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WATER BULLETIN NUMBER 69

**Flow of the Rio Grande
and
Related Data**

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

1999

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-eighth 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 1999.

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 1999 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 kilometers. However, about half of this area yields no runoff to the river, the estimated productive area of the watershed being 456,701 square kilometers. Major reservoirs in the basin have a total storage capacity of approximately 15,228,700 thousand cubic meters, in addition to the International Amistad and Falcon Reservoirs, which have a combined conservation capacity of 7,160,512 thousand cubic meters. In the Rio Grande basin, a total area of 567,703 hectares is irrigated below Elephant Butte Dam on the Rio Grande and above Girvin in Texas 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 meters per year for the period 1934-1952. For the period 1954-1999, this flow has averaged 844,142 thousand cubic meters annually.

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 Natural Resource 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 Natural Resource Conservation 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 City of El Paso; the Maverick County Control and Improvement District No. 1; the Ministry of Agriculture and Hydraulic Resources of Mexico; the National Water Commission of Mexico; the Meteorological Service of Mexico; the Meteorological Service of the State of Chihuahua, Mexico; Federal Power Commission of Mexico; Portable 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 UNITSLENGTH

Millimeters	x	0.03937	=	Inches
Meters	x	3.28084	=	Feet
Kilometers	x	0.62137	=	Miles

AREA

Square Meters	x	10.76391	=	Square Feet
Hectares	x	2.47105	=	Acres
Square Kilometers	x	0.38610	=	Square Miles

VOLUME

1,000 Cubic Meters	x	35.31467	=	Cubic Feet
Cubic Meters	x	0.81071	=	Acre-Feet

WEIGHT

Kilograms	x	2.20462	=	Pounds
Megagrams	x	1.10231	=	Tons (2,000 lbs.)

TEMPERATURE

Degrees Celsius	x	1.8 + 32	=	Degrees Fahrenheit
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GENERAL HYDROLOGIC CONDITIONS FOR 1999

Along and Adjacent to the International Portion of the Rio Grande

During the year 1999, temperatures were about 1.4 degrees Celsius above average on the watershed of the Rio Grande below El Paso, Texas. Evaporation was 120% of average. Precipitation was 58% of average from El Paso to Amistad Dam, 105% of average from Amistad Dam to Falcon Dam, 97% of average from Falcon Dam to Rio Grande City, and 75% 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 below average from the Rio Conchos' confluence to the Gulf of Mexico. In the reach between El Paso and the confluence of the Rio Conchos, the flow was 113% of average, ranging from 97% of average at Above Rio Conchos to 131% at Ft. Quitman; in the reach between the confluence of the Rio Conchos and Amistad Reservoir, where most of the flows normally originate from releases from Luis L. Leon Reservoir (El Granero) on the Rio Conchos, the flow was 34% of average; and in the reach between Amistad Dam and Falcon Reservoir, where flows mostly originate from releases from Amistad Reservoir, the flow was 58% of average. Most of the flows passing the Rio Grande Stations below Falcon Dam originated from releases from Falcon Reservoir, which in 1999 amounted to 1,684,982 thousand cubic meters, or 58% of the average for the forty-six years of operation, 1954-1999. The estimated volume of flow passing to the Gulf of Mexico was 51,262 thousand cubic meters, which is 6% of the average for this forty-six year period.

The total annual flow of all measured tributaries below Fort Quitman was 42% of average. The total flow of these tributaries in the United States was 484,408 thousand cubic meters, or 67% of average. For Mexico, the measured tributary flow, excluding Rio Alamo and Rio San Juan, was 654,198 thousand cubic meters, or 42% of average. The flows of the Rio Alamo and Rio San Juan were 9% and 0.7% of their respective averages.

Return flow to the Rio Grande at Maverick Power Plant near Eagle Pass was 883,223 thousand cubic meters, or 95% of the thirty-two year average. Return flow to the Rio Grande through various drains in the Maverick County Irrigation District, excluding storm inflow, amounted to 28,230 thousand cubic meters, or 25% of the thirty-two year average.

No significant flooding occurred on the Rio Grande in 1999. The highest peak flows recorded on the Rio Grande were, above Falcon Dam, 866 cubic meters per second at Piedras Negras, Coahuila, and Eagle Pass, Texas, and below Falcon Dam, 292 cubic meters per second at Rio Grande City, Texas near Camargo, Tamaulipas.

For all reservoirs in the Rio Grande basin having a capacity greater than 18,500 thousand cubic meters, excepting Amistad and Falcon International Reservoirs, the average amount of water in storage in 1999 was 5,957,300 thousand cubic meters, or 93% of the average 6,416,400 thousand cubic meters. In the United States, stored water in these reservoirs was 147% of average, while in Mexico it was 61% of average.

In International Amistad Reservoir there was a net increase in storage during the year of 7,100 thousand cubic meters. Storage ranged from a high of 1,777,200 thousand cubic meters on February 9 to a low of 1,482,200 thousand cubic meters on May 24 and 25 and averaged 1,655,400 thousand cubic meters during the year, or 50% of the average for the period 1969 through 1999. In International Falcon Reservoir, there was a net decrease in storage during the year of 4,000 thousand cubic meters. The storage ranged from a high of 836,800 thousand cubic meters on October 22, 23 and 24 to a low of 357,000 thousand cubic meters on June 14 and averaged 668,600 thousand cubic meters during the year, or 30% of the average for the period 1954 through 1999.

Diversions from the Rio Grande in the United States were 85% of average. Diversions into the American Canal were 119% of average, into the Maverick Canal, 81% of average and in the United States below Falcon Dam, 80% of the average for the forty-two years, 1958-1999. In Mexico, diversions were 45% of average. Diversions into the Acequia Madre were 115% of average, while diversions through the Anzalduas Canal in Mexico were 41% of the 1952-1999 average.

In 1999, the total reported irrigated area from the Rio Grande and its tributaries below Caballo Dam showed a 10% decrease from the previous year. On the United States side, there was a decrease of about 3.3% above Falcon Dam and decrease of about 0.8% below Falcon Dam, for an overall average decrease of 1.4%. On the Mexican side, there was an increase of about 9% reported above Falcon Dam and a decrease of about 31% below Falcon Dam, for an overall decrease of 19%.

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 meters upstream from the cableway at latitude 33°08'55", longitude 107°12'20", and river kilometer 2,236; 1.6 river kilometers downstream from Elephant Butte Dam, 2.4 river kilometers upstream from Cuchillo Negro River, and 217 river kilometers upstream from the American Dam at El Paso, Texas. The zero of the gage is 1,292.68 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 21 current-meter measurements during the year and a continuous record of gage heights. Records were furnished by the United States Geological Survey. Records available: 1915 through 1999.

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 Meters 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 METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.16	* 7.93	* 48.7	42.8	39.6	* 63.4	61.2	39.1	42.8	* 14.0	0.42	0.18
2	.16	7.99	47.9	36.0	39.6	63.4	* 61.5	39.1	43.0	13.3	.40	.19
3	.16	8.04	46.4	42.5	39.6	63.2	61.5	* 42.8	34.0	13.6	.42	.18
4	.16	8.41	43.6	43.3	* 40.8	63.2	61.2	42.2	22.4	13.4	.42	.18
5	* .16	8.52	53.5	* 43.6	41.6	62.9	59.5	34.6	22.5	31.7	.42	.18
6	.17	8.41	59.8	43.6	41.9	62.9	49.8	22.8	22.6	43.0	.42	.18
7	.17	8.50	55.2	42.8	38.2	62.9	54.4	16.2	* 22.7	44.7	.42	.18
8	.31	3.74	54.7	42.8	41.1	62.6	61.2	22.9	28.9	44.2	.42	.18
9	.42	.99	52.4	41.9	41.3	62.6	42.5	22.7	38.2	43.9	.27	.18
10	.42	1.13	50.7	42.2	41.1	62.3	40.8	22.5	37.9	43.6	.23	.18
11	4.84	11.2	48.4	41.9	41.1	62.0	41.1	22.1	37.9	43.6	.20	.18
12	7.36	19.2	* 47.6	42.2	41.3	62.0	41.1	22.1	37.7	43.0	* .17	.18
13	7.42	19.3	45.9	42.2	26.6	61.5	40.8	22.0	37.4	42.5	.15	.18
14	7.42	19.4	44.7	41.1	41.3	61.2	41.1	21.9	34.6	* 15.5	.14	.18
15	7.39	20.8	43.9	41.1	41.3	* 60.6	40.2	21.7	28.9	.45	.16	.17
16	7.45	* 21.5	43.3	* 41.1	41.3	60.6	54.4	* 21.5	24.3	.42	.20	.17
17	7.48	25.9	40.8	40.5	41.6	60.3	60.9	21.1	* 19.9	.40	.16	.18
18	7.50	31.7	43.0	40.5	* 41.6	60.3	60.9	33.7	20.0	.37	.16	.17
19	7.53	40.5	42.8	25.9	54.1	60.0	* 61.5	40.8	20.2	.24	.16	.17
20	7.56	49.8	42.8	40.5	60.9	60.0	61.5	41.3	17.9	.10	.18	.17
21	7.59	49.3	42.8	40.2	58.1	60.0	61.2	41.3	16.3	.28	.17	.18
22	5.24	49.0	43.0	39.9	54.1	57.5	61.7	41.3	16.5	.37	.18	.17
23	.57	48.7	42.8	39.9	50.7	59.8	53.0	41.1	13.3	.37	.18	.17
24	.57	48.4	42.8	40.2	50.1	58.6	40.2	40.8	17.6	.37	.18	.16
25	.57	51.0	42.8	40.2	44.7	46.4	40.2	40.8	17.7	.37	.19	.16
26	.59	53.8	42.8	40.2	43.6	40.5	39.6	40.8	17.7	.42	.17	.16
27	.59	52.1	42.8	40.2	54.7	40.8	39.6	41.1	17.8	.45	.18	.17
28	5.15	50.4	42.8	39.9	62.3	39.4	39.1	41.3	16.7	.42	.18	.16
29	7.82	42.8	39.9	62.6	49.0	39.4	41.3	15.2	1.10	* .18	.15	
30	7.87	42.8	39.6	62.9	59.8	39.6	41.3	15.3	.42	.18	.15	
31	7.87	42.8	63.2	39.4	42.2	40.2	39.4	42.2	.45			
Sum		725.66		1,218.7		1,749.7		1,026.4		457.00		5.34
		118.67		1,427.1		1,442.9		1,550.1		757.9		7.31

Current Year 1999**Period 1938-1999**

Month	Extreme Gage Meters		Extreme-Cubic Meters per Second		Average	Total	Volume--Thousand Cubic Meters		
	High	Low	Day	Day			Average	Maximum	Minimum
Jan.			130	7.87	11	0.16	3.83	10,253	30,161
Feb.			26	53.8	9	.99	25.9	62,697	52,549
Mar.			6	59.8	17	40.8	46.0	123,301	91,731
April			5	43.6	19	25.9	40.6	105,296	105,891
May			31	63.2	13	26.6	46.5	124,667	117,280
June			1	63.4	28	39.4	58.3	151,174	129,542
July			22	61.7	28	39.1	50.0	133,929	124,112
Aug.			3	42.8	7	16.2	33.1	88,681	93,314
Sept.			2	43.0	23	13.3	25.3	65,483	44,233
Oct.			7	44.7	20	.10	14.7	39,485	20,177
Nov.			1	.42	14	.14	.24	632	16,593
Dec.			2	.19	29	.15	.17	461	22,920
Yearly				63.4		0.10	28.7	906,059	848,503
								2,243,367	226,236

* Discharge measurement made on this day

o 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 kilometer 2,190; 1.3 river kilometers downstream from Caballo Dam, about 5.0 kilometers northeast of Arrey, New Mexico, 8.0 kilometers south of Caballo, New Mexico, and 172 river kilometers upstream from the American Dam at El Paso, Texas. The zero of the gage is 1,262.15 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 91 current-meter 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 1999.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. In addition to the outflow from Caballo Dam listed below, 1,122 TCM of water were diverted in 1999 into Bonita Lateral, a small irrigation canal just below Caballo Dam. Prior to 1998, discharge records were kept at Percha Dam, a low diversion dam about 2.4 kilometers 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 Meters 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 METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.03	13.2	31.9	37.7	33.7	* 51.7	* 72.3	56.2	63.0	34.0	0.11	0.11
2	.03	8.38	* 28.3	38.5	33.5	* 57.0	* 69.3	52.7	58.8	33.2	.11	.11
3	.03	* 8.35	28.3	39.7	36.1	* 58.9	* 68.3	30.3	* 51.4	32.9	.11	.11
4	.03	7.28	28.0	39.8	37.8	* 54.7	* 69.8	6.12	46.9	32.3	.11	.11
5	.03	* 6.00	* 35.2	40.4	* 38.9	* 53.4	* 66.4	2.07	46.8	* 33.6	.11	.11
6	.03	5.98	45.2	* 42.8	37.1	* 54.9	* 58.8	17.6	46.4	35.7	.11	.11
7	.03	6.00	* 49.2	48.3	* 35.3	* 55.0	* 56.2	* 35.2	* 43.2	35.8	.11	.03
8	.03	3.23	49.2	* 49.0	35.4	* 58.1	* 56.6	35.4	* 39.2	* 38.3	.11	.03
9	.03	.11	48.5	44.9	35.6	* 63.8	* 54.7	35.3	* 37.8	40.6	.11	.03
10	.03	.11	* 47.9	* 35.2	36.3	* 66.0	* 52.1	* 37.0	* 37.9	43.9	.11	.03
11	.03	.11	* 49.0	34.5	* 40.4	* 63.6	* 51.2	39.7	37.9	45.2	.11	.03
12	.03	.08	* 51.5	33.8	44.4	61.1	* 49.6	39.5	37.7	41.5	.11	.03
13	.03	.08	* 56.7	38.2	* 45.4	61.1	* 56.1	* 40.5	37.3	* 35.5	.11	.03
14	.03	.06	58.4	* 41.8	* 43.6	61.2	* 63.5	41.3	* 33.7	22.5	.11	.03
15	.03	.06	58.1	41.9	42.1	* 62.0	* 63.9	41.0	* 31.0	.34	.11	.03
16	.03	1.44	* 60.3	* 36.1	42.0	61.9	* 60.8	43.4	* 31.2	.23	.11	.03
17	.03	* 4.05	63.0	31.4	41.7	50.0	* 50.9	* 50.2	* 28.9	.17	.11	.03
18	.03	5.38	* 57.4	31.6	* 45.0	* 36.2	50.9	57.6	* 24.6	.17	.11	.03
19	.03	* 13.2	* 47.8	30.0	46.6	31.5	* 46.6	59.5	* 23.3	.11	.11	.03
20	.03	18.6	42.5	* 32.7	* 46.0	* 26.0	* 41.7	* 57.7	* 23.2	.11	.11	.03
21	.03	19.2	42.5	38.3	46.0	* 24.5	38.0	56.8	* 23.7	.11	.11	.03
22	.03	31.5	* 46.6	* 40.2	46.0	* 15.2	37.8	56.0	* 24.1	.11	.11	.03
23	.03	* 35.7	* 51.5	40.0	46.0	* 30.5	* 40.0	55.8	* 24.1	.11	.11	.03
24	.03	30.8	* 54.3	39.8	45.5	* 34.7	42.1	* 56.7	* 22.7	.11	.11	.03
25	.03	30.7	56.0	39.9	* 46.0	* 40.3	41.9	57.8	* 21.4	.11	.11	.03
26	.03	* 32.4	* 51.7	38.3	47.7	* 50.4	* 44.3	56.3	* 21.2	.11	.11	.03
27	6.49	* 35.5	47.7	* 38.5	* 46.8	52.0	* 57.7	* 53.7	* 22.1	.11	.11	.03
28	* 15.4	35.5	47.9	41.0	* 44.4	55.9	67.1	* 51.2	* 26.8	.11	.11	.03
29	15.3		* 43.3	* 42.5	44.9	* 64.1	63.7	49.9	31.5	.11	.11	.03
30	15.3		* 37.4	* 37.9	47.6	71.0	* 58.2	49.9	33.0	.11	.11	.03
31	15.4			36.5		48.7		56.2	* 57.5	.11	.11	.03
Sum		353.00	1,164.7	1,526.7	1,379.09				507.34		1.41	
	68.67	1,452.2	1,306.5	1,706.7	1,030.8				3.30			

Current Year 1999 Period 1938-1999

Month	Extreme Gage Meters		Extreme-Cubic Meters per Second		Volume-Thousand Cubic Meters				
	High	Low	Day	Day	Average	Total	Average	Maximum	Minimum
Jan.			128	15.4	1.2	0.03	2.22	5,933	5,565
Feb.			123	35.7	114	.06	12.6	30,499	17,950
Mar.			17	63.0	4	28.0	46.8	125,470	113,230
April			8	49.0	19	30.0	38.8	100,630	100,964
May			31	48.7	2	33.5	42.1	112,882	101,880
June			1	72.3	22	15.2	50.9	131,907	136,764
July			19	59.5	5	2.07	55.1	147,459	144,773
Aug.			1	65.0	26	21.2	34.4	119,153	127,988
Sept.			11	45.2	119	.11	16.4	43,834	66,753
Oct.			1	11	11	.11	.11	285	223,812
Nov.			1	11	1	.03	.05	122	101,642
Dec.									180,557
Yearly				72.3	1	0.03	28.8	907,235	837,042
								12,215,231	254,198

* Discharge measurement made on this day

e 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 kilometer 2,021; 8.9 river kilometers upstream from the Paso del Norte Bridge between El Paso, Texas and Cd. Juarez, Chihuahua and 2.7 kilometers upstream from the American Dam at El Paso, Texas. Medium to high flow measurements are made from a cableway located about 60 meters upstream from the bridge. The zero of the gage is 1,134.56 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 25 current-meter measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: 1889 through 1999.

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

EXTREME FLOWS FROM RECORDS: Momentary: Max. 680 CMS 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 CMS on September 3, 1925.

Average Flow in Cubic Meters 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 METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.31	14.9	14.5	18.1	17.2	27.5	28.4	29.6	26.2	13.0	6.46	3.97
2	3.14	* 15.1	15.7	15.4	20.0	27.3	28.7	36.5	30.2	12.7	6.43	4.49
3	3.08	15.0	15.2	15.3	22.1	24.9	28.9	* 51.7	31.3	15.2	6.31	* 3.98
4	3.01	11.7	* 11.5	20.2	* 22.6	24.6	35.7	* 96.5	27.0	17.6	6.05	3.75
5	* 3.04	10.7	10.6	21.9	20.6	27.0	37.6	46.7	26.9	16.0	5.85	3.98
6	3.05	10.3	9.24	* 22.2	17.9	30.6	56.5	39.2	30.9	15.4	5.75	3.86
7	2.98	9.18	11.3	21.7	16.7	34.2	* 49.4	30.9	28.9	13.3	5.71	3.90
8	3.02	8.58	22.5	21.4	16.4	* 35.2	35.1	23.6	* 28.6	* 12.3	5.56	3.85
9	2.90	8.32	27.2	22.8	13.5	33.7	31.3	33.9	24.0	13.5	5.51	3.68
10	2.83	8.27	26.6	23.2	14.3	32.1	30.2	32.2	22.0	14.6	5.46	3.76
11	2.78	7.10	25.0	23.0	13.8	32.9	27.2	28.2	18.9	16.7	5.35	3.71
12	2.74	4.86	22.4	22.7	* 13.4	33.1	27.4	33.7	20.7	19.1	5.25	3.64
13	2.66	4.02	22.1	20.9	14.2	32.0	24.5	28.0	22.6	16.6	4.95	3.56
14	2.55	3.62	23.7	20.3	15.4	34.2	22.8	26.7	22.6	16.7	4.72	3.58
15	2.54	3.37	* 31.3	18.6	14.8	32.3	25.7	24.8	22.3	16.1	4.51	3.33
16	2.48	3.19	32.3	17.5	15.3	* 34.2	28.0	25.7	21.0	24.5	4.42	* 3.31
17	2.36	* 2.93	30.7	17.4	17.3	32.1	36.2	24.2	20.1	17.2	4.55	3.70
18	2.23	2.72	31.7	19.3	17.5	42.9	36.8	23.0	26.0	14.0	4.67	3.43
19	2.21	2.51	33.7	19.6	17.6	43.3	50.4	27.3	25.1	12.5	4.34	3.38
20	2.21	2.58	28.0	19.2	16.6	29.7	40.4	29.4	22.2	11.1	4.22	3.30
21	2.48	2.57	24.1	17.8	17.8	35.9	* 58.7	31.5	21.6	10.3	4.21	3.33
22	* 2.47	5.19	23.0	15.3	17.6	32.4	49.0	32.8	20.8	9.61	4.11	3.28
23	2.41	12.9	23.4	15.4	21.6	33.6	32.4	33.7	* 18.4	8.99	3.88	3.21
24	2.48	12.8	25.0	16.2	25.3	21.9	28.2	34.4	17.7	8.23	3.96	3.83
25	2.55	15.5	26.1	19.4	* 25.4	19.7	27.4	33.2	16.4	* 8.09	4.17	4.45
26	2.67	10.5	26.9	20.2	26.1	18.0	26.7	30.1	16.4	7.90	3.61	4.05
27	2.66	10.7	28.4	21.3	23.7	19.4	26.1	28.0	16.7	7.53	4.01	3.75
28	2.60	10.8	27.9	* 21.0	24.8	26.8	26.4	26.4	16.9	7.26	4.06	3.75
29	2.83		25.4	18.5	23.1	26.0	32.8	29.4	14.8	6.86	3.97	3.56
30	5.17		* 23.8	16.8	20.2	27.0	31.3	30.0	13.8	6.50	4.77	3.40
31	14.3		21.6		24.7		29.3	28.1		6.48		3.22
Sum	229.91		582.6		904.5		1,029.4		395.85		113.99	
	97.74		720.84		587.5		1,049.5		671.0		146.82	

Current Year 1999

Period 1938-1999

Month	Extreme Gage Meters			Extreme-Cubic Meters per Second			Average	Volume-Thousand Cubic Meters		
	High	Low	Day	High	Low	Day		Total	Average	Maximum
Jan.	1,240	0.870	31	14.3	1.19	2.21	3.15	8,445	11,180	150,048
Feb.	1,295	.870	25	15.5	1.19	2.51	8.21	19,864	13,371	122,304
Mar.	1,670	1.100	19	33.7	6	9.24	23.3	62,281	49,299	140,433
April	1,465	1,220	19	24.9	23	14.2	19.4	50,337	52,605	171,563
May	1,505	1,210	26	27.2	9	12.7	19.0	50,760	57,058	439,894
June	1,880	1,290	18	64.8	27	17.2	30.2	78,149	69,545	375,353
July	2,240	1,455	21	101	15	22.0	33.9	90,677	79,056	244,070
Aug.	2,385	1,300	4	200	8	17.3	33.2	88,940	72,360	194,405
Sept.	1,675	1,230	6	34.0	30	13.2	22.4	57,974	49,520	211,481
Oct.	1,570	1,045	16	28.6	30	6.26	12.8	34,201	23,299	163,710
Nov.	1,050	.910	11	6.56	124	3.17	4.89	12,685	12,831	124,457
Dec.	.980	.875	1	5.57	16	2.51	3.68	9,849	12,774	197,341
Yearly	2,385	0.870	200	2.21	17.9	564,162	502,898	1,923,317	70,867	

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

RECORDS: Based on 19 current-meter 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 1999.

REMARKS: This canal diverts water from the Rio Grande at the American Dam at El Paso, Texas, 3.4 river kilometers upstream from the International Dam at Cd. Juarez, Chihuahua. Water from this canal discharges into the American Canal Extension and into the Franklin Canal. The transmitter relays gage height data via GOES satellite.

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

Average Flow in Cubic Meters 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 METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	11.8	* 10.8	12.5	18.0	* 20.0	21.9	22.6	13.1	6.95	3.75
2	0	0	* 14.0	8.74	15.4	19.1	20.9	26.1	25.4	12.7	6.64	4.55
3	0	0	14.7	8.44	17.9	* 17.5	20.9	27.5	25.6	15.0	6.63	* 4.01
4	0	0	11.1	12.6	* 18.4	17.1	25.0	28.4	21.6	18.3	6.40	3.68
5	0	0	10.3	15.1	17.2	19.0	24.8	27.6	20.6	17.2	6.68	4.03
6	0	0	8.70	15.4	14.8	22.1	27.0	27.4	25.8	16.6	6.66	3.85
7	0	0	10.5	14.9	13.3	25.3	27.8	25.0	23.6	14.2	6.44	3.82
8	0	0	21.9	14.5	13.0	26.0	28.7	17.0	* 22.7	* 13.0	* 6.49	3.67
9	0	0	25.6	15.2	10.8	24.6	25.7	25.5	19.8	14.2	6.50	3.40
10	0	0	24.7	15.7	11.6	23.3	25.1	25.0	21.8	15.5	6.28	3.44
11	0	0	23.7	15.3	11.3	23.7	23.8	22.5	19.4	17.2	6.04	3.49
12	0	0	21.3	15.1	11.1	24.2	24.1	25.7	20.2	19.7	5.96	3.43
13	0	0	21.0	14.0	11.7	24.2	22.2	22.0	21.8	17.9	5.78	3.36
14	0	0	21.8	13.5	12.6	24.5	21.1	21.0	22.1	16.9	5.63	3.36
15	0	0	27.0	* 12.1	11.9	24.4	23.2	19.1	21.8	16.2	5.46	3.14
16	0	0	28.1	11.1	12.4	25.7	25.7	19.6	20.6	18.6	5.46	3.04
17	0	0	25.5	10.9	14.1	24.3	26.5	* 18.9	20.1	18.8	5.35	3.50
18	0	1.21	25.3	12.7	14.1	28.9	27.9	17.7	25.5	14.0	5.41	3.29
19	0	2.44	26.1	13.5	14.0	31.2	29.8	20.0	24.0	12.0	4.91	3.27
20	0	2.49	21.4	13.6	12.6	22.8	20.0	22.3	21.1	* 10.7	4.75	3.19
21	0	2.32	17.7	12.0	13.4	24.5	* 27.6	24.0	20.5	9.99	4.72	3.14
22	0	* 4.12	16.8	9.09	12.9	22.8	26.1	24.6	19.6	9.43	4.57	3.17
23	0	* 10.4	16.9	8.71	16.6	22.9	26.1	24.7	* 17.8	9.04	3.53	3.08
24	0	10.0	18.1	9.09	19.8	13.8	24.1	24.8	16.4	8.33	3.91	3.73
25	0	7.86	18.7	11.6	19.6	12.3	22.0	24.3	15.8	8.33	4.41	3.97
26	0	7.48	18.9	12.9	20.3	11.6	20.6	22.6	15.5	8.10	3.45	3.67
27	0	7.59	19.6	14.9	18.3	12.5	20.0	20.8	15.9	7.93	3.86	3.55
28	0	7.60	19.3	13.9	19.1	18.2	19.6	21.6	16.2	7.74	3.88	3.48
29	0		17.0	11.6	17.9	18.3	24.5	21.6	14.4	7.39	3.72	3.34
30	0		15.9	11.8	15.4	19.1	23.7	22.9	13.7	6.91	4.35	3.28
31	0		14.4		16.8	22.4	23.1			6.96		3.21
Sum		63.51		378.77		641.7		713.1		401.95		108.89
	0	587.80		460.8		746.9		611.9		160.82		

Current Year 1999

Period 1939-1999

Month	Extreme Gage Meters			Extreme-Cubic Meters per Second			Average	Total	Average	Maximum	Minimum
	High	Low	Day	High	Day	Low					
Jan.			1	0	1	0	0	0	5,213	51,241	0
Feb.	2.270		123	10.4	11	0	2.27	5,487	9,134	62,253	0
Mar.	2.985	1.820	15	29.5	7	8.17	19.0	50,786	40,924	69,130	0
April	2.405	1.790	27	17.2	23	7.74	12.6	32,726	36,734	87,408	0
May	2.635	1.990	24	21.3	9	10.1	14.9	39,813	35,522	85,163	0
June	3.285	2.060	19	35.9	27	10.8	21.4	55,443	46,560	80,984	0
July	3.210	2.530	6	33.5	27	10.8	24.1	64,532	54,406	87,171	0
Aug.	3.265	2.205	4	34.4	8	12.8	23.0	61,612	52,559	92,064	0
Sept.	2.965	2.180	2	28.7	30	13.4	20.4	52,868	37,149	77,877	0
Oct.	2.655	1.625	16	22.2	30	6.30	13.0	34,728	18,070	59,131	0
Nov.	1.675	.870	1	7.08	23	.65	5.36	13,895	8,585	37,208	0
Dec.	1.490	1.175	1	5.34	16	2.26	3.51	9,408	8,014	55,112	0
Yearly	3.285			35.9		0	13.4	421,298	352,870	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 CO. 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 kilometer 2,017; 2.4 river kilometers upstream from the International Dam, 5.0 river kilometers upstream from the Paso del Norte Bridge between El Paso, Texas and Cd. Juarez, Chihuahua, and 1.0 river kilometer downstream from the American Dam. The zero of the gage is 1,131.51 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 57 current-meter measurements during the year, and a continuous record of gage heights. Computations by shifting control methods. Records available: June 1938 through 1999.

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 CMS on September 14, 1958 with a gage height of 4.42 meters. Min. occasionally no flow.

Average Flow in Cubic Meters 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 METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.91	15.0	* 0.86	* 5.46	* 3.08	* 6.34	6.32	6.44	3.59	0.31	0.15	0.21
2	3.73	15.4	.82	5.63	2.46	5.76	* 6.41	* 7.23	3.60	.29	.15	* .20
3	3.63	15.6	.84	5.92	* 2.11	5.60	6.55	14.1	4.92	.29	.13	.18
4	* 3.52	* 11.7	.80	5.96	2.29	* 5.53	8.76	* 74.3	5.39	.31	.12	.15
5	3.52	11.0	.76	* 5.72	2.20	5.79	13.5	10.1	5.42	.31	.12	.16
6	3.61	11.1	.69	5.27	2.19	5.83	19.8	7.42	5.60	.32	.12	.15
7	3.61	9.70	.66	5.18	* 2.21	* 5.71	17.7	6.74	5.45	* .34	.12	.14
8	3.69	9.05	.70	5.15	2.25	5.66	8.07	6.72	5.45	.34	.12	.14
9	3.65	9.10	1.90	* 5.26	2.18	5.60	* 6.87	* 6.87	* 4.94	* .34	* .12	.13
10	3.69	9.10	1.16	* 5.32	* 2.21	5.56	6.66	6.34	.55	.35	.12	* .16
11	3.67	8.04	1.08	5.28	2.21	* 5.74	6.69	6.28	.49	.36	.13	.17
12	3.68	5.99	.98	* 5.25	2.20	6.00	6.75	6.72	.36	.38	.13	.18
13	3.71	5.11	1.01	5.16	2.26	6.19	6.54	* 6.25	.30	.37	.13	.19
14	* 3.69	4.59	.97	5.36	* 2.24	* 6.24	6.56	6.25	.41	.38	.13	.19
15	3.62	4.32	* 1.62	5.56	2.24	5.87	6.70	6.38	.42	.37	.13	.19
16	3.59	4.07	1.16	* 5.53	2.25	5.98	* 6.62	* 6.43	.37	.38	.14	.19
17	3.51	3.84	* 2.60	5.46	* 2.21	6.13	10.6	6.25	.38	.36	.14	.18
18	3.43	2.65	3.67	5.41	2.24	* 6.43	13.0	6.29	.41	.34	.14	.18
19	3.36	1.151	* 4.89	* 5.33	* 2.17	6.15	22.5	6.36	.39	* .32	* .15	.18
20	3.34	1.07	5.35	5.29	2.19	5.75	* 22.6	6.34	.40	* .27	.15	.17
21	3.29	.95	5.39	5.30	2.18	7.32	28.8	6.40	.43	.24	.15	.16
22	3.26	* .87	* 5.47	5.36	2.15	6.69	* 23.7	6.26	.41	.23	.15	.15
23	3.08	.93	5.41	* 5.44	2.13	7.59	9.97	6.19	* .39	.22	.98	.15
24	2.97	.87	5.35	5.42	* 2.19	5.62	8.69	6.32	.38	.23	.24	.17
25	2.97	5.82	5.34	5.36	2.15	5.74	7.55	6.48	.37	.23	.20	.16
26	* 3.06	1.07	* 5.36	* 5.34	2.21	5.80	* 6.44	6.40	.35	.24	.19	.16
27	3.13	.97	5.50	5.40	2.20	5.85	6.36	6.38	.33	.23	.21	.15
28	3.13	.89	5.58	5.36	* 2.18	* 6.00	6.60	6.44	.34	.20	.21	.14
29	3.38		* 5.58	5.19	2.17	5.88	6.73	6.29	.35	.19	.22	.15
30	5.01		5.50	* 3.43	2.28	6.04	* 6.71	6.27	.32	.17	.22	.15
31	14.1		5.47			5.05	6.57	4.82		.16		.14
Sum		169.95		160.10		180.39		278.06		9.07		5.12
	119.54		92.47		72.27		327.32		52.51		5.41	

Current Year 1999

Period 1939-1999

Month	Extreme Gage Meters			Extreme-Cubic Meters per Second			Volume-Thousand Cubic Meters				
	High	Low	Day	High	Day	Average	Total	Average	Maximum	Minimum	
Jan.	2.090	1.665	131	15.1	124	2.97	3.86	10,328	6,037	98,781	0
Feb.	2.130	1.505	21	16.1	122	.87	6.07	14,684	4,075	60,041	0
Mar.	1.810	1.495	19	5.90	7	.66	2.98	7,989	7,848	79,572	99.8
April	1.860	1.575	29	6.80	30	3.43	5.34	13,833	15,168	91,915	2,752
May	1.840	1.535	31	6.68	4	.92	2.33	6,244	20,785	369,945	31.1
June	2.085	1.755	23	14.7	24	4.87	6.01	15,586	22,306	308,855	0
July	2.430	1.755	21	42.3	8	5.60	10.6	28,280	24,728	191,605	1,193
Aug.	3.850	1.690	4	165	31	3.57	8.97	24,024	19,331	140,115	46.3
Sept.	1.840	1.435	6	6.78	13	.26	1.75	4,537	11,730	152,960	66.4
Oct.	1.460	1.415	112	.49	31	.15	.29	784	5,034	104,679	22.2
Nov.	1.735	1.410	23	4.43	7	.11	.18	467	4,204	87,256	0
Dec.	1.425	1.400	1	.23	8	.12	.17	442	4,697	142,194	0
Yearly	3.850	1.400		165		0.11	4.03	127,198	145,943	134,911	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 meters downstream from the canal intake at the International Dam at Cd. Juarez, Chihuahua, which is located at river kilometer 2,015 and 3.4 river kilometers downstream from the American Dam at El Paso, Texas.

RECORDS: Flow records provided by Mexican Section. Records available: 1938 through 1999. 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: Based on 64 current-meter measurements and a continuous record of stage.

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

			Average Flow in Cubic Meters per Second									
Daily:	Max.	9.61	May 10, 1942			Min. 0			Several months each year			
Monthly:	Max.	7.42	May 1942			Min. 0			Several months each year			
Yearly:	Max.	3.28	1942			Min. 0.26			1964			

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	0	4.87	2.56	5.68	5.42	5.40	3.57	0	0	0
2	0	0	0	4.94	1.65	* 4.96	* 5.49	* 5.45	3.72	0	0	0
3	0	0	0	5.20	* 1.40	4.92	5.49	5.36	* 4.60	0	0	0
4	0	0	0	5.34	1.49	* 5.08	5.73	* 5.71	5.28	0	0	0
5	0	0	0	* 5.21	1.72	5.36	5.78	5.00	5.23	0	0	0
6	0	0	0	4.76	1.83	5.52	6.03	* 4.99	5.38	0	0	0
7	0	0	0	* 4.79	* 1.93	* 5.32	5.83	5.01	5.26	0	0	0
8	0	0	0	4.79	2.10	5.26	5.93	5.14	* 5.31	0	0	0
9	0	0	0	* 4.77	2.11	* 5.13	5.98	* 5.15	5.09	0	0	0
10	0	0	0	* 4.84	* 2.13	5.14	6.08	5.10	1.03	0	0	0
11	0	0	0	4.83	2.07	* 5.28	* 6.09	* 5.08	0	0	0	0
12	0	0	0	* 5.09	* 2.12	5.48	* 5.11	* 5.09	0	0	0	0
13	0	0	0	5.20	2.24	5.52	* 5.86	* 5.05	0	0	0	0
14	0	0	0	* 5.14	* 2.20	* 5.49	5.94	5.09	0	0	0	0
15	0	0	0	5.17	2.10	5.16	6.00	5.15	0	0	0	0
16	0	0	0	5.14	2.12	* 5.26	* 5.92	* 5.09	0	0	0	0
17	0	0	* 1.99	5.04	* 2.09	5.52	6.00	1.64	0	0	0	0
18	0	0	* 3.24	5.01	2.05	* 5.81	5.92	* 5.19	0	0	0	0
19	0	0	* 4.29	* 4.97	* 2.01	5.97	* 6.22	5.35	0	0	0	0
20	0	0	5.08	4.96	2.00	5.43	5.99	5.42	0	0	0	0
21	0	0	5.00	* 4.92	* 2.02	* 5.92	* 5.99	5.37	0	0	0	0
22	0	0	* 4.92	4.98	2.01	5.90	5.94	5.45	0	0	0	0
23	0	0	4.95	4.89	2.02	* 6.08	* 5.93	* 5.54	0	0	0	0
24	0	0	* 4.98	4.95	* 2.21	5.00	6.03	5.51	0	0	0	0
25	0	0	4.75	5.02	2.20	5.56	6.10	* 5.72	0	0	0	0
26	0	0	3.05	* 5.20	2.08	5.66	* 6.21	* 5.77	0	0	0	0
27	0	0	4.54	5.27	1.82	5.63	6.08	* 5.66	0	0	0	0
28	0	0	4.88	* 5.20	* 1.75	5.82	6.07	* 5.62	0	0	0	0
29	0	0	* 4.94	5.02	1.68	* 5.65	6.05	* 5.66	0	0	0	0
30	0	0	5.01	* 3.33	1.73	5.85	* 5.99	* 5.60	0	0	0	0
31	0	0	* 4.94	* 4.37	0	6.08	4.75	0	0	0	0	0
Sum	0	0	148.84	164.36	161.11	0	0	0	0	0	0	0
	0	66.56	63.81	183.28	44.47	0	0	0	0	0	0	0

Current Year 1999

Period 1938-1999

Month	Extreme Gage Meters		Extreme Cubic Meters per Second		Average	Volume--Thousand Cubic Meters			
	High	Low	Day	Day		Total	Average	Maximum	Minimum
Jan.	0	0	1	0	1	0	0	40.4	2,504
Feb.	0	0	1	0	1	0	0	149	9,264
Mar.	1.340	0	20	5.30	1	2.15	5,751	2,465	9,807
April	1.390	.400	4	5.52	30	.95	4.96	12,860	10,531
May	1.530	.410	31	6.45	3	.53	2.06	5,513	10,524
June	1.790	1.160	23	7.36	24	3.66	5.48	14,201	11,152
July	1.900	.280	21	6.58	12	.42	5.91	15,835	11,532
Aug.	2.140	.480	4	6.95	17	.89	5.20	13,920	11,115
Sept.	1.810	.200	6	5.64	11	0	1.48	3,842	5,238
Oct.	0	0	1	0	1	0	0	58.8	1,743
Nov.	0	0	1	0	1	0	0	0	0
Dec.	0	0	1	0	1	0	0	0	0
Yearly	2.140	0		7.36		0	2.28	71,922	62,805
								103,511	8,207

* Discharge measurement made on this day

@ Mean daily

! And other days

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 kilometer 1,888; 2.4 river kilometers downstream from Old Fort Quitman, 14.5 kilometers southeast of Esperanza, Texas, and 28.2 kilometers southeast of McNary, Texas. The zero of the gage is 1,052.35 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 25 current-meter measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: 1889 through 1999.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station.
EXTREME FLOWS FROM RECORDS:** Momentary: Max. 300 CMS October 5, 1946 with a gage height of 3.05 meters. Min. frequency no flow.

			Average Flow in Cubic Meters 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 METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	7.63	7.19	2.77	3.00	2.77	4.01	3.23	7.68	2.79	7.40	8.24	* 7.38
2	7.40	* 9.50	2.58	2.92	2.82	* 3.36	3.26	12.2	3.09	7.21	7.79	7.59
3	6.68	8.04	* 2.63	2.68	3.87	2.81	3.05	31.3	7.74	6.42	6.50	7.60
4	6.70	8.30	2.74	2.62	4.07	2.58	3.24	31.8	3.93	6.44	7.17	7.85
5	6.75	8.29	2.89	2.66	* 3.34	2.92	3.24	68.4	3.83	5.19	6.77	8.57
6	* 6.56	6.85	2.63	2.56	3.81	2.50	* 3.08	* 41.2	4.55	6.73	7.01	8.39
7	6.30	6.20	2.84	* 2.45	2.58	2.89	3.35	21.0	4.50	7.24	7.65	8.31
8	5.84	6.49	2.88	2.46	3.17	3.41	5.42	33.6	4.26	8.19	8.07	7.65
9	5.36	5.83	3.03	2.52	2.89	3.07	6.45	29.3	4.44	7.90	7.52	7.71
10	5.61	5.18	3.28	2.14	2.57	2.72	5.09	26.1	* 4.20	7.35	* 8.31	9.46
11	5.37	4.35	3.19	2.52	2.81	2.89	4.83	32.8	3.76	8.91	8.76	9.84
12	5.13	4.86	3.21	3.25	2.57	2.68	5.25	14.4	3.36	* 7.67	8.92	10.0
13	4.85	6.57	3.17	3.57	2.89	2.41	6.57	8.31	3.17	7.20	8.00	9.78
14	5.12	6.05	3.27	3.46	2.68	2.77	6.04	7.48	2.91	12.8	9.23	8.97
15	5.00	4.92	3.39	3.01	2.80	* 2.82	5.77	6.37	2.65	15.7	9.31	9.22
16	5.06	* 4.70	* 2.87	2.99	2.01	3.01	4.72	7.16	3.38	18.4	8.93	9.86
17	4.66	4.13	2.80	2.57	1.88	2.99	5.39	4.93	5.77	24.6	8.81	* 12.3
18	5.00	3.14	2.62	2.71	* 2.27	5.83	14.4	3.22	6.23	15.9	8.71	13.0
19	4.51	3.08	2.69	2.56	2.29	13.0	24.2	3.28	14.2	10.1	8.62	14.1
20	4.33	2.99	2.72	2.33	2.40	15.1	38.4	2.72	18.9	13.8	8.31	14.5
21	4.18	3.61	2.47	* 2.87	2.91	20.9	36.9	3.24	13.1	15.8	8.70	14.0
22	4.47	3.74	2.25	3.04	3.21	17.4	52.8	3.00	9.36	14.3	8.77	11.9
23	4.47	2.96	2.58	2.87	2.72	16.3	47.9	3.00	9.31	14.8	8.77	9.50
24	4.24	2.45	2.54	2.60	2.59	15.2	37.1	4.20	* 12.2	14.9	8.63	9.35
25	4.18	2.67	2.31	2.58	2.70	10.5	21.7	3.06	12.2	15.7	9.09	9.21
26	4.28	2.69	2.26	2.69	3.53	7.16	18.0	3.21	15.3	* 11.3	8.71	12.5
27	* 3.75	2.62	2.44	2.81	3.33	4.48	11.5	3.24	13.4	9.33	8.55	11.7
28	3.89	2.83	2.26	3.12	3.03	3.93	* 7.40	3.55	12.2	9.80	8.24	10.9
29	3.95	2.32	3.14	3.20	* 3.20	3.95	8.83	2.88	8.93	8.91	* 8.15	* 8.65
30	4.33	2.56	3.17	3.68	3.68	9.24	2.89	7.44	9.17	7.42	5.89	10.6
31	5.63	*	3.01	4.02	8.08	2.81	8.62	8.62			4.56	
Sum	140.23		83.87		187.27		428.33		337.78		300.24	
	161.23		85.20		91.41		414.43		221.10		247.66	

Current Year 1999 Period 1938-1999

Month	Extreme Gage Meters			Extreme-Cubic Meters per Second			Volume-Thousand Cubic Meters				
	High	Low	Day	High	Day	Low	Average	Total	Average	Maximum	Minimum
Jan.	1.620	1.390	1	9.27	29	3.65	5.20	13,930	11,249	96,674	0
Feb.	1.675	1.305	2	11.0	24	2.30	5.01	12,116	8,784	68,720	0
Mar.	1.400	1.285	10	3.91	26	2.10	2.75	7,361	8,067	72,889	0
April	1.460	1.280	13	4.68	10	1.82	2.80	7,246	10,235	94,942	0
May	1.485	1.265	3	5.48	17	1.81	2.95	7,898	15,738	381,665	0
June	2.090	1.290	19	30.4	6	2.23	6.24	16,180	14,020	295,595	0
July	2.840	1.310	22	99.0	3	2.53	13.4	35,807	20,010	173,266	4.7
Aug.	2.785	1.335	4	94.6	30	2.51	13.8	37,008	18,811	158,563	20.6
Sept.	1.890	1.330	3	26.0	15	2.30	7.37	19,103	21,592	181,266	0
Oct.	2.150	1.460	17	46.0	5	4.66	10.9	29,184	21,037	114,377	0
Nov.	1.680	1.465	15	13.1	3	5.80	8.26	21,398	14,322	106,523	0
Dec.	1.760	1.290	20	30.6	31	2.23	9.69	25,941	14,749	152,593	0
Yearly	2.840	1.265		99.0		1.81	7.39	233,172	178,614	1,569,390	2,050

* Discharge measurement made on this day

** Period 1938-1999

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

DESCRIPTION: Cableway, gravity well, and graphical water-stage recorder located on the left bank of the Rio Grande at San Antonio Diversion Dam, latitude 30°10'30", longitude 104°4'11" and river kilometer 1,672, 0.5 river kilometer upstream from Capote Creek and about 4.0 kilometers north of Candelaria, Presidio County, Texas and San Antonio, Chihuahua. The zero of the gage is 871.11 meters above mean sea level, U.S.C.& G. S. datum.

RECORDS: Based on 24 current-meter measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: November 19, 1975 through 1999.

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

EXTREME FLOWS FROM RECORDS: Momentary: Max. 561 CMS on September 30, 1978 with a gage height of 3.31 meters. Min. frequently no flow.

Average Flow in Cubic Meters 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 METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	7.00	4.21	2.40	2.40	1.35	1.56	6.53	15.5	2.41	10.9	13.0	8.35
2	7.01	4.08	2.40	2.65	1.47	1.54	4.84	15.3	2.50	11.6	10.9	7.92
3	7.15	5.13	2.42	2.87	1.53	1.95	2.87	13.5	2.42	10.3	10.1	7.51
4	6.36	7.42	2.44	2.43	1.57	2.10	4.52	13.3	8.54	7.92	10.2	6.09
5	* 6.51	10.6	2.31	* 1.80	1.19	2.03	5.65	5.22	6.14	* 6.65	10.6	5.47
6	6.29	13.5	2.21	1.68	1.47	1.22	* 1.78	4.48	9.89	6.15	10.2	5.14
7	5.59	13.6	2.25	1.44	2.74	.90	1.35	4.92	9.68	5.26	8.81	5.40
8	5.29	13.3	2.16	1.61	2.29	13.7	1.11	5.16	8.28	4.48	8.44	6.18
9	5.53	13.1	2.14	1.82	2.00	10.2	4.76	7.58	7.63	3.96	* 7.98	6.92
10	5.92	10.3	2.00	1.79	2.24	1.68	4.36	7.75	4.17	4.96	7.60	7.03
11	6.30	8.53	* 2.05	1.67	1.37	1.48	2.45	11.1	6.85	5.74	8.03	6.52
12	5.87	7.64	1.94	1.56	1.79	3.72	2.25	13.9	4.80	6.16	8.86	5.97
13	5.34	5.72	1.80	1.54	1.62	1.78	2.74	16.7	2.48	5.54	9.45	* 6.94
14	* 5.30	4.23	2.01	1.13	1.31	4.56	3.04	18.7	3.06	5.79	9.04	8.79
15	5.03	3.21	1.95	1.12	1.38	1.86	9.39	18.3	* 3.17	6.37	8.38	9.44
16	4.48	4.83	2.00	1.72	1.12	* 2.16	11.5	15.7	2.40	5.06	8.01	9.17
17	4.36	* 5.92	1.81	2.36	* 1.25	2.38	4.45	14.0	4.96	5.46	* 7.64	7.86
18	4.25	5.47	1.88	2.27	1.06	1.28	4.76	7.92	1.82	* 7.28	8.20	6.84
19	4.25	4.65	2.31	* 2.02	.99	1.59	* 9.67	3.00	1.85	8.19	8.56	6.76
20	4.42	4.07	2.59	1.81	.82	3.43	12.5	2.40	3.08	9.20	7.85	7.45
21	4.28	2.97	2.35	1.55	.69	3.09	13.0	1.47	4.64	10.1	7.44	7.54
22	4.50	2.35	1.95	1.48	.69	13.8	16.2	1.47	5.67	11.8	7.24	6.68
23	3.95	2.36	1.92	1.27	10.9	16.0	16.0	1.34	7.49	13.5	6.74	6.23
24	3.49	2.40	2.44	1.07	27.4	16.3	15.5	2.94	9.45	14.3	7.02	6.13
25	3.55	3.09	2.56	1.33	22.3	15.8	15.9	1.88	10.5	14.9	7.37	6.39
26	3.92	2.98	2.53	1.43	6.84	15.9	15.6	1.35	10.4	15.3	7.70	6.66
27	3.94	2.46	6.40	2.27	3.84	16.3	15.7	1.71	9.99	15.5	7.89	7.17
28	3.87	2.19	9.57	2.03	1.86	16.4	16.1	1.64	10.7	15.4	8.23	7.89
29	4.21		2.26	1.19	1.79	16.2	16.8	1.95	10.8	15.0	8.52	9.12
30	4.05		3.54	1.20	2.64	12.3	16.8	1.90	10.9	14.8	8.74	10.3
31	3.82		2.32	1.74				16.2	2.53	14.5		10.7
Sum		170.31		52.51		203.21		234.61		292.07		226.56
155.83			80.95		111.25		274.32		186.47		258.74	

Current Year 1999

Period 1975-1999

Month	Extreme Gage Meters		Extreme-Cubic Meters per Second		Average	Total	Volume-Thousand Cubic Meters		
	High	Low	Day	Day			Average	Total	Maximum
Jan.	1,910	1,830	12	7.46	24	3.25	5.03	13,464	20,224
Feb.	1,930	1,775	16	13.8	28	2.06	6.08	14,715	122,892
Mar.	1,995	1,725	28	22.1	122	1.67	2.61	6,994	12,717
April	1,755	1,680	27	3.41	14	.96	1.75	4,537	13,115
May	2,155	1,620	25	36.0	22	.64	3.59	9,612	16,080
June	3,215	1,675	8	221	8	.83	6.77	17,557	18,486
July	2,055	1,715	9	18.4	9	.86	8.85	23,701	24,737
Aug.	2,415	1,830	13	40.2	123	1.20	7.57	20,270	25,350
Sept.	2,340	1,775	11	47.2	118	1.20	6.22	16,111	31,056
Oct.	2,020	1,880	28	15.7	9	3.64	9.42	25,235	31,041
Nov.	1,990	1,935	1	13.8	23	6.51	8.62	22,355	22,588
Dec.	1,955	1,910	31	11.1	6	5.01	7.31	19,575	21,887
Yearly	3,215	1,620		221		0.64	6.16	194,126	252,325
								1,191,590	1,186,685

* Discharge measurement made on this day

† And other days

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) and data collection platform located on the left bank at latitude 29°36'15", longitude 104°27'05", and river kilometer 1,551; 8.0 river kilometers upstream from the international highway bridge between Presidio, Texas and Ojinaga, Chihuahua and 3.8 river kilometers upstream from the confluence with the Rio Conchos. The zero of the gage is 784.29 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 27 current-meter measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: 1889 through 1999.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. The data collection platform is operated in cooperation with the National Weather Service, and relays gage height data upon interrogation by telephone via commercial circuits. Prior to 1978 the zero of the gage was 785.37 meters above mean sea level, U. S. C. & G. S. datum.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 396 CMS on June 14, 1905. Highest flow recorded since 1924 was 146 CMS, with a gage height of 3.22 meters, on May 26, 1942. Min. frequently no flow.

Average Flow in Cubic Meters 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 METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	6.83	4.24	2.99	2.29	1.45	1.25	5.45	11.6	3.41	5.79	8.45	6.57
2	6.67	* 4.10	* 2.76	2.29	1.40	* 1.15	3.91	10.9	* 3.39	5.91	8.15	* 6.69
3	6.62	4.06	2.63	2.80	1.37	1.13	2.86	* 10.6	2.79	5.94	7.77	6.62
4	6.68	3.87	2.53	2.64	1.18	.86	2.60	10.4	3.68	6.12	7.08	6.17
5	* 6.70	4.13	2.43	* 2.53	* 1.24	.87	2.33	10.5	4.85	* 5.86	6.96	6.23
6	6.21	4.80	2.52	2.15	1.03	.97	* 2.18	9.92	6.02	5.42	6.96	6.02
7	6.07	5.51	2.57	1.64	1.05	3.93	2.35	7.89	4.65	5.11	7.10	5.68
8	5.97	6.12	2.49	1.54	1.09	* 7.91	1.81	7.47	4.77	5.10	7.08	5.47
9	5.72	6.29	2.33	1.48	1.11	2.64	1.52	7.49	4.38	4.96	* 6.94	5.40
10	5.59	6.46	2.19	1.56	1.20	* 13.6	5.58	7.65	4.34	4.59	6.98	5.55
11	5.78	6.31	2.21	1.45	.98	8.49	18.4	8.44	4.37	4.48	6.84	6.05
12	5.72	5.77	2.26	1.46	.95	3.65	13.8	9.12	3.91	4.76	6.76	5.98
13	5.70	5.45	2.29	1.41	1.01	6.53	4.05	9.90	5.28	4.87	6.82	* 5.89
14	* 5.53	5.24	2.20	1.40	.86	* 26.2	3.94	10.4	3.85	4.99	7.08	5.66
15	5.32	4.78	2.10	1.39	.83	19.2	4.63	11.2	* 3.06	4.75	7.12	5.81
16	5.31	* 4.17	* 1.98	1.25	.75	* 5.39	4.99	12.5	3.04	5.00	6.92	6.28
17	5.22	* 4.01	2.06	1.11	* .69	3.17	6.78	* 13.2	3.11	5.02	* 6.58	6.50
18	5.05	4.66	2.07	1.29	.68	2.39	7.76	13.4	2.93	4.65	6.36	6.54
19	4.90	5.01	1.97	* 1.39	.56	2.14	* 6.76	12.4	3.52	* 4.81	6.10	6.28
20	4.90	4.75	1.86	1.56	.52	2.58	10.5	10.3	2.75	5.37	6.12	5.95
21	4.83	4.32	1.98	1.44	.46	2.82	9.93	7.35	2.68	5.69	6.19	5.86
22	4.67	4.06	1.97	1.24	.48	3.27	10.9	6.18	3.22	5.98	6.17	6.00
23	4.72	3.63	1.97	1.45	1.85	6.13	10.4	4.89	3.69	6.33	5.98	5.95
24	4.82	3.32	1.85	1.91	9.44	8.82	10.0	4.48	4.21	6.59	5.87	5.77
25	4.62	3.22	1.84	2.09	5.82	6.34	10.2	4.38	4.82	6.88	5.90	5.72
26	4.32	3.29	1.68	1.89	6.88	6.02	10.0	6.52	5.15	7.35	5.99	5.73
27	4.29	3.28	3.97	1.72	5.53	5.46	9.90	5.13	5.50	7.66	6.16	5.78
28	4.33	3.28	2.60	1.49	2.39	5.26	9.60	5.02	5.63	8.02	6.29	5.74
29	4.16		3.76	1.47	3.52	5.35	10.2	5.39	5.60	8.19	6.32	5.82
30	4.19		3.15	1.50	2.65	5.85	13.9	4.42	5.76	8.30	6.30	6.01
31	4.43		2.20		1.54		15.1	4.16		8.41		6.46

Sum 128.13 50.83 169.37 263.20 182.90 186.18
165.87 73.41 60.51 232.33 124.36 201.34

Current Year 1999 Period 1938-1999

Month	Extreme Gage Meters			Extreme-Cubic Meters per Second			Average	Volume-Thousand Cubic Meters			
	High	Low	Day	High	Day	Low		Total	Average	Maximum	Minimum
Jan.	0.685	0.525	1	7.03	129	4.07	5.35	14,331	12,029	183,346	0
Feb.	.660	.455	! 9	6.47	28	3.08	4.58	11,070	9,270	119,491	0
Mar.	.820	.330	27	9.86	26	1.59	2.37	6,343	7,241	91,778	0
April	.445	.275	! 2	2.86	117	1.11	1.69	4,392	6,583	87,920	0
May	1.620	.160	23	34.0	23	.36	1.95	5,228	11,898	295,521	0
June	1.510	.225	14	31.7	! 4	.80	5.65	14,634	13,295	267,019	0
July	1.380	.270	11	26.4	9	1.26	7.49	20,073	17,588	191,983	0
Aug.	.950	.490	18	13.8	31	3.86	8.49	22,740	18,562	164,116	0
Sept.	.690	.390	5	7.40	3	2.46	4.15	10,745	21,383	185,694	0
Oct.	.730	.510	31	8.48	110	4.18	5.90	15,803	21,631	129,311	0
Nov.	.735	.605	1	8.53	25	5.80	6.71	17,396	12,356	125,343	0
Dec.	.660	.570	2	6.82	9	5.24	6.01	16,086	12,553	167,944	0
Yearly	1.620	0.160		34.0		0.36	5.04	158,841	164,389	1,450,617	1,174

* Discharge measurement made on this day ! And other days

** Period June 1900-March 1914; September 1919-March 1920; and 1924-1999

08-3730.00 RIO CONCHOS NEAR OJINAGA, CHIHUAHUA

DESCRIPTION: Cableway, gravity well, and water-stage recorder located on the right bank at latitude 29°34'57", longitude 104°25'52", 1.0 river kilometer from the confluence with the Rio Grande, 4.0 kilometers northwest of Ojinaga, Chihuahua, and 6.0 kilometers northwest of Presidio, Texas. This stream enters the Rio Grande at river kilometer 1,547, 18.7 river kilometers upstream from the "Rio Grande below Rio Conchos" Gaging Station. The zero of the gage is 780.40 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 140 discharge measurements during the year. Records available: 1896 through 1913; 1924 through 1999. 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, and Luis L. Leon Reservoir are located 405, 393, and 183 river kilometers, 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 kilometers upstream from this station. Power generation facilities: La Boquilla 14,647 kw., La Colina 3,620 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 1968-1999) 2,020 CMS, on September 30, 1978 with a 7.53 meter gage height. The greatest recorded flow occurred September 11, 1904 with a peak flow estimated at 4,590 CMS. Min. 0.21 CMS on June 12, 1995 with a 0.46 meter gage height. During the period 1996 to 1998, it is very probable that a minimum momentary flow smaller than the referenced one occurred; however, that data is not available.

Average Flow in Cubic Meters per Second**

Daily:	Max.	1,490	Oct. 1, 1978	Min.	0.09	June 11, 1996
Monthly:	Max.	496	Sept. 1991	Min.	0.39	May 1996
Yearly:	Max.	83.6	1991	Min.	2.38	May 1995

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day:	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.42	* 0.95	2.22	4.10	3.27	2.06	5.45	5.38	7.65	* 2.15	1.52	1.56
2	1.37	1.61	1.76	3.87	3.06	* 1.79	* 5.18	* 23.9	* 6.91	2.16	1.51	1.63
3	1.39	* 3.20	* 0.97	3.11	* 2.15	1.54	5.31	10.2	* 6.60	2.17	* 1.49	* 1.64
4	* 1.78	2.03	.82	1.62	2.96	* 1.45	11.3	* 5.00	10.7	* 2.10	1.49	1.58
5	1.91	* 2.09	* .79	* 1.53	2.59	1.40	* 4.20	3.97	12.1	2.10	* 1.49	1.63
6	* 1.40	2.11	.76	2.05	* 2.35	1.34	4.56	* 8.60	* 5.67	* 2.11	1.49	* 1.59
7	1.42	2.12	.76	* 1.60	* 2.77	* 1.37	* 3.64	7.56	4.30	2.09	1.50	1.63
8	* 1.39	* 2.11	* .77	1.18	3.49	6.96	3.11	* 4.03	* 3.83	* 2.07	* 1.50	* 1.64
9	1.22	2.18	.78	1.14	3.68	* 4.51	* 2.83	* 3.72	3.75	* 2.07	1.51	1.58
10	1.03	* 1.90	* .93	1.08	* 4.06	5.44	3.58	* 3.59	* 3.56	* 2.07	* 1.52	* 1.61
11	* 1.30	.95	1.19	1.13	4.22	* 4.74	11.0	* 3.59	3.33	2.07	1.51	1.63
12	1.17	* .90	* 1.08	* 1.25	* 4.00	3.95	* 5.91	3.65	3.13	* 2.07	* 1.49	1.62
13	* 1.04	.90	1.08	1.29	3.43	4.28	* 8.39	* 5.08	* 3.50	* 1.92	1.50	* 1.55
14	1.07	.90	.93	* 1.21	* 2.76	* 88.7	* 6.17	5.43	6.08	1.79	1.51	1.64
15	* .97	* .95	* .97	* 1.19	2.16	* 31.4	9.94	* 4.18	* 3.40	* 1.79	* 1.51	* 1.73
16	1.09	.90	1.26	* 1.27	2.68	* 12.9	* 8.44	4.09	3.11	1.79	1.51	1.71
17	1.10	* .85	* 1.65	1.26	2.96	9.74	* 5.62	* 3.78	* 3.01	1.79	* 1.51	* 1.62
18	* 1.15	.85	1.98	1.40	* 2.78	* 8.48	7.65	3.20	3.02	* 1.79	1.52	1.62
19	1.20	* .90	* 2.00	* 1.51	* 2.71	7.84	* 5.66	2.72	3.02	* 1.79	* 1.52	1.63
20	* 1.16	1.00	1.24	1.58	* 2.70	31.8	9.05	* 2.66	3.02	* 1.79	1.51	1.63
21	1.33	.95	1.20	* 1.58	* 2.52	* 24.8	* 21.9	2.68	3.02	1.73	1.50	1.51
22	* 1.49	* 1.03	* 1.26	1.54	4.47	11.1	17.9	* 2.69	* 2.94	* 1.72	* 1.49	1.52
23	1.36	.90	.97	1.38	2.98	* 8.56	* 13.3	* 2.67	2.65	1.73	1.49	1.52
24	1.72	* 1.30	* 1.08	1.49	* 5.85	6.57	5.85	* 2.69	* 2.35	1.74	* 1.50	1.52
25	* 1.36	1.42	1.23	2.05	5.77	* 5.77	7.52	* 5.01	2.27	* 1.75	1.50	1.53
26	1.00	* 2.96	* .93	* 4.60	* 3.94	6.10	* 5.36	23.2	* 2.29	1.66	* 1.50	1.53
27	* .81	1.22	.91	4.38	2.90	6.44	3.80	* 35.6	* 2.30	* 1.64	1.45	1.53
28	* .81	1.10	1.19	4.15	* 2.22	* 6.68	* 2.91	12.7	* 2.29	1.64	1.45	1.54
29	* .81			* 3.86	4.16	1.93	6.56	2.62	* 2.29	* 1.65	1.45	1.54
30	.82			4.32	3.40	1.86	* 6.31	* 7.90	* 8.69	2.22	1.72	1.45
31	* .80			* 3.97	* 2.50	19.5	7.63			1.72		1.54
Sum		40.28		63.10		320.58		230.39		58.38		49.30
	37.89		44.86		97.72		235.55		124.31		44.89	

Current Year 1999

Period 1968-1999

Month	Extreme Gage Meters		Extreme-Cubic Meters per Second			Average	Volume-Thousand Cubic Meters				
			High	Low	Day		High	Low	Day	Total	
	High	Low									
Jan.	0.330	0.200	5	2.33	27	0.71	1.22	3,274	40,370	263,658	
Feb.	.460	.210	26	4.75	18	.80	1.44	3,480	38,196	210,479	
Mar.	.440	.210	31	4.78	8	.75	1.45	3,876	48,773	248,201	
April	.440	.220	126	4.78	10	.82	2.10	5,452	44,074	110,860	
May	.510	.280	24	6.50	15	1.54	3.15	8,443	56,399	211,231	
June	2.490	.230	14	127	6	.92	10.7	27,698	67,849	361,843	
July	1.790	.340	31	75.4	29	2.61	7.60	20,352	78,307	297,613	
Aug.	2.050	.340	2	95.6	19	2.61	7.43	19,906	131,588	708,584	
Sept.	.900	.300	5	22.0	30	1.84	4.14	10,740	183,610	1,285,546	
Oct.	.330	.260	3	2.19	126	1.28	1.88	5,044	117,896	809,127	
Nov.	.280	.250	1	1.54	127	1.10	1.50	3,878	43,416	169,500	
Dec.	.300	.230	15	1.83	21	.89	1.59	4,260	28,737	81,372	
Yearly	2.490	0.200		127		0.71	3.69	116,403	879,215	2,636,721	
										75,095	

* Discharge measurement made on this day

† And other days

** Period 1968-1999

08-3740.00 ALAMITO CREEK NEAR PRESIDIO, TEXAS

DESCRIPTION: Gravity well and graphical water-stage recorder located on the downstream side of the highway bridge on Farm-to-Market Road 170 at latitude 29°31'25", longitude 104°17'15", about 400 meters upstream from its confluence with the Rio Grande, and about 9.7 kilometers southeast of Presidio, Presidio County, Texas. This stream enters the Rio Grande near the lower end of the Presidio Valley at river kilometer 1,529, 13.8 river kilometers 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 771.785 meters above mean sea level U.S.C.G.S. datum.

RECORDS: Based on 37 current-meter 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 1999.

REMARKS: A small irrigation reservoir (San Esteban) 16.9 kilometers south of Marfa, Presidio County, Texas and irrigation diversions below the reservoir modify the flow of this spring-fed creek. Back water 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 CMS.

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

Average Flow in Cubic Meters 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.	0.02	1994

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 1999 --- 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	0.01	0.01	0.02	0.02	0.01	0.01	0.02	0.02
2	.02	.02	.02	.02	.01	.01	.01	.02	.01	.01	.02	.02
3	.02	* .02	* .02	.02	.01	* .01	.01	.02	.01	.01	.02	.02
4	.02	.02	.02	.02	.01	.01	.01	.02	.01	.01	.02	.02
5	.02	.02	.02	.02	.01	.02	.01	* .02	.01	.01	.02	.02
6	*	.02	.02	.02	* .02	* .01	.05	.01	.02	.01	.02	* .02
7	.02	.02	.02	.02	.01	.01	.15	* .01	.02	* .01	.02	.02
8	.02	.02	.02	.02	.01	* .01	2.56	.01	.02	* .01	.01	.02
9	.02	.02	.02	.02	.01	* .01	.07	.01	.02	.01	.01	.02
10	.02	.02	.02	.02	.01	* .01	.04	.01	.01	.01	* .02	.02
11	.02	.02	.02	.02	.01	.02	.01	.01	.01	.01	.02	.02
12	.02	.02	.02	.01	.01	.02	5.07	.01	.01	.01	.02	.02
13	.02	.02	.02	.01	.01	9.61	.32	.01	.01	.01	.02	.02
14	.02	.02	.02	.01	.01	23.8	.02	.01	.01	.01	.02	.02
15	.02	.02	.02	.01	.01	.43	* .02	.01	.01	.02	.02	.02
16	.02	.02	.02	.01	.01	.03	.02	.01	.01	.02	* .02	.02
17	.02	.02	* .02	.01	.01	.03	.08	.01	.01	.02	.02	.02
18	.02	* .02	.02	.01	* .01	.03	.07	* .01	.01	.02	.02	.02
19	.03	.02	.02	.01	.01	.03	.08	.01	* .01	* .02	.02	.02
20	*	.03	.02	.01	.01	.03	.04	.01	.01	.02	* .02	* .02
21	.03	.02	.02	.01	.01	.03	.05	.01	* .01	.02	.02	.02
22	.03	.02	.02	* .01	.01	* .11	* .07	.01	.01	.02	.02	.02
23	.02	.02	.02	.01	.41	.03	.05	.01	.01	.02	.02	.02
24	.02	* .02	.02	.01	* .95	* .03	.03	.01	.01	.02	.02	.02
25	.02	.03	.02	.01	* .253	.02	.02	.01	.01	.02	.02	.02
26	.02	.02	.02	.01	* .49	.02	.02	.01	.01	.02	.02	.02
27	.02	.02	.02	.01	.02	.02	* .02	.02	.01	.02	.02	.02
28	.02	.02	.02	.01	.02	.02	.02	.02	.01	.02	.02	.02
29	.02	.02	.02	.01	.02	.02	.02	.02	.01	.02	.02	.02
30	.02	.02	.02	.01	.01	.02	.02	.02	.01	.02	.02	.02
31	.02	.02	.02	.01	.01	.02	.02	.02	.01	.02	.02	.02
Sum		0.57		0.41		37.28		0.40		0.48		0.62
	0.66		0.62		4.68		6.18		0.30		0.60	

Current Year 1999

Period 1932-1999

Month	Extreme Gage Meters		Extreme-Cubic Meters per Second				Volume-Thousand Cubic Meters				
	High	Low	Day	High	Day	Low	Average	Total	Average	Maximum	Minimum
Jan.	0.885	0.870	118	0.03	1 1	0.02	0.02	57.0	151	370	53.6
Feb.	.875	.660	124	.03	1 1	.02	.02	49.2	197	3,853	48.4
Mar.	.685	.650	1 1	.02	1 1	.02	.02	53.6	166	1,256	46.7
April	.665	.645	1 1	.02	112	.01	.01	35.4	283	4,550	25.9
May	1.725	.635	24	9.97	1 1	.01	.15	404	897	10,530	26.8
June	4.010	.395	14	130	1 1	.01	1.24	3,221	2,031	15,607	25.9
July	2.370	.260	12	43.3	1 1	.01	.20	534	3,189	22,813	11.7
Aug.	1.355	1.185	1 2	.03	110	.01	.01	34.6	3,380	20,167	26.8
Sept.	1.320	1.175	5 1	.02	1 1	.01	.01	25.9	5,221	73,244	25.9
Oct.	1.210	1.195	114	.02	1 1	.01	.02	41.5	1,945	23,731	40.6
Nov.	1.220	1.200	1 1	.02	1 1	.02	.02	51.8	207	3,150	44.0
Dec.	1.205	1.175	1 1	.02	1 1	.02	.02	53.6	159	503	48.5
Yearly	4.010	0.260		130		0.01	0.14	4,562	17,826	86,682	758

* Discharge measurement made on this day

! 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 kilometer 1,529; 0.6 river kilometer downstream from Alamito Creek and 14.4 river kilometers downstream from the international highway bridge between Presidio, Texas and Ojinaga, Chihuahua. The zero of the gage is 771.75 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 25 current-meter measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: 1955 through 1999. Records are also available from 1896 through June 13, 1932 for a station located about 19.5 river kilometers downstream from the Rio Conchos and 2.1 kilometers upstream from Alamito Creek; and from June 14, 1932 through 1954 for a station about 3.2 river kilometers downstream from the Rio Conchos and 18.3 river kilometers 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 meters 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 CMS on September 30, 1978, with a gage height of 4.70 meters. The greatest recorded flow occurred September 11, 1904, with a peak flow estimated at 4,590 CMS at a station 19.0 kilometers upstream. Min. 0.01 CMS several days in July 1955 and June 30, 1958.

Average Flow in Cubic Meters per Second**

Daily	Max.	1,510	Oct. 1, 1978	Min.	0.26	June 12, 1996
Monthly	Max.	544	Sept. 1991	Min.	1.84	May 1996
Yearly	Max.	98.1	1991	Min.	6.80	1998

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	8.38	7.08	4.76	3.57	2.89	3.01	10.6	19.1	9.33	6.63	8.89	7.65
2	8.31	6.56	4.32	3.12	3.12	2.53	8.75	39.1	8.25	7.40	8.88	7.63
3	8.32	* 7.58	* 3.65	3.68	3.37	* 2.08	7.08	45.1	8.32	7.41	8.48	7.38
4	8.35	7.03	3.35	3.92	3.28	1.55	13.1	17.2	15.1	7.09	7.24	7.29
5	8.20	6.89	3.22	3.99	* 3.39	1.28	6.01	* 13.4	26.9	7.06	6.77	7.48
6	* 7.66	7.12	3.38	* 3.94	2.89	1.24	5.69	21.0	* 14.1	* 6.99	7.05	* 7.23
7	7.62	7.51	5.52	3.94	2.86	1.37	4.37	17.8	* 11.6	6.65	7.83	6.60
8	7.60	7.65	3.68	3.35	3.16	20.6	2.97	9.40	10.0	7.22	7.76	6.39
9	7.58	7.49	3.82	2.96	3.52	3.86	2.36	8.47	9.97	7.20	6.93	6.14
10	6.94	7.34	3.78	2.96	3.79	7.32	6.75	7.56	9.42	6.08	* 6.97	6.63
11	6.94	6.99	3.75	2.95	3.91	7.84	40.6	8.42	8.97	5.27	6.70	7.20
12	6.90	6.34	3.84	2.93	3.91	3.46	30.5	9.30	8.19	5.46	6.53	7.45
13	6.89	5.82	4.06	2.90	3.76	12.1	16.4	11.9	8.57	5.72	6.73	7.63
14	6.87	5.70	4.03	2.47	3.54	129	* 14.2	13.5	15.5	5.68	6.94	7.26
15	6.82	5.58	3.96	2.40	3.26	41.4	16.1	12.6	8.51	5.15	6.96	7.09
16	6.82	5.46	3.62	2.38	2.97	5.96	16.3	13.0	7.16	5.71	6.65	* 7.41
17	6.77	5.35	* 3.74	2.43	3.20	* 8.75	14.3	14.2	5.89	6.63	6.50	8.27
18	6.78	* 5.24	4.04	2.44	3.11	9.47	20.7	15.1	5.28	6.25	6.40	8.07
19	6.73	5.13	3.93	2.78	* 3.28	7.88	15.0	* 14.6	5.66	6.08	5.87	7.75
20	* 7.27	5.01	4.11	2.90	3.03	29.8	10.9	13.1	6.28	* 6.20	5.72	7.74
21	7.13	4.92	4.29	* 2.65	2.89	37.0	37.9	9.18	5.99	6.20	6.00	7.50
22	7.37	4.81	4.48	2.58	3.98	10.2	29.7	7.97	6.01	6.21	* 7.33	7.81
23	7.40	4.71	4.67	2.56	23.1	6.01	18.5	6.93	6.06	6.34	7.28	7.71
24	7.41	4.62	4.60	2.62	33.8	9.10	11.2	6.20	6.11	7.34	7.82	7.66
25	7.47	4.59	4.39	3.63	16.7	8.08	15.3	9.40	6.19	7.81	7.57	7.97
26	7.45	5.39	4.44	3.75	11.5	3.88	* 14.3	37.0	6.27	7.93	7.55	8.50
27	6.94	5.13	4.63	3.57	8.21	3.77	12.6	70.4	* 6.65	7.96	7.81	8.63
28	6.97	4.65	4.83	3.27	4.57	8.55	13.1	30.6	7.09	8.13	8.29	8.28
29	6.99		5.13	2.97	3.88	10.9	15.1	32.6	7.25	8.00	8.95	8.16
30	7.04		5.53	2.92	4.52	10.8	27.9	16.0	6.54	7.95	7.90	7.89
31	7.05		4.52		3.52		48.5	11.5		8.41		8.27
Sum		167.69		92.53		408.79		561.63		210.16		234.87
	226.97		128.07		182.91		506.78		267.16		218.30	

Current Year 1999

Period 1968-1999

Month	Extreme Gage Meters		Extreme-Cubic Meters per Second			Average	Total	Volume-Thousand Cubic Meters			
	High	Low	Day	High	Day			Average	Total	Maximum	Minimum
Jan.	1.080	1.050	4	9.07	119	6.71	7.32	19,610	56,074	277,577	17,506
Feb.	1.070	1.015	3	8.44	25	4.11	5.99	14,488	49,157	223,569	5,853
Mar.	1.075	1.005	30	6.22	14	3.22	4.13	11,065	58,627	275,997	5,653
April	1.035	.960	1	4.34	17	2.36	3.08	7,995	53,642	199,909	7,861
May	1.865	.950	23	132	7	2.50	5.90	15,803	67,194	243,287	4,939
June	2.575	.880	14	244	6	1.10	13.6	35,319	83,149	383,789	7,311
July	1.850	.990	31	112	19	2.19	16.3	43,786	99,929	325,218	23,118
Aug.	2.040	1.100	2	152	25	6.01	18.1	48,525	162,385	866,134	26,566
Sept.	1.430	1.050	5	49.8	19	4.83	8.91	23,083	310,902	1,410,221	8,669
Oct.	1.120	1.045	31	8.93	11	4.79	6.78	18,158	152,854	871,689	18,158
Nov.	1.140	1.065	29	9.82	21	5.56	7.28	18,861	60,458	197,536	10,782
Dec.	1.130	1.080	17	9.29	9	5.91	7.58	20,293	46,506	229,318	13,618
Yearly	2,575	0.880		244		1.10	8.78	276,986	1,200,877	3,092,559	214,513

* Discharge measurement made on this day

† And other days

** Period 1968-1999

08-3745.00 TERLINGUA CREEK NEAR TERLINGUA, TEXAS

DESCRIPTION: Cableway, bubbler gage, graphical water-stage recorder located on the left bank at latitude 29°12'10", longitude 103°37'10", 4.3 creek kilometers upstream from its confluence with the Rio Grande, and about 13.6 kilometers south of Terlingua, Brewster County, Texas. This creek enters the Rio Grande at river kilometer 1,425, the lower end of Santa Helena Canyon. The zero of the gage is 670.83 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 29 current-meter measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: 1932 through 1999.

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

EXTREME FLOWS FROM RECORDS: Momentary: Max. 988 CMS on May 24, 1935 with a gage height of 5.36 meters on a gage 0.5 kilometer downstream. Min. no flow on several occasions in 1986.

Average Flow in Cubic Meters per Second

Daily:	Max.	487	June 1, 1937	Min.	0	August 14 and 15, 1986
Monthly:	Max.	32.6	Sept. 1974	Min.	0.01	Several months 1995-96
Yearly:	Max.	4.28	1990	Min.	0.10	1994

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.05	* 0.05	* 0.05	* 0.06	0.04	* 0.04	* 0.05	47.1	* 0.05	0.05	0.06	* 0.06
2	.05	.05	.05	.03	.04	.04	.05	.81	.05	.05	.06	.06
3	.05	.05	.05	.03	* .04	.05	.05	.12	2.90	.05	.06	.06
4	* .05	.05	.05	.04	.04	.06	.05	.85	.25	* .05	.06	.06
5	.05	.05	.05	.04	.04	.06	.06	.32	.62	.05	.06	.06
6	.05	.05	.05	.04	.04	.07	.07	.10	.10	.05	.06	.06
7	.05	.05	.05	.04	.04	.09	.07	.08	.18	.05	.06	.06
8	.05	.05	.05	.04	.04	26.6	.06	.07	.04	.05	* .06	.06
9	.05	.05	.05	.05	.04	3.22	.16	* .06	.04	.05	.06	.06
10	.05	.05	.05	.05	.04	3.25	.91	.05	.04	.05	.06	.06
11	.05	.05	.05	.05	.04	2.20	.07	.05	.04	.05	.06	.06
12	.05	.05	.05	8.38	.04	2.07	5.69	.79	.79	.05	.06	.06
13	.05	.05	.05	6.70	.04	38.7	.08	.08	3.06	.05	.06	.06
14	.05	.05	.05	* .05	.04	49.2	.06	.06	.14	.05	* .06	.06
15	.05	.05	* .05	* .09	.04	65.7	.06	.05	.07	.05	* .06	.06
16	.05	* .05	.04	.05	.04	12.3	.06	* .05	.06	.05	.06	.06
17	.05	.05	.04	.05	.04	11.2	.06	.05	.06	.05	.06	.06
18	.05	.05	.04	.05	.04	11.5	.06	.05	.06	* .06	* .06	.06
19	.05	.05	.04	.05	.04	14.6	.06	.05	.06	.06	.06	.06
20	.05	.05	.04	* .05	* .04	22.2	* .06	.05	* .06	.06	.06	.06
21	* .05	.05	.06	.05	5.88	* 16.6	* .06	.05	.06	.06	.06	.06
22	.05	.05	.04	.05	32.8	8.37	.06	.05	.06	.06	.06	.06
23	.05	.05	.04	.05	.09	7.53	.06	.05	.06	.06	.06	.06
24	.05	.05	.04	.05	.05	3.09	.06	.05	.06	.06	.06	.06
25	.05	.05	.04	.05	14.2	1.01	.06	.05	* .06	* .06	* .06	.06
26	.05	.05	.04	.05	2.79	.50	.06	.05	.05	.06	.06	.06
27	.05	.05	2.11	.04	.34	.08	.06	3.92	.05	.06	.06	.06
28	.05	.05	4.70	.04	.09	.05	.06	.07	.05	.06	.06	.06
29	.05	.05	.09	.04	.08	.04	.06	.06	.05	.06	.06	.06
30	.05	.05	.06	.04	.06	* .05	.06	.05	.05	.06	.06	.06
31	.05	.05	.07	.05	.05	1.10	.05	.05	.06	.06	.06	.06
Sum		1.40	14.39	300.47			55.29		1.69		1.86	
	1.55		8.22		57.23		9.49		9.31		1.80	

Current Year 1999

Period 1932-1999

Month	Extreme Gage Meters		Extreme-Cubic Meters per Second			Average	Volume-Thousand Cubic Meters				
	High	Low	Day	High	Day		Total	Average	Maximum	Minimum	
Jan.	0.595	0.580	1 1	0.05	1 1	0.05	134	223	1,079	26.8	
Feb.	.580	.580	1 1	.05	1 1	.05	121	280	5,431	25.1	
Mar.	2.225	.580	27	39.4	120	.03	710	291	2,978	26.8	
April	1.800	.565	12	40.2	1 1	.03	1,243	1,562	23,016	25.9	
May	2.145	.520	22	121	1 1	.04	1,855	4,945	32,095	100	
June	2.490	.535	8	281	1 1	.04	10.0	25,961	8,006	67,640	
July	1.845	.615	31	50.0	1 1	.05	.31	820	9,113	35,429	
Aug.	2.000	.615	1	60.9	2	.04	1.78	4,777	8,653	79,182	
Sept.	2.255	.740	3	90.1	1 4	.04	.31	804	10,404	84,339	
Oct.	.790	.775	118	.06	1 1	.05	.05	146	4,138	34,414	
Nov.	.785	.775	1 1	.06	1	.06	.06	156	551	7,015	
Dec.	.785	.770	1 1	.06	1 1	.06	.06	161	347	3,800	
Yearly	2.490	0.520		281		0.03	1.27	39,978	47,640	135,031	3,032

* Discharge measurement made on this day

! And other days

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

DESCRIPTION: Cableway, gravity well, graphical 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 kilometer 1,388; 2.2 river kilometers upstream from the old Johnson Ranch headquarters, 9.7 river kilometers downstream from Smoky Creek, and 14.8 river kilometers upstream from Chizos Crossing and the Chihuahua-Coahuila state line. The zero of the gage is 623.41 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 23 current-meter measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: April 1936 through 1999.

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

Average Flow in Cubic Meters per Second**

Daily:	Max.	1,850	Oct. 1, 1978	Min.	0.09	June 11, 1996
Monthly:	Max.	470	Sept. 1991	Min.	1.21	May 1996
Yearly:	Max.	97.0	1991	Min.	8.00	1998

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	8.34	* 5.41	* 4.82	* 6.03	4.14	* 4.74	* 8.78	43.1	* 12.4	5.62	7.48	* 8.72
2	8.06	5.54	3.92	4.80	2.98	3.31	8.60	* 55.7	10.9	5.67	8.01	8.04
3	8.45	5.64	3.56	3.66	* 2.43	2.67	8.40	131	9.22	6.21	8.30	7.94
4	* 8.51	5.10	4.27	2.77	2.18	2.02	6.93	46.5	17.8	* 6.75	8.46	7.73
5	8.55	6.52	3.86	2.65	2.16	1.66	8.10	17.2	16.3	6.74	7.58	7.73
6	8.75	6.28	3.25	2.78	2.16	4.07	7.04	14.3	20.4	6.51	6.65	7.78
7	8.93	6.15	2.91	3.17	1.80	4.73	6.06	15.0	14.5	6.49	7.01	8.25
8	8.20	6.92	2.71	2.57	1.76	58.3	5.98	15.4	10.8	6.33	* 7.18	8.04
9	7.96	7.71	2.66	2.07	1.65	26.3	5.93	13.8	8.65	5.72	7.56	7.49
10	7.75	8.23	2.82	1.68	1.52	15.4	5.95	13.5	7.61	5.38	7.21	7.25
11	7.44	8.20	2.47	1.49	1.41	6.35	6.85	13.3	7.08	4.77	6.74	7.11
12	7.33	7.71	2.33	4.71	2.10	11.8	30.3	13.2	8.61	4.66	6.63	7.55
13	7.31	7.31	2.32	28.3	2.26	126	28.7	13.2	22.2	4.28	6.76	8.20
14	7.29	6.82	2.55	1.76	2.16	132	14.0	13.1	9.69	4.33	6.28	* 8.47
15	7.21	6.55	* 2.91	1.42	2.09	277	33.4	13.0	9.02	4.42	6.47	8.57
16	7.18	* 6.18	2.98	1.35	1.86	80.5	31.0	* 12.7	8.86	4.51	6.98	8.17
17	6.80	5.86	3.15	1.31	1.50	26.1	39.7	13.0	6.12	4.22	6.87	8.09
18	6.75	5.14	3.41	1.25	1.31	13.2	11.1	13.2	4.98	4.34	6.76	8.08
19	7.01	4.60	2.77	1.24	1.10	8.58	11.6	13.5	4.63	4.93	6.64	8.79
20	6.89	4.46	2.43	* 1.24	* 1.01	19.3	* 12.9	12.8	* 4.32	5.01	6.34	8.32
21	* 7.09	5.00	2.40	1.37	1.37	* 41.6	43.0	11.9	4.38	4.85	5.97	8.43
22	7.19	5.29	2.16	1.32	48.6	53.3	41.8	10.5	4.47	5.30	5.78	7.75
23	7.06	5.00	2.03	1.48	11.2	36.0	79.4	8.28	3.88	5.85	6.32	7.58
24	6.71	5.11	2.17	1.41	134	22.3	26.0	7.78	3.62	6.17	6.20	7.74
25	6.57	4.36	2.21	1.28	61.4	44.4	16.0	7.16	4.00	* 5.65	6.71	7.79
26	6.74	4.25	2.02	1.32	21.4	14.3	14.9	6.51	4.01	6.54	7.06	8.03
27	6.81	3.96	8.03	1.96	11.9	10.4	15.5	20.9	4.68	6.67	7.54	8.38
28	6.13	3.85	68.8	4.35	10.3	9.32	14.5	61.5	5.26	6.88	7.50	8.86
29	5.48		9.85	3.93	8.79	8.93	14.0	30.4	5.24	7.41	7.88	8.94
30	5.65		6.00	5.14	5.88	8.98	29.9	23.3	5.37	7.19	8.25	8.24
31	5.47		5.47		4.75		57.4	16.3		7.58		8.17
Sum		163.15		99.81		1,073.56		701.03		176.98		250.23
	225.61		173.24		359.17		643.72		259.00		211.12	

Current Year 1999

Period 1968-1999

Month	Extreme Gage Meters		Extreme-Cubic Meters per Second		Average	Total	Volume-Thousand Cubic Meters		
	High	Low	Day	Day			High	Low	Medium
Jan.	1.270	1.180	16	9.13	129	5.38	7.28	19,493	57,203
Feb.	1.260	1.115	110	8.42	28	3.52	5.83	14,096	48,786
Mar.	2.395	1.030	28	121	27	1.86	5.59	14,968	55,875
April	2.220	0.940	13	99.2	25	1.14	3.33	8,624	50,877
May	3.850	0.920	24	421	20	.95	11.6	31,032	183,591
June	3.740	1.010	15	381	8	1.28	35.8	92,756	228,534
July	2.645	1.155	23	158	5	4.51	20.8	55,617	442,109
Aug.	2.885	1.195	3	195	26	6.42	22.6	60,569	167,215
Sept.	1.815	1.110	4	52.1	24	3.49	8.63	22,378	115,261
Oct.	1.245	1.125	31	8.15	18	3.89	5.71	15,291	1,217,635
Nov.	1.250	1.175	4	8.61	22	5.62	7.04	18,241	62,915
Dec.	1.260	1.210	11	9.13	111	7.00	8.07	21,620	47,975
Yearly	3.850	0.920		421		0.95	11.9	374,685	1,047,509
								3,058,852	252,177

* Discharge measurement made on this day

! And other days

** Period 1968-1999

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 kilometer 1,058; 152 meters downstream from the Terrell-Val Verde County line, 8.8 kilometers downstream from Lozier Canyon, and about 19.8 kilometers west of Langtry, Val Verde County, Texas. The zero of the gage is 352.71 meters above mean sea level, U.S. C. & G. S. datum.

RECORDS: Based on 37 current-meter measurements during the year, 25 by the United States Section and 12 by the Mexican Section of the Commission, and a continuous record of gage heights. Computations for medium and high flows by shifting control methods. Low flow computations based on a stable control weir rating curve defined by current-meter measurements. Records available: September 1961 through 1999.

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 Anzaldua Dam office.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 4,190 CMS on November 5, 1978 with a gage height of 11.63 meters. Min. 4.07 CMS on July 1, 1998.

Average Flow in Cubic Meters per Second**

Daily:	Max.	2,310	Sept. 20, 1974	Min.	4.82	July 2, 1998
Monthly:	Max.	443	Sept. 1991	Min.	8.40	April 1998
Yearly:	Max.	110	1991	Min.	15.9	1998

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	16.8	12.4	* 10.9	20.4	13.5	17.4	24.3	58.8	27.3	9.32	* 12.5	13.7
2	16.1	* 11.9	10.5	14.5	9.54	13.7	* 23.6	69.0	25.5	9.79	12.8	14.0
3	15.3	11.7	10.3	12.9	* 8.76	11.7	17.9	* 54.6	* 21.1	10.4	12.8	14.1
4	* 14.6	11.5	10.0	11.6	8.95	10.9	16.5	66.5	18.1	* 10.4	13.2	14.3
5	14.7	11.3	* 10.4	* 11.3	9.36	10.7	15.8	113	20.6	10.4	13.4	14.1
6	14.8	11.2	10.4	10.6	8.39	10.1	15.2	* 68.7	30.9	10.5	13.8	* 13.7
7	14.9	11.1	10.1	10.2	* 7.81	* 11.2	15.6	32.7	* 56.6	10.6	14.1	13.8
8	15.0	10.7	10.5	9.68	7.16	43.5	14.4	25.8	27.3	11.3	14.3	13.9
9	14.8	11.3	10.5	9.32	7.16	17.4	16.1	21.9	26.2	11.1	13.8	13.9
10	14.9	11.1	10.1	8.91	7.09	22.5	13.8	21.9	21.6	10.9	13.3	13.9
11	14.8	11.0	10.0	8.92	7.05	44.2	18.7	21.7	18.6	11.3	13.5	14.4
12	14.6	* 11.2	* 9.87	8.91	6.84	31.7	68.2	18.9	16.5	11.5	13.6	14.3
13	14.4	11.6	9.52	8.64	5.92	46.8	16.8	16.9	16.9	10.9	14.1	13.9
14	14.4	12.0	8.88	8.28	5.81	55.7	12.9	15.5	26.3	11.0	14.2	13.9
15	14.2	12.1	8.85	25.1	5.81	281	35.4	14.3	20.4	10.8	* 13.6	13.6
16	14.1	11.9	8.74	21.8	5.71	330 *	* 57.5	* 15.6	24.5	10.3	13.4	13.9
17	14.2	11.6	8.87	13.2	* 5.98	161	70.2	14.6	18.1	10.4	13.1	14.2
18	14.0	11.2	22.2	10.0	6.73	35.1	57.1	15.8	14.8	10.5	12.9	14.6
19	* 13.7	10.9	10.7	* 8.77	6.40	17.0	58.5	16.7	16.1	* 10.5	13.0	14.8
20	13.4	10.6	9.25	7.92	6.13	21.5	30.7	16.8	13.8	10.5	13.3	* 14.5
21	13.1	10.4	9.15	7.50	5.82	* 24.7	22.2	17.1	* 12.4	10.6	13.1	14.0
22	12.7	10.0	9.12	7.35	5.83	29.6	20.7	17.1	11.3	10.7	13.0	14.4
23	12.6	9.88	9.72	6.42	5.84	41.1	47.9	17.0	10.8	11.4	12.9	14.6
24	12.6	9.91	10.0	6.41	5.91	86.5	73.4	16.7	10.2	11.4	12.6	14.2
25	12.7	10.4	9.66	6.41	28.5	102	72.9	20.4	10.4	11.4	12.3	14.4
26	13.0	10.8	9.17	6.42	122	48.3	43.9	14.9	10.4	11.6	12.2	13.8
27	13.1	10.7	9.27	6.41	53.4	48.9	29.4	13.9	9.66	12.1	12.5	13.8
28	12.9	10.9	10.1	6.41	40.8	* 32.6	24.5	13.4	9.67	12.4	12.8	13.8
29	12.8		12.3	6.42	26.6	22.3	23.3	13.6	9.65	12.3	13.1	13.9
30	12.8		45.8	7.38	32.9	15.3	33.1	29.4	9.18	12.4	13.3	14.3
31	12.8		33.0		25.6		25.5	39.8		12.5		14.3
Sum		311.29		308.08		1,644.4		913.0		341.21		436.8
	434.8		377.87		503.30		1,016.0		564.86		396.5	

Current Year 1999

Period 1968-1999

Month	Extreme Gage Meters		Extreme-Cubic Meters per Second		Average	Volume-Thousand Cubic Meters			
	High	Low	Day	Day		Total	Average	Maximum	Minimum
Jan.	0.595	0.550	1	16.9	22	12.4	14.0	37,567	76,190
Feb.	.560	.520	1	12.6	123	9.81	11.1	26,895	68,386
Mar.	.915	.500	30	65.8	17	8.66	12.2	32,648	76,816
April	.715	.475	15	30.4	122	6.41	10.3	26,618	73,056
May	1.295	.465	26	179	25	4.98	16.2	43,485	95,737
June	2.810	.510	16	406	16	9.50	54.8	142,076	120,281
July	1.330	.540	12	193	14	12.0	32.8	87,782	132,522
Aug.	1.125	.550	5	125	30	12.5	29.5	78,883	192,865
Sept.	1.025	.515	7	94.6	30	8.88	18.8	48,804	242,767
Oct.	.545	.515	130	12.5	1	8.88	11.0	29,481	1,147,133
Nov.	.565	.540	8	14.5	126	12.0	13.2	34,258	441,434
Dec.	.575	.555	19	15.0	16	13.3	14.1	37,740	69,142
Yearly	2.810	0.465		406		4.98	19.9	626,237	1,463,807
								3,465,652	501,613

* Discharge measurement made on this day

† And other days

** Period 1968-1999

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

RECORDS: Based on 34 current-meter measurements during the year, 22 by the United States Section, and 12 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 current-meter measurements. Records available: July 1967 through 1999. Records are also available for Pecos River near Comstock, 15.3 river kilometers downstream, from March 17 through December 3, 1898 and May 1900 through October 7, 1954; for Pecos River near Shumla, 5.6 river kilometers 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 Anzaldua Dam office.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 16,300 CMS on September 20, 1974, with a gage height of 22.95 meters. The greatest flood of record, which exceeded a gage height of 30.5 meters at this station, occurred on June 28, 1954. The peak discharge was 26,800 CMS at the gaging station located near the railroad bridge 15.3 river kilometers downstream. Min. 1.14 CMS on August 4, 1998 with a gage height of 0.425 meters.

	Average Flow in Cubic Meters per Second								
Daily:	Max.	4,330	Sept. 20, 1974		Min.	1.19			August 4, 1998
Monthly:	Max.	382	Sept. 1974		Min.	1.53			July 1998
Yearly:	Max.	42.5		1974		Min.	3.27		1999

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	4.54	4.12	* 3.55	4.79	4.14	3.68	* 3.40	2.51	2.37	2.22	* 2.53	2.87
2	4.47	* 4.07	3.49	4.71	4.08	3.77	3.31	* 2.43	2.19	2.21	2.57	2.90
3	4.36	3.92	3.35	4.46	* 4.10	3.80	3.23	2.41	* 2.09	2.38	2.54	2.96
4	* 4.28	3.77	3.27	4.16	4.02	3.86	3.19	2.52	1.97	* 2.45	2.58	3.05
5	4.23	3.62	* 3.29	* 4.05	3.53	4.49	4.07	2.59	1.98	1.78	2.63	2.86
6	4.25	3.67	3.39	3.95	3.52	4.02	3.44	* 2.55	1.91	1.79	2.69	* 2.88
7	4.20	3.61	3.38	3.74	* 3.52	* 3.64	3.17	2.49	1.91	1.84	2.72	2.92
8	4.24	3.53	3.50	3.74	3.31	3.51	3.08	2.44	1.90	1.90	2.71	2.96
9	4.20	3.42	3.46	* 3.76	3.24	3.15	2.90	2.37	1.91	1.95	2.68	3.00
10	4.07	3.39	3.50	3.78	3.24	2.95	3.43	2.32	1.87	2.01	2.69	2.88
11	4.12	3.45	3.55	3.77	3.33	2.90	3.13	2.30	1.83	2.06	2.72	2.90
12	4.12	3.31	* 3.69	3.57	3.25	2.90	3.43	2.31	1.84	2.12	2.76	2.97
13	4.14	3.36	3.53	3.52	3.25	4.24	3.39	2.37	1.96	2.17	2.75	3.00
14	4.12	3.40	3.51	3.52	3.24	14.3	3.38	2.36	2.22	2.23	2.76	3.02
15	* 4.02	3.52	3.23	3.27	3.52	11.9	3.32	2.29	2.14	2.29	* 2.79	3.02
16	4.02	* 3.64	3.17	3.27	3.80	5.65	* 3.06	* 2.27	2.17	2.34	2.78	3.01
17	3.99	3.62	3.23	3.27	* 3.73	4.84	2.92	2.27	2.16	2.39	2.73	3.00
18	4.00	3.61	4.27	3.30	3.90	4.43	2.87	2.27	2.22	* 2.41	2.70	3.05
19	3.97	3.49	5.50	* 3.16	3.74	3.99	2.88	2.26	2.28	2.46	2.70	3.05
20	3.94	3.45	4.80	3.05	3.48	4.00	2.86	2.24	2.35	2.67	2.66	* 3.12
21	3.98	3.41	4.56	3.06	3.24	14.5	2.83	2.24	* 2.37	2.71	2.64	3.07
22	3.84	3.27	4.22	3.07	3.24	6.89	2.83	2.24	2.35	2.71	2.71	3.05
23	3.82	3.35	3.92	3.09	3.24	5.45	2.82	2.24	2.32	2.65	2.69	3.12
24	3.94	3.47	3.77	3.10	3.24	4.97	2.80	2.23	2.31	2.57	2.66	3.16
25	3.94	3.49	3.51	3.11	3.21	4.65	2.77	2.21	2.30	2.53	2.58	3.32
26	3.95	3.62	3.39	3.14	2.98	4.63	2.55	2.65	2.28	2.50	2.60	3.31
27	4.00	3.72	3.73	3.16	2.98	4.46	2.53	2.46	2.27	2.52	2.74	3.29
28	4.09	3.71	5.22	3.18	2.96	4.09	2.55	2.46	2.27	2.54	2.81	3.23
29	4.03		5.51	4.38	2.96	3.74	2.54	2.46	2.26	2.58	2.85	3.27
30	3.94		5.16	4.54	2.96	3.52	2.53	2.46	2.24	2.59	2.81	3.25
31	3.88		5.04		3.14		2.53	2.45		2.49		3.27
Sum		100.01		108.67		152.72		74.37		72.06		94.76
	126.69		120.49		106.09		93.74		64.24		80.78	

Current Year 1999

Period 1967-1999

Month	Extreme Gage Meters			Extreme-Cubic Meters per Second			Volume-Thousand Cubic Meters				
	High	Low	Day	High	Day	Low	Average	Total	Average	Maximum	Minimum
Jan.	0.575	0.545	1	4.65	23	3.66	4.09	10,946	14,944	36,067	8,824
Feb.	.565	.525	1	4.28	22	3.16	3.57	8,641	15,850	31,348	7,452
Mar.	.615	.525	19	5.86	115	3.14	3.89	10,410	13,893	27,290	8,331
April	.590	.525	1	4.84	119	3.03	3.62	9,389	15,456	46,098	7,956
May	.570	.520	1	4.37	127	2.96	3.42	9,166	19,295	56,812	6,158
June	1.035	.515	14	49.7	110	2.90	5.09	13,195	16,593	56,669	5,403
July	.640	.495	10	7.00	126	2.53	3.02	8,099	18,621	49,844	4,099
Aug.	.500	.480	124	2.73	15	2.16	2.40	6,426	21,561	199,892	5,153
Sept.	.490	.460	11	2.44	10	1.71	2.14	5,550	50,625	992,293	5,550
Oct.	.500	.460	120	2.75	51	1.71	2.32	6,226	25,000	140,507	6,226
Nov.	.510	.490	115	2.88	1	2.42	2.69	6,979	17,262	73,681	6,979
Dec.	.535	.505	125	3.44	5	2.78	3.06	8,187	15,482	46,697	8,187
Yearly	1.035	0.460		49.7		1.71	3.27	103,214	242,582	1,341,805	103,214

* Discharge measurement made on this day

† And other days

08-4474.20 DEAD MANS CANYON NEAR COMSTOCK, TEXAS

To determine storm runoff previously included with flows measured on the Pecos River at a gaging station which was relocated upstream due to completion of Amistad Dam, a gaging station was established at Dead Mans Canyon in 1968.

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 kilometers upstream from its confluence with the Pecos River, which is 15.3 kilometers upstream from the Pecos River confluence with the Rio Grande. The zero of the gage is 359.05 meters 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 1999.

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

EXTREME FLOWS FROM RECORDS: Momentary: Max. 1,070 CMS on September 17, 1974, with a gage height of 3.90 meters. Maximum volumes: Monthly, 35,973 TCM in September 1974; yearly, 37,654 TCM in 1974.

Average Flow in Cubic Meters per Second

Average Flow in Cubic Meters 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 CMS 1999

Month and Day

Annual Summary

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

DESCRIPTION: Concrete control wall with rectangular notch opening of 25.5 CMS capacity, cableway, bubbler gage, water-stage recorders (graphic & digital), located on the left bank at latitude 29°0'035", longitude 101°0'00", about 18.5 kilometers east of Comstock, Val Verde County, Texas, and 41.0 river kilometers upstream from its confluence with the Rio Grande. The confluence is located at river kilometer 925, 1.1 river kilometer upstream from Amistad Dam. The zero of the gage is 345.00 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 29 current-meter measurements during the year, 23 by the United States Section and 6 by the Mexican Section of the Commission, a stable rating curve based on current-meter measurements, and a continuous record of gage heights. Records available: 1960 through 1999. Records are also available from May 1900 through March 1914 for a station 38.3 river kilometers downstream; from December 1923 through September 1932 for a station 36.7 river kilometers downstream; from September 2, 1932 through August 1957 for a station 33.8 river kilometers downstream; from August 7, 1954 through January 1958 for a station 8.7 river kilometers upstream; and from August 1954 through May 31, 1968 for a station at the mouth 39.8 river kilometers 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 CMS on September 18, 1974 with a gage height of 6.04 meters. Min. 1.38 CMS on August 20, 1969.

Average Flow in Cubic Meters 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 METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	7.22	* 7.04	* 6.44	9.69	6.28	5.43	8.65	7.33	6.10	* 5.73	5.72	5.62
2	7.16	7.10	6.31	9.21	6.38	5.37	8.22	* 7.30	6.08	5.91	5.57	5.62
3	7.18	7.15	6.39	8.91	* 6.34	5.38	8.17	7.39	6.10	5.93	* 5.69	5.59
4	* 7.26	7.09	6.34	8.46	5.97	5.32	8.35	7.29	6.12	5.96	5.49	5.43
5	7.30	7.06	6.47	* 8.04	5.68	5.33	8.11	7.20	6.14	5.97	5.59	5.49
6	7.30	7.02	6.35	7.88	5.46	5.32	* 7.95	6.84	6.17	6.01	5.53	* 5.56
7	7.30	7.00	6.38	7.94	5.41	* 5.29	7.54	6.78	* 6.03	6.01	5.53	5.56
8	7.27	6.96	6.52	7.95	5.40	5.29	7.35	6.78	5.87	6.05	5.53	5.57
9	7.26	7.02	6.22	7.62	5.62	5.26	7.06	6.75	6.69	6.06	5.50	5.37
10	7.26	6.96	6.17	7.37	5.81	5.26	8.47	6.70	6.29	6.10	5.53	5.35
11	7.26	6.70	6.19	7.11	5.80	5.19	24.9	6.48	5.90	6.11	5.58	5.32
12	7.21	6.76	* 6.82	6.82	5.68	5.18	29.2	6.37	5.85	6.15	5.63	5.28
13	7.21	6.84	6.42	6.81	5.37	5.17	21.9	6.42	5.76	6.18	5.62	5.27
14	7.18	6.83	6.11	6.86	5.52	6.39	14.5	6.28	5.81	6.19	5.59	5.14
15	7.19	6.79	6.12	6.38	5.51	6.88	11.5	6.23	5.70	6.05	* 5.54	5.12
16	7.16	* 6.32	6.05	6.59	5.58	6.21	10.4	* 6.23	5.69	6.02	5.48	5.22
17	7.16	5.89	6.32	6.49	* 5.65	5.86	9.85	6.25	5.52	6.37	5.47	5.29
18	7.16	5.94	29.0	6.55	5.87	5.48	9.77	6.25	5.55	* 6.26	5.49	5.21
19	* 7.16	5.99	* 14.0	* 6.39	5.67	5.43	9.27	6.25	5.55	6.02	5.45	5.29
20	7.17	5.90	9.18	6.31	5.60	6.49	* 9.26	* 6.24	5.56	6.04	5.43	* 5.18
21	7.20	6.07	8.46	6.31	5.64	15.1	9.13	6.27	* 5.19	6.00	5.43	5.34
22	6.79	6.05	8.04	6.35	5.64	15.3	8.78	6.06	5.18	6.10	5.52	5.38
23	6.94	6.15	7.84	* 6.27	5.78	11.0	8.76	6.22	5.27	6.02	5.41	5.41
24	7.22	6.20	7.76	6.39	5.62	10.0	8.60	6.43	5.32	5.84	5.39	5.39
25	7.08	6.25	7.74	6.76	5.58	9.81	8.26	6.39	5.37	5.84	5.39	5.43
26	7.04	6.32	7.35	6.67	5.55	20.0	8.23	6.41	5.47	5.83	5.49	5.31
27	7.22	6.43	8.60	6.44	5.51	11.5	7.92	6.30	5.56	5.89	5.53	5.29
28	7.32	6.39	15.3	6.22	5.51	10.1	7.76	6.10	5.62	5.89	5.69	5.27
29	7.48		11.4	6.26	5.58	9.51	7.75	6.04	5.45	5.75	5.65	5.29
30	7.07		10.6	6.28	5.47	9.08	7.70	6.06	5.49	5.72	5.64	5.28
31	7.10		9.94		5.42		7.41	6.08			5.72	5.36
Sum		184.22		213.31		232.93		201.72		185.72		166.23
	222.83		262.30		175.90		320.72		172.40		165.88	

Current Year 1999

Period 1960-1999

Month	Extreme Gage Meters		Extreme-Cubic Meters per Second			Average	Volume-Thousand Cubic Meters			
			High		Low		Total	Average	Maximum	Minimum
	High	Low	Day	Day	Low					
Jan.	0.600	0.580	1	7.65	14	6.73	7.19	19,253	19,835	35,576
Feb.	.590	.550	1	7.40	19	5.59	6.58	15,917	18,430	52,636
Mar.	.990	.550	18	52.4	11	5.67	8.46	22,663	17,913	41,204
April	.640	.565	1	9.79	28	5.80	7.11	18,430	17,873	47,831
May	.585	.545	1 2	6.78	31	5.03	5.67	15,198	19,588	49,101
June	.950	.540	21	41.2	12	4.80	7.76	20,125	22,104	67,011
July	1.140	.590	11	92.4	10	6.59	10.3	27,710	27,032	230,071
Aug.	.610	.570	1	7.81	17	5.80	6.51	17,429	48,293	504,380
Sept.	.640	.540	9	9.61	24	4.92	5.75	16,046	35,663	272,093
Oct.	.565	.540	17	6.69	1	5.19	5.99	20,957	40,721	5,590
Nov.	.555	.540	28	5.84	124	5.23	5.53	14,332	20,381	38,316
Dec.	.555	.530	1 3	5.76	14	4.84	5.36	14,362	319,109	872,184
Yearly	1.140	0.530		92.4		4.80	6.86	216,360		89,420

* Discharge measurement made on this day

† And other days

08-4494.40 BIG SATAN CREEK NEAR COMSTOCK, TEXAS

To determine storm runoff previously included with flows measured on the Devils River at a gaging station which was re-located upstream due to completion of Anisted Dam, a gaging station was established at Big Satan Creek in 1968.

DESCRIPTION: Cableway, control weir, bubbler gage, and digital recorder located on the right bank of the creek at latitude 29°39'15", longitude 100°57'50", 1.8 kilometers upstream from its confluence with the Devils River, which is 34.1 kilometers upstream from the Devils River confluence with the Rio Grande. The zero of the gage is 345.64 meters 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 1999.

REMARKS: This creek is normally dry, its flow being confined to periods of storm runoff from its 109 square kilometers of watershed area. Only the days of flow are shown below.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 2,280 CMS on August 23, 1998, with a gage height of 4.420 meters. Maximum volumes: Monthly, 30,502 TCM in August 1998; yearly, 30,502 TCM in 1998.

Average Flow in Cubic Meters per Second

Daily:	Max.	249	Aug. 23, 1998		Min.	
Monthly:	Max.	11.4	Aug. 1998		Min.	
Yearly:	Max.	0.97	1998		Min.	see REMARKS

Mean Daily Discharge in CMS 1999

Annual Summary

Month and Day		Maximum Gage and Discharge		
Month	Day	Meters	CMS	Thousand Cubic Meters
June	21	0.675	11.8	113
Yearly		0.675	11.8	113

Discharge measurement made on this day

08-4494.80 ROUGH CANYON NEAR DEL RIO, TEXAS

To determine storm runoff previously included with flows measured on the Devils River at a gaging station which was re-located upstream due to completion of Amistad Dam, a gaging station was established at Rough Canyon in 1968.

DESCRIPTION: Cabledway, control weir, bubbler gage, and digital recorder located on the right bank at latitude 29°34'40", longitude 100°56'00", 6.3 kilometers upstream from its confluence with the Devils River, which is 17.9 kilometers upstream from the Devils River confluence with the Rio Grande. The zero of the gage is 314.12 meters 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 1999.

REMARKS: This stream is normally dry, its flow being confined to periods of storm runoff from its 62.2 square kilometers of watershed area. Only the days of flow are shown below.
EXTREME FLOWS FROM RECORDS: Momentary: Max. 438 CMS on August 24, 1998, with a gage height of 2.870 meters. Maximum volumes: Monthly, 11,697 TCM in August 1998; yearly, 11,697 TCM in 1998.

Average Flow in Cubic Meters per Second

Daily:	81.9	Aug. 24, 1998		Min.
Monthly:	4.37	Aug. 1998		Min.
Yearly:	0.37	1998		Min.

see REMARKS

Mean Daily Discharge in CMS 1999

Annual Summary

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

To determine storm runoff previously included with flows measured on the Devils River at a gaging station which was re-located upstream due to completion of Amistad Dam, a gaging station was established at the north fork of San Pedro Creek in 1968.

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 kilometers upstream from its confluence with the Middle Fork Branch, which is 10.1 kilometers upstream from its confluence with Devils River which itself is 7.2 river kilometers above Devils River confluence with the Rio Grande. The zero of the gage is 343.49 meters 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 1999.

REMARKS: This creek is normally dry, its flow being confined to periods of storm runoff from its 44 square kilometers of

EXTREME FLOWS FROM RECORDS: Momentary: Max. 253 CMS on August 23 & 24, 1998, with a gage height of 3.750 meters. Maximum volumes: Monthly 10,470 TCM in August 1998; yearly 10,470 TCM in 1998.

volumes: Monthly, 10,670 TCM in August 1998; Yearly, 10,670 TCM in 1998.

Average Flow in Cubic Meters per Second

Daily:	Max.	67.1	Aug. 23, 1998	Min.
Monthly:	Max.	3.98	Aug. 1998	Min.
Yearly:	Max.	0.34	1998	Min.

see REMARKS

Mean Daily Discharge in CMS 1999

Month and Day

Annual Summary				
Month	Maximum Gage and Discharge			
	Day	Meters	CMS	Thousand Cubic Meters
January				
February				
March				
April				
May				
June				
July				
August				
September				
October				
November				
December				

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

To determine storm runoff previously included with flows measured on the Devils River at a gaging station which was re-located upstream due to completion of Amistad Dam, a gaging station was established at the middle fork of San Pedro Creek in 1968.

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 kilometers upstream from its confluence with the North Fork Branch, which is 10.1 kilometers above the confluence with Devils River, which itself is 7.2 river kilometers above the Devils River confluence with the Rio Grande. The zero of the gage is 346.56 meters 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 1999.

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

EXTREME FLOWS FROM RECORDS: Momentary: Max. 1,560 CMS on August 23, 1998, with a gage height of 3.425 meters. Maximum 4,000 CMS on January 12, 1998, with a gage height of 4.000 meters.

volumes: Monthly, 18,121 TCM in August 1998; yearly, 18,121 TCM in 1998.

Average Flow in Cubic Meters per Second

Daily:	Max.	96.8	Aug. 23, 1998	Min.	
Monthly:	Max.	6.77	Aug. 1998	Min.	see REMARKS
	Min.	0.57	1998	Min.	

Mean Daily Discharge in CMS 1999

Month and Day

08-4495.90 EVANS CREEK NEAR COMSTOCK, TEXAS

To determine storm runoff previously included with flows measured on the Devils River at a gaging station which was re-located upstream due to completion of Amistad Dam, a gaging station was established at Evans Creek in 1968.

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 kilometers upstream from its confluence with the Devils River, which is 5.1 kilometers upstream from the Devils River confluence with the Rio Grande. The zero of the gage is 354.34 meters 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 1999.

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

EXTREME FLOWS FROM RECORDS: Momentary: Max. 714 CMS on August 23, 1998, with a gage height of 2.180 meters. Maximum volumes: Monthly, 23,342 TCM in August 1998; yearly, 23,342 TCM in 1998.

Average Flow in Cubic Meters per Second

Daily:	212	Aug. 23, 1998	Min.
Monthly:	8.71	Aug. 1998	Min. see REMARKS
Yearly:	0.74	1998	Min.

Mean Daily Discharge in CMS 1999

Month and Day			
No flow during 1999			

Annual Summary

Month	Maximum Gage and Discharge			Thousand
	Day	Meters	CMS	Cubic Meters
Yearly				

08-4508.05 CARMINA SPRINGS NEAR CD. ACUNA, COAHUILA

DESCRIPTION: Cipolletti weir of 2.00 CMS capacity and staff gage located on a creek about 40 meters upstream from its confluence with the Rio Grande, at latitude 29°26'37", longitude 101°03'27", and about 17.7 kilometers northwest of Cd. Acuna, Coahuila. This creek enters the Rio Grande from Mexico at river kilometer 923, 0.4 river kilometer downstream from Amistad Dam and 20.3 river kilometers 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 5 current-meter measurements during the year. Mean daily discharges determined by prorating between readings. Records available: 1969 through 1999.

REMARKS: At least 104 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 2+, 1971, a flood destroyed part of the weir.

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.92	0.94	0.97	0.94	0.80	0.82	0.85	0.87	0.90	0.90	0.90	0.90
2	.92	.94	.97	.94	.80	.82	.85	.87	.90	.90	.90	.90
3	.92	.94	.97	.94	.80	.81	.85	.87	.90	.90	.90	.90
4	.92	.94	.97	.94	.80	.80	.85	.90	.90	.90	.90	.90
5	.93	.95	.97	.92	.80	.80	.85	.90	.90	.90	.90	.90
6	.94	.95	.97	.92	.80	.80	.85	.90	.90	.91	.90	.90
7	.94	.96	.98	.90	.80	.80	.85	.89	.90	.92	.90	.90
8	.94	.96	.98	.87	.80	.80	.85	.89	.90	.92	.88	.92
9	.94	.97	.98	.87	.80	.79	.85	.87	.90	.91	.88	.92
10	.94	.97	.99	.86	.80	.78	.85	.87	.90	.91	.88	.92
11	.94	.97	.99	.85	.80	.78	.85	.87	.90	.90	.88	.92
12	.94	.96	.99	.85	.80	.78	.85	.87	.90	.90	.88	.92
13	*.94	.96	.98	.85	.80	.78	.85	.87	.90	.90	.90	.92
14	.94	.95	.97	.84	.80	.78	.85	.87	.90	.90	.90	.92
15	.94	.94	.97	.85	.80	.78	.85	.87	.90	.91	.90	.92
16	.94	.94	.97	.85	.80	.80	.85	.87	.90	.91	.90	.92
17	.94	.94	*.97	.85	.80	.80	.85	.87	.90	.92	.90	.92
18	.94	.94	.98	.85	.80	.81	.85	*.87	.90	.92	.90	.92
19	.94	.94	.97	.85	.81	.80	.85	.87	.90	.92	.90	.92
20	.94	.95	.94	.85	.81	.81	.85	.87	.90	.92	.90	.92
21	.94	.95	.94	*.85	.81	.82	.85	.87	.90	.92	.90	.92
22	.94	.95	.94	.85	.80	.82	.85	.87	.90	.92	.90	.92
23	.94	.95	.94	.85	.80	.82	.85	.87	.90	.92	.90	.92
24	.94	.96	.94	.85	.80	.83	.85	.87	.90	.92	.90	.92
25	.94	.96	.94	.85	.80	.84	.85	.90	.90	.92	.90	.92
26	.94	.96	.94	.82	.80	.85	.85	.90	.90	.92	.90	.92
27	.94	.96	.94	.82	.80	.85	.87	.90	.90	.92	.90	.92
28	.94	.96	.94	.82	.80	.85	.87	.90	.90	.92	.90	.92
29	.94		.94	.82	.80	.85	.87	.90	.90	.92	.90	.92
30	.94		.94	.80	.80	.85	.87	.90	.90	.91	.90	.92
31	.94		.94	.85	.80	.84	.85	.90	.90	.90	.90	.92
Sum		26.66		25.92		24.32		27.31		28.26		28.38
	29.05		29.82		24.83		26.45		27.00		26.90	

Current Year 1999

Period 1969-1999

Month	Extreme Gage Meters		Extreme Cubic Meters per Second			Average	Volume-Thousand Cubic Meters				
	High	Low	Day	Φ High	Day		Total	Average	Maximum	Minimum	
Jan.	0.280	0.275	1 6	0.94	1 1	0.92	0.94	2,510	3,479	5,155	449
Feb.	.285	.280	1 9	.97	1 1	.94	.95	2,303	3,151	4,603	460
Mar.	.290	.280	1 10	.99	1 20	.94	.96	2,576	3,439	5,046	648
April	.280	.250	1 1	.94	30	.80	.86	2,239	3,242	4,512	776
May	.255	.250	1 19	.81	1 1	.80	.80	2,145	3,237	4,604	874
June	.260	.245	1 26	.85	1 10	.78	.81	2,101	3,085	4,411	758
July	.265	.260	1 27	.87	1 1	.85	.85	2,285	3,156	4,553	658
Aug.	.270	.265	1 4	.90	1 1	.87	.88	2,360	3,228	4,460	666
Sept.	.270	.270	1 1	.90	1 1	.90	.90	2,333	3,216	4,199	731
Oct.	.275	.270	1 7	.92	1 1	.90	.91	2,442	3,499	4,750	1,024
Nov.	.270	.270	1 1	.90	1 8	.88	.90	2,324	3,412	4,701	1,189
Dec.	.275	.270	1 8	.92	1 1	.90	.92	2,452	3,553	5,019	1,329
Yearly	0.290	0.245		0.99		0.78	0.89	28,070	39,697	53,373	11,20*

* Discharge measurement made on this day

Φ Mean daily

! And other days

LOURDES AND HILDA SPRINGS NEAR CD. ACUNA, COAHUILA

08-4508.20 LOURDES SPRING

DESCRIPTION: Rectangular sharp-crested weir of 0.82 CMS 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 kilometers northwest of Cd. Acuna, Coahuila. This creek enters the Rio Grande from Mexico at river kilometer 922, 19.6 river kilometers upstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila. The zero of the gage is 282.33 meters 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 1999.

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 1999						Period 1969-1999				
	Extreme Gage Meters		Extreme-Cubic Meters per Second			Average	Volume-Thousand Cubic Meters				
	High	Low	Day	Day	Day		Total	Average	Maximum	Minimum	
Jan.	0.090	0.090	1 1	0.05	1 1	0.05	0.05	134	147	199	107
Feb.	.090	.085	1 1	.05	1 1	.05	.05	121	134	228	96.8
Mar.	.090	.085	1 1	.05	1 1	.05	.05	134	148	258	107
April	.090	.085	1 1	.05	122	.04	.05	122	143	171	95.0
May	.085	.085	1 1	.04	1 1	.04	.04	107	144	181	77.8
June	.085	.085	1 1	.04	1 1	.04	.04	104	139	181	77.8
July	.090	.085	118	.05	1 1	.04	.04	119	143	187	55.3
Aug.	.090	.085	1 1	.05	119	.04	.05	123	144	187	53.6
Sept.	.090	.085	119	.05	1 1	.04	.04	114	139	181	36.3
Oct.	.090	.090	1 1	.05	1 1	.05	.05	134	144	187	26.8
Nov.	.090	.090	1 1	.05	1 1	.05	.05	130	139	181	20.7
Dec.	.090	.090	1 1	.05	1 1	.05	.05	134	141	187	0
Yearly	0.090	0.085		0.05		0.04	0.05	1,476	1,705	2,085	793

φ Mean daily ! And other days

08-4508.30 HILDA SPRING

DESCRIPTION: Rectangular sharp-crested weir of 1.50 CMS capacity and staff gage located on a creek about 100 meters upstream from its confluence with the Rio Grande, at latitude 29°26'20", longitude 101°03'35", and about 17.7 kilometer upstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila. The zero of the gage in 276.80 meters 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 1999.

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 1999						Period 1969-1999				
	Extreme Gage Meters		Extreme-Cubic Meters per Second			Average	Volume-Thousand Cubic Meters				
	High	Low	Day	Day	Day		Total	Average	Maximum	Minimum	
Jan.	0.035	0.035	1 1	0.02	1 1	0.02	0.02	53.6	182	321	53.6
Mar.	.035	.035	1 1	.02	1 1	.02	.02	53.6	172	297	53.6
April	.035	.030	1 1	.02	1 1	.02	.02	51.8	162	278	51.8
May	.035	.030	1 1	.02	120	.01	.02	43.2	163	268	43.0
June	.035	.030	117	.02	1 1	.01	.01	38.0	154	259	25.9
July	.035	.035	1 1	.02	1 1	.02	.02	53.6	155	285	26.8
Aug.	.035	.030	1 1	.02	119	.01	.02	42.3	152	295	26.8
Sept.	.035	.030	119	.02	1 1	.01	.01	36.3	152	289	36.0
Oct.	.035	.035	1 1	.02	1 1	.02	.02	53.6	168	299	36.3
Nov.	.035	.035	1 1	.02	1 1	.02	.02	51.8	168	311	51.8
Dec.	.035	.035	1 1	.02	1 1	.02	.02	53.6	176	321	53.6
Yearly	0.035	0.030		0.02		0.01	0.02	580	1,966	3,345	526

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 kilometer 920, 3.4 river kilometers downstream from Amistad Dam and 17.4 river kilometers upstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila. The zero of the gage is 274.00 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 22 current-meter measurements during the year, 11 by the Mexican Section and 11 by the U.S. Section, 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 current-meter measurements. Records available: September 1954 through 1999. Records are also available from May 1900 through April 1915 for a station 3.1 kilometers upstream; from December 1919 through March 1920 for a station 2.7 kilometers downstream near McKeith's Switch; from July 2, 1941 through August 1954 and October 1960 through 1987 for a station at the international highway bridge; and from December 1923 through July 2, 1941, and 1968 through 1999 for a station approximately 17.1 kilometers 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 kilometers upstream. A computerized radio telemetry system controls the releases.

3.4 RIVER KILOMETERS UPSTREAM. A computerized radio telemetry system relays gage height data to the Amistad Dam office. EXTREME FLOWS FROM RECORDS: Momentary: Max. 32,790 CMS on June 28, 1954, determined by slope-area computation, with a gage height of 16.98 meters at the old station site 152 meters downstream. This is the greatest rate of discharge recorded at any point on the Rio Grande. Max. since Amistad Dam, 1,760 CMS on Sept. 21, 1974. Min. 0.63 CMS on February 14, 1969, with a gage height of 0.33 meters.

Average Flow in Cubic Meters per Second**

Daily:	Max.	1,730	Sept. 22, 1974	Min.	1.19	August 26, 1998
Monthly:	Max.	609	Sept. 1974	Min.	1.72	October 1971
Yearly:	Max.	140	1974	Min.	16.3	1972

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	8.86	8.06	31.1	101	32.2	33.0	31.0	21.5	21.4	21.8	21.7	23.1
2	8.06	8.06	31.8	106	32.3	35.0	29.4	19.6	20.0	21.6	21.8	23.3
3	8.53	8.25	31.6	100	32.2	33.6	29.2	19.9	20.4	21.7	19.9	23.2
4	8.30	7.97	32.1	105	32.9	33.0	28.3	19.6	19.6	21.8	20.4	23.4
5	8.06	7.97	31.2	102	32.5	33.3	29.1	20.5	19.4	21.9	20.8	22.2
6	8.73	8.25	32.3	103	32.6	33.2	29.1	19.8	18.3	21.9	21.0	23.1
7	8.50	17.7	30.2	103	32.7	32.9	29.1	19.9	20.2	21.0	20.8	23.2
8	8.60	28.4	30.5	104	32.4	33.2	29.7	21.5	19.2	20.2	20.0	23.2
9	8.50	28.3	31.2	105	31.7	33.4	29.4	20.6	19.2	19.7	19.8	22.6
10	8.50	29.5	96.1	104	31.8	33.2	31.2	20.4	21.1	20.7	20.0	22.3
11	8.50	30.0	105	103	32.4	32.3	29.9	19.6	19.9	20.2	19.6	22.6
12	8.50	32.1	105	102	31.9	33.8	29.5	20.2	20.3	20.3	20.0	20.9
13	* 8.31	31.1	100	103	30.5	53.0	29.8	20.5	19.5	20.5	19.6	22.2
14	8.30	31.0	97.8	102 *	32.3	72.5	28.7	20.7	19.9	20.4	20.4	22.9
15	8.30	31.7	104	103	29.5	75.6	31.1	19.7	* 20.0	20.5	20.1	21.5
16	8.28	30.3	102	104	33.5	76.3	30.0	19.4	20.1	19.4	20.4	20.7
17	8.26	30.6	* 99.8	102	31.8	75.0	29.8	20.3	* 19.5	20.1	* 20.7	19.7
18	8.23	* 30.9	101	102	32.5	74.6	30.5	19.6	19.7	18.8	20.5	21.0
19	8.58	30.9	99.7	101	* 33.2	72.0	30.3	* 21.2	19.9	19.6	20.5	20.1
20	8.43	31.8	101	105	* 33.1	74.9	30.0	21.7	20.0	18.7	20.3	20.3
21	* 8.64	30.3	103	104 *	32.3	74.0	29.5	21.6	20.2	* 19.3	20.6	21.6
22	8.17	32.2	102	106	32.8	75.7	30.1	21.8	20.4	19.8	21.4	21.0
23	8.40	31.1	101	106 *	29.9	75.1	30.2	22.0	20.6	22.4	20.6	21.6
24	8.43	31.7	106 *	106	34.4	74.2	30.6	20.5	20.8	21.2	21.7	22.9
25	8.58	31.8	103	106	32.0	* 74.8	21.9	22.7	21.0	21.2	20.6	22.2
26	8.42	31.3	105	67.1	33.1	71.5	20.5	21.1	21.2	21.3	21.1	20.7
27	* 8.56	32.4	102	32.6	33.0	37.2	20.0	22.7	21.3	21.4	21.0	20.2
28	8.54	31.6	106	* 30.7	32.5	31.7	17.5	22.9	21.5	21.4	21.4	22.2
29	8.76	106	31.0	31.0	32.6	32.7	20.5	23.2	21.7	21.0	20.2	21.1
30	8.40	105	30.9	29.3	32.7	19.7	21.4	21.9	21.6	21.8	22.2	22.6
31	8.29	104		32.8		20.0	20.6		21.1			
Sum		715.26		2,780.3		998.7	1,553.4		646.7		608.2	643.4
	261.52		2,536.4			855.6					618.7	677.8

** Period 1968-1999

• Mean daily

! And other days

** Period 1968-1999

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

DESCRIPTION: Rectangular sharp-crested weir of 0.23 CMS capacity and staff gage located at latitude 29°25'20", longitude 101°02'40", about 0.4 kilometer upstream from its confluence with the Rio Grande and about 15.1 kilometers northwest of Cd. Acuna, Coahuila. This creek enters the Rio Grande from Mexico at river kilometer 919, 16.5 river kilometers upstream from the international highway bridge between Del Rio, Texas, and Cd. Acuna, Coahuila. The zero of the gage is 281.98 meters 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 1999.

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 METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
2	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
3	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
4	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
5	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
6	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
7	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
8	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
9	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
10	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
11	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
12	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
13	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
14	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
15	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
16	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
17	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
18	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
19	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
20	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
21	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
22	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
23	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
24	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
25	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
26	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
27	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
28	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
29	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
30	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
31	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
Sum		0.28		0.30		0.30		0.31		0.31		0.31
	0.31		0.31		0.31		0.31		0.31		0.30	

Current Year 1999

Period 1969-1999

Month	Extreme Gage Meters		Extreme-Cubic Meters per Second				Volume-Thousand Cubic Meters				
	High	Low	1 Day	φ High	1 Day	φ Low	Average	Total	Average	Maximum	Minimum
Jan.	0.040	0.040	1	0.01	1	1	0.01	26.8	79.8	162	26.0
Feb.	0.040	0.040	1	0.01	1	1	0.01	24.2	72.5	152	24.0
Mar.	0.040	0.035	1	0.01	1	1	0.01	26.8	71.4	150	26.8
April	0.035	0.030	1	0.01	1	1	0.01	25.9	67.5	132	25.9
May	0.035	0.035	1	0.01	1	1	0.01	26.8	70.7	139	17.3
June	0.035	0.035	1	0.01	1	1	0.01	25.9	61.3	149	0
July	0.040	0.035	1	0.01	1	1	0.01	26.8	61.8	131	0
Aug.	0.040	0.040	1	0.01	1	1	0.01	26.8	62.8	150	0
Sept.	0.040	0.040	1	0.01	1	1	0.01	25.9	67.8	204	0
Oct.	0.040	0.035	1	0.01	1	1	0.01	26.8	79.6	402	0
Nov.	0.035	0.035	1	0.01	1	1	0.01	25.9	75.0	249	25.9
Dec.	0.040	0.035	1	0.01	1	1	0.01	26.8	74.3	162	26.8
Yearly	0.040	0.030		0.01		0.01	0.01	315	845	1,680	238

φ Mean daily

And other days

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

DESCRIPTION: Cipolletti weir of 2.00 CMS capacity and staff gage located at latitude 29°24'25", longitude 101°02'20", about 200 meters upstream from its confluence with the Rio Grande, and about 13.8 kilometers northwest of Cd. Acuna, Coahuila. This creek enters the Rio Grande from Mexico at river kilometer 918, 15.3 river kilometers 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 during the year. Mean daily discharge determined by prorating between readings. Records available: 1969 through 1999.

REMARKS: At least 70 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 METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.75	0.68	0.64	0.67	0.52	0.48	0.49	0.49	0.54	0.53	0.55	0.60
2	.75	.68	.64	.67	.51	.48	.50	.50	.54	.53	.55	.60
3	.76	.67	.64	.65	.51	.48	.50	.51	.54	.54	.55	.59
4	.76	.67	.64	.64	.51	.47	.51	.52	.54	.54	.55	.59
5	.77	.68	.64	.63	.51	.47	.51	.52	.55	.55	.56	.59
6	.77	.68	.64	.61	.51	.46	.52	.52	.55	.55	.56	.59
7	.76	.68	.64	.61	.51	.46	.52	.52	.55	.55	.56	.58
8	.76	.68	.64	.61	.51	.45	.52	.51	.55	.55	.56	.58
9	.75	.69	.64	.61	.51	.45	.52	.51	.55	.55	.57	.58
10	.74	* .69	.64	.61	.51	.45	.52	.51	.55	.54	.57	.58
11	.73	.68	.64	.61	.51	.45	.52	* .51	.55	.54	.57	.58
12	.73	.68	.64	.61	.51	.46	.52	.51	.55	.54	.57	.58
13	.72	.67	.65	.61	.51	.46	.52	.50	.55	.54	.57	.58
14	.72	.66	.65	.61	.50	.46	.52	.50	.55	.54	.58	.58
15	.72	.65	.65	.60	.50	.46	.52	.50	* .55	.54	.58	.58
16	.72	.65	.66	.59	.50	.46	.52	.50	.55	.54	.58	.58
17	.72	.64	.66	.58	.50	.46	.52	.49	.55	.55	.58	.59
18	.72	.64	.66	.58	.49	.47	.52	.49	.55	.55	.58	.59
19	.72	.64	.66	.57	.49	.47	.52	.50	.54	.55	.59	.59
20	.72	.64	.66	.56	.49	.47	.52	.50	.54	.55	.59	.59
21	.72	.64	.66	.55	.49	.47	.52	.51	.54	.55	.59	.60
22	.72	.64	.66	.55	.49	.47	.51	.52	.54	.55	.59	.60
23	.72	.64	.66	.54	.49	.48	.50	.53	.54	.55	.60	.60
24	.72	.64	* .66	.54	.49	.48	.49	.54	.53	.55	.60	.60
25	.72	.64	.66	.53	.49	.48	.49	.54	.53	.55	.60	.60
26	.72	.64	.66	.53	.49	.48	.48	.55	.53	.55	.60	.60
27	.72	.64	.66	.52	.49	.48	.47	.55	.53	.55	.60	.60
28	.71	.64	.67	* .52	.49	.49	.46	.55	.52	.55	.60	.60
29	.71	.67	.67	.52	.49	.49	.47	.54	.52	.55	.60	.60
30	.70	.67	.67	.52	.48	.49	.48	.54	.52	.55	.60	.60
31	.69	.67	.67	.48				.49	.54	.55		
Sum		18.47		17.55		14.08		16.02		16.92		18.32
	22.64		20.23		15.48		15.67		16.24		17.35	

Current Year 1999

Period 1969-1999

Month	Extreme Gage Meters			Extreme-Cubic Meters per Second			Average	Volume-Thousand Cubic Meters			
	High		Low	Day	High	Low		Total	Average	Maximum	Minimum
	High	Low	Day	Day	High	Low	Day				
Jan.	0.350	0.325	1.6	0.77	31	0.69	0.73	1,956	3,825	5,822	431
Feb.	.325	.310	10	.69	117	.64	.66	1,596	3,469	5,189	470
Mar.	.320	.310	131	.67	11	.64	.65	1,748	3,758	5,642	649
April	.320	.270	11	.67	128	.52	.59	1,516	3,518	5,359	785
May	.270	.255	1	.52	130	.48	.50	1,337	3,507	5,600	889
June	.260	.245	128	.49	18	.45	.47	1,217	3,257	5,021	836
July	.270	.250	16	.52	28	.46	.51	1,354	3,263	5,387	698
Aug.	.280	.260	126	.55	11	.49	.52	1,384	3,231	5,330	818
Sept.	.280	.270	15	.55	128	.52	.54	1,403	3,340	5,448	965
Oct.	.280	.275	15	.55	11	.53	.55	1,462	3,682	6,428	1,249
Nov.	.295	.280	123	.60	11	.55	.58	1,499	3,691	5,979	1,335
Dec.	.295	.290	1	.60	7	.58	.59	1,583	3,836	5,808	1,398
Yearly	0.350	0.245		0.77		0.45	0.57	18,055	42,377	63,943	12,152

* Discharge measurement made on this day

Mean daily

And other days

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

DESCRIPTION: Rectangular sharp-crested weir of 0.50 CMS 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 kilometers northwest of Cd. Acuna, Coahuila. This creek enters the Rio Grande from Mexico at river kilometer 919, 16.2 river kilometers upstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila. The zero of the gage is 284.19 meters 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 1999.

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 METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.04	.05	.04	.04	.05	.04	.04	.04	.04	.04	.04	.04
2	.04	.05	.04	.04	.05	.04	.04	.04	.04	.04	.04	.04
3	.04	.05	.04	.04	.05	.04	.04	.04	.04	.04	.04	.04
4	.04	.05	.04	.04	.05	.04	.04	.04	.04	.04	.04	.04
5	.04	.05	.04	.04	.05	.04	.04	.04	.04	.04	.04	.04
6	.04	.05	.04	.04	.05	.04	.04	.04	.04	.04	.04	.04
7	.04	.05	.04	.04	.05	.04	.04	.04	.04	.04	.04	.04
8	.04	.05	.04	.05	.04	.04	.04	.04	.04	.04	.04	.04
9	.04	.05	.04	.05	.04	.04	.04	.04	.04	.04	.04	.04
10	.04	.05	.04	.05	.04	.04	.04	.04	.04	.04	.04	.04
11	.04	.05	.04	.05	.04	.04	.04	.04	.04	.04	.04	.04
12	.04	.05	.04	.05	.04	.04	.04	.04	.04	.04	.04	.04
13	.04	.05	.04	.05	.04	.04	.04	.04	.04	.04	.04	.04
14	.04	.05	.04	.05	.04	.04	.04	.04	.04	.04	.04	.04
15	.04	.05	.04	.05	.04	.04	.04	.04	.04	.04	.04	.04
16	.04	.05	.04	.05	.04	.04	.04	.04	.04	.04	.04	.04
17	.04	.05	.04	.05	.04	.04	.04	.04	.04	.04	.04	.04
18	.04	.04	.04	.05	.04	.04	.04	.04	.04	.04	.04	.04
19	.04	.04	.04	.05	.04	.04	.04	.04	.04	.04	.04	.04
20	.05	.04	.04	.05	.04	.04	.04	.04	.04	.04	.04	.04
21	.05	.04	.04	.05	.04	.04	.04	.04	.04	.04	.04	.04
22	.05	.04	.04	.05	.04	.04	.04	.04	.04	.04	.04	.04
23	.05	.04	.04	.05	.04	.04	.04	.04	.04	.04	.04	.04
24	.05	.04	.04	.05	.04	.04	.04	.04	.04	.04	.04	.04
25	.05	.04	.04	.05	.04	.04	.04	.04	.04	.04	.04	.04
26	.05	.04	.04	.05	.04	.04	.04	.04	.04	.04	.04	.04
27	.05	.04	.04	.05	.04	.04	.04	.04	.04	.04	.04	.04
28	.05	.04	.04	.05	.04	.04	.04	.04	.04	.04	.04	.04
29	.05	.04	.04	.05	.04	.04	.04	.04	.04	.04	.04	.04
30	.05	.04	.04	.05	.04	.04	.04	.04	.04	.04	.04	.04
31	.05	.04	.04	.05	.04	.04	.04	.04	.04	.04	.04	.04
Sum		1.29		1.44		1.20		1.24		1.24		1.24
	1.36		1.24		1.30		1.24		1.20		1.20	

Current Year 1999

Period 1969-1999

Month	Extreme Gage Meters		Extreme-Cubic Meters per Second		Average	Volume-Thousand Cubic Meters					
	High	Low	Day	Day		Total	Average	Maximum	Minimum		
Jan.	0.085	0.085	120	0.05	1 1	0.04	0.04	118	176	241	83.8
Feb.	.085	.085	1 1	.05	118	.04	.05	111	159	213	84.7
Mar.	.085	.085	1 1	.04	1 1	.04	.04	107	172	227	80.1
April	.085	.080	1 7	.05	1 1	.04	.05	124	166	220	78.0
May	.080	.075	1 1	.05	1 7	.04	.04	112	171	229	80.1
June	.080	.075	1 1	.04	1 1	.04	.04	104	162	223	77.8
July	.080	.080	1 1	.04	1 1	.04	.04	107	163	213	54.0
Aug.	.085	.080	1 1	.04	1 1	.04	.04	107	166	241	54.0
Sept.	.085	.080	1 1	.04	1 1	.04	.04	104	164	233	52.1
Oct.	.085	.080	1 1	.04	1 1	.04	.04	107	173	241	54.0
Nov.	.085	.080	1 1	.04	1 1	.04	.04	104	168	233	78.0
Dec.	.080	.080	1 1	.04	1 1	.04	.04	107	174	241	80.1
Yearly	0.085	0.075		0.05		0.04	0.04	1,312	2,014	2,650	892

Mean daily

And other days

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

DESCRIPTION: Cipolletti weir of 1.00 CMS capacity, located at latitude 29°24'20", longitude 101°02'25", 0.3 kilometer upstream from its confluence with the Rio Grande, and about 13.7 kilometers northwest of Cd. Acuna, Coahuila. This creek enters the Rio Grande from Mexico at river kilometer 918, 5.6 river kilometers downstream from Amistad Dam and 15.1 kilometers 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 1999.

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 kilometer 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 CMS.

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.17	0.17	0.17	0.17	0.18	0.17	0.19	0.19	0.20	0.19	0.19	0.19
2	.17	.17	.17	.17	.18	.17	.19	.19	.20	.19	.19	.19
3	.17	.17	.17	.17	.18	.17	.19	.19	.20	.19	.19	.19
4	.17	.17	.17	.17	.18	.17	.19	.19	.20	.19	.19	.19
5	.17	.17	.17	.17	.18	.17	.19	.19	.20	.19	.19	.19
6	.17	.17	.17	.17	.18	.17	.19	.19	.20	.19	.19	.19
7	.17	.17	.17	.17	.18	.17	.19	.19	.20	.19	.19	.19
8	.17	.17	.17	.17	.18	.17	.19	.19	.20	.19	.19	.19
9	.17	.17	.17	.17	.18	.17	.19	.19	.20	.19	.19	.19
10	.17	.17	.17	.17	.18	.18	.19	.19	.20	.19	.19	.19
11	.17	.17	.17	.17	.18	.18	.19	.19	.20	.19	.19	.19
12	.17	.17	.17	.17	.18	.18	.19	.19	.20	.19	.19	.19
13	.17	.17	.17	.17	.18	.18	.19	.19	.20	.19	.19	.19
14	.17	.17	.17	.17	.18	.18	.19	.19	.20	.19	.19	.19
15	.17	.17	.17	.17	.18	.18	.19	.19	.20	.19	.19	.19
16	.17	.17	.17	.17	.18	.18	.19	.19	.20	.19	.19	.19
17	.17	.17	.17	.17	.18	.18	.19	.19	.20	.19	.19	.19
18	.17	.17	.17	.17	.18	.18	.19	.19	.20	.19	.19	.19
19	.17	.17	.17	.17	.18	.18	.19	.19	.20	.19	.19	.19
20	.17	.17	.17	.17	.18	.18	.19	.19	.20	.19	.19	.19
21	.17	.17	.17	.17	.18	.18	.19	.20	.19	.19	.19	.19
22	.17	.17	.17	.18	.17	.18	.19	.20	.19	.19	.19	.19
23	.17	.17	.17	.18	.17	.18	.19	.20	.19	.19	.19	.19
24	.17	.17	.17	.18	.17	.19	.19	.20	.19	.19	.19	.19
25	.17	.17	.17	.18	.17	.19	.19	.20	.19	.19	.19	.19
26	.17	.17	.17	.18	.17	.19	.19	.20	.19	.19	.19	.19
27	.17	.17	.17	.18	.17	.19	.19	.20	.19	.19	.19	.19
28	.17	.17	.17	.18	.17	.19	.19	.20	.19	.19	.19	.19
29	.17	.17	.17	.18	.17	.19	.19	.20	.19	.19	.19	.19
30	.17	.17	.17	.18	.17	.19	.19	.20	.19	.19	.19	.19
31	.17	.17	.17	.17	.18	.17	.19	.19	.20	.19	.19	.19
Sum		4.76	5.19	5.38	6.03			5.89	5.70			
	5.27	5.27	5.46	5.89	5.88							

Current Year 1999

Period 1961-1999

Month	Extreme Gage Meters		Extreme-Cubic Meters per Second				Average	Total	Average	Maximum	Minimum
	High	Low	Day	High	Day	Low					
Jan.	0.205	0.200	1 1	0.17	1 1	0.17	0.17	455	436	651	8.4
Feb.	.205	.200	1 1	.17	1 1	.17	.17	411	399	624	6.7
Mar.	.205	.205	1 1	.17	1 1	.17	.17	455	435	725	11.5
April	.210	.205	122	.18	1 1	.17	.17	448	451	937	7.8
May	.210	.205	1 1	.18	1 20	.17	.18	465	452	664	7.8
June	.220	.205	124	.19	1 1	.17	.18	509	420	657	8.0
July	.220	.220	1 1	.19	1 1	.19	.19	521	439	653	8.3
Aug.	.225	.220	118	.20	1 1	.19	.19	508	452	648	8.1
Sept.	.225	.220	1 1	.20	1 19	.19	.20	509	474	671	8.0
Oct.	.220	.215	1 1	.19	1 1	.19	.19	492	437	638	7.8
Nov.	.220	.220	1 1	.19	1 1	.19	.19	509	444	664	8.0
Dec.	.220	.220	1 1	.19	1 1	.19	.19				
Yearly	0.225	0.200		0.20		0.17	0.18	5,754	5,321	7,674	268

* Mean daily

! And other days

08-4511.20 MARIS SPRING NEAR CD. ACUNA, COAHUILA

DESCRIPTION: Cipolletti weir of 3.00 CMS capacity and staff gage located at the spring about 30 meters from the right bank of the Rio Grande at latitude 29°24'00", longitude 101°01'40", and about 12.9 kilometers northwest of Cd. Acuna, Coahuila. This spring enters the Rio Grande from Mexico at river kilometer 917, 14.3 river kilometers upstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila and 6.4 river kilometers 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 1999.

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 may 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 CMS 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 METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.24	.24	.25	.25	.24	.24	.27	.25	.26	.25	.25	.24
2	.24	.24	.25	.25	.24	.24	.27	.25	.26	.25	.25	.24
3	.24	.24	.25	.25	.24	.24	.27	.25	.26	.25	.25	.24
4	.25	.24	.25	.25	.24	.24	.26	.25	.26	.25	.25	.24
5	.25	.24	.25	.25	.24	.24	.26	.25	.26	.25	.25	.24
6	.25	.24	.25	.25	.24	.24	.26	.25	.26	.25	.25	.24
7	.25	.24	.25	.25	.24	.24	.26	.25	.26	.25	.25	.24
8	.25	.24	.25	.25	.24	.24	.26	.25	.26	.25	.25	.24
9	.25	.24	.25	.25	.24	.24	.26	.25	.26	.25	.25	.24
10	.25	.24	.25	.25	.24	.24	.26	.25	.26	.25	.25	.24
11	.25	.24	.25	.25	.24	.24	.26	.25	.26	.25	.25	.24
12	.25	.24	.25	.25	.24	.24	.26	.25	.26	.25	.25	.24
13	.25	.24	.25	.25	.24	.24	.26	.25	.25	.25	.25	.24
14	.24	.25	.25	.25	.24	.24	.26	.25	.25	.25	.25	.24
15	.24	.25	.25	.25	.24	.24	.26	.25	.25	.25	.25	.24
16	.24	.25	.25	.25	.24	.24	.26	.25	.25	.25	.25	.24
17	.25	.25	.25	.25	.24	.24	.26	.25	.25	.25	.25	.24
18	.25	.25	.25	.25	.24	.24	.26	.25	.25	.25	.25	.24
19	.25	.25	.25	.25	.24	.24	.26	.25	.25	.25	.25	.24
20	.25	.25	.25	.25	.24	.24	.26	.25	.25	.25	.25	.24
21	.25	.25	.25	.25	.24	.24	.26	.25	.25	.25	.25	.24
22	.25	.25	.25	.25	.24	.25	.26	.25	.25	.25	.25	.24
23	.25	.25	.25	.25	.24	.25	.26	.25	.25	.25	.25	.24
24	.24	.25	.25	.25	.24	.25	.26	.25	.25	.25	.25	.24
25	.24	.25	.25	.25	.24	.24	.26	.25	.25	.25	.25	.24
26	.24	.25	.25	.24	.24	.26	.25	.25	.25	.25	.25	.24
27	.24	.25	.25	.24	.24	.26	.25	.25	.25	.24	.24	.24
28	.24	.25	.25	.24	.24	.26	.25	.26	.25	.24	.24	.24
29	.24	.25	.25	.24	.24	.27	.25	.26	.25	.24	.24	.24
30	.24	.25	.25	.24	.24	.27	.25	.26	.25	.24	.24	.24
31	.24	.25	.25	.24	.24	.26	.26	.25	.26	.24	.24	.24
Sum		6.87	7.44	7.37	7.79			7.67			7.46	
	7.61	7.75	7.44	8.03	7.62			7.67			7.46	

Current Year 1999

Period 1961-1999

Month	Extreme Gage Meters		Extreme-Cubic Meters per Second		Average	Total	Volume-Thousand Cubic Meters				
	High	Low	Day	Day			Average	Maximum	Minimum		
Jan.	0.070	0.065	1.4	0.25	1.1	0.24	0.25	658	694	1,152	5.4
Feb.	.070	.065	114	.25	1.1	.24	.25	594	622	1,136	5.0
Mar.	.070	.070	1.1	.25	1.1	.25	.25	670	683	1,179	7.0
April	.080	.065	1.1	.25	125	.24	.25	643	686	1,217	10.4
May	.065	.060	1.1	.24	1.1	.24	.24	643	745	1,624	10.7
June	.110	.060	129	.27	1.1	.24	.25	637	723	1,719	7.4
July	.110	.070	1.1	.27	126	.25	.26	694	741	1,693	9.8
Aug.	.085	.070	128	.26	117	.25	.25	673	757	1,524	7.6
Sept.	.105	.070	1.1	.26	113	.25	.25	658	772	1,434	13.3
Oct.	.065	.065	1.1	.25	124	.24	.25	663	833	1,752	13.4
Nov.	.065	.065	1.1	.25	127	.24	.25	645	768	1,650	12.7
Dec.	.065	.055	1.1	.24	1.1	.24	.24	643	719	1,464	10.7
Yearly	0.110	0.055		0.27		0.24	0.25	7,821	8,743	16,058	74.3

Mean daily

And other days

DB-4511.30 EIGHT MILE CREEK NEAR DEL RIO, TEXAS

DESCRIPTION: Concrete wall with 90° V-notch weir of 0.20 CMS capacity at latitude 29°24'00", longitude 101°00'55", 1.3 creek kilometers upstream from its confluence with the Rio Grande, and about 12.9 kilometers northwest of Del Rio, Val Verde County, Texas. This stream enters the Rio Grande from the United States at river kilometer 916, 7.4 river kilometers downstream from Amistad Dam and 13.4 kilometers 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 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 12 current-meter measurements during the year. Mean daily discharges determined by prorating between measurements. Records available: March 1961 through 1999.

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 Meters per Second			
Daily:	Max.	0.45	July 23 & 24, 1976
Monthly:	Max.	0.18	July 1976
Yearly:	Max.	0.11	1974 & 1975

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	0	0	0	0	0	0	*	0	*	0
2	0	0	0	0	0	0	0	0	*	0	*	0
3	0	0	*	0	0	*	0	0	0	0	*	0
4	0	*	0	0	0	0	0	0	0	0	*	0
5	0	0	0	0	*	0	0	0	0	0	0	0
6	*	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	*	0	0	0	0	0
8	0	0	0	*	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	*	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0
31	0	0	0	0	0	0	0	0	0	0	0	0
Sum	0	0	0	0	0	0	0	0	0	0	0	0

Current Year 1999**Period 1961-1999**

Month	Extreme Gage Meters		Extreme-Cubic Meters per Second				Average	Volume-Thousand Cubic Meters			
			@ High		@ Low			Total	Average	Maximum	Minimum
	High	Low	Day	Day	Day	Day					
Jan.			1	0	1	0	0	0	131	363	0
Feb.			1	0	1	0	0	0	122	396	0
Mar.			1	0	1	0	0	0	127	386	0
April			1	0	1	0	0	0	117	313	0
May			1	0	1	0	0	0	118	412	0
June			1	0	1	0	0	0	101	264	0
July			1	0	1	0	0	0	101	481	0
Aug.			1	0	1	0	0	0	98.9	369	0
Sept.			1	0	1	0	0	0	98.3	296	0
Oct.			1	0	1	0	0	0	111	412	0
Nov.			1	0	1	0	0	0	112	396	0
Dec.			1	0	1	0	0	0	118	349	0
Yearly			0	0	0	0	0	0	1,355	3,567	0

* 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 floodplain of the Rio Grande at latitude 29°23'35", longitude 101°01'15", about 46 meters from the edge of the low-flow channel and about 12.9 kilometers northwest of Del Rio, Texas. Water from this spring enters the Rio Grande from the United States at river kilometer 916, 7.7 river kilometers downstream from Amistad Dam.

RECORDS: Based on 12 current-meter measurements during the year. Mean daily discharges determined by prorating between measurements. Records available: November 1961 through 1999.

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 CMS. 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 Meters 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 METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.10	0.08	0.08	0.08	0.09	0.07	0.08	0.08	* 0.10	* 0.08	0.09	0.07
2	.10	.08	.08	.08	.09	.07	.08	.08	.10	.08	.09	.07
3	.10	.08	* .08	.08	.09	* .07	.08	.08	.10	.08	* .09	* .07
4	.10	* .08	.08	.08	.09	.07	.08	.08	.10	.08	.09	.07
5	.10	.08	.08	* .08	.09	.07	.08	.08	.10	.08	.09	.07
6	* .10	.08	.08	.08	.09	.07	.08	.08	.10	.08	.09	.07
7	.10	.08	.08	.08	.09	.07	* .08	.08	.10	.08	.09	.07
8	.10	.08	* .08	.08	.09	.07	.08	.08	.10	.08	.09	.07
9	.10	.08	.08	.08	.09	.07	.08	* .08	.09	.08	.09	.07
10	.10	.08	.08	.08	.09	.07	.08	.08	.09	.08	.09	.07
11	.10	.08	.08	.08	.09	.07	.08	.08	.09	.08	.08	.07
12	.10	.08	.08	.08	.09	.07	.08	.08	.09	.08	.08	.07
13	.10	.08	.08	.08	.08	.07	.08	.08	.09	.08	.08	.07
14	.09	.08	.08	.08	.08	.07	.08	.08	.09	.08	.08	.07
15	.09	.08	.08	.08	.08	.07	.08	.08	.09	.08	.08	.07
16	.09	.08	.08	.08	.08	.07	.08	.09	.09	.08	.08	.07
17	.09	.08	.08	.08	.08	.07	.08	.09	.09	.08	.08	.07
18	.09	.08	.08	.08	.08	.07	.08	.09	.09	.08	.08	.07
19	.09	.08	.08	.08	.08	.08	.08	.09	.09	.09	.08	.07
20	.09	.08	.08	.08	.08	.08	.08	.09	.09	.09	.08	.08
21	.09	.08	.08	.08	.08	.08	.08	.09	.09	.09	.08	.08
22	.09	.08	.08	.09	.08	.08	.08	.09	.09	.09	.08	.08
23	.09	.08	.08	.09	.08	.08	.08	.09	.09	.09	.08	.08
24	.09	.08	.08	.09	.08	.08	.08	.09	.08	.09	.08	.08
25	.09	.08	.08	.09	.08	.08	.08	.09	.08	.09	.08	.08
26	.09	.08	.08	.09	.08	.08	.08	.09	.08	.09	.07	.08
27	.09	.08	.08	.09	.07	.08	.08	.10	.08	.09	.07	.08
28	.08	.08	.08	.09	.07	.08	.08	.10	.08	.09	.07	.08
29	.08	.08	.08	.09	.07	.08	.08	.10	.08	.09	.07	.08
30	.08	.08	.08	.09	.07	.08	.08	.10	.08	.09	.07	.08
31	.08	.08	.08	.09	.07		.08	.10	.08	.09		.08
Sum		2.24	2.49	2.22	2.70	2.62	2.29					
	2.88	2.48	2.55	2.48	2.71	2.45						

Current Year 1999**Period 1961-1999**

Month	Extreme Gage Meters		Extreme-Cubic Meters per Second			Average	Volume-Thousand Cubic Meters				
	High	Low	Day	High	Day		Total	Average	Maximum	Minimum	
Jan.			1	0.10	128	0.08	0.09	249	324	649	0
Feb.			1	.08	1	.08	.08	194	304	628	0
Mar.			1	.08	1	.08	.08	214	327	650	0
April			122	.09	11	.08	.08	215	319	604	0
May			1	.09	127	.07	.08	220	344	633	.7
June			19	.08	1	.07	.07	192	316	580	0
July			1	.08	1	.08	.08	214	326	692	0
Aug.			127	.10	11	.08	.09	233	329	622	0
Sept.			1	.10	124	.08	.09	234	317	591	0
Oct.			118	.09	11	.08	.08	226	328	640	0
Nov.			1	.09	126	.07	.08	212	310	636	0
Dec.			120	.08	11	.07	.07	198	317	596	0
Yearly				0.10		0.07	0.08	2,601	3,861	6,978	0.7

* Discharge measurement made on this day

o Mean daily

! And other days

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

DESCRIPTION: Cipolletti weir of 1.00 CMS capacity, located at latitude 29°22'35", longitude 101°01'15", 966 creek meters upstream from its confluence with the Rio Grande, and about 10.5 kilometers northwest of Cd. Acuna, Coahuila. This stream enters the Rio Grande from Mexico at river kilometer 913, 10.1 river kilometers downstream from Amistad Dam and 10.6 river kilometers 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 1999.

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 may 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 METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.07	0.05	0.07	0.07	0.07	0.07	0.07	0.06	0.07	0.06	0.06	0.06
2	.07	.05	.07	.07	.07	.07	.07	.06	.07	.06	.06	.06
3	.07	.05	.07	.07	.07	.07	.07	.06	.07	.06	.06	.06
4	.07	.05	.07	.07	.07	.07	.07	.06	.07	.06	.06	.06
5	.07	.05	.07	.07	.07	.07	.07	.06	.07	.06	.06	.06
6	.07	.05	.07	.07	.07	.07	.07	.06	.07	.06	.06	.06
7	.07	.05	.07	.07	.07	.07	.07	.06	.07	.06	.06	.06
8	.07	.05	.07	.07	.07	.07	.07	.06	.07	.06	.06	.06
9	.07	.05	.07	.07	.07	.07	.07	.06	.07	.06	.06	.06
10	.07	.06	.07	.07	.07	.07	.07	.06	.07	.06	.06	.06
11	.07	.06	.07	.07	.07	.07	.07	.06	.07	.06	.06	.06
12	.07	.06	.07	.07	.07	.07	.07	.06	.07	.06	.06	.06
13	.07	.06	.07	.07	.07	.07	.07	.06	.07	.06	.06	.06
14	.06	.06	.07	.07	.07	.07	.07	.06	.07	.06	.06	.06
15	.06	.06	.07	.07	.07	.07	.07	.06	.07	.06	.06	.06
16	.06	.06	.07	.07	.07	.07	.07	.06	.07	.06	.06	.06
17	.06	.06	.07	.07	.07	.07	.07	.06	.07	.06	.06	.06
18	.06	.06	.07	.07	.07	.07	.07	.07	.07	.06	.06	.06
19	.06	.06	.07	.07	.07	.07	.07	.06	.07	.06	.06	.06
20	.06	.06	.07	.07	.07	.07	.07	.06	.07	.06	.06	.06
21	.06	.06	.07	.07	.07	.07	.07	.06	.07	.06	.06	.06
22	.06	.06	.07	.07	.07	.07	.07	.06	.07	.06	.06	.06
23	.06	.06	.07	.07	.07	.07	.07	.06	.07	.06	.06	.06
24	.06	.07	.07	.07	.07	.07	.07	.06	.07	.06	.06	.06
25	.06	.07	.07	.07	.07	.07	.07	.06	.07	.06	.06	.06
26	.06	.07	.07	.07	.07	.07	.07	.06	.07	.06	.06	.06
27	.06	.07	.07	.07	.07	.07	.07	.06	.07	.06	.06	.06
28	.05	.07	.07	.07	.07	.07	.07	.06	.07	.06	.06	.06
29	.05	.07	.07	.07	.07	.07	.07	.06	.07	.06	.06	.06
30	.05	.07	.07	.07	.07	.07	.07	.06	.07	.06	.06	.06
31	.05	.07	.07	.07	.07	.07	.07	.06	.07	.06	.06	.06
Sum		1.64		2.10		2.10		2.00		1.86		1.86
	1.95		2.17		2.17		2.04		1.98		1.80	

Current Year 1999

Period 1961-1999

Month	Extreme Gage Meters			Extreme-Cubic Meters per Second			Average	Volume-Thousand Cubic Meters			
	High	Low	Day	♦ High	Day	♦ Low		Total	Average	Maximum	Minimum
Jan.	0.110	0.095	1	0.07	128	0.05	0.06	168	202	348	18.7
Feb.	.105	.090	124	.07	1	.05	.06	142	185	317	17.1
Mar.	.110	.105	1	.07	1	.07	.07	187	203	403	17.5
April	.110	.110	1	.07	1	.07	.07	181	212	373	13.0
May	.115	.110	1	.07	1	.07	.07	187	208	323	7.3
June	.115	.110	1	.07	1	.07	.07	181	197	313	5.2
July	.110	.105	1	.07	119	.06	.07	176	190	312	0
Aug.	.110	.105	1	.07	1	.06	.06	173	197	398	0
Sept.	.110	.105	1	.07	119	.06	.07	171	206	337	16.2
Oct.	.105	.105	1	.06	1	.06	.06	161	218	348	14.9
Nov.	.105	.105	1	.06	1	.06	.06	156	203	382	17.5
Dec.	.105	.105	1	.06	1	.06	.06	161	207	382	18.7
Yearly	0.115	0.090		0.07		0.05	0.06	2,044	2,428	4,026	308

♦ Mean daily ! And other days

08-4513.00 CANTU SPRING NEAR DEL RIO, TEXAS

DESCRIPTION: Concrete enclosure located at the spring source in the channel of a small tributary to Cienegas Creek at latitude 29°23'15", longitude 100°56'00", about 4.0 kilometers northwest of Del Rio, Texas and 5.6 creek kilometers upstream from the confluence of Cienegas Creek with the Rio Grande. Cienegas Creek enters the Rio Grande at river kilometer 906, 3.0 river kilometers upstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila.

RECORDS: Based on 12 current-meter measurements during the year. Mean daily discharges determined by prorating between measurements. Records available: March 1961 through 1999.

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 Meters 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 METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.20	0.22	0.23	0.21	0.21	0.21	0.22	0.20	* 0.20	* 0.18	0.19	0.17
2	.20	.22	.23	.21	.21	.21	.22	.20	.20	.18	.19	.17
3	.20	.22	* .23	.20	.21	* .21	.22	.20	.20	* .18	* .19	.17
4	.20	* .22	.23	.20	.21	.21	.22	.19	.20	.18	.19	.17
5	.20	.22	.23	.20	* .21	.21	.22	.19	.20	.18	.19	.17
6	* .20	.22	.23	.20	.21	.21	.22	.19	.20	.18	.19	.17
7	.20	.22	.23	.20	.21	.21	* .22	.19	.20	.18	.19	.17
8	.20	.22	.23	* .20	.21	.21	.22	.19	.20	.18	.19	.17
9	.20	.22	.23	.20	.21	.21	.22	* .19	.19	.18	.19	.17
10	.20	.22	.23	.20	.21	.21	.22	.19	.19	.18	.19	.18
11	.20	.22	.22	.20	.21	.21	.22	.19	.19	.18	.18	.18
12	.20	.22	.22	.20	.21	.21	.22	.19	.19	.18	.18	.18
13	.20	.22	.22	.20	.21	.21	.21	.19	.19	.18	.18	.18
14	.21	.22	.22	.20	.21	.21	.21	.19	.19	.18	.18	.18
15	.21	.22	.22	.20	.21	.21	.21	.19	.19	.18	.18	.18
16	.21	.22	.22	.20	.21	.21	.21	.19	.19	.18	.18	.18
17	.21	.22	.22	.20	.21	.21	.21	.19	.19	.18	.18	.18
18	.21	.23	.22	.20	.21	.21	.21	.19	.19	.19	.18	.18
19	.21	.23	.22	.20	.21	.21	.21	.19	.19	.19	.18	.18
20	.21	.23	.22	.20	.21	.21	.21	.19	.19	.19	.18	.19
21	.21	.23	.22	.20	.21	.22	.21	.20	.19	.19	.18	.19
22	.21	.23	.21	.21	.21	.22	.21	.20	.19	.19	.18	.19
23	.21	.23	.21	.21	.21	.22	.21	.20	.19	.19	.18	.19
24	.21	.23	.21	.21	.21	.22	.20	.20	.18	.19	.18	.19
25	.21	.23	.21	.21	.21	.22	.20	.20	.18	.19	.18	.19
26	.21	.23	.21	.21	.21	.22	.20	.20	.18	.19	.17	.19
27	.21	.23	.21	.21	.21	.22	.20	.20	.18	.19	.17	.19
28	.22	.23	.21	.21	.21	.22	.20	.20	.18	.19	.17	.19
29	.22	.23	.21	.21	.21	.22	.20	.20	.18	.19	.17	.19
30	.22	.23	.21	.21	.21	.22	.20	.20	.18	.19	.17	.19
31	.22	.23	.21	.21	.21	.22	.20	.20	.19	.19	.18	.20
Sum		6.27	6.11	6.41	6.03	5.72	5.45					5.63
	6.42	6.81	6.51	6.55	5.71	5.72	5.45					

Current Year 1999

Period 1961-1999

Month	Extreme Gage Meters		Extreme-Cubic Meters per Second		Average	Volume-Thousand Cubic Meters			
	High	Low	Day	Day		Total	Average	Maximum	Minimum
Jan.			128	0.22	1 1	0.20	0.21	555	425
Feb.			118	0.23	1 1	.22	.22	542	382
Mar.			1	0.23	122	.21	.22	588	418
April			1	0.21	1 3	.20	.20	528	394
May			120	0.22	1 1	.21	.21	554	376
June			1	0.22	124	.20	.21	566	384
July			1	0.22	124	.20	.21	566	671
Aug.			1	0.20	1 4	.19	.19	521	387
Sept.			1	0.20	124	.18	.19	493	392
Oct.			118	0.19	1 1	.18	.18	494	430
Nov.			1	0.19	126	.17	.18	471	409
Dec.			31	0.20	1 1	.17	.18	486	418
Yearly				0.23	0.17	0.20	6,360	4,817	8,063

* Discharge measurement made on this day

* Mean daily

† And other days

08-4515.00 CIENEGAS CREEK NEAR DEL RIO, TEXAS

DESCRIPTION: Measurement sections, one each, located on Cienegas Creek at latitude 29°21'10", longitude 100°56'35", 0.8 creek kilometer upstream from its confluence with the Rio Grande; and for the Briggs Farm ditch, latitude 29°21'40", longitude 100°56'30", 884 meters downstream from the ditch intake which branches off the right bank of Cienegas Creek immediately upstream of a small diversion dam across the creek, and about 4.0 kilometers west of Del Rio, Val Verde County Texas. The point of diversion is 2.9 creek kilometers upstream from the confluence of Cienegas Creek with the Rio Grande. Cienegas Creek enters the Rio Grande at river kilometer 906, 3.0 river kilometers upstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila.

RECORDS: Based on 12 current-meter measurements at Cienegas Creek and 12 current-meter measurements at 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 1999. Discharge measurement data available since November 1962. Records are also available from September 1931 through June 1935 for a station 0.5 creek kilometer downstream. The station was moved 0.3 creek kilometer 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 Meters 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 METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.31	0.32	0.30	0.35	0.42	0.36	0.40	0.30	* 0.28	* 0.30	0.31	0.31
2	.32	.32	.30	.35	.42	.35	.40	.30	.28	.30	.31	.31
3	.32	.32	* .30	.35	.43	* .35	.40	.29	.28	.30	* .31	.31
4	.32	* .32	.30	.35	.43	.35	.40	.29	.28	.30	.31	.31
5	.32	.32	.30	.35	* .43	.35	.41	.29	.28	.30	.31	.31
6	* .32	.32	.31	.36	.43	.36	.41	.28	.28	.30	.31	.31
7	.32	.32	.31	.36	.42	.36	* .41	.28	.28	.31	.31	.31
8	.32	.32	.31	* .36	.42	.36	.40	.27	.28	.31	.31	.31
9	.32	.32	.31	.36	.42	.36	.40	* .27	.28	.31	.31	.32
10	.32	.32	.31	.36	.42	.36	.40	.27	.28	.30	.31	.32
11	.32	.31	.32	.37	.41	.36	.39	.27	.28	.30	.31	.32
12	.32	.31	.32	.37	.41	.37	.39	.27	.28	.30	.31	.32
13	.32	.31	.32	.37	.41	.37	.39	.27	.28	.30	.31	.32
14	.32	.31	.32	.37	.41	.37	.38	.27	.28	.30	.31	.32
15	.32	.31	.32	.38	.40	.37	.38	.27	.28	.30	.31	.32
16	.32	.31	.33	.38	.40	.37	.37	.27	.28	.30	.31	.32
17	.32	.31	.33	.38	.40	.37	.37	.27	.28	.30	.31	.32
18	.32	.31	.33	.38	.39	.38	.37	.27	.28	.30	.31	.32
19	.32	.31	.33	.38	.39	.38	.36	.27	.28	.30	.31	.32
20	.31	.31	.33	.39	.39	.38	.36	.27	.30	.31	.31	.33
21	.32	.31	.32	.39	.39	.38	.35	.28	.30	.31	.31	.33
22	.32	.31	.33	.40	.38	.38	.35	.28	.30	.31	.31	.33
23	.32	.31	.33	.40	.38	.39	.35	.28	.30	.31	.31	.33
24	.32	.31	.33	.41	.38	.39	.33	.28	.30	.31	.31	.33
25	.32	.30	.33	.41	.37	.39	.33	.28	.30	.31	.31	.33
26	.32	.30	.33	.41	.37	.39	.33	.28	.30	.31	.31	.33
27	.32	.30	.34	.41	.37	.39	.32	.28	.30	.31	.31	.33
28	.32	.30	.34	.41	.37	.39	.32	.28	.30	.31	.31	.33
29	.32	.30	.34	.42	.36	.40	.31	.28	.30	.31	.31	.33
30	.32	.30	.34	.42	.36	.40	.31	.28	.30	.31	.31	.33
31	.32		.34	.36			.31	.28		.31		.34
Sum		8.74		11.40		11.18		8.62		9.44		9.97
	9.90		9.97		12.34		11.40		8.68		9.30	

Current Year 1999

Period 1965-1999

Month	Extreme Gage Meters		Extreme-Cubic Meters per Second		Average	Volume-Thousand Cubic Meters					
	High	Low	High	Low		Total	Average	Maximum	Minimum		
			Day	Day							
Jan.			1.2	0.32	1	0.31	0.32	855	975	1,532	163
Feb.			1.1	.32	125	.30	.31	755	897	1,512	121
Mar.			127	.34	1 1	.30	.32	861	935	1,563	85.6
April			129	.42	1 1	.35	.38	985	870	1,388	59.2
May			1.3	.43	129	.36	.40	1,066	875	1,430	81.7
June			129	.40	1 2	.35	.37	966	818	1,322	18.1
July			1.5	.41	129	.31	.37	985	796	1,884	9.3
Aug.			1.1	.30	1 8	.27	.28	745	796	1,531	8.0
Sept.			117	.30	1 1	.28	.29	750	798	1,287	16.2
Oct.			1.7	.31	1 1	.30	.30	816	909	1,400	19.1
Nov.			1.1	.31	1 1	.31	.31	804	889	1,378	31.1
Dec.			31	.34	1 1	.31	.32	861	936	1,441	78.6
Yearly				0.43		0.27	0.33	10,449	10,494	15,992	856

* Discharge measurement made on this day

o 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 kilometer 903, 360 meters upstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila and 20.4 river kilometers downstream from Amistad Dam. The zero of the gage is 264.93 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 18 current-meter measurements during the year, 12 by the United States Section and 6 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 current-meter measurements. Records available: December 1923 through July 2, 1941 and January 1968 through 1999. Records are available from May 1900 through April 1915 for a station 19.6 kilometers upstream; from December 1919 through March 1920 for a station 14.0 kilometers upstream near McKeel's Switch; from July 2, 1941 through 1954 and October 1960 through 1967 for a station 366 meters downstream at the international highway bridge; and from September 1954 through the current year for a station, Rio Grande below Amistad Dam, 17.0 kilometers 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 CMS occurred on June 28, 1954, with a gage height of 11.66 meters at a station 360 meters downstream. The lowest recorded flow was 3.51 CMS which occurred March 5 and 6, 1969, with a gage height of 0.38 meters.

Average Flow in Cubic Meters 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 METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	12.3	12.3	36.4	105	33.0	34.4	34.9	24.5	23.2	24.2	22.5	23.1
2	12.3	12.5	37.2	109	33.1	34.1	35.4	24.3	22.2	23.3	22.1	23.6
3	12.1	13.1	36.7	104	33.4	34.3	34.6	24.1	22.9	21.9	23.8	24.5
4	12.1	12.8	36.7	108	34.0	34.2	35.2	23.5	22.4	24.2	23.6	24.5
5	12.1	12.3	37.3	106	31.9	34.5	35.3	23.2	22.6	24.2	23.5	24.3
6	12.4	12.2	37.8	101	34.4	34.1	35.6	23.0	21.6	24.3	24.1	22.7
7	12.4	16.4	37.6	105	34.6	33.9	35.1	23.3	22.8	23.1	23.3	22.6
8	12.4	32.4	37.0	106	34.8	33.8	33.4	23.9	22.8	23.5	22.7	22.6
9	11.9	33.1	37.7	104	34.4	34.1	33.2	23.6	22.2	23.7	23.1	22.7
10	11.8	34.7	98.3	104	33.7	34.3	34.2	23.8	22.8	24.6	22.7	23.6
11	12.3	34.6	114	102	34.1	34.4	35.0	23.9	22.7	24.4	22.5	23.9
12	12.3	35.5	114	102	34.7	35.9	34.3	23.3	23.2	23.3	21.9	22.4
13	12.2	35.9	110	102	33.3	52.1	34.1	24.1	23.5	23.9	21.8	24.2
14	12.2	35.7	106	102	35.0	76.2	34.6	23.6	23.0	23.8	22.4	25.6
15	12.1	35.9	115	101	32.5	79.0	* 35.3	23.1	22.8	* 23.9	21.7	23.9
16	12.0	35.7	112	* 99.8	36.2	76.5	35.2	23.3	23.3	23.1	21.6	24.7
17	12.0	34.9	113	99.4	35.1	80.6	34.6	23.2	* 22.3	23.4	21.9	* 24.5
18	12.2	34.4	112	102	35.0	78.5	34.9	23.2	20.2	23.0	21.7	24.8
19	12.2	* 36.8	108 *	102	35.5	80.3	35.1	23.1	20.5	23.6	* 21.5	24.2
20	12.3	35.9	111	102	36.6	82.2	34.9	* 22.8	20.3	23.0	22.6	22.8
21	12.2	35.3	112	102	* 35.3	77.7	34.2	23.1	20.8	22.9	22.5	23.7
22	11.3	35.5	110	103	34.6	80.5	34.1	22.1	20.6	23.1	24.0	23.6
23	11.4	46.0	108	104 *	32.4	* 79.0	33.9	22.6	21.2	25.2	22.7	24.0
24	11.5	38.0	110	105	36.0	79.2	31.8	24.0	21.9	24.1	22.9	23.6
25	* 11.9	36.3	106	101	34.4	79.2	32.1	24.0	23.0	23.8	22.2	25.2
26	12.8	35.8	111	76.0	34.2	72.6	23.6	23.4	22.3	24.5	23.9	23.7
27	12.8	35.6	107	34.5	34.3	45.4	23.8	23.4	22.5	24.1	22.9	24.0
28	12.5	35.5	109	34.0	33.9	35.5	24.3	23.2	22.0	23.1	23.5	23.9
29	12.6	106	32.7	34.1	35.6	24.2	24.0	23.1	22.6	22.7	24.0	
30	12.5	108	33.0	31.1	36.2	24.2	24.4	22.8	23.6	23.2	24.2	
31	12.5	108			33.7	23.7	23.5			21.8		24.5

Sum 845.1 2,791.4 1,638.3 728.5 731.2 739.6

377.6 2,742.7 1,059.3 1,004.8 667.5 681.5

Current Year 1999 Period 1968-1999

Month	Extreme Gage Meters		Extreme-Cubic Meters per Second			Average	Volume-Thousand Cubic Meters			
	High	Low	Day	High	Day		Total	Average	Maximum	Minimum
Jan.	0.470	0.450	125	13.1	22	10.7	12.2	32,625	118,507	272,866
Feb.	.820	.460	23	93.5	5	11.8	30.2	73,017	153,202	552,852
Mar.	.965	.490	16	156	1	15.9	88.5	236,969	188,791	489,570
April	1.060	.470	16	190	27	11.6	93.0	241,177	206,921	566,611
May	.720	.465	22	61.6	22	12.3	34.2	91,524	278,575	669,284
June	1.050	.470	17	194	26	13.3	54.6	141,549	210,730	512,957
July	.745	.445	25	70.6	26	10.2	32.4	86,815	172,717	452,566
Aug.	.650	.430	24	46.0	16	8.86	23.5	62,942	186,812	827,137
Sept.	.645	.430	25	44.3	20	8.12	22.3	57,672	228,750	1,637,441
Oct.	.660	.430	21	47.9	29	8.75	23.6	63,176	208,762	1,005,540
Nov.	.650	.435	6	44.6	7	8.97	22.7	58,882	124,905	650,690
Dec.	.700	.440	14	56.3	12	9.07	23.9	63,901	108,384	282,187
Yearly	1.060	0.430		194		8.12	38.4	1,210,249	2,187,056	14,617,893
										627,328

* Discharge measurement made on this day ! And other days ** Period 1968-1999

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

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

DESCRIPTION: Cableway, concrete wall with a V-shape concrete control weir of 10 CMS 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 kilometers upstream from its confluence with the Rio Grande. This stream enters the Rio Grande at river kilometer 903 on the upstream side of the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila and 20.7 river kilometers downstream from Amistad Dam. The zero of the gage is 270.00 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 26 current-meter measurements during the year, 22 by the Mexican Section and 4 by the United States Section, 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 26, 1938 through 1999.

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 CMS, constructed at this station, started operating December 14, 1961. On June 28, 1954, backwater from the Rio Grande reached an elevation of 275.08 meters 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 CMS with a gage height of 7.70 meters on June 17, 1961. Min. no flow on several occasions.

Average Flow in Cubic Meters per Second

Daily:	Max.	678	June 17, 1961	Min.	0	Occasionally
Monthly:	Max.	29.8	June 1961	Min.	.01	Occasionally
Yearly:	Max.	2.74	1961	Min.	.08	1952

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.14	0.11	0.12	0.25	0.23	0.14	0.36	0.19	0.25	0.15	0.27	0.21
2	.13	.12	.12	.23	.21	.13	.32	.16	.21	.13	.25	.21
3	.14	.12	.11	.21	.22	.14	.28	.18	.20	.12	.24	.21
4	.14	.11	.11	.21	.20	.17	.34	.19	.19	.15	.24	.21
5	.14	.11	.11	.17	.17	.16	.42	.16	.17	.15	.23	.21
6	.13	.11	.12	.17	.16	.14	.41	.14	.19	.15	.21	.21
7	.12	.11	.14	.16	.16	.15	.36	.13	.19	.14	.20	.21
8	.12	.11	.13	.15	.16	.14	* .33	.13	.21	.13	.19	.23
9	.12	.11	.12	.15	.16	.14	.32	.12	* .21	.13	.19	.25
10	.13	.15	.12	.14	.15	.14	.31	.12	.19	.14	.19	.25
11	.12	* .15	.13	.14	.16	.14	.68	.12	.17	.13	.17	.25
12	.12	* .14	.14	* .17	.17	.14	.46	* .13	.16	.13	.17	.25
13	.13	.14	.12	.17	* .39	.18	.42	.12	.61	.12	.17	.25
14	.14	.14	.14	.17	.31	.31	.40	.10	.23	.12	.17	.25
15	.14	.15	* .14	.15	.27	.88	.38	.10	.23	.12	.15	.23
16	.16	.15	.14	.15	.27	.24	.37	.09	.21	.11	.17	.25
17	.15	.14	.14	.15	.28	.88	.37	.08	.15	.17	* .17	.25
18	.15	.14	.14	.14	.27	.38	.38	.08	.14	.14	.19	.25
19	.15	.12	.14	.14	.25	.23	.40	* .09	.14	.16	.20	.25
20	.15	.12	.14	.12	.24	27.6	.41	.09	.14	.18	.21	.26
21	.15	.11	.14	.12	.21	* 12.3	.39	.09	.13	.20	.22	.27
22	.13	.11	.14	.12	.20	1.46	.37	.09	.13	.23	* .24	.29
23	.14	.10	.14	.12	.19	.89	.36	.09	.14	.25	.23	.27
24	.13	.10	.12	7.87	.19	.64	.35	23.4	.15	.25	.22	.27
25	.13	.09	.12	1.22	.19	.56	.30	18.2	.15	* .27	.21	.27
26	.13	.11	.13	.58	.19	.52	.29	.74	.16	.27	.22	.25
27	.12	.11	5.82	.32	.19	.49	.29	.42	.16	.30	.21	.29
28	.11	.12	1.77	.25	.21	.46	.26	.33	.16	.30	.21	.29
29	.11	.10	.40	.25	.20	.42	.24	.30	.16	.33	.21	.26
30	.11	.11	.30	.23	.20	.39	.22	.28	.16	.34	.21	.25
31	.11	.11	.25	.18		.19	.19	.26		.33		.25
Sum		3.40		14.42		50.56		46.72		5.84		7.65
	4.09		11.90		8.15		10.98		5.69		6.16	

Current Year 1999

Period 1938-1999

Month	Extreme Gage Meters			Extreme-Cubic Meters per Second			Average	Volume-Thousand Cubic Meters				
	High		Low	Day	High	Day		Total	Average	Maximum	Minimum	
	High	Low	Day	High	Day	Low						
Jan.	0.130	0.105	18	0.17	122	0.10	0.13	353	500	1,420	38.9	
Feb.	.130	.100	10	.17	25	.08	.12	294	607	7,339	40.6	
Mar.	1.060	.110	27	53.6	1	.11	.38	1,028	737	3,214	72.6	
April	1.300	.110	24	70.0	21	.11	.48	1,246	1,547	20,483	93.3	
May	.540	.120	12	7.33	110	.14	.26	704	1,574	11,194	111	
June	1.855	.110	20	140	1 2	.11	1.69	4,368	2,658	77,118	53.6	
July	.280	.130	11	1.17	31	.17	.35	949	1,556	20,240	31.0	
Aug.	1.780	.095	24	129	17	.07	1.51	4,037	2,017	31,967	51.8	
Sept.	.470	.110	13	5.00	19	.11	.19	492	3,012	61,139	45.8	
Oct.	.170	.095	30	.35	11	.08	.19	505	1,768	25,218	27.6	
Nov.	.155	.125	1	.27	115	.15	.21	532	499	3,521	25.9	
Dec.	.160	.140	112	.29	5	.20	.25	661	463	1,372	26.8	
Yearly	1.855	0.095		140			0.07	0.48	15,169	16,938	86,384	2,554

* Discharge measurement made on this day

† And other days

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, gravity well and graphic water-stage recorder located on the left side of the canal under the US 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 kilometer downstream from the source of the springs and 6.3 creek kilometers upstream 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 graphic water-stage recorder located on the left bank about .91 meters downstream from the US Highway 277 Bridge at latitude 29°21'50" and longitude 100°53'10". This stream enters the Rio Grande at river kilometer 902, 0.8 river kilometer 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 meters and 283.70 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Records for the Val Verde Canal and San Felipe Creek at Moore Park are based on 23 and 50 current-meter measurements at each station respectively, during the year, and continuous records of gage heights. Computations are 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 1999.

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 Meters 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 METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.71	3.90	3.99	3.69	3.69	* 3.60	3.86	3.59	3.93	3.94	4.00	4.16
2	3.66	* 3.92	* 3.73	3.72	3.62	3.83	4.06	3.70	3.86	3.96	* 4.00	4.13
3	3.84	3.92	3.94	3.68	3.75	3.88	4.02	* 3.60	* 3.92	4.03	4.29	4.15
4	3.93	3.79	3.90	3.66	* 3.79	3.71	3.81	3.17	3.89	4.06	4.63	4.08
5	* 4.04	3.85	3.99	3.72	3.86	3.53	3.78	3.23	3.78	* 4.12	4.75	4.09
6	3.98	3.89	3.89	* 3.65	3.86	3.55	3.74	3.38	3.78	4.20	4.72	4.14
7	3.93	3.93	3.71	3.71	3.49	* 3.73	3.38	3.90	4.15	4.68	* 4.26	
8	3.90	3.96	3.76	3.71	3.88	3.57	3.77	3.43	3.97	4.09	4.59	4.19
9	3.81	3.95	3.77	3.81	3.76	3.72	3.82	3.48	3.78	3.98	4.52	4.19
10	3.78	3.91	3.85	3.80	3.88	3.78	3.80	3.45	* 3.61	3.94	4.45	4.19
11	3.76	3.87	* 3.92	3.88	3.90	* 3.78	3.56	3.50	3.70	3.81	4.22	4.18
12	3.73	* 3.91	3.91	3.89	3.72	3.82	3.61	* 3.49	3.78	3.84	4.02	4.07
13	3.67	3.87	3.92	3.83	3.77	3.72	3.62	3.47	3.78	3.98	4.04	4.29
14	* 3.65	3.81	3.86	* 3.91	* 3.74	3.78	3.63	3.43	3.86	* 3.95	4.04	4.34
15	3.67	3.85	* 3.88	3.88	3.73	3.61	* 3.62	3.40	* 4.04	4.08	4.17	4.14
16	3.75	3.83	3.99	3.79	3.71	3.53	3.69	3.49	3.86	4.28	* 4.09	4.09
17	3.81	3.79	3.99	3.74	3.77	* 3.77	3.62	* 3.74	3.81	4.30	4.06	* 4.16
18	4.00	3.78	4.04	3.74	* 3.74	3.77	3.60	3.94	3.72	4.22	3.96	4.34
19	3.96	* 3.71	4.03	3.77	3.75	3.84	3.66	4.01	3.67	* 4.07	4.00	4.45
20	* 3.95	3.67	4.09	* 3.82	3.79	3.83	3.66	4.00	3.56	3.99	3.95	4.23
21	4.00	3.67	4.12	3.98	3.78	3.72	* 3.77	3.86	3.45	3.92	3.92	* 4.18
22	4.03	3.62	4.32	4.12	3.74	3.82	3.63	3.95	* 3.52	3.98	3.91	4.00
23	4.02	3.61	4.19	4.23	3.70	3.85	3.62	4.09	3.53	3.86	* 3.95	3.86
24	3.98	3.52	4.10	3.78	3.71	3.89	3.47	3.60	3.58	3.91	3.86	3.84
25	4.01	3.64	* 4.02	3.48	3.66	* 3.96	3.47	3.58	3.66	3.89	3.82	3.80
26	4.04	* 3.74	3.97	3.58	3.62	3.90	3.54	* 3.64	3.69	3.86	3.90	3.78
27	* 4.03	3.75	3.84	3.66	* 3.68	3.93	3.56	3.72	3.85	3.85	4.03	3.85
28	* 4.02	3.86	3.61	3.78	3.69	3.92	3.51	3.68	3.77	3.80	4.04	3.90
29	3.92	3.68	* 3.80	3.59	3.87	* 3.73	3.67	* 3.89	* 3.78	4.03	* 3.82	
30	3.89	3.74	3.73	3.55	* 3.92	3.66	3.86	3.90	3.79	* 4.12	3.87	
31	3.92	3.71		3.65		3.71	3.71	3.92		3.83		3.82
Sum		106.52		113.54		112.89		112.45		123.46		126.59
	120.37		121.46		115.97		114.33		113.04		124.76	

Current Year 1999

Period 1961-1999

Month	Extreme Gage Meters		Extreme-Cubic Meters per Second			Average	Volume-Thousand Cubic Meters				
	High	Low	Day	Φ High	Φ Low		Total	Average	Maximum	Minimum	
Jan.			15	4.04	14	3.65	3.88	10,400	8,672	11,558	2,805
Feb.			8	3.96	24	3.52	3.80	9,203	7,687	10,129	2,614
Mar.			22	4.32	28	3.61	3.92	10,494	8,426	11,137	2,917
April			23	4.23	25	3.48	3.78	9,810	8,135	10,610	2,826
May			11	3.90	30	3.55	3.74	10,020	8,497	11,471	3,506
June			25	3.96	71	3.49	3.76	9,754	8,239	11,162	3,060
July			2	4.06	124	3.47	3.69	9,878	8,412	11,523	2,731
Aug.			23	4.09	41	3.17	3.63	9,716	8,319	11,751	2,608
Sept.			15	4.04	21	3.45	3.77	9,767	8,183	11,038	3,152
Oct.			17	4.30	29	3.78	3.98	10,667	8,715	11,408	3,094
Nov.			5	4.75	25	3.82	4.16	10,779	8,423	11,058	2,941
Dec.			19	4.45	26	3.78	4.08	10,937	8,733	11,633	2,948
Yearly				4.75		3.17	3.85	121,425	100,441	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: Bubble gage, and water-stage recorders (graphic and digital) located on the left bank at latitude 29°19'15" longitude 100°53'20", immediately upstream from the Silos Farm road bridge, 1.8 creek kilometers upstream from its confluence with the Rio Grande, and about 3.2 kilometers south-southeast of Del Rio, Val Verde County, Texas. This stream enters the Rio Grande at river kilometer 902, 0.8 river kilometer downstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila. The zero of the gage is 267.44 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 31 current-meter measurements during the year, 24 by the United States Section and 7 by the Mexican Section of the Commission, and a continuous record of gage heights. Computations by shifting control methods. Records available: September 1931 through 1999.

REMARKS: The flow of this spring-fed creek is greatly modified by municipal and irrigation diversions upstream from the station. Backwater from the Rio Grande reaches this station when the Rio Grande at Del Rio reaches a stage of 4.6 meters, or a flow of about 1,700 CMS. On June 28, 1954 combined creek flow and backwater from the Rio Grande reached a stage of 7.47 meters at this station.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 3,340 CMS on August 24, 1998, with a gage height of 7.705 meters. Min. 0.01 CMS on July 20, 1953.

Average Flow in Cubic Meters per Second

Daily:	Max.	464	August 24, 1998	Min.	0.04	July 21, 1953
Monthly:	Max.	22.8	June 1935	Min.	0.13	July 1953
Yearly:	Max.	3.97	1998	Min.	0.71	1953

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	4.01	3.79	3.30	3.83	3.89	2.54	3.81	2.50	2.70	2.99	3.49	3.97
2	4.01	* 3.79	3.26	3.68	3.69	2.55	3.62	2.27	2.55	3.04	* 3.16	3.87
3	4.02	3.78	3.22	3.56	3.64	2.59	3.50	* 2.34	* 2.48	3.13	2.33	3.68
4	4.05	3.69	3.24	3.41	* 3.31	2.50	3.63	2.65	2.51	3.15	2.13	3.70
5	* 4.12	3.74	3.24	3.29	2.77	2.77	3.27	2.68	2.66	* 3.20	2.12	3.90
6	4.16	3.59	3.23	* 3.17	3.02	2.84	3.30	2.56	2.63	3.02	2.22	3.77
7	4.18	3.46	3.34	3.17	3.23	3.20	* 3.39	2.55	2.62	2.96	2.33	* 3.48
8	4.18	3.44	3.36	3.03	3.30	3.07	3.23	2.55	2.39	2.90	2.30	3.40
9	4.10	3.61	3.33	2.92	3.49	3.03	3.01	* 2.47	2.44	2.83	2.33	3.29
10	4.04	3.78	3.22	3.06	* 3.17	3.08	2.95	2.41	2.55	2.74	2.42	2.75
11	3.98	3.75	3.19	3.15	2.94	3.17	3.31	2.20	2.45	2.71	2.67	2.47
12	3.92	* 3.86	3.26	3.16	3.74	3.45	* 3.04	2.34	2.45	2.51	2.93	2.58
13	3.87	3.64	3.25	3.42	3.35	3.88	2.95	2.39	* 2.47	2.32	2.95	2.62
14	3.80	3.55	3.24	3.07	3.33	3.94	2.83	2.46	2.43	2.28	3.04	2.75
15	3.78	3.52	* 3.40	2.69	3.32	* 4.31	3.40	2.43	2.40	2.71	3.04	2.87
16	3.72	3.47	3.41	* 2.73	3.49	4.17	3.19	2.23	2.58	2.73	* 3.32	3.01
17	3.70	3.57	3.44	2.64	3.59	4.92	3.22	* 2.06	2.71	2.87	3.49	3.10
18	3.67	3.69	3.36	2.67	* 3.33	4.48	3.39	1.89	2.73	2.97	3.75	3.22
19	3.67	3.70	3.35	2.69	3.35	3.38	3.39	1.91	2.38	* 3.27	3.36	3.31
20	* 3.78	3.73	3.39	* 2.69	3.30	3.61	3.38	1.97	2.41	3.43	3.37	3.42
21	3.88	3.59	3.38	2.64	3.45	5.66	* 3.27	2.18	2.57	3.48	3.52	* 3.42
22	3.94	3.63	* 3.29	2.63	3.40	3.67	3.45	2.17	* 2.47	3.35	3.56	3.46
23	3.92	3.60	3.38	2.61	3.44	3.71	3.53	2.13	2.54	3.54	3.28	3.42
24	3.90	3.68	3.46	4.75	3.22	3.85	3.47	3.32	2.61	3.51	3.40	3.46
25	3.90	3.53	3.72	3.67	3.32	3.71	3.32	2.85	2.55	3.46	3.52	3.68
26	3.88	3.52	3.73	3.18	3.36	3.60	3.13	2.88	2.57	3.45	3.56	3.46
27	3.83	3.48	4.27	3.10	3.04	3.65	2.79	3.10	2.68	3.43	3.58	3.55
28	3.66	3.42	3.66	3.15	2.77	3.78	2.71	3.10	2.63	3.43	3.54	3.65
29	3.79		3.73	3.57	2.83	3.81	2.58	3.05	2.46	3.39	3.66	3.73
30	3.89		3.95	3.71	2.73	3.79	2.51	2.85	2.33	3.46	3.80	3.71
31	3.73		3.89	2.70			2.44	2.79		3.50		3.67
Sum		101.60		95.04		106.71		77.28		95.76		104.17
		121.08		106.29		101.31		99.01		75.95		92.17

Current Year 1999

Period 1932-1999

Month	Extreme Gage Meters		Extreme-Cubic Meters per Second			Average	Volume-Thousand Cubic Meters					
			High	Low	Day		High	Low	Average	Total	Average	Maximum
	High	Low	Day	Day	Day							Minimum
Jan.	1.475	1.425	7	4.28	128	3.53	3.91	10,461	6,802	10,985	1,152	
Feb.	1.495	1.390	11	4.14	25	2.91	3.63	8,778	5,735	10,642	601	
Mar.	1.835	1.390	27	8.38	10	3.05	3.43	9,183	5,523	10,304	850	
April	2.075	1.330	24	12.4	14	2.34	3.17	8,211	5,743	12,836	698	
May	1.675	1.350	12	5.94	6	2.25	3.27	8,753	6,515	21,697	912	
June	2.415	1.325	21	16.6	4	2.29	3.56	9,220	6,617	59,059	370	
July	1.640	1.310	4	4.59	30	2.19	3.19	8,554	5,655	27,232	352	
Aug.	2.020	1.235	24	11.4	18	1.54	2.49	6,677	5,782	47,764	432	
Sept.	1.425	1.325	17	3.14	29	2.08	2.53	6,562	6,601	35,373	1,076	
Oct.	1.430	1.275	10	3.85	14	2.07	3.09	8,274	6,777	17,551	1,233	
Nov.	1.465	1.275	30	4.12	4	1.92	3.07	7,963	5,988	10,567	649	
Dec.	1.465	1.305	1	4.10	11	2.20	3.36	9,000	6,228	10,660	612	
Yearly	2.415	1.235		16.6		1.54	3.22	101,636	73,966	125,323	22,441	

* Discharge measurement made on this day

! And other days

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

DESCRIPTION: 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 kilometer downstream from the Tequesquite Creek Siphon, 5.6 canal kilometers upstream from the Las Moras Creek Siphon, about 12.1 kilometers north-northwest of Quemado, Maverick County, Texas and 20.6 kilometers downstream from the canal intake. The canal intake is at river kilometer 875, 28.0 river kilometers 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 245 current-meter measurements during the year and a continuous record of gage heights. 24 measurements were made by the U.S. Section, and 221 measurements were made by the Maverick County Water Control and Improvement District No. 1. 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 1999.

REMARKS: At canal kilometer 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 1999, 5,786 hectares of land were irrigated between this station and the power plant, and 9,796 hectares were irrigated from the extension, making a total of 15,582 hectares. A total of 861,453 TCM returned to the Rio Grande at the power plant and through irrigation system returns published in the following pages of this bulletin.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 52.4 CMS on February 15, 1989. Min. no flow several days in June, July, and November 1954; and October 1978.

Average Flow in Cubic Meters 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 METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	15.5	15.1	* 32.3	44.1	36.3	* 33.4	28.9	* 24.5	22.8	22.8	27.0	26.2
2	* 15.6	* 15.2	* 34.9	* 44.4	35.7	* 34.0	29.0	* 24.1	* 23.0	* 23.1	* 26.2	25.8
3	15.3	15.4	* 35.9	44.7	* 35.5	* 33.5	* 28.9	* 23.4	* 22.5	21.7	* 26.5	* 25.7
4	* 15.4	* 15.2	* 35.3	44.8	* 35.1	* 33.8	29.0	* 25.0	22.4	* 21.6	26.9	* 25.4
5	* 14.8	15.1	35.0	* 44.9	35.3	* 33.9	* 29.3	* 24.7	22.0	* 24.2	* 26.8	* 24.7
6	15.1	15.3	* 34.5	* 45.3	* 34.7	33.8	* 29.5	23.8	22.1	* 21.4	26.6	* 25.2
7	* 15.3	* 15.2	34.9	* 45.0	* 34.5	* 33.9	* 29.3	* 23.1	* 21.6	* 21.4	* 26.5	* 26.0
8	15.3	* 22.7	* 34.9	44.9	* 34.9	* 32.9	* 28.9	* 23.6	* 23.8	* 21.1	26.2	26.4
9	* 15.2	* 32.1	* 33.4	* 44.9	* 35.0	* 33.2	* 28.5	* 24.9	* 22.9	* 22.2	* 25.6	* 26.1
10	* 15.1	* 33.7	36.8	45.1	* 34.8	* 33.5	* 28.6	* 24.3	* 22.3	* 22.2	* 26.0	* 26.1
11	* 15.5	33.6	41.5	* 44.9	34.3	32.7	29.0	* 24.0	* 21.4	23.0	* 26.1	* 13.7
12	15.4	* 33.3	* 43.8	44.8	* 36.3	* 32.4	* 29.4	* 22.6	* 23.6	* 23.1	26.3	* 26.3
13	* 15.3	34.1	* 43.3	* 44.4	* 36.2	* 33.5	* 28.9	* 23.3	* 23.3	* 22.9	26.1	* 25.1
14	* 15.3	* 34.7	* 43.7	43.5	* 35.1	* 36.8	* 28.4	* 24.0	* 24.1	* 22.7	* 26.0	* 25.3
15	15.2	* 36.5	* 43.1	* 42.7	34.9	* 39.3	* 29.0	* 23.7	* 23.3	* 21.8	* 26.6	* 25.5
16	* 15.3	36.3	43.3	* 43.0	* 34.7	* 38.6	* 28.4	* 23.6	* 23.1	* 21.7	26.4	24.5
17	15.2	35.2	43.6	* 43.9	* 34.9	* 38.3	28.4	* 22.8	* 23.4	23.1	25.7	24.3
18	* 15.1	* 34.4	* 43.4	44.5	* 34.4	* 35.9	27.8	* 22.8	* 23.0	* 24.2	* 26.5	24.2
19	* 15.1	* 35.7	43.2	* 44.2	* 35.0	* 30.4	* 27.9	* 22.9	* 23.1	* 23.6	26.7	* 24.8
20	* 15.5	35.6	43.2	* 43.7	* 34.6	* 29.2	* 27.7	* 22.1	* 23.6	* 24.7	* 26.1	* 25.7
21	* 15.5	* 35.2	* 43.3	43.3	* 35.0	31.3	* 27.7	* 22.6	* 22.0	* 24.5	26.5	* 26.9
22	15.1	35.9	* 43.6	* 43.7	* 33.9	* 27.6	* 27.2	* 23.6	* 22.1	* 25.0	* 26.4	* 26.6
23	* 14.7	* 35.8	43.7	* 43.3	* 33.0	* 27.2	* 26.9	* 23.0	* 22.6	* 25.4	* 27.3	27.2
24	* 14.9	36.5	* 43.8	43.8	* 33.5	* 28.8	* 26.7	* 24.6	* 22.9	* 27.0	* 26.5	* 27.2
25	15.0	* 33.5	44.0	* 44.1	* 33.2	* 30.8	* 27.9	* 26.8	* 22.4	* 24.7	* 26.5	27.5
26	* 15.1	32.9	* 44.1	* 43.9	32.5	* 31.2	* 25.7	* 26.0	* 22.8	* 26.1	26.3	26.7
27	15.2	* 33.9	43.5	* 39.0	* 32.5	* 31.6	* 23.5	* 24.5	* 23.4	* 26.4	* 27.6	* 25.6
28	15.2	34.6	38.4	35.6	* 32.8	31.0	* 22.9	* 24.0	* 23.7	* 26.3	* 26.9	* 25.8
29	* 15.2	* 43.8	* 36.5	* 33.3	* 30.2	* 23.6	* 23.9	* 22.6	* 22.6	* 27.3	25.9	
30	* 15.2	* 44.2	37.0	* 33.2	* 29.9	* 24.8	* 24.0	* 23.0	* 24.0	* 26.4	* 26.4	
31	* 15.1	* 44.3	* 33.1				* 24.7	* 24.3		* 26.5		* 27.1
Sum		820.7		1,297.9		982.6		740.5		738.4		790.1
		471.7		1,256.7		1,064.2		856.4		684.8		794.5

Current Year 1999

Period 1968-1999

Month	Extreme Gage Meters		Extreme-Cubic Meters per Second				Volume-Thousand Cubic Meters				
	High	Low	Day	High	Low	Average	Total	Average	Maximum	Minimum	
Jan.	1.885	1.615	20	16.0	23	14.5	15.2	40,755	87,057	120,225	25,730
Feb.	2.850	1.820	16	41.4	8	14.7	29.3	70,908	86,165	113,996	20,233
Mar.	2.985	2.150	30	45.9	19	25.9	40.5	108,579	97,509	122,230	34,141
April	2.980	2.315	61	47.1	28	29.0	43.5	112,139	98,403	125,587	50,229
May	2.760	2.175	112	40.8	123	25.8	34.3	91,947	102,758	126,490	49,910
June	2.875	2.160	16	42.1	12	25.7	32.8	84,897	98,753	116,310	38,497
July	2.445	1.885	13	31.8	128	17.8	27.6	73,993	98,466	120,518	44,129
Aug.	2.345	1.805	4	29.6	20	15.6	23.9	63,979	98,431	119,784	45,279
Sept.	2.330	1.790	114	28.2	7	15.9	22.8	59,167	93,277	117,876	35,450
Oct.	2.475	1.815	124	31.6	4	14.9	23.8	63,798	93,331	121,971	27,426
Nov.	2.475	1.910	23	32.6	26	18.8	26.5	68,645	85,935	115,209	27,737
Dec.	2.495	.215	112	32.9	11	1.76	25.5	68,265	85,493	120,494	29,007
Yearly	2.985	0.215		47.1		1.76	28.8	907,072	1,125,578	1,337,047	565,712

* Discharge measurement made on this day

! And other days

** Period 1968-1999

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 kilometers upstream from its confluence with the Rio Grande, and about 30.6 kilometers southeast of Del Rio, Val Verde County, Texas. This stream enters the Rio Grande at river kilometer 864, 9.1 river kilometers downstream from the Maverick County Water Control and Improvement District No. 1 diversion dam. The zero of the gage is 248.01 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 21 current-meter measurements during the year, 12 by the United States Section and 9 by the Mexican Section of the Commission, and a continuous record of gage heights. Records available: September 1955 through 1999 at this station, and November 22, 1928 through August 1955 at a site 6.3 kilometers upstream.

REMARKS: Flow of this spring-fed creek is modified by small irrigation diversions upstream from the station. When flow in the Rio Grande exceeds about 2,270 CMS at the mouth of this creek, backwater may reach the station. At this station during the Rio Grande flood of June 1954, backwater reached a gage height of 8.78 meters, or an elevation of 256.79 meters above mean sea level.

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

				Average Flow in Cubic Meters 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 METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.77	0.64	0.52	0.74	0.55	0.27	0.63	0.42	0.45	0.33	0.21	0.27
2	.72	.67	* .50	.74	.57	.26	.60	.41	.40	.31	* .22	.28
3	.67	*	.68	.45	.73	.59	.25	.60	.32	.38	.28	.24
4	.67	.69	.23	.69	* .58	.24	.97*	* .43	.34	.25	.24	.27
5	* .70	.68	.28	.63	.53	.23	.97	.45	.32	* .22	.25	.24
6	.72	.66	.46	* .62	.48	.25	* .78	.43	.31	.22	.25	.24
7	.73	.74	.48	.63	.44	1.12	.70	.42	.30	.21	.25	* .24
8	.73	.73	.51	.69	.44	.27	.67	.42	* .29	.19	.25	.24
9	.71	.68	.53	.68	.44	.24	.63	.42	.39	.19	.25	.26
10	.69	.67	.60	.65	* .43	.22	.61	.42	.32	.18	.25	.25
11	.73	.66	.58	.60	.43	.21	1.04	.42	.35	.18	.25	.25
12	.74	.60	.59	.58	.87	.20	* 1.08	.41	.36	.20	.26	.25
13	.74	.61	.59	.59	.64	.35	.76	.42	* .66	.19	.26	.26
14	.70	.64	.56	.60	.50	.38	.67	.44	.85	.19	.26	.26
15	.69	.65	.55	.54	.45	1.83	.63	.45	.91	.19	.26	.26
16	.69	.65	.56	* .52	.46	.99	.62	.46	.84	.21	.26	.27
17	.70	.65	.56	.52	.47	.56	.59	.48	.78	.45	.26	.27
18	.70	.64	.58	.53	.67	1.27	.58	.58	.74	.49	.26	.27
19	.70	.63	.56	.54	.52	.44	.59	.64	.70	.36	.26	.27
20	.70	.61	.53	.54	.35	.42	.62	.67	.66	.30	.25	.27
21	.71	.58	.54	.51	.39	20.3	.57	.69	.63	.29	.26	.27
22	.66	2.25	*	.55	.50	5.15	.46	.71	.60	.29	.26	.28
23	.62	1.64	.55	.48	.39	2.43	.52	.71	.56	.29	.26	.28
24	.66	.55	.59	.51	.37	1.31	.51	.1.18	.53	.28	.26	.28
25	.67	.55	.60	.61	.34	.98	.49	1.57	.50	.27	.25	.28
26	.66	.54	.57	.63	.34	.81	.48	1.21	.47	.27	.26	.28
27	.67	.54	1.19	.73	.33	.73	.45	1.00	.44	.26	.27	.28
28	.67	.54	1.95	.61	.32	.69	.45	.85	.41	.26	.27	.29
29	.67	1.05	.54	.30	.79	.44	.72	.38	.25	.27	.28	.29
30	.64	.80	.52	.29	.67	.43	.62	.35	.26	.27	.26	.29
31	.63	.74	.29			.42	.50			.23		.29
Sum		20.37		18.00		43.86		18.87		8.09		8.30
	21.46		19.35		14.16		19.56		16.32		7.62	

Current Year 1999

Period 1929-1999

Month	Extreme Gage Meters			Extreme-Cubic Meters per Second				Average	Volume-Thousand Cubic Meters			
	High	Low	Day	High	Day	Low	Average		Total	Average	Maximum	Minimum
Jan.	0.430	0.380	1	0.80	22	0.60	0.69	1,854	714	2,784	0	
Feb.	.750	.370	22	4.05	125	.54	.73	1,760	749	7,106	0	
Mar.	.690	.255	27	3.75	4	.10	.62	1,672	687	3,085	0	
April	.375	.305	27	.82	121	.47	.60	1,555	1,442	33,664	0	
May	.535	.265	12	2.02	31	.24	.46	1,223	2,066	36,248	0	
June	1.940	.245	21	86.5	1 4	.20	1.46	3,790	4,365	69,981	0	
July	.550	.285	4	2.29	22	.40	.63	1,690	216	37,030	0	
Aug.	.570	.260	124	2.29	3	.28	.61	1,630	2,289	60,070	0	
Sept.	.440	.255	15	1.06	6	.16	.54	1,410	2,301	60,397	0	
Oct.	.375	.265	117	.64	1 7	.18	.26	699	1,372	12,133	0	
Nov.	.290	.270	112	.30	1 1	.20	.25	658	636	3,196	0	
Dec.	.280	.260	1 8	.29	5	.20	.27	717	726	3,041	0	
Yearly	1.940	0.245		86.5		0.10	0.59	18,658	17,563	94,053	1,178	

* Discharge measurement made on this day ! And other days

08-4555.00 RIO SAN DIEGO NEAR JIMENEZ, COAHUILA

DESCRIPTION: Cableway, masonry and concrete Cipolletti weir of 22 CMS 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 kilometers west of Jimenez, Coahuila, and 7.0 river kilometers upstream from its 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 kilometer 856, 16.8 river kilometers downstream from Maverick County Water Control and Improvement District No. 1 diversion dam and 46.4 river kilometers downstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila. The zero of the gage is 233.51 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 45 current meter measurements, 41 measurements by the Mexican Section, and 4 by the U. S. Section, the weir discharge table and a continuous record of gage heights. Records available: October 1932 through 1999.

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 meters; in November 1961 an additional 0.06 meters, and the capacity of the weir was increased from 20 CMS to 22 CMS.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 2,320 CMS on June 17, 1961 with a gage height of 6.31 meters. Min. no flow occurred on several occasions.

Average Flow in Cubic Meters per Second

Daily:	Max.	1,040	July 18, 1975	Min.	0	Occasionally
Monthly:	Max.	67.5	Oct. 1932	Min.	0.07	July 1996
Yearly:	Max.	17.6	1976	Min.	0.68	1956

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.03	1.38	0.54	1.28	1.82	0.80	19.2	11.0	13.8	8.65	7.32	4.68
2	1.02	* 1.34	.67	1.10	2.03	.80	18.0	10.7	13.5	8.65	7.06	4.68
3	1.01	1.29	.67	.95	2.24	.80	17.3	10.7	* 13.2	8.80	7.06	4.57
4	1.01	1.23	.67	.95	2.62	.60	17.0	10.7	13.2	8.80	6.82	4.57
5	* 1.00	1.18	.67	.80	2.68	.67	17.1	10.4	13.0	* 8.65	6.70	4.57
6	1.05	1.13	.67	.80	2.90	.67	* 16.4	9.51	12.9	8.65	6.57	4.57
7	1.11	1.08	.67	.80	2.90	3.56	16.0	9.24	* 12.9	8.94	6.57	4.46
8	1.16	1.02	.67	.80	2.80	1.14	15.5	8.94	12.8	8.94	6.57	4.34
9	1.22	* .97	* .67	.88	2.68	.88	15.2	8.65	11.8	8.94	* 6.44	4.22
10	1.27	.98	.67	.80	2.68	.80	14.8	* 8.65	11.8	8.94	6.57	4.10
11	* 1.33	* 1.00	.67	.88	2.68	.74	14.9	* 8.65	11.6	8.65	6.57	4.10
12	* 1.38	1.01	.67	.95	3.02	.67	14.5	* 7.86	11.6	* 8.94	6.57	4.10
13	1.39	1.02	.67	* .95	2.62	.80	14.2	7.60	11.6	8.94	6.57	4.10
14	1.40	1.03	.67	* .67	* 2.46	10.8	14.2	7.60	* 11.4	8.94	6.57	3.85
15	1.41	1.05	.67	.54	2.46	* 11.8	14.0	7.60	11.3	8.94	6.46	3.48
16	1.42	* 1.06	* .67	.54	2.46	10.0	13.5	* 7.33	11.3	8.96	* 6.30	3.36
17	1.42	1.03	.67	.54	2.35	8.37	12.8	* 7.33	11.2	9.79	* 6.02	3.24
18	1.43	1.00	.54	.54	5.14	8.12	12.3	7.06	11.0	9.45	5.77	3.02
19	1.44	* .97	.54	.54	2.75	7.22	12.2	7.06	10.4	9.24	5.77	2.90
20	1.45	.94	.54	* .54	2.32	9.18	11.6	7.06	10.1	9.24	5.64	2.90
21	1.46	.91	.54	.54	2.03	433 *	11.6	6.82	* 9.78	8.94	5.64	2.68
22	1.47	.88	.54	.49	1.82	* 87.4	11.3	6.82	9.64	8.94	5.68	2.68
23	1.48	.85	* .54	.44	1.82	35.9	11.3	6.57	9.51	8.94	* 5.52	2.68
24	1.48	.82	.54	.97	1.73	30.6	11.0	10.8	9.51	8.65	5.77	2.68
25	1.49	.79	.54	7.06	* 1.54	* 27.7	11.0	21.4	9.24	8.23	5.77	2.68
26	1.50	.76	.67	3.46	1.45	25.9	11.0	17.9	9.24	7.86	5.77	2.68
27	1.51	.73	2.72	* 2.45	1.36	24.5	10.6	17.5	9.24	7.60	5.77	2.57
28	* 1.52	.70	4.65	1.64	1.19	23.2	10.4	16.8	* 8.94	7.60	5.77	2.68
29	1.48	2.24	1.45	1.10	* 21.6	10.2	16.2	8.65	7.60	5.52	2.86	
30	1.45	* 2.03	1.82	1.10	20.0	10.7	15.5	8.65	7.60	* 4.92	3.13	
31	1.41	1.45			1.10	10.8	14.5			7.33		3.24
Sum		28.15		36.17		808.22		324.45		268.34		110.37
	41.20		29.32		69.85		420.6		332.80		186.05	

Current Year 1999

Period 1932-1999

Month	Extreme Gage Meters		Extreme-Cubic Meters per Second			Average	Volume-Thousand Cubic Meters				
	High	Low	Day	High	Low		Total	Average	Maximum	Minimum	
Jan.	0.075	0.055	28	1.64	5	0.95	1.33	3,560	10,272	44,937	2,300
Feb.	.070	.045	1	1.45	28	.67	1.01	2,432	8,086	31,769	1,279
Mar.	.280	.040	27	12.3	1	.54	.95	2,533	7,307	33,352	797
April	.300	.030	25	13.5	24	.33	1.21	3,125	8,065	49,678	698
May	.215	.060	18	8.38	128	1.10	2.25	6,035	13,670	148,269	395
June	3.070	.040	21	679	1 4	.54	26.9	69,830	14,949	133,550	282
July	.385	.245	1	19.4	29	10.1	13.6	36,340	16,909	167,938	179
Aug.	.535	.180	25	32.0	23	6.57	10.5	28,032	14,853	112,553	392
Sept.	.305	.220	1	13.8	129	8.65	11.1	28,754	20,870	116,770	843
Oct.	.250	.195	17	10.4	31	7.33	8.66	23,185	25,316	180,878	1,011
Nov.	.195	.145	1	7.33	30	4.80	6.20	16,075	17,326	84,231	990
Dec.	.145	.095	1	4.80	27	2.46	3.56	9,536	12,529	55,901	1,389
Yearly	3.070	0.030		679		0.33	7.28	229,437	170,152	557,477	21,508

* Discharge measurement made on this day

! And other days

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

DESCRIPTION: Cableway, control weir of 36 CMS capacity, gravity well, and water-stage recorder located on the right bank at latitude 29°03'00", longitude 100°39'50", and river kilometer 853; 2.4 kilometers south-southeast of Jimenez, Coahuila, 3.0 river kilometers downstream from Rio San Diego, about 12.1 kilometers north-northwest of Quemado, Maverick County, Texas, 19.8 river kilometers downstream from the Maverick County Water Control and Improvement District No. 1 diversion dam, and 49.4 river kilometers downstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila. The zero of the gage is 23.39 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 25 current-meter measurements during the year, 14 by the Mexican Section and 11 by the United States Section of the Commission, and 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 current-meter measurements. Records available 1968 through 1999. Records, excluding some high flow periods, are also available from 1956 through May 1965 for a station 14.0 river kilometers 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 kilometers 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 meter higher.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 4,250 CMS on August 24, 1998, with a gage height of 12.1 meters. Min. 0.05 CMS on September 21, 1995, with a gage height of 0.055 meters.

Average Flow in Cubic Meters per Second

Daily	Max.	3,220	August 25, 1998	Min.	0.08	April 25 and 26, 1983
Monthly	Max.	602	Sept. 1974	Min.	0.80	June 1969
Yearly	Max.	124		Min.	8.11	June 1968

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.62	3.08	6.25	64.0	4.25	4.61	34.3	16.0	18.4	12.4	9.72	5.93
2	3.62	3.17	5.60	63.7	7.71	5.54	32.9	16.0	17.7	12.5	9.11	5.93
3	3.62	3.08	5.41	63.4	7.70	5.19	31.8	* 15.1	17.4	13.0	8.75	5.93
4	3.62	3.05	5.14	63.0	8.07	4.75	32.7	15.1	17.0	12.4	8.58	5.81
5	3.75	2.96	6.00	62.7	8.55	4.62	33.7	14.4	16.6	11.2	8.58	5.32
6	3.71	2.71	5.75	62.4	7.94	5.07	31.3	13.0	16.9	11.4	8.23	5.32
7	3.88	2.64	4.88	63.3	8.69	14.3	30.0	11.9	16.6	11.1	8.23	5.32
8	4.22	2.64	4.65	62.4	8.02	6.75	28.0	11.5	16.6	10.6	8.23	5.32
9	4.15	6.50	4.37	64.1	7.86	5.42	27.9	* 11.5	16.6	10.5	7.89	5.32
10	4.15	6.55	11.5	64.1	* 7.45	5.32	27.3	10.9	15.4	10.5	7.89	5.03
11	4.08	7.68	63.5	62.5	7.20	29.5	10.4	15.6	10.6	7.89	17.4	
12	* 4.15	6.50	63.9	62.9	14.8	5.01	* 29.6	9.69	15.0	10.6	7.89	6.56
13	4.17	8.21	60.2	61.8	9.97	7.89	28.1	9.81	* 15.1	11.7	7.89	5.32
14	4.04	7.75	63.3	64.9	8.13	97.1	27.8	9.69	15.2	11.9	7.89	5.03
15	4.12	7.64	51.4	62.2	8.31	114	27.8	9.48	14.9	11.9	7.89	4.73
16	4.04	8.22	61.6	* 63.9	6.93	70.1	* 27.4	9.24	14.9	12.0	7.89	4.73
17	4.04	7.26	63.6	68.8	8.13	68.3	25.7	8.96	* 14.6	13.7	7.55	* 4.73
18	* 3.92	7.03	61.9	62.4	14.4	70.9	25.4	8.78	14.3	13.4	7.55	4.45
19	3.77	6.58	59.8	62.9	8.92	65.8	25.8	8.78	13.7	12.2	* 7.22	4.45
20	3.65	6.71	60.8	63.9	7.74	75.2	25.2	* 8.59	13.5	12.1	6.89	4.45
21	3.66	6.88	63.4	66.4	7.45	686	24.9	8.80	13.0	11.4	6.89	4.45
22	3.61	6.25	* 63.8	65.9	7.14	204	* 24.0	8.74	12.8	* 10.6	6.89	4.45
23	3.62	6.94	63.3	67.0	7.78	113	* 24.3	8.94	12.8	10.6	6.56	4.45
24	3.55	7.07	62.3	84.7	* 5.87	104	24.1	13.4	12.8	10.7	6.89	4.45
25	* 3.51	* 6.97	64.3	90.2	* 7.29	97.4	23.7	45.0	12.7	10.4	6.89	4.45
26	3.53	6.78	63.2	79.0	6.87	88.5	17.3	27.0	12.8	9.90	7.22	4.45
27	3.44	6.98	73.0	26.7	6.71	83.5	15.5	23.5	12.9	9.60	7.22	4.45
28	* 3.26	6.95	86.6	9.08	7.01	40.5	15.3	22.5	12.8	9.60	6.89	4.45
29	3.16	67.0	5.46	5.61	38.3	15.2	21.4	12.4	9.74	* 6.89	4.45	
30	3.05	67.7	5.35	5.19	36.2	15.6	20.7	12.3	9.36	6.25	4.45	
31	3.15	64.3	4.20	15.8	19.6	15.8	19.6			9.38	4.73	
Sum		164.78		1,769.07		2,132.49		448.40		346.98		166.31
	115.86		1,408.45		241.89		797.9		443.1		230.35	

Current Year 1999

Period 1968-1999

Month	Extreme Gage Meters		Extreme-Cubic Meters per Second			Average	Volume-Thousand Cubic Meters				
	High	Low	Day	High	Low		Total	Average	Maximum	Minimum	
Jan.	0.115	0.090	81	4.45	30	3.01	3.74	10,010	59,270	216,588	6,458
Feb.	.275	.080	13	16.0	1.6	2.61	5.89	14,237	93,257	495,046	7,139
Mar.	1.000	.080	28	151	8	2.61	45.4	121,690	115,222	486,605	2,805
April	1.010	.100	25	154	129	3.62	59.0	152,848	136,815	502,502	6,204
May	.420	.100	18	29.8	130	3.62	7.80	20,899	204,381	608,342	8,109
June	3.390	.090	21	802	13	3.10	71.1	184,247	145,262	489,197	2,061
July	.560	.255	1	45.1	29	14.3	25.7	68,939	118,058	384,578	2,864
Aug.	.720	.180	25	75.0	120	8.58	14.5	38,742	138,799	876,848	6,347
Sept.	.320	.215	11	20.0	129	11.1	14.8	38,284	175,293	1,559,261	16,872
Oct.	.265	.185	18	15.1	130	8.93	11.2	29,979	170,244	1,025,395	13,827
Nov.	.200	.145	1	10.0	30	6.25	7.68	19,902	76,645	615,686	10,933
Dec.	.430	.115	11	30.8	118	4.45	5.36	14,369	55,077	223,396	9,234
Yearly	3.390	0.080		802		2.61	22.6	714,146	11,488,323	13,909,913	256,561

* Discharge measurement made on this day

o Mean daily

! And other days

DB-4571.00 RIO SAN RODRIGO AT EL MORAL, COAHUILA

DESCRIPTION: Bubbler gage and water-stage recorder located on the left bank at El Moral, Coahuila, latitude 28°53'20", longitude 100°37'55", 1.6 river kilometers from the confluence with the Rio Grande, and about 25 kilometers northwest of Piedras Negras, Coahuila. This stream enters the Rio Grande at river kilometer 834, 39.3 river kilometers downstream from the Maverick County Water Control and Improvement District No. 1 diversion dam and 35.2 river kilometers upstream from the international highway bridge between Eagle Pass, Texas, and Piedras Negras, Coahuila. The zero of the gage is 228.89 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 51 current-meter measurement during the year, 3 by the United States Section, and 48 by the Mexican Section, and a continuous record of gage heights. Computations by shifting control methods. Records available: 1962 through 1999.

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. La Fragua Dam, located about 19 river kilometers upstream from this station, began operation in 1991. 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 CMS on July 18, 1975, with a gage height of 5.62 meters. Min. frequently no flow.

Average Flow in Cubic Meters 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.	0.07	1996

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.19	0.03	0.03	0.08	0.02	0	14.1	5.29	16.3	2.20	2.92	1.99
2	.19	* .03	.03	.08	.01	0	10.9	5.25	15.0	2.67	2.83	1.94
3	.17	.03	.02	.08	.01	0	9.06	* 5.21	13.8	3.14	2.74	* 1.90
4	.16	.02	.02	.08	* .01	0	8.26	5.17	12.5	3.61	* 2.65	1.83
5	.16	.02	.02	.08	0	0	8.26	* 5.13	11.3	* 4.08	2.75	1.76
6	.16	.04	.02	.08	0	0	8.26	5.15	10.0	3.64	2.85	1.68
7	.16	.05	.01	.07	0	3.50	8.27	5.17	* 8.77	3.20	2.95	* 1.61
8	.14	.05	.01	.06	0	.31	11.4	5.18	8.58	2.76	3.05	1.58
9	.13	.06	.01	.06	0	.08	13.0	5.20	8.39	2.33	* 3.15	1.54
10	.13	.06	.01	.06	0	.02	12.0	* 5.22	8.20	1.89	3.13	1.51
11	.12	.06	.01	.05	0	0	12.0	5.14	8.02	1.45	3.11	1.48
12	.12	.06	.02	.05	23.7	0	10.1	5.06	7.83	* 1.01	3.09	1.44
13	.11	.07	.02	.05	* .53	0	* 8.55	* 4.98	7.64	1.39	3.08	1.41
14	.10	.07	.03	.05	.19	0	14.4	4.89	* 7.45	1.77	3.06	1.38
15	.09	.08	.04	.05	.10	* .80	* 22.6	4.81	7.30	2.15	3.04	1.35
16	.08	.08	.05	.04	.04	4.41	24.0	4.73	7.15	2.53	* 3.02	1.31
17	.08	.12	.05	.04	.02	4.69	24.9	* 4.65	* 7.00	2.91	3.00	1.28
18	*	.08	.11	.05	* 13.2	* .96	24.9	4.52	6.94	3.29	2.97	1.25
19	.06	.12	.05	.04	.32	.26	20.5	4.40	6.89	* 3.67	2.95	1.22
20	.05	.12	.05	.03	.15	2.03	15.5	4.28	6.84	3.64	2.92	1.18
21	.05	.10	.05	.03	.10	47.7	13.3	4.15	* 6.78	3.61	2.90	* 1.15
22	.04	.09	.05	.03	.07	85.5	11.2	4.02	5.92	3.58	2.87	1.27
23	.04	* .08	* .05	.02	.05	* 62.5	10.3	3.90	5.07	3.55	* 2.85	1.39
24	.04	.06	.05	.02	.04	* 64.5	9.35	51.2	4.22	3.52	2.73	1.51
25	.04	.06	.05	4.89	* .03	* 51.5	7.75	* 61.8	3.36	3.49	2.62	1.64
26	.04	.05	.05	.71	.02	45.8	6.47	* 45.7	2.51	* 3.46	2.50	1.76
27	.04	.04	1.38	* .24	.01	44.7	* 5.62	* 41.3	1.63	3.37	2.38	1.88
28	.04	.04	.42	.11	.01	42.4	5.63	35.4	* .80	3.28	2.26	* 2.00
29	.04	.04	.12	.06	.01	* 32.6	* 5.33	29.4	1.27	3.19	2.15	1.99
30	.04	.04	* .10	.04	0	23.4	5.42	23.5	1.74	3.10	* 2.03	1.98
31	.03	.08			0		5.33	* 17.5	3.01			1.97
Sum		1.80		7.32		517.66		417.30		90.49		49.18
		2.92		2.95		38.64		366.66		219.20		84.55

Current Year 1999

Period 1962-1999

Month	Extreme Gage Meters		Extreme-Cubic Meters per Second				Volume-Thousand Cubic Meters				
	High	Low	Day		Day		Average	Total	Average	Maximum	Minimum
			High	Low	Day	Day					
Jan.	0.250	0.150	1		0.19	0	0.03	0.09	252	4,487	20,066
Feb.	.225	.145	117	.13	14	.02	.06	.06	156	3,072	12,251
Mar.	.805	.110	27	10.2	110	.01	.10	.10	255	2,368	9,653
April	1.040	.140	25	23.7	123	.02	.24	.632	4,935	4,663	0
May	1.920	0	12	106	14	0	1.25	3,338	4,643	36,113	0
June	4.180	0	21	442	11	0	17.3	44,726	8,426	127,224	0
July	.920	.270	15	25.5	30	4.20	11.8	31,679	31,788	560,796	0
Aug.	2.445	.245	25	168	120	3.64	13.5	36,055	13,253	109,801	0
Sept.	.740	0	17	18.5	28	0	7.31	18,939	18,575	65,176	0
Oct.	1.320	.920	15	7.60	112	.87	2.92	7,818	15,399	80,664	0
Nov.	1.095	1.020	18	3.32	30	1.92	2.82	7,305	10,283	103,632	0
Dec.	1.100	.950	13	3.44	121	1.11	1.59	4,249	6,343	25,993	0
Yearly	4.180	0		442		0	4.93	155,404	123,572	748,140	2,288

* Discharge measurement made on this day

† And other days

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 kilometers north-northwest of Eagle Pass, Maverick County, Texas, and about 51.8 canal kilometers downstream from the point of diversion. The return enters the Rio Grande at river kilometer 816.

RECORDS: Based on records furnished by the Maverick County Water Control and Improvement District No. 1 (MCWCID 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 and MCWCID No. 1. There were 145 current-meter measurements made during the year. 24 measurements were made by U.S. Section of the Commission and 121 measurements were made by MCWCID No. 1. Records available: 1949 through 1999.

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 Meters 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 METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	14.4	13.7	33.4	* 42.9	31.9	29.2	* 26.3	19.9	20.2	20.6	24.5	24.5
2	* 14.0	13.5	32.4	* 43.0	30.7	* 26.3	25.3	20.6	* 19.9	19.9	* 24.3	* 23.9
3	13.5	12.8	* 31.4	43.3	30.8	* 26.4	* 26.0	* 19.7	* 22.3	20.7	24.3	23.9
4	13.5	* 13.0	* 31.4	43.2	32.4	* 29.1	26.1	* 20.4	22.0	19.7	* 24.5	* 23.9
5	13.2	13.8	31.3	* 42.4	32.5	29.8	26.7	* 19.5	21.8	20.4	24.4	24.4
6	* 13.3	14.2	* 32.4	42.0	* 32.0	30.4	* 27.0	18.5	21.8	* 20.3	25.0	* 24.6
7	* 14.0	* 14.3	32.3	* 41.8	31.8	* 30.7	* 26.7	* 19.0	* 20.9	* 20.5	* 24.5	* 24.3
8	14.4	17.2	* 31.7	41.3	* 31.8	30.2	26.4	19.3	* 20.4	20.3	24.0	24.3
9	* 14.4	* 27.8	30.9	40.8	32.0	* 29.8	* 26.1	* 20.8	20.4	21.0	23.1	23.8
10	14.3	31.6	* 30.9	41.3	* 31.8	30.0	25.9	19.1	* 20.6	* 20.5	23.1	23.6
11	* 14.4	* 33.0	38.5	* 41.2	30.5	29.1	26.4	17.8	21.6	20.1	23.0	14.3
12	14.1	32.2	* 40.3	41.0	* 33.5	* 29.5	* 26.8	* 17.4	* 21.4	19.9	23.5	13.6
13	* 13.6	33.1	40.6	* 41.0	33.6	30.7	26.4	17.8	21.5	* 19.7	23.0	22.1
14	* 13.1	* 33.3	* 40.5	41.2	* 35.6	33.0	* 26.1	* 18.2	* 22.3	20.2	24.3	* 22.6
15	13.6	33.0	* 39.0	40.5	33.9	35.6	* 25.9	18.6	* 21.4	20.0	24.2	* 22.6
16	* 14.3	33.7	38.6	38.5	* 33.0	* 37.8	25.7	* 18.3	21.3	20.6	* 23.5	* 22.9
17	14.4	33.1	38.7	* 37.7	34.1	35.5	25.3	17.2	21.7	* 20.8	22.8	22.5
18	14.0	* 32.9	* 39.2	39.0	* 33.3	52.2	25.0	* 18.1	* 22.1	* 21.9	* 23.5	23.3
19	13.2	33.0	40.6	* 40.0	33.1	29.2	25.2	* 18.4	22.4	* 21.7	23.7	* 24.5
20	* 13.6	33.0	41.1	40.3	* 33.0	* 28.5	* 24.2	* 17.6	21.4	22.1	23.9	24.2
21	* 14.0	* 34.0	* 41.7	* 40.1	33.1	30.1	23.5	19.1	20.6	22.7	* 24.1	23.5
22	14.1	33.5	41.3	39.9	32.8	27.2	* 24.0	20.3	20.6	23.4	23.8	22.3
23	* 14.0	* 33.2	* 40.4	* 39.2	32.5	* 26.0	23.3	* 20.2	19.8	23.6	25.4	24.2
24	14.1	33.1	40.8	* 39.9	* 31.6	27.1	23.4	24.2	22.1	* 25.0	* 23.7	25.6
25	13.6	33.1	* 41.3	40.9	32.6	* 28.5	24.5	* 25.3	* 22.3	* 24.1	24.8	24.2
26	* 13.4	* 32.6	41.4	41.2	* 32.0	29.6	24.1	25.3	22.1	24.0	24.2	26.9
27	13.1	33.1	42.6	* 39.2	32.1	28.4	20.9	23.9	21.4	25.1	26.0	* 24.5
28	13.4	33.7	38.6	33.7	* 31.6	* 29.2	* 20.3	23.7	20.9	* 24.9	* 25.6	24.0
29	13.4	* 42.2	33.8	* 31.7	* 27.8	* 19.3	23.5	21.0	23.8	24.8	* 23.9	
30	* 13.6	43.2	33.4	32.0	27.1	18.7	* 23.5	21.2	24.3	24.2	24.5	24.4
31	14.1	* 43.2	30.6	19.5	23.3	19.5	23.9					* 24.9
Sum		768.5	1,203.7	918.0	629.1	676.0						722.2
	428.1	1,171.9	1,001.9	761.0	639.4	724.0						

Current Year 1999

Period 1968-1999

Month	Extreme Gage Meters		Extreme-Cubic Meters per Second			Average	Volume-Thousand Cubic Meters				
	High	Low	Day	# High	Day		Total	Average	Maximum	Minimum	
Jan.			1	14.4	114	13.1	13.8	36,988	72,115	116,090	6,108
Feb.			21	34.0	3	12.8	27.4	66,398	72,287	108,078	6,008
Mar.			130	43.2	19	30.9	37.8	101,252	75,080	109,909	7,047
April			3	43.3	30	33.4	40.1	104,000	74,016	115,145	5,305
May			17	34.1	11	30.5	32.3	86,564	81,169	113,668	17,131
June			18	52.2	23	26.0	30.6	79,315	73,071	102,070	8,162
July			6	27.0	30	18.7	24.5	65,750	70,188	96,639	6,830
Aug.			125	25.3	17	17.2	20.3	54,354	70,754	97,044	22,766
Sept.			19	22.4	23	19.8	21.3	55,244	74,937	111,197	16,949
Oct.			27	25.1	14	19.7	21.8	58,406	76,741	109,382	13,750
Nov.			27	26.0	17	22.8	24.1	62,554	70,591	106,644	3,951
Dec.			26	26.9	12	13.6	23.3	62,398	70,394	112,566	3,217
Yearly				52.2		12.8	26.4	833,223	881,343	1,158,234	207,661

* Discharge measurement made on this day

o Mean daily

† And other days

** Period 1968-1999

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, Maverick County 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, 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. Gate leakage at Las Moras Creek which is measured periodically and mean daily discharges are determined by prorating between current-meter measurements.

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 1999. Records computed by the U.S. Section of the Commission prior to 1996. Beginning in 1996, the Maverick County Irrigation District computes and provides the discharge data through the Texas Natural Resource Conservation Commission. 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 Meters 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 METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.14	0.34	0.48	0.71	0.69	0.75	0.79	0.86	0.75	0.58	0.50	0.57
2	.44	.40	.58	.75	.68	.83	.93	.96	.82	.68	.60	.67
3	.41	.45	.66	.84	.68	.93	1.27	.92	.80	1.28	.61	.89
4	.42	.44	.54	.84	.68	.91	.88	1.00	.84	.67	.81	.89
5	.41	.39	.65	.87	.71	.92	1.05	.64	.99	.77	.71	.88
6	.48	.48	.84	.92	.69	.91	1.37	.60	.75	1.38	.72	.91
7	.49	.52	.70	1.04	.71	.89	1.03	.65	.76	.68	.97	.81
8	.47	.48	.71	.93	.63	.85	1.17	.78	.77	.64	.90	.71
9	.43	.50	.68	.95	.61	.84	1.20	1.12	.75	.71	.62	.79
10	.44	.62	.73	.94	.66	.77	1.31	.84	.80	1.18	.63	.77
11	.44	.68	.88	.92	.67	.83	1.03	.66	.92	.59	.88	15.1
12	.44	.61	.89	.92	.74	.79	1.51	.76	.73	.61	.79	.88
13	.45	.59	1.00	.92	.74	.80	1.19	1.09	.75	.66	.74	.57
14	.44	.59	1.05	.97	.76	.82	.99	1.02	.93	.62	.88	.53
15	.44	.59	1.20	.91	.76	.88	1.05	1.08	.79	1.00	.95	.67
16	.44	.65	1.02	.99	.70	.97	.84	1.03	.79	1.02	.74	.60
17	.44	.57	1.06	1.00	.72	1.04	.89	.77	.83	.61	.70	.58
18	.43	.61	1.04	.98	.80	1.00	.93	1.08	.90	.80	.70	.64
19	.42	.66	.90	.96	.85	1.00	.70	.79	.1.01	.86	.70	.69
20	.43	.67	.84	.92	.81	.81	.70	.78	1.12	.85	.70	.62
21	.44	.57	.74	.92	.90	.78	1.01	.91	1.13	.89	.66	.57
22	.45	.54	.76	.87	.85	.86	.95	.85	.68	.90	.68	.52
23	.43	.53	.91	.89	.80	.89	1.18	.72	.67	.79	.69	.52
24	.39	.67	.94	1.03	.86	.93	.94	.83	.64	.72	.64	.54
25	.38	.65	.86	1.02	.87	1.01	.95	.83	.68	.89	.61	.57
26	.37	.78	.86	.90	.81	1.03	1.15	1.24	.68	1.43	.86	.54
27	.36	.66	.82	.81	.79	1.00	1.35	1.06	.71	.75	.85	.54
28	.35	.53	.83	.77	.83	1.02	1.13	.85	.70	.66	.87	.53
29	.35	.87	.78	.82	1.06	.65	1.26	.69	.67	.79	.55	.55
30	.34	.84	.80	.78	.99	.66	.97	.69	1.21	.67	.64	.56
31	.34	.84			.78		.64	.98	.96			.55
Sum		15.77		27.07		27.11		27.93		26.06		34.76
		12.70		25.72		23.38		31.44		24.07		22.17

Current Year 1999**Period 1968-1999**

Month	Extreme Gage Meters		Extreme-Cubic Meters per Second		Average	Total	Volume-Thousand Cubic Meters		
	High	Low	Day	Day			Average	Maximum	Minimum
Jan.			7	0.49	1	0.14	0.41	1,097	3,431
Feb.			26	.78	1	.34	.56	1,363	3,243
Mar.			15	1.20	1	.48	.83	2,222	4,321
April			7	1.04	1	.71	.90	2,339	4,422
May			21	.90	9	.61	.75	2,020	4,228
June			29	1.06	1	.75	.90	2,342	4,248
July			12	1.51	31	.64	1.01	2,716	4,405
Aug.			29	1.26	6	.60	.90	2,413	4,484
Sept.			21	1.13	24	.64	.80	2,080	3,832
Oct.			26	1.43	1	.58	.84	2,252	3,896
Nov.			7	.97	1	.50	.74	1,915	3,701
Dec.			11	15.1	122	.52	1.12	3,003	3,329
Yearly				15.1		0.14	0.82	25,762	47,540
								112,857	12,834

* Mean daily

! And other days

** Period 1968-1999

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

RECORDS: Based on 40 discharge measurements during the year, 27 by the Mexican Section, and 13 by the United States Section, 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 1999. 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 CMS, determined by slope-area calculations, on June 29, 1954, with a gage height of 16.31 meters. Well-authenticated information indicates the occurrence of a flood in June 1865 with an estimated discharge of 35,000 CMS and a gage height of 17.07 meters on the present gage, and also that these were the only floods since 1745 with flows greater than 23,400 CMS. Min. 0.69 CMS on June 22, 1953, with a gage height of 0.02 meters.

Average Flow in Cubic Meters per Second**

Daily:	Max.	3,810	Aug. 25, 1998	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 METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	18.0	* 15.4	* 38.9	117 *	37.1	31.7	* 74.5	37.6	56.1	29.4	* 31.1	27.4
2	17.5	14.9	38.1	117	32.9	* 30.3	69.4	* 38.2	* 51.4	30.1	31.2	* 27.5
3	15.8	13.6	36.1	118	* 36.6	30.6	67.2	36.6	47.1	32.2	30.2	27.5
4	14.4	* 12.4	* 36.0	119	37.8	31.3	65.1	36.7	45.5	* 32.7	* 30.3	27.0
5	14.2	12.4	35.7	119 *	37.0	31.8	* 70.1	* 36.3	44.4	32.3	30.1	27.3
6	* 14.3	12.9	36.9	113	* 36.1	32.5	69.0	33.0	* 41.8	* 32.6	31.3	27.7
7	* 14.4	13.1	36.6	113	35.8	38.0	66.8	31.2	40.0	34.5	31.0	26.2
8	15.8	13.3	37.0	112	36.7	43.6	65.4	30.9	38.4	34.5	30.6	26.5
9	16.5	26.9	35.4	113	36.3	35.4	64.4	31.0	37.6	35.1	29.5	26.7
10	16.5	34.8	33.9	113	36.0	34.3	63.0	31.1	37.3	33.5	29.5	26.6
11	* 16.5	37.9	89.0	113	33.8	33.3	66.7	29.0	37.1	29.5	29.4	23.0
12	16.6	37.1	112	113	91.2	34.2	66.4	26.1	37.1	28.4	30.2	28.0
13	16.1	37.1	114	112	50.7	35.7	62.9	25.7	36.1	27.7	29.9	27.8
14	15.4	39.0	110	114	43.3	50.1	66.5	25.9	37.9	27.6	30.7	26.1
15	15.6	* 38.3	106 *	112	41.8	97.0	* 74.8	26.6	38.4	28.9	* 31.0	24.9
16	16.6	38.4	111	110	39.1	126	76.2	* 26.5	38.2	30.6	30.2	25.3
17	17.9	38.4	111	112	* 38.2	98.5	74.6	24.9	38.7	38.8	29.3	24.3
18	18.1	37.3	112	110	71.4	105	70.4	24.7	39.3	* 36.8	29.5	25.1
19	16.9	37.3	112	112 *	48.0	99.0	64.7	25.2	39.3	33.9	29.8	26.6
20	16.2	37.1	111	114	39.2	97.5	67.8	24.6	37.7	32.8	29.7	26.2
21	17.0	38.3	112	113	37.5	424 *	63.2	25.2	37.0	33.5	29.7	25.3
22	19.1	37.6	113	113	36.1	541 *	59.8	26.8	36.4	33.5	28.8	26.0
23	19.4	37.8	112	113	35.5	185	58.0	27.1	35.2	33.1	29.5	26.7
24	19.5	37.4	109	114	35.2	183	56.2	44.6	38.2	34.6	29.7	28.0
25	18.9	37.3	113	152	34.4	159 *	55.7	148 *	37.7	33.8	29.4	28.2
26	18.3	36.7	111 *	130 *	35.1	156	55.2	104	33.6	33.1	29.5	29.4
27	18.2	37.4	120	89.3	35.0	142	44.0	94.7	32.0	33.9	30.0	27.8
28	17.8	38.3	139	47.8	34.7	104	40.4	80.9	30.4	34.1	29.3	27.3
29	17.4	119	40.4	35.2	88.3	38.8	71.7	29.6	33.2	29.7	27.3	
30	17.0	119	36.1	34.8	78.5	36.6	65.4	29.3	33.2	28.7	27.4	
31	16.5	118	32.8				36.9	61.1	32.7			28.4
Sum	848.4		3,224.6		3,176.6		1,351.3		1,010.6		829.5	
	522.4		2,737.6		1,245.3		1,910.7		1,158.8		898.8	

Current Year 1999

Period 1968-1999

Month	Extreme Gage Meters			Extreme-Cubic Meters per Second			Average	Volume-Thousand Cubic Meters			
	High	Low	Day	High	Day	Low		Total	Average	Maximum	Minimum
Jan.	0.940	0.900	24	19.5	14	14.2	16.9	45,135	144,750	352,875	32,306
Feb.	1.105	.875	14	42.5	8	11.3	30.3	73,302	171,101	552,787	43,917
Mar.	1.835	1.015	28	178	10	28.8	88.3	236,529	197,310	563,328	25,779
April	1.955	1.065	25	203	30	32.6	107	278,605	214,904	570,326	29,641
May	1.650	1.025	12	144	2	30.1	40.2	107,594	290,937	726,365	44,643
June	4.190	.995	22	866	2	26.4	106	274,458	238,815	594,778	23,750
July	1.365	1.060	1	86.8	30	35.5	61.6	165,084	228,995	961,969	32,194
Aug.	1.890	.965	25	188	17	22.9	43.6	116,752	227,650	916,834	70,131
Sept.	1.185	1.000	1	59.0	129	27.0	38.6	100,120	272,562	1,611,965	63,668
Oct.	1.130	.985	17	46.5	14	25.2	32.6	87,316	267,363	1,099,958	59,993
Nov.	1.055	.950	1	33.9	128	21.1	30.0	77,656	165,129	704,160	56,497
Dec.	1.040	.900	112	32.0	11	14.2	26.8	71,669	142,997	356,400	32,314
Yearly	4.190	0.875		866		11.3	51.8	1,634,220	2,562,513	4,629,385	870,435

* Discharge measurement made on this day

! And other days

** Period 1968-1999

08-4581.50 RIO ESCONDIDO AT VILLA DE FUENTE, COAHUILA

DESCRIPTION: Cableway, gravity well, concrete control weir of 50 CMS 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 kilometers southwest of Piedras Negras, Coahuila, 8.0 river kilometers from the confluence with the Rio Grande, and 10.9 river kilometers downstream from the confluence of Rio San Antonio with Rio Escondido. Rio Escondido enters the Rio Grande at river kilometer 794, 5.0 river kilometers downstream from the international highway bridge between Eagle Pass, Texas and Piedras Negras, Coahuila. The zero of the gage is 218.96 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 39 discharge measurements during the year and a continuous record of gage heights. Records available: October 1932 through 1999.

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 meters 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 CMS on June 29, 1936 with a stage of 224.61 meters above mean sea level. Min. frequently no flow.

Average Flow in Cubic Meters per Second

Daily	Max.	371	Sept. 24, 1964	Min.	0	Occasionally
Monthly	Max.	23.4	Sept. 1964	Min.	0.01	Sept. 1965
Yearly	Max.	7.29	1987	Min.	0.07	1956

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.21	* 0.35	* 0.36	0.24	0.18	0.17	0.18	1.57	5.96	3.06	* 2.07	1.54
2	.20	.36	.36	.23	.18	.16	.16	* 1.57	5.84	2.98	2.07	1.52
3	.19	.37	.35	.21	* .18	.16	.16	1.57	5.72	2.90	2.07	1.50
4	.19	.37	.35	.20	.18	.16	.26	1.57	5.64	* 2.81	2.07	1.46
5	.20	.38	.35	* .19	.18	.15	* 2.21	1.57	5.59	2.81	2.07	1.46
6	* .21	.39	.36	.19	.18	.16	.48	1.57	* 5.46	2.77	2.00	1.46
7	.23	.40	.32	.19	.17	.15	.26	1.57	5.34	2.70	1.94	1.46
8	.24	.40	.21	* .19	.17	.14	.23	1.52	5.22	2.65	1.94	1.46
9	.25	.41	.21	.19	.16	.14	.21	1.46	5.10	2.57	1.91	1.46
10	.26	.42	.21	.19	.17	.15	.21	1.46	4.96	2.57	1.88	1.46
11	* .27	.43	.22	.19	.16	.16	1.83	1.46	4.80	2.49	1.88	1.46
12	.27	.44	.22	.18	1.55	.15	.56	1.41	4.80	2.44	1.88	1.46
13	.28	.44	.22	.18	.21	.14	.31	* 1.41	4.68	3.04	1.88	1.46
14	.28	.45	.20	.18	.18	.77	.26	1.41	4.76	3.11	1.88	1.46
15	.29	* .46	* .20	.18	1.00	* .23	1.38	4.74	2.93	* 1.86	1.46	
16	.39	.46	.20	.18	* .18	.27	.24	* 1.41	4.54	2.90	2.07	1.60
17	.39	.45	.20	.18	* .20	.25	.26	1.44	4.43	2.81	2.07	1.62
18	.34	.45	.20	.18	2.10	.28	.23	1.33	4.34	* 2.81	2.04	1.62
19	.31	.45	.19	* .18	.28	.29	.26	1.31	4.24	2.73	1.75	1.46
20	.31	.45	.19	.18	.21	.26	.26	1.30	4.09	2.60	1.64	1.38
21	.31	.44	.19	.18	.20	* .25	.72	1.36	3.90	2.53	1.62	1.36
22	.30	.44	.19	.18	.20	.23	1.00	1.36	3.76	2.43	1.62	1.36
23	.31	* .44	.19	.17	.20	.22	1.08	1.32	3.71	2.34	* 1.54	1.36
24	.32	.43	.19	.16	.19	.22	1.26	38.3	3.62	2.27	1.52	1.36
25	.31	.43	.19	1.02	.19	.21	1.36	119 *	3.52	2.24	1.52	1.36
26	.32	.43	.21	.31	.18	.21	1.40	16.0	3.43	2.20	1.54	1.36
27	.34	.43	.34	.22	.18	.20	1.46	8.83	3.34	2.20	1.57	1.36
28	.35	.42	1.09	.19	.18	.19	1.50	7.45	3.30	2.14	1.57	1.36
29	.35	.46	.18	.18	.18	.19	1.56	6.83	3.20	2.14	1.57	1.36
30	.34	.53	.18	.18	.18	.19	1.57	6.42	3.13	2.07	1.57	1.31
31	.32	.27					1.57	6.08		2.07		
Sum		11.79		6.62		7.22		242.24		80.31		44.60
	8.88		8.77		9.07		23.28		135.16		54.61	

Current Year 1999

Period 1932-1999

Month	Extreme Gage Meters		Extreme-Cubic Meters per Second				Average	Volume-Thousand Cubic Meters				
			High		Low							
	High	Low	Day	High	Day	Low		Total	Average	Maximum	Minimum	
Jan.	0.220	0.120	116	0.46	1 3	0.19	0.29	767	4,000	23,350	53.6	
Feb.	.220	.175	17	.46	1 2	.30	.42	1,019	3,119	17,803	48.4	
Mar.	.460	.110	28	2.98	25	.18	.28	758	2,636	14,070	114	
April	.395	.100	25	2.00	123	.16	.22	572	2,839	27,069	100	
May	.735	.100	18	10.2	1 9	.16	.29	784	4,467	31,418	190	
June	.555	.085	14	4.91	1 9	.14	.24	624	3,446	31,888	74.3	
July	.670	.100	5	8.00	1 2	.16	.75	2,011	3,148	32,694	64.8	
Aug.	3.090	.330	24	308	20	1.26	7.81	20,930	4,521	37,135	0	
Sept.	.600	.465	1	6.02	30	3.07	4.51	11,678	6,096	60,665	21.6	
Oct.	.650	.400	13	7.40	130	2.07	2.59	6,939	6,211	49,084	53.6	
Nov.	.400	.355	1 1	2.07	123	1.52	1.82	4,718	4,822	31,743	53.6	
Dec.	.365	.335	116	1.62	130	1.31	1.44	3,853	4,253	27,140	82.9	
Yearly	3.090	0.085		308		0.14	1.73	54,653	49,538	229,999	2,163	

* Discharge measurement made on this day

! And other days

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

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

RECORDS: Based on the weir discharge table, stable station control rating tables, and a continuous record of gage heights. All storm flow occurring at these stations is deducted from the records and is not shown below. Records available: April 1959 through 1999. Records computed by the U.S. Section of the Commission prior to 1996. Beginning in 1996, the Maverick County Irrigation District computes and provides the discharge data through the Texas Natural Resource Conservation Commission. Records prior to 1976 were published under the "Return Flow to the Rio Grande from Maverick Canal, Eagle Pass to San Antonio Crossing".

EXTREME FLOWS FROM RECORDS:

				Average Flow in Cubic Meters per Second**						
Daily:	Max.	9.91		July 5, 1968				Min.	0.01	Sept. 27, 1997
Monthly:	Max.	7.00		July 1968				Min.	0.04	April 1997
Yearly:	Max.	5.10		1971				Min.	0.07	1998

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.03	0.09	0.03	0.05	0.06	0.02	0.05	0.10	0.15	0.04	0.03	0.07
2	.10	.10	.04	.05	.05	.02	.04	.05	.11	.03	.03	.07
3	.08	.12	.04	.05	.04	.02	.04	.03	.11	.04	.03	.07
4	.08	.10	.04	.06	.05	.03	.04	.02	.08	.05	.04	.07
5	.07	.11	.04	.06	.09	.03	.07	.02	.07	.06	.04	.07
6	.09	.17	.06	.06	.12	.03	.07	.02	.06	.08	.05	.07
7	.09	.15	.08	.08	.05	.02	.07	.02	.06	.08	.05	.06
8	.18	.20	.10	.08	.04	.03	.06	.03	.06	.05	.05	.06
9	.23	.22	.09	.07	.11	.03	.07	.02	.06	.04	.05	.07
10	.17	.19	.08	.06	.10	.03	.10	.02	.05	.03	.05	.07
11	.07	.18	.10	.06	.14	.03	.07	.02	.08	.03	.06	.07
12	.04	.18	.07	.06	.06	.03	.05	.02	.08	.02	.05	.06
13	.04	.16	.05	.07	.11	.03	.05	.03	.07	.03	.05	.06
14	.04	.23	.05	.05	.20	.03	.05	.03	.08	.03	.07	.06
15	.04	.27	.05	.05	.25	.03	.04	.03	.07	.03	.06	.06
16	.03	.34	.05	.05	.22	.04	.03	.05	.07	.05	.06	.07
17	.03	.48	.05	.05	.25	.04	.03	.04	.07	.06	.06	.06
18	.03	.39	.05	.05	.40	.04	.03	.03	.06	.08	.06	.07
19	.03	.29	.05	.05	.25	.05	.03	.03	.06	.10	.06	.07
20	.03	.25	.08	.05	.16	.05	.03	.04	.05	.13	.07	.07
21	.04	.17	.08	.05	.10	.06	.04	.05	.06	.14	.07	.06
22	.04	.14	.09	.07	.08	.06	.04	.05	.06	.10	.07	.06
23	.10	.12	.08	.10	.07	.07	.03	.05	.07	.09	.07	.06
24	.12	.11	.11	.08	.07	.08	.04	.07	.07	.08	.07	.07
25	.12	.10	.11	.07	.06	.07	.04	.23	.07	.07	.06	.08
26	.12	.10	.10	.09	.05	.07	.04	.59	.11	.06	.06	.09
27	.11	.10	.11	.07	.04	.06	.04	.41	.10	.06	.06	.09
28	.10	.10	.12	.05	.06	.05	.03	.14	.08	.05	.06	.09
29	.10	.16	.06	.08	.08	.05	.02	.14	.06	.05	.06	.08
30	.10	.10	.10	.05	.05	.04	.02	.14	.05	.05	.06	.09
31	.09	.06	.06	.03	.03	.02	.15	.05				.12
Sum		5.16		1.85		1.24		2.67		1.86		2.22
	2.54		2.32		3.44		1.38		2.23		1.66	

Current Year 1999

Period 1968-1999

Month	Extreme Gage Meters		Extreme-Cubic Meters per Second			Average	Volume-Thousand Cubic Meters				
	High	Low	Day	High	Low		Total	Average	Maximum	Minimum	
Jan.			9	0.23	1	0.03	0.08	219	5,290	15,700	164
Feb.			17	.48	1	.09	.18	446	4,412	13,204	206
Mar.			29	.16	1	.03	.07	200	5,768	14,401	193
April			23	.10	1	.05	.06	160	6,253	18,066	114
May			18	.40	31	.03	.11	297	5,849	17,672	245
June			24	.08	1	.02	.04	107	6,064	17,742	107
July			10	.10	129	.02	.04	119	5,938	18,723	119
Aug.			26	.59	1	.4	.02	231	5,567	14,290	231
Sept.			1	.15	10	.05	.07	193	4,689	11,301	139
Oct.			21	.14	12	.02	.06	161	4,383	10,138	161
Nov.			14	.07	1	.03	.06	143	4,505	13,309	136
Dec.			31	.12	1	.7	.07	192	4,722	15,785	192
Yearly				0.59		0.02	0.08	2,468	63,440	161,048	2,468

♦ Mean daily

! And other days

** Period 1968-1999

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

RECORDS: Based on 24 current-meter measurements during the year and 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 current-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 1990 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 CMS in June 1954, was determined by slope-area computation, with an elevation of 190.29 meters. Min. 1.54 CMS occurred on June 24, 1953 with an elevation of 177.38 meters at a station 518 meters upstream from the present site.

Average Flow in Cubic Meters per Second**

Daily:	Max. 4,310	August 25, 1998	Min. 9.26	June 29 & 30, 1972
Monthly:	Max. 617	Sept. 1974	Min. 14.2	June 1969
Yearly:	Max. 150	1974	Min. 35.0	1972

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	JULY	Aug.	Sept.	Oct.	Nov.	Dec.
1	15.5	17.0	37.2	111	41.7	32.8	60.1	36.0	64.7	41.3	38.8	* 31.8
2	15.7	16.7	36.6	109	41.3	* 30.8	55.6	36.1	* 58.7	40.3	37.5	28.9
3	16.5	* 16.4	* 34.1	112	38.4	29.4	52.3	37.0	59.4	41.1	37.1	29.2
4	16.6	16.0	32.9	109	39.1	30.2	52.1	* 37.0	47.7	40.2	* 35.0	28.7
5	16.6	16.3	32.8	112	* 39.7	30.5	53.9	37.2	38.6	39.5	33.4	28.4
6	* 15.6	16.5	33.8	109	38.0	31.2	58.7	32.9	39.0	* 37.4	32.5	30.0
7	14.7	18.4	34.6	109 *	37.0	31.8	51.6	32.8	40.0	36.5	32.8	29.5
8	15.4	17.9	34.5	110	37.1	40.7	* 52.2	33.8	38.6	37.6	32.7	28.2
9	16.9	19.4	36.2	112	37.5	35.8	52.3	34.2	38.2	37.6	31.9	29.0
10	17.1	29.5	32.5	112	37.7	33.0	51.9	35.1	38.6	37.4	30.8	29.6
11	17.1	36.4	42.0	112	36.7	32.0	59.8	34.5	39.9	34.0	30.9	29.0
12	16.6	38.8	100	111	120	31.3	56.4	33.7	42.1	32.2	31.4	26.8
13	16.5	38.9	106	110	73.7	55.0	52.3	32.5	42.8	31.6	31.8	32.0
14	16.5	38.4	101	110	45.8	42.5	48.7	31.5	* 43.9	30.4	32.4	30.7
15	16.5	38.8	102	111	45.0	71.1	56.4	31.3	45.3	30.1	32.7	* 29.4
16		38.2	97.0	108	42.0	117	59.1	30.8	45.5	30.1	33.0	29.3
17	17.0	* 39.2	100 *	108	39.6	96.3	57.8	31.2	45.6	47.9	* 33.5	28.9
18	17.5	38.3	103	105	64.0	97.6	54.0	* 31.0	46.4	46.0	32.1	27.7
19	16.7	37.4	102	106	* 61.2	95.4	51.8	31.6	49.5	41.2	32.3	28.5
20	* 16.1	36.9	100	105	42.7	92.3	51.3	31.0	51.0	* 43.4	32.1	29.2
21	16.0	38.0	103	110 *	39.4	145	49.6	29.9	51.3	45.7	32.1	29.1
22	16.2	39.2	105	113	38.4	470 *	48.7	33.1	51.4	44.6	32.1	29.9
23	16.7	37.5	104	111	37.0	118	48.4	36.7	51.8	44.0	31.7	29.6
24	17.5	36.6	103	112	36.4	150	46.4	144	52.7	43.6	32.6	30.1
25	17.6	36.9	107	143	35.5	133	45.1	296 *	53.9	43.6	32.9	31.4
26	16.9	36.8	106	133	35.3	129	45.2	158	52.8	42.2	33.3	32.2
27	16.7	36.6	113	114	36.6	121	40.5	104	50.1	40.9	32.1	32.6
28	16.8	37.1	134	70.0	36.4	106	35.3	96.4	50.1	40.8	32.8	31.1
29	17.4		119	46.5	50.0	78.7	34.4	86.1	46.2	40.7	32.0	30.9
30	17.3		114	43.8	35.9	68.0	33.2	76.4	41.6	40.5	32.1	29.8
31	16.8		115		35.0		33.7	70.2		40.4		29.3

Sum	864.1	3,187.3	2,575.4	1,802.0	1,222.8	920.8
513.5	2,519.2	1,374.1	1,548.8	1,417.4	988.4	

Current Year 1999					Period 1968-1999						
Month	Extreme Gage Meters		Extreme-Cubic Meters per Second		Average	Volume-Thousand Cubic Meters					
	High	Low	Day	High		Day	Total	Average	Maximum	Minimum	
Jan.	1.770	1.730	18	19.3	16	14.3	16.6	44,366	154,279	344,184	44,366
Feb.	1.945	1.730	13	44.0	14	15.3	30.9	74,658	180,515	568,741	63,322
Mar.	2.430	1.870	128	154	11	29.5	81.3	217,659	204,771	567,475	46,184
April	2.490	1.930	25	189	30	39.5	106	275,383	225,093	584,928	46,115
May	2.415	1.865	12	153	26	29.8	44.3	118,722	308,120	740,332	62,566
June	3.290	1.850	22	671	12	27.9	85.8	222,515	254,784	681,150	36,768
July	2.205	1.880	11	76.9	31	30.6	50.0	133,816	241,165	972,830	45,920
Aug.	2.670	1.830	25	348	21	27.9	58.1	155,693	241,979	1,016,428	77,147
Sept.	2.080	1.910	1	67.1	5	36.8	47.2	122,463	286,806	1,598,663	72,300
Oct.	2.075	1.850	17	66.9	16	28.1	39.4	105,650	279,833	1,064,503	56,281
Nov.	1.925	1.860	1	39.5	11	30.1	32.9	85,398	177,920	681,981	54,285
Dec.	1.890	1.820	27	33.7	12	24.0	29.7	79,557	150,670	341,125	46,189
Yearly	3.290	1.730		671		14.3	51.9	1,635,880	2,705,935	14,731,321	1,105,710

Discharge measurement made on this day					And other days				Period 1968-1999			
Month	Extreme Gage Meters		Extreme-Cubic Meters per Second		Average	Volume-Thousand Cubic Meters			Total	Average	Maximum	Minimum
	High	Low	Day	High		Day	Total	Average				
Jan.	1.770	1.730	18	19.3	16	14.3	16.6	44,366	154,279	344,184	44,366	
Feb.	1.945	1.730	13	44.0	14	15.3	30.9	74,658	180,515	568,741	63,322	
Mar.	2.430	1.870	128	154	11	29.5	81.3	217,659	204,771	567,475	46,184	
April	2.490	1.930	25	189	30	39.5	106	275,383	225,093	584,928	46,115	
May	2.415	1.865	12	153	26	29.8	44.3	118,722	308,120	740,332	62,566	
June	3.290	1.850	22	671	12	27.9	85.8	222,515	254,784	681,150	36,768	
July	2.205	1.880	11	76.9	31	30.6	50.0	133,816	241,165	972,830	45,920	
Aug.	2.670	1.830	25	348	21	27.9	58.1	155,693	241,979	1,016,428	77,147	
Sept.	2.080	1.910	1	67.1	5	36.8	47.2	122,463	286,806	1,598,663	72,300	
Oct.	2.075	1.850	17	66.9	16	28.1	39.4	105,650	279,833	1,064,503	56,281	
Nov.	1.925	1.860	1	39.5	11	30.1	32.9	85,398	177,920	681,981	54,285	
Dec.	1.890	1.820	27	33.7	12	24.0	29.7	79,557	150,670	341,125	46,189	
Yearly	3.290	1.730		671		14.3	51.9	1,635,880	2,705,935	14,731,321	1,105,710	

Discharge measurement made on this day					And other days				Period 1968-1999			
Month	Extreme Gage Meters		Extreme-Cubic Meters per Second		Average	Volume-Thousand Cubic Meters			Total	Average	Maximum	Minimum
	High	Low	Day	High		Day	Total	Average				
Jan.	1.770	1.730	18	19.3	16	14.3	16.6	44,366	154,279	344,184	44,366	
Feb.	1.945	1.730	13	44.0	14	15.3	30.9	74,658	180,515	568,741	63,322	
Mar.	2.430	1.870	128	154	11	29.5	81.3	217,659	204,771	567,475	46,184	
April	2.490	1.930	25	189	30	39.5	106	275,383	225,093	584,928	46,115	
May	2.415	1.865	12	153	26	29.8	44.3	118,722	308,120	740,332	62,566	
June	3.290	1.850	22	671	12	27.9	85.8	222,515	254,784	681,150	36,768	
July	2.205	1.880	11	76.9	31	30.6	50.0	133,816	241,165	972,830	45,920	
Aug.	2.670	1.830	25	348	21	27.9	58.1	155,693	241,979	1,016,428	77,147	
Sept.	2.080	1.910	1	67.1	5	36.8	47.2	122,463	286,806	1,598,663	72,300	
Oct.	2.075	1.850	17	66.9	16	28.1	39.4	105,650	279,833	1,064,503	56,281	
Nov.	1.925	1.860	1	39.5	11	30.1	32.9	85,398	177,920	681,981	54,285	
Dec.	1.890	1.820	27	33.7	12	24.0	29.7	79,557	150,670	341,125	46,189	
Yearly	3.290	1.730		671		14.3	51.9	1,635,880	2,705,935	14,731,321	1,105,710	

Discharge measurement made on this day					And other days				Period 1968-1999			
Month	Extreme Gage Meters		Extreme-Cubic Meters per Second		Average	Volume-Thousand Cubic Meters			Total	Average	Maximum	Minimum
	High	Low	Day	High		Day	Total	Average				
Jan.	1.770	1.730	18	19.3	16	14.3	16.6	44,366	154,279	344,184	44,366	
Feb.	1.945	1.730	13	44.0	14	15.3	30.9	74,658	180,515	568,741	63,322	
Mar.	2.430	1.870	128	154	11	29.5	81.3	217,659	204,771	567,475	46,184	
April	2.490	1.930	25	189	30	39.5	106	275,383	225,093	584,928	46,115	
May	2.415	1.865	12	153	26	29.8	44.3	118,722	308,120	740,332	62,566	
June	3.290	1.850	22	671	12	27.9	85.8	222,515	254,784	681,150	36,768	
July	2.205	1.880	11	76.9	31	30.6	50.0	133,816	241,165	972,830	45,920	
Aug.	2.670	1.830	25	348	21	27.9	58.1	155,693	241,979	1,016,428	77,147	
Sept.	2.080	1.910	1	67.1	5	36.8	47.2	122,463	286,806	1,598,663	72,300	
Oct.	2.075	1.850	17	66.9	16	28.1	39.4	105,650	279,833	1,064,503	56,281	
Nov.	1.925	1.860	1	39.5	11	30.1	32.9	85,398	177,920	681,981	54,285	

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

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

RECORDS: Based on 31 current-meter 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 kilometers downstream of present site; March 3, 1989 through May 1990 at a station 0.5 kilometer upstream of present site; and June 1990 through 1999 at the present site.

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.

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

Average Flow in Cubic Meters 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 METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Current Year 1999							Period 1968-1999				
Month	Extreme Gage Meters		Extreme-Cubic Meters per Second			Average	Volume-Thousand Cubic Meters				
	High	Low	Day	High	Day		Total	Average	Maximum	Minimum	
				High	Day						
Jan.	0.565	0.495	4	20.3	23	12.6	16.5	44,185	159,334	352,918	44,185
Feb.	.800	.505	17	39.7	7	12.4	27.4	66,339	187,520	555,809	48,383
Mar.	1.685	.720	29	181	6	27.2	77.4	207,230	210,418	609,638	45,757
April	1.700	.795	26	188	30	38.7	100	259,978	231,499	640,138	43,304
May	1.600	.710	27	176	26	32.1	50.8	136,011	332,708	817,599	110,911
June	4.185	.650	23	662	1 4	26.5	101	260,712	290,829	857,878	36,616
July	1.550	.720	11	169	31	32.5	63.5	170,070	250,186	1,034,298	39,804
Aug.	4.750	.620	26	809	23	20.2	90.1	241,307	250,765	979,770	67,452
Sept.	1.040	.700	1	69.5	30	30.5	44.0	113,996	299,042	1,500,845	79,497
Oct.	1.105	.675	17	85.4	1	29.1	37.2	99,619	315,854	1,180,391	69,266
Nov.	.750	.685	1	36.6	5	30.0	32.8	85,113	182,097	723,165	53,153
Dec.	.730	.620	1	34.2	14	24.7	29.1	78,054	154,660	379,380	48,064
Yearly	4.750	0.495		809		12.4	55.9	1,762,604	2,864,912	4,799,562	1,209,723

* Discharge measurement made on this day

! And other days

** Period 1968-1999

08-4597.00 RIO SALADO NEAR LAS TORTILLAS, TAMAULIPAS

DESCRIPTION: Cableway, control weir with notch opening of 72 CMS capacity, gravity well, and water-stage recorder located on the right bank at latitude 26°50'10", longitude 99°33'50", 3 river kilometers downstream from the confluence of Rio Sabinas with Rio Salado, 10 kilometers southeast of the town of Las Tortillas, Tamaulipas, and 39.8 river kilometers from the confluence with the Rio Grande. This stream enters the Rio Grande at river kilometer 482, 39.8 river kilometers upstream from Falcon Dam. The zero of the gage is 99.28 meters above mean sea level, U. S. C. & G. S. datum. Since July 1996, the actual measurements and record of gage heights have been obtained at the Nuevo Laredo to Reynosa Highway Bridge approximately 39.7 kilometers downstream from the gaging station near Las Tortillas. The zero of the gage at the Bridge is 89.00 meters above mean sea level, U.S.C. and G.S. datum.

RECORDS: Based on 2 discharge measurement during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: September 9, 1953 through 1999. Records are also available for a station at old Cd. Guerrero, 30 kilometers downstream, from 1900 through 1913 and 1923 through September 8, 1953.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 1,840 CMS on September 16, 1971, with a gage height of 12.31 meters. Min. frequently no flow. The maximum discharge was measured at the highway bridge 20.9 river kilometers 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 Meters per Second**

Daily:	Max.	1,780	Sept. 16, 1971	Min.	0	Frequently
Monthly:	Max.	384	Sept. 1971	Min.	0	Frequently
Yearly:	Max.	93.9	1971	Min.	1.08	1994

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	0	1.83	0	3.75	1.14	0.35	4.70	5.35	0.29	0
2	0	0	0	1.28	0	1.84	.64	.40	2.41	1.88	.28	0
3	0	0	0	.76	0	1.27	.87	.50	1.91	1.43	.28	0
4	0	0	0	.50	0	.73	.81	.44	1.61	.90	.27	0
5	0	0	0	.46	0	.45	1.04	.42	1.14	.64	.23	0
6	0	0	0	.45	0	.35	5.23	.37	.88	.47	.23	0
7	0	0	0	.40	0	.27	12.3	.33	1.77	.42	.21	0
8	0	0	0	.34	0	.21	4.59	.28	1.49	.40	.18	0
9	0	0	0	.29	0	.15	2.59	.22	.76	.40	.18	0
10	0	0	0	.26	0	.11	1.96	.16	.64	.32	.17	0
11	0	0	0	.25	0	.07	1.77	.09	.55	.32	.16	0
12	0	0	0	.22	0	.02	1.61	.02	.45	.30	.15	0
13	0	0	0	.20	.02	.06	1.34	0	.38	.30	.15	0
14	0	0	0	.19	.07	.30	.92	0	.33	.26	.14	0
15	0	0	0	.17	.15	2.13	1.19	0	.32	.25	.14	0
16	0	0	0	.16	.21	6.32	1.25	0	.32	.24	.12	0
17	0	0	0	.15	.29	9.12	.82	0	.32	17.6	.14	0
18	0	0	0	.11	.18	12.2	.71	0	.27	38.8	.13	0
19	0	0	0	.07	.05	11.5	.54	0	.24	* 42.2	.11	0
20	0	0	0	.05	.27	27.5	.43	0	.22	19.8	.10	0
21	0	0	0	0	.46	25.5	.35	0	.19	4.87	.10	0
22	0	0	0	0	.22	30.1	.36	.03	.18	* 2.05	.10	0
23	0	0	0	0	.89	28.8	.74	.05	.17	1.58	.08	0
24	0	0	0	0	1.12	15.2	.39	.26	.13	1.23	.08	0
25	0	0	0	.06	0	1.28	.874	.36	2.78	.12	.09	0
26	0	0	.10	0	1.40	4.58	.25	55.4	.08	.87	.06	0
27	0	0	3.06	0	0	2.44	.18	136	.04	.65	.05	0
28	0	0	36.9	0	9.95	1.85	.11	139	.02	.46	.05	0
29	0	0	47.6	0	14.5	1.60	.09	21.8	.11	.41	.05	0
30	0	0	18.2	0	7.00	1.24	.80	0	5.71	.36	.05	0
31	0	0	4.10	0	14.4	0	.21	10.8	.31	0	0	0
Sum	0	0	8.14	110.02	52.46	198.40	45.59	369.70	27.46	146.02	4.37	0

Current Year 1999

Period 1953-1999

Month	Extreme Gage Meters		Extreme-Cubic Meters per Second			Average	Volume-Thousand Cubic Meters			
	High	Low	Day	High	Low		Total	Average	Maximum	Minimum
Jan.	89.000	89.000	11	0	11	0	0	9,709	73,777	0
Feb.	89.000	89.000	11	0	11	0	0	8,104	82,495	0
Mar.	90.470	89.000	29	50.7	11	0	3.55	9,506	5,509	36,628
April	89.300	89.000	1	2.00	121	0	.27	703	12,246	250,373
May	89.900	89.000	128	20.8	11	0	1.69	4,533	28,590	447,500
June	90.360	89.000	19	44.1	12	0	6.61	17,142	31,903	304,451
July	89.820	89.000	7	17.3	129	0	1.47	3,939	29,241	544,635
Aug.	91.990	89.000	29	168	13	0	11.9	31,942	22,854	259,070
Sept.	89.700	89.000	30	12.5	127	0	.92	2,373	88,682	996,183
Oct.	90.450	89.040	17	49.5	16	.22	4.71	12,616	54,285	679,329
Nov.	89.070	89.010	1	.35	126	.05	.15	378	27,063	416,863
Dec.	89.000	89.000	11	0	11	0	0	0	16,433	217,244
Yearly	91.990	89.000		168		0	2.64	83,132	334,617	12,961,050
										34,122

* Discharge measurement made on this day

! And other days

** Period September 1953-1999

08-4613.00 RIO GRANDE BELOW FALCON DAM NEAR FALCON, TEXAS
AND NUEVA CO. 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 kilometer 442; about 11.3 kilometers southwest of Falcon, Starr County, Texas and 139 river kilometers downstream from the old international highway bridge between Laredo, Texas and Nuevo Laredo, Tamaulipas. A gravity well and graphic water-stage recorder located 4.1 river kilometers downstream and a cableway located 1.6 kilometers 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 cableway during spillway gate operations. During 1999 there were 14 current-meter measurements made at the cableway by the United States Section during spillway operations. Records available: 1958 through 1999. Records are also available from December 17, 1952 through 1957 for a station at Chapeno, 4.1 kilometers downstream, where discharges included arroyo inflow below Falcon Dam. This 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 CMS on September 18, 1971. Min. 0.04 CMS on March 24 and 25, 1957 (at Chapeno gaging station).

Average Flow in Cubic Meters 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.	39.6	1997

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	28.9	43.6	61.7	35.0	154	45.0	40.6	82.3	25.1	15.5	28.7	39.3
2	29.2	44.5	72.7	39.2	162	51.0	38.4	63.8	27.9	23.8	31.1	35.6
3	29.3	39.4	49.5	34.8	164	55.9	35.7	48.3	30.4	30.4	32.1	33.2
4	26.1	36.7	* 42.2	34.7	133	68.5	30.5	42.1	27.8	30.8	30.7	30.5
5	21.8	46.1	44.4	35.6	135	81.2	23.0	47.2	23.3	33.0	37.8	30.8
6	19.3	51.3	49.7	35.5	135	80.7	17.8	54.7	14.6	30.5	45.4	28.1
7	19.0	51.6	49.6	37.4	136	69.8	13.0	67.5	2.00	20.6	45.4	27.7
8	19.0	51.1	54.0	45.3	123	75.8	10.5	67.3	3.50	28.2	45.2	30.5
9	16.0	51.8	52.7	62.2	125	85.4	10.5	59.7	6.00	38.1	46.1	25.8
10	16.0	51.9	52.7	76.1	127	91.3	13.0	52.3	8.50	35.5	52.1	22.9
11	20.6	51.8	48.4	75.5	130	101	15.5	65.3	8.50	35.6	55.5	25.7
12	27.1	41.6	47.8	75.4	121	98.6	15.5	74.0	8.50	35.2	57.8	25.3
13	29.0	41.1	57.8	129	101	93.2	15.5	75.4	8.50	* 37.8	62.7	27.8
14	31.5	38.9	63.3	132	103	84.9	15.5	76.2	9.50	45.8	62.8	30.5
15	31.7	36.6	63.2	161	105	70.8	20.7	75.3	13.5	48.8	55.8	* 32.9
16	33.7	42.9	101	172 *	105	* 47.7	20.5	72.6	13.5	55.7	50.9	41.0
17	36.2	46.7	108	186	106 *	28.8	18.0	65.6	18.8	51.9	* 45.7	40.6
18	36.3	46.7	107	186	75.7	28.9	15.5	70.3	23.4	15.5	45.6	40.6
19	32.4	51.2	* 75.2	197	53.3	37.9	25.5	65.9	28.2	20.6	45.6	42.8
20	45.7	51.5	92.7	245 *	24.8	45.4	* 19.2	55.7	28.2	28.8	35.5	45.5
21	55.2	50.5	105	239	17.8	40.3	12.5	41.8	33.4	22.7	32.9	31.2
22	58.4	50.7	105	235 *	35.7	27.8	17.4	12.4	26.0	20.5	28.0	30.0
23	54.0	47.8	135 *	235 *	40.7	20.7	22.3	1.40	23.6	27.1	23.1	25.5
24	48.0	44.1	165	253	43.2	15.5	22.6	8.50	28.1	27.5	20.5	23.0
25	41.3	39.5	194	256	43.8	15.5	25.1	8.50	33.3	29.9	20.4	27.7
26	35.9	34.6	223 *	250	34.9	25.1	27.8	8.50	33.7	32.7	20.4	30.5
27	31.2	34.3	213	198	31.8	25.3	42.8	8.50	33.3	32.5	30.5	30.6
28	30.1	34.7	115	193	41.7	32.5	42.4	9.50	30.4	29.7	30.4	30.4
29	34.2		65.1	186	50.4	40.5	44.8	10.5	28.2	22.7	29.7	28.0
30	36.6		62.7	179	45.8	40.4	47.3	13.0	11.5	21.0	35.5	24.8
31	38.9		51.7	42.9	65.3	20.1			23.7			26.7
Sum		1,253.2		4,218.7		1,625.4		1,424.20		952.1		965.5
	1,012.6		2,728.1		2,747.5		784.7		611.20		1,178.9	

Current Year 1999

Period 1954-1999

Month	Extreme Gage Meters		Extreme-Cubic Meters per Second		Average	Volume-Thousand Cubic Meters		
	High	Low	Day	Day		Total	Average	Maximum
Jan.			22	58.4	19	16.0	32.7	87,489
Feb.			10	51.9	27	34.3	44.8	108,276
Mar.			26	223	4	42.2	88.0	235,708
April			25	256	4	34.7	141	364,496
May			3	164	21	17.8	88.6	237,384
June			11	101	124	15.5	54.2	140,435
July			31	65.3	18	10.5	25.3	67,798
Aug.			1	82.3	23	1.40	45.9	123,051
Sept.			26	33.7	7	2.00	20.4	52,808
Oct.			16	55.7	11	15.5	30.7	82,261
Nov.			14	62.8	125	20.4	39.3	101,857
Dec.			20	45.5	10	22.9	31.1	83,419
Yearly				256		1.40	53.4	1,684,982
								2,887,959
								6,188,898
								1,247,998

* Discharge measurement made on this day

o Mean daily

! And other days

** Period 1954-1999

08-4620.00 RIO ALAMO AT CD. MIER, TAMAULIPAS

DESCRIPTION: Cableway, reinforced concrete weir of .5 CMS capacity, gravity well, and water-stage recorder located on the right bank at a point called "El Paso del Cantaro," latitude 26°27'02", longitude 99°09'06", about 1.0 kilometer north of Cd. Mier, Tamaulipas, and 8.0 river kilometers from the confluence with the Rio Grande. This stream enters the Rio Grande at river kilometer 422, 20.0 river kilometers downstream from Falcon Dam. The weir is located about 91 meters downstream from the recorder. The zero of the gage is at mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on the weir discharge table at low flows and a continuous record of gage heights. High flow computations by shifting control methods. During 1999 there were 2 current meter measurements made at the cableway jointly by the Mexican Section and the U.S. Section. Records available: July 1923 through 1999.

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

EXTREME FLOWS FROM RECORDS: Momentary: Max. 4,100 CMS on September 11, 1948, with a stage of 67.64 meters above mean sea level. 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 Meters per Second

Monthly	Max.	2,470	Sept. 11, 1948	Min.	0	Frequently
Monthly	Max.	207	Sept. 1967	Min.	0	Frequently
Yearly	Max.	23.7	1967	Min.	0.34	1999

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	0	.30	0	0	0	0	.25	2.01	0	0
2	0	0	0	.51	0	0	0	0	.15	1.30	0	0
3	0	0	0	.81	0	0	0	0	.06	.62	0	0
4	0	0	0	.70	0	0	0	0	0	.48	0	0
5	0	0	0	.59	0	0	2.86	0	0	.38	0	0
6	0	0	0	.47	0	0	2.63	0	0	.28	0	0
7	0	0	0	.32	0	0	1.30	0	0	.18	0	0
8	0	0	0	.29	0	0	.77	0	.18	.08	0	0
9	0	0	0	.21	0	0	.67	0	1.35	0	0	0
10	0	0	0	.20	0	0	.20	0	.85	0	0	0
11	0	0	0	.19	0	0	.11	0	.58	0	0	0
12	0	0	0	.14	0	0	0	0	.37	0	0	0
13	0	0	0	.05	0	0	0	0	.27	0	0	0
14	0	0	0	0	0	1.71	0	0	.16	0	0	0
15	0	0	0	0	0	.90	0	0	.02	0	0	0
16	0	0	0	0	0	.09	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	9.37	0	0
18	0	0	0	0	0	0	.22	0	0	13.4	0	0
19	0	0	0	0	0	0	.09	0	0	3.20	0	0
20	0	0	0	0	0	0	0	0	0	1.32	0	0
21	0	0	C	C	0	.24	.32	0	0	.80	0	0
22	0	0	C	C	0	1.23	.67	0	0	.52	0	0
23	0	0	C	C	0	1.10	.63	0	0	.40	0	0
24	0	0	C	C	0	.50	.48	0	0	.30	0	0
25	0	0	C	C	0	.20	.30	0	0	.22	0	0
26	0	0	0	C	0	.02	.11	0	0	.18	0	0
27	0	0	C	C	0	0	.03	* 10.8	0	.05	0	0
28	0	0	18.9	C	0	0	0	2.75	0	0	0	0
29	0	0	14.9	C	0	0	0	0	1.20	1.17	0	0
30	0	0	9.0*	C	0	0	0	.76	.95	0	0	0
31	0	0	.75	0	0	0	0	.42	0	0	0	0
Sum	0	0	4.78	5.99	15.93	43.56	5.99	11.39	6.36	35.09	0	0

Current Year 1999

Period 1924-1999

Month	Extreme Gage Meters		Extreme-Cubic Meters per Second		Average	Volume-Thousand Cubic Meters				
	High	Low	High			Total	Average	Maximum	Minimum	
			Day	Day						
Jan.	57,400	57,400	1	0	1	0	0	2,045	43,079	
Feb.	57,400	57,400	1	0	0	0	0	2,589	65,959	
Mar.	58,750	57,400	28	45.9	11	1.41	3,764	2,105	24,456	
April	57,490	57,400	2	.90	113	0	413	5,569	44,665	
May	57,400	57,400	1	0	1	0	0	9,594	168,990	
June	57,970	57,400	14	12.4	1	.20	518	10,957	102,675	
July	57,700	57,400	5	4.50	1	.37	984	6,668	76,780	
Aug.	58,140	57,400	27	18.6	1	.51	1,376	18,137	253,778	
Sept.	57,700	57,400	29	4.50	3	.21	550	40,062	535,810	
Oct.	58,610	57,400	17	38.5	9	1.13	3,032	17,564	238,962	
Nov.	57,400	57,400	1	0	1	0	0	3,631	31,041	
Dec.	57,400	57,400	1	0	1	0	0	2,540	19,714	
Yearly	58,750	57,400	45.9	0	0	0.34	10,637	121,461	747,096	
Yearly	57,400	57,400	45.9	0	0	0.34	10,637	121,461	747,096	

* Discharge measurement made on this day

† And other days

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

RECORDS: Based on a continuous record of gage heights. Computations by shifting control methods. Discharge prorated between measurements during times of extremely low flow. Records available: 1954 through 1999.

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

EXTREME FLOWS FROM RECORDS: Momentary: Max. 3,270 CMS on September 25, 1967 with a stage of 52.57 meters above mean sea level. Min. no flow occurs frequently.

Average Flow in Cubic Meters per Second

Daily:	Max.	3,250	Sept. 25, 1967	Min.	0	Frequently
Monthly:	Max.	894	Sept. 1967	Min.	0	Frequently
Yearly:	Max.	113	1967	Min.	0.02	1992

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	2.87	0
18	0	0	0	0	0	0	0	0	0	14.3	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0	0	0	0	0
28	0	0	5.00	0	0	0	0	0	0	0	0	0
29	0	0	2.00	0	0	0	0	0	0	.51	0	0
30	0	0	0	0	0	0	0	0	0	2.00	0	0
31	0	0	0	0	0	0	0	0	0	0	0	0
Sum	0	0	7.00	0	0	0	0	0	2.51	17.17	0	0

Current Year 1999

Period 1954-1999

Month	Extreme Gage Meters		Extreme-Cubic Meters per Second				Average	Volume-Thousand Cubic Meters			
	High	Low	Day	High	Low	Day		Total	Average	Maximum	Minimum
				Day	Day	Day					
Jan.	39.400	39.400	1 1	0	1 1	0	0	0	9,017	118,256	0
Feb.	39.400	39.400	1 1	0	1 1	0	0	0	5,327	79,341	0
Mar.	39.550	39.400	28	5.00	1 1	0	.23	605	2,743	30,236	0
April	39.400	39.400	1 1	0	1 1	0	0	0	2,437	44,253	0
May	39.400	39.400	1 1	0	1 1	0	0	0	3,488	35,412	0
June	39.400	39.400	1 1	0	1 1	0	0	0	15,518	412,734	0
July	39.400	39.400	1 1	0	1 1	0	0	0	25,024	421,148	0
Aug.	39.400	39.400	1 1	0	1 1	0	0	0	18,632	337,857	0
Sept.	39.590	39.400	30	6.80	1 1	0	.08	217	113,030	2,316,989	0
Oct.	39.990	39.400	18	24.5	1 1	0	.55	1,483	96,551	111,977	0
Nov.	39.400	39.400	1 1	0	1 1	0	0	0	26,640	283,859	0
Dec.	39.400	39.400	1 1	0	1 1	0	0	0	15,904	190,901	0
Yearly	39.990	39.400		24.5		0	0.07	2,305	334,311	3,566,125	648

And other days

08-6645.00 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 kilometers upstream from the confluence with the Rio Grande. The Rio San Juan enters the Rio Grande at river kilometers 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: Based on 7 discharge measurements during the year by the Mexican Section. 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 kilometers upstream from the confluence with the Rio Grande. All storm water measured at these two drains was deducted and is not included in the tabulation below. Records available: 1953 through 1999. Records prior to 1976 include Rio San Juan flow.

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	0	0.05	0.07	0.02	0.09	0	0	0	0	0
2	0	0	* .07	.05	.07	* .02	.10	0	0	0	0	0
3	0	0	.07	.05	.07	.02	.10	0	0	0	0	0
4	0	0	.07	.05	* .08	* .02	.09	0	0	0	0	0
5	0	0	.07	.05	.07	.02	.09	0	0	0	0	0
6	0	0	.07	* .05	.07	.02	.09	0	0	0	0	0
7	0	0	.07	.05	.06	.02	.08	0	0	0	0	0
8	0	0	.07	.05	.06	.02	.08	0	0	0	0	0
9	0	0	.07	.05	.05	.02	.08	0	0	0	0	0
10	0	0	.07	.05	.04	.02	.07	0	0	0	0	0
11	0	0	.07	.05	.04	.02	.07	0	0	0	0	0
12	0	0	.07	.06	.03	.02	.07	0	0	0	0	0
13	0	0	.07	.06	* .03	.02	.06	0	0	0	0	0
14	0	0	.07	.06	.03	.02	.06	0	0	0	0	0
15	0	0	.07	.06	.02	.01	.06	0	0	0	0	0
16	0	0	.07	.06	.02	.01	.06	0	0	0	0	0
17	0	0	.05	.06	.02	.01	.05	0	0	0	0	0
18	0	0	.05	.06	.02	* .01	.05	0	0	0	0	0
19	0	0	.05	.06	.02	.02	.05	0	0	0	0	0
20	0	0	.05	.06	.02	.03	.04	0	0	0	0	0
21	0	0	.05	.06	.02	.03	.04	0	0	0	0	0
22	0	0	.05	.06	.02	.04	.04	0	0	0	0	0
23	0	0	.05	.06	.02	.04	.03	0	0	0	0	0
24	0	0	.05	.06	.02	.05	.03	0	0	0	0	0
25	0	0	.05	.06	.02	.06	.03	0	0	0	0	0
26	0	0	.05	.06	.02	.06	.02	0	0	0	0	0
27	0	0	.05	.07	.02	.07	.02	0	0	0	0	0
28	0	0	.05	.07	.02	.08	.02	0	0	0	0	0
29	0	0	.05	.07	.02	.08	.01	0	0	0	0	0
30	0	0	.05	.07	.02	.09	.01	0	0	0	0	0
31	0	0	.05	.07	.02	0	0	0	0	0	0	0
Sum	0	0	1.73	0.97	0	0	0	0	0	0	0	0
	0	1.80	1.11	1.69	0	0	0	0	0	0	0	0

Current Year 1999

Period 1954-1999

Month	Extreme Gage Meters		Extreme-Cubic Meters per Second		Average	Volume-Thousand Cubic Meters			
			High	Low		Total	Average	Maximum	Minimum
	High	Low	(Day)	(Day)					
Jan.			1	0	1	0	0	327	1,470
Feb.			1	0	1	0	0	423	1,157
Mar.			1 2	.07	1	0	.06	156	952
April			127	.07	1 1	.05	.06	149	416
May			4	.08	1 15	.02	.04	95.9	781
June			30	.09	1 15	.01	.03	83.8	669
July			1 2	.10	1 31	0	.05	146	394
Aug.			1 1	0	1 1	0	0	331	3,902
Sept.			1 1	0	1 1	0	0	310	2,416
Oct.			1 1	0	1 1	0	0	227	983
Nov.			1 1	0	1 1	0	0	185	792
Dec.			1 1	0	1 1	0	0	173	610
Yearly				0.10	0	0.02	631	4,561	13,656
								605	

* Discharge measurement made on this day

Φ Mean daily

! And other days

08-6646.00 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 Natural Resource Conservation 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 Watermaster.

During 1999, 1,671 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 1999 in this river reach was 11,795 TCM, or 1.2% of the total water diverted from the Rio Grande below Falcon Dam. Records of diversions in this river reach were determined by means of flow meters. More than one crop per year is often grown on parts of this land.

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 Meters per Second									
Daily:	Max.	4.59		May 1, 1998		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 METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.97	0.56	0.74	0.62	2.16	0.33	0.60	0.27	0.98	0.76	0.37	0.61
2	.63	.62	.65	.46	.52	.31	.49	.25	.54	.59	.37	.57
3	.35	.56	.73	.36	.51	.31	.49	.29	.40	.33	.42	.65
4	.31	.61	.80	.23	.39	.31	.22	.29	.38	.36	.51	.48
5	.45	.56	.61	.37	.57	.31	.27	.34	.25	.50	.46	.25
6	.47	.50	.75	.39	.52	.26	.29	.31	.25	.50	.30	.26
7	.54	.35	.50	.46	.51	.40	.29	.25	.25	.59	.23	.22
8	.68	.47	.59	.43	.42	.40	.40	.27	.25	.57	.35	.22
9	.53	.46	.67	.47	.29	.27	.40	.27	.25	.54	.38	.24
10	.43	.41	.68	.40	.35	.26	.22	.28	.25	.35	.38	.29
11	.44	.50	.67	.33	.64	.27	.26	.35	.25	.54	.36	.25
12	.56	.61	.50	.31	.44	.26	.25	.45	.27	.56	.28	.50
13	.55	.60	.45	.44	.44	.24	.25	.45	.27	.61	.24	.52
14	.53	.40	.35	.54	.45	.24	.25	.27	.28	.67	.23	.58
15	.56	.54	.57	.59	.35	.24	.25	.27	.41	.45	.23	.45
16	.44	.66	.65	.54	.28	.24	.25	.28	.40	.47	.25	.51
17	.45	.76	.68	.56	.34	.24	.25	.37	.29	.25	.24	.57
18	.51	.71	.78	.32	.30	.24	.22	.41	.28	.21	.40	.35
19	.53	.65	.63	.50	.30	.24	.22	.40	.28	.21	.40	.22
20	.57	.69	.51	.49	.30	.23	.22	.25	.38	.21	.37	.56
21	.58	.46	.36	.50	.28	.28	.22	.26	.43	.29	.21	.51
22	.49	.61	.53	.47	.26	.35	.39	.23	.43	.38	.21	.50
23	.53	.68	.52	.61	.26	.35	.39	.22	.43	.40	.22	.31
24	.36	.89	.43	.47	.29	.32	.29	.22	.42	.23	.22	.25
25	.51	.80	.39	0	.33	.32	.25	.22	.38	.47	.18	.22
26	.50	.66	.39	0	.28	.26	.26	.22	0	.47	.21	0
27	.66	.54	.45	0	.39	0	.25	.22	0	.38	.23	0
28	.68	0	0	0	.36	0	.25	.28	0	.53	0	0
29	.65	0	0	0	.36	0	.26	0	0	.41	0	0
30	.59	0	0	0	0	0	.25	0	0	.27	0	0
31	0	0	0	0	0	0	.26	0	0	0	0	0
Sum		15.86		10.86		7.48		8.19		13.10		10.09
	16.05		15.58		12.89		9.16		9.00		8.25	

Current Year 1999

Period 1960-1999

Month	Average Rainfall** Millimeters		Extreme-Cubic Meters per Second			Average	Total	Average	Maximum	Minimum	
	1999	1960-1999	Day	High	Low						
Jan.	0	24	1	0.97	31	0	0.52	1,387	943	1,828	
Feb.	3	27	24	.89	28	0	.57	1,370	1,149	2,198	
Mar.	59	16	4	.80	128	0	.50	1,346	1,520	2,558	
April	1	36	1	.62	125	0	.36	938	1,630	4,088	
May	24	64	1	2.16	130	0	.42	1,114	1,290	3,237	
June	84	67	17	.40	127	0	.25	646	1,136	3,217	
July	41	36	1	.60	14	.22	.30	791	960	1,897	
Aug.	36	55	112	.45	129	0	.26	708	916	1,798	
Sept.	114	112	1	.98	126	0	.30	778	767	1,745	
Oct.	59	49	1	.76	31	0	.42	1,132	1,081	2,109	
Nov.	14	27	4	.51	128	0	.28	713	774	1,793	
Dec.	23	23	3	.65	126	0	.33	872	732	1,490	
Yearly	458	536		2.16		0	0.37	11,795	12,878	20,497	6,154

* 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, 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 kilometer 378; about 1.6 kilometer downstream from Rio Grande City, Texas, and 6.0 river kilometers downstream from Rio San Juan. The zero of the gage is 30.48 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 26 current-meter measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: January 1955 through 1999. 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 kilometers 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 kilometers 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 CMS on September 22 and 23, 1967, with a gage height of 18.71 meters. Min. no flow occurred several days in June and July 1953.

Average Flow in Cubic Meters 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.	43.3	1997

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	18.8	35.5	30.4	50.3	148	* 39.1	* 34.8	69.1	15.4	* 25.0	23.2	* 34.3
2	22.2	* 40.6	* 63.7	* 37.9	140	40.2	34.6	78.8	* 27.4	15.2	* 26.2	39.7
3	23.9	38.9	62.3	41.6	149	* 49.8	32.4	* 61.8	31.7	19.6	29.2	38.3
4	23.8	36.8	45.5	35.5	136	51.4	33.6	47.9	35.8	29.1	29.9	35.5
5	* 23.3	32.9	37.7	34.0	114	71.4	28.0	43.1	32.6	30.2	27.8	31.2
6	19.8	39.3	42.3	34.1	118	75.3	22.1	48.8	27.2	31.0	33.4	29.4
7	16.7	45.5	46.1	34.0	117	69.6	16.7	58.8	22.4	30.9	40.2	26.4
8	16.7	45.8	48.2	35.4	115	63.4	11.9	70.7	14.5	19.1	41.2	24.3
9	15.8	46.1	50.1	45.3	110	73.0	9.25	67.2	8.87	26.2	42.5	26.3
10	15.5	47.2	49.4	61.2	109	77.6	8.93	58.7	5.70	37.5	43.7	23.5
11	13.9	44.3	49.4	67.6	112	86.6	9.30	53.7	6.14	36.5	48.4	19.5
12	15.4	42.0	45.5	65.9	111	90.7	11.5	66.2	8.44	37.5	51.5	18.8
13	23.6	34.7	44.6	* 83.3	99.8	86.7	12.4	74.3	8.80	36.9	52.5	19.7
14	25.4	33.4	54.9	118	88.6	82.7	12.4	75.7	* 8.98	40.4	56.1	* 21.1
15	29.0	32.4	59.8	125	91.4	* 83.9	12.6	75.7	8.87	50.3	55.7	24.0
16	28.3	29.0	* 68.2	142	96.1	58.3	16.4	74.9	9.76	53.3	* 50.0	26.6
17	30.0	* 34.0	95.0	159	96.2	38.2	19.7	74.8	12.8	62.4	44.8	34.3
18	35.3	39.1	104 *	164	* 92.7	23.8	21.0	67.4	14.9	102	41.5	35.8
19	* 33.7	39.7	92.9	166	59.8	27.0	* 16.1	69.9	21.5	40.0	41.2	36.8
20	29.4	45.4	72.4	193	42.5	34.5	22.1	* 67.0	28.2	* 20.4	40.5	37.9
21	43.1	46.6	91.6	210	20.8	42.3	21.2	59.1	27.9	30.2	34.1	40.5
22	50.7	46.8	101	218	15.1	32.2	11.8	47.4	31.8	29.3	30.5	30.5
23	56.1	46.1	110	221	29.7	23.9	13.0	27.5	28.8	23.2	23.9	28.9
24	51.7	43.2	135 *	237	35.9	16.3	20.6	12.9	23.3	27.8	20.0	25.0
25	45.9	41.3	159	253	37.8	11.7	22.0	7.04	25.8	30.0	17.9	20.3
26	39.7	35.9	209	258	35.5	11.5	24.5	6.51	33.8	31.3	17.4	23.9
27	35.5	30.7	218	225	29.2	18.3	27.1	8.68	35.6	35.0	17.8	27.5
28	29.2	29.7	263	179	25.9	19.5	42.4	15.9	34.0	34.7	24.3	27.8
29	26.2	122	172	39.4	27.0	43.8	11.8	43.4	32.6	25.0	28.5	
30	29.9	94.7	167	44.9	34.2	46.8	10.7	53.7	24.9	25.9	27.0	
31	32.6	71.7		37.7		49.9	11.1		21.1			24.4
Sum		1,102.9	3,833.1	1,460.1	1,522.63	1,063.6	887.7					
901.1		2,737.4	2,498.0	708.88	688.06	1,056.3						

Current Year 1999

Period 1954-1999

Month	Extreme Gage Meters		Extreme-Cubic Meters per Second		Average	Volume-Thousand Cubic Meters			
	High	Low	Day	High		Total	Average	Maximum	Minimum
Jan.	8.215	7.770	23	56.6	12	12.7	29.1	77,855	263,020
Feb.	8.160	7.940	10	48.3	16	25.6	39.4	95,291	199,902
Mar.	9.540	7.930	28	292	1	26.3	88.3	236,511	171,173
April	9.490	7.990	25	264	7	30.0	128	331,180	380,949
May	9.000	7.770	1	164	22	12.3	80.6	215,827	459,716
June	8.515	7.775	12	92.2	26	10.6	48.7	126,153	345,611
July	8.140	7.700	130	50.6	11	8.51	22.9	61,247	219,647
Aug.	8.395	7.585	17	82.1	26	5.26	49.1	131,555	274,104
Sept.	8.300	7.575	30	69.1	101	5.40	22.9	59,448	336,284
Oct.	8.630	7.765	18	123	21	14.2	34.3	91,895	349,793
Nov.	8.270	7.820	114	57.8	126	16.9	35.2	91,264	161,033
Dec.	8.090	7.860	2	44.5	12	17.9	28.6	76,697	139,535
Yearly	9.540	7.575		292		5.26	50.6	1,594,923	3,300,767
								8,165,042	1,364,475

* Discharge measurement made on this day

! And other days

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 kilometers upstream from the confluence with the Rio Grande. The Rio San Juan enters the Rio Grande at river kilometer 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. Records available: 1953 through 1999.

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.

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	0	1.83	0.03	0	0	0	0	0.03	0	0
2	0	0	.39	1.08	.03	0	0	0	0	0	0	0
3	0	0	.38	.25	.03	0	0	0	0	0	0	0
4	0	0	.37	.40	.03	0	0	0	0	0	0	0
5	0	0	.36	.21	.03	0	0	0	0	0	0	0
6	0	0	.36	.11	.03	0	0	0	0	0	0	0
7	0	0	.35	.08	.03	0	0	0	0	0	0	0
8	0	0	.34	.10	.03	0	0	0	0	0	0	0
9	0	0	.33	.07	.03	0	0	0	0	0	0	0
10	0	0	.32	.07	.03	0	0	0	0	0	0	0
11	0	0	.31	.07	.03	0	0	0	0	0	0	0
12	0	0	.30	.07	.03	0	0	0	0	0	0	0
13	0	0	.30	.07	.03	0	0	0	0	0	0	0
14	0	0	.29	.06	.03	0	0	0	0	0	0	0
15	0	0	.28	.06	.03	0	0	0	0	0	0	0
16	0	0	.27	.06	.03	0	0	0	0	0	0	0
17	0	0	.26	.06	.02	0	0	0	0	0	0	0
18	0	0	.25	.06	.02	0	0	0	0	.09	0	0
19	0	0	.24	.05	.02	0	0	0	0	0	0	0
20	0	0	.24	.05	.02	0	0	0	0	0	0	0
21	0	0	.23	.05	.02	0	0	0	0	0	0	0
22	0	0	.22	.05	.02	0	0	0	0	0	0	0
23	0	0	.26	.05	.02	0	0	0	0	0	0	0
24	0	0	.24	.20	.01	0	0	0	0	0	0	0
25	0	0	.19	.37	.01	0	0	0	0	0	0	0
26	0	0	.18	.19	.01	0	0	0	0	0	0	0
27	0	0	.18	.10	.01	0	0	0	0	0	0	0
28	0	0	.17	.04	.01	0	0	0	0	0	0	0
29	0	0	.16	.04	0	0	0	0	0	0	0	0
30	0	0	.15	.03	0	0	0	0	0	0	0	0
31	0	0	.14	0	0	0	0	0	0	0	0	0
Sum	0	0	5.93	0	0	0	0	0	0	0.12	0	0
			8.06	0.67								

Current Year 1999

Period 1954-1999

Month	Extreme Gage Meters			Extreme-Cubic Meters per Second			Average	Volume-Thousand Cubic Meters			
	High	Low	Day	High	Day	Low		Total	Average	Maximum	Minimum
Jan.			1 1	0	1 1	0	0	0	2,884	9,405	0
Feb.			1 1	0	1 1	0	0	0	3,326	8,707	0
Mar.			2	.39	1	0	.26	696	2,279	6,526	104
April			1 1	1.83	30	.03	.20	512	4,051	12,815	468
May			1 1	.03	129	0	.02	57.9	9,146	37,225	57.9
June			1 1	0	1 1	0	0	0	8,812	106,021	0
July			1 1	0	1 1	0	0	0	4,594	60,172	0
Aug.			1 1	0	1 1	0	0	0	2,424	16,395	0
Sept.			1 1	0	1 1	0	0	0	2,475	13,905	0
Oct.			1 18	.09	1 2	0	0	10.4	2,827	12,127	10.4
Nov.			1 1	0	1 1	0	0	0	1,952	12,904	0
Dec.			1 1	0	1 1	0	0	0	2,436	41,991	0
Yearly				1.83		0	0.04	1,276	47,206	221,389	1,276

♦ 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 Natural Resource Conservation 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 Watermaster.

During 1999, 66,665 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 24.6% of the total irrigable area below Falcon Dam allotted Rio Grande water.

The total diversion during 1999 in this river reach was 192,184 TCM, or 19.5% 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 Meters 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 METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.61	9.65	13.6	2.64	11.0	6.21	5.41	1.92	2.81	6.48	6.92	8.08
2	3.11	9.88	13.7	.82	5.53	6.10	4.81	7.89	3.78	3.96	7.03	7.23
3	2.21	13.0	14.0	.14	11.7	6.70	3.61	9.13	4.04	2.39	6.26	6.53
4	5.05	9.38	12.3	.38	11.7	5.75	3.18	8.22	3.74	4.54	6.20	5.47
5	5.35	7.81	11.8	2.18	11.6	5.49	4.58	8.28	3.14	5.03	5.71	5.01
6	5.60	6.13	9.87	1.68	11.4	5.13	3.44	6.89	2.66	5.78	5.69	9.39
7	7.43	5.40	8.32	3.15	9.41	8.32	2.78	4.84	5.77	3.74	7.34	8.49
8	5.24	10.3	14.3	2.67	7.74	8.87	.99	6.83	4.20	4.06	10.2	6.72
9	3.46	9.52	12.5	3.08	8.69	8.83	1.27	8.51	1.74	3.42	10.0	6.33
10	2.39	9.85	12.7	3.39	12.2	9.20	1.07	8.97	1.17	2.52	10.1	4.80
11	7.53	8.65	12.0	3.26	13.0	7.60	.78	9.38	1.28	6.50	10.2	4.47
12	8.01	7.40	10.5	4.35	12.8	7.33	2.82	10.2	.79	8.14	7.74	3.35
13	6.84	5.91	8.28	4.48	12.5	8.05	1.70	6.92	1.92	9.66	5.28	6.14
14	7.21	4.81	7.23	5.41	10.7	10.7	2.69	6.77	1.76	9.67	5.63	7.80
15	5.41	9.07	13.7	6.05	9.02	10.5	.95	8.13	3.01	7.93	8.34	8.73
16	2.95	9.56	13.0	4.56	7.32	8.23	2.73	9.15	3.80	5.53	9.96	6.91
17	3.82	9.43	13.0	4.89	10.5	7.92	1.04	9.36	1.63	7.67	10.2	6.52
18	9.65	10.7	11.5	3.63	8.75	6.91	1.57	8.27	2.75	4.52	9.61	3.97
19	7.63	8.00	10.4	5.22	9.86	4.11	3.20	11.2	2.96	3.34	8.04	6.08
20	8.19	6.82	7.78	7.33	4.55	3.35	1.17	8.98	4.88	2.40	5.78	8.73
21	8.31	5.56	6.71	7.91	2.92	6.23	2.52	8.16	5.22	3.13	6.09	7.38
22	6.82	11.2	11.0	7.95	3.02	5.12	.63	3.90	5.45	3.28	10.6	4.11
23	5.26	11.5	11.0	6.69	2.89	5.48	3.15	2.37	5.20	3.50	10.7	1.70
24	5.07	12.2	11.1	6.05	4.43	3.54	1.26	1.65	5.01	2.59	8.40	.73
25	10.8	12.8	9.41	5.79	2.74	2.78	.65	1.28	4.20	4.92	3.18	.03
26	10.7	10.7	8.44	8.39	5.75	.35	3.84	.98	4.71	5.24	3.35	1.25
27	11.8	9.43	6.11	8.77	2.59	.31	2.75	2.20	6.51	5.02	5.16	3.04
28	9.79	7.72	1.04	7.92	3.77	3.06	5.08	3.86	6.72	4.81	2.47	1.58
29	7.86		5.09	6.64	2.27	3.43	3.33	3.15	6.36	4.87	5.85	4.09
30	5.62		.50	6.72	3.71	5.20	4.67	3.26	5.99	4.23	6.30	1.69
31	3.08		0		2.98	3.04	2.24		2.56			2.40
Sum		252.38		142.14		180.80		192.89		151.43		158.75
	195.80		300.88		237.04		80.71		113.20		218.33	

Current Year 1999

Period 1960-1999

Month	Average Rainfall** Millimeters		Extreme-Cubic Meters per Second			Average	Volume-Thousand Cubic Meters				
			High		Low		Total	Average	Maximum	Minimum	
	1999	1960-1999	Day	Day	Day						
Jan.	2	28	27	11.8	3	2.21	6.32	16,917	16,120	35,458	2,479
Feb.	16	27	3	13.0	14	4.81	9.01	21,806	17,972	47,610	4,040
Mar.	49	19	8	14.3	31	0	9.71	25,996	27,910	51,495	8,288
April	18	33	27	8.77	3	.14	4.74	12,281	31,770	53,085	4,216
May	19	65	11	13.0	29	2.27	7.65	20,480	27,426	55,732	3,919
June	49	68	14	10.7	27	.31	6.03	15,621	27,215	73,847	6,181
July	57	35	1	5.41	22	.63	2.60	6,973	27,083	57,262	6,973
Aug.	77	52	19	11.2	26	.98	6.22	16,666	27,802	44,751	8,469
Sept.	78	95	28	6.72	12	.79	3.77	9,780	18,130	42,873	5,102
Oct.	82	58	14	9.67	3	2.39	4.88	13,084	21,831	46,570	4,358
Nov.	9	23	23	10.7	28	2.47	7.28	18,864	18,974	45,171	3,614
Dec.	13	25	6	9.39	25	.03	5.12	13,716	15,360	30,837	3,091
Yearly	469	528		14.3	0	6.09	192,184	277,593	424,806	168,318	

* Mean daily

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

OB-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 kilometer from the canal intake, and about 8.0 kilometers northwest of Reynosa, Tamaulipas. The canal intake is immediately upstream from Anzalduas Dam at river kilometer 274, 165 river kilometers downstream from Falcon Dam. The zero of the gage is 26.31 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 107 discharge measurements during the year, 93 by the Mexican Section and 14 by the United States Section of the Commission, and a continuous record of gage heights. Computations by shifting control methods. Records available: 1952 through 1999.

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 kilometers downstream from this station. For area irrigated during the year 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 19 kilometers and 37 kilometers below this station.

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

	Average Flow in Cubic Meters per Second			
Daily:	Max.	279	May 17, 1994	Min. 0
Monthly:	Max.	215	April 1993	Min. 0
Yearly:	Max.	60.3	1989	Frequently Several months 1952 Min. 4.27

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	0	59.8	99.3	0	0	0	0	* 18.2	0	0
2	0	0	0	35.2	81.8	0	0	* 7.30	0	13.2	0	0
3	0	* 13.8	0	35.3	* 66.9	* 6.90	0	12.7	0	0	0	0
4	0	3.40	0	35.9	* 67.2	* 7.50	0	3.80	0	0	0	0
5	0	0	* 17.0	* 32.6	* 56.1	0	0	0	0	0	0	0
6	0	0	3.90	* 30.4	* 44.3	0	* 9.84	0	0	0	0	0
7	0	0	0	* 31.0	46.9	0	* 10.1	0	0	0	0	0
8	0	0	0	* 24.3	46.9	0	* 14.2	0	* 5.52	0	0	0
9	0	* 14.9	0	27.2	39.6	* 9.60	3.74	0	* 11.2	0	0	0
10	0	5.00	0	27.2	* 28.9	* 5.20	0	0	4.70	0	* 6.53	0
11	0	0	* 7.70	49.2	* 30.6	0	0	0	0	0	0	0
12	0	0	11.8	* 51.7	* 28.9	0	0	0	0	0	0	0
13	0	0	0	* 51.7	* 20.0	0	0	* 12.4	0	0	0	0
14	0	0	0	* 81.5	* 11.1	0	0	0	0	0	0	0
15	0	* 14.7	0	* 93.1	0	* 10.2	0	0	0	0	0	0
16	0	0	0	119 *	0	* 11.2	0	* 10.9	0	0	0	0
17	0	0	* 17.2	134	0	3.30	0	13.5	0	0	0	0
18	0	0	* 34.4	132	* 6.48	0	0	* 6.10	0	* 9.20	0	0
19	0	0	* 36.7	129 *	* 11.6	0	0	0	0	* 30.8	0	0
20	0	0	36.7	125 *	0	0	* 5.25	* 9.10	0	9.40	0	0
21	0	0	45.6	144 *	0	* 5.30	* 7.75	12.2	0	0	0	0
22	0	* 13.5	* 54.7	158 *	0	* 11.2	0	7.50	0	0	* 9.68	0
23	0	* 13.8	* 56.4	153 *	0	11.2	* 5.40	* 10.3	0	0	* 5.30	0
24	0	0	* 74.6	167	0	0	7.42	* 14.2	0	0	0	* 10.7
25	0	0	* 98.3	167	* 17.9	0	0	* 7.90	0	0	* 4.94	3.50
26	0	0	125 *	173 *	1.50	0	0	* 8.10	0	0	* 7.71	0
27	0	5.70	170	175 *	0	0	0	* 2.50	0	0	2.99	0
28	0	9.40	175	139 *	0	0	0	0	* 9.44	0	0	* 6.60
29	0	0	175 *	108 *	0	* 13.4	0	0	* 9.40	0	0	* 7.30
30	0	0	122 *	* 99.3	0	* 12.7	* 12.5	0	6.52	0	0	0
31	0	0	* 66.4	0	0	4.42	0	0	0	0	0	0
Sum	94.20	2,788.4	107.70	138.50	80.62	46.78	80.80	37.15	28.10	0	0	0
		1,328.40	705.98									

Current Year 1999

Period 1952-1999

Month	Extreme Gage Meters		Extreme-Cubic Meters per Second			Average	Volume-Thousand Cubic Meters					
			High	Low	Day		High	Low	Day	Total	Average	Maximum
	High	Low	Day	High	Low		High	Low	Day	Average	Maximum	Minimum
Jan.			11	0	11	0	0	0	0	0	128,645	439,093
Feb.			9	14.9	11	0	3.36	8,139	100,859	310,245		0
Mar.			28	175	11	0	42.9	114,774	45,935	182,376		1,182
April			27	175	8	24.3	92.9	240,918	191,955	557,401		2,950
May			1	99.3	115	0	22.8	60,997	256,224	531,533		467
June			29	13.4	11	0	3.59	9,305	115,689	333,959		0
July			8	14.2	11	0	2.60	6,966	50,988	200,370		392
Aug.			24	14.2	11	0	4.47	11,966	93,691	335,642		698
Sept.			9	11.2	11	0	1.56	4,042	60,834	204,486		131
Oct.			19	30.8	13	0	2.61	6,981	58,449	258,526		0
Nov.			22	9.68	11	0	1.24	3,210	16,955	103,226		0
Dec.			24	10.7	11	0	.91	2,428	27,891	205,654		0
Yearly				175	0	0	14.9	469,726	1,148,115	1,903,119		134,796

* Discharge measurement made on this day

* 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°07'51", longitude 98°19'53", and river kilometer 273; 0.8 river kilometer downstream from Anzalduas Dam, about 7.0 kilometers northwest of Reynosa, Tamaulipas, and 16.6 river kilometers 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 135 discharge measurements during the year, 135 by the Mexican Section and 18 by the United States Section of the Commission, and a continuous record of gage heights. Records available: 1952 through 1999.

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 meters 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 CMS on September 24, 1967, with a stage of 34.48 meters above mean sea level. Min. periods of no flow have occurred on several occasions in 1953, 1954, 1956, and 1957.

Average Flow in Cubic Meters 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 METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	15.4	24.2	28.4	* 10.9	77.4	* 23.9	27.9	* 50.1	* 19.1	* 24.9	* 22.9	27.0
2	18.2	* 24.1	* 28.0	18.4	74.1	* 25.6	* 29.0	* 55.2	* 25.5	19.4	23.2	24.1
3	22.5	* 20.6	* 27.7	15.9	70.6	29.5	26.8	* 52.2	* 22.8	25.6	* 24.2	21.0
4	22.8	* 21.2	* 26.9	9.67	* 70.6	* 37.1	23.9	* 45.3	17.8	* 30.4	* 25.8	21.1
5	* 21.3	19.1	27.7	8.33	69.8	37.5	* 29.9	46.1	18.1	29.9	23.0	21.1
6	18.6	17.8	22.3	7.64	* 69.1	50.4	20.2	* 47.1	* 21.2	* 27.4	21.5	* 24.4
7	* 16.6	26.7	30.1	10.7	70.6	* 58.4	14.7	49.1	21.2	27.2	27.0	25.5
8	* 15.6	34.2	* 34.5	12.0	71.9	* 59.9	* 15.0	49.2	15.6	* 27.3	* 30.5	22.8
9	14.1	* 34.5	34.6	11.7	73.2	* 59.9	10.7	* 47.3	* 10.1	20.9	35.5	* 21.9
10	13.3	29.7	33.6	11.5	74.8	* 68.5	8.36	46.8	6.34	25.1	* 33.6	18.9
11	* 13.2	* 28.5	* 34.9	12.7	* 71.5	75.3	8.29	* 51.2	6.68	* 27.4	* 35.2	19.0
12	14.1	28.7	37.6	* 16.7	72.3	47.7	* 8.24	55.3	6.68	28.1	40.8	22.8
13	17.5	19.9	31.7	16.9	* 75.1	73.4	8.59	* 56.1	* 6.68	* 30.4	38.5	* 24.7
14	16.7	20.7	38.8	20.1	77.4	69.4	* 10.3	57.3	* 6.68	* 32.4	41.5	* 24.7
15	* 16.7	24.1	* 41.2	* 24.4	78.0	69.4	12.5	58.1	8.84	* 32.9	* 45.8	* 24.9
16	* 13.8	* 22.3	* 51.9	24.5	76.4	57.1	* 10.3	* 57.3	10.1	35.3	42.2	* 25.0
17	15.9	* 28.1	* 51.8	21.3	* 78.9	51.6	8.61	* 57.2	* 7.96	39.9	* 37.5	* 25.0
18	24.1	28.8	52.7	42.5	79.4	33.6	12.2	* 57.0	5.18	* 35.5	37.6	* 25.0
19	* 26.5	31.4	* 43.7	* 53.3	* 78.2	30.4	* 16.9	55.9	9.71	* 31.8	* 36.0	28.3
20	23.6	28.8	46.2	58.2	55.1	32.0	* 12.9	* 55.5	* 19.1	* 29.2	27.4	* 29.6
21	* 23.5	31.2	38.4	62.6	* 23.3	31.8	9.88	46.2	20.3	24.8	28.1	* 29.0
22	29.4	30.5	* 36.7	58.3	18.1	28.3	* 8.46	49.5	20.3	* 21.1	* 24.3	* 27.3
23	25.8	30.5	37.5	* 50.7	20.1	19.2	* 10.5	* 38.2	* 18.9	21.2	* 21.3	* 20.1
24	33.1	28.3	37.1	52.1	* 24.4	13.0	13.6	* 19.8	12.9	25.1	* 18.0	* 21.8
25	* 28.8	24.2	* 37.4	70.8	* 22.7	13.1	15.6	* 12.0	15.9	* 27.3	16.3	* 23.2
26	* 23.8	21.9	37.6	* 71.1	23.3	12.7	* 20.6	* 9.73	19.5	26.3	* 16.4	* 23.5
27	* 21.2	18.4	39.0	71.7	24.7	15.9	23.8	8.48	* 24.4	* 25.2	21.4	* 25.2
28	19.8	26.9	87.1	* 72.7	* 22.4	20.7	* 27.8	6.46	24.2	* 24.2	22.3	* 24.8
29	18.4	* 86.4	* 74.1	21.2	22.2	31.9	* 9.16	* 25.7	23.3	* 25.9	* 24.6	
30	16.8	19.6	77.4	23.2	25.9	* 33.9	* 11.5	25.5	21.2	26.9	* 16.6	
31	18.8	26.5		26.3		39.5	* 12.4		20.8			* 16.7
Sum		725.3		1,068.84		1,220.4		1,272.73		841.5		729.6
		619.9		1,207.6		1,714.1		550.83		472.95		870.6

Current Year 1999 Period 1952-1999

Month	Extreme Gage Meters		Extreme-Cubic Meters per Second			Average	Volume-Thousand Cubic Meters			
	High	Low	Day	High	Low		Total	Average	Maximum	Minimum
Jan.	24,350	23,760	22	34.8	12	12.5	20,0	53,559	108,647	401,561
Feb.	24,360	23,840	19	35.3	27	14.8	25.9	62,666	87,123	341,107
Mar.	25,390	23,790	28	117	30	12.9	39.0	104,337	96,615	348,805
April	25,100	23,610	25	77.4	1	7.11	35.6	92,348	140,938	507,514
May	25,200	24,010	10	100	21	17.6	55.3	148,098	184,765	591,520
June	25,310	23,740	11	117	23	11.1	40.7	105,443	215,774	838,797
July	24,490	23,600	31	47.0	16	7.07	17.8	47,592	155,788	687,079
Aug.	25,090	23,470	18	69.3	28	5.54	41.1	109,964	153,037	1,489,882
Sept.	24,320	23,540	29	26.7	17	4.71	15.8	40,863	237,808	2,297,808
Oct.	24,990	24,190	17	40.5	30	18.3	27.1	72,706	266,870	2,868,998
Nov.	25,430	24,060	9	133	24	15.7	29.0	75,220	130,387	1,773,274
Dec.	24,690	24,090	21	34.8	30	16.3	23.5	63,037	97,975	666,198
Yearly	25,430	23,470		133		4.71	30.9	975,833	1,875,727	5,724,004
										141,538

* Discharge measurement made on this day

! And other days

RIO GRANDE FLOODWAY DISCHARGES
LOWER RIO GRANDE VALLEY

On the United States Side

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

Floodwater entering the system is measured first at the Bunker Floodway Station at Anzalduas Dam near Mission and again 40.6 kilometers downstream at the Main Floodway Station on Farm Road No. 88 bridge south of Weslaco. At a point 4.8 kilometers 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 1999, 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 kilometers downstream from Anzalduas Dam.

Floodwater entering the system through the Retamal Inlet flows into Culebron and Villa Cardenas Reservoirs 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 1999, 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 Natural Resource Conservation 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 Watermaster.

During 1999, 47,547 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 17.5% of the total irrigable area below Falcon Dam allotted Rio Grande water.

The total diversion during 1999 in this river reach was 213,973 TCM, or 21.7% 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 Meters 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 METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.30	7.94	10.0	7.05	11.2	13.7	8.95	3.29	1.57	2.72	7.01	6.73
2	.02	9.28	14.3	.84	11.1	13.5	9.17	7.15	5.61	4.02	8.05	6.47
3	4.21	8.50	13.4	.05	11.2	12.5	9.14	8.04	7.11	4.21	7.73	5.95
4	7.04	8.15	12.8	0	11.3	12.2	3.76	7.11	.23	8.54	8.49	1.84
5	7.16	8.19	12.7	.53	11.1	12.3	6.34	5.67	0	10.0	8.24	1.47
6	7.30	3.20	8.90	.84	11.1	8.10	6.12	6.37	2.20	9.73	2.77	4.50
7	7.07	2.81	5.59	1.39	12.2	15.0	1.76	6.20	4.09	10.6	2.90	8.04
8	4.24	8.05	13.4	4.37	12.4	16.3	.76	3.47	4.07	7.52	7.84	8.10
9	3.14	9.68	12.0	5.48	11.9	15.6	.76	6.83	2.25	3.02	8.85	7.15
10	3.16	8.38	12.5	3.61	14.1	15.5	.22	9.34	2.32	2.47	9.05	4.85
11	3.22	8.47	11.3	3.06	15.3	19.4	0	8.76	.47	7.46	8.91	3.08
12	3.28	8.58	12.5	5.55	15.3	17.5	1.02	9.72	0	8.91	8.47	3.78
13	6.69	5.87	8.63	7.13	14.8	17.0	.96	9.60	.97	9.40	4.69	8.21
14	7.69	2.71	7.98	6.64	12.8	12.3	1.82	8.18	1.39	9.11	3.01	8.39
15	7.65	8.49	11.3	7.08	13.1	10.9	6.71	8.25	1.41	10.0	7.11	8.12
16	4.78	11.0	12.8	8.19	11.1	10.9	5.85	8.89	2.24	9.85	8.18	8.35
17	1.64	10.6	10.9	4.47	12.6	9.56	.24	10.4	6.08	9.44	8.38	8.26
18	3.86	10.2	10.3	7.97	9.08	9.78	.02	10.8	.23	8.07	7.53	8.18
19	9.43	9.12	8.86	12.1	9.03	5.29	5.93	10.4	0	7.66	7.11	4.38
20	8.90	5.79	5.16	12.5	9.40	3.86	4.88	10.0	5.02	3.03	3.44	10.2
21	8.86	6.00	4.54	12.6	1.13	6.30	3.88	6.30	7.72	2.11	3.21	9.97
22	9.52	8.52	7.26	12.2	.30	7.70	.74	5.40	7.54	1.49	8.67	9.56
23	2.93	9.50	8.41	11.8	.07	7.71	.74	2.92	7.44	.51	9.26	5.86
24	7.76	9.02	8.79	8.71	3.01	5.46	1.16	4.62	4.41	.24	8.62	1.39
25	10.3	9.62	9.59	11.4	3.55	4.52	1.27	.76	2.11	4.81	1.53	1.40
26	11.0	7.80	10.6	12.7	4.36	2.88	4.86	1.21	1.79	6.69	1.54	1.41
27	10.5	4.40	8.50	10.1	7.54	2.13	6.00	2.05	6.72	6.35	2.74	3.15
28	9.34	1.57	6.19	9.53	8.52	6.59	6.73	.39	7.61	8.08	2.95	5.36
29	8.33		11.0	10.6	8.51	8.46	6.78	0	7.10	8.19	4.88	5.33
30	7.45		7.24	12.4	1.57	8.40	6.67	.98	7.83	7.88	6.42	4.31
31	2.98		3.24		7.57		3.83	1.42		2.20		1.39
Sum		211.44		210.89		311.34		184.52		194.31		175.18
	189.75		300.68		286.24		117.07		107.53		187.58	

Current Year 1999

Period 1960-1999

Month	Average Rainfall** Millimeters		Extreme-Cubic Meters per Second			Volume-Thousand Cubic Meters			
	1999	1960-1999	Day	High	Low	Average	Total	Average	Maximum
Jan.	1	32	26	11.0	2	0.02	6.12	16,394	43,121
Feb.	1	31	16	11.0	28	1.57	7.55	18,268	35,196
Mar.	68	21	2	14.3	31	3.24	9.70	25,979	22,639
April	0	36	26	12.7	4	0	7.03	18,221	26,483
May	36	73	111	15.3	23	.07	9.23	24,731	27,487
June	37	66	11	19.4	27	2.13	10.4	26,900	32,537
July	88	40	2	9.17	11	0	3.78	10,115	28,773
Aug.	118	61	18	10.8	29	0	5.95	15,943	22,085
Sept.	68	106	30	7.83	15	0	3.58	9,291	14,522
Oct.	35	61	7	10.6	24	.24	6.27	16,788	18,040
Nov.	0	28	23	9.26	25	1.53	6.25	16,207	14,930
Dec.	12	30	20	10.2	124	1.39	5.65	15,136	12,672
Yearly	464	585		19.4		0	6.79	213,973	251,535
								398,520	149,260

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 Natural Resource Conservation 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 Watermaster.

During 1999, 125,729 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 46.2% of the total irrigable area below Falcon Dam allotted Rio Grande water.

The total diversion during 1999 in this river reach was 447,242 TCM, or 45.4% 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 Meters per Second									
Daily:	Max.	82.4	June 5, 1990			Min. 0			Occasionally			
Monthly:	Max.	63.0	May 1995			Min. 1.52			March 1957			
Yearly:	Max.	27.6	1989			Min. 10.4			March 1968			

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.44	9.39	8.47	29.5	43.5	19.7	10.5	19.7	3.14	10.7	7.31	8.87
2	7.65	8.62	8.61	4.28	43.6	19.0	11.9	24.0	4.93	8.35	11.0	9.08
3	7.96	9.26	8.60	2.08	44.6	15.3	12.9	21.5	5.34	8.81	9.00	9.05
4	9.45	9.74	11.8	8.58	43.5	17.4	10.3	23.9	6.24	12.1	8.58	7.31
5	12.4	11.4	10.9	8.40	43.2	22.9	9.83	23.9	7.92	12.0	8.80	7.81
6	12.4	10.9	8.48	2.33	40.5	21.4	10.4	24.0	4.92	11.7	4.90	8.41
7	8.69	10.2	7.88	1.13	41.3	27.3	15.9	21.7	5.58	11.1	3.97	7.93
8	7.72	12.3	11.4	1.61	42.2	35.0	14.4	19.5	7.40	10.8	7.48	7.42
9	7.15	20.2	16.3	4.95	42.1	36.8	11.5	24.3	7.88	8.03	8.48	8.69
10	7.17	20.8	16.4	2.13	40.0	37.5	2.10	25.4	7.42	7.97	7.99	5.82
11	5.08	19.1	17.1	2.13	45.0	38.7	2.11	25.0	0	8.09	13.9	6.33
12	4.60	17.9	16.2	3.06	46.9	29.7	9.36	22.5	0	9.57	17.5	7.02
13	5.13	15.0	17.3	3.62	46.2	35.2	16.8	21.9	0	9.90	16.1	7.07
14	5.07	13.7	17.8	3.76	46.7	37.9	9.40	19.2	0	11.2	17.0	7.57
15	3.95	12.9	20.7	5.43	46.1	37.1	3.36	19.1	4.38	11.2	19.2	9.36
16	3.30	11.5	22.4	9.51	45.8	38.5	2.66	18.8	5.81	10.4	20.5	10.1
17	3.23	11.9	23.5	13.5	47.5	36.6	2.10	22.9	3.46	9.65	21.2	12.5
18	5.45	11.4	27.1	10.9	45.1	34.0	1.60	23.5	.58	13.7	21.5	10.4
19	9.59	11.6	26.9	14.3	44.1	16.6	3.38	25.6	0	14.3	20.0	10.8
20	10.5	13.9	23.8	18.7	41.2	10.5	7.11	27.0	0	14.1	18.9	11.0
21	8.64	14.3	22.4	23.8	36.0	13.8	8.35	20.5	4.03	12.2	17.9	10.3
22	8.15	14.6	19.0	29.2	19.9	13.1	4.68	11.4	6.65	9.89	14.1	10.2
23	8.10	11.0	16.7	31.1	7.08	10.5	2.16	18.7	7.25	5.75	10.4	7.39
24	7.87	11.1	18.7	24.9	14.5	11.2	3.91	14.6	7.27	5.45	7.85	6.36
25	10.2	11.5	18.7	24.2	25.4	5.59	4.72	9.23	5.08	5.73	5.41	6.24
26	10.5	10.5	18.8	34.1	21.5	1.77	5.33	9.67	4.17	7.28	6.44	7.84
27	10.6	7.10	14.0	39.1	25.6	4.84	8.06	2.40	7.33	7.34	2.94	9.36
28	8.67	6.97	14.7	31.3	21.8	8.03	10.6	0	7.77	7.28	6.02	8.64
29	8.73	31.8	27.5	13.8	7.49	12.9	0	8.78	7.35	8.62	8.19	
30	8.63	29.2	32.3	14.3	9.20	17.3	0	9.89	5.21	8.73	6.44	
31	8.59	11.8		16.4		20.7	2.21		7.44			4.72
Sum		348.78		447.40		652.62		542.11		294.59		258.22
	238.61		537.44		1,095.38		266.32		143.22		351.72	

Current Year 1999

Period 1960-1999

Month	Average Rainfall** Millimeters		Extreme-Cubic Meters per Second		Average	Volume-Thousand Cubic Meters			
	1999	1960-1999	Day	Day		Total	Average	Maximum	Minimum
Jan.	2	37	15	12.4	17	3.23	7.70	20,616	47,767
Feb.	19	38	10	20.8	28	6.97	12.5	30,135	28,404
Mar.	52	27	29	31.8	7	7.88	17.3	46,435	35,551
April	1	43	27	39.1	7	1.13	14.9	38,655	61,431
May	56	75	17	47.5	23	7.08	35.3	94,641	97,125
June	61	73	11	38.7	26	1.77	21.8	56,386	83,555
July	98	49	31	20.7	18	1.60	8.59	23,010	59,367
Aug.	78	72	20	27.0	128	0	17.5	46,838	44,634
Sept.	94	131	30	9.89	111	0	4.77	12,374	29,236
Oct.	21	75	19	14.3	30	5.21	9.50	25,453	30,721
Nov.	12	38	18	21.5	27	2.94	11.7	30,389	24,832
Dec.	6	35	17	12.5	31	4.72	8.33	22,310	24,052
Yearly	500	693		47.5		0	14.2	447,242	566,675
								868,544	328,940

* 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°01'51", longitude 97°43'37", and river kilometer 156, 6.3 river kilometers downstream from San Benito pumping plant and about 15.3 kilometers southwest of San Benito, Texas. The zero of the gage is at mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 45 current-meter 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 current-meter measurements. Records available: November 26, 1952 through August 25, 1953, and December 1953 through 1999.

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 kilometers 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 CMS on September 29, 1967 with a gage height of 18.61 meters. Min. no flow occurs occasionally.

Average Flow in Cubic Meters 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 METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	4.50	* 2.53	* 8.25	4.39	13.4	* 5.69	* 2.63	0.83	* 5.09	* 1.16	5.19	8.14
2	3.68	4.54	7.15	1.82	9.21	1.11	2.35	* 1.39	5.01	1.18	4.81	* 10.8
3	3.61	5.65	4.54	8.05	* 8.43	.67	2.04	2.37	6.01	1.23	* 2.45	12.0
4	* 3.88	5.73	3.50	5.50	8.79	1.18	2.57	3.52	6.45	1.23	1.91	11.0
5	2.19	4.69	1.76	5.61	9.77	1.92	4.33	3.21	4.59	1.23	* 3.41	8.37
6	1.07	3.98	2.44	6.64	12.2	1.25	10.5	2.58	6.94	1.21	5.68	7.02
7	.82	3.87	2.54	* 6.64	11.7	1.32	11.0	3.67	8.36	1.19	7.46	* 7.38
8	.70	4.03	3.41	6.27	13.0	1.50	4.20	8.95	8.08	1.25	8.08	7.81
9	.88	3.94	2.99	2.01	13.0	1.16	1.85	11.2	4.16	1.56	* 8.73	7.42
10	1.05	* 4.00	1.65	2.95	18.3	* 1.01	2.17	11.0	* 2.37	3.26	11.6	6.85
11	1.34	4.17	* 1.20	3.40	13.8	1.13	6.38	6.62	5.58	3.83	12.4	6.62
12	2.13	3.61	1.05	2.57	5.02	10.3	8.62	.69	6.92	3.80	8.86	6.09
13	2.50	3.98	1.25	1.41	* 5.04	16.1	* 4.64	1.71	6.64	* 3.23	8.17	* 5.74
14	* 2.87	4.19	1.02	1.10	7.41	15.9	3.23	8.30	7.15	2.61	8.33	6.00
15	3.04	3.95	.85	.87	8.56	* 14.7	1.90	10.5	* 5.96	1.96	9.14	6.08
16	3.51	4.21	.95	.71	9.59	13.8	1.89	10.9	.65	2.14	11.8	6.10
17	3.51	* 3.23	2.09	.57	10.2	14.5	2.83	* 10.4	1.54	4.29	11.0	6.04
18	3.54	1.75	* 5.86	.40	15.2	13.8	3.81	9.19	2.51	11.2	* 8.59	6.16
19	5.21	1.95	7.80	.38	19.4	3.14	6.08	8.51	3.59	10.9	7.82	6.29
20	5.63	2.21	8.54	.46	* 22.3	11.9	5.91	5.67	3.82	9.94	7.96	6.49
21	* 5.90	2.50	8.40	.62	20.5	16.4	* 3.59	6.37	4.38	* 8.64	7.88	* 8.69
22	5.73	4.92	7.87	1.22	19.2	15.4	2.15	11.7	2.92	10.2	7.42	8.56
23	6.80	7.33	* 9.97	2.88	33.3	14.1	2.92	13.6	1.76	13.3	7.45	8.84
24	10.8	7.40	3.05	3.29	38.8	* 8.33	4.26	11.8	1.61	11.8	* 7.67	9.13
25	12.3	7.57	1.13	5.31	17.9	2.91	4.78	12.9	1.89	10.7	7.45	9.30
26	12.0	5.60	.80	12.0	7.76	12.7	* 4.51	8.94	2.94	12.5	6.76	11.0
27	9.18	5.56	.73	8.03	* 2.16	12.9	* 4.55	* 9.01	3.06	* 12.0	6.87	9.96
28	5.01	7.00	8.57	10.6	2.94	7.47	3.60	8.84	2.85	10.8	7.56	9.29
29	3.06	16.5	* 12.9	3.65	6.82	2.37	8.49	2.99	8.94	7.45	* 7.73	
30	2.80	16.1	17.4	7.04	4.98	1.79	8.00	2.12	7.70	7.63	7.65	
31	2.36		10.2		7.73		1.40	6.96		6.61		8.40
Sum		124.09		136.00	234.09			227.82		181.59		246.95
	131.60		152.16	395.30	124.85			127.94		227.53		

Current Year 1999

Period 1954-1999

Month	Extreme Gage Meters		Extreme-Cubic Meters per Second		Average	Volume-Thousand Cubic Meters			
	High	Low	Day	Day		Total	Average	Maximum	Minimum
Jan.	10.805	10.425	25	12.5	8	0.67	4.25	11,370	51,310
Feb.	10.685	10.485	25	8.19	18	1.62	4.43	10,721	52,118
Mar.	10.970	10.425	29	18.5	27	.69	4.91	13,147	45,173
April	10.990	10.370	30	19.4	118	.34	4.53	11,750	55,927
May	11.745	10.450	24	40.8	27	1.34	12.8	34,154	83,965
June	11.615	10.395	21	16.8	19	.58	7.80	20,225	92,823
July	11.515	10.410	16	13.2	10	.58	4.03	10,787	77,104
Aug.	11.500	10.395	25	14.4	12	.52	7.35	19,684	80,090
Sept.	10.755	10.445	8	8.47	16	.42	4.26	11,054	135,714
Oct.	11.890	10.335	23	13.7	1	1.13	5.86	15,689	166,891
Nov.	12.100	10.580	11	13.1	4	1.06	7.58	19,659	1,086,522
Dec.	12.355	11.545	3	12.2	13	5.67	7.97	21,336	66,892
Yearly	12.355	10.335		40.8		0.34	6.33	199,576	988,972
									3,383,956
									179,397

* Discharge measurement made on this day

! And other days

** Period 1954-1999

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 Natural Resource Conservation 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 Watermaster.

During 1999, 28,623 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 10.5% of the total irrigable area below Falcon Dam allotted Rio Grande water.

The total diversion during 1999 in this river reach was 117,658 TCM, or 11.9% 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 Meters per Second			
Daily:	Max.	22.1	June 14, 1963
Monthly:	Max.	15.3	June 1965
Yearly:	Max.	6.32	1965
			Min. 0 Occasionally
			Min. 0.52 Feb. 1966
			Min. 2.78 1981

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.03	1.64	3.95	5.17	13.9	4.36	2.36	1.72	2.02	2.82	2.45	6.18
2	1.70	1.26	4.09	1.60	11.9	3.05	2.11	1.68	2.23	2.65	2.41	5.86
3	1.48	2.84	4.02	1.52	12.2	3.70	1.05	1.15	1.54	2.66	2.52	6.23
4	1.59	4.14	2.82	1.02	12.2	2.83	1.12	3.16	1.34	1.64	1.12	5.42
5	1.74	2.97	2.07	2.44	9.97	2.26	1.63	4.85	3.34	1.52	1.95	5.28
6	1.61	2.63	2.08	3.94	7.72	1.87	2.06	6.32	4.97	1.91	1.86	5.31
7	1.71	2.72	1.95	1.43	7.79	1.96	2.13	6.31	2.97	1.67	1.79	4.97
8	1.15	1.82	2.75	1.88	7.75	1.97	2.03	6.74	2.41	1.83	1.76	4.72
9	1.04	2.87	2.45	.91	8.48	2.51	2.10	5.90	1.94	1.99	2.42	1.72
10	1.01	2.80	2.46	1.54	9.04	2.42	1.89	2.17	1.98	1.91	2.49	2.00
11	1.14	3.02	2.38	1.56	8.74	2.91	1.70	2.08	1.12	2.14	2.54	2.08
12	1.18	2.09	2.26	1.54	9.06	2.69	2.22	2.27	.89	2.14	6.89	1.93
13	1.00	3.88	1.77	1.51	10.1	7.96	2.14	2.78	1.04	2.06	11.0	2.04
14	1.46	2.29	1.70	2.94	8.94	10.1	4.30	3.44	1.26	1.64	8.75	2.32
15	1.62	2.24	1.70	3.23	8.46	9.96	5.82	3.07	1.40	2.22	8.65	2.54
16	1.53	1.97	2.00	3.10	8.13	10.9	4.41	5.89	3.77	2.31	9.21	1.82
17	2.44	3.29	1.96	1.61	8.97	10.3	1.17	8.60	5.29	2.40	9.84	1.64
18	1.64	3.08	2.11	1.68	5.88	12.9	1.03	8.22	4.71	2.38	11.1	1.62
19	1.72	3.42	2.38	2.61	5.19	7.49	1.39	8.52	4.89	2.90	5.82	1.52
20	3.23	2.32	6.36	1.36	5.07	3.54	1.75	7.72	2.83	2.93	1.69	1.49
21	3.35	2.91	9.35	1.06	8.04	7.69	1.89	8.32	1.38	2.02	1.62	1.30
22	3.11	4.83	5.66	1.12	10.0	11.4	1.69	10.1	1.23	2.07	1.71	1.16
23	3.47	5.57	2.22	1.32	8.58	12.7	1.69	10.1	1.22	2.14	1.85	1.89
24	2.21	6.36	3.38	1.24	9.58	10.2	1.43	11.8	4.18	2.10	2.88	1.90
25	7.89	5.55	4.73	1.09	10.6	8.19	1.28	13.7	2.75	2.82	1.12	1.62
26	11.0	6.28	5.65	1.25	6.38	1.29	2.20	14.6	1.45	2.68	1.07	1.22
27	9.83	5.40	5.04	2.13	5.18	1.70	2.08	15.1	1.40	2.70	1.23	1.14
28	9.42	2.24	3.83	5.92	2.85	1.65	1.48	3.06	1.40	1.80	1.10	.86
29	5.42			.99	8.02	2.38	2.35	1.70	1.26	1.49	2.48	1.78
30	1.49			5.15	8.08	1.43	1.71	2.07	1.80	1.81	2.42	4.85
31	1.16			8.15	2.20			1.59	1.82	2.29		1.18
Sum	92.43		73.82		164.56			184.25		69.24		83.76
	90.37		107.41		246.71			63.51		70.25		115.47

Current Year 1999

Period 1960-1999

Month	Average Rainfall** Millimeters		Extreme-Cubic Meters per Second		Average	Volume-Thousand Cubic Meters			
	1999	1960-1999	Day	High	Day	Low	Average	Total	Average
Jan.	2	41	26	11.0	13	1.00	2.92	7,808	12,427
Feb.	28	36	24	6.36	2	1.26	3.30	7,986	8,988
Mar.	62	24	21	9.35	29	.99	3.46	9,280	9,034
April	7	47	30	8.08	9	.91	2.46	6,378	14,230
May	69	75	1	13.9	30	1.43	7.96	21,316	19,310
June	74	72	18	12.9	26	1.29	5.49	14,218	20,239
July	65	45	15	5.82	18	1.03	2.05	5,487	15,524
Aug.	69	76	27	15.1	3	1.15	5.94	15,919	11,820
Sept.	69	140	17	5.29	12	.89	2.34	6,070	7,653
Oct.	13	79	20	2.93	5	1.52	2.23	5,982	7,067
Nov.	14	40	18	11.1	26	1.07	3.85	9,977	5,736
Dec.	10	37	3	6.23	28	.86	2.70	7,237	6,148
Yearly	482	712		15.1		0.86	3.73	117,658	138,176
								199,208	87,788

* 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°52'33", longitude 97°27'18", and river kilometer 78.3, 0.3 river kilometer downstream from El Jardín pumping plant, and 11.2 river kilometers 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 37 current-meter measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: 1934 through 1999.

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 kilometers 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 CMS on October 8, 1945 with a gage height of 9.60 meters. Min. no flow occurs frequently.

Average Flow in Cubic Meters 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 METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.81	* 0.45	* 0.16	* 8.43	0.64	* 2.22	* 1.89	0.91	* 4.25	* 0.32	* 4.48	0.51
2	3.88	.28	1.02	6.74	.71	2.39	1.95	.75	3.90	.07	3.02	* .31
3	4.06	.22	1.93	3.58	* .39	2.21	2.26	* .94	3.85	.06	2.67	.39
4	* 2.87	.63	1.42	3.35	.16	1.78	2.92	.77	3.60	.23	2.64	.59
5	2.15	1.60	.97	4.26	.08	1.17	2.47	.29	3.14	.53	2.16	.78
6	1.82	1.12	1.37	2.15	.08	.88	2.04	.24	1.97	.50	1.39	1.62
7	1.21	1.01	.93	1.70	.08	.70	2.60	.23	2.22	.36	.85	* 1.98
8	.77	1.27	.58	2.88	.05	.56	3.78	.23	3.75	.31	.65	1.56
9	.41	1.24	.38	3.35	.04	.56	4.13	.21	4.88	.14	* .71	1.64
10	.23	* 1.51	.28	2.69	.12	.57	3.55	.21	* 3.90	.06	1.14	2.33
11	.13	1.30	* .22	1.86	.33	.52	2.80	.25	3.13	.05	1.69	2.52
12	.11	.80	.30	1.42	.27	.54	2.79	.40	2.41	.07	2.23	2.67
13	.09	.64	.34	.97	* .05	.38	* 3.18	.68	2.30	.08	.94	* 2.15
14	* .09	.30	.46	.53	.04	.36	3.24	.73	2.70	.09	.39	1.29
15	.24	.80	.07	.38	.03	.34	2.19	.70	* 3.27	.11	.22	1.49
16	.34	1.16	.07	.39	.07	.38	1.35	1.12	3.38	.13	.19	2.24
17	.44	* .54	.19	.39	.11	1.71	1.23	* 1.52	1.56	.22	.18	2.40
18	.72	.40	.33	.16	.19	1.93	1.44	2.40	1.01	.06	* .27	2.41
19	.44	.24	.27	.09	.22	1.03	2.07	2.86	.92	.05	.57	2.32
20	.19	.21	.21	.07	.78	.49	1.84	2.60	.88	.06	1.96	.34
21	* .40	.54	.25	.07	5.14	2.21	2.22	1.68	.95	* .11	3.26	* 2.61
22	1.70	.61	.24	.08	4.55	4.73	2.40	2.32	1.39	.17	* 4.07	2.76
23	2.35	.41	.31	.07	2.19	1.97	* 2.08	5.71	1.67	.35	3.58	3.85
24	3.24	.55	1.22	.05	3.68	* 1.46	1.75	5.79	1.47	1.43	5.71	5.29
25	* 5.80	.87	1.65	.05	5.51	1.12	1.43	* 3.78	.92	* 3.44	4.42	5.61
26	3.13	.30	.55	.06	* 5.19	2.55	1.16	3.35	.68	4.61	3.79	5.65
27	1.53	.20	1.01	.10	3.91	4.36	* .85	2.21	.85	5.42	3.13	5.76
28	.39	.12	1.89	.06	2.86	4.35	1.17	1.79	.97	7.26	2.60	* 5.48
29	1.14	.25	1.25	.08	2.61	3.05	1.55	4.25	1.32	7.08	2.16	4.65
30	1.70	.48	4.18	.16	2.39	2.25	1.49	4.70	1.39	6.63	1.47	5.33
31	.93	.13	9.13	.21	2.10	1.14	4.58			5.66		6.07
Sum		19.32		46.17		48.77		58.20		45.66		86.60
	44.31		33.18		44.57		66.96		68.67		62.54	

Current Year 1999

Period 1954-1999

Month	Extreme Gage Meters		Extreme-Cubic Meters per Second			Average	Volume-Thousand Cubic Meters				
	High	Low	Day	High	Low		Total	Average	Maximum	Minimum	
Jan.	0.960	0.280	25	7.15	14	0.07	1.43	3,828	40,562	407,379	349
Feb.	.615	.280	5	1.77	28	.11	.69	1,669	45,103	446,279	1,302
Mar.	1.225	.270	31	9.93	115	.06	1.07	2,867	38,244	445,080	2,532
April	1.170	.285	1	9.34	123	.04	1.54	3,989	39,533	397,086	1,079
May	1.095	.325	26	6.53	16	0	1.44	3,851	63,887	438,873	2,807
June	.955	.305	22	5.45	14	.29	1.63	4,214	72,260	600,151	2,996
July	.805	.420	9	4.35	27	.77	2.16	5,785	65,091	539,704	1,383
Aug.	1.055	.305	23	7.75	18	.19	1.88	5,028	67,238	1,001,626	269
Sept.	.820	.320	9	5.03	26	.52	2.29	5,933	121,132	784,150	1,171
Oct.	1.045	.360	28	7.92	11	0	1.47	3,945	155,110	1,094,351	933
Nov.	1.015	.355	24	6.79	116	.16	2.08	5,403	75,544	650,763	1,587
Dec.	.895	.380	31	6.18	2	.27	2.79	7,482	63,377	591,508	646
Yearly	1.225	0.270		9.93		0	1.71	53,994	847,081	3,263,087	37,722

* Discharge measurement made on this day

! And other days

** Period 1954-1999

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 Natural Resource Conservation 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 1999, 1,653 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 0.6% of the total irrigable area below Falcon Dam allotted Rio Grande water.

The total diversion during 1999 in this river reach was 2,732 TCM, 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 Meters per Second									
Daily:	Max.	2.78	June 1, 1996		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 METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.11	0.49	0.12	0	0.67	0	0.72	0	0.05	0.14	0.08	0.07
2	0	.51	.21	0	.06	0	.18	0	.11	.14	.07	.07
3	0	.37	.23	0	.30	0	0	0	.14	.14	.11	.07
4	0	.38	.31	0	.30	0	0	0	.08	.14	.16	0
5	.02	.36	.14	0	.30	0	0	0	.08	0	.15	0
6	.02	.37	.09	0	.38	0	0	0	0	0	.12	0
7	.09	.23	0	.06	.60	0	0	0	0	0	.10	0
8	.16	.41	.17	.11	.41	0	0	0	0	0	.20	0
9	.07	.27	.17	.11	.30	0	0	0	0	0	.09	0
10	0	.22	.10	0	.58	.25	0	0	0	0	.14	0
11	0	.07	.48	0	.53	.40	0	0	0	0	.05	0
12	.01	0	.48	0	.59	.30	0	0	0	.18	.10	0
13	0	0	.57	0	.39	.15	0	0	0	.18	.05	0
14	.02	0	.48	0	.40	.25	0	0	0	.28	0	0
15	.02	0	.64	0	.39	.26	0	0	0	.10	.09	0
16	0	0	.64	0	.27	.24	0	0	0	.10	.09	.07
17	0	.07	.46	0	.22	.38	0	0	0	.10	.18	.07
18	.02	.07	.47	0	.03	.14	0	0	.06	0	.10	.28
19	.02	.11	.31	0	.03	.14	0	0	.06	0	.10	0
20	.02	.11	.18	0	.03	.14	0	0	.05	.09	.10	0
21	0	.11	.05	.06	.03	.08	0	0	.05	.09	.06	.10
22	0	.04	.24	.09	.02	0	0	0	.09	.06	.19	0
23	0	.12	.15	.09	.01	.14	0	0	.15	.09	.09	0
24	0	.12	.10	.01	.01	.14	0	0	.06	.09	.18	0
25	0	.19	.10	0	0	.14	0	0	0	.20	.09	0
26	.09	.18	.10	0	0	.14	0	0	0	.11	.12	0
27	.09	.18	0	0	0	0	0	0	0	.11	0	0
28	.09	0	0	0	0	0	0	0	0	.03	0	0
29	.09	0	0	0	0	0	0	0	0	.03	0	0
30	.19	0	0	0	0	0	0	0	0	.03	0	0
31	0	0	0	0	0	0	0	0	0	0	0	0
Sum		4.98	6.99	0.53	6.85	3.29	0.90	0.22	0.94	2.41	3.03	0.35
	1.13											

Current Year 1999

Period 1960-1999

Month	Average Rainfall** Millimeters		Extreme--Cubic Meters per Second		Volume--Thousand Cubic Meters						
	1999	1960-1999	Day	High	IDay	Average	Total	Average	Maximum	Minimum	
Jan.	9	43	30	0.19	1 2	0	0.04	97.6	389	1,573	0
Feb.	40	34	2	.51	112	0	.18	430	284	1,113	0
Mar.	75	22	115	.64	1 7	0	.23	604	192	782	0
April	1	48	8	.11	1 1	0	.02	45.8	341	1,187	0
May	75	68	1	.67	125	0	.22	592	487	1,673	0
June	62	67	11	.40	1 1	0	.11	284	592	1,718	0
July	32	43	11	.72	1 3	0	.03	77.8	244	960	0
Aug.	92	74	118	.06	1 1	0	.01	19.0	11	391	0
Sept.	80	143	23	.15	1 6	0	.03	81.2	47.0	199	0
Oct.	11	84	14	.28	1 5	0	.08	208	61.7	224	0
Nov.	50	45	18	.28	114	0	.10	262	75.5	311	0
Dec.	4	37	1	.07	1 4	0	.01	30.2	112	613	0
Yearly	531	708		0.72	1	0	0.09	2,732	2,939	6,212	670

e 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 Natural Resource Conservation 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 Watermaster.

In 1999, 271,888 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 973,944 TCM. 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.

Diversions 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 area 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 Meters 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 METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	10.5	29.7	36.9	45.0	82.4	44.3	28.5	26.9	10.6	23.6	24.1	30.5
2	13.1	30.2	41.6	8.00	72.7	42.0	28.7	41.0	17.2	19.7	28.9	29.3
3	16.2	34.5	41.0	4.15	80.5	38.5	27.2	40.1	18.6	18.5	26.0	28.5
4	23.4	32.4	40.8	10.2	79.4	38.5	18.6	42.7	12.0	27.3	25.1	25.5
5	27.1	31.3	38.2	13.9	76.7	43.3	22.7	43.0	14.7	29.1	25.3	19.8
6	27.4	25.7	30.2	9.18	71.6	36.8	22.3	43.9	15.0	29.6	15.6	27.9
7	25.5	21.7	24.2	7.62	73.0	53.0	22.9	39.3	18.7	27.7	16.3	29.7
8	19.2	33.4	42.6	11.1	70.9	62.5	18.6	36.8	18.3	24.8	27.8	27.2
9	15.4	43.0	44.1	15.0	71.8	64.0	16.0	45.8	14.1	17.0	30.2	24.1
10	14.2	42.5	44.8	11.1	76.3	65.1	5.50	46.2	13.1	15.2	30.2	17.8
11	17.4	39.8	43.9	10.3	83.2	69.3	4.85	45.6	3.12	24.7	36.0	16.2
12	17.6	36.6	42.4	14.8	85.1	57.8	15.7	45.1	1.95	29.5	41.0	16.6
13	20.2	31.3	37.0	17.2	84.4	68.6	21.9	41.7	4.20	31.8	37.4	24.0
14	22.0	23.9	35.5	19.3	80.0	71.5	18.5	37.9	4.69	32.6	34.6	26.7
15	19.2	33.2	48.6	22.4	77.4	69.0	17.1	38.8	10.6	31.9	43.6	29.2
16	13.0	34.7	51.5	25.9	72.9	69.0	15.9	43.0	16.0	28.7	48.2	27.8
17	11.6	36.1	50.5	25.0	80.1	65.0	4.80	51.6	16.8	29.5	50.0	29.6
18	21.1	36.2	52.3	24.5	69.1	64.0	4.44	51.3	8.55	29.0	50.4	24.5
19	28.9	32.9	49.5	34.7	68.5	33.9	14.1	56.2	8.13	28.4	41.5	23.0
20	31.4	29.6	43.8	40.4	60.6	21.6	15.1	54.0	13.2	22.7	30.3	32.0
21	29.7	29.3	43.4	45.9	48.4	34.4	16.9	43.6	18.9	19.8	29.1	29.5
22	28.1	39.8	43.7	51.0	33.5	37.7	8.13	31.0	21.4	17.2	35.5	25.5
23	20.3	38.4	39.0	51.6	18.9	36.9	8.13	34.3	21.7	12.4	32.5	17.2
24	23.3	39.7	42.5	41.4	31.8	30.9	8.05	32.9	21.4	10.7	28.2	10.6
25	39.7	40.5	42.9	42.5	42.6	21.5	8.17	25.2	14.5	19.0	11.5	9.5
26	43.8	36.1	44.0	56.4	38.3	6.69	16.5	26.7	12.1	22.5	12.7	11.7
27	43.5	27.1	34.1	60.1	41.3	8.98	19.1	22.0	22.0	21.9	12.3	16.7
28	38.0	18.5	25.8	54.7	37.3	19.3	24.1	7.59	23.5	22.5	12.5	16.4
29	31.1		48.9	52.8	27.3	21.7	25.0	4.41	23.7	23.3	21.1	20.0
30	24.0		42.1	59.5	21.0	24.5	31.0	6.04	23.5	20.0	26.3	14.9
31	15.8		23.2		29.2		29.4	7.69	14.5			9.9
Sum		926.1		885.65		1,320.27		1,112.33		725.1		686.60
	731.7		1,269.0		1,885.0		537.87		444.24		884.2	

Current Year 1999

Period 1958-1999

Month	Average Rainfall**		Extreme-Cubic Meters per Second		Volume-Thousand Cubic Meters						
	Millimeters		@ High		Average		Total	Average	Maximum	Minimum	
	1999	1960-1999	Day	Day	1999	1960-1999	Day	1999	1960-1999		
Jan.	3	36	26	43.8	1	10.5	23.6	63,219	91,191	224,987	11,984
Feb.	18	34	9	43.0	28	18.5	33.1	80,015	68,979	155,700	14,537
Mar.	61	21	18	52.3	31	23.2	40.9	109,642	93,865	193,098	19,538
April	5	37	27	60.1	3	4.15	29.5	76,520	135,258	258,992	15,713
May	47	67	12	85.1	23	18.9	60.8	162,864	150,351	306,530	19,823
June	61	68	14	71.5	26	6.69	44.0	114,071	167,444	319,179	32,671
July	64	40	30	31.0	18	4.44	17.4	46,472	133,097	242,015	36,857
Aug.	78	61	19	56.2	29	4.41	35.9	96,105	107,730	182,408	44,662
Sept.	84	111	30	25.5	12	1.95	14.8	38,382	72,588	168,349	15,676
Oct.	37	71	14	32.6	24	10.7	23.4	62,649	78,053	162,305	16,023
Nov.	17	31	18	50.4	25	11.5	29.5	76,395	64,293	163,201	15,633
Dec.	11	29	20	32.0	25	9.51	22.1	59,322	60,144	113,823	17,311
Yearly	486	606		85.1		1.95	31.3	985,656	1,222,993	1,879,991	785,513

Mean daily

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

OUTFALLS FROM SEWERS INTO THE RIO GRANDE

In Thousand Cubic Meters

EL PASO SEWAGE OUTFALL

Treated sewage effluent enters the Rio Grande through the outfall of the Haskell Street Wastewater Treatment Plant located 11.4 river kilometers downstream from the American Dam and the Northwest Wastewater Treatment Plant which enters the Rio Grande 0.5 miles upstream from the American Dam. Outfalls from both Plants are measured by means of ultrasonic flow meters with a Parshall flume at the Northwest Plant. Beginning in 1999, the Haskell Street Plant discharges primary to the American Canal Extension, and these volumes are not reflected in the tabulator below. 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
1999	2,488	2,652	1,633	959	895	955	972	875	803	948	736	966	14,882
Average	2,667	2,841	2,960	2,803	3,005	2,921	3,208	3,320	3,090	3,000	2,827	2,817	35,459

Period average 1990-1999

EAGLE PASS SEWAGE OUTFALL

Treated sewage effluent enters the Rio Grande at approximately river kilometer 782. The outfall from this plant is measured by means of a flowmeter. The records are furnished by the Eagle Pass Water Treatment Department.

Month	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Yearly
1999	285	240	261	253	301	275	311	315	297	294	296	359	3,487
Average	246	222	250	239	256	241	237	247	259	266	256	269	2,988

Period average 1990-1999

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 kilometers 579 and 573, 1.4 and 7.9 river kilometers 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
1999	1,513	1,393	1,566	1,590	1,724	1,675	1,722	1,805	1,680	1,692	1,587	1,552	19,499
Average	1,307	1,232	1,386	1,404	1,525	1,501	1,558	1,572	1,415	1,506	1,314	1,355	17,075

Period average 1990-1999

NUEVO LAREDO SEWAGE OUTFALL

The effluent of the International Wastewater Treatment Plant is measured by means of a Parshall flume equipped with an electronic digital recorder, chart recorder, and staff gage. The plant discharges to the Arroyo de Coyote at a point approximately 100 meters upstream from the confluence of the Arroyo with the Rio Grande at river kilometer 569.

OUTFALLS FROM SEWERS INTO THE RIO GRANDE

In Thousand Cubic Meters

ROMA SEWAGE OUTFALL

Treated sewage effluent enters the Rio Grande at river kilometer 409.1, 1.3 river kilometers downstream from the Cd. Miguel Aleman, Tamaulipas - Roma, Texas highway bridge. Records furnished by the City of Roma, Texas.

Month	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Yearly
1999	36.8	35.0	40.6	39.9	41.4	35.1	34.4	33.8	36.3	36.0	33.4	33.8	437
Average	40.3	34.0	38.0	38.0	41.3	24.5	35.3	37.0	40.0	39.0	35.7	35.0	438

Period average 1997-1999

RIO GRANDE CITY SEWAGE OUTFALL

Treated sewage effluent enters the Rio Grande at river kilometer 378.5, 0.4 river kilometers upstream from the Rio Grande at Rio Grande City Gaging Station and 0.6 river kilometers upstream from the Cd. Camargo, Tamaulipas - Rio Grande City, Texas highway bridge. Records furnished by Rio Grande City, Texas.

Month	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Yearly
1999	93.5	83.3	94.9	90.6	94.6	91.9	98.8	94.9	99.1	99.2	92.9	92.4	1,126
Average	86.7	81.0	89.3	83.3	91.7	87.7	87.0	88.3	98.3	101	92.7	90.0	1,077

Period average 1997-1999

BROWNSVILLE SEWAGE OUTFALL

Treated sewage effluent enters the Rio Grande at river kilometer 75.3, 14.3 river kilometers downstream from the Gateway Bridge between Brownsville, Texas and Matamoros, Tamaulipas and 3.1 river kilometers 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
1999	657	605	688	638	681	650	632	657	644	634	602	591	7,679
Average	659	611	676	678	697	670	665	686	681	732	645	644	8,044

Period average 1990-1999

MUNICIPAL AND INDUSTRIAL WATER USES

In Thousand Cubic Meters

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 partially derived from deep wells. The amount shown below for the city of El Paso is Rio Grande water pumped from the Franklin Canal at the Robertson-Umbertauer Water Treatment Plant and from the Riverside Canal at the Jonathan W. Rogers Water Treatment 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 Council; 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. 540,203)			DEL RIO (Pop. 32,045)		
	1999	Period 1990 - 1999		1999	Period 1990 - 1999	
		Average	Maximum		Average	Maximum
Jan.	0	123	741	0	#	851
Feb.	529	822	1,907	0	1,130	854
Mar.	6,654	5,090	6,678	3,166	1,315	1,130
April	9,017	7,085	9,017	5,068	1,283	1,084
May	9,658	7,915	10,169	5,321	1,402	1,349
June	9,100	7,693	9,702	5,313	1,311	1,497
July	9,712	7,785	10,005	5,076	1,435	1,729
Aug.	9,555	7,918	10,300	4,809	1,841	1,686
Sept.	8,808	7,105	9,469	4,838	1,499	1,327
Oct.	4,300	3,087	7,930	0	1,461	1,221
Nov.	0	8.4	83.6	0	1,289	957
Dec.	0	0	0	0	1,163	896
Yearly	67,333	54,631	70,268	34,179	14,692	17,027
						11,551

Month	EAGLE PASS (Pop. 27,000)			LAREDO (Pop. 140,000)		
	1999	Period 1990 - 1999		1999	Period 1990 - 1999	
		Average	Maximum		Average	Maximum
Jan.	464	420	467	348	3,060	2,561
Feb.	486	398	486	343	3,035	2,507
Mar.	530	469	550	353	3,674	2,978
April	702	533	702	359	3,949	3,184
May	592	568	823	426	4,411	3,619
June	631	617	744	480	3,847	3,764
July	702	689	901	513	4,418	4,229
Aug.	884	719	884	515	4,662	4,078
Sept.	693	566	712	392	4,206	3,297
Oct.	609	528	609	444	3,547	3,218
Nov.	509	442	509	382	3,375	2,836
Dec.	507	430	507	379	3,587	2,701
Yearly	7,309	6,397	7,309	5,117	45,771	38,972
						45,771
						33,172

Month	LAREDO POWER STATION			RIO BRAVO (Pop. 5,000)		
	1999	Period 1990 - 1999		1999	Period 1990 - 1999	
		Average	Maximum		Average	Maximum
Jan.	45.5	70.6	123	44.2	98.5	61.3
Feb.	79.7	83.9	115	68.7	97.5	97.5
Mar.	84.5	100	175	71.8	105	69.5
April	216	126	216	87.3	131	82.3
May	198	147	212	124	144	93.1
June	180	175	260	156	114	96.9
July	209	206	286	169	145	114
Aug.	343	206	343	146	140	107
Sept.	169	168	239	135	112	80.9
Oct.	114	133	189	114	100	81.5
Nov.	89.1	84.2	145	53.1	94.7	68.4
Dec.	79.6	85.5	146	45.1	101	60.3
Yearly	1,807	1,585	1,892	1,518	1,383	977
						1,383
						572

Missing Data

MUNICIPAL AND INDUSTRIAL WATER USES

In Thousand Cubic Meters

In the United States

Month	SAN YGNACIO (Pop. 788)			ZAPATA (Pop. 9,500)		
	1999	Period 1990 - 1999		1999	Period 1990 - 1999	
		Average	Maximum		Average	Maximum
Jan.	15.2	13.0	16.2	8.3	161	143
Feb.	15.0	13.3	15.3	10.5	149	141
Mar.	18.4	15.7	18.9	12.7	177	164
April	18.5	17.5	24.8	11.2	166	164
May	23.7	20.0	27.0	12.6	242	188
June	22.5	21.0	25.2	16.3	172	191
July	22.9	22.5	27.5	14.9	229	211
Aug.	25.2	21.3	28.2	16.6	208	218
Sept.	20.2	16.6	21.8	10.4	177	168
Oct.	18.7	17.3	20.2	14.3	199	172
Nov.	20.5	15.0	20.5	10.2	156	152
Dec.	20.6	14.8	20.6	9.4	153	148
Yearly	241	208	241	165	2,189	2,060
					2,505	2,505
						1,715

Month	FALCON VILLAGE (Pop. 80)			ROMA (Pop. 8,059)		
	1999	Period 1990 - 1999		1999	Period 1990 - 1999	
		Average	Maximum		Average	Maximum
Jan.	10.0	7.6	10.0	4.2	207	184
Feb.	9.6	7.2	9.6	3.8	205	182
Mar.	11.5	8.3	11.5	4.9	243	208
April	12.9	8.9	12.9	4.5	231	224
May	13.3	9.7	13.3	5.7	254	252
June	13.3	10.0	14.0	7.6	244	252
July	12.9	11.5	14.1	9.7	233	267
Aug.	13.9	11.2	13.9	7.4	284	270
Sept.	12.1	9.6	12.1	7.8	242	222
Oct.	10.4	9.1	10.4	6.3	209	198
Nov.	10.2	7.7	10.2	5.5	217	190
Dec.	9.9	7.5	9.9	5.0	211	182
Yearly	140	108	140	83.4	2,780	2,631
					2,954	2,954
						2,169

Month	RIO GRANDE CITY (Pop. 40,000)			BROWNSVILLE (Pop. 115,000)		
	1999	Period 1990 - 1999		1999	Period 1990 - 1999	
		Average	Maximum		Average	Maximum
Jan.	315	244	315	180	1,798	1,854
Feb.	199	190	257	137	1,681	1,714
Mar.	154	201	292	112	2,036	1,985
April	253	257	440	160	1,968	1,985
May	349	281	378	168	2,136	2,188
June	296	260	336	201	2,017	2,251
July	357	310	360	173	1,945	2,475
Aug.	291	278	333	244	2,163	2,530
Sept.	281	261	356	174	1,807	2,024
Oct.	317	252	317	125	1,797	1,969
Nov.	254	223	263	171	1,823	1,836
Dec.	252	226	252	183	1,842	1,876
Yearly	3,318	2,983	3,459	2,352	23,013	24,687
					26,934	26,934
						23,013

MUNICIPAL AND INDUSTRIAL WATER USES

In Thousand Cubic Meters

In Mexico

PIEDRAS NEGRAS, COAHUILA (Pop. 116,097)				NUEVO LAREDO, TAMAULIPAS (Pop. 274,913)						
Month	1999	Period		1990 - 1999		1999	Period		1990 - 1999	
		Average	Maximum	Minimum	Average		Average	Maximum	Minimum	
Jan.	1,387	950	1,387	740	3,905	3,141	4,787	1,645		
Feb.	1,229	906	1,253	702	3,595	2,863	4,678	1,776		
Mar.	1,487	982	1,487	591	3,926	2,907	4,925	1,571		
April	1,601	994	1,601	564	4,040	3,264	4,311	2,160		
May	1,767	1,117	1,767	664	4,301	3,357	5,358	1,878		
June	1,753	1,167	1,753	774	4,186	3,357	5,011	2,097		
July	1,807	1,263	1,838	845	4,186	3,685	4,963	2,278		
Aug.	1,747	1,227	1,747	848	4,504	3,604	4,945	2,224		
Sept.	1,519	1,143	1,692	820	4,212	3,624	4,843	2,368		
Oct.	1,643	1,131	1,643	835	4,226	3,450	4,513	2,127		
Nov.	1,443	1,005	1,443	744	3,947	3,376	4,706	1,642		
Dec.	1,316	988	1,465	702	4,128	3,588	4,864	2,233		
Yearly	12,872	12,872	18,699	9,024	49,156	40,216	56,762	25,422		

MUNICIPAL AND INDUSTRIAL WATER USES

In Thousand Cubic Meters

In Mexico

CD. MIGUEL ALEMAN, TAMAULIPAS (Pop. 22,363)			CD. DIAZ ORDAZ, TAMAULIPAS (Pop. 15,685)					
Month	1999	Period 1990 - 1999			1999	Period 1996 - 1999		
		Average	Maximum	Minimum		Average	Maximum	Minimum
Jan.	242	217	245	160	187	146	187	130
Feb.	230	197	238	103	139	123	139	110
Mar.	252	231	257	178	149	137	149	121
April	247	232	259	188	146	131	146	108
May	259	241	268	189	152	143	163	124
June	259	239	259	193	140	141	148	135
July	268	246	268	201	152	143	161	120
Aug.	253	245	268	204	156	147	156	135
Sept.	215	231	259	187	153	137	153	129
Oct.	320	241	320	188	154	139	154	131
Nov.	240	238	338	196	149	133	149	124
Dec.	274	226	274	175	149	136	149	128
Yearly	3,059	2,783	3,059	2,216	1,826	1,653	1,826	1,519

REYNOSA, TAMAULIPAS (Pop. 336,732) CONTROL - VALLE HERMOSO, TAMAULIPAS (Pop. 55,274)

Month	1999	Period 1996 - 1999			1999	Period 1998 - 1999		
		Average	Maximum	Minimum		Average	Maximum	Minimum
Jan.	4,121	3,627	4,121	3,370	315	315	315	315
Feb.	6,566	4,011	6,566	2,998	266	266	266	266
Mar.	4,527	3,791	4,527	3,413	268	169	268	69.0
April	4,527	3,845	4,527	3,162	252	327	401	252
May	5,098	4,355	5,098	3,110	294	314	334	294
June	5,547	4,700	5,547	3,266	274	307	340	274
July	5,729	5,122	6,143	3,845	326	332	338	326
Aug.	5,962	5,238	5,962	4,501	321	293	321	264
Sept.	5,530	4,839	5,530	4,069	346	340	346	334
Oct.	5,573	4,534	5,573	4,018	327	349	371	327
Nov.	5,098	4,109	5,098	3,741	349	364	378	349
Dec.	4,804	3,938	4,804	3,491	352	340	352	327
Yearly	63,082	52,106	63,082	43,936	3,690	3,423	3,690	3,156

MATAMOROS, TAMAULIPAS (Pop. 363,236)

Month	1999	Period 1996 - 1999		
		Average	Maximum	Minimum
Jan.	4,657	4,055	4,657	3,002
Feb.	4,452	3,942	4,452	3,006
Mar.	4,016	3,944	4,815	3,000
April	4,045	3,652	4,045	2,903
May	4,378	4,224	4,378	3,993
June	4,605	3,899	4,654	1,940
July	5,147	4,556	5,333	2,853
Aug.	4,584	4,374	5,321	3,194
Sept.	4,795	3,991	4,795	3,046
Oct.	3,242	3,607	4,318	2,980
Nov.	4,919	4,195	4,919	2,573
Dec.	4,666	4,298	5,145	2,589
Yearly	53,506	43,782	53,506	19,175

STORED WATER IN LARGE RESERVOIRS OF THE RIO GRANDE BASIN
In Million Cubic Meters

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 meters in capacity. The monthly figures represent the water in storage on the last day of each month, in millions of cubic meters. 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, Sanchez and Platoro from the State of Colorado, Division of Water Resources; Heron, El Vado, Elephant Butte, Caballo, Sumner, and Brantley from the United States Bureau of Reclamation; Costilla from the New Mexico Interstate Stream Commission; Abiquiu, Cochiti, Jemez Canyon and Santa Rosa from United States Corps of Engineers; Bluewater 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; Delta Lake from the Delta Lake Irrigation District. The data for all reservoirs in the Mexican portion of the watershed were provided by the National Water Commission. The data for Amistad Reservoir (International) and Falcon Reservoir (International) were provided by 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	1999	Average 1927-1999	1999	Average 1928-1999	1999	Average 1928-1999	1999	Average 1925-1999	1999	Average 1924-1999
Jan.	26.1	17.9	4.9	6.0	11.0	9.7	8.3	5.6	6.1	4.6
Feb.	27.6	19.3	5.8	6.5	11.6	10.2	9.2	6.2	6.3	5.0
Mar.	29.0	21.2	6.9	7.1	10.9	10.7	11.1	7.0	6.3	5.4
April	29.0	22.6	7.5	8.0	10.3	11.6	11.1	7.4	6.8	6.0
May	40.4	25.8	8.6	9.6	10.0	14.5	11.4	8.4	9.7	8.1
June	62.4	29.3	12.8	9.9	14.1	17.2	11.9	10.0	11.3	8.7
July	20.2	19.3	2.4	7.2	13.5	14.1	9.0	7.9	6.6	6.4
Aug.	24.8	12.3	4.9	4.8	16.1	9.8	11.3	5.4	5.7	4.1
Sept.	8.0	10.7	8.0	4.4	18.6	8.3	10.4	4.4	3.0	3.5
Oct.	0.1	11.1	1.3	4.4	26.5	8.5	9.0	4.4	2.3	3.5
Nov.	0.2	13.5	2.5	4.7	26.4	9.1	9.2	4.8	2.7	3.9
Dec.	2.8	16.2	3.6	5.7	26.1	9.6	9.9	5.2	2.9	4.2
Avg.	22.6	18.3	5.8	6.5	16.2	11.1	10.2	6.4	5.8	5.3
Max.	62.4	67.6	12.8	32.9	26.5	51.9	11.9	21.8	11.3	20.2
Min.	0.1	0	1.3	0	10.0	0	8.3	0	2.3	0

	SANCHEZ (Capacity 127.3)		PLATORO (Capacity 73.5)		COSTILLA (Capacity 19.4)		HERON (Capacity 495.0)		EL VADO (Capacity 229.8)	
Month	1999	Average 1927-1999	1999	Average 1952-1999	1999	Average 1922-1999	1999	Average 1971-1999	1999	Average 1935-1999
Jan.	44.7	20.1	26.8	20.2	7.1	5.8	368.1	339.9	134.3	74.0
Feb.	45.4	20.0	27.0	20.0	7.6	6.3	357.1	335.7	137.7	71.9
Mar.	46.2	20.8	28.1	20.3	9.5	6.9	354.0	324.5	151.6	78.2
April	47.6	22.1	28.8	20.3	12.8	8.3	369.6	319.8	187.1	116.2
May	46.5	25.1	35.6	23.3	16.3	10.6	409.3	359.6	220.5	156.7
June	60.3	27.2	49.4	31.9	19.7	10.1	457.2	392.3	221.6	149.4
July	56.0	22.8	44.2	29.1	18.4	6.9	472.5	395.0	204.8	129.4
Aug.	59.6	19.1	47.0	26.0	17.5	4.6	487.4	393.6	191.3	106.4
Sept.	55.6	18.7	41.3	25.5	15.0	4.0	489.0	388.9	187.4	92.5
Oct.	55.6	19.5	36.7	24.6	15.3	4.5	485.5	387.2	171.1	86.4
Nov.	56.7	20.1	36.4	21.3	16.0	5.0	476.4	383.4	171.5	77.9
Dec.	56.7	20.5	35.9	21.4	16.7	5.5	468.6	360.5	172.0	76.8
Avg.	52.6	21.3	36.4	23.7	14.3	6.5	432.9	365.0	179.2	101.3
Max.	60.3	78.6	49.4	68.2	19.7	20.2	489.0	495.0	221.6	251.0
Min.	44.7	0	26.8	0	7.1	0	354.0	0	134.3	0

STORED WATER IN LARGE RESERVOIRS OF THE RIO GRANDE BASIN
in Million Cubic Meters

In the United States

	ABQUIU (Capacity 1,481.4)		COCHITI (Capacity 619.6)		JEMEZ CANYON (Capacity 123.9)		BLUEWATER (Capacity 47.5)		ELEPHANT BUTTE (Capacity 2,547.1)	
Month	1999	Average 1965-1999	1999	Average 1973-1999	1999	Average 1965-1999	1999	Average 1927-1999	1999	Average 1915-1999
Jan.	212.8	114.9	59.5	72.2	22.7	12.5	18.2	10.7	2,145.4	1,183.2
Feb.	220.8	113.5	59.5	68.1	21.8	12.7	17.9	11.4	2,142.9	1,188.9
Mar.	227.8	111.7	55.7	68.0	21.4	13.6	17.5	16.2	2,056.8	1,150.3
April	212.1	123.0	59.3	75.9	22.7	17.8	17.1	20.3	1,963.9	1,140.9
May	217.1	169.2	66.3	102.6	28.9	18.9	13.5	18.2	1,984.8	1,236.8
June	201.1	159.4	58.5	105.7	25.8	15.8	10.1	15.3	2,010.3	1,266.0
July	207.8	146.1	59.0	81.8	24.6	14.5	7.6	13.4	1,955.1	1,199.3
Aug.	218.5	143.2	58.9	74.0	24.4	13.9	7.3	12.1	2,035.7	1,136.8
Sept.	215.5	137.4	58.9	73.4	23.2	13.4	6.3	11.4	2,017.5	1,109.6
Oct.	215.8	132.3	59.4	76.5	22.4	12.8	5.3	10.9	2,001.0	1,111.9
Nov.	218.1	124.2	60.3	76.5	22.2	12.8	5.1	10.7	2,055.3	1,138.9
Dec.	218.7	122.3	62.7	76.0	22.7	13.0	5.0	10.5	2,107.0	1,171.2
Avg.	215.5	133.1	59.8	79.2	23.6	14.3	10.9	13.4	2,039.6	1,169.5
Max.	227.8	493.8	66.3	471.2	28.9	88.8	18.2	58.1	2,145.4	2,840.5
Min.	201.1	0	55.7	4.4	21.4	0	5.0	0	1,955.1	4.1

	CABALLO (Capacity 408.9)		STORRIE (Capacity 28.7)		SANTA ROSA (Capacity 542.6)		LAKE SUMNER (Capacity 116.8)		BRANTLEY (Capacity 69.4)	
Month	1999	Average 1938-1999	1999	Average 1939-1999	1999	Average 1980-1999	1999	Average 1937-1999	1999	Average 1988-1999
Jan.	56.2	120.8	26.6	11.1	62.8	73.6	28.7	69.0	46.2	30.0
Feb.	81.5	150.9	27.0	11.1	63.9	72.3	32.4	73.6	49.2	32.4
Mar.	72.2	126.1	25.4	11.8	65.3	72.2	32.1	63.0	50.4	38.6
April	72.3	127.6	26.2	12.5	72.0	74.3	31.1	55.3	35.1	30.4
May	78.5	137.1	25.2	13.0	106.5	79.6	52.6	55.6	46.9	32.2
June	89.8	125.0	26.6	11.8	122.3	79.1	49.4	50.1	49.8	37.8
July	80.8	103.1	27.9	11.9	120.0	74.5	52.9	48.3	34.0	28.1
Aug.	66.1	72.7	26.9	12.3	120.0	76.9	53.7	51.3	39.8	28.9
Sept.	47.4	56.4	28.2	12.2	120.1	74.8	52.2	52.8	28.2	29.8
Oct.	45.2	66.4	26.9	11.5	120.4	76.4	27.9	54.1	22.9	24.4
Nov.	49.1	80.1	26.1	11.6	120.9	78.3	32.6	58.0	27.9	25.3
Dec.	52.2	98.8	25.4	11.4	119.5	79.3	39.8	63.6	33.1	26.6
Avg.	65.9	105.4	26.5	11.8	101.1	75.9	40.5	57.9	38.6	30.4
Max.	89.8	427.5	28.2	32.3	122.3	143.5	53.7	192.8	50.4	57.4
Min.	45.2	0	25.2	0	62.8	0	27.9	0.5	22.9	1.1

	RED BLUFF (Capacity 357.3)		DELTA LAKE (Capacity 30.8)						TOTAL IN U.S. RESERVOIRS (Capacity 7,509.7)	
Month	1999	Average 1936-1999	1999	Average 1939-1999					1999	Average Estimated
Jan.	86.6	121.5	17.7	19.3					3,420.8	2,342.4
Feb.	87.9	123.9	19.3	18.7					3,459.2	2,378.6
Mar.	88.9	120.9	18.5	18.0					3,385.6	2,312.3
April	84.8	107.5	17.8	18.1					3,325.0	2,345.8
May	78.2	107.2	17.5	18.5					3,524.3	2,630.7
June	101.0	108.5	18.2	18.7					3,683.6	2,679.0
July	108.2	98.9	18.7	18.7					3,544.2	2,476.7
Aug.	99.7	94.0	19.5	17.7					3,636.1	2,319.9
Sept.	97.5	98.0	19.3	19.1					3,550.6	2,249.0
Oct.	105.3	107.2	16.6	18.8					3,472.5	2,257.3
Nov.	105.3	111.7	22.3	19.0					3,543.2	2,290.6
Dec.	106.9	117.1	15.0	18.5					3,603.2	2,334.0
Avg.	95.9	109.7	18.4	18.6					3,512.4	2,384.7
Max.	108.2	404.0	22.3	27.9					3,683.6	
Min.	78.2	12.3	15.0	0					3,325.0	

STORED WATER IN LARGE RESERVOIRS OF THE RIO GRANDE BASIN
In Million Cubic Meters

In Mexico

		SAN GABRIEL (Capacity 255.4)		PICO DEL AGUILA (Capacity 50.0)		LA BOQUILLA (Capacity 2,903.4)		LA COLINA (Capacity 24.1)		FRANCISCO I. MADERO (Capacity 348.0)		
Month		Average	1999	Average	1999	Average	1999	Average	1999	Average	1999	Average
Jan.	77.8	132.6	22.6	18.3	832.7	1,803.9	24.3	22.9	162.1	257.5		
Feb.	77.1	129.1	22.6	16.5	827.5	1,754.5	24.3	23.3	162.7	252.5		
Mar.	75.7	123.2	17.0	13.3	753.1	1,676.0	24.5	23.4	153.9	235.1		
April	73.9	113.4	10.8	9.7	675.9	1,577.9	24.5	23.8	143.4	198.0		
May	56.2	97.7	7.7	7.4	589.3	1,481.1	24.5	23.5	119.4	164.8		
June	47.0	85.4	15.9	8.7	584.0	1,396.5	24.4	23.7	111.3	142.3		
July	82.8	89.7	21.1	9.6	807.7	1,439.0	24.5	23.6	207.4	163.4		
Aug.	102.6	111.5	9.9	12.9	1,142.5	1,669.0	24.4	23.3	279.2	209.6		
Sept.	91.3	130.6	10.5	13.6	1,284.2	1,878.8	24.4	23.1	283.8	250.6		
Oct.	91.2	140.9	10.7	17.4	1,277.9	1,886.3	24.4	22.9	281.8	257.4		
Nov.	90.9	140.4	11.8	17.8	1,268.0	1,852.2	24.4	21.4	281.8	258.5		
Dec.	90.8	139.8	11.9	18.0	1,256.4	1,840.4	24.4	23.0	282.4	258.0		
Avg.	79.8	119.5	14.4	13.6	941.6	1,688.0	24.4	23.2	205.8	220.6		
Max.	102.6	475.5	22.6	42.6	1,284.2	3,402.1	24.5	27.8	283.8	452.2		
Min.	47.0	19.8	7.7	6.3	584.0	20.8	24.3	14.3	111.3	1.7		

		CHIHUAHUA (Capacity 25.8)		LUIS L. LEON (Capacity 356.0)		CENTENARIO and SAN MIGUEL (Capacity 46.3)		LA FRAGUA (Capacity 45.0)		VENUSTIANO CARRANZA (Capacity 1,385.0)		
Month		Average	1999	Average	1999	Average	1999	Average	1999	Average	1999	Average
Jan.	5.5	9.6	401.9	467.1	32.3	19.2	43.8	35.5	173.4	595.2		
Feb.	5.2	9.2	397.7	464.3	31.1	19.0	43.1	35.4	169.5	572.0		
Mar.	4.8	8.7	384.6	443.1	28.2	16.1	41.0	31.5	153.4	533.5		
April	4.5	8.2	357.2	414.9	28.7	14.2	45.5	31.8	149.9	521.5		
May	4.4	7.5	327.5	386.0	33.1	14.6	42.1	30.1	146.5	498.0		
June	4.7	7.1	293.6	364.4	35.0	13.0	46.1	29.2	217.0	476.0		
July	7.7	7.5	303.4	378.3	33.8	12.2	44.5	29.3	395.5	488.9		
Aug.	10.4	9.3	288.5	375.6	33.3	12.8	46.2	30.9	480.6	497.3		
Sept.	10.8	11.4	276.4	436.5	33.8	15.0	44.2	34.1	546.2	557.9		
Oct.	10.6	11.6	268.9	455.8	29.8	17.2	45.8	36.6	554.9	599.2		
Nov.	10.5	10.7	271.3	463.8	27.6	17.8	45.8	37.1	549.4	609.2		
Dec.	10.4	10.2	274.0	475.8	28.5	18.3	45.6	36.7	526.9	605.4		
Avg.	7.5	9.2	320.4	427.1	31.3	15.8	44.5	33.2	338.6	546.2		
Max.	10.8	32.7	401.9	928.9	35.0	43.0	46.2	46.2	554.9	1,435.0		
Min.	4.4	0.2	268.9	4.7	27.6	0	41.0	9.6	146.5	1.2		

		LAGUNA DE SALINILLAS (Capacity 19.0)		RODRIGO GOMEZ (Capacity 41.0)		EL CUCHILLO (Capacity 1,123.1)		MARTE R. GOMEZ (Capacity 1,096.9)		TOTAL IN MEXICAN RESERVOIRS (Capacity 7,719.0)		
Month		Average	1993-1999	1999	Average	1963-1999	1999	Average	1993-1999	1999	Average	Estimated
Jan.	8.7	9.9	33.8	31.9	272.3	259.4	182.2	693.8	2,273.4	4,356.9		
Feb.	7.5	11.4	35.1	31.2	261.5	252.0	175.5	650.1	2,240.4	4,220.6		
Mar.	15.1	10.1	33.3	29.9	251.5	245.1	84.6	622.5	2,020.7	4,011.4		
April	13.1	11.4	31.7	29.0	239.7	237.4	59.5	568.2	1,858.3	3,759.4		
May	11.2	11.3	32.0	28.3	236.5	230.7	64.2	513.1	1,694.6	3,494.2		
June	9.3	10.6	32.4	27.8	243.8	228.3	90.8	518.4	1,755.3	3,331.2		
July	10.8	10.1	31.8	27.6	266.1	218.8	115.8	514.1	2,352.9	3,412.0		
Aug.	14.0	10.1	31.3	27.6	284.7	266.3	140.7	552.2	2,888.3	3,808.5		
Sept.	11.8	10.6	30.1	31.4	285.7	311.0	150.6	688.3	3,083.8	4,393.0		
Oct.	10.0	9.9	30.6	33.5	291.9	347.9	163.0	730.5	3,091.5	4,567.3		
Nov.	8.4	9.5	26.9	33.2	281.1	309.6	163.0	737.9	3,060.9	4,519.1		
Dec.	10.7	9.4	29.5	32.6	267.7	303.9	158.9	735.1	3,018.1	4,506.7		
Avg.	10.9	10.4	31.5	30.3	265.2	267.5	129.1	627.0	2,444.9	4,031.7		
Max.	15.1	39.0	35.1	45.4	291.9	512.1	182.2	1,308.0	3,091.5			
Min.	7.5	0	26.9	0	236.5	140.5	59.5	22.0	1,694.6			

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 kilometer 924, 20.8 river kilometers upstream from Del Rio, Texas and Cd. Acuna, Coahuila.

Maximum storage for period of record: 5,994.6 million cubic meters on September 22, 1974 with an elevation of 346.150 meters above mean sea level, U. S. C. & G. S. datum.

Storage Capacities
(1992 Survey)

Elevation Meters	Description	At Indicated Elevation		Between Indicated Elevations	
		Reservoir Capacity- Thousand Cubic Meters	Reservoir Area Hectares	Storage Volume- Thousand Cubic Meters	Type of Storage
273.710	Original River Bed at Dam Axis	0	0	0	
283.465	Lowest Outlet (United States Penstocks)	0	0	3,887,094	Silt & Conservation
340.462	Top of Conservation Storage *	3,887,094	26,077	2,138,052	Ordinary Flood
347.595	Top of Spillway Gates	6,025,146	34,124	499,553	Surcharge
349.025	Maximum Water Surface	6,524,699	35,770		

STORAGE IN MILLION CUBIC METERS AT 24:00 HOURS 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,708.3	1,765.4	1,767.6	1,651.1	1,497.5	1,494.9	1,572.4	1,631.0	1,678.5	1,694.0	1,696.2	1,705.4
2	1,709.7	1,767.6	1,645.5	1,498.7	1,493.6	1,573.1	1,635.1	1,679.9	1,694.7	1,695.5	1,706.1	
3	1,711.1	1,769.1	1,765.4	1,640.7	1,498.7	1,492.4	1,572.4	1,641.4	1,679.9	1,694.7	1,706.1	
4	1,711.8	1,769.8	1,764.0	1,634.5	1,499.4	1,491.1	1,573.1	1,645.5	1,680.6	1,696.2	1,694.7	1,706.1
5	1,714.0	1,773.5	1,764.0	1,627.5	1,498.7	1,489.8	1,573.1	1,651.1	1,681.3	1,696.9	1,694.7	1,706.1
6	1,715.4	1,775.7	1,764.0	1,620.6	1,497.5	1,489.8	1,573.1	1,654.6	1,682.7	1,695.5	1,696.2	1,705.4
7	1,718.3	1,776.4	1,764.0	1,615.9	1,496.2	1,490.5	1,573.1	1,657.4	1,684.8	1,694.7	1,696.9	1,705.4
8	1,723.3	1,776.4	1,762.5	1,610.4	1,494.9	1,490.5	1,572.4	1,658.1	1,686.9	1,696.2	1,696.9	1,705.4
9	1,722.6	1,777.2	1,761.8	1,604.2	1,494.3	1,491.1	1,572.4	1,660.2	1,688.3	1,695.5	1,696.9	1,705.4
10	1,724.0	1,776.4	1,756.6	1,597.4	1,493.6	1,491.1	1,576.5	1,660.9	1,689.1	1,696.2	1,697.6	1,705.4
11	1,725.5	1,776.4	1,750.8	1,590.6	1,492.4	1,491.7	1,586.6	1,660.9	1,689.8	1,696.2	1,698.3	1,706.1
12	1,728.3	1,774.9	1,746.4	1,584.5	1,492.4	1,493.0	1,590.6	1,660.9	1,690.5	1,696.9	1,699.0	1,706.1
13	1,730.5	1,774.2	1,739.2	1,578.5	1,491.1	1,492.4	1,593.3	1,661.6	1,694.0	1,696.9	1,699.7	1,706.1
14	1,732.0	1,772.7	1,732.0	1,573.1	1,491.1	1,494.3	1,596.7	1,661.6	1,694.0	1,696.9	1,700.4	1,706.8
15	1,733.4	1,772.7	1,724.0	1,564.4	1,489.8	1,502.6	1,594.7	1,661.6	1,694.7	1,696.9	1,701.1	1,706.8
16	1,735.6	1,772.7	1,716.1	1,559.0	1,489.8	1,520.8	1,596.7	1,660.9	1,695.5	1,696.9	1,701.1	1,706.8
17	1,738.5	1,772.0	1,714.0	1,552.4	1,489.8	1,547.1	1,600.1	1,660.9	1,696.9	1,699.0	1,701.1	1,707.5
18	1,739.9	1,772.0	1,720.5	1,545.8	1,487.9	1,555.0	1,602.2	1,661.6	1,696.9	1,697.6	1,701.9	1,707.5
19	1,741.4	1,772.7	1,771.3	1,539.8	1,486.6	1,555.0	1,604.9	1,661.6	1,696.9	1,696.9	1,702.6	1,709.7
20	1,744.3	1,771.3	1,710.4	1,532.6	1,485.3	1,559.0	1,607.6	1,663.0	1,698.3	1,696.9	1,701.9	1,707.5
21	1,746.4	1,769.8	1,703.3	1,526.0	1,485.3	1,562.4	1,609.0	1,663.0	1,698.3	1,696.9	1,702.6	1,706.8
22	1,748.6	1,769.1	1,696.9	1,520.1	1,483.4	1,561.7	1,609.7	1,664.4	1,698.3	1,696.9	1,704.0	1,708.3
23	1,749.3	1,769.1	1,691.9	1,513.6	1,483.4	1,561.0	1,609.7	1,665.1	1,697.6	1,696.9	1,703.3	1,708.3
24	1,750.8	1,768.4	1,685.5	1,509.1	1,482.2	1,564.4	1,613.8	1,671.4	1,696.9	1,696.2	1,704.0	1,709.0
25	1,752.2	1,768.4	1,679.2	1,503.9	1,482.2	1,563.7	1,617.2	1,672.8	1,696.9	1,695.5	1,703.3	1,709.7
26	1,754.4	1,768.4	1,672.8	1,500.0	1,487.3	1,565.7	1,622.0	1,673.5	1,696.9	1,695.5	1,702.6	1,710.4
27	1,756.6	1,769.1	1,673.5	1,500.0	1,490.5	1,567.7	1,622.7	1,674.2	1,696.9	1,694.7	1,704.0	1,711.8
28	1,758.8	1,767.6	1,668.6	1,498.7	1,491.1	1,571.1	1,624.1	1,674.2	1,698.3	1,694.7	1,704.7	1,712.6
29	1,761.0	1,664.4	1,498.7	1,492.4	1,572.4	1,626.2	1,674.2	1,695.5	1,696.9	1,704.7	1,714.0	
30	1,762.5	1,658.1	1,498.1	1,494.3	1,573.1	1,627.5	1,674.9	1,694.7	1,695.5	1,704.7	1,714.7	
31	1,764.0	1,654.6	1,494.3			1,628.9	1,677.1			1,695.5		1,715.4

1999

Period 1969-1999

Month	MOMENTARY MAXIMUM			MOMENTARY MINIMUM			Average Storage	Mean Monthly Storage		
	Elevation	Storage	Day	Elevation	Storage	Day		Average	Maximum	Minimum
Jan.	329.875	1,764.0	31	329.490	1,708.3	1	1,735.9	3,462.4	4,971.4	891.3
Feb.	329.965	1,777.2	9	329.885	1,765.6	1	1,771.7	3,447.3	4,952.1	971.6
Mar.	329.900	1,767.6	1	329.110	1,654.6	31	1,721.1	3,403.6	4,954.1	1,062.9
April	329.085	1,651.1	1	327.945	1,498.1	30	1,564.6	3,333.8	4,910.5	1,187.6
May	327.955	1,499.4	4	327.820	1,482.2	24	1,491.4	3,224.0	4,723.6	1,281.1
June	328.515	1,573.1	30	327.880	1,489.8	5	1,526.3	3,156.7	4,698.8	1,082.8
July	328.925	1,628.9	31	328.510	1,572.4	1	1,597.2	3,134.7	4,745.6	980.0
Aug.	329.270	1,677.1	31	328.940	1,631.0	1	1,661.1	3,211.5	4,861.4	1,062.2
Sept.	329.420	1,698.3	20	329.280	1,678.5	1	1,691.7	3,304.3	5,078.5	1,275.4
Oct.	329.425	1,699.0	17	329.390	1,694.0	3	1,696.1	3,456.6	5,515.1	1,489.2
Nov.	329.465	1,704.7	28	329.395	1,694.7	3	1,700.2	3,476.4	5,231.7	1,536.0
Dec.	329.540	1,715.4	31	329.470	1,705.4	1	1,708.0	3,482.9	4,970.7	1,523.4
Yearly	329.965	1,777.2		327.820	1,482.2		1,655.4	3,341.1	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 kilometers downstream from the old international highway bridge between Laredo, Texas and Nuevo Laredo, Tamaulipas and 442 river kilometers upstream from the Gulf of Mexico.

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

Storage Capacities
(1992 Survey)

Elevation Meters	Description	At Indicated Elevation		Between Indicated Elevations	
		Reservoir Capacity- Thousand Cubic Meters	Reservoir Area Hectares	Storage Volume- Thousand Cubic Meters	Type of Storage
53.340	Original River Bed at Dam Axis	0	0	67	Dead
61.965	Lowest Outlet (Mexican Penstock)	67	10	3,273,351	Silt & Conservation
91.805	Top of Conservation Storage *	3,273,418	35,281	623,589	Ordinary Flood
93.480	Top of Spillway Gates	3,897,007	39,678	993,201	Surcharge
95.770	Maximum Water Surface	4,890,208	46,322		

STORAGE IN MILLION CUBIC METERS AT 24:00 HOURS 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	786.6	730.8	675.8	660.8	525.9	419.7	544.5	618.9	751.3	801.3	836.1	800.0
2	784.6	728.3	672.7	666.8	514.8	418.3	548.7	616.1	753.8	802.7	835.4	799.3
3	783.3	726.4	670.3	674.0	503.3	415.3	553.5	609.8	755.1	802.7	834.1	798.0
4	780.7	724.5	668.5	679.4	496.0	410.6	556.7	607.0	755.8	801.3	832.7	799.3
5	779.3	720.1	666.8	684.8	487.2	405.1	562.5	605.3	758.4	800.0	832.7	796.6
6	779.3	718.2	665.0	690.9	477.6	400.0	566.8	603.1	763.6	800.0	831.3	794.6
7	778.7	715.0	662.0	696.5	468.2	395.9	571.7	599.2	770.1	799.3	829.9	794.6
8	779.3	712.6	660.2	700.1	460.7	391.0	576.0	591.9	774.7	800.0	828.5	794.6
9	780.0	709.4	659.0	703.2	451.5	385.3	579.3	588.6	777.0	799.3	826.5	794.6
10	780.0	705.7	656.6	705.1	443.8	379.2	583.7	585.3	779.3	798.0	825.1	793.3
11	779.3	704.5	654.9	707.0	435.3	372.9	587.5	582.0	781.3	797.3	823.1	793.3
12	778.7	698.9	653.7	707.6	427.4	367.0	593.1	576.6	782.6	796.6	820.3	794.0
13	778.7	695.8	652.5	702.0	421.3	361.5	598.6	571.7	784.6	796.6	817.6	793.3
14	776.7	694.6	650.2	700.8	420.4	357.7	602.0	567.4	786.6	794.6	814.2	794.0
15	774.1	694.0	650.2	694.6	417.8	364.6	604.2	563.6	790.6	790.6	811.5	792.0
16	772.7	694.0	649.6	687.3	412.7	367.8	607.0	559.9	792.0	788.6	809.4	790.6
17	770.8	692.2	647.8	677.6	406.8	372.1	612.1	555.6	793.3	789.3	807.4	790.0
18	768.2	690.9	647.2	669.1	403.4	380.0	616.1	550.8	794.6	818.3	805.4	788.0
19	766.8	688.5	651.3	658.4	401.7	387.7	617.8	546.6	794.6	827.2	804.7	786.6
20	763.6	686.7	651.9	645.5	402.5	394.7	620.0	544.0	794.6	832.7	804.0	786.6
21	761.0	684.8	651.9	633.8	405.9	405.5	622.3	541.4	796.0	834.7	802.7	783.3
22	759.0	683.0	650.2	621.2	406.8	413.5	625.8	543.0	795.3	836.8	801.3	784.6
23	751.9	681.2	647.2	609.8	406.3	434.9	626.9	545.6	796.6	836.8	802.7	785.3
24	748.7	680.0	642.0	595.3	405.1	478.6	629.2	548.7	793.3	836.8	804.0	784.0
25	744.8	679.4	633.8	579.8	403.4	496.0	630.4	568.5	792.0	836.1	803.4	784.0
26	742.9	679.4	621.2	565.8	403.8	508.8	630.4	612.1	793.1	835.4	802.0	783.3
27	741.6	678.8	617.8	559.3	403.4	519.8	630.4	675.2	790.6	835.4	801.3	782.6
28	740.3	678.8	624.0	551.9	406.3	529.0	629.8	710.7	791.3	835.4	802.7	781.3
29	739.1		638.5	545.1	410.1	536.7	629.2	732.1	796.6	835.4	802.7	781.3
30	735.9		647.8	535.2	414.4	541.9	626.9	741.6	799.3	835.4	802.0	782.6
31	732.7		653.1	418.7		623.5	747.4			835.4		782.6

Month	1999						Period 1954-1999		
	MOMENTARY MAXIMUM			MOMENTARY MINIMUM			Average Storage	Mean Monthly Storage	
	Elevation	Storage	Day	Elevation	Storage	Day		Average	Maximum
Jan.	81.090	786.6	1	80.675	732.7	31	765.8	2,433.6	3,787.8
Feb.	70.660	730.8	1	80.240	678.8	27	699.2	2,328.2	3,712.2
Mar.	80.215	675.8	1	79.720	617.8	27	651.4	2,325.4	3,689.1
April	80.475	707.6	12	78.960	535.2	30	650.3	2,222.9	3,644.4
May	78.870	525.9	1	77.530	401.7	19	434.3	2,043.1	3,540.0
June	79.025	541.9	30	76.980	357.7	14	420.4	1,960.4	3,440.3
July	79.830	630.4	25	79.050	544.5	1	600.2	2,024.3	3,321.4
Aug.	80.790	747.4	31	79.020	541.4	21	600.3	1,994.3	3,418.5
Sept.	81.185	799.3	30	80.820	751.3	1	782.5	2,099.2	3,541.4
Oct.	81.460	836.8	22	81.105	788.6	16	813.9	2,341.0	3,609.2
Nov.	81.455	836.1	1	81.200	801.3	22	815.2	2,426.5	3,854.0
Dec.	81.190	800.0	1	81.050	781.3	28	790.0	2,465.1	3,860.4
Yearly	81.460	836.8		76.980	357.7		668.6	2,222.0	3,410.6
									577.8

* When necessary, the Commission may set temporary conservation levels

! And other days

QUALITY OF WATER - 1999

08-3640.00 RIO GRANDE AT EL PASO, TEXAS

LOCATION: At gaging station on Courchesne Bridge at river kilometer 2,021, 2.7 river kilometers upstream from American Dam, and 8.9 kilometers upstream from Paso del Norte Bridge between El Paso, Texas and Co. 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 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.

1999	Time	Streamflow		Conductance Micro-siemens/cm	pH	Temper- ature (as CaCO ₃)	Water Hardness,		Hardness, ion (Ca), Dissolved	Calcium mg/L	Magnesium mg/L
		Standard	CMS				Units	Deg C	mg/L		
Date											
Jan. 13	0015	2.61	1,990	8.9	6.5	420		170	120	29	
Feb. 25	0830	17.8	1,220	7.5	11.0	250		74	71	17	
Feb. 26	1315	#	1,230	8.0	26.0	240		75	70	16	
Mar. 26	1030	24.2	882	8.2	15.5	190		31	55	13	
April 27	0900	22.7	1,000	8.3	17.5	230		34	65	15	
May 27	0840	24.2	976	8.2	20.0	210		43	60	14	
June 22	0910	32.0	783	8.1	34.0	180		31	51	12	
July 27	0840	25.9	977	8.3	26.5	220		46	65	13	
Aug. 24	0900	34.0	874	8.3	24.5	190		28	56	12	
Sept. 14	0930	23.4	1,010	8.4	21.5	230		50	68	15	
Dec. 9	1333	3.31	2,200	8.0	4.8	400		160	120	27	

1999	Sodium Ion (Na), Dissolved	Sodium Adsorption Ratio(SAR)	Potassium Ion (K) Dissolved	Alkalinity Total (as CaCO ₃)	Sulfate Ion (SO ₄) Dissolved	Chloride Ion (Cl), Dissolved	Silica (SiO ₂) Dissolved	Solids Dissolved (Calculated)
	Date	mg/L		mg/L	mg/L	mg/L	mg/L	mg/L
Jan. 13	N.A.	N.A.	11.0	250	430	240	23	1,290
Feb. 25	N.A.	N.A.	7.8	#	200	140	15	708
Feb. 26	N.A.	N.A.	8.4	#	200	140	13	698
Mar. 24	N.A.	N.A.	6.4	160	160	77	12	521
April 27	N.A.	N.A.	7.5	171	190	97	13	615
May 27	N.A.	N.A.	6.8	168	190	85	13	580
June 23	N.A.	N.A.	6.7	145	140	61	14	462
July 27	N.A.	N.A.	7.4	171	190	84	15	589
Aug. 24	N.A.	N.A.	6.7	162	170	82	16	540
Sept. 14	N.A.	N.A.	7.6	182	200	95	17	630
Dec. 9	N.A.	N.A.	11.0	#	440	240	29	1,290

- Missing Data

N.A. - Not Analyzed

QUALITY OF WATER - 1999

08-3640.00 RIO GRANDE AT EL PASO, TEXAS

1999	Water Quality Data					Water Quality Data								
	Temperature	Dissolved Oxygen	pH	Coliform, Fecal	Oxygen Demand Bio-Chemical (BOD)	1999	Temperature	Dissolved Oxygen	pH	Coliform, Fecal				
	Date	Deg C	mg/L	Units	/100 mL	5 Day mg/L	Date	Deg C	mg/L	Units	/100 mL	5 Day mg/L		
Jan.	7	5.0	11.4	7.8	80	2	July	15	24.4	11.0	7.9	390	5	
	14	6.1	11.0	8.0	150	2		29	26.1	12.0	8.1	990	2	
	21	8.9	10.5	7.8	230	2		Aug.	5	23.3	10.8	8.0	3000	1
	28	6.7	11.1	8.0	990	1		12	26.7	12.2	7.7	530	2	
Feb.	4	7.2	11.1	8.0	170	3		26	25.6	4.6	8.4	1390	6	
	11	6.1	11.1	7.9	230	3		Sept.	2	24.0	7.3	8.2	3000	2
	18	8.3	10.5	7.8	100	4		9	23.0	7.0	8.2	2120	1	
	25	10.6	9.8	8.1	340	5		16	#	8.3	890	3		
Mar.	4	11.1	10.0	8.1	130	2		23	21.0	6.8	8.3	2400	3	
	11	13.3	9.8	7.8	2440	4		30	17.0	7.5	8.0	2440	4	
	17	10.0	10.0	8.1	110	2		Oct.	7	19.0	7.3	8.1	2560	4
	25	13.9	9.2	7.9	140	3		14	14.4	7.9	7.8	2680	2	
April	1	13.9	9.4	7.8	100	3		21	13.0	8.8	7.8	1490	3	
	8	11.7	9.8	7.9	330	2		28	15.0	8.7	7.4	1280	4	
	15	12.2	9.2	7.9	3200	7		Nov.	4	NST	NST	NST	NST	
	22	15.6	9.0	8.0	4850	2			11	NST	NST	NST	NST	
	29	15.6	9.0	8.0	2050	1			18	13.0	9.0	7.8	2880	2
May	6	14.4	9.2	8.1	700	1			25	NST	NST	NST	NST	
	13	18.9	8.6	7.9	1980	2		Dec.	2	8.9	NR	7.7	330	2
	20	18.9	8.6	8.1	830	3			9	4.2	10.6	7.8	1840	3
	27	20.6	9.4	7.7	720	3			16	3.0	11.1	8.5	3500	4
June	3	20.0	9.2	8.0	410	4			23	NST	NST	NST	NST	
	10	21.1	9.6	7.9	1000	2								
	17	22.8	10.4	7.9	770	4								
July	1	26.1	12.0	7.8	1340	3								
	8	25.6	11.6	7.7	2320	2								

NST - No Sample Taken

- Missing Data

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROSIEMENS/CM @ 25 DEG C - 1999

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1		1,470	1,080			1,100				1,290	1,830	1,870
2				1,130		994	901	931	1,020			
3		1,480	1,060		1,160							1,800
4	2,010					986				1,290		
5		1,520	1,050	1,070	1,180							
6	2,030							903	930	1,250		1,880
7							1,010	899				
8	2,000	1,450	1,050	1,070	1,190					1,270	1,820	1,880
9						1,000	908	932				
10		1,610	1,060		1,120						1,810	1,880
11	2,020					1,010						
12		1,600	1,050	1,120	1,120					1,270	1,830	
13	2,010					908				1,303	1,270	1,870
14				1,090	1,120							
15	2,010		895				925			1,270	1,820	1,930
16		1,190			1,140		909	909		1,100		
17		1,180	876		1,120		906					1,810
18										1,280		1,260
19	1,250	1,180	884	1,160	1,110						1,800	
20	1,280									1,660		
21					1,150	1,120						
22	1,270	1,180	945						1,250	1,680	1,990	
23					1,160							
24		1,180	926		1,090							1,980
25	1,250									1,690		
26		1,180	926	1,150	1,080		929	891				1,990
27	1,260					1,170	1,100	900	947		1,780	
28												
29	1,260						907	947		1,360	1,790	2,000
30												2,030
31					973	1,180						

QUALITY OF WATER - 1999

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

LOCATION: At river kilometer 1,991, 15.3 kilometers downstream from the Haskell R. Street Wastewater Treatment Plant and 26.8 river kilometers 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 Natural Resource Conservation Commission at a location 1.6 km. upstream at Ysleta-Zaragoza Bridge, 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.

		Water Temperature	Oxygen Dissolved (DO)	Coli-form, Fecal Bio-Chemical	Oxygen Demand (BOD) 5 Day			Water Temperature	Oxygen Dissolved (DO)	Coli-form, Fecal Bio-Chemical	Oxygen Demand (BOD) 5 Day	
1999	Date	Deg C	mg/L	PK Colonies /100 mL	mg/L	1999	Date	Deg C	mg/L	PK Colonies /100 mL	mg/L	
	Jan. 7	8.3	10.5	7.7	10	12	July 15	23.9	10.8	8.1	330	2
	14	9.4	10.3	7.7	<1	10	29	27.8	12.2	8.1	120	3
	21	10.6	10.0	7.7	20	14	Aug. 5	24.4	11.0	8.0	500	2
	28	9.4	10.3	7.8	10	21	12	27.8	12.6	8.1	510	2
Feb.	4	9.4	10.3	7.9	20	8	26	25.6	6.1	8.2	70	3
	11	8.3	10.5	8.0	20	8	Sept. 2	24.0	8.0	8.3	260	2
	18	10.6	10.0	8.0	<1	12	9	24.0	6.9	8.2	40	2
	25	13.3	9.6	8.1	50	5	16	#	#	8.4	1530	7
Mar.	4	13.9	9.4	8.2	40	5	23	20.0	7.9	8.5	520	4
	11	13.9	9.4	8.1	<1	6	30	17.0	8.2	8.0	690	5
	17	11.7	9.8	8.2	20	2	Oct. 7	11.0	10.9	8.6	220	5
	25	16.1	9.0	8.2	50	4	14	20.0	8.6	8.4	150	5
April	1	13.3	9.4	7.9	80	4	21	11.0	9.4	8.6	1010	4
	8	8.3	10.3	8.1	440	4	28	18.0	8.0	7.8	193	5
	15	8.9	10.3	8.1	220	6	Nov. 4	NST	NST	NST	NST	
	22	12.2	9.6	8.2	230	3	11	NST	NST	NST	NST	
	29	14.4	9.4	8.1	760	1	18	17.0	8.2	8.0	50	3
May	6	15.6	9.0	8.1	90	3	25	NST	NST	NST	NST	
	13	20.6	9.4	8.1	30	6	Dec. 2	14.7	NR	7.5	<1	2
	20	20.0	9.6	8.0	20	6	9	11.8	8.0	7.7	<1	3
	27	22.8	10.8	7.9	90	4	16	12.6	7.3	8.1	<1	3
June	3	21.1	10.0	8.0	130	5	23	NST	NST	NST	NST	
	10	22.8	11.4	8.0	180	4						
	17	23.3	10.8	8.2	40	4						
July	1	27.2	12.4	8.0	220	4						
	8	25.6	11.4	7.8	720	1						

NST - No Sample Taken

- Missing data

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

LOCATION: Gaging station at river kilometer 1,555; 10.5 river kilometers 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 Natural Resource Conservation Commission, November 1977 through current year, available upon request.

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROSIEMENS/CM @ 25 DEG C - 1999

January	March	May	July	September	November
5 2,890	2 3,670	5 3,380	6 2,590	2 3,230	9 2,750
14 3,070	16 3,990	17 3,920	19 1,840	15 1,470	17 2,790
February	April	June	August	October	December
2 3,410	5 3,620	2 2,380	3 2,240	5 2,660	2 2,830
17 3,050	19 4,740	8 1,010	17 2,080	19 2,790	13 2,930
		10 1,090			
		14 1,210			
		16 1,110			

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

LOCATION: Gaging station at river kilometer 1,259; 0.6 river kilometers downstream from Alamito Creek and 18.7 river kilometers 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 Natural Resource Conservation Commission, November 1977 through current year, available upon request.

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROSIEMENS/CM @ 25 DEG C - 1999

January	March	May	July	September	November
6 2,750	3 3,130	5 2,780	7 2,250	7 2,030	10 2,730
20 2,890	17 3,230	19 2,600	26 1,590	27 2,830	21 2,830
February	April	June	August	October	December
3 3,130	6 3,100	4 2,460	5 1,950	6 2,570	6 2,720
18 3,000	21 3,540	14 507	19 2,340	20 2,730	16 2,770
		17 1,410			

QUALITY OF WATER - 1999

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

LOCATION: Gaging station at river kilometer 1,058, about 20.8 kilometers west of Langtry, Texas.

RECORDS: Chemical analyses, March 1969 through 1970 and October 1974 through current year; biochemical, October 1974 through 1995; 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.

1999	Time	Stream flow, Momen-tary *	Specific Conductance, Micro-siemens	Water Temperature, PH	Hard-ness,	Hard-ness,	Calcu-mation	Magne-sium ion	Sodium ion	Potassium ion		
					Total (as CaCO3)	Noncar-bonate (Ca), (Mg), Disolved	Ion (Na), Disolved	Ion (K), Disolved	Ion (K), Disolved	Ion (K), Disolved		
					mg/L	mg/L	mg/L	mg/L	mg/L	mg/L		
Jan. 13	1100	13.0	1,680	8.3	12.0	320	190	82	28	216	5	6.5
Mar. 24	1120	8.86	1,390	7.9	23.3	330	180	85	28	159	4	6.2
April 21	1030	6.29	1,070	8.2	21.5	290	160	90	15	114	3	5.1
May 19	1150	5.52	1,310	8.1	26.4	320	180	83	27	147	4	6.0
June 15	1800	4.65	640	7.5	22.4	200	100	67	6.5	54	2	4.6
June 30	0900	22.5	952	8.0	28.0	270	160	90	9.7	94	3	5.9
Aug. 3	1100	50.1	746	7.7	27.5	200	110	68	7.1	65	2	4.4
Sept. 9	1210	25.5	1,100	7.7	27.3	260	150	86	11.0	120	3	5.4
Dec. 8	1130	11.9	1,840	7.9	12.5	360	200	95	29.0	231	5	6.4

1999	Time	Alka-linity (as CaCO3)	Sulfate ion	Chloride ion	Silica (SiO2), mg/L	Oxygen Disolved	Coli-form, Fecal	Tur-bidity	Solids Disolved	Solids Disolved	Solids Disolved	Sus-pended
			(SO4)	(Cl)		(DO)	Colonies/100 ml	NTU	mg/L	(Calcu-lated) & 180 Deg C	(Residue Sea-ment)	
			mg/L	mg/L		mg/L	100 ml	mg/L	mg/L	mg/L	mg/L	
Jan. 13	130	360	230	0.6	9.8	N.A.	18	1,000	1,050	25		
Mar. 24	150	300	160	16.0	7.9	N.A.	120	851	836	213		
April 21	130	240	99	14.0	9.0	N.A.	330	888	702	532		
May 19	158	300	140	19.0	7.4	N.A.	80	813	832	123		
June 15	91	160	36	9.1	2.6	N.A.	300	395	430	12,600		
June 30	140	210	46	16.0	6.7	N.A.	2,200	629	673	4,450		
Aug. 3	115	390	140	13.0	6.0	N.A.	4,000	466	490	11,400		
Sept. 9	125	200	48	14.0	6.4	N.A.	3,600	695	726	7,600		
Dec. 8	158	340	210	12.0	10.1	N.A.	48	1,110	1,150	#		

* Flow provided by the US Geological Survey

N.A. - Not Analyzed

- Missing Data

SUSPENDED SILT - 1999

1999	Time	Stream-flow, Momen-tary	Gravimetric Percent	1999	Stream-flow, Momen-tary	Gravimetric Percent	1999	Stream-flow, Momen-tary	Gravimetric Percent		
		Std.	CMS		Std.	CMS		Std.	CMS		
		Date	Std.		Date	Std.		Date	Std.		
Jan. 04	1130	14.4	0.0038	June 07	1015	9.46	0.0235	Nov. 01	1100	12.5	0.0150
Jan. 19	1115	13.5	0.0039	June 21	1045	25.4	0.7758	Nov. 15	1100	13.5	0.0172
Feb. 02	1045	12.0	0.0046	June 28	1015	33.1	0.4585	Dec. 06	1200	13.4	0.0139
Feb. 12	1045	11.2	0.0033	July 19	1130	63.3	1.3107	Dec. 20	1115	14.3	0.0072
Mar. 01	1045	10.9	0.0108	Aug. 03	1030	53.2	1.0289				
Mar. 12	1100	9.94	0.0139	Aug. 16	1000	16.0	0.0325				
Apr. 19	1000	8.95	0.0618	Sep. 07	1030	55.5	0.3109				
May 03	1015	8.98	0.0153	Sep. 21	0915	12.1	0.0471				
May 17	0940	6.68	0.0048	Oct. 04	1030	12.0	0.0168				

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROSIEMENS/CM @ 25 DEG C - 1999

January	March	May	July	September	November
4	1,790	1,690	821	771	883
19	1,670	12	1,320	6	1,560
February	April	June	August	October	December
2	1,690	5	904	3	736
12	1,660	19	1,310	16	1,620
		21	1,120	4	1,180
		28	791	19	1,460
				15	1,600
				20	1,740

QUALITY OF WATER - 1999

08-4474.10 PELOS RIVER NEAR LANGTRY, TEXAS

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

RECORDS: Chemical analyses, 1967 through current year; biochemical analyses, October 1974 through 1995; 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.

1999	Time	Stream	Specific	Water	Hard-	Hard-	Calcium	Magne-	Sodium	Potassium		
		flow,	Conduct-	Temper-	ness,	Total	ion	ium	ion	Ion (K)		
Date	Std.	CMS	Micro-	pH	ature	(as	Noncar-	ion (Ca),	(Na),	Adsorp-		
			siemens	/cm	Units	mg/L	mg/L	ion (Mg),	Dis-	tion (Dissolved		
					Deg C	mg/L	mg/L	solved	solved	Ratio (SAR)		
Jan. 12	1430	4.45	3,900	8.0	10.0	810	650	180	86	520	8	8.6
Mar. 23	1440	4.30	3,550	8.0	11.7	700	570	150	76	460	8	8.3
Apr. 20	1530	3.17	4,060	8.2	24.0	820	700	170	92	568	9	8.5
May 18	1450	3.94	3,670	7.9	27.8	710	610	150	81	514	8	8.3
June 29	1410	3.71	2,880	8.2	30.7	550	450	120	63	392	7	7.0
Aug. 2	1500	2.61	3,060	8.1	30.7	580	450	120	67	424	8	7.7
Sept. 8	1520	2.38	2,590	8.2	29.6	540	440	110	63	393	7	6.4
Dec. 7	1600	2.89	2,910	7.9	11.7	560	430	120	60	360	7	5.8

1999	Alka-	Sulfate	Chloride	Silica	Oxygen,	Coli-	Oxygen	Solids	Solids	Sus-	
	limity	ion	ion	(SiO ₂)	(DO)	form,	Demand,	Dis-	Dis-	pended	
Date	Total (as CaCO ₃)	(SO ₄) Dis- solved	(Cl) Dis- solved	Dis- solved	Dis- solved	Fecal	Bio- Chemical	(Calcu- lated)	(Residue at 180 Deg C)	Sed- iment	
	mg/L	mg/L	mg/L	mg/L	mg/L	Colonyes/ 100 mL	5 Day (BOD ₅)	mg/L	NTU	mg/L	
Jan. 13	160	530	870	14.0	10.6	N.A.	N.A.	0.26	2,310	2,390	<1
Mar. 23	125	470	790	11.0	9.0	N.A.	N.A.	1.8	2,050	2,050	3
Apr. 20	111	560	1,000	11.0	8.9	N.A.	N.A.	1.2	2,510	2,510	2
May 18	100	490	850	12.0	7.8	N.A.	N.A.	1.5	2,170	2,170	2
June 29	104	390	670	9.8	7.1	N.A.	N.A.	1.5	1,720	1,730	2
Aug. 2	100	420	700	13.0	7.1	N.A.	N.A.	1.0	1,810	1,810	3
Sept. 8	98	380	670	13.0	7.3	N.A.	N.A.	0.37	1,700	1,700	1
Dec. 7	134	400	640	11.0	11.0	N.A.	N.A.	0.46	1,680	1,680	#

N.A. - Not Analyzed

- Missing Data

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROSIEMENS/CM @ 25 DEG C - 1999

January	March	May	July	September	November
4 3,510	1 4,140	3 4,120	1 4,180	3 3,010	1 2,760
15 3,810	12 4,120	17 3,740	19 3,070	21 2,820	15 2,740
February	April	June	August	October	December
2 4,050	5 3,860	7 3,860	2 3,050	4 2,760	6 2,680
16 4,140	19 4,190	21 2,760	16 2,920	18 2,770	20 2,950

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

LOCATION: At gaging station 41.0 river kilometers from the confluence with the Rio Grande, which is located at river kilometer 925.

RECORDS: Daily specific conductance, 1968 through September 1985; weekly or 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 - 1999

January	March	May	July	September	November
4 370	1 420	3 405	6 370	7 385	3 397
19 400	12 420	17 377	20 298	21 377	15 463
February	April	June	August	October	December
1 400	5 378	7 374	2 349	1 381	6 376
16 400	19 404	21 387	16 292	18 381	20 396

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

LOCATION: Gaging station at river kilometer 920.3, 3.4 river kilometers 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.

1999	Time	Streamflow Momentary	Specific Conductance Microsiemens /cm	pH	Water Hardness, Temperature Total, Hardness, Noncarbonate Degree (as CaCO ₃) (as CaCO ₃)		Calcium ion (Ca), Dissolved	Magnesium ion (Mg), Dissolved
					Deg C	mg/L		
Date	Standard	CMS	Units					
Jan. 14	0940	7.19	962	8.2	12.0	250	130	70
Mar. 25	1020	52.7	1,020	7.9	15.4	300	130	7*
Apr. 22	1010	100	1,070	8.0	18.0	270	150	73
May 20	1010	4.87	1,050	7.7	18.6	260	130	71
Aug. 4	1000	14.3	1,060	7.3	22.2	260	130	70
Sept. 10	1000	3.0	1,040	7.2	22.5	270	110	74

1999	Sodium ion (Na), Dissolved	Sodium Adsorption Ratio(SAR)	Potassium ion (K) Dissolved	Alkalinity Total (as CaCO ₃)	Sulfate ion (SO ₄) Dissolved	Chloride ion (Cl), Dissolved	Silica (SiO ₂) Dissolved	Solids Dissolved (Calculated)
	Date	mg/L		mg/L	mg/L	mg/L	mg/L	mg/L
Jan. 14	98	3	4.8	126	170	130	12	579
Mar. 25	104	3	4.3	126	180	130	12	594
Apr. 22	107	3	4.0	121	180	140	12	614
May 20	103	3	4.3	128	180	130	11	601
Aug. 4	104	3	4.4	128	170	130	12	593
Sept. 10	106	3	4.6	137	170	130	14	609

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROSIEMENS/CM @ 25 DEG C - 1999

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1		970	1,050						1,020	942	944	958
2			1,050			1,020	1,020	1,020				
3		960	1,040		1,060				979		951	964
4	910					1,030				936		956
5		990	1,050	1,020	1,050							
6	950									959		946
7												
8	980	1,020	1,060	1,030	1,030	1,020	1,020		1,010		930	959
9			1,060	1,050					1,010			976
10		1,030			1,030					1,010		965
11	970					1,030						
12		1,010	1,040	1,020	1,050							
13	970											
14					1,070							
15	970		1,040									
16				1,050								
17				1,040	1,060							
18					1,040							
19	970		1,040	1,050	1,070	1,020			778		942	
20		990	1,040	1,050	1,070	1,020			1,020		988	993
21						1,070	1,020	1,020	989			
22	1,000	1,030	1,070		1,060		1,030	1,020	1,020	979	957	980
23						1,020						
24		1,030	1,050		1,060	1,020				984		949
25						1,020			991		958	
26	970	1,050	1,040	992	1,020			1,020	1,010	976	958	930
27		990							1,010			978
28	1,020				986	1,020	1,030	1,010		981	953	954
29				1,050						981		946
30					1,020			1,040	1,010	1,000		
31					1,020							

QUALITY OF WATER - 1999

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 kilometer 875, 21.5 river kilometers 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 - 1999

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	961	1,010		1,010	971	936	957	940	933	950	882	901
2	969	997	1,010	1,010	977	955	947	937	925	930	878	900
3	985	1,000	1,020	1,010	965	970	948	936	927	922	880	905
4	974	1,010	1,010	1,020	979	961	960	934	937	927	880	906
5	977	1,000	1,020	1,030	979	932	943	937	934	922	878	903
6	972	1,010	1,020	1,030	982	970	951	937	931	923	882	899
7	967	1,010	1,020	1,020	980	969	946	940	919	920	878	899
8	968	1,020	1,020	1,030	987	978	945	944	931	921	876	898
9	967	1,030	1,020	1,030	983	971	941	937	933	917	876	891
10	967	1,030	1,020	1,040	978	964	942	936	921	930	875	906
11	972	1,020	1,020	1,020	995	966	947	937	924	920	882	904
12	977	1,020	1,020	1,030	978	976	944	937	928	918	880	893
13	967	1,020	1,020	1,010	1,030	966	944	942	923	925	874	905
14	978	1,020	1,020	1,020	983	967	946	932	927	922	874	899
15	982	1,020	1,020	1,020	987	967	946	939	933	920	876	900
16	980	1,020	1,020	1,010	981	970	941	943	918	922	883	896
17	979	1,030	1,020	1,010	980	979	970	938	929	919	873	904
18	977	1,030	1,020	1,010	978	970	958	941	914	930	872	896
19	985	968	1,020	1,010	986	971	960	936	920	914	873	893
20	977	1,030	1,020	1,010	993	972	943	924	915	920	881	898
21	985	1,030	1,020	1,010	972	942	946	935	925	923	881	904
22	986	1,010	1,020	1,010	994	969	941	933	924	924	880	906
23	987	1,030	1,020	1,030	991	969	945	912	911	913	872	894
24	986	1,020	1,020	1,030	986	972	943	930	929	919	876	898
25	985	1,030	1,020	1,030	994	969	944	932	922	920	877	901
26	979	1,010	1,020	1,030	980	961	973	929	926	917	872	907
27	982	1,020	1,010	1,030	982	963	963	935	931	921	873	902
28	983	1,010	1,020	1,030	997	984	937	933	926	939	882	898
29	989		1,020	1,030	978	972	944	932	926	921	877	898
30	990		1,020	1,020	991	970	948	936	925	926	881	900
31	986		1,020		981		946	931		923		908

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

LOCATION: Gaging station at river kilometer 741, 57.8 river kilometers 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 - 1999

January	March	May	July	September	November
20 980	3 1,090	5 1,050	8 761	2 627	4 766
	17 1,040	19 812		14 724	17 807
February	April	June	August	October	December
3 1,020	7 1,050	2 978	4 790	6 761	1 818
17 1,060	21 1,040	22 322	18 998	20 737	15 867

QUALITY OF WATER - 1999

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 kilometer 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 Natural Resource Conservation Commission. Additional water quality parameters, including heavy metals, nutrients, pesticides, and biological indices, available from U. S. Geological Survey through September 1986.

1999	Time	Streamflow Momentary	Specific Conductance Micro-siemens /cm	pH	Water Temper- ature Deg C	Hardness, Total (as CaCO ₃) mg/L	Hardness, Noncarbonate (as CaCO ₃) mg/L	Calcium ion (Ca), Dissolved mg/L	Magnesium ion (Mg), Dissolved mg/L
Date	Standard	CMS	Units						
Jan. 13	1030	14.2	1,150	8.1	15.0	310	190	63	24
Feb. 12	1030	30.0	1,100	7.4	16.0	310	180	84	23
Mar. 10	1400	36.2	1,090	7.8	24.5	270	150	78	21
Apr. 8	1130	128	1,050	8.1	24.5	200	150	79	21
Apr. 27	1340	140	1,080	8.0	25.5	260	130	71	20
May 20	0900	95.2	925	7.9	27.0	260	130	73	18
June 10	0920	38.8	1,100	7.8	28.0	260	150	67	21
July 20	1140	24.4	768	8.1	29.5	210	89	61	24
Aug. 18	0820	30.0	840	7.7	26.5	250	140	75	16
Aug. 24	1800	323	600	7.9	26.0	180	95	53	11
Sept. 22	0930	42.5	810	8.1	27.5	220	91	64	16
Oct. 26	1030	40.8	905	8.2	20.0	240	110	69	15
Nov. 23	1420	34.8	870	7.6	22.5	230	110	63	17
Dec. 16	0945	31.2	930	8.0	12.0	250	120	69	18

1999	Sodium ion (Na), Dissolved	Sodium Adsorption Ratio(SAR)	Potassium ion (K) Dissolved	Alkalinity Total (as CaCO ₃) mg/L	Sulfate ion (SO ₄) Dissolved mg/L	Chloride ion (Cl), Dissolved mg/L	Silica (SiO ₂) Dissolved mg/L	Solids Dissolved (Calculated) mg/L
Date	mg/L		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Jan. 13	117	3	3.8	115	230	150	1.3	686
Feb. 12	112	3	4.1	127	220	150	3.0	671
Mar. 10	115	3	4.3	120	200	140	4.2	636
Apr. 8	109	3	4.5	137	180	130	12.0	625
Apr. 27	108	3	4.5	130	190	140	11.0	627
May 20	95	3	4.4	124	190	110	11.0	533
June 10	110	3	4.8	109	200	140	6.3	617
July 20	64	2	3.0	122	170	81	11.0	431
Aug. 18	78	2	4.0	111	150	99	14.0	505
Aug. 24	55	2	3.1	84	110	65	11.0	364
Sept. 22	66	2	2.5	122	130	85	13.0	456
Oct. 26	70	2	3.2	#	130	88	0.35	453
Nov. 23	79	2	3.4	119	160	100	6.7	501
Dec. 16	91	3	3.8	#	170	110	2.6	562

= Missing Data

QUALITY OF WATER - 1999

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

SUSPENDED SILT - 1999

Month	Monthly Weight Megagrams		Number of Samples	Gravimetric Percentages			Silt Volume Thousand Cubic Meters**
	Water	Silt		Composite Sample*	Maximum Sample*	Minimum Sample*	
Jan.	44,185,000	751	31	0.0017	0.0048	0.0044	0.7
Feb.	66,329,000	1,460	28	0.0022	0.0016	0.0023	1.4
Mar.	207,230,000	26,730	31	0.0129	0.0319	0.0060	25.1
April	259,978,000	22,360	30	0.0084	0.0126	0.0079	20.9
May	136,011,000	20,810	31	0.0153	0.0109	0.0105	19.5
June	260,712,000	92,290	30	0.0354	0.1673	0.0056	86.4
July	170,070,000	10,710	31	0.0063	0.0174	0.0057	10.0
Aug.	241,307,000	128,860	31	0.0534	0.0749	0.0061	121.0
Sept.	113,996,000	1,370	30	0.0012	0.0087	0.0022	1.3
Oct.	99,619,000	3,390	31	0.0034	0.0185	0.0032	3.2
Nov.	85,113,000	1,620	30	0.0019	0.0008	0.0031	1.5
Dec.	78,054,000	1,480	31	0.0019	0.0012	0.0013	1.4
Year	1,762,604,000	311,831	365				292.4

* Represents the gravimetric percentages at the maximum flow and minimum flow of the month

** Volume calculated at 1.068 megagrams per cubic meter

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROSIEMENS/CM @ 25 DEG C - 1999

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,080	1,130	1,090	973	1,010	792	773	804	556	697	735	807
2	1,150	1,120	1,070	1,010	1,040	825	802	816	503	739	718	786
3	1,150	1,070	1,020	1,070	1,070	766	751	830	520	740	725	713
4	1,140	1,100	1,070	1,020	1,070	968	744	805	555	788	753	677
5	1,120	1,080	1,020	1,020	1,070	1,010	745	774	516	748	741	758
6	1,060	1,090	1,080	992	1,090	1,050	752	770	523	662	756	784
7	1,120	1,110	1,070	1,030	1,190	1,030	721	754	549	727	761	785
8	1,110	1,080	1,060	1,040	1,050	1,030	762	772	581	696	731	791
9	1,110	1,100	1,090	1,040	1,080	1,030	779	747	583	765	770	815
10	1,080	1,110	1,070	1,070	1,040	1,030	749	720	644	741	713	797
11	1,090	1,100	1,100	934	1,070	1,030	744	715	525	688	748	821
12	1,070	1,060	1,070	1,020	1,050	1,040	660	757	633	694	767	822
13	1,060	1,070	1,110	1,050	1,030	1,020	509	744	655	685	778	825
14	1,060	1,040	1,080	1,020	880	947	598	774	642	699	745	819
15	1,020	1,080	1,090	1,060	778	762	689	724	644	682	731	836
16	1,090	1,020	1,090	1,020	751	724	753	756	581	713	770	852
17	1,080	1,060	1,090	1,070	727	657	763	791	616	699	782	849
18	1,080	990	1,090	1,040	703	900	769	792	654	666	792	832
19	1,070	1,080	1,100	1,010	751	797	755	788	689	634	804	830
20	1,080	1,060	1,050	1,060	879	744	708	788	591	737	746	728
21	1,080	1,080	1,040	1,090	938	858	704	794	615	779	798	804
22	1,080	1,080	1,070	1,020	975	861	714	778	660	674	798	822
23	1,070	1,080	1,070	1,050	965	514	732	779	682	689	786	813
24	1,090	1,090	1,060	992	853	358	743	688	666	769	807	882
25	1,090	1,060	1,060	1,030	800	575	753	405	715	711	807	884
26	1,100	1,080	1,050	1,060	884	690	776	354	682	745	817	876
27	1,070	1,100	1,030	1,070	965	706	774	353	685	710	826	880
28	1,080	1,100	994	1,030	691	743	779	369	691	744	841	880
29	1,080	951	884	579	750	786	523	712	761	846	868	
30	1,090	1,060	935	664	769	797	612	695	783	849	890	
31	1,090	1,000		723			808	565	682			889

QUALITY OF WATER - 1999

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

LOCATION: Chemical and specific conductance samples from Falcon Reservoir at Falcon Dam, river kilometer 442.3, and biochemical sampling at the Chapeno gaging station 4.1 river kilometers 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 U.S. Geological Survey at Falcon Dam Power Plant tailrace; biochemical analyses, collected and analyzed by the International Boundary and Water Commission and the Texas Natural Resource Conservation Commission.

		Streamflow Time	Specific Conductance Micro- siemens /cm		Water Temper- ature	Hardness, Total (as CaCO ₃)	Hardness, (Noncarbonate (as CaCO ₃)	Calcium ion (Ca), Dissolved	Magnesium ion (Mg), Dissolved
1999	Date	Standard CMS	/cm	Units	Deg C	mg/L	mg/L	mg/L	mg/L
	Jan. 12	1630	26.0	970	8.1	15.0	250	130	70
	May 13	1740	43.3	1,040	7.8	28.0	260	160	69
	June 29	0830	40.2	943	7.7	28.0	220	130	59
	July 21	0930	12.0	871	7.8	27.5	210	110	55
	Aug. 17	1620	60.0	670	7.5	29.5	220	110	61
	Nov. 22	0820	30.0	762	7.2	21.5	200	82	55

		Sodium ion (Na), Dissolved	Sodium Adsorption Ratio(SAR)	Potassium ion (K) Dissolved	Alkalinity Total (as CaCO ₃)	Sulfate ion (SO ₄) Dissolved	Chloride ion (Cl), Dissolved	Silica (SiO ₂) Dissolved	Solids Dissolved (Calculated)
1999	Date	mg/L		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	Jan. 12	91	3	5.6	122	170	120	8.9	558
	May 13	115	3	5.0	106	200	140	11.0	626
	June 29	95	3	5.3	92	180	120	8.5	541
	July 21	87	3	4.8	97	140	110	9.3	694
	Aug. 17	84	2	5.1	106	160	110	11.0	506
	Nov. 22	67	2	4.9	116	130	87	10.0	437

		Chapeno	Stream- flow, Moemen- tary	Specific Conduct- ance, Micro- siemens /cm	Water Temper- ature, pH	Oxygen, Dis- solved (DO)	Coli- form, Bio- form, (BBO)	Oxygen, Demand, Fecal Coli./ (BBO)	Sulfate ion (SO ₄), Total (as CaCO ₃)	Chloride ion (Cl), Total (as CaCO ₃)	Solids Dissolved at 180 Deg C)
1999	Date	Std. Time	CMS	/cm	Units	Deg C	mg/L	100 mL	mg/L	mg/L	mg/L

No Samples collected for 1999

QUALITY OF WATER - 1999

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

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROSIEMENS/CM @ 25 DEG C - 1999

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	950	980							838	728	739	709
2												
3		970	1,030	1,060	1,030	1,060	899	859	774	729	730	715
4	950		1,020	1,060	1,040	1,020		853				
5		1,000					908				749	
6	950							858	738	734		717
7												
8	960	1,020	1,030	1,060	1,020	1,050	883		750	732	735	706
9								858	740			
10		1,010	1,030	1,050	1,040		863				731	715
11	950					1,040		865		740		
12											737	
13	950	1,010	1,030	1,040	1,040		883	861	737	732		718
14			1,080					850				
15	930	1,010	1,050	1,040	1,040	1,030			733	731	733	716
16												
17		1,020	1,060	1,050	1,040	1,030	857	853	747		732	730
18	960							862		732		
19		1,020	1,060	1,050	1,040		849				743	
20	930							848		755		724
21												
22	960	1,020	1,060	1,040	1,050	1,030	860		733			
23			1,030						739	727	681	722
24		1,020	1,080		1,050		989	851	851	700		705
25	950					1,010		850		733		736
26											710	
27	980	1,030	1,070	984	1,050		860	837	725	775		733
28								858				
29	970			1,060	1,050	1,050	934			733	729	713
30					1,050		933	852	849			
31				1,060		1,070						713

08-4645.00 RANCHERIAS DRAIN NEAR CAMARGO, TAMAULIPAS

LOCATION: At a point about 600 meters from the confluence with the Rio Grande, which is located at river kilometer 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 - 1999

January	March	May	July	September	November
February 2 6,280	April	4 5,590 4 6,390 15 6,400	2 6,690	October 4 4,560	December

QUALITY OF WATER - 1999

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

LOCATION: Gaging station at river kilometer 378, 6.0 river kilometers 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.

1999	Time	Streamflow Momentary	Specific Conductance Micro-siemens /cm	pH	Water Temperature, Degree (as CaCO ₃)	Hardness, mg/L	Hardness, (Noncarbonate ion (Ca), (as CaCO ₃)	Calcium Dissolved mg/L	Magnesium ion (Mg), Dissolved mg/L
Date	Standard	CMS	Units	Deg C	mg/L	mg/L	mg/L	mg/L	mg/L
Jan. 20	0915	33.1	1,020	8.0	19.0	330	200	90	25
Feb. 18	0900	45.9	1,050	7.7	20.0	270	160	76	21
Mar. 23	0930	104	1,060	7.9	22.0	280	190	77	21
Apr. 27	0838	255	1,030	8.0	22.0	270	170	73	21
May 19	0920	70.0	1,100	7.2	23.0	250	140	66	21
June 22	0855	30.0	1,100	7.3	29.0	220	120	60	20
July 20	0850	25.8	1,010	7.8	29.0	270	180	68	23
Aug. 25	0923	7.42	1,270	7.7	29.0	250	150	66	20
Sept. 21	1030	28.0	825	8.1	28.0	200	98	53	16
Oct. 19	0845	39.9	810	7.5	21.0	170	82	50	12
Nov. 9	0845	48.7	1,220	7.8	22.0	210	81	58	15
Dec. 8	0858	24.9	880	7.8	17.4	210	130	59	16

1999	Sodium Ion (Na), Dissolved	Sodium Adsorption Ratio(SAR)	Potassium Ion (K) Dissolved	Alkalinity (as CaCO ₃)	Total Sulfate Ion (SO ₄) Dissolved	Chloride Ion (Cl), Dissolved	Silica (SiO ₂) Dissolved	Solids Dissolved (Calculated)
Date	mg/L		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Jan. 20	161	4	6.1	130	240	200	6.5	810
Feb. 18	109	3	6.7	110	190	140	20.0	631
Mar. 23	105	3	6.2	130	220	140	9.6	627
Apr. 27	110	3	5.3	98	180	130	5.8	534
May 19	121	3	5.1	110	200	150	10.0	638
June 22	119	3	5.9	110	200	150	10.0	612
July 20	152	4	5.3	88	250	190	12.0	755
Aug. 25	102	6	5.9	100	210	190	13.0	712
Sept. 21	85	3	5.8	100	140	100	10.0	480
Oct. 19	82	3	5.0	87	120	100	10.0	663
Nov. 9	71	2	4.9	120	130	92	10.0	456
Dec. 8	82	2		86	140	100	8.9	467

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROSIEMENS/CM & 25 DEG C - 1999

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,120	1,140	1,140						952	866	821	805
2				1,170		1,140	1,010	940	893		834	791
3			1,130	1,140						827		
4	1,110				1,140		1,160	969		818		
5		1,140	1,150	1,240	1,160							
6	1,100							960	993	813		791
7												
8	1,160	1,140	1,210	1,100	1,140	1,140	1,050		898	824	809	795
9										1,020		
10		1,130	1,130			1,120	1,270	916		822		787
11	1,230					1,100			927		803	
12							1,150				808	
13	1,160	1,130	1,180	1,140	1,110			923	1,080	799		814
14					1,160	1,110	1,100	1,110				
15	1,110	1,160	1,150						1,060	795	794	812
16						1,240		1,060	901			
17		1,230	1,360			1,160		1,040		800		814
18	1,100	1,230	1,150	1,100	1,160		1,140	918		776		
19								1,150	911	847	799	
20	1,090								791			812
21						1,100	1,160	994				
22	1,100	1,180	1,160			1,120			855	783	803	796
23							1,170	1,080	929		820	
24		1,190				1,230				1,020		
25	1,120						1,380		1,270	836		
26		1,140	1,170	1,070	1,180			959			851	
27	1,100								1,260	870		866
28												
29	1,110								861	812	853	832
30								973	926			
31								1,170				826

QUALITY OF WATER - 1999

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

LOCATION: Puertecitos Drain, is located at a point about 2,600 meters from the confluence with the Rio Grande, which is located at river kilometer 353; and, Los Indios Drain, at a point about 650 meters from its confluence with Puertecitos Drain. These two drains join at a point about 1,300 meters 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 - 1999

1999 Date	Puerte- citos Drain	Los Indios Drain									
Feb. 2	2,770		Apr. 16	2,920							
May 4	3,540		May 06	2,660							

No samples for Los Indios Drain for 1999.

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

LOCATION: Gaging station at river kilometer 329, 54.7 river kilometers 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.

1999 Date	Time Standard	Streamflow Momentary CMS	Specific Conductance Micro- siemens/ cm	pH	Water Temper- ature Deg C	Hardness, Total (as CaCO ₃) mg/L	Hardness, Noncarbonate (as CaCO ₃) mg/L	Calcium ion (Ca), Dissolved mg/L	Magnesium ion (Mg), Dissolved mg/L
Jan. 20	1200	7.36	1,040	8.3	19.0	1,200	1,100	280	127
Mar. 16	1400	51.2	1,070	8.1	20.0	270	150	75	20
May 18	1115	129	1,040	7.6	27.0	250	150	65	21
July 26	1145	11.6	1,110	8.0	30.0	240	160	62	21
Sept. 21	1115	9.12	939	8.2	28.8	200	130	50	18
Oct. 20	1135	54.7	660	7.7	30.0	160	73	48	10
Dec. 14	1045	13.6	910	7.9	16.3	230	120	64	17

1999 Date	Sodium ion (Na), Dissolved mg/L	Sodium Adsorption Ratio(SAR)	Potassium ion (K) Dissolved mg/L	Alkalinity Total (as CaCO ₃) mg/L	Sulfate ion (SO ₄) Dissolved mg/L	Chloride ion (Cl), Dissolved mg/L	Silica (SiO ₂) Dissolved mg/L	Solids Dissolved (Calculated) mg/L
Jan. 20	1,560	19	8.1	120	1,800	1,600	17.0	5,410
Mar. 16	105	3	5.9	120	190	140	5.6	617
May 18	113	3	4.8	94	190	140	9.8	597
July 26	123	3	5.5	85	210	160	12.0	637
Sept. 21	106	3	5.7	78	180	130	11.0	546
Oct. 20	60	2	4.9	88	110	73	9.9	366
Dec. 14	92	3	5.3	110	160	120	9.3	531

QUALITY OF WATER - 1999

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

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROSIEMENS/CM @ 25 DEG C - 1999

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,190	1,180	1,120	1,140	1,050	1,050	1,040	1,510	970	900	1,010	940
2	1,190	1,160	1,120	1,120	928	1,060	1,030	890	950	890	1,010	950
3	1,150	1,150	1,110	1,170	1,030	1,080	1,060	880	970	890	1,030	970
4	1,260	1,160	1,140	1,160	1,040	1,070	1,100	860	140	890	1,020	880
5	1,180	1,140	1,120	1,190	1,040	1,080	1,060	870	970	900	970	910
6	1,200	1,160	1,140	1,160	1,040	1,070	1,060	900	960	900	1,030	910
7	1,190	1,100	1,120	1,080	1,050	1,080	1,030	880	970	890	1,020	900
8	1,180	1,100	1,130	1,070	1,040	1,060	1,040	880	150	900	1,030	930
9	1,180	1,130	1,110	1,100	1,030	1,070	1,060	890	960	890	1,030	950
10	1,190	1,110	1,120	1,100	1,030	1,140	1,060	890	970	900	1,020	950
11	1,180	1,110	1,120	1,100	1,040	1,080	1,060	870	940	890	1,010	920
12	1,210	1,100	1,120	1,100	1,040	1,070	1,070	890	970	890	1,070	900
13	1,250	1,070	1,130	1,110	1,040	1,080	1,050	900	940	890	1,040	910
14	1,270	1,080	1,110	1,170	1,060	1,080	1,030	880	130	900	1,040	950
15	1,180	1,100	1,140	1,100	1,040	1,070	1,060	880	960	900	1,020	950
16	1,200	1,090	1,110	1,170	1,040	1,150	1,060	890	960	900	1,020	890
17	1,180	1,060	1,110	1,170	1,060	1,120	1,060	890	980	900	1,040	900
18	1,260	1,060	1,120	1,170	1,040	1,080	1,060	880	170	890	1,040	960
19	1,180	1,060	1,120	1,170	1,030	1,070	1,060	890	150	900	1,040	910
20	1,210	1,060	1,130	1,170	1,040	1,080	1,040	870	140	890	1,020	960
21	1,140	1,060	1,120	1,180	1,040	1,080	1,060	890	120	900	1,040	910
22	1,180	1,100	1,110	1,180	1,040	1,110	1,030	880	150	890	1,060	910
23	1,120	1,070	1,120	1,180	1,040	1,070	1,060	880	950	890	1,060	930
24	1,180	1,080	1,130	1,180	1,040	1,070	1,030	890	130	900	1,070	910
25	1,180	1,070	1,070	1,180	1,040	1,070	1,090	880	940	890	1,030	900
26	1,110	1,100	1,130	1,180	1,030	1,160	1,050	900	940	900	1,030	920
27	1,120	1,060	1,120	1,100	1,050	1,070	1,040	910	140	890	1,030	910
28	1,110	1,090	1,120	1,110	1,040	1,100	1,040	880	120	890	1,050	930
29	1,120	1,060	1,100	1,110	1,030	1,090	1,030	900	130	900	1,030	890
30	1,120	1,090	1,090	1,160	1,040	1,150	1,040	890	980	890	1,030	910
31	1,130		1,260	1,160	1,060	1,120	1,030	890	900			910

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 kilometer 300, 26.2 river kilometers 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 - 1999

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,170	1,070	1,120		1,080	1,130	1,280		1,090	960	890	1,000
2		1,110	1,190			1,170	1,070	850	1,580		900	890
3	1,320	1,100	1,110	1,190	1,070			830				
4												
5												
6	1,120							850	1,170	1,050		810
7												
8	1,090	1,100	1,140	1,230	1,070	1,090	1,020		1,010	860	850	830
9								870			800	840
10									1,090			
11	1,080									890		
12												
13	1,190	1,080	1,110	1,160	1,050	1,100	1,130	870	1,000	890	840	860
14												
15	1,270	1,070	1,110		1,070	1,080	1,210		1,040	870	820	900
16												
17												
18	1,170	1,110	1,110	1,080	1,060	1,010	1,280	860	1,390		810	900
19										840		810
20	1,070								1,610	830		840
21												
22	1,080	1,120	1,100	1,070	1,080	1,190	1,280	860	1,370	810	790	810
23												
24		1,090	1,090	1,070	1,160	1,320	1,170		980		820	800
25	1,050									870		
26												
27	1,020				1,080	1,080	1,260			900	930	
28												
29	1,030				1,070	1,170	1,200	1,170		950	920	910
30												
31					1,090	1,090	1,220	1,170	920			900

QUALITY OF WATER - 1999

08-4678.00 MORILLO DRAIN NEAR ANZALDUAS DAM

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

1999 Date	Time Standard	Streamflow Momentary CMS	Specific Conductance Micro- siemens /cm	pH	Water Temper- ature Deg C	Hardness, Total (as CaCO ₃) mg/L	Hardness, Noncarbonate (as CaCO ₃) mg/L	Calcium Ion (Ca), Dissolved mg/L	Magnesium Ion (Mg), Dissolved mg/L
Jan. 20	1055	1.13	2,380	8.3	21.0	270	52	76	20
Feb. 26	1040	0.99	7,700	7.8	23.0	1,200	940	270	120
Mar. 16	1035	0.99	6,650	8.1	19.0	1,000	830	240	101
Apr. 15	1108	0.99	6,650	7.9	26.0	1,200	940	250	114
May 18	0940	0.99	5,510	7.8	26.0	740	500	160	80
June 22	1145	0.99	8,790	7.9	30.0	1,300	1,100	200	130
July 26	1015	1.13	8,260	7.8	29.0	760	590	260	27
Aug. 24	1055	0.93	6,730	7.9	28.0	1,000	890	230	112
Sept. 21	0945	0.99	6,140	8.2	26.8	640	650	280	32
Oct. 20	1350	0.99	1,290	7.9	19.0	440	66	40	9.7
Nov. 15	1030	0.99	7,300	8.0	21.0	1,100	930	240	121
Dec. 14	1300	0.99	7,910	8.4	16.0	1,200	990	250	125

1999 Date	Sodium ion (Na), Dissolved mg/L	Sodium Adsorption Ratio(SAR)	Potassium ion (K) Dissolved mg/L	Alkalinity Total (as CaCO ₃) mg/L	Sulfate ion (SO ₄) Dissolved mg/L	Chloride ion (Cl), Dissolved mg/L	Silica (SiO ₂) Dissolved mg/L	Solids Dissolved (Calculated) mg/L
Jan. 20	106	3	5.8	210	190	130	5.9	661
Feb. 26	1,450	19	7.5	220	1,800	1,600	6.5	5,390
Mar. 16	1,110	15	11.0	180	1,400	1,300	19	4,340
Apr. 15	1,140	14	9.9	250	1,500	1,200	25	4,400
May 18	845	14	6.5	130	1,100	980	17	3,300
June 22	1,360	16	8.0	190	1,900	1,500	26	5,270
July 26	1,400	22	8.3	170	2,000	1,600	28	5,460
Aug. 24	1,190	16	7.1	150	1,700	1,400	26	4,810
Sept. 21	1,500	22	6.9	190	2,200	1,500	29	5,720
Oct. 20	180	7	5.9	75	190	210	11	701
Nov. 15	1,210	17	6.7	160	1,900	1,400	17	5,060
Dec. 14	1,420	20	6.1	170	2,100	1,500	18	5,530

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROSIEMENS/CM @ 25 DEG C - 1999

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1		8,510	8,500			8,720	8,760		7,890	8,440	5,320	
2		8,390				9,070	8,370	6,610	7,910			7,370
3		8,260	7,730		7,060	8,990		3,900	7,400		5,870	7,320
4	7,840	7,960	6,180	4,340	6,380	9,200	8,500	5,140	5,080	5,830	5,930	
5	7,910							7,070	4,370			
6	7,960			6,840	7,710		8,460	8,560	4,860	4,210		5,770
7	8,030			7,000	8,530	8,790	8,920		3,840			
8	8,040	8,330	8,370	7,270	7,120	6,200	8,800	4,590	4,720	6,200	7,090	
9		8,650	8,300			8,620	8,630	8,110	6,000	6,140	6,160	7,360
10		8,400	8,260		7,770	8,720		4,830	7,650	4,840	7,320	
11	7,760	8,340	8,290		8,690	8,710		4,310		6,720	6,780	
12	7,830	8,050	8,420	7,230	8,650	8,310	5,140	6,630		6,630	6,840	
13	8,180			7,310	8,830	7,760	8,770	9,080	6,950			7,190
14	7,940			7,300	8,730	6,750	8,560	7,300	7,580	7,100	7,720	
15	7,480		8,200	4,270	7,210	8,690	8,940	8,030	7,100	7,100	7,360	
16		7,980	7,110	7,080		8,820	8,840	3,730	8,350	7,130	7,120	
17		8,530	5,800		6,980	9,430	4,860	8,670		7,100	7,520	
18	8,230		5,700		5,680	8,340		6,870		5,990	7,130	
19	8,230	8,360	5,910	7,590	7,610		7,710	7,080	5,560	6,670		
20	8,170			7,580	8,710		8,170	6,980	9,180	1,420	7,530	
21	8,200			8,000	7,780	8,210	9,400		8,620	1,550		7,500
22		8,380	5,390		8,410	8,810		8,130	1,770	5,020	7,450	
23		8,260	5,100	7,380		8,420	7,880	8,340		5,470	7,160	
24		7,920	5,000		8,750	8,450		5,960	8,060	7,630	5,150	
25	8,220	7,900	4,330		8,360	8,560		6,360		2,560	5,380	
26	8,280			2,200	6,240	8,400	8,360	5,960		3,590	6,940	
27	8,830			5,120	8,110		8,120	6,980	7,190	4,320	7,480	
28	8,810			7,590	8,030		8,250		8,370	4,630	8,050	
29	8,720			1,320	8,180	9,100	8,520	9,530	4,820	6,780	7,710	
30			1,890	4,190		8,940	8,510	7,070	9,160	6,840	7,510	
31			3,130		8,770			7,570				7,510

QUALITY OF WATER - 1999

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

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

1999 Date	Time Standard	Streamflow Momentary CMS	Specific Conductance: Micro- siemens/ cm	pH Units	Water Temper- ature Deg C	Hardness, Total (as CaCO ₃) mg/L	Hardness, Noncarbonate (as CaCO ₃) mg/L	Calcium ion (Ca), Dissolved mg/L	Magnesium ion (Mg), Dissolved mg/L
Jan. 20	1025	23.5	1,380	8.2	19.0	260	130	73	19
Mar. 16	1010	52.4	1,150	8.3	22.0	280	160	76	21
May 18	1000	80.1	1,060	8.0	27.5	250	150	67	21
July 26	1040	19.5	1,310	8.0	30.0	220	130	59	18
Aug. 24	1125	13.0	900	7.8	27.0	220	130	60	20
Sept. 21	1010	20.3	1,100	8.0	29.5	240	170	63	21
Oct. 26	1150	27.4	740	7.8	22.0	190	95	55	12
Dec. 24	1320	25.2	880	8.4	18.0	230	130	63	17

1999 Date	Sodium ion (Na), Dissolved mg/L	Sodium Adsorption Ratio(SAR)	Potassium ion (K) Dissolved mg/L	Alkalinity Total (as CaCO ₃) mg/L	Sulfate ion (SO ₄) Dissolved mg/L	Chloride ion (Cl), Dissolved mg/L	Silica (SiO ₂) Dissolved mg/L	Solids Dissolved (Calculated) mg/L
Jan. 20	101	3	6.0	130	180	130	7.1	593
Mar. 16	116	3	5.9	120	210	150	5.9	660
May 18	117	3	4.8	100	200	150	10.0	629
July 26	108	3	5.6	92	180	140	9.3	575
Aug. 24	92	3	5.1	95	160	120	12.0	524
Sept. 21	122	3	5.9	78	200	150	13.0	628
Oct. 26	73	2	4.7	93	110	93	13.0	422
Dec. 24	88	3	5.0	100	160	110	9.9	518

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROSIEMENS/CM @ 25 DEG C - 1999

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,250	1,100	1,110	1,120	1,060	1,240	1,300	1,110	980	960	970	880
2	1,180	1,130	1,140	1,020	1,070	1,260	1,420	1,050	1,010	980	960	940
3	1,220	1,160	1,160	989	1,060	1,260	1,590	970	1,020	980	940	960
4	1,240	1,190	1,220	1,080	1,210	1,430	900	1,060	990	990	910	1,000
5	1,430	1,200	1,200	1,090	1,070	1,220	1,250	880	1,090	920	930	1,020
6	1,370	1,160	1,190	1,170	1,070	1,240	1,170	900	1,140	890	920	940
7	1,370	1,140	1,120	1,250	1,080	1,060	930	1,270	920	890	920	920
8	1,390	1,110	1,130	1,380	1,090	1,140	1,090	920	1,420	970	970	890
9	1,450	1,110	1,110	1,240	1,080	1,130	1,100	930	1,140	1,550	940	850
10	1,320	1,130	1,140	1,220	1,100	1,120	1,090	920	1,410	950	890	870
11	1,280	1,190	1,180	1,290	1,100	1,120	1,120	890	1,370	920	900	860
12	1,210	1,150	1,240	1,090	1,130	1,140	880	1,300	890	870	870	870
13	1,260	1,120	1,130	1,170	1,140	1,120	1,140	910	1,240	920	830	860
14	1,180	1,140	1,180	1,140	1,110	1,080	1,140	920	1,170	910	810	860
15	1,180	1,120	1,160	1,100	1,080	1,080	1,150	930	1,150	930	780	840
16	1,200	1,100	1,160	1,080	1,040	1,100	1,150	870	1,140	930	810	900
17	1,280	1,090	1,130	1,080	1,100	1,110	1,220	870	1,150	910	760	930
18	1,310	1,070	1,140	1,070	1,010	1,110	1,310	870	1,170	900	800	950
19	1,340	1,110	1,110	1,060	1,110	1,110	1,350	880	1,150	900	790	940
20	1,370	1,180	1,120	1,070	1,100	1,140	1,350	880	1,130	900	790	930
21	1,250	1,190	1,140	1,060	1,100	1,080	1,520	880	1,170	960	780	900
22	1,200	1,210	1,130	1,070	1,130	1,160	1,600	960	1,170	830	820	850
23	1,170	1,170	1,130	1,080	1,150	1,150	1,560	980	1,290	840	810	860
24	1,130	1,160	1,150	1,060	1,200	1,260	1,470	980	1,460	860	810	800
25		1,140	1,130	1,080	1,250	1,280	1,400	890	1,640	840	850	830
26	1,110	1,130	1,080	1,090	1,290	1,270	1,330	890	1,730	820	830	820
27	1,060	1,120	1,080	1,070	1,460	1,330	1,250	930	1,550	770	840	820
28	1,080	1,100	1,070	1,080		1,360	1,250	970	1,270	900	850	830
29			1,080	1,070		1,250	1,300	960	1,000	900	820	840
30	1,180		1,040	1,070		1,200	1,260	970	930	850	880	890
31	1,120		988				1,310	980	900			890

QUALITY OF WATER - 1999

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

LOCATION: At river kilometer 190, 84.6 river kilometers downstream from Anzalduas Dam.

RECORDS: Specific conductance, 1965 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 - 1999

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,410	1,210	1,220	1,200	1,060	1,340	1,510	1,340	1,480	1,750	990	940
2	1,430	1,190	1,210	1,170	1,090	1,350	1,420	1,270	1,520	1,470	1,000	910
3	1,330	1,160	1,210	1,300	1,070	1,330	1,300	1,180	1,440	1,210	960	900
4	1,370	1,160	1,200	1,410	1,060	1,320	1,420	1,080	1,400	1,170	980	940
5	1,320	1,190	1,220	1,430	1,070	1,330	1,450	980	1,250	1,160	1,040	930
6	1,320	1,280	1,250	1,310	1,060	1,300	1,580	960	1,260	1,150	1,150	1,040
7	1,400	1,240	1,260	1,310	1,080	1,280	1,390	950	1,240	1,180	1,000	1,080
8	1,460	1,270	1,290	1,380	1,070	1,260	1,320	950	1,230	1,100	1,000	1,070
9	1,540	1,220	1,250	1,470	1,080	1,230	1,300	960	1,240	1,020	1,010	1,070
10	1,550	1,160	1,190	1,530	1,070	1,170	1,280	1,000	1,300	1,030	960	1,030
11	1,520	1,150	1,200	1,620	1,120	1,180	1,210	980	1,370	1,030	980	990
12	1,530	1,170	1,180	1,640	1,070	1,130	1,240	980	1,500	1,140	960	1,010
13	1,550	1,220	1,230	1,780	1,100	1,150	1,400	960	1,690	1,240	910	980
14	1,540	1,190	1,240	1,890	1,080	1,140	1,420	930	1,780	1,180	910	990
15	1,460	1,190	1,260	1,870	1,090	1,110	1,460	940	1,810	1,040	890	980
16	1,460	1,200	1,210	1,710	1,100	1,100	1,430	950	1,750	1,030	870	930
17	1,410	1,210	1,220	1,660	1,090	1,090	1,450	960	1,710	1,020	870	960
18	1,420	1,190	1,270	1,440	1,100	1,120	1,400	920	1,730	970	860	940
19	1,390	1,190	1,230	1,370	1,080	1,180	1,490	910	1,730	980	850	980
20	1,290	1,170	1,190	1,240	1,080	1,170	1,490	920	1,670	970	850	990
21	1,430	1,190	1,180	1,140	1,090	1,170	1,390	940	1,610	1,000	840	1,000
22	1,380	1,280	1,180	1,130	1,130	1,240	1,480	950	1,780	1,060	840	990
23	1,430	1,240	1,180	1,120	1,240	1,240	1,550	920	1,540	1,020	850	970
24	1,300	1,250	1,200	1,100	1,180	1,190	1,570	900	1,550	1,090	860	970
25	1,240	1,260	1,240	1,120	1,220	1,240	1,680	870	1,410	1,100	890	970
26	1,250	1,250	1,220	1,170	1,240	1,270	1,770	920	1,380	1,000	930	980
27	1,190	1,230	1,220	1,090	1,260	1,360	1,800	960	1,360	960	930	960
28	1,210	1,230	1,160	1,100	1,300	1,390	1,690	1,090	1,400	960	1,040	940
29	1,190	1,120	1,090	1,300	1,450	1,590	1,150	1,690	950	1,020	930	920
30	1,230	1,140	1,080	1,400	1,440	1,440	1,520	1,150	1,770	960	980	920
31	1,180	1,140	1,140	1,430	1,370	1,270	1,370	920	1,100	920	930	930

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

LOCATION: Gaging station at river kilometer 78.3, 0.3 river kilometer downstream from El Jardin pumping plant and 11.2 river kilometers downstream from the international highway bridge between Brownsville, Texas and Matamoros, Tamaulipas.

RECORDS: Chemical and biochemical analyses, October 1967 through January 1968 and October 1976 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.

1999	Time	Streamflow Momentary	Specific Conductance Micro- siemens /cm	pH	Water Temper- ature	Hardness, Total (as CaCO ₃)	Hardness, Noncarbonate (as CaCO ₃)	Calcium ion (Ca), Dissolved	Magnesium ion (Mg), Dissolved
Date	Standard	CMS	Units	Deg C	mg/L	mg/L	mg/L	mg/L	mg/L
Jan. 19	1520	0.04	1,840	8.2	21.5	420	240	110	33
Mar. 27	1650	0.42	1,420	8.3	21.0	360	190	99	27
May 11	1630	0.51	1,220	8.2	30.0	300	170	82	24
Aug. 24	0900	0.57	1,340	7.7	27.0	260	140	72	20
Sept. 16	1500	2.72	1,030	7.9	31.5	250	110	65	20

1999	Sodium ion (Na), Dissolved	Sodium Adsorption Ratio(SAR)	Potassium ion (K) Dissolved	Alkalinity Total (as CaCO ₃)	Sulfate ion (SO ₄) Dissolved	Chloride ion (Cl), Dissolved	Silica (SiO ₂) Dissolved	Solids Dissolved (Calculated)
Date	mg/L		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Jan. 19	202	4	6.8	178	320	280	8.9	1,070
Mar. 27	159	4	5.9	171	260	210	9.9	869
May 11	129	3	6.4	136	220	170	13.0	736
Aug. 24	112	3	6.2	119	190	140	14.0	611
Sept. 16	106	3	5.5	135	170	130	11.0	596

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RAINFALL ON THE RIO GRANDE WATERSHED

IN THE UNITED STATES

IN MILLIMETERS

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		Bill Shannon Ranch	
	1999	Average	1999	Average	1999	Average	1999	Average	1999	Average
Jan.	0	16	2	11	0	10	6	8	0	10
Feb.	0	11	0	9	2	8	0	6	0	9
Mar.	0	5	0	8	15	7	4	6	13	7
April	10	5	1	5	0	7	0	5	0	6
May	7	11	4	8	9	11	3	11	21	18
June	10	17	10	15	6	22	5	15	62	40
July	41	29	40	36	53	34	32	35	81	51
Aug.	31	60	34	39	24	40	35	42	12	61
Sept.	35	33	53	30	23	34	11	30	5	57
Oct.	43	25	6	19	0	24	8	21	0	30
Nov.	0	14	0	8	0	10	0	6	0	10
Dec.	0	22	14	14	0	12	8	10	0	11
Yearly	177	248	164	202	132	219	112	195	194	310

Month	Adobes Ranch		H. T. Fletcher Ranch		Kerr Mitchell Ranch		Shafter		Presidio (IB&WC Gage)	
	1999	Average	1999	Average	1999	Average	1999	Average	1999	Average
Jan.	0	9	0	16	0	13	0	8	0	8
Feb.	0	6	0	10	0	10	0	11	0	8
Mar.	4	4	4	8	18	5	0	7	5	4
April	0	5	0	13	3	15	0	17	0	7
May	4	15	5	28	37	33	21	28	4	15
June	1	34	143	46	145	48	89	55	21	32
July	56	49	77	75	60	54	0	65	30	41
Aug.	3	46	19	80	28	58	7	60	12	35
Sept.	2	52	7	61	22	53	27	67	2	37
Oct.	0	17	0	34	0	32	0	29	0	19
Nov.	0	6	0	11	0	9	0	10	0	8
Dec.	0	7	5	13	0	12	0	10	1	10
Yearly	70	250	260	395		342	144	367	75	224

Month	Redford		Study Butte		Terlingua Creek Station		Johnson Ranch		Owens Ranch	
	1999	Average	1999	Average	1999	Average	1999	Average	1999	Average
Jan.	0	8	0	10	0	8	0	8	0	15
Feb.	0	5	4	8	0	6	0	5	0	19
Mar.	9	4	12	6	9	3	5	3	53	22
April	0	6	12	11	3	8	5	10	5	45
May	6	15	10	27	4	18	5	22	43	57
June	20	25	73	30	17	27	60	28	52	47
July	15	40	40	41	84	34	40	30	48	34
Aug.	8	33	21	41	12	31	8	25	31	55
Sept.	5	43	17	34	0	32	5	34	0	63
Oct.	0	18	0	23	0	18	0	18	5	49
Nov.	0	8	0	8	0	5	0	5	8	26
Dec.	1	7	0	6	0	6	0	8	5	17
Yearly	64	212	189	245	129	196	128	196	250	449

RAINFALL ON THE RIO GRANDE WATERSHED

IN THE UNITED STATES

IN MILLIMETERS

Month	Lewis Ranch		Rio Grande near Dryden		Ross Foster Ranch		Pecos River near Langtry Station		Prosser Ranch No. 3	
	1999	Average	1999	Average	1999	Average	1999	Average	1999	Average
Jan.	0	16	0	12	0	9	0	9	0	12
Feb.	4	28	0	12	0	13	0	19	T	25
Mar.	50	26	26	7	8	7	69	16	74	18
April	5	47	1	16	0	17	8	24	5	31
May	14	62	25	26	7	28	10	37	22	57
June	74	69	32	32	41	32	72	44	137	46
July	0	43	58	24	41	15	84	46	15	44
Aug.	3	65	26	46	0	30	27	33	0	45
Sept.	0	67	T	52	0	34	0	52	0	68
Oct.	16	64	1	22	0	23	0	37	8	42
Nov.	0	29	0	12	0	15	0	18	0	22
Dec.	4	20	2	11	3	11	0	13	0	16
Yearly	170	536	171	272	100	234	270	348	261	426

Month	Devils River at Cauthorn Ranch		Prosser Ranch No. 1		Dead Man's Canyon near Comstock		Prosser Ranch No. 2		Walker Ranch	
	1999	Average	1999	Average	1999	Average	1999	Average	1999	Average
Jan.	6	12	0	11	0	10	0	10	0	11
Feb.	0	22	0	21	0	19	0	24	0	20
Mar.	99	24	79	15	18	13	51	15	117	19
April	13	26	0	25	0	25	3	26	0	23
May	10	51	0	56	0	48	0	54	0	59
June	138	55	23	39	72	47	80	43	30	50
July	87	26	0	49	3	51	0	44	0	41
Aug.	6	34	0	40	5	39	0	47	0	29
Sept.	3	48	0	59	0	49	0	60	0	56
Oct.	2	46	0	38	0	40	0	36	0	35
Nov.	6	21	0	20	0	16	0	17	0	18
Dec.	1	16	6	12	0	13	T	12	0	13
Yearly	371	381	108	385	98	370	134	388	147	374

Month	Harlow Ranch		Ed Crane Ranch		H. K. Fawcett Ranch		Brothertown Ranch		A. A. Baker Ranch	
	1999	Average	1999	Average	1999	Average	1999	Average	1999	Average
Jan.	0	10	4	20	2	16	0	15	0	12
Feb.	3	19	5	27	2	21	16	24	2	20
Mar.	97	16	113	21	88	22	76	19	91	18
April	8	25	1	37	18	38	2	24	8	29
May	0	49	21	66	4	60	17	47	15	50
June	43	50	99	49	31	37	110	45	72	43
July	11	34	16	46	0	42	122	40	129	45
Aug.	0	36	3	38	4	58	31	42	17	46
Sept.	0	53	23	66	19	72	0	60	2	67
Oct.	0	40	7	46	0	51	2	39	5	40
Nov.	0	17	0	25	0	23	0	16	0	19
Dec.	0	13	0	20	0	17	0	12	1	14
Yearly	162	362	292	461	168	457	376	383	342	403

Month	Zuberbueler Ranch		Comstock		Martin King Ranch		Goldwire Ranch		H. T. Miers Ranch Headquarters	
	1999	Average	1999	Average	1999	Average	1999	Average	1999	Average
Jan.	1	15	0	14	0	13	0	13	8	15
Feb.	7	29	6	21	14	20	8	18	8	26
Mar.	93	22	52	17	85	14	80	23	114	25
April	6	26	10	32	6	23	31	39	86	43
May	7	58	18	49	68	46	33	59	20	62
June	57	47	62	50	91	42	182	53	195	63
July	99	55	64	38	50	37	59	53	29	42
Aug.	32	36	21	45	52	40	1	64	8	56
Sept.	0	62	6	57	0	61	43	53	12	58
Oct.	7	33	4	41	2	46	6	46	17	60
Nov.	0	21	0	17	0	15	0	26	0	23
Dec.	1	19	2	15	2	14	0	17	0	18
Yearly	310	423	245	396	370	371	443	464	497	491

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RAINFALL ON THE RIO GRANDE WATERSHED

IN THE UNITED STATES

IN MILLIMETERS

Month	H. T. Miers Ranch No. 2		Gillis Ranch Headquarters		Pafford Crossing		Tuffy Whitehead Ranch		Mutto Ranch No. 2	
	1999	Average	1999	Average	1999	Average	1999	Average	1999	Average
Jan.	2	12	0	17	0	13	2	9	0	14
Feb.	7	22	0	27	0	19	3	21	0	24
Mar.	83	28	58	27	33	18	72	22	68	22
April	46	36	51	45	10	33	23	33	50	44
May	18	65	48	71	0	46	12	46	8	52
June	148	56	92	64	133	52	75	44	130	59
July	21	43	29	62	59	49	55	42	30	49
Aug.	6	60	13	69	0	57	28	41	31	60
Sept.	28	67	54	59	5	64	40	65	11	77
Oct.	12	49	13	57	8	47	6	37	11	45
Nov.	0	22	0	32	0	22	0	20	0	23
Dec.	0	20	0	22	0	17	0	13	0	16
Yearly	371	480	358	552	248	437	316	393	339	485

Month	Lowry Ranch No. 2		Amistad Reservoir near Comstock		Evans Creek near Comstock		Sellers Ranch		J. G. Brite Ranch	
	1999	Average	1999	Average	1999	Average	1999	Average	1999	Average
Jan.	2	12	0	10	0	9	0	10	1	11
Feb.	1	20	0	19	0	18	+	18	0	20
Mar.	69	23	44	14	34	16	51	16	51	19
April	35	35	16	30	9	23	23	29	22	33
May	2	56	3	38	0	39	0	45	0	52
June	117	55	63	40	71	38	119	59	120	55
July	40	47	47	30	0	41	46	35	64	39
Aug.	16	61	36	34	20	44	27	44	25	47
Sept.	46	61	32	48	0	54	0	54	13	69
Oct.	15	44	9	37	3	40	17	45	13	44
Nov.	0	24	0	16	0	18	0	20	0	20
Dec.	0	17	0	11	0	13	0	15	0	16
Yearly	343	455	250	327	137	353	283	390	309	425

Month	Devils Lake		Big Satan Creek Station		Rough Canyon near Del Rio		Stewart Ranch		Gillis Ranch	
	1999	Average	1999	Average	1999	Average	1999	Average	1999	Average
Jan.	4	15	13	15	0	12	0	12	0	13
Feb.	0	21	T	22	3	22	0	21	5	23
Mar.	69	19	66	27	99	25	56	20	83	28
April	31	38	33	37	38	29	43	36	21	36
May	0	54	10	51	0	62	8	51	13	59
June	129	59	158	52	137	56	109	55	77	52
July	49	37	35	53	58	47	21	48	51	52
Aug.	20	46	19	68	24	57	18	48	16	47
Sept.	29	59	36	54	36	66	47	65	12	71
Oct.	17	46	13	49	0	56	22	47	8	40
Nov.	0	21	0	25	18	27	0	22	0	26
Dec.	0	19	0	19	0	20	0	16	0	20
Yearly	348	434	383	472	413	479	324	441	286	467

Month	Buoy No. 11		North Fork San Pedro		Amistad Dam		Long Ranch		Middle Fork San Pedro	
	1999	Average	1999	Average	1999	Average	1999	Average	1999	Average
Jan.	0	11	0	12	2	14	0	14	0	11
Feb.	1	20	3	21	1	22	0	23	0	21
Mar.	61	19	83	24	57	22	58	24	69	23
April	33	34	45	37	19	39	41	37	45	34
May	7	50	3	58	2	57	2	57	0	55
June	91	48	117	58	109	55	99	57	85	54
July	73	36	10	58	14	43	25	48	9	48
Aug.	47	41	25	60	53	52	44	44	18	52
Sept.	6	50	5	64	3	85	15	58	18	59
Oct.	31	39	0	47	16	43	13	42	0	51
Nov.	0	17	15	24	1	24	0	21	5	20
Dec.	0	12	0	19	1	18	0	18	0	18
Yearly	350	377	306	482	278	474	297	443	249	446

RAINFALL ON THE RIO GRANDE WATERSHED

IN THE UNITED STATES

IN MILLIMETERS

	Cliff Lowry Ranch No. 1		Hutto Ranch No. 1		Lewis James Ranch		Laughlin Air Force Base		Wardlaw Standard Ranch	
Month	1999	Average	1999	Average	1999	Average	1999	Average	1999	Average
Jan.	4	13	0	12	0	12	3	15	0	20
Feb.	0	24	0	22	0	16	1	27	0	31
Mar.	83	25	57	21	56	10	41	22	66	33
April	49	39	42	42	104	28	135	52	48	45
May	15	65	1	56	12	42	45	58	24	64
June	128	58	106	60	134	38	172	71	206	80
July	38	48	29	53	24	32	43	61	48	40
Aug.	12	55	25	55	13	49	42	53	33	49
Sept.	44	75	16	70	67	73	21	64	35	56
Oct.	18	51	18	47	17	35	17	59	48	52
Nov.	0	25	0	21	0	17	3	26	0	31
Dec.	1	18	0	15	0	13	1	18	0	22
Yearly	392	496	294	474	427	365	523	526	508	523

	Maverick County Canal Headgate		Pinto Creek Station		Las Mores Creek		Eagle Pass		Trees Farm	
Month	1999	Average	1999	Average	1999	Average	1999	Average	1999	Average
Jan.	0	14	0	13	0	19	1	21	0	16
Feb.	0	25	0	19	0	24	1	25	0	22
Mar.	64	18	43	18	36	18	47	21	41	15
April	0	39	30	40	33	35	34	45	14	44
May	51	59	77	60	51	55	103	85	89	72
June	460	63	337	63	248	72	54	76	91	59
July	13	42	66	40	0	37	40	48	51	38
Aug.	76	39	81	52	81	44	163	57	158	42
Sept.	0	61	20	66	0	82	5	78	11	64
Oct.	25	53	69	51	23	54	61	54	61	60
Nov.	0	23	0	26	0	25	1	24	1	21
Dec.	0	19	0	15	0	19	3	21	3	18
Yearly	689	455	723	463	472	484	511	555	520	471

	El Indio		Van Dalsen Farm		Keisling Farm		Apache Ranch		Corralitos Ranch	
Month	1999	Average	1999	Average	1999	Average	1999	Average	1999	Average
Jan.	0	21	0	18	1	19	4	22	0	22
Feb.	0	25	0	23	0	24	0	22	0	24
Mar.	42	18	39	15	41	18	83	15	72	19
April	10	45	3	49	0	46	5	47	1	29
May	81	80	190	75	140	72	104	65	52	59
June	97	60	109	55	99	66	130	54	10	55
July	25	34	36	36	6	35	16	49	19	39
Aug.	191	49	220	45	165	42	154	48	76	54
Sept.	4	76	0	76	4	68	7	72	71	77
Oct.	54	56	53	59	38	54	18	63	33	50
Nov.	0	21	3	21	0	20	0	24	5	25
Dec.	0	19	0	19	0	22	0	22	12	20
Yearly	504	504	653	491	494	486	521	503	351	473

	Huisache Ranch		Zapata		Falcon Dam		Roma (Int'l. Bridge)		Garciasville	
Month	1999	Average	1999	Average	1999	Average	1999	Average	1999	Average
Jan.	0	22	0	24	0	23	0	22	0	22
Feb.	5	26	5	24	4	25	6	26	5	27
Mar.	119	20	120	18	47	17	56	16	48	15
April	1	32	1	36	1	34	1	34	1	30
May	53	60	40	66	11	62	46	50	44	68
June	38	59	74	58	85	63	87	58	86	75
July	66	37	17	38	49	33	18	33	26	31
Aug.	64	45	63	51	31	58	41	46	41	42
Sept.	59	91	60	97	142	103	87	105	64	85
Oct.	155	54	127	49	75	50	43	49	32	43
Nov.	3	23	8	26	2	28	5	23	5	25
Dec.	5	22	18	24	14	21	16	15	21	20
Yearly	568	491	533	511	461	517	406	477	373	483

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RAINFALL ON THE RIO GRANDE WATERSHED

IN THE UNITED STATES

IN MILLIMETERS

Month	Los Ebanos		La Joya		Penitas (Edinburg Pumping Plant)		HCWCID #6 Goodwin Pump No. 3		HCWCID #6 Goodwin Pump No. 4B	
	1999	Average	1999	Average	1999	Average	1999	Average	1999	Average
Jan.	7	25	5	24	T	30	0	30	0	30
Feb.	1	22	0	23	T	26	0	29	0	27
Mar.	2	15	0	14	47	19	102	21	76	18
April	70	31	74	23	T	30	0	37	0	30
May	1	52	0	50	46	60	13	60	25	55
June	32	58	0	60	59	71	90	68	26	66
July	30	29	24	24	101	35	139	39	102	31
Aug.	75	41	59	31	90	56	127	49	108	45
Sept.	8	73	9	72	75	88	88	83	90	90
Oct.	183	49	132	47	54	64	44	69	38	66
Nov.	3	20	0	18	5	22	0	25	13	23
Dec.	3	21	0	23	16	26	13	28	13	28
Yearly	415	436	303	409	493	527	616	538	491	509

Month	United Irrigation District		Edinburg City Water Plant		Anzalduas Dam		Mercedes (IBWC) LRGFCP Office		Mercedes Pump	
	1999	Average	1999	Average	1999	Average	1999	Average	1999	Average
Jan.	0	30	0	36	0	27	0	11	1	37
Feb.	5	28	0	30	6	34	1	19	23	18
Mar.	89	26	89	23	86	24	54	61	43	42
April	0	33	0	36	T	40	0	37	0	35
May	32	79	40	60	42	63	31	60	31	83
June	46	65	33	61	46	60	36	46	59	67
July	80	36	54	38	66	37	147	36	133	50
Aug.	84	50	129	58	79	51	115	52	45	60
Sept.	56	75	79	92	44	91	69	115	72	81
Oct.	38	59	42	56	34	53	43	83	19	62
Nov.	0	21	0	24	T	22	0	33	41	27
Dec.	13	24	13	32	18	21	11	26	11	48
Yearly	443	526	479	546	421	523	507	579	478	610

Month	La Feria Pumping Plant		La Feria Materials Yard		San Benito Pump		CCWCID #11 Bayview Dist. Off.		Brownsville Irrig. and Drainage Dist.	
	1999	Average	1999	Average	1999	Average	1999	Average	1999	Average
Jan.	0	42	0	42	0	35	0	43	0	30
Feb.	28	43	23	49	25	28	0	37	15	30
Mar.	46	29	70	30	64	25	0	21	58	41
April	0	53	0	47	5	36	0	45	0	37
May	55	74	70	70	66	71	94	61	51	43
June	32	78	44	87	109	65	98	59	110	85
July	13	51	31	55	123	41	35	40	0	2
Aug.	33	79	56	69	13	63	84	65	114	85
Sept.	121	152	110	129	82	111	49	136	39	100
Oct.	19	100	13	82	13	72	0	69	0	109
Nov.	18	51	13	38	0	33	0	41	51	42
Dec.	0	41	0	42	17	34	0	35	0	14
Yearly	365	793	430	740	517	614	360	652	438	618

RAINFALL ON THE RIO GRANDE WATERSHED

IN MEXICO

IN MILLIMETERS

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, 26, and Supplement 40A.

Month	Cd. Juarez, Chihuahua		El Vergel, Chihuahua		Jimenez, Chihuahua		La Boquilla, Chihuahua		Camargo, Chihuahua	
	1999	Average	1999	Average	1999	Average	1999	Average	1999	Average
Jan.	5	11	0	33	0	7	0	7	0	10
Feb.	0	11	0	17	0	4	0	5	0	7
Mar.	1	9	0	14	0	3	5	3	0	5
April	0	7	5	13	2	4	0	6	0	5
May	4	9	0	22	9	13	9	14	11	13
June	38	17	107	94	176	40	121	35	24	37
July	42	39	182	180	40	79	87	71	94	73
Aug.	24	42	186	179	27	64	41	73	85	67
Sept.	27	35	115	120	33	56	71	4	67	
Oct.	18	26	0	66	0	26	0	20	0	24
Nov.	0	12	0	16	0	6	0	8	0	10
Dec.	19	15	0	31	1	6	0	8	0	11
Yearly	178	233	595	765	288	308	308	321	218	329

Month	Las Virgenes, Chihuahua		Delicias, Chihuahua		Colonia Anahuac, Chihuahua		Las Burras, Chihuahua		Presa Chihuahua, Chihuahua	
	1999	Average	1999	Average	1999	Average	1999	Average	1999	Average
Jan.	0	7	0	9	0	9	0	7	0	7
Feb.	0	3	0	4	1	8	0	4	0	5
Mar.	8	2	6	3	59	10	4	3	6	6
April	0	6	0	8	2	10	0	7		8
May	3	8	6	9	62	17	0	10		19
June	22	30	34	32	47	41	11	29		46
July	58	65	41	61	16	103	55	67	191	100
Aug.	47	66	67	63	164	119	25	63	129	113
Sept.	30	59	10	58	17	82	10	57		85
Oct.	0	20	0	21	32	32	0	19		25
Nov.	0	6	0	7	0	9	0	6		7
Dec.	0	9	0	9	7	8	0	9		10
Yearly	168	281	164	284	407	448	105	281		431

Month	Chihuahua, Chihuahua		Villa Aldama, Chihuahua		Presa Luis L. Leon, Chihuahua		Coyame, Chihuahua		Ojinaga (IBWC), Chihuahua	
	1999	Average	1999	Average	1999	Average	1999	Average	1999	Average
Jan.	0	8	0	7	0	6	0	8	0	9
Feb.	0	5	0	6	0	4	0	9	0	8
Mar.	6	5	11	7	4	3	8	3	7	4
April	10	7	7	10	2	7	0	9	4	9
May	14	13	38	15	7	15	14	17	6	14
June	52	39	181	43	3	31	21	43	18	33
July	207	92	41	62	214	61	53	66	62	40
Aug.	69	91	57	78	62	72	15	62	7	41
Sept.	63	76	75	78	7	49	3	64	0	41
Oct.	0	24	32	30	0	21	0	26	0	23
Nov.	0	10	3	13	0	8	0	10	0	10
Dec.	6	11	16	9	7	10	0	8	0	9
Yearly	427	381	461	358	306	287	114	325	104	241

RAINFALL ON THE RIO GRANDE WATERSHED

IN MEXICO

IN MILLIMETERS

Month	Ojinaga (M.S. of Mexico), Chihuahua		Sierra Mojada, Coahuila		El Guaje, Coahuila		La Chuperrosa, Coahuila		La Amistad, Coahuila	
	1999	Average	1999	Average	1999	Average	1999	Average	1999	Average
Jan.	0	8	10	15	0	21	0	8	0	16
Feb.	0	7	11	7	0	9	0	15	1	24
Mar.	10	5	0	7	0	9	34	13	59	28
April	0	8	0	9	0	23	22	27	20	35
May	8	15	11	25	33	26	1	35	1	60
June	30	31	89	54	64	18	69	35	102	56
July	69	40	71	69	0	59	83	31	26	44
Aug.	5	39	115	75	0	40	9	41	63	32
Sept.	0	40	0	72	0	70	10	51	0	67
Oct.	0	24	0	31	5	18	8	32	13	44
Nov.	0	9	1	12	0	7	0	16	0	26
Dec.	0	10	0	15	0	5	1	10	0	19
Yearly	122	236	308	391	102	305	237	314	285	451

Month	Represa Amistad, Coahuila		Cd. Acuna, Coahuila		Presa Centenario, Coahuila		Palestina, Coahuila		Jimenez, Coahuila	
	1999	Average	1999	Average	1999	Average	1999	Average	1999	Average
Jan.	0	10	0	14	0	14	0	19	0	17
Feb.	0	14	0	24	0	22	0	25	0	24
Mar.	39	18	47	22	55	26	54	22	55	22
April	19	25	53	46	95	40	38	44	44	43
May	0	42	25	63	45	67	32	68	50	60
June	80	41	120	56	255	70	255	63	382	71
July	1	43	31	44	38	42	49	53	31	42
Aug.	62	34	83	47	167	56	133	57	92	49
Sept.	1	67	33	79	0	76	0	80	3	73
Oct.	10	40	16	58	14	59	33	56	40	59
Nov.	0	16	0	21	0	23	0	22	0	27
Dec.	0	10	0	16	0	15	0	19	0	18
Yearly	212	360	408	490	669	510	594	528	697	505

Month	Presa Cabeceras, Coahuila		Presa San Miguel, Coahuila		Ejido San Miguel, Coahuila		Emiliano Zapata, Coahuila		Piedras Negras, Coahuila	
	1999	Average	1999	Average	1999	Average	1999	Average	1999	Average
Jan.	0	12	0	15	0	9	0	21	1	19
Feb.	0	18	0	24	0	7	0	29	0	22
Mar.	45	20	65	24	0	7	61	36	43	19
April	92	45	56	38	0	16	42	41	40	49
May	32	62	48	68	0	27	0	77	84	89
June	432	74	343	81	21	37	390	98	52	68
July	13	64	40	62	36	35	68	57	76	55
Aug.	126	76	173	73	12	39	38	60	203	57
Sept.	3	103	4	92	25	33	7	62	1	78
Oct.	20	62	28	56	0	12	36	45	51	62
Nov.	0	28	0	29	0	7	0	41	2	23
Dec.	0	14	0	15	0	7	0	20	2	18
Yearly	763	578	757	577	94	236	642	587	553	559

Month	Zaragoza, Coahuila		Allende, Coahuila		Villa Hidalgo, Coahuila		Jarita, Nuevo Leon		I.W. Laredo (IB&WC), Tamaulipas	
	1999	Average	1999	Average	1999	Average	1999	Average	1999	Average
Jan.	0	26	0	14	0	20	0	18	0	20
Feb.	2	21	0	22	0	22	1	27	1	25
Mar.	51	23	52	17	37	18	20	19	62	18
April	35	51	7	42	0	45	2	43	0	37
May	63	75	77	66	151	73	104	76	96	75
June	80	67	116	55	72	59	68	45	139	66
July	48	53	43	45	30	31	19	36	36	37
Aug.	306	71	352	67	178	54	99	60	95	57
Sept.	4	70	8	78	1	76	38	62	64	78
Oct.	30	40	20	45	38	53	10	50	16	56
Nov.	0	24	0	21	0	23	0	29	2	29
Dec.	5	18	0	16	0	18	4	25	5	20
Yearly	624	539	675	488	507	492	365	490	516	518

RAINFALL ON THE RIO GRANDE WATERSHED

IN MEXICO

IN MILLIMETERS

Month	Sombreretillo, Nuevo Leon		La Escondida, Nuevo Leon		General Trevino, Nuevo Leon		General Cepeda, Coahuila		Mina, Nuevo Leon	
	1999	Average	1999	Average	1999	Average	1999	Average	1999	Average
Jan.	0	44	0	39	0	28	0	13	0	14
Feb.	0	19	0	27	2	23	0	11	7	10
Mar.	70	25	27	27	28	19	1	7	3	6
April	20	57	0	58	6	45	1	12	3	22
May	18	43	72	48	26	65	0	24	7	21
June	121	84	96	70	27	51	56	51	43	35
July	49	55	125	46	65	30	53	76	32	27
Aug.	44	49	58	95	0	57	35	73	5	38
Sept.	101	141	104	111	58	87	17	69	59	80
Oct.	55	58	24	54	25	38	3	30	5	26
Nov.	0	25	0	26	6	16	0	13	3	14
Dec.	28	21	26	34	15	24	0	13	9	12
Yearly	506	621	532	635	258	483	166	392	176	305

Month	Icamole, Nuevo Leon		Rinconada, Nuevo Leon		Santa Catarina, Nuevo Leon		Pajonal, Nuevo Leon		La Cruz, Nuevo Leon	
	1999	Average	1999	Average	1999	Average	1999	Average	1999	Average
Jan.	0	11	0	12	0	18	0	17	0	31
Feb.	4	8	0	8	0	11	0	14	0	16
Mar.	3	6	0	7	9	9	0	10	0	13
April	0	11	5	15	11	21	28	28	30	36
May	0	20	0	18	0	27	4	53	13	50
June	2	22	7	25	24	47	52	64	97	83
July	22	14	3	14	82	39	35	61	70	87
Aug.	3	19	9	30	82	65	48	87	64	104
Sept.	41	49	76	55	91	120	107	136	101	164
Oct.	3	21	6	21	21	42	88	48	24	55
Nov.	0	14	0	9	0	13	0	13	0	21
Dec.	8	13	0	10	9	14	0	15	0	16
Yearly	86	208	106	224	329	426	362	546	399	676

Month	Hipolito, Coahuila		San Juan de Vaqueria, Coahuila		Espinazo, Nuevo Leon		Resta, Coahuila		Gomez Farias, Coahuila	
	1999	Average	1999	Average	1999	Average	1999	Average	1999	Average
Jan.	0	15	0	23	0	27	0	12	0	36
Feb.	0	7	0	11	0	11	7	0	0	16
Mar.	0	9	7	8	0	7	0	6	2	8
April	0	13	0	18	0	27	0	13	0	22
May	0	18	20	39	30	48	11	23	1	40
June	0	9	115	63	48	29	31	28	5	48
July	80	20	76	79	42	35	47	29	53	54
Aug.	15	29	78	87	5	38	9	36	24	55
Sept.	30	27	53	69	26	50	21	42	8	50
Oct.	30	19	21	36	9	28	7	22	32	27
Nov.	12	10	0	10	4	13	0	12	0	12
Dec.	0	4	0	10	11	14	0	9	0	19
Yearly	167	180	370	453	175	327	126	239	125	387

Month	Saltillo, Coahuila		Rodrigo Gomez Res., Nuevo Leon		Huachichil, Coahuila		Carbonera, Nuevo Leon		Rusio, Nuevo Leon	
	1999	Average	1999	Average	1999	Average	1999	Average	1999	Average
Jan.	0	16	0	24	0	67	0	20	0	20
Feb.	0	12	0	23	0	36	0	13	0	15
Mar.	2	9	19	27	0	16	2	11	4	12
April	6	17	26	49	6	28	0	25	3	31
May	2	29	40	74	0	94	7	40	12	47
June	99	51	240	136	15	100	25	61	50	56
July	71	64	175	98	61	92	18	67	43	44
Aug.	18	61	51	156	133	77	37	69	17	45
Sept.	29	63	175	248	43	82	19	61	3	46
Oct.	11	30	48	122	50	45	11	35	25	32
Nov.	0	19	0	32	11	18	0	20	0	17
Dec.	4	16	15	22	0	20	0	19	0	24
Yearly	242	387	789	1,011	319	675	119	441	157	387

RAINFALL ON THE RIO GRANDE WATERSHED

IN MEXICO

IN MILLIMETERS

Month	Muzquiz, Coahuila		Sabinas, Coahuila		Juarez, Coahuila		Lag. de Salinillas, Nuevo Leon		Presa Carranza, Coahuila	
	1999	Average	1999	Average	1999	Average	1999	Average	1999	Average
Jan.	0	20	0	15	0	15	0	18	0	18
Feb.	0	16	0	17	0	14	0	18	0	16
Mar.	40	20	65	14	36	12	40	13	24	13
April	46	33	17	33	4	37	0	34	1	31
May	43	90	72	70	114	56	65	60	118	52
June	87	81	100	54	188	46	58	50	114	47
July	118	74	62	44	46	24	19	25	39	26
Aug.	127	77	68	54	65	36	130	58	46	47
Sept.	2	123	0	81	0	76	22	77	6	76
Oct.	53	53	43	45	6	41	29	51	18	42
Nov.	0	28	0	16	0	16	0	17	0	15
Dec.	0	19	0	12	0	13	6	18	9	15
Yearly	516	634	427	455	459	386	369	439	375	398

Month	Progreso, Coahuila		Ocampo, Coahuila		Ejido Iro de Mayo, Coahuila		Lampazos, Nuevo Leon		Cuatro Cienegas, Coahuila	
	1999	Average	1999	Average	1999	Average	1999	Average	1999	Average
Jan.	0	12	0	11	0	17	0	18	0	9
Feb.	0	17	0	7	0	7	0	17	0	8
Mar.	18	10	0	6	0	10	35	14	1	4
April	3	29	0	17	0	24	0	28	0	9
May	11	50	15	34	35	36	13	46	9	21
June	117	54	40	26	26	36	147	54	109	22
July	30	30	18	38	50	28	58	42	28	25
Aug.	35	47	10	39	30	19	45	37	13	31
Sept.	5	73	0	45	0	35	27	113	0	36
Oct.	13	44	0	26	34	24	22	51	2	18
Nov.	0	16	0	11	0	7	2	25	0	11
Dec.	0	12	0	12	0	4	16	18	0	11
Yearly	232	394	97	286	175	247	365	463	162	205

Month	Monclova, Coahuila		Candela, Coahuila		Vallecillo, Nuevo Leon		Castanos, Coahuila		Nueva Cd. Guerrero, Tamaulipas	
	1999	Average	1999	Average	1999	Average	1999	Average	1999	Average
Jan.	0	12	0	17	0	21	0	13	0	23
Feb.	0	13	0	11	0	18	0	12	2	25
Mar.	5	8	6	6	62	16	0	6	36	14
April	0	14	5	27	5	44	0	29	1	37
May	47	36	21	37	24	49	5	48	12	66
June	183	36	51	50	134	75	119	55	39	61
July	37	44	14	49	42	38	79	45	79	36
Aug.	38	58	17	55	104	56	0	56	36	51
Sept.	22	79	31	65	83	102	4	66	97	99
Oct.	7	32	12	34	35	50	1	38	93	47
Nov.	0	15	0	16	2	20	0	7	3	27
Dec.	4	15	12	11	10	16	0	6	12	20
Yearly	343	362		378	501	505	208	381	410	506

Month	Paras, Nuevo Leon		Sabinas Hidalgo, Nuevo Leon		Garza Ayala, Nuevo Leon		Cd. Mier, Km. 8 SW, Tamaulipas		El Alamo, Nuevo Leon	
	1999	Average	1999	Average	1999	Average	1999	Average	1999	Average
Jan.	0	19	0	22	0	22	0	23	0	27
Feb.	2	19	1	18	0	16	1	35	0	18
Mar.	41	14	2	19	43	18	35	17	56	31
April	0	23	2	34	15	37	0	33	0	44
May	16	48	25	69	39	50	61	71	17	51
June	72	66	126	86	126	65	42	73	95	62
July	86	42	701	77	46	70	24	40	72	27
Aug.	6	56	56	58	108	64	30	63	37	41
Sept.	111	84	91	140	61	97	61	121	82	88
Oct.	20	50	57	58	22	53	66	72	20	44
Nov.	3	19	5	22	0	33	0	26	0	17
Dec.	12	16	11	16	12	26	8	18	15	16
Yearly	369	456	1,077	619	472	551	328	592	394	466

RAINFALL ON THE RIO GRANDE WATERSHED

IN MEXICO

IN MILLIMETERS

Month	San Antonio de las Alazanas, Coahuila		San Rafael, Nuevo Leon		La Huasteca, Nuevo Leon		Agua Blanca, Nuevo Leon		Potrero de Abrego, Coahuila	
	1999	Average	1999	Average	1999	Average	1999	Average	1999	Average
Jan.	0	30	0	29	0	14	0	23	0	24
Feb.	0	18	2	20	0	4	0	12	0	13
Mar.	4	12	6	15	0	7	3	15	0	25
April	0	25	0	23	5	15	25	23	0	37
May	3	50	17	43	5	43	10	49	17	36
June	81	68	55	54	16	36	44	59	144	57
July	31	78	15	59	40	29	65	81	21	25
Aug.	67	75	33	63	128	48	128	87	0	58
Sept.	27	64	6	53	97	94	143	133	42	62
Oct.	73	43	25	43	30	42	77	60	80	34
Nov.	0	23	0	26	0	5	0	20	1	24
Dec.	0	23	0	21	0	13	0	16	0	21
Yearly	286	509	159	449	321	350	495	578	305	416

Month	Cienega del Toro, Nuevo Leon		El Canada, Nuevo Leon		Mimbres, Nuevo Leon		Hacienda Mamulique, Nuevo Leon		Cerritos, Nuevo Leon	
	1999	Average	1999	Average	1999	Average	1999	Average	1999	Average
Jan.	0	32	0	14	0	38	0	24	0	29
Feb.	3	15	0	16	5	25	0	11	0	15
Mar.	22	20	9	24	34	26	52	18	12	16
April	0	38	2	29	0	39	0	38	17	47
May	6	61	41	66	12	70	8	42	51	91
June	60	61	128	66	69	88	71	68	179	139
July	100	70	103	27	92	68	61	61	131	111
Aug.	4	74	65	57	0	88	55	72	0	145
Sept.	31	81	95	108	51	94	75	106	0	270
Oct.	28	48	10	68	47	53	15	43	0	112
Nov.	0	19	0	21	0	28	2	28	1	29
Dec.	0	18	9	10	5	30	22	23	12	15
Yearly	254	537	462	506	315	647	361	534	403	1,019

Month	Los Ramones, Nuevo Leon		Ejido Marin, Nuevo Leon		Dr. Gonzales, Nuevo Leon		Tepehuaje, Nuevo Leon		Cienega de Flores, Nuevo Leon	
	1999	Average	1999	Average	1999	Average	1999	Average	1999	Average
Jan.	0	24	0	30	0	40	0	39	0	29
Feb.	0	18	0	17	0	15	0	18	2	22
Mar.	68	20	26	21	50	21	47	23	46	26
April	16	38	21	30	0	38	44	51	13	35
May	24	69	11	53	10	63	45	81	36	63
June	66	83	87	63	50	73	98	79	78	80
July	85	47	142	47	87	39	159	49	90	56
Aug.	14	79	112	69	84	73	108	75	211	103
Sept.	76	138	73	98	103	86	100	118	80	134
Oct.	42	61	6	37	20	33	37	48	17	59
Nov.	4	19	6	17	6	26	2	17	6	26
Dec.	20	17	19	27	18	45	17	20	0	27
Yearly	415	613	503	509	428	552	657	618	579	660

Month	Higueras, Nuevo Leon		Monterrey, Nuevo Leon		San Juan, Nuevo Leon		Laguna de Sanchez, Nuevo Leon		Villa Altende, Nuevo Leon	
	1999	Average	1999	Average	1999	Average	1999	Average	1999	Average
Jan.	0	21	0	17	0	19	0	21	0	32
Feb.	0	16	1	17	0	23	0	14	0	31
Mar.	52	19	23	20	31	21	9	10	26	33
April	0	32	32	31	61	57	0	29	26	69
May	9	52	36	46	47	67	0	48	34	99
June	74	67	149	71	101	73	58	80	104	137
July	84	55	119	56	188	56	17	63	145	86
Aug.	128	84	31	78	49	84	62	102	0	131
Sept.	14	125	78	152	65	134	185	164	72	231
Oct.	8	48	16	77	43	77	106	66	26	127
Nov.	8	20	0	29	11	25	0	21	0	39
Dec.	20	20	28	18	47	18	0	16	0	29
Yearly	397	559	513	612	643	654	437	634	433	1,044

RAINFALL ON THE RIO GRANDE WATERSHED

IN MEXICO

IN MILLIMETERS

Month	Casillas, Nuevo Leon		Montemorelos, Nuevo Leon		Cabezones, Nuevo Leon		Rayones, Nuevo Leon		Potosi, Nuevo Leon	
	1999	Average	1999	Average	1999	Average	1999	Average	1999	Average
Jan.	0	25	0	25	0	30	0	14	0	25
Feb.	0	13	0	24	0	20	0	10	12	16
Mar.	3	13	52	30	33	27	40	9	12	11
April	10	28	20	57	37	61	0	26	11	33
May	14	57	37	85	37	90	1	46	5	49
June	92	78	186	99	232	101	39	52	30	29
July	72	64	94	60	137	66	71	31	51	34
Aug.	26	78	10	104	7	138	85	69	7	33
Sept.	115	172	174	143	203	203	20	91	10	34
Oct.	62	62	70	94	57	88	67	40	30	33
Nov.	0	17	0	38	1	25	6	11	0	26
Dec.	0	16	24	25	27	20	0	10	0	33
Yearly		566	665	815	711	869	329	409	168	356

Month	Galeana, Nuevo Leon		Linares, Nuevo Leon		Pobladores, Nuevo Leon		Cerro Prieto, Nuevo Leon		Los Herrera, (La Tableta), N.L.	
	1999	Average	1999	Average	1999	Average	1999	Average	1999	Average
Jan.	0	19	0	25	0	43	0	28	0	18
Feb.	5	15	7	22	0	17	0	15	3	16
Mar.	18	12	17	27	35	22	24	19	45	16
April	6	31	59	57	0	47	85	41	55	35
May	12	49	90	93	45	57	62	97	62	73
June	94	60	255	104	111	64	105	92	57	67
July	70	47	169	67	144	32	74	44	18	47
Aug.	21	64	5	94	49	53	35	76	17	66
Sept.	38	83	98	161	81	105	98	131	66	116
Oct.	17	42	65	83	10	39	54	61	21	54
Nov.	0	16	7	28	0	15	0	19	4	16
Dec.	17	21	29	27	43	40	28	24	31	15
Yearly	298	459	801	788	518	534	565	647	379	539

Month	El Realito, Nuevo Leon		El Cuchillo, Nuevo Leon		Las Enramadas, Nuevo Leon		Cerralvo, Nuevo Leon		Madero(Los Aldamas) Nuevo Leon	
	1999	Average	1999	Average	1999	Average	1999	Average	1999	Average
Jan.	0	32	0	19	0	24	0	22	0	29
Feb.	12	13	0	15	0	17	0	16	1	19
Mar.	12	18	25	13	13	20	45	23	47	20
April	11	42	0	35	54	44	0	43	4	35
May	5	68	72	62	39	73	103	84	15	69
June	17	72	85	68	110	82	121	87	25	72
July	66	49	47	45	69	55	84	50	39	52
Aug.	34	78	4	71	23	87	12	86	8	84
Sept.	71	108	52	106	68	151	84	129	55	113
Oct.	19	43	6	54	12	64	15	58	35	39
Nov.	10	16	0	15	0	19	0	18	1	16
Dec.	26	27	0	14	31	21	17	15	0	21
Yearly	283	566	291	517	419	657	481	631	230	569

Month	La Pomona, Nuevo Leon		General Bravo, Nuevo Leon		Vaquerias, Nuevo Leon		El Brasil, Nuevo Leon		Miguel Aleman, Tamaulipas	
	1999	Average	1999	Average	1999	Average	1999	Average	1999	Average
Jan.	0	29	0	21	0	35	0	26	0	24
Feb.	0	13	0	16	0	18	0	23	0	24
Mar.	43	27	31	15	5	23	40	18	89	14
April	89	57	0	37	47	42	0	45	0	38
May	45	91	83	72	113	88	62	13	56	56
June	97	80	80	69	75	70	59	5	67	67
July	117	50	46	51	131	34	35	16	41	41
Aug.	19	71	6	66	4	59	52	30	57	57
Sept.	94	121	49	107	90	102	90	86	114	114
Oct.	102	45	9	48	37	47	48	38	55	55
Nov.	1	16	10	22	1	20	23	7	21	21
Dec.	29	29	25	20		43	16	12	21	21
Yearly	636	629	339	544	581		497	296	532	

RAINFALL ON THE RIO GRANDE WATERSHED

IN MEXICO

IN MILLIMETERS

Month	Camargo, Tamaulipas		Cd. Diaz Ordaz, Tamaulipas		Retamal, Tamaulipas		Reynosa, Tamaulipas		Rio Bravo, Tamaulipas	
	1999	Average	1999	Average	1999	Average	1999	Average	1999	Average
Jan.	0	26	0	30	0	28	0	31	0	33
Feb.	0	27	2	29	0	27	4	29	0	26
Mar.	85	19	74	15	46	21	68	18	56	18
April	0	35	0	37	0	36	0	32	0	39
May	20	68	8	71	26	63	24	73	38	59
June	25	69	15	69	56	60	52	60	13	66
July	35	35	35	36	89	39	59	60	49	56
Aug.	38	51	40	53	83	65	40	48	54	76
Sept.	50	112	52	91	98	88	30	92	38	126
Oct.	33	55	56	64	34	64	0	59	78	69
Nov.	0	29	2	28	6	28	0	23	3	29
Dec.	11	28	11	26	25	28	5	25	12	24
Yearly	297	552	295	549	463	547	282	530	341	621

Month	Control, Tamaulipas		Matamoros, Tamaulipas		Valle Hermoso, Tamaulipas		Villa Cardenas, Tamaulipas			
	1999	Average	1999	Average	1999	Average	1999	Average		
Jan.	0	35	3	46	0	29	0	39		
Feb.	8	28	4	40	18	31	10	29		
Mar.	64	22	79	24	89	24	61	21		
April	2	42	16	50	20	52	2	53		
May	20	71	38	65	38	67	25	60		
June	20	68	26	79	25	73	31	71		
July	41	43	47	58	36	48	46	42		
Aug.	25	80	26	105	5	67	23	67		
Sept.	38	127	94	162	91	127	33	117		
Oct.	51	77	11	100	0	75	46	74		
Nov.	25	34	20	39	18	36	0	32		
Dec.	8	29	8	43	13	25	5	29		
Yearly	302	656	372	811	353	654	282	634		

AVERAGE RAINFALL ON SUBDIVISIONS OF THE RIO GRANDE WATERSHED
With Averages for the 129 Years 1871 - 1999, Inclusive

In Millimeters

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)	
	1999	Period Average	1999	Period Average	1999	Period Average	1999	Period Average
Jan.	4	12	3	10	0	9	0	12
Feb.	0	9	0	7	0	8	0	10
Mar.	3	8	9	6	8	5	16	10
April	0	7	1	9	6	10	13	19
May	3	11	21	16	6	20	20	37
June	16	20	43	32	36	30	70	42
July	36	55	62	71	37	47	58	65
Aug.	27	48	52	61	12	48	17	51
Sept.	20	37	22	50	9	41	9	54
Oct.	11	23	5	26	0	22	2	31
Nov.	0	11	0	10	0	9	0	14
Dec.	9	15	8	14	1	10	1	13
Yearly	129	256	226	312	115	259	206	338

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)	
	1999	Period Average	1999	Period Average	1999	Period Average	1999	Period Average
Jan.	3	17	0	18	6	17	0	18
Feb.	0	22	2	22	3	20	0	23
Mar.	61	19	33	24	82	27	41	25
April	30	44	12	41	28	43	30	43
May	39	48	6	70	40	66	24	71
June	97	60	63	61	88	65	205	64
July	13	46	65	45	39	46	29	47
Aug.	9	50	10	47	23	54	48	49
Sept.	17	63	7	73	8	73	14	76
Oct.	8	46	4	50	14	54	20	51
Nov.	0	23	0	26	1	36	0	26
Dec.	1	19	2	21	2	25	0	22
Yearly	278	457	204	498	334	526	411	515

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)	
	1999	Period Average	1999	Period Average	1999	Period Average	1999	Period Average
Jan.	2	19	0	20	0	23	1	32
Feb.	0	21	3	22	2	22	11	29
Mar.	63	23	91	21	62	23	47	26
April	6	42	1	36	1	31	12	35
May	109	78	41	79	17	61	46	71
June	113	62	50	52	82	55	53	64
July	20	38	29	51	49	46	62	44
Aug.	194	57	62	49	35	52	79	59
Sept.	6	75	77	77	120	90	75	109
Oct.	27	48	89	44	63	49	48	64
Nov.	0	24	5	37	20	21	8	34
Dec.	0	24	14	22	27	18	9	31
Yearly	540	511	462	510	478	491	451	598

* Excluding Rio Conchos, Alamito Creek, and Terlingua Creek

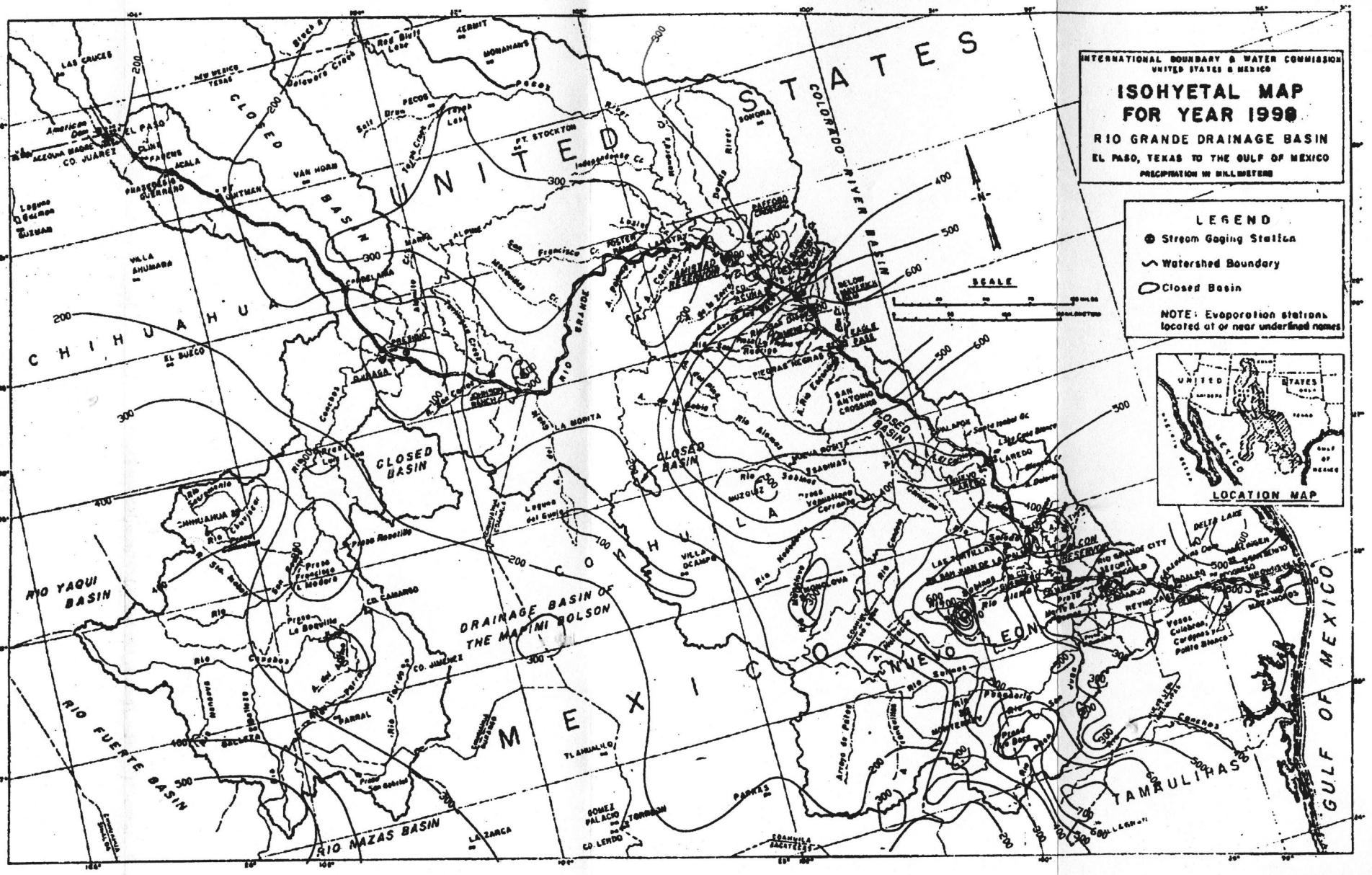
Excluding Pecos and Devils Rivers

+ 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



LOCATION OF RAINFALL STATIONS ON THE RIO GRANDE WATERSHED

The precipitation records of stations listed below began on the date shown and extend through the current year. For detailed information regarding sources of data, specific periods of record, and other pertinent matters relative to these and additional rainfall stations on the Rio Grande watershed, see "Index to Precipitation Records" in Water Bulletins Nos. 10, 14, 22, 26, and Supplement 40A. With the exception of Las Cruces, New Mexico, all United States precipitation stations listed below are in Texas, while those in Mexico are in the indicated state as shown.

IN THE UNITED STATES

NAME OF STATION	TYPE GAGE	LATI- TUD E	LONGI- TUD E	ELEV. METERS	RECORD BEGAN	WATERSHED SUBDIVISION	OBSERVER
A.A. Baker Ranch	R	29° 44'	101° 08'	524	July 1962	Devils River	I. B. & W. C.
Adobes Ranch	C	29° 46'	104° 34'	777	# 1950	Fort Quitman -	I. B. & W. C.
American Dam	S	31° 47'	106° 32'	1,137	# 1938	Above Rio Conchos	I. B. & W. C.
Amistad Dam	R	29° 27'	101° 01'	351	July 1962	El Paso - Fort Quitman	I. B. & W. C.
						Foster Ranch -	
Amistad Reservoir near Comstock	C	29° 32'	101° 12'	344	# 1970	Amistad Dam	I. B. & W. C.
Anzalduas Dam	S	26° 08'	98° 20'	39	1972	Lower Rio Grande Valley	I. B. & W. C.
Apache Ranch	C	27° 56'	99° 56'	152	#May 1953	Eagle Pass - Laredo	Ranch Foreman
Big Satan Creek Station	C	29° 34'	100° 57'	351	Nov. 1968	Devils River	I. B. & W. C.
Bill Shannon Ranch	C	29° 57'	104° 40'	817	#July 1956	Fort Quitman -	
						Above Rio Conchos	Bill Shannon
Brotherton Ranch	S	29° 42'	101° 19'	427	1961	Langtry -	
						Below Amistad Dam	Perry Calk
Brownsville Irrigation and Drainage District	S	25° 52'	97° 27'	1	1992	Lower Rio Grande Valley	
Buoy No. 11	C	29° 30'	101° 10'	**	#Dec. 1969	Foster Ranch -	Joe Barrera
						Amistad Dam	I. B. & W. C.
CCWID # 11 (Bayview Dist. Off.)	S	26° 08'	97° 21'	8	# 1952	Lower Rio Grande Valley	CCWID #11
Cliff Lowry Ranch No. 1	R	29° 28'	100° 52'	454	July 1962	Devils River	I. B. & W. C.
Comstock	R	29° 41'	101° 10'	466	#May 1939	Foster Ranch -	
						Amistad Dam	I. B. & W. C.
Corralitos Ranch	C	27° 07'	99° 25'	105	1953	Laredo - Falcon Dam	I. B. & W. C.
Dead Man's Canyon near Comstock	C	29° 47'	101° 19'	399	Sept. 1967	Pecos River	I. B. & W. C.
Devils Lake	R	29° 34'	100° 58'	349	#May 1939	below Sheffield	I. B. & W. C.
						Devils River	I. B. & W. C.
Devs River at Caughorn Ranch	S	30° 04'	101° 06'	505	#April 1976	Devils River	I. B. & W. C.
Eagle Pass	S	28° 42'	100° 30'	248	1964	Eagle Pass - Laredo	I. B. & W. C.
Ed Crane Ranch	S	29° 50'	101° 05'	497	# 1955	Devils River	I. J. Crane Jr.
Edinburg City Water Plant	S	26° 18'	98° 10'	301	1934	Lower Rio Grande Valley	City of Edinburg
El Indio	S	28° 31'	100° 19'	221	#June 1941	Eagle Pass - Laredo	Mrs. Courtney
Evans Creek near Comstock	C	29° 32'	101° 06'	360	#July 1969	Devils River	I. B. & W. C.
Falcon Dam	S	26° 33'	99° 08'	98	April 1950	Laredo - Falcon Dam	I. B. & W. C.
Fort Hancock Bridge	S	31° 16'	105° 51'	1,067	#April 1940	El Paso - Fort Quitman	I. B. & W. C.
Garciasville	R	26° 20'	98° 41'	61	#April 1957	Lower Rio Grande Valley	I. B. & W. C.
Gillis Headquarters	S	29° 36'	100° 47'	430	1968	Amistad Dam - Eagle Pass	Jake Schiller
Gillis Ranch	S	29° 40'	101° 03'	439	# 1965	Devils River	Walter Gillis
Goldwire Ranch	C	29° 44'	100° 57'	514	Nov. 1968	Devils River	I. B. & W. C.
Guayuro Arroyo	R	31° 10'	105° 40'	1,097	#May 1940	El Paso - Fort Quitman	I. B. & W. C.
HWCID No. 6 Goodwin Pump No. 3	S	26° 16'	98° 24'	53	1953	Lower Rio Grande Valley	HWCID No. 6
Goodwin Pump No. 4B	S	26° 18'	98° 22'	64	1953	Lower Rio Grande Valley	HWCID No. 6
H.K. Fawcett Ranch	C	29° 52'	100° 53'	488	# 1941	Devils River	I. B. & W. C.
H.T. Fletcher Ranch	S	30° 12'	104° 16'	1,554	# 1939	Alamito Creek	Hayes Mitchell
H.T. Miers Ranch Headquarters	C	29° 44'	100° 50'	536	# 1957	Devils River	Jr.
H.T. Miers Ranch No. 2	R	29° 43'	100° 53'	488	April 1964	Devils River	I. B. & W. C.
Harlow Ranch	C	29° 49'	101° 10'	517	#Mar. 1969	Devils River	I. B. & W. C.
Huisache Ranch	C	26° 57'	99° 21'	117	Aug. 1953	Laredo - Falcon Dam	I. B. & W. C.
Hutto Ranch No. 1	R	29° 30'	100° 56'	378	# 1964	Devils River	I. B. & W. C.
Hutto Ranch No. 2	R	29° 38'	100° 54'	369	# 1964	Devils River	I. B. & W. C.
J.G. Brite Ranch	R	29° 33'	101° 01'	351	#Sept. 1962	Devils River	I. B. & W. C.
Johnson Ranch	C	29° 01'	103° 23'	625	#July 1953	Johnson Ranch -	
						Foster Ranch	I. B. & W. C.
Keisling Ranch	S	28° 23'	100° 17'	226	Dec. 1958	Eagle Pass - Laredo	I. B. & W. C.
Kerr Mitchell Ranch	S	30° 13'	104° 00'	1,356	#Mar. 1961	Alamito Creek	Mrs. K. Mitchell
La Feria Materials Yard	V	26° 10'	97° 50'	18	# 1960	Lower Rio Grande Valley	HWCID #3
La Feria Pumping Plant	S	26° 03'	97° 50'	18	# 1952	Lower Rio Grande Valley	
La Joya	C	26° 15'	98° 29'	46	#April 1957	Lower Rio Grande Valley	I. B. & W. C.
Las Cruces	S	32° 10'	106° 47'	1,187	1975	Caballo Dam - El Paso	I. B. & W. C.
Las Moras Creek	S	29° 00'	100° 38'	244	1958	Amistad Dam - Eagle Pass	I. B. & W. C.
Laughlin Air Force Base	S	29° 21'	100° 47'	329	Dec. 1958	Amistad Dam - Eagle Pass	U. S. A. F.

S Standard R Recording C Cumulative

Some months or years missing

V Visual

** Reservoir surface

LOCATION OF RAINFALL STATIONS ON THE RIO GRANDE WATERSHED

IN THE UNITED STATES

NAME OF STATION	TYPE GAGE	LATI- TUD E	LONGI- TUD E	ELEV. METERS	RECORD BEGAN	WATERSHED SUBDIVISION	OBSERVER
Lewis Ranch	S	29° 32'	100° 40'	427	# 1964	Amistad Dam - Eagle Pass	B.C. Lewis Jr.
Lewis James Ranch	S	30° 11'	102° 07'	998	# 1966	Johnson Ranch - Foster Ranch	Lewis James
Long Ranch	R	29° 27'	100° 56'	347	Oct. 1971	Devils River	I. B. & W. C.
Los Ebanos	C	26° 14'	98° 34'	46	#April 1957	Lower Rio Grande Valley	I. B. & W. C.
Lowry Ranch No. 2	R	29° 37'	100° 55'	354	May 1965	Devils River	I. B. & W. C.
Martin King Ranch	R	29° 43'	101° 02'	445	#Nov. 1954	Foster Ranch - Amistad Dam	I. B. & W. C.
Maverick County Canal Headgate	S	29° 10'	100° 46'	265	#Mar. 1948	Amistad Dam - Eagle Pass	MCWCID #1
Mercedes LRGFCP Office	S	26° 07'	97° 56'	22	1994	Lower Rio Grande Valley	I. B. & W. C.
Mercedes Pump	S	26° 04'	97° 54'	!	1938	Lower Rio Grande Valley	I. B. & W. C.
Middle Fork San Pedro	C	29° 29'	100° 52'	357	#June 1969	Devils River	I. B. & W. C.
North Fork San Pedro	C	29° 31'	100° 53'	349	#June 1969	Devils River	I. B. & W. C.
Owens Ranch	S	30° 48'	102° 42'	686	#July 1963	Pecos River below Sheffield	Mrs. W. Owens
Pafford Crossing	C	29° 40'	101° 00'	360	Mar. 1960	Devils River	I. B. & W. C.
Pecos River near Langtry Station	C	29° 48'	101° 26'	384	July 1967	Pecos River below Sheffield	I. B. & W. C.
Penitas (Edinburg Pumping Plant)	S	26° 14'	98° 27'	30	July 1957	Lower Rio Grande Valley	M. Stevens
Pinto Creek Station	C	29° 09'	100° 43'	265	#Dec. 1958	Amistad Dam - Eagle Pass	I. B. & W. C.
Presidio (IBWC)	S	29° 34'	104° 23'	792	#Nov. 1949	Above Rio Conchos - Johnson Ranch	
Prosser Ranch No. 1	C	29° 53'	101° 14'	521	Mar. 1965	Pecos River below Sheffield	I. B. & W. C.
Prosser Ranch No. 2	C	29° 48'	101° 15'	564	#Mar. 1965	Devils River	I. B. & W. C.
Prosser Ranch No. 3	C	30° 02'	101° 16'	616	#Mar. 1965	Pecos River below Sheffield	I. B. & W. C.
Redford	C	29° 29'	104° 13'	762	#July 1954	Above Rio Conchos - Johnson Ranch	I. B. & W. C.
Rio Grande near Dryden	R	29° 48'	102° 08'	411	May 1976	Johnson Ranch - Foster Ranch	I. B. & W. C.
Roma (International Bridge)	S	26° 24'	99° 01'	70	# 1941	Falcon Dam - Rio Grande City	National Weather Service
Ross Foster Ranch	C	29° 45'	101° 46'	375	May 1961	Johnson Ranch - Foster Ranch	I. B. & W. C.
Rough Canyon near Del Rio	C	29° 34'	100° 56'	350	#June 1969	Devils River	I. B. & W. C.
San Benito Pump	S	26° 03'	97° 45'	15	Oct. 1933	Lower Rio Grande Valley	CCWCID No. 2
Sellers Ranch	C	29° 34'	101° 02'	363	#Mar. 1960	Devils River	I. B. & W. C.
Shafter	S	29° 49'	104° 19'	1,195	#July 1968	Above Rio Cochos - Johnson Ranch	
Stewart Ranch	R	29° 35'	100° 52'	405	#April 1960	Devils River	Raymond Wylic
Study Butte	S	29° 19'	103° 32'	777	July 1977	Terlingua Creek	I. B. & W. C.
Terlingua Creek Station	C	29° 12'	103° 36'	675	#Mar. 1952	Terlingua Creek	I. B. & W. C.
Trees Farm	R	28° 38'	100° 25'	219	#Mar. 1959	Eagle Pass - Laredo	I. B. & W. C.
Tuffy Whitehead Ranch	R	29° 37'	101° 07'	433	July 1962	Devils River	I. B. & W. C.
United Irrigation District	S	26° 11'	98° 24'	!	#Aug. 1961	Lower Rio Grande Valley	United Irrig. District
Van Dalsen Farm	C	28° 27'	100° 19'	213	# 1959	Eagle Pass - Laredo	I. B. & W. C.
Walker Ranch	C	29° 49'	101° 13'	466	#Aug. 1969	Devils River	I. B. & W. C.
Wardlaw Standard Ranch	S	29° 18'	100° 38'	326	April 1977	Pinto Creek	Hadly Wardlaw
Zapata	S	26° 54'	99° 16'	116	1992	Laredo - Falcon Dam	I. B. & W. C.
Zuberbueler Ranch	S	29° 41'	101° 14'	445	#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	LATI- TUDE	LONGI- TUDE	ELEV. METERS	RECORD BEGAN	WATERSHED SUBDIVISION	OBSERVER
Allende, Coahuila	S	28° 21'	100° 51'	357	1947	Eagle Pass-Laredo	C. N. A.
Aguia Blanca, Nuevo Leon	S	25° 32'	100° 31'	2,690	1958	Rio San Juan	C. N. A.
Anahuac, Nuevo Leon	S	27° 15'	100° 08'	200	#June 1933	Rio Salado	C. N. A.
Cabezon, Nuevo Leon	S	24° 59'	99° 45'	!	#	1962 Adjacent to Rio San Juan	S. A. R. H.
Camargo, Chihuahua	S	27° 42'	105° 10'	1,204	#May 1903	Rio Conchos	Meteor. Service of Mexico
Camargo, Tamaulipas	S	26° 19'	98° 50'	68	#	1921 Rio San Juan	C. N. A.
Candela, Coahuila	S	26° 50'	100° 40'	!	#	1970 Rio Salado	C. N. A.
Carbonera, Nuevo Leon	S	24° 49'	100° 47'	!	#	1958 Rio San Juan	S. A. R. H.
Castillas, Nuevo Leon	S	25° 11'	100° 12'	1,237	#	1958 Rio San Juan	C. N. A.
Castanos, Coahuila	S	26° 47'	101° 27'	2,400	#Oct. 1932	Rio Salado	Meteor. Service of Mexico
Cd. Acuna, Coahuila	S	29° 20'	100° 57'	274		1951 Amistad Dam-Eagle Pass	C. I. L. A.
Cd. Diaz Ordaz, Tamaulipas	S	26° 14'	98° 36'	40	#	1953 Lower Rio Grande Valley	S. A. R. H.
Cd. Juarez, Chihuahua	S	31° 45'	106° 27'	1,131		1903 El Paso-Ft Quitman	I. B. & W. C.
Cd. Mier, Tamaulipas	S	26° 26'	99° 09'	80	#Oct.	1958 Falcon Dam-Rio Grande C.	I. B. & W. C.
Cerralvo, Nuevo Leon	R	26° 05'	99° 37'	345	#Nov. 1938	Rio San Juan	S. A. R. H.
Cerritos, Nuevo Leon	S	25° 31'	100° 12'	!	#	1958 Rio San Juan	S. A. R. H.
Cerro Prieto, Nuevo Leon	S	25° 56'	99° 23'	270	#May 1959	Rio San Juan	S. A. R. H.
Chihuahua, Chihuahua	S	28° 38'	106° 04'	1,450		1900 Rio Conchos	Meteor. Service of Chihuahua
Cienega de Flores, Nuevo Leon	R	25° 57'	100° 10'	540	#April 1938	Rio San Juan	S.A.R.H.
Cienega del Toro, N. L.	S	25° 05'	100° 20'	2,137	#	1958 Rio San Juan	S. A. R. H.
Coyame, Chihuahua	S	29° 28'	105° 06'	!	#Nov 1961	Rio Conchos	Meteor. Service of Chihuahua
Control, Tamaulipas	S	25° 58'	97° 49'	18	#June 1942	Lower Rio Grande Valley	S. A. R. H.
Cuarto Cienegas, Coahuila	S	26° 59'	102° 04'	742		1923 Rio Salado	C. N. A.
Delicias, Chihuahua	S	28° 11'	105° 28'	1,130	#Aug. 1933	Rio Conchos	C. N. A.
Dr. Gonzalez, N. L.	S	25° 48'	99° 52'	318		1992 Rio San Juan	C. N. A.
Ejido Iro de Mayo, Coah.	S	27° 13'	101° 13'	!		1980 Rio Salado	C. N. A.
Ejido Marin, Nuevo Leon	S	25° 50'	100° 00'	!	#Mar. 1979	Rio San Juan	S. A. R. H.
Ejido San Miguel, Coah.	S	29° 02'	100° 58'	1		1976 Amistad-Eagle Pass	C. N. A.
El Alamo, Nuevo Leon	S	26° 24'	100° 24'	!	#	1981 Rio Salado	I. B. & W. C.
El Brasil, Nuevo Leon	S	25° 53'	98° 59'	!	#July 1979	Rio San Juan	S. A. R. H.
El Canada, Nuevo Leon	S	25° 48'	100° 16'	!	#Jan. 1958	Rio San Juan	C. N. A.
El Cuchillo, Nuevo Leon	R	25° 43'	99° 16'	180	#June 1938	Rio San Juan	S. A. R. H.
El Guaje, Coahuila	S	28° 05'	103° 17'	970		1992 Johnson Ranch-Langtry	C. N. A.
El Realito, Nuevo Leon	S	25° 18'	99° 21'	!	#	1971 Rio San Juan	S. A. R. H.
El Vergel, Chihuahua	S	26° 22'	106° 30'	2,240		1957 Rio Conchos	Meteor. Service of Mexico
Emiliano, Zapata, Coah.	S	29° 01'	100° 49'	!		1964 Amistad-Eagle Pass	C. N. A.
Espinazo, Nuevo Leon	S	26° 15'	101° 05'	!	#	1980 Rio Salado	S. A. R. H.
Galeana, Nuevo Leon	S	24° 50'	100° 04'	1,656	#Oct. 1904	Adjacent to Rio San Juan	C. N. A.
Garza Ayala, Nuevo Leon	S	26° 29'	100° 03'	!	#	1968 Rio San Juan	S. A. R. H.
General Bravo, Nuevo Leon	S	25° 48'	99° 11'	180	#Sept. 1960	Rio San Juan	S. A. R. H.
General Cepeda, Coahuila	S	25° 24'	101° 29'	1,485	#Aug. 1926	Rio San Juan	S. A. R. H.
General Trevino, N. L.	S	26° 13'	99° 28'	!	#Oct. 1976	Rio Alamo	S. A. R. H.
Gomez Farias, Coahuila	S	24° 58'	101° 03'	!	#	1979 Rio San Juan	S. A. R. H.
Hacienda Mamulique, N. L.	S	26° 07'	100° 14'	!	#Sept. 1973	Rio San Juan	S. A. R. H.
Higuera, Nuevo Leon	S	25° 58'	100° 01'	500	#Sept. 1906	Rio San Juan	Meteor. Service of Mexico
Hipolito, Coahuila	S	25° 42'	101° 24'	!	#	1980 Rio San Juan	S. A. R. H.
Huachichil, Coahuila	S	25° 12'	100° 50'	2,100		1980 Rio San Juan	C. N. A.
Icamole, Nuevo Leon	S	25° 55'	100° 43'	1,494	#	1958 Rio San Juan	C. N. A.
Jarita, Nuevo Leon	C	27° 26'	99° 48'	207	#Mar. 1961	Laredo-Falcon Dam	S. A. R. H.
Jimenez, Chihuahua	S	27° 08'	104° 56'	1,377	#	1951 Amistad Dam-Eagle Pass	Meteor. Service of Mexico
Jimenez, Coahuila	S	29° 04'	100° 40'	248		1951 Amistad Dam-Eagle Pass	C. I. L. A.
Juarez, Coahuila	S	27° 37'	100° 44'	275		1969 Rio Salado	C. N. A.
La Amistad, Coahuila	S	29° 27'	101° 05'	316	#Feb. 1977	Amistad Dam-Eagle Pass	I. B. & W. C.
La Boquilla, Chihuahua	S	27° 33'	105° 38'	1,240	#June 1910	Rio Conchos	C. N. A.
La Chuparrasa, Coahuila	R	29° 30'	101° 15'	350	#	1970 Foster Ranch-Amistad Dam	I. B. & W. C.
La Cruz, Nuevo Leon	S	25° 28'	100° 26'	1,500	#	1958 Rio San Juan	C. N. A.
La Escondida, Nuevo Leon	S	26° 16'	99° 46'	300	#Feb. 1979	Rio San Juan	S. A. R. H.
La Huasteca, Nuevo Leon	S	25° 32'	100° 30'	!	#	1979 Rio San Juan	S. A. R. H.
La Pomona, Nuevo Leon	S	24° 59'	99° 12'	!	#Mar. 1979	Rio San Juan	S. A. R. H.
Lag. de Salinillas, NL	S	27° 23'	100° 26'	230	#	1940 Rio Salado	C. N. A.
Laguna de Sanchez, NL	R	25° 21'	100° 16'	1,600	#April 1941	Rio Salado	C. N. A.
Lampazos, Nuevo Leon	S	27° 02'	100° 30'	341	#May 1903	Rio Salado	S. A. R. H.
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 Herrera, (La Tableta), Nuevo Leon	R	25° 54'	99° 24'	250	#Sept. 1939	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.

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LOCATION OF RAINFALL STATIONS ON THE RIO GRANDE WATERSHED

IN MEXICO

NAME OF STATION	TYPE GAGE	LATI- TUDE	LONGI- TUDE	ELEV. METERS	RECORD BEGAN	WATERSHED SUBDIVISION	OBSERVER
Madero (Los Aldamas), NL	S	26° 02'	99° 12'	!	#May 1970	Rio San Juan	C. N. A.
Matamoros, Tamaulipas	S	25° 52'	97° 30'	10	# 1958	Lower Rio Grande Valley	Meteor. Service of Mexico
Miguel Aleman, Tamps.	S	26° 24'	99° 02'	56	# 1951	Falcon Dam-Rio Grande	C. S. A. R. H.
Mimbres Nuevo Leon	S	24° 58'	100° 16'	1,750	# 1958	Rio San Juan	S. A. R. H.
Mina, Nuevo Leon	S	26° 00'	100° 31'	500	# 1958	Rio San Juan	C. N. A.
Monclova, Coahuila	S	26° 54'	101° 25'	586	# 1897	Rio Salado	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.
Muzquiz, Coahuila	S	27° 53'	101° 31'	504	#June 1923	Rio Salado	S. A. R. H.
Nueva Cd. Guerrero, Tamps.	S	26° 35'	99° 15'	106	#May 1954	Laredo - Falcon Dam	I. B. & W. C.
Nuevo Laredo, Tamps.	S	27° 30'	99° 30'	126	# 1950	Laredo - Falcon Dam	S. M. N.
Ocampo, Coahuila	S	27° 19'	102° 24'	1,149	#May 1960	Adjacent to Rio Salado	S. A. R. H.
Ojinaga (M.S. of Mexico), Chihuahua	S	25° 29'	100° 23'	1,531	# 1958	Rio San Juan	C. N. A.
Ojinaga, Chihuahua	S	29° 34'	104° 25'	788	#April 1954	Rio Conchos	I. B. & W. C.
Pajonal, Nuevo Leon	S	25° 29'	100° 23'	1,531	# 1958	Rio San Juan	C. N. A.
Palestina, Coahuila	S	29° 09'	100° 59'	330	# 1931	Amistad-Eagle Pass	S. A. R. H.
Paras, Nuevo Leon	S	26° 30'	99° 31'	165	# 1958	Rio Alamo	S. A. R. H.
Piedras Negras, Coahuila	S	28° 43'	100° 31'	249	# 1951	Eagle Pass-Laredo	Meteor. Service of Mexico
Pobladores, Nuevo Leon	S	25° 31'	99° 24'	!	# 1982	Rio San Juan	S. A. R. H.
Potosi, Nuevo Leon	S	24° 51'	100° 19'	!	# 1958	Adjacent to Rio San Juan	C. N. A.
Potrero de Abrego, Coah.	S	25° 17'	100° 21'	!	# 1982	Rio San Juan	S. A. R. H.
Presa Cabeceras, Coah.	S	29° 09'	101° 07'	!	# 1964	Amistad-Eagle Pass	C. N. A.
Presa Carranza, Coah.	S	27° 31'	100° 37'	240	# 1927	Rio Salado	C. N. A.
Pres. Centenario, Coah.	S	29° 13'	100° 57'	!	# 1964	Amistad-Eagle Pass	C. N. A.
Pres. Chihuahua, Chih.	S	28° 34'	105° 10'	1,595	#Oct. 1961	Rio Conchos	C. N. A.
Pres. Luis L. Leon, Chih.	S	28° 57'	105° 17'	!	# Oct. 1964	Rio Conchos	S. A. R. H.
Pres. San Miguel, Coah.	S	29° 02'	100° 57'	!	# 1964	Amistad-Eagle Pass	C. N. A.
Progreso, Coahuila	S	27° 25'	101° 00'	370	#Feb. 1943	Rio Salado	S. A. R. H.
Rayones, Nuevo Leon	S	25° 01'	100° 05'	600	#Oct. 1926	Rio San Juan	C. N. A.
Reata, Coahuila	S	26° 08'	101° 05'	936	#July 1944	Rio San Juan	S. A. R. H.
Represa Amistad, Coahuila	R	29° 26'	101° 02'	280	#June 1969	Amistad Dam - Eagle Pass	I. B. & W. C.
Retamal, Tamaulipas	S	26° 02'	98° 02'	82	#Oct. 1949	Lower Rio Grande Valley	I. B. & W. C.
Reynosa, Tamaulipas	R	26° 06'	98° 06'	26	# 1941	Lower Rio Grande Valley	I. B. & W. C.
Rinconada, N.L.	S	25° 41'	100° 42'	1,660	#April 1944	Rio San Juan	C. N. A.
Rio Bravo, Tamaulipas	S	25° 59'	98° 04'	26	# 1958	Lower Rio Grande Valley	C. N. A.
Rodrigo Gomez Res. N. L.	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, Coahuila	S	27° 51'	101° 07'	340	# 1922	Rio Salado	C. N. A.
Sabinas, Hidalgo, N. L.	S	26° 30'	100° 10'	314	#May 1958	Rio Salado	I. B. & W. C.
Saltito, Coahuila	S	25° 26'	101° 00'	1,610	# 1886	Rio San Juan	C. N. A.
San Antonio de las Alazanas, Coahuila	S	25° 15'	100° 35'	2,170	# 1958	Rio San Juan	S. A. R. H.
San Juan, Nuevo Leon	S	25° 33'	99° 50'	268	#Nov. 1943	Rio San Juan	C. N. A.
San Juan de Vaqueria, Coah.	S	25° 15'	101° 13'	!	# 1980	Rio San Juan	C. N. A.
San Rafael, Nuevo Leon	C	25° 02'	100° 33'	1,714	# 1958	Rio San Juan	C. N. A.
Santa Catarina, N. L.	S	25° 40'	100° 28'	880	#Oct. 1937	Rio San Juan	C. N. A.
Sierra Mojada, Coahuila	S	27° 07'	103° 42'	1,256	# 1897	Johnson Ranch-Langtry	C. N. A.
Sombreretillo, Nuevo Leon	S	26° 18'	99° 58'	!	# 1970	Rio San Juan	S. A. R. H.
Tepehuaje, N. L.	S	25° 30'	99° 66'	!	#Mar. 1979	Rio San Juan	S. A. R. H.
Vaqueria, Nuevo Leon	S	25° 08'	99° 04'	!	#June 1979	Rio San Juan	S. A. R. H.
Valle Hermoso, Tamaulipas	S	25° 41'	97° 48'	16	#June 1948	Lower Rio Grande Valley	C. N. A.
Vallecillo, Nuevo Leon	S	26° 40'	99° 59'	274	#June 1958	Rio Salado	S. A. R. H.
Villa Aldama, Chihuahua	S	28° 50'	105° 55'	1,262	#Aug. 1966	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 Cardenas, Tamps.	S	23° 56'	98° 55'	!	# 1953	Lower Rio Grande Valley	C. N. A.
Villa Hidalgo, Coahuila	S	27° 47'	99° 52'	200	# 1951	Eagle Pass-Laredo	I. B. & W. C.
Zaragoza, Coahuila	S	23° 58'	99° 46'	1,370	#Aug. 1977	Eagle Pass-Laredo	C. N. A.

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

EVAPORATION IN THE RIO GRANDE BASIN
IN THE UNITED STATES

In Millimeters

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

Month	Presidio		Johnson Ranch		Martin King Ranch		Long Ranch	
	1999	Average 1949-1999	1999	Average 1949-1999	1999	Average 1956-1999	1999	Average 1971-1999
Jan.	51	81	162	95	140	87	40	56
Feb.	75	112	244	135	210	103	130	71
Mar.	121	177	308	217	244	170	85	110
April	252	219	573	274	240	208	126	147
May	220	261	593	330	290	232	162	160
June	221	279	760	344	307	276	164	197
July	213	266	504	346	341	314	198	225
Aug.	214	244	508	304	382	303	187	210
Sept.	209	199	468	248	377	224	130	156
Oct.	128	156	379	195	342	178	176	120
Nov.	51	105	136	122	271	116	104	71
Dec.	62	78	162	92	177	90	85	56
Total	1,817	2,177	4,797	2,702	3,321	2,301	1,587	1,579

Month	Amistad Dam		Falcon Dam		Brownsville		
	1999	Average 1963-1999	1999	Average 1956-1999	1999	Average 1958-1999	
Jan.	116	96	159	103	103	78	
Feb.	160	121	165	131	99	90	
Mar.	205	202	211	208	134	121	
April	244	252	267	254	138	148	
May	315	277	352	293	129	147	
June	299	324	354	336	132	158	
July	338	370	351	385	150	184	
Aug.	463	344	369	350	159	174	
Sept.	360	251	244	246	91	135	
Oct.	407	196	182	189	101	122	
Nov.	395	131	153	133	85	96	
Dec.	244	95	134	101	89	83	
Total	3,546	2,659	2,941	2,729	1,410	1,536	

EVAPORATION IN THE RIO GRANDE BASIN
IN MEXICO

In Millimeters

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 Cd. Acuna, 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 meters and of all brush and tall weeds within 30 meters of the fenced enclosures. The Ojinaga station is 9 meters landward of the east Rio Conchos levee with a concrete V-shaped irrigation ditch and road between the levee and the 8 x 8-meter woven wire pen, which encloses a 150-cm evaporation pan and a 70 x 50-cm shelter with thermometers. Inside the enclosures, all vegetation has been eradicated or kept trimmed to within 0.08 meter 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 meters in diameter and 254 millimeters inches deep, made of 22-gage galvanized iron, set on a wooden platform with the rim of the pan 406 millimeters above the ground. The water level was maintained between 51 and 76 millimeters 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 a Spanish water bulletin published by the Mexican Section of the Commission.

Month	Ojinaga, Chihuahua		La Amistad, Coahuila		Cd. Acuna, Coahuila		Jimenez, Coahuila	
	1999	Average 1951-1999	1999	Average 1977-1999	1999	Average 1951-1999	1999	Average 1951-1999
Jan.	106	87	108	88	95	82	81	92
Feb.	132	124	147	116	112	109	102	117
Mar.	158	200	170	182	129	182	121	181
April	220	249	214	230	149	212	146	205
May	280	315	264	252	176	236	161	232
June	276	330	201	289	174	276	147	272
July	314	318	252	334	222	313	180	307
Aug.	300	272	299	312	242	285	204	282
Sept.	191	213	223	230	183	206	145	206
Oct.	169	167	189	172	167	148	111	150
Nov.	105	105	119	109	91	92	70	99
Dec.	97	80	118	85	89	73	72	82
Total	2,348	2,460	2,304	2,399	1,829	2,214	1,540	2,225

Month	Villa Hidalgo, Coahuila		Nuevo Laredo, Tamaulipas		Nueva Cd. Guerrero, Tamaulipas		Cd. Mier, Tamaulipas	
	1999	Average 1951-1999	1999	Average 1964-1999	1999	Average 1954-1999	1999	Average 1955-1999
Jan.	106	89	154	98	126	86	146	92
Feb.	132	117	150	123	147	109	155	121
Mar.	158	177	192	198	206	181	181	196
April	220	226	252	251	257	218	238	235
May	280	258	309	277	312	253	326	267
June	276	300	291	325	309	291	316	308
July	314	341	314	366	305	335	338	352
Aug.	300	309	319	337	339	305	349	316
Sept.	191	224	223	247	224	220	239	234
Oct.	169	171	168	190	161	166	161	182
Nov.	105	111	139	126	129	115	127	120
Dec.	97	85	114	95	123	87	122	91
Total	2,348	2,408	2,625	2,633	2,638	2,366	2,698	2,514

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 meters above the ground and 2.74 meters southwest of either a 0.61 or 1.22-meter 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 kilometers 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 - In Degrees Celsius

In The United States

Month	Amistad Dam, Texas				Falcon Dam, Texas			
	1999		Mean 1999	Average 1963-1999	1999		Mean 1999	Average 1950-1999
	Max.	Min.			Max.	Min.		
Jan.	14	11	27	-6	22	13	33	-1
Feb.	19	13	32	-1	25	16	33	0
Mar.	20	17	33	4	27	20	36	6
April	24	22	37	5	31	24	41	12
May	28	25	37	13	31	27	44	18
June	29	28	38	19	31	29	41	21
July	30	30	39	21	32	30	42	21
Aug.	32	29	41	19	30	30	42	18
Sept.	27	26	38	12	27	27	39	15
Oct.	23	22	34	7	24	23	36	11
Nov.	19	16	30	3	18	18	32	4
Dec.	14	12	29	-1	17	14	31	3
Yearly	23	21	41	-6	26	23	44	-1

In Mexico

Month	Ojinaga, Chihuahua				La Amisted, Coahuila				Cd. Acuna, Coahuila			
	1999		Mean 1999	Average 1954-1999	1999		Mean 1999	Average 1977-1999	1999		Mean 1999	Average 1951-1999
	Max.	Min.			Max.	Min.			Max.	Min.		
Jan.	11	10	29	-5	12	11	26	-4	12	10	28	-4
Feb.	15	13	31	0	17	13	30	-1	17	12	32	-3
Mar.	18	17	32	2	18	17	30	4	18	17	33	5
April	22	21	38	5	22	21	35	6	23	22	36	6
May	27	26	39	10	26	26	39	15	26	25	36	15
June	30	30	45	17	28	29	39	21	28	29	38	20
July	30	30	45	20	29	31	40	21	28	30	39	21
Aug.	30	29	42	19	31	31	41	21	31	30	40	21
Sept.	28	26	39	10	26	27	37	14	26	27	38	9
Oct.	20	21	37	3	21	22	33	8	21	21	34	4
Nov.	15	14	30	-4	17	16	29	4	17	15	30	2
Dec.	9	11	27	-8	12	12	27	-1	11	11	28	-2
Yearly	21	21	45	-8	22	21	41	-4	22	21	40	-4

Month	Jimenez, Coahuila				Villa Hidalgo, Coahuila				Nuevo Laredo, Tamaulipas (13-20)			
	1999		Mean 1999	Average 1951-1999	1999		Mean 1999	Average 1964-1999	1999		Mean 1999	Average 1964-1999
	Max.	Min.			Max.	Min.			Max.	Min.		
Jan.	12	12	27	-3	15	12	34	-5	16	13	32	0
Feb.	16	14	31	-5	20	14	34	-3	20	16	32	1
Mar.	18	18	33	2	22	19	38	3	22	20	36	4
April	23	22	38	3	27	23	44	13	26	24	40	8
May	27	26	38	14	29	27	43	16	29	27	41	17
June	29	29	39	21	31	30	40	22	31	30	39	20
July	30	30	42	21	31	31	41	22	31	31	41	22
Aug.	32	30	43	21	31	30	42	22	32	31	42	22
Sept.	28	27	39	11	28	27	39	13	28	28	38	15
Oct.	23	22	38	5	23	22	38	5	22	24	35	8
Nov.	19	16	37	0	20	17	34	2	20	19	30	3
Dec.	13	12	32	-4	13	13	31	-4	14	15	30	1
Yearly	23	22	43	-5	24	22	44	-5	24	23	42	0

TEMPERATURE, HUMIDITY, AND WIND

Temperature - In Degrees Celsius

In Mexico

Month	Nuevo Cd. Guerrero, Tamaulipas				Cd. Mier, Tamaulipas				El Retamal, Tamaulipas			
	1999				1999				1999			
	Mean 1999	Average 1958-1999	Max.	Min.	Mean 1999	Average 1955-1999	Max.	Min.	Mean 1999	Average 1951-1999	Max.	Min.
Jan.	17	14	34	3	17	14	35	1	16	16	29	4
Feb.	21	16	34	1	21	16	35	4	17	17	26	3
Mar.	23	20	37	7	23	20	39	5	18	21	25	7
April	27	24	38	11	25	25	11	41	21	24	27	10
May	29	27	44	18	30	28	45	16	24	27	28	18
June	31	30	40	21	32	30	41	22	29	29	48	23
July	30	31	41	21	31	31	43	22	31	30	40	23
Aug.	31	31	41	21	32	31	43	22	32	30	41	22
Sept.	28	28	39	15	29	29	40	16	30	29	41	17
Oct.	23	24	35	9	24	24	37	7	25	25	40	10
Nov.	21	19	32	4	22	19	32	5	22	21	35	5
Dec.	15	15	31	5	16	15	32	0	17	16	31	5
Yearly	25	23	44	1	25	24	45	0	24	24	48	3

TEMPERATURE, HUMIDITY AND WIND

Mean Wind Speed - Kilometers Per Hour

In the United States

Month	Martin King Ranch, Texas		Amistad Dam, Texas		Falcon Dam, Texas	
	1999	Average 1956-1999	1999	Average 1963-1999	1999	Average 1950-1999
Jan.	6.7	4.1	4.9	3.3	5.3	3.5
Feb.	7.3	4.9	4.6	3.7	5.8	4.0
Mar.	9.6	6.3	6.2	4.4	7.0	4.6
April	9.7	6.7	5.9	4.4	6.8	5.1
May	11.0	7.2	6.1	4.4	7.9	5.3
June	11.3	7.8	6.2	4.6	7.7	5.4
July	10.3	7.3	5.8	4.3	6.7	5.6
Aug.	7.4	6.6	4.1	3.8	6.1	4.9
Sept.	9.3	5.4	5.2	3.4	4.8	3.7
Oct.	7.6	5.2	4.7	3.3	4.2	3.3
Nov.	6.8	4.4	3.9	3.2	4.2	3.5
Dec.	6.2	3.9	4.5	3.1	5.5	3.3
Yearly	8.6	5.8	5.2	3.8	6.0	4.4

Mean Relative Humidity - Percent

In the United States

Month	Amistad Dam, Texas		Falcon Dam, Texas	
	1999	Average 1963-1999	1999	Average 1950-1999
Jan.	50	60	74	67
Feb.	47	57	79	65
Mar.	57	53	82	62
April	56	55	79	63
May	60	62	78	66
June	69	62	83	65
July	62	58	81	61
Aug.	53	58	74	62
Sept.	57	63	76	66
Oct.	52	62	85	66
Nov.	54	62	79	67
Dec.	42	61	76	68
Yearly	55	59	79	65

DRAINAGE BASIN AND IRRIGATED AREAS
Along the Rio Grande and Tributaries - 1999

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

The irrigated areas shown below are listed in accordance with the location of their diversions points and are all within the Rio Grande Basin, except in the lower Rio Grande Valley where large portions of irrigated lands in both countries lie outside the basin boundary line.

On the United States side, only the areas irrigated in 1999 are shown, except that in some reaches the figures shown represent acreages which were subject to irrigation in 1999 but for which data on the portion actually irrigated is not known. On the Mexican side, part of the data may have been gathered prior to 1999. The irrigated area data tabulated are the best data that could be obtained.

DESIGNATION OF AREAS AND GAGING STATIONS	Drainage Basin Square Kilometers			Irrigated Areas - Hectares		
	United States	Mexico	Total	United States	Mexico	Total
Above Elephant Butte Dam	67,141	0	67,141			
Elephant Butte Dam to Caballo Dam	3,354	0	3,354	0	0	0
Above Caballo Dam	70,695	0	70,695	0	0	0
Caballo Dam to American Dam	5,317	0	5,317	26,631	0	26,631
Above American Dam	75,812	0	75,812	26,631	0	26,631
American Dam to Acala Station (Discontinued)	1,740	1,409	3,149	18,784	13,921	32,705
Above Acala Gaging Station (Discontinued)	77,552	1,409	78,961	45,415	13,921	59,336
Acala Station to Fort Quitman Station	1,717	2,056	3,773	6,257	0	6,257
Above Fort Quitman Gaging Station	79,269	3,465	82,734	51,672	13,921	65,593
Fort Quitman Station to Above Presidio Station	4,263	3,652	7,915 a)	1,671	180	1,851
Above Presidio Station above Rio Conchos	83,532	7,117	90,649	53,343	14,101	67,444
Rio San Pedro above Francisco I. Madero Dam	0	10,778	10,778	0	39,740	39,740
Rio Conchos above Boquilla Dam	0	10,282	10,282	0	0	0
Boquilla Dam to Luis L. Leon Dam	0	38,490	38,490	0	36,431	36,431
Luis L. Leon Dam to mouth of river	0	8,837	8,837	0	5,736	5,736
Rio Conchos - Total	0	68,387	68,387	0	81,907	81,907
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	549	3,729	4,278
Presidio Station above Rio Conchos to Presidio Station below Rio Conchos - Total	4,776	68,622	73,398	549	85,636	86,185
Above Presidio Station below Rio Conchos	88,308	75,739	164,047	53,892	99,737	153,629
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	264	650	914
Presidio Station below Rio Conchos to Johnson Ranch Station - Total	5,602	5,848	11,450	264	650	914
Above Johnson Ranch Gaging Station	93,910	81,587	175,497	54,156	100,387	154,543
Johnson Ranch Station to Foster Ranch Station	16,607	17,016	33,623	127	0	127
Above Foster Ranch Gaging Station	110,517	98,603	209,120	54,283	100,387	154,670
Pecos River above Girvin (In the State of Texas)	76,566	0	76,566	3,237	0	3,237
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	3,237	0	3,237
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
Foster Ranch Station to Amistad Dam excluding above tributaries	1,033	6,164	7,197	0	0	0
Foster Ranch Station to Amistad Dam- Total	103,631	6,164	109,795	3,237	0	3,237
Above Amistad Dam	214,148	104,767	318,915	57,520	100,387	157,907
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	57,520	100,387	157,907
Below Amistad Dam Station to Del Rio Station	155	259	414	96	0	96
Above Del Rio Gaging Station	214,316	105,036	319,352	57,616	100,387	158,003
Arroyo Las Vacas above Gaging Station	0	906	906	0	42	42
San Felipe Creek above Gaging Station	119	0	119	660	0	660

DRAINAGE BASIN AND IRRIGATED AREAS
Along the Rio Grande and Tributaries - 1999

DESIGNATION OF AREAS AND GAGING STATIONS	Drainage Basin Square Kilometers			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	4,596	4,596
Gaging Station to mouth of river	0	16	16	0	0	0
Rio San Diego - Total	0	2,225	2,225	101	4,596	4,697
Del Rio Station to Jimenez Station - excluding above tributaries	1,733	285	2,018	b) 19,425	0	19,425
Del Rio Station to Jimenez Station - Total	2,497	3,416	5,913	20,186	4,638	24,824
Above the Jimenez Gaging Station	216,813	108,452	325,265	77,802	105,025	182,827
Rio San Rodrigo - Total	0	2,717	2,717	0	711	711
Jimenez Station to Piedras Negras Station- excluding Rio San Rodrigo	1,375	378	1,753	89	286	375
Jimenez Station to Piedras Negras Station-Total	1,375	3,095	4,470	89	997	1,086
Above Piedras Negras Gaging Station	218,188	111,547	329,735	77,891	106,022	183,913
Rio Escondido above Gaging Station	0	3,779	3,779	0	0	0
Rio Escondido - Total	0	3,810	3,810	0	0	0
Piedras Negras Station to El Indio Station - excluding Rio Escondido	614	533	1,147	0	177	177
Piedras Negras Station to El Indio Station - Total	614	4,343	4,957	0	177	177
Above El Indio Gaging Station	218,802	115,890	334,692	77,891	106,199	184,090
El Indio Gaging Station to Laredo Gaging Station	3,201	5,481	8,682	4,350	1,515	5,865
Above Laredo Gaging Station	222,003	121,371	343,374	82,241	107,714	189,955
Rio Salado above Venustiano Carranza Dam	0	41,002	41,002	0	1,782	1,782
Rio Salado-Venustiano Carranza Dam to Las Tortillas Gaging Station	0	18,969	18,969	0	4,720	4,720
Rio Salado-Las Tortillas Gaging Station to River Road Crossing	0	435	435	0	1,675	1,675
Rio Salado- Total	0	60,406	60,406	0	8,177	8,177
Laredo Station to Falcon Dam - excluding Rio Salado	5,289	3,437	8,726	c) 5,600	1,165	6,765
Laredo Station to Falcon Dam - Total	5,289	63,843	69,132	5,600	9,342	14,942
Amistad Dam to Falcon Dam - excluding above tributaries	12,380	10,383	22,763	29,560	3,143	32,703
Above Falcon Dam	227,292	185,214	412,506	87,841	117,056	204,897
Rio Alamo above Gaging Station	0	4,339	4,339	0	0	0
Rio San Juan above Marte Gomez Dam	0	33,010	33,010	0	0	0
Rio San Juan - Marte Gomez Dam to Camargo Gaging Station	0	505	505	0	32,670	32,670
Rio San Juan - Total	0	33,538	33,538	0	32,670	32,670
Falcon Dam to Rio Grande City Station - excluding above tributaries	575	637	1,212	1,671	1,495	3,166
Falcon Dam to Rio Grande City Station - Total	575	38,514	39,089	1,671	34,165	35,836
Above Rio Grande City Gaging Station	227,867	223,728	451,595	89,512	151,221	240,733
Rio Grande City Station to Anzalduas Dam	2,466	2,067	4,533	66,665	4,717	71,382
Anzalduas Canal				0	133,283	133,283
Above Anzalduas Dam	230,333	225,795	456,128	156,177	289,221	445,398
Anzalduas Dam to Progreso Station(Discontinued)	34	423	457	47,547	582	48,129
Above Progreso Gaging Station	230,367	226,218	456,585	203,724	289,803	493,527
Progreso Station to San Benito Station	18	23	41	125,719	1,255	126,974
Above San Benito Gaging Station	230,385	226,241	456,626	329,443	291,058	620,501
San Benito Station to Brownsville Station	36	39	75	28,623	356	28,979
Above Brownsville Gaging Station	230,421	226,280	456,701	358,066	291,414	649,480
Brownsville Station to Gulf of Mexico				1,653	0	1,653
Falcon Dam to Gulf of Mexico - excluding Rio Alamo and Rio San Juan				271,878	141,688	413,566
Amistad Dam to Gulf of Mexico excluding above tributaries				301,438	144,831	446,269
Above Gulf of Mexico				359,719	291,414	651,133

a) Area subject to irrigation during the year.

b) Includes 15,582 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 1999 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 1992 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 METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	39.8	35.5	41.2	58.8	44.0	48.3	55.8	76.4	52.9	33.9	41.1	42.0
2	38.9	37.2	40.7	51.2	44.7	40.6	51.8	86.7	54.1	36.0	39.8	41.0
3	38.8	37.3	38.0	47.1	46.9	39.0	39.5	82.9	46.9	33.3	39.2	41.5
4	37.4	36.6	35.4	52.8	53.5	33.0	45.5	99.4	43.7	43.0	39.2	40.1
5	37.6	38.5	36.1	48.5	46.4	33.7	45.1	137	45.0	45.4	39.2	40.0
6	36.2	39.0	35.1	42.5	41.3	37.6	47.2	77.1	56.7	43.8	40.2	39.1
7	37.2	38.7	37.4	44.8	33.6	45.9	45.1	47.6	75.1	40.2	41.2	37.1
8	41.6	38.3	35.5	44.4	31.3	72.4	42.2	51.3	48.9	44.1	39.7	35.7
9	38.4	40.6	34.0	44.5	33.9	46.3	43.7	57.8	50.3	38.4	39.9	35.1
10	37.1	40.4	37.8	45.4	36.3	45.1	60.0	53.5	52.1	37.9	41.8	34.4
11	35.6	40.9	40.9	45.8	36.6	68.6	116	51.2	46.4	41.0	43.1	34.8
12	37.2	39.3	44.4	42.4	38.6	54.3	160	41.2	45.5	44.4	44.3	33.6
13	38.0	39.7	41.8	41.2	35.2	66.5	90.1	41.1	57.5	40.4	43.2	33.2
14	38.9	39.9	38.6	42.6	40.4	97.1	50.1	42.1	61.9	42.3	43.2	33.9
15	37.8	38.1	38.6	51.1	35.1	275	71.5	42.2	54.3	40.3	43.8	33.6
16	38.7	37.2	36.9	49.1	41.2	302	80.0	38.2	45.7	39.8	43.7	34.6
17	38.8	36.2	43.2	38.5	41.0	195	82.7	37.4	47.2	43.9	42.3	35.4
18	34.6	36.1	94.9	33.6	40.3	151	70.9	40.8	43.1	40.3	42.5	35.7
19	36.9	34.4	66.3	30.6	34.3	166	76.7	44.6	44.1	38.4	42.7	38.2
20	38.5	35.3	62.5	36.9	29.1	132	57.6	49.8	43.4	38.3	40.9	35.0
21	39.2	33.7	61.8	36.7	36.5	136	57.8	47.7	42.7	38.2	40.9	32.9
22	37.8	34.2	63.0	40.2	34.4	121	60.9	53.0	43.4	33.2	42.4	35.1
23	36.3	35.3	67.2	41.1	38.6	99.7	72.2	50.4	36.2	37.6	41.1	35.0
24	36.9	36.8	60.6	46.2	34.6	129	91.4	74.5	33.8	37.5	42.2	34.8
25	37.1	37.6	44.0	51.6	56.6	122	81.0	77.4	34.5	36.2	39.4	35.9
26	37.5	38.4	43.1	50.5	132	82.6	68.7	72.0	37.6	36.6	37.4	36.0
27	37.2	40.4	54.6	49.4	64.2	69.0	52.2	50.8	39.9	35.5	41.5	36.8
28	38.2	38.8	66.5	46.2	50.1	75.6	54.3	47.3	45.7	35.5	42.1	37.8
29	39.1		68.2	42.6	52.9	61.2	49.7	46.1	35.1	36.7	39.9	37.2
30	37.0		93.2	39.0	59.7	59.4	60.5	56.4	32.0	40.1	41.3	41.1
31	36.3		80.3		55.4		53.2	65.7		39.9		42.9
Sum	1,054.4		1,335.3		2,904.9		1,839.6		1,212.1		1,239.2	1,139.5
	1,170.6		1,581.8		1,398.7		2,031.4		1,395.7			

Current Year 1999

Period 1977-1999

Month	Extreme Gage Meters		Extreme-Cubic Meters per Second				Average	Volume-Thousand Cubic Meters				
			High		Low			Total	Average	Maximum	Minimum	
	High	Low	Day	Day	Day	Day						
Jan.			8	41.6	18	34.6	37.8	101,140	153,153	368,798	98,358	
Feb.			11	40.9	21	33.7	37.7	91,100	150,741	432,864	90,012	
Mar.			18	94.9	6	34.0	51.0	136,668	168,167	322,164	94,167	
April			1	58.8	19	30.6	44.5	115,370	179,338	437,055	94,349	
May			16	302	4	33.0	96.8	250,983	250,726	562,118	118,420	
June			12	160	3	39.5	65.5	175,513	239,133	496,282	107,307	
July			5	137	17	37.4	59.3	158,941	325,162	1,037,318	124,908	
Aug.			7	75.1	30	32.0	46.5	120,588	347,880	1,624,752	101,736	
Sept.			5	45.4	22	33.2	39.1	104,725	346,733	1,172,715	104,725	
Oct.			12	44.3	26	37.4	41.3	107,067	169,003	560,631	88,007	
Nov.			31	42.9	21	32.9	36.8	98,453	137,005	321,211	92,733	
Yearly					302		50.1	1,581,396	2,696,674	5,003,493	1,581,396	

e 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 1999 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 1992 survey; and d) rate of evaporation measured at the dam and Nueva Cd. Guerrero.

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 METERS PER SECOND 1999 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	18.1	26.0	34.1	128	49.0	66.1	84.3	42.3	80.9	47.4	43.7	20.2
2	12.6	19.9	47.3	112	35.2	44.7	99.5	42.7	69.2	52.9	31.0	32.8
3	17.8	19.7	32.4	124	35.6	31.0	98.7	0	57.2	36.7	22.7	22.8
4	0	17.6	28.6	104	54.8	24.7	72.3	21.6	47.2	22.4	20.9	54.8
5	9.27	0	33.8	109	46.0	30.9	98.1	39.7	64.5	24.3	44.0	5.69
6	22.1	34.1	36.3	114	35.0	32.7	74.9	40.6	82.6	38.1	36.1	10.6
7	14.6	21.0	22.0	109	37.7	31.6	74.3	35.2	83.4	19.5	36.0	31.9
8	30.9	28.0	42.0	98.0	45.1	27.4	67.3	0	60.0	43.8	36.1	34.7
9	27.5	22.0	46.8	109	31.1	28.6	56.2	34.7	41.2	38.9	28.7	33.3
10	19.2	15.6	31.8	108	46.9	30.5	73.5	28.5	38.7	28.1	42.4	13.4
11	16.3	46.8	34.2	105	40.8	35.7	69.5	42.6	39.5	36.5	37.4	31.9
12	23.4	0	41.3	90.2	36.9	39.0	88.7	25.4	32.2	34.0	30.6	41.1
13	33.0	12.0	53.2	75.0	37.5	38.9	90.4	33.3	41.1	42.7	36.7	27.4
14	13.4	30.9	44.2	130	101	45.6	65.4	40.4	38.8	28.6	28.1	44.8
15	5.30	36.9	71.9	100	83.7	157	59.2	45.4	68.6	8.78	29.5	16.5
16	23.0	48.4	104	96.3	54.7	88.3	67.0	41.2	37.9	40.2	33.2	30.7
17	18.6	30.2	96.6	83.7	46.1	85.1	86.2	43.8	66.1	25.9	37.0	37.0
18	10.6	38.1	108	97.5	44.3	127	66.9	25.0	48.0	353	27.3	24.1
19	21.5	28.3	126	81.4	39.7	132	52.0	27.4	36.1	127	43.4	33.0
20	13.4	38.3	102	104	41.7	131	54.5	34.4	37.3	97.7	32.7	48.6
21	31.8	37.2	109	114	65.7	169	47.1	19.5	59.9	50.0	28.7	0
22	45.0	36.1	90.3	100	55.5	128	68.9	37.8	28.5	49.7	23.6	47.0
23	0	32.9	107	115	44.3	276	46.4	35.7	26.2	32.4	50.2	34.5
24	16.3	35.9	112	94.4	37.4	531	60.4	48.6	21.1	34.5	47.3	8.94
25	3.10	38.9	107	84.3	33.0	223	50.0	242	27.8	27.7	20.8	30.4
26	20.5	39.7	81.1	94.9	48.1	182	38.5	521	35.8	31.1	12.2	24.5
27	22.8	35.8	179	133	36.0	161	56.2	1,000	36.7	39.0	31.3	26.0
28	21.6	42.7	193	116	83.3	150	48.9	1,920	46.5	37.7	46.0	18.9
29	26.6	237	116	103	142	142	50.8	270	98.3	28.4	34.0	32.2
30	5.01	176	70.2	103	113	113	32.3	134	48.3	29.3	32.1	44.4
31	7.65	118	102	102	20.4	98.3			31.4			30.4
Sum		813.0		3,115.9		3,302.8		4,955.5		1,577.88		892.53
	550.93	2,645.9		1,654.1		2,018.8		1,477.3		992.6		

Current Year 1999

Period 1968-1999

Month	Extreme Gage Meters		Extreme-Cubic Meters per Second				Volume-Thousand Cubic Meters				
	High	Low	Day		Day		Average	Total	Average	Maximum	Minimum
			Day	Day	Day	Day					
Jan.	81.090	80.675	22	45.0	14	0	17.8	47,600	161,555	311,728	47,600
Feb.	80.660	80.240	16	48.4	118	0	29.0	70,243	194,901	558,835	67,760
Mar.	80.215	79.720	29	237	7	22.0	85.4	228,606	215,240	552,528	65,454
April	80.475	78.960	27	133	30	70.2	104	269,214	255,300	705,205	61,564
May	78.870	77.530	129	103	9	31.1	53.4	142,914	388,595	948,240	125,635
June	79.025	76.980	24	531	4	24.7	110	285,362	350,658	950,659	57,491
July	79.830	79.050	2	99.5	31	20.4	65.1	174,424	304,592	1,302,981	41,298
Aug.	80.790	79.020	28	1,920	13	0	160	428,155	286,820	1,262,218	69,984
Sept.	81.185	80.820	29	98.3	24	21.1	49.2	127,639	405,549	1,779,529	91,679
Oct.	81.460	81.105	18	353	15	8.78	50.9	136,329	361,892	1,684,800	69,890
Nov.	81.455	81.200	23	50.2	26	12.2	33.1	85,761	190,081	664,762	50,154
Dec.	81.190	81.050	4	54.8	21	0	28.8	77,115	158,641	376,047	43,033
Yearly	81.460	76.980		1,920		0	65.7	2,073,362	3,273,824	7,690,727	1,419,986

* Mean daily

! And other days