Rio Grande Valley	S. A. R. H.
No. 4-16	S	25° 35'	98° 00'	!	# 1964	Lower Rio Grande Valley	S. A. R. H.
Bajo Rio San Juan, Tamps.							
No. 2-33	S	26° 10'	98° 28'	!	# 1964	Lower Rio Grande Valley	S. A. R. H.
No. 2-38	S	26° 06'	98° 34'	!	# 1964	Lower Rio Grande Valley	S. A. R. H.
No. 3-47	S	25° 58'	98° 07'	!	# 1964	Lower Rio Grande Valley	S. A. R. H.
No. 3-48A	S	25° 52'	98° 05'	92	# 1985	Lower Rio Grande Valley	S. A. R. H.
No. 3-55	S	25° 52'	98° 12'	!	# 1964	Lower Rio Grande Valley	S. A. R. H.
No. 3-63	S	25° 41'	98° 06'	!	# 1964	Lower Rio Grande Valley	S. A. R. H.
Balleza, Chihuahua	S	26° 57'	106° 21'	5,870	#May 1903	Rio Conchos	Meteor. Service of Chihuahua
Cabezones, Nuevo Leon	S	24° 59'	99° 45'	!	# 1962	Adjacent to Rio San Juan	S. A. R. H.
Camargo, Chihuahua	S	27° 42'	105° 10'	3,950	#May 1903	Rio Conchos	S. A. R. H.
Camargo, Tamaulipas	S	26° 19'	98° 50'	223	# 1921	Rio San Juan	S. A. R. H.
Candela, Coahuila	S	26° 50'	100° 40'	!	# 1972	Rio Salado	S. A. R. H.
Carbonera, Nuevo Leon	S	24° 49'	100° 47'	!	# 1958	Rio San Juan	S. A. R. H.
Carichic, Chihuahua	S	25° 55'	107° 04'	!	#May 1961	Rio Conchos	Meteor. Service of Chihuahua
Cd. Acuna, Coahuila	S	29° 20'	100° 53'	899	1951	Amistad Dam - Eagle Pass	I. B. & W. C.
Cd. Diaz Ordaz, Tamaulipas	S	26° 14'	98° 36'	131	# 1953	Lower Rio Grande Valley	S. A. R. H.
Cd. Guerrero, Chihuahua	S	28° 33'	107° 29'	6,560	#May 1903	Adjacent to Rio Conchos	Meteor. Service of Mexico
Cd. Juarez, Chihuahua	S	31° 45'	106° 27'	3,700	#Feb. 1903	El Paso - Fort Quitman	I. B. & W. C.
Cd. Mier, Tamaulipas	S	26° 26'	99° 09'	262	#Oct. 1955	Falcon Dam - Rio Grande City	I. B. & W. C.
Cerralvo, Nuevo Leon	R	26° 05'	99° 37'	1,130	#Nov. 1938	Rio San Juan	S. A. R. H.
Cerritos, Nuevo Leon	S	25° 31'	100° 12'	!	# 1958	Rio San Juan	S. A. R. H.
Cerro Prieto, Nuevo Leon	S	25° 56'	99° 23'	886	#May 1959	Rio San Juan	S. A. R. H.
Chihuahua, Chihuahua	S	28° 38'	106° 04'	4,760	# 1900	Rio Conchos	Meteor. Service of Mexico
Cienega de Flores, Nuevo Leon	R	25° 57'	100° 10'	1,770	#Apr. 1938	Rio San Juan	S. A. R. H.
Cienega de La Purisima, Coahuila	S	25° 20'	100° 32'	!	# 1958	Rio San Juan	S. A. R. H.
Cienega del Toro, Nuevo Leon	S	25° 05'	100° 20'	7,010	# 1958	Rio San Juan	S. A. R. H.
Comales, Tamaulipas	R	26° 11'	98° 55'	262	# 1940	Rio San Juan	S. A. R. H.
Control, Tamaulipas	S	25° 58'	97° 49'	59	#June 1942	Lower Rio Grande Valley	S. A. R. H.
Coyame, Chihuahua	S	29° 28'	105° 06'	!	#Nov. 1961	Rio Conchos	Meteor. Service of Chihuahua
Cuatro Cienegas, Coahuila	S	26° 59'	102° 04'	2,430	#May 1907	Rio Salado	S. A. R. H.
Cuauhtemoc, Chihuahua	S	28° 24'	106° 52'	6,890	#June 1923	Adjacent to Rio Conchos	Meteor. Service of Chihuahua
Delicias, Chihuahua	S	28° 11'	105° 28'	3,710	#Aug. 1933	Rio Conchos	S. A. R. H.
Ejido 1o de Mayo, Coahuila	S	27° 13'	101° 13'	!	# 1980	Rio Salado	S. A. R. H.
Ejido Marin, Nuevo Leon	S	25° 50'	100° 00'	!	#Mar. 1979	Rio San Juan	S. A. R. H.
El Brasil, Nuevo Leon	S	25° 53'	98° 59'	!	#July 1979	Rio San Juan	S. A. R. H.
El Cuchillo, Nuevo Leon	S	25° 43'	99° 16'	591	#June 1938	Rio San Juan	S. A. R. H.
El Realito, Nuevo leon	S	25° 18'	99° 21'	!	# 1971	Rio San Juan	S. A. R. H.
El Sitio, Chihuahua	S	27° 31'	106° 16'	!	July 1955	Rio Conchos	Meteor. Service of Chihuahua
Emiliano Zapata, Coahuila	S	29° 01'	100° 49'	!	#Mar. 1976	Eagle Pass - Laredo	S. A. R. H.
Escuela Superior de Agricultura, Chihuahua	S	31° 42'	106° 27'	3,690	# 1980	El Paso - Fort Quitman	S. A. R. H.
Escalon, Chihuahua	S	26° 45'	104° 20'	4,160	# 1957	Adjacent to Rio Conchos	S. A. R. H.
Estacion Rosario, Durango	S	26° 30'	105° 38'	!	#July 1962	Rio Conchos	S. A. R. H.
Fresnillo, Nuevo Leon	S	26° 26'	99° 53'	!	# 1982	Rio Alamo	S. A. R. H.
Galeana, Nuevo Leon	S	24° 50'	100° 04'	5,430	#Oct. 1904	Adjacent to Rio San Juan	Meteor. Service of Mexico
Garza Ayala, Nuevo Leon	S	26° 29'	100° 03'	!	# 1968	Rio San Juan	S. A. R. H.
General Bravo, Nuevo Leon	S	25° 48'	99° 11'	591	#Sept. 1906	Rio San Juan	S. A. R. H.

S Standard R Recording C Cumulative ! Not available # Some months or years missing

LOCATION OF RAINFALL STATIONS ON THE RIO GRANDE WATERSHED

IN MEXICO

NAME OF STATION	TYPE GAGE	LATI-TUDE	LONGI-TUDE	ELEV. (FT.)	RECORD BEGAN	WATERSHED SUBDIVISION	OBSERVER
General Cepeda, Coahuila	S	25° 24'	101° 29'	4,870	#Aug. 1926	Rio San Juan	S. A. R. H.
General Trevino, Nuevo Leon	S	26° 13'	99° 28'	!	#Oct. 1976	Rio Alamo	S. A. R. H.
Gomez Farias, Coahuila	S	24° 58'	101° 03'	!	#June 1979	Rio San Juan	S. A. R. H.
Hacienda Mamulique, Nuevo Leon	S	26° 07'	100° 14'	!	#Sept.1973	Rio San Juan	S. A. R. H.
Higueras, Nuevo Leon	S	25° 58'	100° 01'	1,640	#Sept.1906	Rio San Juan	Meteor. Service of Mexico
Huachichil, Coahuila	S	25° 12'	100° 50'	6,890	#Apr. 1980	Rio San Juan	S. A. R. H.
Icamole, Nuevo Leon	S	25° 55'	100° 43'	4,900	# 1958	Rio San Juan	S. A. R. H.
Iturbide, Nuevo Leon	S	24° 44'	99° 54'	!	# 1941	Adjacent to Rio San Juan	S. A. R. H.
Jimenez, Chihuahua	S	27° 08'	104° 56'	4,520	# 1951	Rio Conchos	Meteor. Service of Chihuahua
Jimenez, Coahuila	S	29° 04'	100° 40'	814	# 1951	Amistad Dam - Eagle Pass	I. B. & W. C.
Km. 135, Chihuahua	S	28° 22'	105° 37'	3,940	# 1962	Rio Conchos	S. A. R. H.
La Amistad, Coahuila	S	29° 27'	101° 05'	1,040	#Feb. 1977	Amistad Dam - Eagle Pass	I. B. & W. C.
La Arena, Nuevo Leon	S	25° 46'	100° 01'	!	# 1968	Rio San Juan	S. A. R. H.
La Boquilla, Chihuahua	S	27° 32'	105° 25'	4,330	#June 1910	Rio Conchos	Elec. Industry of Mexico
La Chuparrosa, Coahuila	R	29° 30'	101° 15'	1,150	# 1970	Foster Ranch - Amistad Dam	I. B. & W. C.
La Cruz, Nuevo Leon	S	25° 28'	100° 26'	4,920	# 1958	Rio San Juan	S. A. R. H.
La Escondida, Nuevo Leon	S	26° 16'	99° 46'	984	#Feb. 1979	Rio San Juan	S. A. R. H.
La Huasteca, Nuevo Leon	S	25° 32'	100° 30'	!	# 1979	Rio San Juan	S. A. R. H.
La Pomona, Nuevo Leon	S	24° 59'	99° 12'	!	#Mar. 1979	Rio San Juan	S. A. R. H.
La Popa, Nuevo Leon	S	26° 10'	100° 50'	3,230	# 1958	Rio San Juan	S. A. R. H.
Laguna de Salinillas, Nuevo Leon	S	27° 23'	100° 26'	755	# 1940	Rio Salado	S. A. R. H.
Laguna de Sanchez, Nuevo Leon	R	25° 21'	100° 16'	5,250	#Apr. 1941	Rio Salado	S. A. R. H.
Las Burras, Chihuahua	S	29° 31'	105° 25'	3,600	#July 1949	Rio Conchos	S. A. R. H.
Las Comitas, Nuevo Leon	S	25° 30'	100° 24'	4,000	# 1940	Rio San Juan	S. A. R. H.
Las Enramadas, Nuevo Leon	S	25° 48'	99° 16'	728	#Sept.1926	Rio San Juan	S. A. R. H.
Las Virgenes, Chihuahua	S	28° 09'	105° 38'	4,000	# 1943	Rio Conchos	S. A. R. H.
Lazaro Cardenas, Chihuahua	S	28° 16'	105° 32'	3,940	# 1961	Rio Conchos	Meteor. Service of Chihuahua
Linares, Nuevo Leon	R	24° 52'	99° 34'	1,180	# 1900	Adjacent to Rio San Juan	S. A. R. H.
Los Ramones, Nuevo Leon	R	25° 42'	99° 38'	262	#Sept.1939	Rio San Juan	S. A. R. H.
Maclovio Herrera, Chihuahua	S	29° 04'	105° 09'	3,220	# 1924	Rio Conchos	Meteor. Service of Chihuahua
Madero (Los Aldamas), Nuevo Leon	S	26° 02'	99° 12'	!	#May 1970	Rio San Juan	S. A. R. H.
Maijoma, Chihuahua	S	28° 55'	104° 21'	4,270	#Aug. 1955	Rio Conchos	Meteor. Service of Mexico
Majalca, Chihuahua	S	28° 53'	106° 21'	6,860	#June 1963	Rio Conchos	Meteor. Service of Chihuahua
Manuel Benavides, Chihuahua	S	29° 06'	103° 54'	!	#Oct. 1961	Above Rio Conchos - Johnson Ranch	Meteor. Service of Chihuahua
Matamoros, Tamaulipas	S	25° 52'	97° 30'	33	# 1958	Lower Rio Grande Valley	Meteor. Service of Mexico
Meoqui, Chihuahua	S	28° 16'	105° 28'	3,790	#Nov. 1926	Rio Conchos	Meteor. Service of Chihuahua
Miguel Aleman, Tamaulipas	S	26° 24'	99° 02'	184	# 1951	Falcon Dam - Rio Grande City	S. A. R. H.
Mimbres, Nuevo leon	S	24° 58'	100° 16'	5,740	# 1958	Rio San Juan	S. A. R. H.
Mina, Nuevo Leon	S	26° 00'	100° 31'	1,640	# 1958	Rio San Juan	S. A. R. H.
Montemorelos, Nuevo leon	S	25° 12'	99° 50'	1,420	#Mar. 1904	Rio San Juan	S. A. R. H.
Monterrey, Nuevo Leon	S	25° 40'	100° 18'	1,740	# 1896	Rio San Juan	S. A. R. H.
Muzquiz, Coahuila	S	27° 53'	101° 31'	1,650	#June 1923	Rio Salado	S. A. R. H.
Nonoava, Chihuahua	S	27° 28'	106° 44'	!	#Nov. 1963	Rio Conchos	Meteor. Service of Chihuahua
Nueva Cd. Guerrero, Tamaulipas	S	26° 35'	99° 15'	348	#May 1954	Laredo - Falcon Dam	I. B. & W. C.
Nuevo Laredo, Tamaulipas	S	27° 30'	99° 30'	413	# 1950	Eagle Pass - Laredo	I. B. & W. C.
Nuevo Laredo, Tamaulipas	S	27° 30'	99° 30'	413	#Mar. 1909	Eagle Pass - Laredo	Meteor. Service of Mexico
Ojinaga, Chihuahua	S	29° 34'	104° 25'	2,590	#Apr. 1954	Rio Conchos	I. B. & W. C.
Ojo Caliente, Chihuahua	S	27° 37'	105° 16'	4,010	# 1942	Rio Conchos	S. A. R. H.
Pajonal, Nuevo Leon	S	25° 29'	100° 23'	5,020	# 1958	Rio San Juan	S. A. R. H.
Palestina, Coahuila	S	29° 09'	100° 59'	1,080	# 1931	Eagle Pass - Laredo	S. A. R. H.
Paras, Nuevo leon	S	26° 30'	99° 31'	541	# 1958	Rio Alamo	S. A. R. H.
Posta Zootecnica, Chihuahua	S	28° 41'	106° 04'	4,740	#Mar. 1957	Rio Conchos	Meteor. Service of Chihuahua
Potosi, Nuevo leon	S	24° 51'	100° 19'	6,260	# 1958	Adjacent to Rio San Juan	S. A. R. H.
Potrero de Abrego, Coahuila	S	25° 17'	100° 21'	!	# 1985	Rio San Juan	S. A. R. H.
Presa Carranza, Coahuila	S	27° 31'	100° 37'	787	#June 1927	Rio Salado	S. A. R. H.
Presa Chihuahua, Chihuahua	S	28° 34'	105° 10'	5,230	Oct. 1961	Rio Conchos	S. A. R. H.

S Standard R Recording C Cumulative ! Not available # Some months or years missing

LOCATION OF RAINFALL STATIONS ON THE RIO GRANDE WATERSHED

In Mexico

NAME OF STATION	TYPE GAGE	LATI-TUDE	LONGI-TUDE	ELEV. (FT.)	RECORD BEGAN	WATERSHED SUBDIVISION	OBSERVER
Presa Luis L. Leon, Chihuahua	S	28° 57'	105° 17'	!	Oct. 1964	Rio Conchos	S. A. R. H.
Progreso, Coahuila	S	27° 25'	101° 00'	1,210	#Feb. 1943	Rio Salado	S. A. R. H.
Ramon Arizpe, Coahuila	S	25° 32'	100° 57'	4,590	#Apr. 1907	Rio San Juan	S. A. R. H.
Rayones, Nuevo leon	S	25° 01'	100° 05'	1,970	#Oct. 1926	Rio San Juan	S. A. R. H.
Represa Amistad, Coahuila	R	29° 26'	101° 02'	919	#June 1969	Amistad Dam - Eagle Pass	I. B. & W. C.
Retamal, Tamaulipas	S	26° 02'	98° 02'	82	#Oct. 1949	Lower Rio Grande Valley	I. B. & W. C.
Reynosa, Tamaulipas	R	26° 06'	98° 19'	130	# 1941	Lower Rio Grande Valley	S. A. R. H.
Rinconada, Nuevo Leon	S	25° 41'	100° 42'	4,790	#Apr. 1944	Rio San Juan	S. A. R. H.
Rodrigo Gomez Reservoir, Nuevo Leon	S	25° 25'	100° 07'	1,460	# 1923	Rio San Juan	S. A. R. H.
Rusio, Nuevo Leon	S	24° 42'	100° 26'	6,580	#June 1956	Rio San Juan	S. A. R. H.
Saltillo, Coahuila	S	25° 26'	101° 00'	5,280	# 1886	Rio San Juan	S. A. R. H.
Samalayuca, Chihuahua	S	31° 21'	106° 28'	4,180	# 1958	El Paso - Fort Quitman	Meteor. Service of Mexico
San Antonio de las Alazanas, Coahuila	S	25° 15'	100° 35'	7,120	# 1958	Rio San Juan	S. A. R. H.
San Diego, Nuevo Leon	S	25° 14'	99° 15'	!	#Feb. 1979	Rio San Juan	S. A. R. H.
San Juan de Vaquería, Coahuila	S	25° 15'	101° 13'	!	#Apr. 1980	Rio San Juan	S. A. R. H.
San Juan, Nuevo leon	S	25° 33'	99° 50'	880	#Nov. 1943	Rio San Juan	S. A. R. H.
San Juanito, Chihuahua	S	27° 58'	107° 36'	!	# 1959	Adjacent to Rio Conchos	Meteor. Service of Chihuahua
San Nicolas, Nuevo Leon	S	25° 45'	100° 17'	!	#Sept.1978	Rio San Juan	S. A. R. H.
Santa Catarina, Nuevo Leon	R	25° 40'	100° 28'	2,890	#Oct. 1937	Rio San Juan	S. A. R. H.
Sierra Mojada, Coahuila	S	27° 17'	103° 42'	4,120	#Mar. 1897	Adjacent to Johnson Ranch - Foster Ranch	S. A. R. H.
Tepehuaje, Nuevo Leon	S	25° 30'	99° 46'	!	#June 1979	Rio San Juan	S. A. R. H.
Topo Chico, Nuevo Leon	R	25° 44'	100° 20'	1,820	#Aug. 1939	Rio San Juan	S. A. R. H.
Tunel San Francisco, Nuevo Leon	S	25° 25'	100° 10'	!	# 1958	Rio San Juan	S. A. R. H.
Una de Gato, Nuevo Leon	S	25° 58'	99° 41'	1,050	# 1979	Rio San Juan	S. A. R. H.
Valadeces, Tamaulipas	S	26° 14'	98° 40'	!	1964	Lower Rio Grande Valley	S. A. R. H.
Valle Hermoso, Tamaulipas	S	25° 41'	97° 48'	52	#June 1949	Lower Rio Grande Valley	S. A. R. H.
Vaquería, Nuevo Leon	S	25° 08'	99° 04'	!	#Mar. 1979	Rio San Juan	S. A. R. H.
Villa Aldama, Chihuahua	S	28° 50'	105° 55'	4,140	#Aug. 1906	Rio Conchos	Meteor. Service of Chihuahua
Villa Allende, Nuevo Leon	S	25° 17'	100° 01'	1,470	#Nov. 1938	Rio San Juan	S. A. R. H.
Villa Coronado, Chihuahua	S	26° 44'	105° 10'	4,790	#Aug. 1964	Rio Conchos	S. A. R. H.
Villa Hidalgo, Coahuila	S	27° 47'	99° 52'	656	# 1951	Eagle Pass - Laredo	I. B. & W. C.
Villalba, Chihuahua	S	27° 59'	105° 47'	3,940	Oct. 1940	Rio Conchos	S. A. R. H.
Zaragoza, Coahuila	S	23° 58'	99° 46'	4,500	#Aug. 1977	Eagle Pass - Laredo	S. A. R. H.

S Standard R Recording C Cumulative ! Not available # Some months or years missing

EVAPORATION IN THE RIO GRANDE BASIN

IN THE UNITED STATES

IN INCHES

Tabulated below are records of evaporation observed at eight stations in Texas operated by the United States Section of the Commission from Presidio to Brownsville. At all stations, the exposure to wind was uniform and relatively unimpeded. The sites were kept cleared of all high brush and trees within 150 feet, and all brush, tall weeds, and other obstructions within 100 feet of the fenced enclosures. Within the enclosures all vegetation has been eradicated or kept trimmed to within 3 inches of the ground surface. For specific location of these stations, refer to data opposite same station name shown in "Location of Rainfall Stations on the Rio Grande Watershed," on preceding pages of this bulletin.

Records were obtained by means of:

1. Standard National Weather Service pan. A circular pan, 4 feet in diameter and 10 inches deep, made of 22-gage galvanized iron, is set on a wooden platform with the rim of the pan 16 inches above the ground. The water level is maintained between 2 and 3 inches below the rim of the pan and is measured with a micrometer gage. This type of pan was in operation at Amistad Dam and Falcon Dam.

2. A circular pan, 2 feet in diameter and 36 inches deep, made of 22-gage galvanized iron, is set in the ground with the rim of the pan 3 inches above the ground surface and the top covered with a circular screen of No. 4 (1/4" mesh) galvanized hardware cloth. This type of pan, equipped with an automatic feed tank that maintains the water at a level 3 inches below the rim of the pan, was in operation at Martin King Ranch and Eagle Pass.

3. An evaporometer, developed by the United States Section of the Commission and calibrated against a 2-foot pan described above, was in operation at Presidio, Johnson Ranch, Long Ranch, and at a site 7 miles east of Brownsville.

Month	Presidio		Johnson Ranch		Martin King Ranch		Long Ranch	
	1989	Average 1950-1989	1989	Average 1950-1989	1989	Average 1956-1989	1989	Average 1971-1989
Jan.	1.49	3.50	3.10	3.30	2.87	3.00	3.20	2.30
Feb.	2.44	4.70	3.92	4.70	2.59	3.60	2.02	2.70
Mar.	4.38	7.50	8.11	8.00	4.37	6.10	5.06	4.60
Apr.	4.93	9.20	9.72	10.00	7.17	7.60	5.13	5.70
May	7.46	10.60	11.00	11.30	11.36	8.30	11.54	6.20
June	8.94	11.50	12.75	11.60	13.16	9.90	10.32	7.40
July	7.52	10.90	9.97	11.60	14.38	11.30	9.58	8.50
Aug.	6.90	10.00	10.00	10.50	21.54	11.10	10.10	7.90
Sept.	5.12	8.30	9.14	8.60	13.63	8.10	6.02	6.10
Oct.	3.54	6.60	6.80	6.80	14.11	5.90	5.57	4.20
Nov.	2.37	4.50	4.73	4.40	8.63	4.00	2.98	2.80
Dec.	1.71	3.30	2.89	3.20	1.62	3.00	1.94	2.20
Total	56.80	90.60	92.13	94.00	115.43	81.90	73.46	60.60

Month	Amistad Dam		Eagle Pass		Falcon Dam		Brownsville	
	1989	Average 1963-1989	1989	Average 1964-1989	1989	Average 1956-1989	1989	Average 1958-1989
Jan.	3.79	3.70	3.50	3.20	4.66	3.90	3.34	3.00
Feb.	3.65	4.70	4.18	3.60	4.87	5.10	4.36	3.60
Mar.	8.33	8.20	6.54	5.70	9.90	8.30	6.66	4.90
Apr.	9.93	10.00	8.57	7.30	10.23	10.10	6.00	6.00
May	12.80	10.80	8.58	7.50	14.14	11.50	8.87	6.00
June	13.83	12.60	11.02	9.60	14.70	13.10	8.99	6.50
July	15.99	14.60	12.80	11.00	15.80	15.10	8.69	7.30
Aug.	13.98	13.40	12.05	10.30	12.73	13.50	7.30	7.10
Sept.	11.66	10.00	10.27	7.80	10.44	9.80	7.35	5.60
Oct.	8.51	7.50	7.14	6.10	8.73	7.50	5.42	4.90
Nov.	5.09	5.00	4.65	4.20	5.92	5.30	3.95	3.90
Dec.	3.24	3.60	3.17	3.40	4.08	3.90	6.72	3.10
Total	110.80	104.10	92.47	79.70	116.20	107.10	77.65	61.90

EVAPORATION IN THE RIO GRANDE BASIN IN MEXICO

IN INCHES

Tabulated below are records of evaporation observed at nine stations operated and maintained by the Mexican Section of the Commission. Eight stations are along the Rio Grande from Cd. Acuna, Coahuila to Retamal, Tamaulipas, and one is located on the Rio Conchos near Ojinaga, Chihuahua. At all stations, except Ojinaga, the sites were kept cleared of all high brush and trees within 150 feet, and of all brush and tall weeds within 100 feet of the fenced enclosures. The Ojinaga station is 30 feet landward of the east Rio Conchos levee with a concrete V-shaped irrigation ditch and road between the levee and the 8 x 8-meter woven wire pen, which encloses a 150-cm evaporation pan and a 70 x 50-cm shelter with thermometers. Inside the enclosures, all vegetation has been eradicated or kept trimmed to within 3 inches of the ground surface. The exposure to wind was uniform and relatively unimpeded. For specific location of these stations, refer to data opposite same station name shown in "Location of Rainfall Stations on the Rio Grande Watershed."

The type of pan used at all these stations was a standard National Weather Service-type pan, 4 feet in diameter and 10 inches deep, made of 22-gage galvanized iron, set on a wooden platform with the rim of the pan 16 inches above the ground. The water level was maintained between 2 and 3 inches below the rim of the pan and was measured with a micrometer gage.

Data for other evaporation stations in the Rio Grande basin in Mexico, which were operated by various Mexican agencies, are available in Water Bulletin No. 58 published by the Mexican Section of the Commission.

	Ojinaga, Chihuahua		La Amistad, Coahuila		Cd. Acuna, Coahuila		Jimenez, Coahuila		Villa Hidalgo, Coahuila	
Month	1989	Average 1954-1989	1989	Average 1977-1989	1989	Average 1951-1989	1989	Average 1951-1989	1989	Average 1951-1989
Jan.	3.27	3.40	3.43	3.40	3.23	3.20	3.86	3.60	2.52	3.60
Feb.	4.06	4.80	3.11	4.50	3.66	4.40	3.43	4.70	3.43	4.80
Mar.	6.69	8.20	7.09	7.40	6.65	7.50	8.23	7.30	7.72	7.30
Apr.	8.15	10.30	8.54	9.40	7.99	8.70	8.98	8.20	9.02	9.30
May	9.80	12.40	10.79	9.70	10.31	9.60	12.99	9.20	11.02	10.50
June	11.85	12.90	12.48	11.40	10.79	11.20	13.35	10.90	10.63	12.40
July	11.69	12.80	14.37	13.60	12.40	12.80	15.00	12.40	10.71	14.10
Aug.	9.92	10.90	12.80	12.80	10.91	11.70	12.76	11.40	9.96	12.90
Sep.	8.19	8.60	10.83	9.80	8.82	8.50	11.26	8.50	9.29	9.50
Oct.	4.92	6.50	7.28	7.10	6.14	6.00	7.76	6.00	4.65	7.10
Nov.	2.72	4.10	4.21	4.70	3.50	3.80	4.06	4.00	3.19	4.60
Dec.	3.11	3.20	2.48	3.40	2.24	2.90	2.87	3.30	2.40	3.50
Total	84.37	98.10	97.41	97.20	86.64	90.30	104.55	89.50	84.54	99.60

	Nuevo Laredo, Tamaulipas		Nueva Cd. Guerrero, Tamaulipas		Cd. Mier, Tamaulipas		Retamal, Tamaulipas			
Month	1989	Average 1964-1989	1989	Average 1954-1989	1989	Average 1955-1989	1989	Average 1951-1989		
Jan.	2.60	4.10	2.76	3.30	3.03	3.50	3.23	3.90		
Feb.	3.54	5.20	3.62	4.20	3.98	4.70	3.82	4.50		
Mar.	7.60	8.60	8.23	7.20	8.50	7.70	7.56	6.60		
Apr.	8.31	10.60	8.23	8.60	8.54	9.30	7.48	7.70		
May	11.26	11.70	11.14	9.90	11.61	10.40	8.19	8.10		
June	10.47	13.40	11.97	11.30	12.48	12.00	7.91	8.80		
July	11.46	15.00	11.89	12.90	12.83	13.70	10.59	9.90		
Aug.	10.63	13.90	10.98	12.00	11.73	12.30	9.33	9.60		
Sep.	9.06	10.40		8.70		9.40	8.98	7.50		
Oct.	6.38	7.80	7.28	6.50	7.95	7.20	9.25	6.20		
Nov.	3.23	5.30	4.45	4.50	5.63	4.80	5.24	4.40		
Dec.	3.39	4.10	2.95	3.30	2.99	3.60	5.28	3.80		
Total	87.93	110.10		92.40		98.60	86.86	81.00		

TEMPERATURE, HUMIDITY, AND WIND

The maximum and minimum temperatures shown for the stations in Mexico are from daily maximum and minimum thermometer observations. The mean monthly temperatures are averages of these daily maximum and minimum temperatures.

The mean monthly temperatures and relative humidities shown for stations in the United States were integrated from continuous records of hygrothermographs, housed in louvered shelters, with the sensing elements of the instruments 16 inches above the ground and 9 feet southwest of either a 2 or 4-foot diameter evaporation pan. The maximum and minimum temperatures shown below are the extreme temperatures for the month as recorded on the charts except for Falcon Dam and Amistad Dam, where the readings are based on daily maximum and minimum thermometer observations.

Monthly mean wind velocities are based on the total miles of wind movement indicated by a standard 3-cup anemometer installed and operated according to specifications for a Class A National Weather Service evaporation station.

TEMPERATURE - DEGREES IN FAHRENHEIT

IN THE UNITED STATES

Month	Amistad Dam, Texas				Eagle Pass, Texas				Falcon Dam, Texas			
	Mean 1989	Average 1963-1989	1989 Max.	1989 Min.	Mean 1989	Average 1964-1989	1989 Max.	1989 Min.	Mean 1989	Average 1950-1989	1989 Max.	1989 Min.
Jan.	53.5	49.9	83	22	56.5	50.9	85	27	62.5	54.5	92	37
Feb.	51.4	53.7	85	22	53.0	55.4	93	16	59.2	59.1	99	32
Mar.	62.1	62.6	98	28	64.2	64.5	97	33	70.4	66.9	104	35
Apr.	71.8	71.0	97	48	72.3	72.9	103	48	77.2	74.5	109	52
May	82.1	76.8	104	61	83.1	78.0	106	65	86.4	80.1	106	65
June	85.5	82.0	108	65	85.2	82.9	110	67	88.3	83.9	105	67
July	88.5	84.7	109	69	88.2	85.9	108	71	89.2	85.6	108	70
Aug.	85.8	84.1	104	67	86.2	85.5	104	72	88.8	85.3	106	72
Sept.	79.7	78.9	103	49	79.9	79.9	102	51	84.3	80.5	110	55
Oct.	71.8	70.1	97	44	71.6	70.9	101	38	78.7	73.3	104	41
Nov.	61.1	60.1	87	37	61.6	61.0	89	35	70.9	63.9	100	42
Dec.	45.2	51.9	79	9	45.8	53.2	78	12	51.4	57.0	88	19
Yearly	69.9	68.8	109	9	70.6	70.1	110	12	75.6	72.1	110	19

IN MEXICO

Month	Cd. Juarez, Chihuahua				Ojinaga, Chihuahua				La Amistad, Coahuila			
	Mean 1989	Average 1960-1989	1989 Max.	1989 Min.	Mean 1989	Average 1954-1989	1989 Max.	1989 Min.	Mean 1989	Average 1977-1989	1989 Max.	1989 Min.
Jan.	46.4	46.0	70	16	50.0	49.5	77	16	51.8	49.4	84	21
Feb.	51.8	50.1	82	21	55.4	54.1	88	23	55.4	53.6	88	21
Mar.	57.2	56.9	91	25	60.8	61.3	95	23	62.6	62.7	97	30
Apr.	64.4	64.3	99	39	68.0	69.8	104	41	71.6	70.9	99	43
May	71.6	73.1	102	50	78.8	78.5	109	45	78.8	78.0	106	61
June	80.6	81.4	106	63	86.0	85.1	111	55	84.2	83.8	109	66
July	84.2	83.3	108	66	86.0	86.0	113	64	86.0	87.5	113	72
Aug.	80.6	80.9	99	63	86.0	84.2	106	66	89.6	87.8	106	66
Sept.	73.4	75.0	95	50	78.8	79.3	95	54	80.6	82.1	104	52
Oct.	66.2	65.4	91	37	69.8	70.0	84	41	73.4	72.2	102	43
Nov.	53.6	53.7	72	32	59.0	57.8	86	36	60.8	61.6	90	37
Dec.	46.4	46.5	63	18	51.8	50.8	82	36	53.6	53.2	79	16
Yearly	64.7	64.7	108	16	69.2	68.9	113	16	70.7	70.2	113	16

Month	Cd. Acuna, Coahuila				Jimenez, Coahuila				Villa Hidalgo, Coahuila			
	Mean 1989	Average 1951-1989	1989 Max.	1989 Min.	Mean 1989	Average 1951-1989	1989 Max.	1989 Min.	Mean 1989	Average 1951-1989	1989 Max.	1989 Min.
Jan.	50.0	48.6	81	23	55.4	52.4	86	25	53.6	52.9	84	32
Feb.	55.4	53.7	86	21	57.2	56.3	111	25	57.2	56.7	93	25
Mar.	62.6	62.5	95	27	62.6	63.5	102	30	66.2	65.5	93	32
Apr.	69.8	71.0	95	46	71.6	71.3	100	48	71.6	73.8	95	46
May	77.0	77.8	102	55	77.0	77.5	108	55	78.8	79.4	104	61
June	82.4	83.6	104	61	82.4	83.4	108	52	84.2	84.4	106	64
July	86.0	86.5	108	72	86.0	85.9	109	68	86.0	86.2	108	64
Aug.	86.0	86.1	106	64	86.0	85.7	106	66	86.0	86.5	100	66
Sept.	78.8	80.0	104	50	78.8	80.8	111	48	80.6	81.4	99	46
Oct.	69.8	70.8	102	37	69.8	71.9	102	39	71.6	72.8	95	36
Nov.	59.0	58.7	90	34	60.8	61.2	93	36	62.6	61.5	86	36
Dec.	51.8	50.8	81	10	55.4	54.1	81	19	55.4	55.0	93	12
Yearly	69.1	69.2	108	10	70.3	70.3	111	19	71.2	71.3	108	12

TEMPERATURE, HUMIDITY, AND WIND

TEMPERATURE - DEGREES IN FAHRENHEIT

IN MEXICO

Month	Nuevo Laredo, Tamaulipas (13-20)				Nuevo Cd. Guerrero, Tamaulipas				Cd. Mier, Tamaulipas			
	Mean 1989	Average 1964-1989	1989		Mean 1989	Average 1958-1989	1989		Mean 1989	Average 1955-1989	1989	
			Max.	Min.			Max.	Min.			Max.	Min.
Jan.	57.2	55.2	84	32	57.2	55.4	90	36	57.2	55.0	97	34
Feb.	62.6	59.9	95	28	60.8	59.7	95	30	60.8	59.6	100	34
Mar.	69.8	69.9	100	32	68.0	67.7	102	34	68.0	67.9	106	30
Apr.	77.0	76.9	109	54	77.0	76.0	104	52	75.2	75.9	111	46
May	82.4	82.0	106	57	82.4	81.0	108	66	80.6	80.9	111	66
June	87.8	86.4	102	70	86.0	85.2	108	66	86.0	85.2	111	68
July	89.6	88.1	106	72	87.8	86.7	106	70	87.8	87.1	109	72
Aug.	89.6	88.2	104	72	87.8	86.8	104	72	87.8	87.2	108	75
Sept.	84.2	84.0	104	54	82.4	82.7	102	57	82.4	82.7	106	39
Oct.	77.0	76.1	99	46	73.4	75.3	100	41	73.4	75.1	102	39
Nov.	68.0	66.5	88	41	66.2	66.3	95	45	64.4	65.8	97	45
Dec.	59.0	60.0	81	14	60.8	58.6	84	45	59.0	58.6	86	21
Yearly	75.4	74.4	109	14	74.2	73.5	108	30	73.6	73.4	111	21

TEMPERATURE, HUMIDITY, AND WIND

MEAN WIND SPEED - MILES PER HOUR

IN THE UNITED STATES

Month	Martin King Ranch, Texas		Amistad Dam, Texas		Eagle Pass, Texas		Falcon Dam, Texas	
	1989	Average 1957-1989	1989	Average 1963-1989	1989	Average 1963-1989	1989	Average 1950-1989
Jan.	3.3	3.8	2.8	3.0	2.1	2.8	3.2	3.5
Feb.	3.8	4.5	3.1	3.5	3.4	3.6	3.7	4.1
Mar.	5.0	5.9	3.3	4.1	4.7	3.9	4.4	4.6
Apr.	5.3	6.1	3.4	4.2	4.3	4.1	3.9	5.0
May	6.5	6.6	3.8	4.2	4.0	3.9	5.6	5.1
June	6.6	7.2	3.6	4.4	4.1	3.9	5.3	5.3
July	5.3	6.7	3.3	4.2	4.1	3.9	4.3	5.6
Aug.	7.5	6.2	3.7	3.7	4.7	3.6	4.2	4.8
Sept.	3.9	5.0	3.2	3.4	3.8	3.1	3.1	3.7
Oct.	5.2	4.7	3.0	3.2	3.0	2.6	2.7	3.3
Nov.	3.8	4.0	2.4	3.0	2.6	2.5	2.5	3.5
Dec.	3.3	3.5	2.7	2.9	3.2	2.5	2.8	3.2
Yearly	5.0	5.4	3.2	3.7	3.7	3.4	3.8	4.3

MEAN RELATIVE HUMIDITY - PERCENT

IN THE UNITED STATES

Month	Amistad Dam, Texas		Eagle Pass, Texas		Falcon Dam, Texas	
	1989	Average 1963-1989	1989	Average 1964-1989	1989	Average 1950-1989
Jan.	57.8	62.4	63.7	63.9	48.7	67.1
Feb.	62.0	60.1	63.6	60.7	46.0	64.8
Mar.	51.2	54.4	43.6	56.2	39.7	62.3
Apr.	54.6	56.8	47.7	57.8	52.4	62.4
May	56.7	64.2	53.4	64.7	62.3	66.3
June	52.0	63.4	52.1	63.8	61.2	65.0
July	47.0	59.5	46.0	59.3	60.8	61.8
Aug.	54.9	60.1	53.4	61.1	61.8	62.5
Sept.	51.3	64.1	45.4	66.0	61.2	66.7
Oct.	55.4	64.2	53.2	67.3	57.9	66.7
Nov.	62.4	62.3	62.7	66.7	60.4	66.9
Dec.	50.8	60.9	59.1	66.5	63.0	67.2
Yearly	54.7	61.0	53.7	62.8	56.3	65.0

IN MEXICO

Month	Nueva Cd. Guerrero, Tamaulipas	
	1989	Average 1961-1989
Jan.	89	77
Feb.	74	75
Mar.	63	70
Apr.	77	71
May	74	76
June	66	74
July	68	72
Aug.	71	72
Sept.	64	76
Oct.	63	76
Nov.	71	76
Dec.	68	77
Yearly	71	74

DRAINAGE BASIN AND IRRIGATED AREAS

ALONG THE RIO GRANDE AND TRIBUTARIES - 1989

The total area within the outer rim of the Rio Grande basin is about 335,500 square miles, but it contains Large areas, especially along its southwestern boundary, that contribute no surface runoff to the Rio Grande. Such noncontributing areas constitute about 47 percent of the total area, leaving 176,333 square miles of productive watershed which is listed in the tabulation below.

The irrigated areas shown below are listed in accordance with the location of their diversions points and are all within the Rio Grande Basin, except in the lower Rio Grande Valley where large portions of irrigated lands in both countries lie outside the basin boundary line.

On the United States side, only the areas irrigated in 1989 are shown, except that in the reaches below Falcon Dam, the figures shown represent acreages which were subject to irrigation in 1989 but for which data on the portion actually irrigated is not known. On the Mexican side, part of the data may have been gathered previous to 1989. The irrigated area data tabulated are the best data that could be obtained.

DESIGNATION OF AREAS AND GAGING STATIONS	Drainage Basin Square Miles			Irrigated Areas - Acres		
	United States	Mexico	Total	United States	Mexico	Total
Above Elephant Butte Dam	25,923	0	25,923	0	0	0
Elephant Butte Dam to Caballo Dam	1,295	0	1,295	0	0	0
Above Caballo Dam	27,218	0	27,218	0	0	0
Caballo Dam to American Dam	2,053	0	2,053	84,592	0	84,592
Above American Dam	29,271	0	29,271	84,592	0	84,592
American Dam to Acala Station	672	544	1,216	41,555	13,186	54,741
Above Acala Gaging Station	29,943	544	30,487	126,147	13,186	139,333
Acala Station to Fort Quitman Station	663	794	1,457	17,253	0	17,253
Above Fort Quitman Gaging Station	30,606	1,338	31,944	143,400	13,186	156,586
Fort Quitman Station to Above Presidio Station	1,646	1,410	3,056	a) 215	a) 188	403
Above Presidio Station above Rio Conchos	32,252	2,748	35,000	143,615	13,374	156,989
Rio San Pedro above Francisco I. Madero Dam	0	4,161	4,161	0	12,121	12,121
Rio Conchos above Boquilla Dam	0	3,970	3,970	0	28,133	28,133
Boquilla Dam to Luis L. Leon Dam	0	14,861	14,861	0	219,207	219,207
Luis L. Leon Dam to mouth of river	0	3,412	3,412	0	52,374	52,374
Rio Conchos - Total	0	26,404	26,404	0	311,835	311,835
Alamito Creek above Gaging Station	1,504	0	1,504	0	0	0
Presidio Station Above Rio Conchos to Presidio Station below Rio Conchos - excluding above tributaries	340	91	431	2,343	245	2,588
Presidio Station above Rio Conchos to Presidio Station below Rio Conchos - Total	1,844	26,495	28,339	2,343	312,080	314,423
Above Presidio Station below Rio Conchos	34,096	29,243	63,339	145,958	325,454	471,412
Terlingua Creek above Gaging Station	1,070	0	1,070	0	0	0
Presidio Station below Rio Conchos to Johnson Ranch Station - excluding Terlingua Creek	1,093	2,258	3,351	780	1,537	2,317
Presidio Station below Rio Conchos to Johnson Ranch Station - Total	2,163	2,258	4,421	780	1,537	2,317
Above Johnson Ranch Gaging Station	36,259	31,501	67,760	146,738	326,991	473,729
Johnson Ranch Station to Foster Ranch Station	6,412	6,570	12,982	55	0	55
Above Foster Ranch Gaging Station	42,671	38,071	80,742	146,793	326,991	473,784
Foster Ranch Station to Langtry Station	182	505	687	0	0	0
Above Langtry Gaging Station (Discontinued)	42,853	38,576	81,429	146,793	326,991	473,784
Pecos River above Girvin (In the State of Texas)	29,562	0	29,562	12,507	0	12,507
Pecos River, Girvin to Station near Langtry	5,617	0	5,617	510	0	510
Station near Langtry to Station at Mouth (Discontinued)	129	0	129	0	0	0
Pecos River - Total	35,308	0	35,308	13,017	0	13,017
Devils River above Pafford Crossing	3,961	0	3,961	0	0	0
Pafford Crossing to Station at Mouth (Discontinued)	344	0	344	0	0	0
Devils River - Total	4,305	0	4,305	0	0	0
Langtry Station to Amistad Dam - excluding above tributaries	217	1,875	2,092	0	0	0
Langtry Station to Amistad Dam - Total	39,830	1,875	41,705	13,017	0	13,017
Above Amistad Dam	82,683	40,451	123,134	159,810	326,991	486,801
Amistad Dam to Below Amistad Dam Gaging Station	5	4	9	0	0	0
Above the Below Amistad Dam Gaging Station	82,688	40,455	123,143	159,810	326,991	486,801
Below Amistad Dam Station to Del Rio Station	60	100	160	340	0	340
Above Del Rio Gaging Station	82,748	40,555	123,303	160,150	326,991	487,141
Arroyo Las Vacas above Gaging Station	0	350	350	0	361	361
San Felipe Creek above Gaging Station	46	0	46	1,630	0	1,630

DRAINAGE BASIN AND IRRIGATED AREAS

ALONG THE RIO GRANDE AND TRIBUTARIES - 1989

DESIGNATION OF AREAS AND GAGING STATIONS	Drainage Basin Square Miles			Irrigated Areas - Acres		
	United States	Mexico	Total	United States	Mexico	Total
Pinto Creek Above Gaging Station	249	0	249	250	0	250
Rio San Diego above Gaging Station	0	853	853	0	7,665	7,665
Gaging Station to mouth of river	0	6	6	0	217	217
Rio San Diego - Total	0	859	859	0	7,882	7,882
Del Rio Station to Jimenez Station - excluding above tributaries	569	110	779	b) 39,249	3,805	43,054
Del Rio Station to Jimenez Station - Total	964	1,319	2,283	41,129	12,048	53,177
Above the Jimenez Gaging Station	83,712	41,874	125,586	201,279	339,039	540,318
Rio San Rodrigo above Gaging Station	0	1,049	1,049	0	0	0
Rio San Rodrigo - Total	0	1,049	1,049	0	0	0
Jimenez Station to Maverick Power Plant - excluding Rio San Rodrigo	287	114	401	1,415	2,135	3,550
Jimenez Station to Maverick Power Plant - Total	287	1,163	1,450	1,415	2,135	3,550
Above Maverick Power Plant	83,999	43,037	127,036	202,694	341,174	543,868
Maverick Power Plant to Piedras Negras Station	244	32	276	160	0	160
Above Piedras Negras Gaging Station	84,243	43,069	127,312	202,854	341,174	544,028
Rio Escondido above Gaging Station	0	1,459	1,459	0	198	198
Rio Escondido - Total	0	1,471	1,471	0	198	198
Piedras Negras Station to El Indio Station - excluding Rio Escondido	237	206	443	320	4,823	5,143
Piedras Negras Station to El Indio Station - Total	237	1,677	1,914	320	5,021	5,341
Above El Indio Gaging Station	84,480	44,746	129,226	203,174	346,195	549,369
El Indio Gaging Station to Villa Hidalgo Station (Discontinued)	629	1,683	2,312	1,014	4,848	5,862
Above Villa Hidalgo Gaging Station	85,109	46,429	131,538	204,188	351,043	555,231
Villa Hidalgo Station to Laredo Station	607	433	1,040	3,210	8,004	11,214
Above Laredo Gaging Station	85,716	46,862	132,578	207,398	359,047	566,445
Rio Salado above Venustiano Carranza Dam	0	15,831	15,831	0	3,274	3,274
Rio Salado above Las Tortillas Gaging Station	0	23,155	23,155	0	57,939	57,939
Rio Salado above River Road Crossing	0	23,323	23,323	0	61,213	61,213
Laredo Station to Falcon Dam - excluding Rio Salado	2,042	1,327	3,369	c) 5,180	2,086	7,266
Laredo Station to Falcon Dam - Total	2,042	24,650	26,692	5,180	63,299	68,479
Amistad Dam to Falcon Dam - excluding above tributaries	4,780	4,009	8,789	50,888	25,701	76,589
Above Falcon Dam	87,758	71,512	159,270	212,578	422,346	634,924
Rio Alamo above Gaging Station	0	1,675	1,675	0	7,660	7,660
Rio San Juan above Marte Gomez Dam	0	12,745	12,745	0	2,995	2,995
Rio San Juan - Marte Gomez Dam to Camargo Gaging Station	0	195	195	0	187,674	187,674
Rio San Juan - Total	0	12,949	12,949	0	190,669	190,669
Falcon Dam to Rio Grande City Station - excluding above tributaries	222	246	468	4,430	4,500	8,930
Falcon Dam to Rio Grande City Station - Total	222	14,870	15,092	4,430	202,829	207,259
Above Rio Grande City Gaging Station	87,980	86,382	174,362	217,008	625,175	842,183
Rio Grande City Station to Anzalduas Dam	952	798	1,750	174,026	22,232	196,258
Anzalduas Canal				0	470,241	470,241
Above Anzalduas Dam	88,932	87,180	176,112	391,034	1,117,648	1,508,682
Anzalduas Dam to Progreso Station (Discontinued)	13	163	176	124,318	1,646	125,964
Above Progreso Gaging Station	88,945	87,343	176,288	515,352	1,119,294	1,634,646
Progreso Station to San Benito Station	7	9	16	319,110	4,102	323,212
Above San Benito Gaging Station	88,952	87,352	176,304	834,462	1,123,396	1,957,858
San Benito Station to Brownsville Station	14	15	29	90,196	1,752	91,948
Falcon Dam to Brownsville Station - excluding Rio Alamo and Rio San Juan	1,208	1,231	2,439	712,080	504,473	1,216,553
Above Brownsville Gaging Station	88,966	87,367	176,333	924,658	1,125,148	2,049,806
Brownsville Station to Gulf of Mexico				5,613	0	5,613
Falcon Dam to Gulf of Mexico - excluding Rio Alamo and Rio San Juan				717,693	504,473	1,222,166
Amistad Dam to Gulf of Mexico excluding above tributaries				768,581	530,174	1,298,755
Above Gulf of Mexico				930,271	1,125,148	2,055,419

a) Total area irrigated from the Rio Grande at least once during the year; additional irrigations from this source dependent on availability of river water in this reach.
b) Includes 37,829 acres irrigated from the Maverick Canal below Mile 13 gaging station.
c) Includes 110 acres irrigated from small reservoirs.

08-4507.00 SUPPLEMENTARY DATA--INTERNATIONAL AMISTAD RESERVOIR

DEDUCED INFLOWS

Considering that a knowledge of the mean daily inflows reaching the International Amistad Reservoir would serve a useful purpose, such data have been deduced for 1989 showing the flows as closely as they can be approximated. These data are based on the daily operation of the International Amistad Reservoir, taking into account: a) record of gage heights at the dam; b) releases; c) filtrations; d) elevation-area-capacity tables based on 1981 survey;and e) rate of evaporation measured at the dam.

Flow contributions from different sources, river channel losses, reservoir evaporation, accuracy of gage-height records, displacement due to wind action on the reservoir, and bank storage and return incident to changes in reservoir level, all tend to cause variations in the deduced determinations; and the inflows shown below should not necessarily be in agreement with the combined flow of the Rio Grande at Foster Ranch, Pecos River near Langtry, and Devils River at Pafford Crossing.

In spite of the deficiencies noted above and others that may occur, the data shown below represent a reasonable approximation of the flows entering the International Amistad Reservoir.

Mean Daily Discharge in Second-Feet 1989 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,720	2,280	2,140	2,190	2,010	1,860	2,160	2,490	7,650	2,680	2,730	1,730
2	1,680	2,320	2,290	2,140	1,990	2,170	1,940	2,120	3,740	2,430	2,330	1,720
3	1,790	2,290	2,310	2,130	1,930	2,690	1,880	2,110	3,390	2,310	2,010	1,790
4	1,770	2,180	2,590	2,020	2,490	2,870	1,910	1,930	3,350	2,320	2,090	1,760
5	1,550	1,950	2,020	2,200	2,450	2,610	1,940	2,110	3,160	2,350	2,140	1,790
6	1,730	1,850	1,930	2,090	2,410	2,360	2,280	2,500	2,660	2,550	2,150	1,820
7	2,020	1,770	1,840	1,980	2,100	1,900	1,790	2,920	2,550	2,630	2,240	1,730
8	2,000	1,710	1,800	2,030	1,930	1,730	2,010	3,130	2,420	2,630	1,980	1,490
9	1,940	1,720	1,760	2,170	2,100	2,030	1,210	3,200	2,620	2,620	2,200	1,550
10	1,940	1,720	1,550	1,880	2,500	2,760	1,290	2,630	2,800	2,500	2,250	1,550
11	2,020	1,700	1,330	1,460	2,590	3,500	1,250	2,470	2,880	2,700	2,180	1,540
12	1,940	1,710	1,840	1,680	2,970	3,270	1,750	2,410	2,950	3,050	2,200	1,280
13	1,850	1,820	1,990	1,730	3,240	2,550	1,810	2,450	6,220	2,620	1,950	1,230
14	1,740	1,930	2,130	1,390	3,600	2,260	2,120	2,400	5,650	2,560	1,900	1,330
15	1,870	2,270	2,150	1,690	3,130	2,120	2,430	2,220	5,130	2,560	1,940	1,290
16	1,750	2,620	2,200	2,130	3,530	1,880	2,340	2,650	2,770	2,520	1,770	1,090
17	1,690	2,950	2,450	2,290	3,990	1,580	2,020	2,900	2,940	2,200	1,590	997
18	1,770	2,810	2,410	3,090	3,700	1,800	2,120	2,590	2,950	2,090	1,590	998
19	2,180	2,730	2,470	2,540	2,580	1,950	1,840	2,700	2,710	1,780	1,590	1,000
20	2,200	3,730	2,400	2,490	2,400	2,270	1,820	2,690	2,850	1,660	1,660	958
21	2,160	3,320	2,060	2,470	2,410	1,900	1,760	2,710	2,710	1,690	1,770	966
22	2,140	3,040	2,040	2,250	2,610	1,740	1,660	2,600	2,730	1,940	1,820	1,090
23	2,130	2,790	1,880	1,260	2,270	1,570	1,450	3,570	2,530	2,040	1,860	1,050
24	2,240	2,680	1,740	2,120	2,110	2,100	1,440	5,610	2,380	2,360	1,870	1,040
25	2,290	2,450	1,580	2,140	2,110	2,090	1,450	6,450	2,090	2,490	1,860	1,040
26	2,400	2,210	1,760	2,470	2,270	2,050	1,460	3,650	2,150	2,550	1,870	1,190
27	2,390	2,190	2,180	2,080	2,130	1,890	1,490	3,540	2,320	2,770	2,010	1,260
28	2,410	2,330	2,560	2,310	1,790	2,070	1,690	3,750	2,770	5,590	1,920	1,490
29	2,180		2,640	2,200	1,430	2,320	1,880	3,330	2,750	5,410	1,680	1,620
30	2,160		2,720	2,290	1,430	2,070	2,030	3,810	2,760	3,040	1,830	1,550
31	2,170		2,600		1,420		2,220	6,470		2,700		1,470
Sum	61,820	65,070	65,360	62,910	75,620	65,960	56,440	96,110	96,580	81,340	58,980	42,409

Month	Current Year 1989: Extreme Gage Feet High	Extreme Gage Feet Low	Ø Extreme Second-Feet High Day	High	Low Day	Low	Average Second-Feet	Total Acre-Feet	Period 1973-1989: Acre-Feet Average	Maximum	Minimum
Jan.			28	2,410	5	1,550	1,990	122,618	118,399	263,901	72,708
Feb.			20	3,730	11	1,700	2,320	129,064	116,293	222,466	73,688
Mar.			30	2,720	11	1,330	2,110	129,640	148,028	304,417	93,840
Apr.			18	3,090	23	1,260	2,100	124,780	159,573	354,458	86,703
May			17	3,990	31	1,420	2,440	149,990	189,771	307,497	103,515
June			11	3,500	23	1,570	2,200	130,830	200,373	418,612	103,948
July			15	2,430	9	1,210	1,820	111,947	216,874	689,085	86,995
Aug.			31	6,470	4	1,930	3,100	190,631	247,671	515,925	129,570
Sept.			1	7,650	25	2,090	3,220	191,564	364,391	2,091,428	92,815
Oct.			28	5,590	20	1,660	2,620	161,335	306,480	950,737	89,772
Nov.			1	2,730	!17	1,590	1,970	116,985	149,917	454,512	67,616
Dec.			6	1,820	20	958	1,370	84,117	118,131	260,410	58,459
Yearly				7,650		958	2,270	1,643,501	2,335,901	4,328,998	1,406,554
	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
				217		27.1	64.3	2,027,226	2,881,287	5,339,732	1,734,956

Ø Mean daily

! And other days

08-4611.00 SUPPLEMENTARY DATA - INTERNATIONAL FALCON RESERVOIR
DEDUCED INFLOWS

Considering that a knowledge of the mean daily inflows reaching the International Falcon Reservoir would serve a useful purpose, such data have been deduced for 1989 showing the flows as closely as they can be approximated. These data are based on the daily operation of the International Falcon Reservoir, taking into account: a) record of gage heights at the dam; b) releases as measured at both hydroelectric plants and outlet works; c) elevation-area-capacity tables based on 1971-1972 surveys; and d) rate of evaporation measured at the dam and Nueva Cd. Guerrero applied to an area one foot higher than the average area of two consecutive days.

Flow contributions from different sources, irrigation diversion between Laredo and Falcon, river channel losses, reservoir evaporation, accuracy of gage-height records, displacement due to wind action on the reservoir, and bank storage and return incident to changes in reservoir level, all tend to cause variations in the deduced determinations; and the inflows shown below should not necessarily be in agreement with the combined flow of the Rio Grande at Laredo and the Rio Salado at Las Tortillas.

In spite of the deficiencies noted above and others that may occur, the data shown below represent a reasonable approximation of the flows entering the International Falcon Reservoir.

Mean Daily Discharge in Second-Feet 1989 —— Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,840	2,750	3,160	2,550	7,420	4,030	1,770	961	1,820	1,520	3,240	3,160
2	2,830	5,090	1,710	3,740	3,810	2,200	795	1,100	1,980	724	2,050	2,180
3	1,680	3,150	3,780	3,420	3,530	2,670	1,830	1,160	1,310	1,920	1,460	4,520
4	1,250	3,570	3,780	5,160	3,850	3,960	2,810	1,310	844	1,210	1,980	2,720
5	4,100	1,460	3,060	3,110	3,570	3,040	1,950	1,210	1,700	1,020	2,280	2,450
6	2,740	3,530	1,760	5,010	3,140	2,830	1,710	1,930	2,720	2,370	2,640	2,990
7	2,870	2,210	1,980	2,490	2,150	2,990	1,030	1,700	682	2,130	1,760	2,520
8	3,810	2,910	1,860	4,310	2,780	2,370	1,210	4,450	1,240	4,800	2,430	2,780
9	1,560	1,960	2,920	3,670	3,850	929	1,750	3,880	1,440	7,420	2,000	2,860
10	5,330	2,590	2,850	1,310	1,700	1,300	720	4,100	1,020	4,980	2,220	2,170
11	4,310	3,880	2,900	1,720	4,730	943	689	3,710	1,650	2,950	1,920	2,800
12	3,780	4,030	3,030	2,300	1,920	6,570	717	2,530	516	2,530	1,990	2,530
13	2,440	3,670	3,570	4,310	3,520	11,100	890	1,820	2,670	1,710	2,600	2,120
14	675	4,030	3,410	2,690	5,050	9,640	1,290	1,820	17,000	1,300	2,160	2,170
15	3,280	3,960	3,880	1,590	4,060	9,820	1,270	1,290	2,980	724	2,710	1,920
16	1,250	4,270	1,660	4,100	4,410	7,270	1,360	667	3,320	2,050	1,900	2,440
17	3,450	4,200	2,270	4,800	4,840	6,530	1,550	1,630	3,300	1,880	2,760	2,380
18	3,520	2,890	2,450	6,000	4,240	7,950	1,360	1,940	2,870	1,680	2,780	2,540
19	5,330	2,500	3,880	7,130	4,380	7,770	1,650	1,410	2,390	505	2,060	2,590
20	1,890	3,920	3,880	8,160	3,330	8,650	1,200	1,690	2,250	161	1,730	1,160
21	773	3,270	4,730	7,950	5,470	7,590	1,800	833	1,530	1,010	1,680	2,410
22	2,340	3,150	607	9,460	2,530	6,640	1,200	2,670	1,450	1,790	2,540	2,670
23	2,620	2,080	1,210	8,830	4,520	4,770	1,130	2,790	1,930	2,250	2,950	2,750
24	1,600	3,080	3,640	9,430	4,100	2,850	1,490	1,760	181	2,570	2,190	2,280
25	3,090	2,980	3,810	7,350	2,010	2,370	1,310	2,280	213	1,750	2,080	3,230
26	3,990	3,500	2,420	9,960	5,620	480	2,460	2,150	745	3,320	2,000	4,800
27	3,920	4,660	3,880	7,350	3,850	1,870	2,880	2,100	643	2,280	3,260	3,990
28	2,450	3,190	3,450	10,900	3,600	2,120	1,860	1,500	756	2,320	3,160	3,290
29	4,870		2,420	13,400	3,000	1,780	1,320	636	456	2,630	1,850	2,070
30	2,280		4,270	11,700	3,570	1,360	1,940	1,980	1,670	4,380	1,210	3,390
31	4,060		922		5,010		1,800	1,130		4,380		2,310
Sum	89,928	92,480	89,149	173,900	119,560	134,392	46,741	60,137	63,276	72,264	67,590	84,190

Month	Current Year 1989							Period 1968-1989		
	Extreme Gage Feet		Ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	High		Low				Average	Maximum	Minimum
			Day		Day						
Jan.			10	5,330	14	675	2,900	178,392	137,717	252,619	50,635
Feb.			2	5,090	5	1,460	3,300	183,442	161,869	453,053	54,934
Mar.			21	4,730	22	607	2,870	176,857	172,812	431,073	53,064
Apr.			29	13,400	10	1,310	5,790	344,896	187,811	571,874	49,911
May			1	7,420	10	1,700	3,850	237,146	315,055	768,748	101,854
June			13	11,100	26	480	4,480	266,578	298,672	770,709	46,609
July			27	2,880	11	689	1,510	92,761	277,083	1,056,340	33,481
Aug.			8	4,450	29	636	1,940	119,252	252,954	1,023,293	64,413
Sept.			14	17,000	24	181	2,110	125,379	373,445	1,442,682	104,535
Oct.			9	7,420	20	161	2,330	143,310	321,998	1,365,884	56,661
Nov.			27	3,260	30	1,210	2,250	134,053	169,311	538,929	40,660
Dec.			26	4,800	20	1,160	2,720	166,995	137,973	304,865	42,870
Yearly				17,000		161	2,990	2,169,061	2,806,710	6,234,950	1,280,067
	Meters		Cubic Meters per Second					Thousands of Cubic Meters			
				480		4.56	84.8	2,675,508	3,462,008	7,691,689	1,578,905

Ø Mean daily ! And other days

CORRECTIONS TO PREVIOUS WATER BULLETINS

Water Bulletin and Page Number	Heading	Reference	Published As	Correction
56 - 116	Rainfall on the Rio Grande Watershed In Mexico	Ejido Marin, Nuevo Leon 301		
58 - 118	Rainfall on the Rio Grande Watershed In Mexico	Maijoma, Chihuahua 203		
58 - 120	Rainfall on the Rio Grande Watershed In Mexico	Reata, Coahuila 288		

Correction — Ejido Marin, Nuevo Leon

Month	1986	Average
Jan.	0.04	1.51
Feb.	0.20	0.74
Mar.	0.20	0.58
Apr.	2.68	1.77
May	5.31	3.05
June	5.83	2.16
July	0.91	1.43
Aug.	0.59	1.72
Sept.	6.02	4.14
Oct.	3.78	1.81
Nov.	1.18	0.67
Dec.	6.02	1.65
Yearly	32.76	21.23

Published As — Maijoma, Chihuahua

Month	1988	Average
Jan.	T	0.45
Feb.	0.12	0.34
Mar.	0.04	0.19
Apr.	0.16	0.35
May	0.04	0.84
June	1.38	1.74
July	5.16	2.86
Aug.	2.83	3.25
Sept.	0.28	2.70
Oct.	0.63	1.08
Nov.	T	0.44
Dec.	0.16	0.44
Yearly	10.80	14.68

Correction — Maijoma, Chihuahua

Month	1988	Average
Jan.	0.39	0.46
Feb.	0.20	0.34
Mar.	T	0.18
Apr.	0.55	0.36
May	0.28	0.84
June	0.55	1.72
July	2.64	2.78
Aug.	1.73	3.22
Sept.	0.59	2.71
Oct.	0.59	1.07
Nov.	0	0.44
Dec.	0.35	0.45
Yearly	7.87	14.57

Correction — Reata, Coahuila

Month	1988	Average
Jan.	0.28	0.43
Feb.	0	0.26
Mar.	0.20	0.25
Apr.	0.98	0.59
May	0	0.90
June	0.51	1.22
July	0.67	1.04
Aug.	3.23	1.49
Sept.	4.96	1.62
Oct.	0.12	0.78
Nov.		0.49
Dec.		0.38
Yearly		9.45