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WATER BULLETIN NUMBER 61

Flow of the Rio Grande and Related Data

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

1991

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 sixty-first 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 the 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 1991.

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 1991 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 Below 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 868,945 square kilometres. However, about half of this area yields no runoff to the river, the estimated productive area of the watershed being 456,701 square kilometres. Reservoirs in the basin have a total storage capacity of approximately 14,452,000 thousand cubic metres, in addition to the International Amistad and Falcon Reservoirs, which have a combined conservation capacity of 7,464,202 thousand cubic metres. In the Rio Grande basin, a total of 828,921 hectares 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 3,207,048 thousand cubic metres per year for the period 1934-1952. For the period 1954-1991, this flow has averaged 948,454 thousand cubic metres per year.

The mean sea level datum, referred to as the U. S. C. & G. S. in the description of the stream-gaging stations, is the National Geodetic Vertical Datum of 1929.

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

This Bulletin is published in System International (SI) units which are based on the metric system. The following conversion constants may be used to convert to the English system of measurement. Data collected by the Mexican Section are computed and published in a Spanish version of the water bulletin in metric units.

METRIC TO ENGLISH CONVERSION CONSTANTS

METRIC UNITS					ENGLISH UNITS
LENGTH					
1	Millimetre	x	0.03937	=	Inch
1	Metre	x	3.28084	=	Feet
1	Kilometre	x	0.62137	=	Mile
AREA					
1	Square Metre	x	10.76391	=	Square Feet
1	Hectare	x	2.47105	=	Acre
1	Square Kilometre	x	0.38610	=	Square Mile
VOLUME					
1	Cubic Metre	x	35.31467	=	Cubic Feet
1,000	Cubic Metres	x	0.81071	=	Acre-Feet
WEIGHT					
1	Kilogram	x	2.20462	=	Pounds
1	Megagram	x	1.10231	=	Tons (2,000 lbs.)
TEMPERATURE					
1	Degree Celsius	x	1.8 + 32	=	Degree Fahrenheit

GENERAL HYDROLOGIC CONDITIONS FOR 1991

Along and Adjacent to the International Portion of the Rio Grande

During the year 1991, temperatures were 1 degree Celsius above average on the watershed of the Rio Grande below El Paso, Texas. Evaporation was 87% of average. Precipitation was 104% of average from El Paso to Amistad Dam, 114% of average from Amistad Dam to Falcon Dam, 122% of average from Falcon Dam to Rio Grande City, and 105% of average in the lower Rio Grande Valley on the United States side.

The yearly volume of flow of the Rio Grande was above average from El Paso to the confluence of the Rio Conchos with the Rio Grande and above 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 106% of average, ranging from 70% of average at Below American Dam to 139% at Above Rio Conchos; 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 229% of average; and in the reach between Amistad Dam and Falcon Reservoir, where flows mostly originate from releases from Amistad Reservoir, the flow was 159% of average. Most of the flows passing the Rio Grande Stations below Falcon Dam originated from releases from Falcon Reservoir, which in 1991 amounted to 2,988,246 thousand cubic metres, or 100% of the average for the thirty-eight years of operation, 1954-1991. The estimated volume of flow passing to the Gulf of Mexico was 334,337 thousand cubic metres, which is 35% of the average for this thirty-eight year period.

The total annual flow of all measured tributaries below Fort Quitman was 128% of average. The total flow of these tributaries in the United States was 795,058 thousand cubic metres, or 94% of average. For Mexico, the measured tributary flow, excluding Rio Alamo and Rio San Juan, was 3,069,389 thousand cubic metres, or 186% of average. The flows of the Rio Alamo and Rio San Juan were 29% and 11% of their respective averages.

Return flow to the Rio Grande at Maverick Power Plant near Eagle Pass was 1,149,536 thousand cubic metres, or 134% of the twenty-four year average. Return flow to the Rio Grande through various drains in the Maverick County Irrigation District, excluding storm inflow, amounted to 53,340 thousand cubic metres, or 41% of the twenty-four year average.

Significant flooding occurred on the Rio Grande from Presidio to above Amistad Dam in 1991. The highest peak flows recorded on the Rio Grande were, above Falcon Dam, 1,810 cubic metres per second at Foster Ranch; and, below Falcon Dam, 382 cubic metres per second at Rio Grande City.

For all reservoirs in the Rio Grande basin having a capacity greater than 18,500 thousand cubic metres, excepting Amistad and Falcon International Reservoirs, the average amount of water in storage in 1991 was 7,641,600 thousand cubic metres, or 124% of the average 6,146,600 thousand cubic metres. In the United States, stored water in these reservoirs was 149% of average, while in Mexico it was 111% of average.

In International Amistad Reservoir there was an increase in storage during the year of 393,500 thousand cubic metres. Storage ranged from a high of 4,899,900 thousand cubic metres on October 5 to a low of 3,705,400 thousand cubic metres on July 25 and averaged 4,132,800 thousand cubic metres during the year, or 112% of the average for the period 1969 through 1991. In International Falcon Reservoir, there was an increase in storage during the year of 895,300 thousand cubic metres. The storage ranged from a high of 3,468,400 thousand cubic metres on December 26 to a low of 1,694,100 thousand cubic metres on June 29 and averaged 2,334,200 thousand cubic metres during the year, or 97% of the average for the period 1954 through 1991.

Diversions from the Rio Grande in the United States were 112% of average. Diversions into the American Canal were 106% of average, into the Maverick Canal, 116% of average and in the United States below Falcon Dam, 109% of the average for the thirty-four years, 1958-1991. In Mexico, diversions were 131% of average. Diversions into the Acequia Madre were 118% of average, while diversions through the Anzalduas Canal in Mexico were 132% of the thirty-eight year average.

In 1991, the total reported irrigated acreage from the Rio Grande and its tributaries below El Paso, Texas showed no change from the previous year. On the United States side, there was an increase of about 3% above Falcon Dam and a decrease of about 1% below Falcon Dam, for an overall average decrease of 1%. On the Mexican side, there was no change reported above Falcon Dam and no change below Falcon Dam.

WATER BULLETIN NUMBER 61 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

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

DESCRIPTION: Concrete wall control, bubbler gage, water-stage recorder, and data collection platform located on the left bank 30 metres upstream from the cableway at latitude 33°08'45", longitude 107°12'20", and river kilometre 2,236; 1.6 river kilometres downstream from Elephant Butte Dam, 2.4 river kilometres upstream from Cuchillo Negro River, and 217 river kilometres upstream from the American Dam at El Paso, Texas. The zero of the gage is 1,292.68 metres 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 1991.

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. The data collection platform is operated by U. S. Geological Survey and relays gage height data by radio via satellite.

EXTREME FLOWS FROM RECORDS:

		Average Flow in Cubic Metres per Second			
Daily:	Max. 233	May 22, 1942	Min. 0	Occasionally	
Monthly:	Max. 215	May 1942	Min. 0.03	Nov.	1971
Yearly:	Max. 71.1	1942	Min. 7.16		1964

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.34	* 0.25	* 30.6	* 43.0	* 32.6	39.6	56.6	19.3	44.2	18.9	0.19	0.20
2	.34	.24	18.9	43.3	26.0	40.2	* 56.6	19.4	43.9	18.6	.19	.20
3	.34	.24	18.8	43.3	32.9	52.7	56.4	19.6	43.9	18.4	.19	.20
4	.34	.24	30.3	43.9	39.6	57.8	56.4	19.7	44.2	* 21.0	.19	.20
5	.34	.24	36.8	44.2	39.4	57.5	56.4	19.7	43.9	31.2	* .19	.21
6	.34	.24	36.2	43.6	39.4	57.8	56.6	19.5	* 44.2	35.7	.19	* .21
7	* .34	.28	37.1	43.6	39.1	57.5	56.6	19.7	43.9	36.0	.19	.21
8	.34	.34	37.1	39.9	32.9	57.8	56.6	* 19.4	43.9	36.0	.19	.21
9	.34	.34	37.1	40.5	26.1	58.1	44.5	* 19.5	44.2	36.2	.19	.21
10	.34	.34	37.1	39.4	33.1	48.4	37.7	19.7	44.2	24.6	.19	.21
11	.34	.34	37.4	39.6	39.6	42.2	37.7	19.8	44.5	18.4	.19	.21
12	.37	.34	37.4	39.6	39.4	42.8	37.9	20.0	41.1	18.7	.19	.22
13	.37	.34	37.7	39.6	39.4	49.0	37.9	32.9	27.0	19.0	.19	.22
14	.37	* .31	37.7	39.6	39.4	60.3	38.2	39.4	20.6	19.3	.20	.22
15	.40	.31	37.4	39.9	39.4	60.0	37.9	28.2	20.8	19.7	.20	.22
16	* .37	.31	37.7	33.1	39.4	58.1	36.8	19.7	21.0	3.43	.20	.22
17	.37	.31	37.7	* 26.8	48.7	58.1	38.2	19.9	* 8.52	.18	.20	.22
18	.37	.31	37.9	34.0	57.8	* 56.9	38.2	20.0	.65	.17	* .20	.22
19	.37	19.8	* 40.5	40.5	57.2	56.6	38.2	7.93	.54	.17	.20	.22
20	.34	36.5	42.2	40.2	56.9	56.9	38.5	.76	.54	.18	.20	.21
21	.34	36.5	42.2	40.2	* 56.6	56.6	38.5	.74	.51	.20	.20	.22
22	.34	36.5	42.2	39.9	56.6	56.6	38.2	.65	.48	* .22	.20	.21
23	.34	36.8	42.5	33.1	56.6	56.6	* 38.5	.65	.59	.22	.20	.19
24	.31	36.8	42.5	33.4	50.1	56.6	38.8	.65	.48	.24	.20	.18
25	.31	36.8	42.5	39.9	38.2	56.6	38.8	.68	.42	.24	.20	.20
26	.28	36.5	42.2	39.9	38.5	56.6	31.7	* .68	.42	.24	.20	.20
27	.28	36.5	42.5	39.6	39.1	56.4	19.3	13.4	.40	.25	.20	.20
28	.28	36.8	42.5	39.6	50.7	56.6	19.4	20.3	.37	.24	.20	.20
29	.27		42.8	39.6	56.9	56.6	32.0	32.3	.37	.22	.20	.20
30	.27		42.5	39.4	51.0	56.6	38.5	38.5	13.0	.23	.20	.20
31	.26		42.8		* 39.1		26.1	42.2		.22		.20
Sum	10.35	354.82	1,170.8	1,182.2	1,331.7	1,634.1	1,273.7	554.84	642.79	378.35	5.87	6.44

Current Year 1991 | Period 1938–1991

Month	Extreme Gage Metres High	Extreme Gage Metres Low	Extreme–Cubic Metres per Second Day	ϕ High	Day	ϕ Low	Average	Volume–Thousands of Cubic Metres Total	Average	Maximum	Minimum
Jan.			15	0.40	31	0.26	0.33	894	31,228	147,406	247
Feb.			!23	36.8	! 2	.24	12.7	30,656	51,850	207,297	232
Mar.			!29	42.8	3	18.8	37.8	101,157	87,390	174,074	1,261
April			5	44.2	17	26.8	39.4	102,142	103,456	199,454	13,824
May			18	57.8	2	26.0	43.0	115,059	111,122	576,485	632
June			14	60.3	1	39.6	54.5	141,186	119,930	447,576	20,862
July			! 1	56.6	27	19.3	41.1	110,048	118,835	261,049	51,006
Aug.			31	42.2	!22	.65	17.9	47,938	92,686	173,511	11,761
Sept.			11	44.5	!28	.37	21.4	55,537	42,138	159,174	201
Oct.			9	36.2	!18	.17	12.2	32,689	19,515	154,731	183
Nov.			!14	.20	! 1	.19	.20	507	18,742	195,408	91.5
Dec.			!12	.22	24	.18	.21	556	25,262	160,055	170
Yearly				60.3		0.17	23.4	738,369	822,154	2,243,367	226,236

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

08-3625.00 RIO GRANDE BELOW CABALLO DAM, NEW MEXICO

DESCRIPTION: Cableway, gravity well, water-stage recorder, and data collection platform located on the left bank at Latitude 32°53'05", longitude 107°17'30", and river kilometre 2,190; 1.3 river kilometres downstream from Caballo Dam, about 5.0 kilometres northeast of Arrey, New Mexico, 8.0 kilometres south of Caballo, New Mexico, and 172 river kilometres upstream from the American Dam at El Paso, Texas. The zero of the gage is 1,262.15 metres above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 43 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 1991.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. In addition to the outflow from Caballo Dam listed below, 396 thousand cubic metres of water were diverted in 1991 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 2.4 kilometres downstream from this station. Small accretions to the river take place between the station and Percha Dam. The data collection platform is operated by U. S. Bureau of Reclamation and relays gage heights and flow data by radio via satellite.

EXTREME FLOWS FROM RECORDS:

Average Flow in Cubic Metres per Second

Daily:	Max.	217	May 20, 1942	Min.	0	1954, 1955 and 1972
Monthly:	Max.	190	May 1942	Min.	0	Nov. 1955
Yearly:	Max.	70.2	1942	Min.	8.04	1964

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.03	0.06	22.0	32.3	* 28.5	48.0	60.7	42.5	53.9	20.4	* 0.08	0.03
2	.03	.06	31.0	37.2	30.2	47.7	44.3	* 40.5	53.6	22.7	.08	.03
3	.03	.06	31.0	* 40.8	31.6	48.3	* 44.0	35.4	49.2	23.8	.08	.03
4	.03	.06	31.0	38.5	31.6	48.3	43.8	34.4	* 42.5	25.4	.08	.03
5	.03	.06	* 32.1	29.6	31.6	* 47.7	42.7	33.1	40.1	26.2	.08	* .03
6	.03	.06	33.5	28.3	30.4	46.1	42.2	36.5	35.1	26.2	.08	.03
7	.03	* .06	35.7	28.3	33.7	45.9	42.2	* 40.0	33.9	24.3	.08	.03
8	.03	.06	46.4	26.3	* 39.3	47.2	40.5	40.0	34.7	21.6	.08	.03
9	.03	.06	* 58.1	33.7	39.5	46.9	48.6	40.8	32.5	* 20.4	.08	.03
10	.03	.06	61.7	* 35.7	38.8	46.6	54.4	38.6	26.7	20.0	.08	.03
11	.03	.06	62.0	36.3	38.1	47.7	50.8	25.7	* 23.5	20.6	.08	.06
12	.03	.06	59.1	34.4	37.7	* 49.4	47.5	25.3	21.6	21.9	.08	.06
13	.03	.06	57.1	31.2	37.7	50.0	45.3	24.0	20.7	22.0	.08	.06
14	.03	.06	57.1	28.9	43.2	52.0	45.6	9.43	19.3	13.3	* .06	.06
15	* .03	.06	58.4	28.3	* 53.5	53.8	44.3	2.83	19.3	5.18	.06	.06
16	.03	.06	60.0	33.7	53.2	53.8	41.5	* 2.83	18.5	.08	.06	.06
17	.03	.06	59.4	* 38.8	49.1	53.8	* 40.7	2.83	22.6	.08	.06	* .06
18	.03	.06	59.1	38.8	45.9	55.9	39.1	14.2	* 13.6	.08	.06	.06
19	.03	3.31	57.5	36.8	45.9	* 60.0	43.5	19.8	.71	.08	.06	.06
20	.03	* 9.29	* 56.0	35.7	46.1	60.7	48.3	20.8	2.52	.08	.06	.06
21	.03	12.0	56.0	35.7	44.3	61.4	47.5	* 22.0	* 7.19	.08	.06	.06
22	.03	20.3	56.0	35.7	* 43.2	61.7	43.8	25.7	11.3	.08	.06	.06
23	.03	24.0	58.4	36.5	43.0	61.7	40.3	28.8	* 11.3	.08	.06	.06
24	.03	24.0	60.7	* 38.7	40.8	61.7	38.6	29.3	12.7	.08	.06	.06
25	.03	24.0	59.1	38.7	38.8	62.0	38.1	28.6	* 13.7	.08	.06	.06
26	.03	24.0	52.4	35.0	39.1	* 62.7	37.4	31.2	16.3	.08	.06	.06
27	.03	* 24.0	* 48.7	32.7	39.1	63.7	37.2	41.5	17.9	.08	.06	.06
28	* .06	21.4	46.4	32.3	43.2	63.7	37.0	* 51.2	18.0	.08	.06	.06
29	.06		37.5	32.7	* 46.6	63.4	36.8	* 55.3	18.0	.08	.06	.06
30	.06		31.8	30.2	46.4	63.0	39.1	56.8	17.8	.08	.06	.06
31	.06		31.8		46.1		* 41.2	54.5		.08		.06
Sum	1.05	187.38	1,507.0	1,021.8	1,256.2	1,634.8	1,347.0	954.42	708.72	315.26	2.06	1.56

Current Year 1991 | Period 1938–1991

Month	Extreme Gage Metres High	Extreme Gage Metres Low	Extreme–Cubic Metres per Second Day	ϕ High	Day	ϕ Low	Average	Volume–Thousands of Cubic Metres Total	Average	Maximum	Minimum
Jan.			!28	0.06	! 1	0.03	0.03	90.7	4,895	146,403	23.7
Feb.			!23	24.0	! 1	.06	6.69	16,190	15,167	138,207	14.4
Mar.			11	62.0	1	22.0	48.6	130,205	109,405	200,839	30,675
April			3	40.8	8	26.3	34.1	88,284	100,235	261,905	31,417
May			15	53.5	1	28.5	40.5	108,536	99,328	508,691	92.8
June			!27	63.7	7	45.9	54.5	141,247	132,144	436,371	31,193
July			1	60.7	29	36.8	43.5	116,381	140,451	292,684	34,748
Aug.			30	56.8	!15	2.83	30.8	82,462	126,160	220,412	25,320
Sept.			1	53.9	19	.71	23.6	61,233	62,607	223,812	8,335
Oct.			! 5	26.2	!16	.08	10.2	27,238	8,676	151,369	19.1
Nov.			! 1	.08	!14	.06	.07	178	4,102	101,642	8.8
Dec.			!11	.06	! 1	.03	.05	135	5,629	180,557	7.5
Yearly				63.7		0.03	24.5	772,180	808,799	2,215,231	254,198

* Discharge measurement made on this day ϕ 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 kilometre 2,021; 8.9 river kilometres upstream from the Paso del Norte Bridge between El Paso, Texas and Cd. Juarez, Chihuahua and 2.7 kilometres upstream from the American Dam at El Paso, Texas. The zero of the gage is 1,134.56 metres above mean sea level, U. S. C. & G. S. datum.

RECORDS: Mean daily discharges in 1991 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 1991, 10 discharge measurements were made at this station. Records available: 1889 through 1991.

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

EXTREME FLOWS FROM RECORDS: Momentary: Max. 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 382 m3/sec on September 3, 1925.

Average Flow in Cubic Metres per Second

Daily:	Max.	671	June 12, 1905	Min.	0	Occasionally
Monthly:	Max.	405	June 1905	Min.	0	Occasionally
Yearly:	Max.	78.7	1905	Min.	1.99	1902

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.14	1.67	6.56	19.8	15.2	14.9	* 36.4	21.9	31.5	10.4	6.26	4.08
2	3.09	1.59	8.38	19.6	15.1	17.3	34.6	22.8	31.2	10.0	6.32	4.02
3	3.20	1.50	8.30	17.7	12.4	21.8	49.1	27.5	30.4	8.86	5.98	3.96
4	3.20	1.62	16.7	17.9	12.1	22.8	35.6	35.7	31.0	7.22	5.92	3.93
5	3.12	2.16	16.6	20.2	13.6	23.0	31.3	29.0	28.1	7.05	5.87	3.92
6	3.17	2.39	15.2	19.6	14.8	23.7	26.9	28.2	25.2	8.08	5.92	4.01
7	3.14	2.42	14.1	17.3	15.0	24.0	28.3	24.6	25.4	9.75	5.80	3.84
8	3.12	* 2.30	12.6	15.0	14.8	22.9	27.7	22.3	27.0	11.7	5.60	3.87
9	2.97	2.27	14.1	15.2	13.1	23.0	26.5	22.2	19.9	12.6	5.53	3.92
10	2.89	2.22	20.5	14.9	14.6	26.7	25.9	23.0	20.1	9.52	5.55	4.04
11	2.81	2.19	27.5	13.2	14.8	27.0	26.3	35.4	22.5	8.72	5.44	4.72
12	2.80	2.60	30.4	14.7	15.9	25.0	25.7	* 41.1	24.0	8.43	5.13	4.80
13	2.77	2.46	30.8	15.6	16.4	20.8	25.1	29.3	19.3	9.67	5.21	4.72
14	2.71	2.27	25.4	16.6	16.9	19.1	27.5	27.8	19.1	9.67	5.32	4.43
15	2.65	2.17	22.4	16.1	16.6	20.4	30.5	40.3	12.0	11.5	5.59	3.98
16	2.65	2.24	23.5	14.7	17.5	23.0	30.2	35.2	14.1	12.8	5.61	3.89
17	2.61	2.12	25.5	13.4	20.4	26.0	29.8	20.0	12.6	* 10.6	5.16	3.81
18	2.64	2.19	25.9	12.5	20.6	25.5	27.2	17.1	16.5	11.4	4.88	4.22
19	2.46	2.41	26.0	14.0	20.9	24.4	25.4	14.7	18.2	9.29	4.77	4.56
20	2.39	2.23	* 25.0	14.2	19.9	23.4	23.3	13.7	26.0	8.95	4.48	5.26
21	2.31	2.31	22.6	14.6	21.2	22.4	25.3	17.5	22.4	8.50	4.48	7.25
22	2.19	2.17	19.8	14.4	22.3	23.5	28.7	18.7	14.7	8.16	4.56	6.57
23	* 2.23	2.35	19.5	* 13.4	21.1	25.6	30.1	17.8	10.8	7.86	4.46	7.12
24	2.16	3.76	21.6	13.6	17.3	27.4	27.8	20.4	10.1	7.80	4.27	8.45
25	2.12	5.15	24.6	13.3	16.8	26.4	* 27.1	22.4	12.0	7.41	4.22	7.78
26	2.06	5.87	25.9	14.3	17.7	* 26.5	23.9	24.7	10.7	7.15	4.42	7.44
27	2.01	6.01	26.0	14.8	17.2	25.4	25.0	21.0	9.64	7.02	4.44	6.37
28	1.93	5.96	24.8	16.4	* 16.9	25.3	26.9	20.3	8.66	6.78	4.30	5.80
29	1.84		22.9	16.4	16.3	26.3	24.6	22.0	9.30	6.41	4.24	5.66
30	1.78		21.3	15.3	15.3	29.2	24.3	24.0	11.0	6.27	4.07	5.29
31	1.70		23.0		14.6		23.0	28.9		6.45		4.91
Sum	79.86	76.60	647.44	468.7	517.3	712.7	880.0	769.5	573.40	276.02	153.80	156.62

Current Year 1991 | Period 1938–1991

Month	Extreme Gage Metres		Extreme–Cubic Metres per Second				Average	Volume–Thousands of Cubic Metres			
	High	Low	Day	ϕ High	Day	ϕ Low		Total	Average	Maximum	Minimum
Jan.	0.77	0.71	! 3	3.20	31	1.70	2.58	6,900	10,674	150,048	271
Feb.	.89	.72	27	6.01	3	1.50	2.74	6,618	12,192	122,304	167
Mar.	1.51	.73	13	30.8	1	6.56	20.9	55,939	46,521	140,433	2,204
April	1.29	1.06	5	20.2	18	12.5	15.6	40,496	51,999	171,563	8,414
May	1.36	1.05	22	22.3	4	12.1	16.7	44,695	56,575	439,894	644
June	1.60	1.15	30	29.2	1	14.9	23.8	61,577	66,605	375,353	7,421
July	2.01	1.30	3	49.1	31	23.0	28.4	76,032	75,786	244,070	11,904
Aug.	1.91	1.05	12	41.1	20	13.7	24.8	66,485	70,574	194,405	6,007
Sept.	1.66	.99	1	31.5	28	8.66	19.1	49,542	47,873	211,481	2,995
Oct.	1.16	.93	16	12.8	30	6.27	8.90	23,848	20,922	163,710	186
Nov.	1.19	.86	2	6.32	30	4.07	5.13	13,288	12,520	124,457	282
Dec.	1.01	.84	24	8.45	17	3.81	5.05	13,532	13,033	197,341	254
Yearly	2.01	0.71		49.1		1.50	14.6	458,952	485,274	1,923,317	70,867

* Discharge measurement made on this day ϕ 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 recorder, 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 0.7 kilometre downstream from the headgates of the American Dam which are located at river kilometre 2,018. The zero of the gage is 1,131.45 metres above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 16 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 1991.

REMARKS: This canal diverts water from the Rio Grande at the American Dam at El Paso, Texas, 3.4 river kilometres 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 3.5, 4.3, and 5.8 river kilometres downstream from the American Dam. The transmitter relays gage height data upon interrogation by telephone via commercial circuits.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 52.1 m3/sec on March 27, 1944. Min. frequently no flow.

Average Flow in Cubic Metres per Second

Daily:	Max.	42.8	Aug. 13, 1945	Min.	0	Frequently
Monthly:	Max.	34.3	Aug. 1943	Min.	0	Frequently since 1952
Yearly:	Max.	21.2	1943	Min.	0.24	1990

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	* 5.52	14.4	* 10.0	9.97	29.5	16.6	26.9	9.80	5.86	3.79
2	0	0	7.31	14.3	9.80	12.1	28.6	* 17.4	27.3	* 9.40	5.95	3.74
3	0	0	7.16	* 12.3	7.00	16.6	25.3	21.3	26.5	8.27	5.64	* 3.68
4	0	.48	15.5	12.5	6.74	* 17.7	26.2	24.5	* 27.1	6.63	5.61	3.65
5	0	* 1.32	15.4	14.8	8.13	18.0	25.4	22.9	24.3	6.46	5.58	3.65
6	0	1.60	13.9	14.4	9.35	18.6	21.7	22.5	21.3	7.50	5.61	3.74
7	0	1.64	12.7	12.1	9.54	18.9	23.1	19.0	21.2	9.18	5.47	3.57
8	0	* 1.53	11.2	9.91	9.40	17.7	22.5	16.6	22.9	11.1	5.27	3.60
9	0	1.51	12.6	10.0	7.87	17.9	* 21.1	16.5	15.9	12.0	5.21	3.65
10	0	1.44	18.9	9.71	9.37	21.6	20.5	17.3	16.0	8.95	5.21	3.77
11	0	1.44	25.8	8.13	9.57	21.9	20.8	28.0	20.1	8.16	* 5.10	4.45
12	0	1.82	28.6	9.18	10.7	19.9	20.3	25.4	22.5	7.87	4.79	4.53
13	0	1.68	28.9	10.1	11.2	15.5	19.7	23.8	18.0	9.12	4.87	4.45
14	0	1.50	23.6	10.8	11.7	13.9	21.8	22.0	17.9	9.12	4.98	4.16
15	0	1.40	20.5	10.5	11.4	15.1	24.6	28.2	10.9	10.9	5.24	3.71
16	0	1.48	21.6	8.95	12.4	17.7	24.6	22.6	13.1	12.1	5.27	3.62
17	0	1.36	23.7	7.65	15.3	20.8	24.2	14.8	11.7	10.0	4.81	3.54
18	0	1.44	23.3	6.94	15.6	20.4	21.7	11.6	15.6	10.8	4.53	3.94
19	0	1.65	22.9	8.35	16.0	19.3	19.8	9.29	17.4	8.72	4.42	4.28
20	0	1.49	21.9	8.50	14.9	18.4	17.7	8.24	22.4	8.38	4.13	4.98
21	0	1.55	* 19.4	8.84	16.1	17.2	19.7	12.0	19.2	7.93	4.13	6.97
22	0	* 1.43	16.4	8.72	17.1	18.1	23.1	13.3	14.0	7.59	4.22	6.29
23	0	1.61	16.0	7.73	15.8	20.2	24.5	12.3	10.1	7.28	4.13	6.85
24	0	2.97	18.0	8.01	12.0	22.1	22.2	14.9	9.40	7.22	3.96	8.18
25	0	4.28	19.9	* 7.79	11.5	21.1	21.5	16.9	11.4	6.83	3.91	7.50
26	0	4.98	20.4	8.75	12.4	21.2	18.2	19.1	10.1	6.57	4.11	7.16
27	0	5.07	20.5	9.40	12.0	20.1	19.3	15.6	9.03	6.43	4.13	6.09
28	0	4.96	19.8	11.1	11.8	20.1	21.0	14.9	8.04	6.20	3.99	5.52
29	0		17.8	11.1	* 11.3	20.9	18.9	16.2	8.69	5.86	3.94	5.38
30	0		16.3	10.1	10.4	23.6	18.7	18.1	10.4	5.75	3.77	5.01
31	0		17.8		9.74		17.5	23.2		5.98		4.62
Sum	0	51.63	563.29	305.06	356.11	556.57	683.7	565.03	509.36	258.10	143.84	148.07

Current Year 1991 | Period 1939-1991

Month	Extreme Gage Metres High	Extreme Gage Metres Low	Extreme-Cubic Metres per Second High Day	Extreme-Cubic Metres per Second High	Extreme-Cubic Metres per Second Low Day	Extreme-Cubic Metres per Second Low	Average	Volume-Thousands of Cubic Metres Total	Volume-Thousands of Cubic Metres Average	Volume-Thousands of Cubic Metres Maximum	Volume-Thousands of Cubic Metres Minimum
Jan.			! 1	0	! 1	0	0	0	4,527	51,241	0
Feb.	1.59	.66	28	6.71	! 1	0	1.84	4,461	8,064	62,253	0
Mar.	2.90	1.44	12	29.7	1	4.96	18.2	48,668	38,468	69,130	0
April	2.23	1.34	5	16.2	25	3.82	10.2	26,357	36,057	87,408	0
May	2.31	1.52	22	17.6	9	5.64	11.5	30,768	33,967	85,163	0
June	2.71	1.80	30	26.2	1	9.49	18.6	48,088	44,348	80,984	0
July	2.99	2.06	1	32.6	3	13.5	22.1	59,072	52,317	87,171	0
Aug.	2.96	1.49	!11	30.3	!20	5.04	18.2	48,819	50,872	92,064	0
Sept.	2.91	1.70	! 7	29.2	28	7.14	17.0	44,009	34,785	77,877	0
Oct.	2.15	1.51	15	13.8	30	5.35	8.33	22,300	16,012	59,131	0
Nov.	1.60	1.31	2	6.40	30	3.51	4.79	12,428	8,483	37,208	0
Dec.	1.88	1.29	21	10.3	17	3.34	4.78	12,793	8,522	55,112	0
Yearly				32.6		0	11.3	357,763	336,422	668,068	7,603

* 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 kilometre 2,017; 2.4 river kilometres upstream from the International Dam, 5.0 river kilometres upstream from the Paso del Norte Bridge between El Paso, Texas and Cd. Juarez, Chihuahua, and 1.0 river kilometre downstream from the American Dam. The zero of the gage is 1,131.51 metres above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 62 discharge measurements during the year, and a continuous record of gage heights. Computations by shifting control methods. Records available: June 1938 through 1991.

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. 320 m3/sec on September 14, 1958 with a gage height of 4.42 metres. Min. occasionally no flow.

Average Flow in Cubic Metres per Second

Daily:	Max.	171	May 20, 1942	Min.	0	Occasionally
Monthly:	Max.	138	May 1942	Min.	0	Occasionally
Yearly:	Max.	42.8	1942	Min.	0.39	1956

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.14	1.67	* 1.04	* 5.35	* 5.24	4.93	6.88	5.27	4.56	0.60	0.40	0.29
2	3.09	1.59	1.07	5.27	5.30	5.15	* 6.03	* 5.35	3.85	* .60	.37	.28
3	* 3.20	1.50	1.14	5.38	* 5.35	* 5.24	23.8	6.17	* 3.88	.59	.34	.28
4	3.20	1.14	1.20	5.44	5.35	* 5.10	9.35	11.2	3.91	.59	.31	.28
5	3.12	.84	1.24	5.38	5.47	* 5.04	* 5.86	* 6.09	3.77	.59	* .29	.27
6	3.17	* .79	1.28	5.15	* 5.44	5.07	5.21	5.69	* 3.88	.58	.31	.27
7	3.14	.78	1.35	5.18	5.44	* 5.13	5.15	5.55	4.16	.57	.33	.27
8	* 3.12	.77	1.41	* 5.07	* 5.38	5.18	* 5.18	5.69	4.13	.58	.33	.27
9	2.97	.76	1.50	5.21	5.18	5.13	5.38	5.66	3.99	.57	.32	* .27
10	2.89	.78	1.59	5.15	* 5.21	* 5.10	5.38	5.66	4.05	.57	.34	.27
11	2.81	.75	1.69	* 5.07	5.18	5.13	5.47	7.36	2.41	.56	.34	.27
12	2.80	.78	1.82	5.49	5.24	5.13	* 5.44	15.7	1.45	.56	.34	.27
13	2.77	.78	1.89	5.47	5.24	5.27	5.44	5.52	1.28	.55	.34	.27
14	2.71	.77	1.84	5.83	5.21	* 5.21	5.66	* 5.78	1.18	.55	.34	.27
15	2.65	.77	1.85	5.64	* 5.18	5.30	5.89	* 12.1	1.08	.55	.35	.27
16	2.65	.76	1.91	5.72	5.13	5.30	5.64	12.6	.97	* .67	.34	.27
17	2.61	.76	1.79	* 5.72	5.13	5.21	* 5.64	5.21	.86	.58	.35	.27
18	2.64	.75	* 2.63	5.58	4.98	* 5.13	5.52	5.47	.88	.57	.35	.28
19	2.46	.76	3.06	* 5.61	4.90	5.10	* 5.58	* 5.41	.82	.57	* .35	.28
20	2.39	.74	3.09	5.66	4.98	5.04	5.61	5.47	3.62	.57	.35	.28
21	2.31	.76	3.23	5.78	* 5.10	* 5.18	5.64	5.49	3.23	.57	.35	.28
22	2.19	.74	* 3.40	* 5.72	5.15	5.35	* 5.64	5.41	.74	.57	.34	.28
23	2.23	.74	3.48	5.64	5.27	5.38	5.61	5.49	* .66	.58	.33	.27
24	2.16	.79	3.62	5.55	* 5.30	* 5.30	* 5.61	5.52	.67	.58	.31	.27
25	2.12	.87	* 4.70	5.55	5.32	5.27	5.64	5.49	.62	.58	.31	.28
26	2.06	* .89	5.49	* 5.58	5.27	5.32	5.66	5.64	.61	.58	.31	.28
27	2.01	.94	* 5.47	5.44	5.24	5.30	5.72	5.44	.61	.59	.31	.28
28	1.93	1.00	* 4.96	5.32	5.10	* 5.18	5.86	* 5.44	.62	* .58	.31	.28
29	1.84		5.07	* 5.32	5.01	5.35	* 5.69	5.78	.61	.55	.30	.28
30	1.78		5.01	5.21	4.87	5.55	5.64	* 5.86	.61	.52	.30	.28
31	1.70		5.24		* 4.90		* 5.49	5.66		.47		.29
Sum	79.86	24.97	84.06	163.48	161.06	156.07	196.31	204.17	63.71	17.74	9.96	8.55

Current Year 1991 | Period 1939-1991

Month	Extreme Gage Metres High	Extreme Gage Metres Low	Extreme-Cubic Metres per Second High Day	Extreme-Cubic Metres per Second High	Extreme-Cubic Metres per Second Low Day	Extreme-Cubic Metres per Second Low	Average	Volume-Thousands of Cubic Metres Total	Volume-Thousands of Cubic Metres Average	Volume-Thousands of Cubic Metres Maximum	Volume-Thousands of Cubic Metres Minimum
Jan.	1.70	1.64	! 4	3.34	31	1.67	2.58	6,900	6,095	98,781	0
Feb.	1.76	1.51	1	2.57	!11	.72	.89	2,157	3,957	60,041	0
Mar.	1.76	1.52	!26	5.66	1	.97	2.71	7,263	7,907	79,572	99.8
April	1.99	1.75	10	12.7	!10	4.87	5.45	14,125	15,381	91,915	2,752
May	1.84	1.76	26	7.08	31	4.73	5.20	13,916	22,019	369,945	31.1
June	1.85	1.76	13	7.08	1	4.79	5.20	13,484	21,677	308,855	0
July	2.69	1.74	3	42.5	! 6	4.79	6.33	16,961	23,086	191,605	1,193
Aug.	2.41	1.76	12	27.2	17	4.59	6.59	17,640	19,426	140,115	46.3
Sept.	2.22	1.48	20	14.8	27	.49	2.12	5,505	12,576	152,960	66.4
Oct.	1.76	1.49	! 1	.60	31	.46	.57	1,533	4,670	104,679	22.2
Nov.	1.51	1.48	1	.40	5	.28	.33	861	3,887	87,256	0
Dec.	1.53	1.48	21	.32	9	.26	.28	739	4,374	142,194	0
Yearly	2.69	1.48		42.5		0.26	3.21	101,084	145,055	1,349,111	12,337

* 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 80 metres downstream from the canal intake at the International Dam at Cd. Juarez, Chihuahua, which is located at river kilometre 2,015 and 3.4 river kilometres downstream from the American Dam at El Paso, Texas.

RECORDS: Flow records provided by Mexican Section. Records available: 1938 through 1991. 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 1991 all of the 73,074,000 m3 tabulated below were distributed to land irrigated in the first unit under the canal.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 13.6 m3/sec on July 21, 1944 with a gage height of 1.83 metres. Min. no flow during several months throughout the year.

Average Flow in Cubic Metres per Second

Daily:	Max.	9.61	May 10, 1942	Min.	0	Several months each year
Monthly:	Max.	8.00	May 1938	Min.	0	Several months each year
Yearly:	Max.	3.28	1942	Min.	0.26	1964

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	0	4.86	4.95	4.92	* 5.33	* 5.10	4.19	0	0	0
2	0	0	0	* 4.94	* 4.92	4.96	4.95	* 5.17	* 3.46	0	0	0
3	0	0	0	* 5.04	* 4.94	* 5.01	* 5.21	5.21	* 3.54	0	0	0
4	0	0	0	* 5.11	4.98	* 4.85	* 4.41	5.30	* 3.65	0	0	0
5	0	0	0	* 5.14	4.98	* 4.88	* 4.09	* 5.00	* 3.53	0	0	0
6	0	0	0	5.05	* 4.96	* 4.88	4.90	* 5.34	* 3.84	0	0	0
7	0	0	0	4.98	* 4.98	* 4.86	4.83	* 5.17	4.03	0	0	0
8	0	0	0	* 4.33	* 5.03	4.89	* 4.73	* 5.37	4.32	0	0	0
9	0	0	0	* 4.59	4.88	4.86	* 4.99	* 5.22	* 3.96	0	0	0
10	0	0	0	4.80	* 4.88	* 4.88	* 5.00	5.10	4.18	0	0	0
11	0	0	0	4.77	4.90	* 4.86	5.06	5.24	1.75	0	0	0
12	0	0	0	* 5.14	4.95	* 4.91	* 5.05	* 5.23	0	0	0	0
13	0	0	0	5.19	* 5.03	* 5.09	5.01	4.77	0	0	0	0
14	0	0	0	5.27	* 5.09	* 5.05	5.15	* 3.69	0	0	0	0
15	0	0	0	* 5.14	* 5.03	5.11	* 5.56	1.47	0	0	0	0
16	0	0	0	* 5.28	* 5.00	5.12	* 5.15	.74	0	0	0	0
17	0	0	0	* 5.32	* 5.09	* 5.17	* 5.05	.50	0	0	0	0
18	0	0	* 1.95	* 5.20	4.96	5.18	* 5.06	.46	0	0	0	0
19	0	0	* 3.06	* 5.26	4.99	5.00	* 5.10	* 2.66	0	0	0	0
20	0	0	* 3.18	5.29	* 4.97	4.97	5.12	* 4.77	0	0	0	0
21	0	0	3.20	5.27	* 5.22	4.93	5.08	* 4.89	0	0	0	0
22	0	0	* 3.30	* 5.33	* 5.13	4.98	* 5.08	* 4.78	0	0	0	0
23	0	0	3.36	* 5.30	* 5.09	5.00	* 5.07	* 4.90	0	0	0	0
24	0	0	3.38	* 5.28	* 4.99	* 5.03	* 5.02	4.95	0	0	0	0
25	0	0	* 4.11	* 5.28	5.06	* 4.94	* 5.36	4.93	0	0	0	0
26	0	0	4.95	* 5.29	5.07	* 5.12	* 5.17	* 5.00	0	0	0	0
27	0	0	5.00	5.21	* 5.09	* 5.01	5.36	* 4.87	0	0	0	0
28	0	0	4.84	5.19	* 5.01	* 4.92	5.40	4.82	0	0	0	0
29	0		4.83	* 5.19	* 5.00	5.02	* 5.24	4.99	0	0	0	0
30	0		4.76	* 5.24	* 5.00	5.18	* 5.34	* 4.97	0	0	0	0
31	0		4.81		* 5.00		* 5.26	4.81		0		0
Sum	0	0	54.73	153.28	155.17	149.58	157.13	135.42	40.45	0	0	0

Current Year 1991 | Period 1938-1991

Month	Extreme Gage Metres		Extreme-Cubic Metres per Second				Average	Volume-Thousands of Cubic Metres			
	High	Low	Day	High	Day	Low		Total	Average	Maximum	Minimum
Jan.	0	0	! 1	0	! 1	0	0	0	46.4	2,504	0
Feb.	0	0	! 1	0	! 1	0	0	0	172	9,263	0
Mar.	1.80	0	27	5.07	! 1	0	1.77	4,729	2,136	9,807	0
April	2.01	0	14	6.23	8	0	5.11	13,243	10,378	15,274	2,492
May	2.03	1.78	21	5.94	3	4.77	5.01	13,407	11,035	21,438	0
June	1.91	1.41	17	5.30	1	3.01	4.99	12,924	10,726	19,366	0
July	2.26	1.25	14	6.42	15	2.10	5.07	13,576	10,988	18,712	0
Aug.	2.14	.72	3	5.88	16	.04	4.37	11,700	10,659	15,567	0
Sept.	1.90	.79	1	5.08	10	0	1.35	3,495	5,561	15,270	0
Oct.	0	0	! 1	0	! 1	0	0	0	67.5	1,743	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	2.26	0		6.42		0	2.32	73,074	61,769	103,526	8,206

* Discharge measurement made on this day ! And other days

WATER BULLETIN NUMBER 61 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

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

DESCRIPTION: Cableway, bubbler gage, 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 kilometre 1,888; 2.4 river kilometres downstream from Old Fort Quitman, 14.5 kilometres southeast of Esperanza, Texas, and 28.2 kilometres southeast of McNary, Texas. The zero of the gage is 1,052.35 metres above mean sea level, U. S. C. & G. S. datum.
RECORDS: Based on 20 discharge measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: 1889 through 1991.
REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station.
EXTREME FLOWS FROM RECORDS:** Momentary: Max. 300 m3/sec October 5, 1946 with a gage height of 3.05 metres. Min. frequently no flow.

Average Flow in Cubic Metres per Second**

Daily:	Max.	167	May 19, 1942	Min.	0	Frequently
Monthly:	Max.	142	May 1942	Min.	0	Several months since 1951
Yearly:	Max.	49.8	1942	Min.	0.07	1965

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	5.78	2.55	2.14	2.51	2.65	1.34	1.00	3.29	2.67	20.5	9.57	7.50
2	6.03	2.56	2.03	3.82	* 2.92	.96	1.25	2.56	2.69	18.0	11.8	7.42
3	5.86	2.73	1.74	* 4.28	2.82	1.09	1.37	2.61	2.40	14.9	12.2	7.59
4	5.66	3.09	* 1.73	* 4.53	3.46	1.16	7.39	6.00	2.25	* 11.7	* 10.8	* 7.39
5	5.64	2.95	2.33	4.28	3.57	.85	4.53	20.7	* 2.14	16.0	9.18	7.14
6	5.64	2.52	2.11	5.04	2.83	* .74	3.54	* 16.2	2.97	18.0	9.15	7.33
7	* 6.06	* 2.78	1.81	6.37	2.24	.92	3.46	7.73	3.31	15.1	10.0	7.82
8	5.58	2.61	1.44	5.66	2.28	.94	4.45	6.43	4.73	9.91	9.97	8.38
9	5.30	2.06	1.28	4.96	2.16	1.19	5.69	3.62	14.1	10.5	11.8	8.13
10	5.13	1.80	1.56	4.42	2.61	1.24	4.36	8.04	16.0	12.0	12.5	7.73
11	5.27	2.29	1.45	4.84	2.70	1.33	* 5.13	11.2	22.9	12.6	11.1	7.48
12	5.24	2.15	1.35	4.28	2.46	1.29	3.29	12.2	34.6	10.7	10.2	9.32
13	4.73	1.54	1.30	3.57	2.17	1.14	4.93	25.3	39.6	13.7	10.3	11.6
14	4.33	1.50	1.43	3.29	1.91	1.05	10.7	34.8	27.2	11.0	9.94	9.80
15	4.08	1.64	1.42	3.77	1.50	1.12	7.05	34.8	28.2	8.86	8.98	10.8
16	* 3.71	1.63	1.45	4.05	1.45	.85	12.0	48.7	23.4	7.99	9.77	9.83
17	4.08	1.56	1.52	2.64	* 1.62	1.00	7.25	61.2	24.7	10.6	9.37	9.26
18	3.91	1.65	1.52	2.45	1.40	1.05	8.92	62.9	* 27.9	* 12.5	9.57	10.3
19	4.16	1.63	1.48	3.54	1.19	.97	7.48	38.8	32.0	11.0	9.71	13.0
20	5.24	1.56	1.37	3.51	1.18	1.01	4.87	25.3	29.2	16.9	* 8.47	16.4
21	5.69	1.57	1.39	3.77	1.63	1.17	4.25	* 13.2	35.4	11.4	7.79	24.9
22	5.32	1.73	1.58	3.40	1.53	1.01	5.83	9.32	24.9	9.35	7.96	21.7
23	4.81	1.81	1.46	3.88	2.00	.90	4.19	11.2	17.5	8.38	8.47	11.4
24	4.67	1.78	1.63	4.56	2.24	.98	5.18	9.46	12.8	9.40	8.50	9.66
25	4.90	1.53	1.58	3.37	2.25	.93	3.65	7.87	12.5	9.12	8.10	9.86
26	4.47	1.55	1.71	2.83	1.64	.83	3.03	8.95	14.4	10.1	7.48	10.1
27	3.62	* 1.86	1.55	2.64	1.82	* .81	5.07	7.22	13.8	11.2	7.14	10.7
28	3.29	2.04	1.60	2.76	2.22	.91	4.84	5.58	11.2	10.1	7.76	9.52
29	3.34		1.82	3.51	2.13	.91	8.33	3.99	10.6	8.95	7.93	8.55
30	2.81		2.24	2.97	1.63	.86	12.3	3.77	10.8	8.21	7.59	8.47
31	2.59		1.91		1.45		7.00	2.95		10.0		8.50
Sum	146.94	56.67	50.93	115.50	65.66	30.55	172.33	515.89	506.86	368.67	283.10	317.58

Current Year 1991 | Period 1938–1991

Month	Extreme Gage Metres High	Extreme Gage Metres Low	Extreme–Cubic Metres per Second High	Day	Extreme–Cubic Metres per Second Low	Day	Average	Volume–Thousands of Cubic Metres Total	Average	Maximum	Minimum
Jan.	1.45	1.25	6.23	! 2	2.50	31	4.74	12,696	9,568	96,674	0
Feb.	1.33	1.15	3.68	5	1.39	14	2.02	4,896	7,706	68,720	0
Mar.	1.25	1.11	2.54	5	1.20	! 8	1.64	4,400	7,554	72,889	0
April	1.52	1.20	7.73	7	2.03	17	3.85	9,979	9,424	94,942	0
May	1.35	1.13	4.13	4	1.11	20	2.12	5,673	15,497	381,665	0
June	1.27	1.06	2.17	10	.68	27	1.02	2,640	13,089	295,595	0
July	2.39	1.08	62.2	14	.88	1	5.56	14,889	17,661	173,266	4.7
Aug.	2.86	1.26	108	14	1.90	2	16.6	44,573	18,425	158,563	20.6
Sept.	2.65	1.20	91.8	!12	1.78	5	16.9	43,793	20,759	181,266	0
Oct.	1.79	1.43	23.8	1	6.91	30	11.9	31,853	18,308	114,377	0
Nov.	1.77	1.42	24.2	2	6.57	28	9.44	24,460	12,473	106,523	0
Dec.	1.91	1.35	34.3	22	5.92	5	10.2	27,439	13,070	152,593	0
Yearly	2.86	1.06	108		0.68		7.21	227,291	163,534	1,569,390	2,050

* Discharge measurement made on this day ! And other days ** Period 1924–1991

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 kilometre 1,672, 0.5 river kilometre upstream from Capote Creek and about 4.0 kilometres north of Candelaria, Texas and San Antonio, Chihuahua. The zero of the gage is 871.11 metres above mean sea level, U. S. C. & G. S. datum.
RECORDS: Based on 21 discharge measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: November 19, 1975 through 1991.
REMARKS: Reservoirs, diversions, and drainage returns modify the flow at this station. Prior to June 1979 the zero of the gage was 871.07 metres above mean sea level, U. S. C. & G. S. datum.
EXTREME FLOWS FROM RECORDS: Momentary: Max. 561 m3/sec on September 30, 1978 with a gage height of 3.31 metres. Min. frequently no flow.

Average Flow in Cubic Metres per Second**

Daily:	Max.	222	Dec. 23, 1986	Min.	0	Frequently
Monthly:	Max.	72.2	Dec. 1986	Min.	0	Frequently
Yearly:	Max.	37.7	1987	Min.	0.59	1977

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	7.22	4.53	2.27	1.53	1.73	0.99	0.97	5.75	5.10	* 19.3	8.86	7.76
2	7.25	4.45	2.22	* 1.58	1.73	.89	.18	5.66	4.96	18.2	8.50	7.73
3	* 7.36	4.22	2.27	1.65	* 2.04	.75	.13	5.78	4.67	17.4	8.30	7.59
4	7.25	4.13	2.27	1.74	1.96	.67	2.80	6.77	4.47	14.8	* 8.33	* 7.48
5	7.11	4.05	2.25	1.91	1.74	.55	* 3.46	8.07	4.30	14.4	8.61	7.48
6	7.02	3.96	* 2.13	2.70	1.80	* .46	.48	8.38	4.96	14.3	8.89	7.50
7	6.85	4.05	1.93	3.17	1.78	.38	1.09	* 4.42	5.10	14.1	9.12	7.53
8	6.71	4.05	1.86	3.06	2.01	.37	2.03	4.79	4.53	13.4	9.09	7.67
9	6.71	4.02	2.07	3.09	2.29	.33	2.67	5.98	5.32	13.1	8.89	7.79
10	6.60	3.88	2.03	3.46	1.96	.33	5.72	7.65	12.3	12.9	8.86	7.87
11	6.46	3.82	1.89	3.91	1.59	.25	7.31	6.37	* 26.8	12.7	8.95	7.99
12	6.26	3.79	1.74	3.82	1.45	.20	4.67	5.92	33.7	12.4	9.15	8.10
13	6.09	3.34	1.55	3.37	1.42	.96	5.10	6.94	37.4	11.8	9.43	8.10
14	5.98	* 3.09	1.54	3.34	1.44	.72	5.38	12.4	42.5	11.6	9.69	7.90
15	5.72	3.40	1.56	3.40	* 1.52	.67	6.26	14.4	31.7	11.4	9.74	7.76
16	* 5.55	3.12	1.54	* 3.17	1.44	.58	* 6.88	8.64	36.0	11.2	9.63	7.93
17	5.44	2.76	1.49	2.75	1.30	.43	6.15	7.22	36.0	11.1	9.54	8.21
18	5.35	2.63	1.49	2.58	1.16	* .34	5.78	7.73	32.6	10.9	9.57	8.27
19	5.30	2.57	* 1.50	2.86	1.01	.31	6.15	8.33	34.3	10.3	9.49	8.58
20	5.27	2.53	1.49	2.68	.83	.25	6.40	9.91	44.5	9.94	* 9.49	8.67
21	5.30	2.51	1.52	2.13	.74	.25	6.43	11.8	46.2	9.91	9.37	11.3
22	5.27	2.46	1.56	1.97	.78	.22	7.73	13.3	40.8	9.97	9.26	10.6
23	5.41	2.44	1.53	2.32	1.27	.17	6.54	13.5	40.5	* 9.86	9.12	9.32
24	5.61	2.42	1.53	2.35	1.44	.12	6.46	13.4	53.2	9.88	8.84	9.49
25	5.61	2.34	1.53	2.43	1.46	.10	5.89	13.2	65.7	9.88	8.58	9.86
26	5.41	* 2.37	1.53	2.23	.96	.08	8.04	12.9	62.0	9.43	8.52	10.1
27	5.27	2.38	1.56	2.53	.88	.07	7.05	9.52	53.8	9.12	8.52	10.0
28	5.21	2.38	1.52	2.50	1.03	.05	7.93	7.16	52.7	9.01	8.44	10.2
29	5.15		1.52	2.07	1.00	.04	8.41	6.23	46.4	8.92	8.21	9.94
30	4.93		1.57	1.84	.83	.69	5.75	6.09	30.6	8.95	7.90	9.49
31	4.64		1.54		.84		5.83	5.58		8.92		9.37
Sum	185.31	91.69	54.00	78.14	43.43	12.22	155.67	263.79	903.11	369.09	268.89	267.58

Current Year 1991 | Period 1975–1991

Month	Extreme Gage Metres High	Extreme Gage Metres Low	Extreme–Cubic Metres per Second Day	High	Day	Low	Average	Volume–Thousands of Cubic Metres Total	Average	Maximum	Minimum
Jan.	1.55	1.46	3	7.59	31	4.47	5.98	16,011	20,296	183,420	0
Feb.	1.47	1.38	2	4.67	!25	2.27	3.27	7,922	14,697	122,892	0
Mar.	1.40	1.34	! 1	2.38	20	1.45	1.74	4,666	13,219	101,919	0
April	1.45	1.34	!11	3.99	! 1	1.53	2.60	6,751	14,420	91,771	10.5
May	1.46	1.28	23	3.54	23	.69	1.40	3,752	18,543	169,009	0
June	1.75	1.10	30	7.76	30	.03	.41	1,056	20,752	186,724	178
July	1.92	1.16	24	13.7	! 3	.11	5.02	13,450	24,961	148,433	97.6
Aug.	2.24	1.45	14	30.3	7	4.22	8.51	22,791	28,851	88,466	755
Sept.	2.32	1.35	26	72.5	5	4.25	30.1	78,029	37,563	166,806	447
Oct.	1.76	1.57	1	24.6	!28	8.64	11.9	31,889	34,338	125,676	537
Nov.	1.64	1.56	15	10.0	30	7.65	8.96	23,232	21,401	132,602	0
Dec.	1.85	1.56	21	12.8	! 5	7.28	8.63	23,119	21,992	187,408	0
Yearly	2.32	1.10		72.5		0.03	7.38	232,668	271,033	1,191,590	18,685

* Discharge measurement made on this day ! And other days ** Period November 1975–1991

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 kilometre 1,551; 8.0 river kilometres upstream from the international highway bridge between Presidio, Texas and Ojinaga, Chihuahua and 3.8 river kilometres upstream from the confluence with the Rio Conchos. The zero of the gage is 784.29 metres 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 by shifting control methods. Records available: 1889 through 1991.
REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. Prior to 1978 the zero of the gage was 785.37 metres above mean sea level, U. S. C. & G. S. datum.
EXTREME FLOWS FROM RECORDS: Momentary: Max. 396 m3/sec on June 14, 1905. Highest flow recorded since 1924 was 146 m3/sec, with a gage height of 3.22 metres, on May 26, 1942. Min. frequently no flow.

Average Flow in Cubic Metres per Second**

Daily:	Max.	388	June 13 & 14, 1905	Min.	0	Frequently
Monthly:	Max.	287	June 1905	Min.	0	Frequently
Yearly:	Max.	55.8	1907	Min.	0.04	1964

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	7.99	* 5.15	3.29	* 1.74	2.64	0.49	0.40	7.33	8.16	20.2	7.67	8.16
2	* 7.96	4.87	3.34	1.70	* 2.48	.51	* .37	6.37	7.14	* 18.1	7.82	* 7.82
3	8.33	4.73	3.23	1.80	2.36	* .52	.80	6.00	6.12	17.5	7.70	7.67
4	8.01	4.64	* 3.06	1.79	2.25	.45	.30	5.89	5.55	15.8	* 7.33	7.48
5	7.84	4.50	3.06	2.49	2.35	.32	.43	6.57	5.10	13.8	7.42	7.22
6	8.04	4.28	3.20	2.64	2.43	.94	.28	* 8.81	* 4.81	11.7	7.39	7.22
7	8.10	4.16	3.20	2.86	2.04	1.69	.28	9.52	6.74	11.3	7.56	7.33
8	7.67	3.94	3.09	2.92	2.15	.88	.19	9.66	5.44	11.3	7.48	7.22
9	7.45	3.85	2.97	3.12	2.29	1.02	.20	6.88	5.38	11.4	7.82	7.25
10	7.39	4.36	3.09	3.12	2.44	1.78	.91	6.34	5.30	11.2	7.96	7.48
11	7.25	4.50	3.29	3.29	2.45	1.10	.79	8.84	5.38	10.8	7.65	8.67
12	7.11	4.50	3.23	3.48	2.38	.89	1.16	11.0	7.00	10.6	7.93	8.55
13	7.00	4.47	2.95	3.79	2.50	1.12	2.33	9.91	8.61	10.9	8.18	8.30
14	* 6.80	4.28	2.89	3.74	* 2.21	.79	12.7	8.52	10.3	10.6	9.40	8.30
15	6.51	4.22	2.72	3.23	2.04	.69	17.4	15.6	11.9	10.4	9.29	8.27
16	6.60	4.02	2.66	* 3.09	2.09	.71	* 4.96	26.5	13.5	10.3	9.37	* 8.10
17	6.37	4.19	2.73	3.03	2.01	* .73	5.07	25.8	15.2	10.1	9.29	7.96
18	6.20	3.94	* 2.74	3.00	2.02	.57	5.21	16.6	16.8	9.83	* 9.23	8.24
19	6.00	* 3.65	2.59	2.60	1.84	.52	4.64	13.2	18.5	9.80	9.03	8.64
20	6.00	3.65	2.45	2.29	1.58	.41	4.05	13.7	20.1	9.46	8.50	9.18
21	6.15	3.51	2.46	2.41	1.28	.45	4.13	13.7	21.8	9.54	7.59	13.1
22	6.03	3.37	2.40	2.51	1.28	1.37	9.18	14.3	23.4	* 9.29	8.33	15.9
23	5.64	3.34	2.44	2.29	1.02	.58	7.76	15.7	25.0	8.55	8.38	15.5
24	5.75	3.31	2.41	2.69	1.02	.49	7.28	16.7	26.7	9.03	8.41	18.7
25	5.81	3.23	2.41	2.09	.89	.52	15.8	19.3	* 28.3	9.01	8.47	17.1
26	6.06	3.06	2.22	2.23	1.09	.20	14.9	21.0	27.0	9.20	8.41	14.8
27	6.20	3.26	2.04	2.33	1.37	.19	19.0	* 17.4	25.6	9.35	7.99	15.5
28	6.03	3.26	1.85	2.27	1.46	.53	23.8	21.6	24.3	8.92	7.76	16.4
29	5.83		2.05	2.37	1.14	.40	31.2	18.7	22.9	8.16	8.01	16.3
30	5.38		1.80	2.61	.73	.42	31.4	11.9	21.6	7.62	8.24	16.8
31	5.44		1.67		.67		17.2	9.01		7.73		16.7
Sum	208.94	112.24	83.53	79.52	56.50	21.28	244.12	402.35	433.63	341.49	245.61	335.86

Current Year 1991 | Period 1938–1991

Month	Extreme Gage Metres High	Extreme Gage Metres Low	Extreme–Cubic Metres per Second Day	Extreme–Cubic Metres per Second High	Extreme–Cubic Metres per Second Day	Extreme–Cubic Metres per Second Low	Average	Volume–Thousands of Cubic Metres Total	Average	Maximum	Minimum
Jan.	0.78	0.67	3	8.61	30	5.07	6.74	18,052	10,825	183,346	0
Feb.	.68	.51	1	5.24	!25	3.06	4.01	9,698	8,271	119,491	0
Mar.	.53	.37	11	3.60	31	1.65	2.69	7,217	6,543	91,778	0
April	.55	.37	14	4.05	2	1.61	2.65	6,871	6,094	87,920	0
May	.46	.21	8	2.83	31	.49	1.82	4,882	12,041	295,521	0
June	.67	.12	6	6.12	126	.14	.71	1,839	13,378	267,019	0
July	2.01	.12	28	47.3	9	.08	7.87	21,092	17,026	191,983	0
Aug.	1.58	.69	26	30.6	! 3	5.83	13.0	34,763	18,499	164,116	0
Sept.	1.48	.54	25	28.3	9	4.36	14.5	37,466	21,983	185,694	0
Oct.	1.23	.77	1	20.3	30	7.11	11.0	29,505	21,796	129,311	0
Nov.	.90	.77	14	9.86	! 4	7.16	8.19	21,221	11,015	125,343	0
Dec.	1.38	.76	22	23.5	! 5	6.94	10.8	29,018	11,514	167,944	0
Yearly	2.01	0.12		47.3		0.08	7.03	221,624	158,985	1,450,617	1,174

* Discharge measurement made on this day ! And other days
** Period June 1900–March 1914; September 1919–March 1920; and 1924–1991

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°25'52", 1.0 river kilometre from the confluence with the Rio Grande, 4.0 kilometres northwest of Ojinaga, Chihuahua, and 6.0 kilometres northwest of Presidio, Texas. This stream enters the Rio Grande at river kilometre 1,547, 18.7 river kilometres upstream from the "Rio Grande below Rio Conchos" Gaging Station. The zero of the gage is 780 metres above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 193 discharge measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: 1896 through 1991. 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 405, 393, 302, and 183 river kilometres, respectively, upstream from this station. Francisco I. Madero Reservoir is located on the Rio San Pedro, a tributary which enters the Rio Conchos 283 river kilometres 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 1968-1991) 2,020 m3/sec, on September 30, 1978. The greatest recorded flow occurred September 11, 1904 with a peak flow estimated at 4,590 m3/sec.

Average Flow in Cubic Metres per Second**

Daily:	Max.	"1,490	Oct. 1, 1978	Min.	0.65	Dec. 19,	1973
Monthly:	Max.	496	Sept. 1991	Min.	1.64	Feb.	1968
Yearly:	Max.	83.6	1991	Min.	13.9		1983

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	13.0	* 24.0	* 26.2	* 30.1	25.9	15.7	* 14.2	87.1	210	751 *	* 5.00	4.36
2	* 13.0	24.0	26.2	30.1	* 27.8	15.5	13.5	* 95.4	203 *	651 *	5.07	4.36
3	12.5	24.0	26.3	* 28.7	29.9	* 16.0	* 14.8	103	220	493 *	5.19	* 4.35
4	* 12.0	* 24.3	* 32.5	* 28.7	30.1	* 15.0	16.1	104	265 *	326 *	* 5.31	* 4.37
5	12.1	24.0	33.5	* 32.8	30.4	* 15.0	* 17.1	101 *	287 *	212	* 5.37	4.35
6	12.4	* 23.8	* 32.9	33.2	* 31.3	16.5	17.5	112	301 *	196	* 5.37	* 4.32
7	* 12.5	* 23.8	* 32.4	33.5	33.9	* 22.9	18.0	139 *	287	214 *	* 5.50	4.60
8	12.9	* 23.8	* 31.8	* 33.7	* 37.2	16.6	* 22.2	145	285	209 *	* 5.69	5.10
9	* 13.4	23.8	31.8	34.2	* 31.2	20.6	28.3	151 *	298 *	* 95.9	5.75	* 5.57
10	15.0	23.7	31.8	* 36.0	* 29.4	* 72.0	* 30.5	180	310 *	* 92.7	5.75	* 5.70
11	* 19.6	* 23.8	* 31.8	34.5	29.2	41.7	* 38.8	161	319 *	* 81.7	* 5.75	* 5.63
12	20.5	23.7	31.2	* 33.6	29.3	* 23.0	* 45.3	166 *	383 *	4.23	* 5.75	4.80
13	20.9	* 23.5	* 30.3	33.1	* 28.5	* 20.0	38.8	162	367 *	3.87	* 5.75	* 4.35
14	* 21.2	* 23.3	30.7	32.1	* 27.3	* 17.8	* 45.7	178 *	366	* 3.29	* 5.63	4.40
15	21.1	* 23.4	* 30.9	33.0	* 25.7	16.1	* 66.3	166	376	* 2.15	* 5.38	4.40
16	20.8	23.1	30.5	32.9	* 22.3	14.8	* 57.9	176 *	369	* 2.07	5.12	* 4.48
17	* 20.9	23.4	30.2	29.4	* 16.1	* 15.3	* 49.0	194	371 *	* 1.61	5.06	* 4.42
18	* 21.5	* 23.3	* 30.2	37.3	16.1	14.7	32.6	191	376 *	* 1.18	* 4.94	* 10.8
19	21.8	23.1	29.4	32.2	16.2	* 14.1	* 31.8	200 *	401 *	.88	* 4.75	18.4
20	22.3	* 23.1	* 28.3	31.8	* 15.9	* 14.4	36.5	193	507 *	.77	* 4.75	* 22.8
21	22.8	* 23.3	* 27.3	32.3	15.4	* 17.6	39.3	196 *	564 *	* .68	4.75	35.1
22	* 23.7	* 23.5	* 26.4	31.9	* 15.0	45.1	* 43.9	198	568 *	.66	* 4.69	50.0
23	* 23.9	23.6	26.7	32.0	* 15.3	18.7	67.1	205	576 *	* .66	4.57	* 49.5
24	* 27.1	23.8	27.3	31.6	* 14.8	* 14.4	* 43.2	210 *	791 *	* .66	4.44	50.0
25	* 25.3	* 23.7	* 27.7	29.3	14.6	13.7	63.6	218	1,020 *	* .66	* 4.32	50.0
26	28.3	23.1	27.0	28.5	14.4	* 12.7	* 91.3	231 *	1,200 *	.66	* 4.25	49.5
27	26.6	* 23.1	* 26.3	27.3	* 14.8	* 11.8	166 *	205	1,020 *	.66	* 4.25	49.0
28	* 24.5	* 23.7	26.5	25.5	14.9	* 11.4	134	208 *	964 *	* .66	* 4.25	49.0
29	24.4		27.4	* 26.2	* 15.5	13.3	163 *	223	864	* .66	* 4.25	49.5
30	* 24.1		28.7	25.7	* 13.4	15.9	154	191 *	811 *	* .66	4.25	65.2
31	* 24.0		29.5		* 13.9		154 *	187		* .66		65.2
Sum	614.1	660.7	909.7	941.2	695.7	592.3	1,754.3	5,276.5	14,879	3,349.63	150.90	693.56

Current Year 1991 | Period 1968-1991

Month	Extreme Gage Metres High	Extreme Gage Metres Low	Extreme-Cubic Metres per Second Day	High	Day	Low	Average	Volume-Thousands of Cubic Metres Total	Average	Maximum	Minimum
Jan.	1.22	0.82	24	30.4	4	12.0	19.8	53,058	40,097	161,947	14,030
Feb.	1.10	1.07	4	24.5	!16	23.1	23.6	57,084	39,763	153,428	4,115
Mar.	1.22	1.10	5	33.7	! 1	26.2	29.3	78,598	58,354	248,200	5,145
April	1.31	1.09	18	39.7	28 ø	25.5	31.4	81,320	51,998	110,859	6,864
May	1.22	.86	8 ø	37.2	30 ø	13.4	22.4	60,108	58,554	152,642	13,484
June	3.00	.76	10	201	28	11.4	19.7	51,175	65,194	172,653	7,411
July	3.36	.87	28	227	2 ø	13.5	56.6	151,572	82,292	190,649	20,542
Aug.	3.57	1.78	25	287	1	82.7	170	455,890	162,809	708,497	39,136
Sept.	6.80	2.82	26	1,250	2 ø	203	496	1,285,546	235,819	1,285,546	22,069
Oct.	5.90	.01	1	788	!21	.66	108	289,408	147,296	809,122	20,825
Nov.	.66	.60	! 9 ø	5.75	!26 ø	4.25	5.03	13,038	53,595	169,499	9,231
Dec.			!30 ø	65.2	6 ø	4.32	22.4	59,924	35,170	81,371	9,107
Yearly				1,250		0.66	83.6	2,636,721	1,030,941	2,636,721	439,776

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

** Period 1968-1991

08-3740.00 ALAMITO CREEK NEAR PRESIDIO, TEXAS

DESCRIPTION: Gravity well and digital water-stage recorder located on the left bank 91 metres upstream from the highway bridge on Farm-to-Market Road 170 at latitude 29°31'25", longitude 104°17'15", about 610 metres from the confluence with the Rio Grande, and about 9.7 kilometres southeast of Presidio, Texas. This stream enters the Rio Grande near the lower end of the Presidio Valley at river kilometre 1,529, 13.8 river kilometres 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 774.68 metres above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 45 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 1991.

REMARKS: A small irrigation reservoir (San Esteban) 16.9 kilometres 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 991 m3/sec.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 1,600 m3/sec, determined by slope-area calculations, on September 2, 1962, with a gage height of 4.13 metres. Min. no flow occasionally.

Average Flow in Cubic Metres per Second

Daily:	Max. 351	Sept. 21, 1974	Min. 0	Occasionally
Monthly:	Max. 28.3	Sept. 1974	Min. 0.01	July 1980
Yearly:	Max. 2.75	1974	Min. 0.09	1982

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.04	* 0.05	0.07	* 0.04	0.03	0.03	0.02	0.82	0.04	0.06	* 0.06	0.03
2	* .04	.05	.05	.03	* .03	.03	* .02	* .05	.04	.06	.06	* .04
3	.04	.06	.04	.02	.03	* .02	.03	.05	* .04	.05	.05	.04
4	.03	.06	* .05	.02	.03	.03	.03	.06	.04	* .05	* .06	.04
5	.05	.06	.05	.02	.03	.08	.03	* .32	.05	.05	.06	.04
6	.06	.07	.05	.15	* .03	.20	.03	.25	.04	.05	.06	.04
7	* .06	.05	.05	.10	.04	.39	.05	.29	.04	.05	.06	.04
8	.06	.05	.04	* .05	.04	.99	.08	.14	.04	.05	.06	.04
9	.05	.06	.03	.04	.04	1.12	.15	.05	* 2.83	.05	.06	* .04
10	.05	.04	.03	.03	.03	* 22.6	.21	.33	5.47	.05	.06	.04
11	.04	.08	* .05	.02	.03	10.4	.22	.99	.09	.05	.06	.05
12	.04	.10	.05	.02	.03	5.58	.40	* .13	.10	.05	* .06	.04
13	.04	.07	.05	.02	.04	2.29	.52	.16	4.36	.05	.06	.04
14	* .04	.06	.05	.02	.04	.89	1.42	20.1	.11	.05	.07	.04
15	.03	.05	.06	.02	.04	.33	* 1.02	22.6	.12	.05	.06	.04
16	.04	.06	.06	.02	.03	.10	.39	1.53	* .17	.05	.05	* .04
17	.03	.06	.05	.02	.03	* .03	.36	1.21	.14	.05	.06	.05
18	.04	.06	* .04	.03	.03	.03	1.42	1.02	.13	.05	* .06	.05
19	.04	* .07	.05	.03	.03	.03	1.77	.89	.12	.05	.05	.06
20	.03	.06	.04	.03	.03	.03	1.79	2.40	.10	.05	.05	.06
21	.05	.06	.04	.03	.03	.02	.38	.28	.09	* .05	.05	.07
22	* .05	.06	.05	* .03	.03	.03	.10	.21	.07	.05	.05	.07
23	.05	.06	.05	.03	.03	.03	.47	.15	* .06	.05	.04	* .08
24	.05	.06	.05	.03	.03	.03	.26	.11	.32	.05	.04	.07
25	.05	.05	.05	.03	.03	.03	11.4	.08	16.8	.05	* .04	.07
26	.05	* .07	.04	.03	.03	.02	3.29	.06	129	.06	.04	.06
27	.04	.08	.03	.03	.03	.02	4.13	* .04	8.27	.06	.03	.06
28	* .04	.08	.03	* .03	* .03	.02	14.3	.04	.08	* .06	.03	.06
29	.04		.03	.03	.03	.02	3.74	.05	.06	.06	.03	.05
30	.04		.04	.03	.03	.02	1.95	.05	* .07	.06	.03	* .05
31	.04		.03		.03		1.63	.04		.06		.05
Sum	1.35	1.74	1.40	1.03	0.99	45.44	51.61	54.50	168.89	1.63	1.55	1.55

Current Year 1991 | Period 1932-1991

Month	Extreme Gage Metres High	Extreme Gage Metres Low	Extreme-Cubic Metres per Second High Day	High	Extreme-Cubic Metres per Second Low Day	Low	Average	Volume-Thousands of Cubic Metres Total	Average	Maximum	Minimum
Jan.	2.29	2.26	5	0.08	! 3	0.03	0.04	117	160	370	57.2
Feb.	2.27	2.19	28	.19	! 7	.03	.06	150	213	3,853	51.2
Mar.	2.24	2.17	1	.18	28	.02	.05	121	179	1,256	57.2
April	2.30	2.18	6	.19	! 3 ϕ	.02	.03	89.0	310	4,550	49.7
May	2.19	2.15	! 9	.06	21	.02	.03	85.5	1,004	10,530	42.8
June	2.66	2.14	10	171	! 1	.02	1.51	3,926	2,227	15,607	29.9
July	2.71	2.16	28	129	! 1 ϕ	.02	1.66	4,459	3,523	22,813	11.7
Aug.	2.76	2.08	14	175	14	.03	1.76	4,709	3,796	20,167	60.2
Sept.	2.83	2.21	26	162	3	.03	5.63	14,592	5,388	73,244	46.3
Oct.	2.21	2.21	1	.07	!12	.04	.05	141	2,196	23,731	45.5
Nov.	2.21	2.19	!13	.08	!27 ϕ	.03	.05	134	225	3,150	44.0
Dec.	2.21	2.19	23	.08	1	.03	.05	134	170	503	48.5
Yearly	2.83	2.08		175		0.02	0.91	28,658	19,391	86,682	2,804

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

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

DESCRIPTION: Cableway, bubbler gage, 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 kilometre 1,529; 0.6 river kilometre downstream from Alamito Creek and 14.4 river kilometres downstream from the international highway bridge between Presidio, Texas and Ojinaga, Chihuahua. The zero of the gage is 771.75 metres above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 37 discharge measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: 1955 through 1991. Records are also available from 1896 through June 13, 1932 for a station located about 19.5 river kilometres downstream from the Rio Conchos and 2.1 kilometres upstream from Alamito Creek; and from June 14, 1932 through 1954 for a station about 3.2 river kilometres downstream from the Rio Conchos and 18.3 river kilometres 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 772.97 metres above mean sea level, U. S. C. & G. S. datum. A concrete control weir at this station was removed in December 1991.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 1,730 m3/sec on September 30, 1978 with a gage height of 4.70 metres. The greatest recorded flow occurred September 11, 1904, with a peak flow estimated at 4,590 m3/sec at a station 19.0 kilometres upstream. Min. 0.01 m3/sec several days in July 1955 and June 30, 1958.

Average Flow in Cubic Metres per Second**

Daily:	Max.	1,510	Oct. 1, 1978	Min.	0.37	March 27, 1968
Monthly:	Max.	544	Sept. 1991	Min.	2.11	March 1968
Yearly:	Max.	98.1	1991	Min.	17.0	1983

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	19.7	* 32.6	30.9	33.1	26.9	15.8	16.1	92.6	219	886	* 16.1	13.2
2	* 19.3	31.4	30.3	* 32.0	* 29.2	15.9	* 15.6	103	209	773 *	16.3	* 13.4
3	19.3	31.4	29.2	30.3	32.3	16.3	17.2	110	197	626	16.1	12.5
4	18.9	31.7	* 35.1	30.9	32.9	* 16.1	19.5	111	205	416 *	15.8	12.3
5	18.5	30.9	37.9	35.7	32.3	15.8	21.9	110	241	240	15.4	12.6
6	19.4	30.3	37.4	40.5	32.3	15.7	22.4	116 *	273 *	201	15.4	13.6
7	20.1	30.6	37.4	39.4	32.3	26.1	23.0	151	340	208	14.9	15.9
8	20.4	29.7	37.4	39.9	35.4	18.0	23.7	157	320	210	14.8	14.0
9	21.0	29.7	36.8	39.1	32.0	21.9	24.6	163	334	79.3	15.5	13.1
10	24.0	30.0	37.7	* 39.6	31.2	91.8	26.7	189	354	46.7	14.8	12.7
11	29.7	30.0	37.7	39.6	30.3	35.1	38.5	189	346	39.9	14.5	11.1
12	30.6	30.6	36.8	37.7	30.0	27.2	43.3	193	445	36.8	14.6	* 14.4
13	31.2	30.3	35.4	36.5	29.7	22.4	48.4	186	490	34.8	14.5	* 13.8
14	* 31.7	30.3	35.1	36.2	* 29.2	20.7	97.4	214	453	32.3	16.1	17.5
15	31.7	28.6	36.8	37.9	24.5	18.8	104 *	229	464	28.3	15.8	21.7
16	31.7	28.3	36.0	37.9	17.7	17.5	79.0	205	459	26.3	15.3	26.3
17	30.9	28.6	36.0	37.4	16.5	16.8	57.8	229	470	24.7	14.5	29.7
18	31.4	28.6	36.8	37.7	16.6	* 16.5	46.4	232	496	24.2	* 14.1	34.8
19	31.7	28.1	* 36.2	36.5	17.0	14.8	43.6	239	527	22.9	14.0	41.1
20	31.7	27.9	33.4	36.0	17.1	14.5	41.9	259	615	22.1	13.9	* 40.5
21	32.9	28.3	32.9	36.2	16.4	14.2	48.4	240	666	21.4	12.8	40.8
22	34.6	* 27.8	30.6	35.7	16.1	44.5	51.8	240	671	20.2	13.3	85.2
23	35.4	28.3	31.4	34.3	16.1	17.0	90.9	250	668 *	19.9	13.3	* 63.4
24	34.6	29.2	32.0	35.4	16.0	15.1	64.9	259	782 *	19.6	13.3	61.7
25	35.7	28.3	32.9	32.6	16.3	13.7	103	260	937 *	* 19.3	13.6	57.8
26	37.1	27.5	32.0	32.3	16.7	12.6	129	289	1,250 *	18.9	13.4	* 51.8
27	35.1	27.5	30.0	30.6	17.3	11.7	260	252 *	1,090 *	18.6	12.5	* 51.5
28	35.4	29.7	29.7	28.9	18.0	11.3	218	249	940 *	18.5	12.5	52.7
29	35.1		28.3	29.2	18.3	12.0	282	265	935	17.4	12.5	53.8
30	34.3		28.9	28.6	16.1	15.5	240	229	926 *	16.5	12.8	* 62.3
31	32.9		28.3		15.7		119	215		16.2		64.6
Sum	896.0	826.2	1,047.3	1,057.7	728.4	625.3	2,418.0	6,225.6	16,322	4,184.8	432.4	1,029.8

Current Year 1991 | Period 1968–1991

Month	Extreme Gage Metres		Extreme–Cubic Metres per Second				Average	Volume–Thousands of Cubic Metres			
	High	Low	Day	High	Day	Low		Total	Average	Maximum	Minimum
Jan.	1.44	1.10	25	40.8	5	17.9	28.9	77,414	54,980	225,647	19,820
Feb.	1.33	1.20	1	34.3	!17	26.5	29.5	71,384	49,845	159,491	5,853
Mar.	1.43	1.15	! 5	39.6	31	24.7	33.8	90,487	67,265	275,997	5,653
April	1.45	1.19	6	43.6	30	27.0	35.3	91,385	61,969	199,909	8,014
May	1.41	.86	8	39.1	30	11.5	23.5	62,934	69,854	243,287	14,983
June	2.45	.84	10	268	29	11.2	20.8	54,026	81,428	314,434	7,311
July	2.79	.94	29	411	2	15.3	78.0	208,915	105,050	276,193	23,118
Aug.	2.56	1.76	26	343	1	88.6	201	537,892	196,776	866,134	37,455
Sept.	4.85	2.22	26	1,290	! 3	193	544	1,410,221	274,150	1,410,221	27,740
Oct.	4.22	.95	1	912	!30	15.6	135	361,567	187,266	871,689	20,688
Nov.	1.01	.86	14	17.2	29	12.1	14.4	37,359	69,030	197,536	10,782
Dec.	1.48	.74	22	139	11	10.6	33.2	88,975	52,297	229,318	13,618
Yearly	4.85	0.74		1,290		10.6	98.1	3,092,559	1,269,910	3,092,559	537,182

* Discharge measurement made on this day ! And other days ** Period 1968–1991

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", 4.2 creek kilometres from the confluence with the Rio Grande, and about 13.7 kilometres south of Terlingua, Brewster County, Texas. This creek enters the Rio Grande at river kilometre 1,425, the lower end of Santa Helena Canyon. The zero of the gage is 670.76 metres above mean sea level, U. S. C. & G. S. datum.
RECORDS: Based on 27 discharge measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: 1932 through 1991.
REMARKS: Irrigation diversions modify the flow of this spring-fed creek at this station.
EXTREME FLOWS FROM RECORDS: Momentary: Max. 988 m3/sec on May 24, 1935 with a gage height of 5.36 metres on a gage 0.5 kilometre downstream. Min. no flow on several occasions in 1986.

Average Flow in Cubic Metres per Second

Daily:	Max.	487	June 1, 1937	Min.	0	August 14 and 15, 1986
Monthly:	Max.	32.6	Sept. 1974	Min.	0.02	October 1934
Yearly:	Max.	4.28	1990	Min.	0.16	1943

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.12	0.10	* 0.09	0.08	* 0.08	0.05	0.09	* 3.57	1.06	0.16	0.09	0.09
2	.12	.10	.09	.08	.08	.04	.09	10.6	.99	.11	.09	.09
3	.12	.10	.08	* .08	.08	.04	* .09	8.86	.99	.06	.10	.09
4	* .12	.10	.08	.08	.07	.04	.09	7.48	.93	.06	.10	.09
5	.11	.10	.08	.74	.07	* .04	.09	6.71	.93	.06	* .10	.09
6	.11	.10	.08	5.75	.08	.05	.09	10.1	.88	.06	.10	.09
7	.11	.10	.07	1.13	.08	5.75	.10	11.5	.88	.06	.10	.09
8	.10	.10	.07	.14	.07	13.3	.10	* 9.69	.88	* .06	.10	.09
9	* .10	.10	.07	* .14	.07	.10	.10	10.5	7.39	.06	.10	.09
10	.10	.10	.07	.14	.07	.14	.22	20.6	* 45.9	.06	.10	* .09
11	.10	* .10	.06	.14	.07	5.66	9.71	16.7	25.9	.06	.10	.09
12	.10	.10	* .06	.12	.07	2.80	4.05	12.1	24.5	.06	.09	.09
13	.10	.10	.07	.11	.07	.71	7.25	12.4	23.1	.06	.09	.09
14	.10	.10	.07	.11	.07	* .33	47.9	76.2	21.6	.06	.09	.09
15	* .10	.10	* .08	.11	.07	.20	14.1	41.1	20.3	.07	.09	.09
16	.10	.10	.08	.11	* .07	.12	3.91	5.98	18.8	.07	.09	.10
17	.10	.10	.08	* .10	.07	.11	* 1.01	2.34	17.4	.07	.09	.10
18	.10	.10	.08	.10	.07	.11	.12	1.60	15.9	.07	.09	.10
19	.10	.10	.08	.10	.06	.10	* .08	1.12	14.6	.07	.09	.10
20	.10	.10	.08	.10	.06	.18	2.81	1.06	13.1	.07	.09	.11
21	.10	.10	.08	.10	.06	.36	.24	.99	11.7	.07	* .09	.11
22	.10	.10	.08	.09	.06	.14	.09	.99	10.2	.08	.09	.11
23	* .10	.10	.08	.09	.06	.10	1.40	.99	8.86	.08	.08	.12
24	.10	.10	.08	.09	2.34	.09	3.82	1.06	7.39	.08	.08	.12
25	.10	.10	.08	.09	.06	.09	1.70	1.12	5.98	.08	.08	.12
26	.10	.10	.08	.08	.05	* .09	8.75	1.06	4.56	.08	.09	.11
27	.10	.10	.08	.08	.05	.09	11.6	.93	3.14	.08	.09	.12
28	.10	.10	.08	.08	.05	.09	15.3	* .77	1.87	.08	.09	.12
29	.10		.08	.08	.05	.09	16.3	.88	.29	.08	.09	.12
30	.10		.08	.08	.05	.09	54.1	.99	.23	.09	.09	.12
31	.10		.08		.05		8.69	.99		.09		.12
Sum	3.21	2.80	2.40	10.32	4.31	31.10	213.99	280.98	310.25	2.30	2.76	3.15

Current Year 1991 | Period 1932–1991

Month	Extreme Gage Metres High	Extreme Gage Metres Low	Extreme–Cubic Metres per Second High Day	High	Extreme–Cubic Metres per Second Low Day	Low	Average	Volume–Thousands of Cubic Metres Total	Average	Maximum	Minimum
Jan.	0.79	0.76	! 1	0.12	! 8	ϕ 0.10	0.10	277	234	1,079	102
Feb.	.80	.77	! 2	.11	28	.09	.10	242	280	5,431	90.5
Mar.	.80	.77	1	.10	!11	.06	.08	207	299	2,978	89.3
April	1.82	.73	5	39.1	! 1	.08	.34	892	1,726	23,016	67.7
May	1.74	.73	24	23.9	!26	ϕ .05	.14	372	4,326	32,095	100
June	2.48	.73	7	173	! 2	ϕ .04	1.04	2,687	8,358	67,640	73.4
July	2.43	.72	14	208	!19	.08	6.90	18,489	9,983	35,429	141
Aug.	1.97	.85	14	76.2	28	.77	9.06	24,277	9,395	79,182	152
Sept.	1.86	.80	10	53.5	30	.23	10.3	26,806	11,216	84,339	152
Oct.	1.13	.61	1	.16	! 3	.06	.07	199	4,625	34,414	62.7
Nov.	1.14	1.12	! 3	ϕ .10	!19	.08	.09	238	587	7,015	80.1
Dec.	1.16	1.13	!24	.13	! 1	.09	.10	272	375	3,800	111
Yearly	2.48	0.61		208		0.04	2.38	74,958	51,404	135,031	4,885

* Discharge measurement made on this day ϕ Mean daily ! 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 kilometre 1,388; 2.2 river kilometres upstream from the old Johnson Ranch headquarters, 9.7 river kilometres downstream from Smoky Creek, and 14.8 river kilometres upstream from Chizos Crossing and the Chihuahua-Coahuila state line. The zero of the gage is 623.41 metres above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 22 discharge measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: April 1936 through 1991.

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. 2,040 m3/sec, on September 30, 1978 with a gage height of 8.66 metres. A flow estimated at 2,750 m3/sec with a stage of 7.50 metres occurred at this station site on October 3, 1932. Min. no flow several days in 1953, 1955, 1957, and 1958.

Average Flow in Cubic Metres per Second**

Daily:	Max.	1,850	Oct. 1, 1978	Min.	0.78	Sept. 9, 1968
Monthly:	Max.	470	Sept. 1991	Min.	2.74	April 1976
Yearly:	Max.	97.0	1991	Min.	15.8	1983

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	23.2	28.6	* 30.6	26.9	* 29.7	18.3	15.7	120 *	193	796	22.3	16.5
2	23.4	28.6	30.6	29.2	28.3	17.8	16.3	86.4	199	750	21.4	16.5
3	23.4	28.1	30.3	* 29.2	29.5	17.6	* 16.1	93.5	185	606 *	20.7	16.6
4	* 23.3	28.1	30.3	28.6	30.3	17.8	16.0	96.6	174	498	20.2	16.4
5	23.3	28.1	32.6	32.0	31.4	* 17.3	18.2	98.8	207	433	* 19.8	16.1
6	23.3	27.3	35.1	52.1	31.2	16.9	19.0	123	248	365	19.5	16.2
7	23.4	26.9	34.8	42.8	30.6	18.8	19.9	125	280	329	19.5	16.2
8	23.8	27.0	34.6	36.5	30.0	74.8	20.8	153	292	331	19.2	18.0
9	24.1	26.6	34.6	36.2	31.7	24.8	21.5	160	303	295	19.3	17.8
10	24.0	26.3	34.0	36.2	30.3	64.3	23.1	186	402 *	171	19.3	* 17.2
11	24.6	* 26.6	34.6	36.5	29.7	65.1	39.9	219	334	120	19.6	17.0
12	28.3	27.2	34.6	36.5	28.9	43.9	39.9	192	334	98.0	19.2	16.7
13	29.5	27.6	34.3	36.0	29.2	28.6	71.4	189	408	83.3	19.3	16.9
14	29.7	27.5	33.7	35.4	29.2	22.9	95.2	241	442	73.9	19.8	17.3
15	* 30.0	27.3	* 33.4	36.2	28.9	20.9	147	326	416	66.0	19.8	17.0
16	29.7	27.3	33.7	37.4	* 27.4	19.3	95.2	223	419	58.9	20.2	17.0
17	29.5	27.6	32.9	* 37.7	23.2	18.3	66.6	202	425	51.8	19.8	17.2
18	29.2	27.6	32.9	36.5	21.1	17.6	47.3	230	464	48.1	19.8	17.2
19	29.5	27.7	33.1	35.7	20.4	17.2	38.2	235	518	45.0	19.3	19.9
20	29.2	27.5	32.6	35.1	20.5	16.1	37.1	248	490	41.6	19.1	24.3
21	29.2	27.7	31.4	34.6	20.5	18.0	58.9	239	507	38.8	* 19.1	28.6
22	29.7	28.2	30.3	34.0	19.6	19.4	44.7	226	535	37.4	18.7	37.7
23	30.6	28.2	29.7	34.0	19.7	33.7	62.9	227	547	34.6	18.2	60.0
24	30.9	28.3	29.5	33.4	50.1	18.5	105	234	552	32.9	18.1	55.5
25	29.7	28.9	30.0	33.4	25.2	16.3	94.0	237	643	31.2	18.0	60.0
26	30.0	29.2	30.0	32.3	21.4	* 15.7	96.0	257	864 *	30.0	17.9	60.0
27	31.2	29.5	29.5	31.2	19.7	15.4	194	249	1,030	28.6	17.9	56.4
28	30.0	29.5	28.3	30.6	19.5	15.1	346	229 *	988 *	27.3	17.4	55.2
29	29.7		27.9	30.0	19.8	14.9	337	236	864 *	26.3	16.9	55.5
30	30.0		27.4	30.0	20.0	14.9	425	242	830	25.0	16.7	56.4
31	29.5		27.4		19.9		234	203		23.4		64.9
Sum	854.9	779.0	984.7	1,036.2	816.9	740.2	2,861.9	6,126.3	14,093	5,596.1	576.0	938.2

Current Year 1991 | Period 1968–1991

Month	Extreme Gage Metres		Extreme–Cubic Metres per Second				Average	Volume–Thousands of Cubic Metres			
	High	Low	Day	High	Day	Low		Total	Average	Maximum	Minimum
Jan.	1.62	1.49	!26	31.7	1	23.1	27.6	73,863	54,976	220,681	18,506
Feb.	1.59	1.54	28	30.9	10	26.1	27.8	67,306	48,666	148,605	9,551
Mar.	1.62	1.52	! 6	35.7	!30	27.0	31.8	85,078	64,267	261,098	7,484
April	2.00	1.50	6	71.4	1	25.9	34.5	89,528	59,092	183,591	7,111
May	2.44	1.33	24	143	31	17.2	26.4	70,580	71,829	228,534	17,829
June	2.80	1.14	8	190	!29	14.8	24.7	63,953	86,541	258,016	7,202
July	5.05	1.14	30	657	1	14.8	92.3	247,268	114,282	247,268	15,373
Aug.	3.86	1.95	15	419	2	80.1	198	529,312	201,114	818,986	37,853
Sept.	6.85	2.46	27	1,120	4	167	470	1,217,635	270,039	1,217,635	34,240
Oct.	6.13	1.66	1	824	31	22.9	181	483,503	212,464	927,275	21,926
Nov.	1.66	1.56	1	22.9	30	16.5	19.2	49,766	72,308	183,566	16,365
Dec.	2.19	1.56	23	72.2	13	16.0	30.3	81,060	53,855	220,460	14,934
Yearly	6.85	1.14		1,120		14.8	97.0	3,058,852	1,309,483	3,058,852	499,282

* Discharge measurement made on this day ! And other days ** Period 1968–1991

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 recorder (graphic and digital) located on the left bank at latitude 29°46'50", longitude 101°45'30", and river kilometre 1,058; 152 metres downstream from the Terrell-Val Verde County line, 8.8 kilometres downstream from Lozier Canyon, and about 19.8 kilometres west of Langtry, Texas. The zero of the gage is 352.71 metres above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 40 discharge measurements during the year, 18 by the United States Section and 22 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 1991.

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. 4,190 m3/sec on November 5, 1978 with a gage height of 11.63 metres. Min. 5.32 m3/sec on August 19, 1965.

Average Flow in Cubic Metres per Second**

Daily:	Max.	2,310	Sept. 20, 1974	Min.	6.15	July 1,	1968
Monthly:	Max.	443	Sept. 1991	Min.	9.12	March	1968
Yearly:	Max.	110	1991	Min.	23.9		1983

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	33.7	45.3	37.9	36.5	37.1	27.9	21.9	351	240	1,060 *	43.6	30.3
2	33.7	45.9	38.2	36.5	36.8	26.1	21.4	250	234	929	42.5	29.7
3	* 33.4	44.2	38.2	36.5	37.7	25.7	21.2	172	233	869 *	41.3	29.2
4	32.9	42.5	38.5	36.2	36.2	24.1	22.0	129	234	816	40.5	29.2
5	33.4	41.6	37.9	* 46.2	35.4	24.3	23.9	95.7	232	623	39.9	* 29.2
6	35.1	41.3	37.7	46.4	35.7	24.2	23.7	98.0	234	439	39.6	29.2
7	35.4	41.9	38.2	47.0	38.2	* 37.7	23.0	102	241	334 *	39.6	28.9
8	35.1	* 42.2	42.5	69.1	39.9	53.0	25.1	115	248	280	38.8	28.9
9	34.6	41.9	43.3	60.9	39.6	47.0	26.6	122 *	254	265 *	38.5	28.9
10	34.0	43.0	43.3	49.3	* 38.5	80.4	27.5	193	259	266	37.9	28.9
11	33.4	42.5	43.6	47.0	38.8	50.1	29.2	217	374	245	37.9	30.3
12	33.1	41.9	43.3	47.0	41.1	86.7	* 33.7	237	329 *	226	37.7	30.3
13	32.3	42.5	43.0	45.9	41.1	79.6	52.1	237	292 *	194	37.4	30.0
14	32.0	43.0	* 43.6	46.7	51.3	73.9	70.2	228	348	171	37.4	29.2
15	34.6	42.8	43.6	* 45.0	42.2	71.9	* 83.3	259	405	138	* 36.8	28.9
16	40.5	42.2	43.6	44.5	39.1	47.3	108	267	379 *	112	36.5	27.4
17	41.9	41.3	43.0	44.2	38.5	* 39.6	113	244	357	96.6	36.2	28.2
18	41.9	40.5	* 43.0	45.6	38.2	36.8	90.1	232	362	83.3	* 36.0	* 28.6
19	41.6	* 39.9	43.0	46.7	36.0	37.7	78.7	226 *	1,080	71.6	36.0	28.0
20	42.8	39.6	42.8	45.9	* 31.7	33.4	66.8	241	538	64.3	34.8	28.1
21	42.5	39.9	42.5	44.5	28.9	29.2	57.5	248	501	* 59.2	34.3	29.5
22	* 40.5	39.6	41.6	44.7	27.7	28.0	64.0	248	479	56.9	* 33.7	31.7
23	40.5	38.2	40.2	43.0	27.8	30.9	71.4	244	470	54.9	33.7	66.8
24	40.8	37.7	39.6	42.5	34.3	29.2	58.9	244	490	53.0	32.9	58.3
25	41.3	37.7	39.4	42.8	79.3	39.9	77.0	245	501	51.5	32.6	60.3
26	41.9	36.8	38.5	42.8	83.8	37.4	103	245	521	49.3	32.6	56.6
27	42.5	37.4	38.5	42.2	52.7	29.5	143	246	612	47.6	32.6	62.9
28	43.0	38.2	38.8	41.9	34.6	26.0	122	249	748	46.7	32.3	64.3
29	43.6		38.2	39.9	29.5	24.1	278	244	932	45.6	32.0	59.5
30	44.7		37.7	38.8	27.5	22.9	292	241	1,150	44.5	31.4	57.5
31	44.5		36.5		26.9		391	238		43.9		56.9
Sum	1,181.2	1,151.5	1,259.7	1,346.2	1,226.1	1,224.5	2,619.2	6,707.7	13,277	7,835.9	1,097.0	1,185.7

Current Year 1991 | Period 1968–1991

Month	Extreme Gage Metres High	Extreme Gage Metres Low	Extreme–Cubic Metres per Second High Day	High	Low Day	Low	Average	Volume–Thousands of Cubic Metres Total	Average	Maximum	Minimum
Jan.	0.83	0.73	!30	45.6	14	31.7	38.1	102,056	76,001	239,323	38,661
Feb.	.83	.77	2	46.4	!26	36.5	41.1	99,490	66,803	158,832	27,673
Mar.	.82	.77	10	44.5	31	36.0	40.6	108,838	83,644	277,246	24,409
April	.97	.76	8	71.4	4	34.6	44.9	116,312	81,032	192,692	24,916
May	1.30	.69	25	121	31	26.3	39.6	105,935	95,805	247,568	35,297
June	1.28	.66	14	116	30	22.2	40.8	105,797	115,841	321,920	27,708
July	2.55	.65	31	442	4	20.4	84.5	226,299	134,207	270,029	29,447
Aug.	2.43	1.09	1	411	5	88.9	216	579,545	227,207	929,405	56,093
Sept.	6.54	1.38	19	1,810	! 2	228	443	1,147,133	292,228	1,147,133	59,971
Oct.	4.88	.98	1	1,160	31	43.9	253	677,022	269,937	1,112,382	39,637
Nov.	.98	.89	1	43.9	30	31.2	36.6	94,781	109,436	441,434	37,497
Dec.	1.22	.87	23	124	16	27.1	38.2	102,444	75,201	217,549	39,502
Yearly	6.54	0.65		1,810		20.4	110	3,465,652	1,627,342	3,465,652	754,478

* Discharge measurement made on this day ! And other days ** Period 1968–1991

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 12.1 kilometres east of Langtry, Texas, 15.3 river kilometres upstream from the Pecos High Railroad Bridge, 24.1 river kilometres from the confluence with the Rio Grande. This stream enters the Rio Grande at river kilometre 991, 38.0 river kilometres downstream from Langtry, Texas. The zero of the gage is 345.36 metres above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 36 discharge measurements during the year, 12 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 1991. Records are also available for Pecos River near Comstock, 15.3 river kilometres downstream, from March 17 through December 3, 1898 and May 1900 through October 7, 1954; for Pecos River near Shumla, 5.6 river kilometres 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. 16,300 m3/sec on September 20, 1974 with a gage height of 22.95 metres. The greatest flood of record, which exceeded a gage height of 30.5 metres at this station, occurred on June 28, 1954. The peak discharge was 26,800 m3/sec at the gaging station located near the railroad bridge 15.3 river kilometres downstream. Min. 1.65 m3/sec on July 27, 1974 with a gage height of 0.45 metres.

Average Flow in Cubic Metres per Second

Daily:	Max.	4,330	Sept. 20 , 1974	Min.	1.69	Aug. 20, 21, & 22, 1970
Monthly:	Max.	382	Sept. 1974	Min.	1.93	August 1970
Yearly:	Max.	42.5	1974	Min.	3.71	1970

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	5.78	5.92	5.41	4.56	3.46	3.06	3.17	4.96	3.26	13.6	6.34	5.52
2	5.78	5.86	5.38	4.56	3.26	2.95	3.20	4.47	3.26	13.0	6.29	5.55
3	* 5.86	5.86	5.24	4.56	3.14	2.86	3.06	4.11	3.43	12.3	6.09	5.52
4	5.92	5.83	5.32	4.98	3.26	3.06	2.92	3.91	3.88	11.4	6.12	5.52
5	5.98	5.64	5.47	* 4.33	3.26	3.12	3.00	3.71	4.28	10.5	6.15	* 5.47
6	6.23	5.61	5.55	4.30	3.17	3.14	2.92	3.65	3.79	10.1	6.23	5.55
7	6.15	5.49	5.44	4.47	3.06	* 3.17	2.79	3.68	3.74	9.74	6.20	5.72
8	5.98	* 5.49	5.41	4.87	3.09	3.26	2.86	3.68	3.65	9.54	6.09	5.75
9	5.98	5.47	5.41	4.84	3.17	3.43	2.78	* 3.57	3.46	9.29	6.00	5.83
10	6.00	5.66	5.38	4.76	* 3.14	3.31	2.74	3.68	3.31	9.01	5.98	5.75
11	5.92	5.78	5.27	4.76	3.17	3.74	2.75	3.82	3.20	8.72	5.98	6.23
12	5.78	5.78	5.24	4.70	3.29	3.79	* 2.80	3.62	3.17	8.55	6.60	6.49
13	5.83	5.78	5.24	4.36	3.99	3.51	2.83	3.60	3.77	8.38	6.68	6.09
14	5.89	5.78	* 5.24	4.25	4.16	3.37	2.86	3.60	17.4	8.18	6.68	5.89
15	5.89	5.69	5.24	* 4.25	3.71	3.31	* 2.79	4.05	20.3	8.07	* 6.66	5.75
16	5.89	5.69	5.15	4.33	3.46	3.31	2.69	3.62	27.2	7.93	6.66	* 5.69
17	5.95	5.69	5.18	4.25	3.31	* 3.34	2.68	3.48	12.7	7.73	6.51	5.69
18	6.40	5.66	* 5.32	4.33	3.17	3.37	2.61	3.68	11.4	7.53	* 6.37	5.78
19	6.15	* 5.61	5.35	4.39	3.09	3.23	2.55	* 4.76	297	7.36	6.32	6.06
20	6.12	5.69	5.32	4.25	* 3.17	3.17	2.44	3.91	52.4	7.25	6.12	6.51
21	5.92	5.66	5.27	4.25	3.20	3.12	2.45	3.60	23.1	* 7.19	6.03	6.51
22	5.83	5.69	5.24	4.28	3.14	3.23	2.41	3.54	19.5	7.14	6.03	6.40
23	* 5.98	5.61	5.18	4.11	3.14	3.14	2.47	3.46	17.9	7.11	5.95	6.29
24	6.06	5.61	5.15	4.08	4.25	3.03	2.50	4.36	17.1	7.00	5.83	6.20
25	6.06	5.55	5.10	4.05	3.60	3.00	2.56	3.71	16.0	6.85	5.78	6.06
26	6.03	5.49	5.04	3.99	3.37	2.95	2.97	3.60	15.7	6.83	5.78	6.06
27	5.98	5.49	5.01	4.02	3.37	2.86	4.98	3.43	15.0	6.83	5.83	5.98
28	5.98	5.44	4.96	3.82	3.23	2.79	4.22	3.31	14.4	6.83	5.89	5.86
29	5.98		4.67	3.57	3.03	2.76	5.24	3.26	13.8	6.66	5.83	5.86
30	5.98		4.62	3.46	3.00	2.92	6.71	3.40	13.7	6.49	5.75	5.83
31	5.92		4.56		3.03		5.72	3.34		6.43		5.83
Sum	185.20	158.52	161.36	129.73	102.89	95.30	98.67	116.57	650.80	263.54	184.77	183.24

Current Year 1991 | Period 1967–1991

Month	Extreme Gage Metres High	Extreme Gage Metres Low	Extreme–Cubic Metres per Second High Day	High	Low Day	Low	Average	Volume–Thousands of Cubic Metres Total	Average	Maximum	Minimum
Jan.	0.65	0.60	7	6.85	1	5.49	5.97	16,001	15,958	36,067	9,324
Feb.	.62	.60	4	6.06	! 7	5.41	5.66	13,696	14,034	31,348	8,649
Mar.	.61	.57	! 2	5.61	31	4.53	5.21	13,942	14,231	27,290	8,546
April	.72	.52	4	9.71	30	3.31	4.32	11,209	17,000	64,098	8,633
May	.61	.50	24	5.61	31	2.74	3.32	8,890	19,435	56,812	7,808
June	.55	.49	! 9	4.11	29	2.60	3.18	8,234	15,827	46,702	6,732
July	.66	.48	30	7.16	21	2.26	3.18	8,525	20,878	94,844	5,290
Aug.	.63	.52	24	6.34	29	3.17	3.76	10,072	23,486	199,892	5,153
Sept.	3.48	.51	19	603	13	3.03	21.7	56,229	60,702	992,293	6,313
Oct.	.77	.63	1	13.8	!30	6.34	8.50	22,770	29,463	140,507	8,786
Nov.	.65	.61	!12	6.97	30	5.61	6.16	15,964	19,259	73,681	8,127
Dec.	.65	.60	!11	6.85	5	5.32	5.91	15,832	16,793	46,697	9,451
Yearly	3.48	0.48		603		2.26	6.39	201,364	267,066	1,341,805	116,791

* 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", 3.7 kilometres upstream from its confluence with the Pecos River, which is 15.3 kilometres upstream from the Pecos River confluence with the Rio Grande. The zero of the gage is 359.05 metres 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 1991.

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

EXTREME FLOWS FROM RECORDS: Momentary: Max. 1,070 m3/sec on September 17, 1974 with a gage height of 3.90 metres. Maximum volumes: Monthly, 35,973,000 m3 in September 1974; yearly, 37,654,000 m3 in 1974.

Average Flow in Cubic Metres per Second

Daily:	Max.	166	Sept. 18, 1974	Min.	
Monthly:	Max.	13.9	Sept. 1974	Min.	see REMARKS
Yearly:	Max.	1.20	1974	Min.	

Mean Daily Discharge in M3/Sec 1991

Month and Day							
April	4	3.46	Sept. 19	6.60			
	5	2.48					

Annual Summary

Month	Maximum Gage and Discharge			Thousands of Cubic Metres
	Day	Metres	M3/Sec	
April	! 4	0.93	52.1	513
Sept.	19	0.71	24.6	570
Yearly		0.93	52.1	1,083

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

DESCRIPTION: Concrete control wall with rectangular notch opening of 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 18.5 kilometres east of Comstock, Val Verde County, Texas, and 41.0 river kilometres from the confluence with the Rio Grande. The confluence is located at river kilometre 925, 1.1 river kilometre upstream from Amistad Dam. The zero of the gage is 345.00 metres above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 36 discharge measurements during the year, 12 by the United States Section and 24 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 1991. Records are also available from May 1900 through March 1914 for a station 38.3 river kilometres downstream; from December 1923 through September 1932 for a station 36.7 river kilometres downstream; from September 2, 1932 through August 1957 for a station 33.8 river kilometres downstream; from August 7, 1954 through January 1958 for a station 8.7 river kilometres upstream; and from August 1954 through May 31, 1968 for a station at the mouth 39.8 river kilometres 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. 7,080 m3/sec on September 18, 1974 with a gage height of 6.04 metres. Min. 1.38 m3/sec on August 20, 1969.

Average Flow in Cubic Metres per Second

Daily:	Max.	3,480	Sept. 18, 1974	Min.	1.52	August 20, 1969
Monthly:	Max.	240	Sept. 1974	Min.	1.82	August 1964
Yearly:	Max.	27.7	1974	Min.	2.83	1968

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	12.9	11.8	11.2	10.3	9.43	9.03	9.63	8.52	7.96	16.1	13.1	11.6
2	13.1	11.7	10.9	10.2	9.49	8.95	9.20	8.35	8.07	16.0	13.1	11.7
3	13.1	11.8	10.6	10.4	9.63	9.06	8.98	8.30	8.35	15.9	12.8	11.9
4	12.9	12.1	10.8	10.5	9.71	9.18	9.26	8.27	8.92	15.7	12.9	11.7
5	12.9	12.1	10.9	13.4	9.40	9.09	9.18	8.21	8.95	15.2	13.0	11.8
6	13.1	12.0	10.8	10.9	9.12	12.4	9.01	8.21	8.81	15.2	13.1	12.0
7	12.9	12.0	10.8	10.5	9.15	14.3	8.84	8.04	8.86	15.0	13.0	12.0
8	12.9	11.8	10.8	10.5	9.37	11.4	8.72	8.24	8.98	15.1	12.8	12.0
9	13.0	11.8	10.8	10.2	9.43	10.7	8.64	7.99	8.86	15.1	12.8	12.0
10	13.2	11.9	10.6	10.0	9.43	10.6	8.64	7.99	8.78	15.1	12.8	11.8
11	12.7	11.9	10.5	10.1	9.43	10.5	8.61	7.99	8.75	* 15.0	13.0	13.1
12	12.5	12.0	10.6	10.1	9.71	10.2	8.67	7.99	8.86	14.8	13.9	12.8
13	12.6	12.0	10.5	10.1	10.8	10.0	8.75	7.93	8.98	14.6	13.5	12.0
14	12.6	11.8	10.4	9.80	9.57	* 10.0	8.75	8.07	152	14.4	13.3	11.6
15	12.5	11.7	10.3	* 9.66	9.29	9.74	* 8.89	8.21	77.6	14.2	13.2	11.5
16	12.5	11.4	10.5	9.60	9.26	9.71	8.78	* 8.16	* 29.2	14.2	13.1	* 11.5
17	12.6	11.7	10.7	9.80	* 9.15	* 9.54	8.69	8.04	18.6	14.0	13.3	11.5
18	13.5	11.9	* 10.5	9.91	9.09	9.57	8.61	8.33	16.2	13.9	* 13.0	11.6
19	12.9	* 11.6	10.6	9.69	9.18	9.35	8.55	* 8.35	44.7	13.8	12.5	12.0
20	12.5	11.4	10.7	9.52	* 9.15	9.35	8.52	8.47	64.9	13.8	12.2	12.8
21	12.3	12.0	10.8	9.46	9.12	9.12	8.55	8.44	37.1	* 13.6	* 12.3	12.3
22	* 12.4	* 11.8	* 10.5	9.52	9.01	9.12	8.67	8.18	26.7	13.7	12.4	12.7
23	12.4	11.4	10.3	9.57	9.06	9.12	8.50	8.07	22.4	13.6	12.1	12.3
24	12.4	11.3	10.4	9.57	9.37	8.92	8.52	8.07	19.5	13.6	12.1	12.1
25	* 12.3	11.1	10.5	9.66	9.49	8.89	* 8.52	8.07	18.0	13.4	12.1	12.2
26	12.2	11.1	10.8	* 9.94	9.15	8.81	8.52	8.07	17.5	13.4	12.1	12.4
27	12.3	11.1	10.5	9.77	9.01	8.72	8.47	8.01	17.0	13.4	12.3	* 12.0
28	12.2	11.0	10.1	9.43	8.86	8.55	8.67	8.01	16.7	13.6	12.3	11.8
29	12.2		10.1	9.29	8.81	8.64	8.89	8.07	16.4	13.3	12.2	11.8
30	11.8		10.2	9.43	8.86	9.18	8.86	8.01	* 16.3	13.1	12.1	11.8
31	12.0		10.3		8.84		8.64	7.93		13.1		11.7
Sum	391.4	327.2	328.0	300.82	288.37	291.74	271.73	252.59	723.93	444.9	382.4	372.0

Current Year 1991 | Period 1960-1991

Month	Extreme Gage Metres High	Extreme Gage Metres Low	Extreme Cubic Metres per Second Day	Extreme Cubic Metres per Second High	Extreme Cubic Metres per Second Day	Extreme Cubic Metres per Second Low	Average	Volume-Thousands of Cubic Metres Total	Volume-Thousands of Cubic Metres Average	Volume-Thousands of Cubic Metres Maximum	Volume-Thousands of Cubic Metres Minimum
Jan.	0.67	0.63	18	13.7	30	11.7	12.6	33,817	19,595	35,576	5,732
Feb.	.64	.61	! 4	12.2	25	10.8	11.7	28,270	16,960	32,782	4,933
Mar.	.62	.57	11	11.4	28	8.72	10.6	28,339	16,858	32,569	5,163
April	.73	.58	5	17.1	29	9.01	10.0	25,991	17,392	47,831	5,575
May	.65	.57	13	12.9	!29	8.72	9.30	24,915	18,940	43,581	5,572
June	.75	.56	! 6	18.0	5	8.33	9.72	25,206	22,273	67,011	5,253
July	.59	.56	1	9.88	! 3	8.47	8.77	23,477	28,328	230,071	4,976
Aug.	.59	.55	4	9.43	! 5	7.93	8.15	21,824	46,762	504,380	4,878
Sept.	1.68	.55	14	552	1	7.93	24.1	62,548	57,585	621,065	6,167
Oct.	.71	.65	1	16.1	31	12.9	14.4	38,439	39,562	272,093	6,172
Nov.	.68	.63	12	14.4	30	11.6	12.7	33,039	21,483	40,721	5,590
Dec.	.67	.62	11	14.1	! 1	11.4	12.0	32,141	20,697	38,316	5,794
Yearly	1.68	0.55		552		7.93	12.0	378,006	326,435	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", 1.8 kilometres upstream from its confluence with the Devils River, which is 34.1 kilometres upstream from the Devils River confluence with the Rio Grande. The zero of the gage is 345.64 metres 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 1991.
REMARKS: This creek is normally dry, its flow being confined to periods of storm runoff from its 109 square kilometres of watershed area. Only the days of flow are shown below.
EXTREME FLOWS FROM RECORDS: Momentary: Max. 1,590 m3/sec on August 15, 1971 with a gage height of 3.75 metres. Maximum volumes: Monthly, 15,053,000 m3 in August 1971; yearly, 15,449,000 m3 in 1971.

Average Flow in Cubic Metres per Second

Daily:	Max.	127	Aug. 15, 1971	Min.	
Monthly:	Max.	5.61	Aug. 1971	Min.	see REMARKS
Yearly:	Max.	0.49	1971	Min.	

Mean Daily Discharge in M3/Sec 1991

Month and Day												
Sept. 14	1.83											

Annual Summary

Month	Maximum Gage and Discharge			Thousands of Cubic Metres
	Day	Metres	M3/Sec	
Sept.	14	0.64	13.9	158
Yearly		0.64	13.9	158

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", 6.3 kilometres upstream from its confluence with the Devils River, which is 17.9 kilometres upstream from the Devils River confluence with the Rio Grande. The zero of the gage is 314.12 metres 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 1991.
REMARKS: This stream is normally dry, its flow being confined to periods of storm runoff from its 62.2 square kilometres of watershed area. Only the days of flow are shown below.
EXTREME FLOWS FROM RECORDS: Momentary: Max. 199 m3/sec on August 12, 1972 with a gage height of 2.07 metres. Maximum volumes: Monthly, 10,152,000 m3 in August 1971; yearly, 10,154,000 m3 in 1971.

Average Flow in Cubic Metres per Second

Daily:		60.6	Aug. 16, 1971	Min.	
Monthly:		3.79	Aug. 1971	Min.	see REMARKS
Yearly:		0.32	1971	Min.	

Mean Daily Discharge in M3/Sec 1991

Month and Day												
Sept. 14	5.15	Sept. 16	0.12	Sept. 19	0.85	Sept. 23	1.09
15	0.52	17	0.32	20	0.25	24	0.37

Annual Summary

Month	Maximum Gage and Discharge			Thousands of Cubic Metres
	Day	Metres	M3/Sec	
Sept.	14	0.63	15.0	749
Yearly		0.63	15.0	749

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", 4.8 kilometres upstream from its confluence with the Middle Fork Branch, which is 10.1 kilometres upstream from its confluence with Devils River which itself is 7.2 river kilometres above Devils River confluence with the Rio Grande. The zero of the gage is 343.49 metres 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 1991.
REMARKS: This creek is normally dry, its flow being confined to periods of storm runoff from its 44 square kilometres of watershed area. Only the days of flow are shown below.
EXTREME FLOWS FROM RECORDS: Momentary: Max. 144 m3/sec on August 12, 1972 with a gage height of 2.57 metres. Maximum volumes: Monthly, 4,198,000 m3 in October 1969; yearly, 5,010,000 m3 in 1969.

Average Flow in Cubic Metres per Second

Daily:	Max.	35.1	Oct. 4, 1969	Min.	
Monthly:	Max.	1.57	Oct. 1969	Min.	see REMARKS
Yearly:	Max.	0.16	1969	Min.	

Mean Daily Discharge in M3/Sec 1991

Month and Day			
No flow during 1991			

Annual Summary

Month	Maximum Gage and Discharge			Thousands of Cubic Metres
	Day	Metres	M3/Sec	
Yearly				

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", 5.1 kilometres upstream from its confluence with the North Fork Branch, which is 10.1 kilometres above the confluence with Devils River, which itself is 7.2 river kilometres above the Devils River confluence with the Rio Grande. The zero of the gage is 346.56 metres 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 1991.
REMARKS: This creek is normally dry, its flow being confined to periods of storm runoff from its 31 square kilometres of watershed area. Only the days of flow are shown below.
EXTREME FLOWS FROM RECORDS: Momentary: Max. 289 m3/sec on July 17, 1972 with a gage height of 1.78 metres. Maximum volumes: Monthly, 4,596,000 m3 in July 1975; yearly, 7,118,000 m3 in 1990.

Average Flow in Cubic Metres per Second

Daily:	Max.	39.4	July 17, 1975	Min.	
Monthly:	Max.	1.72	July 1975	Min.	see REMARKS
Yearly:	Max.	0.23	1990	Min.	

Mean Daily Discharge in M3/Sec 1991

Month and Day			
No flow during 1991			

Annual Summary

Month	Maximum Gage and Discharge			Thousands of Cubic Metres
	Day	Metres	M3/Sec	
Yearly				

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", 17.7 kilometres upstream from its confluence with the Devils River, which is 5.1 kilometres upstream from the Devils River confluence with the Rio Grande. The zero of the gage is 354.34 metres 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 1991.

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

EXTREME FLOWS FROM RECORDS: Momentary: Max. 493 m3/sec on June 2, 1971 with a gage height of 1.83 metres. Maximum volumes: Monthly, 11,448,000 m3 in August 1971; yearly, 17,767,000 m3 in 1971.

Average Flow in Cubic Metres per Second

Daily:	112	Aug. 15, 1971	Min.	
Monthly:	4.28	Aug. 1971	Min.	see REMARKS
Yearly:	0.56	1971	Min.	

Mean Daily Discharge in M3/Sec 1991

Month and Day						
Sept. 19	5.83					
20	0.19					

Annual Summary

Month	Maximum Gage and Discharge			Thousands of Cubic Metres
	Day	Metres	M3/Sec	
Sept.	19	0.50	13.3	520
Yearly		0.50	13.3	520

08-4508.05 CARMINA SPRINGS NEAR CD. ACUNA, COAHUILA

DESCRIPTION: Cipolletti weir of 2.0 m3/sec capacity and staff gage located on a creek that runs almost parallel to Amistad Dam, about 40 metres from the confluence with the Rio Grande, at latitude 29°26'50", longitude 101°03'35", and about 17.7 kilometres northwest of Cd. Acuna, Coahuila. This creek enters the Rio Grande from the Mexican side at river kilometre 923, 322 river metres downstream from Amistad Dam and 20.3 river kilometres 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 proration between readings. Records available: 1969 through 1991.
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 CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.62	1.62	1.62	1.62	1.60	1.51	1.58	1.58	1.62	1.65	1.76	1.74
2	1.62	1.61	1.62	1.65	1.60	1.51	1.57	1.57	1.62	1.68	1.76	1.74
3	1.62	1.60	1.62	1.65	1.59	1.51	1.58	1.58	1.62	1.70	1.74	1.74
4	1.62	1.60	1.62	1.65	1.58	1.51	1.60	1.58	1.62	1.72	1.76	1.74
5	1.62	1.60	1.62	1.65	1.58	1.52	1.59	1.58	1.62	1.74	1.74	1.74
6	1.62	1.60	* 1.65	1.65	1.58	1.56	1.58	1.58	1.62	* 1.76	1.74	1.74
7	1.62	1.62	1.65	1.65	1.58	1.60	1.58	* 1.58	1.62	1.79	1.74	1.74
8	1.62	1.60	1.65	1.65	* 1.58	1.60	1.58	1.58	1.62	1.79	1.74	1.74
9	* 1.62	1.60	1.65	1.65	1.58	1.60	1.58	1.58	1.62	1.79	1.74	1.74
10	1.62	1.62	1.65	* 1.65	1.58	1.60	* 1.57	1.58	1.62	1.81	1.74	1.74
11	1.62	1.62	1.65	1.65	1.58	1.60	1.56	1.58	1.62	1.81	1.74	1.74
12	1.62	1.62	1.65	1.65	1.57	* 1.59	1.57	1.58	1.62	1.81	1.76	1.74
13	1.62	* 1.62	1.65	1.62	1.55	1.59	1.56	1.58	1.62	1.81	1.76	1.74
14	1.62	1.62	1.65	1.62	1.51	1.60	1.57	1.56	1.62	1.79	1.76	1.74
15	1.62	1.62	1.65	1.62	* 1.51	1.59	1.56	1.56	1.60	1.79	1.74	1.74
16	1.62	1.62	1.65	1.62	1.51	1.60	1.56	1.56	1.60	* 1.79	1.74	1.74
17	1.62	1.62	1.65	1.62	1.51	1.60	1.56	1.57	1.60	1.81	1.74	1.74
18	1.62	1.62	1.65	1.62	1.51	1.60	1.56	1.58	* 1.60	1.79	1.74	* 1.74
19	1.62	1.60	1.65	1.62	1.51	1.60	1.56	1.58	1.60	1.79	1.74	1.74
20	1.62	1.60	1.65	1.62	1.51	1.60	1.56	1.58	1.60	1.79	1.74	1.74
21	1.62	1.62	1.65	1.62	1.51	1.60	1.56	1.58	1.60	1.79	1.74	1.74
22	1.62	1.62	1.65	1.60	1.51	1.59	1.57	1.58	1.60	1.79	1.74	1.74
23	1.62	1.62	1.68	1.60	1.51	1.59	1.56	1.58	1.60	* 1.79	1.74	1.74
24	1.62	1.62	1.68	1.62	1.51	1.59	1.56	1.58	1.60	1.79	1.74	1.74
25	1.62	1.62	1.68	1.61	1.51	1.59	1.56	1.58	1.60	1.79	1.74	1.74
26	1.62	1.62	1.68	1.60	1.51	1.59	1.56	1.58	1.60	1.79	1.74	1.74
27	1.62	1.62	1.65	1.60	1.51	1.58	1.57	1.60	1.60	1.79	* 1.74	1.74
28	1.62	1.62	1.64	1.59	1.51	1.57	1.57	1.61	1.60	1.76	1.74	1.74
29	1.62		1.62	1.58	1.51	1.58	1.58	1.62	1.60	1.76	1.74	1.74
30	1.60		1.62	1.58	1.51	1.58	1.58	1.62	1.60	1.76	1.74	1.74
31	1.60		1.62		1.51		1.58	1.62		1.76	1.74	1.74
Sum	50.18	45.19	51.02	48.73	47.73	47.35	48.68	49.07	48.28	54.98	52.32	53.94

Current Year 1991 | Period 1969-1991

Month	Extreme Gage Metres High	Extreme Gage Metres Low	Extreme-Cubic Metres per Second High Day	High	Extreme-Cubic Metres per Second Low Day	Low	Average	Volume-Thousands of Cubic Metres Total	Average	Maximum	Minimum
Jan.	0.43	0.42	! 1	ø 1.62	!30	ø 1.60	1.62	4,336	3,579	5,155	449
Feb.	.43	.42	! 1	ø 1.62	! 2	1.60	1.61	3,904	3,227	4,603	460
Mar.	.44	.43	!23	ø 1.68	! 1	ø 1.62	1.65	4,408	3,524	5,046	648
April	.43	.42	! 2	ø 1.65	!28	1.58	1.62	4,210	3,326	4,406	776
May	.42	.40	! 1	ø 1.60	!14	ø 1.51	1.54	4,124	3,291	4,553	875
June	.42	.40	! 7	ø 1.60	! 1	ø 1.51	1.58	4,091	3,228	4,406	738
July	.42	.41	! 4	ø 1.60	! 2	1.56	1.57	4,206	3,321	4,553	657
Aug.	.43	.41	!28	1.62	! 2	1.56	1.58	4,240	3,366	4,460	666
Sept.	.43	.42	! 1	ø 1.62	!14	1.60	1.61	4,171	3,370	4,199	731
Oct.	.47	.43	!10	ø 1.81	! 1	ø 1.65	1.77	4,750	3,688	4,750	1,024
Nov.	.46	.45	! 1	ø 1.76	! 3	ø 1.74	1.74	4,520	3,610	4,701	1,189
Dec.	.45	.45	! 1	ø 1.74	! 1	ø 1.74	1.74	4,660	3,773	5,019	1,328
Yearly	0.47	0.40		1.81		1.51	1.64	51,620	41,303	51,620	11,200

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

LOURDES AND HILDA SPRINGS NEAR CD. ACUNA, COAHUILA

08-4508.20 LOURDES SPRING

DESCRIPTION: Rectangular sharp-crested weir 0.82 m3/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 17.9 kilometres northwest of Cd. Acuna, Coahuila. This creek enters the Rio Grande from the Mexican side at river kilometre 922, 19.6 river kilometres upstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila. The zero of the gage is 282.33 metres 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 1991.
REMARKS: This spring emerged since operation of Amistad Dam began in May 1968. All storm water from surface runoff passing this station is deducted.

Month	Current Year 1991							Period 1969-1991			
	Extreme Gage Metres		Extreme-Cubic Metres per Second					Volume-Thousands of Cubic Metres			
				ϕ High		ϕ Low	Average	Total			
	High	Low	Day		Day				Average	Maximum	Minimum
Jan.	0.10	0.10	! 1	0.06	1	0.06	0.06	161	148	199	107
Feb.	.10	.10	! 1	.06	! 1	.06	.06	145	135	228	96.8
Mar.	.10	.10	! 1	.06	! 1	.06	.06	161	149	258	107
April	.10	.10	! 1	.06	! 1	.06	.06	156	145	171	104
May	.10	.10	! 1	.06	! 1	.06	.06	161	148	176	91.6
June	.10	.09	! 1	.06	!20	.05	.06	146	143	181	114
July	.10	.09	!18	.06	! 1	.05	.05	146	148	187	107
Aug.	.10	.10	! 1	.06	! 1	.06	.06	161	151	187	117
Sept.	.12	.10	!19	.07	! 1	.06	.06	166	146	181	104
Oct.	.12	.10	! 1	.07	!21	.06	.07	178	150	187	107
Nov.	.10	.10	! 1	.06	! 1	.06	.06	156	145	181	101
Dec.	.10	.10	! 1	.06	! 1	.06	.06	161	148	187	80.4
Yearly	0.12	0.09		0.07		0.05	0.06	1,898	1,756	2,085	1,421

ϕ Mean daily ! And other days

08-4508.30 HILDA SPRING

DESCRIPTION: Rectangular sharp-crested weir of 1.50 m3/sec capacity and staff gage located at latitude 29°26'20", longitude 101°03'35", about 100 metres from the confluence with the Rio Grande and about 17.7 kilometres northwest of Cd. Acuna, Coahuila. This creek enters the Rio Grande from the Mexican side at river kilometre 922, 19.0 kilometres upstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila. The zero of the gage is 276.80 metres 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 1991.
REMARKS: This spring emerged since operation of Amistad Dam began in May 1968. All storm water from surface runoff passing this station is deducted.

Month	Current Year 1991							Period 1969-1991			
	Extreme Gage Metres		Extreme-Cubic Metres per Second					Volume-Thousands of Cubic Metres			
				ϕ High		ϕ Low	Average	Total			
	High	Low	Day		Day				Average	Maximum	Minimum
Jan.	0.08	0.08	! 1	0.06	! 1	0.06	0.06	161	209	321	71.0
Feb.	.08	.08	! 1	.06	! 1	.06	.06	145	186	290	48.0
Mar.	.08	.08	! 1	.06	! 1	.06	.06	161	200	297	54.0
April	.08	.08	! 1	.06	! 1	.06	.06	156	189	278	54.0
May	.08	.08	! 1	.06	! 1	.06	.06	161	190	268	76.0
June	.08	.08	! 1	.06	! 1	.06	.06	156	181	259	72.0
July	.08	.08	! 1	.06	! 1	.06	.06	161	184	285	75.0
Aug.	.08	.08	! 1	.06	! 1	.06	.06	161	185	295	80.1
Sept.	.09	.08	!19	.07	! 1	.06	.06	166	182	289	97.9
Oct.	.09	.09	! 1	.07	! 1	.07	.07	187	200	299	107
Nov.	.09	.09	! 1	.07	! 1	.07	.07	181	200	311	104
Dec.	.09	.09	! 1	.07	! 1	.07	.07	187	210	321	107
Yearly	0.09	0.08		0.07		0.06	0.06	1,983	2,316	3,345	1,074

ϕ Mean daily ! And other days

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), located on the left bank at latitude 29°25'30", longitude 101°02'25", and river kilometre 920, 3.5 river kilometres downstream from Amistad Dam and 17.4 river kilometres upstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila. The zero of the gage is 274.00 metres above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 46 discharge measurements during the year, 35 by the Mexican Section and 11 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 1991. Records are also available from May 1900 through April 1915 for a station 3.1 kilometres upstream; from December 1919 through March 1920 for a station 2.7 kilometres 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 1991 for a station approximately 17.1 kilometres 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, 3.4 river kilometres upstream. A computerized radio telemetry system relays gage height data to the Amistad Dam office.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 32,790 m3/sec on June 28, 1954, determined by slope-area computation, with a gage height of 16.98 metres at the old station site 152 metres downstream. This is the greatest rate of discharge recorded at any point on the Rio Grande. Max. since Amistad Dam, 1,760 m3/sec on Sept. 21, 1974. Min. 0.63 m3/sec on February 14, 1969 with a gage height of 0.33 metres.

Average Flow in Cubic Metres per Second

Daily:	Max.	1,730	Sept. 22, 1974	Min.	1.32	April 13,	1971
Monthly:	Max.	609	Sept. 1974	Min.	1.72	October	1971
Yearly:	Max.	139	1974	Min.	16.3		1972

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	68.9	41.4	17.4	94.7	94.3	93.9	93.1	93.6	196	372	244	41.2
2	69.8	41.0	11.1	94.2	93.7	95.0	92.9	95.6	199	373	246	40.7
3	69.6	41.9	62.9	93.9	94.6	95.0	92.7	95.6	197	373	247	40.7
4	69.7	41.7	64.3	93.9	95.4	94.0	95.6	95.7	194	478	246	40.3
5	69.5	41.6	65.1	94.3	94.7	91.6	94.8	95.2	202	568	82.0	45.6
6	70.1	41.9	* 65.9	94.1	94.2	94.6	96.2	94.8	248	569	66.2	43.1
7	68.4	41.5	66.7	94.3	94.4	94.3	94.2	* 94.0	248	568	66.9	42.8
8	68.9	41.4	63.6	92.9	* 95.6	93.8	95.5	94.9	250	566	66.0	42.8
9	* 69.2	40.8	65.6	94.9	94.6	94.3	95.0	94.8	251	564 *	42.7	40.8
10	69.5	41.6	65.6	* 94.0	95.1	94.8	* 94.3	93.9	250	530 *	41.4	42.1
11	69.6	41.6	64.5	93.5	94.0	93.4	96.1	95.1	249 *	437	40.8	41.6
12	69.9	40.9	65.6	94.6	95.5	* 95.3	94.8	94.0	250 *	390	40.3	41.1
13	71.0	* 41.4	* 65.2	93.2	95.7	92.8	94.9	93.7	278	390	* 41.4	42.3
14	68.8	41.1	64.8	93.3	95.2	94.8	95.0	93.7	337	389	41.0	40.8
15	70.5	41.3	64.5	93.7	95.2	93.5	94.2	* 94.0	327	306	41.0	40.8
16	* 70.7	40.4	65.0	94.3	94.8	94.6	95.3	94.1	346	218 *	40.4	41.3
17	68.9	40.4	64.3	93.1	* 96.0	93.6	93.7	93.4	373	221 *	41.5	42.0
18	68.4	40.5	64.5	94.0	95.2	94.4	93.7	93.8	372 *	245	40.8	* 39.2
19	69.2	39.9	92.3	92.2	96.3	* 91.3	* 93.3	94.4	377	246	39.8	* 42.7
20	68.6	* 39.8	* 95.7	93.8	95.0	97.0	93.8	94.6	374	248	39.7	39.6
21	69.7	41.6	95.3	92.8	95.1	94.2	95.3	* 94.7	371	249	42.2	43.1
22	68.0	40.9	93.7	* 92.9	* 95.0	99.4	94.2	95.0	372	247	* 42.3	42.5
23	* 69.6	41.5	96.0	93.2	94.7	95.1	94.5	94.5	371	186 *	41.8	42.1
24	67.2	64.7	94.8	* 93.3	90.3	* 94.6	* 94.9	94.5	370	252	41.3	12.6
25	67.7	64.3	95.6	93.6	100	93.3	93.9	92.2	372 *	252	40.8	13.7
26	67.2	64.4	96.1	94.3	96.5	93.9	96.0	95.9	374	252	40.3	13.7
27	67.4	* 64.1	93.2	93.8	95.5	93.1	93.7	92.3	372	252	* 40.2	12.1
28	67.5	65.2	93.1	94.7	96.7	93.9	95.1	* 91.4	370	254	40.0	9.90
29	66.6		94.3	93.5	* 94.9	93.3	95.5	115	373	243	40.0	9.90
30	* 41.4		94.7	94.7	95.4	94.4	96.6	201	374	246 *	40.6	9.90
31	41.1		93.4		94.8		95.4	201		245		9.90
Sum	2,082.6	1,268.8	2,294.8	2,813.7	2,948.4	2,827.2	2,934.2	3,156.4	9,237	10,729	2,164.4	1,050.90

Current Year 1991 | Period 1968–1991

Month	Extreme Gage Metres High	Extreme Gage Metres Low	Extreme-Cubic Metres per Second Day	High	Day	Low	Average	Volume-Thousands of Cubic Metres Total	Average	Maximum	Minimum
Jan.	0.73	0.12	! 2	121	!30	3.05	67.2	179,937	121,228	258,801	6,560
Feb.	.73	.11	!27	120	!16	2.75	45.3	109,624	156,063	576,284	15,378
Mar.	.78	.11	25	136	3	2.47	74.0	198,271	178,290	489,022	8,969
April	.91	.18	30	182	! 4	7.57	93.8	243,104	175,906	473,106	34,007
May	.92	.21	28	188	! 6	10.4	95.1	254,742	260,075	665,708	29,773
June	.90	.20	! 2	180	! 4	9.90	94.2	244,270	197,197	404,091	20,251
July	.92	.16	21	186	9	6.28	94.7	253,515	170,812	452,033	28,595
Aug.	1.05	.17	29	243	16	7.12	102	272,713	198,951	816,829	19,229
Sept.	1.47	.72	19	414	! 1	118	308	798,077	264,914	1,578,952	21,717
Oct.	2.10	.14	! 5	570	23	4.35	346	926,986	240,871	1,002,321	4,606
Nov.	1.07	.11	! 2	250	29	2.47	72.1	187,004	128,200	619,571	5,599
Dec.	.52	.11	19	61.2	! 1	2.47	33.9	90,798	104,627	266,784	5,993
Yearly	2.10	0.11		570		2.47	119	3,759,041	2,197,134	4,398,671	514,100

* Discharge measurement made on this day ! And other days

WATER BULLETIN NUMBER 61 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

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

DESCRIPTION: Rectangular sharp-crested weir of 0.23 m3/sec capacity and staff gage located at latitude 29°25'20", longitude 101°02'40",about 396 metres from the confluence with the Rio Grande and about 15.1 kilometres northwest of Cd. Acuna, Coahuila. This creek enters the Rio Grande from the Mexican side at river kilometre 919, 16.6 river kilometres upstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila. The zero of the gage is 281.98 metres 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 1991.
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 CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.02	0.02
2	.02	.02	.02	.02	.02	.02	.02	.02	.02	.03	.02	.02
3	.02	.02	.02	.02	.02	.02	.02	.02	.02	.03	.02	.02
4	.02	.02	.02	.02	.02	.02	.02	.02	.02	.03	.02	.02
5	.02	.02	.02	.02	.02	.02	.02	.02	.02	.03	.02	.02
6	.02	.02	.02	.02	.02	.02	.02	.02	.02	.03	.02	.02
7	.02	.02	.02	.02	.02	.02	.02	.02	.02	.03	.02	.02
8	.02	.02	.02	.02	.02	.02	.02	.02	.02	.03	.02	.02
9	.02	.02	.02	.02	.02	.02	.02	.02	.02	.03	.02	.02
10	.02	.02	.02	.02	.02	.02	.02	.02	.02	.03	.02	.02
11	.02	.02	.02	.02	.02	.02	.02	.02	.02	.03	.02	.02
12	.02	.02	.02	.02	.02	.02	.02	.02	.02	.03	.02	.02
13	.02	.02	.02	.02	.02	.02	.02	.02	.02	.03	.02	.02
14	.02	.02	.02	.02	.02	.02	.02	.02	.02	.03	.02	.02
15	.02	.02	.02	.02	.02	.02	.02	.02	.02	.03	.02	.02
16	.02	.02	.02	.02	.02	.02	.02	.02	.02	.03	.02	.02
17	.02	.02	.02	.02	.02	.02	.02	.02	.02	.03	.02	.02
18	.02	.02	.02	.02	.02	.02	.02	.02	.02	.03	.02	.02
19	.02	.02	.02	.02	.02	.02	.02	.02	.03	.03	.02	.02
20	.02	.02	.02	.02	.02	.02	.02	.02	.03	.03	.02	.02
21	.02	.02	.02	.02	.02	.02	.02	.02	.03	.03	.02	.02
22	.02	.02	.02	.02	.02	.02	.02	.02	.03	.02	.02	.02
23	.02	.02	.02	.02	.02	.02	.02	.02	.03	.02	.02	.02
24	.02	.02	.02	.02	.02	.02	.02	.02	.03	.02	.02	.02
25	.02	.02	.02	.02	.02	.02	.02	.02	.03	.02	.02	.02
26	.02	.02	.02	.02	.02	.02	.02	.02	.03	.02	.02	.02
27	.02	.02	.02	.02	.02	.02	.02	.02	.03	.02	.02	.02
28	.02	.02	.02	.02	.02	.02	.02	.02	.03	.02	.02	.02
29	.02		.02	.02	.02	.02	.02	.02	.03	.02	.02	.02
30	.02		.02	.02	.02	.02	.02	.02	.03	.02	.02	.02
31	.02		.02		.02		.02	.02		.02		.02
Sum	0.62	0.56	0.62	0.60	0.62	0.60	0.62	0.62	0.72	0.83	0.60	0.62

Current Year 1991 | Period 1969-1991

Month	Extreme Gage Metres		Extreme-Cubic Metres per Second				Average	Volume-Thousands of Cubic Metres			
				ϕ High		ϕ Low		Total	Average	Maximum	Minimum
	High	Low	Day		Day						
Jan.	0.10	0.09	! 1	0.02	! 1	0.02	0.02	53.6	92.9	162	26.0
Feb.	.10	.09	! 1	.02	! 1	.02	.02	48.4	82.0	152	24.1
Mar.	.09	.08	! 1	.02	! 1	.02	.02	53.6	82.1	150	27.0
April	.08	.08	! 1	.02	! 1	.02	.02	51.8	78.3	130	26.0
May	.08	.08	! 1	.02	! 1	.02	.02	53.6	84.1	139	27.0
June	.08	.08	! 1	.02	! 1	.02	.02	51.8	72.4	149	26.0
July	.08	.07	! 1	.02	! 1	.02	.02	53.6	73.3	131	26.0
Aug.	.08	.07	! 1	.02	! 1	.02	.02	53.6	74.9	150	0
Sept.	.09	.08	!19	.03	! 1	.02	.02	62.2	80.1	204	0
Oct.	.09	.09	! 1	.03	!22	.02	.03	71.7	95.7	402	0
Nov.	.09	.08	! 1	.02	! 1	.02	.02	51.8	89.9	249	26.0
Dec.	.09	.08	! 1	.02	! 1	.02	.02	53.6	88.5	162	27.0
Yearly	0.10	0.07		0.03		0.02	0.02	659	994	1,680	317

ϕ Mean daily ! And other days

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

DESCRIPTION: Cipolletti weir of 2 m3/sec capacity and staff gage located at latitude 29°24'25", longitude 101°02'20", about 200 metres from the confluence with the Rio Grande, and about 13.8 kilometres northwest of Cd. Acuna, Coahuila. This creek enters the Rio Grande from the Mexican side at river kilometre 918, 15.3 river kilometres 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 discharge determined by prorating between readings. Records available: 1969 through 1991.

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 CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.59	1.57	1.60	1.54	1.43	1.42	1.41	1.37	1.35	1.35	1.73	1.71
2	1.60	1.56	1.59	1.55	1.43	1.43	1.40	1.38	1.35	1.35	1.73	1.71
3	1.60	1.56	1.58	1.55	1.44	1.45	1.39	1.39	1.35	1.35	1.73	1.71
4	1.60	1.55	1.56	1.55	1.45	1.46	1.39	1.40	1.35	1.35	1.73	1.71
5	1.60	1.55	1.55	1.54	1.46	1.48	1.39	1.41	1.35	1.35	1.73	1.75
6	1.60	1.54	1.54	1.54	1.48	1.49	1.39	1.42	1.35	1.35	1.73	1.79
7	1.60	1.54	1.54	1.53	1.49	1.49	1.39	1.43	* 1.35	1.35	1.74	1.83
8	1.60	1.55	1.55	1.53	1.50	1.50	1.39	1.42	1.35	1.35	1.74	1.87
9	1.60	1.55	1.55	1.52	1.50	1.50	1.39	1.41	1.35	1.35	1.75	1.91
10	1.59	1.55	1.55	1.52	1.51	1.51	1.39	1.40	1.35	1.35	1.75	1.95
11	1.59	1.55	1.55	1.51	1.51	1.51	1.39	1.38	1.35	1.35	1.76	1.99
12	1.58	1.56	1.56	1.50	1.51	1.52	1.39	1.37	1.35	1.35	1.76	1.95
13	1.58	1.56 *	1.56	1.49	1.51	1.51	1.40	1.36	1.35	1.35	1.77	1.92
14	1.57	1.55	1.56	1.48	1.52	1.49	1.40	* 1.35	1.35	1.35	1.75	1.88
15	1.57	1.54	1.57	1.47	* 1.52	1.48	1.40	1.35	1.35	1.35	1.73	1.84
16	* 1.56	1.53	1.57	1.46	1.50	1.47	1.41	1.35	1.35	1.35	1.71	1.80
17	1.57	1.51	1.57	* 1.45	1.48	1.46	1.41	1.35	1.35	1.73	1.70	1.77
18	1.57	1.50	1.57	1.45	1.46	1.44	1.41	1.35	1.35	1.73	1.68	1.73
19	1.58	1.49	1.58	1.45	1.45	* 1.43	1.41	1.35	1.35	1.73	1.66	1.74
20	1.58	* 1.48	1.58	1.45	1.43	1.43	1.41	1.35	1.35	1.73	1.64	1.74
21	1.59	1.50	1.57	1.45	1.41	1.44	1.41	1.35	1.35	1.73	1.65	1.74
22	1.59	1.51	1.56	1.45	* 1.39	1.44	1.41	1.35	1.35	1.73	1.66	1.75
23	1.60	1.53	1.55	1.45	1.39	1.44	1.41	1.35	1.35	* 1.73	1.67	1.76
24	1.60	1.55	1.55	1.45	1.38	1.44	1.41	1.35	1.35	1.73	1.68	1.76
25	1.59	1.57	1.54	1.45	1.38	1.45	1.40	1.35	1.35	1.73	1.69	1.76
26	1.59	1.58	1.53	1.44	1.38	1.45	1.40	1.35	1.35	1.73	1.70	1.77
27	1.59	1.60	1.52	1.44	1.38	1.44	1.40	1.35	1.35	1.73	* 1.71	1.76
28	1.59	1.60	1.52	1.44	1.37	1.43	1.39	1.35	1.35	1.73	1.71	1.76
29	1.58		1.53	1.44	1.37	1.42	1.38	1.35	1.35	1.73	1.71	1.75
30	1.58		1.53	1.44	1.39	1.42	1.38	1.35	1.35	* 1.73	1.71	1.75
31	1.58		1.54		1.40		1.38	1.35		1.73		1.74
Sum	49.21	43.23	48.22	44.53	44.82	43.84	43.33	42.44	40.50	47.55	51.41	55.60

Current Year 1991 | Period 1969-1991

Month	Extreme Gage Metres		Extreme-Cubic Metres per Second				Average	Volume-Thousands of Cubic Metres			
	High	Low	Day	ϕ High	Day	ϕ Low		Total	Average	Maximum	Minimum
Jan.	0.57	0.56	! 2	1.60	16	1.56	1.59	4,252	4,183	5,822	430
Feb.	.57	.54	!27	1.60	20	1.48	1.54	3,735	3,793	5,189	470
Mar.	.57	.55	1	1.60	!27	1.52	1.56	4,166	4,106	5,642	649
April	.56	.53	! 2	1.55	!26	1.44	1.48	3,847	3,882	5,359	784
May	.55	.52	!14	1.52	!28	1.37	1.45	3,872	3,913	5,600	889
June	.55	.53	12	1.52	! 1	1.42	1.46	3,788	3,654	5,021	836
July	.53	.52	! 1	1.41	!29	1.38	1.40	3,744	3,683	5,387	949
Aug.	.53	.51	7	1.43	!14	1.35	1.37	3,667	3,708	5,330	965
Sept.	.51	.51	! 1	1.35	! 1	1.35	1.35	3,499	3,772	5,448	965
Oct.	.60	.51	!17	1.73	! 1	1.35	1.53	4,108	4,171	6,428	1,353
Nov.	.61	.58	13	1.77	20	1.64	1.71	4,442	4,185	5,979	1,581
Dec.	.66	.60	11	1.99	! 1	1.71	1.79	4,804	4,343	5,808	1,724
Yearly	0.66	0.51		1.99		1.35	1.52	47,924	47,393	63,942	12,150

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

WATER BULLETIN NUMBER 61 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

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

DESCRIPTION: Rectangular sharp-crested weir of 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 14.8 kilometres northwest of Cd. Acuna, Coahuila. This creek enters the Rio Grande from the Mexican side at river kilometre 919, 16.3 river kilometres upstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila. The zero of the gage is 284.19 metres 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 1991.
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 CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.07	0.06	0.06
2	.06	.06	.06	.06	.06	.06	.06	.06	.06	.07	.06	.06
3	.06	.06	.06	.06	.06	.06	.06	.06	.06	.07	.06	.06
4	.06	.06	.06	.06	.06	.06	.06	.06	.06	.07	.06	.06
5	.06	.06	.06	.06	.06	.06	.06	.06	.06	.07	.06	.06
6	.06	.06	.06	.06	.06	.06	.06	.06	.06	.07	.06	.06
7	.06	.06	.06	.06	.06	.06	.06	.06	.06	.07	.06	.06
8	.06	.06	.06	.06	.06	.06	.06	.06	.06	.07	.06	.06
9	.06	.06	.06	.06	.06	.06	.06	.06	.06	.07	.06	.06
10	.06	.06	.06	.06	.06	.06	.06	.06	.06	.07	.06	.06
11	.06	.06	.06	.06	.06	.06	.06	.06	.06	.07	.06	.06
12	.06	.06	.06	.06	.06	.06	.06	.06	.06	.07	.06	.06
13	.06	.06	.06	.06	.06	.06	.06	.06	.06	.07	.06	.06
14	.06	.06	.06	.06	.06	.06	.06	.06	.06	.07	.06	.06
15	.06	.06	.06	.06	.06	.06	.06	.06	.06	.07	.06	.06
16	.06	.06	.06	.06	.06	.06	.06	.06	.06	.07	.06	.06
17	.06	.06	.06	.06	.06	.06	.06	.06	.06	.07	.06	.06
18	.06	.06	.06	.06	.06	.06	.06	.06	.06	.07	.06	.06
19	.06	.06	.06	.06	.06	.06	.06	.06	.07	.07	.06	.06
20	.06	.06	.06	.06	.06	.06	.06	.06	.07	.07	.06	.06
21	.06	.06	.06	.06	.06	.06	.06	.06	.07	.06	.06	.06
22	.06	.06	.06	.06	.06	.06	.06	.06	.07	.06	.06	.06
23	.06	.06	.06	.06	.06	.06	.06	.06	.07	.06	.06	.06
24	.06	.06	.06	.06	.06	.06	.06	.06	.07	.06	.06	.06
25	.06	.06	.06	.06	.06	.06	.06	.06	.07	.06	.06	.06
26	.06	.06	.06	.06	.06	.06	.06	.06	.07	.06	.06	.06
27	.06	.06	.06	.06	.06	.06	.06	.06	.07	.06	.06	.06
28	.06	.06	.06	.06	.06	.06	.06	.06	.07	.06	.06	.06
29	.06		.06	.06	.06	.06	.06	.06	.07	.06	.06	.06
30	.06		.06	.06	.06	.06	.06	.06	.07	.06	.06	.06
31	.06		.06		.06		.06	.06		.06		.06
Sum	1.86	1.68	1.86	1.80	1.86	1.80	1.86	1.86	1.92	2.06	1.80	1.86

Current Year 1991 | Period 1969-1991

Month	Extreme Gage Metres		Extreme-Cubic Metres per Second				Average	Volume-Thousands of Cubic Metres			
	High	Low	Day	ϕ High	Day	ϕ Low		Total	Average	Maximum	Minimum
Jan.	0.10	0.10	! 1	0.06	! 1	0.06	0.06	161	190	241	107
Feb.	.11	.10	! 1	.06	! 1	.06	.06	145	171	213	97.0
Mar.	.11	.10	! 1	.06	! 1	.06	.06	161	186	227	80.1
April	.10	.10	! 1	.06	! 1	.06	.06	156	181	220	78.0
May	.10	.10	! 1	.06	! 1	.06	.06	161	189	229	80.1
June	.10	.10	! 1	.06	! 1	.06	.06	156	179	223	78.0
July	.10	.10	! 1	.06	! 1	.06	.06	161	180	213	54.0
Aug.	.10	.10	! 1	.06	! 1	.06	.06	161	185	241	54.0
Sept.	.11	.10	!19	.07	! 1	.06	.06	166	183	233	52.1
Oct.	.11	.11	! 1	.07	!21	.06	.07	178	190	241	54.0
Nov.	.11	.11	! 1	.06	! 1	.06	.06	156	184	233	78.0
Dec.	.11	.11	! 1	.06	! 1	.06	.06	161	191	241	80.1
Yearly	0.11	0.10		0.07		0.06	0.06	1,923	2,209	2,650	892

ϕ Mean daily ! And other days

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

DESCRIPTION: Cipolletti weir of 1 m3/sec capacity, located at latitude 29°24'20", longitude 101°02'25", creek kilometre 322 metres from the confluence with the Rio Grande, and about 13.7 kilometres northwest of Cd. Acuna, Coahuila. This stream enters the Rio Grande from the Mexican side at river kilometre 918, 5.6 river kilometres downstream from Amistad Dam and 15.1 kilometres 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 1991.

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 0.5 creek kilometre 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 566 m3/sec.

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.20	0.20	0.21	0.20	0.20	0.19	0.20	0.18	0.19	0.21	0.20	0.20
2	.20	.20	.21	.20	.20	.19	.20	.18	.19	.21	.20	.20
3	.20	.20	.21	.20	.20	.19	.20	.18	.19	.21	.20	.20
4	.20	.20	.21	.20	.20	.19	.20	.18	.19	.21	.20	.20
5	.20	.20	.21	.20	.20	.19	.20	.18	.19	.21	.20	.20
6	.20	.20	.21	.20	.20	.19	.20	.18	.19	.21	.20	.20
7	.20	.20	.21	.20	.20	.19	.20	.18	.19	.21	.20	.20
8	.20	.20	.21	.20	.20	.19	.20	.18	.19	.21	.20	.20
9	.20	.20	.21	.20	.20	.19	.20	.18	.19	.21	.20	.20
10	.20	.20	.21	.20	.20	.19	.20	.18	.19	.21	.20	.20
11	.20	.20	.21	.20	.20	.19	.20	.18	.19	.21	.20	.20
12	.20	.20	.21	.20	.20	.19	.19	.18	.19	.21	.20	.20
13	.20	.20	.21	.20	.20	.19	.19	.18	.19	.21	.20	.20
14	.20	.20	.21	.20	.20	.19	.19	.18	.20	.21	.20	.20
15	.20	.20	.21	.20	.20	.19	.19	.18	.20	.21	.20	.20
16	.20	.20	.21	.20	.20	.19	.19	.18	.20	.21	.20	.20
17	.20	.20	.21	.20	.20	.19	.19	.18	.20	.21	.20	.20
18	.20	.20	.21	.20	.20	.19	.19	.18	.20	.21	.20	.20
19	.20	.20	.21	.20	.20	.19	.19	.19	.20	.21	.20	.20
20	.20	.21	.20	.20	.20	.20	.19	.19	.20	.21	.20	.20
21	.20	.21	.20	.20	.19	.20	.19	.19	.20	.20	.20	.20
22	.20	.21	.20	.20	.19	.20	.19	.19	.20	.20	.20	.19
23	.20	.21	.20	.20	.19	.20	.19	.19	.20	.20	.20	.19
24	.20	.21	.20	.20	.19	.20	.19	.19	.20	.20	.20	.19
25	.20	.21	.20	.20	.19	.20	.19	.19	.20	.20	.20	.19
26	.20	.21	.20	.20	.19	.20	.18	.19	.20	.20	.20	.19
27	.20	.21	.20	.20	.19	.20	.18	.19	.21	.20	.20	.19
28	.20	.21	.20	.20	.19	.20	.18	.19	.21	.20	.20	.19
29	.20		.20	.20	.19	.20	.18	.19	.21	.20	.20	.19
30	.20		.20	.20	.19	.20	.18	.19	.21	.20	.20	.19
31	.20		.20		.19		.18	.19		.20		.19
Sum	6.20	5.69	6.39	6.00	6.09	5.81	5.94	5.71	5.92	6.40	6.00	6.10

Current Year 1991 | Period 1961-1991

Month	Extreme Gage Metres		Extreme-Cubic Metres per Second				Average	Volume-Thousands of Cubic Metres			
	High	Low	Day	ϕ High	Day	ϕ Low		Total	Average	Maximum	Minimum
Jan.	0.23	0.23	! 1	0.20	! 1	0.20	0.20	536	427	651	8.4
Feb.	.23	.23	!20	.21	! 1	.20	.20	492	389	624	6.7
Mar.	.23	.23	! 1	.21	!20	.20	.21	552	426	725	11.5
April	.23	.23	! 1	.20	! 1	.20	.20	518	453	937	7.8
May	.23	.22	! 1	.20	!21	.19	.20	526	490	1,092	13.4
June	.23	.22	!20	.20	! 1	.19	.19	502	429	664	7.8
July	.23	.21	! 1	.20	!26	.18	.19	513	415	657	8.0
Aug.	.22	.21	!19	.19	! 1	.18	.18	493	438	653	8.3
Sept.	.23	.22	!27	.21	! 1	.19	.20	511	454	648	8.1
Oct.	.23	.22	! 1	.21	!21	.20	.21	553	475	671	8.0
Nov.	.23	.22	! 1	.20	! 1	.20	.20	518	431	638	7.8
Dec.	.23	.22	! 1	.20	!22	.19	.20	527	437	664	8.0
Yearly	0.23	0.21		0.21		0.18	0.20	6,241	5,264	7,674	268

ϕ Mean daily ! And other days

08-4511.20 MARIS SPRING NEAR CD. ACUNA, COAHUILA

DESCRIPTION: Cipolletti weir of 3.0 m3/sec capacity and staff gage located at the spring about 30 metres from the right bank of the Rio Grande at latitude 29°24'00", longitude 101°01'40", and about 12.9 kilometres northwest of Cd. Acuna, Coahuila. This spring enters the Rio Grande at river kilometre 917, 14.3 river kilometres upstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila and 6 river kilometres 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 1991.

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 a 0.32 m3/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 CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.36	0.35	0.34	0.34	0.33	0.32	0.35	0.32	0.33	0.33	0.51	0.39
2	.36	.35	.34	.34	.33	.33	.35	.32	.33	.33	.51	.39
3	.36	.35	.35	.34	.33	.33	.35	.32	.33	.33	.51	.39
4	.36	.35	.35	.34	.33	.34	.35	.32	.33	.33	.51	.39
5	.36	.35	.35	.34	.33	.34	.35	.33	.33	.33	.51	.39
6	.36	.35	.35	.34	.33	.34	.35	.33	.33	.33	.51	.39
7	.36	.35	.35	.34	.33	.35	.34	.33	.33	.33	.50	.39
8	.36	.35	.35	.34	.33	.35	.34	.33	.33	.33	.48	.38
9	.36	.35	.35	.34	.33	.35	.34	.33	.33	.33	.47	.38
10	.35	.35	.34	.34	.33	.35	.34	.33	.33	.33	.46	.38
11	.35	.35	.34	.34	.33	.36	.34	.33	.33	.33	.45	.38
12	.35	.35	.34	.34	.34	.36	.34	.33	.33	.33	.43	.38
13	.36	.35	.34	.34	.34	.36	.34	.33	.33	.33	* .42	.38
14	.36	.35	.34	.34	.34	.36	.35	.33	.33	.33	.42	.38
15	.36	.35	.34	.34	.34	.36	.35	.33	.33	.33	.42	.38
16	.36	.35	.34	.34	.34	.36	.35	.33	.33	.33	.42	.38
17	.36	.35	.34	.34	.33	.36	* .35	.33	.33	.33	.41	.38
18	.36	.35	.34	.34	.33	.36	.35	.33	.33	.33	.41	* .38
19	.36	.35	.34	.34	.33	.36	.34	.33	.33	.33	.41	.38
20	.35	.35	.34	.34	.33	.36	.34	.33	.33	.33	.41	.38
21	.35	.35	.34	.34	.32	.36	.33	.33	.33	.33	.41	.38
22	.35	.35	.34	.34	.32	.36	.33	.33	.33	.33	.41	.38
23	* .35	.35	.34	.34	.32	.36	.32	.33	.33	.33	.41	.38
24	.35	.34	.34	.34	.32	.36	.32	.33	.33	.33	.40	.38
25	.35	.34	.34	.34	.32	.36	.32	.33	.33	.33	.40	.38
26	.35	.34	.34	.34	.31	.36	.32	.33	.33	.33	.40	.38
27	.35	* .34	.34	.34	.31	.36	.32	.33	.33	.33	.40	.38
28	.35	.34	.34	.34	.31	.36	.32	.33	.33	.33	.40	.38
29	.35		.34	.34	.31	.36	.32	.33	.33	.51	.40	.38
30	.35		.34	.34	.31	.35	.32	.33	.33	.51	.40	.38
31	.35		.34		.32		.32	.33		.51		.38
Sum	11.01	9.75	10.61	10.20	10.12	10.59	10.45	10.19	9.90	10.77	13.20	11.85

Current Year 1991 | Period 1961-1991

Month	Extreme Gage Metres		Extreme-Cubic Metres per Second				Average	Volume-Thousands of Cubic Metres			
	High	Low	Day	ϕ High	Day	ϕ Low		Total	Average	Maximum	Minimum
Jan.	0.17	0.17	! 1	0.36	!10	0.35	0.36	951	675	1,152	5.4
Feb.	.17	.16	! 1	.35	!24	.34	.35	842	602	1,136	5.1
Mar.	.16	.16	! 3	.35	! 1	.34	.34	917	659	1,179	6.0
April	.16	.16	! 1	.34	! 1	.34	.34	881	670	1,217	5.2
May	.16	.14	!12	.34	!26	.31	.33	874	764	1,624	10.7
June	.17	.15	!11	.36	1	.32	.35	915	734	1,719	7.4
July	.17	.15	! 1	.35	!23	.32	.34	903	736	1,694	9.7
Aug.	.16	.15	! 5	.33	! 1	.32	.33	880	765	1,525	7.6
Sept.	.16	.16	! 1	.33	! 1	.33	.33	855	820	1,435	6.7
Oct.	.25	.16	!29	.51	! 1	.33	.35	931	874	1,752	5.7
Nov.	.25	.19	! 1	.51	!24	.40	.44	1,140	809	1,650	5.2
Dec.	.19	.18	! 1	.39	! 8	.38	.38	1,024	717	1,464	5.4
Yearly	0.25	0.14		0.51		0.31	0.35	11,113	8,825	16,060	180

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

08-4511.30 EIGHT MILE CREEK NEAR DEL RIO, TEXAS

DESCRIPTION: Concrete wall with 90° V-notch weir of 0.20 m3/sec capacity at latitude 29°24'00", longitude 101°00'55", 1.3 creek kilometres from the confluence with the Rio Grande, and about 12.9 kilometres northwest of Del Rio, Texas. This stream enters the Rio Grande from the United States side at river kilometre 916, 7.4 river kilometres downstream from Amistad Dam, and 13.4 kilometres upstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila. The elevation of the zero of the gage is 278.58 metres above mean sea level, U. S. C. & G. S. datum.
RECORDS: Based on 11 measurements during the year. Mean daily discharges determined by prorating between measurements. Records available: March 1961 through 1991.
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 Cubic Metres per Second

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

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.06	0.06	0.06	0.07	0.05	0.10	0.07	0.06	0.08	0.08	0.07	0.07
2	* .06	.06	.06	.07	* .05	.10	.06	.06	.08	.08	.07	.07
3	.06	.06	.06	* .07	.05	.10	.06	.06	.08	.08	.07	.07
4	.06	.06	.06	.07	.05	.10	.06	.06	* .08	.08	.07	.07
5	.06	.06	.06	.07	.06	.10	.06	.06	.08	.08	.07	* .07
6	.06	* .06	* .06	.07	.06	* .10	.06	.06	.08	.08	.07	.07
7	.06	.06	.06	.07	.06	.10	.06	* .06	.08	.08	* .07	.07
8	.06	.06	.06	.07	.06	.10	* .05	.06	.08	.08	.07	.07
9	.06	.06	.06	.07	.06	.10	.05	.07	.08	.08	.07	.07
10	.06	.06	.06	.07	.06	.10	.05	.07	.08	.08	.07	.07
11	.06	.06	.07	.07	.07	.10	.05	.07	.08	.08	.07	.07
12	.06	.06	.07	.07	.07	.10	.05	.07	.08	.08	.07	.07
13	.06	.06	.07	.07	.07	.09	.06	.07	.08	.08	.07	.07
14	.06	.06	.07	.06	.07	.09	.06	.07	.08	.07	.07	.07
15	.06	.06	.07	.06	.07	.09	.06	.07	.08	.07	.07	.07
16	.06	.06	.07	.06	.07	.09	.06	.07	.08	.07	.07	.07
17	.06	.06	.07	.06	.07	.09	.06	.07	.08	.07	.07	.07
18	.06	.06	.07	.06	.08	.08	.06	.07	.08	.07	.07	.07
19	.06	.06	.07	.06	.08	.08	.06	.07	.08	.07	.07	.07
20	.06	.06	.07	.06	.08	.08	.06	.07	.08	.07	.07	.07
21	.06	.06	.07	.06	.08	.08	.06	.07	.08	.07	.07	.07
22	.06	.06	.07	.06	.08	.08	.06	.07	.08	.07	.07	.07
23	.06	.06	.07	.06	.08	.08	.06	.08	.08	.07	.07	.07
24	.06	.06	.07	.06	.08	.08	.06	.08	.08	.07	.07	.07
25	.06	.06	.07	.06	.08	.07	.06	.08	.08	.07	.07	.07
26	.06	.06	.07	.05	.09	.07	.06	.08	.08	.07	.07	.07
27	.06	.06	.07	.05	.09	.07	.06	.08	.08	.07	.07	.08
28	.06	.06	.07	.05	.09	.07	.06	.08	.08	.07	.07	.08
29	.06		.07	.05	.09	.07	.06	.08	.08	.07	.07	.08
30	.06		.07	.05	.09	.07	.06	.08	.08	.07	.07	.08
31	.06		.07		.10		.06	.08	.08	.07	.07	.08
Sum	1.86	1.68	2.07	1.88	2.24	2.63	1.82	2.18	2.40	2.28	2.10	2.22

Current Year 1991 — Period 1961-1991

Month	Extreme Gage Metres High	Extreme Gage Metres Low	Extreme-Cubic Metres per Second Day	ϕ High	Day	ϕ Low	Average	Volume-Thousands of Cubic Metres Total	Average	Maximum	Minimum
Jan.			! 1	0.06	! 1	0.06	0.06	161	160	363	0
Feb.			! 1	.06	! 1	.06	.06	145	144	337	0
Mar.			!11	.07	! 1	.06	.07	179	150	334	0
April			! 1	.07	!26	.05	.06	162	143	313	0
May			31	.10	! 1	.05	.07	194	148	412	0
June			! 1	.10	!25	.07	.09	227	127	264	0
July			1	.07	! 8	.05	.06	157	130	481	0
Aug.			!23	.08	! 1	.06	.07	188	128	369	0
Sept.			! 1	.08	! 1	.08	.08	207	126	296	0
Oct.			! 1	.08	!12	.07	.07	197	144	412	0
Nov.			! 1	.07	! 1	.07	.07	181	145	396	0
Dec.			!27	.08	! 1	.07	.07	192	152	349	0
Yearly				0.10		0.05	0.07	2,190	1,697	3,567	4.2

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

08-4511.40 MCKEE 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 46 metres from the edge of the low-flow channel and about 12.9 kilometres northwest of Del Rio, Texas. Water from this spring enters the Rio Grande at river kilometre 916, 7.7 river kilometres downstream from Amistad Dam. The zero of the gage is 272.67 metres above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 11 discharge measurements during the year. Mean daily discharges determined by prorating between measurements. Records available: November 1961 through 1991.

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 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 Cubic Metres per Second

Daily:	Max.	0.31	Feb. 16, 1983	Min.	0	Occasionally
Monthly:	Max.	0.26	Feb. 1983	Min.	0	Occasionally
Yearly	Max.	0.22	1979	Min.	0	1963

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.04	0.11	0.12	0.13	0.16	0.15	0.13	0.12	0.12	0.13	0.13	0.13
2	* .04	.12	.12	.13	* .16	.15	.13	.12	.12	.13	.13	.13
3	.05	.12	.12	* .13	.16	.15	.13	.12	.12	.13	.13	.13
4	.05	.12	.12	.13	.16	.15	.13	.12	.12	.13	.13	* .13
5	.05	.12	.12	.14	.16	.15	.13	.12	.12	.13	.13	.13
6	.05	* .12	* .12	.14	.16	* .15	.13	.12	.12	.13	.13	.13
7	.05	.12	.12	.14	.16	.15	.12	* .12	.12	.13	* .13	.13
8	.06	.12	.12	.14	.15	.15	* .12	.12	.13	.13	.13	.13
9	.06	.12	.12	.14	.15	.14	.12	.12	* .13	.13	.13	.13
10	.06	.12	.12	.14	.15	.14	.12	.12	.13	.13	.13	.13
11	.06	.12	.12	.14	.15	.14	.12	.12	.13	.13	.13	.13
12	.07	.12	.12	.14	.15	.14	.12	.12	.13	.13	.13	.13
13	.07	.12	.12	.14	.15	.14	.12	.12	.13	.13	.13	.13
14	.07	.12	.12	.14	.15	.14	.12	.12	.13	.13	.13	.13
15	.07	.12	.12	.14	.15	.14	.12	.12	.13	.13	.13	.13
16	.08	.12	.12	.14	.15	.14	.12	.12	.13	.13	.13	.13
17	.08	.12	.13	.14	.15	.14	.12	.12	.13	.13	.13	.13
18	.08	.12	.13	.14	.15	.14	.12	.12	.13	.13	.13	.13
19	.08	.12	.13	.14	.15	.14	.12	.12	.13	.13	.13	.13
20	.08	.12	.13	.15	.15	.14	.12	.12	.13	.13	.13	.13
21	.09	.12	.13	.15	.15	.14	.12	.12	.13	.13	.13	.13
22	.09	.12	.13	.15	.15	.14	.12	.12	.13	.13	.13	.14
23	.09	.12	.13	.15	.15	.14	.12	.12	.13	.13	.13	.14
24	.09	.12	.13	.15	.15	.14	.12	.12	.13	.13	.13	.14
25	.10	.12	.13	.15	.15	.13	.12	.12	.13	.13	.13	.14
26	.10	.12	.13	.15	.15	.13	.12	.12	.13	.13	.13	.14
27	.10	.12	.13	.15	.15	.13	.12	.12	.13	.13	.13	.14
28	.10	.12	.13	.15	.15	.13	.12	.12	.13	.13	.13	.14
29	.10		.13	.15	.15	.13	.12	.12	.13	.13	.13	.14
30	.11		.13	.15	.15	.13	.12	.12	.13	.13	.13	.14
31	.11		.13		.15		.12	.12		.13		.14
Sum	2.33	3.35	3.87	4.27	4.72	4.22	3.78	3.72	3.83	4.03	3.90	4.13

Current Year 1991 | Period 1961–1991

Month	Extreme Gage Metres High	Extreme Gage Metres Low	Extreme Cubic Metres per Second ϕ High Day	ϕ High	ϕ Low Day	ϕ Low	Average	Volume–Thousands of Cubic Metres Total	Average	Maximum	Minimum
Jan.			!30	0.11	! 1	0.04	0.08	201	332	649	0
Feb.			! 2	.12	1	.11	.12	289	313	628	0
Mar.			!17	.13	! 1	.12	.12	334	339	650	0
April			!20	.15	! 1	.13	.14	369	334	604	0
May			! 1	.16	! 8	.15	.15	408	367	633	.7
June			! 1	.15	!25	.13	.14	365	334	580	0
July			! 1	.13	! 7	.12	.12	327	346	692	0
Aug.			! 1	.12	! 1	.12	.12	321	343	622	0
Sept.			! 8	.13	! 1	.12	.13	331	334	591	0
Oct.			! 1	.13	! 1	.13	.13	348	349	640	0
Nov.			! 1	.13	! 1	.13	.13	337	328	636	0
Dec.			!22	.14	! 1	.13	.13	357	332	596	0
Yearly				0.16		0.04	0.13	3,987	4,051	6,978	0.7

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

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

DESCRIPTION: Cipolletti weir of 1 m3/sec capacity, located at latitude 29°22'35", longitude 101°01'15", 966 creek metres from the confluence with the Rio Grande, and about 10.5 kilometres northwest of Cd. Acuna, Coahuila. This stream enters the Rio Grande from the Mexican side at river kilometre 913, 10.0 river kilometre downstream from Amistad Dam and 10.6 river kilometres 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 1991.

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 release.

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.07	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.11	0.09	0.09
2	.07	.08	.08	.08	.08	.08	.08	.08	.08	.11	.09	.09
3	.07	.08	.08	.08	.08	.08	.08	.08	.08	.11	.09	.09
4	.07	.08	.08	.08	.08	.08	.08	.08	.08	.11	.09	.09
5	.07	.08	.08	.08	.08	.08	.08	.08	.08	.11	.09	.09
6	.07	.08	.08	.08	.08	.08	.08	.08	.08	.11	.09	.09
7	.07	.08	.08	.08	.08	.08	.08	.08	.08	.11	.09	.09
8	.07	.08	.08	.08	.08	.08	.08	.08	.08	.11	.09	.09
9	.07	.08	.08	.08	.08	.08	.08	.08	.08	.11	.09	.09
10	.07	.08	.08	.08	.08	.08	.08	.08	.09	.11	.09	.09
11	.07	.08	.08	.08	.08	.08	.08	.08	.09	.11	.09	.09
12	.07	.08	.08	.08	.08	.08	.08	.08	.09	.10	.09	.09
13	.07	.08	.08	.08	.08	.08	.08	.08	.09	.10	.09	.09
14	.07	.08	.08	.08	.08	.08	.08	.08	.09	.10	.09	.09
15	.07	.08	.08	.08	.08	.08	.08	.08	.09	.10	.09	.09
16	.07	.08	.08	.08	.08	.08	.08	.08	.09	.10	.09	.09
17	.07	.08	.08	.08	.08	.08	.08	.08	.09	.10	.09	.09
18	.07	.08	.08	.08	.08	.08	.08	.08	.09	.10	.09	.09
19	.07	.08	.08	.08	.08	.08	.08	.08	.09	.10	.09	.09
20	.08	.08	.08	.08	.08	.08	.08	.08	.10	.10	.09	.09
21	.08	.08	.08	.08	.08	.08	.08	.08	.10	.10	.09	.09
22	.08	.08	.08	.08	.08	.08	.08	.08	.10	.10	.09	.08
23	.08	.08	.08	.08	.08	.08	.08	.08	.10	.10	.09	.08
24	.08	.08	.08	.08	.08	.08	.08	.08	.10	.10	.09	.08
25	.08	.08	.08	.08	.08	.08	.08	.08	.10	.10	.09	.08
26	.08	.08	.08	.08	.08	.08	.08	.08	.10	.10	.09	.08
27	.08	.08	.08	.08	.08	.08	.08	.08	.10	.10	.09	.08
28	.08	.08	.08	.08	.08	.08	.08	.08	.10	.10	.09	.08
29	.08		.08	.08	.08	.08	.08	.08	.11	.10	.09	.08
30	.08		.08	.08	.08	.08	.08	.08	.11	.09	.09	.08
31	.08		.08		.08		.08	.08		.09		.08
Sum	2.29	2.24	2.48	2.40	2.48	2.40	2.48	2.48	2.74	3.19	2.70	2.69

Current Year 1991 | Period 1961-1991

Month	Extreme Gage Metres High	Extreme Gage Metres Low	Extreme-Cubic Metres per Second Day	ϕ High	Day	ϕ Low	Average	Volume-Thousands of Cubic Metres Total	Average	Maximum	Minimum
Jan.	0.13	0.11	!20	0.08	! 1	0.07	0.07	198	205	348	18.7
Feb.	.13	.13	! 1	.08	! 1	.08	.08	194	186	317	17.1
Mar.	.13	.12	! 1	.08	! 1	.08	.08	214	205	403	17.5
April	.12	.12	! 1	.08	! 1	.08	.08	207	221	373	13.0
May	.12	.12	! 1	.08	! 1	.08	.08	214	214	323	7.3
June	.12	.12	! 1	.08	! 1	.08	.08	207	204	313	5.2
July	.12	.12	! 1	.08	! 1	.08	.08	214	196	312	0
Aug.	.13	.12	! 1	.08	! 1	.08	.08	214	201	398	0
Sept.	.15	.13	!29	.11	! 1	.08	.09	237	212	337	16.2
Oct.	.15	.14	! 1	.11	!30	.09	.10	276	228	348	14.9
Nov.	.14	.13	! 1	.09	! 1	.09	.09	233	213	382	17.5
Dec.	.13	.12	! 1	.09	!22	.08	.09	232	216	382	18.7
Yearly	0.15	0.11		0.11		0.07	0.08	2,640	2,501	4,026	308

ϕ Mean daily ! And other days

WATER BULLETIN NUMBER 61 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

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 4.0 kilometres northwest of Del Rio, Texas and 5.6 creek kilometres from the confluence with the Rio Grande. Cienegas Creek enters the Rio Grande at river kilometre 906, 3.0 river kilometres 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 11 discharge measurements during the year. Mean daily discharges determined by prorating between measurements. Records available: March 1961 through 1991.

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 Cubic Metres per Second

Daily:	Max.	0.37	March 2, 1989	Min.	0	Occasionally
Monthly:	Max.	0.34	March 1989	Min.	0	Occasionally
Yearly:	Max.	0.24	1989	Min.	0	1963

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.24	0.23	0.24	0.25	0.22	0.17	0.21	0.19	0.19	0.20	0.21	0.20
2	* .24	.23	.24	.25	* .22	.17	.22	.19	.19	.20	.21	.20
3	.24	.23	.24	* .25	.22	.17	.22	.18	* .19	.20	.21	* .20
4	.24	.23	.25	.25	.22	.17	.22	.18	.19	.20	.21	.20
5	.24	.23	.25	.24	.21	.17	.22	.18				
6	.24	* .23	* .25	.24	.21	* .16	.22	.18	.19	.20	* .21	.20
7	.24	.23	.25	.24	.21	.17	.22	* .18	.19	.20	.21	.20
8	.24	.23	.25	.24	.21	.17	* .23	.18	.19	.20	.21	.20
9	.24	.23	.25	.24	.21	.17	.22	.18	.19	.20	.21	.20
10	.24	.23	.25	.24	.21	.17	.22	.18	.19	.20	.21	.20
11	.24	.23	.25	.24	.20	.17	.22	.18	.19	.20	.21	.20
12	.24	.23	.25	.24	.20	.18	.22	.18	.19	.20	.21	.20
13	.24	.23	.25	.24	.20	.18	.22	.18	.19	.20	.21	.20
14	.24	.24	.25	.24	.20	.18	.22	.18	.19	.20	.21	.20
15	.24	.24	.25	.24	.20	.18	.22	.18	.19	.20	.21	.20
16	.24	.24	.25	.24	.20	.18	.21	.18	.19	.20	.21	.20
17	.24	.24	.25	.23	.20	.19	.21	.18	.19	.20	.21	.20
18	.24	.24	.25	.23	.19	.19	.21	.18	.20	.20	.21	.20
19	.24	.24	.25	.23	.19	.19	.21	.18	.20	.20	.21	.20
20	.23	.24	.25	.23	.19	.19	.21	.18	.20	.20	.21	.20
21	.23	.24	.25	.23	.19	.19	.21	.18	.20	.20	.21	.20
22	.23	.24	.25	.23	.19	.20	.20	.18	.20	.20	.21	.20
23	.23	.24	.25	.23	.19	.20	.20	.18	.20	.20	.21	.20
24	.23	.24	.25	.23	.18	.20	.20	.18	.20	.21	.21	.20
25	.23	.24	.25	.22	.18	.20	.20	.19	.20	.21	.21	.20
26	.23	.24	.25	.22	.18	.20	.20	.19	.20	.21	.21	.20
27	.23	.24	.25	.22	.18	.20	.20	.19	.20	.21	.20	.20
28	.23	.24	.25	.22	.18	.21	.20	.19	.20	.21	.20	.20
29	.23		.25	.22	.18	.21	.19	.19	.20	.21	.20	.20
30	.23		.25	.22	.18	.21	.19	.19	.20	.21	.20	.20
31	.23		.25		.17		.19	.19		.21		.20
Sum	7.32	6.59	7.72	7.04	6.11	5.54	6.53	5.67	5.83	6.28	6.26	6.20

Current Year 1991 | Period 1961-1991

Month	Extreme Gage Metres High	Extreme Gage Metres Low	Extreme–Cubic Metres per Second Day	ϕ High	Day	ϕ Low	Average	Volume–Thousands of Cubic Metres Total	Average	Maximum	Minimum
Jan.			! 1	0.24	!20	0.23	0.24	632	421	697	0
Feb.			!14	.24	! 1	.23	.24	569	375	749	0
Mar.			! 4	.25	! 1	.24	.25	667	407	907	0
April			! 1	.25	!25	.22	.23	608	387	780	0
May			! 1	.22	31	.17	.20	528	394	750	0
June			!28	.21	6	.16	.18	479	367	675	0
July			8	.23	!29	.19	.21	564	380	671	0
Aug.			! 1	.19	! 3	.18	.18	490	381	656	0
Sept.			!18	.20	! 1	.19	.19	504	388	651	0
Oct.			!24	.21	! 1	.20	.20	543	432	777	0
Nov.			! 1	.21	!27	.20	.21	541	408	712	0
Dec.			! 1	.20	! 1	.20	.20	536	420	734	0
Yearly				0.25		0.16	0.21	6,661	4,760	8,063	0

* Discharge measurement made on this day ϕ 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", 0.8 creek kilometre 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", 884 metres 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 4.0 kilometres west of Del Rio, Texas. The point of diversion is 2.9 creek kilometres from the confluence with the Rio Grande. Cienegas Creek enters the Rio Grande at river kilometre 906, 3.0 river kilometres upstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila.

RECORDS: Based on 11 and 11 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 1991. Discharge measurement data available since November 1962. Records are also available from September 1931 through June 1935 for a station 0.5 creek kilometre downstream. The station was moved 0.3 creek kilometre upstream in June 1983.

REMARKS: Low flow of this stream is from springs, one of which is Cantu Spring, whose discharge is shown on the previous page. 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 Cubic Metres per Second

Daily:	Max.	1.21	August 12, 1972	Min.	0.01	April 21, 1966
Monthly:	Max.	0.70	July 1976	Min.	0.02	August 1967
Yearly:	Max.	0.51	1977	Min.	0.03	1968

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.37	0.40	0.42	0.44	0.40	0.51	0.46	0.33	0.30	0.32	0.33	0.39
2	* .37	.40	.42	.44	* .40	.51	.46	.33	.31	.32	.33	.40
3	.37	.40	.43	* .44	.40	.52	.46	.32	.31	.32	.33	.40
4	.38	.40	.43	.44	.41	.52	.46	.32	* .31	.32	.33	* .40
5	.38	.41	.43	.43	.41	.52	.45	.31	.31	.32	.33	.40
6	.38	* .41	* .43	.43	.42	* .52	.45	.31	.31	.32	* .33	.40
7	.38	.41	.43	.43	.42	.52	.45	* .30	.31	.32	.34	.41
8	.38	.41	.43	.43	.42	.52	* .44	.30	.31	.32	.34	.41
9	.38	.41	.43	.43	.42	.52	.44	.30	.31	.32	.34	.41
10	.38	.41	.43	.43	.43	.52	.44	.31	.31	.32	.35	.41
11	.38	.41	.43	.43	.43	.51	.43	.30	.31	.32	.35	.41
12	.38	.41	.43	.43	.44	.51	.43	.30	.31	.32	.35	.41
13	.38	.41	.43	.42	.44	.51	.42	.30	.31	.32	.35	.42
14	.39	.41	.43	.42	.44	.50	.42	.30	.31	.32	.35	.42
15	.39	.41	.43	.42	.45	.50	.42	.30	.31	.33	.36	.42
16	.39	.41	.43	.42	.45	.50	.40	.31	.31	.33	.36	.42
17	.39	.42	.43	.42	.45	.50	.40	.31	.31	.33	.36	.42
18	.39	.42	.43	.42	.46	.50	.40	.30	.31	.33	.37	.42
19	.39	.42	.43	.42	.46	.49	.39	.30	.31	.33	.37	.42
20	.39	.42	.43	.42	.46	.49	.39	.30	.31	.33	.37	.42
21	.39	.42	.43	.41	.47	.49	.38	.30	.31	.33	.37	.43
22	.39	.42	.43	.41	.47	.48	.38	.31	.31	.33	.37	.42
23	.39	.42	.43	.41	.48	.48	.37	.31	.31	.33	.38	.43
24	.40	.42	.44	.41	.48	.48	.37	.31	.31	.33	.38	.43
25	.40	.42	.44	.41	.48	.48	.37	.30	.31	.33	.38	.43
26	.40	.42	.43	.41	.49	.48	.36	.30	.31	.33	.38	.43
27	.40	.42	.43	.41	.49	.47	.36	.31	.32	.33	.38	.43
28	.40	.42	.44	.41	.49	.47	.35	.31	.32	.33	.39	.43
29	.40		.44	.40	.50	.47	.35	.31	.32	.33	.39	.44
30	.40		.44	.40	.50	.46	.34	.31	.32	.33	.39	.44
31	.40		.44		.50		.33	.31		.33		.44
Sum	12.01	11.56	13.37	12.64	13.96	14.95	12.57	9.53	9.33	10.09	10.75	12.96

Current Year 1991 — Period 1965-1991

Month	Extreme Gage Metres High	Extreme Gage Metres Low	Extreme-Cubic Metres per Second Day	ϕ High	Day	ϕ Low	Average	Volume-Thousands of Cubic Metres Total	Average	Maximum	Minimum
Jan.			!24	0.40	! 1	0.37	0.39	1,038	980	1,532	163
Feb.			!17	.42	! 1	.40	.41	999	909	1,427	121
Mar.			!24	.44	! 1	.42	.43	1,155	941	1,462	85.6
April			! 1	.44	!29	.40	.42	1,092	874	1,388	59.2
May			!29	.50	! 1	.40	.45	1,206	878	1,430	81.7
June			! 3	.52	30	.46	.50	1,292	826	1,322	18.1
July			! 1	.46	31	.33	.41	1,086	817	1,884	9.3
Aug.			! 1	.33	7	.30	.31	823	818	1,531	8.0
Sept.			!27	.32	1	.30	.31	806	802	1,287	16.2
Oct.			!15	.33	! 1	.32	.33	872	940	1,400	19.1
Nov.			!28	.39	! 1	.33	.36	929	911	1,378	31.1
Dec.			!29	.44	1	.39	.42	1,120	959	1,441	78.6
Yearly				0.52		0.30	0.39	12,418	10,655	15,992	856

* Discharge measurement made on this day ϕ 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 kilometre 903, 366 metres upstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila and 20.4 river kilometres downstream from Amistad Dam. The zero of the gage is 264.93 metres above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 35 discharge measurements during the year, 12 by the United States Section and 23 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 1991. Records are available from May 1900 through April 1915 for a station 19.6 kilometres upstream; from December 1919 through March 1920 for a station 14.0 kilometres upstream near McKee's Switch; from July 2, 1941 through 1954 and October 1960 through 1967 for a station 366 metres downstream at the international highway bridge; and from September 1954 through 1991 for a station, Rio Grande below Amistad Dam, 17.0 kilometres 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 32,300 m3/sec occurred on June 28, 1954, with a gage height of 11.66 metres at a station 366 metres downstream. The lowest recorded flow was 3.51 m3/sec which occurred March 5 and 6, 1969, with a gage height of 0.38 metres.

Average Flow in Cubic Metres per Second**

Daily:	Max.	1,810	Sept. 22, 1974	Min.	4.64	Aug. 13, 1971
Monthly:	Max.	632	Sept. 1974	Min.	5.32	October 1971
Yearly:	Max.	146	1974	Min.	19.9	1972

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	71.6	41.1	29.7	101	91.2	92.9	98.8	89.5	192	379	276	45.3
2	71.1	40.5	15.5	101	91.8	96.3	95.7	88.4	195	377	278	44.7
3	71.6	40.8	50.1	101	90.1	93.7	94.6	88.6	195	382	278	44.7
4	73.3	39.6	62.3	99.4	91.8	95.4	95.7	88.9	195	484	276	44.5
5	73.3	39.6	62.9	102	92.0	94.6	93.5	92.0	195	606	103	48.4
6	71.9	41.1	63.2	99.4	90.3	88.6	92.9	90.6	236	606	61.5	47.6
7	73.1	41.1	66.6	99.1	90.9	86.7	90.6	92.0	247	598	68.3	45.9
8	73.1	41.1	66.8	94.6	91.5	87.2	90.6	90.1	248	598	70.5	45.6
9	73.1	41.1	67.7	97.7	89.5	88.1	90.6	90.3	245	598	57.5	42.2
10	71.4	41.6	68.8	96.0	88.9	88.6	90.6	89.5	242	569 *	46.4	43.6
11	73.3	41.1	67.1	96.0	86.4	86.1	94.0	90.6	244	464 *	45.6	43.3
12	71.9	41.3	66.3	94.9	92.0	91.5	88.4	90.3	246 *	405	46.2	44.2
13	71.9	41.1	67.1	92.9	100	88.9	91.8	90.6	263	405	47.3	45.0
14	70.8	42.2	68.3	94.9	91.8	* 91.8	92.3	90.6	348	405	45.9	45.0
15	70.0	43.6	68.5	91.5	90.1	90.6	91.5	* 90.3	329	340	45.0	46.4
16	70.8	44.2	70.2	94.3	91.2	91.2	92.6	* 88.9	346	266	43.3	47.9
17	* 70.5	44.7	68.5	91.8	* 92.0	90.3	92.3	88.9	382	222 *	51.8	48.1
18	69.4	43.6	70.2	93.7	91.5	92.3	* 86.1	90.6	382	267	37.7	46.2
19	68.5	44.7	90.6	92.0	91.8	89.2	85.8	91.8	566	270	43.3	* 47.3
20	68.8	43.9	97.7	92.6	92.0	97.7	83.3	91.8	405	272	43.9	46.4
21	68.8	43.6	97.4	92.9	93.2	93.7	86.7	90.9	385	274	* 45.3	47.3
22	68.8	* 43.3	* 98.8	90.9	92.6	96.0	91.2	90.9	377	271	* 44.7	46.2
23	68.5	43.3	103	* 92.3	* 90.6	97.4	89.5	92.6	377	208	43.9	45.9
24	65.4	62.9	101	92.9	90.3	100 *	88.6	92.3	377 *	274	44.7	24.0
25	* 65.7	61.7	98.8	92.6	99.1	98.3	* 88.4	77.9	382	275	44.5	19.2
26	66.0	62.9	97.7	* 92.0	90.6	98.0	90.1	106	382	274	43.3	19.3
27	64.6	61.5	99.4	93.5	91.5	96.6	88.1	91.5	379	274	42.5	* 18.2
28	64.3	63.7	98.3	92.3	93.5	96.0	89.8	91.8	379	274	42.5	15.0
29	61.7		100	90.3	91.5	98.0	90.1	91.2	382	269	41.3	15.0
30	43.3		102	91.5	90.9	101	90.9	163	382 *	279	43.0	14.6
31	41.1		101		92.9		89.8	193		280		14.4
Sum	2,107.6	1,280.9	2,385.5	2,847.0	2,843.5	2,796.7	2,814.9	2,985.4	9,503	11,465	2,400.9	1,191.4

Current Year 1991 | # Period 1968-1991

Month	Extreme Gage Metres High	Extreme Gage Metres Low	Extreme-Cubic Metres per Second High Day	High	Low Day	Low	Average	Volume-Thousands of Cubic Metres Total	Average	Maximum	Minimum
Jan.	0.90	0.47	4	121	29	11.7	68.0	182,097	127,641	272,866	17,882
Feb.	.87	.47	28	112	4	12.5	45.7	110,670	160,500	552,852	22,983
Mar.	.91	.45	30	126	2	9.94	77.0	206,107	184,475	471,234	21,337
April	.97	.57	!26	151	8	26.9	94.9	245,981	181,627	469,594	41,748
May	.99	.57	!11	161	!10	26.9	91.7	245,678	263,760	669,284	38,149
June	1.01	.57	22	171	8	26.4	93.2	241,635	201,022	417,899	28,546
July	1.02	.53	21	177	9	20.3	90.8	243,207	176,359	452,566	38,823
Aug.	1.13	.55	31	234	16	23.1	96.3	257,939	204,241	827,137	35,556
Sept.	2.37	.89	19	756	1	120	317	821,059	275,298	1,637,441	47,921
Oct.	1.93	.59	5	612	23	29.7	370	990,576	249,787	1,005,540	14,281
Nov.	1.22	.46	! 1	286	15	10.6	80.0	207,438	136,583	650,690	16,830
Dec.	.73	.46	17	64.0	24	10.6	38.4	102,937	110,673	282,187	17,168
Yearly	2.37	0.45		756		9.94	122	3,855,324	2,271,966	4,617,893	627,328

* Discharge measurement made on this day ! And other days ** Period 1968-1991

\# 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 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 2.9 creek kilometres from the confluence with the Rio Grande. This stream enters the Rio Grande at river kilometre 903 on the upstream side of the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila and 20.8 river kilometres downstream from Amistad Dam. The zero of the gage is 270.00 metres above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 17 discharge measurements during the year, a stable rating curve up to 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 1991.

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 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 275.08 metres 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. 1,800 m3/sec with a gage height of 7.70 metres on June 17, 1961. Min. no flow on several occasions.

Average Flow in Cubic Metres per Second**

Daily:	Max.	678	June 17, 1961	Min.	0	Dec. 23,	1956
Monthly:	Max.	29.8	June 1961	Min.	0.01	Oct.	1952
Yearly:	Max.	2.74	1961	Min.	0.08		1952

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.18	0.27	0.30	0.13	0.10	0.10	0.06	0.04	0.04	0.72	0.10	0.24
2	.19	.27	.30	.12	.10	.10	.05	.04	.04	.68	.10	.24
3	.20	.27	.28	.12	.10	.10	.05	.04	.09	.64	.10	.25
4	.21	.28	.27	* .13	.10	.10	5.23	.04	.06	.60	.12	.25
5	.20	.28	.28	3.70	.10	.09	.26	.04	* .05	.57	.12	.26
6	.20	.27	.30	.39	.10	.94	.13	.04	.04	.56	.14	.26
7	.22	.28	.29	.28	.10	.19	.11	.04	.04	.56	* .12	.26
8	.22	.28	.28	.24	.10	.11	.10	.04	.04	.56	.12	.26
9	.22	.29	.26	.21	.09	.10	.10	.04	.04	.56	.12	.31
10	.22	.31	.30	.20	.10	.09	.09	.04	.04	.54	.12	.35
11	.22	.29	.31	.19	.10	.09	.09	.04	.04	.46	.12	.45
12	.22	.27	.28	.19	.08	.09	.08	.04	.04	.42	.20	.47
13	.21	.27	.20	.19	14.5	* .09	.08	.04	.04	.34	.20	.48
14	.22	.26	.16	.18	.51	.48	.08	* .04	13.7	.32	.21	.46
15	.20	.26	* .16	.16	.23	.14	.07	.04	.21	.25	.20	.45
16	.20	.28	.16	.17	.18	.10	.06	.04	.53	.24	.20	.45
17	.21	.24	.16	.18	.16	* .09	.07	.04	.23	.24	.21	.45
18	* .24	.24	.16	.18	.15	.08	.07	.04	2.70	* .18	.21	.46
19	.24	.25	.16	.17	.12	.08	.08	.04	122	.10	.21	.52
20	.23	.24	.16	.14	.12	.08	.08	.04	7.36	.10	.21	.76
21	.21	.28	.16	.12	.13	.08	.08	.04	3.15	.10	.23	2.04
22	.22	.26	.14	.12	.13	.07	.07	.04	2.32	.10	.24	1.18
23	.23	.25	.14	.12	* .12	.06	.06	.04	1.85	.10	.26	.69
24	.24	.25	.14	.12	.15	.06	.06	.04	1.67	.10	.28	.58
25	.24	.27	.15	.12	.12	.06	.05	.04	1.22	.10	.29	.56
26	.27	.28	.15	.12	.12	.06	* .05	.04	* .97	.10	.31	.58
27	.27	.28	.14	.11	.12	.05	.05	.04	.87	.10	.28	.54
28	.28	* .30	.13	.11	.10	.05	.04	.04	.78	.10	.26	.52
29	.29		.12	.10	.10	.05	.04	.04	.70	.10	.25	.52
30	.28		.12	.10	.10	.06	.04	.04	.68	.10	.26	.52
31	.27		.12		.10		.04	.04		* .10		* .52
Sum	7.05	7.57	6.28	8.41	18.43	3.84	7.52	1.24	161.54	9.74	5.79	15.88

Current Year 1991 | Period 1938–1991

Month	Extreme Gage Metres High	Extreme Gage Metres Low	Extreme–Cubic Metres per Second Day	High	Day	Low	Average	Volume–Thousands of Cubic Metres Total	Average	Maximum	Minimum
Jan.	0.18	0.14	29	0.31	1	0.17	0.23	609	492	1,122	38.9
Feb.	.18	.16	10	.34	14	.22	.27	654	596	7,339	41.1
Mar.	.18	.13	11	.34	!26	.12	.20	543	697	3,214	73.0
April	.86	.11	5	25.2	29	.09	.28	727	1,673	20,488	93.0
May	1.36	.11	13	76.0	9	.08	.59	1,592	1,521	11,200	111
June	.46	.08	6	4.70	27	.04	.13	332	2,848	77,117	54.0
July	.91	.08	4	29.7	3	.04	.24	650	1,621	20,240	33.1
Aug.	.10	.07	5	.06	25	.03	.04	107	1,520	24,531	52.1
Sept.	3.36	.08	19	403	! 1	ϕ .04	5.38	13,957	3,222	61,139	46.0
Oct.	.24	.11	1	.72	28	.09	.31	842	1,975	25,217	27.9
Nov.	.19	.11	12	.36	1	.09	.19	500	519	3,522	25.9
Dec.	.53	.16	21	6.78	2	.22	.51	1,372	464	1,372	27.1
Yearly	3.36	0.07		403		0.03	0.69	21,885	17,148	86,376	2,550

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

** Period 1938–1991

WATER BULLETIN NUMBER 61 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

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 1.0 creek kilometre downstream from the source of the springs and 6.3 creek kilometres 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 91 metres 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 kilometre 902, 0.8 river kilometre 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, 287.30 metres and 283.70 metres above 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 24 discharge measurements at each station 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 1991.

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 Cubic Metres per Second

Daily:	Max.	4.84	July 23, 1976	Min.	0.83	July 29, 1964
Monthly:	Max.	4.33	December 1976	Min.	0.97	August 1964
Yearly:	Max.	4.22	1977	Min.	1.43	1963

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.77	3.09	3.77	3.88	3.96	4.19	3.51	3.79	3.77	* 3.99	3.91	3.48
2	3.85	3.12	3.74	3.74	4.02	4.13	* 3.43	3.82	3.79	3.96	3.68	3.48
3	3.77	3.06	3.79	* 3.79	4.02	4.19	3.34	3.82	3.94	4.05	3.65	* 3.43
4	3.79	2.83	3.79	4.13	4.08	* 4.25	3.43	3.79	* 3.77	4.25	3.94	3.43
5	3.82	* 2.89	* 3.99	3.71	4.05	4.19	3.46	3.71	3.85	3.96	* 3.71	3.46
6	3.88	3.03	3.96	3.57	4.11	3.88	3.43	* 3.77	3.85	3.99	3.71	3.51
7	3.85	3.31	4.08	3.60	* 3.99	3.74	3.46	3.62	3.85	3.96	3.74	3.57
8	* 4.08	3.17	4.02	3.68	3.94	3.74	3.46	3.79	3.68	3.91	3.68	3.60
9	4.22	3.20	4.05	3.62	3.82	3.77	3.48	3.77	3.71	3.94	3.74	3.54
10	4.22	3.29	3.99	3.62	3.74	3.77	3.46	3.82	3.85	3.88	3.46	3.51
11	4.16	3.40	4.08	3.65	3.57	3.82	3.48	3.77	3.79	3.85	3.46	3.54
12	4.19	3.51	4.05	3.88	3.57	3.77	3.48	3.94	3.74	3.88	3.57	3.51
13	4.08	3.54	4.11	3.91	3.40	3.85	3.46	3.96	3.74	3.91	3.57	3.48
14	4.08	3.60	4.05	3.71	3.43	3.77	3.34	3.96	3.60	3.91	3.62	3.57
15	4.08	3.51	3.99	3.88	3.48	3.71	3.48	3.88	3.57	* 3.88	3.62	3.54
16	4.02	3.68	3.96	* 3.91	3.48	3.68	* 3.57	3.85	3.48	3.91	3.91	3.74
17	4.19	3.74	4.08	3.88	3.51	3.88	3.54	3.77	* 3.48	3.91	3.62	3.71
18	4.08	3.85	4.11	3.94	3.51	* 3.74	3.60	3.71	3.96	3.88	3.68	* 3.68
19	4.16	3.79	4.19	3.94	3.51	3.65	3.62	3.77	4.73	3.77	* 3.74	3.65
20	4.05	* 3.91	* 3.99	3.88	3.62	3.94	3.54	* 3.74	4.62	3.85	3.68	3.65
21	4.39	3.85	4.19	3.88	* 3.62	3.54	3.46	3.77	4.30	3.88	3.60	3.65
22	4.11	3.79	4.05	4.08	3.74	3.51	3.51	3.85	4.42	3.88	3.54	3.62
23	* 3.99	3.79	4.02	4.25	3.77	3.62	3.57	3.71	4.39	4.19	3.43	3.60
24	4.16	3.79	3.94	3.99	3.85	3.60	3.65	3.74	4.45	3.82	3.60	3.60
25	3.60	3.77	3.96	3.96	4.05	3.60	3.71	3.77	3.94	3.91	3.57	3.54
26	3.51	3.74	3.94	4.08	4.30	3.46	3.51	3.79	3.91	3.82	3.54	3.62
27	3.46	3.79	3.82	4.02	4.30	3.29	3.40	3.85	3.96	3.74	3.60	3.60
28	3.40	3.77	3.79	4.53	4.33	3.46	3.43	3.82	3.88	3.79	3.48	3.65
29	3.37		3.71	3.94	4.47	3.96	3.43	3.85	3.88	3.77	3.54	3.54
30	3.29		3.71	3.88	4.59	3.57	3.60	3.85	3.94	3.85	3.51	3.60
31	3.31		3.65		4.62		3.74	3.82		3.82		3.60
Sum	120.93	97.81	122.57	116.53	120.45	113.27	108.58	117.87	117.84	121.11	109.10	110.70

Current Year 1991 | Period 1961-1991

Month	Extreme Gage Metres High	Extreme Gage Metres Low	Extreme–Cubic Metres per Second Day	ϕ High	Day	ϕ Low	Average	Volume–Thousands of Cubic Metres Total	Average	Maximum	Minimum
Jan.			21	4.39	30	3.29	3.90	10,448	8,596	11,558	2,805
Feb.			20	3.91	4	2.83	3.49	8,451	7,622	10,129	2,614
Mar.			!19	4.19	31	3.65	3.95	10,590	8,374	11,137	2,917
April			28	4.53	6	3.57	3.88	10,068	8,071	10,610	2,826
May			31	4.62	13	3.40	3.89	10,407	8,472	11,471	3,506
June			4	4.25	27	3.29	3.78	9,787	8,201	11,162	3,060
July			31	3.74	! 3	3.34	3.50	9,381	8,420	11,523	2,731
Aug.			!13	3.96	7	3.62	3.80	10,184	8,417	11,751	2,608
Sept.			19	4.73	!16	3.48	3.93	10,181	8,220	11,038	3,152
Oct.			4	4.25	27	3.74	3.91	10,464	8,689	11,408	3,094
Nov.			4	3.94	23	3.43	3.64	9,426	8,379	11,058	2,941
Dec.			16	3.74	! 3	3.43	3.57	9,564	8,721	11,633	2,948
Yearly				4.73		2.83	3.77	118,951	100,182	133,083	45,119

* Discharge measurement made on this day ϕ 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, 1.8 creek kilometres from the confluence with the Rio Grande, and about 3.2 kilometres south-southeast of the Del Rio, Texas. This stream enters the Rio Grande at river kilometre 902, 0.8 river kilometre downstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila. The zero of the gage is 267.44 metres above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 45 discharge measurements during the year, 24 by the United States Section and 21 by the Mexican Section of the Commission, and a continuous record of gage heights. Computations by shifting control methods. Records available: September 1931 through 1991.

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 at Del Rio reaches a stage of 4.6 metres, or a flow of about 1,700 m3/sec. On June 28, 1954 combined creek flow and backwater from the Rio Grande reached a stage of 7.47 metres, the highest of record, at this station.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 1,270 m3/sec on June 14, 1935 with a gage height of 7.07 metres. Min. 0.01 m3/sec on July 20, 1953.

Average Flow in Cubic Metres per Second

Daily:	Max.	459	June 14, 1935	Min.	0.04	July 21, 1953
Monthly:	Max.	22.8	June 1935	Min.	0.13	July 1953
Yearly:	Max.	3.85	1935	Min.	0.71	1953

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	4.16	3.17	3.68	3.14	2.97	2.92	3.26	2.58	3.48	* 3.46	3.31	3.20
2	4.11	3.06	3.54	3.09	3.12	3.09	* 3.31	2.58	3.03	3.43	3.48	3.09
3	4.11	2.95	3.60	* 3.00	3.12	3.20	3.37	2.72	3.14	3.43	3.54	* 2.95
4	4.11	2.89	3.54	2.83	3.09	* 3.26	5.13	2.80	* 3.06	3.40	3.57	3.00
5	4.08	* 2.81	* 3.46	6.29	2.92	3.17	3.14	2.95	2.97	3.37	* 3.51	3.12
6	4.13	2.83	3.43	4.33	2.89	3.68	3.09	* 2.95	3.14	3.40	3.51	3.17
7	4.16	2.86	3.46	4.28	* 2.86	3.77	3.00	3.03	3.34	3.40	3.57	3.34
8	* 4.13	2.89	3.31	4.22	2.92	3.48	3.00	3.03	3.14	3.46	3.57	3.46
9	4.05	2.95	3.40	3.62	2.86	3.62	3.06	3.00	3.14	3.54	3.65	3.40
10	3.99	2.97	3.40	3.34	2.95	3.26	3.00	3.06	3.20	3.51	3.60	3.37
11	3.99	2.92	3.43	3.37	2.83	3.17	2.95	3.03	3.12	3.57	3.62	3.57
12	3.94	2.86	3.43	3.34	2.92	3.09	2.92	2.89	2.72	3.48	3.71	3.68
13	3.94	2.92	3.46	3.43	3.94	3.03	2.79	2.80	2.66	3.48	3.62	3.68
14	3.88	2.92	3.43	3.34	3.29	4.87	2.77	2.83	5.83	3.34	3.68	3.74
15	3.91	3.09	3.48	3.46	3.20	3.54	2.51	2.83	4.02	* 3.37	3.65	3.79
16	3.94	3.09	3.54	* 3.31	3.12	3.34	* 2.44	3.00	4.36	3.37	3.60	3.65
17	* 3.88	3.14	3.48	3.14	3.12	3.20	2.40	3.17	* 4.05	3.43	3.46	3.68
18	3.94	3.17	3.48	* 3.26	3.06	* 3.17	2.35	3.40	3.74	3.46	3.68	* 3.79
19	3.91	3.20	3.60	3.06	2.95	3.12	2.33	3.29	5.89	3.43	* 3.85	3.71
20	3.85	* 3.31	* 3.60	3.26	2.78	3.12	2.45	* 3.31	3.62	3.34	3.85	3.79
21	3.88	3.46	3.54	3.31	* 2.72	* 3.14	2.66	3.31	3.40	3.31	3.65	3.85
22	3.85	3.40	3.57	3.23	2.69	3.17	2.74	3.48	3.43	3.34	3.62	3.46
23	* 3.82	3.40	3.48	2.95	2.69	3.17	2.71	* 3.34	3.46	3.37	3.62	3.37
24	3.77	3.40	3.37	3.06	* 2.66	3.20	2.79	3.37	3.54	3.37	3.65	3.40
25	3.60	3.43	3.26	3.23	2.61	3.03	* 2.95	3.29	3.60	* 3.43	3.46	3.40
26	3.57	3.51	3.31	3.12	2.61	3.03	3.03	3.17	3.68	3.46	3.46	3.51
27	3.48	3.51	3.23	3.17	2.53	2.89	3.17	3.14	* 3.57	3.48	3.48	3.46
28	3.37	* 3.60	3.23	3.12	2.57	2.65	3.23	3.20	3.48	3.51	3.31	3.54
29	3.31		3.17	2.95	2.60	2.83	3.14	3.09	3.51	3.51	* 3.23	3.60
30	3.29		3.14	2.86	2.64	3.31	2.97	2.97	3.46	3.46	3.34	* 3.68
31	3.23		3.17		2.72		2.77	3.00		3.34		3.68
Sum	119.38	87.71	106.22	102.11	89.95	97.52	91.43	94.61	106.78	106.25	106.85	108.13

Current Year 1991 | Period 1932–1991

Month	Extreme Gage Metres High	Extreme Gage Metres Low	Extreme Cubic Metres per Second Day	Extreme Cubic Metres per Second High	Extreme Cubic Metres per Second Day	Extreme Cubic Metres per Second Low	Average	Volume–Thousands of Cubic Metres Total	Average	Maximum	Minimum
Jan.	0.41	0.38	8	4.30	31	3.12	3.85	10,314	6,597	10,985	1,152
Feb.	.40	.35	21	3.68	11	2.72	3.13	7,578	5,471	10,642	601
Mar.	.44	.18	27	4.11	8	1.60	3.43	9,177	5,292	10,304	850
April	1.67	.33	5	26.6	!29	2.68	3.40	8,822	5,646	12,836	698
May	1.03	.30	13	11.1	29	2.35	2.90	7,772	6,469	21,697	912
June	1.02	.13	14	11.4	28	.86	3.25	8,426	6,649	59,059	370
July	1.37	.28	4	18.9	19	2.26	2.95	7,900	5,654	27,232	352
Aug.	.59	.25	22	6.60	1	2.29	3.05	8,174	5,141	9,355	432
Sept.	1.40	.28	19	19.8	12	2.44	3.56	9,226	6,621	35,373	1,076
Oct.	.39	.34	29	3.77	!20	3.20	3.43	9,180	6,762	17,551	1,233
Nov.	.43	.34	12	4.19	29	ϕ 3.23	3.56	9,232	5,858	10,567	649
Dec.	.52	.34	1	5.24	4	2.86	3.49	9,342	6,081	10,660	612
Yearly	1.67	0.13		26.6		0.86	3.33	105,143	72,241	121,046	22,441

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

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

DESCRIPTION: Foot bridge for making current meter measurements, and water-stage recorder (graphic), located on the left bank of a gunnite-lined section of the canal at latitude 29°03'00", longitude 100°39'40", 0.8 canal kilometre downstream from the Tequesquite Creek Siphon, 5.6 canal kilometres upstream from the Las Moras Creek Siphon, about 12.1 kilometres north-northwest of Quemado, Maverick County, Texas and 20.6 kilometres from the canal intake. The canal intake is at river kilometre 875, 28.0 river kilometres 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 1991.

REMARKS: At canal kilometre 51.2 a portion of the diverted water returns to the river through the Maverick Power Plant, and the remainder enters the Maverick Canal Extension. In 1991, 5,184 hectares of land were irrigated between this station and the power plant, and 10,256 hectares were irrigated from the extension, making a total of 15,440 hectares. A total of 1,202,876 m3 returned to the Rio Grande at the power plant and through irrigation system returns published in following pages of this bulletin.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 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 Cubic Metres per Second**

Daily:	Max.	50.4	Aug. 19, 1990	Min.	0	Oct. 2 & 3,	1978
Monthly:	Max.	47.5	April 1990	Min.	8.35	Feb.	1977
Yearly:	Max.	42.2	1980	Min.	17.9		1972

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	42.2	40.2	42.8	* 41.1	43.6	38.8	41.9	* 39.1	45.0	46.7	45.3	42.2
2	41.9	39.9	30.0	39.9	43.6	39.6	* 41.6	39.6	45.0	46.4	45.3	41.9
3	41.3	39.4	22.8	40.2	43.6	39.4	41.6	44.5	45.0	46.7	45.3	* 41.6
4	41.1	* 39.4	* 33.1	39.9	43.9	39.1	41.3	45.0	* 45.0	46.2	45.0	41.6
5	40.5	38.8	41.6	40.5	43.6	* 39.1	40.5	45.3	45.9	43.9	* 43.3	42.2
6	40.8	38.8	41.9	41.3	43.9	39.1	41.3	45.3	46.2	43.3	42.5	42.8
7	40.5	38.2	41.6	41.6	* 43.9	37.1	40.8	45.9	45.9	42.8	44.5	43.3
8	* 41.1	38.5	41.9	42.8	43.0	36.5	41.1	45.6	45.9	45.3	43.9	43.3
9	41.1	38.8	41.9	42.8	43.9	37.4	40.2	45.6	45.9	* 44.5	43.6	43.3
10	41.1	38.8	41.9	42.5	44.2	37.9	41.6	45.0	45.6	45.3	42.2	43.3
11	41.1	39.1	42.2	41.9	44.7	37.9	41.1	45.3	45.9	44.7	42.2	43.6
12	40.8	37.7	41.9	41.6	45.9	37.1	40.8	44.2	46.4	44.7	42.2	43.6
13	41.3	37.7	42.2	41.3	46.4	37.4	40.5	44.7	46.4	45.0	42.5	43.6
14	41.1	38.5	41.6	42.5	45.6	37.4	40.2	44.7	45.6	45.3	41.6	43.9
15	41.1	38.8	41.1	* 43.6	45.9	36.5	* 40.8	44.5	45.0	45.3	41.3	43.9
16	40.2	38.2	41.9	43.0	45.3	37.7	40.8	45.0	* 46.2	45.9	41.3	* 44.2
17	38.2	37.9	40.8	43.3	43.9	* 37.7	40.8	44.7	45.9	45.9	42.2	43.9
18	38.5	37.4	* 40.5	43.6	41.3	36.8	40.8	45.6	45.9	46.2	39.1	43.6
19	39.1	38.2	42.8	44.2	35.4	36.5	40.5	* 44.7	42.8	45.6	41.6	43.3
20	39.6	* 38.2	43.0	43.9	* 33.1	36.5	40.5	45.0	41.3	46.2	42.5	43.6
21	39.1	39.4	43.6	44.5	32.0	37.1	40.8	45.0	44.5	45.9	* 42.2	43.9
22	* 39.4	39.4	42.5	44.5	32.9	36.0	41.1	44.7	44.5	45.9	42.8	43.9
23	39.6	37.7	42.8	43.6	33.4	38.2	41.1	45.0	45.0	* 45.3	43.0	43.3
24	39.6	37.4	42.8	43.3	34.0	39.4	41.1	44.5	45.3	45.9	42.8	41.9
25	40.5	39.4	43.3	42.8	34.8	38.8	40.8	44.2	45.6	47.3	42.2	25.0
26	40.2	41.6	42.2	43.9	34.8	39.1	39.9	44.5	45.6	47.0	42.5	24.8
27	40.8	42.5	42.2	44.2	35.7	39.1	40.2	45.3	45.9	46.7	42.5	24.6
28	39.9	42.5	42.2	44.7	37.4	38.8	40.5	45.6	45.9	45.9	42.8	22.3
29	39.4		42.2	45.3	37.9	40.8	40.8	45.6	46.2	45.6	42.8	20.1
30	39.1		41.6	45.0	39.1	41.9	40.8	46.2	46.4	45.0	42.5	20.1
31	39.9		41.9		39.4		40.2	46.2		45.3		20.1
Sum	1,250.1	1,092.4	1,264.8	1,283.3	1,256.1	1,144.7	1,266.0	1,386.1	1,361.7	1,411.7	1,283.5	1,192.7

Current Year 1991 | Period 1968–1991

Month	Extreme Gage Metres High	Extreme Gage Metres Low	Extreme–Cubic Metres per Second High Day	Extreme–Cubic Metres per Second High	Extreme–Cubic Metres per Second Low Day	Extreme–Cubic Metres per Second Low	Average	Volume–Thousands of Cubic Metres Total	Average	Maximum	Minimum
Jan.	2.94	2.64	! 1	43.9	20	35.4	40.3	108,009	89,137	120,225	25,730
Feb.	2.92	2.46	27	44.7	25	32.6	39.0	94,383	85,039	108,750	20,233
Mar.	2.92	1.91	1	44.7	3	21.3	40.8	109,279	95,304	121,154	34,141
April	2.95	2.70	29	46.4	2	37.7	42.8	110,877	96,256	123,103	50,229
May	2.96	2.37	!13	47.0	21	31.7	40.5	108,527	101,737	126,490	49,910
June	2.82	2.50	30	42.8	!21	35.1	38.2	98,902	98,893	116,310	38,497
July	2.87	2.68	10	43.6	!13	38.8	40.8	109,382	100,343	120,518	44,129
Aug.	3.01	2.67	!28	47.0	2	38.2	44.7	119,759	101,665	119,784	45,279
Sept.	3.02	2.57	!12	47.0	20	35.4	45.4	117,651	97,398	117,876	40,659
Oct.	3.01	2.81	26	47.6	7	41.6	45.5	121,971	96,645	121,971	27,426
Nov.	2.97	2.43	7	46.7	18	33.1	42.8	110,894	85,648	115,209	27,737
Dec.	2.97	1.82	16	46.7	29	19.9	38.5	103,049	85,216	120,494	29,007
Yearly	3.02	1.82		47.6		19.9	41.6	1,312,683	1,133,281	1,337,047	565,712

* Discharge measurement made on this day ! And other days ** Period 1968–1991

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", 2.6 creek kilometre from the confluence with the Rio Grande, and about 30.6 kilometres southeast of Del Rio, Texas. This stream enters the Rio Grande at river kilometre 864, 9.1 river kilometres downstream from the Maverick County Water Control and Improvement District No. 1 diversion dam. The zero of the gage is 248.01 metres above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 30 discharge measurements during the year, 12 by the United States Section and 18 by the Mexican Section of the Commission, and a continuous record of gage heights. Records available: September 1955 through 1991 at this station, and November 22, 1928 through August 1955 at a site 6.3 kilometres 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 2,270 m3/sec, backwater may reach this station. Backwater from the Rio Grande flood of June 1954 reached a gage height of 8.78 metres, or an elevation of 256.79 metres above mean sea level, at this station.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 5,270 m3/sec on June 24, 1948 with a gage height of 9.75 metres. Min. frequently no flow.

Average Flow in Cubic Metres per Second

Daily:	Max.	799	June 24, 1948	Min.	0	Frequently
Monthly:	Max.	27.0	June 1948	Min.	0	Frequently
Yearly:	Max.	2.97	1932	Min.	0.04	1980

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.39	0.35	0.23	0.18	0.08	0.04	0.08	0.04	0.02	0.11	0.18	0.39
2	.38	.38	.24	.18	.07	.04	.09	.03	.02	* .11	.19	.38
3	.39	.42	.23	* .16	.07	.04	* .08	.02	.02	.11	.20	.38
4	.39	.44	.21	.18	.08	* .04	.12	.02	* .02	.10	.17	* .37
5	.40	.39	.20	.26	.08	.04	.10	.02	.02	.10	* .18	.37
6	.41	.39	* .19	.45	.07	.07	.10	* .02	.02	.11	.21	.39
7	.42	.31	.19	.34	.07	.05	.07	.02	.03	.11	.24	.48
8	* .44	* .29	.21	.27	* .07	.04	.06	.02	.02	.11	.25	.45
9	.47	.34	.22	.22	.07	.05	.06	.02	.01	.11	.25	.44
10	.46	.33	.21	.20	.07	.05	.06	.02	.01	.12	.27	.44
11	.47	.32	.21	.20	.07	.04	.05	.02	.01	.12	.25	.46
12	.47	.32	.22	.19	.07	.04	.05	.02	.02	.12	.27	.47
13	.46	.29	.20	.17	.12	.04	.05	.03	.02	.13	.27	.51
14	.47	.28	.18	.16	.13	.06	.05	.05	.07	.13	.29	.47
15	.46	.28	.16	.14	.11	.45	.05	.04	3.54	.13	.29	.44
16	.46	.27	.19	.17	.09	.40	.04	.03	3.46	.13	.28	.43
17	* .44	.27	.21	.18	.08	.16	.03	.02	.91	.12	.48	.44
18	.42	.27	.17	* .19	.07	.09	.03	.02	.21	.12	.55	.45
19	.40	.25	.21	.19	.07	.07	.03	.02	.28	.13	.44	.49
20	.39	.26	.23	.18	.07	.07	.03	.02	.20	.14	.37	.63
21	.37	.31	.23	.16	.07	* .07	.03	.02	.18	.14	.35	.93
22	.36	.28	.22	.15	.07	.07	.04	.02	.16	.14	.36	.91
23	.35	.27	.20	.16	.07	.07	.04	* .02	.15	.14	.39	.71
24	.33	.26	.20	.16	* .07	.06	.05	.02	.14	.14	.39	.61
25	.33	.27	.22	.16	.07	.06	* .05	.02	.14	* .14	.39	.59
26	.33	.26	.22	.13	.07	.05	.04	.02	.13	.17	.40	.61
27	.32	.28	.22	.08	.07	.04	.03	.02	* .12	.18	.40	.61
28	.32	* .29	.20	.08	.07	.03	.04	.02	.13	.17	.42	.62
29	.31		.18	.08	.07	.04	.04	.02	.12	.16	* .56	.61
30	.31		.15	.08	.06	.05	.04	.02	.12	.15	.43	.60
31	.31		.16		.06		.05	.02		.16		.60
Sum	12.23	8.67	6.31	5.45	2.36	2.42	1.68	0.72	10.30	4.05	9.72	16.28

Current Year 1991 | Period 1929-1991

Month	Extreme Gage Metres High	Extreme Gage Metres Low	Extreme-Cubic Metres per Second High Day	Extreme-Cubic Metres per Second High	Extreme-Cubic Metres per Second Low Day	Extreme-Cubic Metres per Second Low	Average	Volume-Thousands of Cubic Metres Total	Volume-Thousands of Cubic Metres Average	Volume-Thousands of Cubic Metres Maximum	Volume-Thousands of Cubic Metres Minimum
Jan.	0.37	0.33	13	0.48	!29	0.31	0.39	1,057	686	2,748	0
Feb.	.37	.31	! 3	.46	8	.23	.31	749	716	7,106	0
Mar.	.34	.27	2	.26	30	.13	.20	545	641	3,085	0
April	.40	.24	6	.50	!27 ϕ	.08	.18	471	1,520	33,464	0
May	.30	.22	13	.16	!30	.06	.08	204	2,208	36,248	0
June	.43	.22	15	.84	!28	.03	.08	209	4,754	69,981	0
July	.28	.21	4	.16	!17 ϕ	.03	.05	145	1,751	37,030	0
Aug.	.22	.18	14	.05	!22	.01	.02	62.2	1,778	60,070	0
Sept.	1.17	.18	15	17.6	! 5	.01	.34	890	2,472	60,397	0
Oct.	.28	.25	29	.20	! 4	.10	.13	350	1,253	11,022	0
Nov.	.41	.27	17	.73	! 4	.16	.32	840	611	3,196	0
Dec.	.46	.34	21	1.06	! 3	.37	.53	1,407	706	3,041	0
Yearly	1.17	0.18		17.6		0.01	0.22	6,929	19,096	94,053	1,178

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

08-4555.00 RIO SAN DIEGO NEAR JIMENEZ, COAHUILA

DESCRIPTION: Cableway, masonry and concrete Cipolletti weir of 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 6.0 kilometres west of Jimenez, Coahuila, and 7.0 river kilometres 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 kilometre 856, 16.8 river kilometres downstream from Maverick County Water Control and Improvement District No. 1 diversion dam and 46.4 river kilometres downstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila. The zero of the gage is 253.51 metres 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 41 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 1991. 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 0.80 metres; in November 1961 an additional 0.06 metres, and the capacity of the weir was increased from 20 m3/sec to 22 m3/sec.

EXTREME FLOWS FROM RECORDS:** Momentary: Max. 2,320 m3/sec on June 17, 1961 with a gage height of 6.31 metres. Min. no flow occurred on several occasions.

Average Flow in Cubic Metres per Second**

Daily:	Max.	1,040	July 18, 1975	Min.	0	Occasionally
Monthly:	Max.	67.5	Oct. 1932	Min.	0.23	July 1956
Yearly:	Max.	17.6	1976	Min.	0.68	1956

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	7.77	5.77	4.91	1.77	1.38	1.01	1.54	2.80	2.63	* 26.8	12.6	13.1
2	7.68	5.77	4.89	* 1.69	1.38	1.02	1.54	2.51	2.96	26.4	12.4	13.1
3	7.78	5.77	4.67	1.61	1.40	1.11	1.36	2.33	2.82	25.7	12.4	* 12.3
4	7.68	5.77	4.34	1.62	1.40	* 1.01	1.36	2.26	2.77	25.2	12.4	11.8
5	7.68	5.77	4.10	2.09	1.40	1.01	1.36	2.26	2.86	24.4	* 11.8	11.8
6	7.68	5.58	4.01	2.20	1.30	2.09	1.54	2.25	3.21	24.4	11.8	11.8
7	7.39	5.42	4.01	2.46	* 1.14	1.91	1.46	2.16	4.12	24.2	11.8	11.6
8	* 7.39	5.28	3.99	2.43	1.22	1.49	1.37	2.09	4.80	* 23.8	13.3	10.8
9	7.39	5.28	3.79	* 2.72	1.22	1.40	* 1.42	2.09	4.80	23.6	13.8	10.5
10	7.39	5.28	3.67	2.70	1.22	1.21	1.28	2.09	* 4.84	23.0	14.2	* 10.5
11	7.39	* 5.16	3.57	2.60	1.06	1.21	1.20	2.10	4.80	22.2	14.2	10.7
12	7.10	* 5.03	* 3.58	2.42	1.07	1.21	1.19	2.26	5.03	21.5	* 14.7	10.4
13	6.95	5.28	3.57	2.25	3.01	1.21	1.19	* 2.26	5.04	21.0	14.6	10.5
14	6.84	5.16	3.38	2.05	* 2.12	1.53	1.16	2.17	10.5	20.3	14.4	10.2
15	* 6.84	5.03	2.95	1.98	1.55	1.55	1.02	2.00	7.85	* 19.8	14.2	9.91
16	6.84	5.03	2.75	* 1.70	1.34	1.45	1.02	1.90	11.0	19.0	13.8	9.78
17	6.84	4.96	2.74	1.61	1.24	1.32	1.02	1.90	18.4	18.8	13.8	* 9.76
18	7.11	4.92	2.63	1.61	1.23	* 1.19	1.01	1.74	21.0	16.5	13.8	9.85
19	6.84	* 4.92	* 2.51	1.61	1.23	1.19	1.02	1.90	123	15.6	* 13.6	10.1
20	6.68	4.91	2.46	1.45	1.23	1.24	1.20	1.81	40.5	15.3	13.4	11.3
21	6.44	5.14	2.41	1.44	* 1.39	1.53	2.38	1.90	34.4	15.0	13.4	12.0
22	* 6.30	5.02	2.35	1.44	1.38	1.83	3.83	2.09	33.2	* 14.6	13.1	12.1
23	6.30	4.91	2.26	* 1.42	1.38	1.86	* 2.77	2.42	34.2	14.6	13.1	11.4
24	6.16	4.91	2.41	1.42	1.38	1.72	2.65	2.51	* 33.5	13.6	13.0	* 11.0
25	6.02	5.02	2.26	1.59	1.32	1.65	2.64	2.40	32.3	12.8	12.8	10.8
26	6.02	* 4.91	* 2.02	1.59	1.22	1.52	2.64	2.40	31.1	12.6	* 12.8	11.0
27	6.02	4.91	1.85	1.42	1.21	1.31	2.64	* 2.40	30.3	12.1	12.4	11.2
28	6.02	4.91	1.76	1.42	* 1.09	1.16	* 2.81	2.40	29.4	12.1	12.4	11.2
29	* 6.02		1.60	1.40	1.02	1.06	2.87	2.62	28.6	* 12.4	12.4	11.2
30	5.94		1.60	* 1.40	1.00	1.31	2.90	2.62	27.7	12.6	13.4	11.0
31	6.02		1.77		1.00		2.96	2.62		12.8		10.8
Sum	212.52	145.82	94.81	55.11	41.53	41.31	56.35	69.26	597.63	582.7	395.8	343.50

Current Year 1991 | Period 1933-1991

Month	Extreme Gage Metres High	Extreme Gage Metres Low	Extreme-Cubic Metres per Second High Day	High	Extreme-Cubic Metres per Second Low Day	Low	Average	Volume-Thousands of Cubic Metres Total	Average	Maximum	Minimum
Jan.	0.21	0.17	3	7.97	30	5.77	6.86	18,362	10,449	44,936	2,294
Feb.	.17	.14	! 1	5.77	!20	ϕ 4.91	5.21	12,599	8,155	31,774	1,307
Mar.	.14	.06	1	4.91	!29	1.60	3.06	8,192	7,077	33,353	1,653
April	.09	.05	9	ϕ 2.72	!29	ϕ 1.40	1.84	4,762	8,394	49,672	1,369
May	.14	.04	13	5.07	!30	ϕ 1.00	1.34	3,588	14,332	148,018	1,062
June	.11	.04	6	3.80	1	1.00	1.38	3,569	14,126	133,586	670
July	.15	.04	21	5.29	18	ϕ 1.01	1.82	4,869	16,927	167,937	604
Aug.	.09	.06	1	2.88	18	1.74	2.23	5,984	14,254	112,553	910
Sept.	1.85	.09	19	317	1	2.62	19.9	51,635	21,483	116,770	1,459
Oct.	.44	.26	1	27.3	!27	12.1	18.8	50,345	24,034	88,601	2,094
Nov.	.30	.26	12	14.9	! 5	11.8	13.2	34,197	17,180	79,017	990
Dec.	.28	.23	! 1	13.1	!17	ϕ 9.76	11.1	29,678	12,397	55,901	1,394
Yearly	1.85	0.04		317		1.00	7.22	227,780	168,808	557,474	21,500

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

** Period 1932-1991

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

DESCRIPTION: Cableway, control weir of 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 kilometre 853; 2.4 kilometres south-southeast of Jimenez, Coahuila, 3.0 river kilometres downstream from Rio San Diego, about 12.1 kilometres north-northwest of Quemado, Maverick County, Texas, 19.8 river kilometres downstream from the Maverick County Water Control and Improvement District No. 1 diversion dam, and 49.4 river kilometres downstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila. The zero of the gage is 234.39 metres above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 25 discharge measurements during the year, 18 by the Mexican Section and 7 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 1991. Records, excluding some high flow periods, are also available from 1956 through May 1965 for a station 14.0 river kilometres 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 21.5 river kilometres upstream largely control the flow at this station. The weir was placed in operation June 1, 1967, at which time the zero of the gage was set 1.00 metre higher.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 2,260 m3/sec on July 18, 1975 with a gage height of 7.68 metres. Min. 0.08 m3/sec several days in April 1983 with a gage height of 0.06 metres.

Average Flow in Cubic Metres per Second

Daily:	Max.	1,900	July 18, 1975	Min.	0.08	April 25 and 26, 1983
Monthly:	Max.	602	Sept. 1974	Min.	0.80	June 1969
Yearly:	Max.	124	1974	Min.	8.11	1968

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	41.9	15.7	37.8	59.3	58.8	58.6	57.6	60.8	163	361	228	23.8
2	42.2	16.1	6.03	59.9	59.2	61.1	56.3	60.4	163	356	228	23.4
3	44.3	16.4	4.26	60.0	57.7	55.7	56.7	54.6	164	357	229	23.2
4	44.7	16.8	37.6	60.0	58.7	57.6	69.3	55.6	164	377	229	22.4
5	45.6	18.4	34.7	75.8	58.8	58.1	59.5	55.5	162	563	128	22.0
6	44.9	18.3	36.6	64.2	56.5	67.9	58.3	54.9	202	577	48.0	21.4
7	45.3	18.8	36.4	64.3	56.7	65.7	58.4	55.1	216	579 *	46.1	22.0
8	42.8	18.4	36.2	* 61.9	58.2	63.2	57.0	54.4	217	575	46.8	20.7
9	42.0	17.3	36.0	63.5	56.8	62.5	57.1	54.2	223	577	47.4	* 20.4
10	42.6	18.3	35.9	61.2	57.0	* 61.7	58.6	55.7	219	570	26.9	20.6
11	41.7	* 17.6	* 35.7	65.2	53.1	59.3	58.3	54.8	216	474	* 25.6	21.8
12	43.5	18.2	35.5	64.0	57.6	64.4	57.3	* 55.5	215	371	27.6	21.6
13	41.9	17.7	34.7	63.6	* 79.7	62.4	57.8	55.3	216	366	28.4	21.7
14	* 41.0	17.2	34.5	61.1	60.5	67.0	58.7	54.0	331	364	28.4	21.2
15	40.8	16.6	34.6	56.2	56.5	68.0	57.4	54.9	306	336	28.0	19.9
16	40.0	16.9	34.2	61.5	56.6	62.1	55.9	54.1	312	242	28.0	19.5
17	42.6	18.4	35.4	61.9	56.8	61.8	57.5	54.9	352 *	175	27.6	* 19.9
18	44.9	18.4	34.0	61.5	59.0	62.6	56.6	54.4	355	237	31.8	20.4
19	40.9	18.8	37.9	60.2	65.3	62.5	57.8	55.1	708	235	24.8	20.1
20	41.2	17.8	57.8	59.6	67.7	65.3	56.6	* 53.6	427	236	25.1	24.7
21	40.8	17.8	* 55.9	59.3	68.5	58.2	55.5	53.7	373	236 *	24.0	24.6
22	41.4	17.9	56.6	59.5	67.7	62.3	64.7	54.0	371	237	26.0	28.0
23	44.0	19.0	55.5	58.8	65.8	64.7	58.4	55.6	375	171 *	25.9	23.6
24	42.4	19.6	55.7	59.6	65.5	59.4	57.9	54.4	374	235	23.6	22.4
25	41.4	* 42.2	* 56.6	60.9	70.7	59.4	57.7	52.6	367	234	* 23.6	13.0
26	41.0	37.7	58.9	59.7	61.6	59.2	59.0	* 54.8	365	234	* 23.9	12.3
27	41.1	36.7	58.4	59.6	* 61.9	58.6	58.2	52.6	365	234	23.8	12.1
28	* 38.6	37.3	56.7	58.3	61.6	58.6	59.2	52.6	364	235	23.4	12.2
29	42.5		57.4	57.3	59.9	55.6	* 59.1	52.6	363	228	23.6	12.2
30	42.1		58.9	56.8	59.3	56.6	59.9	52.6	362	228	24.6	12.0
31	16.9		58.1		57.8		61.0	122		230		* 11.4
Sum	1,287.0	580.3	1,304.49	1,834.7	1,891.5	1,840.1	1,813.3	1,765.3	9,010	10,430	1,774.9	614.5

Current Year 1991 | Period 1968–1991

Month	Extreme Gage Metres High	Extreme Gage Metres Low	Extreme–Cubic Metres per Second Day	High	Day	Low	Average	Volume–Thousands of Cubic Metres Total	Average	Maximum	Minimum
Jan.	0.79	0.21	5	91.6	31	8.52	41.5	111,197	66,825	216,587	6,459
Feb.	.77	.19	25	86.4	16	7.24	20.7	50,138	102,123	495,044	7,139
Mar.	.77	.13	18	86.4	3	3.77	42.1	112,708	110,231	361,072	7,245
April	.87	.26	17	112	29	12.4	61.2	158,518	115,662	434,160	6,204
May	.89	.24	13	119	11	10.9	61.0	163,426	189,560	608,339	8,109
June	.88	.24	29	116	23	10.6	61.3	158,985	131,634	359,889	2,061
July	.93	.22	22	130	9	9.19	58.5	156,669	123,630	384,576	2,864
Aug.	1.25	.24	31	218	16	10.9	56.9	152,522	146,743	876,843	14,623
Sept.	3.57	.77	19	856	4	87.8	300	778,464	219,430	1,559,252	16,872
Oct.	2.65	.51	7	582	17	38.2	336	901,152	214,720	1,025,389	13,827
Nov.	1.31	.29	3	232	7	14.4	59.2	153,351	92,882	615,683	10,932
Dec.	.52	.24	22	39.0	31	10.9	19.8	53,093	60,603	223,394	9,234
Yearly	3.57	0.13		856		3.77	93.6	2,950,223	1,574,043	3,909,891	256,561

* Discharge measurement made on this day

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", 1.6 river kilometres from the confluence with the Rio Grande, and about 25 kilometres northwest of Piedras Negras, Coahuila. This stream enters the Rio Grande at river kilometre 834, 39.3 river kilometres downstream from the Maverick County Water Control and Improvement District No. 1 diversion dam and 35.2 river kilometres upstream from the international highway bridge between Eagle Pass, Texas and Piedras Negras, Coahuila. The zero of the gage is 228.89 metres above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 47 discharge measurements during the year, 45 by the Mexican Section and 2 by the United States Section of the Commission, and a continuous record of gage heights. Computations by shifting control methods. Records available: 1962 through 1991.

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. 3,970 m3/sec on July 18, 1975 with a gage height of 5.62 metres. Min. frequently no flow.

Average Flow in Cubic Metres per Second

Daily:	Max.	1,260	July 18, 1975	Min.	0	Frequently
Monthly:	Max.	209	July 1976	Min.	0	Frequently
Yearly:	Max.	23.7	1976	Min.	0.15	1963

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	8.60	* 3.28	0.50	0.33	0	0	0	0	0	10.6	4.00	4.46
2	8.60	3.25	.50	.33	0	0	.10	0	0	10.1	4.42	2.77
3	8.60	2.16	.50	.33	0	0	.24	0	0	9.57	4.83	2.43
4	8.60	1.56	.50	.26	0	0	.10	0	0	9.06	* 5.25	2.43
5	8.60	1.09	.50	.65	0	0	0	0	0	8.54	* 5.67	2.43
6	8.60	* .87	* .53	.78	0	2.14	0	0	0	8.03	4.20	2.43
7	8.39	.87	.70	.78	0	.07	0	0	0	7.52	* 3.91	2.43
8	8.18	.87	* .78	* .57	0	0	0	0	0	7.01	* 3.92	2.43
9	8.18	.78	.78	.38	0	0	0	0	0	6.50	2.73	* 2.43
10	7.96	.68	.76	.26	0	0	0	0	0	* 5.99	2.73	2.43
11	7.96	* .68	.68	.22	0	0	0	0	0	6.99	* 2.92	2.44
12	7.80	.66	.63	.20	0	0	0	0	0	8.00	2.66	2.62
13	7.59	.59	.54	0	.32	0	0	0	0	9.00	3.16	2.62
14	* 7.54	.59	.50	0	* .39	.49	0	0	6.70	* 10.0	3.20	2.62
15	7.54	.54	.50	0	0	1.27	0	0	7.17	9.13	3.20	2.72
16	7.14	.50	.50	0	0	.02	0	0	6.85	8.28	2.96	2.42
17	7.14	.50	.50	0	0	0	0	0	8.81	7.42	2.93	* 2.11
18	7.14	* .50	* .53	0	0	0	0	* 0	9.44	6.55	* 2.66	2.06
19	7.14	* .50	.68	0	0	0	0	0	35.4	5.69	2.77	2.09
20	7.14	.50	.68	0	0	0	0	0	29.4	4.83	2.94	2.55
21	6.86	.50	.68	0	0	0	7.29	0	20.1	* 3.97	1.97	3.01
22	6.76	.50	.68	* 0	0	0	* 5.06	0	17.2	3.88	1.67	3.60
23	6.76	.50	.59	0	0	0	.58	0	16.9	3.79	1.38	* 3.55
24	6.76	.50	.50	0	0	0	.04	0	15.9	* 3.70	1.24	2.60
25	6.76	* .50	* .50	0	0	0	0	0	13.9	3.71	* 2.53	2.11
26	6.76	* .50	.50	0	0	0	0	0	13.2	3.72	3.78	1.98
27	6.76	.50	.50	0	0	0	0	0	12.8	3.73	4.04	1.84
28	* 6.76	.50	.50	0	0	0	0	0	12.4	* 3.74	4.21	1.81
29	6.76		.42	0	0	0	0	0	11.8	* 3.75	4.43	1.98
30	6.48		.42	0	0	0	0	0	11.1	3.66	4.43	* 2.22
31	* 6.39		.42		0		0	0		3.58		2.25
Sum	232.25	24.97	17.50	5.09	0.71	3.99	13.41	0	249.07	200.04	100.74	77.87

Current Year 1991 | Period 1962-1991

Month	Extreme Gage Metres High	Extreme Gage Metres Low	Extreme-Cubic Metres per Second High Day	Extreme-Cubic Metres per Second High	Extreme-Cubic Metres per Second Low Day	Extreme-Cubic Metres per Second Low	Average	Volume-Thousands of Cubic Metres Total	Average	Maximum	Minimum
Jan.	0.64	0.59	! 1	8.60	!30	6.39	7.49	20,066	5,291	20,066	0
Feb.	.59	.47	! 1	3.28	!15	.50	.89	2,157	3,491	12,251	0
Mar.	.49	.47	! 7	.78	!29	.42	.56	1,512	2,702	9,653	0
April	.49	.41	! 5	.78	!13	0	.17	440	5,915	46,663	100
May	.59	.02	13	3.28	! 1	0	.02	61.3	4,881	36,113	21.0
June	.82	0	6	13.0	! 1	0	.13	345	7,368	127,224	0
July	.96	0	21	22.2	! 1	0	.43	1,159	36,229	560,793	0
Aug.	.42	0	! 1	0	! 1	0	0	0	13,237	109,801	0
Sept.	3.40	.42	14	307	! 1	0	8.30	21,520	20,787	65,176	0
Oct.	.80	.59	1	12.2	31	3.45	6.45	17,283	18,821	80,464	0
Nov.	.84	.46	! 4	10.6	24	.38	3.36	8,704	12,102	103,631	0
Dec.	.69	.57	1	4.58	!27	1.80	2.51	6,728	7,447	25,993	0
Yearly	3.40	0		307		0	2.54	79,975	138,271	748,138	4,750

* Discharge measurement made on this day ! And other days ** Period 1961-1991

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 14.5 kilometres north-northwest of Eagle Pass, Texas, and about 51.8 canal kilometres downstream from the point of diversion. The return enters the Rio Grande at river kilometre 816.

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 24 discharge measurements made during the year. Records available: 1949 through 1991.

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 Cubic Metres per Second**

Daily:	Max.	48.1	April 28, 1990	Min.	0	Occasionally	
Monthly:	Max.	44.4	April 1990	Min.	1.20	Dec.	1971
Yearly:	Max.	36.7	1990	Min.	6.57		1972

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	40.5	38.8	39.1	* 35.7	32.3	30.3	38.2	30.6	39.4	44.5	39.4	38.8
2	40.5	38.5	31.7	34.0	32.6	33.4	* 38.8	29.7	39.4	44.2	39.4	38.2
3	39.9	38.8	20.2	33.1	33.7	32.3	38.5	33.4	39.9	44.2	39.6	* 36.8
4	39.1	* 38.5	* 24.5	33.4	34.6	30.0	38.2	36.5	* 39.4	43.9	39.6	36.8
5	39.1	37.7	34.6	35.7	35.1	* 28.6	36.5	37.4	39.6	42.2	* 39.6	38.2
6	39.6	37.1	35.7	38.2	34.8	31.7	36.8	* 36.5	39.6	41.1	37.9	38.5
7	* 39.6	36.2	35.1	39.4	33.7	34.0	36.2	37.9	39.9	40.5	38.8	39.1
8	39.6	35.4	34.0	40.8	33.4	32.9	35.7	37.9	41.3	41.3	39.6	39.1
9	39.6	36.8	33.7	41.1	* 34.0	33.7	35.7	38.5	42.5	41.1	39.4	38.8
10	39.9	36.2	35.1	40.5	34.6	34.6	35.7	38.5	42.2	* 41.3	38.5	38.8
11	40.2	37.4	34.8	40.2	35.7	34.8	34.8	38.2	42.8	41.1	38.5	39.9
12	39.9	35.7	34.0	39.4	37.7	34.0	35.1	36.5	43.0	40.5	37.9	40.2
13	40.5	33.7	32.6	38.5	38.8	33.7	34.3	37.4	43.9	41.3	37.9	39.9
14	39.9	33.7	31.7	38.5	39.6	34.0	34.6	35.7	43.6	41.3	37.4	40.2
15	39.9	33.4	31.4	38.5	39.6	32.9	* 33.7	34.8	43.3	40.8	37.1	39.9
16	39.1	33.4	32.3	36.8	40.2	32.9	32.6	35.1	43.9	40.8	36.8	* 40.5
17	37.7	32.9	32.6	34.8	38.8	* 34.3	33.4	34.6	* 44.7	39.4	37.7	40.8
18	38.5	32.9	32.0	* 35.4	37.4	32.0	32.6	35.4	44.5	40.5	36.5	40.5
19	39.4	* 33.4	32.6	36.2	32.9	31.7	32.6	* 35.1	44.2	39.9	35.1	40.2
20	39.6	33.4	* 34.3	36.2	* 29.7	29.7	30.9	34.8	39.4	40.5	36.8	41.1
21	39.4	33.4	35.1	36.5	27.3	28.9	33.1	36.0	43.6	40.2	* 36.5	41.1
22	* 39.4	34.3	34.3	36.0	26.6	28.6	35.1	36.0	44.2	39.9	36.5	41.3
23	28.2	34.0	35.4	34.6	27.3	29.2	35.4	36.0	45.0	* 38.5	36.8	41.3
24	38.8	33.7	36.0	33.1	28.0	30.9	35.4	36.5	45.6	38.2	37.7	40.8
25	39.4	34.0	35.7	33.1	29.2	30.0	34.6	36.8	45.6	39.6	37.7	27.6
26	39.4	36.8	34.6	34.3	29.5	28.9	33.4	35.4	45.9	41.3	37.4	21.9
27	39.6	36.8	35.4	34.3	28.0	29.2	33.7	37.1	45.6	41.3	37.4	22.1
28	39.1	38.2	35.7	35.7	28.9	28.3	34.6	39.1	45.0	40.2	38.2	21.2
29	38.5		35.7	35.4	28.6	29.5	34.6	38.8	45.0	39.1	38.2	18.6
30	38.2		36.2	34.3	28.9	32.6	34.3	38.5	45.0	38.2	37.7	18.4
31	38.5		36.8		29.2		32.0	38.5		39.1		18.7
Sum	1,210.6	995.1	1,042.9	1,093.7	1,020.7	947.6	1,081.1	1,123.2	1,287.0	1,266.0	1,137.6	1,099.3

Current Year 1991 | Period 1968–1991

Month	Extreme Gage Metres High	Extreme Gage Metres Low	Extreme–Cubic Metres per Second ¢ High Day	¢ High	¢ Low Day	¢ Low	Average	Volume–Thousands of Cubic Metres Total	Average	Maximum	Minimum
Jan.			! 1	40.5	23	28.2	39.1	104,596	72,076	116,090	6,108
Feb.			! 1	38.8	!17	32.9	35.5	85,977	68,670	98,205	6,008
Mar.			1	39.1	3	20.2	33.6	90,107	69,525	105,961	7,047
April			9	41.1	! 3	33.1	36.5	94,496	68,570	115,145	5,305
May			16	40.2	22	26.6	32.9	88,188	77,200	113,668	17,131
June			11	34.8	28	28.3	31.6	81,873	69,256	102,070	8,162
July			2	38.8	20	30.9	34.9	93,407	68,430	96,639	6,830
Aug.			28	39.1	2	29.7	36.2	97,044	71,134	97,044	22,766
Sept.			26	45.9	! 1	39.4	42.9	111,197	76,656	111,197	16,949
Oct.			1	44.5	!24	38.2	40.8	109,382	78,144	109,382	13,750
Nov.			! 3	39.6	19	35.1	37.9	98,289	68,396	106,644	3,951
Dec.			!22	41.3	30	18.4	35.5	94,980	68,522	112,566	3,217
Yearly				45.9		18.4	36.5	1,149,536	856,579	1,158,234	207,661

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

** Period 1968–1991

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 1.6 kilometres downstream from the heading of this canal extension, about 14.5 kilometres north-northwest of Eagle Pass, Texas, and about 52.8 canal kilometres downstream from the point of diversion from the Rio Grande, which is located at river kilometre 874.9. The elevation of the zero of the gage has not been determined.

RECORDS: Based on 12 discharge measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: 1939 through 1991.

REMARKS: The main Maverick Canal divides into two branches at a point about 14.5 kilometres north-northwest of Eagle Pass, Texas, and about 51.2 canal kilometres 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 1991, 10,256 hectares of land north and south of Eagle Pass were irrigated. A total of 18,922 thousand cubic metres of water from this canal extension returned to the river through the irrigation system which extends approximately 108 canal kilometres downstream.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 16.4 m3/sec on July 25, 1964. Min. occasionally no flow.

Average Flow in Cubic Metres per Second**

Daily:	Max.	15.6	June 6 & 7, 1968	Min.	0	Occasionally
Monthly:	Max.	14.9	June 1968	Min.	0.51	Jan. 1985
Yearly:	Max.	8.33	1972	Min.	1.65	1986

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.85	1.20	1.43	* 3.85	3.20	7.16	4.42	5.01	3.91	1.11	1.63	2.89
2	.60	1.20	1.17	3.82	3.79	7.36	* 2.05	5.01	3.79	1.13	1.63	2.92
3	.76	1.01	1.14	3.85	4.02	7.50	2.50	5.07	3.68	1.17	1.67	* 3.68
4	1.08	* .86	* 1.18	3.99	4.08	7.50	2.86	4.93	* 3.71	1.20	2.31	3.65
5	1.07	.86	1.55	3.68	3.82	* 6.46	3.09	4.70	3.99	1.23	* 2.72	3.23
6	1.06	.80	1.91	2.12	3.68	5.13	3.03	* 4.62	4.11	1.26	3.03	3.23
7	* .93	.86	2.18	.63	3.71	2.44	3.00	4.56	4.16	1.29	3.00	3.20
8	.82	.87	2.89	.32	3.74	.43	3.00	4.81	3.43	1.72	2.73	3.17
9	.82	.90	3.06	0	* 4.25	.49	2.95	4.93	1.93	1.99	2.48	2.89
10	.76	.90	3.06	0	4.62	.54	2.92	4.84	.93	* 4.42	2.46	2.66
11	.70	.97	3.03	0	4.76	.58	2.89	4.62	.97	6.34	2.45	2.65
12	.70	1.29	3.09	0	4.93	.65	2.86	4.39	1.01	6.40	2.43	2.65
13	.93	1.29	3.46	0	5.07	.72	3.03	4.33	1.05	5.30	2.83	2.64
14	1.18	1.51	3.62	0	5.13	.80	3.46	4.56	1.09	2.34	3.31	2.62
15	1.17	1.86	3.62	0	5.18	.88	3.88	4.90	1.14	2.16	3.29	2.61
16	1.18	1.86	3.62	.16	5.32	1.17	4.08	5.01	.89	2.19	3.09	2.31
17	1.19	1.86	3.60	.95	5.35	1.31	4.08	4.96	.13	2.21	2.81	1.98
18	.94	1.88	3.60	1.55	5.41	1.39	4.05	4.96	.12	2.24	2.79	1.97
19	.80	1.77	3.60	1.75	5.44	1.78	4.11	4.87	.14	1.20	2.73	1.96
20	.80	1.54	3.60	1.87	5.44	1.92	4.70	4.84	.13	.63	2.70	1.95
21	1.10	1.52	3.48	1.82	4.93	2.76	5.01	4.79	.15	.64	2.69	1.93
22	1.38	1.51	3.51	1.64	4.53	3.00	4.87	4.67	.17	.62	2.65	1.90
23	1.38	1.51	3.68	1.60	4.59	3.17	4.39	4.50	.12	.63	2.45	1.60
24	1.39	1.50	3.88	1.65	4.67	3.34	4.45	4.42	0	.22	2.15	1.39
25	1.05	1.47	3.88	1.99	4.73	3.79	4.70	4.33	0	0	2.13	1.36
26	.78	1.47	3.65	2.53	5.07	4.13	4.84	4.28	0	0	2.08	1.33
27	.78	1.56	3.54	2.63	5.58	4.36	4.81	4.25	.11	.67	2.03	1.31
28	.79	1.57	3.77	2.61	5.98	4.98	4.84	4.16	.39	.85	2.00	1.32
29	.80		3.91	2.76	6.40	5.15	4.81	4.05	.43	1.35	1.97	1.32
30	1.04		3.96	2.86	6.85	5.41	4.56	4.02	.69	1.63	1.93	1.31
31	1.20		3.96		7.02		4.70	3.96		1.63		1.31
Sum	30.03	37.40	95.63	50.63	151.29	96.30	118.94	143.35	42.37	55.77	74.17	70.94

Current Year 1991 | Period 1968–1991

Month	Average Rainfall*** Millimetres 1991	Average Rainfall*** Millimetres 1939–1991	Extreme-Cubic Metres per Second High Day	High	Low Day	Low	Average	Volume–Thousands of Cubic Metres Total	Average	Maximum	Minimum
Jan.	28	20	!22	1.39	2	0.25	0.97	2,595	10,393	22,494	1,369
Feb.	24	24	!18	1.90	6	.61	1.34	3,231	9,566	22,210	1,560
Mar.	7	16	31	3.99	4	1.12	3.08	8,262	15,272	28,860	1,777
April	52	45	5	4.19	! 8	0	1.69	4,374	17,006	31,947	2,638
May	38	76	31	7.16	1	2.86	4.88	13,071	15,176	34,773	2,811
June	104	59	4	7.59	8	.40	3.21	8,320	17,724	37,218	2,552
July	27	37	1	5.72	20	.91	3.84	10,276	19,707	35,591	7,940
Aug.	24	50	! 3	5.13	!30	3.94	4.62	12,385	18,070	30,017	5,289
Sept.	145	71	7	4.25	!23	0	1.41	3,661	11,973	21,821	1,911
Oct.	3	55	12	6.49	!24	0	1.80	4,819	10,717	20,357	1,664
Nov.	5	19	13	3.34	! 1	1.62	2.47	6,408	10,550	23,181	1,616
Dec.	90	20	! 3	4.19	!29	1.30	2.29	6,129	10,184	20,752	2,891
Yearly	547	492		7.59		0	2.65	83,531	166,338	262,901	52,016

* Discharge measurement made on this day ! And other days ** Period 1968–1991

*** 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 1991. 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 shown on a prior page of this bulletin.

EXTREME FLOWS FROM RECORDS:

Average Flow in Cubic Metres per Second**

Daily:	Max.	26.3	Sept. 29, 1975	Min.	0.07	Aug. 4 & 8, 1985
Monthly:	Max.	4.36	June 1968	Min.	0.14	Sept. 1985
Yearly:	Max.	3.57	1968	Min.	0.41	1985

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.93	0.83	1.38	0.94	1.69	1.23	1.16	1.59	1.12	1.30	1.62	1.42
2	.94	.80	1.40	1.14	1.73	1.19	1.13	1.82	1.11	1.33	1.52	1.39
3	.87	.80	1.34	1.58	1.62	1.08	1.08	1.63	1.14	1.45	1.39	1.56
4	.84	.82	1.33	1.16	1.01	.97	1.01	1.38	1.14	1.28	1.36	1.46
5	.84	.85	1.55	1.23	.85	.98	1.00	1.20	1.11	1.16	1.26	1.40
6	.85	.96	1.35	1.11	1.02	.98	.97	1.06	1.09	1.08	1.22	1.27
7	.90	.98	1.36	1.06	1.18	.95	1.29	1.37	1.09	1.06	1.31	1.12
8	1.00	1.06	1.48	1.06	1.25	.97	1.62	1.25	1.05	1.23	1.32	1.08
9	1.11	.87	1.35	1.02	1.39	.97	1.20	1.22	1.23	1.37	1.32	1.05
10	1.07	.80	1.21	1.08	1.15	1.00	1.16	1.14	1.18	1.21	1.42	1.00
11	1.01	.93	1.20	1.12	1.09	.99	1.27	1.14	.94	1.21	1.45	1.02
12	.97	1.00	1.05	1.09	.94	.95	1.23	1.66	1.05	1.36	1.48	1.01
13	.90	1.02	1.21	1.26	.95	.94	1.23	1.21	1.16	1.25	1.46	.99
14	.88	1.14	1.43	1.38	.94	.97	1.08	1.21	1.16	1.19	1.41	1.00
15	.88	1.31	1.66	1.38	.95	1.03	1.04	1.08	1.17	1.17	1.54	.98
16	.89	1.35	1.35	1.49	.95	1.05	1.19	.98	1.19	1.32	1.42	.97
17	.88	1.21	1.27	1.54	.93	1.05	1.30	.97	1.26	1.50	1.31	.99
18	.84	1.14	1.51	1.38	.88	.97	1.31	1.07	1.33	1.52	1.25	.99
19	.83	1.32	1.52	1.23	.83	.97	1.21	1.20	1.28	1.54	1.25	1.00
20	.82	1.22	1.50	1.22	.84	.99	1.20	1.25	1.31	1.50	1.36	1.02
21	.81	1.25	1.57	1.22	.88	1.08	1.25	1.15	1.31	1.40	1.46	1.07
22	.82	1.38	1.38	1.08	.80	1.08	1.22	1.32	1.26	1.40	1.33	1.07
23	.83	1.52	1.64	1.08	.80	1.05	1.18	1.49	1.25	1.34	1.32	1.05
24	.85	1.42	1.25	1.21	.90	.99	1.23	1.49	1.26	1.32	1.25	1.02
25	.85	1.09	1.17	1.32	1.15	1.01	1.23	1.18	1.29	1.41	1.20	.87
26	.82	1.41	1.84	1.34	1.05	1.01	1.23	1.19	1.31	1.64	1.26	.82
27	.79	1.51	1.40	1.44	1.06	1.02	1.15	1.21	1.31	1.45	1.25	.80
28	.83	1.45	1.31	1.48	1.12	1.03	1.15	1.20	1.27	1.40	1.29	.76
29	.86		1.59	1.53	1.14	1.06	1.16	1.42	1.27	1.31	1.34	.71
30	.88		1.06	1.65	1.35	1.12	1.37	1.46	1.27	1.52	1.33	.70
31	.86		.89		1.37		1.76	1.39		1.59		.68
Sum	27.45	31.44	42.55	37.82	33.81	30.68	37.61	39.93	35.91	41.81	40.70	32.27

Current Year 1991 | Period 1968-1991

Month	Extreme Gage Metres High	Extreme Gage Metres Low	Extreme Cubic Metres per Second Day	ϕ High	Day	ϕ Low	Average	Volume-Thousands of Cubic Metres Total	Average	Maximum	Minimum
Jan.			9	1.11	27	0.79	0.89	2,372	3,701	9,424	1,252
Feb.			23	1.52	! 2	.80	1.12	2,716	3,421	7,556	1,158
Mar.			26	1.84	31	.89	1.37	3,676	4,518	7,940	1,383
April			30	1.65	1	.94	1.26	3,268	4,591	9,615	1,016
May			2	1.73	!22	.80	1.09	2,921	4,393	10,087	1,048
June			1	1.23	13	.94	1.02	2,651	4,537	11,334	640
July			31	1.76	6	.97	1.21	3,250	4,702	10,060	405
Aug.			2	1.82	17	.97	1.29	3,450	4,750	11,423	486
Sept.			18	1.33	11	.94	1.20	3,103	3,987	9,472	356
Oct.			26	1.64	7	1.06	1.35	3,612	4,002	8,097	1,337
Nov.			1	1.62	25	1.20	1.36	3,516	3,842	10,726	1,019
Dec.			3	1.56	31	.68	1.04	2,788	3,440	7,122	1,277
Yearly				1.84		0.68	1.18	37,323	49,884	112,857	12,834

ϕ Mean daily ! And other days ** Period 1968-1991

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 kilometre 800, 1.0 river kilometre upstream from the international highway bridge between Eagle Pass, Texas and Piedras Negras, Coahuila and 124 river kilometres downstream from Amistad Dam. The zero of the gage is 208.15 metres above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 33 discharge measurements during the year, 22 by the Mexican Section and 11 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 1991. 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. 27,300 m3/sec, determined by slope-area calculations, on June 29, 1954 with a gage height of 16.31 metres. Well-authenticated information indicates the occurrence of a flood in June 1865 with an estimated discharge of 35,000 m3/sec and a gage height of 17.07 metres on the present gage, and also that these were the only floods since 1745 with flows greater than 23,400 m3/sec. Min. 0.69 m3/sec on June 22, 1953 with a gage height of 0.02 metres.

Average Flow in Cubic Metres per Second**

Daily:	Max.	2,870	July 19, 1975	Min.	4.90	April 25, 1984
Monthly:	Max.	622	Sept. 1974	Min.	9.16	June 1969
Yearly:	Max.	147	1974	Min.	27.5	1972

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	101	88.0	106	114	97.0	90.4	103	103	201	404	255	84.7
2	101	87.6	77.6	109	98.1	91.1	102	103	195 *	400	253	83.7
3	101	89.2	42.4	108	99.9	* 92.0	101	101	201	399 *	255	82.4
4	101	* 94.2	* 61.0	108	98.6	90.1	109	105	202	398	256 *	81.1
5	102	93.9	93.5	122	99.7	88.1	109	107 *	198	511	232	81.2
6	102	92.9	95.8	125	* 95.2	154	102	105	220	601	103	81.4
7	102 *	92.0	94.1	119	94.4	111	102	104	256	606	91.4	82.6
8	102	91.2	92.3	117	95.4	102	101 *	104	246	607	93.0	83.6
9	102	91.2	90.1	114 *	97.1	99.7	102	103	247	607	92.4	82.7
10	104	90.8	90.4	116	95.5	98.0	102	103	247	604	74.3	82.8
11	104	92.2	90.7	114	96.9	97.5	100	102	246	566	68.2	85.0
12	105	89.7	89.2	113	96.1	95.5	103	103	247	449	67.3	85.6
13	105	86.1	85.5	112	117	97.6	99.3	101 *	247	404	70.5	83.4
14	106	85.0	83.7	109	120	101	103	99.1	305	400 *	69.3	81.8
15	106	83.7	84.4	108 *	102	108	101	99.3	352	396	68.2	78.8
16	108	82.1	84.9	106	100	99.6	99.5	97.4	335	296	67.9	76.2
17	111	83.0	86.3	105	99.0	* 98.6	102	97.3	360 *	220	68.7	75.2
18	114	* 82.9	* 84.0	104	98.0	95.9	102	97.6	380	262	* 77.6	* 73.8
19	113	82.9	82.9	105	97.2	96.8	102	100 *	576	262	59.2	71.8
20	114	80.5	112	103	* 98.0	93.8	102	98.0	694 *	262	68.4	80.6
21	113 *	79.8	118	104	96.1	97.1	113	97.9	539	263	68.5	80.3
22	114	80.8	117	104	95.4	93.7	116 *	98.0	490	263	67.2	81.2
23	115	80.1	116	102	* 94.8	97.5	106	99.4	479	234	72.1	* 75.1
24	116 *	81.4	117	100	94.3	94.6	105	99.8	480	233 *	74.8	70.2
25	117	106	114 *	101	95.1	95.3	103	99.1	437	260	75.4	56.1
26	119	109	114	102	99.4	* 93.3	102	94.9	425	261	76.8	40.0
27	120	109	114	102	93.8	94.0	105	100	419	261	* 79.4	39.2
28	122	107	112	101	91.3	93.3	104	96.3	412	260 *	80.9	38.1
29	123		109	100	91.4	93.4	106	96.0	407	260	81.7	35.1
30	122		111	98.0	87.7	96.8	105	121	406	249	83.2	34.0
31	95.1		112		87.6		106	197		252		34.3
Sum	3,380.1	2,512.2	2,980.8	3,245.0	3,022.0	2,949.7	3,217.8	3,232.1	10,449	11,450	3,150.4	2,202.0

Current Year 1991 | Period 1968–1991

Month	Extreme Gage Metres High	Extreme Gage Metres Low	Extreme-Cubic Metres per Second High	Day	Extreme-Cubic Metres per Second Low	Day	Average	Volume-Thousands of Cubic Metres Total	Average	Maximum	Minimum
Jan.	1.59	1.07	164	29	71.9	1	109	292,041	153,892	352,873	32,306
Feb.	1.53	1.05	152	25	68.5	22	89.7	217,054	181,542	552,784	43,917
Mar.	1.47	.83	143	1	35.0	4	96.2	257,541	192,097	489,954	25,778
April	1.57	1.01	161	5	61.1	24	108	280,368	194,747	476,450	29,641
May	1.57	.94	160	13	50.2	30	97.5	261,101	278,765	726,361	44,643
June	1.91	.96	224	6	53.4	5	98.3	254,854	225,203	587,171	23,749
July	1.64	1.00	173	22	60.3	1	104	278,018	240,709	961,964	32,194
Aug.	1.94	.98	229	31	56.7	26	104	279,253	233,715	916,828	70,131
Sept.	3.92	1.50	772	20	147	4	348	902,794	321,079	1,611,956	99,541
Oct.	3.40	1.32	608	8	115	24	369	989,280	317,305	1,099,952	72,334
Nov.	2.08	.97	257	4	55.8	19	105	272,195	180,932	704,157	56,497
Dec.	1.21	.82	94.9	1	33.7	30	71.0	190,253	146,520	356,398	32,313
Yearly	3.92	0.82	772		33.7		142	4,474,752	2,666,506	4,629,360	870,430

* Discharge measurement made on this day

** Period 1968–1991

08-4581.50 RIO ESCONDIDO AT VILLA DE FUENTE, COAHUILA

DESCRIPTION: Cableway, gravity well, concrete control weir of 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 5.0 kilometres southwest of Piedras Negras, Coahuila, 6.0 river kilometres from the confluence with the Rio Grande, and 10.9 river kilometres downstream from the confluence of Rio San Antonio with Rio Escondido. Rio Escondido enters the Rio Grande at river kilometre 794, 5.0 river kilometres downstream from the international highway bridge between Eagle Pass, Texas and Piedras Negras, Coahuila. The zero of the gage is 218.96 metres above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 25 discharge measurements during the year, 23 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 1991. 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 222.48 metres 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. 680 m3/sec on June 29, 1936 with a gage height of 5.83 metres. Min. frequently no flow.

Average Flow in Cubic Metres per Second**

Daily:	Max.	371	Sept. 24, 1964	Min.	0	Occasionally	
Monthly:	Max.	23.4	Sept. 1964	Min.	0.01	Sept.	1965
Yearly:	Max.	7.28	1987	Min.	0.07		1956

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.07	2.07	2.00	1.14	0.96	0.56	0.72	0.30	0.30	1.36	2.78	3.07
2	2.07	1.89	1.98	1.13	.92	.58	.62	.29	* .68	1.19	2.73	3.07
3	2.06	1.85	1.92	1.12	.96	* .58	.58	.29	.42	* 1.07	2.73	3.07
4	2.00	* 2.98	* 1.94	1.04	.95	.59	.52	.28	.34	1.20	* 2.82	3.07
5	2.00	2.12	1.92	2.21	.98	.57	.52	* .34	.44	1.31	2.90	3.07
6	2.00	1.92	1.85	1.94	* .97	.98	.52	.38	.64	1.22	2.98	3.07
7	* 2.00	1.84	1.81	2.02	.97	.62	.47	.45	1.97	1.19	2.98	3.07
8	2.00	1.84	1.74	1.62	.99	.71	* .52	.38	.88	1.30	2.93	3.07
9	2.00	1.88	1.74	1.40	.95	.74	.60	.36	.61	1.42	2.90	2.98
10	2.02	1.85	1.74	1.46	.96	.66	.51	.34	.66	1.50	2.90	3.04
11	2.00	1.84	1.60	4.71	.95	.63	.48	.34	.81	1.58	2.93	3.07
12	1.96	1.87	1.45	1.91	.93	.61	.46	.32	.81	1.66	3.13	3.16
13	1.94	1.81	1.43	1.74	.89	.60	.46	.30	.85	1.78	3.34	3.16
14	1.94	1.76	1.42	1.75	.98	.58	.48	.29	.99	* 1.86	3.34	3.10
15	2.07	2.00	1.56	* 1.89	1.04	.67	.52	.38	1.29	2.12	3.34	3.31
16	2.06	2.34	1.53	1.74	1.10	.80	.54	.46	1.37	2.14	3.28	3.24
17	1.88	2.42	1.41	1.63	.92	* .57	.37	.32	* 1.69	2.00	2.98	3.24
18	1.92	* 2.34	* 1.41	1.42	1.04	.53	.34	.29	.95	2.05	3.02	3.42
19	1.84	2.39	1.41	1.31	.85	.56	.32	* .35	4.84	2.07	3.07	3.50
20	1.81	2.15	1.41	1.25	* .83	.47	.31	.33	2.38	2.14	* 3.02	4.06
21	* 1.74	2.00	1.48	1.21	.81	.44	.56	.37	1.34	2.24	2.99	3.90
22	1.78	2.00	1.43	1.14	.82	.42	* .69	.33	1.31	2.34	3.07	3.81
23	1.81	1.97	1.34	1.07	.80	.43	.40	.35	1.95	2.42	3.06	* 3.69
24	1.98	1.98	1.34	1.12	.80	.39	.42	.31	1.62	2.42	2.98	3.62
25	2.07	1.97	1.31	1.12	.81	.37	.42	.30	1.24	2.49	3.07	3.62
26	2.14	1.94	1.31	1.12	.79	.36	.38	.30	1.16	2.49	3.07	3.62
27	2.14	2.00	1.26	1.04	.72	.34	.37	.29	1.12	2.53	3.07	3.57
28	2.10	2.00	1.21	1.01	.63	.33	.36	.29	1.12	* 2.57	3.07	3.52
29	2.07		1.19	.92	.59	.34	.34	.28	1.07	* 2.57	3.07	3.43
30	2.07		1.17	.92	.58	.50	.31	.27	1.30	2.59	3.07	* 3.43
31	2.07		1.16		.54		.34	.28		2.79		3.43
Sum	61.61	57.02	47.47	45.10	27.03	16.53	14.45	10.16	36.15	59.61	90.62	103.48

Current Year 1991 | Period 1933–1991

Month	Extreme Gage Metres High	Extreme Gage Metres Low	Extreme–Cubic Metres per Second High Day	Extreme–Cubic Metres per Second High	Extreme–Cubic Metres per Second Low Day	Extreme–Cubic Metres per Second Low	Average	Volume–Thousands of Cubic Metres Total	Average	Maximum	Minimum
Jan.	0.41	0.38	15	2.20	21	1.74	1.99	5,323	4,143	23,350	54.0
Feb.	.57	.38	4	5.14	14	1.74	2.04	4,927	3,154	17,803	48.0
Mar.	.40	.32	1	2.00	30	1.12	1.53	4,101	2,619	14,070	114
April	.84	.29	11	14.4	29	.86	1.50	3,897	2,898	27,075	100
May	.33	.24	15	1.21	30	.54	.87	2,335	4,642	31,417	190
June	.44	.18	6	2.65	27	.31	.55	1,428	3,566	31,888	74.4
July	.42	.17	21	2.27	28	.29	.47	1,248	2,967	32,693	65.0
Aug.	.23	.16	15	.51	9	.27	.33	878	4,373	37,135	24.1
Sept.	.67	.17	19	8.00	1	.28	1.21	3,123	6,361	60,665	22.0
Oct.	.45	.31	31	2.81	3	1.07	1.92	5,150	5,951	35,302	54.0
Nov.	.48	.43	12	3.34	1	2.73	3.02	7,830	4,702	31,737	54.0
Dec.	.56	.48	29	4.91	9	2.93	3.34	8,941	4,170	27,140	83.0
Yearly	0.84	0.16		14.4		0.27	1.56	49,181	3,946	229,996	2,165

* Discharge measurement made on this day

** Period 1932–1991

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 1991. 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 Cubic Metres per Second**

Daily:	Max.	9.91	July 5, 1968	Min.	0.04	April 22,	1986
Monthly:	Max.	7.00	July 1968	Min.	0.12	April	1986
Yearly:	Max.	5.10	1971	Min.	0.42		1986

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.16	0.12	0.36	0.22	0.16	0.23	1.65	0.31	0.86	0.33	0.65	0.59
2	.15	.14	.36	.36	.27	.21	1.76	.26	.91	.26	.58	.59
3	.14	.15	.35	.39	.34	.25	1.30	.34	.86	.29	.56	.59
4	.16	.20	.35	.42	.46	.27	.85	.33	.79	.50	.79	.63
5	.14	.34	.36	.58	1.12	.28	.79	.36	.70	.36	1.20	.72
6	.13	.55	.41	.40	1.46	.45	.72	.33	.71	.30	1.14	.93
7	.13	.51	.44	.34	1.20	.47	.69	.35	.73	.32	.78	1.11
8	.13	.44	.37	.58	.65	.54	1.03	.37	.89	.37	.97	.76
9	.16	.40	.39	.31	.42	.65	1.32	.39	.86	.38	.87	.73
10	.19	.44	.31	.35	.56	.78	.94	.56	.61	.46	.54	.78
11	.25	.39	.31	.34	.68	.92	.74	.71	.67	.37	.42	.83
12	.31	.32	.37	.29	.36	1.00	.65	.60	.62	.35	.43	.72
13	.40	.27	.30	.29	.39	1.05	.74	.37	.69	.40	.61	.53
14	.31	.30	.46	.29	.37	.97	.77	.40	.66	.40	.70	.55
15	.15	.26	.49	.27	.33	.63	.74	.48	.73	.41	.58	.61
16	.11	.19	.51	.24	.37	.34	.56	.44	.73	.40	.76	.69
17	.19	.20	.49	.21	.37	.48	.49	.40	.77	.33	1.66	.79
18	.16	.23	.48	.18	.34	.46	.45	.49	.74	.36	1.72	.87
19	.14	.23	.52	.18	.35	.45	.46	.49	.68	.40	1.06	.85
20	.14	.25	.40	.16	.36	.38	.46	.46	.65	.48	.93	.89
21	.13	.23	.52	.16	.32	.38	.46	.44	.64	.63	.88	.95
22	.13	.24	.59	.15	.26	.46	.52	.45	.59	.65	.82	1.06
23	.13	.29	.58	.22	.24	.48	.58	.49	.67	.86	.99	1.07
24	.16	.28	.55	.17	.23	.48	.36	.57	.56	.77	1.15	.99
25	.18	.28	.45	.23	.33	.49	.38	.68	.50	.37	.81	.96
26	.19	.25	.60	.27	.22	.48	.35	.85	.48	.34	.43	.91
27	.15	.27	.43	.28	.27	.53	.26	.76	.46	.49	.49	.76
28	.13	.32	.37	.26	.17	.59	.31	.84	.40	.64	.45	.57
29	.13		.41	.20	.27	.95	.52	.83	.36	.59	.50	.41
30	.15		.30	.17	.24	1.33	.41	.83	.35	.92	.52	.46
31	.13		.23		.22		.40	.93		.93		.97
Sum	5.26	8.09	13.06	8.51	13.33	16.98	21.66	16.11	19.87	14.66	23.99	23.87

Current Year 1991 | Period 1968–1991

Month	Extreme Gage Metres High	Extreme Gage Metres Low	Extreme–Cubic Metres per Second: ϕ High Day	ϕ High	ϕ Low Day	ϕ Low	Average	Volume–Thousands of Cubic Metres: Total	Average	Maximum	Minimum
Jan.			13	0.40	16	0.11	0.17	454	6,680	15,700	454
Feb.			6	.55	1	.12	.29	699	5,583	13,204	699
Mar.			26	.60	31	.23	.42	1,128	7,320	14,401	392
April			! 5	.58	22	.15	.28	735	7,991	18,066	317
May			6	1.46	1	.16	.43	1,152	7,412	17,672	698
June			30	1.33	2	.21	.57	1,467	7,717	17,742	655
July			2	1.76	27	.26	.70	1,871	7,567	18,723	967
Aug.			31	.93	2	.26	.52	1,392	6,985	14,290	756
Sept.			2	.91	30	.35	.66	1,717	5,923	11,301	765
Oct.			31	.93	2	.26	.47	1,267	5,488	10,138	1,087
Nov.			18	1.72	11	.42	.80	2,073	5,735	13,309	451
Dec.			7	1.11	29	.41	.77	2,062	5,995	15,785	943
Yearly				1.76		0.11	0.51	16,017	80,396	161,048	13,217

ϕ Mean daily ! And other days ** Period 1968–1991

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 kilometre 741, 0.9 river kilometre downstream from Cuervo Creek, which marks the lower end of the Maverick County Water Control and Improvement District No. 1, 3.1 river kilometres upstream from Tovar Creek, 8.0 kilometres northeast of Villa Guerrero, Coahuila, about 18.5 kilometres south of El Indio, Texas, and 57.8 river kilometres downstream from the international highway bridge between Eagle Pass, Texas and Piedras Negras, Coahuila. The zero of the gage is 176.78 metres above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 12 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 1991 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. 25,800 m3/sec in June 1954, determined by slope-area computation, with an elevation of 190.29 metres. Min. 1.54 m3/sec on June 24, 1953 with an elevation of 177.38 metres at a station 518 metres upstream from the present site.

Average Flow in Cubic Metres per Second**

Daily:	Max.	2,730	July 19, 1975	Min.	9.26	June 29 & 30, 1972
Monthly:	Max.	617	Sept. 1974	Min.	14.2	June 1969
Yearly:	Max.	150	1974	Min.	34.8	1972

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	90.1	65.4	62.9	77.3	103	85.8	104 *	94.9	193	399	240	92.0
2	91.5	63.7	58.6	* 75.6	98.8	95.2	104	92.6	195	402	245	75.3
3	90.6	63.7	26.6	95.4	102	100	102	91.5	194	399	246	72.5
4	89.5	69.7	18.1	99.4	103	89.5	101	92.6	198	396	254	* 73.9
5	88.9	* 66.8	* 38.8	99.7	103	90.3	109	107 *	193 *	450	254	80.7
6	89.5	62.6	46.4	93.7	103	181 *	101	101	208	592	140 *	83.5
7	89.5	61.2	46.2	96.6	103	147	99.4	96.0	239	620	105	79.0
8	88.9	59.2	47.9	96.0	100 *	118	99.7	94.9	263	620 *	78.2	81.3
9	87.8	59.2	45.6	97.4	103	101	101	92.9	249	626	76.2	81.0
10	88.4	58.3	52.1	101	101	96.9	99.1	94.0	249	620	77.9	82.1
11	88.4	58.3	55.2	97.1	101	97.4	98.8	94.9	244	606	75.6	83.8
12	87.8	58.9	54.7	98.3	99.7	95.2	101	94.3	244	470	75.0	85.8
13	88.4	57.2	53.2	102	113	97.1	94.9	93.2	244	391	75.3	85.5
14	* 89.2	55.8	49.0	102	138	97.4	96.3	92.0	257	388	78.2	85.2
15	89.2	54.4	49.8	101	109	108	96.0	91.2	317	391	75.9	85.8
16	88.4	54.4	48.7	91.8	107	101	95.2	91.5	320	346	71.6	85.0
17	89.5	54.9	48.7	101	110	101	95.4	90.6	323	276	74.5	85.0
18	94.6	56.1	48.7	100	102	96.3	95.2	91.2	346	249	81.6	85.0
19	92.3	56.4	61.7	103	102	94.6	93.7	94.3	430	267	82.4	85.0
20	90.9	56.6	72.8	103	101	91.8	95.7	94.0	736	264	72.5	101
21	90.3	57.8	90.1	96.9	93.2	92.9	95.7	92.9	561	260	75.9	97.1
22	89.2	48.7	77.9	98.8	87.5	87.2	109	92.9	515	260	77.6	97.4
23	90.6	44.7	85.0	101	87.5	92.0	109	94.0	507	257	82.4	93.7
24	89.5	54.1	82.4	104	86.1	95.2	102	96.0	507	182	84.7	90.6
25	90.1	60.0	80.1	101	87.5	92.3	98.0	96.0	473	250	83.0	84.7
26	91.2	80.1	93.7	104	93.5	90.9	96.9	91.8	428	261	84.1	61.7
27	91.2	74.2	82.4	103	84.4	89.5	97.1	97.7	413	256	87.8	56.6
28	92.3	68.3	78.2	106	84.7	90.3	96.0	94.3	422	253	88.6	54.4
29	91.8		83.3	109	84.4	91.8	97.1	95.2	408	256	91.2	52.1
30	90.9		82.7	105	81.6	99.4	97.1	98.0	402	244	91.5	48.1
31	88.4		76.2		82.4		97.1	175		242		46.7
Sum	2,788.9	1,680.7	1,897.7	2,960.0	3,055.3	3,006.0	3,077.4	3,008.4	10,278	11,493	3,325.7	2,451.5

Current Year 1991 | Period 1968–1991

Month	Extreme Gage Metres		Extreme–Cubic Metres per Second				Average	Volume–Thousands of Cubic Metres			
	High	Low	Day	High	Day	Low		Total	Average	Maximum	Minimum
Jan.	2.36	2.14	19	117	12	67.1	90.0	240,961	165,641	344,184	58,194
Feb.	2.30	1.94	26	101	22	31.4	60.0	145,212	188,916	548,741	63,322
Mar.	2.39	1.71	26	123	4	5.38	61.2	163,961	198,961	521,829	46,184
April	2.41	2.05	29	135	1	50.1	98.7	255,744	206,605	500,930	46,115
May	2.48	2.07	14	171	30	53.8	98.6	263,978	300,064	740,332	62,566
June	2.63	2.09	6	253	1	57.8	100	259,718	250,693	681,150	36,768
July	2.43	2.10	23	144	21	62.3	99.3	265,887	257,087	972,830	45,920
Aug.	2.55	2.10	31	210	26	62.9	97.0	259,926	253,088	1,016,428	82,422
Sept.	3.19	2.44	20	765	5	152	343	888,019	336,986	1,598,663	102,781
Oct.	2.96	2.38	! 6	629	24	128	371	992,995	333,638	1,064,503	81,268
Nov.	2.62	2.10	! 4	258	19	63.7	111	287,340	198,465	681,981	58,933
Dec.	2.33	2.00	20	117	130	45.9	79.1	211,810	160,221	341,125	61,451
Yearly	3.19	1.71		765		5.38	134	4,235,551	2,850,365	4,731,321	1,105,710

* Discharge measurement made on this day ! And other days ** Period 1968–1991

WATER BULLETIN NUMBER 61 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

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

DESCRIPTION: Bubbler gage and water-stage recorder located at the Lincoln Juarez International Bridge on the left bank at latitude 27°30'05", longitude 99°30'13" and river kilometre 580. The zero of the gage is 107.12 metres above mean sea level U. S. C. & G. S. datum.

RECORDS: Based on 26 measurements during the year made from the bridge 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; 1923 through March 2, 1989 at a station 1.3 kilometres downstream of present site; March 3, 1989 through May 1990 at a station 0.5 kilometres upstream of present site; and June 1990 through December 1991 at the present site.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. This station also serves as a flood warning station for the National Weather Service.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 20,300 m3/sec on June 30, 1954 determined by slope-area calculations, with a gage height of 18.44 metres at a site 0.5 kilometres upstream. Much well authenticated information established the occurrence of a greater flood in 1865 with a gage height of 19.05 metres on a gage 1.3 kilometres downstream with a discharge of approximately 27,000 m3/sec and that these were the only floods since 1745 with flows greater than 17,000 m3/sec. Min. No flow several days in June and July 1953, and July 24, 1956.

Average Flow in Cubic Metres per Second**

Daily:	Max.	3,270	June 30, 1971	Min.	7.00	July 2, 1972
Monthly:	Max.	579	Sept. 1974	Min.	14.1	June 1969
Yearly:	Max.	152	1974	Min.	38.2	1972

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	104	105	* 98.8	110	* 95.7	94.3	123	94.3	214	436 *	275 *	62.0
2	105	79.9	97.7	112 *	92.0	92.9	114 *	* 92.9	198	433	274	61.7
3	107 *	75.6	96.0	112	93.5	94.3	112	90.9	188	430	272	* 62.0
4	106	108	68.3	111	96.0	* 98.6	108	90.6	203	425	273	61.5
5	105	127 *	43.6	150	100	96.9	106	160	211 *	422	274	61.2
6	105	102	47.3	193	103	99.7	117	148	211	479	268	61.7
7	105	91.8	83.0	155	103	243	108	123	232	583	146	62.6
8	106	76.7	84.1	144	106	203	106	110	272	598 *	106	64.6
9	107	70.0	83.0	130	96.6	167	107	100	278	603	101	64.9
10	106	67.4	80.7	130	97.7	120	107	95.7	270	606	101	65.1
11	105	67.4	77.9	156	98.0	112	105	96.6	272	609 *	98.6	64.0
12	106	66.6	78.2	175	100	109	107	98.0	267	595	75.3	64.6
13	105	68.8	77.3	128	112	107	109	* 96.9	267	501	* 71.6	68.3
14	106	66.6	74.8	122	140 *	106	109	94.0	268	433	71.1	69.7
15	107 *	64.0	70.5	118	147	108	111	92.6	314	428	72.8	69.7
16	106	64.0	70.5	115 *	128	121	105 *	92.9	396	425	71.1	68.0
17	105	62.9	71.6	110	138	150	94.6	94.0	360 *	357	69.1	* 67.4
18	107	63.4	71.6	111	140	119 *	92.6	95.7	371	289	68.3	68.0
19	112	63.2	* 71.4	109	127	108	94.0	102	402	270	69.4	69.7
20	111	* 63.7	70.2	109	124	104	92.3	94.0	496	297	72.5	73.6
21	108	65.1	70.8	108	122	102	92.9	92.3	685	297	57.8	98.8
22	106	64.6	101	107	121	100	96.3	93.5	583	295 *	62.6	86.9
23	106	64.6	103	108	119	97.1	115	98.6	515	295	61.7	91.2
24	106	65.7	104	105	116	98.3	112	103	532	286	62.9	86.9
25	104	67.4	103	103	116	103	102	108	521	239	63.4	80.4
26	105	69.4	104	102	113	96.3	98.3	101	467	286	62.6	79.9
27	106	94.0	104	103	116	95.4	94.9	98.0	453	286	62.3	61.2
28	107	97.7	105	105	107	93.5	93.2	96.6	450	286	61.7	47.9
29	108		106	101	103	97.7	94.9	92.9	445	286	62.6	46.4
30	107		105	101	100	104	94.3	93.5	442	282	63.2	45.0
31	106		107		98.3		95.2	120		274		43.3
Sum	3,295	2,142.5	2,629.3	3,643	3,468.8	3,441.0	3,216.5	3,159.5	10,783	12,331	3,450.6	2,078.2

Current Year 1991 | Period 1968–1991

Month	Extreme Gage Metres High	Extreme Gage Metres Low	Extreme–Cubic Metres per Second High	Day	Low	Day	Average	Volume–Thousands of Cubic Metres Total	Average	Maximum	Minimum
Jan.	0.69	0.48	!19	129	1	85.5	106	284,688	169,170	352,918	61,395
Feb.	.82	.35	4	153	!16	59.2	76.5	185,112	193,978	555,809	48,383
Mar.	.68	.15	!29	123	6	34.0	84.8	227,172	203,757	488,071	45,757
April	1.34	.44	!11	263	30	77.3	121	314,755	213,645	498,537	43,304
May	.92	.41	14	176	1	71.4	112	299,704	320,161	817,599	110,911
June	1.43	.39	7	279	1	70.8	115	297,302	287,336	857,878	36,616
July	.77	.40	23	143	!19	70.2	104	277,906	265,273	1,034,298	39,804
Aug.	1.30	.39	5	250	4	68.5	102	272,981	261,845	979,770	81,016
Sept.	3.48	.84	21	705	4	157	359	931,651	347,479	1,500,845	100,872
Oct.	3.01	.93	10	615	25	181	398	1,065,398	380,696	1,180,391	69,266
Nov.	1.43	.31	1	276	21	53.2	115	298,132	204,782	723,165	55,719
Dec.	.61	.19	21	108	3!	41.9	67.0	179,556	163,547	379,380	63,297
Yearly	3.48	0.15		705		34.0	147	4,634,357	3,011,669	4,799,562	1,209,723

* Discharge measurement made on this day ! And other days ** Period 1968–1991

08-4597.00 RIO SALADO NEAR LAS TORTILLAS, TAMAULIPAS

DESCRIPTION: Cableway, control weir with notch opening of 72 m3/sec capacity, gravity well, and water-stage recorder located on the right bank at latitude 26°50'10", longitude 99°33'50", 3 river kilometres downstream from the confluence of Rio Sabinas with Rio Salado, 10 kilometres southeast of the town of Las Tortillas, Tamaulipas, and 39.9 river kilometres from the confluence with the Rio Grande. This stream enters the Rio Grande at river kilometre 482, 39.8 river kilometres upstream from Falcon Dam. The zero of the gage is 99.28 metres above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 11 discharge measurements during the year, 7 by the Mexican Section and 4 by the United States Section of the Commission, a stable rating curve up to 72 m3/sec, and a continuous record of gage heights. Computations by shifting control methods for flows greater than 72 m3/sec. Records available: September 9, 1953 through 1991. Records are also available for a station at old Cd. Guerrero, 35 kilometres downstream, from 1900 through 1913 and 1923 through September 8, 1953.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 1,840 m3/sec on September 16, 1971 with a gage height of 12.31 metres. Min. frequently no flow. The maximum discharge was measured at the highway bridge 20.9 river kilometres 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 Cubic Metres per Second**

Daily:	Max.	1,780	Sept. 16, 1971	Min.	0	Frequently
Monthly:	Max.	384	Sept. 1971	Min.	0	Frequently
Yearly:	Max.	93.6	1971	Min.	1.61	1956

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.02	* 0.13	* 0.17	* 0.75	0.74	1.33	10.4	0.10	0.74	1.42	0.03	0.14
2	* 1.19	.47	.27	.79	* .51	1.21	2.49	.07	* 4.31	1.22	.63	.33
3	1.36	.20	.35	.41	.51	* 1.16	1.38	.06	4.28	1.08	.33	.33
4	1.36	.64	.52	.11	.84	1.03	3.17	.07	27.5	.75	.13	.32
5	1.40	1.06	.71	.06	1.29	1.04	2.82	.08	13.4	.68	.24	.31
6	1.31	1.12	.74	.45	1.26	1.15	2.05	.08	11.3	.54	.21	.28
7	1.22	.76	.72	1.12	1.41	8.07	1.65	0	15.9	.46	.38	.10
8	1.24	1.25	.33	1.18	1.38	8.16	1.57	0	12.1	.46	.42	.05
9	1.33	1.17	.10	1.03	1.18	6.00	1.34	0	12.7	.48	.44	.06
10	1.33	.92	.04	.76	.91	10.1	1.22	0	7.98	.43	.31	.07
11	1.35	.94	.02	.56	.83	20.9	1.03	0	7.84	.18	.31	.17
12	1.30	1.22	.36	.37	2.08	18.7	.88	0	5.88	.09	.31	.10
13	1.28	1.21	.31	.13	12.9	9.77	.72	0	2.64	.08	.31	* .05
14	1.25	1.03	* .08	.33	11.2	* 6.39	.62	.02	2.64	.10	.24	.05
15	1.26	.77	.13	.52	30.6	4.85	.52	.02	2.59	.25	.20	.02
16	1.12	.68	.46	.51	16.3	3.65	.44	.04	2.52	.16	.11	.30
17	1.04	.70	.22	.34	10.5	3.61	.37	.04	2.52	.08	.19	.91
18	1.02	.69	.69	.39	8.78	2.44	.20	.08	2.52	.04	.42	1.08
19	.90	.82	.79	.16	7.13	1.46	.08	.09	* 2.52	.02	.44	1.16
20	.94	.58	.40	.05	6.61	.38	.05	.07	2.47	.08	.20	1.02
21	1.00	.44	.24	.08	4.83	.24	.02	.07	2.40	.14	.10	1.40
22	1.02	.22	.22	.57	3.69	1.31	0	.08	2.40	.08	.09	1.57
23	.96	.34	.31	.46	3.04	2.22	.02	.09	2.40	.05	.08	1.38
24	.93	.56	.15	.20	2.92	2.36	.04	.10	1.82	.08	.07	1.28
25	.88	.68	.08	.10	2.75	2.78	.08	.11	1.15	.07	.04	1.18
26	.66	.78	.26	.10	2.52	3.38	.10	.16	1.11	.04	.01	1.14
27	.61	.45	.07	.06	2.29	5.12	.10	.21	1.52	.01	.10	1.12
28	.49	.40	.04	.05	2.05	4.63	.10	.26	2.88	.01	.11	1.63
29	.44		.01	.80	1.75	6.79	.10	.30	1.87	.01	.06	1.21
30	.50		.03	.92	1.57	26.0	.10	.34	1.53	.01	.02	1.16
31	.14		.18		1.45		.10	.32		0		1.14
Sum	31.85	20.23	9.00	13.36	145.82	166.23	33.76	2.86	163.43	9.10	6.53	21.06

Current Year 1991 | Period 1954-1991

Month	Extreme Gage Metres High	Extreme Gage Metres Low	Extreme-Cubic Metres per Second High Day	High	Day	Low	Average	Volume-Thousands of Cubic Metres Total	Average	Maximum	Minimum
Jan.	0.19	0.06	5	1.48	31	0.09	1.03	2,752	11,541	73,777	0
Feb.	.20	.06	8	1.60	1	.09	.72	1,748	9,671	82,495	0
Mar.	.15	0	18	1.00	29	0	.29	778	5,891	36,622	0
April	.17	.03	7	1.18	21	.04	.45	1,154	14,474	250,371	0
May	.83	.11	15	44.9	2	.46	4.70	12,599	32,895	447,498	0
June	.84	.07	30	46.2	21	ϕ .24	5.54	14,362	36,640	304,449	0
July	.63	0	1	21.8	21	0	1.09	2,917	34,874	544,632	0
Aug.	.09	0	31	35.0	! 7	0	.09	247	25,890	259,069	0
Sept.	.77	.16	4	37.2	! 1	ϕ .74	5.45	14,120	103,859	996,178	2,651
Oct.	.19	0	1	1.48	30	0	.29	786	64,859	679,326	136
Nov.	.13	0	2	.76	1	0	.22	564	33,085	416,916	0
Dec.	.24	0	21	2.06	1	0	.68	1,820	20,221	217,216	0
Yearly	0.84	0		46.2		0	1.71	53,847	393,900	2,961,034	50,866

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

** Period September 1953-1991

WATER BULLETIN NUMBER 61 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

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 kilometre 442; about 11.3 kilometres southwest of Falcon, Texas and 139 river kilometres downstream from the old international highway bridge between Laredo, Texas and Nuevo Laredo, Tamaulipas. A gravity well and water-stage recorder located 4.1 river kilometres downstream and a cableway located 1.6 kilometre 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 spillway gate operations. During 1991 there were 0 discharge measurements made by the United States Section of the Commission. Records available: 1958 through 1991. Records are also available from December 17, 1952 through 1957 for a station at Chapeno, 4.1 kilometres 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. 2,340 m3/sec on September 18, 1971. Min. 0.04 m3/sec on March 24 and 25, 1957 (at Chapeno gaging station).

Average Flow in Cubic Metres per Second**

Daily:	Max.	2,160	Sept. 18, 1971	Min.	0.04	March 24 & 25,	1957
Monthly:	Max.	920	Oct. 1958	Min.	0.67	Nov.	1973
Yearly:	Max.	196	1958	Min.	44.7		1970

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	125	225	24.5	154	269	242	34.6	90.1	77.3	43.6	15.8	40.8
2	127	218	28.3	157	292	253	3.34	111	76.5	35.1	10.8	47.6
3	113	208	42.2	160	303	266	3.34	124	57.8	34.8	17.8	43.9
4	124	114	56.9	170	329	278	3.34	127	21.9	35.1	25.7	52.1
5	125	69.1	64.3	120	326	286	3.34	73.6	6.49	39.1	25.4	55.5
6	125	44.5	66.6	59.2	276	297	6.17	80.7	3.34	43.3	21.9	52.7
7	144	21.4	64.3	34.6	283	292	17.8	98.3	3.34	52.7	16.1	61.5
8	202	19.5	58.3	25.8	295	289	21.0	104	3.34	58.6	16.3	64.0
9	210	24.6	62.0	28.9	283	267	20.8	98.6	3.34	46.4	16.3	61.7
10	222	24.6	66.6	28.6	295	248	20.7	92.6	9.86	38.2	16.2	58.9
11	224	24.4	73.1	25.9	320	247	21.3	92.3	13.2	47.0	16.2	53.2
12	255	20.6	85.2	20.3	331	207	21.1	108	13.5	57.5	14.1	53.5
13	263	16.7	81.8	24.6	334	150	14.0	93.7	12.9	58.3	18.2	67.1
14	271	16.6	74.2	29.7	191	145	11.2	84.7	8.44	54.7	27.4	86.9
15	295	22.7	75.6	39.4	78.7	176	11.4	79.0	8.58	69.7	26.4	86.9
16	312	28.2	83.3	53.8	52.7	187	11.1	84.1	8.38	90.3	35.4	78.2
17	317	30.3	72.2	54.9	54.1	85.5	12.1	113	15.8	53.2	35.1	57.2
18	317	32.9	73.3	61.2	50.7	88.4	18.9	127	14.8	50.4	39.4	28.9
19	326	25.9	69.4	77.6	51.8	96.6	26.7	127	11.2	50.1	54.9	25.9
20	334	20.9	67.4	95.2	54.1	108	40.8	125	12.0	61.5	63.4	18.2
21	337	6.32	63.7	96.3	40.5	112	42.5	127	14.0	89.5	68.5	13.0
22	320	17.2	66.6	100	30.9	120	46.2	117	17.8	108	38.5	15.3
23	329	26.3	86.4	108	25.4	120	46.7	106	17.5	66.8	36.0	18.3
24	300	28.9	89.2	122	50.1	127	41.3	103	11.9	49.3	32.9	21.4
25	297	31.4	88.9	162	92.0	166	44.2	103	17.0	52.4	29.5	30.0
26	292	25.8	108	197	96.3	174	42.5	106	21.4	84.1	22.9	29.5
27	292	23.4	124	197	118	166	45.6	109	24.2	84.4	40.5	38.5
28	289	20.6	118	215	161	180	48.1	88.9	32.9	95.4	56.9	37.9
29	295		112	217	186	142	58.3	74.5	32.9	83.3	50.4	40.8
30	266		120	234	194	98.3	66.0	74.2	38.5	30.0	43.0	47.0
31	248		138		199		72.8	78.2		15.3		48.7
Sum	7,696	1,387.82	2,404.3	3,069.0	5,662.3	5,613.8	877.23	3,120.5	610.11	1,778.1	931.9	1,435.1

Current Year 1991 | Period 1958–1991

Month	Extreme Gage Metres High	Extreme Gage Metres Low	Extreme-Cubic Metres per Second: ϕ High Day	ϕ High	ϕ Low Day	ϕ Low	Average	Volume–Thousands of Cubic Metres: Total	Average	Maximum	Minimum
Jan.			21	337	3	113	248	664,934	272,768	664,934	12,802
Feb.			1	225	21	6.32	49.6	119,908	179,057	453,153	13,796
Mar.			31	138	1	24.5	77.6	207,732	161,129	461,497	27,900
April			30	234	12	20.3	102	265,162	375,120	750,828	97,418
May			13	334	23	25.4	183	489,223	466,907	882,527	26,611
June			6	297	17	85.5	187	485,032	322,035	830,101	24,322
July			31	72.8	! 2	3.34	28.3	75,793	191,938	482,117	15,837
Aug.			! 4	127	5	73.6	101	269,611	272,120	1,823,919	74,233
Sept.			1	77.3	! 6	3.34	20.3	52,714	207,972	1,333,232	1,761
Oct.			22	108	31	15.3	57.4	153,628	280,814	2,463,696	2,383
Nov.			21	68.5	2	10.8	31.1	80,516	142,931	1,391,291	1,727
Dec.			!14	86.9	21	13.0	46.3	123,993	122,753	573,923	10,807
Yearly				337		3.34	94.8	2,988,246	2,995,544	6,188,898	1,410,843

ϕ Mean daily ! And other days ** Period 1968–1991

08-4620.00 RIO ALAMO AT CD. MIER, TAMAULIPAS

DESCRIPTION: Cableway, reinforced concrete weir of 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 1.0 kilometre north of Cd. Mier, Tamaulipas, and 8.0 river kilometres from the confluence with the Rio Grande. This stream enters the Rio Grande at river kilometre 422, 20.0 river kilometres downstream from Falcon Dam. The weir is located about 91 metres downstream from the recorder. The zero of the gage is at mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 5 discharge measurements made at high flows during the year, 5 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 1991.

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 0.40 metres to make it coincide with the weir crest elevation. Prior to January 1, 1969, the zero of the gage was 57.41 metres above mean sea level, U. S. C. & G. S. datum.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 4,100 m3/sec on September 11, 1948 with a gage height of 10.23 metres. 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 Cubic Metres per Second**

Daily:	Max.	2,470	Sept. 11, 1948	Min.	0	Frequently
Monthly:	Max.	207	Sept. 1967	Min.	0	Frequently
Yearly:	Max.	23.7	1967	Min.	0.47	1929

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	0	0	0	* 0.21	* 16.1	0	1.76	0.05	0	0
2	0	0	0	0	0	.11	9.45	0	.76	.03	0	0
3	0	0	0	0	0	.05	4.57	0	.73	.03	0	0
4	0	0	0	0	0	.02	2.09	0	18.8	.02	0	0
5	0	0	0	0	0	0	1.04	0	123 *	.03	0	0
6	0	0	0	0	0	0	.57	0	* 46.1	.05	0	0
7	0	0	0	0	0	0	2.14	0	31.9	1.61	0	0
8	0	0	0	0	0	0	1.77	0	14.2	1.32	0	0
9	0	0	0	0	0	0	.48	0	6.87	.95	0	0
10	0	0	0	0	0	1.25	.20	0	2.85	.71	0	0
11	0	0	0	0	0	1.36	.10	0	1.83	.43	0	0
12	0	0	0	0	0	1.24	.04	0	2.07	.10	0	0
13	0	0	0	0	0	.39	.01	0	1.11	.04	0	0
14	0	0	0	0	6.58	.42	0	0	.61	.02	0	0
15	0	0	0	0	2.40	.75	0	0	12.9	0	0	0
16	0	0	0	0	2.18	.48	0	0	7.75	0	0	0
17	0	0	0	0	3.42	.56	0	0	5.01	0	0	0
18	0	0	0	0	1.05	.23	0	0	4.05	0	0	0
19	0	0	0	0	.81	* .12	0	0	8.40	0	0	0
20	0	0	0	0	.19	.05	0	0	14.7	0	0	0
21	0	0	0	0	.11	.02	0	0	5.70	0	0	.18
22	0	0	0	0	.39	0	0	0	3.15	0	0	0
23	0	0	0	0	.23	0	0	0	1.91	0	0	0
24	0	0	0	0	.88	0	0	0	1.18	0	0	0
25	0	0	0	0	43.9	0	0	0	.72	0	0	0
26	0	0	0	0	11.2	0	0	0	.43	0	0	0
27	0	0	0	0	6.10	0	0	0	.29	0	0	0
28	0	0	0	0	2.59	0	0	0	.20	0	0	0
29	0		0	0	1.19	.01	0	0	.13	0	0	0
30	0		0	0	.62	25.5	0	0	.08	0	0	0
31	0		0		.36		0	0		0		0
Sum		0		0		32.77		0		5.39		0.18
	0		0		84.20		38.56		319.19		0	

Current Year 1991 | Period 1924–1991

Month	Extreme Gage Metres		Extreme–Cubic Metres per Second				Average	Volume–Thousands of Cubic Metres			
			High		Low			Total	Average	Maximum	Minimum
	High	Low	Day		Day						
Jan.			! 1	0	! 1	0	0	0	3,664	43,048	0
Feb.			! 1	0	! 1	0	0	0	3,755	65,959	0
Mar.			! 1	0	! 1	0	0	0	2,730	24,423	0
April			! 1	0	! 1	0	0	0	6,777	44,664	0
May	59.06	57.18	25	135	! 1	0	2.72	7,275	13,784	168,987	0
June	59.00	57.41	30	120	! 5	0	1.09	2,831	14,330	102,663	0
July	58.37	57.41	1	44.5	13	0	1.24	3,332	8,695	76,779	0
Aug.			! 1	0	! 1	0	0	0	17,752	253,727	0
Sept.	59.62	57.43	5	223	30	.07	10.6	27,578	45,489	535,808	167
Oct.	57.62	57.41	7	1.90	!14	0	.17	466	20,015	238,925	0
Nov.			! 1	0	! 1	0	0	0	4,675	31,041	0
Dec.	57.54		21	.96	! 1	0	.01	15.6	3,810	19,713	0
Yearly				223		0	1.32	41,498	145,476	747,092	14,677

* Discharge measurement made on this day ! And other days ** Period 1924–1991

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", 5.0 river kilometres from the confluence with the Rio Grande, and 15.0 river kilometres downstream from Marte R. Gomez Dam. This stream enters the Rio Grande at river kilometre 384; 6.0 river kilometres upstream from the Rio Grande gaging station at Rio Grande City, 58.1 river kilometres downstream from Falcon Dam. The zero is at mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 15 discharge measurements during the year, 15 by the Mexican Section and 0 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 1991.

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 39.76 metres above mean sea level, U. S. C. & G. S. datum.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 3,270 m3/sec on September 25, 1967 with a gage height of 12.81 metres. Min. no flow on several occasions in 1989, 1990 and 1991.

Average Flow in Cubic Metres per Second

Daily:	Max.	3,250	Sept. 25, 1967	Min.	0	July 5, 1989
Monthly:	Max.	894	Sept. 1967	Min.	0	July 1990
Yearly:	Max.	113	1967	Min.	0.05	1990

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.01	0.04	0.03	0.03	0	0	13.1	* 0.08	0.01	* 0.11	0.01	0
2	.01	.05	* .03	.03	0	0	0	.08	0	.08	0	0
3	.01	.05	.03	* .03	.01	0	* .79	.08	0	.08	0	0
4	.02	.05	.03	.03	.01	0	.77	.08	.08	.08	0	0
5	.02	.05	.03	.03	.01	0	.74	.08	.17	.07	0	0
6	.02	* .05	.03	.03	.01	0	.72	.08	.25	.07	.01	.01
7	.02	.05	.03	.03	.01	0	.69	.08	.33	.07	.01	.01
8	.02	.04	.03	.03	.02	0	.67	.07	.42	.07	.01	.01
9	.02	.04	.03	.03	.02	0	.64	.07	.50	.06	.01	.01
10	* .02	.04	.02	.04	.02	0	.62	.07	.58	.06	.02	.01
11	.02	.04	.02	.04	.02	0	.59	.07	.66	.06	.02	.02
12	.02	.04	.02	.04	.02	0	.57	.07	* .75	.06	* .02	.02
13	.02	.03	.02	.04	.02	0	.55	.07	.72	.05	.02	.02
14	.02	.03	.02	.04	.03	0	.52	.07	.68	.05	.02	.02
15	.03	.03	.02	.04	.03	0	.50	* .07	.65	.05	.02	.03
16	.03	.03	.02	* .04	* .03	0	.47	.07	.62	.05	.02	.03
17	.03	.02	.02	.04	.03	0	.45	.06	.58	.04	.02	* .03
18	.03	* .02	* .02	.03	.03	0	.42	.06	.55	.04	.01	.03
19	.03	.02	.02	.03	.02	0	.40	.06	.52	.04	.01	.03
20	.03	.02	.02	.03	.02	0	.37	.05	.48	.04	.01	.03
21	.03	.02	.02	.03	.02	0	.35	.05	.45	.03	.01	.03
22	.03	.02	.02	.02	.02	0	.32	.04	.42	.03	.01	.03
23	.03	.02	.02	.02	.02	0	.30	.04	.38	.03	.01	.03
24	.04	.02	.02	.02	.02	0	.28	.04	.35	.03	.01	.03
25	.04	.03	.02	.01	.01	0	.25	.03	.31	.02	.01	.03
26	.04	.03	.02	.01	.01	0	.23	.03	.28	.02	.01	.03
27	.04	.03	.03	.01	.01	0	.20	.03	.25	.02	.01	.03
28	.04	.03	.03	.01	.01	0	.18	.02	.21	.02	0	.04
29	.04		.03	0	.01	0	.15	.02	.18	.01	0	.04
30	.04		.03	0	0	156	.13	.01	.15	.01	0	.04
31	.04		.03		0		.10	.01		.01		.04
Sum	0.84	0.94	0.76	0.81	0.49	156	26.07	1.74	11.53	1.46	0.31	0.68

Current Year 1991 | Period 1954-1991

Month	Extreme Gage Metres High	Extreme Gage Metres Low	Extreme-Cubic Metres per Second High Day	High	Low Day	Low	Average	Volume-Thousands of Cubic Metres Total	Average	Maximum	Minimum
Jan.			!24	0.04	! 1	0.01	0.03	72.6	10,905	118,255	72.6
Feb.			! 2	.05	!17	.02	.03	81.2	6,440	79,341	81.2
Mar.			! 1	.03	!10	.02	.02	65.7	3,297	30,236	65.7
April			!10	.04	!29	0	.03	70.0	2,942	44,252	70.0
May			!14	.03	! 1	0	.02	42.3	4,027	35,412	42.3
June			30	156	! 1	0	5.20	13,478	17,718	412,732	92.0
July	40.40	39.87	1	97.0	2	0	.84	2,252	30,224	421,146	.9
Aug.			! 1	.08	!30	.01	.06	150	22,319	337,855	56.2
Sept.			12	.75	! 2	0	.38	996	136,427	2,316,976	76.8
Oct.			1	.11	!29	.01	.05	126	116,392	1,111,982	54.4
Nov.			!10	.02	! 2	0	.01	26.8	32,240	283,824	26.8
Dec.			!28	.04	! 1	0	.02	58.8	19,250	190,900	15.6
Yearly				156		0	0.55	17,419	402,181	3,566,105	1,635

* Discharge measurement made on this day ! 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 20.0 river kilometres upstream from the confluence with the Rio Grande. The Rio San Juan enters the Rio Grande at river kilometre 384. 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 the Rio Grande City 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, 5.0 river kilometres upstream from the confluence with the Rio Grande. The discharge through Rancherias Drain was determined by prorating between 23 current meter measurements made during the year. There were no drainage flows through Los Fresnos Drain in 1991. All storm water measured at these two drains was deducted and is not included in the tabulation below. Records available: 1953 through 1991. Records prior to 1976 include Rio San Juan flow.

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.05	0.34	0.19	0.20	0.18	0.22	0.38	* 0.04	0.18	0.05	0.05	0.06
2	.05	.33	* .19	.20	.18	.22	.39	.04	.19	* .04	.05	.06
3	.05	.32	.19	* .20	.18	.22	* .40	.04	* .20	.04	.04	* .06
4	.04	.30	.19	.21	.18	* .22	.39	.04	.20	.05	* .04	.06
5	.04	.29	.18	.21	.19	.22	.38	.04	.20	.05	.04	.06
6	.04	* .28	.18	.22	.19	.22	.36	.04	.20	.06	.04	.06
7	.04	.27	.18	.23	.19	.22	.35	.04	.20	.06	.05	.06
8	.04	.27	.18	.23	.19	.22	.34	.03	.20	.07	.05	.06
9	.04	.26	.18	.24	.19	.22	.33	.03	.20	.07	.05	.06
10	* .04	.25	.18	.25	.19	.21	.31	.03	.20	.08	.06	.06
11	.11	.25	.17	.26	.19	.21	.30	.03	.20	.08	.06	.06
12	.18	.24	.17	.26	.20	.21	.29	.03	* .20	.09	* .06	.06
13	.25	.23	.17	.27	.20	.21	.28	.03	.19	.09	.06	.06
14	.31	.23	.17	.28	.20	.21	.26	.03	.18	.10	.06	.06
15	.38	.22	.17	.28	.20	* .21	.25	* .03	.18	.10	.06	.06
16	.45	.21	.16	* .29	* .20	.22	.24	.04	.17	* .11	.06	.06
17	* .52	.21	.16	.28	.20	.23	.23	.05	.16	.11	.06	* .06
18	.51	* .20	* .16	.27	.20	.24	.21	.06	.15	.10	.06	.07
19	.50	.20	.16	.27	.20	.25	.20	.07	.14	.10	.06	.08
20	.48	.20	.16	.26	.20	.26	.19	.07	.14	.10	.06	.10
21	.47	.20	.17	.25	.21	.27	.18	.08	.13	.09	.06	.11
22	.46	.20	.17	.24	.21	.28	.16	.09	.12	.09	.06	.12
23	.45	.20	.17	.23	.21	.29	.15	.10	.11	.08	.06	.13
24	.44	.19	.18	.23	.21	.30	.14	.11	.10	.08	.06	.15
25	.42	.19	.18	.22	.21	.32	.13	.12	.10	.08	.06	.16
26	.41	.19	.18	.21	.21	.33	.11	.13	.09	.07	.06	.17
27	.40	.19	.18	.20	.21	.34	.10	.14	.08	.07	.06	.18
28	.39	.19	.19	.20	.21	.35	.09	.15	.07	.07	.06	.20
29	.38		.19	.19	.21	.36	.08	.16	.06	.06	.06	.21
30	.36		.19	* .18	.21	.37	.06	.16	.06	.06	.06	.22
31	.35		.19		.22		.05	.17		.05		.23
Sum	8.65	6.65	5.48	7.06	6.17	7.65	7.33	2.22	4.60	2.35	1.67	3.15

Current Year 1991 | Period 1954-1991

Month	Extreme Gage Metres High	Extreme Gage Metres Low	Extreme-Cubic Metres per Second ϕ High Day	ϕ High	ϕ Low Day	ϕ Low	Average	Volume-Thousands of Cubic Metres Total	Average	Maximum	Minimum
Jan.			17	0.52	! 4	0.04	0.28	747	308	1,127	0
Feb.			1	.34	!24	.19	.24	575	434	1,157	0
Mar.			! 1	.19	!16	.16	.18	473	323	952	31.9
April			16	.29	30	.18	.24	610	411	1,338	23.9
May			31	.22	! 1	.18	.20	533	777	1,777	77.1
June			30	.37	!10	.21	.26	661	701	1,550	68.7
July			3	.40	31	.05	.24	633	350	692	40.1
Aug.			31	.17	! 8	.03	.07	192	261	612	32.1
Sept.			! 3	.20	!29	.06	.15	397	298	1,296	19.1
Oct.			!16	.11	! 2	.04	.08	203	263	1,321	23.9
Nov.			!10	.06	! 3	.04	.06	144	208	783	8.0
Dec.			31	.23	! 1	.06	.10	272	184	636	22.0
Yearly				0.52		0.03	0.17	5,440	4,518	8,237	611

* Discharge measurement made on this day ϕ 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 1991, 1,799 irrigable hectares 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 area below Falcon Dam allotted Rio Grande water.

The total diversion during 1991 in this river reach was 15,225,000 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 Cubic Metres per Second

Daily:	Max.	3.51	April 6-9, 1984	Min.	0	Occasionally
Monthly:	Max.	1.58	April 1984	Min.	0.06	March 1957
Yearly:	Max.	0.65	1989	Min.	0.20	1968

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.22	1.22	1.47	0.80	1.14	1.15	0.20	0.95	0.20	0.38	0.90	0.24
2	.38	1.20	1.42	.93	1.14	.45	.20	.79	.33	.35	.84	.29
3	.41	.55	.58	.91	1.16	.52	.20	.54	.27	.42	.24	.42
4	.33	.43	1.04	1.06	.75	.61	.20	.36	.25	.43	.44	.47
5	.20	.37	1.17	1.14	.46	.67	.20	.38	.25	.29	.44	.56
6	.19	.42	1.23	.73	.29	.82	.20	.55	.20	.22	.54	.67
7	.19	.39	1.13	.43	.26	.87	.19	.54	.20	.25	.38	.40
8	.19	.72	1.28	.53	.37	.59	.19	.56	.10	.50	.45	.30
9	.18	.51	1.15	.47	.54	.28	.28	.54	.20	.53	.43	.62
10	.18	.44	.74	.52	.53	.37	.28	.46	.20	.52	.40	.63
11	.24	.57	.88	.51	.44	.33	.29	.35	.20	.85	.53	.56
12	.39	.71	1.03	.56	.38	.32	.35	.44	.23	.75	.49	.52
13	.32	.75	1.06	.36	.48	.43	.25	.53	.25	.62	.53	.54
14	.32	.79	1.06	.28	.31	.55	.31	.47	.21	.71	.63	.33
15	.36	.83	1.00	.58	.37	.37	.38	.52	.21	.76	.56	.24
16	.36	.85	.87	.84	.31	.28	.39	.56	.24	.64	.39	.25
17	.49	.74	.61	.89	.31	.27	.42	.51	.24	.74	.29	.23
18	.54	.94	.82	.79	.24	.27	.48	.36	.23	.88	.52	.37
19	.47	1.02	.86	.95	.25	.27	.49	.44	.36	.70	.69	.41
20	.36	.95	.82	.99	.28	.27	.42	.38	.27	.54	.61	.43
21	.51	.84	.88	.64	.28	.27	.30	.50	.23	.62	.58	.37
22	.52	.99	1.05	.87	.31	.27	.35	.48	.19	.95	.74	.23
23	.63	.73	.75	1.03	.25	.30	.48	.59	.26	.74	.58	.23
24	.70	.05	.68	.76	.31	.49	.42	.58	.31	.69	.52	.23
25	.78	.05	.78	.79	.32	.49	.55	.39	.26	.84	.59	.23
26	.64	.05	1.12	.79	.02	.45	.61	.51	.27	.69	.56	.23
27	.01	.05	1.13	.73	.02	.57	.41	.68	.33	0	.56	.35
28	.01	.05	1.14	0	.02	.67	0	.64	.28	0	.32	.28
29	.01		1.09	0	.02	.31	0	.70	0	0	.53	0
30	.01		.72	0	.02	0	0	.67	0	0	.50	0
31	.01		.05		.02		0	.55		0		0
Sum	10.15	17.21	29.61	19.88	11.60	13.51	9.04	16.52	6.77	15.61	15.78	10.63

Current Year 1991 | Period 1960-1991

Month	Average Rainfall** Millimetres 1991	Average Rainfall** Millimetres 1960-1991	Extreme-Cubic Metres per Second Day	ϕ High	Day	ϕ Low	Average	Volume-Thousands of Cubic Metres Total	Average	Maximum	Minimum
Jan.	28	25	25	0.78	!27	0.01	0.33	877	901	1,828	196
Feb.	18	28	1	1.22	!24	.05	.61	1,487	1,098	2,198	275
Mar.	6	12	1	1.47	31	.05	.96	2,558	1,520	2,558	549
April	13	38	5	1.14	!28	0	.66	1,718	1,639	4,088	440
May	163	69	3	1.16	!26	.02	.37	1,002	1,215	3,237	260
June	116	66	1	1.15	!30	0	.45	1,167	1,163	3,217	258
July	67	40	26	.61	!28	0	.29	781	910	1,703	343
Aug.	0	59	1	.95	11	.35	.53	1,427	886	1,798	343
Sept.	68	113	19	.36	!29	0	.23	585	735	1,745	220
Oct.	28	48	22	.95	!27	0	.50	1,349	1,013	2,109	448
Nov.	8	26	1	.90	3	.24	.53	1,363	777	1,793	260
Dec.	59	24	6	.67	!29	0	.34	918	709	1,490	179
Yearly	574	548		1.47		0	0.48	15,232	12,566	20,497	6,154

ϕ 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 kilometre 378; about 1.6 kilometre downstream from Rio Grande City, Texas, and 6.0 river kilometres downstream from Rio San Juan. The zero of the gage is 30.48 metres 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 by shifting control methods. Records available: January 1955 through 1991. 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" 4.8 kilometres 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, 64.1 river kilometres 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. 6,230 m3/sec on September 22 and 23, 1967 with a gage height of 18.71 metres. Min. no flow occurred several days in June and July 1953.

Average Flow in Cubic Metres per Second**

Daily:	Max.	5,860	Sept. 23, 1967	Min.	0.36	March 5, 1985
Monthly:	Max.	1,400	Oct. 1958	Min.	6.66	March 1957
Yearly:	Max.	259	1958	Min.	49.6	1970

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	125	227 *	* 20.3	140	244 *	224	193 *	71.4	82.1	37.1	19.8	41.1
2	129 *	214	23.8	135	266	253	61.5	98.0	80.7	* 44.2	17.6	* 43.3
3	119	210	30.3	145	273	258 *	17.1	104	* 77.9	37.1	15.5	49.8
4	108	193	44.7	159 *	292	268	10.1	118	63.7	35.7	* 13.8	41.9
5	124	87.5	58.3	160	326	270	7.33	112 *	93.2	34.0	25.5	56.9
6	124	76.7	70.5	84.4	314	277	6.00	70.8	79.3	37.4	28.9	53.5
7	124	45.0	66.6	67.4	254	289	6.32	87.8	52.7	44.5	25.7	54.7
8	173	27.2	60.0	36.2	268	275	17.8	98.0	41.1	57.8	18.1	63.7
9	197	22.9	58.9	26.9	274	272	24.4	102	16.6	61.2	15.9	65.4
10	208	27.2	64.6	58.3	259	248	22.9	98.0	10.1	48.7	15.6	62.6
11	217	27.9	67.4	34.0	292	258	23.1	88.4	12.1	39.6	15.4	60.6
12	228	27.7	77.0	27.7	309	245	23.6	91.5	18.2	50.7	14.5	55.5
13	247	* 25.3	82.1	21.3	317	167	24.2	103	17.1	58.9	14.1	56.1
14	257	18.8	75.0	23.5	334	147 *	18.4	92.3	17.3	60.6	13.8	71.1
15	275	18.9	71.1	28.3	149	158	* 14.1	81.6	14.5	* 56.1	* 23.9	86.9
16	289	24.0	80.7	38.8	* 74.5	196	12.6	71.4	* 21.0	75.0	22.7	88.4
17	300 *	32.3	77.6	* 54.7	84.1	197	12.8	84.7	18.2	88.4	29.7	83.8
18	303	36.8	* 71.9	56.1	62.9	78.7	13.1	113	16.8	56.6	35.4	* 57.2
19	300	33.4	71.6	62.6	57.5	107	20.8	126	20.0	51.8	39.9	34.8
20	309	27.4	71.4	81.8	60.6	112	36.2	121 *	24.7	54.4	54.9	28.6
21	317	21.6	65.4	93.5	56.4	110	44.2	124	30.9	64.6	67.7	24.7
22	303	11.5	62.9	96.0	45.6	114	47.0	121	21.7	92.9	66.8	16.1
23	297	14.6	69.4	103	36.5	127	51.3	114	18.9	110	40.2	15.5
24	303	27.7	82.4	103	30.3	125	48.7	105	22.9	70.5	36.8	16.9
25	286	30.3	85.2	139	138	132	44.5	95.4	12.7	56.6	32.3	19.8
26	280	30.9	84.7	169	133	195	46.7	100	11.8	62.6	31.7	28.3
27	279	26.5	106	200	107	161	45.9	103	19.0	88.4	20.4	31.4
28	274	24.6	128	209	138	172	47.0	105	21.4	93.7	37.4	39.4
29	269		92.6	209	196	166	50.4	82.7	29.5	105	60.9	40.5
30	269		113	217	193	250	62.6	69.7	33.7	88.9	53.8	41.6
31	245		116		191		65.4	68.3		41.9		51.5
Sum	7,278	1,590.7	2,249.4	2,979.5	5,775.4	5,851.7	1,119.05	3,021.0	999.8	1,904.9	908.7	1,481.6

Current Year 1991 | Period 1954-1991

Month	Extreme Gage Metres High	Extreme Gage Metres Low	Extreme-Cubic Metres per Second High Day	High	Extreme-Cubic Metres per Second Low Day	Low	Average	Volume-Thousands of Cubic Metres Total	Average	Maximum	Minimum
Jan.	9.74	8.37	21	323	4	73.6	235	628,819	283,768	628,819	20,625
Feb.	9.33	7.69	1	239	!22	7.62	56.8	137,436	207,494	464,530	31,488
Mar.	8.91	7.82	31	157	1	15.8	72.6	194,348	167,837	466,756	17,787
April	9.28	7.89	30	225	13	19.8	99.3	257,429	350,935	709,848	92,665
May	10.10	8.00	14	360	24	28.3	186	498,995	469,428	850,281	45,271
June	10.25	8.21	30	382	18	53.2	195	505,587	361,590	811,943	97,028
July	10.12	7.67	1	365	! 6	5.38	36.1	96,686	222,340	707,768	27,479
Aug.	8.98	8.11	5	161	16	37.1	97.5	261,014	288,993	1,853,522	30,778
Sept.	8.94	7.77	5	150	11	8.92	33.3	86,383	384,832	3,346,077	52,327
Oct.	8.83	7.96	23	141	31	27.6	61.4	164,583	400,999	3,758,177	37,009
Nov.	8.41	7.78	22	78.4	14	11.5	30.3	78,512	178,718	1,778,975	36,109
Dec.	8.63	7.83	16	110	23	14.4	47.8	128,010	150,797	665,515	39,434
Yearly	10.25	7.67		382		5.38	96.3	3,037,802	3,467,731	8,165,042	1,565,582

* Discharge measurement made on this day ! And other days ** Period 1955-1991

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 20.0 river kilometres upstream from the confluence with the Rio Grande. The Rio San Juan enters the Rio Grande at river kilometre 384. 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 the Rio Grande City 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 1991, 55% 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 1991.

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 1991, 34,889,000 m3 were diverted.

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.87	2.60	0.44	0.38	0.46	0.31	2.46	0.16	0.30	0.21	0.19	0.18
2	2.02	2.57	.43	.38	.56	.30	2.61	.16	.31	.18	.18	.18
3	2.33	2.55	.43	.38	.87	.29	2.76	.16	.32	.19	.17	.18
4	2.52	3.29	.42	.39	2.72	.28	2.92	.16	.36	.20	.16	.17
5	2.52	3.77	.42	.40	2.98	.31	.33	.16	.98	.21	.17	.17
6	2.52	2.32	.42	.41	3.32	.34	.28	.16	.99	.22	.17	.16
7	2.52	2.23	.41	.42	4.43	.37	.27	.16	.50	.23	.18	.15
8	2.52	2.08	.41	.43	4.14	.46	.27	.15	1.39	.24	.18	.15
9	2.52	2.37	.40	.44	1.71	1.46	.26	.15	1.00	.24	.19	.14
10	2.60	2.43	.40	.45	1.18	1.11	.26	.15	.77	.26	.20	.13
11	2.68	2.20	.40	.46	1.00	.48	.25	.15	.72	.27	.20	.14
12	2.84	1.97	.39	.47	.87	.51	.25	.15	2.18	.28	.21	.13
13	3.27	1.96	.39	.48	1.15	.54	.24	.15	3.48	.29	.21	.13
14	3.25	1.95	.38	.49	5.78	.57	.24	.15	.67	.30	.21	.12
15	3.64	1.94	.38	.50	3.42	.60	.24	.15	.64	.31	.21	.11
16	3.80	1.94	.38	.51	1.07	.58	.23	.16	.61	.32	.21	.14
17	3.96	1.93	.37	.51	2.61	.57	.23	.17	.58	.31	.21	.10
18	3.93	1.92	.37	.54	2.83	.55	.22	.18	.56	.30	.20	.14
19	3.90	1.18	.37	.50	1.91	.53	.22	.19	.53	.29	.20	.18
20	3.87	1.49	.37	.49	1.09	.51	.21	.19	.50	.28	.38	.23
21	3.50	1.67	.37	.49	.42	.50	.21	.20	.48	.28	.20	.25
22	3.35	1.66	.37	.50	.41	.48	.20	.21	.45	.27	.20	.29
23	3.48	1.65	.37	.66	.40	.46	.20	.22	.42	.26	.19	.33
24	3.45	1.63	.37	.51	.39	.44	.20	.23	.40	.25	.19	.37
25	3.19	1.34	.37	.53	.38	.43	.19	.24	.37	.25	.19	.40
26	2.77	.53	.38	.47	.37	.41	.19	.25	.34	.24	.19	.44
27	2.74	.46	.38	.46	.36	.39	.18	.26	.32	.23	.19	.48
28	2.80	.45	.38	.71	.35	.38	.18	.27	.29	.22	.18	.53
29	2.69		.38	.99	.34	.36	.17	.28	.26	.21	.18	.57
30	2.66		.38	.47	.33	2.32	.17	.28	.23	.20	.18	.61
31	2.52		.38		.32		.16	.29		.20		.64
Sum	92.23	54.08	12.11	14.82	48.17	16.84	16.80	5.94	20.95	7.74	5.92	7.94

Current Year 1991 | Period 1954-1991

Month	Extreme Gage Metres High	Extreme Gage Metres Low	Extreme-Cubic Metres per Second Day	ϕ High	Day	ϕ Low	Average	Volume-Thousands of Cubic Metres Total	Average	Maximum	Minimum
Jan.			17	3.96	1	1.87	2.98	7,969	3,154	9,405	575
Feb.			5	3.77	28	.45	1.93	4,673	3,854	8,707	574
Mar.			1	.44	!17	.37	.39	1,046	2,557	6,526	643
April			29	.99	! 1	.38	.49	1,280	4,024	7,602	1,109
May			14	5.78	31	.32	1.55	4,162	9,762	37,225	1,921
June			30	2.32	4	.28	.56	1,455	10,275	106,020	1,455
July			4	2.92	31	.16	.54	1,452	5,365	60,172	1,109
Aug.			31	.29	! 8	.15	.19	513	2,737	16,395	513
Sept.			13	3.48	30	.23	.70	1,810	2,725	13,905	654
Oct.			16	.32	2	.18	.25	669	3,279	12,126	351
Nov.			20	.38	4	.16	.20	511	2,312	12,903	511
Dec.			31	.64	17	.10	.26	686	2,784	41,991	575
Yearly				5.78		0.10	0.83	26,226	52,828	221,387	16,605

ϕ 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 1991, 74,292 irrigable hectares and several towns and rural homes were allotted Rio Grande water in the river between the gaging station at Rio Grande City and Anzalduas Dam. Such irrigable area was 25.7% of the total irrigable area below Falcon Dam allotted Rio Grande water.

The total diversion during 1991 in this river reach was 280,924,000 m3, or 20.9% of the total water diverted from the Rio Grande below Falcon Dam. Records of diversions in this river reach were determined by means of flowmeters 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 Cubic Metres per Second

Daily:	Max.	34.6	June 21, 1960	Min.	0	Occasionally	
Monthly:	Max.	28.6	June 1960	Min.	0.29	March	1957
Yearly:	Max.	13.5	1989	Min.	5.32		1966

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	6.83	19.5	9.52	17.0	20.0	12.7	2.95	9.63	8.04	7.50	4.47	6.20
2	7.59	12.1	6.43	19.3	18.4	12.4	3.99	13.0	6.71	7.42	3.48	7.84
3	7.73	8.38	7.31	19.5	19.3	18.5	3.20	11.1	10.6	7.50	2.92	7.65
4	5.98	5.92	12.2	18.5	13.5	18.7	.18	11.8	4.42	9.32	4.47	7.19
5	6.06	4.45	11.1	13.7	7.73	19.9	1.57	17.8	1.80	6.80	3.31	7.70
6	5.66	12.1	13.2	4.22	7.33	19.9	2.83	10.3	.92	5.30	2.25	9.35
7	6.66	3.57	15.2	4.19	9.46	19.3	1.47	9.40	6.29	7.59	3.09	5.72
8	5.49	4.22	15.3	4.25	6.71	21.4	2.15	13.4	1.00	8.89	2.42	5.41
9	6.37	4.93	10.8	3.77	7.33	17.2	1.91	12.1	4.45	10.5	2.17	10.8
10	6.37	4.45	11.3	4.25	7.36	20.6	2.06	9.46	2.67	12.2	2.35	10.7
11	5.64	6.51	21.9	6.23	6.68	20.9	1.67	9.77	1.82	10.5	4.50	9.71
12	4.79	5.81	20.4	3.99	7.67	20.5	2.11	12.0	1.87	7.65	5.07	9.97
13	4.05	6.17	20.7	2.50	9.77	18.8	1.63	14.8	3.03	8.41	4.25	10.1
14	5.72	5.98	20.6	3.09	5.52	19.0	1.97	16.6	2.06	11.5	6.88	4.79
15	6.40	6.83	19.3	6.49	5.35	15.2	5.01	14.8	1.73	10.2	5.24	5.24
16	6.60	4.90	11.6	7.62	4.39	14.0	6.63	11.6	2.70	11.5	3.43	7.33
17	7.82	4.79	12.1	8.64	3.82	9.46	6.80	9.43	4.93	12.8	3.82	7.28
18	8.07	6.85	16.7	11.1	3.17	10.8	5.35	10.4	2.89	13.8	6.00	4.76
19	6.80	6.97	17.9	9.66	4.42	9.49	5.18	14.4	2.67	10.6	7.36	3.57
20	5.98	7.93	16.4	8.07	7.33	10.0	4.13	17.0	2.55	10.6	7.59	3.77
21	6.51	8.27	17.1	9.49	5.30	10.3	5.72	17.2	1.42	13.3	8.47	2.46
22	9.52	8.61	18.0	15.5	4.76	8.47	8.41	16.8	1.62	12.9	9.26	2.57
23	10.6	5.58	14.2	15.7	5.47	9.52	10.0	16.0	2.77	16.9	7.39	3.17
24	10.6	5.04	11.4	16.7	5.86	15.4	10.8	10.8	5.92	16.7	7.50	1.82
25	9.86	6.23	18.0	15.8	3.85	16.5	10.3	10.6	5.38	15.1	9.32	.71
26	8.61	7.33	19.5	15.3	3.31	16.1	8.78	14.6	5.47	12.4	9.69	4.73
27	6.20	6.60	19.0	12.5	7.33	16.1	6.74	16.2	6.71	11.0	7.50	5.21
28	8.95	6.43	18.9	11.4	9.69	14.8	6.40	16.3	4.13	15.6	4.67	2.39
29	11.0		13.7	14.7	9.46	11.8	9.49	15.4	3.20	14.1	8.58	.83
30	11.1		12.1	16.0	10.9	7.87	11.0	13.7	4.45	4.05	5.95	.87
31	9.32		10.5		8.95		7.36	11.0		1.30		2.30
Sum	228.88	196.45	462.36	319.16	250.12	455.61	157.79	407.39	114.22	323.93	163.40	172.14

Current Year 1991 | Period 1960–1991

Month	Average Rainfall** Millimetres 1991	Average Rainfall** Millimetres 1960–1991	Extreme-Cubic Metres per Second Day	ϕ High	Day	ϕ Low	Average	Volume-Thousands of Cubic Metres Total	Average	Maximum	Minimum
Jan.	19	30	30	11.1	13	4.05	7.38	19,775	16,567	35,458	2,479
Feb.	38	29	1	19.5	7	3.57	7.02	16,973	17,518	47,610	4,040
Mar.	4	15	11	21.9	2	6.43	14.9	39,948	28,903	51,495	8,288
April	21	34	3	19.5	13	2.50	10.6	27,575	33,713	53,085	9,608
May	95	68	1	20.0	18	3.17	8.07	21,610	28,076	55,732	3,919
June	87	68	8	21.4	30	7.87	15.2	39,365	28,592	73,847	6,181
July	48	40	30	11.0	4	.18	5.09	13,633	26,894	57,262	8,330
Aug.	15	55	5	17.8	7	9.40	13.1	35,198	28,266	44,751	8,469
Sept.	112	99	3	10.6	6	.92	3.81	9,869	18,630	42,873	5,102
Oct.	34	56	23	16.9	31	1.30	10.4	27,988	22,810	46,570	4,358
Nov.	17	22	26	9.69	9	2.17	5.45	14,118	19,183	33,940	3,614
Dec.	38	26	9	10.8	25	.71	5.55	14,873	15,870	30,837	3,091
Yearly	528	542		21.9		0.18	8.91	280,925	285,022	424,806	168,318

ϕ 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", 0.8 canal kilometre from the canal intake, and about 8.0 kilometres northwest of Reynosa, Tamaulipas. The canal intake is immediately upstream from Anzalduas Dam at river kilometre 274, 165 river kilometres downstream from Falcon Dam. The zero of the gage is 26.31 metres above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 250 discharge measurements during the year, 241 by the Mexican Section and 9 by the United States Section of the Commission, and a continuous record of gage heights. Computations by shifting control methods. Records available: 1952 through 1991.

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 37.0 canal kilometres downstream from this station. For area irrigated during 1991 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 7.2 kilometres, 18.2 kilometres, and 36.2 kilometres below this station.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 310 m3/sec on June 2, 1957 with a gage height of 4.88 metres. Min. no flow occurs frequently.

Average Flow in Cubic Metres per Second

Daily:	Max.	265	April 23, 1983	Min.	0	Frequently
Monthly:	Max.	198	May 1988	Min.	0	Several months
Yearly:	Max.	60.4	1989	Min.	4.26	1952

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	85.8	167 *	* 6.30	* 62.0	155 *	94.3	* 68.2	* 16.2	22.1	* 10.7	14.6	9.20
2	* 85.7	153	6.10	* 70.8	169 *	114	* 71.0	* 15.8	* 18.4	* 10.9	11.5	* 12.4
3	* 85.1	139	7.60	* 77.2	191 *	125 *	* 31.4	22.2	* 20.4	* 10.6	10.2	* 12.3
4	89.1	127	* 8.60	* 86.4	191	125 *	* 20.4	24.3	* 19.8	* 10.6	* 9.60	* 14.1
5	88.3	120	* 9.10	* 86.9	200	120 *	* 16.9	* 29.7	* 21.2	10.5	* 9.00	* 19.1
6	90.2	* 66.2	* 8.60	89.3	202 *	108 *	15.7	* 34.5	* 19.8	10.6	* 9.40	* 27.7
7	* 87.0	* 69.4	* 8.10	46.7	205 *	107 *	13.0	* 15.0	18.3	* 10.8	8.70	29.4
8	* 88.9	34.2	* 8.20	* 22.8	213 *	110	* 11.6	* 27.8	18.3	* 10.7	* 8.40	* 27.8
9	138 *	25.9	8.20	* 23.5	211 *	115	* 11.5	* 26.3	* 13.7	10.7	8.20	* 27.6
10	170 *	19.2	8.10	* 23.1	210 *	119 *	* 11.7	26.3	* 11.6	* 10.7	8.10	* 29.5
11	180 *	* 17.5	* 8.00	* 23.2	200	122 *	11.8	30.5	* 11.0	* 10.7	* 8.20	* 29.7
12	190	* 17.0	* 9.20	* 23.4	200	114 *	* 13.0	* 28.5	* 9.70	10.7	* 8.20	* 30.1
13	185	* 9.50	* 9.00	17.8	202 *	* 89.3	14.2	* 29.1	* 10.3	10.1	* 8.20	* 30.4
14	195 *	* 9.10	* 8.50	13.9	151 *	* 55.1	12.5	* 28.7	10.5	* 10.1	* 6.60	30.7
15	195 *	* 9.00	* 9.10	* 13.9	102 *	48.3	* 10.7	* 31.9	10.5	* 10.7	* 10.1	30.7
16	205 *	9.10	9.30	* 14.4	* 95.6	48.4	* 11.4	* 38.7	10.9	* 9.70	10.6	* 31.2
17	209 *	7.50	10.1	* 17.3	* 92.8	* 49.6	* 10.9	46.2	* 10.3	* 10.1	10.6	* 30.9
18	214 *	* 6.00	* 13.0	* 19.0	88.8	* 51.0	* 11.3	46.2	* 10.7	* 10.3	* 9.80	* 29.6
19	217	* 7.75	* 13.6	* 18.2	68.6	* 51.1	* 11.9	* 48.6	* 10.7	10.3	* 8.60	21.5
20	212	2.40	* 14.1	27.9	* 48.7	* 51.4	11.7	* 50.4	* 10.5	10.1	6.10	* 15.4
21	205 *	0	13.3	31.3	* 25.4	* 51.4	12.1	* 49.1	10.2	* 10.0	* 5.94	9.60
22	207 *	0	* 12.2	* 39.4	* 15.1	50.7	* 9.30	* 46.4	10.5	* 10.0	* 6.10	7.36
23	197 *	0	12.2	* 40.8	* 16.7	42.8	* 11.6	* 46.7	* 10.6	* 10.3	6.20	* 16.2
24	198 *	0	13.5	* 50.7	* 16.7	* 45.4	* 12.8	41.7	* 9.90	* 10.4	6.20	* 20.1
25	192 *	0	* 19.3	* 63.2	29.7	* 42.8	* 12.4	42.0	* 9.80	* 10.3	* 5.20	16.9
26	189	0	* 20.5	* 72.0	* 51.5	* 49.1	* 12.2	* 39.3	* 11.5	10.4	* 5.24	* 16.9
27	190	* 5.00	* 27.3	* 85.3	* 57.3	* 51.2	12.0	* 40.6	* 11.5	11.0	1.28	* 16.9
28	179 *	* 6.70	33.5	104	* 53.5	* 54.0	10.7	* 29.7	11.4	* 15.8	0	16.9
29	174 *		* 35.7	124 *	* 52.1	66.4	* 10.7	* 21.6	11.6	* 17.7	0	16.9
30	175 *		46.8	134 *	* 70.7	70.5	* 14.6	* 21.9	* 10.2	* 14.3	0	* 16.9
31	166 *		50.1		* 82.4		14.9	22.1		* 14.6		* 17.8
Sum	5,082.1	1,027.45	467.20	1,522.4	3,667.6	2,341.8	524.10	1,018.0	395.90	344.40	220.86	661.76

Current Year 1991 | Period 1954–1991

Month	Extreme Gage Metres High	Extreme Gage Metres Low	Extreme-Cubic Metres per Second Day	ϕ High	Day	ϕ Low	Average	Volume-Thousands of Cubic Metres Total	Average	Maximum	Minimum
Jan.			19	217	3	85.1	164	439,093	143,140	439,093	1,875
Feb.			1	167	!21	0	36.7	88,772	115,490	310,244	1,340
Mar.			31	50.1	2	6.10	15.1	40,366	44,854	182,432	1,391
April			30	134	!14	13.9	50.7	131,535	176,224	457,270	28,840
May			8	213	22	15.1	118	316,881	279,741	531,530	34,896
June			3	125	!23	42.8	78.1	202,332	131,017	333,903	17,541
July			2	71.0	22	9.30	16.9	45,282	54,407	200,317	7,068
Aug.			20	50.4	7	15.0	32.8	87,955	103,346	333,640	8,275
Sept.			1	22.1	12	9.70	13.2	34,206	67,447	204,511	2,685
Oct.			29	17.7	16	9.70	11.1	29,756	64,527	258,525	0
Nov.			1	14.6	!28	0	7.36	19,082	16,232	103,230	0
Dec.			16	31.2	22	7.36	21.3	57,176	28,046	205,621	803
Yearly				217		0	47.3	1,492,436	1,224,471	1,903,255	680,814

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

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 kilometre 273; 0.8 river kilometre downstream from Anzalduas Dam, about 7.0 kilometres northwest of Reynosa, Tamaulipas, and 16.6 river kilometres 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 113 discharge measurements during the year, 101 by the Mexican Section and 12 by the United States Section of the Commission, and a continuous record of gage heights. Records available: 1952 through 1991.
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 25.18 metres 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. 3,700 m3/sec on September 24, 1967 with a gage height of 9.30 metres. Min. periods of no flow have occurred on several occasions in 1953, 1954, 1956, and 1957.

Average Flow in Cubic Metres per Second

Daily:	Max.	3,440	Sept. 25, 1967	Min.	0	Occasionally	
Monthly:	Max.	1,070	Oct. 1958	Min.	0.16	March	1957
Yearly:	Max.	182	1958	Min.	4.49		1957

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	35.5	72.6	16.6	47.6	54.8	95.7	213	37.1	39.4	* 9.06	12.0	37.1
2	34.9	72.3	14.1	* 47.5	52.7	103	169 *	* 48.4	43.6	9.15	6.46	26.6
3	* 35.6	74.4	20.1	50.4	* 65.2	112	89.8	52.1	* 41.1	9.22	6.35	* 26.6
4	32.6	87.5	24.9	52.8	76.7	119 *	27.3	58.3	50.0	13.4	6.27	* 17.8
5	34.5	60.1	* 32.2	42.0	98.3	126 *	* 5.16	65.0	* 43.5	14.9	* 6.29	* 15.1
6	34.5	14.4	37.3	46.6	165 *	130	4.40	* 59.4	83.9	19.1	4.90	15.4
7	37.5	4.64	36.7	35.6	130 *	135 *	6.00	54.3	64.0	18.4	3.55	9.66
8	36.4	* 3.50	* 35.4	38.8	* 74.1	141	6.66	51.0	39.4	* 17.6	* 3.50	13.6
9	40.6	3.50	31.4	* 10.5	61.3	147	* 6.36	58.9	23.5	17.5	3.45	17.3
10	37.5	6.05	34.5	6.02	* 57.2	137	6.23	58.6	* 6.41	* 17.8	3.52	* 17.4
11	* 40.8	8.62	36.7	15.6	64.6	119 *	6.18	56.2	* 6.64	11.6	3.40	17.3
12	46.4	* 8.14	36.7	* 5.41	82.7	115	* 4.40	51.7	* 6.20	11.7	* 3.40	17.3
13	53.0	8.78	47.8	5.25	92.1	132	3.55	* 52.9	9.62	30.0	3.46	* 17.7
14	58.9	12.7	50.8	8.96	144	* 92.4	6.42	45.5	6.05	* 36.1	6.29	18.6
15	60.8	* 8.94	* 51.0	11.7	227 *	* 89.6	5.91	34.2	4.51	36.9	6.39	37.7
16	69.4	11.5	51.7	* 12.0	94.9	* 96.0	* 7.00	* 30.5	3.58	32.1	6.36	41.9
17	* 79.3	21.1	62.3	16.4	* 9.61	129	* 7.04	24.7	* 8.44	* 27.6	10.1	* 35.8
18	* 84.1	22.3	51.2	16.7	14.3	130 *	5.71	43.0	13.5	34.0	12.1	36.0
19	78.7	18.0	42.1	* 16.0	5.93	44.5	* 5.98	50.7	* 6.54	26.3	* 12.1	29.1
20	88.2	* 17.1	* 39.4	18.6	11.8	* 46.6	5.98	* 50.7	3.84	34.3	* 18.8	20.2
21	95.8	* 20.8	43.4	23.5	23.7	* 50.1	10.1	53.2	3.75	34.5	* 22.9	16.7
22	* 92.3	* 14.9	* 38.1	25.2	* 35.6	55.2	18.3	53.5	3.65	* 29.2	* 27.9	15.7
23	95.1	12.5	43.6	* 27.8	24.2	58.9	* 20.3	* 50.6	3.52	41.8	20.1	7.34
24	97.7	19.8	48.7	* 33.1	14.4	68.0	15.4	44.5	* 3.40	* 44.2	20.0	8.75
25	* 93.2	* 24.7	51.5	40.2	6.60	* 75.1	20.5	47.6	8.73	31.4	21.0	8.76
26	91.1	* 20.7	* 54.8	* 51.6	75.5	84.6	* 21.9	53.7	* 6.51	27.6	* 15.4	9.74
27	93.2	* 17.5	62.6	55.0	63.5	92.1	21.9	* 52.1	6.27	41.8	12.2	14.5
28	96.5	16.6	60.3	60.5	* 47.8	* 96.7	24.6	49.6	4.19	46.9	* 20.2	* 14.5
29	* 98.2		57.6	58.2	73.9	95.0	25.7	46.2	9.56	* 46.8	29.6	14.3
30	90.0		41.2	52.9	103	92.8	25.7	* 42.4	10.2	34.1	39.9	14.2
31	81.1		42.1		* 96.7		33.9	41.1		30.0		15.2
Sum	2,043.4	683.67	1,296.8	932.44	2,147.14	3,008.3	830.38	1,517.7	563.51	835.03	367.89	607.85

Current Year 1991 | Period 1954–1991

Month	Extreme Gage Metres High	Extreme Gage Metres Low	Extreme–Cubic Metres per Second High	Day	Extreme–Cubic Metres per Second Low	Day	Average	Volume–Thousands of Cubic Metres Total	Average	Maximum	Minimum
Jan.	25.51	24.29	103	24	25.6	4	65.9	176,550	120,273	401,559	1,344
Feb.	25.46	23.65	96.2	4	3.50	7	24.4	59,069	88,224	341,105	1,024
Mar.	25.01	23.93	66.2	17	13.4	1	41.8	112,044	96,283	300,324	418
April	24.98	23.70	64.3	28	5.00	10	31.1	80,563	137,465	394,060	3,898
May	27.31	23.67	243	15	4.19	17	69.3	185,513	185,226	591,517	43,616
June	26.36	24.57	168	18	40.8	19	100	259,917	226,347	838,792	9,683
July	27.49	23.64	261	1	3.38	12	26.8	71,745	159,515	687,075	2,467
Aug.	25.13	24.24	74.2	5	24.6	17	49.0	131,129	160,137	1,489,874	1,163
Sept.	25.52	23.57	101	6	2.10	14	18.8	48,687	271,316	2,297,796	4,835
Oct.	24.71	23.82	48.1	27	8.70	1	26.9	72,147	312,994	2,869,074	2,134
Nov.	24.72	23.61	48.6	30	3.20	13	12.3	31,786	153,866	1,773,744	1,764
Dec.	24.77	23.50	51.4	1	1.25	23	19.6	52,518	113,383	666,203	1,850
Yearly	27.49	23.50	261		1.25		40.6	1,281,668	2,025,029	5,724,541	141,541

* Discharge measurement made on this day

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 40.6 kilometres downstream at the Main Floodway Station on Farm Road No. 88 bridge south of Weslaco. At a point 4.8 kilometres 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 1991, 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 59.7 kilometres 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 floodwater entering the canal at Anzalduas Dam reaches these lakes via the Culebron and Retamal Canals. From that point 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 1991, 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 1991, 48,258 hectares 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 16.7% of the total irrigable area below Falcon Dam allotted Rio Grande water.

The total diversion during 1991 in this river reach was 290,382,000 m3, or 21.6% of the total water diverted from the Rio Grande below Falcon Dam. Records of diversions in this river reach were determined by means of 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 Cubic Metres per Second

Daily:	Max.	33.4	June 1, 1990	Min.	0	Occasionally	
Monthly:	Max.	23.1	June 1990	Min.	0.38	May	1972
Yearly:	Max.	12.6	1989	Min.	4.73		1970

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	4.08	20.4	7.99	14.1	18.6	25.5	12.2	13.6	11.3	8.44	2.38	6.09
2	4.59	12.1	2.73	16.8	16.7	28.6	2.97	13.2	14.6	8.75	.84	8.33
3	5.10	14.1	5.95	15.6	18.4	31.2	.74	13.5	8.78	8.41	.14	4.76
4	3.26	11.3	9.49	17.0	19.9	30.3	.01	12.7	6.17	10.1	.89	7.28
5	2.02	.49	10.5	11.6	22.5	31.4	.01	13.1	1.48	1.99	2.68	7.22
6	1.01	5.61	12.1	4.90	25.6	32.0	0	12.7	1.17	5.69	2.20	4.50
7	2.22	1.29	14.1	.80	20.4	30.6	0	12.7	.29	10.5	1.05	2.10
8	2.70	1.33	13.7	4.05	13.7	28.3	4.13	11.5	.29	9.49	.91	4.53
9	2.77	.65	9.20	7.19	13.0	23.2	5.24	8.41	1.58	6.12	.28	10.6
10	2.78	1.28	10.7	4.47	12.3	26.1	4.53	6.68	3.14	7.87	.03	9.66
11	2.89	3.77	17.5	4.59	9.20	23.7	3.65	6.06	2.89	4.96	1.90	9.66
12	2.32	4.67	18.6	3.99	13.2	24.4	1.24	9.43	2.89	2.28	3.71	6.85
13	1.98	4.64	19.6	1.53	21.6	22.5	.01	14.4	1.82	5.95	3.71	4.28
14	6.74	3.88	20.7	3.57	15.6	22.2	.01	14.5	.44	10.4	3.20	1.89
15	8.04	3.77	16.8	6.46	6.40	19.8	2.53	14.4	.20	12.1	2.45	4.08
16	10.1	1.43	7.82	7.90	5.58	19.3	3.62	14.5	1.05	16.6	.73	6.77
17	11.1	2.10	11.0	9.69	2.19	10.6	3.68	7.65	5.10	17.6	.24	4.47
18	12.3	4.50	13.8	10.5	.65	2.92	3.23	9.01	7.14	17.1	3.34	3.60
19	7.70	5.21	17.2	9.06	.57	8.04	2.47	15.0	6.09	7.16	4.56	1.52
20	12.2	5.21	17.0	10.6	2.86	3.85	.96	15.8	3.82	9.63	4.53	1.21
21	19.5	4.33	16.9	10.8	4.25	4.62	.76	15.0	1.19	15.0	4.59	.02
22	16.4	5.44	13.4	15.3	9.94	4.84	4.28	15.3	.05	15.9	7.70	0
23	19.0	1.30	8.55	16.8	10.8	4.73	8.61	16.4	1.16	14.8	3.34	1.79
24	18.1	2.86	8.41	18.9	7.70	12.5	9.86	10.3	3.29	15.5	4.13	1.35
25	17.7	5.52	15.3	20.0	4.16	15.2	9.37	12.3	5.41	10.6	7.39	.08
26	14.2	6.71	15.7	21.7	6.83	19.1	8.33	14.3	5.64	5.86	8.01	2.40
27	16.7	7.48	18.3	17.1	13.9	22.3	8.13	14.4	5.95	9.20	4.70	1.14
28	19.1	6.71	19.7	16.0	17.3	25.6	6.88	14.3	3.17	13.5	5.30	.25
29	19.1		19.3	17.6	21.5	20.8	8.13	14.3	4.25	14.0	7.25	.07
30	18.4		11.5	19.5	27.9	12.5	9.03	12.4	7.93	3.71	5.27	3.54
31	18.5		11.2		28.6		10.6	7.79		1.32		2.28
Sum	302.60	148.08	414.74	338.10	411.83	586.70	135.21	385.63	118.28	300.53	97.45	122.32

Current Year 1991 | Period 1960–1991

Month	Average Rainfall** Millimetres 1991	1960–1991	Extreme–Cubic Metres per Second ϕ High Day	ϕ High	ϕ Low Day	ϕ Low	Average	Volume–Thousands of Cubic Metres Total	Average	Maximum	Minimum
Jan.	19	34	21	19.5	6	1.01	9.76	26,145	16,863	43,121	892
Feb.	71	34	1	20.4	5	.49	5.29	12,794	13,713	35,196	2,522
Mar.	12	15	14	20.7	2	2.73	13.4	35,834	23,323	44,562	7,923
April	42	36	26	21.7	7	.80	11.3	29,212	27,129	48,447	10,422
May	90	74	31	28.6	19	.57	13.3	35,582	27,775	53,225	1,008
June	117	68	6	32.0	18	2.92	19.6	50,691	33,772	59,901	5,184
July	34	45	1	12.2	! 6	0	4.36	11,682	28,194	49,928	8,137
Aug.	37	63	23	16.4	11	6.06	12.4	33,318	21,454	33,973	9,192
Sept.	117	110	2	14.6	22	.05	3.94	10,219	15,192	34,885	3,964
Oct.	81	59	17	17.6	31	1.32	9.69	25,966	18,991	38,509	2,540
Nov.	9	28	26	8.01	10	.03	3.25	8,420	14,792	28,146	1,252
Dec.	77	31	9	10.6	22	0	3.95	10,568	12,802	24,623	2,284
Yearly	706	597		32.0		0	9.21	290,431	254,000	398,520	149,260

ϕ Mean daily ! And other days ** 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 1991, 128,457 hectares 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 area below Falcon Dam allotted Rio Grande water.

The total diversion during 1991 in this river reach was 606,535,000 m3, or 45.1% of the total water diverted from the Rio Grande below Falcon Dam. Records of diversions in this river reach were determined by means of flowmeters, 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 Cubic Metres per Second

Daily:	Max.	82.4	June 5, 1990	Min.	0	Occasionally	
Monthly:	Max.	62.6	June 1990	Min.	1.52	March	1957
Yearly:	Max.	27.6	1989	Min.	10.4		1968

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	18.0	45.9	9.26	21.5	32.3	61.7	31.4	21.6	13.8	3.91	5.75	8.35
2	20.2	36.2	4.67	23.3	32.0	60.6	23.3	23.1	15.6	3.37	5.21	10.1
3	27.0	35.7	4.70	23.4	29.5	63.7	18.7	20.5	19.4	4.42	5.10	8.72
4	24.9	27.9	6.37	22.2	29.5	70.0	2.41	22.3	19.1	2.62	5.13	10.0
5	19.5	18.6	11.8	3.46	30.3	70.8	9.74	28.6	17.5	4.79	5.07	4.45
6	17.8	22.1	11.6	.14	48.1	76.2	1.50	35.4	18.9	4.67	5.49	2.70
7	23.4	19.3	13.6	.14	54.4	82.4	.01	37.4	5.92	7.19	5.10	2.70
8	22.1	13.7	12.4	8.30	58.9	78.7	1.79	37.4	3.17	9.46	3.99	7.67
9	25.7	2.50	9.52	13.3	53.0	78.7	3.17	38.2	5.89	10.9	3.34	8.84
10	26.1	2.42	11.5	6.17	53.8	78.7	3.12	34.3	5.64	12.3	3.43	9.09
11	26.8	3.34	11.9	0	43.6	71.1	3.14	34.3	3.37	12.3	5.13	9.63
12	28.3	6.15	16.8	1.17	40.8	63.2	2.92	34.6	3.06	8.47	5.35	9.52
13	30.0	6.88	17.2	0	37.4	66.3	2.27	30.9	2.97	8.58	5.41	10.5
14	34.8	6.97	19.6	0	22.9	68.3	2.23	31.4	2.18	12.5	5.64	10.0
15	37.9	6.23	19.9	5.07	20.1	54.4	3.46	25.1	0	14.6	6.09	9.74
16	36.2	3.74	21.6	6.29	26.0	49.6	4.13	19.3	2.19	14.9	5.64	19.0
17	42.8	3.06	27.1	3.94	7.19	46.4	5.07	15.9	.90	12.3	3.96	18.5
18	48.4	5.41	27.4	3.94	1.29	49.0	3.20	15.3	0	11.6	4.84	17.2
19	51.0	6.68	26.5	4.16	1.15	49.6	2.95	15.5	2.62	21.3	5.75	17.2
20	53.0	5.66	21.3	6.23	1.20	39.6	4.87	23.3	5.18	21.5	6.77	16.6
21	54.9	5.58	20.1	6.15	3.31	32.6	4.84	24.0	2.54	19.9	7.00	3.91
22	54.7	2.69	23.3	11.1	11.9	45.6	9.94	30.6	0	18.8	8.35	1.21
23	53.8	.14	21.3	11.8	13.2	40.5	12.2	32.3	2.54	17.3	8.10	1.14
24	53.2	.08	22.5	12.0	11.1	43.0	14.3	27.3	2.78	21.1	7.33	1.77
25	54.4	2.76	26.7	14.0	7.36	45.0	12.5	27.2	1.40	25.5	12.3	1.21
26	50.7	5.81	25.9	21.6	2.79	45.3	11.2	23.1	3.03	17.9	14.2	3.82
27	49.8	11.9	25.8	20.9	8.10	46.2	9.40	23.6	5.41	17.7	13.9	4.84
28	49.8	11.5	30.3	23.9	16.6	48.7	10.9	24.7	2.20	19.2	11.5	4.98
29	50.4		27.8	28.9	26.6	47.9	13.6	22.3	0	19.7	8.81	4.39
30	52.1		25.3	30.3	41.6	23.1	15.1	19.9	2.19	13.4	8.78	5.04
31	53.0		19.5		50.4		15.9	15.3		8.38		2.60
Sum	1,190.7	318.90	573.22	333.36	816.39	1,696.9	259.26	814.7	169.48	400.56	202.46	245.42

Current Year 1991 | Period 1960-1991

Month	Average Rainfall** Millimetres 1991	Average Rainfall** Millimetres 1960-1991	Extreme-Cubic Metres per Second Day	φ High	Day	φ Low	Average	Volume-Thousands of Cubic Metres Total	Average	Maximum	Minimum
Jan.	13	39	21	54.9	6	17.8	38.4	102,876	51,839	119,807	6,010
Feb.	63	41	1	45.9	24	.08	11.4	27,553	28,170	75,228	5,929
Mar.	13	20	28	30.3	2	4.67	18.5	49,526	35,564	84,858	9,551
April	194	46	30	30.3	!11	0	11.1	28,802	61,441	125,384	18,480
May	59	75	8	58.9	19	1.15	26.3	70,536	69,293	136,226	11,443
June	88	75	7	82.4	30	23.1	56.6	146,612	86,247	162,181	13,724
July	71	56	1	31.4	7	.01	8.36	22,400	55,560	110,240	13,947
Aug.	42	73	9	38.2	!18	15.3	26.3	70,390	42,521	79,218	15,710
Sept.	201	134	3	19.4	!15	0	5.65	14,643	28,905	68,815	5,314
Oct.	67	67	25	25.5	4	2.62	12.9	34,608	31,710	71,743	6,347
Nov.	41	36	26	14.2	9	3.34	6.75	17,493	24,956	54,715	5,986
Dec.	83	36	16	19.0	23	1.14	7.92	21,204	25,035	55,789	8,217
Yearly	935	698		82.4		0	19.2	606,643	541,241	868,544	328,940

φ 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 kilometre 156, 6.3 river kilometres downstream from San Benito pumping plant and about 15.3 kilometres southwest of San Benito, Texas. The zero of the gage is at mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 23 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 1991.

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, 286 river kilometres 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. 708 m3/sec on September 29, 1967 with a gage height of 18.61 metres. Min. no flow occurs occasionally.

Average Flow in Cubic Metres per Second**

Daily:	Max.	702	Sept. 29, 1967	Min.	0	Occasionally	
Monthly:	Max.	405	Oct. 1971	Min.	1.12	Dec.	1956
Yearly:	Max.	107	1976	Min.	5.66		1956

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	9.23	6.40	* 4.93	10.2	* 2.86	3.79	* 57.8	* 2.06	22.8	5.15	* 28.0	21.0
2	7.00	7.65	5.61	9.20	1.27	4.81	105	2.45	17.2	* 4.84	21.0	28.6
3	7.90	10.4	7.08	* 5.83	1.61	* 6.15	120	7.36	* 11.6	2.66	11.5	17.4
4	7.73	21.8	8.21	7.76	2.62	7.59	72.5	12.3	19.0	2.65	8.47	13.3
5	9.43	* 57.5	8.86	37.7	18.6	8.50	28.2	13.1	19.9	5.47	7.79	13.8
6	14.4	46.2	8.10	44.2	36.2	11.4	2.75	9.40	20.0	5.98	7.11	11.8
7	* 12.5	8.07	10.4	44.2	64.0	9.03	3.82	7.62	49.3	11.6	6.49	10.4
8	12.6	2.34	11.8	35.4	69.1	12.2	5.18	3.20	72.8	8.44	6.20	6.85
9	10.3	4.30	13.1	25.9	32.0	21.5	2.53	1.10	51.8	4.08	5.44	3.99
10	9.97	3.91	12.3	13.5	9.60	30.0	.67	4.36	32.0	3.43	5.27	* 4.11
11	10.7	2.74	11.8	10.1	10.7	32.6	.11	11.8	16.3	4.02	4.73	2.42
12	7.82	2.27	8.04	8.72	19.3	31.2	22.1	11.6	9.18	2.76	3.91	1.54
13	9.35	1.77	4.13	10.5	43.9	25.7	54.4	8.64	7.76	2.28	2.89	1.64
14	12.9	1.31	4.11	9.57	53.0	28.3	11.8	6.40	8.10	6.29	1.65	2.66
15	10.8	1.04	* 9.20	7.76	94.0	21.1	6.71	* 3.74	12.3	10.8	* 1.02	7.79
16	10.7	4.96	11.4	4.50	139 *	19.9	5.83	5.04	* 10.1	* 9.83	.76	13.5
17	13.5	6.00	12.6	4.30	92.6	* 30.0	4.84	2.80	8.72	8.41	1.27	13.7
18	15.5	7.31	14.8	4.19	83.8	64.0	4.98	2.24	9.37	3.91	5.81	13.9
19	15.9	12.2	9.49	* 4.36	45.9	72.2	4.93	8.67	7.36	2.50	8.52	* 13.8
20	11.5	* 13.7	3.26	4.16	36.8	15.9	4.33	12.9	6.88	1.52	9.06	11.2
21	17.9	9.97	1.87	4.33	23.3	6.83	3.79	9.15	5.10	2.95	8.47	13.4
22	18.0	10.8	2.07	4.87	11.4	6.71	4.30	8.01	7.42	6.37	13.0	19.7
23	* 15.0	16.6	2.74	4.22	15.2	2.45	3.54	3.03	7.62	3.46	13.2	19.3
24	16.2	13.3	2.52	3.68	11.1	3.96	1.33	1.33	6.60	4.56	14.9	15.4
25	15.6	11.2	5.86	3.88	8.84	3.26	.50	3.60	7.14	3.29	12.1	10.5
26	12.9	12.3	8.47	4.08	14.4	5.18	.37	6.49	5.35	2.19	6.91	8.13
27	13.3	10.4	8.41	5.07	43.3	7.62	5.52	10.9	2.48	1.41	4.42	6.94
28	13.8	4.50	12.7	5.21	35.7	9.46	5.86	11.4	3.77	7.11	3.12	7.70
29	12.7		10.1	8.55	10.3	12.1	4.87	9.74	6.00	10.7	3.00	11.2
30	11.7		11.2	8.52	7.53	36.5	3.99	12.3	5.21	19.9	9.35	12.7
31	6.97		6.94		11.5		2.48	16.0		31.2		15.8
Sum	373.80	310.94	252.10	354.46	1,049.43	549.94	555.03	228.73	469.16	199.76	235.36	354.17

Current Year 1991 | Period 1954-1991

Month	Extreme Gage Metres High	Extreme Gage Metres Low	Extreme-Cubic Metres per Second High Day	High	Low Day	Low	Average	Volume-Thousands of Cubic Metres Total	Average	Maximum	Minimum
Jan.	10.89	10.60	19	22.7	31	5.10	12.1	32,296	58,067	393,481	3,601
Feb.	11.82	10.47	5	62.9	15	.61	11.1	26,865	53,853	447,576	4,168
Mar.	10.80	10.48	18	15.3	21	1.78	8.13	21,781	44,819	444,640	3,164
April	11.55	10.53	5	57.8	24	3.20	11.8	30,625	50,899	310,737	9,689
May	14.42	10.42	16	150	2	.55	33.9	90,671	84,312	472,420	20,813
June	12.36	10.49	19	81.0	23	.18	18.3	47,515	93,428	647,984	19,815
July	14.37	10.43	3	131	!10	.07	17.9	47,955	86,948	552,457	5,790
Aug.	10.92	10.44	31	24.2	10	.61	7.38	19,762	89,687	1,020,220	3,827
Sept.	12.21	10.48	8	78.7	27	2.01	15.6	40,535	159,252	787,894	9,513
Oct.	11.03	10.46	31	34.6	20	.84	6.44	17,259	198,290	1,086,522	4,737
Nov.	10.96	10.42	1	28.6	!16	.68	7.85	20,335	95,621	816,665	6,954
Dec.	11.05	10.48	2	35.1	!12	1.35	11.4	30,600	78,228	591,018	2,992
Yearly	14.42	10.42		150		0.07	13.5	426,199	1,093,404	3,383,956	179,397

* Discharge measurement made on this day ! And other days ** Period 1954-1991

WATER BULLETIN NUMBER 61 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

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 1991, 33,622 hectares and several towns and rural homes were allotted Rio Grande water in the river reach between gaging stations near San Benito and Brownsville. Such irrigable area was 11.6% of the total irrigable area below Falcon Dam allotted Rio Grande water.

The total diversion during 1991 in this river reach was 148,444,000 m3, or 11.0% 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 Cubic Metres per Second

Daily:	Max.	22.1	June 14, 1963	Min.	0	Occasionally	
Monthly:	Max.	15.3	June 1965	Min.	0.52	Feb.	1966
Yearly:	Max.	6.32	1965	Min.	2.78		1981

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.37	15.9	2.39	9.18	4.79	7.84	7.48	4.76	11.5	4.53	9.37	1.56
2	1.35	13.9	2.86	6.85	3.91	7.82	3.46	4.96	11.5	3.37	2.26	5.92
3	2.74	11.0	2.80	4.59	1.29	8.38	3.43	2.17	8.30	1.17	1.33	9.97
4	4.64	6.63	2.75	3.96	1.23	9.52	2.40	2.20	2.28	1.23	.98	8.21
5	5.86	2.81	6.37	4.28	1.19	10.3	1.77	2.79	2.70	.97	2.59	3.46
6	5.13	2.45	4.87	1.35	6.54	10.8	1.72	10.3	3.09	.91	2.73	3.20
7	9.20	6.34	1.48	.72	11.5	12.5	1.76	12.8	1.67	1.01	2.17	3.65
8	10.2	6.80	1.42	.87	12.1	12.4	1.84	9.43	.69	1.13	1.83	2.03
9	6.94	1.96	2.55	1.00	9.77	12.9	1.82	5.55	1.20	.92	2.19	1.93
10	7.28	1.27	2.27	.52	10.9	15.5	1.20	2.76	2.86	1.05	2.07	1.97
11	10.7	1.41	4.59	1.05	6.66	16.4	1.07	3.00	3.03	1.42	1.78	1.60
12	4.50	1.38	9.74	.71	4.22	16.9	1.10	8.04	6.71	1.30	2.02	1.28
13	4.53	1.18	8.61	.63	3.82	15.3	.84	10.7	1.44	1.15	1.73	1.47
14	5.81	1.46	2.36	1.04	8.52	13.9	.89	11.7	1.58	1.59	1.62	1.19
15	14.6	1.18	1.48	1.07	10.6	12.9	3.96	6.46	1.27	2.82	2.19	1.57
16	14.5	1.70	7.14	1.02	5.58	12.0	5.01	2.27	1.57	8.07	1.26	1.62
17	14.6	1.65	9.57	.78	1.66	10.1	1.00	2.10	1.69	10.4	1.51	2.66
18	14.4	1.55	10.6	1.02	.79	8.64	2.57	1.98	1.18	8.89	1.63	8.69
19	15.9	6.12	7.79	.73	.88	8.18	2.50	2.35	.78	3.14	1.62	11.4
20	15.3	10.6	7.08	1.01	1.01	10.5	1.72	7.99	.83	1.21	2.65	5.75
21	15.2	10.0	3.29	.75	.81	9.29	1.15	14.0	.86	1.15	2.97	2.20
22	15.9	8.55	2.89	1.01	4.22	4.28	1.30	11.7	.98	1.15	3.17	.89
23	17.1	2.56	2.72	1.04	4.30	4.42	5.47	9.77	1.05	.95	2.16	.76
24	15.8	1.96	2.64	.90	1.23	4.76	6.80	5.58	.85	1.25	.63	2.15
25	15.2	1.35	3.12	1.11	.91	7.96	3.00	3.06	.86	.91	1.23	1.16
26	15.5	1.80	7.82	.93	1.06	10.1	1.52	3.00	.89	.78	6.37	1.01
27	12.8	1.65	11.2	1.06	.84	10.8	1.48	3.12	.81	.76	6.00	1.80
28	13.4	3.14	10.5	.98	4.13	10.7	1.08	2.70	.83	.67	1.03	2.26
29	11.0		11.4	5.81	8.27	12.2	1.07	3.37	.91	1.87	1.67	.59
30	8.64		8.07	4.02	7.53	9.71	2.51	3.54	1.00	6.60	1.10	1.03
31	8.98		3.48		5.35		2.59	8.95		10.9		.61
Sum	319.07	128.30	165.85	59.99	145.61	317.00	75.51	183.10	74.91	83.27	71.86	93.59

Current Year 1991 | Period 1960-1991

Month	Average Rainfall** Millimetres 1991	Average Rainfall** Millimetres 1960-1991	Extreme-Cubic Metres per Second Day	Extreme-Cubic Metres per Second ϕ High	Extreme-Cubic Metres per Second Day	Extreme-Cubic Metres per Second ϕ Low	Average	Volume-Thousands of Cubic Metres Total	Volume-Thousands of Cubic Metres Average	Volume-Thousands of Cubic Metres Maximum	Volume-Thousands of Cubic Metres Minimum
Jan.	12	44	23	17.1	2	1.35	10.3	27,568	13,889	30,303	1,871
Feb.	78	37	1	15.9	!13	1.18	4.58	11,085	9,118	25,442	1,268
Mar.	2	17	29	11.4	8	1.42	5.35	14,329	9,340	18,745	1,777
April	196	50	1	9.18	10	.52	2.00	5,183	14,459	34,233	3,613
May	111	76	8	12.1	18	.79	4.70	12,581	17,891	34,571	1,956
June	95	72	12	16.9	22	4.28	10.6	27,389	21,270	39,816	4,612
July	19	52	1	7.48	13	.84	2.44	6,524	15,198	29,633	4,548
Aug.	21	78	21	14.0	18	1.98	5.91	15,820	11,084	17,955	4,021
Sept.	199	149	! 1	11.5	8	.69	2.50	6,472	7,354	14,796	1,081
Oct.	27	67	31	10.9	28	.67	2.69	7,195	7,307	14,503	1,962
Nov.	13	36	1	9.37	24	.63	2.40	6,209	5,806	11,127	2,215
Dec.	60	39	19	11.4	29	.59	3.02	8,086	6,345	11,785	2,484
Yearly	833	717		17.1		0.52	4.71	148,441	139,061	199,208	87,788

ϕ Mean daily ! And other days ** 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 kilometre 78.3, 0.3 river kilometre downstream from El Jardin pumping plant, and 11.2 river kilometres 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 23 discharge measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: 1934 through 1991.

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, 364 river kilometres 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. 898 m3/sec on October 8, 1945 with a gage height of 9.60 metres. Min. no flow occurs frequently.

Average Flow in Cubic Metres per Second**

Daily:	Max.	459	Oct. 19 & 20, 1971	Min.	0	Frequently	
Monthly:	Max.	408	Oct. 1971	Min.	0.10	Aug.	1957
Yearly:	Max.	103	1976	Min.	1.19		1956

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	10.2	9.94	* 4.87	2.67	* 0.55	3.85	* 34.0	1.67	6.09	* 4.90	* 16.0	7.00
2	* 9.06	10.9	3.31	1.70	1.91	4.05	56.1	* 1.28	11.0	3.12	20.7	* 18.2
3	8.16	11.7	3.57	* 4.93	1.89	* 1.08	96.9	1.56	8.38	3.54	19.6	17.2
4	8.78	15.5	4.08	3.85	.88	1.01	105	3.29	* 11.0	3.46	12.8	9.32
5	8.89	* 34.6	4.87	18.5	1.25	.56	71.6	8.86	15.6	3.43	8.47	9.97
6	9.63	54.7	3.03	51.3	5.52	.11	36.8	9.18	18.8	5.47	6.94	12.8
7	8.84	46.2	5.58	46.4	17.6	.33	17.4	2.73	21.4	7.73	6.49	12.1
8	3.65	28.6	8.35	42.8	50.7	.30	13.8	1.33	41.3	11.7	6.06	11.7
9	2.63	17.1	8.89	36.2	52.4	.53	13.5	.44	54.7	11.0	5.13	9.03
10	2.35	10.9	10.5	28.0	23.8	2.92	10.3	.31	39.1	7.08	3.99	5.30
11	.76	9.71	10.3	18.8	8.78	9.26	7.50	.44	19.5	4.70	3.51	4.11
12	1.34	8.98	6.54	14.2	9.09	12.3	5.61	3.60	9.94	4.56	3.26	3.37
13	1.66	7.31	2.05	11.8	11.4	12.3	25.1	3.29	7.28	3.85	2.72	2.45
14	1.54	5.86	1.23	12.2	27.9	12.2	41.9	.65	6.37	2.86	2.21	2.11
15	1.26	4.70	* 2.04	12.1	49.0	14.6	22.5	* .28	6.26	* 3.82	* 1.69	2.05
16	.33	3.60	5.44	9.91	* 96.6	10.6	10.3	.86	6.49	8.04	1.28	4.11
17	.15	3.82	4.33	* 6.32	119	* 9.94	8.55	1.84	8.50	4.67	1.07	9.49
18	.05	5.75	3.29	4.67	95.4	21.9	8.10	2.42	* 8.75	2.80	1.24	* 11.2
19	.04	* 6.94	4.39	4.39	71.4	49.3	7.28	1.61	7.16	1.52	2.08	5.15
20	.05	4.36	6.06	4.11	41.3	46.2	8.33	1.81	6.26	2.25	4.56	5.13
21	.05	2.86	4.42	4.16	30.3	14.4	7.62	2.76	4.96	2.78	5.75	11.6
22	* .07	2.69	4.05	3.43	22.8	6.83	6.46	.93	4.96	2.71	6.00	14.7
23	.34	5.52	3.57	3.23	14.3	8.69	5.32	.14	4.16	4.90	10.0	18.4
24	1.07	12.9	3.23	2.61	19.7	4.11	2.32	.08	4.98	4.39	13.2	17.8
25	1.99	13.0	2.92	2.12	17.0	4.33	1.74	.07	5.07	3.94	14.7	16.3
26	3.62	11.3	2.45	1.88	11.7	1.87	2.56	.07	4.76	3.99	13.1	11.8
27	3.34	10.8	1.55	1.56	13.0	.47	2.42	.23	4.96	3.29	3.74	8.04
28	2.81	9.26	.61	2.08	33.1	2.17	3.54	4.73	4.87	2.42	2.04	6.00
29	4.30		1.47	2.02	26.9	6.91	5.10	8.10	3.94	4.05	3.34	6.17
30	7.42		1.68	1.01	7.87	14.3	3.77	7.70	4.45	8.27	3.20	7.33
31	10.3		1.19		3.77		2.77	8.69		9.35		10.9
Sum	114.68	369.50	129.86	358.95	886.81	277.42	644.19	80.95	360.99	150.59	204.87	290.83

Current Year 1991 | Period 1954–1991

Month	Extreme Gage Metres High	Extreme Gage Metres Low	Extreme–Cubic Metres per Second High Day	High	Low Day	Low	Average	Volume–Thousands of Cubic Metres Total	Average	Maximum	Minimum
Jan.	1.38	0.38	31	10.8	!18	0.03	3.70	9,908	46,289	407,379	349
Feb.	3.24	.76	6	57.2	22	2.43	13.2	31,925	47,079	446,279	1,303
Mar.	1.33	.50	!10	10.9	28	.40	4.19	11,220	37,890	445,080	2,532
April	3.26	.57	6	53.5	30	.46	12.0	31,013	35,664	270,860	1,079
May	5.17	.51	17	127	1	.12	28.6	76,620	65,186	438,873	5,104
June	3.48	.53	19	57.8	6	.10	9.25	23,969	71,397	600,151	2,996
July	5.23	.63	4	113	25	1.46	20.8	55,658	75,290	539,704	1,383
Aug.	1.29	.45	6	10.6	!25	.06	2.61	6,994	77,157	1,001,626	269
Sept.	3.34	.93	9	54.7	29	3.91	12.0	31,190	143,025	784,150	1,171
Oct.	1.61	.61	31	14.9	19	1.33	4.86	13,011	184,884	1,094,351	933
Nov.	2.04	.60	! 2	23.0	17	1.03	6.83	17,701	89,427	650,763	1,587
Dec.	1.84	.70	2	21.3	15	1.91	9.38	25,128	75,166	591,508	646
Yearly	5.23	0.38		127		0.03	10.6	334,337	948,454	3,263,087	37,722

* Discharge measurement made on this day ! And other days ** Period 1954–1991

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 1991, 2,293 hectares 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 area below Falcon Dam allotted Rio Grande water.

The total diversion during 1991 in this river reach was 3,686,000 m3, or 0.3% 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 Cubic Metres per Second

Daily:	Max.	1.92	May 1, 1984	Min.	0	Frequently
Monthly:	Max.	0.66	June 1965	Min.	0	Occasionally
Yearly:	Max.	0.20	1965	Min.	0.02	1976

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.01	1.44	0	0.42	0	0.18	0	0.01	0	0	0.07	0
2	.09	1.44	0	.37	0	.47	0	.02	0	0	.07	0
3	.23	.71	0	.38	0	.56	0	.02	.01	0	.07	.04
4	.31	.38	0	.40	0	.63	0	.02	.01	0	.07	.14
5	.31	.13	0	.23	0	.76	0	.02	.01	0	.05	.27
6	.15	.06	0	.13	.03	.60	0	.04	.01	0	0	.36
7	.15	.06	0	0	.04	.58	0	.04	0	0	0	.39
8	.15	.06	0	0	.12	.67	0	.04	0	0	0	.24
9	.14	.06	0	0	.12	.51	0	.04	0	0	0	.37
10	.14	.06	0	0	.25	.57	0	0	0	0	0	.25
11	.32	.17	0	0	.25	.61	0	0	0	0	0	.24
12	.36	.17	0	0	.10	.72	0	0	0	0	0	.24
13	.36	.17	0	0	.10	.61	0	0	0	0	0	.33
14	.46	.17	0	0	0	.51	0	0	0	0	0	.31
15	.42	.17	0	0	0	.47	0	0	0	0	0	.18
16	.46	.17	0	0	0	.30	0	.01	0	0	.01	.18
17	.73	.17	0	0	0	.43	0	0	0	0	.01	.22
18	.87	.25	0	0	0	.45	.11	0	0	0	.01	.26
19	.87	.26	0	0	0	.29	.11	0	0	0	0	.26
20	.41	.26	.03	0	0	.22	.22	0	0	0	0	.40
21	.67	.18	.14	0	0	.22	.22	0	0	0	0	.40
22	.67	.06	.14	0	0	.29	.18	0	0	.09	0	.23
23	.59	.09	.14	0	0	.20	.18	0	0	.09	0	.39
24	.65	.06	.14	0	0	.16	.07	0	0	.09	0	.26
25	.52	.06	0	0	0	.28	0	0	0	0	0	.09
26	.51	.06	0	0	0	.28	0	0	.11	0	0	.09
27	.01	.06	.12	0	0	.25	0	0	.11	0	0	.20
28	.01	.06	.12	0	0	.23	0	0	0	0	0	.10
29	.01		.12	0	0	.05	0	.07	0	0	0	0
30	.01		.21	0	0	0	0	.09	0	0	0	0
31	.01		0		0		0	.05		0		0
Sum	10.60	6.99	1.16	1.93	1.01	12.10	1.09	0.47	0.26	0.27	0.36	6.44

Current Year 1991 | Period 1960-1991

Month	Average Rainfall** Millimetres 1991	Average Rainfall** Millimetres 1960-1991	Extreme-Cubic Metres per Second Day	ϕ High	Day	ϕ Low	Average	Volume-Thousands of Cubic Metres Total	Average	Maximum	Minimum
Jan.	20	46	!18	0.87	! 1	0.01	0.34	916	461	1,573	0
Feb.	56	35	! 1	1.44	! 6	.06	.25	604	296	1,113	0
Mar.	24	15	30	.21	! 1	0	.04	100	165	782	0
April	164	51	1	.42	! 7	0	.06	167	326	1,187	22.4
May	68	71	!10	.25	! 1	0	.03	87.3	477	1,673	0
June	62	68	5	.76	!30	0	.40	1,045	603	1,718	0
July	23	52	!20	.22	! 1	0	.04	94.2	238	960	0
Aug.	25	74	30	.09	!10	0	.02	40.6	122	391	16.9
Sept.	178	152	!26	.11	! 1	0	.01	22.5	52.2	199	0
Oct.	48	70	!22	.09	! 1	0	.01	23.3	66.9	224	0
Nov.	19	40	! 1	.07	! 6	0	.01	31.1	68.5	311	0
Dec.	19	39	!20	.40	! 1	0	.21	556	117	613	0
Yearly	706	713		1.44		0	0.12	3,687	2,993	6,212	670

ϕ 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 1991, 288,721 hectares, 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 1,345,196,000 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 volumes shown in the summary below may not equal the sum of the volumes of the individual reaches.

EXTREME FLOWS FROM RECORDS:

Average Flow in Cubic Metres per Second

Daily:	Max.	159	June 1, 1960	Min.	0.08	Aug. 10,	1980
Monthly:	Max.	123	June 1960	Min.	2.89	Mar.	1957
Yearly:	Max.	59.8	1989	Min.	24.9		1970

MEAN DAILY DISCHARGE IN CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	30.6	104	30.6	62.9	76.7	109	54.4	50.4	44.7	24.8	22.9	22.5
2	34.3	77.0	18.1	67.4	72.2	110	34.0	54.9	48.7	23.3	12.7	32.6
3	43.3	70.5	21.4	64.3	69.7	123	26.3	47.9	47.3	21.9	9.80	31.4
4	39.4	52.7	31.7	63.2	64.9	130	5.21	49.3	32.3	23.7	12.0	33.4
5	34.0	26.9	40.8	34.6	62.3	134	13.3	62.9	23.8	14.8	14.2	23.6
6	30.0	42.8	43.0	11.5	88.1	140	6.26	69.4	24.3	16.8	13.2	20.8
7	41.9	30.9	45.6	6.29	96.0	146	3.43	72.8	14.4	26.5	11.8	15.0
8	40.8	26.8	44.2	18.0	92.0	142	10.1	72.2	5.27	29.5	9.60	20.2
9	42.2	10.6	33.1	25.7	83.8	133	12.4	64.9	13.3	28.9	8.41	33.1
10	42.8	9.91	36.5	15.9	85.2	142	11.2	53.5	14.5	34.0	8.27	32.3
11	46.4	15.8	56.9	12.4	66.8	133	9.83	53.5	11.3	30.0	13.8	31.4
12	40.8	18.9	66.6	10.4	66.3	126	7.70	64.6	14.8	20.4	16.7	28.3
13	41.3	19.8	67.1	5.01	73.1	124	5.01	71.4	9.52	24.7	15.6	27.3
14	53.8	19.3	64.3	7.99	52.7	125	5.44	74.8	6.49	36.8	18.0	18.5
15	67.7	19.0	58.3	19.7	42.8	103	15.3	61.2	3.43	40.5	16.5	21.0
16	68.3	12.8	49.0	23.7	41.9	95.4	19.8	48.1	7.76	51.8	11.4	35.1
17	77.6	12.5	60.3	23.9	15.2	77.3	17.0	35.7	12.9	53.8	9.86	33.4
18	84.7	19.5	69.4	27.3	6.15	72.2	15.0	37.1	11.4	52.4	16.3	34.8
19	82.7	26.3	70.2	24.6	7.28	75.9	13.7	47.9	12.5	43.0	20.0	34.3
20	87.2	30.6	62.6	26.9	12.7	64.6	12.3	64.6	12.7	43.3	22.1	28.2
21	97.4	29.2	58.3	27.9	14.0	57.2	13.0	70.5	6.26	50.1	23.6	9.37
22	97.7	26.3	58.9	43.6	31.2	63.7	24.5	74.8	2.83	49.8	29.2	5.13
23	102	10.4	47.6	46.4	34.0	59.8	37.1	75.0	7.79	51.0	21.6	7.48
24	99.1	10.1	45.9	49.3	26.2	76.5	42.2	54.7	13.1	55.2	20.1	7.56
25	98.6	16.0	64.0	51.8	16.6	85.5	35.7	53.5	13.3	53.0	30.9	3.48
26	90.1	21.8	70.0	60.3	14.0	91.2	30.6	55.5	15.4	37.7	38.8	12.3
27	85.5	27.7	75.6	52.4	30.3	96.3	26.2	58.1	19.3	38.8	32.6	13.6
28	91.2	27.9	80.7	52.4	47.6	101	25.2	58.6	10.6	49.0	22.8	10.3
29	91.5		73.3	67.1	66.0	92.9	32.3	56.4	8.35	49.6	26.8	5.89
30	90.3		58.1	69.7	88.1	53.2	37.7	50.1	15.6	27.8	21.6	10.5
31	89.8		44.7		93.5		36.5	43.6		21.9		7.79
Sum	2,063.0	816.01	1,646.8	1,072.59	1,637.33	3,082.7	638.68	1,807.9	483.90	1,124.8	551.14	650.60

Current Year 1991 | Period 1958-1991

Month	Average Rainfall** Millimetres 1991	Average Rainfall** Millimetres 1958-1991	Extreme-Cubic Metres per Second Day	Extreme-Cubic Metres per Second ϕ High	Extreme-Cubic Metres per Second Day	Extreme-Cubic Metres per Second ϕ Low	Average	Volume-Thousands of Cubic Metres Total	Average	Maximum	Minimum
Jan.	15	38	23	102	6	30.0	66.5	178,243	96,343	224,987	11,984
Feb.	48	37	1	104	10	9.91	29.1	70,503	66,939	155,700	14,537
Mar.	6	16	28	80.7	2	18.1	53.1	142,284	95,070	193,098	19,538
April	97	39	30	69.7	13	5.01	35.8	92,672	137,779	258,994	52,375
May	79	69	7	96.0	18	6.15	52.8	141,465	146,872	282,261	19,823
June	78	69	7	146	30	53.2	103	266,345	174,077	319,179	32,671
July	43	46	1	54.4	7	3.43	20.6	55,182	129,137	242,015	38,857
Aug.	21	61	23	75.0	17	35.7	58.3	156,203	105,447	176,740	44,662
Sept.	133	114	2	48.7	22	2.83	16.1	41,809	73,449	168,349	15,676
Oct.	42	66	24	55.2	5	14.8	36.3	97,183	80,803	162,305	16,023
Nov.	18	29	26	38.8	10	8.27	18.4	47,618	64,576	120,842	15,633
Dec.	53	30	16	35.1	25	3.48	21.0	56,212	62,169	113,823	17,311
Yearly	633	614		146		2.83	42.7	1,345,719	1,232,661	1,879,991	785,513

ϕ Mean daily

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

OUTFALLS FROM SEWERS INTO THE RIO GRANDE

In Thousands of Cubic Metres

EL PASO SEWAGE OUTFALL

Treated sewage effluent enters the Rio Grande through the outfall of the Haskell R. Street Wastewater Treatment Plant located 11.4 river kilometres 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.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Yearly
1991	2,682	2,407	2,629	2,568	2,820	2,709	3,094	3,248	3,049	3,052	2,743	2,889	33,890
Average	2,452	2,321	2,469	2,389	2,493	2,507	2,677	2,798	2,669	2,572	2,466	2,451	30,264

Period average 1982–1991

EAGLE PASS SEWAGE OUTFALL

Treated sewage effluent enters the Rio Grande at river kilometre 798 and about 183 metres 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.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Yearly
1991	248	236	260	228	228	223	183	190	244	237	208	234	2,719
Average	219	192	208	214	223	214	201	205	213	226	216	223	2,554

Period average 1982–1991

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 kilometres 579 and 573, 1.4 and 7.9 river kilometres respectively downstream from the old international highway bridge Laredo, Texas and Nuevo Laredo, Tamaulipas. The records are furnished by the Laredo Water Treatment Plant in Laredo, Texas.

Month	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Yearly
1991	1,155	1,047	1,211	1,236	1,370	1,341	1,393	1,381	1,375	1,353	1,205	1,280	15,347
Average	1,131	1,016	1,128	1,101	1,213	1,181	1,214	1,215	1,216	1,216	1,144	1,118	13,893

Period average 1982–1991

BROWNSVILLE SEWAGE OUTFALL

Treated sewage effluent enters the Rio Grande at river kilometre 75.3, 14.3 river kilometres downstream from the Gateway Bridge between Brownsville, Texas and Matamoros, Tamaulipas and 3.1 river kilometres downstream from the Brownsville Gaging station. Records are furnished by the City of Brownsville.

Month	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Yearly
1991	603	561	632	735	725	653	673	691	687	756	659	681	8,056
Average	698	638	679	675	726	691	718	708	738	730	673	683	8,357

Period average 1982–1991

MUNICIPAL AND INDUSTRIAL WATER USES

In Thousands of Cubic Metres

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 prior pages of this bulletin. 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. 527,194)				DEL RIO (Pop. 34,000)			
	1991	Period 1982 - 1991			1991	Period 1982 - 1991		
		Average	Maximum	Minimum		Average	Maximum	Minimum
Jan.	0	10.4	104	0	759	767	1,032	566
Feb.	0	102	413	0	725	730	1,031	570
Mar.	3,166	1,194	3,601	136	1,246	1,042	1,494	697
April	5,292	2,865	5,292	1,004	1,266	1,159	1,715	791
May	5,436	4,727	5,811	3,862	1,386	1,244	1,684	973
June	5,313	4,927	5,463	4,161	1,229	1,261	1,753	754
July	5,325	5,254	5,524	4,908	1,406	1,514	1,853	942
Aug.	4,809	4,941	5,378	4,040	1,750	1,698	2,322	1,016
Sept.	4,838	4,653	5,244	3,620	1,426	1,250	1,555	866
Oct.	0	812	2,213	0	1,309	1,002	1,373	557
Nov.	0	18.6	149	0	878	822	1,062	445
Dec.	0	0	0	0	761	771	934	603
Yearly	34,179	29,504	36,774	23,341	14,141	13,260	15,254	10,150

Month	EAGLE PASS (Pop. 25,000)				LAREDO (Pop. 122,899)			
	1991	Period 1982 - 1991			1991	Period 1982 - 1991		
		Average	Maximum	Minimum		Average	Maximum	Minimum
Jan.	380	322	380	236	2,077	1,799	2,158	1,332
Feb.	359	308	362	241	2,420	1,798	2,420	1,525
Mar.	443	373	443	310	3,362	2,272	3,362	1,895
April	402	401	495	331	3,476	2,504	3,476	1,996
May	474	418	481	306	3,533	2,683	3,660	2,023
June	480	462	596	302	3,433	2,802	3,903	2,020
July	513	509	644	402	3,512	3,063	3,512	2,572
Aug.	587	543	650	419	4,207	3,218	4,207	2,626
Sept.	395	458	596	338	2,690	2,566	2,987	2,251
Oct.	444	397	518	268	3,440	2,415	3,440	1,867
Nov.	382	338	394	242	3,007	2,175	3,007	1,759
Dec.	379	334	412	233	2,468	2,056	2,468	1,648
Yearly	5,238	4,863	5,605	3,911	37,625	29,351	37,625	25,151

Month	LAREDO POWER STATION				RIO BRAVO (Pop. 5,000)			
	1991	Period 1982 - 1991			1991	Period 1983 - 1991		
		Average	Maximum	Minimum		Average	Maximum	Minimum
Jan.	105	81.3	139	37.0	45.1	21.4	45.1	5.6
Feb.	101	82.6	124	49.0	45.9	20.9	45.9	0
Mar.	175	112	175	55.3	56.5	27.4	56.5	1.0
April	146	120	164	67.1	61.4	28.5	61.4	5.3
May	212	147	212	106	61.8	32.1	61.8	6.8
June	176	178	245	99.2	66.1	38.0	83.3	10.5
July	183	173	217	125	70.9	33.6	70.9	5.8
Aug.	257	194	257	148	89.2	46.4	89.2	13.6
Sept.	153	155	207	97.4	38.9	31.9	50.3	12.2
Oct.	128	113	145	75.7	63.3	32.3	63.3	7.4
Nov.	133	80.3	133	37.4	52.1	29.6	52.1	4.1
Dec.	69.3	77.6	138	8.1	23.6	18.8	42.4	0
Yearly	1,838	1,514	1,838	957	675	361	675	3.7

WATER BULLETIN NUMBER 61 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

MUNICIPAL AND INDUSTRIAL WATER USES

In Thousands of Cubic Metres

In the United States

Month	SAN YGNACIO (Pop. 724)				NEW ZAPATA (Pop. 9,582)			
	1991	Period 1982 – 1991			1991	Period 1982 – 1991		
		Average	Maximum	Minimum		Average	Maximum	Minimum
Jan.	11.1	13.8	26.5	9.9	100	104	130	51.3
Feb.	10.6	14.1	23.1	9.1	114	106	134	71.2
Mar.	14.7	17.8	30.5	10.5	176	135	176	111
April	16.9	19.7	32.8	13.2	139	154	249	108
May	16.2	20.1	32.3	12.8	126	133	169	101
June	17.1	19.8	28.9	12.2	175	156	231	115
July	14.9	20.5	34.3	14.9	153	166	221	142
Aug.	19.4	21.9	38.4	15.3	231	181	270	132
Sept.	10.4	18.7	25.2	10.4	115	145	178	105
Oct.	14.3	16.6	24.9	13.6	139	137	204	106
Nov.	10.2	14.4	22.2	10.2	158	117	158	50.0
Dec.	9.4	13.7	21.1	9.4	114	120	153	99.8
Yearly	165	211	302	159	1,740	1,654	1,876	1,454

Month	FALCON VILLAGE (Pop. 82)				ROMA (Pop. 8,059)			
	1991	Period 1982 – 1991			1991	Period 1982 – 1991		
		Average	Maximum	Minimum		Average	Maximum	Minimum
Jan.	8.1	10.1	13.1	6.9	167	120	176	83.9
Feb.	8.6	9.4	12.1	6.5	173	114	173	77.5
Mar.	10.7	11.1	13.8	6.5	234	145	234	99.5
April	11.0	11.9	15.2	9.1	231	154	231	109
May	10.5	12.3	15.4	9.1	236	168	240	91.8
June	10.1	13.1	16.4	9.3	226	172	276	110
July	10.9	14.0	18.1	10.9	222	183	259	114
Aug.	13.0	14.5	19.2	10.9	279	189	279	132
Sept.	10.0	12.1	14.3	9.1	222	163	233	121
Oct.	10.1	11.9	13.8	9.9	64.4	138	216	64.4
Nov.	8.1	10.6	13.3	8.1	137	137	190	99.7
Dec.	7.9	10.0	12.3	7.9	142	132	195	86.6
Yearly	119	141	167	113	2,333	1,815	2,479	1,317

Month	RIO GRANDE CITY (Pop. 40,500)				BROWNSVILLE (Pop. 115,000)			
	1991	Period 1982 – 1991			1991	Period 1982 – 1991		
		Average	Maximum	Minimum		Average	Maximum	Minimum
Jan.	183	174	204	132	1,744	1,711	1,851	1,578
Feb.	137	166	235	125	1,612	1,540	1,745	1,422
Mar.	191	209	252	177	2,069	1,885	2,279	1,684
April	160	208	278	134	1,945	1,967	2,188	1,783
May	168	240	437	121	1,993	1,881	2,191	987
June	201	238	343	176	2,267	2,031	2,383	1,768
July	173	247	304	173	1,513	2,130	2,540	1,513
Aug.	244	256	331	195	2,617	2,348	2,650	1,872
Sept.	221	242	366	150	1,828	1,964	2,307	1,567
Oct.	254	236	356	162	2,104	1,964	2,164	1,642
Nov.	213	192	233	153	1,996	1,824	2,025	1,640
Dec.	207	181	209	135	1,848	1,766	1,913	1,569
Yearly	2,352	2,589	3,075	2,041	23,536	23,011	24,602	20,831

MUNICIPAL AND INDUSTRIAL WATER USES

In Thousands of Cubic Metres

In Mexico

Month	CD. ACUNA, COAHUILA				PIEDRAS NEGRAS, COAHUILA			
	1991	Period 1982 – 1991			1991	Period 1982 – 1991		
		Average	Maximum	Minimum		Average	Maximum	Minimum
Jan.	305	291	310	244	757	720	798	392
Feb.	276	271	295	248	708	673	842	344
Mar.	305	296	310	273	792	718	862	443
April	295	287	301	264	805	712	850	366
May	305	297	311	274	933	781	942	364
June	296	291	302	265	947	808	992	352
July	309	300	319	274	1,015	879	1,046	373
Aug.	310	299	316	274	1,040	951	1,053	819
Sept.	301	293	305	265	871	880	955	786
Oct.	308	299	310	274	909	863	972	738
Nov.	298	290	306	265	783	787	888	640
Dec.	307	301	316	273	741	776	860	636
Yearly	3,615	3,515	3,651	3,192	10,301	9,548	10,663	6,312

Month	NUEVO LAREDO, TAMAULIPAS				NUEVA CD. GUERRERO, TAMAULIPAS			
	1991	Period 1982 – 1991			1991	Period 1982 – 1991		
		Average	Maximum	Minimum		Average	Maximum	Minimum
Jan.	1,645	2,496	3,346	1,645	36.6	50.7	67.5	36.6
Feb.	1,778	2,340	3,184	1,778	31.9	45.1	66.4	31.9
Mar.	1,846	2,586	3,593	1,846	43.0	49.5	73.5	39.0
April	2,399	2,883	3,533	2,345	37.1	51.2	74.0	37.1
May	1,946	2,711	3,593	1,813	62.9	58.1	72.0	43.0
June	2,164	2,819	3,618	2,006	67.3	61.0	94.2	41.4
July	2,404	3,026	3,629	2,251	72.9	56.6	72.9	43.9
Aug.	2,224	3,022	3,639	2,224	62.1	54.4	69.9	44.2
Sept.	2,490	2,982	3,546	2,368	55.1	54.3	69.6	41.3
Oct.	2,436	2,917	3,644	2,224	59.0	56.9	67.6	41.2
Nov.	2,743	2,801	3,515	1,642	53.3	53.6	67.0	40.5
Dec.	3,005	2,869	3,454	2,233	55.6	51.4	62.0	39.0
Yearly	27,080	33,452	41,571	25,417	637	643	791	566

Month	CD. MIER, TAMAULIPAS				CD. MIGUEL ALEMAN, TAMAULIPAS			
	1991	Period 1982 – 1991			1991	Period 1982 – 1991		
		Average	Maximum	Minimum		Average	Maximum	Minimum
Jan.	37.3	47.8	68.5	37.3	178	122	178	50.4
Feb.	34.2	41.5	70.4	31.5	169	124	169	43.9
Mar.	43.3	49.7	74.5	35.4	193	143	193	52.5
April	45.7	53.7	75.2	42.2	200	145	200	51.2
May	46.2	55.4	73.6	40.7	204	153	204	51.8
June	51.3	54.8	73.1	42.1	202	154	202	59.8
July	61.4	54.3	79.6	36.8	213	160	213	64.5
Aug.	66.2	61.4	78.0	41.0	228	162	228	69.8
Sept.	56.3	56.1	72.2	40.7	218	150	218	64.4
Oct.	67.2	56.9	74.3	35.3	197	151	197	53.9
Nov.	64.5	55.9	74.5	37.4	207	148	207	61.9
Dec.	65.9	51.1	70.6	43.1	190	136	190	47.4
Yearly	640	639	868	509	2,399	1,748	2,399	672

STORED WATER IN LARGE RESERVOIRS OF THE RIO GRANDE BASIN
In Millions of Cubic Metres

Data are presented below for all storage reservoirs in the Rio Grande basin in the United States and Mexico that exceed 18.5 million cubic metres in capacity. The monthly figures represent the water in storage on the last day of each month, in millions of cubic metres. 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 Summer, 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

	RIO GRANDE (Capacity 63.0)		CONTINENTAL (Capacity 28.0)		SANTA MARIA (Capacity 55.6)		TERRACE (Capacity 21.2)		MOUNTAIN HOME (Capacity 22.9)	
Month	1991	Average 1927-1991	1991	Average 1928-1991	1991	Average 1928-1991	1991	Average 1925-1991	1991	Average 1924-1991
Jan.	12.0	17.3	2.6	6.0	9.0	9.6	7.6	5.2	2.6	4.5
Feb.	13.7	18.6	3.0	6.6	9.3	10.1	8.4	5.7	3.0	4.9
Mar.	15.7	20.4	3.8	7.1	9.6	10.6	9.6	6.4	3.1	5.3
April	22.0	21.9	6.5	7.9	8.4	11.7	5.8	6.8	4.3	5.9
May	30.5	25.0	8.8	9.5	6.4	15.1	12.0	8.0	7.2	7.9
June	14.6	28.1	5.9	9.9	5.9	17.8	11.6	9.7	10.4	8.4
July	1.5	19.3	5.4	7.4	0.4	14.5	5.7	7.9	8.0	6.1
Aug.	2.0	11.7	5.2	5.0	0.6	9.6	3.8	5.2	5.8	3.8
Sept.	1.9	10.1	0.5	4.5	3.7	7.8	2.8	4.1	3.9	3.3
Oct.	2.0	10.7	0.2	4.6	5.6	8.0	2.2	4.2	3.5	3.4
Nov.	5.4	12.9	0.6	4.8	6.2	8.6	3.7	4.5	3.9	3.8
Dec.	8.8	15.7	1.2	5.4	6.8	9.2	5.3	4.8	4.3	4.1
Avg.	10.8	17.6	3.6	6.6	6.0	11.0	6.5	6.0	5.0	5.1
Max.	30.5	67.6	8.8	32.9	9.6	51.9	12.0	21.8	10.4	20.2
Min.	1.5	0	0.2	0	0.4	0	2.2	0	2.6	0

	SANCHEZ (Capacity 127.3)		PLATORO (Capacity 73.5)		COSTILLA (Capacity 19.4)		HERON (Capacity 495.0)		EL VADO (Capacity 229.8)	
Month	1991	Average 1927-1991	1991	Average 1952-1991	1991	Average 1922-1991	1991	Average 1971-1991	1991	Average 1935-1991
Jan.	17.9	17.2	12.0	16.7	3.9	5.6	463.9	301.3	123.6	69.0
Feb.	18.3	17.4	12.5	16.5	4.6	6.1	453.7	296.8	125.2	67.1
Mar.	19.6	17.9	13.2	16.7	5.1	6.7	426.0	289.8	153.6	69.7
April	21.5	19.1	15.3	16.9	7.3	8.1	395.6	291.5	212.2	107.9
May	25.8	22.5	25.0	19.3	10.0	10.3	447.1	327.9	211.5	149.8
June	28.5	24.2	45.0	26.7	9.3	9.6	490.4	361.7	200.1	141.2
July	23.7	19.8	35.0	24.9	5.9	6.5	494.6	365.7	190.8	121.6
Aug.	23.4	16.0	28.9	23.0	4.8	4.3	493.1	364.4	180.7	99.7
Sept.	24.4	15.4	23.8	22.9	4.4	3.7	493.4	360.9	173.3	86.2
Oct.	22.9	16.3	22.2	22.5	5.3	4.2	491.3	360.7	160.7	81.2
Nov.	23.9	16.8	23.1	18.4	6.4	4.7	489.8	358.1	155.9	71.7
Dec.	24.1	17.2	23.8	18.4	7.2	5.1	486.4	328.9	144.7	70.9
Avg.	22.8	18.3	23.3	20.2	6.2	6.2	468.8	334.0	169.4	94.7
Max.	28.5	77.0	45.0	68.2	10.0	18.6	494.6	495.0	212.2	251.0
Min.	17.9	0	12.0	0	3.9	0	395.6	0.7	123.6	0

STORED WATER IN LARGE RESERVOIRS OF THE RIO GRANDE BASIN
In Millions of Cubic Metres

In the United States

Month	ABIQUIU (Capacity 1,481.4)		COCHITI (Capacity 619.6)		BLUEWATER (Capacity 47.5)		ELEPHANT BUTTE (Capacity 2,547.1)		CABALLO (Capacity 408.9)	
	1991	Average 1965–1991	1991	Average 1973–1991	1991	Average 1927–1991	1991	Average 1915–1991	1991	Average 1938–1991
Jan.	202.3	87.1	62.0	75.0	3.0	10.7	1,746.9	1,061.2	68.7	121.8
Feb.	210.1	84.4	62.9	67.7	3.8	11.5	1,779.9	1,066.8	82.3	153.8
Mar.	210.7	81.1	62.7	66.4	11.8	16.1	1,744.5	1,030.5	55.4	128.0
April	265.0	92.4	76.4	78.2	18.5	20.3	1,747.5	1,022.2	65.1	127.7
May	314.4	143.2	137.0	110.9	15.2	18.3	1,804.0	1,122.6	68.0	133.7
June	260.9	136.3	63.6	120.1	13.0	15.4	1,880.3	1,155.1	61.8	116.6
July	240.8	121.6	60.7	88.6	10.0	13.5	1,878.1	1,090.6	54.8	94.0
Aug.	241.4	116.9	60.7	77.5	7.6	12.1	1,941.5	1,026.5	23.6	64.4
Sept.	228.6	112.7	60.8	76.7	5.9	11.4	1,940.8	999.3	28.5	50.3
Oct.	220.3	109.3	60.7	80.9	5.6	11.0	1,913.7	1,001.3	35.3	63.6
Nov.	201.9	99.0	60.6	80.7	5.4	10.7	1,996.0	1,024.6	38.9	78.6
Dec.	192.3	96.5	60.8	79.4	5.4	10.5	2,114.1	1,054.3	47.2	98.7
Avg.	232.4	106.7	69.1	83.5	8.8	13.5	1,873.9	1,054.6	52.5	102.6
Max.	314.4	493.8	137.0	471.2	18.5	58.1	2,114.1	2,840.5	82.3	427.5
Min.	192.3	0	60.6	4.4	3.0	0	1,744.5	4.1	23.6	0

Month	STORRIE (Capacity 28.7)		SANTA ROSA (Capacity 542.6)		LAKE SUMNER (Capacity 116.8)		BRANTLEY (Capacity 69.4)		RED BLUFF (Capacity 357.3)	
	1991	Average 1939–1991	1991	Average 1980–1991	1991	Average 1937–1991	1991	Average 1988–1991	1991	Average 1936–1991
Jan.	16.4	10.3	32.3	58.8	23.9	73.0	15.5	16.8	93.0	121.3
Feb.	16.4	10.3	33.2	59.5	26.6	77.8	17.1	17.6	95.2	123.6
Mar.	16.3	11.1	33.7	61.4	24.8	66.5	16.7	19.0	94.5	120.3
April	15.7	11.7	36.3	63.5	13.9	57.8	7.4	15.1	86.3	106.4
May	16.3	12.3	27.8	62.2	6.7	57.5	26.5	28.0	73.3	107.1
June	15.7	10.9	37.5	65.9	3.8	51.1	14.3	23.3	66.7	108.4
July	16.9	10.8	63.4	60.0	7.5	49.0	36.5	23.4	70.4	98.2
Aug.	16.0	11.5	101.8	65.3	46.4	53.4	44.7	19.4	63.6	93.9
Sept.	16.3	11.1	114.6	64.0	53.3	55.6	56.4	23.7	92.0	98.6
Oct.	15.8	10.7	114.1	66.0	50.9	58.7	49.2	22.2	100.3	108.0
Nov.	16.7	10.8	114.6	66.8	59.8	62.7	42.6	21.6	113.6	112.0
Dec.	17.0	10.1	114.2	67.5	70.1	68.3	25.4	18.0	151.6	117.7
Avg.	16.3	11.0	68.6	63.4	32.3	60.9	29.4	20.7	91.7	109.6
Max.	17.0	32.3	114.6	143.5	70.1	192.8	56.4	56.4	151.6	404.0
Min.	15.7	0	27.8	0	3.8	0.5	7.4	1.1	63.6	12.3

Month	LAKE CASA BLANCA (Capacity 22.9)		DELTA LAKE (Capacity 30.8)						TOTAL IN U.S. RESERVOIRS (Capacity 7,408.7)	
	1991	Average 1962–1991	1991	Average 1939–1991					1991	Estimated ! Average
Jan.	17.8	16.3	21.5	19.3					2,958.4	2,124.0
Feb.	17.6	15.9	19.0	18.6					3,015.8	2,157.3
Mar.	18.0	15.8	23.1	17.8					2,971.5	2,084.6
April	17.5	16.0	17.9	17.8					3,066.4	2,126.8
May	18.7	16.9	16.5	18.5					3,308.7	2,426.5
June	18.9	17.1	20.0	18.6					3,278.2	2,476.1
July	18.6	16.4	17.3	18.4					3,246.0	2,278.2
Aug.	17.1	16.4	20.7	17.5					3,333.4	2,117.5
Sept.	16.3	17.6	22.7	19.0					3,368.3	2,058.9
Oct.	17.6	17.6	21.5	18.8					3,320.9	2,084.0
Nov.	18.4	17.2	18.9	18.8					3,406.3	2,107.8
Dec.	18.9	16.8	21.8	18.5					3,551.4	2,136.0
Avg.	18.0	16.7	20.1	18.5					3,235.4	2,181.5
Max.	18.9	34.8	23.1	27.9					3,551.4	
Min.	16.3	4.3	16.5	0					2,958.4	

STORED WATER IN LARGE RESERVOIRS OF THE RIO GRANDE BASIN

In Millions of Cubic Metres

In Mexico

Month	SAN GABRIEL (Capacity 255.4)		LA BOQUILLA (Capacity 2,903.4)		LA COLINA (Capacity 24.1)		ROSETILLA (Capacity 19.0)		FRANCISCO I. MADERO (Capacity 348.0)	
	1991	Average 1990–1991	1991	Average 1914–1991	1991	Average 1940–1991	1991	Average 1940–1991	1991	Average 1948–1991
Jan.	141.2	141.2	2,306.9	1,843.8	24.7	22.7	17.1	15.9	321.3	269.3
Feb.	131.0	131.0	2,255.2	1,794.9	24.9	23.1	17.1	15.7	273.5	263.3
Mar.	119.5	119.5	2,128.0	1,720.2	25.3	23.2	17.1	15.1	198.4	244.2
April	103.2	103.2	1,923.6	1,622.3	25.2	23.7	17.1	14.8	164.3	203.9
May	82.5	82.5	1,717.9	1,527.4	25.3	23.4	17.1	14.9	137.9	168.6
June	65.9	65.9	1,521.6	1,444.8	25.3	23.5	17.1	15.2	100.3	147.6
July	115.5	115.5	1,866.9	1,493.4	25.4	23.5	17.1	15.2	277.5	171.0
Aug.	239.3	239.3	2,977.4	1,729.4	24.4	23.1	17.1	16.1	345.1	218.2
Sept.	277.0	277.0	2,954.5	1,942.8	24.4	22.9	17.1	16.4	351.9	263.4
Oct.	458.1	259.6	2,869.6	1,953.6	24.5	22.7	17.1	16.3	347.4	271.4
Nov.	475.5	259.0	2,871.3	1,916.0	24.4	20.9	17.1	15.6	347.0	272.3
Dec.	474.4	259.6	2,931.6	1,902.9	24.4	22.8	17.1	16.1	347.4	271.2
Avg.	223.6	171.1	2,360.4	1,741.0	24.9	23.0	17.1	15.6	267.7	230.4
Max.	475.5	475.5	2,977.4	3,402.1	25.4	27.8	17.1	23.9	351.9	452.2
Min.	65.9	42.5	1,521.6	20.8	24.4	14.3	17.1	0	100.3	1.7

Month	CHIHUAHUA (Capacity 31.9)		LUIS L. LEON (Capacity 850.1)		CENTENARIO and SAN MIGUEL (Capacity 24.5)		LA FRAGUA (Capacity 45.0)		VENUSTIANO CARRANZA (Capacity 1,385.0)	
	1991	Average 1961–1991	1991	Average 1968–1991	1991	Average 1934–1991	1991	Average 1991–1991	1991	Average 1930–1991
Jan.	23.8	9.7	465.9	472.5	26.1	17.3			685.5	620.2
Feb.	22.7	9.3	455.5	467.2	25.8	17.1			630.7	595.1
Mar.	21.6	8.7	421.2	439.9	24.1	13.9	1.6	1.6	571.4	561.7
April	20.8	8.3	380.9	408.0	25.5	12.0	4.0	4.0	523.8	544.1
May	19.3	7.5	362.1	381.5	23.4	12.8	5.7	5.7	474.7	519.9
June	18.0	7.0	349.6	377.1	19.4	11.0	6.7	6.7	391.3	495.7
July	22.8	7.4	456.5	396.5	20.3	10.3	7.4	7.4	387.0	508.6
Aug.	24.5	9.5	365.6	393.3	19.5	11.1	8.7	8.7	395.5	516.2
Sept.	26.1	12.0	690.0	463.7	20.6	13.4	46.0	46.0	518.5	582.4
Oct.	24.1	11.7	746.1	490.5	20.5	15.7	45.9	45.9	681.5	627.2
Nov.	24.8	11.3	816.6	497.8	20.9	16.2	45.9	45.9	754.8	638.6
Dec.	24.1	10.8	834.7	509.9	20.9	16.6	45.8	45.8	769.1	635.7
Avg.	22.7	9.4	528.7	441.5	22.3	13.9			565.3	570.4
Max.	26.1	32.7	834.7	928.9	26.1	26.1	46.0	46.0	769.1	1,435.0
Min.	18.0	0.2	349.6	4.7	19.4	0	1.6	1.6	387.0	1.2

Month	LAGUNA DE SALINILLAS (Capacity 19.0)		RODRIGO GOMEZ (Capacity 41.0)		MARTE R. GOMEZ (Capacity 1,096.9)				TOTAL IN MEXICAN RESERVOIRS (Capacity 7,043.3)	
	1991	Average 1931–1991	1991	Average 1963–1991	1991	Average 1943–1991			1991	Estimated ! Average
Jan.	12.8	9.5	32.3	33.1	294.6	755.5			4,352.2	4,210.7
Feb.	12.6	11.3	29.5	32.5	290.9	709.5			4,169.4	4,070.2
Mar.	13.5	9.5	26.6	31.1	265.0	678.4			3,833.3	3,867.0
April	12.4	11.0	24.7	30.1	173.3	621.5			3,398.8	3,606.9
May	10.7	11.0	22.8	29.6	150.2	567.7			3,049.6	3,352.5
June	14.6	10.1	21.0	29.2	220.4	575.5			2,771.2	3,209.3
July	13.4	9.7	20.2	28.8	293.1	565.5			3,523.1	3,352.9
Aug.	11.9	9.7	17.0	28.9	268.7	606.4			4,714.7	3,809.9
Sept.	11.6	10.5	24.2	33.1	386.3	761.0			5,348.2	4,444.7
Oct.	9.5	9.7	25.1	34.5	458.1	807.3			5,727.5	4,566.1
Nov.	10.2	9.4	24.6	34.1	475.5	810.2			5,908.6	4,547.3
Dec.	15.2	9.1	24.4	33.7	474.4	806.7			6,003.5	4,541.1
Avg.	12.4	10.0	24.4	31.6	312.5	688.8			4,400.0	3,964.9
Max.	15.2	19.5	32.3	45.4	475.5	1,308.0			6,003.5	
Min.	9.5	0	17.0	0	150.2	22.0			2,771.2	

! Total of period averages in all reservoirs

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 kilometre 924, 20.8 river kilometres upstream from Del Rio, Texas and Cd. Acuna, Coahuila.

Maximum storage for period of record: 5,994.6 million cubic metres on September 22, 1974 with an elevation of 346.150 metres 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 Metres	Description	At Indicated Elevation		Between Indicated Elevations	
		Reservoir Capacity Thousands of Cubic Metres	Reservoir Area Hectares	Storage Volume Thousands of Cubic Metres	Type of Storage
273.710	Original River Bed at Dam Axis	0	0	0	
283.465	Lowest Outlet (United States Penstocks)	0	0	4,174,047	Silt & Conservation
340.462	Top of Conservation Storage *	4,174,047	26,247	2,151,570	Ordinary Flood
347.595	Top of Spillway Gates	6,325,617	34,140	500,931	Surcharge
349.025	Maximum Water Surface	6,826,548	36,007		

STORAGE IN MILLIONS OF CUBIC METRES AT 24:00 HOURS 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	4,097.8	4,084.9	4,123.9	4,069.4	3,989.7	3,892.1	3,786.2	3,803.5	4,064.2	4,738.3	4,455.5	4,410.4
2	4,097.8	4,087.5	4,126.5	4,066.8	3,984.6	3,888.4	3,781.3	3,812.2	4,065.5	4,792.8	4,441.8	4,409.0
3	4,097.8	4,090.1	4,126.5	4,062.9	3,982.1	3,882.1	3,776.4	3,814.7	4,065.5	4,841.8	4,419.9	4,409.0
4	4,093.9	4,092.6	4,126.5	4,075.8	3,979.5	3,878.3	3,770.2	3,817.2	4,066.8	4,885.4	4,400.8	4,406.3
5	4,093.9	4,095.2	4,126.5	4,073.2	3,973.1	3,882.1	3,765.3	3,814.7	4,065.5	4,899.9	4,398.1	4,406.3
6	4,095.2	4,096.5	4,127.7	4,069.4	3,966.8	3,879.6	3,759.1	3,818.4	4,062.9	4,894.1	4,395.4	4,406.3
7	4,092.6	4,099.1	4,126.5	4,069.4	3,961.7	3,875.8	3,753.0	3,818.4	4,060.3	4,872.3	4,398.1	4,407.6
8	4,091.3	4,100.4	4,125.6	4,068.1	3,957.9	3,870.8	3,746.9	3,823.3	4,060.3	4,849.1	4,392.7	4,410.4
9	4,092.6	4,103.0	4,125.2	4,068.1	3,954.1	3,868.3	3,739.5	3,828.3	4,060.3	4,825.9	4,390.0	4,411.7
10	4,091.3	4,105.6	4,122.5	4,064.2	3,950.3	3,868.3	3,735.9	3,834.6	4,062.9	4,807.1	4,392.7	4,414.4
11	4,090.1	4,105.6	4,121.2	4,062.9	3,949.0	3,867.0	3,728.5	3,842.1	4,073.2	4,791.3	4,394.0	4,418.5
12	4,088.8	4,108.2	4,121.2	4,061.6	3,952.8	3,867.0	3,723.6	3,853.3	4,081.0	4,772.7	4,398.1	4,419.9
13	4,087.5	4,110.8	4,118.6	4,059.0	3,954.1	3,867.0	3,720.0	3,863.3	4,091.3	4,752.6	4,399.5	4,422.6
14	4,087.5	4,113.4	4,116.0	4,052.6	3,950.3	3,867.0	3,716.3	3,873.3	4,121.2	4,729.7	4,402.2	4,421.2
15	4,087.5	4,110.8	4,114.7	4,047.4	3,946.4	3,867.0	3,717.5	3,887.1	4,147.3	4,712.6	4,402.2	4,419.9
16	4,087.5	4,112.1	4,116.0	4,044.9	3,945.2	3,865.8	3,717.5	3,904.7	4,167.0	4,701.2	4,407.6	4,421.2
17	4,090.1	4,114.7	4,113.4	4,042.3	3,938.8	3,859.5	3,721.2	3,921.1	4,170.9	4,688.5	4,407.6	4,422.6
18	4,090.1	4,117.3	4,113.4	4,041.0	3,935.0	3,855.8	3,721.2	3,933.8	4,184.1	4,672.9	4,410.4	4,424.0
19	4,088.8	4,118.6	4,109.5	4,037.1	3,931.3	3,850.8	3,720.0	3,943.9	4,375.0	4,660.1	4,411.7	4,426.7
20	4,088.8	4,121.2	4,108.2	4,032.0	3,926.2	3,847.0	3,717.5	3,969.3	4,410.4	4,643.2	4,411.7	4,430.8
21	4,087.5	4,123.9	4,106.9	4,029.4	3,921.1	3,844.6	3,715.1	3,970.6	4,433.6	4,627.7	4,410.4	4,433.6
22	4,083.6	4,123.9	4,103.0	4,025.6	3,917.4	3,835.8	3,712.6	3,987.2	4,452.7	4,613.7	4,411.7	4,436.3
23	4,083.6	4,123.9	4,099.1	4,020.4	3,912.3	3,829.6	3,710.2	3,994.8	4,472.0	4,603.9	4,410.4	4,441.8
24	4,082.3	4,125.2	4,096.5	4,017.9	3,922.4	3,825.8	3,707.8	4,005.1	4,491.2	4,588.4	4,409.0	4,444.5
25	4,082.3	4,123.9	4,093.9	4,015.3	3,918.6	3,818.4	3,705.4	4,015.3	4,510.6	4,574.5	4,406.3	4,454.1
26	4,082.3	4,121.2	4,092.6	4,012.7	3,919.9	3,813.4	3,706.6	4,024.3	4,531.3	4,559.1	4,407.6	4,458.2
27	4,082.3	4,118.6	4,090.1	4,008.9	3,918.6	3,806.0	3,710.2	4,034.6	4,553.6	4,543.8	4,407.6	4,465.1
28	4,081.0	4,118.6	4,087.5	4,005.1	3,912.3	3,799.8	3,720.0	4,047.4	4,584.2	4,529.9	4,407.6	4,470.6
29	4,086.2		4,079.7	3,998.7	3,907.2	3,794.9	3,731.0	4,056.4	4,623.5	4,513.3	4,411.7	4,477.5
30	4,084.9		4,077.1	3,994.8	3,902.2	3,793.6	3,755.4	4,059.0	4,680.0	4,496.8	4,411.7	4,483.0
31	4,083.6		4,071.9		3,897.2		3,778.8	4,061.6		4,476.1		4,492.6

Month	1991						Average Storage	Period 1969-1991		
	MOMENTARY MAXIMUM			MOMENTARY MINIMUM				Mean Monthly Storage		
	Elevation	Storage	Day	Elevation	Storage	Day		Average	Maximum	Minimum
Jan.	340.175	4,099.1	1	340.105	4,081.0	28	4,088.7	3,744.3	4,971.4	891.3
Feb.	340.275	4,125.2	24	340.115	4,083.6	1	4,109.5	3,714.6	4,952.1	971.6
Mar.	340.285	4,127.7	6	340.070	4,071.9	31	4,109.9	3,669.9	4,954.1	1,062.9
April	340.085	4,075.8	4	339.770	3,994.8	30	4,043.2	3,624.0	4,910.5	1,187.6
May	339.770	3,994.8	1	339.385	3,897.2	31	3,941.2	3,542.0	4,723.6	1,281.1
June	339.385	3,897.2	1	338.970	3,793.6	30	3,852.1	3,482.5	4,696.8	1,127.9
July	338.970	3,793.6	1	338.610	3,705.4	25	3,734.5	3,460.1	4,745.6	1,171.3
Aug.	340.030	4,061.6	31	338.910	3,778.8	1	3,917.2	3,562.5	4,861.4	1,189.0
Sept.	342.315	4,680.0	30	340.025	4,060.3	! 7	4,259.6	3,660.8	5,078.5	1,275.4
Oct.	343.080	4,899.9	5	341.585	4,476.1	31	4,698.7	3,856.9	5,515.1	1,489.2
Nov.	341.585	4,476.1	1	341.270	4,390.0	9	4,407.5	3,880.0	5,231.7	1,558.1
Dec.	341.645	4,492.6	31	341.330	4,406.3	! 4	4,431.5	3,889.4	4,970.7	1,591.8
Yearly	343.080	4,899.9		338.610	3,705.4		4,132.8	3,673.9	4,873.4	1,290.5

* When necessary, the Commission may set temporary conservation 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 139 river kilometres downstream from the old international highway bridge between Laredo, Texas and Nuevo Laredo, Tamaulipas and 442 river kilometres upstream from the Gulf of Mexico.

Maximum storage for period of record: 4,305.6 million cubic metres on October 19, 1958 with an elevation of 93.910 metres above mean sea level, U. S. C. & G. S. datum.

Storage Capacities
(1971 - 1972 Survey)

Elevation Metres	Description	At Indicated Elevation		Between Indicated Elevations	
		Reservoir Capacity Thousands of Cubic Metres	Reservoir Area Hectares	Storage Volume Thousands of Cubic Metres	Type of Storage
53.340	Original River Bed at Dam Axis	0	0		
				83	Dead
61.965	Lowest Outlet (Mexican Penstock)	83	36		
				3,290,072	Silt & Conservation
91.805	Top of Conservation Storage *	3,290,155	35,142		
				627,872	Ordinary Flood
93.480	Top of Spillway Gates	3,918,027	39,860		
				990,137	Surcharge
95.770	Maximum Water Surface	4,908,164	46,710		

STORAGE IN MILLIONS OF CUBIC METRES AT 24:00 HOURS 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2,566.5	2,134.6	2,168.5	2,105.2	2,077.6	1,909.1	1,719.1	1,841.1	1,753.4	2,562.0	3,277.6	3,409.8
2	2,562.9	2,120.3	2,169.3	2,098.9	2,057.3	1,888.6	1,730.0	1,837.5	1,761.6	2,588.9	3,301.1	3,410.9
3	2,562.9	2,109.1	2,170.1	2,091.8	2,041.8	1,873.4	1,742.4	1,831.1	1,779.7	2,614.1	3,311.9	3,407.6
4	2,560.2	2,105.2	2,170.1	2,084.7	2,022.5	1,857.5	1,749.2	1,824.0	1,797.9	2,645.8	3,319.4	3,406.5
5	2,559.3	2,106.8	2,170.1	2,090.2	2,004.1	1,838.2	1,757.5	1,821.9	1,822.6	2,675.0	3,340.0	3,407.6
6	2,558.4	2,106.8	2,169.3	2,096.5	1,986.7	1,820.4	1,764.4	1,826.1	1,845.3	2,702.6	3,358.4	3,406.5
7	2,554.0	2,109.1	2,169.3	2,101.2	1,964.8	1,811.2	1,771.3	1,826.1	1,866.9	2,731.3	3,374.7	3,407.6
8	2,544.2	2,113.1	2,166.8	2,106.0	1,952.1	1,803.5	1,776.9	1,826.1	1,890.1	2,765.9	3,375.8	3,407.6
9	2,535.3	2,117.1	2,164.4	2,122.7	1,932.7	1,791.6	1,781.8	1,823.3	1,908.4	2,811.2	3,378.0	3,407.6
10	2,522.0	2,123.5	2,162.0	2,128.2	1,914.2	1,783.2	1,783.9	1,821.1	1,929.0	2,843.7	3,383.5	3,407.6
11	2,509.6	2,125.1	2,157.9	2,133.0	1,893.7	1,767.9	1,789.5	1,819.0	1,954.3	2,887.2	3,393.3	3,404.3
12	2,495.5	2,127.4	2,157.1	2,140.2	1,874.1	1,761.6	1,793.0	1,814.8	1,967.8	2,926.2	3,395.5	3,404.3
13	2,477.0	2,129.8	2,156.3	2,149.1	1,870.5	1,752.0	1,797.9	1,809.8	1,992.0	2,966.6	3,398.8	3,405.4
14	2,463.0	2,135.4	2,155.5	2,158.8	1,877.7	1,746.5	1,805.6	1,807.0	2,008.7	3,000.5	3,402.1	3,406.5
15	2,443.0	2,137.0	2,153.9	2,162.0	1,887.2	1,738.2	1,812.0	1,804.9	2,034.1	3,023.5	3,403.2	3,408.7
16	2,422.1	2,138.6	2,153.1	2,163.6	1,904.7	1,730.0	1,815.5	1,802.8	2,056.5	3,047.7	3,406.5	3,408.7
17	2,404.0	2,140.2	2,149.1	2,165.2	1,911.3	1,740.3	1,820.4	1,798.6	2,081.5	3,066.0	3,409.8	3,412.0
18	2,386.7	2,142.7	2,145.9	2,168.5	1,915.0	1,747.2	1,824.0	1,795.1	2,113.1	3,085.4	3,406.5	3,413.1
19	2,362.8	2,149.1	2,142.7	2,169.3	1,923.1	1,747.2	1,824.0	1,790.2	2,149.1	3,098.7	3,409.8	3,417.5
20	2,345.7	2,149.9	2,141.0	2,167.6	1,928.3	1,744.4	1,828.9	1,784.6	2,178.2	3,117.1	3,408.7	3,420.8
21	2,327.0	2,149.1	2,141.0	2,168.5	1,929.0	1,743.0	1,833.2	1,778.3	2,222.4	3,123.3	3,402.1	3,434.0
22	2,303.4	2,150.7	2,141.0	2,167.6	1,932.7	1,738.9	1,833.9	1,771.3	2,268.1	3,137.8	3,404.3	3,448.4
23	2,289.1	2,152.3	2,140.2	2,163.6	1,940.1	1,736.2	1,834.6	1,767.2	2,307.6	3,148.1	3,404.3	3,455.1
24	2,263.9	2,153.9	2,140.2	2,161.2	1,955.1	1,732.8	1,835.4	1,764.4	2,356.8	3,154.4	3,403.2	3,455.1
25	2,246.4	2,159.6	2,139.4	2,154.7	1,960.3	1,723.2	1,835.4	1,763.7	2,382.5	3,165.8	3,405.4	3,459.5
26	2,229.0	2,162.8	2,136.2	2,145.9	1,962.5	1,712.3	1,838.2	1,761.0	2,412.6	3,180.4	3,408.7	3,468.4
27	2,211.7	2,165.2	2,133.8	2,135.4	1,961.0	1,701.5	1,841.1	1,754.0	2,447.3	3,195.0	3,406.5	3,465.1
28	2,195.3	2,166.8	2,129.8	2,124.3	1,957.3	1,695.5	1,842.5	1,752.0	2,477.9	3,206.6	3,402.1	3,461.8
29	2,179.0		2,126.6	2,109.1	1,947.6	1,694.1	1,843.2	1,752.0	2,509.6	3,226.6	3,403.2	3,461.8
30	2,162.0		2,120.3	2,094.1	1,933.5	1,709.0	1,843.2	1,752.0	2,535.3	3,242.5	3,405.4	3,466.2
31	2,145.9		2,113.9		1,921.6		1,843.2	1,750.6		3,263.7		3,466.2

Month	1991							Period 1954-1991		
	MOMENTARY MAXIMUM			MOMENTARY MINIMUM			Average Storage	Mean Monthly Storage		
	Elevation	Storage	Day	Elevation	Storage	Day		Average	Maximum	Minimum
Jan.	89.565	2,570.9	1	88.045	2,145.9	31	2,399.6	2,594.8	3,787.8	269.8
Feb.	88.125	2,166.8	28	87.890	2,105.2	4	2,135.0	2,478.1	3,712.2	192.7
Mar.	88.135	2,170.1	! 3	87.925	2,113.9	31	2,150.2	2,475.1	3,689.1	279.6
April	88.135	2,169.3	19	87.810	2,084.7	4	2,134.2	2,374.7	3,644.4	401.6
May	87.845	2,094.1	1	86.945	1,870.5	13	1,946.5	2,202.5	3,540.0	604.5
June	87.160	1,921.6	1	86.175	1,694.1	29	1,768.0	2,103.8	3,440.3	337.6
July	86.830	1,843.2	! 29	86.240	1,709.0	1	1,803.6	2,183.2	3,321.4	258.9
Aug.	86.830	1,843.2	1	86.425	1,750.6	31	1,795.9	2,161.8	3,418.5	256.6
Sept.	89.445	2,535.3	30	86.425	1,750.6	1	2,093.7	2,276.5	3,541.4	316.0
Oct.	91.730	3,263.7	31	89.445	2,535.3	1	2,974.3	2,557.6	4,009.2	380.3
Nov.	92.140	3,409.8	! 17	91.730	3,263.7	1	3,383.3	2,657.6	3,854.0	482.2
Dec.	92.305	3,468.4	26	92.125	3,404.3	! 11	3,426.5	2,698.3	3,860.4	423.6
Yearly	92.305	3,468.4		86.175	1,694.1		2,334.2	2,397.0	3,410.6	672.9

* When necessary, the Commission may set temporary conservation levels

! And other days

QUALITY OF WATER - 1991

08-3640.00 RIO GRANDE AT EL PASO, TEXAS

LOCATION: At gaging station on Courchesne Bridge at river kilometre 2,021, 2.7 river kilometres upstream from American Dam, and 8.9 kilometres 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 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.

1991 Date	Time Standard	Streamflow Momentary m3/sec	Specific Conductance Micro-siemens	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. 17	0720	3.00	2,190	8.0	0.0	420	160	120	30
Feb. 22	0830	2.27	2,360	8.1	8.0	440	160	120	33
Mar. 21	0840	23.8	1,080	8.0	11.0	230	58	69	15
Apr. 19	0715	14.4	1,330	7.9	10.0	280	75	80	20
May 16	0830	16.4	1,190	8.0	14.5	260	71	78	17
June 20	0720	24.9	1,110	7.8	28.0	240	64	73	15
July 18	0840	28.0	1,070	7.8	24.5	240	61	70	16
Aug. 15	0810	32.6	1,030	7.9	19.0	220	70	65	15
Sept.19	0850	19.4	1,290	7.8	10.0	270	95	77	18
Oct. 17	0710	10.8	1,550	7.8	10.0	340	120	97	24
Nov. 21	0840	4.19	1,930	8.0	8.5	410	140	120	27
Dec. 19	0830	4.67	1,940	8.0	9.0	380	130	110	26

1991 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. 17	320	7	11	266	540	260	22	1,460
Feb. 22	350	7	10	276	540	290	25	1,530
Mar. 21	130	4	6.4	176	230	110	14	681
Apr. 19	180	5	8.3	207	280	140	15	848
May 16	150	4	8.0	194	240	110	13	733
June 20	140	4	7.7	180	210	94	13	661
July 18	120	3	8.2	180	230	96	14	663
Aug. 15	130	4	7.8	154	220	100	15	646
Sept.19	170	5	7.7	171	280	140	16	812
Oct. 17	200	5	8.7	225	310	150	20	945
Nov. 21	250	5	11	266	410	210	24	1,210
Dec. 19	260	6	9.9	249	400	220	23	1,200

QUALITY OF WATER – 1991

08-3640.00 RIO GRANDE AT EL PASO, TEXAS

1991 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. 10	7.8	9.8	8.5	270	4
25	3.3	10.5	8.4	150	5
Feb. 14	11.1	9.4	8.4	250	3
22	7.8	9.6	8.2	54	4
Mar. 21	11.1	9.4	8.3	80	4
28	3.3	9.6	8.2	150	4
April 25	15.5	8.6	8.3	520	6
May 16	14.4	8.4	8.3	210	6
30	21.1	7.9	8.4	280	5
July 18	27.5	7.2	8.3	0	4
25	20.0	7.3	8.3	400	3
Aug. 1	25.6	7.2	8.3	0	>8
8	21.1	5.3	8.3	0	5
15	18.9	7.3	8.2	0	3
Aug. 22	25.6	7.1	8.2	940	4
29	23.3	7.3	8.3	360	4
Sept. 5	21.1	8.6	8.7	320	5
12	17.7	7.6	8.2	100	6
19	10.0	8.6	8.3	40	4
26	21.1	8.1	8.6	0	5
Oct. 3	18.8	8.1	8.2	510	6
10	18.8	8.4	8.4	200	4
17	16.7	8.6	8.3	120	6
24	15.6	8.8	8.3	780	8
30	2.2	9.8	8.5	350	7
Nov. 7	12.2	9.6	8.4	210	6
14	14.4	9.2	8.5	650	3
21	8.8	10.4	8.5	230	3

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

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROSIEMENS/CM @ 25 DEG C – 1991

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1				1,060	1,220		1,120	1,220		1,610	1,930	
2				1,050	1,150		1,120	1,260		1,640		2,040
3	2,140			1,050	1,060				1,340	1,570		2,030
4	2,210			1,050					1,660	1,780	1,900	2,040
5				1,230			1,120	1,070	1,250		1,930	2,040
6					1,060			1,180	1,270		1,940	2,030
7	2,370							1,240			1,910	
8	2,140			1,230			1,130	1,320		1,580	1,840	
9	2,150			1,240			1,120	1,320	1,300	1,570		2,090
10	2,370			1,230			1,120		1,300	1,590		1,980
11				1,230			1,120		1,080	1,550		1,950
12				1,220			1,120	1,200	1,300		1,960	2,010
13									1,520		1,960	2,000
14	2,370							1,060			1,860	
15	2,370			1,260			1,120	1,070		1,650		
16				1,280	1,200		1,120	1,070	1,560	1,540		1,790
17				1,250			1,130		1,590	1,540		1,800
18				1,260			1,120		1,340	1,620	1,970	1,800
19				1,250			1,060	1,620	1,340		2,080	1,800
20						1,120		1,630	1,850		2,070	1,800
21			1,090					1,670			2,080	
22		2,380	2,380	1,280			1,060			1,880	2,020	
23				1,210			1,080		1,290	1,900		
24							1,060		1,850	1,940		
25			1,080				1,090		1,770	1,940	2,080	
26			2,400	1,160			1,090	1,720	1,700		2,040	
27			2,390					1,240	1,700		2,040	
28			2,400					1,330		1,950		
29				1,200			1,120	1,360		1,980	2,030	
30				1,180			1,150	1,380		1,970		
31							1,170			1,960		

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

LOCATION: At river kilometre 1,991, 15.3 kilometres downstream from the Haskell R. Street Wastewater Treatment Plant and 26.8 river kilometres 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.

1991 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. 10	10.0	9.4	7.1	20	19
25	4.4	9.8	7.7	280	15
Feb. 14	12.2	9.0	7.4	140	18
22	12.2	9.0	7.7	120	14
Mar. 21	12.2	9.2	7.7	320	10
28	5.6	9.4	7.9	30	10
April 25	16.7	8.4	7.6	180	14
May 16	20.0	8.1	7.9	>300	13
30	24.4	7.7	7.6	90	14
July 18	27.5	7.2	7.7	0	7
25	26.3	7.3	8.3	290	4
Aug. 1	25.6	7.0	7.8	0	10
8	24.4	5.5	7.8	0	8
15	20.0	7.3	7.9	0	6
Aug. 22	26.7	6.9	7.8	340	7
29	25.6	7.0	7.7	290	15
Sept. 5	23.3	8.5	8.1	1,120	9
12	18.8	7.6	7.7	100	8
19	14.4	8.3	7.8	290	7
26	23.3	7.7	7.2	450	12
Oct. 3	22.2	7.8	7.6	950	16
10	21.1	7.9	7.9	30	14
17	18.8	8.2	7.8	110	14
24	18.8	8.4	7.9	40	13
31	13.3	9.6	7.8	10	11
Nov. 7	15.5	9.2	7.8	560	13
14	13.3	8.8	7.9	460	9
21	12.2	9.7	7.8	80	13

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

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

LOCATION: Gaging station at river kilometre 1,888, 2.4 river kilometres 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.

1991 Date	Time Std.	Stream flow, Momentary m3/sec	Specific Conductance Micro-siemens	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	Sodium ion (Na), Dissolved mg/L	Sodium Adsorption Ratio (SAR)	Potassium ion (K) Dissolved mg/L
Jan. 10	1110	5.30	3,500	8.1	10.5	606	336	170	44	520	10	13
Mar. 27	1010	1.50	7,200	8.1	13.0	1,106	817	300	87	1,000	13	13
May 14	1005	2.10	5,200	8.3	21.0	916	643	250	71	770	11	12
July 17	1115	7.70	2,350	8.0	25.0	444	238	130	29	340	7	10
Sept. 11	1120	14.5	2,200	8.0	21.0	419	244	120	29	310	6	10
Nov. 14	1119	9.80	3,150	8.0	14.0	593	346	170	41	440	8	12

1991 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. 10	270	570	680	27	8.2	49	10	2,187	2,260	90
Mar. 27	290	1,300	1,600	22	6.8	46	10	4,497	4,140	106
May 14	274	990	1,100	20	5.1	K 47	33	3,379	3,290	266
July 17	206	380	400	18	4.1	5,400	950	1,432	1,440	1,310
Sept. 11	175	410	400	17	6.8	K 910	800	1,402	1,400	1,540
Nov. 14	248	530	600	25	7.3	4,900	35	1,968	2,000	

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

QUALITY OF WATER - 1991

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

LOCATION: Gaging station at river kilometre 1,555; 10.5 river kilometres 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 the International Boundary and Water Commission and the Texas Water Commission, November 1977 through current year, available upon request.

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROSIEMENS/CM @ 25 DEG C - 1991

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1		3,730		5,900	3,680		2,950	1,570				3,440
2						4,320				3,250		
3			4,810	6,030							3,270	
4												
5												
6												
7		4,080	5,090			1,650		2,130	3,320			
8			5,030		3,840							
9				5,730								
10												
11												
12									2,750			3,370
13						919						
14	3,780	4,530			3,260						3,350	
15												
16				4,500	3,290		1,430	969				3,400
17						2,570					3,350	
18									1,600			
19		4,670										
20						2,750						
21		4,460	5,890				1,580				3,420	
22								1,890		3,150		
23					4,060							
24	3,850								2,330			
25												
26												
27						4,790						
28		4,590						2,170				
29												
30					4,090							
31	3,700											

08-3730.00 RIO CONCHOS NEAR OJINAGA, CHIHUAHUA

LOCATION: At gaging station, 2.5 river kilometres from the confluence with the Rio Grande, which is located at river kilometre 1,547.
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 MICROSIEMENS/CM @ 25 DEG C - 1991

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1			1,090	1,120			1,290	989		680		
2	1,470			1,090			1,310					1,940
3												1,950
4	1,530	1,120	1,110	1,090		1,320	1,230					
5												
6		1,140	1,020			1,570				586		1,900
7												
8		1,120	1,040	1,040		1,360		920			2,090	1,940
9	1,450								545			
10				1,100								
11	1,260	1,160	1,060	1,020		1,060			497	860		1,970
12									499			1,990
13		1,140	1,040			1,290				1,480		
14	1,130				1,180					1,370		
15		1,180	1,080									
16								795	497	1,410		
17	1,150				1,430	1,360			499		2,090	
18	1,140	1,160	1,010					777	492			
19						1,350						
20		1,170	1,100									
21						1,280					2,040	
22	1,110	1,130	1,140		1,380							
23						1,330						
24		1,130			1,380							
25			1,040									
26						1,410	1,050	774				
27		1,130	1,100		1,330		820					
28	1,160					1,420		641				
29					1,300							
30	1,140							2,660				
31							997					

QUALITY OF WATER - 1991

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

LOCATION: Gaging station at river kilometre 1,259; 0.6 river kilometre downstream from Alamito Creek and 18.7 river kilometres 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 the International Boundary and Water Commission and the Texas Water Commission, November 1977 through current year, available upon request.

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROSIEMENS/CM @ 25 DEG C - 1991

January		March		May		July		September		November	
2	3,160	4	1,490	2	1,460	2	1,460	25	576	1	2,640
14	1,800	19	1,350	14	1,380	15	959	28	505	18	2,830
						August		30	490		
February		April		June		6	1,130			December	
1	1,590	2	1,450	4	1,530	27	796	October		2	2,950
22	1,690	10	1,400	18	1,440			4	518	22	2,950
						September		25	2,530	26	2,900
						6	708				

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

LOCATION: Gaging station at river kilometre 1,058, about 20.8 kilometres 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.

1991 Date	Time Std.	Stream flow, Momentary m3/sec	Specific Conductance Micro-siemens	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	Sodium ion (Na), Dissolved mg/L	Sodium Adsorption Ratio (SAR)	Potassium ion (K) Dissolved mg/L
Feb. 6	1045	46.2	1,600	8.4	15.0	370	190	110	22	190	4	6.4
May 22	1045	27.9	1,230	8.3	24.5	270	130	77	19	150	4	7.1
Aug. 21	1150	253	835	8.1	28.0	210	82	69	8.9	93	3	5.7
Oct. 29	1102	80.7	1,620	8.2	22.5	380	220	110	24	210	5	7.5

1991 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. 6	176	360	180	21	11.0	K 3	2.6	35	1,000	1,000	107
May 22	140	330	96	26	7.9	260	1.7	66	795	802	164
Aug. 21	128	220	40	23	7.3	4,000	0.7	950	545	562	7,850
Oct. 29	153	400	180	22	8.5	K 18	2.3	55	1,050	1,070	265

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

SUSPENDED SILT - 1991

1991 Date	Time Std.	Streamflow, Momentary m3/sec	Gravimetric Percent	1991 Date	Time Std.	Streamflow, Momentary m3/sec	Gravimetric Percent	1991 Date	Time Std.	Streamflow, Momentary m3/sec	Gravimetric Percent
Jan. 7	1200	35.7	0.00540	May 6	1030	35.7	0.01600	Aug. 19	1415	232	0.62100
22	1200	40.2	0.00710	20	1115	31.2	0.01150	Sept. 3	1100	231	0.23630
Feb. 4	1030	42.5	0.01330	June 3	1000	26.3	0.03740	16	1130	380	0.70270
Mar. 4	1315	38.8	0.00770	17	1200	38.2	1.03940	Oct. 21	1400	58.9	0.02330
18	1130	43.0	0.00950	July 1	1125	21.9	0.18720	Nov. 4	1015	40.2	0.00900
April 1	1100	36.8	0.00950	15	1000	83.8	0.79200	18	1020	34.8	0.00480
15	0945	45.0	0.02400	Aug. 5	1130	232	0.68430	Dec. 16	1220	29.2	0.00380

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

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROSIEMENS/CM @ 25 DEG C - 1991

January		March		May		July		September		November	
7	1,800	4	1,470	6	1,360	1	1,160	3	821	4	1,780
22	1,580	18	1,380	20	1,280	15	1,100	16	610	18	1,810
February		April		June		August		October		December	
4	1,570	1	1,420	3	1,370	5	826	21	1,430	16	1,890
		15	1,380	17	936	19	823				

08-4474.10 PECOS RIVER NEAR LANGTRY, TEXAS

LOCATION: At gaging station, 24.1 river kilometres from the confluence with the Rio Grande, which is located at river kilometre 991.4.
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.

1991 Date	Time Std.	Stream flow, Momentary m3/sec	Specific Conductance Micro-siemens	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	Sodium ion (Na), Dissolved mg/L	Sodium Adsorption Ratio (SAR)	Potassium ion (K) Dissolved mg/L
Feb. 6	1520	5.70	5,100	8.2	15.5	990	840	230	100	730	10	11
Mar. 19	1300	4.80	5,210	8.2	16.0	1,000	880	230	110	760	10	12
May 22	1520	3.00	3,940	8.3	27.5	710	610	150	81	570	9	9.2
July 2	1400	3.20	3,260	8.2	27.5	580	490	120	69	460	8	7.8
Aug. 20	1215	3.90	3,270	8.2	30.0	610	500	130	68	460	8	8.3
Oct. 30	0902	6.40	2,900	8.3	21.0	580	430	130	62	390	7	8.0

1991 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. 6	155	660	1,300	12	9.9	K 5	1.3	1.8	3,150	3,160	10
Mar. 19	150	810	1,200	11	10.2	K 5	0.5	1.9	3,230	3,220	13
May 22	100	550	910	8.7	7.4	21	1.3	3.0	2,340	2,460	19
July 2	98	470	720	9.9	7.4	K 4	1.5	2.0	1,920	1,960	13
Aug. 20	107	430	740	13	6.9	K 12	0.9	1.5	1,920	2,000	6
Oct. 30	148	420	600	14	7.9	K 15	0.7	1.5	1,720	1,710	9

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

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROSIEMENS/CM @ 25 DEG C - 1991

January		March		May		July		September		November	
10	4,440	4	5,090	6	4,560	15	3,210	3	3,500	4	2,860
23	1,710	18	5,210	20	4,020			16	1,080	18	3,040
February		April		June		August		October		December	
4	5,080	1	5,250	3	3,730	5	3,360	7	4,180	2	4,190
19	5,100	15	5,110	17	3,380	19	3,300	21	3,320	16	4,060

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

LOCATION: At gaging station 41.0 river kilometres from the confluence with the Rio Grande, which is located at river kilometre 925.
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 MICROSIEMENS/CM @ 25 DEG C - 1991

January		March		May		July		September		November	
7	442	4	397	6	298	1	457	3	386	4	395
22	430	18	408	20	273	15	404	16	278	18	398
February		April		June		August		October		December	
4	409	15	399	3	379	5	342	1	319	2	390
19	357			17	388	19	403	21	403	16	405

QUALITY OF WATER - 1991

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

LOCATION: Gaging station at river kilometre 920.3, 3.4 river kilometres 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.

1991 Date	Time Standard	Streamflow Momentary m3/sec	Specific Conductance Micro-siemens	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	0830	48.7	1,100	8.0	11.0	270	130	80	16
Feb. 21	0745	41.6	1,210	8.1	11.0	290	150	85	18
Mar. 20	0750	112	1,130	8.0	13.0	260	130	78	17
April 17	0740	54.9	1,110	7.9	20.0	270	130	80	17
May 23	0755	145	1,140	8.0	16.0	280	140	83	17
June 19	0930	54.9	1,140	7.8	23.0	280	140	84	16
July 19	0655	56.9	1,160	7.8	18.0	290	150	84	19
Aug. 21	0800	57.8	1,160	7.9	21.0	290	140	84	19
Sept. 18	0650	374	1,090	7.7	23.0	260	130	75	17
Oct. 16	0810	255	985	7.8	22.0	240	120	69	16
Nov. 20	0800	46.7	924	7.9	16.5	230	110	68	14
Dec. 18	0805	38.8	958	7.9	14.0	240	110	70	15

1991 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	120	3	5.5	134	250	120	15	688
Feb. 21	140	4	5.6	138	270	140	16	758
Mar. 20	120	3	5.5	134	250	130	16	698
April 17	130	3	5.3	136	240	120	16	691
May 23	130	3	5.6	138	240	120	16	695
June 19	130	3	5.5	138	240	120	16	695
July 19	130	3	5.6	138	260	140	16	738
Aug. 21	130	3	5.4	144	260	130	17	733
Sept. 18	130	4	5.2	126	250	120	17	691
Oct. 16	110	3	5.3	116	210	95	16	592
Nov. 20	100	3	4.9	121	200	94	18	572
Dec. 18	110	3	5.7	125	210	96	17	600

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROSIEMENS/CM @ 25 DEG C - 1991

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1		1,100	1,170	1,120	1,110		1,140	1,120				
2	1,080							1,190		755		961
3				1,130	1,140	1,150	1,140		1,160			
4	1,070	1,110	1,160						1,140	681	984	963
5				1,130			1,170					
6		1,130	1,150		1,130				1,150		998	962
7	1,070					1,140		1,190		730		
8		1,130	1,140	1,120	1,140		1,190				988	
9	1,080							1,180	1,130	922		978
10				1,120	1,150	1,160	1,170					
11	1,180	1,210	1,160						1,120	934		977
12				1,120		1,130	1,150	1,170			994	
13		1,190	1,150						764		994	979
14	1,130					1,130		1,170				
15			1,140	1,110	1,140		1,170			989	987	
16								1,160				968
17				1,120	1,140	1,140	1,090		1,120			
18	1,120		1,150						1,120	985	1,010	982
19		1,260		1,100		1,140	1,170	1,110			951	
20					1,140				1,100			1,030
21		1,210						1,180		963		
22	1,110		1,150	1,120	1,130		1,110				950	
23	1,110							1,180	1,050	953		1,020
24				1,110	1,090	1,130	1,150					
25	1,120	1,200	1,120							948	961	
26				1,130								1,110
27		1,170	1,160					1,180	833		964	1,130
28	1,100				1,140			1,180				
29			1,130	1,070	1,090		1,110			942	965	
30	1,100							1,160	773	286		968
31					1,080							

QUALITY OF WATER - 1991

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 kilometre 875, 21.5 river kilometres 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 MICROSIEMENS/CM @ 25 DEG C - 1991

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,040	1,060	1,130	1,070	1,100	1,070	1,090	1,010	1,130	1,070	958	968
2	2,480	1,050	1,100	1,100	1,070	1,120	1,080	1,100	1,140	782	960	970
3	2,480	1,050	1,070	1,100	1,100	1,110	1,130	1,150	1,140	813	961	969
4	1,080	1,050	1,100	1,100	1,060	1,120	1,130	1,120	1,150	927	1,000	971
5	1,080	1,080	1,120	1,100	1,110	1,130	1,140	1,120	1,120	929	1,000	966
6	1,070	1,070	1,120	1,100	1,060	1,060	1,140	1,130	1,080	929	1,000	1,030
7	1,060	1,100	1,120	1,130	1,090	1,060	1,110	1,140	1,140	941	998	1,020
8	1,060	1,090	1,120	1,060	1,080	1,100	1,160	1,140	1,020	942	1,020	1,020
9	1,080	1,160	1,120	1,070	1,100	1,120	1,140	1,120	1,090	946	1,000	1,020
10	1,080	1,160	1,110	1,100	1,130	1,080	1,150	1,100	1,130	944	1,020	978
11	1,090	1,160	1,110	1,100	1,120	1,130	1,080	1,140	1,100	934	1,010	973
12	1,130	1,180	1,110	1,100	1,140	1,130	1,080	1,120	1,120	936	965	975
13	1,130	1,210	1,130	1,100	1,130	1,140	1,090	1,150	830	936	962	977
14	1,130	1,200	1,120	1,100	1,130	1,080	1,110	1,160	833	937	963	980
15	1,130	1,220	1,130	1,100	1,130	1,140	1,140	1,140	833	996	961	983
16	1,070	1,200	1,120	1,100	1,100	1,120	1,140	1,120	835	1,010	962	979
17	1,070	1,150	1,120	1,090	1,180	1,110	1,140	1,140	1,020	1,030	959	978
18	1,070	1,190	1,120	1,090	1,080	1,100	1,140	1,150	1,050	990	964	1,020
19	1,070	1,180	1,120	1,110	1,090	1,090	1,160	1,110	1,030	939	968	1,020
20	1,080	1,190	1,130	1,100	1,070	1,090	1,150	1,140	1,130	939	966	1,010
21	1,080	1,190	1,130	1,100	1,090	1,130	1,160	1,130	1,100	941	977	1,020
22	1,060	1,160	1,130	1,100	1,120	1,110	1,150	1,130	1,100	938	974	1,030
23	1,080	1,160	1,130	1,110	1,120	1,130	1,150	1,140	1,100	933	976	1,030
24	1,090	1,170	1,120	1,100	1,140	1,130	1,130	1,160	1,050	933	975	1,020
25	1,100	1,170	1,110	1,100	1,130	1,140	1,140	1,160	831	934	988	1,010
26	1,090	1,180	1,120	1,110	1,100	1,140	1,120	1,150	833	936	961	1,070
27	1,090	1,200	1,130	1,120	1,120	1,140	1,140	1,160	831	934	966	1,060
28	1,080	1,190	1,130	1,110	1,140	1,150	1,140	1,150	840	933	975	1,030
29	1,070		1,110	1,110	1,110	1,150	1,140	1,150	815	939	975	1,020
30	1,070		1,110	1,100	1,140	1,140	1,140	1,170	817	957	968	1,020
31	1,070		1,110		1,120		1,140	1,190		940		1,010

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

LOCATION: Gaging station at river kilometre 741, 57.8 river kilometres 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 MICROSIEMENS/CM @ 25 DEG C - 1991

January		March		May		July		September		November	
14	1,070	5	1,230	8	1,140	1	1,110	5	1,160	6	948
23	1,040	19	1,130	21	1,160	17	1,140	18	1,090	20	869
February		**April**		**June**		**August**		**October**		**December**	
5	1,020	2	1,120	6	813	5	1,140	8	899	4	858
21	1,090	17	1,130	18	1,030	20	1,160	18	1,000	12	902

QUALITY OF WATER - 1991

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 kilometre 586.
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.

1991 Date	Time Standard	Streamflow Momentary m3/sec	Specific Conductance Micro-siemens	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. 15	1045	124	1,040	8.1	11.0	280	130	84	16
Feb. 20	1100	65.1	1,080	8.0	7.0	270	140	79	18
Mar. 19	1145	68.0	1,130	8.1	19.0	280	130	81	18
April 16	1135	119	1,100	7.8	22.0	280	140	81	18
May 14	1350	173	1,030	8.0	19.0	250	130	75	16
June 18	1230	128	1,030	7.7	28.5	250	130	75	15
July 19	1205	112	1,160	7.9	30.5	280	150	82	19
Aug. 20	1145	93.7	1,130	7.9	30.5	280	150	81	20
Sept. 17	1210	354	998	7.8	25.5	250	130	72	16
Oct. 16	1150	394	929	7.8	30.0	250	120	74	15
Nov. 19	0915	53.8	884	7.9	22.0	250	120	75	15
Dec. 17	1005	64.6	873	8.0	6.0	250	99	76	14

1991 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. 15	110	3	4.5	148	240	110	14	668
Feb. 20	120	3	4.6	131	240	120	8.4	669
Mar. 19	120	3	5.0	143	250	130	11	702
April 16	120	3	5.4	141	240	120	15	685
May 14	110	3	5.1	123	210	110	12	613
June 18	120	3	4.9	121	210	110	14	622
July 19	130	3	5.5	131	270	130	15	731
Aug. 20	130	3	5.0	138	260	130	17	727
Sept. 17	110	3	5.5	120	230	110	16	632
Oct. 16	96	3	4.9	125	190	96	16	568
Nov. 19	87	2	3.9	134	170	91	12	535
Dec. 17	81	2	4.0	148	170	83	16	534

1991 Date	Time Std.	Stream-flow, Momen-tary m3/sec	Specific Conduct-ance Micro-siemens	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 Solids mg/L
Jan. 8	1110	108	1,020	7.6	12.9	6.9	20	1.0	143	212	99	666	46
Feb. 12	1115	56.6	950	7.8	18.4	7.0	15	3.5	126	214	112	644	18
Mar. 14	0840	53.2	1,190	8.9	20.0	8.4	34		146	191	130		21
April 9	1200	113	910	7.7	23.7	6.8	40	1.5	140	232	116	702	208
May 7	1205	99.1	1,110	7.7	23.2	6.9	105	1.0	134	233	120	716	37
July 9	1200	103	1,070	8.0	29.0	7.0	120	2.0	130	227	115	698	32
Aug. 6	1205	157	710	8.0	27.0	7.0	185	2.5	99	154	80	466	370
Sept. 10	0840	245	1,086	8.5	26.1	5.9	170		160	115	195		208
Oct. 9	1200	600	1,000	8.3	22.0	7.5	200	1.0	124	203	79	578	120
Nov. 5	1100	258	990	6.7	15.8	7.3	110	1.5	131	211	86	614	24
Dec. 10	0800	55.5	930	8.6	18.1	8.8	17						

QUALITY OF WATER - 1991

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

SUSPENDED SILT - 1991

Month	Monthly Weight Megagrams		Number of Samples	Gravimetric Percentages			* Silt Volume - Thousand Cubic Metres			
								Period 1968 - 1991		
	Water	Silt		Average	Maximum Sample	Minimum Sample	Total	Average	Maximum	Minimum
Jan.	284,688,000	7,117	31	0.00250	0.00310	0.00140	6.7	6.8	25.8	1.1
Feb.	185,112,000	24,620	28	0.01330	0.03340	0.00170	23.1	15.3	134.4	1.1
Mar.	227,172,000	25,440	31	0.01120	0.02880	0.00090	23.8	14.1	77.3	2.2
April	314,755,000	59,800	30	0.01900	0.03970	0.00600	56.0	36.2	309.6	0.9
May	299,704,000	22,480	31	0.00750	0.01630	0.00230	21.0	49.9	203.5	1.4
June	297,302,000	53,510	30	0.01800	0.04170	0.00310	50.1	72.5	848.6	0.7
July	277,906,000	11,670	31	0.00420	0.00630	0.00190	10.9	62.7	515.6	1.6
Aug.	272,981,000	44,500	31	0.01630	0.04380	0.00090	41.7	55.0	386.1	2.8
Sept.	931,651,000	223,600	30	0.02400	0.04520	0.01250	209.4	82.7	863.4	4.1
Oct.	1,065,398,000	78,840	31	0.00740	0.01090	0.00550	73.8	71.3	352.8	2.1
Nov.	298,132,000	6,260	30	0.00210	0.00320	0.00120	5.9	9.8	33.7	1.0
Dec.	179,556,000	3,950	31	0.00220	0.00350	0.00090	3.7	11.4	95.5	0.8
Year	4,634,357,000	561,787	365	0.01056			526.1	487.7	2,006.7	117.3

* Volume calculated at 1.068 megagrams per cubic metre

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROSIEMENS/CM @ 25 DEG C - 1991

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,020	1,040	1,100	1,130	1,070	1,130	1,140	1,060	1,170	844	900	894
2	1,030	1,040	1,100	1,110	1,120	1,140	1,140	1,110	1,160	814	958	894
3	1,020	1,050	1,130	1,140	1,100	1,140	1,070	1,060	1,120	807	935	899
4	1,020	1,030	1,130	1,110	1,110	1,130	1,110	1,140	1,100	805	946	914
5	1,010	929	1,150	1,120	1,070	1,150	1,100	1,140	1,110	810	943	897
6	1,020	822	1,180	956	1,110	1,140	1,120	1,140	1,070	820	936	883
7	1,000	844	1,150	861	1,100	1,100	1,120	1,150	1,090	841	940	872
8	1,020	908	1,180	1,060	1,080	897	1,100	1,160		912	962	883
9	1,020	989	1,140	1,060	1,120	725	1,110	1,140	1,150	906	984	891
10	1,020	1,010	1,170	1,100	1,140	680	1,090	1,140	1,090	906	979	906
11	1,020	1,010	1,100	1,110	1,120	939	1,140	1,150	1,140	915	970	897
12	1,020	1,000	1,110	1,110	1,130	1,070	1,120	1,140	1,120	957	980	900
13	1,020	1,020	1,130	877	1,120	1,120	1,140	1,150	1,140	955	964	887
14	1,030	1,040	1,120	1,010	1,070	1,110	1,160	1,150	1,120	961	910	902
15	1,040	1,050	1,130	1,110	1,060	1,140	1,150	1,140	1,130	937	980	908
16	1,040	1,060	1,130	1,120	1,120	1,140	1,130	1,160	1,080	957	947	897
17	1,060	1,070	1,130	1,110	1,100	1,090	1,140	1,150	1,030	978	929	904
18	1,070	1,090	1,140	1,130	1,010	1,040	1,130	1,140	1,060	987	915	907
19	1,070	1,080	1,140	1,130	1,040	1,060	1,130	1,160	1,070	996	883	912
20	1,080	1,120	1,140	1,120	1,100	1,100	1,150	1,160	1,090	996	888	918
21	1,060	1,120	1,130	1,120	1,110	1,130	1,150	1,150	813	971	902	916
22	1,050	1,120	1,140	1,120	1,120	1,130	1,160	1,160	808	965	916	875
23	1,060	1,120	1,140	1,130	1,130	1,130	1,160	1,140	903	949	885	892
24	1,080	1,110	1,140	1,140	1,140	1,130	1,130	1,140	933	945	909	892
25	1,050	1,130	1,140	1,130	1,130	1,140	1,130	1,120	935	950	898	907
26	1,050	1,140	1,140	1,120	1,130	1,140	1,110	1,130	929	947	886	892
27	1,050	1,140	1,140	1,110	1,120	1,150	1,120	1,150	949	956	872	903
28	1,030	1,130	1,120	1,120	1,130	1,150	1,130	1,150	956	946	885	941
29	1,060		1,130	1,130	1,150	1,140	1,130	1,140	920	930	887	972
30	1,030		1,140	1,120	1,150	1,130	1,110	1,130	846	930	888	964
31	1,030		1,120		1,140		1,160	1,140		928		988

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 kilometre 442.3, and biochemical sampling at the Chapeno gaging station 4.1 river kilometres 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.

1991 Date	Time Standard	Streamflow Momentary m3/sec	Specific Conductance Micro-siemens	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. 16	1130	306	1,120	7.9	15.0	260	140	74	19
Feb. 19	1130	28.3	1,120	8.0	15.5	270	150	76	20
Mar. 19	1115	68.8	1,120	8.0	18.5	260	140	74	19
April 17	1550	52.7	1,120	7.8	21.5	270	140	75	19
May 15	1130	96.0	1,120	7.9	24.5	270	140	77	19
June 18	1300	85.2	1,110	8.0	27.0	250	140	72	18
July 16	0930	5.66	1,100	7.8	26.5	260	150	73	20
Aug. 15	1300	73.4	1,100	7.8	26.5	260	150	71	20
Sept. 17	1140	7.93	1,110	7.7	26.5	250	150	68	19
Oct. 16	1120	89.2	1,110	7.7	23.5	270	160	74	20
Nov. 20	1030	54.7	1,060	7.9	19.5	250	130	72	17
Dec. 17	1300		1,060	7.9	16.0	250	130	71	17

1991 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. 16	130	3	5.9	123	270	130	12.0	715
Feb. 19	130	3	5.6	125	250	130	13.0	700
Mar. 19	120	3	5.6	126	240	120	13.0	668
April 17	130	3	5.4	128	250	130	14.0	701
May 15	130	3	5.7	128	240	120	14.0	683
June 18	130	4	5.4	112	250	120	14.0	677
July 16	120	3	5.8	114	250	130	14.0	682
Aug. 15	130	4	5.5	112	260	130	15.0	700
Sept. 17	130	4	5.9	102	260	130	15.0	690
Oct. 16	130	3	5.5	110	240	120	14.0	670
Nov. 20	120	3	5.4	120	240	120	15.0	662
Dec. 17	120	3	6.0	121	240	120	15.0	663

1991 Date	Time Std.	Stream-flow, Momen-tary m3/sec	Specific Conduct-ance Micro-siemens	pH Units	Water Temper-ature 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 Solids mg/L
Jan. 16	1235	384	1,210	8.3	16.8	10.0	14		122	22.6	116		6
Mar. 14	1315	94.0	1,160	8.9	18.8	9.9	< 7		128	242	132		7
June 12	1200	284	1,098	8.8	28.2	6.3	40		118	271	249		77
Sept. 9	1300	26.0	1,143	7.6	28.5	5.7	17		114	198	120		53
Dec. 12	0800	105	1,180	8.2	18.2	7.7	13		120	247	130		21

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

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

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROSIEMENS/CM @ 25 DEG C - 1991

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1		1,140	1,120	1,130	1,130		1,110	1,120	1,140	1,150	1,100	1,110
2	1,140			1,130	1,130	1,130	1,110		1,130	1,150	1,110	1,110
3			1,130									
4	1,120	1,130	1,130	1,130		1,130	1,110	1,120				
5												
6		1,140			1,130	1,120		1,120	1,140	1,150	1,110	1,110
7	1,130				1,140		1,110				1,110	
8		1,120	1,130	1,130				1,120	1,130	1,150		1,110
9	1,130				1,130	1,130	1,100					
10				1,140								
11	1,120	1,150	1,120			1,120	1,100	1,110	1,140	1,150	1,120	1,100
12				1,130	1,130				1,160		1,110	1,100
13	1,130	1,130	1,130			1,120		1,120		1,160		
14							1,100				1,100	
15		1,140	1,140	1,130	1,130							
16	1,130							1,120	1,160	1,150		1,110
17				1,140	1,130	1,110	1,100		1,180		1,100	1,100
18	1,130	1,130	1,140					1,130		1,150		
19				1,140		1,110	1,100		1,160		1,080	1,120
20	1,130	1,130	1,130		1,130							
21						1,110		1,130		1,120		
22		1,120	1,130	1,150	1,130			1,110			1,100	
23	1,130							1,130	1,160	1,120		1,110
24				1,140	1,120	1,130	1,120					
25	1,130	1,130	1,130						1,160	1,110	1,110	1,110
26				1,140		1,120	1,110	1,130				
27	1,130	1,130	1,130		1,120				1,180		1,110	1,100
28						1,120		1,130		1,100		
29			1,130	1,150	1,130		1,120				1,120	
30	1,140							1,130	1,160	1,100		1,100
31					1,150		1,120					

08-4642.00 RIO SAN JUAN AT CAMARGO, TAMAULIPAS

LOCATION: At gaging station, 5.1 river kilometres from the confluence with the Rio Grande, which is located at river kilometre 384.
RECORDS: Specific conductance, 1960 through current year.
REMARKS: Sampling and determinations by the International Boundary and Water Commission.

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROSIEMENS/CM @ 25 DEG C - 1991

January		March		May		July		September		November	
10	3,470	2	4,320	16	1,210	3	910	12	588	12	3,660
		18	3,960								
February		April		June		August		October		December	
6	3,400	3	4,150	3	2,690	1	3,650	2	2,610	17	3,950
18	3,750	15	1,560			15	3,640				

08-4645.00 RANCHERIAS DRAIN NEAR CAMARGO, TAMAULIPAS

LOCATION: At a point about 600 metres from the confluence with the Rio Grande, which is located at river kilometre 389. 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 MICROSIEMENS/CM @ 25 DEG C - 1991

January		March		May		July		September		November	
10	2,890	2	5,380	16	5,610	3	4,650	3	5,050	4	4,680
17	3,340	18	5,100					12	2,190	12	4,750
February		April		June		August		October		December	
6	3,990	3	4,980	3	5,530	1	4,780	2	4,560	3	4,570
18	5,460	15	4,350	15	4,030	15	4,830	16	4,490	17	4,090
		30	4,340								

QUALITY OF WATER - 1991

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

LOCATION: Gaging station at river kilometre 378, 6.0 river kilometres 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.

1991 Date	Time Standard	Streamflow Momentary m3/sec	Specific Conductance Micro-siemens	pH Units	Water Temper-ature 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. 17	1030	113	1,130	7.9	15.0	260	140	74	19
Feb. 25	1145	28.6	1,280	8.0	20.0	290	160	78	22
Mar. 18	1055	80.4	1,190	8.0	20.0	270	140	76	19
April 17	1120	61.4	1,190	8.0	25.5	270	150	75	21
May 16	1020	96.0	1,180	8.0	27.0	280	150	80	19
June 19	1100	117	1,140	8.0	30.0	260	150	75	18
July 15	1015	13.9	1,350	7.9	31.0	280	190	71	24
Aug. 20	0930	148	1,120	7.8	30.0	260	160	71	21
Sept. 16	0900	21.5	1,310	7.8	22.0	270	150	76	20
Oct. 15	0900	62.0	1,130	7.8	25.0	260	150	73	18
Nov. 15	1230	27.7	1,190	7.9	22.0	270	150	75	19
Dec. 23	1100	18.1	1,320	7.8	21.0	280	150	81	20

1991 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. 17	130	3	5.9	121	240	130	12	684
Feb. 25	160	4	5.6	121	300	160	5.9	805
Mar. 18	130	3	5.7	128	250	150	12	720
April 17	140	4	5.3	125	260	140	9.4	726
May 16	140	4	5.6	131	250	140	14	728
June 19	140	4	5.7	112	250	130	14	701
July 15	180	5	6.3	85	310	190	12	845
Aug. 20	130	3	5.7	108	240	120	15	668
Sept. 16	160	4	6.3	118	290	170	14	808
Oct. 15	140	4	5.8	108	250	130	14	696
Nov. 15	140	4	5.5	118	250	150	13	724
Dec. 23	160	4	6.0	135	280	170	15	814

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROSIEMENS/CM @ 25 DEG C - 1991

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1		1,240	1,550	1,220	1,190		760	1,180	1,330		1,360	
2	1,230								1,320	1,310		1,190
3				1,190	1,190	1,180	752					
4	1,220	1,230	1,300						1,320	3,420	1,360	1,190
5				1,200		1,180	1,470	1,200				
6		1,300	1,220		1,210				1,320		1,370	1,250
7	1,250					1,190		1,200		3,520		
8		1,400	1,260	1,410	1,210		1,350				1,360	
9	1,220							1,230		1,230		1,290
10				1,450	1,190	1,220	1,410					
11	1,190	1,460	1,250						1,360	1,240	1,400	1,290
12				1,280		1,180	1,230	1,230				
13		1,550	1,240		1,220				1,360		1,380	1,290
14	1,230					1,200		1,210		1,240		
15		1,500	1,230	1,400	1,280		1,230				1,170	
16	1,220							1,220	1,350	1,220		1,430
17				1,280	1,340	1,190	1,230					
18	1,240	1,370	1,220						2,010	1,230	1,170	1,430
19				1,210		1,230	1,220	1,210				
20		1,390	1,240		1,320				1,100		1,170	1,420
21	1,240					1,220		1,210		1,240		
22		1,460	1,220	1,220	1,310		1,260				1,160	
23	1,280							1,310	1,110	1,220		1,430
24				1,240	1,230	1,220	1,220					
25	1,210	1,370	1,260						1,500	1,210	1,180	
26				1,200		1,200	1,250	1,320				
27		1,550	1,210		1,200				1,510		1,230	1,430
28	1,200					1,180		1,320		1,210		
29			1,190	1,190	1,200		1,220				1,180	
30	1,220							1,320	1,330	1,210		
31					1,200		1,200					

QUALITY OF WATER - 1991

PUERTECITOS DRAIN AND LOS INDIOS DRAIN NEAR CD. DIAZ ORDAZ, TAMAULIPAS

LOCATION: For Puertecitos Drain, at a point about 2,600 metres from the confluence with the Rio Grande, which is located at river kilometre 353; and, for Los Indios Drain, at a point about 650 metres from its confluence with Puertecitos Drain. These two drains join at a point about 1,300 metres 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 MICROSIEMENS/CM @ 25 DEG C - 1991

1991 Date	Puerte-citos Drain	Los Indios Drain	1991 Date	Puerte-citos Drain	Los Indios Drain	1991 Date	Puerte-citos Drain	Los Indios Drain	1991 Date	Puerte-citos Drain	Los Indios Drain
Jan. 10	2,640	2,250	Apr. 3	2,840	2,170	July 3	2,380	2,350	Oct. 16	2,800	2,210
17	2,810	2,280	15	2,780	2,180	Aug. 1	2,810	2,280	Nov. 4	2,780	2,190
Feb. 6	2,810	2,150	30	2,700	2,200	15	2,760	2,220	12	2,770	2,190
18	2,930	2,130	May 16	2,920	2,380	Sept. 3	2,490	2,130	Dec. 3	2,560	2,160
Mar. 2	2,930	2,120	June 3	2,930	2,370	12	1,790	2,210	17	2,670	2,080
18	2,860	2,140	15	2,840	2,400	Oct. 2	2,650	2,210			

08-4663.00 RIO GRANDE AT LOS EBANOS, TEXAS NEAR CD. DIAZ ORDAZ, TAMAULIPAS

LOCATION: Gaging station at river kilometre 329, 54.7 river kilometres 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.

1991 Date	Time Standard	Streamflow Momentary m3/sec	Specific Conductance Micro-siemens	pH Units	Water Temper-ature 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. 14	1330	240	1,160	7.7	17.0	280	150	80	19
Feb. 25	1315	40.2	1,690	8.0	22.0	360	210	99	28
Mar. 18	1340	86.4	1,180	8.0	22.0	270	140	76	20
April 17	1350	43.6	1,450	7.8	29.0	320	180	88	25
May 16	1400	154	1,180	8.0	28.5	260	130	75	17
June 19	1205	105	1,180	8.0	30.0	260	150	76	17
July 15	1430	15.0	1,600	7.8	31.5	350	220	95	28
Aug. 19	1315	127	1,140	7.8	31.5	270	160	74	21
Sept. 16	1230	36.8	1,500	7.7	32.0	310	170	90	21
Oct. 15	1215	46.2	1,180	7.9	28.0	270	160	75	21
Nov. 15	1350	17.3	1,640	7.8	22.0	370	220	100	28
Dec. 23	1200	17.6	1,420	7.7	21.0	320	170	91	23

1991 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. 14	130	3	7.4	125	280	130	14.0	736
Feb. 25	200	5	6.3	148	340	230	9.4	1,000
Mar. 18	130	3	5.6	131	260	140	13.0	724
April 17	180	4	5.7	138	320	190	11.0	903
May 16	140	4	6.0	126	230	150	13.0	707
June 19	140	4	6.1	114	250	150	13.0	721
July 15	200	5	6.2	128	350	230	14.0	1,000
Aug. 19	130	3	5.9	110	270	140	16.0	724
Sept. 16	180	4	7.5	138	270	240	14.0	906
Oct. 15	130	3	5.9	112	260	130	14.0	704
Nov. 15	200	5	5.9	144	340	240	14.0	1,020
Dec. 23	160	4	6.4	148	290	180	17.0	857

QUALITY OF WATER - 1991

08-4663.00 RIO GRANDE AT LOS EBANOS, TEXAS NEAR CD. DIAZ ORDAZ, TAMAULIPAS

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROSIEMENS/CM @ 25 DEG C - 1991

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,170	1,650	1,540	1,230	1,150	1,160	509	1,180	972	1,170	1,560	1,190
2	1,180	1,660	1,540	1,230	1,150	1,130	482	1,280	1,220	1,180	1,530	1,180
3	1,180	1,650	1,550	1,230	1,150	1,160	470	1,220	1,230	1,140	1,580	1,180
4	1,170	1,090	1,550	1,220	1,150	1,130	1,100	1,280	1,200	1,160	1,520	1,180
5	1,180	1,080	1,550	1,150	1,190	1,150	496	1,290	1,210	1,200	1,580	1,430
6	1,180	1,100	1,540	1,140	1,190	1,120	512	1,260	727	1,180	1,530	1,190
7	1,170	1,080	1,540	1,150	1,190	1,160	515	1,270	728	1,560	1,540	1,190
8	1,120	1,080	1,550	1,140	1,190	1,130	515	1,250	725	1,560	1,560	1,190
9	1,120	1,080	1,560	1,140	1,200	1,120	466	1,260	723	1,570	1,520	1,190
10	1,130	1,080	1,540	1,390	1,180	1,120	490	1,260	724	1,570	1,580	1,190
11	1,120	1,080	1,540	1,400	1,180	1,120	477	1,230	723	1,560	1,560	1,190
12	1,130	1,080	1,240	1,400	1,180	1,140	475	1,190	721	1,180	1,550	1,200
13	1,120	1,080	1,250	1,400	1,170	1,160	1,570	1,290	1,220	1,190	1,530	1,180
14	1,120	1,090	1,250	1,390	1,180	1,110	1,570	1,180	1,220	1,190	1,510	1,190
15	1,120	1,080	1,250	1,140	1,180	1,160	1,570	1,180	1,220	1,180	1,560	1,200
16	1,120	1,080	1,240	1,390	1,180	1,170	1,570	1,190	1,220	1,240	1,490	1,250
17	1,120	1,630	1,250	1,400	1,180	1,150	1,570	1,190	1,220	1,240	1,430	1,190
18	1,120	1,640	1,250	1,400	1,180	1,170	1,570	1,180	1,220	1,240	1,260	1,240
19	1,130	1,640	1,240	1,400	1,180	1,170	1,570	1,180	1,220	1,180	1,260	1,190
20	1,120	1,590	1,250	1,390	1,180	1,170	1,570	1,180	1,220	1,240	1,260	1,190
21	1,130	1,590	1,250	1,410	1,140	1,170	1,580	1,190	1,230	1,560	1,260	1,420
22	1,110	1,590	1,250	1,390	1,140	1,170	1,570	1,180	1,220	1,240	1,260	1,430
23	1,110	1,590	1,240	1,390	1,140	1,170	1,570	1,180	1,220	1,560	1,270	1,420
24	1,120	1,590	1,250	1,390	1,140	1,160	1,570	1,220	1,230	1,560	1,260	1,430
25	1,110	1,590	1,240	1,380	1,140	1,170	1,570	1,220	1,220	1,560	1,270	1,430
26	1,110	1,590	1,540	1,180	1,140	1,170	1,580	1,220	1,220	1,240	1,270	1,440
27	1,110	1,630	1,210	1,170	1,140	1,170	1,320	1,220	1,220	1,240	1,270	1,430
28	1,110	1,630	1,210	1,170	1,140	554	1,300	1,220	1,220	1,240	1,270	1,420
29	1,110		1,210	1,170	1,140	579	1,300	1,220	1,550	1,240	1,270	1,420
30	1,110		1,210	1,170	1,140	556	1,320	1,220	1,560	1,140	1,260	1,430
31	1,110		1,210		1,140		1,300	1,220		1,240		1,430

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 kilometre 300, 26.2 river kilometres 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 MICROSIEMENS/CM @ 25 DEG C - 1991

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1		1,160	1,720	1,180	1,160		697				1,150	
2	1,150							1,230	1,340	1,540		1,180
3				1,170	1,160	1,150	799					
4	1,180	1,160	1,590						1,210	1,520	1,260	1,200
5				1,170		1,140	887	1,160				
6		1,190	1,470		1,160				1,190		1,350	1,250
7	1,160					1,150		1,140		1,340		
8		1,210	1,270	1,250	1,160		1,120				1,860	
9	1,180							1,190	1,160	1,320		1,200
10				1,260	1,180	1,140	1,520					
11	1,180	1,510	1,260						749	1,240	1,580	1,170
12				1,270		1,140	2,000					
13		1,310	1,240		1,160				805		1,590	1,180
14	1,150					1,140		1,150		1,280		
15		1,560	1,200	1,290	1,120		1,800	1,180			1,700	
16	1,160								1,310	1,250		1,200
17			1,200	1,300	1,130	1,160	1,960	1,200	1,620			
18	1,160	1,600								1,230	1,800	1,160
19				1,540		1,120	1,750	1,210				
20		1,660	1,230		1,160			1,170	1,540		1,400	1,150
21	1,150					1,190				1,280		
22		1,520	1,240	1,200	1,320		1,890				1,210	
23	1,150							1,170	1,660	1,240		1,280
24				1,210	1,330	1,190	1,390					
25	1,150	1,500	1,240						1,650	1,180	1,140	
26				1,220		1,190	1,310	1,180				1,720
27		1,790	1,200		879				1,550		1,260	
28	1,170							1,180		1,240		1,550
29			1,190	1,160	1,120	1,140	1,330				1,300	
30	1,160							1,210	1,520	1,160		1,320
31					1,150		1,330					

QUALITY OF WATER - 1991

08-4678.00 MORILLO DRAIN NEAR ANZALDUAS DAM

LOCATION: At the Morillo Drain Project pumping plant located about 0.6 river kilometre from the confluence with the Rio Grande or at the gaging station on the bypass canal 0.6 kilometre from the pumping plant. Morillo Drain enters the Rio Grande at river kilometre 288, 14.2 river kilometres 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.

1991 Date	Time Standard	Streamflow Momentary m3/sec	Specific Conductance Micro-siemens	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. 16	0825	2.41	5,630	8.0	17.0	860	620	220	75
Feb. 20	0820	0.91	7,150	8.0	20.0	1,000	780	250	100
Mar. 22	0840		7,260	8.0	24.0	1,000	770	250	98
April 17	0730	1.98	5,430	7.8	26.0	850	620	210	78
May 15	0730	6.09	3,450	8.0	27.0	470	320	130	36
June 21	0730	2.01	4,600	8.0	28.5	670	490	160	66
July 19	0715	0.99	7,920	7.9	28.0	1,100	850	250	110
Aug. 21	0720	0.99	7,040	7.9	29.0	1,000	810	220	110
Sept. 13	0725	4.81	618	7.7	27.0	140	41	48	5.5
Oct. 18	0720	1.02	5,960	7.9	24.0	910	710	210	94
Nov. 22	0820	0.99	7,730	7.9	17.0	1,100	900	260	120
Dec. 18	0820	0.99	4,360	8.0	15.0	670	480	160	65

1991 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. 16	1,000	15	8.3	243	1,200	1,100	29	3,780
Feb. 20	1,200	16	8.4	257	1,500	1,400	33	4,650
Mar. 22	1,300	18	7.8	259	1,500	1,400	33	4,750
April 17	910	14	8.5	226	1,400	1,000	31	3,770
May 15	570	11	8.2	148	610	620	22	2,090
June 21	760	13	17	177	900	850	26	2,890
July 19	1,400	19	8.7	223	1,600	1,600	36	5,140
Aug. 21	1,300	18	8.1	197	1,500	1,300	34	4,590
Sept. 13	74	3	5.7	102	96	73	17	381
Oct. 18	1,000	14	7.7	202	1,200	1,200	26	3,860
Nov. 22	1,400	18	7.7	246	1,600	1,500	33	5,070
Dec. 18	690	12	6.9	184	830	820	23	2,710

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROSIEMENS/CM @ 25 DEG C - 1991

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1		6,650	7,650			5,440	555	7,780		7,880		
2	4,650				5,080	1,000		7,480	7,360	7,970		8,080
3	4,750				4,950				7,750	7,950		8,000
4	4,360	6,320	7,640			6,030	1,510		7,500	7,920	7,740	7,950
5			7,750	6,450		6,140	2,870	7,470	4,000		7,890	7,930
6		6,080	7,780		1,190	6,290		7,450	1,180		7,990	7,970
7	4,660	6,640	7,880		1,630	6,150		6,870		7,830	8,070	
8	5,120	6,710	7,680	5,410	3,130		6,720	6,960		8,230	8,050	
9	4,880			5,610	5,090		7,140	7,630	2,660	7,800		7,710
10	5,280			5,530	5,790	6,410	7,290		4,190	7,540		9,260
11	5,240	6,940	7,650	5,600		5,790			5,920	7,580	8,030	6,980
12		6,940	7,690	5,460		6,730	6,770	7,710	3,410		8,020	7,560
13		7,090	7,690		6,580	6,850		7,720	845		8,020	7,690
14	5,400	7,120	7,830		5,130	6,820		7,850		7,640	8,130	
15	5,520	7,110	7,600	5,150	3,510		7,650	7,770		7,840	8,110	
16	5,780			5,570	5,600		7,660	7,750		7,390		7,800
17	5,490			5,610	5,950	6,270	7,780		6,430	7,670		8,300
18	5,450	7,240	7,450	5,430		6,280	8,050		6,880	7,910	8,170	8,170
19		7,270	7,710	5,430		6,860	8,100	7,850	7,140		8,100	
20		7,350	7,770		6,240	5,690		7,910	7,370			6,090
21	6,020	7,230			6,290	5,810		8,030		7,840	8,100	
22	6,030	7,190	7,470	5,530	6,590		7,990		7,750	7,900	8,130	
23	5,730			5,490	6,530		7,930		7,590	7,650		8,160
24	6,070			5,560	6,360	7,330	8,310		7,700	7,930		8,350
25	5,940	7,380	7,290	5,550		7,460	7,840		7,730	7,920	7,800	
26		7,410	7,810			7,480	8,070	8,030	7,660		7,990	7,270
27		6,930	7,820		5,830	7,630		7,850			7,960	6,200
28	6,410	7,640			5,910			7,900		7,920	7,990	
29	6,510			5,070	5,470		8,070	7,860		7,930	8,190	
30	6,630			5,110	5,380		8,060	7,960	7,730	6,720		4,810
31	6,650				5,410		8,030			5,230		5,090

WATER BULLETIN NUMBER 61 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

QUALITY OF WATER - 1991

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

LOCATION: At Anzalduas Dam, 0.8 river kilometre above the gaging station, located at river kilometre 273.
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.

1991 Date	Time Standard	Streamflow Momentary m3/sec	Specific Conductance Micro-siemens	pH Units	Water Temper-ature 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. 16	0905	66.5	1,190	7.9	16.0	270	150	76	20
Feb. 20	1130	17.5	2,030	8.1	20.0	410	260	110	34
Mar. 22	0900	38.5	1,230	8.1	24.0	270	140	77	20
April 17	0810	15.3	1,490	7.9	27.0	330	190	89	26
May 15	0830	50.4	1,170	8.0	26.0	270	150	78	19
June 21	0810	50.4	1,160	7.9	31.0	250	150	74	17
July 19	0745	6.20	1,800	8.0	30.0	390	240	110	29
Aug. 21	0750	50.4	1,160	7.9	31.0	270	160	73	21
Sept. 13	0750	6.50	731	7.6	27.0	170	74	51	10
Oct. 18	0810	39.4	1,290	7.9	25.5	300	180	81	23
Nov. 22	0840	30.6	1,470	8.0	17.0	330	190	92	25
Dec. 18	0900	43.6	1,110	7.9	15.0	280	120	80	19

1991 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. 16	140	4	5.7	125	260	140	13	730
Feb. 20	280	6	6.1	159	440	320	15	1,300
Mar. 22	130	3	5.5	131	270	150	13	745
April 17	190	5	5.9	138	330	200	15	939
May 15	140	4	5.2	126	240	130	14	703
June 21	140	4	5.8	108	250	150	13	715
July 19	230	5	7.4	159	370	300	16	1,160
Aug. 21	140	4	5.6	112	300	150	15	773
Sept. 13	83	3	5.2	95	130	88	8.2	433
Oct. 18	160	4	5.9	118	300	170	14	825
Nov. 22	180	4	6.1	138	330	190	13	920
Dec. 18	130	3	5.7	157	240	120	15	705

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROSIEMENS/CM @ 25 DEG C - 1991

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,210	1,190	1,790	1,160	1,160	1,150	1,130	1,380	1,190	1,560	1,180	1,340
2	1,230	1,200	1,790	1,150	1,160	1,160	1,180	1,360	1,240	1,690	1,170	1,350
3	1,260	1,210	1,860	1,180	1,160	1,200	583	1,290	1,250	1,760	1,160	1,420
4	1,240	1,210	1,960	1,170	1,180	1,160	594	1,240	1,220	1,720	1,190	1,230
5	1,230	1,210	1,770	1,180	1,210	1,160	635	1,180	1,170	1,520	1,200	1,210
6	1,240	1,220	1,600	1,170	1,140	1,150	720	1,160	1,230	1,480	1,230	1,270
7	1,240	1,270	1,680	1,160	1,180	1,140	955	1,150	1,220	1,420	1,280	1,260
8	1,260	1,500	1,610	1,160	1,210	1,130	925	1,180	1,260	1,460	1,320	1,260
9	1,270	1,400	1,390	1,170	1,240	1,140	880	1,200	1,190	1,420	1,430	1,330
10	1,240	1,490	1,300	1,170	1,180	1,140	886	1,180	1,030	1,440	1,560	1,220
11	1,210	1,490	1,270	1,200	1,170	1,160	923	1,190	769	1,410	1,540	1,210
12	1,210	1,520	1,260	1,210	1,170	1,140	1,090	1,180	697	1,360	1,710	1,230
13	1,210	1,490	1,270	1,420	1,160	1,060	1,260	1,200	733	1,300	1,920	1,190
14	1,210	1,620	1,270	1,540	1,140	1,130	1,450	1,180	766	1,270	1,860	1,190
15	1,200	1,860	1,240	1,590	1,180	1,150	1,730	1,190	899	1,280	1,800	1,200
16	1,200	1,680	1,220	1,550	1,080	1,160	1,960	1,200	880	1,320	1,680	1,220
17	1,200	1,780	1,210	1,520	1,120	1,170	1,950	1,180	905	1,310	1,740	1,160
18	1,190	2,110	1,240	1,490	1,340	1,140	1,870	1,190	999	1,340	1,870	1,150
19	1,190	2,100	1,230	1,460	1,320	1,120	1,410	1,220	1,240	1,290	1,900	1,150
20	1,190	2,170	1,220	1,710	1,410	1,090	1,810	1,250	1,330	1,250	1,900	1,140
21	1,210	2,060	1,200	1,510	1,400	1,100	1,740	1,380	1,350	1,190	1,780	1,140
22	1,190	2,000	1,250	1,370	1,190	1,060	1,760	1,180	1,560	1,240	1,540	1,170
23	1,200	1,900	1,250	1,290	1,240	1,130	1,880	1,190	1,680	1,310	1,400	1,220
24	1,200	1,890	1,250	1,260	1,330	1,210	2,070	1,160	1,710	1,380	1,290	1,260
25	1,190	1,920	1,240	1,190	1,340	1,190	1,990	1,160	1,750	1,340	1,220	1,220
26	1,190	1,910	1,260	1,210	1,370	1,190	1,650	1,160	1,800	1,180	1,180	1,260
27	1,190	2,040	1,220	1,200	1,440	1,210	1,470	1,190	1,720	1,180	1,170	1,370
28	1,200	1,980	1,210	1,190	1,180	1,160	1,360	1,200	1,440	1,280	1,160	1,490
29	1,200		1,220	1,200	680	1,140	1,380	1,220	1,430	1,320	1,170	1,620
30	1,200		1,200	1,180	1,160	1,140	1,410	1,200	1,590	1,220	1,270	1,820
31	1,200		1,170		1,150		1,390	1,190		1,220		1,800

08-4733.90 RIO GRANDE AT MERCEDES IRRIGATION DISTRICT PUMPS NEAR MERCEDES, TEXAS AND RIO RICO, TAMAULIPAS

LOCATION: At river kilometre 190, 84.6 river kilometres 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 MICROSIEMENS/CM @ 25 DEG C - 1991

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,280	1,230	2,010	1,260	1,210	1,180	1,170	1,490	1,260	1,980	1,160	1,300
2	1,260	1,230	2,060	1,220	1,200	1,170	1,200	1,490	1,240	2,080	1,310	1,310
3	1,270	1,220	2,160	1,230	1,180	1,170	1,120	1,470	1,260	1,940	1,300	1,340
4	1,250	1,220	2,120	1,230	1,180	1,170	973	1,430	1,310	1,760	1,400	1,430
5	1,260	1,180	1,960	1,170	1,180	1,170	887	1,370	1,270	1,750	1,490	1,470
6	1,280	1,220	2,000	1,180	1,190	1,180	852	1,280	1,250	1,840	1,530	1,520
7	1,270	1,290	2,010	1,210	1,240	1,170	860	1,210	1,220	1,940	1,530	1,480
8	1,280	1,340	1,720	1,210	1,240	1,170	832	1,200	1,630	1,570	1,540	1,450
9	1,300	1,410	1,750	1,230	1,260	1,160	776	1,200	1,300	1,630	1,590	1,420
10	1,290	1,490	1,760	1,210	1,330	1,150	779	1,220	1,370	1,670	1,600	1,490
11	1,320	1,510	1,590	1,250	1,360	1,150	840	1,240	1,470	1,640	1,710	1,500
12	1,290	1,670	1,430	1,270	1,310	1,150	885	1,220	1,620	1,610	1,730	1,480
13	1,250	1,870	1,390	1,500	1,260	1,160	1,240	1,230	1,550	1,630	1,780	1,530
14	1,230	1,880	1,350	1,400	1,210	1,140	1,410	1,240	1,630	1,650	1,800	1,450
15	1,290	1,780	1,330	1,440	1,180	1,150	1,370	1,270	1,670	1,440	1,820	1,390
16	1,230	1,870	1,320	1,430	1,200	1,160	1,310	1,260	1,420	1,370	1,900	1,310
17	1,220	1,890	1,280	1,500	1,210	1,200	1,400	1,290	1,170	1,370	2,090	1,240
18	1,220	1,820	1,250	1,510	1,150	1,200	1,510	1,300	1,200	1,440	2,240	1,250
19	1,210	2,050	1,250	1,710	1,250	1,180	1,590	1,310	1,320	1,460	2,100	1,250
20	1,210	1,850	1,260	1,770	1,400	1,170	1,710	1,240	1,430	1,440	1,940	1,200
21	1,220	2,070	1,310	1,710	1,470	1,200	1,910	1,290	1,670	1,400	1,920	1,200
22	1,310	2,220	1,310	1,650	1,660	1,170	2,030	1,290	1,400	1,330	2,060	1,230
23	1,220	2,250	1,270	1,610	1,700	1,170	1,980	1,230	1,420	1,300	1,980	1,290
24	1,220	2,130	1,280	1,750	1,500	1,120	1,910	1,210	1,660	1,400	1,870	1,270
25	1,220	2,200	1,280	1,540	1,360	1,200	1,860	1,200	1,700	1,430	1,630	1,360
26	1,220	2,170	1,280	1,400	1,480	1,250	1,970	1,210	1,710	1,240	1,530	1,410
27	1,220	2,020	1,280	1,270	1,480	1,210	2,150	1,210	1,690	1,220	1,470	1,600
28	1,220	2,020	1,290	1,280	1,450	1,210	2,060	1,210	1,780	1,270	1,410	1,560
29	1,210		1,250	1,230	1,550	1,210	1,760	1,240	1,930	1,320	1,450	1,570
30	1,210		1,250	1,100	1,100	1,150	1,580	1,240	1,960	1,410	1,460	1,510
31	1,220		1,270		1,140		1,460	1,270		1,200		1,580

QUALITY OF WATER - 1991

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

LOCATION: Gaging station at river kilometre 78.3, 0.3 river kilometre downstream from El Jardin pumping plant and 11.2 river kilometres 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.

1991 Date	Time Standard	Streamflow Momentary m3/sec	Specific Conductance Micro-siemens	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. 8	1606	2.70	1,250	8.1	13.0	300	160	82	22
Mar. 6	1512	2.50	2,060	8.2	22.5	470	270	120	40
May 2	0905	0.30	1,780	8.0	27.5	470	260	130	35
July 10	1245	7.20	998	8.2	28.0	220	88	63	14
Sept. 4	0825	10.7	1,220	8.0	29.0	280	160	77	21
Oct. 22	0910		1,830	8.0	25.5	440	250	120	34
Dec. 17	1620		1,620	7.9	17.0	390	210	110	28

1991 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. 8	150	4	5.8	140	260	160	14	781
Mar. 6	270	5	8.7	192	440	340	16	1,390
May 2	190	4	7.4	209	340	250	19	1,130
July 10	120	4	4.9	127	200	120	13	598
Sept. 4	140	4	6.1	116	280	150	15	776
Oct. 22	210	4	6.7	196	390	230	17	1,170
Dec. 17	180	4	6.6	184	320	210	16	1,120

RAINFALL ON THE RIO GRANDE WATERSHED

IN THE UNITED STATES

IN MILLIMETRES

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.

Month	Las Cruces, New Mexico		American Dam		Fort Hancock Bridge		Guayuco Arroyo		Neely Ranch	
	1991	Average	1991	Average	1991	Average	1991	Average	1991	Average
Jan.	11	15	17	10	42	10	13	8	31	9
Feb.	23	12	11	9	0	8	1	6	8	6
Mar.	0	6	8	8	3	6	1	6	4	5
April	0	6	0	5	0	7	0	5	0	5
May	11	12	17	7	0	11	4	11	16	10
June	3	19	0	15	6	21	3	15	15	21
July	44	27	21	38		34	131	36	59	45
Aug.	116	75	46	39		42	109	43	31	48
Sept.	42	34	100	29		36	102	32	23	40
Oct.	2	26	12	20		26	1	23		26
Nov.	8	18	8	8		9	8	7		8
Dec.	94	25	70	13		12	47	10		11
Yearly	354	275	310	201		222	420	202		234

Month	Bill Shannon Ranch		H. T. Fletcher Ranch		Adobes Ranch		Shafter		Kerr Mitchell Ranch	
	1991	Average	1991	Average	1991	Average	1991	Average	1991	Average
Jan.	6	11	23	17	0	8	8	5	22	13
Feb.	12	9	14	10	T	6	10	11	11	9
Mar.	0	7	0	8	0	4	0	8	0	5
April	3	7	43	14	0	4	0	18	94	14
May	0	18	12	27	0	16	18	20	17	30
June	13	42	46	47	13	34	12	62	15	48
July	95	52	297	81	140	53	149	86	199	57
Aug.	69	69	132	86	71	48	85	72	33	60
Sept.	71	66	111	67	20	59	25	83	65	54
Oct.	0	34	4	38	T	18	0	38	0	35
Nov.	9	11	13	11	5	7	0	9	13	9
Dec.	31	12	60	13	6	8	49	14	60	12
Yearly	309	338	755	419	255	265	356	426	529	346

Month	Presidio (IB&WC Gage)		Redford		La Mota Ranch		Study Butte		Terlingua Creek Station	
	1991	Average	1991	Average	1991	Average	1991	Average	1991	Average
Jan.	17	8	0	7	0	14	8	11	0	7
Feb.	9	6	0	5	6	5	0	5	15	6
Mar.	0	4	0	4	0	5	0	2	0	3
April	1	6	0	7	20	17	0	12	0	8
May	0	14	0	16	13	23	0	31	3	19
June	39	34	20	25	0	41	0	33	50	29
July	144	40	102	41	147	49	0	45	140	37
Aug.	13	37	46	36	81	53	0	46	13	33
Sept.	74	40	0	49	137	61	114	41	71	36
Oct.	0	21	0	21	T	27	0	29	13	20
Nov.	12	8	0	8	0	10	9	8	0	6
Dec.	40	10	20	8	41	12	13	8	36	7
Yearly	349	228	188	227	445	317	144	271	341	211

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WATER BULLETIN NUMBER 61 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

RAINFALL ON THE RIO GRANDE WATERSHED

IN THE UNITED STATES

IN MILLIMETRES

	Johnson Ranch		Owens Ranch		Lewis James Ranch		Rio Grande near Dryden		Ross Foster Ranch	
Month	1991	Average	1991	Average	1991	Average	1991	Average	1991	Average
Jan.	0	8	66	13	32	13	9	15	11	10
Feb.	0	5	6	19	24	16	12	10	0	13
Mar.	0	4	0	23	1	8	0	3	0	6
April	8	11	47	45	17	28	21	19	0	21
May	3	24	15	57	36	43	4	27	0	30
June	31	29	68	52	39	32	21	32	77	35
July	8	30	174	40	21	33	35	23	7	15
Aug.	38	26	85	50	4	46	41	43	10	31
Sept.	41	36	164	69	159	80	155	59	8	37
Oct.	0	19	3	57	15	40	0	27	0	28
Nov.	18	6	18	30	0	17	12	14	180	17
Dec.	38	8	86	19	83	15	31	13	28	13
Yearly	185	206	732	474	431	371	341	285	321	256

	Jones Ranch		Eugene Miller Ranch		Prosser Ranch No. 3		Pecos River near Langtry Station		Prosser Ranch No. 2	
Month	1991	Average	1991	Average	1991	Average	1991	Average	1991	Average
Jan.	62	24	40	17	58	11	5	9	38	10
Feb.	18	29	6	22	0	20	11	18	0	23
Mar.	1	20	7	20	0	13	3	11	0	14
April	25	46	54	37	0	30	75	26	0	31
May	51	65	21	79	56	54	24	37	0	58
June	80	52	100	52	0	39	0	48	0	43
July	57	60	51	63	61	42	0	43	20	47
Aug.	57	64	14	48	0	47	0	35	0	54
Sept.	126	88	170	92	0	80	127	60	0	75
Oct.	18	61	0	64	0	48	104	44	0	43
Nov.	27	24	22	22	34	19	25	17	23	18
Dec.	109	19	68	19	74	15	69	15	56	13
Yearly	631	552	553	535	283	418	443	363	137	429

	W. E. Sawyer Ranch		Devils River at Cauthorn Ranch		Dead Man's Canyon near Comstock		Martin King Ranch		Prosser Ranch No. 1	
Month	1991	Average	1991	Average	1991	Average	1991	Average	1991	Average
Jan.	0	13	30	11	3	11	23	14	46	11
Feb.	13	28	14	19	6	18	6	18	0	20
Mar.	0	26	0	17	1	12	0	10	0	12
April	53	45	50	25	36	30	42	24	0	31
May	20	62	24	52	9	55	63	43	94	63
June	52	54	60	51		56	56	45	0	42
July	45	45	53	26		65	0	38	53	54
Aug.	66	67	35	29		40	0	37	0	44
Sept.	128	77	179	57	81	63	219	69	0	70
Oct.	13	68	0	62	0	49	2	50	0	44
Nov.	13	24	22	15	13	19	26	15	15	20
Dec.	145	26	58	17	10	14	43	14		12
Yearly	548	535	525	381		432	480	377		423

	Walker Ranch		Brotherton Ranch		Harlow Ranch		Zuberbueler Ranch		Ed Crane Ranch	
Month	1991	Average	1991	Average	1991	Average	1991	Average	1991	Average
Jan.	28	11	29	16	0	9	26	15	37	20
Feb.	0	19	7	22	20	17	12	25	12	26
Mar.	0	12	2	14	0	8	0	15	2	15
April	0	27	47	25	30	27	38	29	47	39
May	84	65	18	43	19	49	21	55	39	66
June	0	54	70	46	53	59	55	55	42	53
July	15	44	0	39	14	39	20	59	10	48
Aug.	0	29	29	40	5	37	15	23	28	28
Sept.	0	72	212	69	131	64	200	75	153	75
Oct.	0	39	0	43	0	49	0	38	3	52
Nov.	0	18	24	15	23	15	44	21	39	22
Dec.	42	14	64	13	43	14	63	21	66	21
Yearly	169	404	502	385	338	387	494	431	478	465

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RAINFALL ON THE RIO GRANDE WATERSHED

IN THE UNITED STATES

IN MILLIMETRES

Month	A. A. Baker Ranch		Cow Creek near Comstock		Comstock		Amistad Reservoir near Comstock		Tuffy Whitehead Ranch	
	1991	Average	1991	Average	1991	Average	1991	Average	1991	Average
Jan.	21	12	89	17	15	14	13	9	14	10
Feb.	11	19	0	10	10	20	0	15	13	19
Mar.	0	14	3	11	0	16	3	10	0	17
April	27	29	28	29	23	33	42	30	30	32
May	25	49	0	36	0	48	91	39	43	45
June	67	47	0	33	57	54	47	40	70	47
July	46	45	72	47	17	40	10	29	13	42
Aug.	16	39	1	41	0	40	6	33	11	33
Sept.	135	77	206	60	166	63	227	56	165	74
Oct.	1	45	0	42	0	45	0	41	5	42
Nov.	28	17	23	18	11	16	25	16	19	17
Dec.	57	14	42	19	26	16	48	9	55	14
Yearly	434	407	464	363	325	405	512	327	438	392

Month	Gillis Ranch		Goldwire Ranch		H. K. Fawcett Ranch		Pafford Crossing		Buoy No. 11	
	1991	Average	1991	Average	1991	Average	1991	Average	1991	Average
Jan.	27	13	3	14	38	17	5	14	13	11
Feb.	13	23	0	17	19	20	0	19	20	17
Mar.	0	21	17	17	2	19	10	14	0	13
April	21	37	15	42	34	40	15	35	47	39
May	49	59	0	61	19	60	0	48	77	50
June	70	56	83	55	13	36	38	54	58	52
July	10	55	3	58	14	45	5	52	11	39
Aug.	5	35	5	56	21	53	3	48	0	35
Sept.	157	77	43	57	244	79	51	69	239	58
Oct.	0	45	0	53	1	58	0	53	7	41
Nov.	50	23	25	27	23	21	28	22	28	15
Dec.	133	21	56	17	67	16	69	16	44	11
Yearly	535	465	250	474	495	464	224	444	544	381

Month	H. T. Miers Ranch No. 2		Vinegarone		Evans Creek near Comstock		H. T. Miers Ranch Headquarters		J. G. Brite Ranch	
	1991	Average	1991	Average	1991	Average	1991	Average	1991	Average
Jan.	0	12	0	16	0	8	3	15	11	11
Feb.	25	22	18	21	1	18	0	24	13	21
Mar.	0	21	3	17	2	13	18	19	0	16
April	0	37	17	36	43	28	8	43	74	36
May	0	66	20	69	71	43	0	63	42	55
June	75	57	63	54	54	46	24	64	50	56
July	0	45	88	68	22	53	0	41	2	41
Aug.	0	51	56	69	T	45	0	46	5	43
Sept.	126	75	157	70	178	69	38	63	142	79
Oct.	0	53	6	65	0	49	0	66	3	50
Nov.	0	23	42	25	3	20	25	23	27	19
Dec.	71	20	106	20	76	14	79	18	52	15
Yearly	297	482	576	530	450	406	195	485	421	442

Month	Big Satan Creek Station		Sellers Ranch		Lowry Ranch No. 2		Devils Lake		Rough Canyon near Del Rio	
	1991	Average	1991	Average	1991	Average	1991	Average	1991	Average
Jan.	5	15	0	10	11	12	13	16	18	10
Feb.	15	17	8	18	15	20	14	21	0	23
Mar.	18	22	0	13	0	19	0	16	0	18
April	15	43	69	31	45	40	35	40	0	30
May	0	56	36	47	42	60	68	55	69	67
June	38	52	44	62	56	58	48	61	66	59
July	0	57	1	37	30	49	24	37	36	51
Aug.	15	60	17	37	14	52	8	40	17	46
Sept.	150	60	114	60	192	66	143	63	25	75
Oct.	0	57	3	50	2	50	5	49	152	63
Nov.	0	25	25	19	20	24	27	20	10	26
Dec.	76	19	56	14	55	17	69	19	79	19
Yearly	332	483	373	398	482	467	454	437	472	487

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IN THE UNITED STATES

IN MILLIMETRES

	Cliff Lowry Ranch No. 1		Amistad Dam		Stewart Ranch		North Fork San Pedro		Long Ranch	
Month	1991	Average	1991	Average	1991	Average	1991	Average	1991	Average
Jan.	14	13	17	13	16	12	13	11	13	14
Feb.	11	25	13	22	16	22	0	20	17	23
Mar.	0	20	2	19	0	18	0	19	0	19
April	31	42	49	44	37	39	31	39	51	42
May	40	67	89	61	39	51	58	63	57	59
June	49	58	83	57	61	58	41	61	83	61
July	9	48	30	48	19	49	61	67		55
Aug.	20	49	32	48	22	39	18	45	13	35
Sept.	204	84	227	92	203	69	236	67	175	64
Oct.	4	56	3	48	4	51	3	54	0	47
Nov.	19	26	28	23	15	22	0	25	34	23
Dec.	59	17	70	18	67	16	81	19	75	18
Yearly	460	505	643	493	499	446	542	490		460

	Middle Fork San Pedro		Hutto Ranch No. 2		Gillis Headquarters Ranch		Hutto Ranch No. 1		Lewis Ranch	
Month	1991	Average	1991	Average	1991	Average	1991	Average	1991	Average
Jan.	5	10	13	14	24	17	1	13	29	15
Feb.	0	23	17	25	21	27	0	22	25	28
Mar.	0	19	0	17	5	24	0	17	0	22
April	32	37	52	49	34	46	37	45	52	52
May	51	63	60	53	22	73	35	58	24	60
June	38	59	57	61	58	69	119	61	41	72
July	61	56	41	52	51	64	32	56	94	44
Aug.	1	42	13	46	60	57	34	43	28	52
Sept.	138	66	165	84	149	63	129	75	113	70
Oct.	0	61	3	50	4	63	4	53	5	67
Nov.	0	22	45	24	23	32	54	22	33	30
Dec.	94	19	71	17	78	23	64	16	74	21
Yearly	420	477	537	492	529	558	509	481	518	533

	Laughlin Air Force Base		Maverick County Canal Headgate		Wardlaw Standart Ranch		Pinto Creek Station		Las Moras Creek	
Month	1991	Average	1991	Average	1991	Average	1991	Average	1991	Average
Jan.	18	14	15	14	38	21	8	12	25	19
Feb.	13	24	13	25	7	30	0	18	10	25
Mar.	4	15	0	15	0	26	0	15	3	17
April	52	52	23	44	32	44	0	44	41	39
May	25	55	33	55	41	68	0	57	51	55
June	70	71	0	55	82	81	0	57	150	68
July	94	64	48	45	77	43	0	40	25	39
Aug.	23	44	13	38	18	27	48	39	3	45
Sept.	138	67	15	66	117	57	18	64	84	83
Oct.	9	63	0	55	5	52	130	52	3	59
Nov.	19	26	20	25	22	37	8	27	4	25
Dec.	72	17	102	19	82	25	18	15	77	20
Yearly	537	512	282	456	521	511	230	440	476	494

	Normandy		Lateral No. 12 Headgate		Coal Mine		Eagle Pass		Trees Farm	
Month	1991	Average	1991	Average	1991	Average	1991	Average	1991	Average
Jan.	13	19	20	15	14	16	52	20	20	15
Feb.	10	22	37	18	15	21	47	25	22	22
Mar.	8	19	5	15	4	17	4	19	1	11
April	46	49	41	45	53	43	62	47	36	46
May	57	71	56	64	39	66	27	93	25	76
June	155	63	127	61	79	60	125	80	79	59
July	75	53	100	41	27	50	29	47	27	38
Aug.	5	49	5	40	0	39	22	60	19	42
Sept.	99	76	94	70	204	81	198	81	119	65
Oct.	3	60	3	61	4	61	4	58	5	67
Nov.	4	26	3	22	8	20	7	24	6	20
Dec.	81	20	76	18	89	17	100	23	99	20
Yearly	556	527	567	470	536	491	677	577	458	481

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IN MILLIMETRES

Month	Farias Ranch		Indio Ranch		El Indio		Van Dalsem Farm		Keisling Farm	
	1991	Average	1991	Average	1991	Average	1991	Average	1991	Average
Jan.	25	17	27	18	30	19	27	16	26	18
Feb.	19	28	23	23	20	26	25	24	23	25
Mar.	4	14		14	10	14	20	13	8	16
April	50	49	71	52	54	47	46	53	42	49
May	30	76	59	77	52	83	43	77	30	71
June	94	60	107	63	102	60	124	56	122	69
July	37	48	10	45	46	34	17	36	19	35
Aug.	30	47	11	40	56	49	25	42	28	40
Sept.	118	81	108	77	120	73	145	72	145	65
Oct.	3	66	4	60	4	58	0	60	0	58
Nov.	5	20	0	21	1	20	6	20	7	20
Dec.	95	22	81	21	94	20	83	21	80	23
Yearly	510	528		511	589	503	561	490	530	489

Month	Apache Ranch		Laredo Water Plant		Corralitos Ranch		Huisache Ranch		Zapata Water Plant	
	1991	Average	1991	Average	1991	Average	1991	Average	1991	Average
Jan.	30	17	28	19	38	19	36	21	42	22
Feb.	14	22	20	22	19	20	17	23	20	23
Mar.	13	9	0	14	13	13	20	15	13	14
April	91	44	78	31	25	30	28	34	25	38
May	60	61	151	62	191	56	188	57	180	67
June	79	52	43	54	140	56	142	64	135	61
July	15	53	12	30	76	37	75	39	79	43
Aug.	64	46	5	47	5	50	9	40	13	49
Sept.	81	78	113	73	64	75	53	92	51	102
Oct.	50	64	3	45	32	52	36	54	34	47
Nov.	41	22	2	21	13	22	9	21	8	23
Dec.	76	20	66	24	89	18	91	22	89	25
Yearly	614	488	521	442	705	448	704	482	689	514

Month	Falcon Dam		Roma (Int'l. Bridge)		Garciasville		Los Ebanos		La Joya	
	1991	Average	1991	Average	1991	Average	1991	Average	1991	Average
Jan.	28	23	29	22	23	23	0	25	8	26
Feb.	12	26	9	26	32	28	18	25	32	27
Mar.	6	15	8	14	3	11	1	11	0	11
April	13	35	6	35	50	30	1	32	20	24
May	179	66	177	51	162	65	20	57	0	55
June	107	64	114	58	28	63	114	64	11	65
July	82	35	79	34	66	35	98	32	71	29
Aug.	0	60	0	48	0	45	0	44	0	35
Sept.	60	104	60	105	150	83	84	80	130	80
Oct.	35	50	38	49	6	43	9	44	0	43
Nov.	9	27	6	21	4	23	38	20	46	20
Dec.	75	21	76	15	35	19	4	21	0	23
Yearly	606	526	602	478	559	468	387	455	318	438

Month	Penitas (Edinburg Pumping Plant)		United Irrigation District		Edinburg Filtration Plant		La Feria Materials Yard		La Feria Pumping Plant	
	1991	Average	1991	Average	1991	Average	1991	Average	1991	Average
Jan.	23	32	30	31	19	37	18	44	15	45
Feb.	39	28	66	31	107	31	83	55	53	47
Mar.	5	15	9	23	17	18	30	22	11	24
April	11	32	24	33	31	37	318	49	269	57
May	96	62	128	77	71	61	69	68	75	75
June	89	72	168	67	110	63	104	89	91	82
July	5	38	17	41	7	41	91	66	44	59
Aug.	78	58	25	54	49	57	75	73	53	83
Sept.	139	92	53	79	203	94	220	130	191	155
Oct.	50	65	86	59	56	54	48	77	20	94
Nov.	7	22	9	19	9	24	84	36	41	47
Dec.	67	27	80	27	89	32	119	43	76	41
Yearly	609	543	695	541	768	549	1,259	752	939	809

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	CCWCID #19 (Adams Gardens)		San Benito Pump		CCWCID #11 (Bayview Dist. Off.					
Month	1991	Average	1991	Average	1991	Average				
Jan.	9	34	0	36	0	45				
Feb.	93	42	60	28	67	42				
Mar.	17	21	0	20	0	19				
April	323	45	136	36	121	49				
May	59	66	59	68	55	65				
June	20	69	142	63	102	57				
July	143	50	12	42	31	48				
Aug.	26	70	43	61	0	66				
Sept.	344	112	189	110	237	144				
Oct.	35	65	25	65	0	58				
Nov.	99	37	19	31	0	37				
Dec.	132	32	56	34	90	39				
Yearly	1,299	643	741	594	703	669				

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IN MEXICO

IN MILLIMETRES

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 is 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.

	Cd. Juarez, Chihuahua		La Trasquila, Chihuahua		Estacion Rosario, Durango		Valle Allende, Chihuahua		Hidalgo del Parral, Chihuahua	
Month	1991	Average	1991	Average	1991	Average	1991	Average	1991	Average
Jan.	24	11	2	9	0	10		9	2	5
Feb.	19	11	6	7	18	6	4	4	5	5
Mar.	2	9	0	4	0	3		2	0	2
April	T	7	0	5	0	8		7	0	5
May	6	9	2	8	0	16		21	0	12
June	T	16	8	29	3	54	11	51	13	44
July	61	39	26	86	241	122	28	98	43	109
Aug.		43	16	71	151	123	42	117	32	112
Sept.		36	20	78	108	115	30	91	45	114
Oct.		26	0	24	9	28		22	0	28
Nov.		12	9	9	17	8		7	5	12
Dec.		15	9	11	36	12		9	22	10
Yearly		234	98	341	583	505		438	167	458

	Jimenez, Chihuahua		Balleza, Chihuahua		La Boquilla, Chihuahua		Ojo Caliente, Chihuahua		Camargo, Chihuahua	
Month	1991	Average	1991	Average	1991	Average	1991	Average	1991	Average
Jan.	0	8	1	11		8	0	7	3	10
Feb.	7	4	14	8		5	4	5	5	6
Mar.	0	3	0	4		4	0	4	0	5
April	0	4	0	6		6	0	5	0	6
May	0	13	0	7	T	14	7	12	6	13
June	1	37	4	43	2	36	18	42	4	39
July	30	84	26	121	11	72	36	84	43	76
Aug.	25	66	28	122	30	75	36	74	34	71
Sept.	52	58	14	82	34	74	23	67	24	66
Oct.	10	28	0	23	0	22	0	28	2	25
Nov.	3	6	12	12	9	8	12	6	11	11
Dec.	15	6	6	12	12	9	14	7	17	12
Yearly	143	317	105	451		333	150	341	149	340

	El Sitio, Chihuahua		Las Virgenes, Chihuahua		Delicias, Chihuahua		Presa Chihuahua, Chihuahua		Meoqui, Chihuahua	
Month	1991	Average	1991	Average	1991	Average	1991	Average	1991	Average
Jan.		8	9	7	8	9	3	7	0	9
Feb.	8	8	2	3	3	4	10	5	2	4
Mar.		4	0	2	0	3	0	4	T	3
April		7	0	7	0	9	0	9	0	11
May		12	0	8	0	9	1	21	5	13
June		43	5	29	2	32	5	51	T	32
July	30	108	20	68	39	64	51	104	3	65
Aug.	39	123	17	69	40	66	27	120	43	78
Sept.	34	85	14	61	10	60	51	91	6	60
Oct.		24	0	22	0	22	0	26	0	25
Nov.	9	9	15	6	12	7	10	8	12	7
Dec.	15	10	22	9	16	10	11	10	9	11
Yearly		441	104	291	130	295	169	456	80	318

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	Posta Zootecnica, Chihuahua		Las Burras, Chihuahua		Villa Aldama, Chihuahua		Presa Luis L. Leon, Chihuahua		Maclovio Herrera, Chihuahua	
Month	1991	Average	1991	Average	1991	Average	1991	Average	1991	Average
Jan.	0	9	15	8	T	6	9	7	0	8
Feb.	17	6	4	5	6	5	6	4	5	5
Mar.	0	4	0	3	0	5	0	3	0	3
April	0	11	0	8	0	9	0	7	0	9
May	0	18	0	12	T	11	15	15	3	14
June	T	37	0	30	T	36	4	35	10	33
July	86	85	0	72	19	70	62	58	28	69
Aug.	75	101	50	65	27	74	44	73	13	72
Sept.	82	82	53	62	32	73	35	56	18	78
Oct.	T	30	18	21	T	25	0	21	0	23
Nov.	31	9	10	6	9	13	8	8	14	9
Dec.	18	9	6	9	9	9	19	10	4	14
Yearly	309	401	156	301	102	336	202	297	95	337

	Coyame, Chihuahua		Ojinaga (IB&WC), Chihuahua		Ojinaga (M.S. of Mexico), Chihuahua		Manuel Benavides, Chihuahua		La Chuparrosa, Coahuila	
Month	1991	Average	1991	Average	1991	Average	1991	Average	1991	Average
Jan.	T	7	10	8	4	8	T	5	13	8
Feb.	6	8	8	7	6	6	1	6	0	12
Mar.		3	0	4	0	5	0	5	9	11
April	2	9		9	0	8	8	9		31
May	T	16	T	13	1	15	8	29	13	33
June	8	45	32	36	25	32	25	42	51	37
July	4	63	96	42	30	39	6	50	0	36
Aug.	26	65	6	45	11	40	17	64	6	44
Sept.	18	69	93	45	20	42	30	66	147	61
Oct.		27	T	26	0	26	4	26	0	38
Nov.	10	10	T	10	11	10	10	9	23	16
Dec.	8	8	21	10	13	11	8	10	45	9
Yearly		330		255	121	242	117	321		336

	La Amistad, Coahuila		Amistad Res. near Tlaloc, Coahuila		Represa Amistad, Coahuila		Cd. Acuna, Coahuila		Jimenez, Coahuila	
Month	1991	Average	1991	Average	1991	Average	1991	Average	1991	Average
Jan.	12	16	18	11	6	9	11	15	21	18
Feb.	13	22	0	17	7	15	16	23	8	22
Mar.	T	19	0	18	0	12	T	19	T	19
April	46	41	41	29	35	27	59	47	35	45
May	96	64		46	77	43	62	59	36	61
June	95	65	T	49	51	40	60	56	171	65
July	26	46	36	67	19	48	73	45	32	44
Aug.	27	15	0	44	24	33	3	40	45	43
Sept.	241	78	201	76	189	67	291	83	142	76
Oct.	2	49	0	46	2	47	4	62	4	60
Nov.	28	30	10	20	22	17	33	20	17	27
Dec.	58	19	0	15	37	10	71	17	82	19
Yearly	644	464		438	469	368	683	486	593	499

	Zaragoza, Coahuila		Lag. de Salinillas, Nuevo Leon		Villa Hidalgo, Coahuila		Colombia (SARH), Nuevo Leon		San Nicolas, Nuevo Leon	
Month	1991	Average	1991	Average	1991	Average	1991	Average	1991	Average
Jan.	6	31		18	36	20	32	22	27	25
Feb.	20	20		19	92	23	63	28	35	27
Mar.	0	16	5	13	T	17	3	15	5	17
April	7	57	22	34	69	46	48	48	25	42
May	55	84	76	61	60	67	98	71	68	73
June	64	74	51	51	79	57	52	48	99	63
July	65	45	22	25	T	33	28	40	2	51
Aug.	71	55	7	54	28	53	3	19	15	47
Sept.	106	70	58	79	42	79	48	32	82	58
Oct.	23	46	3	51	4	51	6	60	8	58
Nov.	0	28	0	17	0	23	0	19	2	12
Dec.		21	64	17	46	20	64	25	64	25
Yearly		547		439	456	489	445	427	432	498

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Month	Jarita, Nuevo Leon		Anahuac, Nuevo Leon		Lampazos, Nuevo Leon		Nv. Laredo (IB&WC), Tamaulipas		Espinazo, Nuevo Leon	
	1991	Average	1991	Average	1991	Average	1991	Average	1991	Average
Jan.	22	17	0	19	6	18	20	20	6	32
Feb.	45	31	0	19	15	18	24	26	21	15
Mar.	5	13	0	13	0	13	2	14	1	3
April	28	41	28	32	29	30	46	36	1	36
May	57	80	31	64	64	50	81	76	24	62
June	52	45	79	53	118	54	80	67	90	33
July	1	38	1	37	15	44	28	36	39	42
Aug.	16	50	80	59	35	35	4	56	55	38
Sept.	97	67	79	80	183	119	105	79	64	59
Oct.	0	47	3	43	7	53	3	58	5	34
Nov.	6	27	2	19	0	26	2	28	4	9
Dec.	68	24	72	19	87	19	68	22	45	15
Yearly	397	480	375	457	559	479	463	518	355	378

Month	Villaldama, Nuevo Leon		Vallecillo, Nuevo Leon		La Popa, Nuevo Leon		Sabinas Hidalgo, Nuevo Leon		Ojo de Agua (Sabinas), N. L.	
	1991	Average	1991	Average	1991	Average	1991	Average	1991	Average
Jan.	17	32	16	21	0	12	18	21	0	35
Feb.	7	13	10	20	0	14	10	20	15	21
Mar.	8	7	7	12	0	5	18	15	0	8
April	4	41	9	48	0	13	16	34	0	42
May	52	49	40	51	0	24	39	67	17	88
June	77	70	102	80	0	34	117	87	41	51
July	10	53	26	41	0	28	15	64	17	45
Aug.	14	68	11	52	0	38	10	57	0	73
Sept.	174	130	172	107	26	64	103	154	105	56
Oct.	6	30	4	49	0	17	2	60	0	36
Nov.	10	16	0	20	0	14	11	23	33	12
Dec.	32	16	47	18	13	16	53	16	35	12
Yearly	411	525	444	519	39	279	412	618	263	479

Month	Garza Ayala, Nuevo Leon		Mina, Nuevo Leon		Icamole, Nuevo Leon		Hacienda Mamulique, Nuevo Leon		Nueva Cd. Guerrero, Tamaulipas	
	1991	Average	1991	Average	1991	Average	1991	Average	1991	Average
Jan.	10	22	4	15	5	11	14	25	25	24
Feb.	0	17	3	10	8	8		10	7	27
Mar.	12	11	0	4	0	3		11	3	13
April	4	42	3	17	11	10	3	47	7	38
May	56	51	2	20	21	19	33	42	113	70
June	114	59	138	38	109	23	21	79	199	67
July	0	89	20	29	16	15	55	71	20	36
Aug.	7	63	29	42	0	21	53	76	1	53
Sept.	105	103		80	57	50	144	111	44	98
Oct.	3	54		26	0	23	10	40	1	47
Nov.	3	36		15	2	15	22	26	7	25
Dec.	58	17		13	29	13	80	26	84	22
Yearly	372	564		309	258	211		564	511	520

Month	La Escondida, Nuevo Leon		Rinconada, Nuevo Leon		Cienega de Flores, Nuevo Leon		Agualeguas, Nuevo Leon		Higueras, Nuevo Leon	
	1991	Average	1991	Average	1991	Average	1991	Average	1991	Average
Jan.	33	37	8	11	2	29	24	40	25	19
Feb.	13	28	6	8	1	23	8	21	12	16
Mar.	7	20	1	5	T	24	3	14	0	17
April	0	68	0	14	T	36	14	46	3	32
May	0	46	7	17	36	64	33	64	13	53
June	89	83	53	26	146	83	126	60	101	68
July	25	50	20	15	40	58	35	44	66	56
Aug.		113	3	29	13	106	8	78	42	85
Sept.	103	109	78	54	160	137	91	61	181	125
Oct.	5	46	7	22	3	62	17	49		47
Nov.	17	17	0	9	11	27	6	18	6	19
Dec.	66	47	20	10	52	29	55	26	66	20
Yearly		664	203	220	464	678	420	521		557

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RAINFALL ON THE RIO GRANDE WATERSHED

IN MEXICO

IN MILLIMETRES

	Topo Chico, Nuevo Leon		Monterrey, Nuevo Leon		La Huasteca, Nuevo Leon		Ejido Marin, Nuevo Leon		La Cruz, Nuevo Leon	
Month	1991	Average	1991	Average	1991	Average	1991	Average	1991	Average
Jan.	12	14	12	16	5	17	23	31	10	31
Feb.	5	14	14	17	12	4	12	17	19	17
Mar.	7	13	5	18	T	5	2	12		11
April	28	30	55	30	21	16	2	32	0	33
May	58	43	43	46	38	50	16	62	11	51
June	81	57	106	70	83	39	104	63	103	78
July	71	42	24	58	70	39	55	53	113	84
Aug.	14	74	53	81	13	36	35	64	149	107
Sept.	147	123	148	155	108	97	132	108	295	171
Oct.	10	74	10	78		28	49	36	45	57
Nov.	26	18	22	29	0	6	19	14	26	22
Dec.	60	13	82	18	46	19	55	35	71	17
Yearly	519	515	574	616		356	504	527		679

	Cd. Mier, Tamaulipas		General Trevino, Nuevo Leon		Cerralvo, Nuevo Leon		La Arena, Nuevo Leon		Pajonal, Nuevo Leon	
Month	1991	Average	1991	Average	1991	Average	1991	Average	1991	Average
Jan.	26	26	34	32	26	20	7	22	0	17
Feb.	20	31	17	27		17	19	19	8	16
Mar.	1	14	0	16	10	17	3	14	0	8
April	24	38	48	54	7	42	13	32	26	29
May	106	67	33	81		86	14	68	13	53
June	209	68		58		90	112	78	86	64
July	21	32		31	73	51	61	72	56	64
Aug.	43	64		71	8	91	7	78	98	89
Sept.	59	108		101	192	134	82	130	117	139
Oct.	5	50	0	42	3	61	32	60	35	48
Nov.	10	24	0	16	6	17	12	18	7	13
Dec.	78	23	35	32	42	15	44	18	67	16
Yearly	602	545		561		641	406	609	513	556

	Tepehuaje, Nuevo Leon		Santa Catarina, Nuevo Leon		Una de Gato, Nuevo Leon		Cerritos, Nuevo Leon		Laguna de Sanchez, Nuevo Leon	
Month	1991	Average	1991	Average	1991	Average	1991	Average	1991	Average
Jan.	6	37	3	18	51	33	19	25	0	19
Feb.	23	19	14	11	24	17		16	0	16
Mar.	8	16	2	8	2	12	10	15	5	9
April	19	47	27	21	6	52	50	46	15	30
May	36	91	44	27	19	80	113	101	47	47
June	108	84	89	48	184	112	139	151	83	83
July	45	54	49	42	140	60	84	128	58	65
Aug.	17	83	7	67	16	80	50	141	36	106
Sept.	100	127	124	119	133	123	300	297	124	167
Oct.	119	46	12	42	3	77	34	99	24	62
Nov.	9	16	8	13	8	17	35	19	71	18
Dec.	34	27	39	14	61	44	66	16	23	16
Yearly	524	647	418	430	647	707		1,054	486	638

	Tunel San Fco., Nuevo Leon		Rodrigo Gomez Res., Nuevo Leon		Carbonera, Nuevo Leon		Miguel Aleman, Tamaulipas		Casillas, Nuevo Leon	
Month	1991	Average	1991	Average	1991	Average	1991	Average	1991	Average
Jan.	4	31	9	25	0	24	26	25	0	22
Feb.	25	29	24	24	0	14	46	27	13	15
Mar.	0	32	25	26	0	12	0	12	0	13
April	31	58	52	47	0	28	44	42	0	28
May	92	97	86	74	0	45	87	59	0	57
June	104	154	153	139	67	63	133	73	0	82
July	112	103	23	100	98	75	72	41		65
Aug.	99	167	27	150	14	77	0	52		79
Sept.	106	282	347	252	82	66	66	119		112
Oct.	29	137	21	123	0	42	21	56	124	62
Nov.	9	39	16	32	0	22	14	22	0	17
Dec.	61	29	72	23	37	23	42	21	56	15
Yearly	672	1,158	855	1,015	298	491	551	549		567

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RAINFALL ON THE RIO GRANDE WATERSHED

IN MEXICO

IN MILLIMETRES

Month	Cienega del Toro, Nuevo Leon		Los Ramones, Nuevo Leon		Villa Allende, Nuevo Leon		Mimbres, Nuevo Leon		Potosi, Nuevo Leon	
	1991	Average	1991	Average	1991	Average	1991	Average	1991	Average
Jan.	4	32	26	21	27	30	4	38	67	24
Feb.	16	15	32	19	48	32	25	29	15	17
Mar.	0	18	2	16	36	31	0	25	0	9
April	22	41	12	36	124	69	31	41	36	33
May	84	65	84	72	168	100	92	70	32	44
June	28	57	193	83	173	139	104	82	17	28
July	111	76	20	48	46	88	112	73	50	37
Aug.	48	79	4	86	31	133	99	87	29	37
Sept.	110	85	119	142	262	238	106	97	72	39
Oct.	17	48	6	63	42	127	29	51	9	35
Nov.	3	18	8	17	30	39	9	30	5	28
Dec.	60	19	55	17	54	29	61	32	57	38
Yearly	503	553	561	620	1,041	1,055	672	655	389	369

Month	Rusio, Nuevo Leon		Cerro Prieto, Nuevo Leon		Rayones, Nuevo Leon		Madero(Los Aldamas) Nuevo Leon		Montemorelos, Nuevo Leon	
	1991	Average	1991	Average	1991	Average	1991	Average	1991	Average
Jan.	5	19	11	27	1	13	2	28	4	23
Feb.	15	16	47	17	18	10	22	22	68	25
Mar.	0	13	3	14	1	8	2	17	31	28
April	6	33	27	37	12	27	76	36	19	59
May	50	45	97	106	41	47	80	78	72	87
June	48	50	121	103	96	53	91	84	106	100
July	68	46	40	50	53	31	18	58	31	62
Aug.	26	49	43	81	31	70	53	102	2	105
Sept.	58	50	135	130	49	90	114	131	224	176
Oct.	13	34	74	60	13	39	12	36	31	93
Nov.	6	18	18	18	1	11	8	12	20	39
Dec.	45	22	55	27	25	11		26	47	24
Yearly	340	395	671	670	341	410		630	655	821

Month	Galeana, Nuevo Leon		Las Enramadas, Nuevo Leon		Iturbide, Nuevo Leon		Cabezones, Nuevo Leon		El Cuchillo, Nuevo Leon	
	1991	Average	1991	Average	1991	Average	1991	Average	1991	Average
Jan.	1	18	18	24	4	18	0	29	20	19
Feb.	32	16	17	18	56	18	0	21	21	15
Mar.	0	11	0	17	0	15	0	27	2	12
April	17	31	0	44	12	32	62	64	12	34
May	92	48	0	72	40	55	51	100	62	61
June	53	57	131	81	93	85	155	104	160	67
July	42	48	39	58	118	71	49	72	22	47
Aug.	104	65	8	92	77	108	133	146	1	72
Sept.	46	87	180	158	83	157	207	213	96	111
Oct.	38	42	47	65	21	61	24	82	27	56
Nov.	0	16	8	18	12	13	38	26	12	14
Dec.	35	20	69	21	34	16		20		15
Yearly	460	459	517	668	550	649		904		523

Month	Linares, Nuevo Leon		El Realito, Nuevo Leon		General Bravo, Nuevo Leon		San Diego, Nuevo Leon		Comales, Tamaulipas	
	1991	Average	1991	Average	1991	Average	1991	Average	1991	Average
Jan.	13	24	14	29	21	21	7	43	38	23
Feb.	87	22	24	13	22	16	30	16	24	23
Mar.	29	26	6	16	3	14	20	16	0	14
April	4	56	32	41	10	37	35	102	102	41
May	76	93	70	74	85	73	137	120	142	57
June	129	102	106	77	155	69	78	100	122	59
July	88	69	20	60	7	54	35	62	84	38
Aug.	10	96	15	85	5	69	40	105	0	62
Sept.	144	162	94	122	87	112	59	130	152	109
Oct.	101	84	51	42	26	47	34	26	10	60
Nov.	39	28	11	10	9	21	25	15	15	21
Dec.	42	28	63	25	30	21	70	39	43	24
Yearly	762	790	506	594	460	554	570	774	732	531

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RAINFALL ON THE RIO GRANDE WATERSHED

IN MEXICO

IN MILLIMETRES

	El Brasil, Nuevo Leon		Camargo, Tamaulipas		La Pomona, Nuevo Leon		Vaqueria, Nuevo Leon		Reynosa, Tamaulipas	
Month	1991	Average	1991	Average	1991	Average	1991	Average	1991	Average
Jan.	0	26	26	26	10	34	2	38	19	31
Feb.	18	28	29	29	34	18	17	23	75	30
Mar.	0	9	2	17	0	21	2	26	3	18
April	18	40	71	37	38	56	82	45	17	31
May	100	64	160	68	70	106	115	94	103	73
June	133	50	119	73	176	80	165	71	133	60
July	0	49	90	37	63	58	46	36	54	41
Aug.	0	47	4	45	88	69	20	65	1	47
Sept.	154	94	166	116	94	123	82	104	109	93
Oct.	68	32	8	53	34	27	72	40	91	59
Nov.	12	12	11	29	1	13	23	15	10	22
Dec.	36	22	27	29	62	35	67	44	55	26
Yearly	539	473	713	559	670	640	693	601	670	531

	Bajo Rio San Juan, Tamps., No. 3-60		Bajo Rio San Juan, Tamps., No. 3-58		Bajo Rio San Juan, Tamps., No. 3-47		Bajo Rio San Juan, Tamps., 3-48A		Bajo Rio San Juan, Tamps., No. 3-63	
Month	1991	Average	1991	Average	1991	Average	1991	Average	1991	Average
Jan.	45	40	97	47	54	46	60	41	30	46
Feb.	68	34	88	38	103	36	89	46	80	45
Mar.	9	15	10	16	5	14	4	15	5	13
April	101	40	44	39	32	40	29	25	89	36
May	52	72	37	74	42	82	62	62	60	69
June	172	87	142	78	81	81	72	68	139	88
July	126	53	118	67	38	56	50	34	79	51
Aug.	0	58	0	61	0	60	0	32	0	68
Sept.	278	131	235	129	173	110	172	94	235	126
Oct.	168	73	238	72	183	59	173	59	223	67
Nov.	4	23	4	23	14	22	9	19	19	20
Dec.	77	33	87	32	74	31	73	39	86	32
Yearly	1,100	659	1,100	676	799	637	793	534	1,045	661

AVERAGE RAINFALL ON SUBDIVISIONS OF THE RIO GRANDE WATERSHED
With Averages for the 121 Years 1871 – 1991, Inclusive

In Millimetres

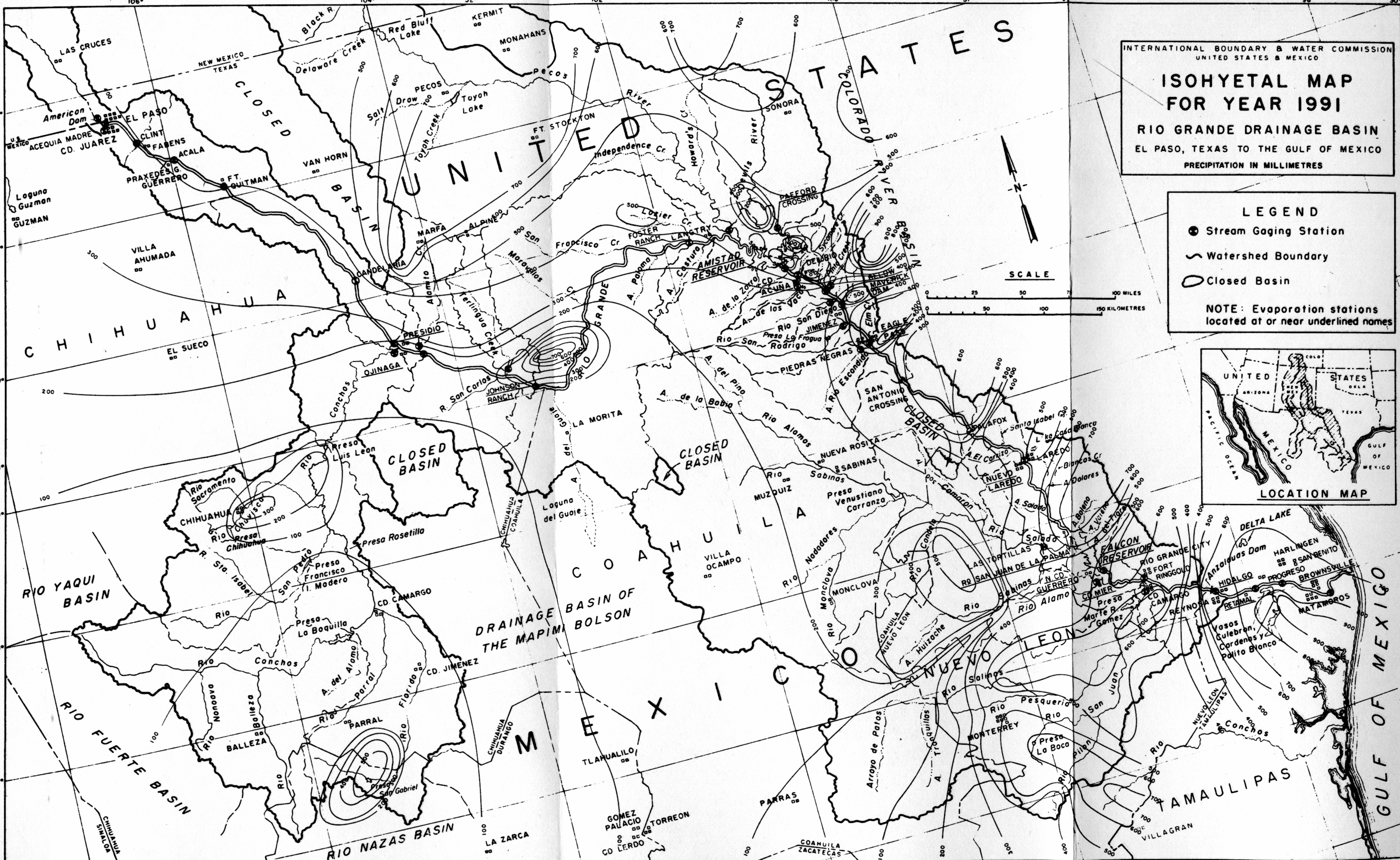
The Precipitation records of all stations on or adjacent to the watershed subdivisions listed below have been used, with proper weighting for area, in calculating the average rainfalls shown here. The drainage area for each subdivision is shown in parentheses. The hundreds of individual records are delineated 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 (6,933 Square Km)		Fort Quitman to Above Rio Conchos (7,915 Square Km)		* Above Rio Conchos to Johnson Ranch (9,795 Square Km)		Johnson Ranch to Foster Ranch (33,623 Square Km)	
	1991	Period Average	1991	Period Average	1991	Period Average	1991	Period Average
Jan.	31	12	17	10	4	9	17	12
Feb.	9	10	8	7	6	7	10	10
Mar.	3	8	3	6	1	5	2	10
April	4	7	1	9	7	10	18	20
May	16	11	9	16	9	20	19	38
June	21	20	16	31	30	30	39	43
July	82	56	91	73	84	48	59	46
Aug.	82	48	50	62	38	49	36	52
Sept.	97	38	58	51	48	42	83	56
Oct.	8	24	0	27	2	23	1	32
Nov.	14	11	10	10	7	9	18	15
Dec.	76	15	38	14	26	10	52	14
Yearly	443	260	301	316	262	262	354	348

Month	Pecos River below Sheffield (8,780 Square Km)		# Foster Ranch to Amistad Dam (7,249 Square Km)		Devils River (11,150 Square Km)		+ Amistad Dam to Eagle Pass (4,209 Square Km)	
	1991	Period Average	1991	Period Average	1991	Period Average	1991	Period Average
Jan.	48	17	17	19	31	17	23	19
Feb.	5	22	6	23	14	19	17	23
Mar.	2	19	2	24	2	26	3	25
April	34	45	33	43	36	44	46	44
May	28	47	31	72	38	66	40	73
June	57	61	50	64	57	66	93	64
July	105	47	13	47	48	47	59	48
Aug.	53	50	9	48	38	54	25	48
Sept.	117	64	129	77	145	75	145	77
Oct.	6	47	3	52	20	57	9	53
Nov.	25	23	49	26	22	37	20	26
Dec.	72	19	46	22	94	25	81	22
Yearly	552	461	388	517	545	533	561	522

Month	! Eagle Pass to Laredo (9,829 Square Km)		** Laredo to Falcon Dam (8,726 Square Km)		## Falcon Dam to Rio Grande City (1,212 Square Km)		United States Side Below Rio Grande City (2,554 Square Km)	
	1991	Period Average	1991	Period Average	1991	Period Average	1991	Period Average
Jan.	30	18	33	20	26	23	14	33
Feb.	27	21	17	21	23	22	51	29
Mar.	7	22	10	20	4	22	6	25
April	73	42	34	37	31	32	104	36
May	82	78	170	80	155	62	71	71
June	75	63	124	52	116	54	75	64
July	17	38	56	52	69	48	40	46
Aug.	35	57	6	48	5	53	23	59
Sept.	99	75	68	77	80	88	139	110
Oct.	20	48	23	44	26	49	42	63
Nov.	16	24	8	37	9	20	19	34
Dec.	73	25	83	22	56	18	51	32
Yearly	554	511	632	510	600	491	635	602

* 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 1991
RIO GRANDE DRAINAGE BASIN
EL PASO, TEXAS TO THE GULF OF MEXICO
PRECIPITATION IN MILLIMETRES
LEGEND
Stream Gaging Station
Watershed Boundary
Closed Basin
NOTE: Evaporation stations located at or near underlined names
SCALE
100 MILES
150 KILOMETRES
LOCATION MAP
UNITED STATES
MEXICO
PACIFIC OCEAN
GULF OF MEXICO
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
EL PASO
CD. JUAREZ
AMISTAD RESERVOIR
FALCON RESERVOIR
BROWNSVILLE
MATAMOROS
LAREDO
NUEVO LAREDO
EAGLE PASS
PIEDRAS NEGRAS
PRESIDIO
OJINAGA
MONTERREY
TORREON

LOCATION OF RAINFALL STATIONS ON THE RIO GRANDE WATERSHED

The precipitation records of stations listed below began on the date shown and extend through 1991. 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	LATITUDE	LONGITUDE	ELEV. METRES	RECORD BEGAN	WATERSHED SUBDIVISION	OBSERVER
A.A. Baker Ranch	R	29° 44'	101° 08'	1,720	July 1962	Devils River	I. B. & W. C.
Adobes Ranch	C	29° 46'	104° 34'	2,550	# 1950	Fort Quitman – Above Rio Conchos	I. B. & W. C.
American Dam	S	31° 47'	106° 32'	3,730	# 1938	El Paso – Fort Quitman	I. B. & W. C.
Amistad Dam	R	29° 27'	101° 01'	1,150	July 1962	Foster Ranch – Amistad Dam	I. B. & W. C.
Amistad Reservoir near Comstock	C	29° 32'	101° 12'	1,128	# 1970	Foster Ranch – Amistad Dam	I. B. & W. C.
Apache Ranch	C	27° 56'	99° 56'	500	#May 1953	Eagle Pass – Laredo	Ranch Foreman
Big Satan Creek Station	C	29° 34'	100° 57'	1,150	Nov. 1968	Devils River	I. B. & W. C.
Bill Shannon Ranch	C	29° 57'	104° 40'	2,680	#July 1956	Fort Quitman – Above Rio Conchos	Bill Shannon
Brotherton Ranch	S	29° 42'	101° 19'	1,400	1961	Langtry – Below Amistad Dam	Perry Calk
Buoy No. 11	C	29° 30'	101° 10'	**	#Dec. 1969	Foster Ranch – Amistad Dam	I. B. & W. C.
CCWCID No. 19 (Adams Gardens)	S	26° 10'	97° 47'	50	1952	Lower Rio Grande Valley	CCWCID #19
CCWID # 11 (Bayview Dist. Off.)	S	26° 08'	97° 21'	25	# 1952	Lower Rio Grande Valley	CCWID #11
Cliff Lowry Ranch No. 1	R	29° 28'	100° 52'	1,490	July 1962	Devils River	I. B. & W. C.
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° 36'	101° 12'	1,310	April 1965	Foster Ranch – Amistad Dam	I. B. & W. C.
Dead Man's 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° 58'	1,146	#May 1939	Devils River	I. B. & W. C.
Devils River at Cauthorn Ranch	S	30° 04'	101° 06'	1,656	#April 1976	Devils River	I. B. & W. C.
Eagle Pass	S	28° 42'	100° 30'	815	1964	Eagle Pass – Laredo	I. B. & W. C.
Ed Crane Ranch	S	29° 50'	101° 05'	1,630	# 1955	Devils River	E. J. Crane Jr.
Edinburg City Plant	S	26° 18'	98° 10'	100	# 1934	Lower Rio Grande Valley	City of Edinburg
El Indio	S	28° 31'	100° 19'	725	#June 1941	Eagle Pass – Laredo	Mrs. Courtney
Eugene Miller Ranch	S	30° 25'	101° 09'	2,150	July 1975	Devils River	Mr. Miller
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	April 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.
Fort Hancock Bridge	S	31° 16'	105° 51'	3,500	#April 1940	El Paso – Fort Quitman	I. B. & W. C.
Garciasville	R	26° 20'	98° 41'	200	#April 1957	Lower Rio Grande Valley	I. B. & W. C.
Gillis Headquarters	S	29° 36'	100° 47'	1,410	1968	Amistad Dam – Eagle Pass	Jake Schiller
Gillis Ranch	S	29° 40'	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.
H.K. Fawcett Ranch	C	29° 52'	100° 53'	1,600	# 1941	Devils River	I. B. & W. C.
H.T. Fletcher Ranch	S	30° 12'	104° 16'	5,100	# 1939	Alamito Creek	Hayes Mitchell Jr.
H.T. Miers Ranch Headquarters	C	29° 44'	100° 50'	1,760	# 1957	Devils River	I. B. & W. C.
H.T. Miers Ranch No. 2	R	29° 43'	100° 53'	1,600	April 1964	Devils River	I. B. & W. C.
Harlow Ranch	C	29° 49'	101° 10'	1,696	#Mar. 1969	Devils River	I. B. & W. C.
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° 38'	100° 54'	1,210	# 1964	Devils River	I. B. & W. C.
Indio Ranch	S	28° 31'	100° 22'	700	1959	Eagle Pass – Laredo	I. B. & W. C.
J.G. Brite Ranch	R	29° 33'	101° 01'	1,150	#Sept. 1962	Devils River	I. B. & W. C.
Johnson Ranch	C	29° 01'	103° 23'	2,050	#July 1933	Johnson Ranch – Foster Ranch	I. B. & W. C.
Jones Ranch	S	30° 43'	100° 58'	2,400	#Oct. 1962	Devils River	Mrs. Jones
Keisling Ranch	S	28° 23'	100° 17'	740	Dec. 1958	Eagle Pass – Laredo	I. B. & W. C.
Kerr Mitchell Ranch	S	30° 13'	104° 00'	4,450	#Mar. 1941	Alamito Creek	Mrs. Kerr Mitchell
La Feria Materials Yard	V	26° 10'	97° 50'	60	# 1960	Lower Rio Grande Valley	CCWCID #3
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	#April 1957	Lower Rio Grande Valley	I. B. & W. C.
La Mota Ranch	S	29° 33'	103° 59'	3,854	#Feb. 1943	Alamito Creek	John Rice
Laredo Water PLant	S	27° 33'	99° 31'	410	# 1930	Eagle Pass – Laredo	Laredo Water Plant
Las Cruces	S	32° 19'	106° 47'	3,893	1975	Cabballo 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° 32'	100° 40'	1,400	# 1964	Amistad Dam – Eagle Pass	Billie C. Lewis Jr.
Lewis James Ranch	S	30° 11'	102° 07'	3,273	# 1966	Johnson Ranch – Foster Ranch	Lewis James
Long Ranch	R	29° 27'	100° 56'	1,140	Oct. 1971	Devils River	I. B. & W. C.

S Standard R Recording C Cumulative V Visual ** Reservoir surface
Some months or years missing

LOCATION OF RAINFALL STATIONS ON THE RIO GRANDE WATERSHED

IN THE UNITED STATES

NAME OF STATION	TYPE GAGE	LATI-- TUDE	LONGI-- TUDE	ELEV. METRES	RECORD BEGAN	WATERSHED SUBDIVISION	OBSERVER
Los Ebanos	C	26º 14'	98º 34'	150	#April 1957	Lower Rio Grande Valley	I. B. & W. C.
Lowry Ranch No. 2	R	29º 37'	100º 55'	1,160	May 1965	Devils River	I. B. & W. C.
Martin King Ranch	R	29º 43'	101º 02'	1,460	#Nov. 1954	Foster Ranch – Amistad Dam	I. B. & W. C.
Maverick County Canal Headgate	S	29º 10'	100º 46'	870	#Mar. 1948	Amistad Dam – Eagle Pass	MCWCID #1
Middle Fork San Pedro	C	29º 29'	100º 52'	1,170	#June 1969	Devils River	I. B. & W. C.
Neely Ranch	S	30º 59'	105º 32'	3,350	#Aug. 1941	Fort Quitman – Above Rio Conchos	Mrs. Tom Neely
Normandy	S	28º 55'	100º 36'	780	#Dec. 1958	Amistad Dam – Eagle Pass	Fannin G. Lowe
North Fork San Pedro	C	29º 31'	100º 53'	1,144	#June 1969	Devils River	I. B. & W. C.
Owens Ranch	S	30º 48'	102º 42'	2,250	#July 1963	Pecos River below Sheffield	Mrs. W. Owens
Pafford Crossing	C	29º 40'	101º 00'	1,180	Mar. 1960	Devils River	I. B. & W. C.
Pecos River near Langtry Station	C	29º 48'	101º 26'	1,260	July 1967	Pecos River below Sheffield	I. B. & W. C.
Penitas (Edinburg Pumping Plant)	S	26º 14'	98º 27'	100	July 1957	Lower Rio Grande Valley	M. Stevens
Pinto Creek Station	C	29º 09'	100º 43'	870	#Dec. 1958	Amistad Dam – Eagle Pass	I. B. & W. C.
Presidio (IBWC Gage)	S	29º 34'	104º 23'	2,599	#Nov. 1949	Above Rio Conchos – Johnson Ranch	I. B. & W. C.
Prosser Ranch No. 1	C	29º 53'	101º 14'	1,710	Mar. 1965	Pecos River below Sheffield	I. B. & W. C.
Prosser Ranch No. 2	C	29º 48'	101º 15'	1,850	#Mar. 1965	Devils River	I. B. & W. C.
Prosser Ranch No. 3	C	30º 02'	101º 16'	2,020	#Mar. 1965	Pecos River below Sheffield	I. B. & W. C.
Redford	C	29º 29'	104º 13'	2,500	#July 1954	Above Rio Conchos – Johnson Ranch	I. B. & W. C.
Rio Grande near Dryden	R	29º 48'	102º 08'	1,350	May 1976	Johnson Ranch – Foster Ranch	National Weather Service
Roma (International Bridge)	S	26º 24'	99º 01'	230	# 1941	Falcon Dam – Rio Grande City	I. B. & W. C.
Ross Foster Ranch	C	29º 45'	101º 46'	1,230	May 1961	Johnson Ranch – Foster Ranch	I. B. & W. C.
Rough Canyon near Del Rio	C	29º 34'	100º 56'	1,147	#June 1969	Devils River	I. B. & W. C.
San Benito City	S	26º 03'	97º 45'	50	Oct. 1933	Lower Rio Grande Valley	I. B. & W. C.
Sellers Ranch	C	29º 34'	101º 02'	1,190	#Mar. 1960	Devils River	I. B. & W. C.
Shafter	S	29º 49'	104º 19'	3,920	#July 1968	Above Rio Cochos – Johnson Ranch	Raymond Wylie
Stewart Ranch	R	29º 35'	100º 52'	1,330	#April 1960	Devils River	I. B. & W. C.
Study Butte	S	29º 19'	103º 32'	2,550	July 1977	Terlingua Creek	Shirley Willard
Terlingua Creek Station	C	29º 12'	103º 36'	2,215	#Mar. 1952	Terlingua Creek	I. B. & W. C.
Trees Farm	R	28º 38'	100º 25'	720	#Mar. 1959	Eagle Pass – Laredo	I. B. & W. C.
Tuffy Whitehead Ranch	R	29º 37'	101º 07'	1,420	July 1962	Devils River	I. B. & W. C.
United Irrigation District	S	26º 11'	98º 24'	!	#Aug. 1961	Lower Rio Grande Valley	United Irrigation District
Van Dalsem Farm	C	28º 27'	100º 19'	700	# 1959	Eagle Pass – Laredo	I. B. & W. C.
Vinegarone	C	29º 56'	100º 45'	1,780	#May 1966	Devils River	I. B. & W. C.
W.E. Sawyer Ranch	S	30º 28'	100º 47'	2,100	#July 1966	Devils River	
Walker Ranch	C	29º 49'	101º 13'	1,530	#Aug. 1969	Devils River	I. B. & W. C.
Wardlaw Standart Ranch	S	29º 18'	100º 38'	1,070	April 1977	Pinto Creek	Hadly Wardlaw
Zapata Water Plant	S	26º 54'	99º 16'	380	#May 1953	Laredo – Falcon Dam	I. B. & W. C.
Zuberbueler Ranch	S	29º 41'	101º 14'	1,460	#Feb. 1975	Foster Ranch – Amistad Dam	J. U. Zuberbueler

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	LATITUDE	LONGITUDE	ELEV. METRES	RECORD BEGAN	WATERSHED SUBDIVISION	OBSERVER
Agualeguas, Nuevo Leon	S	26º 19'	99º 33'	184	# 1979	Rio Alamo	C. N. A.
Amistad Reservoir near Tlaloc, Coahuila	C	29º 26'	101º 07'	366	# 1970	Foster Ranch – Amistad Dam	I. B. & W. C.
Anahuac, Nuevo Leon	S	27º 15'	100º 08'	200	#June 1933	Rio Salado	C. N. A.
Bajo Rio San Juan, Tamps.							
No. 3-47	S	25º 58'	98º 07'	!	# 1964	Lower Rio Grande Valley	C. N. A.
No. 3-48A	S	25º 52'	98º 05'	28	# 1985	Lower Rio Grande Valley	C. N. A.
No. 3-58	S	25º 50'	98º 11'	!	# 1964	Lower Rio Grande Valley	C. N. A.
No. 3-60	S	25º 46'	98º 10'	!	# 1964	Lower Rio Grande Valley	C. N. A.
No. 3-63	S	25º 41'	98º 06'	!	# 1964	Lower Rio Grande Valley	C. N. A.
Balleza, Chihuahua	S	26º 57'	106º 21'	1,790	#May 1903	Rio Conchos	Meteor. Service of Chihuahua
Cabezones, Nuevo Leon	S	24º 59'	99º 45'	!	# 1962	Adjacent to Rio San Juan	C. N. A.
Camargo, Chihuahua	S	27º 42'	105º 10'	1,204	#May 1903	Rio Conchos	Meteor. Service of Chihuahua
Camargo, Tamaulipas	S	26º 19'	98º 50'	68	# 1921	Rio San Juan	C. N. A.
Carbonera, Nuevo Leon	S	24º 49'	100º 47'	!	# 1958	Rio San Juan	C. N. A.
Casillas, Nuevo Leon	S	25º 12'	100º 12'	1,237	# 1958	Rio San Juan	C. N. A.
Cd. Acuna, Coahuila	S	29º 20'	100º 53'	274	1951	Amistad Dam – Eagle Pass	I. B. & W. C.
Cd. Juarez, Chihuahua	S	31º 45'	106º 27'	1,127	#Feb. 1903	El Paso – Fort Quitman	I. B. & W. C.
Cd. Mier, Tamaulipas	S	26º 26'	99º 09'	80	#Oct. 1955	Rio Alamo	I. B. & W. C.
Cerralvo, Nuevo Leon	R	26º 05'	99º 37'	345	#Nov. 1938	Rio San Juan	S. A. R. H.
Cerritos, Nuevo Leon	S	25º 31'	100º 12'	!	# 1958	Rio San Juan	C. N. A.
Cerro Prieto, Nuevo Leon	S	25º 56'	99º 23'	270	#May 1959	Rio San Juan	C. N. A.
Cienega de Flores, Nuevo Leon	R	25º 57'	100º 10'	540	#April 1938	Rio San Juan	S. A. R. H.
Cienega del Toro, Nuevo Leon	S	25º 05'	100º 20'	2,137	# 1958	Rio San Juan	C. N. A.
Colombia, Nuevo Leon	S	27º 42'	99º 45'	!	#Sept. 1976	Eagle Pass – Laredo	C. N. A.
Comales, Tamaulipas	R	26º 11'	98º 55'	80	# 1940	Rio San Juan	C. N. A.
Coyame, Chihuahua	S	29º 28'	105º 06'	!	#Nov. 1961	Rio Conchos	Meteor. Service of Chihuahua
Delicias, Chihuahua	S	28º 11'	105º 28'	1,130	#Aug. 1933	Rio Conchos	C. N. A.
Ejido Marin, Nuevo Leon	S	25º 50'	100º 00'	!	#Mar. 1979	Rio San Juan	C. N. A.
El Brasil, Nuevo Leon	S	25º 53'	98º 59'	!	#July 1979	Rio San Juan	C. N. A.
El Cuchillo, Nuevo Leon	S	25º 43'	99º 16'	180	#June 1938	Rio San Juan	C. N. A.
El Realito, Nuevo Leon	S	25º 18'	99º 21'	!	# 1971	Rio San Juan	C. N. A.
El Sitio, Chihuahua	S	27º 31'	106º 16'	!	July 1955	Rio Conchos	Meteor. Service of Chihuahua
Espinazo, Nuevo Leon	S	26º 15'	101º 05'	!	# 1980	Rio Salado	C. N. A.
Estacion Rosario, Durango	S	26º 30'	105º 38'	!	#July 1962	Rio Conchos	C. N. A.
Galeana, Nuevo Leon	S	24º 50'	100º 04'	1,656	#Oct. 1904	Adjacent to Rio San Juan	C. N. A.
Garza Ayala, Nuevo Leon	S	26º 29'	100º 03'	!	# 1968	Rio San Juan	C. N. A.
General Bravo, Nuevo Leon	S	25º 48'	99º 11'	180	#Sept. 1906	Rio San Juan	C. N. A.
General Trevino, Nuevo Leon	S	26º 13'	99º 28'	!	#Oct. 1976	Rio Alamo	C. N. A.
Hacienda Mamulique, Nuevo Leon	S	26º 07'	100º 14'	!	#Sept. 1973	Rio San Juan	C. N. A.
Hidalgo del Parral, Chihuahua	S	26º 56'	105º 39'	1,750	#Mar. 1903	Rio Conchos	Meteor. Service of Chihuahua
Higueras, Nuevo Leon	S	25º 58'	100º 01'	500	#Sept. 1906	Rio San Juan	Meteor. Service of Mexico
Icamole, Nuevo Leon	S	25º 55'	100º 43'	1,494	# 1958	Rio San Juan	C. N. A.
Iturbide, Nuevo Leon	S	24º 44'	99º 54'	!	# 1941	Adjacent to Rio San Juan	C. N. A.
Jarita, Nuevo Leon	C	27º 26'	99º 48'	207	#Mar. 1961	Laredo – Falcon Dam	C. N. A.
Jimenez, Chihuahua	S	27º 08'	104º 56'	1,377	# 1951	Rio Conchos	Meteor. Service of Chihuahua
Jimenez, Coahuila	S	29º 04'	100º 40'	248	# 1951	Amistad Dam – Eagle Pass	I. B. & W. C.
La Amistad, Coahuila	S	29º 27'	101º 05'	316	#Feb. 1977	Amistad Dam – Eagle Pass	I. B. & W. C.
La Arena, Nuevo Leon	S	25º 46'	100º 01'	!	# 1968	Rio San Juan	C. N. A.
La Boquilla, Chihuahua	S	27º 32'	105º 25'	1,320	#June 1910	Rio Conchos	C. N. A.
La Chuparrosa, Coahuila	R	29º 30'	101º 15'	350	# 1970	Foster Ranch – Amistad Dam	I. B. & W. C.
La Cruz, Nuevo Leon	S	25º 28'	100º 26'	1,500	# 1958	Rio San Juan	C. N. A.
La Escondida, Nuevo Leon	S	26º 16'	99º 46'	300	#Feb. 1979	Rio San Juan	C. N. A.
La Huasteca, Nuevo Leon	S	25º 32'	100º 30'	!	# 1979	Rio San Juan	C. N. A.
La Pomona, Nuevo Leon	S	24º 59'	99º 12'	!	#Mar. 1979	Rio San Juan	C. N. A.
La Popa, Nuevo Leon	S	26º 10'	100º 50'	984	# 1958	Rio San Juan	C. N. A.
La Trasquila, Chihuahua	S	29º 08'	107º 08'	!	# 1962	Adjacent to Rio Conchos	C. N. A.
Lag. de Salinillas, Nuevo Leon	S	27º 23'	100º 26'	230	# 1940	Rio Salado	C. N. A.
Laguna de Sanchez, Nuevo Leon	R	25º 21'	100º 16'	1,600	#April 1941	Rio Salado	C. N. A.

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	LATITUDE	LONGITUDE	ELEV. METRES	RECORD BEGAN	WATERSHED SUBDIVISION	OBSERVER
Lampazos, Nuevo Leon	S	27° 02'	100° 30'	341	#May 1903	Rio Salado	Meteor. Service of Mexico
Las Burras, Chihuahua	S	29° 31'	105° 25'	1,096	#July 1949	Rio Conchos	C. N. A.
Las Enramadas, Nuevo Leon	S	25° 48'	99° 16'	222	#Sept. 1926	Rio San Juan	C. N. A.
Las Virgenes, Chihuahua	S	28° 09'	105° 38'	1,220	# 1943	Rio Conchos	C. N. A.
Linares, Nuevo Leon	R	24° 52'	99° 34'	360	# 1900	Adjacent to Rio San Juan	C. N. A.
Los Ramones, Nuevo Leon	R	25° 42'	99° 38'	80	#Sept. 1939	Rio San Juan	S. A. R. H.
Maclovio Herrera, Chihuahua	S	29° 04'	105° 09'	982	# 1924	Rio Conchos	Meteor. Service of Chihuahua
Madero (Los Aldamas), Nuevo Leon	S	26° 02'	99° 12'	!	#May 1970	Rio San Juan	C. N. A.
Manuel Benavides, Chihuahua	S	29° 06'	103° 54'	!	#Oct. 1961	Above Rio Conchos - Johnson Ranch	Meteor. Service of Chihuahua
Meoqui, Chihuahua	S	28° 16'	105° 28'	1,155	#Nov. 1926	Rio Conchos	Meteor. Service of Chihuahua
Miguel Aleman, Tamaulipas	S	26° 24'	99° 02'	56	# 1951	Falcon Dam - Rio Grande City	C. N. A.
Mimbres, Nuevo Leon	S	24° 58'	100° 16'	1,750	# 1958	Rio San Juan	C. N. A.
Mina, Nuevo Leon	S	26° 00'	100° 31'	500	# 1958	Rio San Juan	C. N. A.
Montemorelos, Nuevo Leon	S	25° 12'	99° 50'	433	#Mar. 1904	Rio San Juan	C. N. A.
Monterrey, Nuevo Leon	S	25° 40'	100° 18'	530	# 1896	Rio San Juan	C. N. A.
Nueva Cd. Guerrero, Tamaulipas	S	26° 35'	99° 15'	106	#May 1954	Laredo - Falcon Dam	I. B. & W. C.
Nuevo Laredo, Tamaulipas	S	27° 30'	99° 30'	126	# 1950	Eagle Pass - Laredo	I. B. & W. C.
Ojinaga (M.S. of Mexico), Chihuahua	S	29° 34'	104° 25'	799	#Nov. 1906	Rio Conchos	Meteor. Service of Chihuahua
Ojinaga, Chihuahua	S	29° 34'	104° 25'	788	#April 1954	Rio Conchos	I. B. & W. C.
Ojo Caliente, Chihuahua	S	27° 37'	105° 16'	1,222	# 1942	Rio Conchos	C. N. A.
Ojo de Agua (Sabinas), Nuevo Leon	S	26° 30'	100° 11'	!	# 1980	Rio Salado	C. N. A.
Pajonal, Nuevo Leon	S	25° 29'	100° 23'	1,531	# 1958	Rio San Juan	C. N. A.
Posta Zootecnica, Chihuahua	S	28° 41'	106° 04'	1,445	#Mar. 1957	Rio Conchos	Meteor. Service of Chihuahua
Potosi, Nuevo Leon	S	24° 51'	100° 19'	1,908	# 1958	Adjacent to Rio San Juan	C. N. A.
Presa Chihuahua, Chihuahua	S	28° 34'	105° 10'	1,595	Oct. 1961	Rio Conchos	C. N. A.
Presa Luis L. Leon, Chihuahua	S	28° 57'	105° 17'	!	Oct. 1964	Rio Conchos	C. N. A.
Rayones, Nuevo Leon	S	25° 01'	100° 05'	600	#Oct. 1926	Rio San Juan	C. N. A.
Represa Amistad, Coahuila	R	29° 26'	101° 02'	280	#June 1969	Amistad Dam - Eagle Pass	I. B. & W. C.
Reynosa, Tamaulipas	R	26° 06'	98° 19'	40	# 1941	Lower Rio Grande Valley	C. N. A.
Rinconada, Nuevo Leon	S	25° 41'	100° 42'	1,460	#April 1944	Rio San Juan	C. N. A.
Rodrigo Gomez Reservoir, Nuevo Leon	S	25° 25'	100° 07'	445	# 1923	Rio San Juan	C. N. A.
Rusio, Nuevo Leon	S	24° 42'	100° 26'	2,004	#June 1956	Rio San Juan	C. N. A.
Sabinas Hidalgo, Nuevo Leon	S	26° 30'	100° 10'	314	#May 1958	Rio Salado	I. B. & W. C.
San Diego, Nuevo Leon	S	25° 14'	99° 15'	!	#Feb. 1979	Rio San Juan	C. N. A.
San Nicolas, Nuevo Leon	S	25° 45'	100° 17'	!	#Sept. 1978	Rio San Juan	C. N. A.
Santa Catarina, Nuevo Leon	R	25° 40'	100° 28'	880	#Oct. 1937	Rio San Juan	C. N. A.
Tepehuaje, Nuevo Leon	S	25° 30'	99° 46'	!	#June 1979	Rio San Juan	C. N. A.
Topo Chico, Nuevo Leon	R	25° 44'	100° 20'	555	#Aug. 1939	Rio San Juan	S. A. R. H.
Tunel San Fco., Nuevo Leon	S	25° 25'	100° 10'	!	# 1958	Rio San Juan	C. N. A.
Una de Gato, Nuevo Leon	S	25° 58'	99° 41'	320	# 1979	Rio San Juan	C. N. A.
Valle Allende, Chihuahua	S	26° 56'	105° 23'	!	#Mar. 1962	Rio Conchos	Meteor. Service of Chihuahua
Vallecillo, Nuevo Leon	S	26° 40'	99° 59'	274	#June 1958	Rio Salado	C. N. A.
Vaqueria, Nuevo Leon	S	25° 08'	99° 04'	!	#Mar. 1979	Rio San Juan	C. N. A.
Villa Aldama, Chihuahua	S	28° 50'	105° 55'	1,262	#Aug. 1906	Rio Conchos	Meteor. Service of Chihuahua
Villa Allende, Nuevo Leon	S	25° 17'	100° 01'	447	#Nov. 1938	Rio San Juan	C. N. A.
Villa Hidalgo, Coahuila	S	27° 47'	99° 52'	200	# 1951	Eagle Pass - Laredo	I. B. & W. C.
Villaldama, Nuevo Leon	S	26° 30'	100° 25'	469	#April 1979	Rio Salado	C. N. A.
Zaragoza, Coahuila	S	23° 58'	99° 46'	1,370	#Aug. 1977	Eagle Pass - Laredo	C. N. A.

S Standard R Recording ! Not Available # Some months or years missing

EVAPORATION IN THE RIO GRANDE BASIN IN THE UNITED STATES

In Millimetres

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 46 metres, and all brush, tall weeds, and other obstructions within 30 metres of the fenced enclosures. Within the enclosures all vegetation has been eradicated or kept trimmed to within 0.10 metre 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, 1.22 metres in diameter and 0.25 metre deep, made of 22-gage galvanized iron, is set on a wooden platform with the rim of the pan 0.41 metre above the ground. The water level is maintained between 0.05 and 0.08 metre 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, 0.61 metre in diameter and 0.91 metre deep, made of 22-gage galvanized iron, is set in the ground with the rim of the pan 0.08 metre above the ground surface and the top covered with a circular screen of No. 4 (6 millimetre) galvanized hardware cloth. This type of pan, equipped with an automatic feed tank that maintains the water at a level 0.08 metre 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 0.61 metre pan described above, was in operation at Presidio, Johnson Ranch, Long Ranch, and at a site 11.3 kilometres east of Brownsville.

	Presidio		Johnson Ranch		Martin King Ranch		Long Ranch	
Month	1991	Average 1950-1991	1991	Average 1950-1991	1991	Average 1956-1991	1991	Average 1971-1991
Jan.	30	86	77	85	82	79	42	58
Feb.	59	118	120	122	137	95	55	71
Mar.	132	188		204	264	159	149	119
April	138	229	93	250	284	194	140	143
May	203	267	245	287	319	215	192	159
June	182	287		295	311	259	191	192
July	136	270		294	393	290	204	214
Aug.	132	248	300	267	369	283	198	200
Sept.	64	205	238	220	303	209	125	152
Oct.	81	162	227	171	306	155	108	111
Nov.	64	111	221	113	209	106	129	73
Dec.	35	81	70	81	72	79	30	54
Total	1,256	2,252		2,389	3,049	2,123	1,563	1,546

	Amistad Dam		Eagle Pass		Falcon Dam		Brownsville	
Month	1991	Average 1963-1991	1991	Average 1964-1991	1991	Average 1956-1991	1991	Average 1958-1991
Jan.	82	95	71	82	91	101		77
Feb.	127	120	108	93	128	131		92
Mar.	237	207	182	145	265	212	139	126
April	235	252	146	181	249	255	139	151
May	290	275	183	191	274	291	178	155
June	301	322	203	245	320	336	121	164
July	310	366	188	275	299	381		186
Aug.	326	339	242	259	363	342		180
Sept.	203	249	157	197	189	247		142
Oct.	179	188	143	154	188	191		125
Nov.	115	126	119	107	115	135		100
Dec.	68	92	96	87	96	99	64	81
Total	2,473	2,631	1,838	2,016	2,577	2,721		1,579

EVAPORATION IN THE RIO GRANDE BASIN IN MEXICO

IN MILLIMETRES

Tabulated below are records of evaporation observed at eight stations operated and maintained by the Mexican Section of the Commission. Seven stations are along the Rio Grande from La Amistad, Coahuila to Cd. Mier, 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 46 metres and of all brush and tall weeds within 30 metres of the fenced enclosures. The Ojinaga station is 9 metres landward of the east Rio Conchos levee with a concrete V-shaped irrigation ditch and road between the levee and the 8 x 8-metre 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 0.08 metre 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, 1.22 metres in diameter and 254 millimetres deep, made of 22-gage galvanized iron, set on a wooden platform with the rim of the pan 406 millimetres above the ground. The water level was maintained between 51 and 76 millimetres 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. 61 published by the Mexican Section of the Commission.

Month	Ojinaga, Chihuahua		La Amistad, Coahuila		Cd. Acuna, Coahuila		Jimenez, Coahuila	
	1991	Average 1954-1991	1991	Average 1977-1991	1991	Average 1951-1991	1991	Average 1951-1991
Jan.	73	86	61	88	63	82	71	93
Feb.	114	122	119	116	114	112	122	120
Mar.	213	207	224	187	210	189	236	186
April	0	253	215	232	199	218	214	208
May	301	312	264	249	240	243	243	234
June	287	327	284	294	242	285	246	279
July	159	318	298	337	230	321	268	314
Aug.	131	271	291	318	261	293	277	289
Sept.	108	212	169	238	146	212	168	212
Oct.	66	161	164	177	140	151	161	153
Nov.	0	101	94	115	84	95	113	101
Dec.	44	81	55	83	44	74	65	82
Total	1,496	2,451	2,238	2,434	1,973	2,275	2,184	2,271

Month	Villa Hidalgo, Coahuila		Nuevo Laredo, Tamaulipas		Nueva Cd. Guerrero, Tamaulipas		Cd. Mier, Tamaulipas	
	1991	Average 1951-1991	1991	Average 1964-1991	1991	Average 1954-1991	1991	Average 1955-1991
Jan.	75	92	67	102	66	84	72	89
Feb.	75	121	96	132	108	107	114	119
Mar.	194	184	185	215	240	183	265	196
April	165	232	177	263	213	217	220	234
May	190	265	211	291	243	252	244	265
June	205	312	245	337	279	289	289	306
July	228	351	279	374	273	327	286	346
Aug.	240	323	291	347	325	305	363	314
Sept.	141	237	141	258	161	219	178	236
Oct.	146	178	170	196	170	165	182	183
Nov.	97	116	93	132	106	115	109	122
Dec.	43	88	56	101	75	84	71	91
Total	1,799	2,499	2,011	2,748	2,259	2,347	2,393	2,501

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 0.41 metres above the ground and 2.74 metres southwest of either a 0.61 or 1.22-metre 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 kilometres 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 Celsius

In The United States

Month	Amistad Dam, Texas				Eagle Pass, Texas				Falcon Dam, Texas			
	Mean 1991	Average 1963-1991	1991 Max.	1991 Min.	Mean 1991	Average 1964-1991	1991 Max.	1991 Min.	Mean 1991	Average 1950-1991	1991 Max.	1991 Min.
Jan.	11	10	26	-6	11	11	21	-1	12	13	31	1
Feb.	15	12	31	1	14	13	31	0	17	15	32	4
Mar.	20	17	37	6	20	18	40	8	22	20	40	7
April	24	22	37	7	23	23	36	9	26	24	39	13
May	28	25	38	12	27	26	39	16	27	27	38	18
June	29	28	39	17	29	28	38	19	29	29	39	19
July	29	29	41	21	29	30	41	20	28	30	40	21
Aug.	31	29	41	21	30	30	40	21	31	30	42	23
Sept.	25	26	38	11	25	27	37	11	25	27	38	12
Oct.	23	21	36	10	23	22	36	6	25	23	37	14
Nov.	15	16	29	-1	15	16	34	-1	16	18	31	2
Dec.	13	11	24	0	13	12	26	-1	15	14	32	3
Yearly	22	21	41	-6	22	21	41	-1	23	23	42	1

In Mexico

Month	Cd. Juarez, Chihuahua				Ojinaga, Chihuahua				La Amistad, Coahuila			
	Mean 1991	Average 1960-1991	1991 Max.	1991 Min.	Mean 1991	Average 1954-1991	1991 Max.	1991 Min.	Mean 1991	Average 1977-1991	1991 Max.	1991 Min.
Jan.	8	8	18	-3	10	10	23	-4	11	10	26	-3
Feb.	11	10	23	-2	13	12	28	-1	13	12	31	-2
Mar.	14	14	28	1	17	16	33	4	17	17	38	4
April	18	18	31	6	20	21	40	5	22	22	37	8
May	22	23	36	11	26	26	38	8	26	26	38	14
June	28	28	41	14	30	30	37	14	29	29	39	18
July	29	28	38	17	30	30	38	17	30	31	41	14
Aug.	27	27	37	15	29	29	33	17	31	31	41	22
Sept.	23	24	34	12	26	26	34	8	27	28	38	11
Oct.	19	19	30	4	22	21	32	4	22	22	36	4
Nov.	12	12	26	0	16	14	30	2	17	16	29	-2
Dec.	9	8	23	-6	11	10	19	-7	13	12	26	-2
Yearly	18	18	41	-6	21	20	40	-7	22	21	41	-3

Month	Cd. Acuna, Coahuila				Jimenez, Coahuila				Villa Hidalgo, Coahuila			
	Mean 1991	Average 1951-1991	1991 Max.	1991 Min.	Mean 1991	Average 1951-1991	1991 Max.	1991 Min.	Mean 1991	Average 1951-1991	1991 Max.	1991 Min.
Jan.	10	9	23	-1	13	11	29	0	12	12	32	0
Feb.	13	12	28	2	14	14	33	3	15	14	30	0
Mar.	17	17	30	1	17	17	38	5	19	19	32	1
April	21	22	37	7	22	22	37	7	23	23	42	7
May	25	25	34	14	25	25	37	12	26	26	43	13
June	28	29	39	17	28	29	42	15	29	29	42	21
July	30	30	41	19	30	30	39	18	30	30	42	21
Aug.	30	30	38	19	30	30	40	21	30	30	43	21
Sept.	26	27	38	12	26	27	38	16	27	27	40	16
Oct.	21	22	34	7	21	22	35	5	22	23	40	6
Nov.	15	15	29	-2	17	16	30	2	17	17	31	4
Dec.	12	10	26	-2	13	12	30	10	13	13	37	-3
Yearly	21	21	41	-2	21	21	42	0	22	22	43	-3

TEMPERATURE, HUMIDITY, AND WIND

Temperature - Degrees in Celsius

In Mexico

Month	Nuevo Laredo, Tamaulipas (13-20)				Nuevo Cd. Guerrero, Tamaulipas				Cd. Mier, Tamaulipas			
	Mean 1991	Average 1964-1991	1991		Mean 1991	Average 1958-1991	1991		Mean 1991	Average 1955-1991	1991	
			Max.	Min.			Max.	Min.			Max.	Min.
Jan.	15	13	30	3	14	13	28	3	15	13	33	4
Feb.	17	16	36	3	17	16	32	4	17	15	33	2
Mar.	21	21	40	10	20	20	39	8	21	20	42	8
April	25	25	36	12	25	24	38	13	25	24	41	14
May	28	28	39	18	28	27	38	19	28	27	40	20
June	31	30	39	21	30	30	39	20	31	30	41	22
July	32	31	42	23	31	30	41	21	32	31	41	23
Aug.	32	31	40	24	31	30	41	22	32	31	43	24
Sept.	29	29	39	14	28	28	38	13	29	28	40	12
Oct.	24	24	38	10	24	24	37	15	24	24	37	14
Nov.	19	19	29	4	20	19	31	5	19	19	33	2
Dec.	15	16	27	2	17	15	31	5	16	15	34	0
Yearly	24	24	42	2	24	23	41	3	24	23	43	0

TEMPERATURE, HUMIDITY AND WIND

Mean Wind Speed - Kilometres Per Hour

In the United States

Month	Martin King Ranch, Texas		Amistad Dam, Texas		Eagle Pass, Texas		Falcon Dam, Texas	
	1991	Average 1956–1991	1991	Average 1963–1991	1991	Average 1963–1991	1991	Average 1950–1991
Jan.	5.3	6.1	4.3	4.8	5.0	4.5	4.0	5.6
Feb.	6.9	7.3	4.5	5.6	5.3	5.8	4.0	6.5
Mar.	9.3	9.5	6.0	6.6	7.1	6.3	5.8	7.3
April	8.9	9.8	4.7	6.7	5.8	6.5	5.5	8.0
May	10.9	10.6	5.1	6.7	6.6	6.3	5.6	8.2
June	11.1	11.5	4.8	7.0	7.1	6.3	6.3	8.5
July	9.5	10.7	5.0	6.6	6.1	6.3	4.8	8.8
Aug.	8.0	9.9	4.7	5.9	5.5	5.7	5.6	7.7
Sept.	7.9	8.1	4.5	5.4	5.1	5.0	4.0	5.9
Oct.	6.4	7.5	3.4	5.0	4.7	4.2	3.2	5.2
Nov.	7.2	6.4	4.3	4.7	6.1	4.1	4.0	5.5
Dec.	5.3	5.7	4.2	4.7	4.7	4.0	3.5	5.1
Yearly	8.1	8.6	4.6	5.8	5.8	5.4	4.7	6.9

Mean Relative Humidity - Percent

In the United States

Month	Amistad Dam, Texas		Eagle Pass, Texas		Falcon Dam, Texas	
	1991	Average 1963–1991	1991	Average 1964–1991	1991	Average 1950–1991
Jan.	71.8	62.3	67.6	61.0	73.9	67.1
Feb.	53.5	59.4	53.0	60.0	63.8	64.7
Mar.	38.7	54.3	33.8	55.8	52.6	62.2
April	58.1	57.5	57.2	58.3	65.1	62.6
May	61.5	64.2	55.8	64.3	70.1	66.3
June	67.2	63.1	57.1	63.0	66.8	64.9
July	58.6	59.8	55.7	59.3	66.8	61.9
Aug.	43.8	59.6	50.0	60.6	59.1	62.4
Sept.	62.9	64.5	73.2	66.5	74.0	66.8
Oct.	54.4	63.8	56.4	66.5	63.8	66.4
Nov.	54.0	62.4	52.9	66.2	64.1	66.8
Dec.	69.0	61.0	74.8	66.2	79.4	67.3
Yearly	57.8	61.0	57.3	62.3	66.6	65.0

DRAINAGE BASIN AND IRRIGATED AREAS
Along the Rio Grande and Tributaries - 1991

The total area within the outer rim of the Rio Grande basin is about 868,945 square kilometres, 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 456,701 square kilometres of productive watershed which is listed in the tabulation below.

The irrigated areas shown below are listed in accordance with the location of their diversion 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 1991 are shown, except that in the reaches below Falcon Dam, the figures shown represent acreages which were subject to irrigation in 1991 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 1991. The irrigated area data tabulated are the best data that could be obtained.

DESIGNATION OF AREAS AND GAGING STATIONS	Drainage Basin Square Kilometres			Irrigated Areas -- Hectares		
	United States	Mexico	Total	United States	Mexico	Total
Above Elephant Butte Dam	67,141	0	67,141	0	0	0
Elephant Butte Dam to Caballo Dam	3,354	0	3,354	0	0	0
Above Caballo Dam	70,495	0	70,495	0	0	0
Caballo Dam to American Dam	5,317	0	5,317	34,287	0	34,287
Above American Dam	75,812	0	75,812	34,287	0	34,287
American Dam to Acala Station	1,740	1,409	3,149	19,101	5,336	24,437
Above Acala Gaging Station	77,552	1,409	78,961	53,388	5,336	58,724
Acala Station to Fort Quitman Station	1,717	2,056	3,773	6,280	0	6,280
Above Fort Quitman Gaging Station	79,269	3,465	82,734	59,668	5,336	65,004
Fort Quitman Station to Above Presidio Station	4,263	3,652	7,915	a) 61	a) 76	137
Above Presidio Station above Rio Conchos	83,532	7,117	90,649	59,729	5,412	65,141
Rio San Pedro above Francisco I. Madero Dam	0	10,778	10,778	0	4,905	4,905
Rio Conchos above Boquilla Dam	0	10,282	10,282	0	11,385	11,385
Boquilla Dam to Luis L. Leon Dam	0	38,490	38,490	0	88,710	88,710
Luis L. Leon Dam to mouth of river	0	8,837	8,837	0	21,195	21,195
Rio Conchos - Total	0	68,387	68,387	0	126,195	126,195
Alamito Creek above Gaging Station	3,895	0	3,895	0	0	0
Presidio Station Above Rio Conchos to Presidio Station below Rio Conchos - excluding above tributaries	881	235	1,116	888	99	987
Presidio Station above Rio Conchos to Presidio Station below Rio Conchos - Total	4,776	68,622	73,398	888	126,294	127,182
Above Presidio Station below Rio Conchos	88,308	75,739	164,047	60,617	131,706	192,323
Terlingua Creek above Gaging Station	2,771	0	2,771	0	0	0
Presidio Station below Rio Conchos to Johnson Ranch Station - excluding Terlingua Creek	2,831	5,848	8,679	348	622	970
Presidio Station below Rio Conchos to Johnson Ranch Station - Total	5,602	5,848	11,450	348	622	970
Above Johnson Ranch Gaging Station	93,910	81,587	175,497	60,965	132,328	193,293
Johnson Ranch Station to Foster Ranch Station	16,607	17,016	33,623	22	0	22
Above Foster Ranch Gaging Station	110,517	98,603	209,120	60,987	132,328	193,315
Foster Ranch Station to Langtry Station	471	1,308	1,779	0	0	0
Above Langtry Gaging Station (Discontinued)	110,988	99,911	210,899	60,987	132,328	193,315
Pecos River above Girvin(In the State of Texas)	76,566	0	76,566	2,250	0	2,250
Pecos River, Girvin to Station near Langtry	14,548	0	14,548	0	0	0
Station near Langtry to Station at Mouth (Discontinued)	334	0	334	0	0	0
Pecos River - Total	91,448	0	91,448	2,250	0	2,250
Devils River above Pafford Crossing	10,259	0	10,259	0	0	0
Pafford Crossing to Station at Mouth (Discontinued)	891	0	891	0	0	0
Devils River - Total	11,150	0	11,150	0	0	0
Langtry Station to Amistad Dam - excluding above tributaries	562	4,856	5,418	0	0	0
Langtry Station to Amistad Dam - Total	103,160	4,856	108,016	2,250	0	2,250
Above Amistad Dam	214,148	104,767	318,915	63,237	132,328	195,565
Amistad Dam to Below Amistad Dam Gaging Station	13	10	23	0	0	0
Above the Below Amistad Dam Gaging Station	214,161	104,777	318,938	63,237	132,328	195,565
Below Amistad Dam Station to Del Rio Station	155	259	414	106	0	106
Above Del Rio Gaging Station	214,316	105,036	319,352	63,343	132,328	195,671
Arroyo Las Vacas above Gaging Station	0	906	906	0	146	146
San Felipe Creek above Gaging Station	119	0	119	660	0	660

DRAINAGE BASIN AND IRRIGATED AREAS
Along the Rio Grande and Tributaries - 1991

DESIGNATION OF AREAS AND GAGING STATIONS	Drainage Basin Square Kilometres			Irrigated Areas - Hectares		
	United States	Mexico	Total	United States	Mexico	Total
Pinto Creek Above Gaging Station	645	0	645	101	0	101
Rio San Diego above Gaging Station	0	2,209	2,209	0	3,102	3,102
Gaging Station to mouth of river	0	16	16	0	88	88
Rio San Diego - Total	0	2,225	2,225	0	3,190	3,190
Del Rio Station to Jimenez Station - excluding above tributaries	1,733	285	2,018	b) 16,015	1,540	17,555
Del Rio Station to Jimenez Station - Total	2,497	3,416	5,913	16,776	4,876	21,652
Above the Jimenez Gaging Station	216,813	108,452	325,265	80,119	137,204	217,323
Rio San Rodrigo above Gaging Station	0	2,717	2,717	0	0	0
Rio San Rodrigo - Total	0	2,717	2,717	0	0	0
Jimenez Station to Maverick Power Plant - excluding Rio San Rodrigo	743	295	1,038	573	864	1,437
Jimenez Station to Maverick Power Plant - Total	743	3,012	3,755	573	864	1,437
Above Maverick Power Plant	217,556	111,464	329,020	80,692	138,068	218,760
Maverick Power Plant to Piedras Negras Station	632	83	715	65	0	65
Above Piedras Negras Gaging Station	218,188	111,547	329,735	80,757	138,068	218,825
Rio Escondido above Gaging Station	0	3,779	3,779	0	80	80
Rio Escondido - Total	0	3,810	3,810	0	80	80
Piedras Negras Station to El Indio Station - excluding Rio Escondido	614	533	1,147	130	1,952	2,082
Piedras Negras Station to El Indio Station - Total	614	4,343	4,957	130	2,032	2,162
Above El Indio Gaging Station	218,802	115,890	334,692	80,887	140,100	220,987
El Indio Gaging Station to Villa Hidalgo Station (Discontinued)	1,629	4,360	5,989	427	1,962	2,389
Above Villa Hidalgo Gaging Station	220,431	120,250	340,681	81,314	142,062	223,376
Villa Hidalgo Station to Laredo Station	1,572	1,121	2,693	1,351	3,239	4,590
Above Laredo Gaging Station	222,003	121,371	343,374	82,665	145,301	227,966
Rio Salado above Venustiano Carranza Dam	0	41,002	41,002	0	1,325	1,325
Rio Salado above Las Tortillas Gaging Station	0	59,971	59,971	0	23,447	23,447
Rio Salado above River Road Crossing	0	60,406	60,406	0	24,772	24,772
Laredo Station to Falcon Dam - excluding Rio Salado	5,289	3,437	8,726	c) 2,204	844	3,048
Laredo Station to Falcon Dam - Total	5,289	63,843	69,132	2,204	25,616	27,820
Amistad Dam to Falcon Dam - excluding above tributaries	12,380	10,383	22,763	20,871	10,401	31,272
Above Falcon Dam	227,292	185,214	412,506	84,869	170,917	255,786
Rio Alamo above Gaging Station	0	4,339	4,339	0	3,100	3,100
Rio San Juan above Marte Gomez Dam	0	33,010	33,010	0	1,212	1,212
Rio San Juan - Marte Gomez Dam to Camargo Gaging Station	0	505	505	0	75,949	75,949
Rio San Juan - Total	0	33,538	33,538	0	77,161	77,161
Falcon Dam to Rio Grande City Station - excluding above tributaries	575	637	1,212	1,799	1,821	3,620
Falcon Dam to Rio Grande City Station - Total	575	38,514	39,089	1,799	82,082	83,881
Above Rio Grande City Gaging Station	227,867	223,728	451,595	86,668	252,999	339,667
Rio Grande City Station to Anzalduas Dam	2,466	2,067	4,533	74,292	8,997	83,289
Anzalduas Canal				0	190,300	190,300
Above Anzalduas Dam	230,333	225,795	456,128	160,960	452,296	613,256
Anzalduas Dam to Progreso Station(Discontinued)	34	423	457	48,258	666	48,924
Above Progreso Gaging Station	230,367	226,218	456,585	209,218	452,962	662,180
Progreso Station to San Benito Station	18	23	41	128,457	1,660	130,117
Above San Benito Gaging Station	230,385	226,241	456,626	337,675	454,622	792,297
San Benito Station to Brownsville Station	36	39	75	33,622	709	34,331
Falcon Dam to Brownsville Station - excluding Rio Alamo and Rio San Juan	3,129	3,188	6,317	286,428	204,153	490,581
Above Brownsville Gaging Station	230,421	226,280	456,701	371,297	455,331	826,628
Brownsville Station to Gulf of Mexico				2,293	0	2,293
Falcon Dam to Gulf of Mexico - excluding Rio Alamo and Rio San Juan				288,721	204,153	492,874
Amistad Dam to Gulf of Mexico excluding above tributaries				309,592	214,554	524,146
Above Gulf of Mexico				373,590	455,331	828,921

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 15,440 hectares irrigated from the Maverick Canal below Mile 13 gaging station.
c) Includes 45 hectares 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 1991 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 CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	59.9	76.7	71.2	69.4	58.9	63.2	70.1	411	286	1,170	73.0	55.4
2	65.3	77.0	72.4	70.3	64.3	67.6	70.7	251	299	1,030	73.8	51.2
3	70.7	77.4	70.9	80.1	70.5	64.0	56.9	147	308	971	60.6	52.0
4	68.4	76.5	74.8	119	79.6	68.8	63.7	74.8	311	935	50.3	49.6
5	68.9	76.1	80.0	134	74.6	97.5	65.6	54.4	302	729	49.7	52.8
6	75.3	75.0	87.8	124	60.5	114	60.8	96.4	311	561	46.5	51.3
7	72.2	77.8	87.5	128	52.3	124	59.2	108	314	438	59.2	52.5
8	70.1	71.3	87.8	150	63.1	92.8	56.6	136	325	374	58.5	55.4
9	71.2	76.0	90.6	107	71.4	78.8	52.1	129	319	332	47.9	51.8
10	73.7	82.3	85.7	93.0	75.4	114	61.1	206	327	319	59.1	54.2
11	72.7	80.8	83.0	96.6	85.2	99.2	57.1	226	435	287	64.2	63.6
12	70.7	80.6	82.2	93.6	117	133	68.7	255	393	261	70.8	66.4
13	68.8	81.3	74.5	94.1	137	125	79.2	257	381	219	73.6	68.1
14	73.1	81.6	71.9	82.3	132	117	97.3	254	656	180	69.9	68.3
15	75.7	75.1	71.1	78.5	92.6	119	117	280	669	131	74.8	65.7
16	79.7	74.0	74.1	76.0	80.3	101	137	298	612	99.0	87.7	65.8
17	86.7	73.4	73.6	73.3	74.5	80.0	156	288	521	89.2	83.0	66.7
18	88.7	74.3	75.8	78.1	75.7	74.9	126	290	500	79.1	84.9	65.3
19	83.8	72.0	73.3	84.9	65.5	63.2	119	282	1,970	82.4	80.3	67.3
20	85.2	71.7	79.6	83.6	68.1	71.9	98.8	333	1,220	79.0	76.8	69.9
21	83.6	75.9	86.0	81.9	63.5	75.0	91.7	282	1,140	80.9	70.4	69.5
22	77.7	72.7	84.9	79.1	64.4	65.5	98.8	291	664	89.0	72.9	73.6
23	78.4	68.3	79.6	68.8	65.9	59.0	105	217	630	94.4	62.2	108
24	76.2	69.1	84.0	72.4	129	52.3	91.8	256	643	91.1	59.7	97.8
25	75.7	73.3	84.5	79.3	157	62.1	106	234	651	99.6	51.0	106
26	75.6	70.7	89.3	80.1	167	62.0	136	238	670	101	51.6	100
27	73.1	68.2	87.2	80.2	88.2	39.2	172	237	746	98.9	52.3	106
28	72.0	68.6	85.3	82.9	74.1	45.4	182	246	872	104	54.3	105
29	79.7		78.7	72.4	62.1	47.9	318	248	1,040	99.6	58.4	99.0
30	76.1		80.7	69.5	54.0	73.6	365	256	1,290	92.4	60.0	92.8
31	73.0		75.6		60.5		425	261		79.2		94.1
Sum	2,321.9	2,097.7	2,483.6	2,682.4	2,584.2	2,450.9	3,764.2	7,142.6	18,805	9,395.8	1,937.4	2,245.1

Current Year 1991 | Period 1977–1991

Month	Extreme Gage Metres		Extreme–Cubic Metres per Second				Average	Volume–Thousands of Cubic Metres			
	High	Low	Day	ϕ High	Day	ϕ Low		Total	Average	Maximum	Minimum
Jan.			18	88.7	1	59.9	74.9	200,612	155,031	325,517	104,028
Feb.			10	82.3	27	68.2	74.9	181,241	148,074	274,407	103,343
Mar.			9	90.6	3	70.9	80.1	214,583	178,171	322,164	115,807
April			8	150	23	68.8	89.4	231,759	201,895	437,055	112,640
May			26	167	7	52.3	83.4	223,275	244,358	379,291	160,977
June			12	133	27	39.2	81.7	211,758	261,063	516,300	136,012
July			31	425	9	52.1	121	325,227	249,387	415,273	107,307
Aug.			1	411	5	54.4	230	617,121	374,502	1,037,318	159,859
Sept.			19	1,970	1	286	627	1,624,752	435,184	1,624,752	114,484
Oct.			1	1,170	20	79.0	303	811,797	458,851	1,172,715	110,732
Nov.			16	87.7	6	46.5	64.6	167,391	196,098	560,631	99,013
Dec.			23	108	4	49.6	72.4	193,977	150,302	321,211	98,905
Yearly				1,970		39.2	159	5,003,493	3,052,916	5,003,493	1,734,955

ϕ Mean daily

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 1991 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 CUBIC METRES PER SECOND 1991 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	74.3	100	58.7	64.3	90.4	122	162	88.5	125	364	182	98.4
2	88.8	55.2	68.7	105	70.4	37.1	142	90.7	228	360	289	69.3
3	116	87.0	73.4	94.0	144	108	159	75.3	198	348	153	18.0
4	95.0	70.0	81.6	98.5	119	116	97.5	69.8	288	420	119	48.5
5	116	94.1	88.7	189	128	80.8	116	73.9	295	389	268	76.5
6	119	51.7	74.6	139	86.6	100	100	153	282	392	242	47.0
7	94.1	62.9	83.3	105	41.8	207	111	116	260	380	213	80.6
8	88.2	74.7	47.6	100	161	213	92.0	126	289	471	42.3	70.3
9	110	92.8	44.9	237	72.7	144	92.6	88.7	232	587	51.2	69.3
10	71.1	92.5	57.5	112	99.0	169	79.6	94.5	258	424	89.2	65.9
11	87.9	53.2	43.0	92.8	105	84.4	86.5	94.4	312	565	144	30.2
12	99.3	62.3	93.0	119	130	153	77.8	85.3	182	528	48.4	64.5
13	56.1	57.6	91.6	150	311	56.4	90.8	60.3	306	547	66.5	90.0
14	118	94.8	77.5	169	291	105	119	78.6	219	427	81.3	110
15	73.7	53.1	63.2	94.9	208	102	101	77.2	322	389	47.4	117
16	82.9	51.6	82.2	89.3	277	119	73.0	80.8	281	386	83.5	83.3
17	112	58.2	46.2	87.3	146	220	88.4	97.1	320	227	81.6	100
18	125	74.2	53.2	118	112	185	79.0	96.7	397	290	11.8	77.0
19	53.1	113	52.2	102	167	116	47.5	90.8	436	276	79.4	62.7
20	151	40.8	61.6	92.6	132	96.3	119	83.6	354	287	95.4	66.4
21	134	11.3	79.2	123	63.6	120	112	74.0	530	179	21.2	177
22	53.3	48.9	85.6	115	86.7	96.4	72.7	58.9	559	293	76.3	192
23	166	57.7	97.7	82.0	128	114	74.3	77.2	486	208	56.0	105
24	16.5	56.4	102	112	235	113	72.0	91.2	601	142	30.5	27.1
25	103	107	101	97.7	167	77.0	65.4	113	333	206	72.8	71.1
26	95.2	69.4	98.2	109	142	75.8	99.2	93.5	387	275	42.2	156
27	95.1	56.9	117	96.3	120	57.3	107	45.9	438	270	36.2	8.90
28	104	47.3	98.9	114	139	136	89.5	85.9	406	245	24.7	22.7
29	115		102	73.9	95.3	134	89.8	97.0	394	334	77.7	49.9
30	77.8		63.1	78.6	56.0	276	88.1	93.0	359	219	79.5	93.1
31	70.7		75.1		80.7		96.8	74.2		270		42.5
Sum	2,962.1	1,894.6	2,362.5	3,360.2	4,205.2	3,733.5	3,000.5	2,725.0	10,077	10,698	2,905.1	2,390.20

Current Year 1991 | Period 1968–1991

Month	Extreme Gage Metres		Extreme–Cubic Metres per Second				Average	Volume–Thousands of Cubic Metres			
	High	Low	Day	ϕ High	Day	ϕ Low		Total	Average	Maximum	Minimum
Jan.			23	166	24	16.5	95.6	255,925	175,855	311,600	62,457
Feb.			19	113	21	11.3	67.7	163,693	208,068	558,832	67,760
Mar.			27	117	11	43.0	76.2	204,120	212,787	531,720	65,453
April			9	237	1	64.3	112	290,321	245,533	705,201	61,564
May			13	311	7	41.8	136	363,329	393,249	948,235	125,635
June			30	276	2	37.1	124	322,574	359,638	950,654	57,491
July			1	162	19	47.5	96.8	259,243	338,469	1,302,974	41,298
Aug.			6	153	27	45.9	87.9	235,440	306,630	1,262,211	79,452
Sept.			24	601	1	125	336	870,653	475,305	1,779,519	128,942
Oct.			9	587	24	142	345	924,307	440,231	1,684,791	69,890
Nov.			2	289	18	11.8	96.8	251,001	215,046	664,758	50,153
Dec.			22	192	27	8.90	77.1	206,513	173,568	376,045	52,879
Yearly				601		8.90	138	4,347,119	3,544,379	7,690,686	1,578,937

ϕ Mean daily

CORRECTIONS TO PREVIOUS WATER BULLETINS

Water Bulletin And Page Number	Heading	Reference	Correction
60– 10	08–3645.00 DIVERSIONS FROM THE RIO GRANDE AMERICAN CANAL AT EL PASO, TEXAS	Period Maximum	Yearly 668,068
60– 13	08–3705.00 RIO GRANDE AT FORT QUITMAN, TEXAS NEAR COLONIA LUIS LEON, CHIHUAHUA	Average Flow in Cubic Metres per Second**	Yearly: Max. 49.8 1942
60– 14	08–3712.00 RIO GRANDE NEAR CANDELARIA, TEXAS AND SAN ANTONIO DEL BRAVO, CHIHUAHUA	Average Flow in Cubic Metres per Second**	Yearly: Max. 37.7 1987
		Volume–Thousands of Cubic Metres	Average / Minimum Jan. 20,582 Feb. 15,149 Mar. 13,789 Apr. 14,932 May 19,529 June 22,065 July 25,728 Aug. 29,255 Sept. 34,865 Oct. 34,501 Nov. 21,279 Dec. 21,922 Yearly 273,596 18,685
60– 26	08–4494.90 MIDDLE FORK SAN PEDRO CREEK NEAR DEL RIO, TEXAS	RECORDS:	Records available: December 1967 through 1990
		EXTREME FLOWS FROM RECORDS:	Maximum volumes: Yearly: 7,118,000 m3 in 1990
		Average Flow in Cubic Metres per Second	Yearly: Max. 0.23 1990
60– 50	08–4575.00 RETURN FLOW TO THE RIO GRANDE FROM THE MAVERICK CANAL AT MAVERICK POWER PLANT NEAR EAGLE PASS, TEXAS	Average Flow in Cubic Metres per Second**	Daily: Max. 48.1 Apr. 28, 1990
60– 64	08–4647.00 RIO GRANDE AT RIO GRANDE CITY, TEXAS NEAR CAMARGO, TAMAULIPAS	Annual Summary, Extreme–Cubic Metres per Second High and Low	Instantaneous
60– 71	08–4736.00 DIVERSIONS FROM THE RIO GRANDE UNITED STATES SIDE, PROGRESO TO SAN BENITO	Volume–Thousands of Cubic Metres	Average / Maximum / Minimum Jan. 50,192 Feb. 28,190 Mar. 35,113 9,551 Apr. 62,493 18,480 May 69,253 June 84,300 July 56,629 Aug. 41,622 Sept. 29,365 68,815 Oct. 31,617 Nov. 25,197 Dec. 25,159 Yearly 539,130

WATER BULLETIN NUMBER 61 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

CORRECTIONS TO PREVIOUS WATER BULLETINS

Water Bulletin And Page Number	Heading	Reference	Correction
60- 81	STORED WATER IN LARGE RESERVORS OF THE RIO GRANDE BASIN	Costilla	COSTILLA (Capacity 19.4)

	1990	Average 1922-1990
Jan.	0.5	5.6
Feb.	1.1	6.1
Mar.	2.0	6.8
April	3.5	8.1
May	6.4	10.3
June	5.4	9.6
July	3.9	6.5
Aug.	1.9	4.3
Sept.	0.6	3.7
Oct.	1.7	4.2
Nov.	2.7	4.7
Dec.	3.5	5.1
Avg.	2.8	6.2
Max.	6.4	18.6
Min.	0.5	0

Water Bulletin And Page Number	Heading	Reference	Correction
60- 82	STORED WATER IN LARGE RESERVORS OF THE RIO GRANDE BASIN	TOTAL IN U.S. RESERVOIRS	TOTAL IN U.S. RESERVOIRS (Capacity 7,408.7)

	1990	Estimated ! Average
Jan.	3,355.6	2,107.7
Feb.	3,394.5	2,139.7
Mar.	3,278.0	2,068.4
April	3,235.8	2,112.4
May	3,193.7	2,408.7
June	2,990.0	2,466.8
July	2,831.1	2,252.3
Aug.	2,732.5	2,083.4
Sept.	2,679.7	2,020.3
Oct.	2,714.8	2,048.3
Nov.	2,808.3	2,073.2
Dec.	2,879.9	2,103.4
Avg.	3,007.8	2,157.0
Max.	3,394.5	
Min.	2,679.7	

Water Bulletin And Page Number	Heading	Reference	Correction
60- 84	STORED WATER IN LARGE RESERVORS OF THE RIO GRANDE BASIN	International Amistad Reservoir	Mean Monthly Storage

	Maximum	Minimum
Jan.	4,971.4	891.3
Feb.	4,952.1	971.6
Mar.	4,954.1	1,062.9
April	4,910.5	1,187.6
May	4,723.6	1,281.1
June	4,696.8	1,127.9
July	4,745.6	1,171.3
Aug.	4,861.4	1,189.0
Sept.	5,078.5	1,275.4
Oct.	5,515.1	1,489.2
Nov.	5,231.7	1,558.1
Dec.	4,970.7	1,591.8

Water Bulletin And Page Number	Heading	Reference	Correction
60- 84	STORED WATER IN LARGE RESERVORS OF THE RIO GRANDE BASIN	International Amistad Reservoir	MOMENTARY MINIMUM Elevation
		Yearly	332.355