

UNITED STATES OF AMERICA
DEPARTMENT OF STATE

INTERNATIONAL BOUNDARY AND WATER COMMISSION
UNITED STATES AND MEXICO

WATER BULLETIN NUMBER 58

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

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

1988

INTERNATIONAL BOUNDARY AND WATER COMMISSION
UNITED STATES AND MEXICO

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

CONTENTS

Foreword and Acknowledgments	4
General Hydrologic Conditions for 1988	6
Isohyetal Map for Year 1988	127
Map - Rio Grande Drainage Basin	Following Page 144

QUANTITY OF WATER

Stream-Flow Records	
Rio Grande below Elephant Butte Dam	7
below Caballo Dam	8
at El Paso	9
Diversions from the Rio Grande - American Canal at El Paso	10
Rio Grande below American Dam at El Paso and Cd. Juarez	11
Diversions from the Rio Grande - Acequia Madre at Cd. Juarez	12
Rio Grande at Fort Quitman near Colonia Luis Leon	13
near Candelaria and San Antonio del Bravo	14
above Rio Conchos near Presidio and Ojinaga	15
Tributary - Rio Conchos near Ojinaga	16
Alamito Creek near Presidio	17
Rio Grande below Rio Conchos near Presidio and Ojinaga	18
Tributary - Terlingua Creek near Terlingua	19
Rio Grande at Johnson Ranch near Castolon and Santa Elena	20
at Foster Ranch near Langtry and Rancho Santa Rosa	21
Tributary - Pecos River near Langtry	22
Dead Mans Canyon near Comstock	23
Devils River at Pafford Crossing near Comstock	24
Big Satan Creek near Comstock and Rough Canyon near Del Rio	25
North Fork San Pedro Creek and Middle Fork San Pedro Creek near Del Rio	26
Evans Creek near Comstock	27
Carmina Springs near Cd. Acuna	28
Lourdes and Hilda Springs near Cd. Acuna	29
Rio Grande below Amistad Dam near Cd. Acuna and Del Rio	30
Tributary - Spring M-15 near Cd. Acuna	31
Arroyo de los Jabonillos near Cd. Acuna	32
Spring M-5 near Cd. Acuna	33
Arroyo del Buey near Cd. Acuna	34
Maris Spring near Cd. Acuna	35
Eight Mile Creek near Del Rio	36
McKee Spring near Del Rio	37
Arroyo de la Treinta y Una near Cd. Acuna	38
Cantu Spring near Del Rio (formerly Cantu Spring on Cienegas Creek near Del Rio)	39
Cienegas Creek near Del Rio	40
Rio Grande at Del Rio and Cd. Acuna	41
Tributary - Arroyo de Las Vacas at Cd. Acuna	42
San Felipe Springs at Del Rio	43
San Felipe Creek near Del Rio	44
Diversions from the Rio Grande - Maverick Canal at Mile 13 near Quemado	45
Tributary - Pinto Creek near Del Rio	46
Rio San Diego near Jimenez (formerly Rio San Diego at Jimenez)	47
Rio Grande near Jimenez and Quemado (formerly Rio Grande below Maverick Dam near Quemado)	48
Tributary - Rio San Rodrigo at El Moral (formerly Rio San Rodrigo near mouth at El Moral)	49
Return Flow at Maverick Power Plant near Eagle Pass	50
Maverick Canal Extension below the Power Plant near Eagle Pass	51
Tributary - Return Flow from the Maverick Irrigation District above Eagle Pass (formerly Return Flow - Maverick Dam to Eagle Pass)	52
Rio Grande at Piedras Negras and Eagle Pass (formerly Rio Grande at Eagle Pass)	53
Tributary - Rio Escondido at Villa de Fuente	54
Return Flow from the Maverick Irrigation District below Eagle Pass (formerly Return Flow - Eagle Pass to San Antonio Crossing)	55
Rio Grande near El Indio and Villa Guerrero (formerly Rio Grande at San Antonio Crossing near El Indio)	56
at Laredo and Nuevo Laredo (formerly at Nuevo Laredo)	57
Tributary - Rio Salado near Las Tortillas (formerly Rio Salado at Las Tortillas)	58
Rio Grande below Falcon Dam near Falcon and Nueva Cd. Guerrero	59
Tributary - Rio Alamo at Cd. Mier	60
Rio San Juan at Camargo	61
Contributions from the Lower Rio San Juan Irrigation District - Falcon Dam to Rio Grande City (formerly Contributions from the Rio San Juan - Falcon Dam to Fort Ringgold)	62
Diversions from the Rio Grande - Falcon Dam to Rio Grande City (formerly Falcon Dam to Fort Ringgold)	63
Rio Grande at Rio Grande City near Camargo (formerly Rio Grande at Fort Ringgold, Rio Grande City)	64
Rio Grande at Los Ebanos near Cd. Diaz Ordaz	65
Tributary - Contributions from the Lower Rio San Juan Irrigation District - Rio Grande City to Anzalduas Dam (formerly Contributions from Rio San Juan - Fort Ringgold to Anzalduas Dam)	66
Diversions from the Rio Grande - Rio Grande City to Anzalduas Dam (formerly Fort Ringgold to Anzalduas Dam)	67

CONTENTS

QUANTITY OF WATER

Diversions from the Rio Grande - Anzalduas Canal near Reynosa	68
Rio Grande below Anzalduas Dam near Reynosa and Mission	69
Floodways - United States and Mexico	70
Diversions from the Rio Grande - Anzalduas Dam to Progreso	74
Progreso to San Benito	75
Rio Grande near San Benito and Ramirez	76
Diversions from the Rio Grande - San Benito to Brownsville	77
Rio Grande near Brownsville and Matamoros	78
Diversions from the Rio Grande - Brownsville to the Gulf of Mexico	79
U. S. Side, Falcon Dam to the Gulf of Mexico	80
Tributary - Outfalls from Sewers	81
Diversions from the Rio Grande - Municipal and Industrial Water Uses - United States and Mexico	82
Stored Water in Large Reservoirs of the Rio Grande - United States and Mexico	85

QUALITY OF WATER

Quality of Water	90
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CLIMATOLOGICAL DATA AND DRAINAGE BASIN AND IRRIGATED AREAS

Rainfall on the Rio Grande Watershed - United States and Mexico	110
Average Rainfall on Subdivisions of the Rio Grande Watershed	126
Location of Rainfall Stations on the Rio Grande Watershed - United States and Mexico	128
Evaporation in the Rio Grande Basin - United States and Mexico	134
Temperature, Humidity, and Wind - United States and Mexico	136
Drainage Basin Area above Each Gaging Station and Corresponding Irrigated Areas	139

SUPPLEMENTARY DATA

Deduced Inflows - International Amistad Reservoir	141
- International Falcon Reservoir	142

CORRECTIONS TO PREVIOUS WATER BULLETIN

Corrections to Previous Water Bulletin	143
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FOREWORD

This bulletin presents the fifty-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 1988.

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 1988 the United States Section of the Commission operated the stream-gaging stations on the Rio Grande at El Paso, American Dam, Fort Quitman, Candelaria, Above Rio Conchos, Below Rio Conchos, Johnson Ranch, Foster Ranch, Del Rio, El Indio, Rio Grande City, San Benito, and Brownsville. The Mexican Section operated the stream-gaging stations on the Rio Grande at Below Amistad Dam, Jimenez, Piedras Negras, and Below Anzalduas Dam. The station at Falcon Dam was operated jointly by the two Sections. Each Section operated the gaging stations on tributary streams, floodways, and diversions within its own country.

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

The total drainage area within the outer rim of the Rio Grande Basin is 335,500 square miles. However, about half of this area yields no runoff to the river, the estimated productive area of the watershed being 176,333 square miles. Reservoirs in the basin have a total storage capacity of approximately 11,966,300 acre-feet, in addition to the International Amistad and Falcon Reservoirs, which have a combined conservation capacity of 6,051,436 acre-feet. In the Rio Grande basin, a total of 2,058,167 acres is irrigated below Elephant Butte Dam on the Rio Grande and above Girvin on the Pecos River. The flow of the Rio Grande to the Gulf of Mexico below Brownsville prior to construction of Falcon Dam averaged 2,600,000 acre-feet per year for the period 1934-1952. For the period 1954-1988, this flow has averaged 818,805 acre-feet per year.

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

ACKNOWLEDGMENTS

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

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

PERIOD AVERAGES

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

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

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

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

FOREWORD

UNITS OF MEASURE

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

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

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

GENERAL HYDROLOGIC CONDITIONS FOR 1988

ALONG AND ADJACENT TO THE INTERNATIONAL PORTION OF THE RIO GRANDE

During the year 1988, temperatures were 100% of average on the watershed of the Rio Grande below El Paso, Texas. Evaporation was 87% of average. Precipitation was 79% of average from El Paso to Amistad Dam, 84% of average from Amistad Dam to Falcon Dam, 104% of average from Falcon Dam to Rio Grande City, and 88% 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 in the reaches from El Paso to the Confluence of the Rio Conchos with the Rio Grande and 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 181% of average, ranging from 132% of average at Below American Dam to 288% at Fort Quitman; in the reach between the Confluence of the Rio Conchos and Amistad Reservoir, where most of the flows originate from releases from Luis L. Leon Reservoir (El Granero) on the Rio Conchos, the flow was 110% of average; and in the reach between Amistad Dam and Falcon Reservoir, where flows mostly originate from releases from Amistad Reservoir, the flow was 103% of average. Most of the flows passing the Rio Grande Stations below Falcon Dam originated from releases from Falcon Reservoir, which in 1988 amounted to 2,531,229 acre-feet, or 107% of the average for the thirty-five years of operation, 1954 to 1988. The volume of flow wasted to the Gulf of Mexico was 891,927 acre-feet, which is 109% of the average for this thirty-five year period.

The total annual flow of all measured Tributaries below Fort Quitman was 132% of average. The total flow of these tributaries in the United States was 575,867 acre-feet, or 84% of average. For Mexico, the measured tributary flow, excluding Rio Alamo and Rio San Juan, was 1,783,136 acre-feet, or 138% of average. The flows of the Rio Alamo and Rio San Juan were 178% and 185% of their respective averages.

Return flow to the Rio Grande at Maverick Power Plant near Eagle Pass was 786,425 acre-feet, or 118% of the twenty-one year average. Return flow to the Rio Grande through various drains in the Maverick County Irrigation District, excluding storm inflow, amounted to 59,215 acre-feet, or 52% of the twenty-one year average.

The only flood of consequence during 1988 occurred in the Middle and Lower Rio Grande Basin and adjacent areas in both the United States and Mexico. The rains and resultant flood flows were a result of Hurricane Gilbert which hit the Mexican Gulf coast on September 16, 1988 about 110 miles south of Brownsville, Texas. Heavy rains in the Monterrey area caused high rates of runoff in the Rio San Juan and its tributaries. Rio San Juan flood flows entered the Rio Grande at Rio Grande City and moved downstream requiring diversions into the United States and Mexico interior floodways. Remnants of Hurricane Gilbert brought heavy to moderate precipitation to the Rio Salado Basin upstream of Falcon Reservoir and to the Rio Grande Basin in its traverse from the Gulf of Mexico to upstream of Amistad Reservoir. The highest peak flows recorded on the Rio Grande were, above Falcon Dam, 98,400 second-feet at Foster Ranch; and, below Falcon Dam, 53,500 second-feet at Rio Grande City.

For all reservoirs in the Rio Grande basin having a capacity greater than 15,000 acre-feet, excepting Amistad and Falcon International Reservoirs, the average amount of water in storage in 1988 was 7,280,000 acre-feet, or 152% of the average 4,793,700 acre-feet. In the United States, stored water in these reservoirs was 205% of average, while in Mexico it was 122% of average.

In International Amistad Reservoir there was a net increase in storage during the year of 70,500 acre-feet. Storage ranged from a high of 3,636,600 acre-feet on September 20 to a low of 3,349,600 acre-feet on June 15 and averaged 3,495,600 acre-feet during the year, or 118% of the average for the period 1969 through 1988. In International Falcon Reservoir, there was a net increase in storage during the year of 4,400 acre-feet. The storage varied from a high of 2,854,600 acre-feet on November 1 to a low of 1,871,500 acre-feet on July 13 and averaged 2,478,100 acre-feet during the year, or 126% of the average for the thirty-five years of operation, 1954 through 1988.

Diversions from the Rio Grande in the United States were 120% of average. Diversions into the American Canal were 145% of average, into the Maverick Canal, 109% of average and in the United States below Falcon Dam, 123% of the average for the thirty-two years, 1957-1988. In Mexico, diversions were 115% of average. Diversions into the Acequia Madre were 118% of average, while diversions through the Anzalduas Canal for irrigation in Mexico were 115% of the thirty-five year average.

In 1988, the total reported irrigated acreage from the Rio Grande and its tributaries below El Paso, Texas showed an increase of 8% from the previous year. On the United States side, there was a decrease of about 12% above Falcon Dam and an increase of about 1% below Falcon Dam, for an overall average decrease of 2%. On the Mexican side, there was an increase of 59% above Falcon Dam and no change below Falcon Dam, for an overall average increase of 16%.

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

DESCRIPTION: Concrete wall control, bubbler gage, and water-stage recorder located on the left bank 100 feet (30.5 m) upstream from the cableway at latitude 33°08'45", longitude 107°12'20", and river mile 1,389.1 (2,235.5 km); 0.7 river mile (1.1 km) downstream from Elephant Butte Dam, 1.5 river miles (2.4 km) upstream from Cuchillo Negro River, and 135.1 river miles (217.4 km) upstream from the American Dam at El Paso, Texas. The zero of the gage is 4,242.09 feet (1,297.99 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 24 discharge measurements during the year and a continuous record of gage heights. Records were furnished by the United States Geological Survey. Records available: 1915 through 1988.

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

EXTREME FLOWS FROM RECORDS:

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

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

Mean Daily Discharge in Second-Foot 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	124	1,520	2,090	2,080	2,110	1,720	1,500	1,290	66	38	43	72
2	124	1,510	2,050	2,090	2,100	1,490	1,740	1,740	22	38	43	72
3	124	1,520	2,090	2,090	2,110	1,510	100	1,740	21	37	43	72
4	124	1,520	2,080	2,070	2,110	1,500	90	1,750	13	37	42	74
5	125	1,500	2,080	2,050	2,110	137	1,130	1,760	13	35	42	74
6	126	1,500	2,090	2,570	1,700	1,310	1,500	1,760	13	34	42	75
7	129	1,490	2,090	2,970	1,460	1,500	1,510	750	11	39	42	77
8	131	2,000	2,090	3,050	1,450	1,510	1,480	1,520	12	38	42	81
9	131	2,300	2,090	3,020	1,450	1,510	1,450	1,510	12	39	42	82
10	132	2,310	2,100	3,030	1,020	1,530	106	1,320	12	39	42	81
11	136	1,810	1,590	3,040	793	1,540	1,300	1,310	12	38	42	82
12	137	1,480	144	3,040	809	157	1,490	1,700	11	39	42	83
13	137	1,470	141	2,520	824	1,360	1,510	1,720	9.7	39	42	81
14	140	1,470	143	2,180	836	1,560	1,520	705	9.0	39	43	81
15	147	1,470	145	2,180	838	1,570	1,530	1,480	9.0	39	45	81
16	145	1,460	150	2,190	847	1,570	1,100	1,670	9.0	39	48	81
17	145	1,460	154	2,200	850	1,580	108	1,710	9.0	39	52	81
18	148	1,470	576	2,200	846	1,570	1,320	1,710	9.0	40	55	81
19	148	1,480	1,450	2,200	1,280	156	1,520	1,720	9.0	40	57	83
20	151	1,470	1,460	2,210	1,070	1,370	1,510	1,740	9.5	40	59	83
21	156	1,480	1,850	2,210	603	1,570	1,510	708	10	40	60	100
22	160	1,470	2,080	2,210	840	1,560	1,500	1,510	10	41	62	445
23	160	1,470	2,070	2,190	840	1,560	1,490	1,760	11	41	64	679
24	159	1,470	2,100	2,170	842	1,550	81	1,720	14	41	65	680
25	566	1,480	2,080	2,170	842	1,530	1,300	1,710	19	41	66	683
26	808	1,480	2,080	2,180	593	155	1,500	1,740	24	41	68	685
27	812	1,480	2,080	2,160	798	1,330	1,510	1,700	27	41	68	683
28	812	1,490	2,090	2,150	1,490	1,510	1,510	1,725	31	42	69	682
29	1,260	1,880	2,070	2,140	1,480	1,540	1,510	1,550	38	42	71	682
30	1,500		2,070	2,130	1,480	1,520	1,500	1,800	37	42	71	682
31	1,500		2,080		1,480		79	1,600	43	43	71	680
Sum	10,593	45,910	49,453	70,690	37,911	40,005	36,754	47,128	512.2	1,221	1,572	8,280

Month	Extreme Gage Feet		Extreme Second-Foot				Average Second-Foot	Total Acre-Foot	Acre-Foot			
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum	
							High	Low				
Jan.			130	1,500	1	124	342	21,011	26,588	119,504	200	
Feb.			10	2,310	116	1,460	1,580	91,061	43,073	168,059	188	
Mar.			10	2,100	13	141	1,600	98,089	68,472	138,446	1,022	
Apr.			8	3,050	5	2,050	2,360	140,211	83,144	162,000	11,207	
May			1	2,110	26	593	1,220	75,195	89,474	467,000	512	
June			1	1,720	5	137	1,330	79,349	96,576	363,000	16,913	
July			15	1,530	31	79	1,190	72,900	96,452	211,636	41,352	
Aug.			30	1,800	34	705	1,520	93,477	76,125	140,668	9,530	
Sept.			1	66	14	9.0	17	1,016	33,115	129,000	163	
Oct.			31	43	6	34	39	2,422	16,207	125,443	148	
Nov.			130	71	4	42	62	3,118	16,048	158,000	74.2	
Dec.			26	685	1	72	267	16,423	21,646	129,759	138	
Yearly				3,050		9.0	956	694,272	666,920	1,818,800	183,415	
				Meters		Cubic Meters per Second		Thousands of Cubic Meters				
						86.4	0.25	27.1	856,371	822,632	2,243,453	226,239

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

08-3625.00 RIO GRANDE BELOW CABALLO DAM, NEW MEXICO

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

RECORDS: Based on 46 discharge measurements during the year and a continuous record of gage heights. Records were furnished by the El Paso office of the United States Bureau of Reclamation. Records available: 1938 through 1988.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. In addition to the outflow from Caballo Dam listed below, 495 acre-feet (611,000 m³) of water were diverted in 1988 into Bonita Lateral, a small irrigation canal just below Caballo Dam. Prior to 1938, discharge records were kept at Percha Dam, a low diversion dam about 1.5 miles (2.4 km) downstream from this station. Small accretions to the river take place between the station and Percha Dam.

EXTREME FLOWS FROM RECORDS:

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

Mean Daily Discharge in Second-Foot 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	69	71	1,180	2,110	2,450	1,850	2,240	2,110	914	1,020	2.0	2.0
2	68	72	1,260 *	1,950 *	2,430	1,850	2,260	2,040	900	1,120	2.0	2.0
3	67	74	1,520	1,950	2,230	1,910	2,240	1,920 *	838	1,030 *	2.0	2.0
4	65	73	1,520	1,950	2,120 *	2,000	2,230	1,910	699	1,030	2.0	2.0
5	64	73	1,520	2,110	2,140	2,010	2,200	1,730	661	1,040	2.0	2.0
6	64 *	73	1,510	2,230 *	1,960	2,000	2,140 *	1,590	923	1,300	2.0	2.0
7	64	73	1,520	2,240	1,890	2,070	2,000	1,250	1,030 *	600	2.0	2.0
8	64	74	1,660	2,270	1,890	2,120 *	1,890	1,240	1,180	25	2.0	2.0
9	64	72	1,720 *	2,280	1,880	2,120	1,670	1,260	1,250	10	2.0	2.0
10	64	72	1,950	2,300	1,800	2,180	1,560	1,280 *	1,300	3.0	2.0	2.0
11	64	71	2,260	2,320	1,800 *	2,270	1,360	1,080	1,410	3.0	2.0	2.0
12	62	71	2,570 *	2,350	1,820	2,270	1,410	1,080	1,380	3.0	2.0	2.0
13	63	72	2,550	2,330 *	1,620	2,260	1,590	1,160	1,320	3.0	2.0	2.0
14	63	70	2,720	2,230	1,430 *	2,280	1,590 *	1,320	1,370 *	3.0	2.0	2.0
15	64	71	2,890	1,830	1,440	2,330	1,690	1,380	1,450	3.0	2.0	2.0
16	65	184	2,990 *	1,610	1,440	2,310	1,780	1,320	1,400	3.0	1.0	2.0
17	65	380 *	3,040	1,630	1,560	2,240 *	1,780	1,150	1,300	3.0	1.0	2.0
18	66	772 *	3,160	1,610	1,680 *	2,190	1,760	1,000	1,300	3.0	1.0	2.0
19	64	806	3,270 *	1,950	1,660	2,170	1,940	1,480	1,300	3.0	1.0	2.0
20	67	414	3,290	2,210 *	1,560	2,150	2,050 *	1,560	1,360	3.0	1.0	2.0
21	70 *	320	3,290	2,230	1,460	2,270	1,920	1,450	1,350	3.0	1.0	2.0
22	68	520	3,140	2,220	1,450	2,420 *	2,060	1,440	1,290	3.0	1.0	2.0
23	69	660	3,030	2,240	1,440	2,470	2,240	1,510	1,220	3.0	1.0	2.0
24	67	795 *	3,020	2,240	1,550	2,540	2,290	1,540 *	1,100	3.0	1.0	2.0
25	68	792	2,980	2,280	1,540 *	2,590	2,270	1,550	1,100	3.0	1.0	2.0
26	68	1,300	2,870	2,340	1,450	2,580	2,390	1,700	1,000	3.0	1.0	2.0
27	69	1,530 *	2,860	2,420 *	1,660	2,470	2,450 *	1,880	490	3.0	1.0	2.0
28	69	1,020	2,700	2,440	1,750	2,130	2,550	1,640	584 *	3.0	1.0	2.0
29	69	1,180	2,600	2,440	1,790	2,250 *	2,460 *	1,180	677	3.0	1.0	2.0
30	70	2,510 *	2,460	1,850	2,210	2,390	2,390	680	843	3.0	1.0	2.0
31	70	2,500	2,500	1,850	2,210	2,390	2,270	773 *		3.0	1.0	2.0
Sum	2,053	11,755	75,600	64,770	54,590	66,510	62,670	44,203	32,939	7,241.0	45.0	62.0

Month	Current Year 1988							Period 1938-1988			
	Extreme Gage Feet		Extreme Second-Foot				Average Second-Foot	Total Acre-Feet	Acre-Feet		
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum
Jan.	121		70	12	62	66	4,072	4,194	118,691	19.2	
Feb.	27	1,530	14	70	405	23,316	12,045	112,046	11.7		
Mar.	120	3,290	1	1,180	2,440	149,950	87,164	162,823	24,900		
Apr.	30	2,460	116	1,610	2,160	128,469	81,567	212,000	25,470		
May	1	2,450	14	1,430	1,760	108,278	79,754	412,000	75.2		
June	25	2,450	1	1,850	2,220	131,921	105,964	354,000	25,289		
July	28	2,550	11	1,360	2,020	124,304	113,981	237,283	28,200		
Aug.	1	2,110	30	680	1,430	87,675	103,839	179,000	20,500		
Sept.	15	1,450	27	490	1,100	65,334	50,400	181,000	6,757		
Oct.	6	1,300	110	3.0	234	14,362	7,002	122,717	15.5		
Nov.	1	2.0	116	1.0	1.5	89.3	3,511	82,403	7.0		
Dec.	1	2.0	1	2.0	2.0	123	4,827	146,380	6.0		
Yearly			3,290	1.0	1,150	837,893	654,248	1,795,670	206,085		
	Meters		Cubic Meters per Second				Thousands of Cubic Meters				
			93.2		0.03	32.6	1,033,524	807,002	2,214,923	254,202	

* Discharge measurement made on this day ∅ 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°08'10", longitude 106°32'25", and river mile 1,255.7 (2,020.8 km); 5.5 river miles (8.9 km) upstream from the Paso del Norte Bridge between El Paso, Texas and Cd. Juarez, Chihuahua and 1.7 miles (2.7 km) upstream from the American Dam at El Paso, Texas. The zero of the gage is 3,722.30 feet (1,134.56 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Mean daily discharges in 1988 were computed by adding the flows in the American Canal and the flows at the river station below the American Dam. Because the mean daily discharges are rounded, the monthly sum for this station may not equal the sum of the monthly sums of the other two stations. Extreme discharges are those passing the El Paso station. In 1988, 18 discharge measurements were made at this station. Records available: 1889 through 1988.

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

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

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

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

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	176	163	804	1,400	1,610	1,060	1,170	1,530	913	362	228	169
2	179	153	677	1,250	1,710	1,010	1,250	1,480	846	470	243	166
3	191	153	254	1,160	1,700	939	1,340	1,400	1,050	729	215	164
4	186	150	687	1,270	1,580	976	1,280	1,340	976	733	207	160
5	191	160	679	1,240	1,360	1,140	1,250	1,400	943	486	196	161
6	198	165	832	1,060	1,310	1,300	1,380	1,620	758	351	193	165
7	189	193	964	1,190	1,370	1,260	1,270	1,810	654	356	184	164
8	185	193	981	1,200	1,280	1,210	1,620	1,640	609	519	167	162
9	132	176	916	1,230	1,300	1,140	1,680	1,340	615	809	192	172
10	183	174	862	1,230	1,280	1,120	1,900	1,280	581	576	183	204
11	184	167	894	1,290	1,240	1,160	1,640	1,170	579	480	181	198
12	183	166	1,010	1,330	1,080	1,240	1,480	1,190	615	473	177	182
13	177	164	1,370	1,310	983	1,350	1,190	1,100	778	446	181	153
14	173	165	1,510	1,380	969	1,310	986	964	765	438	181	154
15	173	166	1,520	1,430	919	1,280	993	999	707	432	170	123
16	172	155	1,760	1,470	771	1,280	955	982	685	434	169	137
17	169	160	1,780	1,300	694	1,180	1,020	1,700	722	416	173	140
18	173	164	1,830	1,290	694	1,190	1,150	1,280	767	416	177	139
19	177	170	1,870	1,280	732	1,220	1,140	1,080	799	388	176	144
20	175	245	2,140	1,190	839	1,180	1,060	735	768	339	175	149
21	171	520	2,100	1,380	779	1,170	1,050	954	735	337	184	142
22	174	414	2,080	1,530	809	1,100	1,160	1,240	756	334	192	141
23	171	251	2,030	1,520	770	1,150	996	1,120	876	295	193	136
24	170	189	1,790	1,560	790	1,130	1,030	985	913	289	192	136
25	160	203	1,800	1,600	757	1,260	1,150	923	833	279	183	133
26	163	262	1,820	1,500	718	1,350	1,160	810	873	258	185	136
27	164	348	1,790	1,400	766	1,340	1,040	825	823	253	189	128
28	165	498	1,830	1,440	695	1,630	1,120	941	738	240	191	127
29	164	829	1,770	1,480	758	1,720	1,240	1,570	522	237	179	132
30	161	1,650	1,450	980	1,270	1,370	1,400	394	235	171	134	
31	159	1,380	1,040	1,040	1,040	1,400	1,190	206	206	134	134	
Sum	5,428	6,916	43,680	40,400	32,283	36,665	38,470	38,008	22,593	12,616	5,647	4,685

Month	Current Year 1988				Period 1938-1988						
	Extreme Gage Feet		Extreme Second-Feet		Average Second-Feet	Total Acre-Feet	Acre-Feet				
	High	Low	Day	Low			Average	Maximum	Minimum		
Jan.	2.95	2.67	6	198	25	160	175	10,766	8,801	121,646	220
Feb.	4.30	2.15	29	829	4	150	238	13,718	10,013	99,154	136
Mar.	6.05	3.51	20	2,140	3	554	1,410	86,638	36,982	113,851	1,790
Apr.	5.80	4.55	25	1,600	6	1,060	1,350	80,132	42,479	139,000	6,820
May	5.95	4.06	2	1,710	117	694	1,040	64,032	46,145	357,000	522
June	6.40	4.63	29	1,720	3	939	1,220	72,724	53,720	304,000	6,020
July	6.28	4.56	10	1,900	16	955	1,240	76,304	61,121	198,000	9,652
Aug.	6.53	4.12	7	1,810	20	735	1,230	75,388	57,511	158,000	4,870
Sept.	5.34	3.68	3	1,050	30	394	753	44,813	38,698	171,000	2,430
Oct.	4.78	3.34	9	809	31	206	407	25,023	16,854	132,722	151
Nov.	3.34	3.05	2	243	16	169	188	11,201	10,166	100,899	229
Dec.	3.21	2.98	10	204	15	123	151	9,293	10,687	159,987	206
Yearly	6.53	2.15		2,140		123	785	570,032	393,177	1,559,200	57,481
	Meters		Cubic Meters per Second				Thousands of Cubic Meters				
	1.99	0.66		60.6		3.48	22.2	703,123	484,976	1,923,242	70,902

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

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

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

RECORDS: Based on 12 discharge measurements during the year, a stable rating curve at medium and high flows, and a continuous record of gage heights. Records available: June 2, 1938 through 1988.

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

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

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

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	134 *	782 *	853	944	834	978	1,040	753	217	8.0	164
2	0	129	654	736	980	787	1,010	1,050	665 *	342	8.0	161
3	0	129	533	662	974	705	1,030	1,060	862	585 *	8.0	160
4	0	125	666	732	945	736	1,020	1,030 *	803	612	8.0	156
5	0	135	658	694	849 *	884	1,020	1,010	756	385	8.0	157 *
6	0	142	812	565 *	821	1,040	1,040	994	572	260	8.0	161
7	0	169	944	671	860	1,020 *	1,020 *	1,000	458	279	8.0	160
8	0	168	961	771	797	995	1,060	1,030	412	435	8.0	158
9	0	154	896	853	797	950	1,170	1,020	421	662	8.0	168
10	0.	151	842	845	786	928	1,170	1,040	380	478	8.0	200
11	0	147	874	878	738	942	1,100	990	378	401	8.0	194
12	0	146	980	875	595	989	1,100	1,010	418	357	8.0	178
13	0	144	1,040	844	635	1,020	1,000	902	588	341	8.0	147
14	0	145	975	885	616	1,030	806	793	584	334	8.0	148
15	0	146	903	920	665	1,020	806	619	524	332	8.0	115
16	0	134	994	928	585	1,030	769	787	503	339	8.0	130
17	0	140	997	808	510	1,000	827	1,000	531	380	8.0	132
18	0	144	1,020	803	504	991	939	986	572	414	8.0	131
19	0	150	1,010	797	515	1,030	944	900	609	385	8.0	140
20	0	225	990	709	603	1,000	883	587	581	336	8.0	135
21	0	499	994	813	549	975	860	768	540	334	8.0	132
22	0	394	1,040	908	580	900	972	998	566	331	8.0	130
23	0	230	1,030	919	537	951	826	960	687	292	8.0	125
24	0	169	961	932	544	942	828	827	726	286	8.0	124
25	63.9	183	982	952	510	1,060	948	766	648	277	8.0	120
26	126 *	242	998	888	478	1,060	958	644	687	256	8.0	123
27	127	327	1,010	833	524	1,030	855	657	642	251	8.0	114
28	129	477	1,010	860	458	1,110	912	750	556	238	115	112
29	130	807	981	869	515	1,100	1,010	992	347	235	175	117
30	131		915	858	740	1,060	1,030	993	225	233	167	118
31	133		804		814		1,040	937		91.9		117
Sum	839.9	6,285	28,256	24,661	20,968	29,119	29,931	28,380	16,994	10,698.9	673.0	4,427

Month	Current Year 1988						Period 1939-1988				
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum
Jan.	4.27	2.16	31	134	1	0	27.1	1,666	3,665	41,542	0
Feb.	8.37	3.19	29	840	16	38.1	217	12,466	6,713	50,755	0
Mar.	9.44	6.61	112	1,080	3	481	911	56,045	31,302	56,045	1,700
Apr.	9.04	6.88	25	976	18	513	822	48,914	29,983	70,900	4,560
May	9.22	5.98	3	1,030	29	389	676	41,589	27,944	69,000	392
June	9.80	7.47	125	1,190	3	669	971	57,757	36,269	65,700	5,990
July	10.18	7.97	9	1,280	15	736	966	59,367	42,818	70,700	8,673
Aug.	9.69	7.01	2	1,110	21	493	915	56,291	41,963	74,600	4,840
Sept.	9.23	5.22	3	926	30	193	566	33,707	28,504	63,100	2,230
Oct.	8.55	2.86	9	760	31	2.7	345	21,221	13,073	47,938	0
Nov.	6.08	2.86	28	379	1	8.0	22.4	1,335	6,920	30,165	0
Dec.	5.02	3.15	10	224	13	32.8	143	8,781	6,982	44,680	0
Yearly	10.18	2.16		1,280		0	550	399,139	276,136	541,610	47,397
	Meters		Cubic Meters per Second				Thousands of Cubic Meters				
	3.10	0.66		36.2		0	15.6	492,330	340,608	668,065	58,463

* Discharge measurement made on this day | And other days

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

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

RECORDS: Based on 65 discharge measurements during the year, and a continuous record of gage heights. Computations by shifting control methods. Records available: June 1938 through 1988. During 1985 through 1988 for flows to be delivered to Mexico during the irrigation season, the flow record was based on a continuous record of gage heights at this station and a rating curve developed from discharge measurements at a site 1.1 river miles downstream from above gaging station.

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

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

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

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

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	176	29.0	22.1	589	669	222	195	485	160	145	220	4.6
2	179	24.4	22.7	509	730	222	242	432	181	128	235	4.5
3	181	24.3	21.3	500	723	234	311	338	190	144	207	4.3
4	186	24.7	20.5	541	634	240	257	311	173	121	199	4.3
5	191	25.1	20.5	545	511	253	228	388	187	101	188	4.2
6	198	23.4	20.3	497	488	256	340	625	186	91.2	185	4.2
7	189	24.2	20.1	516	505	242	253	812	196	76.7	176	4.2
8	185	24.5	19.9	430	480	211	564	614	197	83.8	179	4.1
9	182	22.3	19.8	377	499	189	512	315	194	147	184	4.0
10	183	22.5	19.7	380	498	187	732	238	201	98.0	175	4.0
11	184	20.4	19.9	410	500	216	543	176	201	78.6	173	3.9
12	183	20.4	25.8	453	485	246	377	176	197	116	169	4.0
13	177	20.2	326	467	348	327	191	156	190	105	173	5.5
14	173	20.2	533	498	353	279	180	171	181	104	173	5.9
15	173	20.2	621	512	254	258	187	180	183	99.6	162	8.4
16	172	21.0	762	537	186	249	186	195	182	94.5	161	7.3
17	169	20.1	780	491	184	181	197	696	191	35.8	165	7.8
18	173	20.1	808	489	190	196	207	291	195	2.4	169	8.3
19	177	20.2	861	486	217	193	191	175	190	2.6	168	8.8
20	175	20.2	1,150	477	236	182	179	148	187	2.8	167	9.3
21	171	20.5	1,110	566	230	194	190	196	195	2.7	176	9.9
22	174	20.4	1,040	619	229	195	191	240	190	2.6	184	10.7
23	171	20.5	1,000	603	233	191	170	167	189	2.5	185	11.2
24	170	20.1	830	624	246	185	200	158	187	2.5	184	11.9
25	95.9	20.1	820	647	247	199	206	157	185	2.4	175	12.5
26	37.3	20.1	819	608	240	285	199	166	186	2.1	177	13.0
27	36.5	21.0	784	558	242	314	189	168	181	1.8	181	13.8
28	35.7	21.2	823	678	237	518	209	191	182	1.9	75.9	14.5
29	33.9	21.7	784	614	243	623	234	573	175	2.0	4.3	15.3
30	29.8		732	593	240	211	343	405	169	2.1	4.2	16.0
31	26.2		576		228		355	253		114		16.9
Sum	4,587.3	632.9	15,411.7	15,724	11,305	7,508	8,558	9,590	5,601	1,913.6	4,974.4	257.3

Month	Current Year 1988						Period 1939-1988				
	Extreme Gage Feet		Extreme Second-Feet			Average Second-Feet	Total Acre-Feet	Acre-Feet			
	High	Low	Day	High	Day			Average	Maximum	Minimum	
Jan.	6.15	5.22	6	208	31	25.5	148	9,099	5,098	80,083	0
Feb.	5.36	5.16	1	82.2	116	19.9	21.8	1,255	18,638	48,676	0
Mar.	8.07	5.18	120	1,270	8	19.4	497	30,569	5,542	64,510	81.9
Apr.	7.79	6.68	25	672	8	302	524	31,188	12,024	74,500	2,230
May	8.16	5.97	3	834	13	82.3	365	22,423	17,707	300,000	25.2
June	8.24	5.96	28	867	30	144	250	14,892	16,951	250,000	0
July	8.38	5.85	11	966	13	115	276	16,975	17,956	155,000	967
Aug.	8.56	5.85	7	1,120	31	118	309	19,021	15,311	114,000	37.5
Sept.	6.23	5.92	10	248	2	140	187	11,109	9,762	124,000	53.8
Oct.	6.60	4.65	31	311	118	1.8	61.7	3,796	3,574	84,865	18.0
Nov.	6.74	5.10	2	340	129	4.2	166	9,867	3,113	70,740	0
Dec.	5.99	3.06	31	17.0	110	3.8	8.3	510	3,592	115,279	0
Yearly	8.56	4.65		1,270		1.8	235	170,704	129,268	1,093,553	10,001
	Meters		Cubic Meters per Second			Thousands of Cubic Meters					
	2.61	1.42		36.0		0.05	6.66	210,560	159,449	1,348,876	12,336

* Discharge measurement made on this day ! And other days

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

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

RECORDS: Flow records provided by Mexicoan Section. Records available: 1938 through 1988. These records, showing the water diverted by Mexico, do not necessarily reflect the quantities of water made available to Mexico in the bed of the river by the United States under the terms of the Convention of 1906. Such quantities of water are included in the record of "Rio Grande below American Dam at El Paso, Texas" on the preceding page of this bulletin.

REMARKS: In 1988 all of the 61,935 acre-feet (76,395,000 m³) tabulated below were distributed to land irrigated in the first unit under the canal.

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

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

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	0	149	145	158 *	150 *	162 *	130	0	0	0
2	0	0	0	147	143 *	155	156	163	147	0	0	0
3	0	0	0	149	141	155 *	159	164 *	143	0	0	0
4	0	0	0	149 *	149 *	153	161 *	161	140	0	0	0
5	0	0	0	147	160	151	153 *	160 *	147	0	0	0
6	0	0	0	154 *	163 *	155	165	161	145 *	0	0	0
7	0	0	0	154	165	169 *	163 *	164	148 *	0	0	0
8	0	0	0	150 *	164	165 *	172 *	162 *	151 *	0	0	0
9	0	0	0	146 *	158 *	160	163	120	148 *	0	0	0
10	0	0	0	149	161	161 *	171	93.2	148	0	0	0
11	0	0	0	147 *	158 *	171	172 *	108	148	0	0	0
12	0	0	0	148	163	169	170 *	162 *	146 *	0	0	0
13	0	0	0	152 *	135	167 *	156 *	159	139 *	0	0	0
14	0	0	105 *	167	156	165	155 *	155	149 *	0	0	0
15	0	0	134 *	166 *	156	155 *	171	164 *	145 *	0	0	0
16	0	0	149 *	165	158 *	168	174	172	145 *	0	0	0
17	0	0	146	158	158	158	167	147 *	140	0	0	0
18	0	0	144 *	160 *	156 *	169	165 *	144	136	0	0	0
19	0	0	148	156	155	170	162	146 *	135	0	0	0
20	0	0	152	159 *	154 *	161 *	164 *	132	156 *	0	0	0
21	0	0	152	166	154	169	170 *	141	164 *	0	0	0
22	0	0	153 *	168 *	150	174	165 *	154 *	160 *	0	0	0
23	0	0	149 *	161	147	174	156	150	161 *	0	0	0
24	0	0	153	164	135	159	165	151 *	153	0	0	0
25	0	0	156 *	159 *	143 *	164 *	162 *	150	156	0	0	0
26	0	0	159	155	153	167	171	152 *	161 *	0	0	0
27	0	0	157	158 *	152 *	171 *	176 *	162	164 *	0	0	0
28	0	0	154 *	158	153	173	171	164	160 *	0	0	0
29	0	0	154 *	149 *	154	168 *	172 *	137 *	159 *	0	0	0
30	0	0	150 *	146	153 *	161 *	169	139	160 *	0	0	0
31	0	0	149	158	158	169	141	160	160 *	0	0	0
Sum	0	0	4,656	4,656	4,915	4,915	5,115	4,640.2	4,484	0	0	0

Month	Average Rainfall Inches**		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	1988	1938-1988	High		Low	Average			Maximum	Minimum	
	Day	Day	Day	Day	Day	Day	Day	Day	Day		
Jan.	0.24	0.43	1	1	0	0	0	39.8	2,030	0	
Feb.	.39	.43	1	1	0	0	0	147	7,510	0	
Mar.	.16	.35	1	171	1	0	85.8	5,286	1,642	7,951	
Apr.	.39	.28	14	179	5	135	155	9,236	8,297	12,383	
May	.24	.35	7	175	13	1.4	153	9,420	8,839	17,380	
June	.12	.67	28	183	17	137	164	9,747	8,595	15,700	
July	1.61	1.54	8	190	13	124	165	10,150	8,799	15,170	
Aug.	3.58	1.61	28	181	11	43.1	150	9,205	8,575	12,620	
Sept.	1.46	1.42	22	169	1	79.5	149	8,891	7,450	12,380	
Oct.	.51	1.06	1	1	0	1	0	0	57.7	1,413	
Nov.	.08	.47	1	1	0	1	0	0	0	0	
Dec.	.63	.59	1	1	0	1	0	0	0	0	
Yearly	9.41	9.21	190	190	0	85.5	61,935	52,442	83,930	6,653	
	Millimeters		Cubic Meters per Second				Thousands of Cubic Meters				
	239	234		5.39		0	2.42	76,395	61,133	103,511	8,207

* Discharge measurement made on this day
 ** Average for valley floor in United States and Mexico from El Paso to Clint station

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

DESCRIPTION: Cableway, gravity well, and digital water-stage recorder located on the left bank of the realigned channel of the Rio Grande at latitude 31°05'10", longitude 105°36'30", and river mile 1,173.2 (1,888.1 km); 1.5 river miles (2.4 km) downstream from Old Fort Quitman, 9 miles (14.5 km) southeast of Esperanza, Texas, and 17.5 miles (28.2 km) southeast of McNary, Texas. The zero of the gage is 3,450.57 feet (1,051.73 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 51 discharge measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: 1889 through 1988.

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

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

		Average Flow in Second-Feet (Cubic Meters per Second)**				
Daily:	Max. 5,890 (167)	May 19, 1942	Min. 0	Frequently		
Monthly:	Max. 5,030 (142)	May 1942	Min. 0	Several months since 1951		
Yearly:	Max. 1,750 (49.6)	1942	Min. 2.3 (0.07)	1965		

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	402	224	366	948	1,270	254	389	173	695	319	423	287
2	396	187	324	984	1,410	294	931	173	317	308	413	279
3	366	154	325	905	1,390	257	713	631	412	327	357	246
4	366	132	300	728	1,340	190	750	550	801	305	347	253
5	313	135	296	747	1,300	158	664	681	1,020	704	348	209
6	309	176	294	518	1,150	147	312	977	1,000	768	348	235
7	293	208	306	369	1,060	171	318	1,420	633	451	347	210
8	282	214	319	753	1,130	181	772	1,500	487	505	348	218
9	281	222	267	799	1,050	154	1,090	1,440	368	596	355	227
10	274	218	249	785	932	137	1,820	1,190	246	838	344	247
11	268	215	271	1,010	779	167	2,160	1,180	244	897	343	242
12	277	214	278	1,030	668	168	1,740	1,200	248	776	345	248
13	259	214	278	942	568	171	1,460	778	213	626	351	203
14	246	214	453	1,010	517	239	1,390	562	187	591	354	208
15	251	214	358	1,130	472	308	1,240	550	273	511	347	215
16	232	228	352	1,160	428	314	1,140	610	261	550	326	209
17	244	217	415	1,240	442	297	1,160	519	223	574	300	221
18	250	224	475	1,160	233	364	1,080	1,260	262	567	311	262
19	259	242	570	1,120	206	718	1,050	1,120	390	539	401	311
20	262	251	703	1,070	190	1,030	828	1,060	457	543	378	299
21	260	251	979	936	281	766	497	776	540	549	359	313
22	252	313	1,010	920	310	203	296	504	922	521	306	309
23	266	276	1,030	1,090	360	143	211	927	778	486	320	235
24	265	256	1,060	1,240	305	144	151	692	792	469	333	265
25	262	210	998	1,340	233	138	138	492	988	469	352	251
26	257	149	966	1,320	280	125	119	323	900	461	359	264
27	255	151	1,010	1,200	295	303	112	252	594	445	372	241
28	245	156	1,070	1,190	196	438	104	186	576	430	350	279
29	247	359	1,080	1,250	197	254	107	185	525	427	351	256
30	235	1,030	1,260	200	426	122	883	400	426	332	240	206
31	224	1,010	173	173	173	173	137	943	424	424	206	206
Sum*	8,598	6,224	18,442	30,154	19,365	8,659	23,001	23,737	15,752	16,402	10,520	7,688

Month	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Period 1938-1988		
	High	Low	High		Low				Average	Maximum	Minimum
			Day	Day	Day	Day					
Jan.	8.35	6.50	2	522	31	218	277	17,054	7,659	78,375	0
Feb.	6.78	5.77	29	472	4	118	215	12,345	6,311	55,712	0
Mar.	8.21	5.74	28	1,130	10	247	595	6,579	6,056	59,092	0
Apr.	9.03	7.60	25	1,400	7	311	1,010	59,810	7,365	77,000	0
May	9.23	6.91	2	1,460	120	158	625	38,410	12,797	309,000	0
June	8.34	6.61	120	2,080	22	110	289	17,175	11,042	240,000	0
July	10.67	6.63	11	2,400	28	94.1	742	45,622	14,521	140,000	3.8
Aug.	10.15	6.94	5	1,910	2	148	766	47,082	13,741	127,000	16.7
Sept.	8.98	7.06	1	1,310	14	178	525	31,244	16,079	147,000	0
Oct.	8.57	7.10	6	1,080	2	279	529	32,533	14,097	92,727	0
Nov.	7.70	6.52	18	624	18	105	351	20,866	9,717	86,360	0
Dec.	7.44	6.74	1	429	5	123	248	15,249	10,296	123,709	0
Yearly	10.67	5.74		2,400		94.1	515	373,969	129,680	1,270,400	1,662
	Meters		Cubic Meters per Second				Thousands of Cubic Meters				
	3.25	1.75		68.0		2.66	14.6	461,283	159,958	1,567,013	2,050

** Period 1924-1988

* Discharge measurement made on this day

! And other days

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

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

RECORDS: Based on 27 discharge measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: November 19, 1975 through 1988.

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

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

		Average Flow in Second Feet (Cubic Meters per Second)**			
Daily:	Max. 4,400 (124.6)	Dec. 23, 1986	Min. 0	Frequently	
Monthly:	Max. 2,550 (72.2)	Dec. 1986	Min. 0	Frequently	
Yearly:	Max. 1,090 (30.9)	1986	Min. 20.9 (0.59)	1977	

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	308	264	183	832	1,070	182	211	213	327	442	315	268
2	318	280	188	855	1,120	169	343	655	298	430	301	262
3	327	299	189	907	1,070	164	433	215	570	413	290	259
4	347	317	199	949	1,020	159	339	210	646	349	291	255
5	356	282	234	945	1,020	163	463	269	694	297	281	238
6	344	249	245	912	1,050	175	559	409	672	256	271	236
7	343	228	228	917	1,060	178	931	829	559	241	269	239
8	336	196	212	923	1,120	165	857	1,000	482	252	264	242
9	332	181	190	913	1,150	157	750	1,160	584	313	261	230
10	299	182	172	872	1,140	186	630	956	617	374	250	230
11	294	207	178	835	1,080	198	688	788	545	505	247	244
12	279	213	186	761	864	161	683	846	455	386	250	223
13	274	216	177	765	821	155	671	1,030	401	352	253	232
14	273	217	156	802	842	163	697	1,240	331	389	244	256
15	275	205	145	807	750	166	766	1,280	318	484	247	272
16	282	201	133	808	611	179	882	1,050	316	578	249	284
17	294	205	136	841	495	157	1,050	887	250	578	250	285
18	285	205	162	773	379	168	1,130	719	233	508	248	280
19	276	201	264	731	332	183	891	611	238	453	242	269
20	273	204	347	792	322	187	675	561	231	432	237	258
21	273	195	348	848	322	195	655	493	268	438	241	261
22	266	179	371	898	260	209	839	651	260	433	247	259
23	273	175	442	950	207	225	675	768	281	411	256	255
24	276	178	491	963	190	251	538	803	303	391	262	249
25	265	184	544	924	217	281	478	699	352	393	265	248
26	267	217	642	841	230	231	389	533	425	379	262	245
27	264	267	742	749	268	186	273	529	440	366	267	220
28	269	255	809	822	261	178	226	580	387	355	273	218
29	271	203	841	905	225	173	209	467	394	342	268	217
30	273		858	992	213	172	177	375	434	332	270	219
31	267		842		209		186	398		325		218
Sum	9,079	6,405	10,854	25,832	19,918	5,516	18,294	21,224	12,311	12,197	7,871	7,671
Current Year 1988												
Period 1975-1988												
Month	Extreme Gage Feet		Extreme Second-Feet			Average Second-Feet	Total Acre-Feet	Acre-Feet				
	High	Low	High	Day	Low			Average	Maximum	Minimum		
Jan.	4.67	4.51	1.5	362	127	260	293	18,008	17,772	148,701	0	
Feb.	4.63	4.29	4	332	1.9	172	221	12,704	13,267	99,630	0	
Mar.	5.32	4.21	30	863	16	129	350	21,529	12,139	82,627	0	
Apr.	5.51	5.17	30	1,060	19	717	861	51,237	12,330	74,400	8.4	
May	5.67	4.38	9	1,170	24	189	643	39,507	17,351	137,018	0	
June	4.90	4.17	10	410	14	147	184	10,941	20,391	151,380	143	
July	5.64	4.16	18	1,150	31	166	590	36,286	23,271	120,337	79.1	
Aug.	5.83	4.26	15	1,300	1	162	685	42,097	20,564	59,936	611	
Sept.	5.22	4.35	3	775	20	220	410	24,418	26,427	135,232	362	
Oct.	5.04	4.38	116	609	7	236	393	24,192	24,648	101,887	435	
Nov.	4.66	4.49	1	327	119	236	262	15,612	17,656	107,502	0	
Dec.	4.60	4.39	17	294	27	206	247	15,215	18,580	151,934	0	
Yearly	5.83	4.16	1,300		129		429	311,746	224,396	966,039	15,148	
	Meters		Cubic Meters per Second			Thousands of Cubic Meters						
	1.78	1.27		36.8		3.65	12.1	384,532	276,788	1,191,590	18,685	

1 And other days ** Period November 1975-1988

* Discharge measurement made on this day

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

DESCRIPTION: Cableway, bubbler gage, and water-stage recorder (graphic and digital) located on the left bank at latitude 29°36'15", longitude 104°27'05", and river mile 963.7 (1,551.0 km); 5.0 river miles (8.0 km) upstream from the international highway bridge between Presidio, Texas and Ojinaga, Chihuahua and 2.4 river miles (3.8 km) upstream from the Rio Conchos. The zero of the gage is 7,575.14 feet (2302.29 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 29 discharge measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: 1889 through 1988.

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

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

		Average Flow in Second-Feet (Cubic Meters per Second)**			
Daily:	Max. 13,700 (388)	June 13 & 14, 1905	Min. 0	Frequently	
Monthly:	Max. 10,150 (287)	June 1905	Min. 0	Frequently	
Yearly:	Max. 1,970 (55.8)	1907	Min. 1.3 (0.04)	1964	

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	346	244	291	682	693	244	141	269	300	372	340	260
2	353	232	252	688	726	217	230	523	448	402	329	256
3	351	237	223	695	766	199	207	595	556	403	311	261
4	351	252	220	699	811	180	209	618	528	391	294	270
5	345	263	218	708	839	175	310	317	546	371	303	259
6	338	275	233	730	859	168	195	232	602	288	310	248
7	336	254	271	754	842	162	261	357	617	231	303	228
8	331	253	286	758	840	168	348	452	617	214	289	227
9	322	247	282	758	846	171	499	655	518	202	274	229
10	319	224	277	771	865	161	697	730	454	205	271	238
11	321	207	256	781	906	149	858	835	505	234	265	238
12	279	215	237	764	952	232	609	958	535	309	268	244
13	247	230	241	746	997	182	525	993	495	404	276	240
14	259	242	249	714	989	148	535	955	423	315	262	226
15	270	249	246	685	850	134	557	863	373	279	264	244
16	258	252	241	696	797	136	543	898	311	330	254	257
17	259	245	231	707	771	147	576	977	303	422	261	264
18	271	240	220	710	681	155	643	1,050	281	469	270	280
19	275	247	224	725	531	137	720	1,070	227	487	287	285
20	264	246	227	725	430	141	788	884	210	456	274	275
21	257	246	280	683	391	146	833	629	861	407	259	254
22	266	248	334	677	369	142	776	541	739	390	240	235
23	271	241	334	693	350	134	587	460	501	386	238	261
24	262	222	339	726	270	138	624	529	288	370	251	254
25	261	213	371	755	191	146	646	605	262	361	261	246
26	262	215	390	770	260	156	514	656	267	368	256	236
27	266	221	451	774	246	171	445	635	331	379	267	227
28	268	249	496	755	256	152	326	474	401	380	252	212
29	268	293	553	681	263	461	225	492	402	377	276	212
30	271	219	619	670	271	127	204	528	352	365	272	217
31	262		664	276	261		191	398		351		224
Sum	9,009	7,002	9,756	21,680	19,114	5,179	14,822	20,178	13,254	10,918	8,277	7,616

Month	Current Year 1988						Period 1938-1988				
	Extreme Gage Feet		Extreme Second-Feet		Average Second-Feet	Total Acre-Feet	Acre-Feet				
	High	Low	High	Low			Average	Maximum	Minimum		
Jan.	2.89	2.33	2	364	14	218	291	17,869	8,631	148,641	0
Feb.	2.69	2.26	29	302	11	203	241	13,888	6,683	96,873	0
Mar.	4.03	1.99	31	676	5	215	315	19,351	5,260	74,406	0
Apr.	4.35	4.00	11	787	29	660	723	43,002	4,783	71,278	0
May	4.98	2.38	13	1,000	25	166	617	37,912	10,042	240,000	0
June	4.71	1.72	29	911	30	119	173	10,272	11,363	216,000	0
July	5.35	1.73	10	1,170	1	112	478	29,399	14,121	156,000	0
Aug.	5.59	2.11	2	1,290	1	172	651	40,022	13,772	133,000	0
Sept.	4.91	2.21	21	1,070	20	205	442	26,289	17,008	151,000	0
Oct.	3.39	2.34	19	495	19	201	352	21,656	16,177	105,000	0
Nov.	2.78	2.33	1	346	22	229	276	16,417	8,530	101,617	0
Dec.	2.58	2.27	19	290	29	210	246	15,106	8,922	136,155	0
Yearly	5.59	1.72		1,290		112	401	291,183	125,292	1,176,700	952
	Meters		Cubic Meters per Second				Thousands of Cubic Meters				
	1.70	0.52		36.5		3.17	11.4	359,168	154,545	1,451,436	1,174

* Discharge measurement made on this day ! And other days
** Period June 1900-March 1914; September 1919-March 1920; and 1924-1988

08-3730.00 RIO CONCHOS NEAR OJINAGA, CHIHUAHUA

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

RECORDS: Based on 145 discharge measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: 1896 through 1988. Prior to April 4, 1954, flow records were determined from records of the Rio Grande at stations located upstream and downstream from the Rio Conchos confluence.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. La Boquilla Reservoir, La Colina Reservoir, La Rosetilla Reservoir, and Luis L. Leon Reservoir are located 252 (405), 248 (393), 188 (302), and 114 (183) river miles (km), respectively, upstream from this station. Francisco I. Madero Reservoir is located on the Rio San Pedro, a tributary which enters the Rio Conchos 176 river miles (283 km) upstream from this station. Power generation facilities: La Boquilla 14,647 kw., La Colina 3,620 kw., La Rosetilla 5,150 kw., Francisco I. Madero and Luis L. Leon, none. The station was relocated on January 20, 1978 incident to the Rio Grande channel rectification in the Presidio-Ojinaga area.

EXTREME FLOWS FROM RECORDS: Momentary: Max. (period 1968-1988) 71,300 second-feet (2,020 m³/sec), on September 30, 1978. The greatest recorded flow occurred September 11, 1904 with a peak flow estimated at 162,000 second-feet (4,590 m³/sec).

Average Flow in Second-Feet (Cubic Meters per Second)**			
Daily:	Max. ‡ 52,600 (21,490)	Oct. 1, 1978	Min. 23.0 (0.65) Dec. 19, 1973
Monthly:	Max. 10,700 (302)	Oct. 1978	Min. 57.9 (1.64) Feb. 1968
Yearly:	Max. 2,340 (66.4)	1978	Min. 491 (13.9) 1983

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	381	303 *	313	228	230	448 *	1,340 *	1,530 *	2,740	826	918	547
2	381	314	302 *	246	243 *	441	2,690	2,910 *	3,520 *	844	901	523 *
3	378	308 *	325	267	237	434 *	1,900	2,000 *	3,160	862 *	901	512
4	378 *	293	371 *	265 *	225 *	413	1,430 *	2,220	2,500	830	901 *	523
5	367	311	267	261	226	417	1,700 *	2,180 *	2,220 *	816 *	886	544 *
6	360 *	339	278	247 *	219 *	424 *	1,380 *	2,610	2,190	840 *	879	498
7	360	381	279 *	238	318	427	2,060	2,470	2,150 *	837	911	477 *
8	357 *	367 *	260 *	255 *	406	431 *	1,700	2,310 *	1,950	833	886	470
9	343	348	252 *	438	378 *	413	2,030	2,530	1,710 *	840	872	463 *
10	334	327 *	236	295	381	922	2,270	2,560 *	1,510	869 *	862	463
11	333 *	302	231 *	285 *	396 *	1,190	3,310 *	2,660	1,360	883	844	480
12	325	295 *	230	266	399	1,760	1,920	3,230	1,240	897	848	477
13	313 *	301	245	260 *	427 *	1,420	1,780	2,850	1,300	932 *	848	473
14	309	292	277 *	256	427	1,310	1,700	1,770	1,030	932 *	844	470 *
15	297 *	289 *	324	251 *	406	1,300	2,540 *	2,560 *	978	932	809	466
16	297	282 *	265 *	257	434 *	1,270	2,450	2,910	943	929	795	459 *
17	298	280	229	267	636	1,270	1,930	2,920	904	957 *	795	466
18	306	290	212 *	274 *	826 *	1,250	1,810	2,890	869	957	777	484
19	313	309 *	207	273	501	1,240	1,710	2,830 *	830 *	957 *	766	487 *
20	289 *	351	209	249 *	445 *	1,240	1,760 *	2,790	809	950 *	745	448
21	293	354	219 *	204	445	1,200	1,760	3,430	2,670 *	957 *	731	434
22	295 *	385 *	194	215 *	459	1,190 *	1,040 *	3,260 *	1,290	957	713	445
23	290	360	169 *	223	470 *	1,170	763	2,950	1,980 *	961	706 *	452
24	305	342 *	164	230	459	1,130 *	756	2,740 *	1,150	961 *	706	448
25	319 *	307	143 *	238 *	466 *	1,140	1,220 *	2,790	964	946	703 *	459
26	296	308 *	125	258	597	1,300	1,880	2,890 *	932 *	932 *	686	470
27	270 *	327	127	250 *	544 *	1,370	1,620 *	2,880	922 *	922 *	699	466
28	291	325	158 *	229	572	1,340	1,440	2,900	851 *	911	664 *	456
29	278	330 *	106	226 *	516	1,520 *	1,410 *	2,870 *	823	918	607	452
30	280		102 *	218	501 *	1,420	1,400	2,790	809 *	946	604 *	448
31	281		155		463		1,740	2,770 *		932 *		452
Sum	9,917	9,330	6,974	7,669	13,252	30,800	54,439	83,000	46,105	28,066	23,807	14,712

Month	Current Year 1988						Period 1968-1988				
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum
Jan.	3.44	3.15	4	388	27	265	320	19,673	33,256	131,293	11,374
Feb.	3.48	3.05	24	424	25	268	322	18,506	31,586	124,386	3,336
Mar.	3.51	2.72	4	434	31	101	225	13,827	48,207	201,219	4,171
Apr.	3.94	2.95	9	593	21	198	256	15,215	43,380	89,875	5,565
May	5.31	3.05	18	1,670	7	208	428	26,286	49,780	123,749	10,932
June	6.53	3.44	12	2,680	10	388	1,030	61,093	56,673	139,972	6,008
July	9.02	4.07	9	5,090	24	752	1,760	108,024	64,043	154,562	16,654
Aug.	9.06	5.05	21	5,120	14	1,460	2,680	164,578	101,761	243,660	31,728
Sept.	8.33	4.13	21	4,410	120	805	1,540	91,486	149,062	468,680	17,892
Oct.	4.69	4.13	17	1,170	1	4	805	55,672	104,212	659,967	16,883
Nov.	4.40	3.71	7	978	29	530	794	47,217	41,914	137,415	7,484
Dec.	3.77	3.51	5	576	21	434	875	29,181	28,591	65,969	7,383
Yearly	9.06	2.72		5,120		101	897	650,758	752,465	1,698,395	356,533
Yearly	Meters		Cubic Meters per Second				Thousands of Cubic Meters				
	2.76	0.83		145		2.85	25.4	802,702	928,180	2,094,945	439,780

* Discharge measurement made on this day ! And other days ‡ Estimated
 ** Period 1968-1988

08-3740.00 ALAMITO CREEK NEAR PRESIDIO, TEXAS

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

RECORDS: Based on 70 discharge measurements during the year at low and medium flows, a high flow rating curve determined by slope-area calculations, and a continuous record of gage heights. Computations by shifting control methods. Records available: 1932 through 1988.

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

EXTREME FLOWS FROM RECORDS: Momentary: Max. 56,400 second-feet (1,600 m³/sec), determined by slope-area calculations, on September 2, 1962, with a gage height of 13.54 feet (4.13 m). Min. 00.1 second-foot (0.003 m³/sec) occasionally.

		Average Flow in Second-Foot (Cubic Meters per Second)			
Daily:	Max. 12,400 (351)	Sept. 21, 1974	Min. 0.1 (0.003)	Occasionally	
Monthly:	Max. 998 (28.3)	Sept. 1974	Min. 0.2 (0.005)	July 1980	
Yearly:	Max. 97.1 (2.75)	1974	Min. 3.2 (0.09)	1982	

Mean Daily Discharge in Second-Foot 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.2	* 1.2	1.1	1.2	0.9	* 0.8	* 90.3	* 1.6	1.4	1.4	* 1.6	* 1.6
2	1.2	1.1	* 1.1	1.2	* .8	* .9	132	4.2	* 37.0	* 1.3	* 1.6	* 1.6
3	1.3	1.1	1.1	* 1.0	* .8	* .8	3.4	23.0	22.3	* 1.2	1.6	1.6
4	1.3	1.1	1.2	* .9	* .9	* .8	1.4	25.6	6.1	1.2	1.4	1.6
5	* 1.4	1.1	1.2	1.1	1.0	* .9	* 1.0	24.2	2.4	1.2	1.4	* 1.6
6	1.3	1.1	1.2	1.1	1.0	* .8	1.4	273	* 1.2	1.2	1.3	1.6
7	1.3	1.1	* 1.2	1.1	1.0	* .9	6.4	112	1.1	1.2	* 1.2	1.7
8	1.2	* 1.1	1.2	1.1	1.0	* .9	4.4	* 25.4	1.3	1.2	* 1.2	1.7
9	1.1	1.1	1.2	1.1	* 1.0	* .9	6.7	* 2.0	1.3	1.2	1.3	1.7
10	1.2	1.1	1.2	1.1	1.0	* .8	232	1.8	1.3	1.2	1.4	1.7
11	* 1.1	1.1	1.2	* 1.1	1.0	* .8	* 96.0	1.6	* 1.4	* 1.2	1.6	* 1.7
12	1.0	1.2	1.2	1.1	1.1	* .9	* 9.1	1.8	* 1.4	1.1	1.6	* 1.8
13	1.1	1.2	1.2	1.1	1.1	* .8	* 2.5	1.8	1.4	1.2	1.6	1.9
14	1.2	1.2	1.2	1.1	1.1	* .9	1.7	1.8	1.4	1.4	* 1.6	1.9
15	1.2	1.2	* 1.2	1.1	1.0	5.3	* 4.7	* 1.8	1.5	1.4	1.6	1.8
16	1.2	* 1.2	1.2	1.1	* 1.0	* .9	2.3	1.7	1.4	* 1.3	1.6	1.6
17	1.2	1.2	1.2	1.1	1.1	* .9	19.9	1.7	1.5	* 1.2	1.6	1.6
18	1.2	1.2	1.1	* 1.1	297.7	* .9	* 99.0	1.7	1.5	1.2	1.6	1.6
19	* 1.2	1.2	1.1	1.1	* 1.0	* .9	* 5.5	1.7	* 1.5	1.2	1.6	* 1.6
20	1.2	1.3	1.2	1.1	* .9	* .9	1.7	1.6	1.4	1.2	1.7	1.6
21	1.2	* 1.3	* 1.2	1.1	* .9	* .9	1.7	* 1.6	9.7	1.3	* 1.6	1.4
22	1.1	* 1.4	1.2	1.2	* 1.0	* .8	1.4	* 1.6	1.6	1.3	1.6	1.4
23	1.1	1.4	1.3	1.1	* 1.1	* .8	1.2	1.6	1.4	* 1.3	1.6	1.3
24	1.1	1.3	1.3	* 1.1	* .9	* .7	1.1	1.6	1.4	* 1.3	1.7	1.3
25	* 1.1	1.3	1.3	* 1.1	* .8	* .7	* 1.8	1.6	1.4	1.4	1.7	1.3
26	1.1	1.2	1.3	1.0	* .8	* .7	* 58.6	1.7	* 1.5	1.4	1.7	1.3
27	1.1	1.2	1.5	* .9	12.2	* .7	161	* 1.6	1.5	1.5	1.6	* 1.3
28	1.1	1.1	* 1.4	1.0	1.1	* .8	1.1	1.5	1.4	1.4	* 1.7	1.3
29	1.2	* 1.1	1.4	* .9	* .9	1.1	* 1.3	* 1.5	1.4	1.4	1.6	1.4
30	1.2	1.2	1.3	* .9	* .9	37.5	1.7	1.5	1.4	1.6	1.5	1.4
31	1.2	1.3	1.3		* .8		1.6	1.5		* 1.7		1.4
Sum	36.6	34.4	38.0	32.2	337.1	66.4	953.9	527.3	112.5	40.3	46.4	48.3

Month	Current Year 1988						Period 1932-1988				
	Extreme Gage Feet		Extreme Second-Foot				Average Second-Foot	Total Acre-Feet	Acre-Feet		
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum
Jan.	5.23	5.20	5	1.4	19	1.0	1.2	72.6	131	271	46.4
Feb.	5.22	5.20	22	1.5	17	1.0	1.2	68.2	174	3,120	41.5
Mar.	5.26	5.20	24	1.9	1	1.1	1.2	75.4	148	1,018	46.4
Apr.	5.23	5.18	6	1.3	13	.8	1.1	63.9	257	3,690	40.3
May	8.06	4.75	18	1,990	27	.6	10.9	669	831	8,520	34.7
June	6.96	4.84	30	635	126	.6	2.2	132	1,839	12,653	24.2
July	7.00	4.23	10	2,720	18	.6	30.6	1,892	2,806	18,500	9.5
Aug.	7.55	4.20	6	2,280	13	.9	17.0	1,046	2,939	16,330	49.0
Sept.	5.49	4.17	2	251	22	1.0	3.8	223	4,332	59,380	37.1
Oct.	4.26	4.20	130	1.7	13	1.0	1.3	79.9	1,796	19,200	35.9
Nov.	4.28	4.21	12	1.7	17	1.1	1.5	92.0	186	2,554	35.7
Dec.	4.23	4.21	112	1.9	123	1.3	1.6	95.8	138	408	39.3
Yearly	8.06	4.17		2,720		0.6	6.2	4,510	15,597	70,274	2,320
	Meters		Cubic Meters per Second				Thousands of Cubic Meters				
	2.46	1.27		77.0		0.02	0.18	5,563	19,239	86,682	2,862

* Discharge measurement made on this day ! And other days

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

DESCRIPTION: Cableway, bubbler gage, concrete control weir, water-stage recorders (graphic and digital), and data collection platform located on the left bank at latitude 29°31'10", longitude 104°47'10", and river mile 949.8 (1,528.5 km); 0.4 river mile (0.6 km) downstream from Alamito Creek and 9.0 river miles (14.4 km) downstream from the international highway bridge between Presidio, Texas and QJinaga, Chihuahua. The zero of the gage is 2,532.00 feet (771.75 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 25 discharge measurements during the year and a continuous record of gage heights. Computations for high flows by shifting control methods. Low and medium flow computations based on a stable control weir rating curve defined by meter measurements. Records available: 1955 through 1988. Records are also available from 1896 through June 13, 1932 for a station located about 12.1 river miles (19.5 km) downstream from the Rio Conchos and 1.3 miles (2.1 km) upstream from Alamito Creek; and from June 14, 1932 through 1954 for a station about 2.0 river miles (3.2 km) downstream from the Rio Conchos and 11.4 river miles (18.3 km) upstream from Alamito Creek.

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

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

		Average Flow in Second-Feet (Cubic Meters per Second)**			
Daily:	Max. 53,300 (1,510)	Oct. 1, 1978	Min. 12.9 (0.37)	March 27, 1968	
Monthly:	Max. 11,500 (326)	Oct. 1978	Min. 74.5 (2.11)	March 1968	
Yearly:	Max. 2,440 (69.1)	1986	Min. 602 (17.0)	1983	

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	753	592	629	879	955	694	1,700	2,230	3,540	1,190	1,370	900
2	759	707 *	575 *	912	1,020	675 *	3,390	5,240 *	4,690 *	1,230	1,340 *	863 *
3	753	664	536	947	1,020 *	652	2,700	3,440	4,310	1,280	1,330	844
4	753	621	621	975 *	1,040	612	1,970	3,560	3,500	1,260 *	1,310	855
5	733	658	510	967 *	1,070	610	2,250	3,180	2,840	1,230	1,290	895
6	720 *	697	505	978	1,110	612	1,960	3,790	2,780	1,230	1,280	830
7	721	753	571	978	1,140	604	2,790	3,830	2,720	1,190	1,310	801
8	722	726	570	1,020	1,270	612	2,520 *	3,110	2,650	1,160	1,290	742
9	711	662	567	1,210	1,250	607	2,480	3,750	2,370	1,150	1,260	755
10	708	608	547	1,140	1,260	1,050	4,100	3,830	2,090	1,180	1,250	790
11	709	556	522	1,090	1,250	1,420	5,540	3,960	1,900	1,260	1,210	824
12	676	553	500	1,030	1,290	2,320	3,360	5,020	1,870	1,340	1,210	832
13	636	565	510	996	1,350	1,890	2,640	4,760	1,740	1,460	1,210	818
14	629	578	557	960	1,380	1,630 *	2,410	2,820	1,510	1,420	1,210	784
15	605	573	632	930	1,310	1,640 *	3,410	4,000	1,440	1,400	1,160	780
16	606	573 *	549	958	1,220	1,650	4,050	4,370 *	1,440	1,430	1,100 *	792
17	593	562	466 *	1,010	1,350	1,580	2,720	4,400	1,430	1,570	1,110	800
18	529	566	413	1,030	1,830 *	1,600	2,910	4,280	1,360	1,630 *	1,090	828
19	641	554	391	1,040 *	1,100	1,540	2,590 *	4,240	1,220	1,640	1,100	832
20	616	580	403	1,040 *	896	1,550	2,670	4,060	1,090 *	1,590	1,070	804 *
21	609 *	562	504	903	844	1,520	2,740	5,040	4,410	1,550	1,040	789
22	606	588	555 *	879	837	1,490	2,100	4,520	2,270	1,520	1,020	775
23	618	558	526	894	823	1,460	1,210	3,870	2,680	1,520	1,010	801
24	643	530	491	940	792	1,400	1,010	3,680	1,650	1,500	1,030	806
25	682	504	487	1,010	730	1,420	1,850	3,760	1,290	1,470	1,050	817
26	666	507	499	1,080	853	1,620	2,800	3,960	1,240	1,450	1,040	825
27	620	542	551	1,060	868	1,770	2,730	4,000	1,230	1,420	1,030	797
28	662	553	609	1,020	863	1,740	2,150	3,910	1,290	1,410	1,010	769
29	674	626	618	956	832	2,220	2,030	3,870	1,280	1,410	954	764
30	663	670	910	822	1,920	1,960	3,800	1,220	1,430	931	774	774
31	682	755	749	822	749	1,920	2,370	3,660	1,420	1,430	931	776
Sum	20,798	17,418	16,839	29,742	33,124	40,108	81,110	121,940	65,050	42,940	34,615	25,062

Month	Current Year 1988						Period 1968-1988				
	Extreme Gage Feet		Extreme Second-Foot			Average Second-Foot	Total Acre-Feet	Acre-Feet			
	High	Low	Day	High	Low			Average	Maximum	Minimum	
Jan.	3.67	3.31	4	767	16	588	671	41,252	44,853	182,935	16,068
Feb.	3.59	3.06	7	756	25	483	601	34,548	39,358	129,302	4,745
Mar.	3.87	2.77	31	850	19	389	543	33,400	55,129	223,755	4,583
Apr.	4.72	3.84	9	1,380	1	844	991	58,992	51,155	162,069	6,497
May	6.28	3.54	18	3,510	31	692	1,070	65,700	59,383	197,236	12,147
June	6.03	3.26	12	3,260	10	569	1,340	79,553	71,139	254,916	5,927
July	7.62	4.05	10	7,710	24	1,000	2,620	160,879	81,670	223,914	18,744
Aug.	7.87	5.20	2	8,860	1	2,070	3,930	241,864	122,598	270,367	30,365
Sept.	7.54	4.17	21	6,990	20	1,030	2,170	129,025	175,344	469,832	22,489
Oct.	5.00	4.35	19	1,730	1	1,130	1,390	85,170	130,180	706,691	16,772
Nov.	4.73	3.96	1	1,390	129	896	1,150	68,658	54,352	160,145	8,781
Dec.	4.00	3.66	1	920	8	734	808	49,710	41,873	185,911	11,038
Yearly	7.87	2.77		8,860		389	1,440	1,048,751	927,034	1,770,650	483,092
	Meters		Cubic Meters per Second			Thousands of Cubic Meters					
	2.40	0.84		251		11.0	40.8	1,293,613	1,143,478	2,184,061	595,884

* Discharge measurement made on this day

! And other days

** Period 1968-1988

08-3745.00 TERLINGUA CREEK NEAR TERLINGUA, TEXAS

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

RECORDS: Based on 50 discharge measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: 1932 through 1988.

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

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

		Average Flow in Second-Feet (Cubic Meters per Second)			
		June 1, 1937	Min.	0	August 14 and 15, 1986
Daily:	Max. 17,200 (487)	June 1, 1937	Min.	0.8 (0.02)	October 1934
Monthly:	Max. 1,150 (32.6)	Sept. 1974	Min.	5.5 (0.16)	1943
Yearly:	Max. 146 (4.13)	1937	Min.		

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.9	2.4	3.1	2.1	2.3	2.7	13.5	629	5.4	2.7	2.6	2.3
2	3.0	2.4	3.1	2.1	2.3	1.7	130	252	22.4	2.6	2.7	2.4
3	3.1	2.4	3.2	2.1	2.3	1.7	70.5	538	36.4	2.6	2.4	2.2
4	3.1	2.4	3.2	2.1	2.3	1.7	14.9	256	10.5	2.6	2.4	2.4
5	3.0	2.3	3.3	2.1	2.4	1.6	69.5	688	2.5	2.6	2.4	2.2
6	3.2	2.3	3.3	2.1	2.4	1.7	21.9	1,550	2.0	2.6	2.2	2.2
7	3.1	2.4	3.3	2.1	2.4	1.6	18.3	476	2.0	2.6	2.2	2.0
8	3.2	2.4	3.4	2.1	2.4	1.6	115	75.7	2.0	2.6	2.2	2.0
9	3.2	2.4	3.4	2.1	2.5	1.6	120	17.6	1.9	2.6	2.2	2.0
10	3.2	2.4	3.4	2.0	2.5	1.7	335	10.9	1.8	2.6	2.2	2.2
11	3.3	2.4	3.5	2.1	2.4	2.5	325	6.5	1.8	2.6	2.2	2.2
12	3.3	2.5	3.5	2.1	2.4	1.6	142	3.1	1.8	2.7	2.2	2.0
13	3.4	2.5	3.6	2.1	2.4	1.6	36.5	41.1	1.8	2.8	2.2	2.0
14	3.4	2.5	3.6	2.1	2.5	101	26.5	17.5	1.8	2.7	2.2	2.0
15	3.4	2.5	3.6	2.2	2.5	8.9	25.9	17.1	9.7	2.5	2.2	2.0
16	3.6	2.5	3.5	2.2	2.5	2.9	25.4	11.1	4.1	2.4	2.2	2.0
17	3.5	2.6	3.4	2.2	2.5	2.0	252	7.6	3.7	2.3	2.2	2.0
18	3.7	2.6	3.3	2.2	2.96	1.9	293	5.1	2.9	2.4	2.2	2.2
19	3.7	2.6	3.2	2.2	43.7	2.1	29.2	5.4	3.0	2.4	2.2	2.2
20	3.6	2.7	3.3	2.3	19.4	2.1	17.5	6.0	3.0	2.5	2.2	2.1
21	3.5	2.7	3.2	2.3	10.6	2.2	11.1	4.9	3.0	2.5	2.2	2.1
22	3.3	2.8	3.1	2.3	4.1	2.6	13.6	3.1	3.0	3.0	2.2	2.2
23	3.3	2.7	3.1	2.3	1.8	2.9	9.3	3.0	381	2.5	2.2	2.2
24	3.1	2.8	3.0	2.4	1.7	3.2	5.7	2.8	30.4	2.3	2.2	2.2
25	3.0	2.8	2.9	2.4	1.7	3.5	37.6	2.8	7.5	2.3	2.2	2.2
26	3.0	2.9	2.8	2.4	22.5	3.9	305	3.1	1.7	2.3	2.2	2.2
27	2.9	2.9	2.8	2.4	1.9	8.4	52.7	3.2	1.8	2.3	2.2	2.2
28	2.8	3.0	2.7	2.4	99.4	5.1	24.2	3.1	2.1	2.4	2.2	2.1
29	2.7	3.0	2.5	2.3	6.0	6.1	18.5	3.0	2.6	2.4	2.2	2.2
30	2.6	2.4	2.4	2.3	3.9	5.8	16.9	2.9	2.8	2.5	2.2	2.2
31	2.5	2.3	2.3	2.3	3.6	3.6	37.5	2.7	2.5	2.5	2.2	2.2
Sum	98.6	74.8	98.0	66.1	557.3	187.9	2,613.7	4,648.3	556.4	78.5	67.5	66.6

Month	Current Year 1988						Period 1932-1988				
	Extreme Gage Feet		Extreme Second-Feet			Average Second-Feet	Total Acre-Feet	Acre-Feet			
	High	Low	High	Day	Low			Average	Maximum	Minimum	
Jan.	3.30	3.26	18	3.9	31	2.5	3.2	196	193	875	82.7
Feb.	3.29	3.27	29	3.1	4	2.3	2.6	148	224	4,400	73.4
Mar.	3.30	3.26	113	3.7	31	2.2	3.2	194	246	2,410	72.4
Apr.	3.30	3.25	24	2.5	9	2.0	2.2	131	1,447	18,659	55.1
May	7.14	3.09	18	3,560	124	1.7	18.0	1,105	3,582	26,000	81.3
June	6.28	2.99	14	1,170	13	1.4	6.3	373	7,042	54,800	59.5
July	6.46	2.97	17	4,390	25	3.7	84.3	5,184	8,053	28,700	113
Aug.	8.72	3.25	6	13,000	12	2.0	15.0	9,220	6,278	33,617	123
Sept.	6.34	3.43	23	2,790	26	1.7	18.5	1,104	8,992	68,373	123
Oct.	4.07	3.54	22	9.3	123	2.2	2.5	156	3,635	27,900	50.8
Nov.	3.57	3.55	1	2.7	18	2.0	2.3	124	492	5,687	64.9
Dec.	3.60	3.56	4	2.7	6	2.0	2.1	132	309	3,080	90.0
Yearly	8.72	2.97		13,000		1.4	24.9	18,077	40,493	105,807	3,958
	Meters		Cubic Meters per Second			Thousands of Cubic Meters					
	2.66	0.91	368		0.04	0.71	22,298	49,947	130,511	4,882	

* Discharge measurement made on this day ! And other days

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

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

RECORDS: Based on 13 discharge measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: April 1936 through 1988.

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

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

		Average Flow in Second-Foot (Cubic Meters per Second)**		
Daily:	Max. 65,300 (1,850)	Oct. 1, 1978	Min. 27.5 (0.78)	Sept. 9, 1968
Monthly:	Max. 12,200 (345)	Oct. 1978	Min. 96.9 (2.74)	April 1976
Yearly:	Max. 2,490 (70.5)	1978	Min. 559 (15.8)	1983

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	807	616	620	657	805	729	1,880	2,770	3,270	1,160	1,320	916
2	794	625	686	776	811	678	1,880	3,100	3,250	1,120	1,270	909
3	792	626	609	829	844	646	3,350	4,730	4,150	1,170	1,240	880
4	793	625	572	869	869	626	2,410	3,690	3,730	1,200	1,230	864
5	787	610	573	894	892	608	1,800	3,880	3,170	1,180	1,210	863
6	770	613	578	877	915	594	2,200	4,060	2,970	1,160	1,200	882
7	755	637	520	863	995	595	1,980	6,460	2,870	1,150	1,190	860
8	743	693	552	858	1,000	596	2,860	3,480	2,820	1,130	1,190	824
9	741	707	565	883	1,150	583	2,830	3,270	2,670	1,100	1,180	795
10	732	675	576	978	1,150	581	4,140	3,200	2,280	1,080	1,130	785
11	724	647	561	1,030	1,170	1,090	4,040	3,420	1,970	1,080	1,130	801
12	724	617	544	972	1,160	1,110	4,250	3,500	1,790	1,110	1,120	817
13	706	604	532	940	1,200	2,030	3,000	4,010	1,760	1,160	1,120	826
14	667	594	524	909	1,250	2,380	2,500	3,710	1,600	1,250	1,140	829
15	653	599	553	883	1,280	1,870	2,450	2,910	1,450	1,260	1,140	816
16	638	601	597	850	1,230	1,420	3,240	3,550	1,420	1,240	1,100	793
17	617	599	594	839	1,150	1,400	3,310	3,590	1,340	1,260	1,050	804
18	615	599	530	853	2,120	1,330	3,390	3,610	1,320	1,340	1,060	809
19	623	596	487	882	1,940	1,370	2,840	3,650	1,290	1,380	1,040	829
20	630	612	456	884	1,150	1,320	2,720	3,630	1,190	1,410	1,040	834
21	623	632	439	892	964	1,330	2,670	3,770	1,060	1,400	1,030	820
22	615	636	471	811	860	1,310	2,710	3,890	3,500	1,370	1,010	800
23	617	645	513	778	824	1,300	2,130	3,720	2,850	1,390	1,000	789
24	617	651	516	791	814	1,270	1,380	3,400	2,770	1,360	989	795
25	618	621	507	822	792	1,220	1,160	3,310	1,660	1,360	989	802
26	650	593	495	862	964	1,220	2,490	3,400	1,280	1,340	992	806
27	646	573	501	876	848	1,420	2,960	3,500	1,200	1,320	982	803
28	625	580	537	899	1,380	2,110	2,500	3,480	1,170	1,290	981	782
29	603	594	585	885	1,160	1,570	2,060	3,470	1,190	1,290	968	765
30	614	591	591	856	818	1,900	2,010	3,410	1,200	1,300	944	762
31	604	619	619	776	776	1,990	1,990	3,340	1,320	1,320	944	758
Sum	21,143	18,020	16,963	26,009	33,281	36,206	81,130	112,910	64,190	38,680	32,985	25,418

Month	Extreme Gage Feet		Extreme Second-Foot				Average Second-Foot	Total Acre-Foot	Acre-Foot		
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum
	Jan.	2.74	2.36	1	816	31	593	682	41,937	45,070	178,909
Feb.	2.60	2.23	9	714	127	565	621	35,742	38,622	120,476	7,743
Mar.	2.43	1.95	2	657	120	433	547	33,646	52,702	211,676	6,067
Apr.	3.25	2.41	110	1,110	31	632	867	51,588	48,566	148,840	5,765
May	6.40	2.59	18	4,470	31	751	1,070	66,012	60,651	185,276	14,454
June	6.33	2.22	28	4,430	19	570	1,210	71,814	75,444	209,177	5,839
July	8.16	3.02	10	6,650	26	1,110	2,620	160,919	88,016	197,593	12,460
Aug.	10.92	3.92	7	10,600	1	1,900	3,640	223,954	128,762	242,539	30,689
Sept.	6.92	3.08	3	4,910	21	1,030	2,140	127,319	178,307	472,093	27,759
Oct.	3.64	3.08	22	1,450	19	1,080	1,250	76,721	142,038	751,755	17,776
Nov.	3.47	2.91	1	1,330	30	930	1,100	65,425	56,943	148,820	13,267
Dec.	2.90	2.64	1	924	31	751	820	50,416	43,366	178,730	12,107
Yearly	10.92	1.95		10,600		433	1,390	1,005,493	958,487	1,801,958	404,776
	Meters		Cubic Meters per Second				Thousands of Cubic Meters				
	3.33	0.59		300		12.3	39.4	1,240,256	1,182,275	2,222,679	499,283

* Discharge measurement made on this day

! And other days

** Period 1968-1988

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

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

RECORDS: Based on 30 discharge measurements during the year, 11 by the United States Section and 19 by the Mexican Section of the Commission, and a continuous record of gage heights. Computations for high flows by shifting control methods. Low and medium flow computations based on a stable control weir rating curve defined by meter measurements. Records available: September 1961 through 1988.

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. The transmitter relays gage height data upon interrogation from the Amistad Dam hydrographic office of the United States Section of the Commission. Transmission is via radio.

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

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

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

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,120	925	841	836	1,150	1,200	7,430	1,930	3,370	1,740	1,580	1,330
2	1,110	940	895	843	1,150	1,060	4,420	2,380	3,300	1,720	1,560	1,310
3	1,100	923	827	863	1,100	1,030	3,870	2,870	3,270	1,690	1,590	1,290
4	1,080	929	830	923	1,050	964	2,990	5,400	3,720	1,620	1,580	1,270
5	1,060	923	857	1,050	1,070	921	3,210	4,170	4,190	1,590	1,520	1,240
6	1,060	916	842	1,100	1,110	894	2,430	3,880	3,730	1,600	1,510	1,220
7	1,060	916	825	1,120	1,160	866	2,020	4,210	2,960	1,590	1,510	1,200
8	1,030	909	824	1,150	1,170	840	2,260	5,900	2,770	1,590	1,500	1,190
9	1,020	929	817	1,160	1,170	805	4,020	4,550	2,670	1,560	1,490	1,180
10	1,010	966	779	1,180	1,180	794	4,150	2,860	2,610	1,530	1,500	1,170
11	989	997	811	1,130	1,250	780	5,320	2,930	2,520	1,510	1,500	1,150
12	992	998	810	1,160	1,290	758	4,050	2,790	2,320	1,470	1,480	1,120
13	992	966	816	1,270	1,300	873	4,000	3,010	2,140	1,460	1,430	1,120
14	982	944	784	1,280	1,310	1,200	3,810	3,350	2,010	1,430	1,440	1,140
15	979	913	761	1,260	1,320	2,000	2,630	3,820	1,960	1,470	1,450	1,140
16	957	900	759	1,230	1,340	3,000	2,310	3,130	1,880	1,500	1,450	1,150
17	948	903	767	1,210	1,360	2,010	2,200	2,620	1,940	1,570	1,430	1,150
18	943	903	772	1,150	1,380	1,590	3,160	3,290	51,200	1,560	1,430	1,130
19	917	894	805	1,120	1,770	1,520	3,000	3,380	8,600	1,540	1,420	1,130
20	924	881	836	1,120	4,160	1,500	4,190	3,280	2,820	1,560	1,380	1,140
21	937	881	791	1,150	2,680	1,490	3,420	3,430	2,390	1,640	1,390	1,140
22	961	880	751	1,170	1,530	1,470	2,600	3,550	2,250	1,660	1,380	1,170
23	968	889	738	1,170	1,310	1,460	2,400	4,110	2,120	1,680	1,390	1,180
24	972	893	715	1,170	1,180	1,460	2,500	3,910	3,700	1,650	1,390	1,160
25	979	901	725	1,090	1,100	1,430	2,110	3,580	3,570	1,670	1,370	1,120
26	993	898	758	1,070	1,690	1,420	1,660	3,260	3,190	1,650	1,360	1,120
27	1,010	905	765	1,070	1,160	1,610	1,490	3,270	2,480	1,640	1,340	1,120
28	1,010	883	777	1,090	1,230	2,520	2,350	3,350	2,060	1,630	1,330	1,100
29	1,010	863	762	1,140	1,260	4,920	2,590	3,450	1,890	1,600	1,340	1,110
30	961		736	1,150	1,320	5,190	2,280	3,430	1,780	1,710	1,330	1,120
31	937		763		1,510		2,020	3,440		1,680		1,100
Sum	31,011	26,568	24,489	33,425	43,760	47,575	96,890	108,670	135,410	49,510	43,370	36,210

Month	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Period 1968-1988		
	High	Low	Day	High		Low			Acre-Feet		
				Day	Day		Day	Average	Maximum	Minimum	
Jan.	2.42	2.25	1	1,130	118	915	1,000	61,509	61,610	194,023	31,343
Feb.	2.33	2.21	110	1,000	11	836	916	52,697	52,721	128,767	22,435
Mar.	2.23	2.10	1 2	862	24	698	790	48,573	68,065	224,767	19,789
Apr.	2.54	2.19	113	1,320	1	810	1,110	66,297	66,336	156,218	20,200
May	4.45	2.36	20	6,810	4	1,040	1,410	86,797	79,852	200,707	28,616
June	4.92	2.14	29	7,740	12	747	1,590	94,364	99,602	260,985	22,463
July	7.58	2.62	1	13,000	27	1,450	3,130	192,178	106,717	218,916	23,871
Aug.	5.02	2.86	8	7,930	1	1,890	3,510	215,544	147,153	233,664	45,747
Sept.	30.02	2.80	18	98,400	17	1,730	4,510	268,582	199,992	590,037	48,619
Oct.	2.96	2.60	3	2,080	14	1,420	1,600	98,202	182,690	901,825	32,134
Nov.	2.71	2.54	3	1,610	128	1,320	1,450	86,023	84,466	357,878	30,399
Dec.	2.55	2.39	1	1,340	31	1,090	1,170	71,821	60,211	176,370	32,025
Yearly	30.02	2.10		98,400		698	1,850	1,342,587	1,209,415	2,196,111	611,666
	Meters		Cubic Meters per Second				Thousands of Cubic Meters				
	9.15	0.64		2,790		19.8	52.4	1,656,054	1,491,789	2,708,859	754,478

* Discharge measurement made on this day † And other days ** Period 1968-1988

08-4474.10 PECOS RIVER NEAR LANGTRY, TEXAS

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

RECORDS: Based on 30 discharge measurements during the year, 12 by the United States Section and 18 by the Mexican Section of the Commission, and a continuous record of gage heights. Computations for high flows by shifting control methods. Low and medium flow computations based on stable control weir rating curves defined by meter measurements. Records available: July 1967 through 1988. Records are also available for Pecos River near Comstock, 9.5 river miles (15.3 km) downstream, from March 17 through December 3, 1898 and May 1900 through October 7, 1954; for Pecos River near Shumla, 3.5 river miles (5.6 km) upstream, from October 8, 1954 through June 1967; and for Pecos River at Mouth near Comstock, from March 1961 through July 2, 1968.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. The transmitter relays gage height data upon interrogation from the Amistad Dam hydrographic office of the United States Section of the Commission. Transmission is via radio.

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

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

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

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	208	204	191	156	181	190	162	151	148	316	209	201
2	208	202	189	154	180	185	163	151	147	312	208	201
3	208	201	187	151	179	180	154	151	149	305	208	201
4	208	201	185	155	174	177	150	151	158	313	206	201
5	204	200	188	162	170	167	160	148	136	285	204	201
6	203	199	190	167	164	155	153	148	136	275	199	201
7	207	201	185	164	162	146	166	148	135	268	200	201
8	204	201	188	161	161	143	169	148	136	266	201	201
9	204	204	185	161	158	142	172	148	138	267	201	198
10	204	201	180	170	161	133	175	148	135	284	201	198
11	204	200	181	176	167	129	183	148	129	259	201	200
12	203	198	180	181	190	125	210	145	127	254	201	200
13	203	200	176	181	171	123	427	145	126	249	201	198
14	201	200	173	178	164	123	606	145	123	239	201	198
15	201	198	171	174	161	125	382	145	116	238	201	199
16	203	197	172	170	157	125	288	145	114	237	201	194
17	204	203	178	173	157	125	251	142	1,060	235	201	194
18	201	204	177	173	152	125	245	142	10,300	235	201	194
19	202	202	170	185	165	128	238	144	2,170	231	201	193
20	214	202	172	213	227	128	299	148	802	231	201	191
21	225	200	170	234	1,050	129	611	146	711	234	201	191
22	228	198	170	251	312	130	258	148	510	233	201	194
23	228	196	171	240	222	132	232	148	450	231	201	193
24	227	193	171	218	204	134	214	148	421	220	201	191
25	221	190	166	210	187	136	196	151	377	218	201	190
26	214	194	163	203	320	137	184	154	347	221	201	188
27	209	196	162	195	188	138	177	144	332	218	201	193
28	204	198	163	191	170	144	173	140	320	215	201	190
29	201	195	163	190	176	151	165	145	324	211	201	188
30	202		161	195	180	146	161	150	320	211	201	190
31	203		155	182	182		153	153		215	201	191
Sum	6,456	5,778	5,433	5,532	6,592	4,251	7,287	4,568	20,850	7,726	6,057	6,064
Current Year 1988									Period 1967-1988			
Month	Extreme Gage Feet		Extreme Second-Feet			Average Second-Feet	Total Acre-Feet	Acre-Feet				
	High	Low	Day	High	Day			Average	Maximum	Minimum		
Jan.	2.08	1.99	121	228	18	198	208	12,805	13,194	29,240	7,559	
Feb.	2.02	1.96	11	208	25	188	199	11,460	11,534	25,414	7,012	
Mar.	1.98	1.85	11	194	130	154	175	10,776	11,650	22,124	6,929	
Apr.	2.16	1.83	22	256	11	148	184	10,973	14,450	51,960	6,999	
May	3.91	1.83	21	2,930	19	148	213	13,075	16,011	46,055	6,330	
June	2.00	1.70	1	201	123	112	142	8,432	13,593	37,856	5,458	
July	3.07	1.82	21	1,130	4	185	235	14,454	16,440	76,891	4,289	
Aug.	1.87	1.80	126	160	127	139	147	9,060	20,184	162,055	4,178	
Sept.	9.89	1.70	18	17,000	116	112	695	41,355	52,378	804,466	5,188	
Oct.	2.63	2.02	4	581	31	208	289	15,324	24,806	113,911	7,123	
Nov.	2.08	1.99	7	228	16	198	202	12,014	16,055	59,734	6,589	
Dec.	2.00	1.96	11	201	125	188	196	12,028	13,861	37,859	7,662	
Yearly	9.89	1.70		17,000		112	237	171,756	224,166	1,087,822	94,683	
	Meters		Cubic Meters per Second			Thousands of Cubic Meters						
	3.01	0.52		481		3.17	6.71	211,858	276,504	1,341,807	116,790	

* Discharge measurement made on this day ! And other days

08-4474.20 DEAD MANS CANYON NEAR COMSTOCK, TEXAS

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

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

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

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

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

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

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

MEAN DAILY DISCHARGE IN SECOND-FOOT 1988

Month and Day			
No flow during 1988			

ANNUAL SUMMARY

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

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

DESCRIPTION: Concrete control wall with rectangular notch opening of 900 second-foot (25.5 m³/sec) capacity, cableway, bubbler gage, water-stage recorders (graphic & digital), and binary decimal transmitter located on the left bank at latitude 29°40'35", longitude 101°00'00", about 11.5 miles (18.5 km) east of Comstock, Val Verde County, Texas, and 25.5 river miles (41.0 km) from the confluence with the Rio Grande. The confluence is located at river mile 574.6 (924.7 km), 0.7 river mile (1.1 km) upstream from Amistad Dam. The zero of the gage is 1,331.88 feet (345.00 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 34 discharge measurements during the year, 12 by the United States Section and 22 by the Mexican Section of the Commission, a stable rating curve based on meter measurements, and a continuous record of gage heights. Records available: 1960 through 1988. Records are also available from May 1900 through March 1914 for a station 23.8 river miles (38.3 km) downstream; from December 1923 through September 1932 for a station 22.6 river miles (36.7 km) downstream; from September 2, 1932 through August 1957 for a station 21.0 river miles (33.8 km) downstream; from August 7, 1954 through January 1958 for a station 5.4 river miles (8.7 km) upstream; and from August 1954 through May 31, 1968 for a station at the mouth 24.7 river miles (39.8 km) downstream.

REMARKS: At this station the flow of this spring-fed stream is very uniform during periods of dry weather and is not modified by diversions or storage. The transmitter relays gage height data upon interrogation from the Amistad Dam hydrographic office of the United States Section of the Commission. Transmission is via radio.

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

		Average Flow in Second-Feet (Cubic Meters per Second)			
Daily:	Max. 123,000 (3,480)	Sept. 18, 1974	Min. 53.7 (1.52)	August 20, 1969	
Monthly:	Max. 8,460 (240)	Sept. 1974	Min. 64.3 (1.82)	August 1964	
Yearly:	Max. 977 (27.7)	1974	Min. 99.9 (2.83)	1968	

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	336	330	306	277	264	262	240	552	350	499	375	349
2	335	325	308	277	259	261	235	417	341	476	370	349
3	337	327	294	279	257	243	249	367	323	471	369	349
4	337	323	302	279	253	247	235	383	343	460	364	349
5	331	325	305	279	248	248	232	968	344	450	364	351
6	334	325	301	275	246	252	233	396	345	440	363	354
7	333	329	298	273	249	251	235	379	346	431	362	353
8	332	328	294	273	251	254	246	364	348	431	364	349
9	335	329	291	275	250	252	251	355	336	430	367	349
10	334	326	291	267	248	245	247	352	338	424	366	362
11	333	310	290	272	260	247	11,900	351	330	419	363	360
12	336	319	288	275	262	239	5,460	347	324	414	362	354
13	331	321	287	273	249	244	1,940	343	326	412	359	349
14	329	318	281	271	242	247	723	347	322	398	359	349
15	329	319	281	272	245	249	468	344	321	400	357	341
16	334	317	286	271	246	261	395	347	323	399	352	341
17	334	319	294	280	249	253	363	353	428	408	351	343
18	330	312	283	269	246	249	347	347	4,700	424	351	343
19	322	317	286	266	261	246	333	346	2,720	395	342	343
20	317	318	286	268	283	245	402	347	1,080	391	352	344
21	324	317	285	267	394	246	403	349	795	395	354	348
22	327	316	285	272	300	242	366	350	668	397	354	344
23	327	311	289	267	282	239	332	349	620	393	354	344
24	323	315	288	265	277	242	321	337	594	391	356	340
25	323	314	283	268	265	263	314	341	572	386	359	342
26	329	320	283	268	281	277	312	340	551	386	356	341
27	326	321	281	263	264	256	319	338	530	386	340	332
28	326	317	283	263	253	246	312	342	511	379	348	337
29	327	309	277	273	257	245	304	341	549	375	346	338
30	329	309	276	272	251	240	300	342	523	375	346	342
31	331		278		256		305	357		375		349
Sum	10,231	9,277	8,960	8,149	8,148	7,491	28,322	11,691	20,211	12,810	10,725	10,738

Month	Current Year 1988						Period 1960-1988				
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum
Jan.	1.96	1.85	4	354	19	299	330	20,293	15,427	28,842	4,647
Feb.	1.94	1.82	7	343	11	285	320	18,401	13,305	26,577	3,999
Mar.	1.90	1.76	2	323	27	257	289	17,772	13,199	26,404	4,186
Apr.	1.85	1.74	1	299	24	249	272	16,163	13,791	38,777	4,520
May	2.45	1.66	21	630	30	215	263	16,161	15,099	35,344	4,517
June	1.91	1.64	25	328	3	207	250	14,858	18,286	54,328	4,259
July	8.12	1.58	11	48,600	3	185	914	56,176	21,548	186,522	4,034
Aug.	3.26	1.88	5	2,090	1	313	377	23,189	38,679	408,908	3,955
Sept.	4.61	1.89	18	9,250	14	318	674	40,088	44,386	503,590	5,004
Oct.	2.40	1.99	18	605	23	370	413	25,408	32,650	220,590	4,532
Nov.	2.11	1.87	3	437	19	308	358	21,273	16,782	33,013	4,532
Dec.	2.00	1.87	8	375	27	308	346	21,299	16,146	31,063	4,697
Yearly	8.12	1.58		48,600		185	401	291,081	259,298	707,092	72,494
	Meters		Cubic Meters per Second				Thousands of Cubic Meters				
	2.47	0.48		1,380		5.24	11.4	359,043	319,839	872,184	89,420

* Discharge measurement made on this day ! And other days

08-4494.40 BIG SATAN CREEK NEAR COMSTOCK, TEXAS

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

DESCRIPTION: Cableway, control weir, bubbler gage, and digital recorder located on the right bank of the creek at latitude 29°39'50", longitude 100°57'50", 1.1 miles (1.8 km) upstream from its confluence with the Devils River, which is 21.1 miles (34.1 km) upstream from the Devils River confluence with the Rio Grande. The zero of the gage is 1,134.00 feet (345.64 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on current meter measurements, a continuous record of gage heights, and the weir discharge rating. Records available: May 1968 through 1988.

REMARKS: This creek is normally dry, its flow being confined to periods of storm runoff from its 42 square miles (109 km²) of watershed area. Only the days of flow are shown below.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 56,100 second-feet (1,590 m³/sec) on August 15, 1971 with a gage height of 12.31 feet (3.75 m). Maximum volumes: Monthly, 12,204 acre-feet (15,054,000 m³) in August 1971; yearly 12,525 acre-feet (15,450,000 m³) in 1971.

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

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

MEAN DAILY DISCHARGE IN SECOND-FOOT 1988

Month and Day			
No flow during 1988			

ANNUAL SUMMARY

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

08-4494.80 ROUGH CANYON NEAR DEL RIO, TEXAS

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

DESCRIPTION: Cableway, control weir, bubbler gage, and digital recorder located on the right bank at latitude 29°34'40", longitude 100°56'00", 3.9 miles (6.3 km) upstream from its confluence with the Devils River, which is 11.1 miles (17.9 km) upstream from the Devils River confluence with the Rio Grande. The zero of the gage is 1,129.00 feet (344.12 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on current meter measurements, a continuous record of gage heights, and the weir discharge rating. Records available: January 1968 through 1988.

REMARKS: This stream is normally dry, its flow being confined to periods of storm runoff from its 24 square miles (62.2 km²) of watershed area. Only the days of flow are shown below.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 7,040 second-feet (199 m³/sec) on August 12, 1972 with a gage height of 6.80 feet (2.07 m). Maximum volumes: Monthly, 8,230 acre-feet (10,152,000 m³) in August 1971; yearly 8,232.2 acre-feet (10,154,000 m³) in 1971.

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

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

MEAN DAILY DISCHARGE IN SECOND-FOOT 1988

Month and Day			
Aug. 1	20.6	Sep. 29 30	24.5 4.4

ANNUAL SUMMARY

Month	Maximum Gage and Discharge			Total Acre-Feet
	Day	Feet	Second-Foot	
Aug.	1	1.38	106.0	40.9
Sep.	29	1.62	225.0	57.3
Yearly		1.62	225.0	98.2
		Meters	Cubic Meters per Second	Thousands of Cubic Meters
		0.49	6.37	121.0

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

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

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

RECORDS: Based on current meter measurements, a continuous record of gage heights, and the weir discharge rating. Records available: January 1968 through 1988.

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

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

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

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

MEAN DAILY DISCHARGE IN SECOND-FOOT 1988

Month and Day					
Sep. 29	100.0				
30	5.2				

ANNUAL SUMMARY

Month	Maximum Gage and Discharge			Total Acre-Feet
	Day	Feet	Second-Feet	
Sept.	29	2.70	3.5	209.0
			2.70	3.5
Yearly		Meters	Cubic Meters per Second	Thousands of Cubic Meters
		0.82	0.10	258.0

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

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

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

RECORDS: Based on current meter measurements, a continuous record of gage heights, and the weir discharge rating. Records available: December 1967 through 1988.

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

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

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

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

MEAN DAILY DISCHARGE IN SECOND-FOOT 1988

Month and Day					
Aug. 5	14.3				
6	14.1				
7	6.2				
8	1.5				
9	0.1				

ANNUAL SUMMARY

Month	Maximum Gage and Discharge			Total Acre-Feet
	Day	Feet	Second-Feet	
Aug.	5	1.41	112.0	71.8
			1.41	112.0
Yearly		Meters	Cubic Meters per Second	Thousands of Cubic Meters
		0.43	3.17	88.6

08-4495.90 EVANS CREEK NEAR COMSTOCK, TEXAS

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

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

RECORDS: Based on current meter measurements, a continuous record of gage heights, and the weir discharge rating. Records available: December 1967 through 1988.

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

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

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

Daily:	Max.	3.940	(112)	Aug. 15,	1971	Min.	
Monthly:	Max.	151	(4.28)	Aug.	1971	Min.	see REMARKS
Yearly:	Max.	19.9	(0.56)		1971	Min.	

MEAN DAILY DISCHARGE IN SECOND-FEET 1988

Month and Day			
Jul. 21	23.6	Sep. 18	61.0

ANNUAL SUMMARY

Month	Maximum Gage and Discharge			Total Acre-Feet
	Day	Feet	Second-Feet	
Jul.	21	1.46	255.0	46.8
Sep.	18	1.69	524.0	121.0
		1.69	524.0	168.0
Yearly		Meters	Cubic Meters per Second	Thousands of Cubic Meters
		0.52	14.80	207.0

08-4508.05 CARMINA SPRINGS NEAR CD. ACUNA, COAHUILA

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

RECORDS: Based on periodic staff gage readings and the weir discharge table. Mean daily discharges determined by prorating between readings. Records available: 1969 through 1988.

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

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	56.5	56.5	58.3	60.0	60.0	58.3	57.2		55.8	59.0	62.9	54.6
2	56.5	56.5	58.3	60.0	60.0	57.9	57.2		55.8	59.3	63.2	65.0
3	56.5	56.5	58.3	60.0	60.0	57.2	57.2		56.5	59.7	63.2	65.0
4	56.5	56.9	58.3	60.0	60.0	57.2	57.2		56.5	59.7	63.2	65.3
5	56.5	56.9	58.3	60.0	60.0	56.9	57.2		56.5	60.0	63.2	65.3
6	56.5	57.2	58.3	60.0	60.0	56.2	57.2		56.5	60.0	63.2	65.7
7	56.5	57.6	58.3	60.0	60.0	56.5	57.2		56.5	60.0	63.2	65.7
8	56.5	57.9	58.3	60.0	60.0	56.5	57.2		56.5	60.0	63.2	65.7
9	56.5	57.9	58.3	60.0	60.0	56.5	58.3		56.5	60.0	63.2	66.0
10	56.5	58.3	59.3	60.0	60.0	55.8	57.9		56.5	60.0	63.6	66.0
11	56.5	58.3	59.3	60.0	60.0	55.1	58.3		56.5	60.0	63.6	66.0
12	56.5	58.3	59.7	60.0	60.0	55.1	58.6	57.2	56.5	60.0	63.9	66.0
13	56.5	58.3	59.7	60.0	60.0	54.4	58.3	57.2	56.5	60.0	63.9	66.4
14	56.5	58.3	60.0	60.0	60.0	53.7	58.3	57.2	56.5	60.0	64.3	66.4
15	56.5	58.3	60.0	60.0	60.0	53.3	58.3	57.2	56.5	60.0	64.3	66.4
16	56.5	58.3	60.0	60.0	60.0	53.3	58.3	57.2	56.5	60.4	64.5	66.4
17	56.5	58.3	60.0	60.0	60.0	54.0	58.3	57.2	56.9	60.0	64.6	66.4
18	56.5	58.3	60.0	60.0	60.0	54.7	58.3	56.5	57.9	60.0	64.6	66.4
19	56.5	58.3	60.0	60.0	59.7	55.1	58.3	56.5	57.9	60.4	64.6	66.4
20	56.5	58.3	60.0	60.0	59.7	55.4	58.3	56.5	57.9	60.4	64.6	66.4
21	56.5	58.3	60.0	60.0	59.3	56.2	59.3	57.2	57.9	60.4	64.5	66.4
22	56.5	58.3	60.0	60.0	59.0	56.5	60.0	56.5	58.3	60.7	64.5	66.4
23	56.5	58.3	60.0	60.0	58.6	56.9	61.1	57.2	58.3	60.7	64.6	66.4
24	56.5	58.3	60.4	60.0	58.6	56.9	61.8	56.2	58.3	60.7	64.6	66.4
25	56.5	58.3	60.0	60.0	58.3	57.2	62.9	56.2	58.3	60.7	64.6	66.4
26	56.5	58.3	60.0	60.0	58.3	57.6	63.6	56.2	58.3	61.4	64.6	66.4
27	56.5	58.3	60.0	60.0	58.3	56.9	64.6	56.5	58.3	61.8	64.6	66.4
28	56.5	58.3	60.4	60.0	58.3	57.2	63.9	55.8	58.3	61.8	64.6	67.1
29	56.5	58.3	60.0	60.0	58.3	57.2	63.9	57.2	58.6	62.2	64.6	67.1
30	57.6	60.0	60.0	60.0	58.3	57.2	64.3	56.5	58.6	62.5	64.6	67.5
31	56.9	60.0	60.0	60.0	58.3		64.6	56.2		62.9	64.6	67.5
Sum	1,753.0	1,679.9	1,843.5	1,800.0	1,843.0	1,682.9	1,847.1	1,716.4	1,874.7	1,921.1	2,051.5	

Current Year 1988										Period 1969-1988		
Month	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet			
	High	Low	Day	High		Low			Average	Maximum	Minimum	
				Day	Day							
Jan.	1.54	1.35	30	65.7	30	55.8	56.5	3,477	2,788	4,041	364	
Feb.	1.41	1.38	110	58.3	11	56.5	57.9	3,330	2,523	3,405	373	
Mar.	1.48	1.41	12	63.4	11	58.3	59.3	3,657	2,788	3,657	425	
Apr.	1.44	1.41	11	60.0	11	60.0	60.0	3,572	2,611	3,572	629	
May	1.44	1.41	11	60.0	123	58.3	59.3	3,656	2,638	3,691	709	
June	1.41	1.31	11	58.3	115	53.3	56.2	3,338	2,561	3,572	598	
July	1.54	1.38	127	64.6	1	56.5	59.7	3,664	2,639	3,691	533	
Aug.									2,659	3,616	540	
Sept.	1.51	1.35	30	63.2	11	55.8	57.2	3,404	2,663	3,404	593	
Oct.	1.48	1.44	31	62.9	1	59.0	60.4	3,720	2,910	3,816	830	
Nov.	1.54	1.51	115	64.6	1	62.9	63.9	3,811	2,857	3,811	964	
Dec.	1.57	1.54	130	67.5	1	64.6	66.0	4,069	2,990	4,069	1,077	
Yearly									32,587	41,290	9,080	
	Meters		Cubic Meters per Second				Thousands of Cubic Meters					
									40,195	50,932	11,201	

* Discharge measurement made on this day

Ø Mean daily

! And other days

LOURDES AND HILDA SPRINGS NEAR CD. ACUNA, COAHUILA

08-4508.20 LOURDES SPRING

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

RECORDS: Based on periodic staff gage readings and the weir discharge table. Mean daily discharges determined by prorating between readings. Records available: 1969 through 1988.

REMARKS: This spring emerged since operation of Amistad Dam began in May 1968. All storm water from surface runoff passing this station is deducted. The daily flow throughout the year ranged from 2.1 (0.06) to 2.5 second-feet (0.07 m³/sec) and averaged 2.5 second-feet (0.07 m³/sec). The volume for the year amounted to 1,690 acre-feet (2,085,000 m³).

08-4508.30 HILDA SPRING

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

RECORDS: Based on periodic staff gage readings and the weir discharge table. Mean daily discharges determined by prorating between readings. Records available: 1969 through 1988.

REMARKS: This spring emerged since operation of Amistad Dam began in May 1968. All storm water from surface runoff passing this station is deducted. The daily flow throughout the year ranged from 2.5 (0.07) to 3.2 second-feet (0.09 m³/sec) and averaged 2.8 second-feet (0.08 m³/sec). The volume for the year amounted to 2,028 acre-feet (2,501,000 m³).

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

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

RECORDS: Based on 47 discharge measurements during the year, 37 by the Mexican Section and 10 by the United States Section of the Commission, and a continuous record of gage heights. Computations for high flows by shifting control methods. Low and medium flow computations based on a stable control weir rating curve defined by meter measurements. Records available: September 1954 through 1988. Records are also available from May 1900 through April 1915 for a station 1.9 miles (3 km) upstream; from December 1919 through March 1920 for a station 1.7 miles (3 km) downstream near McKee's Switch; from July 2, 1941 through August 1954 and October 1960 through 1967 for a station at the international highway bridge; and from December 1923 through July 2, 1941, and 1968 through 1988 for a station approximately 10.6 miles (17.0 km) downstream.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. On May 31, 1968 Amistad Dam started impounding water. After this day, flow at this station is controlled largely by releases from Amistad Reservoir, 2.1 river miles (3.3 km) upstream. The transmitter relays gage height data upon interrogation by telephone via private line to the Amistad office.

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

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

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

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	770	1,640	1,630	1,640	2,040	4,270	2,420	2,490	4,240	6,180	1,610	1,390
2	745	1,560	1,600	1,660	2,030	3,530	2,440	2,480	3,710	2,980	1,600	1,370
3	770	1,610	1,610	1,680	2,020	3,250	2,390	2,590	3,670	2,760	1,600	1,380
4	756	1,630	1,610	1,630	2,000	3,410	2,400	2,470	3,670	2,360	1,540	1,370
5	770	1,620	1,650	1,660	2,000	3,480	2,400	3,960	3,640	2,570	1,530	1,390
6	784	1,590	1,600	1,640	1,960	3,500	2,330	6,110	3,570	1,860	1,550	1,370
7	759	1,640	1,640	1,980	2,040	3,530	2,360	6,140	3,640	1,870	1,580	1,370
8	752	1,620	1,640	2,000	2,010	3,330	2,410	6,110	3,640	1,760	1,520	1,360
9	749	1,630	1,660	2,000	2,080	3,570	2,400	6,110	3,670	1,770	1,530	1,380
10	752	1,640	1,330	1,990	2,410	3,530	2,430	4,100	3,670	1,720	1,520	1,370
11	731	1,610	530	2,020	2,010	3,530	2,650	4,060	3,670	1,770	1,500	1,380
12	1,580	1,650	505	1,970	2,030	3,520	6,250	2,510	3,600	1,800	1,580	1,340
13	1,690	1,610	505	2,000	1,960	3,470	5,930	2,450	3,640	1,770	1,580	1,370
14	1,640	1,610	505	1,970	1,960	3,450	5,010	2,470	2,670	1,830	1,580	1,410
15	1,630	1,610	516	2,030	1,960	3,370	4,170	2,480	823	1,700	1,580	1,330
16	1,620	1,620	611	2,220	1,990	3,280	4,100	4,100	727	1,810	1,580	1,360
17	1,630	1,630	773	1,980	3,710	3,270	4,100	4,130	1,170	1,900	1,540	1,370
18	1,660	1,660	1,430	2,480	3,310	519	4,060	4,130	788	1,390	1,530	1,370
19	1,470	1,670	1,590	2,630	3,780	505	3,130	4,100	756	1,820	1,560	1,360
20	1,680	1,660	1,640	2,480	5,470	505	3,110	4,060	855	1,810	1,550	1,400
21	1,660	1,650	1,640	3,530	7,700	516	7,630	4,170	3,500	1,920	1,600	1,370
22	1,670	1,630	1,660	3,290	5,510	523	8,190	4,170	4,040	1,940	1,570	1,390
23	1,680	1,640	1,660	1,970	4,130	4,060	8,050	8,160	8,930	1,940	1,570	1,380
24	1,680	1,620	1,660	2,000	4,770	2,630	6,110	8,190	8,900	1,930	1,540	1,360
25	1,670	1,640	1,670	2,000	4,310	2,400	4,100	4,240	8,900	1,900	1,580	1,410
26	1,690	1,640	1,680	2,000	4,100	2,450	2,650	4,130	8,760	1,890	1,560	1,380
27	1,580	1,640	1,650	2,000	4,100	2,420	2,420	4,100	8,930	1,910	1,590	1,390
28	1,730	1,650	1,680	1,970	4,130	2,400	2,500	4,100	8,370	1,610	1,550	1,380
29	1,590	1,650	1,650	1,980	4,130	2,470	2,480	4,100	6,750	1,600	1,360	1,390
30	1,750	2,240	2,120	5,370	2,370	2,460	2,420	6,820	1,590	1,350	1,380	1,370
31	1,650			5,540		2,480	4,170		1,500			1,370
Sum	41,288	47,270	43,445	62,520	103,060	83,058	115,560	134,819	130,820	63,210	46,430	42,640

Month	Extreme Gage Feet		Extreme Year-Feet				Average Second-Feet	Total Acre-Feet	Period 1968-1988		
	High	Low	High		Low	Acre-Feet					
			Day	High		Day			Average	Maximum	Minimum
Jan.	2.13	0.33	28	3,430	1.5	87.2	1,330	81,911	90,820	209,814	5,318
Feb.	2.13	.33	14	3,430	11	77.3	1,630	93,734	120,187	467,202	12,467
Mar.	2.36	.33	10	4,170	3	77.3	1,400	86,184	143,363	396,457	7,271
Apr.	2.99	.33	19	6,570	125	87.2	2,080	123,938	124,138	383,554	27,570
May	3.48	.36	30	8,720	1.1	97.1	3,320	204,434	206,802	539,699	24,137
June	2.99	.52	17	6,500	124	222	2,770	164,761	154,946	327,602	16,418
July	3.77	.36	1.6	10,300	1.9	108	3,740	229,210	139,429	366,470	23,182
Aug.	3.38	.36	1.6	8,260	4	108	4,200	259,413	163,189	662,215	15,589
Sept.	3.54	.95	21	9,110	15	727	4,480	267,398	199,083	1,280,079	17,606
Oct.	3.35	.36	1	8,120	130	97.1	2,400	125,381	149,270	812,596	3,734
Nov.	2.17	.36	1.1	3,530	30	97.1	1,550	92,067	96,256	502,295	4,539
Dec.	1.61	.36	1.6	2,010	1.2	97.1	1,380	84,608	78,992	216,286	4,859
Yearly	3.77	0.33		10,300		77.3	2,500	1,813,039	1,666,475	3,566,065	416,789
Yearly	Meters		Cubic Meters per Second				Thousands of Cubic Meters				
	1.15	0.10		292		2.19	70.7	2,236,360	2,055,574	4,398,694	514,104

* Discharge measurement made on this day ! And other days

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

DESCRIPTION: Rectangular sharp-crested weir of 8.1 second-foot (0.2 m³/sec) capacity and staff gage located at latitude 29°25'20", longitude 101°02'40", about 1,300 feet (400 m) from the confluence with the Rio Grande and about 9.4 miles (15.1 km) northwest of Cd. Acuna, Coahuila. This creek enters the Rio Grande from the Mexican side at river mile 571.3 (919.4 km), 10.3 river miles (16.6 km) upstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila. The zero of the gage is 925.13 feet (281.98 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on periodic staff gage readings and the weir discharge table. Mean daily discharges determined by prorating between readings. Records available: 1969 through 1988.

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

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.1	1.1	1.1	1.1	0.7	0.7	0.7	1.8	1.1	1.1	2.1	1.1
2	1.1	1.1	1.1	1.1	.7	.7	.7	1.8	1.1	1.1	2.1	1.1
3	1.1	1.1	1.1	1.1	.7	.7	.7	1.8	1.1	1.1	2.1	1.1
4	1.1	1.1	1.1	1.1	.7	.7	.7	1.8	1.1	1.1	2.1	1.1
5	1.1	1.1	1.1	1.1	.7	.7	.7	1.8	1.1	1.1	2.1	1.1
6	1.1	1.1	1.1	1.1	.7	.7	.7	1.8	1.1	1.1	2.1	1.1
7	1.1	1.1	1.1	1.1	.7	.7	.7	1.8	1.1	1.1	1.8	1.1
8	1.1	1.1	1.1	1.1	.7	.7	.7	1.8	1.1	1.1	1.8	1.1
9	1.1	1.1	1.1	1.1	.7	.7	.7	1.8	1.1	1.1	1.8	1.1
10	1.1	1.1	1.1	1.1	.7	.7	.7	1.8	1.1	1.4	1.8	1.1
11	1.1	1.1	1.1	1.1	.7	.7	.7	1.4	1.1	1.4	1.8	1.1
12	1.1	1.1	1.1	1.1	.7	.7	1.1	1.4	1.1	1.4	1.8	1.1
13	1.1	1.1	1.1	1.1	.7	.7	1.1	1.4	1.1	1.4	1.8	1.1
14	1.1	1.1	1.1	1.1	.7	.7	1.1	1.4	1.1	1.4	1.8	1.1
15	1.1	1.1	1.1	1.1	.7	.7	1.1	1.4	1.1	1.4	1.8	1.1
16	1.1	1.1	1.1	1.1	.7	.7	1.1	1.4	1.1	1.4	1.8	1.1
17	1.1	1.1	1.1	1.1	.7	.7	1.1	1.4	1.1	1.4	1.8	1.1
18	1.1	1.1	1.1	1.1	.7	.7	1.1	1.4	1.1	1.4	1.4	1.1
19	1.1	1.1	1.1	1.1	.7	.7	1.1	1.4	1.1	1.4	1.4	1.1
20	1.1	1.1	1.1	1.1	.7	.7	1.1	1.4	1.1	1.8	1.4	1.1
21	1.1	1.1	1.1	.7	.7	.7	1.4	1.4	1.1	1.8	1.4	1.1
22	1.1	1.1	1.1	.7	.7	.7	1.4	1.4	1.1	1.8	1.4	1.1
23	1.1	1.1	1.1	.7	.7	.7	1.4	1.4	1.1	1.8	1.4	1.1
24	1.1	1.1	1.1	.7	.7	.7	1.4	1.4	1.1	1.8	1.4	1.1
25	1.1	1.1	1.1	.7	.7	.7	1.4	1.4	1.1	1.8	1.4	1.1
26	1.1	1.1	1.1	.7	.7	.7	1.4	1.1	1.1	1.8	1.4	1.1
27	1.1	1.1	1.1	.7	.7	.7	1.4	1.1	1.1	1.8	1.4	1.1
28	1.1	1.1	1.1	.7	.7	.7	1.4	1.1	1.1	1.8	1.1	1.1
29	1.1	1.1	1.1	.7	.7	.7	1.4	1.1	1.1	1.8	1.1	1.1
30	1.1	1.1	1.1	.7	.7	.7	1.8	1.1	1.1	2.1	1.1	1.1
31	1.1	1.1	1.1	.7	.7	.7	1.8	1.1	1.1	2.1	1.1	1.1
Sum	34.1	31.9	34.1	29.0	21.7	21.0	33.8	45.6	33.0	46.1	50.0	34.1

Month	Current Year 1988						Period 1969-1988				
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum
Jan.	0.33	0.33	1 1	1.1	1 1	1.1	1.1	65.2	77.0	131	21.1
Feb.	.33	.33	1 1	1.1	1 1	1.1	1.1	61.0	67.6	123	19.5
Mar.	.33	.33	1 1	1.1	1 1	1.1	1.1	65.2	67.6	122	21.9
Apr.	.33	.30	1 1	1.1	1 1	.7	1.1	56.0	63.5	105	21.1
May	.30	.30	1 1	.7	1 1	.7	.7	43.5	67.2	109	21.9
June	.30	.30	1 1	.7	1 1	.7	.7	42.0	60.4	121	21.1
July	.66	.30	1 30	1.8	1 1	.7	1.1	66.6	62.5	106	21.1
Aug.	.66	.33	1 1	1.8	1 1	1.1	1.4	90.0	63.1	122	0
Sept.	.33	.33	1 1	1.1	1 1	1.1	1.1	63.1	67.4	165	0
Oct.	.56	.36	1 30	2.1	1 1	1.1	1.4	90.0	80.3	326	0
Nov.	.56	.33	1 1	2.1	1 28	1.1	1.8	98.9	76.5	202	21.1
Dec.	.33	.33	1 1	1.1	1 1	1.1	1.1	65.2	74.4	131	21.9
Yearly	0.66	0.30		2.1		0.7	1.1	807	828	1,362	257
	Meters		Cubic Meters per Second				Thousands of Cubic Meters				
	0.20	0.09		0.06		0.02	0.03	995	1,021	1,679	317

Ø Mean daily † And other days

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

DESCRIPTION: Cipolletti weir of 70.6 second-foot (2.0 m³/sec) capacity and staff gage located at latitude 29°24'25", longitude 101°02'20", about 660 feet (200 m) from the confluence with the Rio Grande, and about 8.6 miles (13.8 km) north-west of Cd. Acuna, Coahuila. This creek enters the Rio Grande from the Mexican side at river mile 570.5 (918.2 km), 9.5 river miles (15.3 km) upstream from the International highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila. The elevation of the zero of the gage has not been determined.

RECORDS: Based on periodic staff gage readings and the weir discharge table. Mean daily discharges determined by prorating between readings. Records available: 1969 through 1988.

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

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
1	60.4	58.3	60.4	58.3	56.5	57.2	53.7	55.1	56.2	62.5	64.6	60.4	
2	60.4	58.6	60.4	58.3	56.5	56.9	53.3		55.8	62.5	65.3	60.7	
3	60.4	58.6	60.0	58.3	56.5	56.2	53.0		55.8	62.5	64.6	60.7	
4	60.4	59.0	59.7	57.9	56.5	55.8	52.6		55.1	62.5	64.3	61.1	
5	60.4	59.0	59.3	57.9	56.5	55.1	52.6		54.4	62.5	63.6	61.1	
6	60.4	59.3	59.0	57.9	56.2	54.7	52.3		54.0	62.2	63.2	61.4	
7	60.4	59.7	58.6	57.9	56.2	54.0	52.6		53.7	62.2	62.5	61.4	
8	60.4	60.0	58.3	57.6	56.2	53.7	53.0		53.7	61.8	62.2	61.4	
9	60.4	60.0	57.9	57.6	56.2	53.7	53.3		53.3	61.8	61.4	61.4	
10	60.4	60.4	57.9	57.6	55.8	54.0	53.3		53.0	61.4	61.4	61.4	
11	60.4	60.4	57.6	57.6	55.8	54.0	53.7		52.6	61.4	61.1	61.1	
12	60.4	60.4	57.6	57.2	55.4	54.0	54.0		52.3	61.1	61.1	61.1	
13	60.4	60.4	57.6	57.2	55.1	54.0	54.4		52.3	61.1	60.7	61.1	
14	60.0	60.4	57.6	57.2	54.7	54.4	54.0		56.5	61.1	60.7	61.1	
15	59.7	60.4	57.2	57.2	54.7	54.4	54.0		57.2	61.1	60.7	61.1	
16	59.3	60.4	57.2	57.2	54.4	57.9	53.7		58.3	61.1	60.4	61.1	
17	59.0	60.4	57.6	57.2	54.0	54.4	53.7		59.0	61.1	60.4	61.1	
18	58.6	60.4	57.9	57.2	53.7	53.0	53.3		57.2	60.0	61.1	61.1	
19	58.3	60.0	58.3	57.2	54.0	52.6	53.3		57.9	60.7	61.1	61.1	
20	57.9	60.0	58.3	57.2	54.4	51.2	53.0		58.6	61.8	61.1	61.1	
21	57.9	59.7	58.6	57.2	54.7	51.2	53.7		59.7	62.5	60.7	61.1	
22	57.9	59.7	59.0	56.9	55.4	52.3	54.0		60.4	62.5	60.7	61.1	
23	57.9	59.3	59.3	56.9	55.8	52.6	54.7		61.1	62.5	60.7	61.1	
24	57.9	59.3	59.3	56.9	56.2	52.6	55.4		61.8	62.5	60.7	61.1	
25	57.9	59.3	59.0	56.9	56.5	53.0	56.2		61.1	62.5	60.4	60.7	
26	57.9	59.7	59.0	56.5	56.5	53.3	56.5		60.4	62.5	60.4	60.7	
27	57.9	59.7	59.0	56.5	56.9	53.7	57.2		59.7	62.5	61.1	60.7	
28	57.9	60.0	59.0	56.5	56.9	53.7	55.8		59.3	62.5	61.8	60.7	
29	58.3	60.0	58.6	56.5	56.9	54.0	55.1		58.6	62.5	62.5	60.4	
30	58.3		58.6	56.5	56.9	53.7	54.4		57.9	62.5	63.2	60.4	
31	58.3		58.6		57.2		53.7		57.2	63.9		60.7	
Sum	1,836.1	1,732.8	1,816.4	1,719.0	1,729.2	1,621.3	1,673.5		1,740.7	1,909.3	1,847.6	1,891.3	
Current Year 1988									Period 1969-1988				
Month	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet				
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum		
Jan.	1.94	1.90	1	0	60.4	120	0	57.9	59.3	3,642	3,378	4,720	349
Feb.	1.94	1.90	110	0	60.4	1	0	58.3	59.7	3,437	3,074	4,207	381
Mar.	1.94	1.87	1	1	60.4	115	0	57.2	58.6	3,603	3,321	4,574	526
Apr.	1.90	1.87	1	1	58.3	126	0	56.5	57.2	3,409	3,151	4,345	636
May	1.87	1.80	31	0	57.2	18	0	53.7	55.8	3,429	3,174	4,540	721
June	1.87	1.77	1	0	57.2	22	0	52.3	54.0	3,216	2,979	4,071	678
July	1.87	1.77	27	0	57.2	6	0	52.3	54.0	3,319	3,015	4,367	769
Aug.											3,026	4,321	782
Sept.	2.26	1.84	128		75.2	112	0	52.3	57.9	3,453	3,080	4,417	782
Oct.	2.00	1.94	131	0	63.9	125	0	60.4	61.4	3,788	3,416	5,211	1,097
Nov.	2.03	1.94	2	0	65.3	115	0	60.4	61.4	3,665	3,392	4,847	1,282
Dec.	2.03	1.94	1	0	61.4	1	0	60.4	61.1	3,752	3,520	4,709	1,398
Yearly	Meters		Cubic Meters per Second				Thousands of Cubic Meters						
										47,521	63,943	12,152	

* Discharge measurement made on this day 0 Mean daily ! And other days

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

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

RECORDS: Based on periodic staff gage readings and the weir discharge table. Mean daily discharges determined by prorating between readings. Records available: 1969 through 1988.

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

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.5	2.5	2.5	2.5	2.1	2.5	2.1	2.1	2.5	2.5	2.1	2.8
2	2.5	2.5	2.5	2.5	2.1	2.5	2.1	2.1	2.5	2.5	2.1	3.2
3	2.5	2.5	2.5	2.5	2.1	2.5	2.1	2.1	2.5	2.5	2.1	3.2
4	2.5	2.5	2.5	2.5	2.1	2.5	2.1	2.1	2.5	2.5	2.1	3.2
5	2.5	2.5	2.5	2.5	2.1	2.5	2.1	2.1	2.5	2.5	2.1	3.2
6	2.5	2.5	2.5	2.5	2.1	2.5	2.1	2.1	2.5	2.5	2.1	3.2
7	2.5	2.5	2.5	2.5	2.1	2.5	2.1	2.1	2.5	2.5	2.1	3.2
8	2.5	2.5	2.5	2.5	2.1	2.5	2.1	2.1	2.5	2.5	2.5	3.2
9	2.5	2.5	2.5	2.5	2.1	2.5	2.1	2.1	2.5	2.5	2.5	3.2
10	2.5	2.5	2.5	2.5	2.1	2.5	2.1	2.1	2.5	2.5	2.5	3.2
11	2.5	2.5	2.5	2.5	2.1	2.5	2.1	2.1	2.5	2.5	2.5	3.2
12	2.5	2.5	2.5	2.5	2.1	2.5	2.1	2.1	2.5	2.5	2.5	2.8
13	2.5	2.5	2.5	2.5	2.1	2.5	2.1	2.1	2.5	2.5	2.5	2.8
14	2.5	2.5	2.5	2.5	2.1	2.5	2.1	2.1	2.5	2.5	2.5	2.8
15	2.5	2.5	2.5	2.5	2.1	2.5	2.1	2.1	2.5	2.5	2.5	2.8
16	2.5	2.5	2.5	2.5	2.1	2.5	2.1	2.1	2.5	2.5	2.5	2.8
17	2.5	2.5	2.5	2.5	2.1	2.1	2.1	2.1	2.5	2.5	2.5	2.8
18	2.5	2.5	2.5	2.5	2.5	2.1	2.1	2.1	2.5	2.5	2.5	2.8
19	2.5	2.5	2.5	2.5	2.5	2.1	2.1	2.5	2.5	2.1	2.5	2.8
20	2.5	2.5	2.5	2.5	2.5	2.1	2.1	2.5	2.5	2.1	2.8	2.8
21	2.5	2.5	2.5	2.1	2.5	2.1	2.1	2.5	2.5	2.1	2.8	2.8
22	2.5	2.5	2.5	2.1	2.5	2.1	2.1	2.5	2.5	2.1	2.8	2.5
23	2.5	2.5	2.5	2.1	2.5	2.1	2.1	2.5	2.5	2.1	2.8	2.5
24	2.5	2.5	2.5	2.1	2.5	2.1	2.1	2.5	2.5	2.1	2.8	2.5
25	2.5	2.5	2.5	2.1	2.5	2.1	2.1	2.5	2.5	2.1	2.8	2.5
26	2.5	2.5	2.5	2.1	2.5	2.1	2.1	2.5	2.5	2.1	2.8	2.5
27	2.5	2.5	2.5	2.1	2.5	2.1	2.1	2.5	2.5	2.1	2.8	2.5
28	2.5	2.5	2.5	2.1	2.5	2.1	2.1	2.5	2.5	2.1	2.8	2.5
29	2.5	2.5	2.5	2.1	2.5	2.1	2.1	2.5	2.5	2.1	2.8	2.5
30	2.5	2.5	2.5	2.1	2.5	2.1	2.1	2.5	2.5	2.1	2.8	2.5
31	2.5	2.5	2.5	2.5	2.5	2.1	2.1	2.5	2.5	2.1	2.8	2.1
Sum	77.5	72.5	77.5	71.0	70.7	69.4	65.1	70.3	75.0	72.3	75.5	87.4
Current Year 1988										Period 1969-1988		
Month	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet			
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum	
Jan.	0.36	0.36	1	2.5	1	2.5	2.5	152	159	195	86.7	
Feb.	.39	.39	1	2.5	1	2.5	2.5	142	144	173	78.6	
Mar.	.36	.36	1	2.5	1	2.5	2.5	152	155	184	64.9	
Apr.	.36	.36	1	2.5	121	2.1	2.5	140	150	178	63.2	
May	.36	.36	18	2.5	1	2.1	2.1	140	156	186	64.9	
June	.36	.36	1	2.5	117	2.1	2.5	137	147	181	63.2	
July	.36	.33	1	2.1	1	2.1	2.1	131	147	173	43.8	
Aug.	.36	.33	19	2.5	1	2.1	2.1	139	151	195	43.8	
Sept.	.36	.36	1	2.5	1	2.5	2.5	147	150	189	42.2	
Oct.	.36	.33	1	2.5	119	2.1	2.5	143	157	195	43.8	
Nov.	.43	.33	120	2.8	1	2.1	2.5	150	153	189	63.2	
Dec.	.46	.36	2	3.2	31	2.1	2.8	173	158	195	64.9	
Yearly	0.46	0.33		3.2		2.1	2.5	1,746	1,827	2,148	723	
	Meters		Cubic Meters per Second				Thousands of Cubic Meters					
	0.14	0.10		0.09		0.06	0.07	2,152	2,254	2,653	892	

‡ Mean daily † And other days

08-4509.10 ARROYO DEL BUËY NEAR Cd. ACUNA, COAHUILA

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

RECORDS: Based on periodic staff gage readings and the weir discharge table. Mean daily discharges determined by prorating between readings. Records available: November 1961 through 1988.

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

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	8.1	7.8	7.8	8.1	8.1	8.5	8.1	7.8	7.8	8.1	8.8	8.5
2	8.1	7.8	7.8	8.1	8.1	8.5	8.1	7.8	7.8	8.1	8.8	8.5
3	8.1	7.8	7.8	8.1	8.1	8.5	8.1	7.8	7.8	8.1	8.8	8.5
4	8.1	7.8	7.8	8.1	8.1	8.5	8.1	7.8	7.8	8.1	8.8	8.5
5	8.1	7.8	7.8	8.1	8.1	8.5	8.1	7.8	7.8	8.1	8.8	8.5
6	8.1	7.8	7.8	8.1	8.1	8.5	8.1	7.8	7.8	8.1	8.8	8.5
7	8.1	7.8	7.8	8.1	8.1	8.5	8.1	7.8	7.8	8.1	8.8	8.5
8	8.1	7.8	7.8	8.1	8.1	8.5	8.1	7.8	7.8	8.1	8.8	8.5
9	8.1	7.8	7.8	8.1	8.1	8.5	8.1	7.8	7.8	8.1	8.8	8.5
10	8.1	7.8	7.8	8.1	8.1	8.5	8.1	7.8	7.8	8.1	8.8	8.5
11	8.1	7.8	7.8	8.1	8.1	8.5	8.1	7.8	7.8	8.1	8.8	8.1
12	8.1	7.8	7.8	8.1	8.1	8.5	8.1	7.8	7.8	8.1	8.8	8.1
13	8.1	7.8	7.8	8.1	8.1	8.5	8.1	7.8	7.8	8.5	8.8	8.1
14	8.1	7.8	7.8	8.1	8.1	8.5	8.1	7.8	7.8	8.5	8.8	8.1
15	8.1	7.8	7.8	8.1	8.1	8.5	8.1	7.8	7.8	8.5	8.8	8.1
16	8.1	7.8	7.8	8.1	8.1	8.5	8.1	7.8	7.8	8.5	8.8	8.1
17	8.1	7.8	7.8	8.1	8.1	8.5	8.1	7.8	7.8	8.5	8.8	8.1
18	8.1	7.8	8.1	8.1	8.5	8.1	8.1	7.8	8.1	8.5	8.8	7.8
19	8.1	7.8	8.1	8.1	8.5	8.1	8.1	7.8	8.1	8.5	8.8	7.8
20	7.8	7.8	8.1	8.1	8.5	8.1	8.1	7.8	8.1	8.5	8.5	7.8
21	7.8	7.8	8.1	8.1	8.5	8.1	7.8	7.8	8.1	8.5	8.5	7.8
22	7.8	7.8	8.1	8.1	8.5	8.1	7.8	7.8	8.1	8.5	8.5	7.8
23	7.8	7.8	8.1	8.1	8.5	8.1	7.8	7.8	8.1	8.5	8.5	7.8
24	7.8	7.8	8.1	8.1	8.5	8.1	7.8	7.8	8.1	8.5	8.5	7.8
25	7.8	7.8	8.1	8.1	8.5	8.1	7.8	7.8	8.1	8.5	8.5	7.4
26	7.8	7.8	8.1	8.1	8.5	8.1	7.8	7.8	8.1	8.5	8.5	7.4
27	7.8	7.8	8.1	8.1	8.5	8.1	7.8	7.8	8.1	8.8	8.5	7.4
28	7.8	7.8	8.1	8.1	8.5	8.1	7.8	7.8	8.1	8.8	8.5	7.4
29	7.8	7.8	8.1	8.1	8.5	8.1	7.8	7.8	8.1	8.8	8.5	7.4
30	7.8	7.8	8.1	8.1	8.5	8.1	7.8	7.8	8.1	8.8	8.5	7.4
31	7.8	7.8	8.1	8.1	8.5	8.1	7.8	7.8	8.1	8.8	8.5	7.4
Sum	247.5	226.2	246.0	243.0	256.7	249.4	247.8	241.8	237.9	260.2	260.7	248.1
Current Year 1988										Period 1961-1988		
Month	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet			
	High	Low	Day	High	Low	Day			Average	Maximum	Minimum	
Jan.	0.98	0.82	1 1	8.1	120	7.8	8.1	491	335	528	6.8	
Feb.	.82	.82	1 1	7.8	1 1	7.8	7.8	447	302	477	5.4	
Mar.	.82	.79	118	8.1	1 1	7.8	7.8	487	330	520	9.3	
Apr.	.82	.82	1 1	8.1	1 1	8.1	8.1	483	345	540	6.3	
May	.85	.82	118	8.5	1 1	8.1	8.1	509	337	544	10.9	
June	.85	.82	1 1	8.5	117	8.1	8.5	495	329	538	6.3	
July	.82	.82	1 1	8.1	121	7.8	8.1	492	326	533	6.5	
Aug.	.82	.82	1 1	7.8	1 1	7.8	7.8	478	345	529	6.7	
Sept.	.82	.82	118	8.1	1 1	7.8	7.8	471	350	525	6.6	
Oct.	.89	.82	127	8.8	1 1	8.1	8.5	516	373	544	6.5	
Nov.	.98	.89	1 1	8.8	120	8.5	8.8	517	342	517	6.3	
Dec.	.98	.79	1 1	8.5	125	7.4	8.1	492	346	538	6.5	
Yearly	0.98	0.79		8.8		7.4	8.1	5,878	4,060	6,191	217	
	Meters		Cubic Meters per Second				Thousands of Cubic Meters					
	0.30	0.24		0.25		0.21	0.23	7,251	5,008	7,636	257	

Ø Mean daily

! And other days

08-4511.20 MARIS SPRING NEAR CD. ACUNA, COAHUILA

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

RECORDS: Based on periodic staff gage readings and the weir discharge table. Mean daily discharges determined by prorating between readings. Records available: November 14, 1961 through February 1984 and September 1985 through 1988.

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

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	15.5	14.8	14.8	14.8	14.1	15.2	14.1	14.8	14.8	21.2	15.2	14.8
2	15.5	14.8	14.8	14.8	14.1	14.5	14.1	14.8	14.5	18.0	15.2	14.8
3	15.2	14.8	14.8	14.5	14.1	14.5	14.1	14.8	14.5	17.7	15.2	14.8
4	15.2	14.8	14.8	14.5	14.1	14.1	13.8	14.8	14.5	17.3	15.2	14.8
5	15.2	14.8	14.8	14.5	14.1	14.1	13.8	14.8	14.1	16.2	15.2	14.8
6	15.2	14.8	14.8	14.5	14.1	14.1	13.4	14.8	14.1	16.2	14.8	14.8
7	15.2	14.8	14.8	14.5	14.1	13.8	13.4	14.8	14.5	16.2	14.8	14.8
8	15.2	14.8	14.8	14.5	14.1	14.5	13.8	14.8	14.5	16.2	14.8	14.8
9	15.2	14.8	14.8	14.5	14.1	14.5	13.8	14.8	14.5	15.9	14.8	14.8
10	15.2	14.8	14.8	14.5	14.1	14.5	14.1	14.8	14.5	15.9	14.8	14.8
11	15.2	14.8	14.8	14.5	14.1	14.5	14.1	14.8	14.5	15.9	14.8	14.5
12	15.2	14.8	14.8	14.5	14.1	14.1	14.5	14.8	14.5	15.9	14.8	14.5
13	15.2	14.8	14.5	14.5	14.1	14.1	14.5	14.8	14.5	15.9	14.8	14.5
14	15.2	14.8	14.5	14.5	14.1	14.1	14.5	14.8	14.1	15.5	14.8	14.1
15	15.2	14.8	14.5	14.5	14.1	14.1	14.5	14.8	15.2	15.5	14.8	14.1
16	15.2	14.8	14.5	14.5	14.1	14.5	14.5	14.8	16.2	15.5	14.8	14.1
17	15.2	14.8	14.5	14.5	14.1	14.5	14.1	14.8	17.3	15.5	14.8	14.1
18	15.2	14.8	14.5	14.5	14.1	14.1	14.1	14.8	18.0	15.2	14.8	14.5
19	15.2	14.8	14.5	14.5	14.1	14.1	14.1	14.8	19.1	15.2	14.8	14.5
20	* 15.2	14.8	14.5	14.5	14.1	14.1	14.1	14.8	20.1	15.2	14.8	14.5
21	15.2	14.8	14.5	14.5	14.1	14.1	14.1	14.8	21.2	15.2	14.8	14.5
22	15.2	14.8	14.5	14.5	14.1	* 14.8	14.5	14.8	21.2	15.2	14.8	14.5
23	15.2	14.8	14.5	14.5	14.1	14.5	14.5	14.8	21.2	14.8	* 14.8	14.5
24	14.8	* 14.8	14.5	14.1	14.1	14.1	14.5	14.8	21.2	14.8	14.8	14.5
25	14.8	14.8	14.5	14.1	* 14.1	14.1	14.5	14.8	21.2	14.8	14.8	14.1
26	14.8	14.8	14.5	14.1	14.1	14.1	14.8	14.8	21.2	14.8	14.8	14.1
27	14.8	14.8	14.8	14.1	14.5	14.1	* 14.8	14.8	21.2	14.8	14.8	14.1
28	14.8	14.8	14.8	14.1	14.5	13.8	14.8	14.8	21.2	14.8	14.8	* 14.1
29	14.8	14.8	14.8	14.1	14.8	14.1	14.8	14.8	21.2	14.8	14.8	14.1
30	14.8	14.8	14.8	14.1	14.8	14.1	14.8	14.8	21.2	15.2	14.8	14.1
31	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	15.2	15.2	14.8	14.1
Sum	468.6	429.2	454.6	432.8	440.0	427.5	442.3	458.8	520.0	490.5	446.0	448.1
Current Year 1988									Period #Dec. 1961-1988			
Month	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet			
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum	
Jan.	0.69	0.66	! 1	15.5	! 24	14.8	15.2	930	518	934	4.4	
Feb.	.66	.66	! 1	14.8	! 1	14.8	14.8	853	462	921	4.1	
Mar.	.66	.66	! 1	14.8	! 13	14.5	14.8	902	503	956	4.9	
Apr.	.62	.62	! 1	14.8	! 24	14.1	14.5	858	513	987	4.2	
May	.66	.62	! 29	14.8	! 1	14.1	14.1	874	574	1,317	8.7	
June	.69	.62	! 1	15.2	! 7	13.8	14.1	849	550	1,394	6.0	
July	.66	.59	! 26	14.8	! 6	13.4	14.1	878	577	1,373	7.9	
Aug.	.66	.66	! 1	14.8	! 1	14.8	14.8	912	602	1,236	6.2	
Sept.	1.77	.62	! 21	21.2	! 5	14.1	17.3	1,031	640	1,163	5.4	
Oct.	.72	.66	! 1	21.2	! 23	14.8	15.9	974	702	1,420	4.6	
Nov.	.69	.66	! 1	15.2	! 6	14.8	14.8	886	635	1,338	4.2	
Dec.	.66	.62	! 1	14.8	! 14	14.1	14.5	889	559	1,187	4.4	
Yearly	1.77	0.59		21.2		13.4	14.8	10,836	6,835	13,020	146	
	Meters		Cubic Meters per Second				Thousands of Cubic Meters					
	0.54	0.18		0.60		0.38	0.42	13,366	8,393	16,058	180	

* Discharge measurement made on this day † Mean daily ! And other days # Some months missing

08-4511.30 EIGHT MILE CREEK NEAR DEL RIO, TEXAS

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

RECORDS: Based on 14 measurements during the year. Mean daily discharges determined by prorating between measurements. Records available: March 1961 through 1988.

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

EXTREME FLOWS FROM RECORDS:

		Average Flow in Second-Feet (Cubic Meters per Second)			
Daily:	Max. 15.9 (0.45)	July 23 & 24, 1976	Min. 0	Occasionally	
Monthly:	Max. 6.3 (0.18)	July 1976	Min. 0	Occasionally	
Yearly:	Max. 4.0 (0.11)	1974 & 1975	Min. 0	Several years	

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.6	2.7	2.7	2.5	2.2	1.9	1.7	2.2	1.9	2.4	2.4	2.0
2	2.6	2.7	2.7	2.5	2.2	1.9	1.7	2.2	1.9	2.4	2.4	2.0
3	2.6	2.7	2.7	2.5	2.2	1.9	1.7	2.2	1.9	2.4	2.4	2.0
4	2.6	2.7	2.7	2.5	2.2	1.9	1.7	2.2	1.9	2.4	2.4	2.0
5	2.6	2.7	2.7	2.5	2.2	1.9	1.7	2.2	1.8	2.5	2.4	2.0
6	2.6	2.7	2.7	2.5	2.2	1.9	1.7	2.2	1.8	2.5	2.4	1.9
7	2.6	2.7	2.7	2.5	2.2	1.9	1.7	2.2	1.8	2.5	2.4	1.9
8	2.6	2.7	2.7	2.5	2.2	1.9	1.7	2.1	1.8	2.5	2.3	1.9
9	2.6	2.7	2.7	2.5	2.2	1.9	1.7	2.1	1.8	2.5	2.3	1.9
10	2.6	2.7	2.6	2.5	2.1	1.9	1.8	2.1	1.8	2.5	2.3	1.9
11	2.6	2.7	2.6	2.4	2.1	1.9	1.8	2.1	1.9	2.5	2.3	1.9
12	2.6	2.7	2.6	2.4	2.1	1.9	1.8	2.1	1.9	2.5	2.3	2.0
13	2.6	2.7	2.6	2.4	2.1	1.8	1.8	2.1	1.9	2.5	2.3	2.0
14	2.6	2.7	2.6	2.4	2.1	1.8	1.8	2.1	1.9	2.5	2.3	2.0
15	2.6	2.7	2.6	2.4	2.1	1.8	1.8	2.1	2.0	2.5	2.2	2.0
16	2.6	2.7	2.6	2.4	2.1	1.8	1.9	2.1	2.0	2.5	2.2	2.0
17	2.6	2.7	2.6	2.4	2.1	1.8	1.9	2.0	2.0	2.5	2.2	2.1
18	2.6	2.7	2.6	2.4	2.1	1.8	1.9	2.0	2.0	2.5	2.2	2.1
19	2.6	2.7	2.6	2.4	2.1	1.8	1.9	2.0	2.1	2.5	2.2	2.1
20	2.6	2.7	2.6	2.4	2.0	1.8	1.9	2.0	2.1	2.5	2.2	2.1
21	2.7	2.7	2.6	2.3	2.0	1.8	2.0	2.0	2.1	2.4	2.1	2.2
22	2.7	2.7	2.6	2.3	2.0	1.8	2.0	2.0	2.1	2.4	2.1	2.2
23	2.7	2.7	2.6	2.3	2.0	1.8	2.0	2.0	2.2	2.4	2.1	2.2
24	2.7	2.7	2.6	2.3	2.0	1.8	2.0	2.0	2.2	2.4	2.1	2.2
25	2.7	2.7	2.6	2.3	2.0	1.8	2.0	2.0	2.2	2.4	2.1	2.2
26	2.7	2.7	2.6	2.3	2.0	1.8	2.1	2.0	2.2	2.4	2.1	2.3
27	2.7	2.7	2.6	2.3	2.0	1.8	2.1	1.9	2.3	2.4	2.1	2.3
28	2.7	2.7	2.5	2.3	2.0	1.8	2.1	1.9	2.3	2.4	2.1	2.3
29	2.7	2.7	2.5	2.3	1.9	1.8	2.1	1.9	2.3	2.4	2.0	2.3
30	2.7	2.7	2.5	2.3	1.9	1.7	2.1	1.9	2.3	2.4	2.0	2.3
31	2.7	2.7	2.5	2.3	1.9	1.7	2.1	1.9	2.3	2.4	2.0	2.4
Sum	81.7	78.3	81.1	72.0	64.5	55.1	58.2	63.8	60.4	76.0	67.0	64.7
Current Year 1988									Period #March 1961-1988			
Month	Extreme Gage Feet		Extreme Second-Feet			Average Second-Feet	Total Acre-Feet	Acre-Feet				
	High	Low	Day	High	Low			Average	Maximum	Minimum		
Jan.			121	2.7	1.1	2.6	2.6	162	116	294	0	
Feb.			111	2.7	1.1	2.7	2.7	155	104	273	0	
Mar.			111	2.7	28	2.5	2.6	161	109	271	0	
Apr.			111	2.5	21	2.3	2.4	143	104	244	0	
May			111	2.2	29	1.9	2.1	128	105	224	0	
June			111	1.9	31	1.7	1.8	109	98.0	214	0	
July			126	2.1	11	1.7	1.9	115	98.0	390	0	
Aug.			111	2.2	27	1.9	2.1	127	100	299	0	
Sept.			127	2.3	15	1.8	2.0	120	94.0	240	0	
Oct.			115	2.5	11	2.4	2.5	151	113	334	0	
Nov.			111	2.4	29	2.0	2.2	133	107	321	0	
Dec.			31	2.4	16	1.9	2.1	128	114	283	0	
				2.7		1.7	2.2	1,632	1,262	2,892	3.4	
Yearly	Meters		Cubic Meters per Second			Thousands of Cubic Meters						
				0.08		0.05	0.06	2,013	1,557	3,567	4.2	

* Discharge measurement made on this day 0 Mean daily ! And other days
Some months missing

08-4511.40 MCKEE SPRING NEAR DEL RIO, TEXAS

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

RECORDS: Based on 14 discharge measurements during the year. Mean daily discharges determined by prorating between measurements. Records available: November 1961 through 1988.

REMARKS: The flow of this spring is uniform during periods of dry weather and is not modified by diversions or storage. It is estimated that backwater from the Rio Grande will reach the emergence of this spring when the river flow is approximately 14,000 second-feet (396 m³/sec). This station was established for investigational purposes in connection with Amistad Dam to determine what effect storage in Amistad Reservoir may have on the flow of this spring.

EXTREME FLOWS FROM RECORDS:

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

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

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.0	2.9	2.6	2.5	2.7	2.9	2.5	2.3	2.2	2.9	2.4	1.9
2	3.0	2.9	2.6	2.5	2.7	2.9	2.5	2.3	2.2	2.9	2.4	1.9
3	3.0	2.9	2.6	2.5	2.7	2.8	2.5	2.3	2.2	3.0	2.3	1.9
4	3.0	2.9	2.6	2.5	2.7	2.8	2.5	2.3	2.2	3.0	2.3	1.9
5	3.0	2.9	2.6	2.5	2.7	2.8	2.6	2.3	2.2	3.0	2.3	1.9
6	3.0	2.9	2.6	2.5	2.7	2.8	2.6	2.3	2.2	3.1	2.3	1.8
7	3.0	2.9	2.6	2.5	2.7	2.7	2.6	2.3	2.2	3.1	2.3	1.8
8	3.0	2.8	2.7	2.5	2.7	2.7	2.6	2.3	2.2	3.1	2.3	1.8
9	3.0	2.8	2.7	2.5	2.7	2.7	2.6	2.3	2.2	3.0	2.2	1.8
10	3.0	2.8	2.7	2.5	2.7	2.6	2.6	2.3	2.2	3.0	2.2	1.8
11	3.0	2.8	2.7	2.5	2.7	2.6	2.5	2.3	2.3	3.0	2.2	1.7
12	3.0	2.8	2.7	2.5	2.7	2.6	2.5	2.3	2.3	3.0	2.2	1.7
13	3.0	2.8	2.7	2.6	2.8	2.6	2.5	2.3	2.3	2.9	2.2	1.7
14	3.0	2.8	2.7	2.6	2.8	2.5	2.5	2.3	2.4	2.9	2.2	1.7
15	3.0	2.8	2.7	2.6	2.8	2.5	2.5	2.3	2.4	2.9	2.2	1.7
16	3.0	2.8	2.7	2.6	2.8	2.5	2.5	2.3	2.4	2.8	2.1	1.6
17	3.0	2.7	2.7	2.6	2.8	2.4	2.5	2.3	2.5	2.8	2.1	1.6
18	3.0	2.7	2.7	2.6	2.8	2.4	2.5	2.3	2.5	2.8	2.1	1.6
19	3.0	2.7	2.7	2.6	2.8	2.4	2.5	2.3	2.5	2.8	2.1	1.5
20	3.0	2.7	2.6	2.6	2.8	2.4	2.4	2.3	2.6	2.7	2.1	1.5
21	2.9	2.7	2.6	2.6	2.8	2.3	2.4	2.3	2.6	2.7	2.1	1.5
22	2.9	2.7	2.6	2.6	2.8	2.3	2.4	2.2	2.6	2.7	2.1	1.5
23	2.9	2.7	2.6	2.6	2.8	2.3	2.4	2.2	2.7	2.6	2.0	1.4
24	2.9	2.7	2.6	2.6	2.8	2.3	2.4	2.2	2.7	2.6	2.0	1.4
25	2.9	2.7	2.6	2.6	2.8	2.4	2.4	2.2	2.7	2.6	2.0	1.4
26	2.9	2.6	2.6	2.6	2.8	2.4	2.4	2.2	2.7	2.6	2.0	1.4
27	2.9	2.6	2.6	2.6	2.9	2.4	2.4	2.2	2.8	2.5	2.0	1.3
28	2.9	2.6	2.6	2.7	2.9	2.4	2.4	2.2	2.8	2.5	2.0	1.3
29	2.9	2.6	2.6	2.7	2.9	2.4	2.4	2.2	2.8	2.5	2.0	1.3
30	2.9	2.6	2.6	2.7	2.9	2.5	2.3	2.2	2.9	2.4	1.9	1.3
31	2.9	2.5	2.5	2.7	2.9	2.9	2.3	2.2	2.9	2.4	1.9	1.3
Sum	91.9	80.2	81.7	77.1	86.1	76.3	76.8	70.3	73.5	86.8	64.6	49.7

Month	Current Year 1988						Period Nov. 1961-1988				
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum
Jan.	11	3.0	121	2.9	3.0	182	286	526	0		
Feb.	11	2.9	126	2.6	2.8	159	266	509	0		
Mar.	18	2.7	31	2.5	2.6	162	289	527	0		
Apr.	128	2.7	11	2.5	2.6	153	282	490	0		
May	127	2.9	11	2.7	2.8	171	308	513	.7		
June	11	2.9	21	2.3	2.5	151	282	470	0		
July	14	2.6	30	2.3	2.5	152	290	561	0		
Aug.	11	2.3	22	2.2	2.3	139	284	504	0		
Sept.	30	2.9	11	2.2	2.5	146	278	479	0		
Oct.	16	3.1	30	2.4	2.8	172	292	519	0		
Nov.	11	2.4	30	1.9	2.2	128	277	516	0		
Dec.	11	1.9	31	1.2	1.6	98.6	280	483	0		
Yearly				3.1		1.2	2.5	1,814	3,414	5,657	0.7
	Meters		Cubic Meters per Second				Thousands of Cubic Meters				
				0.09		0.03	0.07	2,238	4,211	6,978	0.9

* Discharge measurement made on this day

‡ Mean daily

! And other days

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

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

RECORDS: Based on periodic staff gage readings and the weir discharge table. Mean daily discharges determined by prorating between readings. Records available: November 1961 through 1988.

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

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.8	2.8	2.8	2.8	2.5	2.8	2.8	2.8	2.8	3.2	3.2	3.2
2	2.8	2.8	2.8	2.8	2.5	2.8	2.8	2.8	2.8	3.2	3.2	3.2
3	2.8	2.8	2.8	2.8	2.5	2.8	2.8	2.8	2.8	3.2	3.2	3.2
4	2.8	2.8	2.8	2.8	2.5	2.8	2.8	2.8	2.8	3.2	3.2	3.2
5	2.8	2.8	2.8	2.8	2.5	2.8	2.8	2.8	2.8	3.2	3.2	3.2
6	2.8	2.8	2.8	2.8	2.5	2.8	2.8	2.8	2.8	3.2	3.2	3.2
7	2.8	2.8	2.8	2.8	2.5	2.8	2.8	2.8	2.8	3.2	3.2	3.2
8	2.8	2.8	2.8	2.8	2.5	2.8	2.8	2.8	2.8	3.2	3.2	3.2
9	2.8	2.8	2.8	2.8	2.5	2.8	2.8	2.8	2.8	3.2	3.2	3.2
10	2.8	2.8	2.8	2.8	2.5	2.8	2.8	2.8	2.8	3.2	3.2	3.2
11	2.8	2.8	2.8	2.8	2.5	2.8	2.8	2.8	2.8	3.2	3.2	3.2
12	2.8	2.8	2.8	2.8	2.5	2.8	2.8	2.8	2.8	3.2	3.2	3.2
13	2.8	2.8	2.8	2.8	2.5	2.8	2.8	2.8	2.8	3.2	3.2	3.2
14	2.8	2.8	2.8	2.8	2.5	2.8	2.8	2.8	2.8	3.2	3.2	3.2
15	2.8	2.8	2.8	2.8	2.5	2.8	2.8	2.8	2.8	3.2	3.2	2.8
16	2.8	2.8	2.8	2.8	2.5	2.8	2.8	2.8	2.8	3.2	3.2	2.8
17	2.8	2.8	2.8	2.8	2.5	2.8	2.8	2.8	2.8	3.2	3.2	2.8
18	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	3.2	3.2	3.2	2.8
19	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	3.2	3.2	3.2	2.8
20	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	3.2	3.2	3.2	2.8
21	2.8	2.8	2.8	2.5	2.8	2.8	2.8	2.8	3.2	3.2	3.2	2.8
22	2.8	2.8	2.8	2.5	2.8	2.8	2.8	2.8	3.2	3.2	3.2	2.8
23	2.8	2.8	2.8	2.5	2.8	2.8	2.8	2.8	3.2	3.2	3.2	2.8
24	2.8	2.8	2.8	2.5	2.8	2.8	2.8	2.8	3.2	3.2	3.2	2.8
25	2.8	2.8	2.8	2.5	2.8	2.8	2.8	2.8	3.2	3.2	3.2	2.8
26	2.8	2.8	2.8	2.5	2.8	2.8	2.8	2.8	3.2	3.2	3.2	2.8
27	2.8	2.8	2.8	2.5	2.8	2.8	2.8	2.8	3.2	3.2	3.2	2.8
28	2.8	2.8	2.8	2.5	2.8	2.8	2.8	2.8	3.2	3.2	3.2	2.8
29	2.8	2.8	2.8	2.5	2.8	2.8	2.8	2.8	3.2	3.2	3.2	2.5
30	2.8	2.8	2.8	2.5	2.8	2.8	2.8	2.8	3.2	3.2	3.2	2.5
31	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	3.2	3.2	3.2	2.5
Sum	86.8	81.2	86.8	81.0	81.7	84.0	86.8	86.8	89.2	99.2	96.0	91.5
Current Year 1988									Period 1961-1988			
Month	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet			
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum	
Jan.	0.39	0.39	! 1	2.8	! 1	2.8	2.8	173	169	282	15.2	
Feb.	.39	.39	! 1	2.8	! 1	2.8	2.8	162	152	257	13.9	
Mar.	.39	.39	! 1	2.8	! 1	2.8	2.8	173	166	327	14.2	
Apr.	.43	.39	! 1	2.8	121	2.5	2.8	161	174	302	10.5	
May	.39	.39	! 18	2.8	! 1	2.5	2.5	162	170	262	5.9	
June	.39	.39	! 1	2.8	! 1	2.8	2.8	168	155	254	4.2	
July	.39	.39	! 1	2.8	! 1	2.8	2.8	173	158	253	0	
Aug.	.39	.39	! 1	2.8	! 1	2.8	2.8	173	162	323	0	
Sept.	.43	.39	! 18	3.2	! 1	2.8	2.8	178	172	273	13.1	
Oct.	.43	.43	! 1	3.2	! 1	3.2	3.2	195	183	282	12.1	
Nov.	.43	.43	! 1	3.2	! 1	3.2	2.8	189	174	310	14.2	
Dec.	.43	.36	! 1	3.2	129	2.5	2.8	182	173	310	15.2	
Yearly	0.43	0.36		3.2		2.5	2.8	2,089	2,008	3,264	250	
	Meters		Cubic Meters per Second				Thousands of Cubic Meters					
	0.13	0.11		0.09		0.07	0.08	2,579	2,477	4,025	309	

0 Mean daily

! And other days

08-4513.00 CANTU SPRING NEAR DEL RIO, TEXAS

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

RECORDS: Based on 12 discharge measurements during the year. Mean daily discharges determined by prorating between measurements. Records available: March 1961 through 1988.

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

EXTREME FLOWS FROM RECORDS:

		Average Flow in Second-Feet (Cubic Meters per Second)					
		October 20, 1982		March 1982			
Daily:	Max. 10.1 (0.29)					Min. 0	Occasionally
Monthly:	Max. 9.3 (0.26)					Min. 0	Occasionally
Yearly:	Max. 8.3 (0.24)					Min. 0	1963

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	9.4	8.1	8.3	8.1	10.4	8.0	8.8	8.8	8.5	9.7	9.6	9.8
2	9.4	8.1	8.3	8.1	10.5	8.0	8.8	8.8	8.5	9.7	9.6	9.8
3	9.5	8.0	8.3	8.1	10.6	8.1	8.8	8.8	8.5	9.8	9.6	9.8
4	9.6	8.0	8.3	8.1	10.7	8.1	8.8	8.8	8.5	9.8	9.6	9.9
5	9.7	8.0	8.3	8.1	10.8	8.1	8.9	8.8	8.4	9.9	9.6	9.9
6	9.7	8.0	8.3	8.2	10.7	8.1	8.9	8.8	8.4	9.9	9.6	9.9
7	9.8	8.0	8.3	8.3	10.6	8.2	8.9	8.8	8.4	9.9	9.6	9.9
8	9.7	8.1	8.3	8.4	10.5	8.2	8.9	8.7	8.4	9.9	9.6	9.9
9	9.7	8.1	8.3	8.5	10.4	8.2	8.9	8.7	8.4	9.9	9.6	9.9
10	9.6	8.1	8.2	8.6	10.3	8.2	8.9	8.7	8.5	9.9	9.6	9.9
11	9.5	8.1	8.2	8.6	10.2	8.3	8.9	8.7	8.5	9.9	9.7	9.8
12	9.5	8.1	8.2	8.7	10.1	8.3	8.9	8.7	8.6	9.8	9.7	9.8
13	9.4	8.1	8.2	8.8	10.0	8.3	8.9	8.7	8.6	9.8	9.7	9.8
14	9.3	8.1	8.2	8.9	9.9	8.3	8.9	8.7	8.7	9.8	9.7	9.8
15	9.3	8.1	8.2	9.0	9.8	8.4	8.9	8.7	8.7	9.8	9.7	9.8
16	9.2	8.1	8.2	9.1	9.7	8.4	8.9	8.7	8.8	9.8	9.7	9.7
17	9.1	8.2	8.2	9.2	9.6	8.4	8.9	8.6	8.9	9.8	9.7	9.7
18	9.1	8.2	8.2	9.3	9.5	8.4	8.9	8.6	8.9	9.8	9.7	9.7
19	9.0	8.2	8.2	9.4	9.3	8.5	8.9	8.6	9.0	9.8	9.7	9.6
20	8.9	8.2	8.2	9.5	9.2	8.5	8.9	8.6	9.0	9.8	9.7	9.6
21	8.9	8.2	8.2	9.5	9.1	8.5	8.8	8.6	9.1	9.7	9.7	9.6
22	8.8	8.2	8.2	9.6	9.0	8.5	8.8	8.6	9.1	9.7	9.7	9.6
23	8.7	8.2	8.2	9.7	8.9	8.6	8.8	8.6	9.2	9.7	9.8	9.5
24	8.7	8.2	8.2	9.8	8.8	8.6	8.8	8.6	9.3	9.7	9.8	9.5
25	8.6	8.2	8.2	9.9	8.7	8.6	8.8	8.6	9.3	9.7	9.8	9.5
26	8.5	8.3	8.2	10.0	8.6	8.6	8.8	8.6	9.4	9.7	9.8	9.5
27	8.5	8.3	8.2	10.1	8.5	8.7	8.8	8.5	9.4	9.7	9.8	9.4
28	8.4	8.3	8.1	10.2	8.4	8.7	8.8	8.5	9.5	9.7	9.8	9.4
29	8.3	8.3	8.1	10.3	8.3	8.7	8.8	8.5	9.5	9.7	9.8	9.4
30	8.3		8.1	10.4	8.2	8.7	8.8	8.5	9.6	9.7	9.8	9.4
31	8.2		8.1		8.1		8.8	8.5	9.6	9.7	9.8	9.3
Sum	282.3	236.1	254.7	272.5	297.4	251.2	274.4	268.4	265.6	303.1	290.8	300.0

Month	Current Year 1988						Period March 1961-1988				
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum
Jan.			7	9.8	31	8.2	9.1	560	328	565	0
Feb.			126	8.3	13	8.0	8.1	468	287	478	0
Mar.			11	8.3	128	8.1	8.2	505	309	569	0
Apr.			30	10.4	11	8.1	9.1	500	295	540	0
May			5	10.8	31	8.1	9.6	590	302	590	0
June			127	8.7	11	8.0	8.4	498	287	547	0
July			15	8.9	11	8.8	8.9	544	293	544	0
Aug.			11	8.8	127	8.5	8.7	532	293	532	0
Sept.			30	9.6	15	8.4	8.9	527	300	528	0
Oct.			15	9.9	31	9.6	9.8	601	323	601	0
Nov.			123	9.8	11	9.6	9.7	577	316	577	0
Dec.			14	9.9	31	9.3	9.7	595	333	595	0
Yearly				10.8		8.0	9.0	6,537	3,676	6,537	0
	Meters		Cubic Meters per Second				Thousands of Cubic Meters				
				0.31		0.23	0.25	8,063	4,534	8,063	

* Discharge measurement made on this day † Mean daily ‡ And other days

08-4615.00 CIENEGAS CREEK NEAR DEL RIO, TEXAS

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

RECORDS: Based on 14 and 12 discharge measurements at Cienegas Creek and Briggs Farm ditch, respectively, during the year. Mean daily discharge computations determined by combining the two records for the total yield of the springs. Records available: March 1965 through 1988. Discharge measurement data available since November 1962. Records are also available from September 1931 through June 1935 for a station 0.3 creek mile (0.5 km) downstream. The station was moved 0.2 creek mile (0.3 km) upstream in June 1983.

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

EXTREME FLOWS FROM RECORDS:

		Average Flow in Second-Feet (Cubic Meters per Second)				
Daily:	Max. 42.7 (1.21)	August 12, 1972	Min. 0.5 (0.01)	April 2', 1966		
Monthly:	Max. 24.8 (0.70)	July 1976	Min. 0.8 (0.02)	August 1967		
Yearly:	Max. 17.9 (0.51)	1977	Min. 2.2 (0.06)	1968		

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	15.5	16.1	15.8	14.1	13.7	16.3	16.6	16.9	14.8	16.2	19.6	16.8
2	15.4	16.1	15.8	14.0	13.7	16.2	16.7	16.9	14.7	16.2	19.8	16.7
3	15.3	16.2	15.8	13.9	13.7	16.2	16.8	16.9	14.7	16.3	19.9	16.5
4	15.2	16.2	15.8	13.8	13.7	16.2	17.0	16.8	14.6	16.4	20.0	16.4
5	15.3	16.2	15.8	13.7	13.7	16.2	17.1	16.7	14.5	16.5	20.0	16.3
6	15.2	16.2	15.8	13.7	13.7	16.1	17.2	16.7	14.4	16.5	19.9	16.2
7	15.1	16.2	15.8	13.7	13.9	16.1	17.2	16.6	14.4	16.6	19.8	16.0
8	15.2	16.1	15.8	13.7	13.9	16.0	17.2	16.5	14.3	16.7	19.6	15.8
9	15.2	16.1	15.8	13.7	14.1	16.1	17.1	16.4	14.2	16.8	19.5	15.8
10	15.3	16.1	15.8	13.7	14.1	16.0	17.1	16.4	14.3	17.0	19.4	15.8
11	15.3	16.1	15.8	13.7	14.3	16.0	17.1	16.3	14.4	17.1	19.3	15.8
12	15.3	16.1	15.8	13.7	14.3	15.9	17.1	16.2	14.4	17.2	19.1	15.8
13	15.4	16.1	15.8	13.7	14.5	15.9	17.2	16.1	14.5	17.3	19.0	15.9
14	15.4	16.1	15.8	13.7	14.5	15.9	17.2	16.1	14.7	17.5	18.9	15.9
15	15.4	16.1	15.7	13.7	14.7	15.9	17.1	16.0	14.8	17.6	18.8	15.9
16	15.5	16.1	15.6	13.7	14.7	15.8	17.1	15.9	14.8	17.7	18.6	16.0
17	15.5	15.9	15.5	13.7	14.9	15.8	17.1	15.8	14.9	17.8	18.5	16.0
18	15.6	15.9	15.4	13.7	14.9	15.7	17.1	15.8	15.0	17.9	18.4	16.0
19	15.6	15.9	15.3	13.7	15.1	15.8	17.1	15.7	15.1	18.1	18.3	16.0
20	15.6	15.9	15.2	13.7	15.1	15.7	17.0	15.6	15.1	18.2	18.1	16.0
21	15.7	15.9	15.1	13.7	15.3	15.7	17.0	15.5	15.2	18.3	18.0	16.0
22	15.7	15.9	15.0	13.7	15.3	15.6	17.0	15.6	15.3	18.4	17.9	16.0
23	15.8	15.9	14.9	13.7	15.5	15.7	17.0	15.5	15.5	18.5	17.8	16.1
24	15.8	15.9	14.8	13.7	15.5	15.9	17.0	15.4	15.5	18.7	17.7	16.1
25	15.8	15.9	14.7	13.7	15.7	16.0	17.0	15.3	15.6	18.8	17.5	16.1
26	15.9	15.8	14.7	13.7	15.7	16.1	16.9	15.3	15.7	18.9	17.4	16.1
27	16.0	15.8	14.6	13.7	15.9	16.2	17.0	15.2	15.8	19.0	17.3	16.1
28	15.9	15.8	14.5	13.7	15.9	16.3	17.0	15.1	15.8	19.2	17.2	16.1
29	16.0	15.8	14.4	13.7	16.1	16.4	17.0	15.0	15.9	19.3	17.0	16.1
30	16.0		14.3	13.7	16.1	16.5	17.0	15.0	16.0	19.4	16.9	16.2
31	16.1		14.2		16.3		17.0	14.9		19.5		16.2
Sum	482.0	464.4	475.1	412.0	458.5	480.2	528.0	494.1	448.9	549.6	559.2	498.7

Month	Extreme Gage Feet		Current Year 1988				Average Second-Feet	Total Acre-Feet	Period March 1965-1988		
	High	Low	Extreme Second-Feet		Acre-Feet						
	Day	Day	High	Low	Day	Day	Average	Maximum	Minimum		
Jan.	31	16.1	7	15.1	15.5	956	806	1,242	134		
Feb.	13	16.2	126	15.8	16.0	921	747	1,157	98.0		
Mar.	1	15.8	31	14.2	15.3	942	776	1,185	102		
Apr.	1	14.1	15	13.7	13.7	817	713	1,125	100		
May	31	16.3	11	13.7	14.8	909	707	1,159	109		
June	31	16.5	22	15.6	16.0	952	662	1,072	86.3		
July	16	17.2	1	16.6	17.0	1,047	660	1,527	85.5		
Aug.	1	16.9	31	14.9	15.9	980	662	1,241	48.4		
Sept.	30	16.0	9	14.2	15.0	890	649	1,043	84.1		
Oct.	31	19.5	1	16.2	17.7	1,090	773	1,135	150		
Nov.	14	20.0	30	16.9	18.6	1,109	772	1,117	152		
Dec.	1	16.8	18	15.8	16.1	989	803	1,168	133		
Yearly				20.0	13.7	16.0	11,602	8,730	12,965	1,531	
	Meters		Cubic Meters per Second			Thousands of Cubic Meters					
				0.57	0.39	0.45	14,311	10,768	15,992	1,888	

9 Mean daily ! And other days

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

DESCRIPTION: Cableway, gravity well, concrete control weir, water-stage recorders (graphic and digital) and data collection platform located on the right bank at latitude 29°19'40", longitude 100°55'50", and river mile 561.2 (903.2 km), 1,200 feet (366 m) upstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila and 12.7 river miles (20.4 km) downstream from Amistad Dam. The zero of the gage is 869.20 feet (264.93 m) above mean sea level, U. S. C. & G. datum.

RECORDS: Based on 36 discharge measurements during the year, 17 by the United States Section and 19 by the Mexican Section of the Commission, and a continuous record of gage heights. Computations for high flows by shifting control methods. Low and medium flow computations based on a stable control weir rating curve defined by meter measurements. Records available: December 1923 through July 2, 1941 and January 1968 through 1988. Records are available from May 1900 through April 1915 for a station 12.2 miles (19.6 km) upstream; for December 1919 through March 1920 for a station 8.7 miles (14.0 km) upstream near McKee's Switch; from July 2, 1941 through 1954 and October 1960 through 1967 for a station 1,200 feet (366 m) downstream at the international highway bridge; and from September 1954 through 1988 for a station, Rio Grande below Amistad Dam, 10.6 miles (17.0 km) upstream.

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

EXTREME FLOWS FROM RECORDS: The greatest recorded flow of 1,140,000 second-feet (32,300 m³/sec) occurred on June 28, 1954, with a gage height of 38.25 feet (11.66 m) at a station 1,200 feet (366 m) downstream. The lowest recorded flow was 12th second-feet (3.51 m³/sec) which occurred March 5 and 6, 1969, with a gage height of 1.24 feet (0.38 m).

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

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

Mean Daily Discharge in Second-Foot 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	831	1,710	1,690	1,660	2,000	4,560	2,380	2,470	4,180	6,180	1,580	1,390
2	800	1,670	1,700	1,640	2,010	3,670 *	2,340	2,510	3,800	3,100	1,550	1,380
3	863	1,706	1,690	1,710	2,010	3,370	2,370	2,500	3,730	2,900	1,590 *	1,390
4	829	1,660 *	1,680 *	1,640	2,030	3,400	2,370	2,470 *	3,740	2,360	1,550	1,390
5	832	1,710	1,710	1,660	2,010 *	3,380	2,380	3,760	3,730	2,430	1,590	1,420
6	842	1,730	1,690	1,630	2,000	3,410	2,430	5,620	3,770	1,930	1,530	1,390
7	807 *	1,740	1,710	1,970 *	2,020	3,420	2,420	6,050	3,710	1,920	1,540	1,380
8	841	1,750	1,690	1,990	2,040	3,420	2,430 *	6,010	3,550	1,860	1,530	1,400 *
9	884	1,750	1,690	1,990	2,070	3,430	2,420	6,010	3,620	1,880	1,540	1,400
10	877	1,740	1,650	1,980	2,420	3,450	2,450	4,400	3,620	1,880	1,530	1,400
11	863	1,690 *	672 *	1,980	2,040	3,440	3,330	4,050	3,580	1,860	1,550 *	1,420
12	1,480	1,750	649 *	1,970	2,060	3,440	7,510	2,720	3,590	1,840	1,570	1,370
13	1,690	1,710	649	1,980	2,000	3,420	5,400	2,420	3,660	1,830 *	1,540	1,380
14	1,700	1,710	645	1,980	1,990	3,390	4,940	2,430	3,090	1,840	1,550	1,410
15	1,690	1,690	635 *	2,000 *	2,010	3,290	4,210	2,430	959	1,740	1,560	1,390
16	1,680	1,700	727	2,180	2,020	3,440 *	3,970	3,770	825	1,860	1,560	1,380
17	1,670	1,700	957	1,980	3,480	1,110	3,940	3,940	1,300	1,830	1,540	1,390
18	1,680	1,770	1,310	2,370	3,790	653	3,330	3,960 *	1,070	1,900	1,550	1,390
19	1,570	1,740	1,640	2,560	3,740	630	3,040	3,940	891	1,770	1,550	1,380
20	1,640	1,720	1,650	2,290	4,710	618	3,020	3,710	925	1,820	1,540	1,400
21	1,700	1,720	1,650	3,470	7,730	612 *	7,280	4,200	2,430	1,910 *	1,570	1,380
22	1,690	1,690	1,650	3,310	5,200	3,550	7,770	4,100	8,600 *	1,910	1,540	1,400
23	1,690	1,700	1,650	2,010	4,110	2,650	7,620	7,410	8,510	1,930	1,560	1,410
24	1,690	1,690	1,650	2,000	4,450	2,330	6,010	7,800	8,500	1,910	1,550	1,410
25	1,680	1,680	1,650	2,000	4,440	2,390	4,290	4,590 *	8,510	1,880	1,560	1,430
26	1,700	1,700	1,630	1,990	4,010	2,380	2,770	4,190	8,400 *	1,900	1,540	1,420
27	1,660	1,680	1,640	2,000	4,050	2,350	2,520	4,190	8,510	1,890	1,560	1,420
28	1,760 *	1,710	1,650	1,990	4,090	2,360	2,500	4,190	8,350 *	1,570	1,550	1,420
29	1,620	1,690	1,640	1,960	3,990	2,360	2,490 *	4,210	6,800	1,570	1,410	1,420
30	1,760		2,150	2,070	4,830	2,380	2,470	4,230	6,710	1,570	1,390	1,410
31	1,680		1,650		5,320		2,510	4,170		1,610		1,430
Sum	49,600		61,910		82,303		128,490		64,380		46,230	43,400
	42,699		45,044		100,670		115,510		132,660			

Month	Current Year 1988				Period #1968-1988						
	Extreme Gage Feet		Extreme Second-Foot		Average Second-Foot	Total Acre-Feet	Acre-Feet				
	High	Low	High	Low			Average	Maximum	Minimum		
Jan.	2.54	1.49	28	2,720	2	363	1,380	84,692	96,896	221,105	14,497
Feb.	2.54	1.54	14	2,720	124	427	1,710	93,380	124,415	448,205	18,633
Mar.	2.74	1.50	10	3,460	17	376	1,450	89,343	148,790	382,036	17,298
Apr.	3.30	1.51	19	5,980	1	388	2,060	122,797	130,354	380,707	33,846
May	3.69	1.53	120	8,130	1	414	3,250	199,676	210,845	542,598	30,928
June	3.52	1.66	1	7,150	21	594	2,740	163,246	159,779	338,718	23,143
July	3.97	1.54	21	9,870	110	427	3,730	229,111	145,465	367,024	31,474
Aug.	3.68	1.52	7	8,070	14	401	4,140	254,856	169,144	670,572	28,826
Sept.	3.84	1.79	28	9,100	16	816	4,420	263,127	208,637	1,327,497	38,550
Oct.	3.59	1.50	1	7,600	130	388	2,080	127,696	156,772	815,207	11,578
Nov.	2.52	1.53	3	2,690	1	2	1,540	91,696	103,006	527,524	13,644
Dec.	2.29	1.53	26	1,950	115	414	1,400	86,083	84,571	228,774	13,918
Yearly	3.97	1.49		9,870		363	2,490	1,810,703	1,738,674	3,743,795	508,583
	Meters		Cubic Meters per Second				Thousands of Cubic Meters				
	1.21	0.45		280		10.3	70.5	2,233,466	2,144,620	4,617,896	627,327

* Discharge measurement made on this day ! And other days ** Period 1968-1988
 # Values for January 1968 are Rio Grande near Del Rio less Arroyo de las Vacas flow

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

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

RECORDS: Based on 10 discharge measurements during the year, a stable rating curve up to 353 second-foot (10 m³/sec), which is the capacity of the weir, and a continuous record of gage heights. Computations by shifting control method for flows exceeding the capacity of the weir. Records available: Occasional estimates from June 1915 to March 19, 1938 and a continuous record from March 20, 1938 through 1988.

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

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

		Average Flow in Second-Foot (Cubic Meters per Second)**					
Daily:	Max. 23,940 (678)	June 17, 1961		Min. 0	December 23, 1956		
Monthly:	Max. 1,050 (29.8)	June 1961		Min. 0.4 (0.01)	October 1952		
Yearly:	Max. 96.7 (2.74)	1961		Min. 2.8 (0.08)	1952		

Mean Daily Discharge in Second-Foot 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	13.4	11.7	9.9	9.9	4.9	3.2	2.1	3.9	2.8	6.4	7.4	4.9
2	13.8	12.0	10.2	9.9	4.9	3.2	2.1	3.9	2.8	5.7	5.7	4.9
3	13.8	11.3	9.9	9.9	4.2	2.8	2.1	3.5	2.8	4.9	5.3	4.9
4	13.4	12.0	9.9	9.9	3.5	2.8	2.1	3.5	2.8	4.9	4.9	4.9
5	12.0	12.0	10.2	10.2	3.5	2.8	1.8	3.2	2.8	4.9	4.6	4.9
6	15.1	12.0	10.2	10.2	3.2	2.8	1.8	3.2	2.8	4.9	4.9	5.7
7	12.4	12.0	10.2	9.9	3.2	2.8	1.4	2.2	2.8	4.6	4.9	6.0
8	10.6	12.0	9.9	9.2	3.2	2.8	1.4	3.5	2.8	4.6	4.9	5.3
9	9.5	11.3	9.2	9.5	3.2	3.2	1.4	3.5	2.5	4.2	4.9	4.9
10	9.5	10.9	9.9	11.7	3.2	2.8	1.4	3.5	2.5	4.2	4.9	6.7
11	11.7	12.4	10.6	13.8	3.2	3.2	1.8	3.5	2.8	4.2	4.2	7.1
12	13.8	12.7	8.8	13.1	3.2	2.8	1.8	3.5	2.5	4.2	3.9	6.0
13	14.8	12.7	8.5	7.8	3.2	2.8	1.8	3.9	2.5	3.9	3.9	5.7
14	13.4	13.4	9.2	6.4	3.2	2.8	1.8	3.9	2.8	3.9	3.5	5.7
15	10.6	12.4	9.9	6.0	3.2	2.5	1.4	3.5	2.5	3.9	5.3	5.3
16	10.2	12.0	9.9	6.0	3.2	2.5	1.4	3.2	2.5	3.9	7.1	4.9
17	11.7	12.0	10.6	5.7	3.2	2.5	1.8	3.2	132	4.2	6.4	5.7
18	11.7	12.7	10.6	5.3	3.5	2.1	1.8	3.2	321	3.9	5.7	5.7
19	9.9	11.3	10.2	5.3	3.5	1.8	1.8	3.2	13.1	4.2	5.7	5.7
20	8.8	10.6	9.9	4.9	3.5	2.1	1.8	3.5	7.4	4.2	6.0	5.7
21	9.5	10.2	9.9	4.9	4.9	2.5	216	3.5	5.7	4.6	5.7	5.7
22	9.9	9.2	9.9	4.6	3.5	2.8	8.5	3.2	4.9	4.6	5.7	5.7
23	9.5	8.1	9.9	4.9	3.2	2.8	3.5	3.2	4.9	4.2	5.3	5.7
24	9.5	8.1	9.9	4.6	3.2	2.5	3.5	2.8	4.9	4.2	4.2	5.3
25	9.5	8.5	9.9	4.2	3.2	3.2	3.5	2.8	4.2	4.2	4.2	4.9
26	9.2	10.2	10.2	4.2	4.9	2.8	3.5	2.8	3.9	4.2	3.9	7.1
27	9.2	10.2	10.2	3.9	2.8	2.8	3.9	2.8	3.9	4.2	3.9	7.4
28	9.2	10.2	10.6	3.9	2.8	3.2	3.9	2.8	3.9	4.2	4.2	9.5
29	9.9	9.2	10.2	3.9	3.5	2.8	3.9	2.8	62.5	4.2	4.2	11.7
30	10.2	10.2	10.2	3.9	3.2	2.8	3.9	2.8	10.6	4.6	4.2	13.1
31	10.6		9.9		2.8		3.9	2.8		59.0		12.4
Sum	344.3	323.3	308.5	217.6	107.9	82.5	292.8	101.8	625.9	192.0	149.6	199.1

Month	Extreme Gage Feet		Extreme Second-Foot				Average Second-Foot	Total Acre-Foot	Acre-Foot		
	High	Low	Day	Low	Day	Average			Maximum	Minimum	
	Jan.	0.62	0.52	13	14.8	120	8.5	10.9	683	392	910
Feb.	.62	.49	18	14.8	123	7.8	11.3	641	481	5,950	33.3
Mar.	.59	.52	16	12.0	19	8.5	9.9	612	520	2,600	59.2
Apr.	.62	.36	12	14.8	27	3.2	7.4	431	1,347	16,610	75.4
May	.79	.33	21	28.6	23	2.5	3.5	214	1,263	9,080	90.0
June	.46	.30	25	6.7	117	1.8	2.8	164	2,433	65,520	43.8
July	3.74	.26	21	1,840	16	1.4	9.5	580	1,355	16,409	26.8
Aug.	.43	.33	29	4.9	25	2.5	3.2	203	1,294	19,888	42.2
Sept.	3.77	.30	18	1,900	9	2.1	20.8	1,243	2,369	49,566	37.3
Oct.	2.26	.36	31	501	18	3.2	6.4	382	1,658	20,444	22.6
Nov.	.59	.36	1	12.0	112	3.5	4.9	297	424	2,855	21.0
Dec.	.62	.43	130	13.8	1	4.9	6.4	394	364	1,066	22.0
Yearly	3.77	0.26		1,900		1.4	8.1	5,844	13,900	70,026	2,067
	Meters		Cubic Meters per Second				Thousands of Cubic Meters				
	1.15	0.08		53.8		0.04	0.23	7,208	17,145	86,384	2,555

** Period 1938-1988

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

RECORDS: Records for the Val Verde Canal and San Felipe Creek at Moore Park are based on 23 and 23 discharge measurements, respectively, by wading during the year, and continuous records of gage heights. Computations by shifting control methods. Records for the Del Rio Pumping Plant are furnished by the city of Del Rio Water Department. Records available: Total yield of the springs, February 1961 through 1988.

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

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

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

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	144	150	147	133	149	133	132	135	138	136	136	141
2	140	146	149	132	154	136	132	134	137	137	133	140
3	141	148	143	140	155	136	130	133	136	138	136	138
4	142	147	151	139	152	139	137	133	135	139	135	152
5	143	136	154	136	151	140	139	132	137	144	136	145
6	143	128	150	134	148	137	139	132	135	141	136	144
7	142	127	149	131	149	132	140	134	140	140	138	145
8	140	126	157	132	146	142	140	136	138	141	140	146
9	138	126	153	135	150	149	138	141	134	143	139	149
10	136	126	153	130	152	151	136	132	136	140	142	147
11	134	124	156	134	138	145	133	132	134	138	138	146
12	133	125	154	137	137	142	135	134	143	140	142	146
13	134	125	145	137	141	137	138	139	144	140	142	144
14	132	126	145	136	142	140	145	137	144	139	145	142
15	136	127	142	142	147	141	147	138	141	142	139	141
16	140	125	140	137	162	143	146	128	136	140	138	141
17	136	128	138	137	154	131	141	130	125	143	138	144
18	138	128	136	135	151	121	144	128	133	141	139	147
19	140	128	138	134	150	120	141	135	131	143	137	149
20	140	131	138	137	152	127	140	134	132	146	141	145
21	140	132	138	144	149	127	126	135	133	144	140	138
22	142	131	137	147	151	127	129	131	131	144	142	130
23	140	135	142	148	156	123	124	130	132	143	140	132
24	141	141	142	141	159	124	122	131	135	144	140	130
25	142	138	136	142	153	122	131	141	137	140	142	127
26	143	135	132	141	147	122	137	139	138	139	141	128
27	144	140	127	147	142	123	139	137	139	140	140	129
28	144	143	139	146	139	124	139	131	138	137	139	127
29	146	143	129	141	153	123	140	132	135	137	145	125
30	147	147	133	149	154	120	136	130	136	134	141	125
31	150	131	131	147	147	127	137	137	137	133	133	128
Sum	4,351	3,865	4,424	4,154	4,630	3,977	4,233	4,151	4,083	4,346	4,180	4,311

		Current Year 1988						Period Feb. 1961-1988			
Month	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum
Jan.			31	150	14	132	140	8,630	6,886	9,370	2,274
Feb.			1	150	11	124	133	7,666	6,132	8,212	2,119
Mar.			8	157	27	127	143	8,775	6,695	9,029	2,365
Apr.			31	149	10	130	138	8,239	6,443	8,602	2,291
May			16	152	12	137	149	9,183	6,756	9,300	2,842
June			10	151	119	120	133	7,888	6,543	9,049	2,481
July			15	147	24	122	137	8,396	6,783	9,342	2,214
Aug.			9	141	116	128	134	8,233	6,757	9,527	2,114
Sept.			113	144	119	131	136	8,099	6,587	8,949	2,555
Oct.			20	146	31	133	140	8,620	6,950	9,249	2,508
Nov.			114	145	2	133	139	8,291	6,720	8,965	2,384
Dec.			4	152	129	125	139	8,551	7,002	9,431	2,390
Yearly				162		120	139	100,571	80,254	107,892	36,580
	Meters		Cubic Meters per Second				Thousands of Cubic Meters				
				4.59		3.40	3.94	124,052	98,992	133,083	45,121

♯ Mean daily † And other days

08-4530.00 SAN FELIPE CREEK NEAR DEL RIO, TEXAS

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

RECORDS: Based on 44 discharge measurements during the year, 24 by the United States Section and 20 by the Mexican Section of the Commission, and a continuous record of gage heights. Computations by shifting control methods. Records available: September 1931 through 1988.

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

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

Average Flow in Second-Foot (Cubic Meters per Second)			
Daily:	Max. 16,200 (459)	June 14, 1935	Min. 1.5 (0.04) July 21, 1953
Monthly:	Max. 805 (22.8)	June 1935	Min. 4.6 (0.13) July 1953
Yearly:	Max. 136 (3.85)	1935	Min. 25.1 (0.71) 1953

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	124	137	126 *	118	113	122	113	136	105	126	112	119
2	123	137	121	118	118	122	108	118	105	123	109	118
3	124	136	115	118	119 *	117	110	121	104	121	108	120
4	124	135	108	120	118	121	109	120	104	118	109	124
5	125 *	134	107	122 *	118	122	102	137	104	122 *	110	121
6	126	132	105	117	119	119	100 *	123	101	122	112	119 *
7	126	131	105	114	118	114	102	122	100 *	119	113	118
8	125	129	106	117	117	109 *	105	120	98.4	119	112	120 *
9	125	129	103	116	113	106	107	117	101	119	111	121
10	125	127	97.8	117	113	105	112	117	101	119	115	120
11	124	126	95.4	111	119	111	117	115	101	120	116	119
12	125	125	93.1	103	117	109	112	114	101	117	116	120
13	127	124	91.5	97.5	116	107	107	113	103	118	117	122
14	125	123	91.3	94.6	113	106	102	113	104	116	118	119
15	126	122	95.9	93.9	118	106	101	112	104	115	120	120
16	126	120 *	101	96.4	117	110	102	111 *	109	116	119 *	118
17	125	123	104	96.3	114 *	107	100	112	145	114	123	117
18	129	124	103	94.9	111	112	97.5	110	143	114 *	126 *	117
19	130 *	125	103	96.5	111 *	112	92.3	107	124	114	126	120
20	130	126	104	90.0	114	107	142	106	124	113	126	117
21	130 *	125	104	87.1	120	103	196	107	123	111 *	127	129 *
22	130	123	104	88.1	120	102 *	127	103	123 *	112	124	136
23	132	127	106	87.5	114	102	126	105	123 *	110	122	134
24	132	124	105	90.1	112	105	125	105	122	109	124	135
25	132	121	105 *	86.8	114	114	118	105 *	123	110	123	136
26	132	127 *	105	88.2	131	121	109	103	121	110	124	137
27	133	122	110	91.8	129	128	109	105	117	112	123	137
28	133	122	115	94.7	126	126	108	105	116	112	121	137
29	135	123	118	106	136	121	108	105	209	113	122	141
30	136	118	118	111	135	117 *	108	103	131	112	121	142
31	137	118	118		129		109	104		113		140
Sum	3,976	3,679	3,284.0	3,082.4	3,682	3,383	3,484.8	3,494	3,490.4	3,589	3,549	3,893

Month	Extreme Gage Feet		Extreme Second-Foot				Average Second-Foot	Total Acre-Feet	Period 1932-1988		
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum
	Jan.	1.40	1.29	30	140	1	122	128	7,886	5,226	8,906
Feb.	1.62	1.21	5	166	29	116	127	7,297	4,349	8,630	487
Mar.	1.35	1.75	2	131	4	61.4	106	6,514	4,148	8,354	689
Apr.	1.33	1.03	11	133	26	98.1	103	6,114	4,461	10,407	566
May	1.63	1.03	26	175	3	99.2	119	7,303	5,195	17,600	739
June	1.72	1.98	25	187	22	98.1	113	6,710	5,390	47,900	301
July	3.10	1.92	21	381	19	89.4	112	6,912	4,503	22,077	285
Aug.	2.23	1.02	1	251	22	99.2	113	6,930	4,084	7,584	350
Sept.	3.56	1.97	29	468	8	94.8	116	6,923	5,305	28,678	872
Oct.	1.32	1.11	5	131	121	105	116	7,119	5,418	14,229	1,000
Nov.	1.30	1.14	21	131	1	106	118	7,039	4,636	8,567	526
Dec.	1.42	1.16	129	131	1	106	126	7,722	4,802	8,642	496
Yearly	3.56	0.75		468		61.4	116	84,469	57,517	98,137	18,201
	Meters		Cubic Meters per Second				Thousands of Cubic Meters				
	1.09	0.23		13.3		1.74	3.29	104,191	70,946	121,050	22,451

* Discharge measurement made on this day ! And other days

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

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

RECORDS: Based on 24 discharge measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Gage heights at this station are affected by gate operation at Las Moras Siphon. Records available: June 21, 1949 through 1988.

REMARKS: At canal mile 31.8 (51.2 km) a portion of the diverted water returns to the river through the Maverick Power Plant, and the remainder enters the Maverick Canal Extension. In 1988, 10,989 acres (4,447 ha) of land were irrigated between this station and the power plant, and 25,099 acres (10,157 ha) were irrigated from the extension, making a total of 36,088 acres (14,604 ha). A total of 845,640 acre-feet (1,043,080,000 m³) returned to the Rio Grande at the power plant and through the Irrigation system (see pages 50, 52, and 53).

EXTREME FLOWS FROM RECORDS: Momentary: Max. 1,750 second-feet (49.6 m³/sec) on August 30, 1973. Min. no flow several days in June, July, and November 1954; and October 1978.

		Average Flow in Second-Feet (Cubic Meters per Second)**			
Daily:	Max. 1,730 (49.0)	August 29, 1973	Min. 0	Oct. 2 & 3, 1978	
Monthly:	Max. 1,600 (45.4)	September 1981	Min. 295 (8.35)	February 1977	
Yearly:	Max. 1,490 (42.2)	1980 & 1981	Min. 632 (17.9)	1972	

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	926	1,400 *	1,320	1,370	1,420	247	1,390	1,420	1,470	1,530	1,450 *	1,430
2	937	1,400	1,310	1,350	1,400 *	1,350 *	1,390	1,420 *	1,460	1,480	1,450	1,420
3	923	1,380	1,320 *	1,360	1,380	1,640	1,420	1,430	1,470	1,480	1,450	1,390
4	923	1,380	1,320	1,340	1,340	1,640	1,410	1,400	1,490	1,430 *	1,440	1,350
5	938	1,380	1,310	1,320 *	1,390	1,600	1,390 *	1,470	1,480	1,390	1,430	1,350 *
6	941	1,380	1,300	1,300	1,410	1,590	1,380	1,500	1,490 *	1,390	1,430	1,330
7	951	1,400	1,310	1,320	1,420	1,560	1,400	1,490	1,490	1,370	1,420	1,330
8	954	1,380	1,310	1,330	1,440	1,510	1,390	1,500	1,480	1,350	1,400	1,360
9	954	1,380	1,320	1,350	1,430	1,540	1,340	1,470	1,480	1,390	1,400	1,390
10	955	1,370	1,320	1,360	1,420	1,550	1,320	1,460	1,470	1,360	1,370	1,390
11	953	1,370	1,120	1,370	1,430	1,570	1,320	1,460	1,470	1,310	1,400	1,380
12	951	1,400	856	1,390	1,440	1,560	1,390	1,420	1,460	1,310	1,410	1,390
13	1,050	1,410	702	1,380	1,420	1,560 *	1,450	1,370	1,460	1,290	1,390	1,360
14	1,200	1,410	742	1,380	1,400	1,550	1,410	1,330	1,460	1,300	1,390	1,370
15	1,190	1,390	740	1,380	1,390	1,500	1,400	1,380 *	1,230	1,390	1,390	1,360
16	1,210	1,380 *	769 *	1,380	1,390	1,520	1,380	1,430	779	1,480	1,410	1,340
17	1,210	1,370	916	1,390	1,390 *	1,400	1,410	1,440	737	1,520	1,400	1,370
18	1,220	1,370	782	1,420 *	1,450	741	1,420 *	1,460	1,060	1,550 *	1,410	1,390
19	1,230 *	1,360	1,070	1,430	1,450	614	1,390	1,460	1,000	1,420	1,420	1,390 *
20	1,260	1,360	1,100	1,430	1,470	664	1,370	1,460	744 *	1,340	1,450	1,370
21	1,310	1,350	1,110	1,480	1,510	560	1,410	1,440	299	1,330	1,460	1,360
22	1,320	1,340	1,110	1,460	1,560	680	1,410	1,460	1,180	1,350	1,440	1,370
23	1,320	1,340	1,180	1,410	1,580	1,220	1,450	1,450	1,460	1,340	1,440	1,360
24	1,340	1,350	1,330	1,380	1,580	1,410	1,470	1,450	1,450	1,340	1,440	1,390
25	1,330	1,340	1,380	1,390	1,600	1,440	1,470	1,470	1,450	1,340	1,390	1,380
26	1,330	1,340	1,390	1,370	1,610	1,450	1,410	1,440	1,460	1,380	1,420	1,370
27	1,330	1,330	1,380	1,360	1,620	1,420	1,370	1,420	1,470	1,410	1,420	1,370
28	1,340	1,330	1,390	1,400	1,620	1,420	1,380	1,440	1,480	1,440	1,440	1,340
29	1,330	1,330	1,380	1,420	1,690	1,420	1,390	1,440	1,480	1,420	1,430	1,350
30	1,370		1,430	1,430	1,730	1,400	1,390	1,470	1,510	1,440	1,430	1,380
31	1,400		1,400		824		1,400	1,470		1,420		1,370
Sum	35,596	39,720	36,427	41,450	45,204	39,326	43,350	44,720	39,419	43,290	42,620	42,500

Month	Current Year 1988						Period 1968-1988				
	Extreme Gage Feet		Extreme Second-Feet		Average Second-Feet	Total Acre-Feet	Acre-Feet				
	High	Low	Day	High			Day	Average	Maximum	Minimum	
Jan.	8.83	6.82	126	1,440	12	867	1,150	70,604	70,632	97,468	20,860
Feb.	8.76	8.26	14	1,440	29	1,280	1,370	78,783	66,841	88,166	16,403
Mar.	9.51	6.60	29	1,500	18	644	1,180	72,252	74,882	96,284	27,679
Apr.	9.44	8.40	21	1,510	6	1,190	1,380	82,215	75,719	92,978	40,721
May	9.91	.74	31	1,740	31	23.4	1,460	89,661	80,791	97,573	40,463
June	9.52	.69	3	1,660	1	23.4	1,310	78,002	79,478	94,260	31,210
July	9.29	8.04	3	1,530	9	1,160	1,400	85,983	81,010	97,657	35,776
Aug.	9.25	8.03	8	1,530	15	1,190	1,440	88,701	81,463	97,111	36,708
Sept.	9.09	1.85	30	1,540	21	1,090	1,310	78,186	78,007	95,485	32,963
Oct.	9.11	7.11	1	1,550	13	1,040	1,400	85,864	77,232	97,931	22,235
Nov.	9.14	8.04	19	1,550	9	1,250	1,420	84,535	67,369	93,391	22,487
Dec.	9.00	7.64	19	1,530	26	1,170	1,370	84,297	67,247	97,665	23,516
Yearly	9.91	0.69		1,740		23.4	1,350	979,083	900,671	1,084,048	458,631
	Meters		Cubic Meters per Second				Thousands of Cubic Meters				
	3.02	0.21		49.3		0.66	38.2	1,207,679	1,110,960	1,337,152	565,712

* Discharge measurement made on this day ! And other days ** Period 1968-1988

08-4550.00 PINTO CREEK NEAR DEL RIO, TEXAS

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

RECORDS: Based on 34 discharge measurements during the year, 13 by the United States Section and 21 by the Mexican Section of the Commission, and a continuous record of gage heights. Records available: September 1955 through 1988 at this station, and November 22, 1928 through August 1955 at a site 3.9 miles (6.3 km) upstream.

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

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

		Average Flow in Second-Feet (Cubic Meters per Second)					
Daily:	Max. 28,200 (799)	June 24, 1948		Min. 0	Frequently		
Monthly:	Max. 953 (27.0)	June 1948		Min. 0	Frequently		
Yearly:	Max. 105 (2.97)	1932		Min. 1.3 (0.04)	1980		

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	24.5	19.0	16.1	11.0	4.4	5.4	3.0	3.1	1.5	1.7	1.9	1.9
2	23.0	19.3	16.8	11.4	4.1	4.9	2.6	2.5	1.5	1.6	1.9	1.9
3	23.1	19.1	15.7	12.1	3.9	5.2	2.7	1.6	1.5	1.6	1.9	1.9
4	23.1	18.8	14.1	12.2	4.7	4.9	2.2	1.6	1.5	1.6	1.9	1.9
5	22.9	18.1	13.1	12.5	7.6	4.8	1.9	1.6	1.5	1.6	1.9	1.9
6	22.6	18.7	12.8	12.2	6.5	6.0	1.9	1.5	1.5	1.6	1.9	1.9
7	22.6	18.8	12.9	11.9	6.9	5.5	1.7	1.5	1.4	1.5	1.9	1.9
8	22.1	19.0	12.2	11.6	6.7	4.5	1.8	1.5	1.5	1.6	1.9	1.9
9	22.1	18.3	12.0	11.3	6.6	3.9	1.8	1.8	1.5	1.6	1.9	2.0
10	22.9	17.6	11.3	10.9	6.4	4.0	1.6	1.7	1.4	1.7	2.0	2.0
11	23.6	18.1	10.8	10.6	6.0	3.6	1.6	1.7	1.4	1.6	2.0	2.0
12	24.4	17.1	10.2	10.3	6.4	3.5	1.6	1.6	1.3	1.6	2.0	2.0
13	24.7	17.8	9.8	10.0	6.8	3.5	1.6	1.6	1.2	1.6	1.9	2.1
14	24.1	16.1	9.2	9.7	7.2	3.3	1.5	1.6	2.0	1.7	1.9	2.1
15	23.7	16.0	7.1	9.4	6.8	3.3	1.4	1.6	2.3	1.7	1.9	2.1
16	23.9	14.9	8.9	9.1	6.4	3.0	1.4	1.6	2.2	1.7	1.9	2.1
17	24.9	17.0	10.3	8.8	6.6	2.8	1.4	1.6	2.2	1.7	1.9	2.2
18	25.2	17.3	10.0	8.5	6.2	2.7	1.3	1.6	2.1	1.7	1.9	2.2
19	23.9	17.3	9.8	8.2	5.9	2.7	1.3	1.6	2.0	1.8	1.9	2.2
20	23.1	17.5	10.1	7.8	5.8	2.6	1.5	1.5	2.0	1.8	1.9	2.2
21	22.0	16.2	10.0	7.5	7.7	2.5	1.5	1.5	2.0	1.8	1.9	2.3
22	21.4	16.3	10.0	7.2	6.9	2.4	1.4	1.5	2.0	1.8	1.9	2.3
23	22.0	16.6	10.5	6.9	7.0	2.3	1.3	1.5	1.9	1.8	1.9	2.3
24	21.1	15.9	11.7	6.6	6.3	2.0	1.3	1.5	1.9	1.9	1.9	2.3
25	19.1	16.0	11.3	6.3	5.9	1.9	1.3	1.5	1.9	1.9	1.9	2.4
26	17.5	16.2	10.7	6.0	6.0	2.0	1.3	1.5	1.9	1.9	1.9	2.4
27	18.3	17.2	11.4	5.7	5.7	457	1.2	1.5	1.8	1.9	1.8	2.4
28	19.7	16.4	11.3	5.4	5.3	116	1.3	1.5	1.8	1.9	1.9	2.4
29	19.1	17.1	10.5	5.0	5.3	6.2	1.6	1.5	1.8	1.9	1.9	2.5
30	19.0	10.3	10.3	4.7	5.4	3.4	2.0	1.5	1.7	1.9	1.9	2.7
31	18.7		10.4		5.3		2.8	1.5	1.7	1.9	1.9	2.9
Sum	688.3	503.7	351.3	270.8	188.7	675.8	52.8	50.9	52.3	53.6	57.2	67.3

Month	Current Year 1988						Period 1929-1988					
	Extreme Gage Feet		Extreme Second-Feet			Average Second-Feet	Total Acre-Feet	Acre-Feet				
	High	Low	Day	High	Low			Average	Maximum	Minimum		
Jan.	1.37	1.21	117	25.3	129	16.5	1,365	565	2,270	0		
Feb.	1.32	1.12	2	21.1	14	12.6	999	592	5,760	0		
Mar.	1.25	.95	1	18.2	15	6.4	697	526	2,500	0		
Apr.			5	12.5	30	4.7	537	1,192	27,100	0		
May			21	7.7	3	3.9	374	1,869	29,400	0		
June	6.32	.63	27	2,960	124	1.7	27.5	1,340	4,106	56,700		
July	.97	.70	3	3.8	8	1.2	1.7	105	1,427	30,000		
Aug.	.98	.72	2	4.0	8	1.3	1.6	101	1,502	48,700		
Sept.	.88	.72	1	2.5	13	1.2	1.7	104	2,077	48,965		
Oct.	.78	.74	124	1.9	7	1.4	1.7	106	1,049	8,940		
Nov.	.77	.73	1	2.0	27	1.8	1.9	113	497	3,590		
Dec.	.79	.72	130	2.9	6	1.8	2.2	133	573	2,470		
Yearly				2,960		1.2	8.2	5,974	15,975	76,259	948	
	Meters		Cubic Meters per Second			Thousands of Cubic Meters						
				83.8		0.03	0.23	7,369	19,705	94,064	1,169	

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

08-4555.00 RIO SAN DIEGO NEAR JIMENEZ, COAHUILA

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

RECORDS: For the river, based on the weir discharge table and a continuous record of gage heights; and for the canal, on 36 discharge measurements during the year, and a continuous record of gage heights. The flow tabulated below includes the flow of the canal, and prior to 1964, records do not include this flow. Records available: 1922 through 1988. Records from 1922 through September 1932 are considered doubtful.

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

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

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

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

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	303	238	151	73.5	49.4	53.0	59.0	230	227	759	452	341
2	303	232*	152	73.5	48.7	52.3	66.7	222	224	742	452	332
3	303	232	147	73.5	52.6	48.4	70.6	228	222	727	452	332
4	293	222	144	73.1	48.4	49.1	70.6	226	216	717	445	332
5	292*	213	144	73.1	46.3	64.3	74.9	273	209	664*	438	332
6	292	213	144	73.1	46.3	67.5	76.3	264	206	643	434	332
7	292	207	143	73.1	46.6	72.4	72.0	272	200	629	431	321
8	292	204	141*	73.1	51.6	70.3	72.4	280	197	604	427	321
9	292	209	140	73.1	51.9	64.3	73.5	286	191	590	427	321
10	283	215	136	73.1	52.3	60.0	78.4	280	191	576	427	321
11	281	207	138	71.0	52.3	54.4	84.0	277	184	579*	420	315
12	278	202	136	67.1	52.3	53.3	88.3	270	179	569	410	310
13	267	204	136	68.2	49.1	53.0	95.7	270	171*	554	403	304*
14	261	207	136	63.9	47.0	49.8	97.8	271	167	554	403*	300
15	261	209	132*	63.6	47.0	47.0	104	277	161	554	403	296
16	261	212*	126	63.9	47.0	47.0	114	270	161	537	396	290
17	257	210	116	68.9	43.4	47.0	127	269	220	526	388	290
18	251	198	107	66.4	41.7	47.0	131	269	466	509*	388	283
19	251*	186	103	64.3	41.7	46.3	132*	268	788	494	378	277
20	247	182	100	57.2	45.2	44.5	136	267	865*	487	374	286
21	236	177	97.5	52.6	164	39.9	158	267	865	487	374	283
22	232	177	92.2	52.6	91.5	39.9	173	265	858	487	367*	275
23	246	175	90.8	52.3	67.1	39.2	174	256*	851	487	360	269
24	251	177	80.5	52.3	60.4	39.2	203	253	819	473	353	265
25	251	171	73.8	51.9	56.5	55.8	203	248	780	473*	353	254
26	251	161	73.8	51.9	56.5	61.1	214*	237	749	473	353	255
27	245	150	73.5	52.3	55.8	95.0	214	236	727*	473*	347	246*
28	243	145	73.5	52.3	53.0	101	214	227	720	463	343	243*
29	251	144	73.8	52.3	49.8	62.5	213	227	770	459	343*	240
30	247		73.8	52.3	51.9	58.6	210	227*	759	452	338	239
31	242		73.5	53.0			213	227		456		231
Sum	8,255	5,679	3,548.7	1,909.5	1,720.3	1,683.1	4,013.2	7,939	13,343	17,197	11,879	9,036

Month	Current Year 1988							Period 1933-1988					
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet				
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum		
Jan.	0.69	0.59	1	0	303	121	0	232	266	16,364	8,410	36,430	1,860
Feb.	.59	.39	1	1	258	127	0	130	196	11,264	6,607	25,760	1,060
Mar.	.43	.23	1	1	160	125	0	73.5	114	7,041	5,780	27,040	1,340
Apr.	.23	.16	1	1	75.9	120	0	50.1	63.6	3,787	6,717	40,270	1,110
May	.69	.13	21	1	311	117	0	32.5	55.4	3,412	11,796	120,200	861
June	.66	.10	27	1	290	123	0	23.3	56.2	3,339	11,925	108,300	543
July	.52	.16	126	1	0	214	1	38.8	130	7,959	13,927	136,149	490
Aug.	.69	.52	1	5	322	1	1	209	256	15,745	11,657	91,248	738
Sept.	1.35	.43	120	0	865	115	0	158	445	26,466	16,888	94,667	1,183
Oct.	1.25	.89	1	1	773	129	0	445	555	34,112	19,106	71,830	1,698
Nov.	.89	.72	1	1	463	30	0	332	396	23,567	13,689	64,060	803
Dec.	.75	.56	1	1	343	31	0	213	292	17,930	9,766	45,320	1,130
Yearly	1.35	0.10			865			23.3	236	170,986	136,268	451,952	17,430
	Meters		Cubic Meters per Second				Thousands of Cubic Meters						
	0.41	0.03			24.5			0.66	6.67	210,909	168,084	557,477	21,508

* Discharge measurement made on this day 0 Mean daily ! And other days
 ** Period 1932-1988

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

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

RECORDS: Based on 33 discharge measurements during the year, 26 by the Mexican Section and 7 by the United States Section of the Commission, and a continuous record of gage heights. Computations by shifting control methods prior to completion of the weir and for flows exceeding the capacity of the weir thereafter. Computations for flows within the capacity of the weir were based on a stable control weir rating curve defined by meter measurements. Records available: 1965 through 1988. Records, excluding some high flow periods, are also available from 1956 through May 1965 for a station 8.1 river miles (14 km) upstream. Records prior to 1976 were published under title "Rio Grande below Maverick Dam near Quemado, Texas."

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

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

		Average Flow in Second-Feet (Cubic Meters per Second)					
Daily:	Max. 67,100 (1,900)	July 18, 1975	Min. 2.8 (0.08)			April 25 and 26, 1983	
Monthly:	Max. 21,300 (602)	Sept. 1974	Min. 28.3 (0.80)			June 1969	
Yearly:	Max. 4,350 (124)	1974	Min. 286 (8.11)			1968	

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	551	1,010	819	664	971	5,470	1,290	1,620	3,130	6,140	1,090	632
2	530	992	830	685	932	2,770	1,300	1,590	2,960	3,670	971	632
3	530	971	805	650	901	2,300	1,240	1,560	2,660	2,520	957	650
4	562	953	795	706	961	2,280	1,250	1,560	2,650	2,240	932	717
5	530	936	770	798	1,190	2,310	1,230	2,680	2,630	1,880	865	710
6	551	946	830	703	879	2,310	1,240	3,450	2,530	1,950	865	720
7	551	950	819	650	876	2,360	1,200	4,940	2,500	1,430	872	699
8	512	946	840	1,020	851	2,390	1,190	5,090	2,710	1,400	876	671
9	516	943	862	1,010	851	2,330	1,150	5,090	2,560	1,340	869	657
10	526	922	791	1,020	975	2,320	1,270	4,770	2,510	1,330	897	692
11	526	932	636	985	1,200	2,270	1,340	3,040	2,560	1,380	851	682
12	526	886	171	968	911	2,340	6,600	1,940	2,440	1,360	858	660
13	1,220	915	173	975	795	2,260	3,740	1,720	2,580	1,330	848	636
14	1,040	901	168	957	795	2,110	4,410	1,610	2,530	1,370	858	660
15	1,090	897	135	957	809	1,890	3,520	1,530	1,110	1,430	869	664
16	1,060	897	131	975	858	2,200	2,770	2,640	498	1,170	830	653
17	1,060	893	237	1,180	1,620	1,840	2,720	2,980	643	1,170	823	682
18	1,030	872	236	971	2,610	263	2,730	3,000	1,610	1,240	791	643
19	1,050	848	678	1,410	2,610	251	1,870	3,010	1,120	1,050	816	632
20	872	851	805	1,530	2,570	266	1,880	2,940	1,230	1,250	773	671
21	865	844	805	2,010	6,960	290	5,230	3,060	1,780	1,320	788	611
22	925	837	805	2,480	4,380	1,500	7,770	3,060	7,200	1,370	816	614
23	953	862	780	1,340	4,240	2,030	6,920	5,190	8,860	1,380	805	618
24	982	812	710	961	2,940	1,260	5,010	7,240	8,830	1,370	830	614
25	971	826	699	961	3,400	1,230	4,700	5,160	8,720	1,360	862	622
26	936	823	671	996	3,210	1,360	1,890	3,170	8,550	1,360	837	632
27	989	823	671	961	2,860	1,810	1,640	3,190	8,620	1,280	812	632
28	975	812	685	975	2,850	1,790	1,550	3,170	8,580	1,240	791	600
29	1,060	812	703	975	2,850	1,320	1,540	3,160	6,960	1,000	812	593
30	1,000	901	890	890	2,850	1,310	1,530	3,160	6,710	957	629	597
31	1,030	883			5,300		1,560	3,180		996		579
Sum	25,519	25,912	19,844	31,341	66,008	56,430	83,280	99,470	117,971	50,283	25,493	20,075

Month	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum
	High	Low	Day	High	Day	Low	Average	Maximum	Minimum		
Jan.	2.00	0.72	13	1,900	121	348	823	50,656	48,668	175,590	5,236
Feb.	1.84	.59	11	1,590	127	256	893	51,399	78,328	401,339	5,788
Mar.	1.84	.39	11	1,620	19	111	639	39,359	89,933	292,726	5,874
Apr.	2.95	.39	20	4,310	25	122	1,050	62,173	73,523	320,444	5,030
May	4.17	.39	21	7,880	2	122	2,130	130,915	151,181	493,189	6,574
June	4.27	.56	1	8,190	21	221	1,880	111,919	103,833	291,767	1,671
July	4.76	.66	21	9,500	1	290	2,690	165,195	103,124	311,781	2,322
Aug.	3.94	.89	24	7,270	2	466	3,210	197,311	124,833	710,869	11,855
Sept.	4.59	.89	22	9,010	16	466	3,920	233,944	161,653	1,264,108	13,678
Oct.	4.07	.95	1	7,630	130	523	1,620	99,780	130,088	831,298	11,210
Nov.	1.84	.82	25	1,590	30	413	851	50,573	69,863	499,143	8,863
Dec.	1.48	.66	20	1,090	31	301	646	39,820	44,060	181,109	7,486
Yearly	4.76	0.39		9,500		111	1,700	1,233,044	1,179,087	3,169,805	207,998
	Meters		Cubic Meters per Second				Thousands of Cubic Meters				
	1.45	0.12		269		3.13	48.1	1,520,943	1,454,380	3,909,913	256,561

* Discharge measurement made on this day ! And other days

08-4571.00 RIO SAN RODRIGO AT EL MORAL, COAHUILA

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

RECORDS: Based on 26 discharge measurements during the year, 26 by the Mexican Section and 0 by the United States Section of the Commission, and a continuous record of gage heights. Computations by shifting control methods. Records available: 1962 through 1988.

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

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

Average Flow in Second-Feet (Cubic Meters per Second)			
Daily:	Max. 44,500 (1,260)	July 18, 1975	Min. 0 Frequently
Monthly:	Max. 7,380 (209)	July 1976	Min. 0 Frequently
Yearly:	Max. 837 (23.7)	1976	Min. 5.3 (0.15) 1963

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	218	165 *	96.4	68.9	35.3	24.4	16.6	58.3	55.8	611	311	185
2	212	162	96.4	67.5	35.7	27.5	16.2	68.9	55.1	590	293	186
3	206	160	96.4	64.3	35.7	23.3	14.8	68.9	54.7	498	290	198
4	203	160	96.4	60.4	34.6	19.1	14.1	1,440	54.0	473	290	211
5	203	160	96.4	55.8	32.8	16.2	12.7	1,670	53.7	448 *	279	222 *
6	203	160	95.7	55.8	31.8	13.1	12.7	1,190	53.0	643	275	222
7	203	160	* 83.3	55.8	31.8	11.7	12.7	982	51.2	403	281 *	222
8	203	160	71.3	55.8	31.1	11.3	12.7	770 *	51.9	381	272	222
9	203	170	68.9	55.8	* 27.5	10.2	12.7	600	50.5	367	290	222
10	200	174	68.9	55.8	23.7	9.5	13.4	509	52.3	360 *	290	222
11	198	178	68.9	* 55.8	22.6	9.5	* 19.1	304	* 55.8	351	290	222
12	202	179	68.9	55.8	22.6	9.2	353	240	* 54.7	346	290	222
13	198	179	66.7	55.8	22.6	* 8.5	320	195	53.0	342	290	222
14	198	179	63.9	55.8	22.6	8.5	126	170	53.0	335	287	222
15	198	161	61.8	54.0	22.6	9.5	20.5	142	50.5	332	283	216
16	198	155	61.8	53.0	22.6	17.3	17.7	118	50.9	332	275	213
17	195	155	61.8	53.0	22.6	17.7	16.2	101	116	331	264	208
18	194 *	155	61.8	49.1	22.6	16.6	15.2	96.4	1,450	325	261	205
19	194	155	59.7	45.2	22.6	14.1	15.2	80.5	5,830 *	325	252	203
20	194	155	54.4	45.2	22.6	9.9	15.5	75.9	4,560	325	247	198
21	194	155	53.0	45.2	410	5.7	145	72.4	2,510	325	244 *	197
22	190	152 *	* 58.6	45.2	249	5.3	876	* 68.9	1,510	324	241	192
23	189	151	61.8	43.4	105 *	5.3	477	192	1,340	314	241	191
24	189	151	61.8	41.3	24.0	5.3	290	533	1,330	307 *	241	191
25	186	151	61.8	* 37.8	22.6	14.5	187 *	331	1,320	304	241	185
26	187	151	61.8	33.5	18.4	12.7	38.5	65.3	1,330	304	239	185 *
27	184	151	62.2	31.8	17.3	* 10.9	35.3	63.6	1,400	305	191	185
28	182	151	* 66.7	31.8	16.6	9.9	38.5	58.6	1,410	310	179	185
29	179	151	68.9	31.8	16.6	13.4	39.9	* 55.8	1,000	337	180	179
30	174	151	68.9	32.1	16.6	16.2	42.4	55.8	689	325	185	179
31	170	151	68.9	151	151	151	45.9	55.8	325	325	185	179
Sum	6,047	4,646	2,194.2	1,492.5	1,593.1	605.9	3,272.5	10,432.1	26,645.1	11,598	7,792	6,291

Month	Current Year 1988						Period 1962-1988				
	Extreme Gage Feet		Extreme Second-Feet			Average Second-Feet	Total Acre-Feet	Acre-Feet			
	High	Low	Day	High	Low			Average	Maximum	Minimum	
Jan.	1.48	1.31	1	219	31	170	195	11,994	3,778	13,281	0
Feb.	1.35	1.25	111	179	122	151	160	9,214	2,727	9,932	0
Mar.	1.25	1.05	1	96.4	120	53.0	70.6	4,352	2,105	7,826	0
Apr.	1.15	.85	1	68.9	26	26.1	49.8	2,960	2,707	29,072	81.1
May	2.59	.75	21	671	127	16.6	51.2	3,157	4,118	29,277	17.0
June	2.69	.43	1	731	15	.7	20.1	1,201	6,578	103,142	0
July	3.44		22	1,190	4	12.7	106	6,492	31,413	454,643	0
Aug.	4.92	1.02	4	2,340	1	48.0	337	20,689	11,672	89,017	0
Sept.	9.06	1.05	19	7,350	7	50.5	886	52,839	17,319	52,839	0
Oct.	2.72	1.84	2	752	124	304	374	23,002	13,974	53,088	0
Nov.	1.87	1.51	1	325	128	179	260	15,452	9,664	84,015	0
Dec.	1.64	1.54	112	222	1	179	203	12,483	5,725	19,970	0
Yearly	9.06			7,350		0.7	226	163,835	112,780	606,526	3,851
	Meters		Cubic Meters per Second				Thousands of Cubic Meters				
	2.76			208		0.02	6.39	202,087	139,112	748,140	4,750

** Period 1961-1988 * 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 9 miles (14.5 km) north-northwest of Eagle Pass, Texas, and about 32.2 canal miles (51.8 km) downstream from the point of diversion. The return enters the Rio Grande at river mile 506.8 (815.6 km).

RECORDS: Based on records furnished by the Maverick County Water Control and Improvement District No. 1, showing hourly discharge in cubic feet per second based on hourly manometer readings, through each turbine at the Central Power and Light Company hydroelectric power plant. The mean daily discharges computed from the manometer readings have been multiplied by a factor to make them agree with periodic current meter measurements of flows made under stable flow conditions by hydrographers of the Commission. There were 49 discharge measurements made during the year. Records available: 1949 through 1988.

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

		Average Flow in Second-Feet (Cubic Meters per Second)**			
Daily:	Max. 1,580 (44.7)	February 28, 1982	Min. 0	Occasionally	
Monthly:	Max. 1,530 (43.3)	January 1985	Min. 42.4 (1.20)	December 1971	
Yearly:	Max. 1,230 (34.8)	1981	Min. 232 (6.57)	1972	

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	765	1,180	1,110	1,100	1,170	412	1,080	1,140	1,160	1,250	1,290	1,080
2	773	1,170	1,090	1,090	1,140	1,170	1,080	1,140	1,130	1,260	1,270	1,110
3	768	1,170	1,090	1,160	1,130	1,240	1,140	1,160	1,190	1,270	1,340	1,100
4	765	1,170	1,090	1,130	1,040	1,260	1,190	1,150	1,250	1,210	1,290	1,060
5	783	1,180	1,090	1,090	979	1,230	1,190	1,150	1,240	1,140	1,310	1,090
6	791	1,210	1,090	1,060	1,070	1,190	1,110	1,270	1,230	1,110	1,300	1,090
7	796	1,250	1,090	1,030	1,110	1,160	1,130	1,280	1,180	1,100	1,280	1,080
8	809	1,210	1,070	1,020	1,170	1,140	1,140	1,270	1,160	1,100	1,250	1,100
9	800	1,170	1,050	1,050	1,100	1,150	1,120	1,260	1,140	1,140	1,220	1,180
10	803	1,160	1,040	1,060	1,070	1,170	1,110	1,230	1,140	1,140	1,190	1,170
11	811	1,160	999	1,050	1,080	1,230	1,100	1,220	1,180	1,040	1,210	1,160
12	908	1,170	519	1,070	1,070	1,170	1,110	1,180	1,150	1,020	1,250	1,230
13	980	1,220	499	1,070	1,060	1,130	1,210	1,110	1,100	1,050	1,250	1,180
14	1,130	1,210	401	1,060	1,070	1,080	1,170	1,060	1,090	957	1,190	1,200
15	1,120	1,170	391	1,060	1,080	1,080	1,160	1,100	1,040	1,020	1,130	1,180
16	1,140	1,160	415	1,090	1,050	1,020	1,140	1,060	690	1,260	1,120	1,090
17	1,150	1,150	611	1,130	1,010	435	1,180	1,080	587	1,260	1,140	1,160
18	1,110	1,170	721	1,110	983	271	1,170	1,100	867	1,280	1,150	1,180
19	1,110	1,160	802	1,060	972	80.0	1,120	1,140	989	1,240	1,100	1,160
20	1,130	1,180	969	1,090	972	0	1,040	1,160	743	1,090	1,170	1,130
21	1,180	1,200	958	1,100	1,030	17.0	1,140	1,180	258	1,050	1,170	1,110
22	1,190	1,170	902	1,110	1,120	625	1,230	1,180	670	1,050	1,150	1,130
23	1,200	1,150	927	1,120	1,120	864	1,270	1,150	1,290	1,090	1,110	1,140
24	1,220	1,160	969	1,080	1,110	872	1,290	1,090	1,290	1,080	1,180	1,160
25	1,180	1,160	987	1,100	1,100	947	1,250	1,110	1,290	1,100	1,130	1,180
26	1,160	1,160	1,020	1,040	1,080	922	1,180	1,180	1,270	1,100	1,130	1,150
27	1,160	1,160	1,060	1,050	1,060	989	1,090	1,090	1,260	1,160	1,150	1,140
28	1,170	1,190	1,040	1,020	1,040	1,000	1,070	1,150	1,260	1,180	1,160	1,070
29	1,140	1,180	1,050	1,110	1,220	1,040	1,080	1,150	1,250	1,220	1,120	1,090
30	1,170	1,180	1,060	1,120	1,270	1,040	1,100	1,150	1,280	1,290	1,100	1,120
31	1,240		1,120		658		1,140	1,140		1,270		1,120
Sum	31,452	34,150	28,140	32,430	33,132	26,934.0	35,530	35,830	32,374	35,527	35,850	35,140

Month	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	High		Low	Average			Maximum	Minimum	
			Day	Day							
Jan.			31	1,240	1	765	1,010	62,384	56,024	94,116	4,952
Feb.			7	1,250	17	1,150	1,180	67,736	52,761	79,617	4,871
Mar.			31	1,120	15	391	908	55,815	53,568	85,904	5,713
Apr.			3	1,160	28	1,020	1,080	64,324	52,002	81,937	4,301
May			30	1,270	31	658	1,070	65,716	60,066	85,686	13,888
June			4	1,260	20	0	898	53,423	54,779	82,750	6,618
July			20	1,040	24	1,290	1,150	70,473	53,981	78,637	5,537
Aug.			7	1,280	114	1,060	1,160	71,068	55,881	77,970	18,457
Sept.			124	1,290	21	258	1,080	64,213	60,494	80,112	13,741
Oct.			30	1,290	14	957	1,150	70,467	61,678	85,547	11,147
Nov.			3	1,340	119	1,100	1,200	71,107	52,557	80,073	3,203
Dec.			12	1,230	4	1,060	1,130	69,699	52,785	91,260	2,608
Yearly				1,340		0	1,080	786,425	666,576	889,049	168,354
	Meters		Cubic Meters per Second				Thousands of Cubic Meters				
				37.9		0	30.6	970,040	822,208	1,096,624	207,661

** Discharge measurement made on this day ☉ Mean daily ! And other days
 ●● Period 1968-1988

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

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

RECORDS: Based on 24 discharge measurements during the year and a continuous record of gage heights. Computations by shifting nontroll methods. Records available: 1939 through 1988.

REMARKS: The main Maverick Canal divides into two branches at a point about 9 miles (14.5 km) north-northwest of Eagle Pass, Texas, and about 31.8 canal miles (51.2 km) downstream from the point at which water from the Rio Grande is diverted. One branch leads to the Maverick Power Plant and back to the Rio Grande, while the other branch forms this Maverick Canal Extension, which is used to transmit irrigation water. Irrigation from this canal extension began in June 1938. In 1988, 25,099 acres (10,157 ha) of land north and south of Eagle Pass were irrigated. A total of 31,690 acre-feet (39,089,000 m³) of water from this canal extension returned to the river through the irrigation system which extends approximately 67 canal miles (108 km) downstream.

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

		Average Flow in Second-Feet (Cubic Meters per Second)**					
Daily:	Max. 552 (15.6)	June 6 & 7, 1968		Min.	0	Occasionally	
Monthly:	Max. 507 (14.9)	June		Min.	18.0 (0.51)	January 1985	
Yearly:	Max. 294 (8.33)	1972		Min.	58.2 (1.65)	1986	

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	92.9	58.9	* 69.2	135	176	127	194	195	111	116	35.9	145
2	93.2	* 58.4	74.7	135	173	241 *	193	138	109	113	* 53.8	146
3	93.2	62.3	80.0	134	170 *	222	188	134 *	93.7	111 *	47.7	139
4	93.3	65.3	83.0	132	181	191	186	134	92.5	110	33.8	132
5	98.8	66.7	86.1	132 *	193	201	185	137	92.5	110	30.5	133
6	108 *	66.3	91.2	137	205	211	183 *	139	* 97.3	109	26.2	134 *
7	101	65.3	97.2	150	217	217	182	140	121	104	21.8	134
8	96.2	66.3	101	160	231	203	182	131	135	115	16.2	128
9	94.6	72.0	107	165	252	207	183	126	146	124	13.0	112
10	92.9	76.5	112	167	222	220	192	128	155	115	11.1	113
11	88.8	77.7	121	168	190	213	190	145	169	107	84.7	113
12	84.6	79.5	126	170	206	210	179	155	181	104	82.1	112
13	82.6	80.9	134	173	223	205	177	-163	205	96.9	68.2	112
14	81.0	82.1	144	176	218	207 *	178	169	230	97.0	80.2	106
15	79.3	83.6	145	179	237	217	187	182 *	228	96.4	106 *	106
16	77.4	85.1	149 *	183	243 *	223	187	188	80.1	97.0	109	105
17	75.9	* 89.5	150	187	247	228	187	192	.5	67.3	113	105
18	74.5	90.1	143	191	268	215	182	185	3.2	49.5	116	106
19	73.0	88.8	142	204 *	271	215	176 *	177	8.9	98.5	141	111
20	* 71.6	87.3	140	207	270	215	180	168	25.0	104 *	184	120 *
21	71.3	86.3	142	203	268	221	183	160	* 33.9	115	135	116
22	70.7	84.6	142	200	268	209	164	147	16.9	123	127	108
23	70.3	79.7	141	196	257	223	156	132	64.3	126	165	108
24	69.7	76.0	140	193	256	254	146	112	112	119	161	106
25	68.3	74.6	139	189	262	269	155	142	109	114	155	106
26	67.4	73.3	138	186	257	270	154	124	107	115	156	109
27	64.1	72.0	138	184	254	258	151	126	101	111	157	108
28	60.9	71.2	140	181	253	238	146	123	95.9	115	159	105
29	60.3	70.0	139	180	236	220	146	123	98.1	75.1	147	76.3
30	59.9		138	178	233	204	145	118	109	20.2	144	79.8
31	59.5		137		201		145	111		26.9		69.0
Sum	2,475.3	2,190.3	3,829.4	5,175	7,128	6,554	5,392	4,528	3,130.8	3,104.8	2,840.2	3,503.1

Month	Average Daily Discharge in Inches***		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Period 1968-1988				
	1988	1939-1988	High		Low				Acre-Feet				
	Day	Day	Day	Day	Average	Maximum			Minimum				
Jan.	0.13	0.77	15	108	31	59.2	79.8	4,910	9,101	18,236	1,110		
Feb.	.29	.88	17	91.7	2	58.3	75.5	4,344	8,392	18,006	1,265		
Mar.	.11	.63	17	157	1	68.7	124	7,596	13,213	23,397	1,441		
Apr.	.09	1.76	19	211	5	130	173	10,264	14,966	25,900	3,654		
May	.94	3.07	10	284	31	156	230	14,138	13,002	28,191	2,279		
June	2.03	2.33	2	291	2	118	218	13,000	15,194	30,173	2,006		
July	1.74	1.41	21	197	30	144	174	10,695	16,916	28,854	6,437		
Aug.	2.08	2.00	16	195	130	111	146	8,981	15,474	24,335	5,625		
Sept.	3.54	2.80	15	250	16	.1	104	6,210	10,208	17,691	1,549		
Oct.	1.44	2.21	24	130	29	16.1	100	6,158	9,195	16,504	1,349		
Nov.	.07	.76	24	168	10	10.1	94.7	5,633	9,075	18,794	1,310		
Dec.	.23	.72	3	148	31	64.5	113	6,948	8,834	16,824	2,344		
Yearly	12.69	19.34		291		0.1	136	98,877	143,570	213,138	42,170		
	Millimeters		Cubic Meters per Second				Thousands of Cubic Meters						
	322	491		8.24		0	3.85	121,963	177,091	262,901	52,016		

** Period 1968-1988 * Discharge measurement made on this day † And other days
*** On the United States side from Maverick Power Plant to Cuervo Creek

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

DESCRIPTION: Part of the water diverted from the Rio Grande into the Maverick Canal is returned to the river through various drains and spillways of the irrigation system located between Maverick Diversion Dam and Eagle Pass, Texas. These return flows are measured at gaging stations consisting of sharp-crested Cipolletti weirs or control structures equipped with continuous water-stage recorders located at Hughes Ranch, gate leakage at Las Moras Creek, Lateral 1, Lateral 2 Spill, Canon Grande, Quemado Creek, Lateral 15 Spill, Houchin Spill, Lateral 12 Spill, Elm Creek, and Seco Creek; and a Farshall flume at the Lateral 2 Sand Trap Spill into Las Moras Creek immediately below the canal siphon.

RECORDS: Based on the weir discharge table and a continuous record of gage heights. All storm flow occurring at these stations is deducted from the records and is not shown below. Records available: April 1959 through 1988. Records prior to 1976 were published under the title "Return Flow to the Rio Grande from Maverick Canal-Maverick Dam to Eagle Pass, Texas."

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

EXTREME FLOWS FROM RECORDS:

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

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

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	23.0	37.5	39.7	39.9	37.9	107	31.6	41.2	42.9	37.7	33.6	55.3
2	23.0	38.2	40.6	35.3	33.2	32.1	35.7	35.2	57.0	34.1	34.4	58.9
3	23.2	36.8	33.4	33.9	34.8	42.3	32.7	45.6	48.7	33.4	35.5	55.7
4	22.9	35.4	34.9	36.9	43.0	36.0	30.5	37.5	35.3	36.5	35.8	46.0
5	27.1	33.9	36.3	41.9	49.2	35.9	31.7	44.3	32.7	44.5	35.5	47.9
6	27.3	33.0	33.3	45.5	57.9	33.3	41.8	30.1	34.1	40.7	34.8	42.1
7	26.1	32.3	30.5	43.5	51.6	40.2	43.5	26.0	35.0	41.8	35.4	41.7
8	25.8	30.9	38.0	40.3	47.4	45.0	44.3	27.3	42.2	46.6	44.4	42.3
9	26.0	31.3	35.8	38.4	48.0	44.9	44.2	26.3	41.5	44.9	43.9	37.1
10	26.7	30.1	33.6	37.6	52.4	52.2	37.0	27.5	41.8	44.5	44.1	33.4
11	26.6	30.6	35.0	34.1	50.2	50.0	30.9	32.4	45.3	43.5	43.8	33.9
12	26.3	28.6	31.8	37.6	47.8	43.2	35.8	32.1	42.3	47.1	40.2	32.5
13	26.8	28.6	32.5	38.2	55.6	41.5	41.8	35.5	36.2	48.1	38.4	35.8
14	28.2	30.1	30.0	45.4	57.0	44.2	45.9	38.9	41.8	41.3	41.0	31.3
15	30.1	29.9	43.7	52.2	51.3	38.2	43.5	36.0	38.3	38.3	53.4	32.9
16	31.8	29.8	61.1	54.3	47.0	37.7	40.3	30.9	40.0	39.8	57.2	33.9
17	32.5	29.5	48.9	45.3	50.1	46.4	36.3	39.0	50.7	41.7	58.9	31.3
18	31.2	31.0	41.3	42.2	57.1	39.6	40.6	38.8	52.0	35.0	59.6	29.4
19	34.7	31.6	41.8	49.8	62.9	33.3	42.8	36.6	47.5	34.2	67.4	36.2
20	36.2	30.1	34.1	50.9	55.1	33.1	50.0	35.3	37.9	37.2	63.8	43.5
21	33.6	27.5	33.8	47.4	60.2	28.4	65.0	39.7	28.3	32.7	58.6	41.3
22	35.5	29.6	38.3	59.6	47.4	33.0	51.0	41.1	30.2	32.0	57.5	43.5
23	33.2	31.9	62.1	55.3	46.7	35.2	36.3	43.5	38.4	32.4	53.4	35.9
24	33.4	34.1	67.4	52.4	41.4	35.4	33.2	53.2	38.8	32.1	51.1	40.0
25	32.6	30.3	65.0	44.9	45.3	36.7	30.7	51.7	37.1	41.3	60.4	33.0
26	33.3	38.2	60.4	37.1	56.0	34.2	35.2	46.0	35.0	33.3	56.3	34.7
27	31.4	47.4	59.5	41.3	60.7	35.8	38.6	41.3	40.8	34.0	49.8	33.4
28	30.6	41.1	59.8	37.9	61.0	38.0	43.8	42.0	42.9	38.6	37.2	38.8
29	33.4	28.2	53.0	43.1	42.1	41.2	40.6	39.5	45.2	41.7	36.0	40.4
30	32.3		50.3	46.1	36.1	37.5	43.5	40.3	38.2	33.2	51.9	49.0
31	32.6		44.9		40.3		40.4	39.0		33.0		52.5
Sum		947.5		1,308.3		1,231.5		1,173.8		1,218.1		1,243.6
	917.4		1,350.8		1,889.4		1,239.2				1,413.3	

Current Year 1988

Period 1968-1988

Month	Extreme Gage Feet		Extreme Second-Feet		Average Second-Feet	Total Acre-Feet	Acre-Feet				
	High	Low	Day	Low			Day	Average	Maximum	Minimum	
											Day
Jan.			20	36.2	4	22.9	29.6	1,820	3,104	7,640	1,015
Feb.			27	47.4	21	27.5	32.7	1,879	2,837	6,126	939
Mar.			24	67.4	14	30.0	43.6	2,679	3,762	6,437	1,121
Apr.			22	59.6	3	33.9	43.6	2,595	3,843	7,795	824
May			31	40.3	2	33.2	60.9	3,748	3,655	8,178	850
June			1	107	21	28.4	41.1	2,443	3,793	9,190	519
July			21	65.0	4	30.5	40.0	2,458	3,978	8,157	328
Aug.			24	53.2	7	26.0	37.9	2,328	3,981	9,261	394
Sept.			2	57.0	21	28.3	40.6	2,416	3,309	7,680	289
Oct.			13	48.1	22	32.0	38.6	2,371	3,328	6,564	1,084
Nov.			19	67.4	1	33.6	47.1	2,803	3,181	8,696	826
Dec.			2	58.9	18	29.4	40.1	2,467	2,838	5,774	1,035
Yearly				403		22.9	41.3	30,007	41,609	91,498	10,405
	Meters		Cubic Meters per Second			Thousands of Cubic Meters					
				11.4		0.65	1.17	37,013	51,324	112,861	12,834

0 Mean daily

** Period 1968-1988

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

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

RECORDS: Based on 32 discharge measurements during the year, 24 by the Mexican Section and 8 by the United States Section of the Commission, and a continuous record of gage heights. Computations by shifting control methods. 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 1988. 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 transmitter is coupled, via leased telephone circuits, to a receiver located in the office of the Eagle Pass and Piedras Negras Bridge Company, from where the Wheatstone bridge circuit can be balanced to indicate the existing gage height. This system is operated in cooperation with the National Weather Service.

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

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

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

Mean Daily Discharge in Second-Foot 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,610	2,310 *	2,060	1,840	2,130	5,510	2,520	2,780 *	4,170	7,590	2,740	2,080
2	1,570	2,290	2,030	1,810	2,110	3,710	2,510	2,720	4,130	7,170	2,630	2,120 *
3	1,560	2,260	2,000 *	1,860	2,070	3,410	2,530	2,720	3,810	4,270 *	2,540 *	2,150
4	1,580	2,260	1,970	1,860 *	2,010	3,320	2,690 *	3,700	3,810	3,850	2,490	2,170
5	1,580	2,250	1,980	1,770	1,960	3,340	2,600	4,700	3,740 *	3,330	2,460	2,230
6	1,540	2,270	2,010	1,760	2,000	3,270 *	2,560	5,540	3,710	3,260	2,460	2,240
7	1,580	2,300	1,990	1,680	2,000	3,250	2,580	6,920	3,740	2,770	2,470	2,220
8	1,540	2,280	1,990	1,970	2,030	3,290	2,570	6,780	3,670	2,710	2,490	2,240
9	1,540	2,250	1,950	2,050	1,980	3,210	2,540	6,530	3,570	2,640	2,480 *	2,240
10	1,540	2,230	1,920	2,090	1,950	3,220	2,600	6,460	3,640	2,630	2,460	2,290
11	1,530	2,230	1,910	2,060	2,330	3,270	2,720	4,590	3,200	2,610	2,440	2,290
12	1,590	2,180	1,060	2,030	2,020	3,340	4,770	4,240	3,640	2,540	2,480	2,270
13	2,030	2,260	731	2,020	1,970	3,330	6,450	3,070	3,640	2,520	2,480	2,180
14	2,280	2,240	706 *	2,010	1,910	3,290	5,690	2,860	3,600	2,520	2,420 *	2,140
15	2,320	2,190 *	604	2,000	1,920	3,260	4,800	2,840 *	3,230	2,580	2,370	2,140
16	2,300	2,160	611	2,060	1,890 *	3,280	4,060	2,840	1,630	2,570	2,360	2,080
17	2,300	2,150	788	2,280	1,890	3,340	3,990	4,030	1,470	2,700	2,370	2,090
18	2,270 *	2,160	1,080	2,100 *	3,210	1,470	3,920 *	4,100	2,550	2,730	2,360	2,100
19	2,260	2,100	1,130	2,320	3,400	689	3,740	4,130	9,150	2,820	2,320	2,070 *
20	2,170	2,120	1,770	2,560	3,000	494 *	3,040	4,130	5,970	2,700	2,320	2,020
21	2,210	2,120	1,820	2,400	5,540	410	3,740	4,100	4,310	2,810	2,320	2,030
22	2,250	2,090 *	1,750	3,310	6,570	388	8,930	4,240	6,000	2,870	2,300	2,010 *
23	2,240	2,080	1,760	3,170	5,010	3,400	7,950	4,450	10,600	2,920	2,220	2,050
24	2,300	2,070	1,740	2,070	3,810	2,460	7,420	7,450	10,500	2,900	2,280	2,090
25	2,270 *	2,090	1,750	1,940	4,240	2,280	6,040 *	7,380	10,300	2,930	2,300	2,120
26	2,250 *	2,090	1,760	2,010	4,060	2,640	4,200	4,480	10,100	2,920	2,270	2,100
27	2,270	2,100	1,800	1,970	3,740	2,510	2,980	4,240	9,960	2,960 *	2,270	2,090
28	2,240	2,110	1,810	2,020	3,670	3,420	2,780	4,200	9,960 *	2,950	2,270	2,000
29	2,300	2,090	1,820	2,010	3,650	2,600	2,770	4,200	9,250	2,930	2,240	1,960
30	2,260	2,060	1,760	2,020	3,880	2,530	2,740	4,200	8,160	2,770	2,200	1,980
31	2,390	2,260	2,260	2,530	5,230	2,770	4,200	4,200	2,710	2,710	2,200	1,960
Sum	61,670	63,330	50,320	63,050	93,780	83,931	121,210	138,720	165,210	98,180	71,810	65,750

Month	Extreme Gage Feet		Extreme Second-Foot				Average Second-Foot	Total Acre-Foot	Acre-Foot			
	High	Low	High	Low	Average	Maximum			Minimum			
	Day	Day	Day	Day	Day	Day	Day	Day	Day			
Jan.	3.64	2.82	31	2,700	19	1,450	1,990	122,306	116,449	286,079	26,191	
Feb.	3.61	2.99	1	2,650	24	1,680	2,180	125,612	139,221	448,150	35,604	
Mar.	3.44	2.20	1	2,390	15	565	1,620	99,766	153,813	397,213	20,899	
Apr.	4.40	2.76	22	3,960	7	1,320	2,100	125,052	137,776	386,265	24,300	
May	6.33	2.82	22	7,880	5	1,260	3,030	186,026	222,689	588,871	36,193	
June	5.91	1.94	1	6,920	21	2,420	2,800	166,456	180,974	476,028	19,254	
July	7.12	3.05	22	9,820	12	1,820	3,920	240,431	198,973	779,878	26,100	
Aug.	6.59	3.18	7	8,550	12	2,000	4,480	275,131	193,065	743,286	56,856	
Sept.	7.91	2.79	19	11,900	17	1,390	5,510	327,820	243,410	1,306,836	80,699	
Oct.	6.59	3.25	2	8,510	14	2,100	3,170	194,796	215,170	891,747	58,642	
Nov.	3.90	3.25	1	3,130	25	1,940	2,390	142,458	139,317	570,870	45,803	
Dec.	3.87	3.15	11	2,550	29	1,710	2,120	130,417	110,990	288,937	26,197	
Yearly	7.91	1.94		11,900		261	2,940	2,136,271	2,051,847	3,753,089	705,670	
	Meters		Cubic Meters per Second				Thousands of Cubic Meters					
	2.41	0.59		336		7.40	83.3	2,635,062	2,530,912	4,629,385	870,435	

** Period 1968-1988 * Discharge measurement made on this day ! And other days

08-4581.50 RIO ESCONDIDO AT VILLA DE FUENTE, COAHUILA

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

RECORDS: Based on 21 discharge measurements during the year, 21 by the Mexican Section and 0 by the United States Section of the Commission, and a continuous record of gage heights. Records available: 1922 through 1988. Records from 1922 through September 1932 are considered doubtful.

REMARKS: Diversions and drainage returns modify the flow of this spring-fed stream at this station. Backwater from the Rio Grande reached an elevation of 729.92 feet (222.48 m) during the flood of June 1954. Prior to November 1954, the gage well was located at the present cableway site. The weir was destroyed by a flood on September 24, 1964. On November 29, 1969, the concrete control weir was finished and placed in operation.

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

		Average Flow in Second-Foot (Cubic Meters per Second)**				
Daily:	Max. 13,100 (371)	Sept. 24, 1954		Min. 0		Occasionally
Monthly:	Max. 827 (23.4)	Sept. 1964		Min. 0.3 (0.01)		September 1965
Yearly:	Max. 257 (7.28)	1987		Min. 2.4 (0.07)		1956

Mean Daily Discharge in Second-Foot 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	148	108	94.3	63.2	41.0	100	27.5	36.7	77.7	204	163	135
2	146	108	93.6	59.3	41.7	44.8	27.2	34.3	77.3	196	161	132
3	146	106	91.5	59.7	42.0	42.4	26.8	32.5	74.9	198	164	131
4	146	108	87.9	59.3	41.0	38.1	28.6	34.5	73.8	199	165	131
5	146	108	89.3	59.3	41.0	38.1	32.1	42.4	73.1	197	163	131
6	147	111	86.2	58.6	39.6	37.4	29.7	66.4	73.1	198	161	131
7	150	109	84.4	57.2	39.6	34.6	27.5	49.1	73.1	196	161	131
8	147	108	82.3	58.6	37.8	34.3	26.8	48.0	72.0	199	159	131
9	146	109	80.2	58.6	37.4	32.8	26.1	50.1	68.5	199	155	129
10	142	112	79.8	57.2	37.8	31.1	28.3	51.9	68.5	193	153	134
11	138	108	77.7	56.5	38.8	30.7	28.3	53.7	68.2	186	153	124
12	143	105	77.0	55.4	39.6	29.7	29.7	55.8	66.4	186	153	131
13	144	106	75.6	54.7	37.8	29.0	26.1	58.3	66.0	186	152	131
14	142	107	75.6	53.7	41.7	27.9	23.7	62.2	63.9	186	153	129
15	141	108	79.1	55.1	43.1	29.0	22.6	67.1	62.9	178	154	131
16	138	108	79.8	58.3	43.1	36.0	28.3	74.2	68.5	171	155	135
17	135	108	72.7	51.2	34.6	30.7	23.0	69.9	420	176	155	138
18	131	107	68.5	49.4	33.2	28.6	21.2	72.7	278	177	165	138
19	129	105	66.4	47.3	33.2	27.5	22.6	75.9	194	177	158	132
20	137	105	66.7	45.9	33.9	26.8	23.0	78.4	173	167	149	126
21	138	104	68.5	44.5	37.4	26.8	33.2	82.3	183	161	152	124
22	138	102	68.5	44.5	43.1	26.8	65.3	80.9	188	161	150	123
23	138	102	68.2	44.1	36.4	26.8	40.6	77.7	190	161	136	119
24	137	99.2	66.4	43.1	33.9	25.8	34.3	77.7	191	159	138	118
25	135	99.2	66.4	42.7	31.8	25.8	31.8	77.7	194	158	138	117
26	135	99.6	65.7	42.0	32.1	74.9	29.3	79.1	194	158	136	115
27	133	101	63.9	41.0	31.8	59.7	30.4	80.5	194	161	133	114
28	131	97.8	63.6	41.0	32.8	34.6	30.4	79.8	194	163	131	112
29	131	93.2	61.4	41.7	31.8	31.8	31.8	77.7	198	210	131	114
30	127		62.9	43.8	31.8	29.7	29.7	77.7	201	173	134	115
31	115		63.9		56.5		30.7	77.7		167		115

Sum	4,300	3,052.0	2,328.0	1,546.9	1,177.3	1,092.2	916.6	1,983.0	4,119.9	5,601	4,531	3,927
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Month	Current Year 1988						Period 1933-1988				
	Extreme Gage Feet		Extreme Second-Foot			Average Second-Foot	Total Acre-Feet	Acre-Feet			
	High	Low	Day	High	Day			Average	Maximum	Minimum	
Jan.	1.71	1.54	1	150	31	112	139	8,528	3,306	18,930	43.8
Feb.	1.54	1.44	1	112	29	93.6	105	6,063	2,481	14,433	38.9
Mar.	1.44	1.21	1	96.4	129	61.4	75.2	4,617	2,059	11,407	92.4
Apr.	1.25	1.05	1	63.9	127	41.0	51.6	3,069	2,310	21,950	81.1
May	2.23	.95	31	300	125	31.8	38.1	2,335	3,840	25,470	154
June	2.26	.85	26	307	123	25.8	36.4	2,167	2,978	25,852	60.3
July	1.35	.79	22	75.6	18	20.1	29.7	1,818	2,417	26,505	52.7
Aug.	1.51	.95	6	105	1	31.8	63.9	3,933	3,674	30,166	19.5
Sept.	4.46	1.21	17	1,690	115	59.3	137	8,175	5,303	49,182	17.8
Oct.	2.30	1.74	29	317	28	153	181	11,115	4,834	28,620	43.8
Nov.	1.84	1.64	18	182	123	131	151	8,991	3,767	25,730	43.8
Dec.	1.67	1.54	117	138	28	112	127	7,790	3,309	22,003	67.3
Yearly	4.46	0.79		1,690		20.1	94.6	68,601	40,278	186,461	1,755
	Meters		Cubic Meters per Second			Thousands of Cubic Meters					
	1.36	0.24		47.9		0.57	2.68	84,617	49,682	229,999	2,164

** Period 1932-1988

* 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 Lateral 40 Spill, Canon Diablo, Lateral 50 Spill, Rosita Creek, Lateral 60-K Spill, Sauz Creek, Indio Creek, Gravel Spill, 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 1988. Records prior to 1976 were published under the title "Return Flow to the Rio Grande from Maverick Canal, Eagle Pass to San Antonio Crossing."

EXTREME FLOWS FROM RECORDS:

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

Daily:	Max. 350 (9.91)	July 5, 1968	Min. 1.4 (0.04)	April 22, 1986
Monthly:	Max. 247 (7.00)	July 1968	Min. 4.3 (0.12)	April 1986
Yearly:	Max. 180 (5.10)	1971	Min. 14.8 (0.42)	1986

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	43.4	38.7	32.6	38.2	29.5	61.5	38.2	59.9	49.2	31.9	18.7	40.7
2	44.3	39.1	33.1	37.4	29.3	63.7	43.6	71.3	47.8	30.9	21.9	41.5
3	45.9	39.8	31.0	38.7	25.7	69.5	43.6	77.2	47.1	36.5	19.4	42.6
4	46.9	32.3	20.0	42.5	24.1	71.9	44.7	73.0	48.3	53.4	17.9	43.7
5	44.3	29.0	20.8	42.4	25.7	83.3	44.3	69.6	45.8	47.2	15.9	42.7
6	43.4	38.9	20.0	39.1	25.3	74.4	43.3	67.1	44.0	38.5	12.9	39.2
7	43.9	41.1	20.1	38.3	26.9	67.4	50.6	76.4	39.7	28.4	13.7	37.3
8	43.5	42.1	20.0	40.3	30.0	42.3	52.9	81.5	36.1	27.3	35.4	38.0
9	45.0	37.1	21.4	38.6	29.3	41.5	45.8	81.6	31.0	26.1	29.6	52.0
10	46.9	25.0	25.6	35.1	30.7	40.8	48.2	75.6	12.2	25.9	23.6	62.9
11	45.8	19.0	24.2	30.9	36.5	41.6	46.3	70.7	10.6	28.3	22.7	58.5
12	44.7	20.3	25.1	29.2	38.5	39.3	40.3	75.4	11.4	30.4	22.4	55.5
13	58.6	24.9	23.4	27.9	31.1	38.3	34.9	67.7	11.1	26.1	28.7	48.8
14	47.7	29.1	22.5	31.7	39.2	43.7	34.2	65.1	15.8	25.5	27.4	50.9
15	54.3	22.6	22.8	33.7	47.3	29.7	36.0	64.7	20.5	25.3	24.8	44.7
16	58.5	21.0	22.5	31.8	46.4	30.7	31.6	62.2	30.9	25.7	24.7	44.7
17	56.0	22.7	23.7	33.6	42.6	31.9	28.0	57.9	27.1	27.5	29.7	43.3
18	53.5	21.2	25.8	33.1	37.9	31.3	45.4	56.5	29.0	28.0	21.8	42.5
19	57.0	17.6	25.9	31.9	40.3	32.5	36.7	60.8	33.4	28.0	26.5	33.8
20	53.7	18.0	24.3	34.0	41.7	33.2	40.1	62.4	37.9	27.8	31.6	26.8
21	57.0	16.9	28.4	34.9	47.1	33.8	46.6	63.3	40.4	27.3	34.1	32.0
22	64.1	17.5	24.1	36.0	56.1	29.0	36.9	62.4	41.7	25.3	36.3	42.8
23	59.7	30.3	27.4	44.0	54.4	28.8	36.1	65.4	43.6	21.9	39.9	50.7
24	57.5	36.1	27.6	41.9	60.4	28.0	35.5	65.8	42.3	18.8	43.0	44.5
25	52.7	32.4	28.9	42.6	64.6	27.7	43.1	66.6	66.9	18.2	44.2	42.3
26	41.6	31.8	27.5	39.9	62.6	29.0	46.7	65.8	123	24.5	46.2	39.5
27	39.0	35.0	27.1	31.9	62.4	37.1	68.9	63.0	115	25.2	45.3	40.5
28	36.7	32.6	28.6	28.5	63.8	40.2	60.2	56.2	109	24.0	43.1	43.2
29	36.1	27.8	31.6	28.3	68.7	40.2	54.1	52.2	88.3	28.2	43.7	43.0
30	37.3		38.5	32.4	68.1	40.5	43.3	50.8	44.8	24.0	38.6	45.2
31	38.8		43.6		66.2		44.1	50.6		18.4		50.5
Sum	1,497.8	835.9	818.1	1,068.8	1,352.4	1,302.8	1,344.2	2,038.7	1,344.2	874.5	883.7	1,364.3

Month	Current Year 1988						Period 1968-1988				
	Extreme Gage Feet		Extreme Second-Feet		Average Second-Feet	Total Acre-Feet	Acre-Feet				
	High	Low	Day	Day			Average	Maximum	Minimum		
Jan.			22	64.1	29	36.1	48.3	2,971	5,968	12,728	1,082
Feb.			8	42.1	21	16.9	28.8	1,658	4,974	10,704	745
Mar.			31	43.6	4	20.0	26.4	1,623	6,535	11,675	318
Apr.			23	44.0	13	27.9	35.6	2,120	7,152	14,646	257
May			29	68.7	4	24.1	43.6	2,682	6,632	14,327	566
June			5	83.3	25	27.7	43.4	2,584	6,954	14,384	531
July			27	68.9	17	28.0	43.4	2,666	6,794	15,180	784
Aug.			9	81.6	31	50.6	65.8	4,044	6,263	11,586	613
Sept.			26	123	11	10.6	44.8	2,666	5,266	9,162	620
Oct.			4	53.4	25	18.2	28.2	1,735	4,888	8,220	881
Nov.			26	46.2	6	12.9	29.5	1,753	5,058	10,790	267
Dec.			10	62.9	20	26.8	44.0	2,706	5,395	12,797	1,061
Yearly				123		10.6	40.2	29,208	71,879	130,563	10,715
	Meters		Cubic Meters per Second				Thousands of Cubic Meters				
				3.48		0.30	1.14	36,027	88,661	161,047	13,217

☐ Mean daily † And other days ** Period 1968-1988

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

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

RECORDS: Based on 23 discharge measurements during the year and a continuous record of gage heights. Computations for high flows by shifting control methods. Low and medium flow computations based on a stable control weir rating curve defined by meter measurements. Records available: 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 1988 with several days missing prior to September 1955. Records prior to 1976 were published under the title "Rio Grande at San Antonio Crossing near El Indio, Texas."

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

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

Daily:	Max. 96,400 (2,730)	July 19, 1975	Min. 327 (9.26)	June 29 & 30, 1977
Monthly:	Max. 21,800 (617)	Sept. 1974	Min. 501 (14.2)	June 1969
Yearly:	Max. 5,300 (150)	1974	Min. 1,230 (34.8)	1972

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,850	2,550	2,220	2,340	2,190	6,300 *	2,590	2,930	4,460	7,900	2,880 *	2,110
2	1,850	2,530 *	2,270	1,950	2,190	5,010	2,470	2,930	4,390	7,500	2,920	2,090
3	1,850	2,530	2,210	1,970	2,150	3,790	2,500	2,950 *	4,220	4,600	2,780	2,130
4	1,860	2,550	2,150	2,030	2,070	3,620	2,540	3,050	4,050	4,190	2,730	2,160
5	1,850 *	2,500	2,140	2,010	2,020 *	3,730	2,550	4,900	4,030	3,690	2,690	2,170
6	1,820	2,480	2,130	1,920 *	2,110	3,680	2,500 *	5,720	4,130	3,540	2,620	2,220 *
7	1,810	2,480	2,140	1,870	2,030	3,590	2,450	6,630	3,940 *	3,330	2,630	2,180
8	1,830	2,440	2,120	1,810	2,060	3,620	2,460	7,110	3,970	3,000	2,610	2,160
9	1,820	2,420	2,090	2,190	2,110	3,550	2,420	6,860	3,800	2,930	2,580	2,170
10	1,860	2,420	2,040	2,210	2,010	3,470	2,400	6,690	3,850	2,950	2,520	2,280
11	1,860	2,370	2,050	2,210	2,160	3,510	2,550	5,470	3,910	2,880	2,530	2,340
12	1,870	2,350	1,790	2,200	2,410	3,540	3,100	4,560	3,830	2,850	2,490	2,300
13	1,940	2,350	1,050	2,230	2,030	3,600	7,380	3,470	3,820	2,790	2,510	2,300
14	2,580	2,330	970	2,210	2,000	3,500 *	5,140	3,050	3,820	2,750	2,470 *	2,250
15	2,570	2,290	900	2,200	1,970	3,390	5,010	2,960	3,760	2,770	2,410	2,250
16	2,640	2,290 *	873	2,220	2,010	3,190	4,480	3,000 *	2,400	2,940	2,390	2,240
17	2,610	2,270	842 *	2,230	2,030 *	3,400	4,060	4,030	3,940	2,790 *	2,330	2,240
18	2,570	2,270	1,040	2,190	2,660	2,960	4,050	4,360	2,570	2,860	2,360	2,290
19	2,590	2,270	1,160	2,290 *	3,600	1,100	4,000	4,410	7,560	2,900	2,350	2,280 *
20	2,590	2,250	1,590	2,410	3,660	838	3,090 *	4,410	7,450 *	2,680	2,360	2,220
21	2,590 *	2,270	1,920	2,760	4,400	683	3,230	4,350	4,970	2,740	2,380	2,210
22	2,590	2,250	1,900	2,390	8,070	610	7,430	4,600	4,510	2,790	2,400	2,190
23	2,590	2,250	1,850	2,240	5,640	1,510	8,230	4,490	10,300	2,930	2,360	2,210
24	2,570	2,250	1,900	2,210	4,900	2,880	7,820	6,970	10,600	2,900	2,300	2,210
25	2,570	2,250	1,910	2,240	4,380	2,260	6,160	8,060	10,400	2,940	2,380	2,260
26	2,570	2,220	1,930	2,220	4,630	2,370	5,040	5,500	10,200	2,920	2,370	2,240
27	2,570	2,250	1,920	2,210	4,390	2,750	3,200	4,550	9,930	3,000	2,350	2,240
28	2,570	2,220	1,960	2,220	4,060	3,610	2,880	4,520	9,910	3,010	2,310	2,180
29	2,570	2,220	1,930	2,210	4,190	3,080	2,750	4,520	9,540	3,360	2,310	2,090
30	2,550		1,940	2,180	4,320	2,600	2,760	4,490	8,030	2,950	2,310	2,120
31	2,550		2,070	4,830			2,800	4,490		2,850		2,200
Sum	70,510	68,120	55,008	65,570	99,280	91,741	120,040	146,030	172,290	104,230	74,630	68,530

Current Year 1988

Period 1968-1988

Month	Extreme Gage Feet		Extreme Second-Feet		Average Second-Feet	Total Acre-Feet	Acre-Feet				
	High	Low	Day	Low			Average	Maximum	Minimum		
										Day	
Jan.	7.16	6.62	16	2,940	5	1,770	2,270	139,854	127,899	221,917	47,179
Feb.	7.02	6.86	1	2,550	128	2,220	2,350	135,114	146,111	444,879	51,336
Mar.	7.00	6.09	2	2,550	17	816	1,770	109,107	161,933	423,055	37,442
Apr.	7.49	6.55	21	3,730	8	1,620	2,190	120,056	147,620	361,567	37,386
May	8.48	6.54	22	8,570	6	1,580	3,200	196,919	238,433	600,198	50,723
June	8.28	6.84	1	7,160	23	540	3,060	181,966	202,784	552,218	29,808
July	8.61	6.74	22	9,260	1	1,880	3,870	238,096	212,540	788,688	37,228
Aug.	8.54	6.88	7	8,490	2	2,160	4,710	289,646	210,886	824,033	66,822
Sept.	8.92	6.71	19	11,600	116	1,780	5,740	341,732	258,467	1,296,059	83,327
Oct.	8.57	6.98	2	8,490	14	2,350	3,360	206,737	230,211	863,008	66,885
Nov.	7.29	6.81	2	3,230	24	2,080	2,490	148,026	153,232	552,893	47,778
Dec.	6.99	6.70	11	2,480	29	1,920	2,210	135,927	122,429	276,555	49,819
Yearly	8.92	5.84		11,600		540	3,100	2,253,180	2,212,575	3,835,752	896,415
	Meters		Cubic Meters per Second			Thousands of Cubic Meters					
	2.72	1.78		329		15.3	87.8	2,779,252	2,729,167	4,731,323	1,105,710

* Discharge measurement made on this day

! And other days

** Period 1968-1988

08-4590.CO RIO GRANDE AT LAREDO, TEXAS
AND NUEVO LAREDO, TAMULIPAS

DESCRIPTION: Cableway, bubbler gage, and water-stage recorder located on the right bank at Laredo, Texas at latitude 27°29'45", longitude 99°20'25", and river mile 359.8 (579.0 km), immediately downstream from the Laredo, Texas sewage plant and 1.1 river mile (1.8 km) downstream from the old international highway bridge between Laredo, Texas and Nuevo Laredo, Tamulipas. The zero of the gage is 345.28 Feet (105.24 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: based on 24 discharge measurements during the year, and a continuous record of gage heights. Computations by shifting control methods. Records available: May 1900 through 1913; May, June, and October 1914; September 1916; September and October 1917; October 1918; September and October 1919; August and September 1920; June, November, and December 1922; and 1923 through 1988. Gage height records are available for January, February, and March 1914.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. This station was established in January 1955 to replace the station 1.7 miles (2.7 km) upstream which was destroyed by the June-July 1954 flood. Prior to July 11, 1958 the recorder was located 0.2 river mile (0.3 km) upstream, where the cableway is still located, and the zero of the gage was 347.90 feet (106.04 m) above mean sea level, U. S. C. & G. S. datum.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 716,900 second-feet (20,300 m³/sec) on June 30, 1954, determined by slope-area calculations, with a gage height of 61.35 feet (18.70 m). Much well-authenticated information established the occurrence of a greater flood in June 1865 with a gage height of 62.5 feet (19.05 m) on the same gage and discharge of approximately 950,000 second-feet (27,000 m³/sec), and also that these were the only floods since 1745 with flows greater than 600,000 second-feet (17,000 m³/sec). Min. no flow several days in June and July 1953 and on July 24, 1956.

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

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

Mean Daily Discharge in Second-Feet 1888 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
1	1,880	2,510	2,410 *	1,830	2,070	4,910 *	2,410 *	2,920	4,660 *	8,970	4,220 *	2,400 *	
2	1,850	2,610 *	2,430	2,340	2,070	6,490	2,410	2,950 *	4,580	8,600	3,190	2,270	
3	1,870	2,520	2,300	1,930	2,200 *	5,320	2,330	3,020	4,500	8,160	2,970	2,200	
4	1,860	2,540	2,220	1,890	2,090	3,960	2,410	2,990	4,430	5,210	2,810	2,270	
5	1,850 *	2,610	2,160	1,900 *	2,030	3,440	2,510	3,620	4,140	4,600	2,740	2,320	
6	1,850	2,540	2,130	1,940	1,950	3,470	2,490	5,010	4,150	4,080	2,650	2,340	
7	1,850	2,530	2,120	1,870	1,970	3,430	2,460	6,020	3,990	3,760	2,590	2,380	
8	1,800	2,570	2,150	1,850	2,050	3,300	2,420	7,000	3,850	3,650	2,600	2,350	
9	1,820	2,600	2,110	1,760	2,060	3,340	2,730	7,480	3,800	3,180	2,620	2,300	
10	1,820	2,570	2,100	2,070	2,090	3,280	2,550	7,190	3,640	3,170	2,610	2,320	
11	1,810	2,550	2,020	2,220	2,000	3,230	2,500	7,060	3,740	3,100	2,550	2,420	
12	1,770	2,500	2,020	2,230	1,980	3,240	2,610	5,860	3,780	3,050	2,580	2,460	
13	1,760	2,510	2,010	2,210	2,000	3,270	2,960	4,820	3,780 *	2,930	2,480	2,450 *	
14	1,820	2,490	1,520	2,200	2,090	3,300	7,440	3,820	3,750	2,860	2,450	2,410	
15	2,340	2,600	1,030	2,160	2,040	3,230	5,560 *	3,300	3,760	2,790	2,460	2,350	
16	2,530	2,550	996	2,140	1,960	3,170	5,420	3,260 *	3,940	2,730	2,410 *	2,330	
17	2,570	2,500 *	948	2,170	1,940 *	3,090	4,830	3,270	5,300	2,780	2,330	2,320	
18	2,540	2,470	899	2,270	1,890	3,160	4,210	4,050	7,700	2,770 *	2,310	2,310	
19	2,510	2,440	869	2,470 *	2,030	3,150	4,160	4,670	3,450	2,830	2,330	2,360	
20	2,460 *	2,450	1,060	2,200	3,430	1,630	4,190	4,640	7,760	2,830	2,310	2,370	
21	2,460	2,450	1,140	2,460	3,670	877 *	3,620	4,610	7,700	2,720	2,330	2,320	
22	2,330	2,440	1,790 *	2,730	4,310	709	3,480	4,560	5,290	2,670	2,360	2,290	
23	2,430	2,340	1,890	2,760	7,870	622	8,280	4,750	4,880	2,740	2,380	2,270	
24	2,450	2,390	1,820	3,600	5,550	579	8,670	4,620	11,100	2,830	2,380	2,280	
25	2,490	2,370	1,830	3,090	4,820	2,340	8,280	7,200	11,400	2,860	2,330	2,270	
26	2,530	2,370	1,830	2,140	4,130	2,180	6,560	8,430	11,300	2,870	2,420	2,290	
27	2,490	2,380	1,860	2,060	4,420	3,410	5,460	5,850	11,100	2,950	2,470	2,290	
28	2,500	2,390	1,870	1,970	4,170	2,960	3,700	4,750	10,800	3,240	2,420	2,230	
29	2,530	2,400	1,900	1,950	3,820	3,090	3,140	4,670	10,800	7,430	2,400	2,200	
30	2,460	1,880	2,040	3,910	3,120	3,280	2,940	4,690	10,400	7,840	2,400	2,150	
31	2,540	1,860		4,050	2,960	4,650	2,960	4,650		5,610	2,400	2,140	
Sum		72,290		66,450		91,457		151,730		125,810		77,060	71,660
67,770			55,042			93,060		125,690		183,470			

Month	Current Year 1988						Period 1968-1988				
	Extreme Gage Feet		Extreme Second-Feet			Average Second-Feet	Total Acre-Feet	Acre-Feet			
	High	Low	Day	High	Low			Average	Maximum	Minimum	
Jan.	4.01	2.99	17	2,790	13	1,730	2,190	134,420	128,842	286,116	49,774
Feb.	4.10	3.40	2	2,820	125	2,170	2,490	143,385	148,010	450,602	39,225
Mar.	3.77	1.97	1	2,600	19	860	1,780	109,174	162,864	395,686	37,096
Apr.	4.82	2.81	24	3,900	9	1,570	2,220	131,802	150,932	369,202	35,107
May	7.52	2.98	23	8,330	16	1,730	3,000	184,582	255,349	662,839	89,917
June	7.29	1.60	1	7,690	25	558	3,050	181,402	235,447	695,494	29,635
July	8.48	3.35	23	10,300	4	1,980	4,050	249,302	219,151	838,520	32,270
Aug.	7.73	3.68	26	8,750	1	1	4,890	300,952	218,812	794,314	65,681
Sept.	9.21	4.21	24	11,700	19	2,960	6,120	363,907	266,792	1,216,757	94,988
Oct.	8.58	3.68	29	10,400	22	2,410	4,060	249,540	265,287	956,960	56,195
Nov.	5.43	3.41	1	4,800	18	2,140	2,570	152,846	157,226	586,280	45,172
Dec.	3.79	3.29	12	2,600	30	2,000	2,310	142,135	126,378	307,569	51,316
Yearly	9.21	1.60		11,700		558	3,230	2,343,447	2,335,090	3,891,074	980,740
	Meters		Cubic Meters per Second			Thousands of Cubic Meters					
	2.81	0.49		331		15.8	91.5	2,890,595	2,880,287	4,799,562	1,209,723

* Discharge measurement made on this day

! And other days

** Period 1968-1988

08-4597.00 RIO SALADO NEAR LAS TORTILLAS, TAMAUlipAS

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

RECORDS: Based on 40 discharge measurements during the year, 40 by the Mexican Section and 0 by the United States Section of the Commission, a stable rating curve up to 2,500 second-foot (72 m³/sec), and a continuous record of gage heights. Computations by shifting control methods for flows greater than 2,500 second-foot (72 m³/sec). Records available: September 9, 1953 through 1988. Records are also available for a station at old Cd. Guerrero, 21.7 miles (35 km) downstream, from 1900 through 1913 and 1923 through September 8, 1953.

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

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

Average Flow in Second-Foot (Cubic Meters per Second)**			
Daily:	Max. 62,900 (1,780)	Sept. 16, 1971	Min. 0
Monthly:	Max. 13,600 (384)	Sept. 1971	Min. 0
Yearly:	Max. 3,310 (93.6)	1971	Min. 56.8 (1.61)

Frequently
Frequently
1956

Mean Daily Discharge in Second-Foot 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	38.1	* 26.1	* 17.0	31.4	41.7	738	117 *	130 *	533	3,050	2,480 *	256
2	47.7	29.7	9.2	35.3	* 46.3	2,910	110	170	509 *	2,840	2,070	261 *
3	49.8	33.2	8.5	31.8	46.6	2,810	90.4	132	317	2,670	1,950	263
4	50.5	33.9	3.9	* 32.1	45.9	1,330	* 89.7	144	334	2,510	1,930	256
5	* 49.1	45.2	2.1	30.4	42.4	424	84.4	73.8	283	2,370	1,900	256 *
6	47.0	53.0	1.4	33.2	38.8	208 *	73.1	82.3	224	2,010	1,880	254
7	44.8	78.4	1.4	37.4	34.3	139	68.5	890	319	1,650 *	1,850	247
8	44.8	76.6	.7	35.3	43.1	111	297	261	176	1,600	1,820 *	242
9	45.2	67.5	.4	27.9	49.4	75.9	396	177	120	1,560	1,810	236
10	54.7	60.4	1.8	29.3	51.6	59.3	272	99.6	105	1,520	1,810	231
11	53.7	46.6	1.4	31.8	49.4	173	234	54.0	88.3	1,490 *	1,800 *	222
12	42.7	47.7	.7	33.9	45.2	159	523	34.6	80.9	1,540	1,780	214
13	32.1	43.1	0	35.3	42.0	68.2	176 *	24.7	80.9	2,250	1,770	214
14	25.1	38.5	0	33.2	29.7	51.6	122	7.8	* 78.4	3,600	1,770	214
15	* 14.8	39.6	0	* 30.0	24.0	* 50.1	95.7	38.8	66.4	4,060	1,770	214 *
16	12.4	41.7	0	15.2	* 32.5	54.0	77.0	152	244	4,060	1,770	209
17	38.1	38.1	26.8	23.3	33.9	57.2	69.9	108 *	1,860	4,060	1,660	210
18	39.2	29.7	30.7	41.7	25.4	50.5	57.9	181	1,250	4,060 *	1,140 *	206
19	33.2	17.0	19.4	39.2	22.2	50.1	41.3	156	40,300	4,030	1,050	200
20	29.7	13.4	15.9	29.7	26.5	54.0	66.4	251	24,300	3,780	1,030	192
21	30.0	10.6	27.5	22.6	111	53.0	162	1,560	19,500	2,160 *	1,020	192
22	26.1	4.2	28.3	9.5	537	41.7	97.5	2,400	18,900	1,910	995 *	191
23	24.4	21.2	33.9	13.1	752	31.1	124	763	18,600	1,900	646	194
24	24.0	18.4	25.8	8.8	200	32.1	319	230	17,100	1,900	403	190
25	23.0	3.5	26.8	15.9	114	61.4	174	144	13,500	1,870 *	351 *	202
26	21.9	2.1	18.4	18.0	274	77.3	107 *	113	10,900	1,860	326	203
27	30.4	1.8	12.7	19.1	286	2,090	56.5	219	8,790	1,860	319	195
28	30.4	9.9	7.8	27.2	403	1,940 *	43.4	106	7,310 *	1,860 *	304	191
29	24.0	17.7	23.0	31.8	351	251	35.7	221	5,930	4,310	270 *	184
30	18.4	15.5	33.2	33.2	175	134	126	872	3,530	5,600	264	170
31	13.8	35.0		124	124		114	544		6,300 *		184
Sum	1,059.1	948.8	396.0	836.6	4,097.9	14,284.5	4,420.4	10,339.6	195,328.9	86,270	39,969	6,693

Month	Extreme Gage Feet		Extreme Second-Foot				Average Second-Foot	Total Acre-Foot	Period 1954-1988		
	High	Low	High	Day	Low	Average			Maximum	Minimum	
	Jan.	0.66	0.30	10	60.0	116	10.6	34.3	2,101	9,728	59,812
Feb.	.79	-.10	7	84.8	127	1.4	32.8	1,882	8,087	66,880	0
Mar.	.56	0	117	43.8	1.9	0	12.7	786	4,816	29,690	0
Apr.	.52	.20	1	41.7	122	3.5	27.9	1,660	12,379	202,979	0
May	2.36	.36	23	1,090	19	18.4	132	8,129	28,410	362,793	0
June	4.00	.39	1.2	4,270	23	22.6	477	28,337	31,640	246,821	0
July	2.23	.39	20	95.7	20	24.7	143	8,766	29,621	441,541	0
Aug.	3.35	.23	22	2,680	114	3.5	333	20,497	22,336	210,031	0
Sept.	30.51	.69	119	44,500	115	63.6	6,500	387,332	90,555	807,616	2,149
Oct.	6.27	2.62	30	6,890	111	1,470	2,780	171,093	56,733	550,739	110
Nov.	3.67	1.31	1	3,530	30	256	1,330	79,246	28,972	338,000	0
Dec.	1.35	1.05	1.2	265	30	165	216	13,283	17,583	176,100	0
Yearly	30.51	0		44,500		0	996	723,112	340,860	2,400,554	41,238
	Meters		Cubic Meters per Second				Thousands of Cubic Meters				
	9.30	0		1,260		0	28.2	891,947	420,444	2,961,050	50,859

** Period September 1953-1988

* Discharge measurement made on this day

! And other days

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

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

RECORDS: Based on daily Simplex meter records of releases through the six turbines, established rating curves for the four hollow-jet bypass valves, estimates of gate leakage, and measurements of flow at the cable during spillgate operations. During 1988 there were 4 discharge measurements made by the United States Section of the Commission. Records available: 1958 through 1988. Records are also available from December 17, 1952 through 1957 for a station at Chapeno, 2.6 miles (4.1 km) downstream, where discharges included arroyo inflow below Falcon Dam, which inflow is eliminated from the records reported below.

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

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

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

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2,700	1,100	2,540	2,020	13,500	10,600	4,710	2,090	440	18.0	5,580	1,210
2	2,160	1,390	2,520	2,020	13,500	9,480	5,030	1,430	68.0	18.0	7,150	1,180
3	2,610	2,400	2,500	2,360	13,600	8,020	2,900	3,370	118	18.0	7,720	1,220
4	2,310	2,020	2,500	2,350	13,600	6,900	4,320	4,290	118	4,040	8,100	1,220
5	1,420	1,280	2,500	2,130	13,700	6,880	2,820	4,310	705	3,980	8,120	1,220
6	980	2,040	2,520	1,480	13,800	5,890	2,150	4,220	708	4,080	8,160	1,220
7	1,440	1,810	2,520	2,070	13,700	4,820	2,570	4,190	615	4,030	8,090	1,540
8	1,260	1,570	2,520	2,060	13,500	5,140	2,530	4,150	373	4,010	7,300	2,000
9	1,030	1,020	2,520	2,640	13,400	5,380	2,520	3,340	118	4,130	5,140	2,040
10	1,420	779	2,520	892	12,500	4,400	2,490	3,540	465	4,050	4,000	2,030
11	1,580	668	2,510	3,460	12,000	4,790	2,500	4,100	1,170	4,060	3,980	2,000
12	1,650	928	2,020	2,750	9,780	4,830	2,240	4,620	1,170	4,020	3,980	2,010
13	1,540	1,020	2,020	2,760	9,610	5,430	2,380	4,410	2,060	3,940	3,940	1,940
14	1,490	1,040	2,020	3,080	8,500	5,750	3,130	4,110	1,820	3,930	3,990	1,820
15	1,510	1,000	2,020	3,720	8,740	5,490	2,910	4,060	573	3,940	4,030	1,810
16	1,330	1,000	2,020	4,620	7,580	5,440	3,100	2,280	18.0	3,940	3,990	1,820
17	1,800	1,020	1,760	5,020	6,590	4,820	3,100	218	18.0	3,980	4,020	1,830
18	981	1,010	1,760	5,340	7,800	4,360	3,610	130	18.0	4,090	3,990	1,820
19	943	1,020	2,010	5,720	8,700	4,330	3,870	218	18.0	3,970	3,950	1,810
20	810	1,020	2,360	6,430	8,230	3,940	3,550	218	18.0	4,050	3,970	1,810
21	561	1,020	2,720	8,130	8,500	3,720	3,020	218	18.0	3,970	4,020	1,800
22	425	1,020	2,720	10,400	8,680	3,760	2,560	435	18.0	510	2,790	1,810
23	378	1,020	2,370	10,600	8,990	3,020	2,890	634	18.0	1,010	1,970	1,810
24	375	1,280	2,020	11,500	9,130	3,540	3,130	896	18.0	1,210	2,030	1,820
25	402	1,360	2,010	11,900	10,200	3,560	3,410	1,160	18.0	1,740	2,050	1,820
26	527	1,220	2,590	13,200	11,200	3,780	3,690	1,190	18.0	1,720	2,060	2,000
27	540	1,370	2,550	13,500	12,000	3,580	4,220	1,020	18.0	1,720	2,030	2,220
28	364	1,720	2,260	13,100	12,000	3,390	3,270	1,130	18.0	1,810	2,040	2,220
29	218	2,080	2,270	13,600	11,900	3,460	3,790	834	18.0	2,220	2,020	2,400
30	218		2,020	14,700	12,100	3,960	3,980	643	18.0	2,230	1,620	3,110
31	605		2,020	12,300	12,300		2,200	868		2,460		4,120
Sum	35,577	37,225	70,910	183,552	339,330	152,460	98,590	68,322	10,791.0	88,894.0	131,830	58,680

Month	Current Year 1988						Period #1954-1988					
	Extreme Gage Feet		Extreme Second-Feet		Average Second-Feet	Total Acre-Feet	Acre-Feet					
	High	Low	Day	High			Day	Low	Average	Maximum	Minimum	
Jan.			1	2,700	29	218	1,150	70,566	206,592	462,369	10,379	
Feb.			3	2,400	11	668	1,280	73,835	151,048	367,384	11,185	
Mar.			121	2,720	117	1,760	2,290	140,648	130,966	374,142	2,390	
Apr.			30	14,700	10	892	6,120	364,070	288,354	608,707	19,530	
May			6	13,800	17	6,590	10,900	673,051	360,063	715,233	21,574	
May			1	10,600	23	3,020	5,080	302,400	254,130	672,976	19,718	
July			2	5,030	6	2,150	3,180	195,550	149,797	391,071	12,839	
Aug.			12	4,620	18	130	2,200	135,515	215,784	1,478,678	25,900	
Sept.			13	2,060	116	18.0	360	21,404	165,762	1,080,871	1,428	
Oct.			9	4,130	1	18.0	2,870	176,319	217,889	1,997,000	1,932	
Nov.			6	8,160	30	1,620	4,390	261,481	113,715	1,128,000	1,400	
Dec.			31	4,120	2	1,180	1,890	116,390	105,540	465,000	8,761	
Yearly				14,700		18.0	3,490	2,531,229	2,359,640	5,016,800	1,143,806	
		Meters										
					Cubic Meters per Second					Thousands of Cubic Meters		
					416	0.51	98.8	3,122,220	2,910,569	6,188,122	1,410,862	

* Discharge measurement made on this day 0 Mean daily ! And other days
** Period 1968-1988 # Values prior to 1958 are Chapeno discharge less arroyo flow

08-4620.00 RIO ALAMO AT CD. MIER, TAMAUlipAS

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

RECORDS: Based on 29 discharge measurements made at high flows during the year, 26 by the Mexican Section and 3 by the United States Section of the Commission, the weir discharge table at low flows, and a continuous record of gage heights. High flow computations by shifting control methods. Records available: July 1923 through 1988.

REMARKS: Small reservoirs and irrigation diversions modify the flow of this spring-fed stream at this station. On June 11, 1992, the zero of the gage was raised 1.31 feet (0.40 m) to make it coincide with the weir crest elevation. Prior to January 1, 1969, the zero of the gage was 168.35 feet (57.41 m) above mean sea level, U. S. C. & G. S. datum.

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

		Average Flow in Second-Feet (Cubic Meters per Second)**				
Daily:	Max. 87,230 (2,470)	Sept. 11, 1948	Min. 0	Frequently		
Monthly:	Max. 7,310 (207)	Sept. 1967	Min. 0	Frequently		
Yearly:	Max. 837 (23.7)	1967	Min. 16.4 (0.47)	1929		

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	1.1	0.7	0.7	0	0	0	6,180 *	1,020	3,260	413	62.9
2	0	1.1	1.1	0	0	0	0	388 *	295	1,690	250	60.4
3	0	1.1	1.1	0	0	0	0	168	273	611	145	59.0
4	0	2.1	1.1	0	0	0	0	345	324	286	105	59.0
5	.7	2.5	1.1	0	0	0	0	381 *	284	179	94.6	59.0
6	1.1	2.1	.7	13.1	0	0	0	266	172	133	87.9	59.0
7	1.1	1.8	.7	1.1	0	0	0	92.9	100	108	83.0	59.0
8	1.4	1.8	.7	0	0	0	0	59.7	84.0	94.6	80.5	58.3
9	1.8	1.8	0	0	0	0	410	43.8	63.6	90.8	78.8	56.9
10	1.8	2.1	0	0	0	0	180	34.3	49.1	89.7	75.6	56.9
11	1.8	2.1	0	0	165	0	12.4	27.9	40.6	86.9	73.5	55.8
12	2.5	1.8	0	4.2	862 *	0	2.1	21.5	33.2	83.0	73.1	54.7
13	3.2	1.4	0	6.4	90.1	0	0	17.3	24.0	75.2	71.3	54.7
14	3.5	1.1	0	2.5	20.8	0	0	14.5	19.4	72.0	71.3	54.7
15	3.5	1.1	0	1.1	7.8	0	0	586	17.0	71.3	70.3	53.0
16	15.9	1.1	0	.7	3.5	0	0	2,660 *	74.5	71.3	69.2	50.9
17	10.2	1.1	0	0	1.8	0	0	572 *	3,080 *	70.6	69.2	49.1
18	6.7	1.1	0	0	1.1	0	0	1,870 *	15,200	69.2	68.5	46.6
19	6.7	1.1	0	0	.7	0	0	1,380 *	24,600	69.2	67.1	45.6
20	6.0	1.1	0	0	0	0	0	968	5,900 *	71.3	67.1	45.6
21	4.2	1.4	0	0	0	0	826 *	410	3,640 *	69.9	67.1	45.2
22	4.2	1.1	0	0	0	0	204 *	220	2,690 *	69.2	66.4	43.8
23	4.2	1.4	0	0	0	0	43.1	127	2,100	67.5	65.0	43.8
24	3.5	.7	0	0	0	0	18.4	90.1	1,720	67.1	64.6	43.4
25	2.1	1.1	0	0	0	0	9.5	71.3	1,240	65.7	63.2	42.4
26	1.8	1.1	0	0	0	0	5.7	66.0	731	65.0	63.2	42.4
27	1.4	1.1	0	0	0	0	159 *	61.1	562	65.0	63.2	42.4
28	1.1	.7	26.8	0	0	0	30.4	56.9	473	63.2	63.2	42.4
29	1.1	.7	11.3	0	0	0	8.5	74.9	424	710	63.2	42.4
30	1.4	4.2	0	0	0	0	1,210	424	2,930 *	1,290	63.2	42.0
31	1.1	1.8	0	0	0	0	4,060	228	791	791	63.2	40.6
Sum	94.0	38.8	51.3	29.8	1,152.8	0	7,179.1	17,905.2	68,163.4	10,605.7	2,756.3	1,571.9

Month	Current Year 1988						Period 1924-1988				
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum
Jan.	188.75	188.35	16	27.9	1	0	3.2	186	3,068	34,920	0
Feb.	188.42	188.35	1	2.5	23	0	1.4	75.6	3,115	53,474	0
Mar.	188.88	188.32	28	43.8	8	0	1.8	101	2,299	19,830	0
Apr.	188.94	188.35	6	56.9	1	0	1.1	58.9	5,666	36,210	0
May	191.54	188.35	11	1,620	1	0	37.1	2,285	11,588	137,000	0
June	188.35	188.35	1	0	1	0	0	0	12,097	83,240	0
July	194.62	188.35	31	6,220	1	0	232	14,237	7,315	62,246	0
Aug.	197.51	188.58	1	11,700	114	13.1	579	35,519	14,894	205,700	0
Sept.	206.36	188.62	19	37,400	115	15.9	2,270	135,193	38,129	434,387	135
Oct.	194.16	189.04	1	5,440	25	63.2	342	21,022	16,973	193,700	0
Nov.	190.35	189.01	1	551	124	63.2	91.8	5,468	3,965	25,165	0
Dec.	189.01	188.85	1	63.2	130	40.6	50.9	3,117	3,230	15,982	0
Yearly	206.36	188.32		37,400			299	217,263	122,339	605,678	11,899
	Meters		Cubic Meters per Second				Thousands of Cubic Meters				
	62.90	57.40		1,060		0	8.47	267,991	150,903	747,096	14,686

** Period 1924-1988

* 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", 3.1 river miles (5 km) from the confluence with the Rio Grande, and 9.3 river miles (15 km) downstream from Marte R. Gomez Dam. This stream enters the Rio Grande at river mile 238.7 (384.1 km); 3.7 river miles (6.0 km) upstream from the Rio Grande gaging station at Rio Grande City, 36.1 river miles (58.1 km) downstream from Falcon Dam. The zero of the gage is at mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 71 discharge measurements during the year, 68 by the Mexican Section and 3 by the United States Section of the Commission, and a continuous record of gage heights. Computations by shifting control methods. Discharge prorated between measurements during times of extremely low flow. Records available: January 1954 through 1988.

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

EXTREME FLOWS FROM RECORDS: Momentary: Max. 115,000 second-feet (3,270 m³/sec) on September 25, 1967 with a gage height of 42.03 feet (12.81 m). Min. 0.4 second-foot (0.01 m³/sec) several days in May and June 1979 and March 1982.

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

Daily:	Max. 115,000 (3,250)	Sept. 25, 1967	Min. 0.4 (0.01)	Various days in May & June 1979 and March 1982
Monthly:	Max. 31,600 (894)	Sept. 1967	Min. 1.1 (0.03)	May 1979
Yearly:	Max. 3,990 (113)	1967	Min. 10.9 (0.31)	1980

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	30.4	7.1	15.2	11.7	4.6	3.5	10.9	3.5	4.2	5,930	1,070	448
2	29.0	7.1	15.5	11.7	4.2	3.5	11.3	3.5	4.2	5,930	1,090	360
3	27.5	6.7	15.9	11.3	3.5	3.5	11.3	3.5	3.9	5,690	1,120	360
4	25.8	7.1	15.5	11.7	3.5	3.5	11.3	3.5	3.9	4,870	1,140	360
5	24.0	7.1	15.5	11.7	3.5	3.5	11.7	3.5	3.5	4,240	1,100	357
6	22.6	7.4	15.2	11.7	3.5	3.5	10.9	3.9	3.5	3,710	1,050	357
7	21.5	7.4	14.8	11.7	3.5	3.5	10.6	3.9	3.5	3,230	1,000	346
8	20.8	7.8	14.8	11.7	3.5	3.9	9.9	4.2	3.5	2,950	1,070	335
9	19.8	8.1	14.5	11.7	3.5	4.2	9.2	4.2	3.5	2,700	1,140	324
10	19.1	8.1	14.1	11.7	3.5	4.6	8.8	4.6	3.5	2,560	1,110	313
11	18.0	8.5	14.1	11.7	3.5	5.3	8.1	4.6	3.5	2,480	1,090	302
12	17.3	8.5	13.8	11.7	3.5	5.7	7.4	4.6	3.5	2,390	1,020	292
13	16.2	8.8	13.4	11.7	3.5	6.0	7.1	4.9	3.5	2,250	957	281
14	15.2	9.2	13.4	11.7	3.5	6.4	6.4	4.9	3.5	2,130	890	286
15	14.5	9.2	13.1	11.7	3.5	6.7	5.7	5.3	3.5	2,030	883	292
16	13.4	9.5	13.1	11.7	3.5	7.1	5.3	5.3	3.5	1,900	872	297
17	12.7	9.5	12.7	11.7	3.5	7.4	4.6	5.7	1,130	1,790	759	283
18	11.7	9.9	12.4	11.7	3.5	8.1	3.9	5.7	572	1,700	643	269
19	10.9	10.2	12.4	11.7	3.5	8.5	3.5	5.7	26,300	1,620	583	255
20	9.9	10.6	12.0	10.9	3.5	8.8	2.8	5.3	47,000	1,620	519	241
21	9.5	11.3	11.7	10.6	3.5	9.2	2.8	5.3	40,600	1,560	459	227
22	9.5	11.7	11.7	9.9	3.5	9.2	2.8	5.3	31,600	1,480	473	227
23	9.2	12.0	11.3	9.2	3.5	9.5	2.8	4.9	23,300	1,390	484	228
24	8.8	12.4	11.3	8.8	3.5	9.9	3.2	4.9	16,500	1,280	463	228
25	8.8	12.7	11.3	8.1	3.5	9.9	3.2	4.9	13,000	1,130	438	229
26	8.5	13.4	11.3	7.8	3.5	9.9	3.2	4.6	10,600	950	424	230
27	8.1	13.8	11.3	7.1	3.5	10.2	3.2	4.6	8,830	678	410	230
28	8.1	14.1	11.3	6.4	3.5	10.6	3.2	4.6	7,490	395	396	231
29	7.8	14.5	11.3	6.0	3.5	10.6	3.2	4.6	6,140	225	466	212
30	7.8	11.7	11.7	5.3	3.5	10.6	3.2	4.2	6,070	742	537	194
31	7.4	11.7	11.7	5.3	3.5	10.6	3.2	4.2	6,070	989	537	175
Sum	473.8	283.7	407.3	312.0	110.3	206.8	194.7	142.4	239,190.2	72,529	23,656	8,769

Current Year 1988

Period 1954-1988

Month	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	High		Low	Average			Maximum	Minimum	
			Day	Day							
Jan.			1	30.4	31	7.4	15.2	940	9,501	95,871	88.4
Feb.			29	14.5	13	6.7	9.9	563	5,649	64,323	72.9
Mar.			3	15.9	23	11.3	13.1	807	2,885	24,513	70.0
Apr.			1	11.7	30	5.3	10.2	617	2,572	35,876	153
May			1	4.6	3	3.5	3.5	221	3,524	28,709	73.0
June			128	10.6	1	3.5	7.1	410	15,271	334,608	74.6
July			5	11.7	120	2.8	6.4	386	26,547	341,429	143
Aug.			117	5.7	1	3.5	4.6	283	19,634	273,904	77.0
Sept.			20	48,000	1	3.5	7,980	474,415	120,049	1,878,406	62.3
Oct.			1	6,000	29	141	2,340	143,822	102,439	901,500	193
Nov.			4	1,140	28	396	788	46,930	28,375	230,100	125
Dec.			1	448	31	175	283	17,395	16,939	154,765	163
Yearly				48,000		2.8	946	686,789	353,385	2,891,093	8,060
	Meters		Cubic Meters per Second				Thousands of Cubic Meters				
				1,360		0.08	26.8	847,144	435,893	3,566,125	9,941

* Discharge measurement made on this day ! And other days

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

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

RECORDS: Water entering the Rio Grande through the Rio San Juan Channel, composed of spills and leakage from Marte R. Gomez Dam, storm inflow and drainage below the dam, is measured at the Rio San Juan Gaging Station at Camargo, Tamaulipas, 3.1 river miles (5 km) upstream from the confluence with the Rio Grande. The discharge through Rancherias Drain was determined by prorating between 23 current meter measurements made during the year. There were no drainage flows through Los Fresnos Drain in 1988. All storm water measured at these two drains was deducted and is not included in the tabulation below. Records available: 1953 through 1988. Records prior to 1976 include Rio San Juan flow.

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.1	23.3	6.7	4.6	6.0	17.7	9.9	2.8	2.8	2.1	2.1	1.8
2	2.1	23.3	6.0	4.6	5.7	17.7	8.5	2.8	2.8	2.1	2.1	1.4
3	2.5	23.3	5.7	4.2	5.7	17.7	7.1	2.8	2.8	2.1	2.1	1.4
4	2.5	22.6	5.7	4.6	6.4	17.7	5.7	2.8	2.8	2.1	2.1	1.4
5	2.5	21.9	5.7	4.6	7.1	17.7	4.2	2.8	2.8	2.1	2.1	1.4
6	2.5	21.2	5.3	4.6	7.8	17.7	4.2	2.8	2.8	2.1	2.1	1.4
7	3.9	20.5	5.3	4.6	8.5	17.7	3.9	2.8	2.8	2.1	2.1	1.4
8	5.3	19.8	5.3	4.6	9.5	18.0	3.9	2.8	2.8	2.1	2.1	1.4
9	7.1	19.1	5.3	4.6	10.2	18.7	3.9	2.8	2.8	2.1	2.1	1.4
10	8.5	18.4	5.3	4.6	10.9	19.1	3.9	2.8	2.8	2.1	2.1	1.4
11	9.9	17.7	4.9	4.6	11.7	19.4	3.5	2.8	2.8	2.1	2.1	1.4
12	11.3	17.0	4.9	4.6	12.4	20.1	3.5	3.2	2.8	2.1	2.1	1.1
13	12.7	16.2	4.9	4.9	13.1	20.5	3.5	3.2	2.8	2.5	2.1	1.1
14	14.5	15.5	4.9	4.9	13.8	20.8	3.5	3.2	2.5	2.5	2.1	1.1
15	15.9	14.8	4.9	4.9	14.8	21.5	3.2	3.2	2.5	2.5	2.1	1.1
16	17.3	14.1	4.6	4.9	15.5	21.9	3.2	3.2	2.5	2.5	2.1	1.1
17	18.7	13.4	4.6	4.9	16.2	22.6	3.2	3.2	2.5	2.5	2.1	1.1
18	20.5	12.7	4.6	4.9	17.0	23.0	3.2	3.2	2.5	2.5	2.1	1.1
19	21.9	12.4	4.6	4.9	17.7	23.3	2.8	3.2	2.5	2.5	2.1	1.1
20	23.3	11.7	4.6	4.9	17.7	24.0	2.8	3.2	2.5	2.5	2.1	1.1
21	23.3	11.3	4.2	4.9	17.7	24.4	2.8	3.2	2.5	2.5	2.1	1.1
22	23.3	10.6	4.2	4.9	17.7	23.0	2.8	3.2	2.5	2.5	1.8	1.1
23	23.3	10.2	4.2	5.3	17.7	21.5	2.8	3.2	2.5	2.5	1.8	1.1
24	23.3	9.5	4.2	5.3	17.7	20.1	2.8	3.2	2.5	2.5	1.8	1.1
25	23.3	9.2	4.2	5.3	17.7	18.7	2.8	3.2	2.5	2.5	1.8	1.1
26	23.3	8.8	4.2	5.3	17.7	17.3	2.8	3.2	2.5	2.5	1.8	1.1
27	23.3	8.1	4.2	5.3	17.7	15.9	2.8	3.2	2.5	2.5	1.8	1.4
28	23.3	7.8	4.2	5.3	17.7	14.5	2.8	2.8	2.1	2.5	1.8	1.4
29	23.3	7.1	4.2	5.3	17.7	12.7	2.8	2.8	2.1	2.5	1.8	1.4
30	23.3		4.6	5.7	17.7	11.3	2.8	2.8	2.1	2.1	1.8	1.4
31	23.3		4.6		17.7		2.8	2.8		2.1		1.4
Sum	461.3	441.5	150.8	146.6	422.4	576.2	118.4	93.2	77.7	71.9	60.3	39.3
Current Year 1988										Period 1954-1988		
Month	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet			
	High	Low	Day	High	Low	Day			Average	Maximum	Minimum	
Jan.			120	23.3	! 1	2.1	14.8	914	216	914	0	
Feb.			! 1	23.3	29	7.1	15.2	876	327	938	0	
Mar.				6.7	121	4.2	4.9	300	247	771	25.9	
Apr.			30	5.7	3	4.2	4.9	291	304	718	19.5	
May			!19	17.7	! 2	5.7	13.8	837	622	1,454	61.6	
June			21	24.4	30	11.3	19.1	1,142	570	1,257	55.9	
July			1	9.9	!19	2.8	3.9	235	277	561	32.4	
Aug.			!12	3.2	! 1	2.8	3.2	185	214	443	25.9	
Sept.			! 1	2.8	128	2.1	2.5	154	217	697	15.4	
Oct.			!13	2.5	! 1	2.1	2.5	142	194	797	19.5	
Nov.			! 1	2.1	122	1.8	2.1	120	174	641	6.5	
Dec.			! 1	1.8	!12	1.1	1.4	77.0	153	495	29.2	
Yearly					24.4	1.1	7.4	5,273	3,515	6,786	490	
	Meters		Cubic Meters per Second				Thousands of Cubic Meters					
					0.69		0.03	0.21	6,504	4,336	8,370	605

* Discharge measurement made on this day

ø Mean daily

! And other days

C8-4646.00 DIVERSIONS FROM THE RIO GRANDE
UNITED STATES SIDE, FALCON DAM TO RIO GRANDE CITY

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

During 1988, 4,995 irrigable acres (2,021 ha) and several towns and rural homes were allotted Rio Grande water in the river reach between Falcon Dam and the Rio Grande City gaging station. Such irrigable area was 0.7% of the total irrigable acres (ha) below Falcon Dam allotted Rio Grande water.

The total diversion during 1988 in this river reach was 13,454 acre-feet (16,595,000 m3), or 1.1% of the total water diverted from the Rio Grande below Falcon Dam. All records of diversions in this river reach, which were determined by means of flow meters, were furnished by the Rio Grande Watermaster. More than one crop per year is often grown on parts of this land.

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

EXTREME FLOWS FROM RECORDS:

		Average Flow in Second-Foot (Cubic Meters per Second)			
Daily:	Max. 124 (3.51)	April 6-9, 1984		Min. 0	Occasionally
Monthly:	Max. 55.7 (1.58)	April 1984		Min. 2.2 (0.06)	March 1957
Yearly:	Max. 20.3 (0.57)	1960		Min. 6.9 (0.20)	1968

Mean Daily Discharge in Second-Foot 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	8.7	21.9	34.4	29.3	21.0	24.7	32.3	22.7	27.4	35.4	14.9	18.0
2	11.4	22.6	29.5	32.9	27.2	26.5	33.1	15.5	23.7	10.3	14.1	18.6
3	8.8	20.6	32.1	32.9	29.7	25.8	20.6	21.4	17.8	13.1	15.5	17.9
4	12.4	17.3	19.6	40.7	34.5	29.9	17.6	17.5	14.8	15.7	20.9	18.9
5	9.8	17.3	22.1	40.6	36.2	18.9	18.2	24.7	17.7	24.7	23.2	17.7
6	7.3	9.9	15.0	37.4	29.9	22.4	23.6	18.6	22.1	21.4	12.9	17.9
7	7.3	9.9	18.4	35.8	26.8	24.9	26.1	12.2	22.1	21.2	23.8	19.1
8	7.7	9.9	19.6	25.6	24.9	22.3	27.8	12.2	22.5	21.1	24.9	16.5
9	7.7	9.9	20.5	27.8	27.3	27.7	15.8	11.7	18.1	13.9	30.4	15.4
10	7.7	9.9	24.5	17.4	32.3	28.3	11.5	12.8	21.2	18.4	24.4	14.3
11	10.6	9.9	21.2	19.8	29.4	25.7	11.6	15.2	20.5	14.1	24.3	7.1
12	10.6	9.9	30.7	18.3	26.5	16.4	11.5	22.0	23.5	15.6	19.3	13.0
13	10.6	11.4	22.9	24.9	8.3	10.2	12.5	19.6	27.4	19.0	10.8	17.4
14	10.6	11.4	23.6	28.7	7.6	17.4	17.8	8.2	29.1	21.9	11.4	16.2
15	7.7	15.6	26.2	34.1	5.6	19.9	21.3	10.9	27.1	25.7	17.1	13.0
16	5.9	15.6	26.4	35.8	2.7	29.6	18.4	6.3	23.1	17.1	18.7	17.8
17	5.9	15.6	23.7	26.1	6.1	29.7	16.6	3.2	15.0	25.0	19.1	20.4
18	5.9	19.1	24.3	29.6	6.7	26.1	31.0	3.2	13.6	27.1	22.8	12.9
19	4.9	18.7	19.7	29.7	10.4	13.5	25.7	3.2	13.6	35.2	19.9	21.0
20	4.9	18.7	18.2	34.6	13.7	27.3	25.5	4.4	13.6	35.1	13.0	24.1
21	5.0	17.2	18.6	35.1	12.3	29.2	19.8	2.2	13.6	35.7	12.5	24.5
22	4.1	17.8	21.5	36.9	10.4	32.7	22.1	1.5	13.7	36.8	14.0	27.1
23	4.1	22.0	18.0	38.7	10.5	23.6	22.8	1.8	13.7	23.3	16.2	23.4
24	4.1	20.5	18.0	29.2	8.5	24.4	14.2	8.9	28.2	46.5	9.4	19.1
25	13.8	19.8	17.5	35.1	8.5	24.5	16.8	8.9	7.3	41.1	15.9	12.8
26	19.6	16.0	22.0	39.5	5.1	5.1	16.0	12.7	7.3	36.8	11.7	21.2
27	23.6	14.3	1.1	36.5	11.1	5.1	26.1	18.0	7.3	38.9	0	27.4
28	26.6	7.0	1.1	40.5	8.1	5.1	27.5	.2	7.3	34.9	0	28.4
29	26.8	7.0	.7	42.9	0	4.7	22.3	.2	7.3	23.0	0	26.4
30	19.9	.7	.7	40.9	0	75.4	17.3	.2	7.3	1.8	0	25.6
31	5.4	.7	.7		0		5.0	.2		.5		18.9
Sum	319.4	436.7	592.5	977.3	481.3	697.0	628.4	320.3	526.9	750.3	461.1	592.0

Current Year 1988										Period 1957-1988		
Month	Average Rainfall Inches**		Extreme Second-Foot				Average Second-Foot	Total Acre-Foot	Acre-Foot			
	1988	1957-1988	High		Low	Average			Maximum	Minimum		
	Day	Day	Day	Day	Day	Day			Day	Day		
Jan.	0.96	1.10	29	26.8	122	4.1	10.3	634	672	1,482	159	
Feb.	.77	1.17	2	22.6	128	7.0	15.1	866	796	1,782	223	
Mar.	.36	.53	1	34.4	129	.7	19.1	1,175	1,082	1,845	158	
Apr.	1.01	1.48	29	42.9	10	17.4	32.6	1,938	1,254	3,314	357	
May	3.36	2.74	5	36.2	129	0	15.5	955	983	2,624	211	
June	.71	2.68	30	75.4	29	4.7	23.2	1,382	925	2,610	209	
July	2.84	1.48	2	33.1	31	5.0	20.3	1,246	735	1,620	278	
Aug.	2.36	2.23	5	24.7	128	.2	10.3	635	705	1,458	278	
Sept.	4.90	4.42	14	29.1	125	7.3	17.6	1,045	586	1,230	178	
Oct.	2.15	2.16	24	46.5	31	.5	24.2	1,488	777	1,710	131	
Nov.	.25	1.08	9	30.4	127	0	15.4	915	580	1,170	211	
Dec.	.20	.86	28	28.4	11	7.1	19.1	1,174	594	1,580	145	
Yearly	19.87	21.93		75.4		0	18.5	13,453	9,689	14,754	4,989	
Yearly	Millimeters		Cubic Meters per Second				Thousands of Cubic Meters					
	505	557		2.14		0	0.52	16,594	11,951	18,199	6,154	

0 Mean daily 1 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, TAMAILIPAS

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

RECORDS: Based on 29 discharge measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: January 1955 through 1988. 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, Tamailipas are available for May, June, and October 1916; September 1916; September and October 1917; October 1918; September and October 1919; August and September 1920; June 1922; September 1923; and 1924 through 1931. Records are also available for the station "Rio Grande near Rio Grande City," 3.0 miles (4.8 km) downstream, for 1932 through 1954.

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

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

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

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

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,780	658	2,220	1,880	12,500	12,100	3,470	5,220	1,830	10,600	4,990	1,970
2	2,040	1,250	2,540	1,880	12,500	10,400	4,070	4,140	1,680	8,840	8,260	1,850
3	1,830	1,540	2,440	1,920	12,300	10,100	4,600	2,000	1,320	7,000	8,580	1,860
4	1,960	2,350	2,360	2,170	12,200	8,460	2,640	2,000	1,220	5,990	9,180	1,870
5	1,830	1,950	2,360	2,100	12,200	7,510	2,990	2,800	1,230	8,140	9,080	1,870
6	1,160	1,380	2,310	1,970	12,300	7,430	2,390	3,280	1,350	8,630	9,150	1,870
7	917	1,960	2,280	1,640	12,400	4,840	2,120	3,490	1,500	7,650	9,150	1,880
8	1,270	1,830	2,230	1,890	12,300	5,010	2,380	3,590	1,440	7,240	9,050	2,030
9	1,170	1,600	2,180	1,900	12,200	5,720	2,350	3,750	1,360	7,000	7,880	2,760
10	1,080	1,240	2,190	2,130	12,100	5,070	2,780	3,620	1,150	6,710	5,500	2,490
11	1,370	983	2,180	1,200	11,600	4,000	2,500	3,520	1,060	6,540	5,140	2,460
12	1,720	851	2,120	2,090	13,800	4,450	2,520	3,560	1,570	6,460	5,090	2,390
13	1,670	1,020	1,830	2,560	10,200	4,280	2,280	3,720	1,700	6,310	4,980	2,410
14	1,690	1,100	1,770	2,600	9,140	5,180	2,530	3,780	2,060	6,120	4,890	2,370
15	1,690	1,080	1,760	2,850	8,650	4,950	2,870	3,780	1,920	5,980	4,870	2,260
16	1,870	1,030	1,760	3,390	8,800	4,700	2,840	3,980	1,520	5,860	4,810	2,260
17	1,520	1,060	1,740	4,130	6,990	4,620	3,140	2,900	2,930	5,770	4,580	2,260
18	1,880	1,070	1,590	4,420	6,410	4,080	3,350	1,440	5,600	5,800	4,590	2,240
19	1,330	1,070	1,630	4,530	8,220	3,850	3,730	1,750	19,000	5,680	4,550	2,250
20	1,210	1,080	1,800	5,070	8,790	3,780	3,910	1,280	42,900	5,550	4,550	2,220
21	1,140	1,110	2,000	6,000	8,540	3,360	3,830	951	50,900	5,320	4,380	2,200
22	944	1,150	2,240	7,620	8,960	3,310	3,640	621	37,000	4,460	4,280	2,200
23	840	1,150	2,250	9,050	8,740	2,980	2,880	536	25,800	2,130	2,680	2,180
24	725	1,170	2,060	9,540	9,390	2,890	2,920	788	20,700	2,310	2,460	2,180
25	762	1,320	1,880	10,100	9,520	3,670	3,070	970	16,000	2,570	2,490	2,230
26	779	1,590	1,880	10,700	10,160	3,150	3,290	1,230	12,500	2,770	2,480	2,230
27	820	1,510	2,060	11,300	11,100	3,230	3,540	1,320	10,200	2,460	2,520	2,270
28	837	1,540	2,280	11,700	11,200	3,100	4,080	1,130	8,730	2,280	2,400	2,400
29	769	1,950	2,150	11,900	11,500	2,970	4,000	1,180	7,370	3,070	2,330	2,290
30	585	2,110	12,100	11,700	11,700	3,020	4,020	1,270	8,080	5,010	2,360	2,510
31	489	1,920	11,900	11,900	11,900	4,690	1,130	4,330	4,330	4,330	4,020	4,020
Sum	39,677	38,592	64,120	152,330	328,250	152,210	99,420	74,686	291,620	174,580	157,250	70,280
Current Year 1988										Period #1954-1988		
Month	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet			
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum	
Jan.	27.62	25.14	2	2,610	31	478	1,280	78,698	212,341	427,991	16,721	
Feb.	27.31	25.15	5	2,780	1	484	1,330	76,546	164,711	376,607	25,500	
Mar.	27.61	26.55	1	3,000	18	1,430	1,070	127,180	134,678	378,000	14,400	
Apr.	32.18	26.11	30	12,300	11	1,030	5,080	302,142	284,851	575,484	75,100	
May	34.12	29.18	12	15,000	18	5,770	10,600	651,074	371,689	689,109	36,702	
June	31.97	27.35	1	12,100	23	2,270	5,070	301,904	282,659	568,255	78,662	
July	28.84	26.58	31	4,980	4	1,360	3,210	197,197	184,689	573,798	22,300	
Aug.	28.88	25.44	2	5,680	23	510	2,410	148,137	239,382	1,502,678	25,000	
Sept.	49.62	25.16	21	53,500	11	1,020	9,720	578,420	329,181	2,712,754	42,423	
Oct.	32.27	26.87	11	11,200	28	2,010	5,630	346,274	338,742	3,047,000	30,000	
Nov.	30.92	27.27	4	9,280	30	3,320	5,240	311,901	150,022	1,442,000	29,274	
Dec.	28.27	26.38	31	4,040	1	1,690	2,270	139,398	123,809	540,000	31,970	
Yearly	49.62	25.14		53,500		478	4,490	3,258,871	2,816,754	6,619,700	1,269,259	
Meters			Cubic Meters per Second				Thousands of Cubic Meters					
15.12			7.66				1,520 13.5 127			4,019,752 3,474,410 8,165,268 1,565,606		

* Discharge measurement made on this day

! And other days

** Period 1955-1988

1954 values are Rio Grande City less arroyo inflow

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

DESCRIPTION: Cableway, bubbler gage, water-stage recorder and digital transmitter located on the left bank at latitude 26°14'15", longitude 98°33'50", and river mile 204.3 (328.8 km); 660 feet (201 m) downstream from Los Ebanos International Ferry, and 34.0 river miles (54.7 km) upstream from Anzalduas Dam. The zero of the gage is 100.00 feet (30.48 m) above mean sea level, U. S. G. S. datum.

RECORDS: Based on 6 discharge measurements during the flood period and a continuous record of gage heights. Computations for the flood period by shifting control methods. Records available: June 1976 through 1988, complete gage height record and flood flows.

REMARKS: This station is operated as a flood stage recording and transmitting station. Discharges are computed only during flood periods. The transmitter relays gage height data via radio to the Lower Rio Grande Flood Control Project Office of the Commission, where it is recorded automatically, and to the Anzalduas Dam control room for visual readout.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 43,100 second-feet (1,220 m³/sec) on September 22, 1988 with a gage height of 28.29 feet (8.62 m).

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18									3,800			
19									11,200			
20									31,100 *			
21									38,100 *			
22									42,300			
23									38,500 *			
24									34,100 *			
25									24,400			
26									15,600 *			
27									12,700			
28									10,900			
29									8,880			
30									7,840			
31												
Sum												
Current Year 1988									Period 1976-1988			
Month	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet			
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum	
Jan.												
Feb.												
Mar.												
Apr.												
May												
June												
July												
Aug.												
Sept.	28.29		22	43,100								
Oct.												
Nov.												
Dec.												
Yearly	Meters		Cubic Meters per Second				Thousands of Cubic Meters					

* Discharge measurement made on this day

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

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

RECORDS: Drain water reaching the Rio Grande through Morillo Drain was determined by hourly staff gage readings and the weir discharge table, and through Puertecitos and Los Indios Drains by prorating between frequent current meter measurements. All storm water measured at these drains was deducted and is not included in the tabulation below. In 1988, 45% of the drain water from this irrigation district reaching the Rio Grande between the Rio Grande City Gaging Station and Anzalduas Dam was contributed by Morillo Drain. Records available: 1953 through 1988.

REMARKS: Since July 9, 1969, some water has been diverted from Morillo Drain directly to the gulf via the Morillo Drain Diversion Canal to reduce the salinity of Rio Grande waters. In 1988, 56,094 acre-feet (69,191,000 m³) were diverted.

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	29.3	97.8	32.1	24.4	124	223	47.3	29.0	21.2	95.3	24.7	17.0
2	35.3	87.6	30.7	24.4	115	279	43.1	28.6	20.8	94.6	20.1	17.0
3	28.6	86.9	29.0	23.3	124	261	49.4	27.9	20.8	44.1	20.5	16.6
4	29.3	79.1	28.6	24.4	118	240	61.8	27.5	43.4	44.1	20.8	16.6
5	26.5	90.1	28.6	24.4	121	233	29.3	27.2	21.2	92.2	21.5	16.2
6	33.9	137	28.3	24.4	121	234	29.7	27.2	20.1	91.5	21.9	16.2
7	57.2	79.1	27.9	24.4	157	204	30.4	26.8	20.1	90.1	22.2	16.2
8	52.3	76.3	27.5	24.4	178	192	30.7	26.5	20.1	88.6	21.9	16.6
9	50.9	75.6	27.2	24.4	178	186	30.7	26.1	20.1	87.6	21.5	16.6
10	42.0	78.4	27.2	24.4	173	208	31.1	26.1	20.1	86.2	21.2	16.6
11	52.3	71.7	26.8	24.4	155	214	31.8	25.8	20.1	85.1	20.8	17.0
12	75.2	63.2	26.5	24.4	237	190	32.1	25.1	20.1	84.4	20.5	17.0
13	63.9	62.2	26.8	24.7	241	177	32.5	25.1	20.1	85.0	20.5	17.0
14	60.4	65.7	26.5	24.7	218	173	32.6	24.7	19.8	82.3	20.1	17.0
15	77.0	56.5	26.1	24.7	194	141	33.5	24.4	19.8	81.2	19.8	17.3
16	83.0	54.4	25.8	24.7	183	144	33.9	37.8	41.7	80.2	19.4	17.3
17	62.5	54.0	25.4	24.7	167	147	33.9	44.5	103	79.5	19.1	18.7
18	93.2	53.3	25.4	24.7	146	142	34.3	34.6	103	78.4	19.1	20.1
19	80.5	50.9	25.1	24.7	195	142	35.0	32.1	102	77.3	18.7	21.5
20	84.8	49.4	24.7	25.1	170	116	35.3	28.6	101	77.0	18.7	22.6
21	85.1	47.7	24.7	31.4	192	106	35.0	25.4	101	76.6	18.4	24.0
22	86.5	45.6	24.4	41.0	216	92.2	34.3	30.7	99.9	77.0	18.4	25.8
23	99.2	44.1	24.0	36.7	220	84.0	33.9	22.6	99.2	77.3	18.0	27.2
24	102	42.4	24.0	46.3	204	79.1	33.2	22.6	98.5	69.6	18.0	28.6
25	104	41.0	24.0	48.7	200	78.4	32.6	22.2	97.8	52.3	18.0	30.0
26	95.0	39.2	24.0	43.8	217	145	32.1	22.2	97.8	42.0	17.7	31.4
27	87.6	37.4	24.0	52.3	205	109	31.8	21.9	97.1	38.1	17.7	32.5
28	96.1	36.0	24.0	81.9	230	61.4	31.1	21.9	96.8	32.8	17.3	33.9
29	105	33.9	24.0	117	240	56.2	30.7	21.5	96.1	87.2	17.3	35.3
30	102		24.0	142	226	51.6	30.0	21.5	96.1	29.0	17.3	36.7
31	89.7		24.4		209		29.7	21.2		27.9		38.1
Sum		1,836.5		1,130.8		4,708.9		829.3		2,232.5		694.6
	2,169.3		811.7		5,674		1,073.2		1,758.8		591.1	
Current Year 1988												
Month	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Period 1954-1988			
	High	Low	High		Low				Acre-Feet			
			Day		Day				Average	Maximum	Minimum	
Jan.			29	105	5	26.5	69.9	4,303	2,335	6,812	466	
Feb.			6	137	29	33.9	63.2	3,643	3,067	7,059	465	
Mar.			1	32.1	123	24.0	26.1	1,610	2,106	5,291	521	
Apr.			30	142	3	23.3	37.8	2,242	3,202	6,111	899	
May			13	241	2	115	183	11,256	7,708	30,179	1,557	
June			2	279	30	51.6	157	9,342	8,545	85,952	2,027	
July			4	61.8	5	29.3	34.6	2,129	4,530	48,782	899	
Aug.			17	44.5	31	21.2	26.8	1,646	2,338	13,292	661	
Sept.			17	103	114	19.8	58.6	3,489	2,319	11,273	612	
Oct.			1	95.3	31	27.9	72.0	4,428	2,814	9,831	541	
Nov.			1	24.7	128	17.3	19.8	1,172	1,955	10,461	430	
Dec.			31	38.1	5	16.2	22.2	1,377	2,373	31,043	466	
Yearly	Meters		Cubic Meters per Second				Thousands of Cubic Meters					
				7.89		0.46	1.82	57,527	53,400	221,389	16,608	

0 Mean daily

! And other days

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

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

During 1988, 178,114 irrigable acres (72,081 ha) and several towns and rural homes were allotted Rio Grande water in the river reach between the gaging station at Rio Grande City and Anzalduas Dam. Such irrigable area was 24.7% of the total irrigable acres (ha) below Falcon Dam allotted Rio Grande water.

The total diversion during 1988 in this river reach was 290,024 acre-feet (357,739,000 m3), or 24.4% of the total water diverted from the Rio Grande below Falcon Dam. About 85% of the water diverted in this river reach was determined by the International Boundary and Water Commission through records of discharge obtained by means of flow meters and by deflection meters developed by the Commission. The records for the rest of these diversions were furnished by the Rio Grande Watermaster and were determined from records of discharge obtained by means of flow meters. More than one crop per year is often grown on parts of this land.

EXTREME FLOWS FROM RECORDS:

		Average Flow in Second-Feet (Cubic Meters per Second)			
Daily:	Max. 1,220 (34.6)	June 21, 1960	Min. 0	Occasionally	
Monthly:	Max. 1,010 (28.6)	June 1960	Min. 10.3 (0.29)	March 1957	
Yearly:	Max. 457 (12.9)	1982	Min. 188 (5.32)	1966	

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	75.0	363	519	494	567	949	755	554	271	156	232	467
2	77.2	378	452	336	749	832	452	616	192	185	197	499
3	127	417	609	368	807	504	317	654	113	290	297	444
4	161	338	410	579	813	352	350	532	75.0	411	234	397
5	135	201	286	716	845	370	538	457	187	497	214	534
6	122	130	302	678	806	470	585	374	244	516	201	533
7	73.0	142	494	696	607	529	497	354	273	453	286	505
8	90.8	126	580	602	602	586	373	601	295	306	290	522
9	59.9	86.4	538	421	700	566	322	621	307	317	437	440
10	93.3	82.3	550	401	797	599	259	632	284	525	416	262
11	223	65.6	578	472	796	482	277	676	276	566	358	286
12	110	116	347	627	685	502	448	585	389	521	246	432
13	144	57.2	377	614	487	784	438	493	354	636	222	478
14	186	58.4	574	623	394	776	372	466	270	586	450	471
15	205	117	558	577	360	698	266	585	119	490	534	500
16	69.5	95.1	567	348	490	592	188	404	28.0	434	510	463
17	93.3	117	514	320	600	493	234	214	7.4	649	496	409
18	115	188	407	565	614	347	399	204	7.0	677	484	395
19	128	173	322	642	575	328	543	69.5	95.5	720	416	420
20	67.8	126	299	632	464	551	587	77.4	247	708	345	470
21	71.5	147	434	614	355	600	488	49.9	151	709	668	425
22	123	330	504	608	375	566	432	145	94.1	574	660	429
23	85.7	297	560	398	573	575	347	113	147	470	455	264
24	102	289	548	379	646	516	362	172	75.3	725	204	93.8
25	162	332	479	698	672	404	523	183	143	653	299	23.9
26	202	280	288	795	700	351	570	216	99.3	730	288	273
27	238	217	289	771	552	495	612	138	78.3	666	247	386
28	214	240	469	858	496	587	642	123	240	653	433	454
29	224	420	508	819	364	607	525	274	316	360	439	438
30	190	547	655	421	609	334	302	257	278	415	357	357
31	219	531		588		343	248		253		237	
Sum	4,187.0	5,929.0	14,440	17,306	18,600	16,620	13,378	11,132.8	5,634.9	15,714	10,973	12,307.7

Month	Current Year 1988						Period 1957-1988				
	Average Rainfall Inches**		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	1988	1957-1988	High		Low				Average	Maximum	Minimum
			Day	Value	Day	Value					
Jan.	1.02	1.34	27	238	9	59.9	135	8,305	12,067	28,747	2,010
Feb.	1.58	1.23	29	420	13	57.2	204	11,760	12,835	38,599	1,640
Mar.	1.10	.67	3	609	5	286	466	28,611	20,978	41,200	637
Apr.	.41	1.37	28	858	17	320	577	34,326	26,936	43,037	5,760
May	.86	2.57	5	845	21	355	600	36,893	24,091	48,400	3,177
June	.99	2.70	1	949	19	328	554	32,965	23,051	59,900	5,011
July	2.18	1.51	1	755	16	188	432	26,535	22,933	46,423	6,753
Aug.	3.27	2.17	11	676	21	49.9	359	22,082	22,720	36,280	6,866
Sept.	5.13	3.74	12	389	18	7.0	188	11,177	15,486	35,000	4,136
Oct.	1.89	2.47	26	730	1	156	507	31,168	17,309	37,755	2,830
Nov.	.05	.96	21	668	2	197	366	21,765	14,934	27,516	2,930
Dec.	.03	.94	5	534	25	23.9	397	24,412	12,795	25,000	2,506
Yearly	18.51	21.67		949		7.0	400	290,029	226,135	330,908	136,460
	Millimeters		Cubic Meters per Second				Thousands of Cubic Meters				
	470	550		26.9		0.20	11.3	357,745	278,933	408,168	168,321

* Mean daily

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

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

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

RECORDS: Based on 153 discharge measurements during the year, 137 by the Mexican Section and 16 by the United States Section of the Commission, and a continuous record of gage heights. Computations by shifting control methods. Records available: 1952 through 1988.

REMARKS: Diversions by this canal are for irrigation and domestic use in Mexico and for conveying water for storage in Culebron, Villa Cardenas, and Palto Blanco Reservoirs about 23 canal miles (37.0 km) downstream from this station. For acreage irrigated during 1988 see the tabulation under the heading of "Drainage Basin and Irrigated Areas" in this Bulletin. Flow at this canal station is affected by backwater from the operation of canal gates 4.5 miles (7.2 km), 11.3 miles (18.2 km), and 22.5 miles (36.2 km) below this station.

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

		Average Flow in Second-Feet (Cubic Meters per Second)					
Daily:	Max. 9,360 (265)	April 23, 1983		Min. 0	Frequently		
Monthly:	Max. 6,990 (198)	May 1988		Min. 0	Several months		
Yearly:	Max. 1,980 (56.1)	1959		Min. 150 (4.26)	1952		

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	487	1.4	1.4	1.4	8,650	7,060	431	2,380	961	1.4	1.4	332
2	484	1.4	1.4	1.4	8,440	6,500	147	2,470	399	1.4	1.4	325
3	470	1.4	1.4	1.4	8,480	6,180	1.4	2,390	1.4	1.4	1.4	328
4	604	1.4	1.4	180	8,550	5,720	1.4	2,040	1.4	1.4	1.4	328
5	770	1.4	1.4	406	8,550	5,050	1.4	1,910	1.4	1.4	1.4	319
6	890	1.4	1.4	406	8,510	4,310	219	2,470	264	1.4	1.4	353
7	883	1.4	220	448	8,550	3,710	441	2,350	399	1.4	1.4	569
8	890	235	332	452	8,440	2,630	484	2,420	438	1.4	1.4	830
9	742	470	364	456	8,330	1,800	530	2,620	431	1.4	1.4	872
10	685	494	403	593	8,400	1,680	519	2,770	424	498	1.4	883
11	678	487	438	699	8,190	1,770	516	2,190	371	890	1.4	883
12	897	388	434	1,010	7,520	1,920	569	2,060	371	918	1.4	660
13	883	1.4	1.4	1,180	7,380	1,830	565	1,940	360	922	1.4	353
14	908	1.4	1.4	1,030	6,890	1,560	565	2,130	364	922	1.4	381
15	971	1.4	1.4	1,250	6,250	1,600	731	2,020	371	925	1.4	353
16	964	1.4	1.4	1,680	6,640	1,610	883	1,940	185	918	1.4	335
17	989	1.4	1.4	2,330	6,460	1,600	1,030	1,790	1.4	819	1.4	335
18	989	1.4	1.4	2,840	5,010	1,590	1,030	1,410	1.4	1,180	1.4	353
19	759	1.4	1.4	3,110	4,030	1,240	890	883	1.4	1,300	1.4	374
20	441	1.4	1.4	3,300	4,800	897	819	265	1.4	1,200	1.4	374
21	353	1.4	1.4	3,460	4,980	901	770	1.4	1.4	1,120	1.4	378
22	293	218	413	4,100	5,120	798	812	1.4	1.4	1,080	1.4	371
23	353	403	720	5,300	5,260	689	883	309	1.4	1,080	1.4	367
24	410	448	745	6,360	5,620	685	989	671	1.4	1,080	1.4	367
25	445	438	385	6,960	5,720	607	1,030	590	1.4	1,080	1.4	367
26	424	431	1.4	7,520	5,970	530	1,070	221	1.4	1,130	1.4	537
27	403	269	1.4	7,800	6,430	530	1,190	1.4	1.4	1,130	1.4	840
28	448	1.4	182	7,980	7,240	554	1,410	1.4	1.4	1,080	1.4	788
29	547	1.4	406	8,300	7,630	544	1,640	177	1.4	1,080	1.4	777
30	554	1.4	208	8,480	7,660	547	1,940	121	1.4	1,110	191	989
31	1.4	1.4	1.4	7,560	7,560		2,220	562		530		1,050
Sum	19,615.4	4,306.2	5,275.2	87,634.2	217,260	66,642	24,327.2	43,104.6	5,361.8	22,004.6	231.6	16,371

Current Year 1988										Period 1954-1988		
Month	Average Rainfall Inches **		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet			
	1988	1954-1988	High		Low	Average			Maximum	Minimum		
			Day	Day								
Jan.	4.02	1.85	117	0 989	31	0 1.4	632	38,906	102,303	271,293	1,520	
Feb.	2.52	1.50	10	0 494	1	0 1.4	149	8,543	89,239	251,519	1,086	
Mar.	1.26	1.79	24	0 745	1	0 1.4	170	10,465	36,921	147,900	1,128	
Apr.	1.59	1.77	30	0 8,480	1	0 1.4	2,920	173,812	140,861	370,715	23,381	
May	1.02	2.87	1	0 8,650	19	0 4,030	6,990	430,919	219,314	430,919	28,291	
June	1.89	3.23	1	0 7,060	126	0 1.4	2,220	132,168	99,598	270,700	14,221	
July	1.71	2.36	31	0 2,220	1	0 1.4	784	48,267	44,760	162,400	5,730	
Aug.	4.49	3.11	10	0 2,770	121	0 1.4	1,390	85,532	86,535	270,487	6,709	
Sept.	5.35	4.92	1	0 961	3	0 1.4	179	10,633	56,677	165,800	2,177	
Oct.	1.73	2.60	19	0 1,300	1	0 1.4	710	43,336	52,954	209,590	0	
Nov.	.04	1.18	30	0 191	1	0 1.4	7.8	461	12,484	83,690	0	
Dec.	.04	1.18	31	0 1,050	5	0 319	530	32,482	21,728	166,700	651	
Yearly	23.66	27.36		8,650		1.4	1,400	1,015,824	963,374	1,434,920	551,946	
	Millimeters		Cubic Meters per Second				Thousands of Cubic Meters					
	601	695		245		0.04	39.6	1,253,008	1,188,303	1,770,162	680,817	

* Discharge measurement made on this day 0 Mean daily ! And other days
** Average of several stations

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

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

RECORDS: Based on 131 discharge measurements during the year, 110 by the Mexican Section and 21 by the United States Section of the Commission, and a continuous record of gage heights. Records available: 1952 through 1988.

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

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

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

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

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	862	410 *	1,150	1,260	3,880	3,600	2,710	2,060	297	9,250	4,060 *	1,810
2	1,110	494	1,130 *	1,260	3,490	3,920	2,920	2,920 *	294	11,000	5,650	1,000
3	1,580	491 *	1,710	1,350	2,950 *	3,350 *	3,600	1,130	685	9,920 *	7,310 *	911
4	1,630	946	1,960	1,450 *	2,820	3,250	4,700 *	1,080	597	7,490 *	7,800	1,020
5	1,320 *	2,120	1,980	1,470	2,890	2,650	3,010	992 *	388 *	6,750 *	8,580	946
6	964	833	2,020	1,270	3,150 *	2,540 *	2,780	802	322	7,560	8,830	858 *
7	773	696	2,050 *	927	3,670	2,750	2,360	1,140	298	7,840	8,900 *	925
8	682	1,600	1,970 *	872 *	3,710	2,670	2,150 *	1,190 *	301	7,400	8,790	879 *
9	604	971 *	1,870 *	869	3,410	2,490	1,680	1,130 *	321 *	7,060	8,370	692
10	388	975	1,740	1,080	3,200	2,500 *	1,510	1,070	299	6,360 *	6,890	812
11	448 *	975	1,650	978 *	3,120 *	2,640	1,680	1,110 *	333	5,540	5,300	1,380
12	547	908 *	1,350	904	4,060	2,810	1,730 *	1,110	477	5,300 *	4,980	1,390
13	523 *	826	1,360	826 *	5,540	3,090	1,730	1,020	509 *	5,050	4,870	1,620 *
14	388	830	1,360 *	805	3,470	3,280 *	1,840 *	1,140	611	4,770 *	4,590 *	1,630
15	420	865 *	1,390	802	2,650	3,310	1,900	1,490	646	4,270	4,410	1,480 *
16	456	851	1,470	851	1,790 *	3,160	1,980	1,430	1,360	4,730	4,410 *	1,400
17	452	943 *	1,460 *	1,470	1,870	2,960	2,010	2,750	2,690	4,660	4,380	1,450
18	348 *	992	1,440	1,520 *	2,080 *	3,100	1,980	1,220	5,190	4,380	4,270	1,480
19	295	989	1,450	1,360 *	2,230	3,020	1,980 *	713 *	10,800 *	4,100 *	4,310	1,420
20	202 *	985	1,450	1,300	2,200	3,020	1,780	1,180	25,200 *	3,920	4,380	1,430 *
21	154	992	1,460	1,300 *	2,530	2,840 *	1,710 *	1,050	26,400 *	3,960 *	4,240 *	1,350
22	159	999	1,460 *	1,680	2,870	2,680	1,710	675	24,100 *	3,880	3,960	1,340 *
23	161	703 *	1,580	2,060	2,860	2,630 *	1,720	464	25,400 *	2,800	3,740	1,440
24	190	692	1,570	2,500	2,580 *	2,590	1,830	434	26,400 *	869 *	2,770	1,670
25	141 *	590 *	1,570	2,680 *	2,620	2,480	1,860	551	22,300 *	1,000	2,660	1,750
26	115	505	1,580	2,690	2,690	2,720	1,870 *	622 *	12,700 *	1,150	2,600	1,620
27	262 *	505	1,590	2,320	2,960 *	2,870 *	1,700	470	14,800 *	1,110	2,600	1,390
28	274	597	1,490 *	2,700	3,320	2,950 *	1,580 *	466	11,400 *	1,110	2,380	1,340
29	179	865 *	1,260 *	2,740 *	3,600	2,950	1,310	632 *	9,080 *	1,210	2,200	1,190 *
30	160		1,260 *	2,950	3,670 *	2,930	1,320	562	7,420 *	1,710	1,950	1,240
31	184		1,260		3,640		1,560	396 *		3,810		1,570
Sum	15,971	25,148	48,040	46,239	95,520	87,750	64,160	33,029	231,618	149,979	150,080	40,433

Month	Current Year 1988						Period 1954-1988				
	Extreme Gage Feet		Extreme Second-Feet			Average Second-Feet	Total Acre-Feet	Acre-Feet			
	High	Low	Day	High	Day			Average	Maximum	Minimum	
Jan.	81.63	77.69	1	1,780	125	113	516	31,683	95,355	325,550	1,090
Feb.	83.56	78.28	8	3,120	1	244	869	49,886	71,816	276,539	830
Mar.	82.55	80.45	6	2,330	1	1,120	1,550	95,339	77,307	243,477	339
Apr.	83.79	79.56	30	3,420	113	788	1,540	91,731	113,828	319,470	3,160
May	87.27	81.23	13	6,290	16	1,500	3,080	189,430	150,408	479,551	35,360
June	84.71	82.51	2	4,100	6	2,360	2,920	174,049	181,176	680,021	7,850
July	85.96	80.58	4	5,160	29	1,180	2,070	127,244	133,209	557,022	2,000
Aug.	83.96	77.99	2	3,570	19	238	1,070	65,548	133,299	1,207,862	943
Sept.	103.81	77.99	120	31,100	16	238	7,730	459,381	233,657	1,862,856	3,920
Oct.	93.93	79.17	1	11,100	24	170	4,840	297,427	269,257	2,326,000	1,730
Nov.	91.54	81.59	7	8,980	30	1,670	5,010	297,685	131,722	1,438,000	1,430
Dec.	81.86	79.72	1	1,950	9	530	1,300	80,223	95,445	540,100	1,500
Yearly	103.81	77.69		31,100		113	2,700	1,959,626	1,686,479	4,640,968	114,749
	Meters		Cubic Meters per Second				Thousands of Cubic Meters				
	31.64	23.68		880		3.20	76.4	2,417,173	2,080,238	5,724,004	141,538

* Discharge measurement made on this day ! And other days

RIO GRANDE FLOODWAY DISCHARGES
LOWER RIO GRANDE VALLEY

ON THE UNITED STATES SIDE

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

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

A total of 99,802 acre-feet (123,104,000 m³) of flood flow was diverted through the floodway system in 1988.

08-4685.00 BANKER FLOODWAY AT ANZALDUAS DAM NEAR MISSION, TEXAS

DESCRIPTION: Cableway, gravity well, concrete control weir, water-stage recorder, and selsyn-type transmitter, located on the right bank at latitude 26°08'30", longitude 98°19'20", about 0.2 river mile (0.3 km) from the point of diversion. The point of diversion is at river mile 171.1 (275.4 km), 0.8 river mile (1.3 km) upstream from Anzalduas Dam. The zero of the gage is at mean sea level, U. S. C. & G. S. datum. The crest of the weir is at elevation 106.5 feet (32.46 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 4 discharge measurements and a continuous record of gage heights during the flood period. Computations based on a stable control weir rating curve defined by meter measurements.

REMARKS: The transmitter relays gage height data to the Anzalduas control room.

Mean Daily Discharge in Second Feet 1988 - Period Summary

Sep. 20	96.9	Period	Maximum Gage - Feet	Date	Maximum Second-Feet	Total Acre-Feet	
21 *	5,360		Sep. 20- Sep. 27	109.18	Sep. 23	11,200	99,802
22 *	10,600			Meters		Cubic Meters per Second	Thous. of Cubic Meters
23 *	10,400			33.28		317	123,104
24	8,850						
25	6,690						
26 *	7,020						
27	1,300						
Total	50,316.9						

08-4700.50 MAIN FLOODWAY SOUTH OF WESLACO, TEXAS

DESCRIPTION: Gravity well and water-stage recorder located in the low-flow channel on the downstream side of the bridge on Farm Road No. 88 at latitude 26°06'40", longitude 97°59'30", about 3 miles (4.8 km) south of Weslaco, Texas 25.4 channel miles (40.9 km) from the point of diversion from the Rio Grande, and 2.5 channel miles (4.0 km) upstream from the point where this floodway branches into the Arroyo Colorado and North Floodway. The zero of the gage is at mean sea level, U. S. C. & G. S. datum (I. B. & W. C. Survey, 1967).

RECORDS: Based on 2 discharge measurements and a continuous record of gage heights during the flood period. Computations by shifting control methods. Flood measurements are made from the highway bridge.

REMARKS: Besides floodwaters from the Rio Grande, the floodway carries local storm, drainage, and seepage flows.

Mean Daily Discharge in Second Feet 1988 - Period Summary

Sep. 22	1,410	Sep. 30	782	Period	Maximum Gage - Feet	Date	Maximum Second-Feet	Total Acre-Feet	
23 *	9,760	Oct. 1	383		Sep. 22- Oct. 2	66.25	Sep. 24	11,400	101,236
24	10,900	2	225			Meters		Cubic Meters per Second	Thous. of Cubic Meters
25 *	9,100					20.19		323	124,872
26	7,280								
27	7,360								
28	2,580								
29	1,260	Total	51,040						

* Discharge measurement made on this day

RIO GRANDE FLOODWAY DISCHARGES
LOWER RIO GRANDE VALLEY

ON THE UNITED STATES SIDE

08-4701.00 NORTH FLOODWAY WEST OF MERCEDES, TEXAS

DESCRIPTION: Gravity well and water-stage recorder located in the pilot channel of the floodway on the upstream side of the old U. S. Highway No. 83 bridge at latitude 26°08'30", longitude 97°55'50" on the west city limit of Mercedes, Texas, and about 2 channel miles (3.2 km) from the point where the Main Floodway divides into the North Floodway and Arroyo Colorado. The zero of the gage is 0.16 foot (0.05 m) above mean sea level, U. S. C. & G. S. datum (I. B. & W. C. Survey, 1967).

RECORDS: Based on 3 discharge measurements and a continuous record of gage heights during the flood period. Computations by shifting control methods. Flood measurements are made from the highway bridge.

REMARKS: Besides a portion of Rio Grande floodwaters from the Main Floodway, the North Floodway carries local storm, drainage, and seepage flows.

Mean Daily Discharge in Second-Feet 1988 - Period Summary

Sep. 22	90	Sep. 30	41.1
23 *	4,870	Oct. 1	11.6
24 *	7,680	2	3.4
25	6,170	3	0.1
26	4,040		
27	3,450		
28 *	1,270		
29	195	Total	27,821.2

Period	Maximum Gage - Feet	Date	Maximum Second-Feet	Total Acre-Feet
	63.20	Sep. 24	8,170	55,183
Sep. 22- Oct. 3	Meters		Cubic Meters per Second	Thous. of Cubic Meters
	19.26		231	68,066

08-4702.00 NORTH FLOODWAY NEAR SEBASTIAN, TEXAS

DESCRIPTION: Gravity well and water-stage recorder located in the pilot channel of the floodway on the upstream side of the southbound U. S. Highway No. 77 bridge at latitude 26°18'50", longitude 97°46'35", about 2 miles (3.2 km) south-southwest of Sebastian, Texas, and about 23 channel miles (37.0 km) from the point where the Main Floodway divides into the North Floodway and Arroyo Colorado. The zero of the gage is 0.37 foot (0.11 m) above mean sea level, U. S. C. & G. S. datum (I. B. & W. C. Survey, 1967).

RECORDS: Based on 4 discharge measurements and a continuous record of gage heights during the flood period. Computations by shifting control methods. Flood measurements are made from the highway bridge.

REMARKS: Besides a portion of Rio Grande floodwaters from the Main Floodway, the North Floodway carries local storm, drainage, and seepage flows.

Mean Daily Discharge in Second Feet 1988 - Period Summary

Sep. 23	159	Sep. 30	1,080
24 *	2,660	Oct. 1	616
25 *	5,900	2	382
26	6,230	3 *	219
27	4,820	4	161
28 *	4,650	5	122
29	3,040	6	105
		Total	30,104

Period	Maximum Gage - Feet	Date	Maximum Second-Feet	Total Acre-Feet
	42.30	Sep. 25	7,210	59,710
Sep. 23- Oct. 6	Meters		Cubic Meters per Second	Thous. of Cubic Meters
	12.89		204	73,651

08-4703.00 ARROYO COLORADO FLOODWAY SOUTH OF MERCEDES, TEXAS

DESCRIPTION: Cableway, bubbler gage, and water-stage recorder located on the left bank immediately upstream from the Hidalgo and Cameron Counties Water Control and Improvement District No. 9 El Fuste Siphon at latitude 26°07'45", longitude 97°54'45" near the south city limits of Mercedes, Texas and about 3.5 channel miles (5.6 km) from the point where the Main Floodway divides into the North Floodway and Arroyo Colorado. The zero of the gage is 51.88 feet (15.81 m) above mean sea level, U. S. C. & G. S. datum (I. B. & W. C. Survey, 1967).

RECORDS: Based on 3 discharge measurements and a continuous record of gage heights during the flood period. Computations by shifting control methods.

REMARKS: Besides a portion of Rio Grande floodwaters from the Main Floodway, the Arroyo Colorado carries local storm, drainage, and seepage flows.

Mean Daily Discharge in Second-Feet 1988 - Period Summary

Sep. 22	1,010	Sep. 30	974
23 *	2,190	Oct. 1	513
24	2,210	2	280
25 *	2,060		
26	1,900		
27	1,990		
28 *	1,690		
29	1,380	Total	16,197

Period	Maximum Gage - Feet	Date	Maximum Second-Feet	Total Acre-Feet
	3.11	Sep. 23	2,260	32,126
Sep. 22- Oct. 2	Meters		Cubic Meters per Second	Thous. of Cubic Meters
	0.95		64.8	39,627

* Discharge measurement made on this day

RIO GRANDE FLOODWAY DISCHARGES
LOWER RIO GRANDE VALLEY

ON THE UNITED STATES SIDE

08-4704.00 ARROYO COLORADO FLOODWAY SOUTH OF HARLINGEN, TEXAS

DESCRIPTION: Gravity well and water-stage recorder located in the low-flow channel on the downstream side of the south service road bridge for U. S. Highway No. 83 at latitude 26°10'20", longitude 97°41'55", on the south city limit of Harlingen, Texas, and about 18 channel miles (29.0 km) from the point where the Main Floodway divides into the North Floodway and Arroyo Colorado. The zero of the gage is at mean sea level, U. S. C. & G. S. datum (I. B. & W. C. Survey, 1967).
 RECORDS: Based on 4 discharge measurements and a continuous record of gage heights during the flood period. Computations by shifting control methods. Flood measurements are made from the highway bridge.
 REMARKS: Besides a portion of the Rio Grande floodwaters from the Main Floodway, the Arroyo Colorado carries local storm, drainage, and seepage flows.

Mean Daily Discharge in Second-Feet 1988 - Period Summary

Sep. 23	1,280	Sep. 30	1,380
24 *	2,090	Oct. 1	891
25 *	2,300	2	534
26	2,270	3 *	399
27	2,220	4	346
28	2,190	5	310
29 *	1,890	Total	18,100

Period	Maximum Gage - Feet	Date	Maximum Second-Feet	Total Acre-Feet
	Sep. 23- Oct. 5	14.72	Sep. 25	2,310
	Meters		Cubic Meters per Second	Thous. of Cubic Meters
	4.49		65.4	44,283

* Discharge measurement made on this day

RIO GRANDE FLOODWAY DISCHARGES
LOWER RIO GRANDE VALLEY

ON THE MEXICAN SIDE

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

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

The Retamal Floodway replaced the floodway system used prior to 1976, which consisted of Retamal Canal, San Rafael Floodway, and Floodway No. 2.

In 1988 floodwaters were diverted through Retamal Floodway. No floodwaters were diverted through Anzalduas Canal due to repair work in progress.

RETAMAL FLOODWAY AT RETAMAL DAM NEAR PROGRESO, TAMAULIPAS

DESCRIPTION: Concrete control weir of 106,000 second-foot (3,000 m³/sec) capacity located at latitude 26°02'20", longitude 98°02'10", about 0.2 river mile (0.3 km) from the point of diversion. The point of diversion is at river mile 133.2 (214 km) 0.8 river mile (1,200 m) upstream from Retamal Dam, and 1,115.6 river miles (1,795.4 km) downstream from the American Dam at El Paso, Texas. The zero of the gage is at 79.99 feet (24.35 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 1 discharge measurement and hourly gage height readings during the flood period. Computations by shifting control methods due principally to an irrigation ditch located across the floodway downstream from the concrete weir which acted as a shifting control.

REMARKS: Retamal Floodway was used for the first time in 1976. Flood diversions were also made in 1978.

Mean Daily Discharge in Second-Foot 1988 - Period Summary

Sept. 19	0	Sept. 23	14,000	Sept. 27	5,240	Period	Date	Maximum Second-Foot	Total Acre-Feet
20	2,770	24	14,500	28	6,020		Sept. 26	15,100	192,515
21	10,800	25	14,800	29	3,990	Sept. 19		Cubic Meters per Second	Thousands of Cubic Meters
22	13,000	26	10,900	30	802	Sept. 30		428	237,465

* Discharge measurement made on this day

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

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

During 1988, 125,370 irrigable acres (50,737 ha) and several towns and rural homes were allotted Rio Grande water in the river reach between Anzalduas Dam and the Progreso International Bridge. Such irrigable area was 17.4% of the total irrigable acres (ha) below Falcon Dam allotted Rio Grande water.

The total diversion during 1988 in this river reach was 240,825 acre-feet (297,053,000 m3), or 20.3% of the total water diverted from the Rio Grande below Falcon Dam. About 91% of the water diverted in this river reach was determined by the International Boundary and Water Commission through records of discharge obtained by means of flow meters, and by deflection meters developed by the Commission. The records for the rest of these diversions were furnished by the Rio Grande Watermaster and were determined from records of discharge obtained by means of flow meters. More than one crop per year is often grown on parts of this land.

EXTREME FLOWS FROM RECORDS:

		Average Flow in Second-Feet (Cubic Meters per Second)					
Daily:	Max. 1,120 (31.7)	June 16 & 17, 1965	Min. 0				Occasionally
Monthly:	Max. 749 (21.2)	June 1969	Min. 13.3 (0.38)				May 1972
Yearly:	Max. 367 (10.4)	1982	Min. 167 (4.73)				1970

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	41.5	208	355	381	607	782	792	490	295	125	377	417
2	98.9	224	384	292	703	617	638	524	177	127	285	425
3	198	260	366	297	696	687	593	464	72.6	324	330	176
4	249	285	346	376	698	604	561	374	54.0	327	289	262
5	166	209	148	388	694	436	488	326	176	319	187	393
6	132	89.6	221	431	720	502	547	238	202	328	109	406
7	86.9	55.9	410	445	717	497	550	178	225	426	131	406
8	49.9	141	450	363	671	484	519	415	254	380	247	382
9	32.8	62.6	447	278	642	481	349	392	179	371	394	365
10	6.5	81.4	470	280	724	441	210	412	85.6	184	420	365
11	128	69.0	381	329	762	359	353	378	73.1	462	414	126
12	131	48.3	280	308	666	530	469	300	228	442	300	294
13	153	7.2	370	269	603	600	436	156	270	463	249	335
14	213	7.2	527	179	424	718	440	150	279	502	397	334
15	113	11.3	492	159	318	723	436	496	99.0	435	435	332
16	51.8	123	440	89.9	467	744	410	533	23.8	353	520	335
17	27.9	135	366	176	474	638	511	460	10.5	389	521	149
18	66.2	136	192	345	460	456	624	299	9.9	385	528	203
19	128	98.0	81.3	396	460	514	624	93.7	189	391	252	291
20	89.9	46.1	53.6	426	463	562	600	50.9	67.5	420	320	413
21	87.5	46.3	276	439	421	612	584	.5	62.9	428	426	427
22	46.6	125	256	400	507	619	510	90.3	61.3	372	452	440
23	4.2	145	121	389	680	594	378	104	53.2	277	269	355
24	7.6	145	137	365	657	556	441	107	25.3	372	74.8	53.2
25	121	150	155	565	621	416	589	133	195	393	330	21.1
26	124	149	155	590	584	509	562	118	283	456	144	187
27	159	127	164	612	516	630	568	89.9	269	462	180	352
28	194	124	260	630	564	702	511	55.3	218	456	314	402
29	142	271	306	590	585	661	325	216	254	407	355	411
30	47.4		317	518	692	639	192	247	208	360	359	378
31	40.4		345		600		304	241		413		200
Sum	3,137.0	3,579.9	9,301.9	11,265.9	18,396	17,313	15,114	8,131.6	4,599.7	11,549	9,608.8	9,415.3

Month	Average Rainfall Inches**		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Period 1957-1988		
	1988	1957-1988	High		Low	Average			Maximum	Minimum	
			Day	Day							
Jan.	2.61	1.53	4	249	23	4.2	101	6,222	11,825	34,959	723
Feb.	2.02	1.43	4	285	113	7.2	123	7,101	9,837	28,535	1,140
Mar.	.89	.68	14	527	20	53.6	300	18,450	16,700	36,100	1,050
Apr.	.81	1.41	28	630	16	89.9	376	22,346	21,004	39,277	3,630
May	.67	2.81	11	762	15	318	593	36,468	21,947	43,150	817
June	1.45	2.68	1	782	11	359	577	34,340	25,885	44,541	4,203
July	1.42	1.70	1	792	30	192	488	29,978	23,495	41,100	6,597
Aug.	3.12	2.41	16	533	21	.5	262	16,129	17,128	27,542	7,452
Sept.	5.23	4.24	1	295	18	9.9	153	9,123	12,513	28,000	3,214
Oct.	.79	2.59	14	502	1	125	373	22,907	14,532	29,215	2,059
Nov.	.07	1.19	18	528	24	74.8	320	19,059	11,479	22,818	1,015
Dec.	.06	1.12	22	440	25	21.1	304	18,675	10,562	19,962	1,852
Yearly	19.14	23.79		742		0.5	332	240,818	196,907	265,366	121,008
	Millimeters		Cubic Meters per Second				Thousands of Cubic Meters				
	486	604		22.4		0.01	9.40	297,044	242,881	327,324	149,261

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

Q8-4736.00 DIVERSIONS FROM THE RIO GRANDE
UNITED STATES SIDE, PROGRESO TO SAN BENITO

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

During 1988, 320,166 irrigable acres (129,568 ha) and several towns and rural homes were allotted Rio Grande water in the river reach between Progreso and the gaging station at San Benito. Such irrigable area was 44.3% of the total irrigable acres (ha) below Falcon Dam allotted Rio Grande water.

The total diversion during 1988 in this river reach was 524,865 acre-feet (647,410,000 m³), or 44.2% of the total water diverted from the Rio Grande below Falcon Dam. About 97% of the water diverted in this river reach was determined by the International Boundary and Water Commission through records of discharge obtained by means of flow meters, by open channel rating stations, and by deflection meters developed by the Commission. The records for the rest of these diversions were furnished by the Rio Grande Watermaster and were determined from records of discharge obtained by means of flow meters. More than one crop per year is often grown on parts of this land.

EXTREME FLOWS FROM RECORDS:

		Average Flow in Second-Feet (Cubic Meters per Second)			
Daily:	Max. 2,750 (77.9)	June 15, 1965	Min. 0	Occasionally	
Monthly:	Max. 2,080 (58.9)	June 1960	Min. 53.5 (1.52)	March 1957	
Yearly:	Max. 808 (22.9)	1980	Min. 367 (10.4)	1968	

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	715	71.6	296	527	1,670	1,990	1,900	865	207	477	1,280	458
2	708	109	291	486	1,770	2,040	1,780	828	294	540	1,060	357
3	712	159	329	390	1,730	1,280	1,709	848	100	543	888	392
4	890	191	358	400	1,750	1,230	1,610	609	81.6	433	911	365
5	766	120	239	438	1,740	1,480	1,930	604	91.3	367	816	379
6	782	81.5	223	479	1,650	1,260	1,730	384	183	284	632	411
7	718	115	250	515	1,680	1,520	1,510	212	186	315	770	488
8	568	139	497	502	1,590	1,660	1,460	333	223	305	683	615
9	596	166	594	423	1,730	1,680	1,410	521	222	296	631	560
10	398	188	608	508	1,830	1,830	1,090	532	157	439	470	380
11	278	186	552	600	1,830	1,550	1,130	543	148	483	555	352
12	236	216	508	611	1,470	1,760	1,210	647	200	435	430	452
13	375	223	445	610	1,210	2,010	1,280	686	182	336	416	529
14	442	172	550	606	1,240	2,050	1,260	642	201	408	488	528
15	381	139	675	655	1,160	2,180	1,400	732	50.7	382	561	532
16	80.3	170	650	517	1,160	2,120	1,310	710	.6	369	425	509
17	295	207	624	514	998	1,940	1,240	732	.6	536	397	376
18	265	152	432	782	950	1,700	1,270	594	35.7	612	444	374
19	219	84.8	263	863	1,030	1,500	1,200	596	116	654	376	635
20	135	.3	261	878	1,150	1,580	1,210	602	522	609	381	802
21	24.6	.3	268	924	1,130	1,620	985	555	551	594	469	517
22	21.1	38.6	315	885	972	1,530	969	595	581	467	444	508
23	38.5	200	345	972	1,090	1,410	1,090	630	565	466	423	396
24	78.2	244	456	1,130	1,350	1,520	1,040	460	460	751	245	368
25	40.3	223	466	1,320	1,450	1,630	955	390	502	809	343	370
26	35.4	212	445	1,380	1,370	1,560	1,000	433	517	815	237	375
27	34.2	128	417	1,530	1,480	1,600	1,080	526	640	706	233	867
28	109	164	602	1,500	1,790	1,660	919	398	723	949	430	1,000
29	136	304	622	1,450	1,790	1,720	798	400	708	998	568	1,050
30	147		494	1,660	1,900	1,770	749	355	605	926	531	1,062
31	110		477		2,000		842	296		1,080		889
Sum	10,333.6	4,404.1	13,552	24,015	45,660	50,380	39,347	17,202	9,053.5	17,384	16,537	16,796

Month	Average Rainfall Inches**		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet			
	1988	1957-1988	High		Low				Average	Maximum	Minimum	
			Day		Day							
Jan.	3.31	1.71	4	890	22	21.1	333	20,496	36,134	97,130	4,872	
Feb.	2.35	1.81	29	304	20	.3	152	8,735	19,896	49,859	4,807	
Mar.	2.52	.84	15	675	6	223	437	26,880	25,582	54,200	3,280	
Apr.	.21	1.53	30	1,660	3	390	801	47,633	49,170	101,651	12,900	
May	1.61	3.01	31	2,000	18	950	1,470	90,565	54,859	110,440	9,277	
June	1.50	3.10	15	2,180	4	1,230	1,680	99,327	65,227	123,000	11,126	
July	1.36	2.10	1	1,930	30	749	1,270	78,044	45,392	89,373	11,307	
Aug.	2.99	2.80	28	723	116	.6	302	17,957	23,868	59,400	4,308	
Sept.	6.37	5.14	31	1,080	6	284	561	34,481	24,331	58,164	5,146	
Oct.	.94	2.95	1	1,280	27	233	551	32,801	19,432	44,359	4,853	
Nov.	.18	1.56	29	1,050	11	352	542	33,314	20,688	37,500	6,663	
Dec.	.04	1.34										
Yearly	23.38	27.89		2,180		0.3	723	524,953	418,176	586,544	266,680	
	Millimeters		Cubic Meters per Second				Thousands of Cubic Meters					
	594	708		61.7		0.01	20.5	647,519	515,812	723,490	328,944	

∅ 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, TAMAUULIPAS

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

RECORDS: Based on 36 discharge measurements during the year and a continuous record of gage heights. Computations for high flows by shifting control methods. Low and medium flow computations based on a stable control weir rating curve defined by meter measurements. Records available: November 25, 1952 through August 25, 1953, and December 1953 through 1988.

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

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

		Average Flow in Second-Foot (Cubic Meters per Second)**			
Daily:	Max. 24,800 (702)	Sept. 29, 1967	Min. 0	Frequently	
Monthly:	Max. 14,300 (405)	Oct. 1971	Min. 39.5 (1.12)	December 1956	
Yearly:	Max. 3,780 (107)	1976	Min. 200 (5.66)	1956	

Mean Daily Discharge in Second-Foot 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	70.1	65.7	236	493	412	642	369	457	61.6	8,100	2,170	1,760
2	96.0	69.1	372	528	1,080	605	294	715	50.0	8,550	2,930	1,630
3	229	71.0	474	686	1,010	1,370	410	1,450	50.9	9,540	3,930	944
4	468	63.9	838	934	374	1,660	989	759	46.9	9,470	5,340	592
5	520	180	1,380	763	197	1,480	1,610	275	369	8,300	6,340	735
6	593	1,310	1,580	708	129	821	1,200	437	361	7,360	7,230	544
7	368	1,440	1,660	549	258	838	840	568	129	7,110	7,760	321
8	321	745	1,420	223	622	601	574	610	71.3	7,350	7,960	270
9	251	1,130	1,130	134	883	540	450	618	55.8	7,330	8,030	221
10	192	1,190	1,030	173	446	307	434	376	43.9	7,130	7,940	283
11	355	908	823	206	207	293	419	278	34.4	6,730	7,250	359
12	288	778	854	219	370	549	343	199	23.6	6,030	6,080	815
13	209	768	809	109	1,380	343	207	194	16.5	5,190	5,080	756
14	94.6	732	719	73.2	2,620	229	169	236	15.8	4,500	4,560	768
15	80.4	769	380	62.5	2,090	249	188	300	20.9	4,300	4,250	821
16	121	702	342	57.0	1,250	298	197	380	289	4,150	3,800	792
17	253	568	507	90.6	452	457	309	389	931	4,020	3,720	783
18	236	547	672	401	296	604	372	1,230	2,390	3,930	4,060	895
19	257	790	1,180	386	358	1,050	241	1,130	3,760	3,700	4,170	871
20	246	996	1,370	220	445	1,150	210	189	6,600	3,400	3,910	517
21	257	1,060	1,370	128	409	874	204	428	7,920	3,260	3,710	413
22	244	1,060	1,230	73.2	775	809	281	592	8,120	3,250	3,670	519
23	191	860	1,200	161	1,090	754	309	353	8,290	3,250	3,400	556
24	120	602	1,270	391	682	573	356	140	8,380	2,590	3,730	922
25	147	450	1,090	562	268	441	494	107	8,110	772	3,450	1,240
26	201	386	1,270	547	248	421	363	82.7	8,010	130	2,770	1,640
27	145	364	1,290	408	343	575	325	66.3	7,950	150	2,680	1,100
28	106	287	1,070	127	305	439	280	62.5	8,360	174	2,620	227
29	87.2	248	740	280	511	374	337	56.6	8,080	134	2,130	99.1
30	67.1	560	450	450	686	380	327	46.7	7,990	388	1,870	25.9
31	62.7	531		613			418	46.3		1,250		22.7
Sum	6,876.1	19,139.7	29,397	10,042.5	20,809	19,726	13,519	12,771.1	96,530.6	141,538	136,540	21,441.7

Month	Extreme Gage Feet		Extreme Second-Foot				Average Second-Foot	Total Acre-Feet	Period 1954-1988		
	High	Low	Day	High	Low	Average			Maximum	Minimum	
Jan.	36.05	34.87	6	666	130	61.5	222	13,639	49,098	319,002	2,920
Feb.	38.23	34.88	7	1,840	4	61.5	660	37,963	45,719	363,000	3,380
Mar.	37.89	35.34	7	1,720	1	227	948	58,308	37,929	360,000	2,560
Apr.	35.34	34.91	4	852	116	55.6	335	19,919	42,904	251,919	7,855
May	41.15	35.16	14	2,050	6	104	671	41,274	70,251	382,973	16,873
June	37.94	35.18	4	1,730	11	152	658	39,126	78,221	525,330	16,100
July	37.87	34.74	5	1,690	113	164	436	26,815	74,121	447,886	4,690
Aug.	37.47	34.27	18	1,820	130	40.5	412	25,331	77,196	827,107	3,100
Sept.	55.18	34.08	28	8,480	13	11.2	3,220	191,466	138,258	638,757	7,710
Oct.	55.98	34.54	4	9,760	29	83.2	4,570	280,736	173,072	880,859	3,840
Nov.	53.78	36.44	9	8,050	1	1,450	4,550	270,823	82,979	662,000	5,640
Dec.	37.37	34.24	1	1,840	30	17.1	692	42,529	67,264	479,000	2,430
Yearly	55.98	34.08		9,760		11.2	1,440	1,047,929	937,012	2,743,424	145,520
	Meters		Cubic Meters per Second				Thousands of Cubic Meters				
	17.06	10.39		276		0.32	40.8	1,292,599	1,155,786	3,383,959	179,496

* Discharge measurement made on this day

! And other days

** Period 1954-1988

Q8-4749.00 DIVERSIONS FROM THE RIO GRANDE
UNITED STATES SIDE, SAN BENITO TO BROWNSVILLE

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

During 1988, 89,616 irrigable acres (36,267 ha) and several towns and rural homes were allotted Rio Grande water in the river reach between the gaging stations near San Benito and Brownsville. Such irrigable area was 12.4% of the total irrigable acres (ha) below Falcon Dam allotted Rio Grande water.

The total diversion during 1988 in this river reach was 115,695 acre-feet (142,707,000 m³), or 9.8% of the total water diverted from the Rio Grande below Falcon Dam. About 90% of the water diverted in this river reach was determined by the International Boundary and Water Commission through records of discharge obtained by means of flow meters and by deflection meters developed by the Commission. The records for the rest of these diversions were furnished by the Rio Grande Watermaster and were determined from records of discharge obtained by means of flow meters. More than one crop per year is often grown on parts of this land.

EXTREME FLOWS FROM RECORDS:

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

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	30.6	52.8	50.4	43.3	275	575	376	331	59.4	45.8	52.8	58.5
2	24.6	29.3	25.2	59.9	380	631	351	363	63.2	53.4	176	64.8
3	17.0	36.4	210	45.1	408	473	295	383	54.7	108	302	59.5
4	53.6	23.5	35.4	29.6	440	35.4	304	389	73.9	144	228	58.1
5	27.8	16.4	16.1	57.5	424	228	311	318	88.2	198	45.2	27.1
6	190	43.6	37.4	252	378	364	271	317	199	133	40.6	286
7	137	24.1	19.5	324	297	386	261	295	267	68.4	42.7	64.5
8	29.1	17.1	36.5	65.3	316	347	273	301	130	63.5	62.5	92.6
9	20.3	38.3	43.5	33.9	358	292	258	298	52.8	60.3	74.7	106
10	47.8	23.1	212	52.4	331	298	228	295	51.4	143	76.5	60.5
11	35.2	35.6	149	35.9	322	313	236	292	44.2	337	77.8	64.1
12	33.2	22.8	30.5	55.3	240	322	225	286	49.1	286	62.0	71.0
13	54.8	17.0	51.9	42.5	262	347	243	150	49.6	102	54.2	85.5
14	34.9	41.8	31.4	203	300	371	237	91.3	43.3	212	243	107
15	56.8	20.2	29.4	147	294	301	228	227	8.2	126	233	94.6
16	36.4	33.8	60.5	73.1	292	285	223	275	19.6	86.4	90.0	110
17	33.9	25.0	295	74.8	310	234	204	170	13.5	266	38.5	71.3
18	48.0	21.0	139	65.2	349	224	286	83.4	12.1	413	38.8	59.0
19	40.3	47.9	30.5	219	366	282	352	110	49.0	116	40.0	217
20	31.0	48.3	51.9	362	290	318	267	85.7	37.4	228	39.4	333
21	47.0	6.7	197	364	333	274	262	43.5	35.5	306	133	247
22	27.8	17.7	222	202	337	197	287	169	37.8	252	267	59.9
23	33.4	39.2	79.9	81.6	419	262	286	286	36.5	227	308	57.7
24	19.9	60.6	85.1	45.8	516	304	282	118	33.0	186	64.3	84.3
25	16.5	78.3	86.8	255	502	286	289	125	30.5	82.9	46.8	89.6
26	46.2	35.6	60.6	430	392	240	259	110	34.3	75.1	49.0	97.2
27	22.3	30.5	64.7	527	380	193	250	73.7	33.9	81.4	36.0	52.9
28	19.6	52.4	77.1	484	381	105	249	44.4	27.9	84.9	50.4	51.2
29	39.6	17.0	23.9	298	338	88.6	249	57.5	5.2	61.9	79.5	116
30	28.6		52.5	294	430	178	259	49.8	35.8	27.7	81.8	329
31	16.6		59.9		472		243	45.6		39.5		119
Sum	1,299.8	956.0	2,958.1	5,222.2	11,232	9,072.6	8,344	6,182.9	1,676.0	4,614.2	3,133.5	3,637.8

Current Year 1988						Period 1954-1988					
Month	Average Rainfall Inches**		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	1988	1957-1988	High		Low	Average			Maximum	Minimum	
			Day	Day							
Jan.	4.12	1.87	6	190	25	16.5	41.9	2,578	9,997	24,568	1,290
Feb.	2.08	1.74	25	78.3	21	6.7	33.0	1,896	6,852	20,626	1,028
Mar.	2.18	.73	4	35.4	7	19.5	95.4	5,867	6,801	15,200	705
Apr.	.02	1.70	27	527	4	29.5	174	10,358	11,672	27,753	2,180
May	.80	2.91	24	516	13	262	362	22,278	15,133	28,027	1,586
June	2.19	3.06	2	631	29	88.6	302	17,995	16,276	32,279	3,739
July	.59	2.02	1	376	17	204	269	16,550	12,079	24,083	3,687
Aug.	3.02	2.96	4	389	21	43.5	199	12,264	8,811	14,556	3,260
Sept.	6.20	5.68	7	267	29	5.2	55.9	3,324	5,995	12,600	876
Oct.	1.67	3.01	18	413	30	27.7	149	9,152	5,825	11,300	1,591
Nov.	.17	1.59	23	308	27	36.0	104	6,215	4,715	9,021	1,796
Dec.	.05	1.54	20	333	28	51.2	117	7,215	5,364	11,200	2,014
Yearly	23.09	28.81		631		5.2	159	115,692	109,520	161,503	71,171
	Millimeters		Cubic Meters per Second				Thousands of Cubic Meters				
	586	732		17.9		0.15	4.50	142,704	135,091	199,211	87,788

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

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

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

RECORDS: Based on 29 discharge measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: 1934 through 1988.

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

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

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

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

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	126	91.4	243	531	41.9	167	114	158	36.8	7,870	447	1,470
2	142	90.1	230	503	102	138	99.0	159	38.3	7,970	1,610	1,330
3	119	79.5	254	522	437	181	74.0	290	57.9	8,320	2,330	1,260
4	177	89.7	182	622	430	746	107	686	51.4	8,630	3,130	977
5	367	99.8	373	743	171	1,100	544	412	37.4	8,520	4,420	712
6	449	150	993	671	32.7	961	1,000	117	115	7,930	5,520	493
7	362	943	1,260	344	.9	456	868	40.6	180	7,310	6,380	564
8	393	1,060	1,290	466	0	407	602	133	70.4	7,150	6,860	433
9	319	768	1,120	351	104	325	412	212	15.4	7,190	7,080	407
10	274	956	885	258	433	269	323	249	13.1	7,100	7,130	327
11	210	996	664	193	273	124	270	132	10.5	6,720	6,960	338
12	248	839	712	198	129	31.0	238	56.0	9.1	6,050	6,460	395
13	297	740	747	222	182	146	170	17.1	8.1	5,490	5,590	641
14	235	707	720	150	1,070	106	99.1	36.5	6.1	4,980	4,850	677
15	148	688	621	52.2	1,910	21.1	36.7	98.5	18.0	4,570	4,180	723
16	224	684	438	16.1	1,450	3.5	15.1	84.0	430	4,260	3,750	792
17	153	678	344	11.9	886	5.4	14.3	146	635	3,850	3,280	778
18	185	605	310	20.6	393	150	59.4	370	1,140	3,510	3,100	781
19	240	564	547	178	173	263	91.1	1,020	2,220	3,580	3,210	880
20	208	703	896	167	200	514	31.6	972	3,640	3,430	3,180	842
21	246	819	1,050	44.1	207	614	12.9	411	5,770	3,030	3,150	504
22	249	885	842	3.9	223	608	8.2	394	6,880	2,880	3,190	410
23	239	864	883	1.8	416	528	5.0	360	7,320	2,870	2,950	502
24	221	751	925	61.4	527	446	20.8	305	7,520	2,760	2,990	508
25	157	567	974	227	262	329	65.4	173	7,610	1,860	3,260	760
26	151	490	922	197	53.4	236	178	112	7,740	1,100	3,180	1,030
27	169	396	987	96.2	18.5	206	156	113	7,800	661	2,790	1,240
28	150	356	960	12.9	35.4	361	125	87.1	7,940	371	2,340	989
29	137	300	785	2.0	27.7	359	103	94.3	8,030	320	2,000	475
30	128	701	701	1.4	38.2	239	102	85.3	7,920	292	1,660	189
31	102		592		175		119	69.4		278		51.6
Sum	6,825	16,959.5	22,450	6,827.5	10,351.7	10,040.0	6,063.6	7,592.8	83,262.5	140,852	116,977	21,478.6

Month	Current Year 1988						Period 1954-1988					
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet			
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum	
Jan.	5.70	3.02	6	532	3	105	220	13,537	39,762	330,268	283	
Feb.	8.88	2.91	7	1,230	1	74.0	585	33,639	39,834	362,000	1,060	
Mar.	9.30	3.71	7	1,320	4	161	724	44,529	32,476	361,000	2,050	
Apr.	7.02	1.80	6	767	30	0	228	13,542	30,007	219,590	875	
May	11.19	1.77	15	1,880	1	0	334	20,532	54,270	355,795	4,140	
June	8.36	1.87	5	1,140	116	1.0	335	19,914	60,957	486,551	2,430	
July	8.12	1.95	6	1,060	23	4.0	196	12,027	64,389	437,546	1,120	
Aug.	8.76	2.05	19	1,270	113	12.0	245	15,060	67,199	812,033	218	
Sept.	25.20	2.12	28	8,150	15	3.0	2,780	165,149	124,574	635,722	950	
Oct.	26.12	4.31	4	8,690	31		278	4,540	279,376	162,103	887,207	756
Nov.	24.01	4.31	9	7,200	1		276	3,900	232,020	77,844	528,000	1,290
Dec.	10.52	2.43	1	1,570	31	25.0	693	42,602	64,990	480,000	524	
Yearly	26.12	1.77		8,690		0	1,230	891,927	818,405	2,645,434	30,596	
	Meters		Cubic Meters per Second				Thousands of Cubic Meters					
	7.96	0.54		246		0	34.8	1,100,174	1,009,486	3,263,090	37,740	

* Discharge measurement made on this day

! And other days

** Period 1954-1988

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

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

During 1988, 4,212 irrigable acres (1,705 ha) were allotted Rio Grande water in the river reach between the gaging station near Brownsville and the mouth of the Rio Grande. Such irrigable area was 0.6% of the total irrigable acres (ha) below Falcon Dam allotted Rio Grande water.

The total diversion during 1988 in this river reach was 2,626 acre-feet (3,239,000 m³), or 0.2% of the total water diverted from the Rio Grande below Falcon Dam. All records of diversions in this river reach, which were determined by means of flow meters, were furnished by the Rio Grande Watermaster. More than one crop per year is often grown on parts of this land.

EXTREME FLOWS FROM RECORDS:

		Average Flow in Second-Feet (Cubic Meters per Second)		
Daily:	Max. 67.7 (1.92)	May 1, 1988	Min. 0	Frequently
Monthly:	Max. 23.4 (0.66)	June 1965	Min. 0	Occasionally
Yearly:	Max. 7.0 (0.20)	1965	Min. 0.7 (0.02)	1976

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	0	0.2	6.3	16.6	9.9	0	0.1	0.4	0.1	11.7
2	0	0	0	.2	4.3	18.9	8.0	0	.1	.1	.1	11.7
3	0	0	0	.2	4.3	12.4	8.0	0	.1	.1	.1	11.7
4	0	0	2.6	.2	4.3	10.9	5.2	0	.1	.1	1.3	9.0
5	0	0	2.6	.2	11.1	6.3	1.6	3.9	.1	.1	1.3	3.6
6	0	0	2.6	.2	18.2	7.8	1.6	3.9	.1	.1	1.3	4.9
7	0	0	2.6	.2	16.0	14.3	1.6	3.9	.1	.1	1.3	4.9
8	0	0	0	.2	9.6	21.4	2.0	3.9	.1	.1	.1	7.8
9	0	0	0	.2	8.2	12.8	7.5	0	.1	.1	.1	5.1
10	0	0	0	.2	8.2	20.9	7.5	1.2	.1	.1	.1	5.1
11	0	0	0	.2	7.8	13.0	8.3	1.2	0	.1	3.3	.1
12	2.8	2.6	0	.2	10.3	10.9	10.9	1.2	0	.1	3.3	9.6
13	6.9	2.6	0	.2	14.8	10.9	16.3	1.2	0	.1	3.3	9.6
14	6.9	2.6	0	2.3	13.7	11.0	17.9	.1	0	.1	.1	9.6
15	4.1	2.6	0	2.3	8.9	9.9	17.9	.1	0	2.3	.1	10.3
16	0	2.6	0	2.3	16.6	9.9	9.7	.1	0	2.3	.1	10.3
17	0	0	0	2.3	15.6	4.2	7.8	.1	2.8	2.8	.1	3.5
18	0	0	0	2.3	15.6	4.2	1.9	.1	2.9	2.8	.1	.1
19	0	0	0	.2	17.0	4.2	2.4	.1	2.9	2.8	.1	10.6
20	0	0	1.3	6.1	15.6	6.5	1.6	.1	.1	2.6	.1	12.6
21	0	0	1.3	6.1	14.3	4.0	1.6	.1	.1	2.6	.1	13.5
22	0	0	0	6.1	12.6	6.7	1.6	0	.1	2.6	.1	13.5
23	0	0	0	6.1	21.3	6.7	1.6	0	.1	2.6	.1	10.4
24	0	0	0	4.1	21.3	11.4	1.6	0	.1	2.6	.1	5.6
25	0	2.9	0	.2	20.6	11.4	1.6	0	0	2.6	.1	5.9
26	0	2.9	0	1.3	29.5	2.7	1.6	0	0	2.6	.1	5.9
27	0	2.9	0	5.3	29.5	2.7	3.3	0	0	.1	0	10.2
28	0	0	0	7.1	29.5	2.7	3.3	0	0	.1	0	10.2
29	0	0	0	9.8	0	2.7	3.3	0	0	.1	0	10.2
30	0	0	0	12.0	0	2.7	3.3	0	0	0	0	10.2
31	0	0	0	0	0	2.7	1.5	0	0	0	0	3.4
Sum	20.7	21.7	13.0	78.5	405.0	280.7	171.9	21.2	10.1	33.2	17.0	250.8

Current Year 1988							Period 1957-1988				
Month	Average Rainfall Inches**		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	1988	1957-1988	Day	High	Day	Low			Average	Maximum	Minimum
Jan.	4.61	1.91	113	6.9	1	0	0.7	41.1	350	1,275	0
Feb.	2.12	1.71	125	2.9	1	0	.7	43.0	217	902	0
Mar.	1.88	.65	14	2.6	1	0	.4	25.8	128	634	0
Apr.	0	1.74	30	12.0	1	.2	2.6	156	253	962	0
May	.24	2.71	126	29.5	129	0	13.1	803	393	1,356	0
June	2.65	2.89	8	21.4	126	2.7	9.4	557	421	1,393	0
July	.74	1.97	114	17.9	31	1.5	5.5	341	190	778	0
Aug.	2.95	2.90	15	3.9	1	1	.7	42.0	108	317	13.7
Sept.	6.01	5.84	118	2.9	111	0	.3	20.0	52.0	190	0
Oct.	1.83	3.00	117	2.8	130	0	1.1	65.9	61.0	218	0
Nov.	.05	1.69	111	3.3	127	0	.6	33.7	59.0	252	0
Dec.	.02	1.59	121	13.5	111	.1	8.1	497	90.0	497	0
Yearly	23.10	28.60		29.5		0	3.6	2,626	2,328	5,036	543
	Millimeters		Cubic Meters per Second				Thousands of Cubic Meters				
	587	726		0.84		0	0.10	3,239	2,872	6,212	670

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

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

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

In 1988, 722,473 irrigable acres (292,378 ha), several towns and many rural homes were allotted Rio Grande water between Falcon Dam and the Gulf of Mexico. The total diversion from the river was 1,187,489 acre-feet (1,464,743,000 m3). About 91% of the water diverted was determined through records of discharge obtained by means of flow meters, by open channel rating stations, and by deflection meters developed by the Commission. The records for the balance of the diversions were furnished by the Rio Grande Watermaster and were determined from records of discharge obtained by means of flow meters. Drainage from more than 90% of this area does not return to the Rio Grande, but some of it is reused within the area. More than one crop per year is often grown on parts of this land.

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

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

EXTREME FLOWS FROM RECORDS:

Average Flow in Second-Feet (Cubic Meters per Second)			
Daily:	Max. 5,380 (152)	June 20 & 21, 1950	Min. 2.8 (0.08) Aug. 10, 1980
Monthly:	Max. 4,350 (123)	June 1950	Min. 102 (2.89) March 1957
Yearly:	Max. 1,830 (51.7)	1982	Min. 880 (24.9) 1970

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	871	717	1,250	1,430	3,150	4,340	3,870	2,260	860	840	1,960	1,430
2	920	763	1,180	1,170	3,630	4,170	3,260	2,350	750	916	1,730	1,380
3	1,060	893	1,550	1,130	3,680	2,980	3,020	2,370	358	1,280	1,830	1,100
4	1,370	855	1,490	1,430	3,740	2,580	3,050	1,920	299	1,330	1,680	1,110
5	1,100	564	859	1,640	3,750	2,540	3,290	1,730	560	1,410	1,290	1,600
6	1,230	355	801	1,880	3,600	2,630	3,160	1,340	850	1,280	997	1,660
7	1,020	347	1,190	2,020	3,340	2,970	2,850	1,060	973	1,280	1,250	1,490
8	746	433	1,580	1,560	3,210	3,120	2,650	1,670	925	1,080	1,310	1,640
9	717	363	1,640	1,180	3,470	3,060	2,360	1,840	779	1,060	1,570	1,490
10	553	385	1,860	1,260	3,720	3,220	1,810	1,880	599	1,310	1,410	867
11	675	366	1,680	1,460	3,750	2,740	2,020	1,910	562	1,860	1,430	835
12	524	416	1,200	1,620	3,200	3,140	2,370	1,840	890	1,700	1,060	1,270
13	744	318	1,270	1,560	2,590	3,760	2,430	1,510	883	1,560	955	1,450
14	893	293	1,710	1,640	2,380	3,940	2,340	1,360	822	1,730	1,590	1,470
15	768	306	1,780	1,570	2,150	3,930	2,370	2,050	304	1,460	1,780	1,480
16	244	440	1,740	1,070	2,430	3,780	2,160	1,930	95.1	1,260	1,560	1,450
17	456	500	1,750	1,110	2,400	3,340	2,210	1,580	49.8	1,870	1,470	1,030
18	500	516	1,190	1,790	2,400	2,760	2,610	1,180	81.2	2,120	1,520	1,090
19	520	422	716	2,150	2,460	2,640	2,750	872	466	1,920	1,100	1,580
20	329	239	684	2,340	2,400	3,040	2,690	820	888	2,000	1,100	2,050
21	236	218	1,190	2,380	2,270	3,140	2,340	651	814	2,080	1,710	1,650
22	223	529	1,350	2,140	2,210	2,950	2,220	1,000	788	1,700	1,840	1,480
23	166	703	1,120	1,890	2,790	2,870	2,130	1,130	816	1,470	1,470	1,110
24	212	759	1,240	1,950	3,200	2,930	2,140	810	622	2,080	598	624
25	354	806	1,200	2,870	3,270	2,770	2,370	840	878	1,980	1,030	523
26	427	696	971	3,240	3,080	2,670	2,410	890	941	2,120	730	959
27	477	520	936	3,480	3,070	2,930	2,540	846	1,030	1,950	696	1,700
28	563	587	1,410	3,520	3,270	3,060	2,350	621	1,220	2,180	1,230	1,950
29	568	1,020	1,460	3,210	3,080	3,080	1,920	948	1,290	1,850	1,440	2,050
30	433		1,410	3,180	3,440	3,270	1,550	954	1,110	1,570	1,390	2,060
31	391		1,410	3,560			1,740	831		1,810		1,470
Sum	19,290	15,329	40,817	58,870	94,790	94,350	76,980	42,993	21,503.1	50,056	40,726	43,008
Current Year 1988												
Period 1957-1988												
Month	Average Rainfall Inches**		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet			
	1988	1957-1988	Day	High	Low				Average	Maximum	Minimum	
	Day	Day			Day							
Jan.	2.31	1.51	4	1,370	23	166	622	38,261	71,039	182,403	9,717	
Feb.	1.78	1.47	29	1,020	21	218	529	30,405	50,436	126,230	11,785	
Mar.	1.49	.70	10	1,860	19	716	1,320	80,959	71,341	149,000	6,280	
Apr.	.46	1.48	28	3,520	16	1,070	1,960	116,767	110,280	209,970	25,100	
May	1.50	2.77	15	3,750	15	2,150	3,060	188,013	117,120	228,833	16,071	
June	1.30	2.84	1	4,340	5	2,540	3,150	187,140	131,812	259,000	26,487	
July	1.77	1.74	1	3,870	30	1,550	2,480	152,688	104,837	196,205	31,502	
Aug.	2.96	2.47	3	2,370	28	621	1,390	85,275	83,062	143,286	36,208	
Sept.	5.59	4.50	29	1,290	17	50.0	717	42,651	58,480	136,000	12,709	
Oct.	1.51	2.64	28	2,180	1	840	1,610	99,285	62,842	124,598	12,991	
Nov.	.13	1.23	1	1,960	24	598	1,360	80,779	51,194	97,969	12,674	
Dec.	.07	1.15	30	2,060	25	523	1,390	85,305	50,098	85,305	14,034	
Yearly	20.67	24.50		4,340		50.0	1,640	1,187,528	962,541	1,322,498	636,835	
Millimeters												
Cubic Meters per Second												
Thousands of Cubic Meters												
530 622 123 1.42 46.4 1,464,792 1,187,275 1,631,275 785,523												

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

OUTFALLS FROM SEWERS INTO THE RIO GRANDE

IN ACRE-FEET

EL PASO SEWAGE OUTFALL

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

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Yearly
1988	1,542	1,489	1,590	1,481	1,204	1,253	1,434	1,590	1,374	1,360	1,836	1,695	17,848
* Average	2,040	1,907	2,043	1,948	2,035	2,062	2,187	2,254	2,152	2,092	2,003	1,999	24,722

EAGLE PASS SEWAGE OUTFALL

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

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Yearly
1988	153	143	152	149	145	127	142	160	161	155	172	155	1,814
* Average	176	149	168	167	178	177	180	175	173	190	172	178	2,083

LAREDO SEWAGE OUTFALL

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

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Yearly
1988	989	940	978	989	1,057	1,057	1,110	1,020	1,020	1,018	943	980	12,101
* Average	846	762	833	826	921	900	929	932	941	944	878	855	10,567

BROWNSVILLE SEWAGE OUTFALL

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

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Yearly
1988	612	564	585	548	563	561	569	559	577	554	530	508	6,730
* Average	652	590	633	608	667	654	676	660	690	671	606	614	7,721

* Period averages are for past 10 years

MUNICIPAL AND INDUSTRIAL WATER USES

IN ACRE-FEET

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

All Rio Grande water used by U. S. municipalities below Falcon Dam is also included in the figures shown under "Diversion from the Rio Grande - United States Side..." (by river reaches and total below Falcon Dam) on pages 63, 67, 74, 75, 77, 79, and 80 herein. Population data was provided by the Chamber of Commerce for each city in the United States, except El Paso, which was provided by the City Planning Office; Falcon Village, estimated by the International Boundary and Water Commission; Del Rio, by the Middle Rio Grande Development Council; Laughlin Air Force Base, by Laughlin 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. 519,690)				DEL RIO (Pop. 34,000)			
	1988	Period 1979-1988			1988	Period 1979-1988		
		Average	Maximum	Minimum		Average	Maximum	Minimum
Jan.	0	59.0	337	0	837	589	837	396
Feb.	0	156	477	0	836	574	836	378
Mar.	255	561	1,256	48.0	1,211	798	1,211	495
Apr.	1,906	1,720	2,723	551	1,390	917	1,390	546
May	3,864	3,396	3,905	1,903	1,365	910	1,365	739
June	3,891	3,712	4,216	2,995	611	923	1,358	611
July	4,100	3,929	4,409	3,112	1,285	1,250	1,618	764
Aug.	3,861	3,669	4,272	2,907	1,154	1,309	1,883	824
Sept.	4,042	3,195	4,251	1,778	1,205	978	1,260	702
Oct.	1,538	611	1,794	0	963	765	1,113	452
Nov.	0	88.0	334	0	835	630	861	361
Dec.	0	49.0	329	0	675	592	757	446
Yearly	23,457	21,146	25,588	14,569	12,367	10,235	12,367	8,036

Month	EAGLE PASS (Pop. 26,000)				LAREDO (Pop. 135,000)			
	1988	Period 1979-1988			1988	Period 1979-1988		
		Average	Maximum	Minimum		Average	Maximum	Minimum
Jan.	238	255	297	191	1,520	1,415	1,524	1,221
Feb.	245	248	294	195	1,391	1,301	1,421	1,123
Mar.	323	305	354	251	1,827	1,668	1,900	1,464
Apr.	354	331	401	268	2,018	1,791	2,042	1,447
May	362	330	390	248	2,375	1,863	2,375	1,640
June	359	354	429	245	2,676	2,010	2,676	1,638
July	354	445	555	326	2,480	2,346	2,694	2,019
Aug.	340	456	564	340	2,236	2,392	2,902	2,108
Sept.	338	409	545	274	2,032	1,993	2,224	1,793
Oct.	298	345	507	217	2,089	1,791	2,089	1,513
Nov.	269	282	345	196	1,804	1,607	1,804	1,426
Dec.	258	261	297	189	1,821	1,520	1,821	1,336
Yearly	3,738	4,021	4,611	3,171	24,269	21,697	24,269	20,317

Month	LAREDO POWER STATION				RIO BRAVO (Pop. 3,000)			
	1988	Period 1979-1988			1988	Period 1984-1988		
		Average	Maximum	Minimum		Average	Maximum	Minimum
Jan.	61.0	61.8	113	30.0	14.4	14.0	29.0	4.5
Feb.	52.9	67.5	101	39.7	21.5	9.6	21.5	0
Mar.	98.8	79.9	105	44.8	22.6	12.7	22.6	.8
Apr.	103	94.7	133	54.4	25.4	15.8	25.4	4.3
May	127	107	137	73.4	17.2	15.4	26.3	5.5
June	199	138	199	80.4	26.7	14.6	26.7	8.5
July	132	141	176	101	16.1	11.6	16.1	4.7
Aug.	152	147	176	111	32.2	23.8	32.2	11.0
Sept.	163	119	163	75.6	23.6	20.6	24.4	9.9
Oct.	101	88.9	118	61.4	8.2	17.1	29.7	6.0
Nov.	65.3	64.0	101	30.3	15.5	16.4	25.4	3.3
Dec.	60.8	54.0	98.3	6.6	19.2	10.6	24.3	0
Yearly	1,316	1,163.0	1,432	776	243	182	246	92.4

MUNICIPAL AND INDUSTRIAL WATER USES

IN ACRE-FEET

In the United States

Month	SAN YGNACIO (Pop. 1,000)				NEW ZAPATA (Pop. 10,000)			
	1988	Period 1979-1988			1988	Period 1979-1988		
		Average	Maximum	Minimum		Average	Maximum	Minimum
Jan.	10.4	9.6	21.5	3.8	105	72.6	105	41.6
Feb.	13.5	9.8	18.7	3.8	91.1	74.1	109	45.7
Mar.	14.0	12.2	24.7	4.7	105	91.5	124	64.8
Apr.	18.5	13.9	26.6	4.8	202	112	202	66.5
May	26.2	13.6	26.2	4.7	124	95.7	124	73.6
June	22.2	13.7	23.4	6.3	143	105	143	70.4
July	14.2	14.9	27.8	7.6	146	121	151	84.4
Aug.	14.5	15.5	31.1	6.7	107	130	219	85.3
Sept.	14.1	14.0	20.4	4.6	116	106	141	55.6
Oct.	11.5	11.6	20.2	6.4	127	102	165	72.6
Nov.	10.8	10.3	18.0	4.7	40.5	83.6	111	40.5
Dec.	11.7	9.7	17.1	3.6	117	80.6	117	45.4
Yearly	182	149	245	63.8	1,424	1,174	1,457	780

Month	FALCON VILLAGE (Pop. 85)				ROMA (Pop. 4,500)			
	1988	Period 1979-1988			1988	Period 1979-1988		
		Average	Maximum	Minimum		Average	Maximum	Minimum
Jan.	5.6	8.6	10.6	5.6	94.7	72.7	94.7	29.1
Feb.	5.3	8.0	9.8	5.3	97.7	71.1	97.7	48.3
Mar.	5.3	9.5	11.3	5.3	119	88.5	119	42.4
Apr.	8.7	10.5	13.8	7.4	127	95.4	127	45.3
May	9.6	10.5	12.5	7.4	140	98.4	140	44.3
June	10.5	10.7	17.6	6.6	145	100	145	45.8
July	10.3	11.9	18.0	8.9	148	111	149	43.8
Aug.	8.8	12.5	15.6	8.8	143	114	145	48.2
Sept.	7.8	10.1	13.0	7.4	128	101	129	35.2
Oct.	8.3	10.1	11.6	8.3	130	93.5	130	39.6
Nov.	7.0	9.0	10.8	6.9	121	86.3	121	29.0
Dec.	7.3	8.9	10.7	6.7	122	81.3	122	25.1
Yearly	94.5	120	147	91.6	1,515	1,113	1,515	508

Month	RIO GRANDE CITY (Pop. 13,000)				BROWNSVILLE (Pop. 115,000)			
	1988	Period 1979-1988			1988	Period 1979-1988		
		Average	Maximum	Minimum		Average	Maximum	Minimum
Jan.	138	139	165	107	1,312	1,321	1,467	1,119
Feb.	109	137	190	101	1,165	1,193	1,322	1,011
Mar.	154	171	204	148	1,365	1,421	1,654	1,270
Apr.	109	175	226	109	1,460	1,538	1,753	1,264
May	98.0	195	354	98.0	1,672	1,556	1,776	1,296
June	182	194	278	143	1,634	1,592	1,907	1,433
July	182	211	246	180	1,711	1,808	2,221	1,481
Aug.	158	209	269	158	1,778	1,846	2,014	1,518
Sept.	122	196	297	122	1,551	1,558	1,370	1,270
Oct.	140	188	289	140	1,707	1,566	1,718	1,331
Nov.	129	157	189	129	1,642	1,461	1,642	1,330
Dec.	134	147	169	109	1,521	1,373	1,521	1,272
Yearly	1,655	2,119	2,493	1,655	18,518	18,233	19,945	16,699

MUNICIPAL AND INDUSTRIAL WATER USES

IN ACRE-FEET

IN MEXICO

Month	CD. ACUNA, COAHUILA				PIEDRAS NEGRAS, COAHUILA			
	1988	Period 1979 - 1988			1988	Period 1979 - 1988		
		Average	Maximum	Minimum		Average	Maximum	Minimum
Jan.	235	225	251	198	629	523	647	318
Feb.	239	214	239	199	606	471	606	279
Mar.	251	231	251	211	664	535	664	359
Apr.	244	224	244	197	689	519	689	297
May	252	230	252	197	764	549	764	295
June	245	228	245	210	804	558	804	285
July	252	235	259	220	800	600	800	302
Aug.	244	236	256	221	742	656	854	348
Sept.	244	230	247	215	742	619	774	321
Oct.	250	235	251	222	733	600	737	371
Nov.	248	228	248	214	720	557	720	351
Dec.	256	236	256	219	690	560	690	361
Yearly	2,960	2,752	2,960	2,561	8,583	6,747	8,583	4,391

Month	NUEVO LAREDO, TAMPS.				NUEVA CD. GUERRERO, TAMPS.			
	1988	Period 1979 - 1988			1988	Period 1979 - 1988		
		Average	Maximum	Minimum		Average	Maximum	Minimum
Jan.	2,054	2,187	2,713	1,948	46.2	45.1	59.3	34.0
Feb.	2,013	2,024	2,581	1,592	26.8	40.4	53.8	25.8
Mar.	1,924	2,308	2,913	1,924	31.6	42.4	59.6	31.6
Apr.	1,901	2,350	2,864	1,901	37.4	45.5	60.0	34.5
May	1,470	2,454	2,913	1,470	53.8	47.5	58.4	34.9
June	1,626	2,482	2,933	1,626	39.6	48.9	76.4	33.6
July	1,825	2,634	2,942	1,825	35.6	43.7	58.4	35.6
Aug.	1,864	2,649	2,950	1,864	42.4	43.5	55.5	35.8
Sept.	1,922	2,510	2,875	1,922	37.0	41.4	56.4	33.5
Oct.	1,822	2,497	2,954	1,822	54.8	45.3	54.8	33.4
Nov.	1,724	2,428	2,850	1,724	43.2	43.4	56.7	32.8
Dec.	1,810	2,343	2,800	1,810	39.9	44.0	58.5	33.1
Yearly	21,955	28,866	33,702	21,955	488	531	641	459

Month	CD. MIER, TAMPS.				CD. MIGUEL ALEMAN, TAMPS.			
	1988	Period 1979 - 1988			1988	Period 1979 - 1988		
		Average	Maximum	Minimum		Average	Maximum	Minimum
Jan.	36.3	43.0	55.5	31.4	129	70.5	129	39.8
Feb.	29.4	35.0	57.1	11.2	126	74.2	126	35.3
Mar.	37.4	48.3	76.5	28.7	131	88.1	131	42.4
Apr.	40.2	47.0	61.0	35.3	132	85.8	132	41.5
May	43.6	48.2	59.7	33.0	141	92.3	141	42.0
June	38.7	43.4	59.3	34.1	138	95.1	138	48.5
July	29.8	43.1	64.5	29.8	152	98.0	152	47.2
Aug.	39.9	48.6	63.2	33.2	148	97.9	148	49.2
Sept.	51.4	45.0	58.5	33.0	113	91.2	131	47.4
Oct.	43.0	52.9	101.0	35.0	150	91.6	150	43.7
Nov.	39.4	45.4	60.4	30.3	142	89.4	142	46.3
Dec.	38.3	42.7	57.2	35.4	143	83.0	143	38.4
Yearly	467	543	704	413	1,645	1,057	1,645	1,221

STORED WATER IN LARGE RESERVOIRS OF THE RIO GRANDE BASIN

IN THOUSANDS OF ACRE-FEET

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

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

IN THE UNITED STATES

Month	RIO GRANDE (Capacity 51.1)		CONTINENTAL (Capacity 22.7)		SANTA MARIA (Capacity 45.1)		TERRACE (Capacity 17.2)		MOUNTAIN HOME (Capacity 18.6)	
	1988	Average 1927-1988	1988	Average 1928-1988	1988	Average 1928-1988	1988	Average 1925-1988	1988	Average 1924-1988
Jan.	7.4	14.5	11.4	5.0	13.4	7.8	5.2	4.2	3.3	3.7
Feb.	8.4	15.6	12.1	5.4	13.5	8.3	6.1	4.6	3.6	4.0
Mar.	9.4	17.0	12.8	5.9	13.6	8.9	7.2	5.0	3.8	4.4
Apr.	13.6	17.7	12.9	6.4	15.1	10.0	8.1	5.8	4.4	4.9
May	14.7	22.1	13.2	8.1	15.4	13.2	7.9	7.2	4.8	6.5
June	6.2	23.7	6.5	8.4	15.4	14.8	7.2	8.5	5.2	6.9
July	5.9	14.0	0	5.8	13.2	10.6	3.1	5.8	3.2	5.1
Aug.	6.6	8.1	0	4.0	9.9	6.7	2.1	3.8	1.9	3.1
Sep.	6.3	8.4	0.6	3.8	9.1	6.4	1.6	3.3	2.2	2.8
Oct.	6.4	9.2	1.4	3.7	8.3	6.5	1.5	3.4	2.3	2.8
Nov.	9.3	11.5	2.1	4.0	8.5	7.2	2.1	3.5	2.7	3.1
Dec.	11.6	13.1	2.8	4.6	8.2	7.6	2.8	4.0	2.9	3.4
Avg.	8.8	14.6	6.3	5.4	12.0	9.0	4.6	4.9	3.4	4.2
Max.	14.7	54.8	13.2	26.7	15.4	42.1	8.1	17.7	5.2	16.4
Min.	5.9	0	0	0	8.2	0	1.5	0	1.9	0

Month	SANCHEZ (Capacity 103.2)		PLATORO (Capacity 60.0)		COSTILLA (Capacity 15.7)		HERON (Capacity 401.3)		EL VADO (Capacity 186.3)	
	1988	Average 1927-1988	1988	Average 1952-1988	1988	Average 1922-1988	1988	Average 1971-1988	1988	Average 1935-1988
Jan.	45.8	13.7	43.5	13.1	5.3	4.6	393.5	223.1	118.5	52.5
Feb.	44.2	13.7	43.2	12.8	5.7	5.0	391.0	219.7	118.8	50.8
Mar.	43.5	14.3	43.3	13.0	6.3	5.5	385.6	216.0	120.1	51.9
Apr.	43.2	15.5	45.1	13.1	7.2	6.6	346.3	219.3	170.7	83.3
May	39.2	18.8	45.0	15.0	7.5	8.4	366.6	249.2	178.1	118.5
June	35.3	19.0	43.7	21.1	5.7	7.9	389.5	277.4	179.6	111.9
July	32.4	14.9	35.6	20.1	3.9	5.3	392.5	280.8	164.5	96.2
Aug.	30.0	12.6	30.0	18.7	1.8	3.5	396.1	279.9	159.1	78.2
Sep.	31.9	12.7	29.2	18.8	2.1	3.1	394.8	277.4	151.7	67.1
Oct.	32.1	13.3	29.0	18.6	2.9	3.5	392.9	277.0	149.7	63.0
Nov.	32.2	13.4	29.1	14.9	3.5	3.9	377.0	274.7	161.1	55.1
Dec.	32.5	13.9	29.3	14.8	4.2	4.2	369.4	247.5	164.7	54.9
Avg.	36.9	14.7	37.2	16.2	4.7	5.1	382.9	253.5	153.1	73.6
Max.	45.8	62.4	45.1	55.3	7.5	15.1	396.1	401.3	179.6	203.5
Min.	30.0	0	29.0	0	1.8	0	346.3	0.6	118.5	0

STORED WATER IN LARGE RESERVOIRS OF THE RIO GRANDE BASIN

IN THOUSANDS OF ACRE-FEET

IN THE UNITED STATES

Month	ABIQUIU (Capacity 1,212.0)		COCHITI (Capacity 505.7)		BLUEWATER (Capacity 43.5)		ELEPHANT BUTTE (Capacity 2,110.3)		CABALLO (Capacity 331.5)	
	1988	Average 1965-1988	1988	Average 1973-1988	1988	Average 1927-1988	1988	Average 1915-1988	1988	Average 1938-1988
Jan.	183.2	57.8	221.9	62.8	19.0	8.9	2,092.6	809.5	232.0	101.9
Feb.	190.9	54.5	172.9	55.6	19.2	9.5	2,091.2	813.4	292.7	126.9
Mar.	183.8	51.8	123.3	54.0	20.2	13.3	2,075.4	796.6	243.0	105.1
Apr.	183.4	60.1	84.4	65.2	20.6	16.9	2,069.2	790.5	254.9	103.9
May	188.1	105.3	55.9	93.8	18.9	15.2	2,066.6	875.3	221.1	109.1
June	181.1	101.0	48.9	106.9	14.9	12.8	2,011.6	904.2	169.6	95.9
July	181.8	88.5	48.2	76.2	12.0	11.3	1,951.1	853.0	126.8	77.5
Aug.	184.3	84.8	57.9	65.4	11.6	10.1	1,912.9	799.9	142.1	53.1
Sep.	186.2	82.0	50.2	64.5	10.8	9.6	1,983.0	777.7	83.3	40.6
Oct.	185.2	79.2	52.2	68.6	10.3	9.2	1,985.2	779.3	74.9	51.9
Nov.	183.2	70.3	50.7	67.8	10.2	9.0	2,009.1	798.7	79.8	64.6
Dec.	186.1	68.1	50.7	67.1	10.1	8.8	2,034.7	820.0	98.3	81.7
Avg.	184.8	75.3	84.8	70.7	14.8	11.2	2,023.6	818.2	168.2	84.4
Max.	190.9	400.3	221.9	382.0	20.6	47.1	ø 2,099.2	ø 2,302.8	ø 304.0	ø 346.6
Min.	181.1	0	48.2	3.6	10.1	0	ø 1,911.1	ø 3.3	ø 69.9	ø 0.1

Month	STORRIE (Capacity 23.3)		SANTA ROSA (Capacity 447.1)		LAKE SUMNER (Capacity 101.6)		McMILLAN & AVALON (Capacity 37.4)		BRANTLEY (Capacity 348.5)	
	1988	Average 1939-1988	1988	Average 1980-1988	1988	Average 1937-1988	1988	Average 1908-1988	1988	Average 1988-1988
Jan.	17.9	7.9	111.4	48.5	44.6	61.2	28.3	25.9		
Feb.	17.6	7.9	111.9	48.9	45.9	65.1	31.7	26.1		
Mar.	17.6	8.7	111.9	50.6	43.3	55.4	25.2	25.5		
Apr.	16.7	9.1	113.0	56.2	42.6	48.2	8.8	17.3		
May	15.4	9.7	111.6	61.9	19.0	48.3	19.3	19.2		
June	15.1	8.5	102.4	66.1	19.2	43.3	6.2	18.4		
July	14.9	8.4	97.1	55.3	22.4	41.5	19.6	17.6		
Aug.	18.6	9.1	96.7	57.5	20.7	44.7	5.3	16.4	0.9	0.9
Sep.	19.7	8.6	78.8	53.8	17.4	46.4	21.0	18.1	12.8	12.8
Oct.	19.0	8.3	80.1	55.9	17.8	49.1	7.6	19.7	19.1	19.1
Nov.	18.8	8.4	80.3	56.4	22.3	52.2	8.2	21.3	19.1	19.1
Dec.	18.8	7.9	81.5	57.1	27.4	56.8	10.2	24.2	19.1	19.1
Avg.	17.5	8.5	98.1	55.7	28.6	51.0	16.0	20.8	14.2	14.2
Max.	19.7	26.3	113.0	116.3	45.9	156.3	31.7	85.5	19.1	19.1
Min.	14.9	0	78.8	0	17.4	0.4	5.3	0	0.9	0.9

Month	RED BLUFF (Capacity 310.0)		LAKE CASA BLANCA (Capacity 19.1)		DELTA LAKE (Capacity 25.0)		TOTAL IN U.S. RESERVOIRS (Capacity 6,436.2)	
	1988	Average 1936-1988	1988	Average 1962-1988	1988	Average 1939-1988	1988	Estimated Average
Jan.	223.2	97.1	11.3	13.1	17.7	15.5	3,850.4	1,652.3
Feb.	226.1	98.9	10.6	12.8	15.8	14.9	3,873.1	1,674.4
Mar.	225.1	96.5	9.9	12.7	17.4	14.2	3,741.7	1,626.3
Apr.	209.6	85.1	9.5	12.9	14.8	14.3	3,694.1	1,662.3
May	202.3	86.2	10.5	13.6	16.1	15.1	3,637.2	1,919.7
June	192.3	88.1	11.9	13.9	18.4	15.0	3,485.9	1,973.7
July	188.4	79.8	12.7	13.3	17.7	14.9	3,347.0	1,795.9
Aug.	180.6	76.5	13.2	13.5	17.4	14.1	3,299.7	1,664.6
Sep.	180.9	80.0	14.3	14.5	17.4	15.3	3,305.3	1,627.7
Oct.	177.3	87.9	15.3	14.2	17.2	15.4	3,287.7	1,658.8
Nov.	177.7	91.0	14.4	13.8	15.9	15.2	3,317.3	1,679.1
Dec.	180.2	95.3	13.8	13.6	15.7	14.9	3,375.0	1,702.5
Avg.	197.0	88.5	12.3	13.5	16.8	14.9	3,517.9	1,719.8
Max.	226.1	327.5	15.3	28.2	18.4	22.6	3,873.1	
Min.	177.3	10.0	9.5	3.5	14.8	0	3,287.7	

ø Daily extremes

! Totals of period averages in all reservoirs

STORED WATER IN LARGE RESERVOIRS OF THE RIO GRANDE BASIN
IN THOUSANDS OF ACRE-FEET

IN MEXICO

Month	LA BOQUILLA (Capacity 2,417.5)		LA COLINA (Capacity 19.5)		ROSETILLA (Capacity 15.4)		FRANCISCO I. MADERO (Capacity 282.1)		CHIHUAHUA (Capacity 25.9)	
	1988	Average 1914-1988	1988	Average 1940-1988	1988	Average 1940-1988	1988	Average 1948-1988	1988	Average 1961-1988
Jan.	1,580.6	1,504.9	20.3	18.3	13.9	12.8	200.5	219.7	3.2	7.8
Feb.	1,471.4	1,465.7	20.3	18.7	13.9	12.7	202.0	215.7	3.0	7.5
Mar.	1,318.2	1,408.3	20.3	18.7	13.9	12.1	189.4	201.4	2.7	7.0
Apr.	1,187.6	1,331.0	20.3	19.1	13.9	11.9	151.4	168.8	2.4	6.6
May	1,050.5	1,258.6	20.3	18.9	13.9	12.0	110.9	139.7	2.1	6.0
June	910.1	1,178.9	19.9	19.0	13.9	12.2	103.9	124.2	1.5	5.6
July	1,160.3	1,218.9	20.2	19.0	13.9	12.2	129.8	139.8	1.2	5.8
Aug.	1,737.3	1,393.9	20.2	18.7	13.9	13.0	197.5	174.2	3.2	7.0
Sep.	1,778.9	1,566.9	20.3	18.5	13.9	13.2	189.4	211.9	2.8	9.1
Oct.	1,705.0	1,574.8	19.7	18.3	13.9	13.2	195.2	219.0	2.4	8.8
Nov.	1,681.6	1,543.4	19.7	16.8	13.9	12.6	195.9	219.7	2.0	8.5
Dec.	1,668.8	1,531.2	19.7	18.4	13.9	13.0	197.9	218.7	1.8	8.1
Avg.	1,437.5	1,414.7	20.1	18.5	13.9	12.6	172.0	187.7	2.4	7.3
Max.	1,778.9	2,758.1	20.3	22.5	13.9	19.4	202.0	366.6	3.2	26.5
Min.	910.1	16.9	19.7	11.6	13.9	0	103.9	1.5	1.2	0.2

Month	LUIS L. LEON (Capacity 689.1)		CENTENARIO and SAN MIGUEL (Capacity 19.9)		VENUSTIANO CARRANZA (Capacity 1,122.8)		LAGUNA DE SALINILLAS (Capacity 15.4)		RODRIGO GOMEZ (Capacity 33.2)	
	1988	Average 1968-1988	1988	Average 1934-1988	1988	Average 1930-1988	1988	Average 1931-1988	1988	Average 1963-1988
Jan.	350.3	390.6	17.3	13.9	1,062.6	489.4	8.7	7.5	13.5	26.9
Feb.	364.8	386.6	17.2	13.7	1,033.0	469.8	8.5	9.1	12.6	26.8
Mar.	374.5	363.1	17.0	10.9	968.0	443.8	9.6	7.5	13.1	26.0
Apr.	381.8	335.2	16.8	9.3	921.4	430.4	11.5	8.9	13.0	25.0
May	383.5	311.7	16.5	9.9	866.2	412.9	11.7	8.9	11.8	24.7
June	351.8	308.7	16.3	8.5	824.3	396.1	11.9	8.1	12.1	24.6
July	358.3	319.7	16.0	8.0	881.8	407.7	11.8	7.7	11.4	24.3
Aug.	298.3	320.6	15.7	8.7	969.4	414.3	10.3	7.7	12.3	24.5
Sep.	290.2	369.8	15.3	10.6	1,111.6	468.7	9.2	8.4	35.3	27.8
Oct.	297.5	392.6	15.0	12.5	1,122.8	504.0	9.3	7.8	35.4	28.7
Nov.	281.3	398.7	14.8	12.9	1,113.3	512.8	13.4	7.5	35.2	28.3
Dec.	280.5	406.5	15.2	13.3	1,118.1	510.6	11.8	7.2	35.0	27.9
Avg.	334.4	358.6	16.1	11.0	999.4	455.0	10.6	8.0	20.1	26.3
Max.	383.5	753.1	17.3	20.7	1,122.8	1,167.8	13.4	15.8	35.4	36.8
Min.	280.5	3.8	14.8	0	824.3	1.0	8.5	0	11.4	0

Month	MARTE R. GOMEZ (Capacity 889.3)		TOTAL IN MEXICAN RESERVOIRS (Capacity 5,530.1)							
	1988	Average 1943-1988							1988	Estimated Average
Jan.	809.7	623.8							4,080.6	3,315.6
Feb.	803.3	584.9							3,950.0	3,211.2
Mar.	796.8	559.0							3,723.5	3,057.9
Apr.	706.4	514.7							3,426.5	2,860.9
May	572.2	475.6							3,059.6	2,678.9
June	504.7	483.9							2,770.4	2,569.8
July	494.4	474.8							3,099.1	2,637.9
Aug.	548.4	509.6							3,826.5	2,892.2
Sep.	930.9	637.5							4,397.8	3,342.4
Oct.	897.9	674.3							4,314.1	3,454.2
Nov.	886.4	676.3							4,257.5	3,437.5
Dec.	876.4	673.4							4,239.1	3,428.3
Avg.	735.6	574.0							3,762.1	3,073.9
Max.	930.9	1,465.4							4,397.8	
Min.	494.4	17.8							2,770.4	

STORAGE WATER IN LARGE RESERVOIRS OF THE RIO GRANDE BASIN
INTERNATIONAL AMISTAD RESERVOIR

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

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

STORAGE CAPACITIES

(1980 Survey)

Elevation	Description	At Indicated Elevation		Between Indicated Elevations	
		Reservoir Capacity Acre-Feet	Reservoir Area Acres	Storage Volume Acre-Feet	Type of Storage
898.0	Original River Bed at Dam Axis	0	0	0	
930.0	Lowest Outlet (United States Penstocks)	0	0	3,383,848	Silt & Conservation
1,117.0	Top of Conservation Storage *	3,383,848	64,860	1,744,152	Ordinary Flood
1,140.4	Top of Spillway Gates	5,128,000	84,358	336,000	Surcharge
1,144.3	Maximum Water Surface	5,464,000	88,127		

STORAGE IN THOUSANDS OF ACRE-FeET AT 24:00 HOURS 1988 - ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	3,520.5	3,534.8	3,528.2	3,521.6	3,488.9	3,409.1	3,362.3	3,405.9	3,399.5	3,556.8	3,568.9	3,577.7
2	3,521.6	3,535.9	3,530.4	3,521.6	3,485.7	3,407.0	3,364.4	3,407.0	3,398.5	3,554.6	3,570.0	3,577.7
3	3,522.7	3,535.9	3,529.3	3,520.5	3,484.6	3,401.7	3,365.5	3,408.1	3,403.8	3,554.6	3,571.1	3,577.7
4	3,526.0	3,535.9	3,527.1	3,520.5	3,482.4	3,396.3	3,364.4	3,414.5	3,403.8	3,547.9	3,573.3	3,578.8
5	3,527.1	3,535.9	3,530.4	3,521.6	3,480.3	3,392.1	3,365.5	3,418.8	3,403.8	3,546.9	3,574.4	3,578.8
6	3,528.2	3,534.8	3,532.6	3,521.6	3,479.2	3,387.8	3,366.5	3,416.6	3,401.7	3,545.8	3,574.4	3,578.8
7	3,530.4	3,533.7	3,533.7	3,519.5	3,479.2	3,384.6	3,366.5	3,413.4	3,400.6	3,546.9	3,575.5	3,583.2
8	3,531.5	3,533.7	3,533.7	3,518.4	3,480.3	3,380.3	3,366.5	3,413.4	3,399.5	3,545.8	3,576.6	3,583.2
9	3,532.6	3,533.7	3,532.6	3,518.4	3,479.2	3,376.1	3,367.7	3,415.6	3,398.5	3,552.4	3,578.8	3,581.0
10	3,534.8	3,532.6	3,532.6	3,516.2	3,479.2	3,371.8	3,372.9	3,414.5	3,397.4	3,552.4	3,578.8	3,582.1
11	3,535.9	3,532.6	3,532.6	3,512.9	3,480.3	3,366.5	3,402.7	3,414.5	3,395.3	3,552.4	3,577.7	3,583.2
12	3,537.0	3,532.6	3,532.6	3,512.9	3,479.2	3,362.3	3,409.1	3,415.6	3,394.2	3,552.4	3,578.8	3,583.2
13	3,537.0	3,532.6	3,532.6	3,511.8	3,478.1	3,359.9	3,410.2	3,417.7	3,392.1	3,552.4	3,578.8	3,583.2
14	3,537.0	3,532.6	3,532.6	3,510.7	3,475.9	3,351.7	3,409.1	3,420.9	3,392.1	3,552.4	3,578.8	3,587.7
15	3,538.1	3,531.5	3,532.6	3,510.7	3,475.9	3,349.6	3,408.1	3,424.1	3,395.3	3,552.4	3,582.1	3,586.6
16	3,538.1	3,532.6	3,532.6	3,510.7	3,475.9	3,350.6	3,405.9	3,424.1	3,398.5	3,552.4	3,581.0	3,585.5
17	3,538.1	3,532.6	3,531.5	3,511.8	3,472.7	3,354.9	3,402.7	3,422.0	3,424.1	3,552.4	3,578.8	3,585.5
18	3,538.1	3,532.6	3,531.5	3,508.5	3,469.4	3,357.0	3,404.9	3,419.8	3,553.5	3,554.6	3,579.9	3,585.5
19	3,538.1	3,533.7	3,531.5	3,506.4	3,466.2	3,359.1	3,402.7	3,419.8	3,629.9	3,556.8	3,579.9	3,586.6
20	3,539.2	3,532.6	3,531.5	3,505.3	3,465.1	3,360.2	3,411.3	3,419.8	3,636.6	3,556.8	3,578.8	3,587.7
21	3,539.2	3,531.5	3,530.4	3,502.0	3,464.0	3,362.3	3,418.8	3,418.8	3,636.6	3,557.9	3,578.8	3,587.7
22	3,537.0	3,531.5	3,529.3	3,500.9	3,459.7	3,358.0	3,419.8	3,419.8	3,624.3	3,559.0	3,578.8	3,589.9
23	3,537.0	3,530.4	3,529.3	3,499.8	3,452.1	3,358.0	3,410.2	3,412.4	3,613.2	3,560.1	3,578.8	3,592.1
24	3,537.0	3,529.3	3,530.4	3,499.8	3,445.7	3,355.9	3,404.9	3,407.0	3,604.3	3,559.0	3,578.8	3,592.1
25	3,536.0	3,529.3	3,528.2	3,497.7	3,440.3	3,357.0	3,402.7	3,407.0	3,595.4	3,559.0	3,578.8	3,592.1
26	3,533.7	3,530.4	3,528.2	3,496.6	3,442.4	3,355.9	3,402.7	3,407.0	3,584.3	3,559.0	3,577.7	3,595.4
27	3,533.7	3,529.3	3,528.2	3,494.4	3,437.0	3,354.9	3,401.7	3,405.9	3,575.5	3,560.1	3,577.7	3,594.3
28	3,532.6	3,530.4	3,528.2	3,493.3	3,430.6	3,353.8	3,400.6	3,404.9	3,565.6	3,564.5	3,575.5	3,591.0
29	3,532.6	3,528.2	3,527.1	3,492.2	3,425.2	3,353.8	3,401.7	3,402.7	3,568.9	3,565.6	3,577.7	3,591.0
30	3,533.7		3,523.9	3,491.1	3,418.8	3,355.9	3,402.7	3,402.7	3,559.0	3,566.7	3,576.6	3,591.0
31	3,534.8		3,521.6		3,414.5		3,403.8	3,400.6		3,568.9		3,591.0

Month	1988						Period 1969 - 1988			
	MOMENTARY MAXIMUM			MOMENTARY MINIMUM			Average Storage	Mean Monthly Storage		
	Elevation	Storage	Day	Elevation	Storage	Day		Average	Maximum	Minimum
Jan.	1,119.36	3,539.2	1 20	1,119.08	3,520.5	1	3,533.5	3,005.2	4,030.4	722.6
Feb.	1,119.31	3,535.9	1 2	1,119.19	3,528.2	29	3,532.5	2,988.3	4,014.7	787.7
Mar.	1,119.27	3,533.7	1 7	1,119.09	3,521.6	31	3,530.2	2,952.7	4,016.4	861.7
Apr.	1,119.09	3,521.6	1 1	1,118.64	3,491.1	30	3,509.0	2,924.1	3,981.0	962.8
May	1,118.64	3,491.1	1 1	1,117.47	3,414.5	31	3,464.1	2,872.9	3,829.5	1,038.6
June	1,117.47	3,414.5	1 1	1,116.47	3,349.6	15	3,368.0	2,834.6	3,807.8	914.4
July	1,117.55	3,419.8	22	1,116.57	3,355.9	1	3,393.5	2,823.2	3,847.3	945.6
Aug.	1,117.62	3,424.1	1 15	1,117.26	3,400.6	31	3,413.4	2,888.0	3,941.3	963.9
Sept.	1,120.80	3,636.6	1 20	1,119.57	3,392.1	18	3,484.9	2,940.6	4,177.2	1,034.0
Oct.	1,119.80	3,568.9	31	1,119.46	3,545.8	1 6	3,555.4	3,086.3	4,471.2	1,207.2
Nov.	1,120.00	3,582.1	15	1,119.80	3,568.9	1	3,577.2	3,121.7	4,241.4	1,263.2
Dec.	1,120.19	3,595.4	26	1,119.91	3,576.6	1	3,585.8	3,133.9	4,029.7	1,290.8
Yearly	1,120.80	3,636.6		1,116.47	3,349.6		3,495.6	2,964.3	3,950.8	1,047.6

* 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 86.1 river miles downstream from the old international highway bridge between Laredo, Texas and Nuevo Laredo, Tamaulipas and 274.8 river miles upstream from the Gulf of Mexico.

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

STORAGE CAPACITIES
(1971 - 1972 Survey)

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

STORAGE IN THOUSANDS OF ACRE-FEET AT 24:00 HOURS 1988 - ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2,765.3	2,804.7	2,847.3	2,776.0	2,496.4	2,023.1	1,892.1	1,918.3	2,066.2	2,673.7	2,854.6	2,779.6
2	2,760.8	2,808.3	2,848.2	2,775.1	2,475.8	2,021.7	1,887.2	1,919.0	2,074.1	2,692.0	2,853.6	2,779.6
3	2,757.2	2,807.4	2,845.4	2,774.2	2,452.0	2,023.1	1,884.5	1,918.3	2,084.3	2,708.6	2,847.3	2,780.5
4	2,755.5	2,809.2	2,841.8	2,771.5	2,429.3	2,018.1	1,879.7	1,918.3	2,091.6	2,713.9	2,843.6	2,781.3
5	2,756.4	2,810.1	2,840.9	2,770.6	2,405.1	2,011.0	1,879.0	1,917.6	2,097.4	2,716.5	2,832.7	2,781.3
6	2,758.1	2,811.0	2,836.4	2,769.7	2,380.3	2,006.0	1,878.3	1,916.9	2,100.3	2,720.1	2,818.2	2,782.2
7	2,756.4	2,811.9	2,836.4	2,767.9	2,355.7	2,001.1	1,877.6	1,917.6	2,104.7	2,720.9	2,811.0	2,784.0
8	2,757.2	2,813.7	2,834.5	2,767.0	2,335.9	1,996.1	1,876.9	1,919.0	2,109.8	2,720.9	2,799.3	2,784.9
9	2,758.1	2,815.5	2,830.0	2,764.4	2,314.0	1,991.1	1,876.3	1,924.5	2,115.6	2,721.8	2,796.6	2,785.8
10	2,756.4	2,819.1	2,825.5	2,762.6	2,296.9	1,986.2	1,874.9	1,928.0	2,120.8	2,722.7	2,795.7	2,785.8
11	2,756.4	2,822.8	2,825.5	2,761.7	2,288.4	1,983.4	1,872.8	1,931.5	2,123.7	2,720.9	2,793.0	2,784.9
12	2,757.2	2,825.5	2,825.5	2,759.0	2,274.5	1,976.3	1,872.2	1,934.3	2,126.6	2,720.9	2,795.7	2,782.2
13	2,755.5	2,827.3	2,825.5	2,754.6	2,258.4	1,974.9	1,871.5	1,933.6	2,128.8	2,720.1	2,794.8	2,780.5
14	2,755.5	2,828.2	2,821.8	2,751.0	2,245.4	1,969.3	1,874.9	1,935.0	2,132.5	2,720.1	2,793.0	2,782.2
15	2,757.2	2,829.1	2,819.1	2,747.5	2,228.7	1,964.3	1,876.3	1,935.0	2,139.1	2,720.9	2,793.0	2,784.9
16	2,760.8	2,831.8	2,815.5	2,747.2	2,217.3	1,958.0	1,877.6	1,936.4	2,161.3	2,722.7	2,793.9	2,781.3
17	2,761.7	2,834.5	2,812.8	2,737.7	2,207.5	1,953.8	1,879.0	1,941.9	2,176.8	2,722.7	2,792.1	2,780.5
18	2,764.4	2,836.4	2,809.2	2,728.9	2,194.0	1,950.3	1,879.0	1,951.0	2,207.5	2,728.9	2,788.5	2,777.8
19	2,767.0	2,838.2	2,804.7	2,717.4	2,179.8	1,945.4	1,877.6	1,958.0	2,253.0	2,731.5	2,788.5	2,776.0
20	2,769.7	2,838.2	2,788.5	2,706.0	2,170.9	1,939.9	1,883.8	1,965.1	2,296.1	2,734.2	2,785.8	2,776.9
21	2,771.5	2,834.5	2,793.9	2,692.9	2,162.0	1,933.6	1,885.9	1,974.9	2,341.5	2,736.0	2,782.2	2,776.9
22	2,774.2	2,838.2	2,790.3	2,680.6	2,150.2	1,927.3	1,887.2	1,982.7	2,384.3	2,739.5	2,780.5	2,777.8
23	2,777.8	2,840.0	2,789.4	2,664.1	2,142.8	1,920.4	1,892.7	1,991.1	2,415.5	2,748.4	2,779.6	2,777.8
24	2,782.2	2,840.9	2,788.5	2,648.5	2,136.2	1,914.1	1,901.0	1,998.2	2,449.6	2,752.8	2,779.6	2,777.8
25	2,779.6	2,841.8	2,788.5	2,632.2	2,126.6	1,907.2	1,908.6	2,005.3	2,487.3	2,754.6	2,779.6	2,776.9
26	2,783.1	2,843.6	2,786.7	2,609.9	2,111.2	1,901.7	1,912.1	2,016.0	2,517.9	2,758.1	2,780.5	2,776.9
27	2,785.8	2,845.4	2,783.1	2,587.7	2,097.4	1,900.3	1,918.3	2,026.0	2,546.4	2,762.6	2,780.5	2,776.9
28	2,788.5	2,847.3	2,782.2	2,564.9	2,082.8	1,901.7	1,919.0	2,032.4	2,575.0	2,769.7	2,777.8	2,775.1
29	2,792.1	2,847.3	2,781.3	2,543.8	2,064.8	1,898.9	1,919.0	2,041.7	2,620.1	2,811.9	2,779.6	2,774.2
30	2,797.5		2,779.6	2,519.6	2,047.5	1,896.9	1,919.7	2,048.9	2,653.7	2,836.4	2,779.6	2,773.3
31	2,800.2		2,777.8		2,033.8		1,919.0	2,056.1		2,845.4		2,769.7

Month	1988						Period 1954 - 1988			
	MONTHLY MAXIMUM			MONTHLY MINIMUM			Average Storage	Mean Monthly Storage		
	Elevation	Storage	Day	Elevation	Storage	Day		Average	Maximum	Minimum
Jan.	302.70	2,800.2	31	302.20	2,755.5	4	2,768.4	2,116.1	3,070.8	218.7
Feb.	303.22	2,847.3	1 28	302.70	2,800.2	1	2,827.7	2,030.2	3,009.6	156.2
Mar.	303.23	2,848.2	2	302.45	2,777.8	31	2,812.4	2,024.7	2,990.8	226.7
Apr.	302.45	2,777.8	1	299.46	2,519.6	30	2,708.5	1,938.3	2,954.6	325.6
May	299.46	2,519.6	1	293.15	2,033.8	31	2,237.5	1,793.4	2,869.9	490.1
June	293.15	2,033.8	1	291.20	1,896.9	30	1,959.8	1,733.5	2,212.8	273.7
July	291.53	1,919.7	30	290.83	1,871.5	13	1,888.8	1,807.7	2,692.7	209.9
Aug.	293.46	2,056.1	31	291.49	1,916.9	6	1,961.1	1,787.9	2,771.4	208.0
Sept.	301.04	2,653.7	30	293.46	2,056.1	1	2,256.7	1,882.5	2,871.1	256.2
Oct.	303.20	2,845.4	31	301.04	2,653.7	1	2,737.7	2,098.1	3,250.2	308.3
Nov.	303.30	2,854.6	1	302.45	2,777.8	28	2,799.0	2,168.1	3,124.5	390.9
Dec.	302.49	2,785.8	1 9	302.36	2,769.7	31	2,779.5	2,199.0	3,129.7	343.4
Yearly	303.30	2,854.6		290.83	1,871.5		2,478.1	1,965.0	2,764.2	544.3

* When necessary, the Commission may set temporary conservation levels

! And other days

QUALITY OF WATER - 1988

08-3640.00 RIO GRANDE AT EL PASO, TEXAS

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

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

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

1988	Time	Streamflow	Specific	pH	Water	Hardness,	Hardness,	Calcium	Magnesium
Date	Standard	Momentary	Conductance		Temper-	Total	Noncarbonate	ion (Ca),	ion (Mg),
		Second-Feet	Micromhos	Units	ature	(as CaCO ₃)	(as CaCO ₃)	Dissolved	Dissolved
					Deg C	mg/L	mg/L	mg/L	mg/L
Jan. 06	1345	190	1740	8.5	12.5	370	---	110	24
29	1300	230	1810	7.9	10	390	151	110	27
Feb. 17	0845	140	1870	8	11	390	145	110	27
Mar. 08	1000	890J	800	8.2	12	190	---	57	12
Apr. 21	0700	890	1030	7.8	16.5	240	69	70	16
May 17	1030	690	980	8.2	21	240	---	70	15
19	0720	480	1090	8	11	250	63	75	16
June 16	0710	1750	949	8.1	21	230	61	66	15
July 21	0710	300	1010	7.8	20	240	66	69	16
26	1115	1120	860	8.2	26	---	---	---	---
Aug. 19	0735	1200	909	7.5	20	220	71	63	15
30	1000	1400	780	8.1	20.5	---	---	---	---
Sept. 22	0715	810	1120	7.9	15.5	250	119	72	17
Oct. 20	0725	370	1790	8	15.5	410	164	120	28
Nov. 15	1300	200	1700	8.6	13	380	---	130	---
17	0715	169	1980	8.2	1	450	194	130	30
Dec. 20	1130	120	1960	8.1	12	440	178	130	28

J Estimated value

1988	Sodium	Sodium	Potassium	Alkalinity	Sulfate	Chloride	Silica	Solids
Date	ion (Na),	Adsorption	ion (K)	Total	ion (SO ₄)	ion (Cl),	(SiO ₂)	Dissolved
	Dissolved	Ratio(SAR)	Dissolved	(as CaCO ₃)	Dissolved	Dissolved	Dissolved	(Calculated)
	mg/L		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Jan. 06	220	5	9.9	---	400	180	20	964
29	260	6	11	239	410	200	20	1181
Feb. 17	260	6	10	245	420	170	20	1164
Mar. 08	89	3	5.5	---	150	67	13	394
Apr. 21	120	3	6.9	171	210	95	15	636
May 17	110	3	2.5	---	190	83	12	483
19	130	4	6.6	187	220	100	13	673
June 16	110	3	6.2	169	190	78	13	580
July 21	120	3	6.5	174	210	90	15	631
Aug. 19	100	3	5.9	149	170	77	17	537
Sept. 22	130	4	6.9	131	230	110	18	663
Oct. 20	240	5	10	246	420	190	24	1180
Nov. 17	280	6	9.5	256	460	210	27	1300
Dec. 20	260	6	11	262	460	210	22	1280

QUALITY OF WATER - 1988

08-3640.00 RIO GRANDE AT EL PASO, TEXAS

1988	Water Temperature	Oxygen, Dissolved (DO)	pH	Coll-form, Fecal	Oxygen Demand Bio-Chemical (BOD)	1988	Water Temperature	Oxygen, Dissolved (DO)	pH	Coll-form, Fecal	Oxygen Demand, Bio-Chemical (BOD)
Date	Deg C	mg/L	Units	Colonies /100 ml	mg/L	Date	Deg C	mg/L	Unit	Colonies /100 mL	mg/L
Jan. 7	9.5*	11.2	8.0	1500	9	Jun. 30	23.0	7.2	7.9	250	4
14	9.0*	10.0	8.0	4000	5	Jul. 7	21.0	7.2	7.8	94	3
21	4.0*	12.0	7.9	7900	4	14	22.0	7.8	7.7	108	7
28	10.0*	10.8	8.0	1170	7	21	20.0	7.6	7.9	29	5
Feb. 4	13.0*	9.4	8.0	2100	7	28	23.5	7.2	7.7	90	4
11	9.0*	11.0	8.1	270	5	Aug. 4	20.0	7.2	8.3	<1	4
18	10.0*	10.8	8.0	430	5	11	21.0	7.4	8.2	10	3
25	11.5*	10.6	8.0	300	8	18	19.0	7.3	8.0	100	3
Mar. 3	11.0*	11.3	7.9	340	7	25	21.0	7.3	8.2	<1	1
10	9.0	8.2	7.6	220	7	Sept. 1	16.5	7.3	8.2	96	2
17	9.0*	10.5	7.4	70	6	8	16.5	7.9	8.2	128	3
24	14.5	8.1	7.6	110	3	15	14.5	7.9	8.2	108	2
31	8.0	8.6	7.7	110	2	22	15.5	7.7	8.1	106	2
Apr. 7	12.0	9.0	8.0	108	3	29	14.5	7.7	8.2	126	3
14	12.0	9.0	7.9	148	2	Oct. 6	13.0	8.6	8.2	144	2
21	17.0	9.4	8.0	110	3	13	13.0	8.6	8.1	150	1
28	11.0	9.0	7.8	18	2	20	15.5	8.2	8.2	172	1
May 5	12.0	7.9	7.9	150	2	27	12.0	8.8	8.2	164	1
12	14.5	8.2	8.0	60	1	Nov. 3	11.0	8.8	8.2	182	1
19	11.0	8.5	7.9	340	1	10	7.0	9.4	8.1	186	4
26	16.5	7.7	7.9	350	3	17	1.0	10.5	8.1	186	1
Jun. 2	15.5	7.7	8.0	150	2	Dec. 1	3.0*	11.4	8.3	198	1
9	15.5	7.7	7.6	50	2	8	10.0*	11.4	8.1	198	2
16	21.0	7.3	7.7	350	3	15	6.0	10.8	8.1	194	1
23	22.0	7.0	7.9	140	3	29	4.0*	12.7	8.3	194	1

*Estimated from Riverside Canal and Drain temperature

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROMHOS/CM @ 25 DEG C - 1988

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1		1,810	1,020									1,950
2		1,860	1,130			1,000						
3		1,880	1,160					950		1,200	1,900	
4		1,910			870	810		910		1,150	1,890	
5					810			950		1,210		
6									1,100	1,380		
7												
8			950	790		910	1,030					
9		1,790	920	800		910		810	1,260			1,850
10		1,810	930		990			880			1,920	
11								1,020				
12	1,860	1,810								1,400		
13	1,820	1,800		860		880	910					
14	1,720											1,930
15	1,780		760			930					1,910	1,910
16	1,800		780						1,140		1,920	1,930
17			770								1,970	
18		1,820	750		900	930		1,020		1,680	1,950	
19		1,810	720					880				
20	1,780	1,820			1,060	960	970	900	1,090	1,760		
21				1,010	1,000							
22				1,020			1,000					1,940
23		1,110	730					940				
24			760		1,020	990						
25		1,270			1,040		980	1,010				
26		1,440										
27					850	1,060	990		1,130	1,780		
28					1,040					1,810		
29	1,860	990				900					1,940	
30									1,110		1,960	1,960
31					980							

QUALITY OF WATER - 1988

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

LOCATION: At river mile 1,237.3 (1,991.2 km), 9.5 miles (15.3 km) downstream from the Haskell R. Street Wastewater Treatment Plant and 16.7 river miles (26.8 km) downstream from the American Dam at El Paso, Texas.

RECORDS: Biochemical analyses, February 1976 through current year. Samples also collected quarterly and analyses made by the Texas Water Commission at a location one mile upstream at Ysleta-Zaragoza Bridge, 1937 through 1972 and May 1975 through current year.

REMARKS: Sampling by International Boundary and Water Commission. Analyses by the Haskell R. Street Wastewater Treatment Plant laboratory in El Paso.

1988	Water Temperature	Oxygen, Dissolved (DO)	pH	Coli-form, Fecal	Oxygen Demand, Bio-Chemical (BOD)	1988	Water Temperature	Oxygen, Dissolved (DO)	pH	Coli-form, Fecal	Oxygen Demand, Bio-Chemical (BOD)
Date	Deg C	mg/L	Units	Colonies /100 mL	mg/L	Date	Deg C	mg/L	Units	Colonies /100 mL	mg/L
Jan. 7	9.5*	10.0	7.3	45	16	Jun. 30	29.0	7.0	7.5	180	8
14	9.0*	9.4	7.4	6	10	Jul. 7	24.5	7.2	7.7	<1	4
21	4.0*	11.3	7.3	1	10	14	24.5	8.1	7.4	<1	7
28	7.0*	10.0	7.3	20	21	20	22.0	7.4	7.6	27	6
Feb. 4	13.0*	9.8	7.5	9	17	28	24.5	7.0	7.3	50	10
11	9.0*	12.0	7.5	37	12	Aug. 4	22.0	7.2	8.2	<1	7
18	10.0*	10.8	7.4	23	17	11	25.5	7.3	8.0	<1	4
25	11.5*	9.8	7.5	9	12	18	25.5	7.3	7.9	400	4
Mar. 3	11.0*	10.8	7.7	79	12	25	25.5	7.0	8.0	60	1
10	11.0	8.8	7.5	10	10	Sept. 1	22.0	7.4	8.0	110	4
17	9.0*	10.3	7.5	98	6	8	20.0	7.7	7.7	1500	8
24	12.0	7.4	7.6	174	4	15	20.0	7.7	8.0	1400	7
31	10.0	9.8	7.7	62	3	22	20.0	7.7	7.7	<1	5
Apr. 7	14.5	9.0	7.9	38	4	29	16.5	7.2	7.9	20	8
14	14.5	9.0	7.9	16	3	Oct. 6	16.5	8.4	7.7	<1	8
21	15.5	9.0	7.9	14	3	13	14.5	8.4	8.0	20	5
28	14.5	8.4	7.7	20	3	20	16.5	7.9	7.9	230	6
May 5	18.0	7.4	7.4	470	3	27	16.5	8.4	7.9	370	5
12	17.0	7.4	8.0	150	3	Nov. 3	14.5	8.4	7.8	80	5
19	20.0	7.2	7.6	40	7	10	13.0	9.0	7.7	250	6
26	20.0	6.8	7.5	102	7	17	3.0	10.0	7.8	25	6
Jun. 2	18.0	7.3	7.7	80	6	Dec. 1	3.0*	10.5	7.8	<1	8
9	19.0	6.9	7.5	120	4	8	10.0*	10.5	7.5	<1	6
16	22.0	7.6	7.6	950	5	15	9.0	10.0	7.6	<1	7
23	25.5	6.8	7.5	170	6	29	4.0*	11.7	7.7	10	5

*Estimated from Riverside Canal and Drain Temperature

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

LOCATION: Gaging station at river mile 1,173.2 (1,888.1 km), 1.5 river miles (2.4 km) downstream from old Fort Quitman.

RECORDS: Chemical analyses, February 1938 through current year; biochemical analyses, October 1974 through current year; specific conductance (daily), October 1974 through 1977.

REMARKS: Sampling and analyses by U. S. Geological Survey. Additional water quality parameters, including heavy metals, nutrients, pesticides, and biological indices, determined and published by the U. S. Geological Survey. Sampling prior to 1977 by the International Boundary and Water Commission.

1988	Time	Stream flow, Momentary	Specific Conductance	pH	Water Temperature	Hardness, Total (as CaCO ₃)	Hardness, Noncarbonate (as CaCO ₃)	Calcium ion (Ca), Dissolved	Magnesium ion (Mg), Dissolved	Sodium ion (Na), Dissolved	Sodium Adsorption Ratio (SAR)	Potassium ion (K), Dissolved
Date	Std.	Sec.-Ft.	Micromhos	Units	Deg C	mg/L	mg/L	mg/L	mg/L	mg/L		mg/L
Mar. 09	1130	254	2690	8.2	13	460	254	120	39	400	8	9
May 18	1115	312	3390	8.2	23	610	386	170	44	510	9	9
July 27	1200	160	4350	8.3	27	700	443	180	62	660	11	11
Aug. 31	1200	748	1810	8	25	340	169	98	24	240	6	7.7
Nov. 16	1230	320	2750	8.1	12.5	500	236	140	36	380	7	10

1988	Alkalinity Total (as CaCO ₃)	Sulfate ion (SO ₄), Dissolved	Chloride ion (Cl), Dissolved	Silica (SiO ₂), Dissolved	Oxygen, Dissolved (DO)	Coli-form, Fecal	Turbidity	Solids Dissolved (Calculated)	Solids Dissolved (Residue @ 180 Deg C)	Suspended Sediment
Date	mg/L	mg/L	mg/L	mg/L	mg/L	Cols./100 mL	NTU	mg/L	mg/L	mg/L
Mar. 09	206	460	420	20	9	27B	92	1590	1680	658
May 18	224	570	670	22	7.9	97	92	2130	2140	825
July 27	257	730	710	27	11.5	440	49	2530	2810	379
Aug. 31	171	310	290	19	7	6000L	480	1090	1120	1820
Nov. 16	264	480	440	31	8.5	160	16	1680	1700	752

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

L Actual value is known to be greater than value given

QUALITY OF WATER - 1988

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

LOCATION: Gaging station at river mile 966.4 (1,555.3 km); 5.1 river miles (10.5 km) upstream from the Rio Conchos.

RECORDS: Chemical analyses, February 1933 through 1981; specific conductance, 1931 and 1935 through current year.

REMARKS: Sampling by the International Boundary and Water Commission; chemical analyses by the U.S. Geological Survey; determinations for specific conductance by International Boundary and Water Commission. Results of biochemical analyses by Texas Water Commission, November 1977 through current year, available on request.

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROMHOS/CM @ 25 DEG C - 1988

January	March	April	June	August	September	November
5 2,910	2 3,510	19 1,930	2 3,050	2 2,110	20 2,270	2 2,790
21 3,090	15 2,920	May	14 2,930	16 1,580	October	15 2,640
February	22 3,390	3 2,130	July	September	4 2,110	December
7 2,970	April	9 1,870	1 1,820	2 2,060	18 2,540	2 2,900
16 3,520	4 1,970	18 1,950	19 2,040			20 2,600

08-3730.00 RIO CONCHOS NEAR OJINAGA, CHIHUAHUA

LOCATION: At gaging station, 1.5 river miles (2.5 km) from the confluence with the Rio Grande, which is located at river mile 961.4 (1,547.2 km).

RECORDS: Chemical analyses, February 1935 through 1981; suspended silt, 1956 through 1979, specific conductance, 1935 through current year.

REMARKS: Sampling and determinations for suspended silt and specific conductance by the International Boundary and Water Commission; chemical analyses by the U. S. Geological Survey.

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROMHOS/CM @ 25 DEG C - 1988

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1						1,330		920				
2			1,420		1,560			1,020				
3								900		1,080		
4	1,370		1,490	1,480	1,580		1,150					1,260
5							1,130	960	960	1,080		
6	1,340			1,480	1,610							
7	2,990					1,340			1,040		1,110	1,270
8	1,360	1,640					880	1,010				1,260
9									1,000			1,190
10		1,420				1,280		980		1,090		
11	1,360						1,110					1,270
12		1,450						1,060	1,040	1,090		
13				1,590	1,440	1,100	1,120		1,100	1,070		1,290
14								1,230				
15	1,380	1,460		1,570		1,130						
16					1,390							
17		1,460				1,320		950		1,080		
18	1,380			1,520	1,260		1,110					
19										1,070		1,300
20	1,380			1,510	1,350	1,130	1,080					
21										1,060		
22	1,380	1,380		1,630		1,150	1,140	950				
23					1,350						1,210	
24		1,400		1,610		1,170		2,270		1,070		
25	1,380		1,720		1,340		1,640					
26		1,420						1,020		1,080		
27				1,500	1,310		990					
28			1,710							1,090	1,240	
29		1,420				1,170	1,060					
30			1,870						1,110		1,250	
31					1,300						1,250	

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

LOCATION: Gaging station at river mile 940.8 (1,258.5 km); 0.4 river mile (0.6 km) downstream from Alamito Creek and 11.6 river miles (18.7 km) downstream from the Rio Conchos.

RECORDS: Specific conductance, 1956 through current year.

REMARKS: Sampling and determinations for specific conductance by the International Boundary and Water Commission. Results of biochemical analyses by Texas Water Commission, November 1977 through current year, available on request.

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROMHOS/CM @ 25 DEG C - 1988

January	March	April	June	August	September	November
6 2,160	2 2,600	23 1,890	14 1,500	2 1,150	20 1,580	2 1,500
21 2,290	17 2,300	May	18 1,260	16 1,120	October	15 1,650
February	22 2,600	3 1,980	July	September	4 1,620	December
2 2,480	April	June	8 1,150	2 1,190	18 1,680	2 1,840
16 2,270	4 1,920	2 2,070	19 1,380			20 2,160

QUALITY OF WATER - 1988

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

LOCATION: Gaging station at river mile 657.5 (1,058.2 km), about 12.3 miles (19.8 km) west of Langtry, Texas.
 RECORDS: Chemical analyses, March 1969 through 1970 and October 1974 through current year; biochemical, October 1974 through current year; suspended silt, 1969 through current year; specific conductance, 1969 through 1981, 1983, 1985 through current year.

REMARKS: Sampling and analyses by U. S. Geological Survey; sampling and determinations for suspended silt and specific conductance by the International Boundary and Water Commission. Additional water quality parameters, including heavy metals, nutrients, pesticides, and biological indices, determined and published by the U. S. Geological Survey.

1988 Date	Time Std.	Stream Flow, Momen- tary Sec.-Ft.	Specific Conduct- ance Micromhos	pH Units	Water Temp- erature Deg C	Hard- ness, Total (as CaCO ₃) mg/L	Hard- ness, Noncar- bonate (as CaCO ₃) mg/L	Calcium ion (Ca), Dis- solved mg/L	Magne- sium ion (Mg) mg/L	Sodium ion (Na), Dis- solved mg/L	Sodium Adsorp- tion Ratio (SAR)	Potassium ion (K), Dissolved mg/L
Jan. 01	1050	876	1700	8.2	12	390	219	110	27	210	5	7.5
May 05	1040	1190	1610	8.3	25	310	175	83	26	220	5	6.3
Aug. 08	1450	3190	1220	8.3	28	270	122	85	14	150	4	6.1
Nov. 02	1100	1560	1220	8.2	22	270	118	77	18	160	4	5.6

1988 Date	Alka- linity Total (as CaCO ₃) mg/L	Sulfate ion (SO ₄), Dis- solved mg/L	Chlo- ride ion (Cl), Dis- solved mg/L	Silica (SiO ₂), Dis- solved mg/L	Oxygen, Dis- solved (DO) mg/L	Coli- form, Fecal Cols./ 100 mL	Oxygen Demand, Bio- Chemical (BOD) 5 Day mg/L	Tur- bidity NTU	Solids Dis- solved (Calcu- lated) mg/L	Solids Dis- solved (Residue @ 180 Deg C) mg/L	Sus- pended Sedi- ment mg/L
Jan. 20	171	390	210	16	10.2	7B	2.7	7.4	1073	1080	39
May 11	135	370	220	13	9.8	180	4	230	1019	1050	318
Aug. 03	148	300	110	21	8.4	680	2.4	1400	775	793	3620
Nov. 02	152	290	120	19	10.1	2200	0.8	800	800	781	1250

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

SUSPENDED SILT - 1988

Date	Time Std.	Stream- flow, Momen- tary Sec.-Ft.	Gravimetric Percent	Date	Time Std.	Stream- flow, Momen- tary Sec.-Ft.	Gravimetric Percent	Date	Time Std.	Stream- flow, Momen- tary Sec.-Ft.	Gravimetric Percent
Jan. 4	1130	1070	0.00440	May 2	1130	1130	0.01460	Sep. 6	0930	4080	0.38520
19	1215	916	0.01064	15	1145	1340	0.01736	19	0945	6910	0.30892
Feb. 1	1200	916	0.01868	June 6	1200	889	0.38368	Oct.17	1415	1590	0.00568
16	1033	889	0.00952	20	0900	1490	0.12968	Nov. 7	1010	1540	0.01820
Mar. 7	1130	823	0.01144	July 5	0900	3070	0.11656	Dec. 5	1030	1240	0.04936
21	1100	784	0.01128	18	1000	3450	0.44552	19	1040	1120	0.04084
Apr. 4	1030	889	0.01048	Aug. 1	0920	1920	0.92880				
18	1015	1150	0.01876	15	0900	3950	0.27028				

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROMHOS/CM @ 25 DEG C - 1988

January	February	April	May	July	September	November
4 1,770	16 2,020	4 2,270	16 1,860	5 1,180	6 990	7 1,600
19 1,670	March	18 1,600	June	18 1,320	19 579	December
February	7 1,740	May	6 1,440	August	October	5 1,450
1 1,650	21 1,800	2 1,590	20 1,180	1 1,260	17 1,270	19 1,520
				15 1,150		

QUALITY OF WATER - 1988

08-4474.10 PECOS RIVER NEAR LANGTRY, TEXAS

LOCATION: At gaging station, 15.9 river miles (24.1 km) from the confluence with the Rio Grande, which is located at river mile 616.0 (991.4 km).

RECORDS: Chemical analyses, 1967 through current year; biochemical analyses, October 1974 through current year; suspended silt, November 1954 through 1976; specific conductance daily, 1969 through September 1985 and biweekly through current year.

REMARKS: Sampling and analyses by U. S. Geological Survey; sampling and determinations for specific conductance by the International Boundary and Water Commission. Additional water quality parameters, including heavy metals, nutrients, pesticides, and biological indices, determined and published by the U. S. Geological Survey.

1988 Date	Time Std.	Stream flow, Momen- tary Sec.-Ft.	Specific Conduct- ance Micromhos	pH Units	Water Temp- erature Deg C	Hard- ness, Total (as CaCO3) mg/L	Hard- ness, Noncar- bonate (as CaCO3) mg/L	Calcium ion (Ca), Dis- solved mg/L	Magne- sium ion (Mg) (Mg) mg/L	Sodium ion (Na), Dis- solved mg/L	Sodium Adsorp- tion Ratio (SAR)	Potassium ion (K), Dissolved mg/L
Jan. 20	1510	218	5790	8.1	12	1120	959	250	120	860	11	12
Mar. 23	1240	178	5670	8.1	19	980	830	210	110	870	12	11
May 11	1420	163	5180	8.2	26	1000	873	220	110	850	12	11
July 12	1425	211	5010	8.2	29.5	1120	1002	250	120	700	9	10
Aug. 03	1030	166	4770	8.3	27.5	880	752	200	92	680	10	9
Nov. 02	1515	208	3500	8.2	21.5	700	547	150	79	480	8	7.8

1988 Date	Alka- linity Total (as CaCO3) mg/L	Sulfate ion (SO4), Dis- solved mg/L	Chlo- ride ion (Cl), Dis- solved mg/L	Silica (SiO2), Dis- solved mg/L	Oxygen, Dis- solved (DO) mg/L	Coli- form, Fecal Cols./ 100 mL	Oxygen Demand, Bio- chemical (BOD) 5 Day mg/L	Tur- bidity NTU	Solids Dis- solved (Calcu- lated) mg/L	Solids Dis- solved (Residue @ 180 Deg C) mg/L	Sus- pended Sedi- ment mg/L
Jan. 20	161	870	1300	14	9.9	6B	1.6	1.3	3523	3820	28
Mar. 23	150	890	1200	11	10.6	3B	1.2	0.6	3392	3770	19
May 11	127	870	1300	14	9	13B	1.1	4	3451	3640	11
July 12	118	770	1200	17	8.3	4B	0.7	2.3	3138	3200	54
Aug. 03	128	750	1100	17	8.3	27	1.3	4.9	2925	3090	39
Nov. 02	153	510	800	16	8.7	4B	0.4	2.8	2135	2230	14

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

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROMHOS/CM @ 25 DEG C - 1988

January	February	April	June	July	September	November
4 5,480	16 4,920	4 5,550	6 5,260	18 4,570	19 1,180	7 3,450
19 5,650	March	18 6,380	20 5,040	August	October	December
February	7 5,690	May	July	1 4,080	3 3,360	5 3,900
1 6,120	21 5,680	16 5,050	5 5,430	15 4,670	17 3,360	19 3,690

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

LOCATION: At gaging station 25.5 river miles (41.0 km) from the confluence with the Rio Grande, which is located at river mile 574.6 (924.7 km).

RECORDS: Daily specific conductance, 1968 through September 1985; biweekly specific conductance through current year.

REMARKS: Sampling and determinations for specific conductance by the U. S. Geological Survey through September 1985. Sampling prior to 1978 and since October 1985 by the International Boundary and Water Commission. Chemical and biochemical analyses, 1978 through current year, available from U. S. Geological Survey.

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROMHOS/CM @ 25 DEG C - 1988

January	February	April	June	August	October	November
4 840	16 470	4 490	20 540	1 400	3 410	22 420
18 440	March	18 450	July	15 520	17 380	December
February	7 400	May	400	September	November	5 400
1 760	21 400	2 380	16 450	6 610	6 430	19 410

QUALITY OF WATER - 1988

08-4509.00 RIO GRANDE BELOW AMISTAD DAM NEAR Cd. ACUÑA, COAHUILA AND DEL RIO, TEX

LOCATION: Gaging station at river mile 571.8 (920.3 km), 2.2 river miles (3.4 km) downstream from Amistad Dam.
 RECORDS: Chemical analyses, July 1968 through current year; suspended silt, 1969 through 1976; specific conductance 1968 through current year.

REMARKS: Sampling for chemical analyses by the International Boundary and Water Commission, analyses by the U. S. Geological Survey. Sampling and determinations for specific conductance by the International Boundary and Water Commission.

1988	Time	Streamflow Momentary	Specific Conductance	pH	Water Temper- ature	Hardness, Total (as CaCO ₃)	Hardness, Noncarbonate (as CaCO ₃)	Calcium ion (Ca), Dissolved	Magnesium ion (Mg), Dissolved
Date	Standard	Second-Feet	Micromhos	Units	Deg C	mg/L	mg/L	mg/L	mg/L
Jan. 20	1300	2090	1370	8	10.5	300	164	85	22
Feb. 17	0800	1800	1490	8	11.5	340	200	93	25
Mar. 18	0800	1250	1490	7.9	11	320	181	87	24
Apr. 28	0830	2010	1440	7.9	14	310	171	86	24
May 18	0655	3740	1440	8	15	320	179	88	24
June 15	0800	3370	1480	8	16	320	179	87	24
July 28	1215	3840	1490	7.7	16.5	330	187	89	26
Aug. 18	0700	3960	1500	7.6	19.5	330	192	89	27
Sept. 22	0700	9110	1450	7.7	20.5	310	169	85	24
Oct. 21	1100	1830	1380	7.7	22	290	169	78	24
Nov. 16	0805	1500	1360	8	18	290	170	77	23
Dec. 21	0800	1540	1380	7.9	13	290	169	78	23

1988	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. 20	170	4	7.6	136	250	180	15	811
Feb. 17	190	5	7.7	140	300	220	16	936
Mar. 18	180	4	6.6	139	310	210	15	916
Apr. 28	170	4	6	139	300	190	15	874
May 18	180	4	5.8	141	290	200	15	887
June 15	180	4	5.9	141	290	210	15	897
July 28	180	4	5.6	143	300	210	15	911
Aug. 18	180	4	5.9	138	300	210	15	910
Sept. 22	180	4	5.9	141	280	200	16	876
Oct. 21	170	4	5.6	121	290	190	16	846
Nov. 16	170	5	5.9	120	280	190	15	833
Dec. 21	170	5	6.3	121	290	180	15	835

QUALITY OF WATER - 1988

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

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROMHOS/CM @ 25 DEG C - 1988

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1		1,530		1,420		1,400	1,440	1,450				
2			1,480		1,400				1,500		1,330	1,340
3		1,510				1,410		1,420		1,400		
4	1,390		1,500	1,350	1,440						1,340	
5		1,490					1,440	1,470		1,380		1,340
6				1,400	1,420	1,400	1,450		1,460			
7			1,490						1,470		1,360	1,330
8	1,370	1,580		1,410		1,430	1,440	1,490				
9			1,460		1,420				1,470		1,350	1,310
10		1,570				1,420		1,440				
11	1,350		1,490	1,430	1,410		1,600					
12		1,540						1,490	1,460	1,380		1,330
13	1,350			1,410	1,430	1,440	1,480					
14			1,520					1,470	1,370	1,330		1,330
15	1,440			1,410		1,440	1,460	1,460				
16		1,440	1,500		1,410						1,330	1,340
17						1,420		1,470		1,360		
18			1,470	1,420	1,390		1,460					
19	1,400	1,440					1,480	1,470	1,360			1,330
20				1,320	1,410	1,410						
21			1,470							1,360	1,370	1,340
22	1,380	1,500		1,410		1,420		1,450				
23			1,480		1,390				1,410		1,340	1,320
24		1,520				1,430		1,450		1,350		
25	1,400		1,470	1,400	1,410		1,820					
26		1,530						1,480	1,420	1,350		
27	1,380			1,390	1,420		1,480		1,400	1,350		1,320
28			1,450			1,430						
29	1,430	1,550		1,410			1,470	1,440	1,400		1,350	
30			1,430					1,430	1,400			1,340
31					1,440			1,470		1,330		

QUALITY OF WATER - 1988

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

LOCATION: Near gaging station at Maverick Canal Headgates. The canal intake is at river mile 543.6 (874.9 km) 13.3 river miles (21.5 km) above the gaging station.

RECORDS: Specific conductance, 1954 through current year.

REMARKS: Sampling and determinations by the International Boundary and Water Commission.

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROMHOS/CM @ 25 DEG C - 1988

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,450			1,380	1,350	1,430	1,400	1,430	1,430	1,340	1,280	1,280
2	1,470			1,330	1,300	1,370	1,360	1,420	1,420	1,360	1,280	1,270
3	1,470			1,350	1,360	1,370	1,390	1,430	1,420	1,350	1,280	1,270
4	1,460			1,350	1,340	1,380	1,390	1,420	1,400	1,350	1,290	1,260
5	1,480			1,350	1,370	1,370	1,340	1,420	1,410	1,350	1,290	1,270
6	1,470			1,350	1,350	1,380	1,400	1,400	1,400	1,360	1,290	1,270
7	1,460			1,340	1,340	1,380	1,400	1,400	1,400	1,350	1,280	1,300
8	1,470			1,370	1,340	1,400	1,390	1,400	1,410	1,360	1,290	1,290
9	1,470			1,360	1,350	1,400	1,400	1,390	1,410	1,340	1,280	1,280
10	1,460			1,350	1,350	1,350	1,400	1,400	1,410	1,350	1,290	1,280
11	1,470			1,370	1,360	1,390	1,430	1,430	1,400	1,350	1,290	1,270
12	1,460			1,360	1,330	1,400	1,440	1,410	1,400	1,340	1,280	1,270
13	1,470			1,360	1,330	1,410	1,410	1,430	1,400	1,340	1,290	1,310
14	1,460			1,370	1,330	1,400	1,420	1,440	1,400	1,330	1,300	1,290
15	1,470			1,360	1,340	1,390	1,420	1,450	1,410	1,340	1,280	1,280
16	1,470			1,360	1,330	1,400	1,410	1,450	1,370	1,330	1,290	1,270
17	1,470			1,380	1,340	1,400	1,430	1,440	1,360	1,320	1,300	1,270
18	1,460			1,380	1,370	1,400	1,390	1,440	1,340	1,320	1,300	1,270
19	1,470			1,380	1,370	1,230	1,420	1,440	1,300	1,310	1,290	1,270
20	1,460			1,380	1,370	1,210	1,420	1,430	1,280	1,320	1,300	1,270
21	1,470			1,370	1,390	1,210	1,440	1,440	1,300	1,330	1,300	1,270
22	1,470			1,390	1,370	1,210	1,440	1,430	1,370	1,310	1,280	1,260
23	1,470			1,370	1,370	1,290	1,440	1,410	1,380	1,300	1,300	1,270
24	1,470			1,380	1,370	1,400	1,480	1,440	1,380	1,320	1,310	1,260
25	1,460			1,370	1,380	1,400	1,410	1,440	1,380	1,320	1,290	1,260
26	1,460			1,370	1,360	1,370	1,410	1,420	1,360	1,300	1,270	1,250
27	1,460			1,360	1,370	1,300	1,410	1,400	1,340	1,290	1,250	1,250
28	1,470			1,360	1,380	1,300	1,420	1,400	1,340	1,310	1,280	1,290
29	1,470			1,360	1,380	1,390	1,420	1,400	1,330	1,290	1,280	1,270
30	1,480			1,360	1,390	1,380	1,430	1,400	1,320	1,290	1,280	1,260
31	1,470				1,410		1,430	1,400				1,260

■ Data not available

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

LOCATION: Gaging station at river mile 460.4 (741.0 km), 35.9 river miles (57.8 km) downstream from the international highway bridge between Eagle Pass, Texas and Piedras Negras, Coahuila.

RECORDS: Specific conductance 1954 through current year.

REMARKS: Sampling and determinations by the International Boundary and Water Commission.

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROMHOS/CM @ 25 DEG C - 1988

January	February	April	May	July	September	November
5 950	16 1,280	6 1,300	17 1,340	6 1,360	7 1,330	1 1,060
21 1,100	March	19 1,310	June	20 1,390	20 610	14 1,080
February	2 1,330	May	1 1,390	August	October	December
2 1,580	17 1,250	3 1,320	14 1,400	3 1,350	3 1,180	5 1,110
				16 1,300	17 1,050	19 1,140

QUALITY OF WATER - 1988

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

LOCATION: Samples for biochemical analyses, specific conductance, and suspended silt collected at the Laredo Water Plant, river mile 364.0 (585.8 km); for chemical and biochemical analyses at International Bridge II, river mile 360.6 (580.3 km).

RECORDS: Chemical analyses, 1955 through 1976; chemical and biochemical analyses, 1973 through September 1986; biochemical analyses, September 1968 through current year; suspended silt, 1953 through current year; specific conductance, 1948-1949 and 1955 through current year.

REMARKS: Field parameter samples for biochemical analyses, suspended silt and specific conductance collected and analyzed by the International Boundary and Water Commission and the Texas Water Commission. Additional water quality parameters, including heavy metals, nutrients, pesticides, and biological indices, available from U. S. Geological Survey through September 1986.

1988 Date	Time Std.	Stream- flow, Momen- tary Sec.-Ft.	Specific Conduct- ance Micro- mhos	pH Units	Water Tem- pera- ture Deg C	Oxygen, Dis- solved (DO) mg/L	Coli- form, Fecal Cols./ 100 mL	Oxygen Demand, Bio- Chemical (BOD) 5 Day mg/L	Alkalinity Total (as CaCO3) mg/L	Sulfate ion (SO4), Dis- solved mg/L	Chloride ion (Cl), Dis- solved mg/L	Solids Dis- solved (Residue @ 180 Deg C) mg/L	Sus- pended Sedi- ment mg/L
Jan. 13	1050	1700	943	8.3	8.5	11.4	20	1	---	173	108	622	9
Feb. 09	1100	2300	1205	8.2	12.5	10.9	15	<1	---	236	154	784	24
Apr. 14	1055	1900	1161	8.1	14.0	7.4	5	1	---	264	171	808	26
May 10	1100	1850	1169	7.7	21.5	7.5	40	2	129	265	180	872	39
June 15	1700	3460	1432	8.6	28.5	7.9	30	---	136	277	192	902	27
July 12	1105	3500	1354	8.4	27.0	7.5	200	1.5	---	273	187	880	11
Aug. 09	1115	8500	1127	8.6	26.5	7.6	240	1	154	208	144	728	44
Sept.23	1215	1100	620	8.6	27.0	6.6	<100	---	162	66	36	---	161
Oct. 12	1150	3000	1047	8.4	20.0	8.8	80	1	144	197	132	646	67
Nov. 08	1145	2350	1061	---	19.5	8.2	60	2	134	207	134	690	58
Dec. 14	1520	2320	1270	8.5	14.0	10.2	45	---	130	181	89	---	16

SUSPENDED SILT - 1988

Month	Tons		Number of Samples	Gravimetric Percentages			Acre-Feet at 1,452 Tons/AF	1968-1988 Period of Record		
	Water	Silt		Average	Maximum Sample	Minimum Sample		Average	Maximum	Minimum
Jan.	182,677,000	7,090	31	0.00388			4.9	5.5	20.9	0.93
Feb.	194,860,000	6,550	29	0.00336			4.5	11.1	109.0	0.88
Mar.	148,367,000	5,820	31	0.00392			4.0	11.4	62.7	1.80
Apr.	179,119,000	7,450	30	0.00416			5.1	27.5	251.0	0.69
May	250,847,000	23,080	31	0.00920			15.9	44.4	165.0	1.10
June	246,525,000	23,470	30	0.00952			16.2	63.9	688.0	0.56
July	338,801,000	55,830	31	0.01648			38.5	55.3	418.0	1.30
Aug.	408,994,000	116,150	31	0.02840			80.0	48.2	313.0	2.30
Sept.	494,550,000	153,510	30	0.03104	0.05644	0.00184	105.7	66.4	700.0	3.30
Oct.	339,125,000	86,820	31	0.02560	0.06332	0.00828	59.8	54.1	286.0	1.70
Nov.	207,718,000	17,860	30	0.00860			12.3	8.4	27.3	0.81
Dec.	193,161,000	17,310	31	0.00896			11.9	10.1	77.4	0.66
Year	3,184,744,000	520,940	366	0.01281			358.8	406.2	1,626.9	95.07

QUALITY OF WATER - 1988

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

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROMHOS/CM @ 25 DEG C - 1988

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	970	1,100	1,200	1,310	1,350	1,460	1,300	1,420	1,390	1,270	820	1,040
2	960	1,130	1,240	1,310	1,350	1,360	1,270	1,300	1,380	1,210	820	1,040
3	970	1,130	1,250	1,320	1,320	1,340	1,190	1,310	1,370	1,210	910	1,040
4	960	1,150	1,200	1,310	1,330	1,330	1,200	1,330	1,350	1,210	980	1,050
5	970	1,200	1,260	1,310	1,380	1,310	1,320	1,320	1,340	1,210	1,030	1,050
6	960	1,220	1,280	1,300	1,340	1,390	1,350	1,240	1,320	1,110	1,040	1,060
7	960	1,230	1,260	1,330	1,330	1,390	1,350	1,270	1,340	1,090	1,060	1,060
8	960	1,230	1,290	1,320	1,340	1,360	1,360	1,000	1,340	1,090	1,050	1,070
9	830	1,240	1,310	1,310	1,330	1,330	1,340	1,060	1,340	1,050	1,060	1,070
10	960	1,230	1,300	1,310	1,330	1,340	1,330	1,230	1,330	1,040	1,060	1,070
11	960	1,240	1,210	1,310	1,340	1,350	1,270	1,330	1,330	1,050	1,080	1,080
12	970	1,240	1,300	1,290	1,360	1,360	1,350	1,320	1,330	1,040	1,080	1,080
13	800	1,220	1,310	1,290	1,340	1,360	1,370	1,320	1,320	1,060	1,070	1,080
14	1,040	1,210	1,300	1,250	1,330	1,360	1,370	1,320	1,310	1,050	1,050	1,080
15	980	1,230	1,310	1,290	1,320	1,370	1,330	1,290	1,310	1,050	1,050	1,080
16	940	1,240	1,320	1,290	1,330	1,390	1,410	1,270	1,330	1,050	1,080	1,080
17	960	1,230	1,320	1,320	1,340	1,390	1,330	1,260	1,300	1,040	1,070	1,070
18	940	1,210	1,210	1,300	1,340	1,380	1,410	1,230	1,030	1,000	1,080	1,080
19	840	1,180	1,260	1,330	1,340	1,370	1,430	1,190	900	1,040	1,070	1,080
20	1,060	1,180	1,300	1,260	1,330	1,380	1,390	1,220	940	1,040	1,060	1,080
21	1,090	1,200	1,320	1,280	1,330	1,410	1,410	1,280	780	1,060	1,070	1,080
22	1,100	1,210	1,220	1,310	1,340	1,460	1,390	1,300	580	1,060	1,080	1,080
23	1,090	1,200	1,300	1,300	1,360	1,430	1,410	1,350	540	1,040	1,060	1,080
24	1,110	1,210	1,180	1,310	1,370	1,440	1,390	1,300	590	1,040	1,080	1,090
25	1,120	1,210	1,160	1,340	1,380	1,430	1,310	1,340	990	1,020	1,070	1,090
26	1,120	1,210	1,200	1,340	1,380	1,420	1,300	1,350	1,180	1,000	1,060	1,090
27	1,090	1,220	1,270	1,360	1,380	1,370	1,300	1,370	1,220	930	1,070	1,100
28	1,110	1,100	1,300	1,350	1,400	1,150	1,300	1,380	1,230	920	1,080	1,110
29	1,110	1,230	1,240	1,360	1,370	1,110	1,390	1,370	1,240	850	1,080	1,120
30	1,110		1,310	1,360	1,370	1,340	1,400	1,330	1,250	800	1,080	1,120
31	1,060		1,320		1,370		1,380	1,330		1,110		1,130

QUALITY OF WATER - 1988

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

LOCATION: Chemical and specific conductance samples from Falcon Reservoir at Falcon Dam, river mile 274.8 (442.3 km), and biochemical sampling at the Chapeno gaging station 2.5 river miles (4.1 km) below Falcon Dam; latitude 26°31'45", longitude 99°09'30".

RECORDS: Chemical analyses, July 1955 through current year; biochemical analyses, July 1975 through current year; suspended silt, July 1955 through 1976; specific conductance 1955 through current year.

REMARKS: Sampling for chemical analyses by the International Boundary and Water Commission at Falcon Village Water Plant, analyses by the U. S. Geological Survey; sampling and determinations for specific conductance by the International Boundary and Water Commission at Falcon Dam Power Plant tailrace; biochemical analyses, collected and analyzed by the International Boundary and Water Commission and the Texas Water Commission.

1988	Time	Streamflow	Specific	pH	Water	Hardness,	Hardness,	Calcium	Magnesium
Date	Standard	Momentary	Conductance		Temperature	Total	Noncarbonate	ion (Ca),	ion (Mg),
		Second-Foot	Microhmhos	Units	Deg C	(as CaCO3)	(as CaCO3)	Dissolved	Dissolved
						mg/L	mg/L	mg/L	mg/L
Jan. 22	1000	450	1070	7.9	13.5	270	139	75	19
Feb. 19	0930	1000	1070	7.8	13.5	260	125	74	19
Mar. 17	1300	1500	1060	7.9	15.5	270	139	75	19
Apr. 21	1300	2600	1070	7.9	19	260	129	74	19
May 16	1300	8580	1080	8	21	260	125	74	19
June 16	0900	5570	1120	8	25.5	260	139	70	20
July 21	0945	3440	1170	7.8	27	270	154	75	21
Aug. 19	0930	200	1200	7.5	28	270	156	72	23
Sept. 20	0900	36	1220	7.8	27	280	168	74	23
Oct. 17	1300	2000	1230	7.6	26	270	158	71	23
Nov. 14	1130	4000	1210	8	25.5	270	158	72	22
Dec. 22	1100	900	1200	8	16	270	155	72	22

1988	Sodium	Sodium	Potassium	Alkalinity	Sulfate	Chloride	Silica	Solids
Date	ion (Na),	Adsorption	ion (K)	Total	ion (SO4)	ion (Cl),	(SiO2)	Dissolved
	Dissolved	Ratio(SAR)	Dissolved	(as CaCO3)	Dissolved	Dissolved	Dissolved	(Calculated)
	mg/L		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Jan. 22	120	3	6.3	131	190	130	14	633
Feb. 19	120	3	6	135	210	130	14	654
Mar. 17	120	3	5.3	131	220	130	14	662
Apr. 21	120	3	4.9	131	210	130	13	650
May 16	120	3	4.9	135	210	130	13	652
June 16	130	4	5.1	121	230	140	12	680
July 21	130	3	5	116	240	150	13	704
Aug. 19	140	4	5.4	114	250	150	13	722
Sept. 20	140	4	5.8	112	250	160	14	734
Oct. 17	140	4	5.4	112	260	160	14	741
Nov. 14	140	4	5.5	115	250	160	14	732
Dec. 22	140	4	5.8	118	250	150	14	725

1988	Time	Streamflow	Specific	pH	Water	Oxygen,	Coli-	Oxygen	Alkalinity	Sulfate	Chloride	Solids	Sus-
Date	Std.	Sec-Ft.	Conductance		Temperature	Dissolved	form,	Demand,	Total	ion (SO4),	ion (Cl),	Dis-	pended
			Micro-	Units	Deg C	(DO)	Fecal	Bio-	(as CaCO3)	Diss-	Diss-	solved	Sedi-
			mhos			mg/L	Cols./	Chemical	mg/L	mg/L	mg/L	(Residue	ment
							100 ml	(BOD)				@ 180	
								5 Day				Deg C)	
								mg/L				mg/L	mg/L
Jan. 20	0900	1100	1218	8.3	13.0	8.5	<9	---	128	207	124	578	5
Feb. 02	1110	1490	1218	8.2	14.0	10.2	<7	---	130	196	124	640	7
Mar. 08	0940	3230	1223	8.3	15.5	8.7	<9	---	131	209	108	670	6
Apr. 20	1237	6300	1230	8.0	21.0	7.8	<9	---	132	210	125	680	11
May 10	1500	9820	1096	---	24.0	8.0	<7	---	129	216	125	650	7
June 15	1100	5320	1163	8.3	26.5	6.2	<7	---	126	225	135	696	9
July 26	1448	8650	1346	8.4	29.0	6.2	<9	---	118	238	148	736	8
Aug. 24	0838	1680	1196	---	27.5	3.0	190	---	114	254	152	776	9
Sept. 23	1631	33	1240	8.4	30.0	8.0	30	---	104	252	165	780	<5
Dec. 14	1020	4700	1325	8.6	17.0	8.6	---	---	123	239	154	746	10

QUALITY OF WATER - 1988

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

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROMHOS/CM @ 25 DEG C - 1988

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1		1,040		1,070		1,070	1,120	1,150				
2	1,020	1,030	1,030		1,080				1,180		1,190	1,310
3		1,020				1,070	1,120	1,150		1,200		
4	1,020	1,020	1,030	1,050	1,050				1,180		1,180	
5								1,160		1,220		1,300
6	1,010			1,050	1,050	1,080	1,110					
7			1,030						1,180	1,210	1,190	1,210
8	990			1,040		1,070	1,120	1,160				
9			1,190		1,050				1,180		1,190	1,200
10		1,050				1,080		1,170		1,220		
11	1,040		1,060	1,040	1,050		1,120				1,180	
12		1,050						1,180	1,190	1,200		1,190
13	1,060			1,040	1,070	1,090	1,110					
14		1,030	1,040						1,190	1,220	1,180	1,190
15	1,030			1,040		1,080	1,140	1,180				
16			1,040		1,060				1,200		1,190	1,190
17	1,020	1,020		1,040	1,040	1,100		1,180		1,210		
18			1,030				1,130				1,190	
19		1,030						1,180	1,190	1,210		1,180
20	1,020			1,050	1,060	1,100	1,130				1,180	
21			1,030						1,190	1,200	1,180	1,170
22	1,030	1,030		1,040		1,110	1,140	1,180				
23			1,050		1,050				1,190		1,180	1,170
24		1,080				1,110		1,180		1,200		
25	1,030			1,050	1,080		1,140				1,170	
26		1,040	1,040					1,180	1,210	1,190		1,170
27	1,080			1,050	1,060	1,110	1,160					
28		1,040	1,040						1,210	1,190	1,180	1,170
29	1,030			1,040	1,070		1,150	1,180			1,180	1,170
30			1,040			1,130			1,200			
31								1,180		1,190		

08-4642.00 RIO SAN JUAN AT CAMARGO, TAMAULIPAS

LOCATION: At gaging station, 3.1 river miles (5 km) from the confluence with the Rio Grande, which is located at river mile 238.7 (384.1 km).

RECORDS: Specific conductance, 1960 through current year.

REMARKS: Sampling and determinations by the International Boundary and Water Commission.

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROMHOS/CM @ 25 DEG C - 1988

January		February		March		April		June		August		September	
6	1,360	3	1,610	3	1,560	5	1,850	21	2,260	4	2,110	7	1,980
20	2,990	18	1,650	23	1,600	19	2,000		July	18	2,100		December
								5	1,480			16	900
								20	1,940				

QUALITY OF WATER - 1988

08-4645.00 RANCHERIAS DRAIN NEAR CAMARGO, TAMAILIPAS

LOCATION: At a point about 1,950 feet (600 m) from the confluence with the Rio Grande, which is located at river mile 241.6 (388.8 km). This drain carries waste water from the Lower Rio San Juan Irrigation District in Mexico.

RECORDS: Specific conductance, 1948 and 1960 through current year.

REMARKS: Sampling and determinations by the International Boundary and Water Commission.

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROMHOS/CM @ 25 DEG C - 1988

January	February	April	May	July	September	November
6 5,080	18 4,850	5 4,870	19 5,600	5 5,260	6 2,430	7 4,900
20 2,920	March	19 2,930	June	20 5,030	October	17 4,760
February	3 4,950	May	7 4,100	August	4 2,300	December
3 4,090	23 5,180	3 3,920	21 4,740	4 4,810	21 2,250	6 4,930
				18 4,290		16 4,940

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

LOCATION: Gaging station at river mile 235.0 (378.1 km), 3.7 river miles (6.0 km) downstream from Rio San Juan.

RECORDS: Chemical analyses, 1959 through current year; specific conductance, 1958 through current year; suspended silt, 1959 through 1977.

REMARKS: Sampling by the International Boundary and Water Commission; chemical analyses by the U.S. Geological Survey; specific conductance determinations by the International Boundary and Water Commission.

1988	Time	Streamflow	Specific	pH	Water	Hardness,	Hardness,	Calcium	Magnesium
Date	Standard	Second-Foot	Conductance	Units	Temperature	Total	Noncarbonate	ion (Ca),	ion (Mg),
			Micromhos		Deg C	(as CaCO ₃)	(as CaCO ₃)	Dissolved	Dissolved
						mg/L	mg/L	mg/L	mg/L
Jan. 15	1315	1490	1110	7.9	12	270	139	77	20
Feb. 16	1300	970	1280	7.9	19	290	159	81	21
Mar. 17	1415	2040	1100	7.8	19	270	140	76	20
Apr. 15	1200	2810	1080	7.8	21	270	142	74	20
May 17	1140	7000	1140	8	25	270	135	76	20
June 13	1116	4150	1160	7.9	26.5	270	147	73	21
July 19	1106	3360	1170	7.8	29	260	142	70	21
Aug. 15	1200	3980	1210	7.6	29	270	159	70	23
Sept. 26	1100	13700	701	7.8	26.5	220	115	67	14
Oct. 17	1215	5890	1160	7.7	24	270	154	73	22
Nov. 15	1115	4890	1180	7.9	25	270	155	74	21
Dec. 15	1108	2490	1230	7.7	18.5	280	152	75	22

1988	Sodium	Sodium	Potassium	Alkalinity	Sulfate	Chloride	Silica	Solids
Date	ion (Na),	Adsorption	ion (K)	Total	ion (SO ₄)	ion (Cl),	(SiO ₂)	Dissolved
	Dissolved	Ratio(SAR)	Dissolved	(as CaCO ₃)	Dissolved	Dissolved	Dissolved	(Calculated)
	mg/L		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Jan. 15	140	4	6.5	131	230	150	13	715
Feb. 16	150	4	6	131	240	180	10	767
Mar. 17	130	3	5.5	130	230	140	14	694
Apr. 15	120	3	5	128	220	130	12	658
May 17	150	3	5.1	135	220	150	13	695
June 13	130	3	5.7	123	230	150	12	696
July 19	140	4	5.1	118	250	150	13	720
Aug. 15	140	4	5.4	111	250	160	13	728
Sept. 26	50	1	4.4	105	150	58	9.3	416
Oct. 17	130	3	5	116	240	150	13	703
Nov. 15	140	4	6	115	230	150	13	703
Dec. 15	140	4	5.9	128	250	160	13	743

QUALITY OF WATER - 1988

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

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROMHOS/CM @ 25 DEG C - 1988

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,230	1,440		1,240		1,200	1,220	890				
2			1,190		1,130	1,190			1,040		1,270	1,320
3		1,240						1,130		910		
4	1,370		1,510				1,120				1,260	
5		1,370		1,180	1,140			1,160	1,240	1,090		1,330
6	1,240			1,180	1,150	1,210	1,260					
7			1,290						1,000	1,200	1,430	1,360
8	1,370	1,400				1,220	1,230					
9			1,260	1,210	1,140			1,260	1,460		1,470	1,360
10		1,470			1,160					1,210		
11	1,420		1,260	1,330		1,250	1,280				1,280	
12		1,400						1,250	1,520	1,230		1,350
13	1,260			1,190	1,140	1,280						
14			1,270						1,330	1,220	1,280	1,350
15	1,400	1,420		1,170		1,300	1,250	1,260				
16			1,250		1,270				1,210		1,270	1,340
17		1,410				1,290		940		1,230		
18	1,330		1,270	1,180	1,170		1,310				1,270	
19		1,330						930	550	1,240		1,340
20	1,470			1,170	1,180	1,250	1,220					
21			1,270						640	1,240	1,270	1,330
22	1,420	1,320		1,060	1,230	1,240	1,240	920				
23			1,270						690		1,270	1,320
24		1,310				1,180		1,270		1,250		
25	1,620		1,270	1,130	1,190		1,190					
26		1,270						1,300	840	1,250	1,280	1,310
27	1,450			1,140	1,180	1,220	1,230					
28			1,240						860	1,290	1,250	1,300
29	1,550	1,230		1,120				1,340				
30			1,270		1,170	1,240			890		1,250	1,280
31								1,360		1,050		

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

LOCATION: For Puertecitos Drain, at a point about 8,500 feet (2,600 m) from the confluence with the Rio Grande, which is located at river mile 219.3 (352.9 km); and, for Los Indios Drain, at a point about 2,150 feet (650 m) from its confluence with Puertecitos Drain. These two drains join at a point about 4,250 feet (1,300 m) from the confluence with the Rio Grande. These drains carry waste water from the lower Rio San Juan Irrigation District in Mexico.

RECORDS: Specific conductance, 1960 through current year.

REMARKS: Sampling and determinations by the International Boundary and Water Commission.

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROMHOS/CM @ 25 DEG C - 1988

Date	Puertecitos Drain	Los Indios Drain	Date	Puertecitos Drain	Los Indios Drain	Date	Puertecitos Drain	Los Indios Drain	Date	Puertecitos Drain	Los Indios Drain
Jan. 6	1,990	2,280	Apr. 3	2,230		July 5	2,250	2,670	Oct. 4	2,210	5,070
18		1,870	5		2,290	20	2,540	2,360	21	2,050	5,110
20	2,420		19	2,590	1,990	Aug. 4	2,370	2,270	Nov. 7	2,010	2,140
Feb. 3	2,680	2,500	3	2,230	2,420	18	2,440	2,260	17	2,010	2,140
18	2,640	2,600	19	2,590	2,530	Sep. 6	2,440	5,000	Dec. 6	2,270	2,160
Mar. 3	2,970	2,520	June 7	2,390	2,770				16	2,070	2,110
23	2,910	2,300	21	2,390	2,690						

QUALITY OF WATER - 1988

08-4663.00 RIO GRANDE AT LOS EBANOS, TEXAS NEAR Cd. DIAZ ORDAZ, TAMAUlipAS

LOCATION: Gaging station at river mile 204.3 (328.8 km) 34.0 river miles (54.7 km) upstream from Anzalduas Dam.
 RECORDS: Chemical analyses, June 1977 through current year; specific conductance, 1956 through current year.
 REMARKS: Sampling by the International Boundary and Water Commission; chemical analyses by the U. S. Geological Survey; specific conductance determinations by the International Boundary and Water Commission.

1988	Time	Streamflow Momentary	Specific Conductance	pH	Water Temperature	Hardness, Total (as CaCO ₃)	Hardness, Noncarbonate (as CaCO ₃)	Calcium ion (Ca), Dissolved	Magnesium ion (Mg), Dissolved
Date	Standard	Second-Foot	Micromhos	Units	Deg C	mg/L	mg/L	mg/L	mg/L
Jan. 19	5345	1590	1250	7.8	18	290	154	82	21
Feb. 17	1315	1900	1420	8	20	330	185	90	25
Mar. 21	1315	2430	1190	7.8	20	290	157	81	22
Apr. 18	1245	4660	1100	7.8	25	270	142	76	20
May 17	1235	8620	1120	8	25	270	135	74	20
June 13	1359	5270	1210	8	29.5	280	152	77	22
July 19	1401	3500	1230	7.8	31	290	168	78	22
Aug. 19	1115	2880	1200	7.6	28	260	149	70	20
Sept. 26	1350	13700	725	7.8	30	240	130	70	15
Oct. 19	1130	6520	1150	7.6	26	290	172	79	22
Nov. 15	1404	4820	1200	7.9	27	280	160	77	22
Dec. 15	1210	2800	1340	7.8	18	300	167	81	24

1988	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	150	4	6.6	136	240	160	14	755
Feb. 17	170	4	6.1	145	290	200	12	880
Mar. 21	140	4	5.6	133	250	150	14	742
Apr. 18	120	3	5.3	128	230	130	14	672
May 17	120	3	4.9	135	220	140	13	673
June 13	140	4	5.3	128	240	150	13	724
July 19	140	4	5.4	122	260	160	13	752
Aug. 19	140	4	5	111	240	160	12	714
Sept. 26	54	2	4.5	110	150	60	9.7	429
Oct. 19	130	3	5	118	240	150	13	710
Nov. 15	140	4	5.4	120	240	150	13	719
Dec. 15	150	4	6	133	270	180	14	805

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROMHOS/CM @ 25 DEG C - 1988

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,250	1,230	1,280	1,140	1,100	1,120	1,520	1,160	1,320	650	1,160	1,390
2	1,250	1,200	1,290	1,140	1,060	1,130	1,190	1,160	1,330	640	1,170	1,370
3	1,240	1,200	1,290	1,200	1,070	1,130	1,130	1,170	1,320	770	1,150	1,330
4	1,500	1,210	1,140	1,180	1,070	1,140	1,180	1,160	1,330	1,030	1,170	1,310
5	1,280	1,210	1,150	1,180	1,070	1,130	1,130	1,160	1,330	640	1,170	1,300
6	1,250	1,180	1,150	1,190	1,070	1,130	1,130	1,150	1,680	750	1,160	1,300
7	1,240	1,180	1,140	1,180	1,070	1,130	1,120	1,160	1,700	1,030	1,160	1,310
8	1,250	1,180	1,150	1,180	1,070	1,120	1,290	1,170	1,700	1,010	1,150	1,310
9	1,250	1,610	1,140	1,140	1,050	1,130	1,210	1,180	1,690	1,060	1,170	1,310
10	1,240	1,610	1,180	1,120	1,020	1,130	1,260	1,170	1,700	1,040	1,150	1,290
11	1,240	1,610	1,180	1,120	1,020	1,130	1,270	1,200	1,700	1,050	1,150	1,320
12	1,190	1,600	1,170	1,120	1,020	1,130	1,260	1,200	1,690	1,100	1,170	1,330
13	1,190	1,600	1,180	1,120	1,010	1,130	1,260	1,210	1,260	1,110	1,160	1,310
14	1,190	1,600	1,170	1,120	1,010	1,130	1,230	1,200	1,260	1,120	1,170	1,320
15	1,190	1,590	1,170	1,080	1,110	1,140	1,240	1,210	1,260	1,120	1,170	1,330
16	1,210	1,600	1,190	1,070	1,090	1,160	1,210	960	1,200	1,120	1,170	1,340
17	1,200	1,600	1,190	1,070	1,080	1,160	1,210	950	1,090	1,090	1,200	1,360
18	1,650	1,600	1,190	1,070	1,090	1,160	1,230	960	1,060	1,250	1,220	1,370
19	1,680	1,600	1,220	1,070	1,090	1,150	1,210	970	880	1,230	1,200	1,390
20	1,680	1,370	1,190	1,080	1,090	1,170	1,190	940	760	1,240	1,200	1,390
21	1,680	1,360	1,190	1,050	1,100	1,160	1,190	1,120	760	1,250	1,200	1,360
22	1,650	1,350	1,140	1,060	1,090	1,170	1,200	1,130	770	1,250	1,240	1,350
23	1,680	1,360	1,150	1,080	1,090	1,170	1,190	1,120	730	1,240	1,270	1,340
24	1,680	1,350	1,150	1,070	1,100	1,180	1,190	1,120	920	1,210	1,270	1,340
25	2,010	1,350	1,160	1,060	1,090	980	1,170	1,300	920	1,250	1,290	1,330
26	2,030	1,360	1,160	1,060	1,090	990	1,160	1,310	920	1,180	1,300	1,230
27	2,020	1,250	1,150	1,070	1,070	970	1,200	1,320	920	1,170	1,330	1,240
28	2,030	1,280	1,140	1,050	1,120	970	1,170	1,320	910	1,160	1,350	1,260
29	2,030	1,280	1,120	1,050	1,060	1,160	1,170	1,330	910	1,150	1,380	1,270
30	2,020		1,120	1,070	1,070	1,170	1,190	1,320	730	1,150	1,390	1,250
31	1,240		1,120		1,120		1,190	1,330		1,140		1,250

QUALITY OF WATER - 1988

08-4675.00 RIO GRANDE AT PENITAS, TEXAS AND REYNOSA DIAZ, TAMAULIPAS

LOCATION: At the H.C.W.C. & I. District No. 1 (Edinburg) pumping plant, river mile 186.6 (300.4 km), 16.3 river miles (26.2 km) upstream from Anzalduas Dam.

RECORDS: Specific conductance, 1963 through current year.

REMARKS: Sampling and determinations by the International Boundary and Water Commission.

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROMHOS/CM @ 25 DEG C - 1988

January	February	April	June	July	September	November
1 1,190	22 1,420	13 1,180	3 1,120	25 1,220	23 790	14 1,180
4 1,090	24 1,430	15 1,150	6 1,130	27 1,220	26 710	16 1,180
6 1,090	26 1,490	18 1,080	8 1,140	29 1,210	28 700	18 1,200
8 1,280	29 1,340	20 1,080	10 1,150	August	30 710	21 1,210
11 1,310	March	22 1,070	13 1,180	1 1,020	October	23 1,220
13 1,380	2 1,260	25 1,070	15 1,160	3 500	3 750	25 1,240
15 1,250	4 1,140	27 1,060	17 1,150	5 1,190	5 810	28 1,330
18 1,310	7 1,160	29 1,070	20 1,180	8 1,160	7 1,000	30 1,310
20 1,290	9 1,130	May	22 1,260	10 1,200	10 1,070	December
22 1,300	11 1,140	2 1,070	24 1,220	12 1,240	12 1,100	2 1,490
25 1,470	14 1,140	4 1,070	27 1,125	15 1,200	14 1,100	5 1,460
27 1,450	16 1,210	6 1,070	29 1,220	17 1,200	17 1,130	7 1,440
29 1,520	18 1,200	9 1,070	July	19 960	19 1,150	9 1,270
February	21 1,220	11 1,080	1 1,260	22 940	21 1,160	12 1,320
1 1,980	23 1,230	13 1,090	4 1,200	24 820	24 1,230	14 1,290
3 1,920	25 1,180	16 1,090	6 1,260	26 1,400	26 1,260	16 1,310
5 1,770	28 1,200	18 1,130	8 1,220	September	28 1,290	19 1,290
8 1,520	30 1,150	20 1,100	10 1,050	2 1,510	November	21 1,300
10 1,290	April	23 1,210	13 1,230	5 1,210	2 1,050	23 1,330
12 1,280	1 1,200	25 1,210	15 1,370	7 1,340	4 1,140	26 1,310
15 1,590	4 1,190	27 1,100	18 1,230	9 1,360	7 1,150	28 1,290
17 1,690	6 1,140	30 1,100	20 1,200	19 1,340	9 1,160	30 1,290
19 1,430	8 1,180	June	22 1,210	21 1,770	11 1,150	
	11 1,170	1 1,100				

08-4678.00 MORILLO DRAIN NEAR ANZALDUAS DAM

LOCATION: At the Morillo Drain Project pumping plant located about 0.4 river mile (0.6 km) from the confluence with the Rio Grande or at the gaging station on the bypass canal 0.4 mile (0.6 km) from the pumping plant. Morillo Drain enters the Rio Grande at river mile 179.1 (288.3 km), 8.8 river miles (14.2 km) upstream from Anzalduas Dam. This drain carries waste water from the lower Rio San Juan Irrigation District in Mexico and surface runoff during periods of heavy precipitation.

RECORDS: Chemical analyses, 1962 through current year; specific conductance, 1956 through current year.

REMARKS: Sampling by the International Boundary and Water Commission and chemical analyses by the U. S. Geological Survey. Determinations for specific conductance by International Boundary and Water Commission.

1988	Time	* Streamflow Momentary	Specific Conductance	pH	Water Temperature	Hardness, Total (as CaCO ₃)	Hardness, Noncarbonate (as CaCO ₃)	Calcium Ion (Ca), Dissolved	Magnesium Ion (Mg), Dissolved
Date	Standard	Second-Foot	Micromhos	Units	Deg C	mg/L	mg/L	mg/L	mg/L
Jan. 14	0850	36	4670	7.9	18	710	492	170	69
Feb. 16	0835	.7	6910	7.9	17	1010	745	240	100
Mar. 14	0900	0	7710	7.8	16	1060	811	260	100
Apr. 18	0845	0	5510	7.9	25	890	673	230	77
May 16	0720	96	4070	8.1	25	640	437	160	58
June 15	0820	48	4600	8.1	27	710	493	180	63
July 20	0840	0	7130	7.9	26.5	1170	931	270	120
Aug. 17	0835	4.2	4020	7.7	29	590	426	140	58
Sept. 22	0925		821	7.8	26.5	250	143	72	16
Oct. 19	0820	61.8	5530	7.8	25	880	660	230	74
Nov. 14	0845	0	6440	8.1	27	940	700	230	89
Dec. 21	0830	0	6820	7.9	20	920	680	220	89

* Flow to Rio Grande

1988	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	810	13	8.7	218	1000	940	27	3156
Feb. 16	1200	16	8.5	265	1500	1400	37	4645
Mar. 14	1400	19	7.8	249	1700	1600	39	5256
Apr. 18	950	14	7.3	217	1200	1100	30	3725
May 16	680	12	6.2	203	880	760	27	2693
June 15	790	13	6.8	217	1000	850	30	3050
July 20	1400	18	7.8	239	1700	1500	35	5176
Aug. 17	670	12	7.3	164	860	740	26	2600
Sept. 22	72	2	4.7	107	170	80	9.4	488
Oct. 19	950	14	6.8	220	1200	1100	34	3730
Nov. 14	1100	16	7.1	238	1400	1300	40	4310
Dec. 21	1100	16	7.3	239	1300	1300	34	4190

QUALITY OF WATER - 1988

08-4678.00 MORILLO DRAIN NEAR ANZALDUAS DAM

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROMHOS/CM @ 25 DEG C - 1988

January	February	April	June	July	September	November
4 3,680	18 6,600	12 5,880	2 4,020	20 6,140	5 5,810	7 6,260
7 4,150	22 7,080	14 6,570	6 3,870	21 6,740	6 5,430	10 6,220
11 4,060	25 7,160	18 5,490	9 4,390	25 6,810	8 5,650	14 6,240
14 4,090	29 7,200	21 4,470	13 4,250	28 6,890	12 5,860	17 5,840
18 4,490	March	25 4,080	14 4,150	August	15 5,900	21 6,290
21 4,170	3 7,380	28 3,960	15 4,420	1 5,700	22 800	24 6,370
25 4,450	7 6,850	May	16 4,860	4 6,210	October	28 6,160
28 4,520	10 7,080	2 4,030	20 4,990	9 5,940	3 3,400	December
February	14 7,470	5 4,120	23 5,520	11 5,750	6 5,940	2 6,060
1 5,100	17 7,140	9 3,720	27 6,170	15 5,010	13 5,750	5 6,470
2 5,220	24 8,430	12 2,850	July	17 3,780	17 5,730	8 6,280
3 5,100	28 7,410	16 3,940	4 6,160	18 3,600	19 5,260	12 6,430
4 5,410	31 9,140	19 4,690	5 6,170	22 5,140	20 5,070	15 5,780
8 5,530	April	23 3,920	7 6,640	25 6,410	27 4,800	19 6,340
11 6,280	4 6,840	26 4,080	12 5,970	29 6,610	31 5,130	21 5,900
15 6,410	7 6,790	30 3,860	14 6,520	September	November	22 6,060
16 6,510	11 5,900		18 6,850	1 6,750	3 5,750	26 6,000
						29 4,520

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

LOCATION: At Anzalduas Dam, 0.5 river mile (0.8 km) above the gaging station, located at river mile 169.8 (273.3 km).

RECORDS: Chemical analyses, March 1959 through current year; specific conductance 1948 and 1956 through current year; suspended silt, May 1956 through 1977.

REMARKS: Sampling by the International Boundary and Water Commission; chemical analyses by the U. S. Geological Survey; determinations for specific conductance by the International Boundary and Water Commission.

1988	Time	Streamflow Momentary	Specific Conductance	pH	Water Temperature	Hardness, Total (as CaCO3)	Hardness, Noncarbonate (as CaCO3)	Calcium ion (Ca), Dissolved	Magnesium ion (Mg), Dissolved
Date	Standard	Second-Foot	Micromhos	Units	Deg C	mg/L	mg/L	mg/L	mg/L
Jan. 19	0915	350	1570	8	15	360	211	100	27
Feb. 16	0800	810	1530	8.1	18	350	202	96	27
Mar. 14	1030	1390	1250	8.1	16.5	290	152	82	21
Apr. 18	0915	1610	1130	7.9	23	270	139	77	20
May 16	0735	1860	1180	8	26	280	145	76	21
June 15	0915	3200	1310	8	28	290	160	78	23
July 20	0900	1750	1310	7.9	29	300	174	79	24
Aug. 17	0900	3000	1290	7.8	29	280	164	74	24
Sept.22	0845	30120	722	7.8	25	230	123	69	15
Oct. 19	0850	4340	1230	7.7	26	300	180	83	22
Nov. 14	0930	4670	1210	8	27	280	155	78	21
Dec. 21	0900	1390	1410	8	19	330	189	91	25

1988	Sodium Ion (Na), Dissolved	Sodium Adsorption Ratio(SAR)	Potassium ion (K) Dissolved	Alkalinity Total (as CaCO3)	Sulfate ion (SO4) Dissolved	Chloride ion (Cl), Dissolved	Silica (SiO2) Dissolved	Solids Dissolved (Calculated)
Date	mg/L		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Jan. 19	210	5	6.9	149	310	230	15	988
Feb. 16	200	5	6	148	330	230	15	993
Mar. 14	140	4	5.5	138	260	170	12	773
Apr. 18	120	3	5	131	230	140	13	684
May 16	130	3	4.9	135	230	150	13	706
June 15	160	4	5.3	130	270	180	13	807
July 20	160	4	5.6	126	270	180	13	807
Aug. 17	150	4	5.5	116	270	170	14	777
Sept.22	55	2	4.5	107	160	60	8.9	437
Oct. 19	140	4	5.1	120	260	160	13	755
Nov. 14	140	4	5.0	125	240	160	13	732
Dec. 21	160	4	5.8	141	280	190	13	849

QUALITY OF WATER - 1988

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

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROMHOS/CM @ 25 DEG C - 1988

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,330	2,260	1,570	1,230	1,190	1,150		1,420	1,490		1,320	1,330
2	1,300	2,280	1,480	1,200	1,100	1,140	1,250	1,210	1,450	990	1,320	1,340
3	1,250	2,260	1,370	1,210	1,100	1,150	1,240	960	1,480	690	1,150	1,340
4	1,160	2,450	1,360	1,988	1,100	1,180	1,220	670	1,500	740	1,150	1,350
5	1,150	2,460	1,200	1,220	1,100	1,170	1,310	590	1,550	780	1,160	1,360
6	1,130	2,030	1,160	1,230	1,100	1,220	1,180	1,090	1,580	815	1,160	1,370
7	1,200	1,720	1,160	1,210	1,120	1,220	1,230	1,150	1,550	980	1,160	1,460
8	1,180	1,480	1,170	1,220	1,100	1,230	1,230	1,130	1,550	1,050	1,160	1,480
9	1,230	1,410	1,160	1,210	1,110	1,300	1,250	1,150	1,580	1,070	1,170	1,460
10	1,260	1,440	1,150	1,210	1,110	1,280	1,310	1,170	1,570	1,090	1,150	1,460
11	1,300	1,440	1,200	1,240	1,100	1,290	1,340	1,200	1,400	1,130	1,160	1,480
12	1,400	1,390	1,170	1,230	1,140	1,250	1,290	1,270	1,340	1,140	1,770	1,410
13	1,510	1,400	1,330	1,220	1,120	1,280	1,280	1,270	1,460	1,170	1,170	1,280
14	1,560	1,390	1,250	1,200	1,120	1,290	1,250	1,250	1,640	1,170	1,180	1,230
15	1,560	1,430	1,240	1,290	1,120	1,250	1,230	1,230	1,590	1,170	1,200	1,290
16	1,490	1,500	1,220	1,150	1,120	1,240	1,440	1,230	1,720	1,180	1,470	1,300
17	1,460	1,510	1,210	1,150	1,140	1,240	1,230	1,280	1,560	1,180	1,220	1,310
18	1,530	1,610	1,220	1,120	1,150	1,230	1,260	1,230	1,510	1,190	1,200	1,320
19	1,510	1,680	1,240	1,100	1,200	1,230	1,270	1,240	1,280	1,200	1,200	1,330
20	1,530	1,690	1,240	1,090	1,190	1,280	1,280	1,050	530	1,220	1,210	1,340
21	1,580	1,550	1,230	1,100	1,160	1,300	1,250	940	770	1,230	1,210	1,330
22	1,500	1,470	1,220	1,110	1,170	1,270	1,230	980	720	1,230	1,220	1,340
23	1,500	1,450	1,260	1,100	1,160	1,250	1,210	1,020	680	1,220	1,210	1,340
24	1,540	1,440	1,200	1,080	1,170	1,260	1,210	1,220	710	1,260	1,220	1,340
25	1,560	1,470	1,180	1,080	1,170	1,250	1,200	1,240	710	1,290	1,230	1,340
26	1,520	1,480	1,190	1,140	1,170	1,250	1,100	960	710	1,350	1,250	1,350
27	1,590	1,510	1,220	1,100	1,160	1,400	1,240	840	700	1,360	1,330	1,350
28	1,800	1,570	1,240	1,080	1,150	1,310	1,250	1,030		1,380	1,340	1,340
29	1,900	1,590	1,270	1,090	1,140	1,170	1,240	1,170	790	1,350	1,330	1,340
30	2,150		1,260	1,100	1,140	1,240	1,220	1,450	830	1,360	1,380	1,370
31	2,240		1,220		1,140		1,190	1,560		1,390		1,360

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

LOCATION: At river mile 117.8 (189.5 km), 52.6 river miles (84.6 km) downstream from Anzalduas Dam.

RECORDS: Specific conductance, 1945 through current year.

REMARKS: Sampling and determinations by the International Boundary and Water Commission.

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROMHOS/CM @ 25 DEG C - 1988

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,330	1,910	1,620	1,330	1,080	1,160	1,310	1,250	1,210	850	1,390	1,430
2	1,480	1,880	1,650	1,320	1,100	1,180	1,240	1,240	1,320	860	1,380	1,430
3	1,520	1,900	1,630	1,270	1,090	1,150	1,240	1,230	1,340	790	1,280	1,470
4	1,370	2,000	1,570	1,260	1,110	1,170	1,250	1,070	1,500	850	1,190	1,450
5	1,280	2,200	1,400	1,250	1,110	1,190	1,210	1,020	1,690	770	1,160	1,450
6	1,230	2,270	1,280	1,260	1,110	1,180	1,300	1,100	1,520	780	1,170	1,480
7	1,190	2,540	1,210	1,270	1,100	1,210	1,180	1,140	1,540	890	1,200	1,500
8	1,200	2,480	1,170	1,260	1,100	1,250	1,360	1,190	1,550	970	1,160	1,520
9	1,220	2,040	1,170	1,300	1,110	1,240	1,280	1,230	1,590	1,080	1,160	1,540
10	1,260	1,510	1,170	1,300	1,110	1,280	1,250	1,210	1,640	1,070	1,170	1,550
11	1,260	1,520	1,180	1,260	1,110	1,350	1,310	1,240	1,620	1,080	1,170	1,390
12	1,330	1,530	1,190	1,290	1,110	1,300	1,350	1,250	1,630	1,100	1,170	1,390
13	1,340	1,520	1,200	1,300	1,100	1,290	1,360	1,270	1,740	1,170	1,210	1,370
14	1,410	1,520	1,220	1,340	1,140	1,280	1,350	1,280	1,820	1,180	1,200	1,360
15	1,460	1,500	1,230	1,310	1,020	1,310	1,290	1,300	1,770	1,180	1,180	1,350
16	1,540	1,490	1,300	1,320	1,080	1,310	1,300	1,120	1,620	1,190	1,180	1,360
17	1,550	1,460	1,240	1,210	1,160	1,300	1,270	1,220	1,690	1,190	1,190	1,380
18	1,570	1,520	1,220	1,230	1,180	1,270	1,400	1,200	1,700	1,200	1,280	1,390
19	1,580	1,610	1,230	1,170	1,170	1,280	1,310	1,240	1,700	1,210	1,210	1,410
20	1,590	1,610	1,260	1,140	1,180	1,290	1,290	1,240	1,360	1,210	1,200	1,380
21	1,560	1,730	1,250	1,140	1,230	1,270	1,290	1,190	620	1,240	1,210	1,400
22	1,620	1,730	1,280	1,150	1,220	1,250	1,300	1,180	780	1,250	1,220	1,390
23	1,710	1,680	1,270	1,130	1,170	1,260	1,290	1,140	740	1,250	1,230	1,430
24	1,710	1,600	1,260	1,130	1,180	1,270	1,260	1,120	700	1,260	1,230	1,400
25	1,710	1,540	1,290	1,100	1,180	1,290	1,230	1,120	690	1,260	1,230	1,410
26	1,770	1,550	1,240	1,100	1,180	1,300	1,230	1,070	710	1,290	1,290	1,420
27	1,850	1,540	1,210	1,100	1,200	1,280	1,240	1,070	720	1,310	1,320	1,430
28	1,840	1,550	1,220	1,120	1,190	1,300	1,120	1,070	720	1,380	1,340	1,440
29	1,830	1,610	1,240	1,100	1,160	1,380	1,250	1,050	720	1,410	1,380	1,440
30	1,800		1,310	1,100	1,160	1,110	1,280	1,070	890	1,450	1,390	1,430
31	1,770		1,330		1,160		1,270	1,060		1,450		1,430

QUALITY OF WATER - 1988

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

LOCATION: Gaging station at river mile 48.7 (78.3 km), 0.2 river mile (0.3 km) downstream from El Jardin pumping plant and 7.0 river miles (11.2 km) downstream from the international highway bridge between Brownsville, Texas and Matamoros, Tamaulipas.

RECORDS: Chemical and biochemical analyses, October 1967 through January 1968 and October 1974 through current year; biochemical, December 1976 through current year; specific conductance, 1955 through September 1983; suspended silt, 1955 through 1977.

REMARKS: Sampling and analyses by the U. S. Geological Survey. Additional water quality parameters, including heavy metals, nutrients, pesticides, and biological indices, determined and published by the U. S. Geological Survey. Sampling and determinations for specific conductance prior to 1978 by the International Boundary and Water Commission.

1988	Time	Stream flow, Momentary	Specific Conductance	pH	Water Temperature	Hardness, Total (as CaCO ₃)	Hardness, Noncarbonate (as CaCO ₃)	Calcium ion (Ca), Dissolved	Magnesium ion (Mg)	Sodium ion (Na), Dissolved	Sodium Adsorption Ratio (SAR)	Potassium ion (K), Dissolved
Date	Std.	Sec.-Ft.	Micromhos	Units	Deg C	mg/L	mg/L	mg/L	mg/L	mg/L		mg/L
Jan. 12	1515	250	1260	8	13	340	192	93	25	160	4	6.3
Mar. 09	1025	1280	1250	8	20	300	174	83	23	150	4	5.7
May 05	0930	172	1140	8	26	280	152	79	20	130	3	5.4
July 13	0930	138	1220	8	30	290	169	78	22	140	4	5.7
Aug. 23	1115	313	1210	8.1	30	290	170	78	24	150	4	6
Oct. 25	1430	2410	1200	7.8	26	300	185	82	23	140	4	5.5
Dec. 13	0800	800	1430	8.3	16	390	204	110	28	160	4	6

1988	Alkalinity Total (as CaCO ₃)	Sulfate ion (SO ₄), Dissolved	Chloride ion (Cl), Dissolved	Silica (SiO ₂), Dissolved	Oxygen, Dissolved (DO)	Coliform, Fecal	Oxygen Demand, Biochemical (BOD) 5 Day	Turbidity	Solids Dissolved (Calculated)	Solids Dissolved (Residue @ 180 Deg C)	Suspended Sediment
Date	mg/L	mg/L	mg/L	mg/L	mg/L	Cols./100 ml	mg/L	NTU	mg/L	mg/L	mg/L
Jan. 12	148	280	180	14	10.7	240	1.8	16	847	869	25
Mar. 09	126	270	180	13	8	640	3.1	62	800	822	104
May 05	128	240	140	13	7.9	710	3.3	24	704	704	56
July 13	121	260	160	13	7.1	400	3	23	751	771	41
Aug. 23	120	260	170	14	7.3	1800	1.5	76	774	781	71
Oct. 25	115	250	160	13	7.2	---	2.5	200	743	771	---
Dec. 13	186	290	190	16	11.2	350	2.8	59	912	915	79

RAINFALL ON THE RIO GRANDE WATERSHED

IN THE UNITED STATES

IN INCHES

Tabulated below, in approximate downstream order, are monthly records of United States rainfall stations with averages for their periods of record. With the exception of Las Cruces, New Mexico, all stations are located in Texas. For location, elevation, period of record, type of gauge in use, watershed subdivision in which the station is located, and the observer, see alphabetical listing of these stations following rainfall data in this bulletin. These rainfall records have not been published elsewhere. Records of daily rainfall amounts, where available, are on file in the office of the United States Section of the Commission. Daily records for years prior to 1953 may also be found in corresponding water bulletins.

Detailed listings of the months and years for which records are available through 1970 may be found under "Index to Precipitation Records" in Water Bulletins 10, 14, 26, and Supplement 40A.

Month	Las Cruces, New Mexico		American Dam		Fort Hancock Bridge		Guayuco Arroyo		Neely Ranch	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	0.25	0.66	0.18	0.41	0.15	0.39	0.06	0.31	0.18	0.33
Feb.	1.22	.46	.17	.37	.25	.31	.16	.20	.20	.22
Mar.	.06	.20	0	.31	0	.26	.12	.23	.08	.19
Apr.	.29	.30	.30	.22	.68	.29	.14	.19	.57	.19
May	.08	.52	.12	.27	.20	.47	.89	.45	.44	.40
June	.50	.90	.01	.63	.91	.88	.39	.63	1.05	.88
July	1.04	1.03	1.82	1.50	4.02	1.31	3.49	1.35	3.65	1.72
Aug.	4.65	2.98	2.90	1.53	3.94	1.62	3.14	1.64	4.68	1.83
Sep.	1.46	1.34	.49	1.11	.58	1.41	.67	1.21	1.06	1.55
Oct.	1.24	1.14	.54	.81	.50	.99	.25	.94	.30	1.03
Nov.	0	.79	.05	.31	.05	.38	0	.26	0	.31
Dec.	1.35	.92	.66	.47	.05	.47	.07	.36	.05	.45
Yearly	12.24	11.24	7.24	7.94	11.33	8.78	9.38	7.77	12.26	9.10

Month	Adobes Ranch		Shafter		Presidio (IB&WC Gage)		Kerr Mitchell Ranch		H. T. Fletcher Ranch	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	0	0.36	0	0.21	0	0.32	0	0.51	0	0.68
Feb.	0	.23	0	.33	0	.20	0	.34	0	.35
Mar.	0	.16	0	.34	T	.15	.20	.20	.05	.33
Apr.	.10	.18	.05	.84	.10	.27	.60	.51	1.80	.50
May	0	.68	.37	.89	.63	.58	2.15	1.22	1.60	1.12
June	.80	1.44	1.78	2.83	.75	1.40	.90	1.96	2.10	1.90
July	1.35	1.98	4.07	3.21	1.60	1.48	3.82	2.09	5.30	2.95
Aug.	1.35	1.88	1.71	2.90	1.00	1.39	2.30	2.27	4.90	3.24
Sep.	1.80	2.29	1.43	3.43	.50	1.51	.85	2.12	.75	2.54
Oct.	.30	.79	0	1.57	.28	.82	.10	1.38	0	1.49
Nov.	0	.29	0	.40	0	.33	0	.38	0	.46
Dec.	.25	.33	.24	.49	.22	.37	.75	.45	.30	.48
Yearly	5.95	10.61	9.65	17.44	5.08	8.82	11.17	13.43	16.80	16.04

Month	La Mota Ranch		Redford		Study Butte		Terlingua Creek Station		Johnson Ranch	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	0	0.63	0	0.32	0	0.51	0	0.31	0	0.31
Feb.	0	.12	0	.21	0	.16	0	.20	.10	.22
Mar.	0	.24	0	.17	0	.07	T	.13	0	.15
Apr.	0	.68	0	.29	0	.52	0	.34	.50	.43
May	1.30	1.08	.30	.63	1.23	1.38	.60	.73	1.60	1.00
June	T	1.79	0	1.07	1.88	1.58	1.60	1.16	1.40	1.16
July	4.10	1.40	2.40	1.44	2.78	1.81	1.00	1.24	3.50	1.19
Aug.	1.50	1.92	2.10	1.37	2.57	1.84	2.60	1.26	.70	.95
Sep.	0	2.20	.10	1.84	.85	1.33	1.00	1.25	.50	1.36
Oct.	0	1.09	0	.90	0	1.15	.20	.82	.60	.75
Nov.	0	.42	0	.36	0	.31	0	.24	0	.23
Dec.	0	.40	.20	.32	0	.30	.25	.27	.55	.30
Yearly	6.90	11.97	5.10	8.92	9.31	10.96	7.28	7.95	9.45	8.07

RAINFALL ON THE RIO GRANDE WATERSHED
IN THE UNITED STATES
IN INCHES

Month	Yarborough Ranch		Lewis James Ranch		Bricker Ranch		Roas Foster Ranch		Owens Ranch	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	0	0.27	0	0.50	0	0.33	0	0.40	0	0.45
Feb.	.07	.41	0	.56	0	.69	0	.48	.07	.68
Mar.	.21	.37	0	.31	0	.45	T	.25	0	.91
Apr.	.16	.33	.40	1.15	0	.97	0	.87	.94	1.81
May	2.73	1.12	4.11	1.80	7.10	1.47	.05	1.22	2.72	2.15
June	.81	2.16	1.12	1.32	0	1.26	3.50	1.44	1.30	2.13
July	3.61	2.59	3.08	1.36	1.45	.74	1.50	.63	6.49	1.26
Aug.	1.13	2.61	0	1.91	0	.98	1.08	1.27	0	2.00
Sep.	1.80	3.18	6.20	3.04	0	2.13	0	1.56	4.00	2.33
Oct.	1.26	1.74	.70	1.64	0	1.04	0	1.12	0	2.40
Nov.	0	.55	0	.74	0	.37	0	.50	0	1.21
Dec.	.33	.57	0	.52	0	.38	0	.50	.35	.66
Yearly	12.11	15.90	15.61	14.85	8.55	10.81	6.13	10.24	15.87	17.99

Month	Prosser Ranch No. 3		Rio Grande near Dryden		Pecos River near Langtry Station		Dead Man's Canyon near Comstock		Prosser Ranch No. 1	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	0	0.39	0.03	0.65	0	0.39	0	0.47	0	0.38
Feb.	0	.91	.13	.26	.10	.74	.15	.67	0	.72
Mar.	0	.56	0	.14	T	.43	0	.52	0	.47
Apr.	0	1.27	0	.83	T	.93	0	1.14	0	1.22
May	.70	2.20	1.09	1.18	3.30	1.50	4.55	2.27	5.25	2.44
June	0	1.66	.59	1.41	0	2.09	1.05	2.29	.50	1.80
July	1.60	1.35	4.58	.92	2.10	1.44	3.70	2.15	2.50	1.83
Aug.	0	1.97	.57	1.78	.10	1.51	0	1.66	1.02	1.88
Sep.	5.00	3.21	5.24	2.21	7.90	2.42	2.00	2.44	4.85	2.78
Oct.	T	2.04	.11	1.04	1.20	1.70	5.40	2.07	.20	1.94
Nov.	0	.66	0	.60	0	.72	0	.77	0	.77
Dec.	0	.55	.18	.53	.10	.52	T	.59	0	.50
Yearly	7.30	16.77	12.52	11.55	14.80	14.39	16.85	17.04	14.32	16.73

Month	Martin King Ranch		Brotherton Ranch		Walker Ranch		Zuberbueler Ranch		P. W. Kelly Ranch	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	T	0.51	0	0.59	0	0.40	0.09	0.49	0	0.55
Feb.	.12	.72	.15	.90	0	.69		.94	0	.81
Mar.	.08	.32	.24	.51	0	.44		.45	.25	.65
Apr.	.10	.95	.04	.96	0	1.03		1.12	0	1.05
May	3.41	1.73	2.98	1.80	4.90	2.64	3.98	2.28	3.89	2.34
June	.40	1.81	.20	1.89	.80	2.37	.86	2.41		2.32
July	1.95	1.46	1.89	1.53	2.90	1.51	2.27	2.26		1.82
Aug.	1.18	1.58	.26	1.69	.27	1.20	.83	1.01		1.91
Sep.	8.35	2.59	6.25	2.60	0	2.92	5.49	2.62		2.99
Oct.	1.30	2.12	.66	1.80	0	1.72	1.21	1.67		1.88
Nov.	0	.60	0	.59	0	.82	0	.81		.88
Dec.	0	.53	.41	.46	0	.54	.45	.82		.36
Yearly	16.89	14.92	13.08	15.32	8.87	16.28		16.88		17.56

Month	Comstock		Cow Creek near Comstock		Amistad Reservoir near Comstock		Feely		Prosser Ranch No. 2	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	0	0.55	0	0.30	0	0.36	0	0.35	0	0.36
Feb.	.10	.79	0	.42	0	.57	0	.69	0	.93
Mar.	.24	.57	0	.38	0	.37	0	.43	0	.58
Apr.	.20	1.32	.01	1.09	0	1.19	0	1.27	0	1.26
May		1.91	0	1.33	0	1.33	0	1.84	3.28	2.45
June	0	2.18	0	1.42	.30	1.66	0	1.93	.70	1.85
July	4.25	1.46	5.70	1.70	1.40	1.25	5.10	1.54	2.00	1.66
Aug.	0	1.67		1.72	0	1.44	0	1.72	3.70	2.30
Sep.	4.39	2.39		2.20	4.90	1.93	0	1.97	4.20	2.99
Oct.	.12	1.82	6.00	1.82	.30	1.86		1.82	T	1.88
Nov.	0	.64	0	.72	0	.65	0	.58	0	.71
Dec.	.26	.65		.55	.30	.32		.45	0	.48
Yearly		15.95		13.65	7.20	12.93		14.59	13.88	17.45

RAINFALL ON THE RIO GRANDE WATERSHED
IN THE UNITED STATES
IN INCHES

Month	Devils River at Cauthorn Ranch		Vinegarone		Eugene Miller Ranch		H. K. Fawcett Ranch		Ed Crane Ranch	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	0	0.35	0.70	0.59	T	0.56	0	0.63	0.10	0.75
Feb.	.10	.71	0	.84	0	.62	.10	.74	.16	.97
Mar.	0	.58	0	.64	T	.66	0	.71	.07	.54
Apr.	.10	.95	.05	1.47	1.45	1.53	0	1.62	.49	1.52
May	.65	2.28	.10	2.69	3.64	3.37	1.50	2.38	3.90	2.58
June	.79	2.19	0	2.29	1.88	2.17	0	1.57	1.16	2.22
July	1.30	.84	4.85	2.37	3.96	2.49	4.70	1.68	1.66	1.70
Aug.	1.23	1.23	4.28	2.82	.91	2.05	0	2.24	1.53	1.16
Sep.	4.08	1.59	1.92	2.41	5.11	2.86	0	2.72	6.10	2.79
Oct.	0	2.76	1.85	2.79	0	2.67	0	2.41	.22	2.19
Nov.	.03	.59	0	.96	0	.88	0	.82	0	.84
Dec.	.25	.59	0	.69	.33	.68	.40	.58	.37	.79
Yearly	8.53	14.66	13.75	20.56	17.28	20.54	6.70	18.10	15.76	18.05

Month	H. T. Miers Ranch Headquarters		H. T. Miers Ranch No. 2		A. A. Baker Ranch		Harlow Ranch		Gillis Ranch	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	0	0.58	0.07	0.47	0	0.42	0	0.35	0	0.44
Feb.	.10	.98	.16	.82	0	.70	0	.56	0	.89
Mar.	0	.69	.12	.80	.28	.52	0	.33	.11	.70
Apr.	.70	1.70	.55	1.53	.05	1.15	.10	1.08	0	1.50
May	.50	2.51	1.85	2.48	3.00	1.96		2.00	3.23	2.46
June	0	2.70	2.13	2.33	.75	1.97		2.47	.85	2.33
July	.35	1.57	7.58	1.70	4.96	1.63		1.28	5.27	1.91
Aug.	2.72	1.89	1.19	2.21	.14	1.64	0	1.61	1.17	1.54
Sep.	3.23	2.49	5.19	2.69	4.75	2.94	3.40	2.51	4.77	2.82
Oct.	.80	2.71	0	2.26	.17	1.84	0	1.92	.20	2.00
Nov.	.10	.92	0	.98	0	.68	0	.62	0	.84
Dec.	.30	.64	.47	.73	.27	.50	.30	.52	.45	.66
Yearly	8.80	19.38	19.31	19.00	14.37	15.95		15.25	16.05	18.09

Month	Goldwire Ranch		Pafford Crossing		Big Satan Creek Station		Cliff Lowry Ranch No. 1		Lowry Ranch No. 2	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	0	0.55	0	0.52	0	0.58	0	0.50	0	0.43
Feb.	.10	.66	.10	.74	0	.79	.10	.99	.10	.77
Mar.	0	.67	0	.52	0	.78	.05	.75	.10	.70
Apr.	.56	1.56	.10	1.28	.15	1.60	.17	1.62	.05	1.53
May	.75	2.48	.60	1.96	0	2.30	2.15	2.51	2.52	2.17
June	1.40	2.24	0	2.24	0	2.20	.32	2.37	.59	2.32
July	3.10	2.23	5.20	1.99	.80	2.11	3.01	1.73	2.31	1.82
Aug.	.09	2.50	4.00	2.01	5.43	2.70	1.10	2.10	2.61	2.23
Sep.	4.01	2.48	0	2.75	3.22	2.36	7.07	3.08	3.19	2.30
Oct.	1.20	2.35	.60	2.17	1.10	2.45	.55	2.33	.06	2.14
Nov.	.10	1.09	.50	.86	.10	1.07	0	1.01	0	.94
Dec.	.30	.64	.50	.59	.50	.70	.31	.64	.30	.65
Yearly	11.61	19.45	11.60	17.63	11.30	19.51	14.83	19.63	11.83	18.00

Month	Tuffy Whitehead Ranch		Stewart Ranch		Rough Canyon near Del Rio		Devils Lake		Sellers Ranch	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	0	0.39	0	0.47	0.04	0.39	0	0.61	0	0.37
Feb.	.05	.73	.10	.86	.20	.89	.10	.82	.10	.72
Mar.	.17	.60	.10	.62	.10	.62	.15	.58	0	.47
Apr.	.05	1.25	.03	1.54	.05	1.35	.27	1.56	.20	1.25
May	2.20	1.83	2.20	1.92		2.33	2.52	2.05	1.85	1.88
June	.15	1.94	.07	2.37	.45	2.13	.10	2.44	1.05	2.55
July	4.25	1.52	4.00	1.75	5.25	2.10	5.21	1.41	5.00	1.37
Aug.	0	1.44	.87	1.64	0	1.95	.28	1.65	0	1.57
Sep.	5.05	2.69	5.67	2.48	6.60	2.53	4.77	2.33	3.30	2.36
Oct.	.05	1.76	.08	2.16	.20	2.54	.33	2.01	0	2.02
Nov.	0	.66	0	.87	0	.99	0	.75	0	.70
Dec.	.41	.52	.12	.59	.10	.68	.42	.73	.10	.53
Yearly	12.38	15.33	13.24	17.27		18.80	14.15	16.94	11.60	15.79

RAINFALL ON THE RIO GRANDE WATERSHED
IN THE UNITED STATES
IN INCHES

Month	Evans Creek near Constock		J. G. Brite Ranch		Hutto Ranch No. 1		Hutto Ranch No. 2		Middle Fork San Pedro	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	0	0.29	0	0.40	0	0.53	0	0.52	0	0.46
Feb.	.20	.77	.06	.82	.09	.87	.09	.95	.10	.94
Mar.	0	.49	.07	.61	0	.65	0	.65	.10	.67
Apr.	.10	1.13	0	1.40	0	1.75	.13	1.83	.10	1.62
May	1.25	1.72		2.13	.73	2.15	1.72	1.97	0	2.28
June	0	1.98	1.05	2.33	.77	2.45	1.00	2.50	.40	2.62
July	4.10	1.79	4.70	1.61	5.45	2.01	2.15	1.90	4.25	2.35
Aug.	0	2.03	.12	1.85	.87	1.83	2.53	1.99	0	1.88
Sep.	5.90	2.75	4.18	3.02	7.76	2.72	5.76	3.17	5.40	1.85
Oct.	0	2.00	.20	2.12	.05	2.29	.11	2.14	.10	2.63
Nov.	0	.84	0	.76	0	.84	0	.94	0	.96
Dec.	.20	.50	.40	.58	0	.61	.33	.59	.10	.67
Yearly	12.75	16.29		17.63	15.72	18.70	13.82	19.15	10.55	18.93

Month	North Fork San Pedro		Long Ranch		Buoy No. 11		Amistad Dam		Laughlin Air Force Base	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	T	0.44	0.04	0.53	0	0.40	0.07	0.51	0.03	0.48
Feb.	.10	.79	.15	.84	.10	.62	.20	.86	.25	.97
Mar.	.05	.64	.20	.68	0	.41	.54	.71	.13	.56
Apr.	.20	1.63	.10	1.51	0	1.58	.04	1.71	.16	2.01
May	0	2.22	1.79	2.31	0	1.93	2.36	2.25	1.84	2.16
June	.50	2.54	.58	2.59	0	2.17	.35	2.33	3.14	2.98
July	4.90	2.37	5.59	2.17	.80	1.55	5.18	1.90	2.77	2.36
Aug.	0	1.86	.95	1.54	0	1.57	1.04	2.01	3.01	1.88
Sep.	7.60	2.19	5.47	2.12	1.10	2.10	6.95	3.37	5.47	2.44
Oct.	.15	2.45	.13	2.11	2.10	1.79	.58	2.04	.32	2.46
Nov.	0	1.01	0	.86	T	.60	.21	.89	.01	1.02
Dec.	T	.67	.20	.66	.25	.34	.34	.66	.34	.53
Yearly	13.50	18.81	15.20	17.92	4.35	15.06	17.86	19.24	17.47	19.85

Month	Gilliss Headquarters Ranch		Lewis Ranch		Wardlaw Standart Ranch		Pinto Creek Station		Las Moras Creek	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	0	0.65	0	0.57	0	0.76	0.50	0.49	0	0.73
Feb.	.18	1.00	0	1.10	0	1.06	.10	.75	0	.97
Mar.	.15	.81	.12	.79	0	.92	0	.51	.10	.64
Apr.	.97	1.84	.30	1.99	.20	1.49	.10	1.52	0	1.41
May	2.73	2.90	1.25	2.50	1.02	2.91		2.34	1.10	2.13
June	2.13	2.93	3.05	3.10	6.75	3.58		2.42	2.30	2.70
July	2.41	2.16	.98	1.42	2.25	1.02	1.30	1.33	1.30	1.32
Aug.	1.46	2.42	1.25	2.03	.87	.86	.42	1.52	1.08	1.86
Sep.	4.27	2.05	2.57	4.68	2.25	2.80	2.64	3.35	3.17	3.17
Oct.	.17	2.72	.55	2.83	.60	2.19	.25	2.07	.98	2.41
Nov.	0	1.29	0	1.16	T	1.65	0	1.11	0	1.04
Dec.	.45	.85	.50	.81	.33	.81	0	.59	.15	.77
Yearly	14.92	21.62		20.97	16.70	19.50		17.29	10.36	19.15

Month	Normandy		Lateral No. 12 Headgate		Coal Mine		Eagle Pass		Trees Farm	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	0	0.78	0	0.56	0.07	0.61	0.13	0.73	0.10	0.57
Feb.	0	.80	.20	.65	.20	.77	.19	.86	.23	.74
Mar.	.12	.69	.10	.55	.17	.66	.15	.73	.10	.44
Apr.	.20	1.85	0	1.72	.05	1.70	.08	1.75	.10	1.79
May	1.31	2.85	1.10	2.53	1.10	2.65	.97	3.78	.80	3.05
June	.72	2.51	.50	2.42	.50	2.43	2.07	3.23	2.15	2.34
July	2.53	1.83	1.10	1.40	4.30	1.92	2.83	1.82	1.17	1.50
Aug.	2.61	1.93	1.95	1.62	2.05	1.64	2.11	2.45	3.83	1.72
Sep.	4.28	3.00	2.90	2.70	1.45	3.00	2.77	2.99	3.90	2.57
Oct.	1.50	2.48	1.40	2.53	1.45	2.55	1.52	2.46	2.50	2.75
Nov.	.16	1.07	0	.91	.05	.80	.20	.98	.09	.81
Dec.	.20	.76	.20	.66	.22	.62	.38	.86	.25	.72
Yearly	13.63	20.55	9.45	18.25	11.61	19.35	13.40	22.64	15.22	19.00

RAINFALL ON THE RIO GRANDE WATERSHED

IN THE UNITED STATES

IN INCHES

Month	Farias Ranch		Indio Ranch		El Indio		Van Dalsem Farm		Keisling Farm	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	0.13	0.66	0.10	0.65	0.07	0.76	0.18	0.62	0.23	0.68
Feb.	.25	.95	.40	.78	.35	.95	.20	.83	.52	.86
Mar.	.10	.53	.10	.56	.09	.54	.07	.48	.10	.64
Apr.	.05	1.91	.15	1.96	.06	1.80	.20	2.07	.02	1.94
May	.65	3.16	1.08	3.08	1.29	3.37	.87	3.19	.79	2.95
June	4.05	2.40	1.75	2.50	2.84	2.36	1.55	2.14	1.36	2.74
July	1.10	1.76	1.37	1.74	1.97	1.26	.65	1.40	.51	1.30
Aug.	1.65	1.87	2.83	1.65	1.50	1.89	1.65	1.70	1.01	1.71
Sep.	3.65	3.24	5.18	3.11	5.41	2.92	3.00	2.86	2.95	2.57
Oct.	1.38	2.72	.98	2.49	1.06	2.32	1.25	2.42	1.35	2.40
Nov.	.05	.82	0	.85	.20	.78	0	.79	0	.76
Dec.	.20	.81	0	.79	.40	.72	.20	.77	.18	.91
Yearly	13.26	20.83	13.94	20.16	15.24	19.67	9.82	19.27	9.02	19.46

Month	Apache Ranch		Laredo Water Plant		Corralitos Ranch		Huisache Ranch		Zapata Water Plant	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	0.52	0.57	0.43	0.74	0.40	0.73	0.40	0.80	0.40	0.87
Feb.	.70	.76	.64	.84	.50	.71	.15	.86	.19	.83
Mar.	.02	.37	.28	.56	.60	.53	.50	.60	.40	.56
Apr.	.02	1.57	.07	1.21	.25	1.10	.20	1.26	.19	1.49
May	.60	2.48	.48	2.43	3.25	2.15	3.48	2.22	3.50	2.67
June	3.30	2.03	1.50	2.23	.45	2.15	.45	2.49	.52	2.36
July	.60	2.06	2.65	1.14	5.30	1.36	3.50	1.44	2.84	1.62
Aug.	1.70	1.74	2.50	1.87	4.45	1.98	2.90	1.54	3.70	1.90
Sep.	3.60	3.17	3.50	2.82	3.60	2.92	4.50	3.70	5.35	4.12
Oct.	1.60	2.34	3.51	1.83	6.50	2.08	5.50	2.22	3.60	1.92
Nov.	0	.67	0	.87	0	.79	0	.77	.10	.88
Dec.	0	.71	.21	.86	.05	.62	.04	.78	.05	.88
Yearly		18.47	15.77	17.40	25.35	17.12	21.62	18.68	20.84	20.10

Month	Falcon Dam		Roma (Int'l. Bridge)		Garciasville		Los Ebanos		La Joya	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	1.28	0.91	1.15	0.86	0.95	0.97	0	1.03	0.95	1.12
Feb.	.92	.99	0	1.01	1.41	1.08	1.72	1.06	1.19	1.08
Mar.	.48	.60	.17	.55	.37	.47	.94	.44	.40	.47
Apr.	.29	1.31	.27	1.35	.36	1.13	.16	1.29	0	.89
May	3.70	2.62	3.50	1.99	.75	2.55	.90	2.37	.60	2.37
June	.38	2.55	.30	2.28	.44	2.60	1.31	2.59	1.19	2.78
July	2.92	1.32	2.50	1.30	3.35	1.37	2.31	1.21	.76	1.12
Aug.	1.22	2.40	1.40	1.89	4.17	1.94	3.56	1.91	2.99	1.53
Sep.	6.68	4.21	4.80	4.20	2.98	3.30	6.19	3.18	6.30	3.15
Oct.	2.90	2.07	2.90	2.01	2.27	1.79	1.53	1.84	3.05	1.81
Nov.	0	1.07	0	.81	0	.90	0	.80	0	.82
Dec.	.09	.77	.09	.51	0	.72	0	.75	.04	.85
Yearly	20.86	20.82	17.08	18.76	17.05	18.82	18.62	18.41	17.47	17.99

Month	Penitas (Edinburg Pumping Plant)		Edinburg Filtration Plant		La Feria Pumping Plant		La Feria Materials Yard		CCWCID #19 (Adams Gardens)	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	1.37	1.35	2.19	1.57	4.30	1.87	3.65	1.84	3.33	1.38
Feb.	1.32	1.11	2.58	1.31	2.85	1.90	3.50	2.21	1.92	1.64
Mar.	4.52	.63	.45	.72	4.90	.95	1.90	.88	4.52	.85
Apr.	.42	1.26	.19	1.55	0	1.96	0	1.51	.18	1.43
May	.45	2.47	.79	2.30	2.10	3.06	3.00	2.79	1.95	2.70
June	1.19	2.96	2.15	2.69	2.80	3.30	0	3.62	1.27	2.81
July	2.33	1.55	1.55	1.44	0	2.41	1.10	2.59	.45	1.89
Aug.	5.22	2.35	2.72	2.43	2.05	3.41	2.65	3.04	3.50	2.92
Sep.	4.53	3.62	5.35	3.73	7.70	6.34	7.80	5.14	9.36	4.30
Oct.	1.59	2.64	.40	2.44	.10	3.90	.35	3.19	.88	2.73
Nov.	.06	.89	.02	1.06	0	1.93	0	1.43	0	1.46
Dec.	0	1.01	.09	1.07	0	1.56	0	1.59	.04	1.16
Yearly	23.00	21.84	18.48	22.31	26.80	32.59	23.95	29.83	27.40	25.27

RAINFALL ON THE RIO GRANDE WATERSHED
IN THE UNITED STATES
IN INCHES

Month	San Benito Pump		CCWCID #11 (Bayview Dist. Off.)						
	1988	Average	1988	Average					
Jan.	3.27	1.48	5.20	1.77					
Feb.	1.96	1.09	2.70	1.63					
Mar.	1.30	.80	2.60	.71					
Apr.	0	1.38	0	1.75					
May	2.63	2.72	0	2.60					
June	1.37	2.52	1.44	2.30					
July	0	1.70	0	1.90					
Aug.	3.65	2.41	3.86	2.68					
Sep.	7.55	4.42	4.28	5.76					
Oct.	1.51	2.63	2.05	2.39					
Nov.	0	1.25	0	1.49					
Dec.	0	1.36	0	1.52					
Yearly	23.24	23.76	22.13	26.50					

RAINFALL ON THE RIO GRANDE WATERSHED

IN MEXICO

IN INCHES

Tabulated below, in approximate downstream order, are monthly records of Mexican rainfall stations with averages for their periods of record. For location, elevation, period of record, type of gage in use, watershed subdivision in which the station is located, and the observer, see alphabetical listing of these stations following rainfall data. These rainfall records have not been published elsewhere. Records of daily rainfall amounts, where available, are on file in the offices of the Mexican Section of the Commission.

Detailed listings of the months and years for which records are available through 1970 may be found under "Index to Precipitation Records" in Water Bulletins 10, 14, 22, 26, and Supplement 40A.

Month	Cd. Juarez, Chihuahua		Esc. Superior de Agricul., Chihuahua		Samalayuca, Chihuahua		Escuela Agrope- cuaria, Chihuahua		Campo Agricola Experi., Chihuahua	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	0.24	0.43	0.20	0.60	0.16	0.47	0.04	0.40	0.47	0.39
Feb.	.39	.44	.47	.42	.16	.45	.04	.35	.12	.24
Mar.	.16	.35	.08	.27	.08	.36	0	.29	T	.23
Apr.	.39	.29	.20	.52	.39	.17	0	.17	.35	.20
May	.24	.36	.08	.34	T	.25	0	.35	.24	.33
June	.12	.66	.04	1.45	.63	.81	0	.71	.83	.76
July	1.61	1.54	1.38	1.12	3.39	1.98	0	1.72	2.95	1.62
Aug.	3.58	1.63	6.02	2.42	3.15	2.00	0	1.49	2.95	1.38
Sep.	1.46	1.42	2.13	1.48		1.96		1.65		1.58
Oct.	.51	1.05	1.30	1.44	.71	.90		.97		.87
Nov.	.08	.48	.12	.46	.16	.47		.33		.43
Dec.	.63	.61	.20	.74	.12	.44		.37		.46
Yearly	9.41	9.26	12.22	11.26		10.26		8.80		8.49

Month	El Cuarenta, Chihuahua		Gallego, Chihuahua		La Trasquila, Chihuahua		El Maguey, Chihuahua		Cd. Guerrero, Chihuahua	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	T	0.46	T	0.36	0.04	0.38	T	0.41	0.08	0.62
Feb.	T	.31	T	.36	.12	.28	.20	.31	T	.40
Mar.	.63	.24	.08	.19	.20	.15	.08	.18	T	.25
Apr.	.20	.22	.04	.28	.35	.22	.47	.27	.20	.22
May	.08	.34	0	.37	0	.33	T	.47	.04	.34
June	1.42	.99	.39	1.17	.47	1.23	2.52	1.76	4.92	1.57
July	2.80	2.13	6.50	3.14	2.83	3.37	5.16	3.81	5.94	4.91
Aug.	3.98	3.09	3.94	3.47		2.74	6.69	4.28	6.85	5.14
Sep.	1.14	1.92	2.64	2.85		3.10	1.18	3.38	1.65	3.14
Oct.	.16	1.08	.87	1.30	.35	.99	2.28	.98	.87	1.16
Nov.	0	.48	.04	.36		.34	0	.27	T	.49
Dec.	T	.49	.12	.39		.43	.12	.30	.67	.73
Yearly	10.41	11.75	14.62	14.24		13.56	18.70	16.42	21.22	18.97

Month	Bachiniva, Chihuahua		Cuauhtemoc, Chihuahua		Colonia Anahuac, Chihuahua		El Vergel, Chihuahua		San Antonio, Durango	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	T	0.51	T	0.36	T	0.40	0.31	1.33	0.20	0.43
Feb.	0	.18	.08	.16	T	.25	.24	.70	0	.16
Mar.	0	.29	0	.16	0	.19	.20	.56	0	.09
Apr.	.12	.21	.16	.25	.94	.38	.24	.52	0	.26
May	0	.30	T	.42	T	.49	.98	.89	0	.61
June	4.13	1.61	1.42	1.58	1.77	1.66	7.87	3.68	2.99	2.16
July	7.28	5.19	3.86	4.57	6.22	4.57	11.42	7.09	12.48	4.69
Aug.	6.93	4.83	6.14	4.41	4.21	4.93	6.46	7.02	5.47	4.23
Sep.	2.72	2.75	2.32	2.91	2.09	3.46	3.94	4.74	2.32	4.33
Oct.	1.54	1.10	1.61	1.16	.71	1.08	.24	1.86		1.20
Nov.	0	.33	0	.30	0	.31	T	.63		.26
Dec.	0	.48	.28	.44	0	.31	.47	1.26		.31
Yearly	22.72	17.78	15.87	16.72	15.94	18.03	32.37	30.28		18.73

T Trace

RAINFALL ON THE RIO GRANDE WATERSHED

IN MEXICO

IN INCHES

Month	Estacion Rosario, Durango		Villa Coronado, Chihuahua		Valle Allende, Chihuahua		Hidalgo del Parral, Chihuahua		Jimenez, Chihuahua	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	0.20	0.41	0	0.68	0	0.39	0	0.19	0.20	0.34
Feb.	0	.22	0	.30	.20	.17	T	.20	0	.15
Mar.	0	.13	T	.16	T	.08	0	.09	0	.11
Apr.	0	.32	.87	.62	.28	.29	.71	.20	0	.19
May	0	.67	0	.78	0	.81	0	.47	T	.57
June	2.99	2.28	3.43	3.24	2.36	2.05	3.62	1.76	2.05	1.52
July	12.48	4.63	8.82	4.49	5.67	3.96	4.53	4.22	6.22	3.32
Aug.	5.47	4.87	10.08	5.66	6.85	4.80	5.00	4.48	2.72	2.65
Sep.	2.32	4.53	1.10	4.37	.87	3.54	.39	4.50	.83	2.29
Oct.	.31	1.11	.35	1.45	.16	.81	T	1.12	T	1.12
Nov.	0	.31	0	.47	0	.29	T	.47	0	.24
Dec.	1.18	.43	.20	.50	.12	.35	T	.35	.12	.25
Yearly	24.95	19.91	24.85	22.67	16.51	17.54	14.25	18.05	12.14	12.75

Month	Balleza, Chihuahua		La Boquilla, Chihuahua		Ojo Caliente, Chihuahua		Camargo, Chihuahua		El Sitio, Chihuahua	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	0	0.45	T	0.31	0	0.31	T	0.46	T	0.33
Feb.	T	.32	T	.18	0	.22	T	.24	T	.29
Mar.	T	.15	T	.14	0	.15	T	.11	T	.17
Apr.	.28	.24	.87	.25	.20	.18	.28	.27	.39	.27
May	T	.26	T	.55	0	.49	T	.62	T	.48
June	1.81	1.70	2.64	1.44	2.87	1.73	2.32	1.69	1.97	1.70
July	7.76	4.75	1.89	2.88	4.88	3.31	3.94	3.25	5.63	4.36
Aug.	4.92	4.87	5.39	2.99	4.25	2.89	3.82	3.12	4.80	4.93
Sep.	1.46	3.33	.39	2.96	.87	2.72	1.85	2.94	1.57	3.39
Oct.	.35	.91	.39	.86	.79	1.08	1.10	1.00	2.36	.96
Nov.	0	.44	0	.31	0	.23	0	.35	0	.36
Dec.	.39	.47	.12	.34	0	.29	.12	.36	.12	.37
Yearly	16.97	17.89	11.69	13.21	13.86	13.60	13.43	14.41	16.84	17.61

Month	Nonoava, Chihuahua		Carichic, Chihuahua		San Juanito, Chihuahua		Las Virgenes, Chihuahua		Delicias, Chihuahua	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	0	0.47	0.12	0.57	0.67	1.92	T	0.30	0.04	0.36
Feb.	.28	.34	T	.41	.24	1.03	0	.12	T	.15
Mar.	0	.27	T	.25	T	.59	T	.09	T	.13
Apr.	.04	.26	.16	.26	.35	1.00	.35	.29	.39	.35
May	.04	.38	T	.44	.71	.73	.12	.35	.08	.38
June	3.46	2.27	2.76	1.86	3.74	2.44	1.06	1.23	3.86	1.26
July	8.82	5.03	8.82	5.96	9.02	8.78	2.76	2.74	3.43	2.49
Aug.	6.57	4.06	7.76	5.25	13.27	7.18	3.19	2.66	4.41	2.55
Sep.	2.05	2.87	1.77	3.75	1.26	4.25	.35	2.43	1.02	2.33
Oct.	.24	1.05	.39	1.09	.75	2.25	.67	.86	.79	.84
Nov.	0	.44	0	.55	0	1.24	0	.24	0	.27
Dec.	1.10	.54	.94	.81	1.06	2.02	0	.36	.16	.38
Yearly	22.60	17.98	22.72	21.20	31.07	33.43	8.50	11.67	14.18	11.49

Month	Presa Chihuahua, Chihuahua		Lazaro Cardenas, Chihuahua		Chihuahua, Chihuahua		Km. 135, Chihuahua		Meoqui, Chihuahua	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	0.12	0.30	0.04	0.27	0.16	0.31	0	0.25	0.04	0.32
Feb.	T	.18	T	.23	T	.19		.22	T	.18
Mar.	0	.16	T	.11	T	.19		.11	T	.12
Apr.	.12	.37	.31	.39	.12	.26	.12	.34	.51	.52
May	.04	.40	.71	.57	T	.53	.28	.50	.04	.56
June	.98	2.16	.79	1.32	1.54	1.54	.79	1.11	2.05	1.40
July	2.99	3.95	2.40	2.78	4.29	3.59	3.82	2.37	3.78	2.58
Aug.	6.38	4.60	4.76	2.62	9.25	3.57	4.21	2.75	4.61	2.80
Sep.	.63	3.46	.51	2.77	1.89	2.94	.98	3.11	1.18	2.50
Oct.	2.09	1.09	1.22	.84	1.61	.94	1.46	.98	.83	.97
Nov.	0	.33	0	.32	0	.41	0	.33	0	.25
Dec.	.20	.40	.24	.24	.28	.42	0	.37	.20	.39
Yearly	13.55	17.90	10.98	12.46	19.14	14.89		12.44	13.24	12.59

T Trace

RAINFALL ON THE RIO GRANDE WATERSHED

IN MEXICO

IN INCHES

Month	Posta Zootenica, Chihuahua		Majalca, Chihuahua		Las Burras, Chihuahua		Villa Aldama, Chihuahua		Presa Luis L. Leon, Chihuahua	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	0.12	0.37	0.16	0.53	0.08	0.32	T	0.28	0.08	0.26
Feb.	.04	.20	.20	.35	0	.19	T	.17	T	.15
Mar.	T	.16	0	.34	0	.11	T	.23	T	.12
Apr.	.24	.45	.87	.49	.12	.33	.16	.39	.75	.31
May	.16	.79	.04	.84	.12	.48	.08	.50	T	.60
June	.35	1.52	2.68	2.56	1.02	1.26	.20	1.56	.24	1.45
July	1.85	3.24	6.46	6.03	6.34	2.85	2.09	2.67	3.78	2.30
Aug.	5.31	4.02	8.74	6.34	1.02	2.53	2.05	2.82	1.61	2.85
Sep.	.79	3.17	2.01	4.70	.12	2.36	.55	3.14	.04	2.31
Oct.	2.83	1.22	2.17	1.19	1.06	.82	1.54	.89	.83	.91
Nov.	0	.33	0	.42	0	.24	0	.30	0	.32
Dec.	.20	.35	.12	.45	.12	.37	.28	.38	.16	.37
Yearly	11.89	15.82	23.45	24.24	10.00	11.86	6.95	13.33	7.49	11.95

Month	Maclovio Herrera, Chihuahua		Coyame, Chihuahua		Ojinaga (IB&WC), Chihuahua		Ojinaga (M.S. of Mexico), Chihuahua		Mafjoma, Chihuahua	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	T	0.34	0	0.29	T	0.35	T	0.30	T	0.45
Feb.	.12	.20	.35	.29	T	.24	T	.22	.12	.34
Mar.	.04	.12	T	.14	T	.15	T	.19	.04	.19
Apr.	.16	.38	.08	.39	.04	.37	.04	.31	.16	.35
May	.04	.58	.51	.65	.55	.64	.47	.60	.04	.84
June	1.38	1.37	2.20	1.83	.31	1.49	.16	1.26	1.38	1.74
July	5.16	2.70	4.45	2.41	1.93	1.62	1.18	1.56	5.16	2.86
Aug.	2.83	2.79	2.01	2.47	2.56	1.71	.91	1.61	2.83	3.25
Sep.	.28	3.06	2.32	2.75	.98	1.74	.94	1.65	.28	2.70
Oct.	.63	.88	.79	1.05	.39	1.06	.47	1.04	.63	1.08
Nov.	T	.37	T	.42	.44	.44	0	.38	T	.44
Dec.	.16	.59	.31	.33	.37	.37	.16	.43	.16	.44
Yearly	10.80	13.38	13.02	13.02		10.08	4.33	9.55	10.80	14.68

Month	Manuel Benavides, Chihuahua		Esacolon, Coahuila		La Chuparrosa, Coahuila		Progreso, Coahuila		La Amistad, Coahuila	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	T	0.20	0.79	0.44	0	0.28	0	0.51	T	0.61
Feb.	.24	.23	.63	.20	.15	.54	.35	.66	.12	.84
Mar.	T	.20	.59	.11	.07	.39	0	.35	.47	.68
Apr.	T	.35	.31	.52	0	1.16	.67	1.25	T	1.56
May	.63	1.16	.77	.77	0	1.40	1.34	2.16	2.56	2.32
June	1.85	1.70	1.91	1.84	0	1.54	.55	1.79		2.84
July	1.61	2.05	4.65	2.47	4.46	1.64	4.49	1.16	6.10	1.64
Aug.	1.22	2.59	8.58	3.04	.33	2.00	3.70	1.90	.04	.62
Sep.	.87	2.66		2.82	4.28	2.34	3.31	2.97	7.48	2.33
Oct.	.51	1.04	1.97	1.27	.96	1.67	.98	1.77	.63	2.25
Nov.	0	.35	0	.29	0	.66	0	.59	T	1.20
Dec.	.43	.39	0	.39	.25	.31	.12	.50	.28	.70
Yearly	7.36	12.92		14.16	10.50	13.93	15.51	15.61		17.59

Month	Amistad Res. near Tlaloc, Coahuila		Represa Amistad, Coahuila		Cd. Acuna, Coahuila		Presa Centenario, Coahuila		Palestina, Coahuila	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	0	0.41	0	0.35	0.04	0.56	0	0.52	0.04	0.81
Feb.	.15	.70	.04	.61	.16	.88	.24	.72	.31	.94
Mar.	.10	.66	.16	.48	.16	.69	0	.60	.12	.72
Apr.		1.09	.04	1.00	.08	1.79		1.50	.08	1.78
May		1.77	1.14	1.62	2.36	2.35		2.29	1.73	2.51
June	.31	2.19	.39	1.68	.94	2.32		2.54	.71	2.36
July	8.60	2.72	4.33	1.97	4.69	1.70		1.32	4.02	1.88
Aug.	.68	1.93	.16	1.44	.47	1.67		2.27	1.97	2.23
Sep.	7.70	2.61	4.96	2.30	5.43	2.91		3.13	4.57	3.12
Oct.	.70	2.01	.43	2.11	1.50	2.56		2.56	1.06	2.24
Nov.	0	.78	0	.69	T	.77		1.07		.90
Dec.		.65	.24	.36	.35	.64		.72		.76
Yearly		17.52	11.89	14.61	16.18	18.84		19.24		20.25

T Trace

RAINFALL ON THE RIO GRANDE WATERSHED

IN MEXICO

IN INCHES

Month	Presa Cabeceras, Coahuila		Presa San Miguel, Coahuila		Emiliano Zapata, Coahuila		Jimenez, Coahuila		Piedras Negras, Coahuila	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	0	0.55	0	0.55	0.31	1.16	0.04	0.68	T	0.68
Feb.	.12	.71	.28	.74	2.72	1.04		.86		.88
Mar.	.12	.59	.16	.63	2.95	1.08	T	.71		.60
Apr.	0	1.65	.08	1.37	1.38	1.89	.12	1.68		1.88
May	2.01	2.49	1.69	2.36	7.05	3.93	1.34	2.50		3.59
June	.39	2.45	.63	2.59	9.02	3.75	3.15	2.57		2.73
July	3.86	2.58	2.83	1.74	1.42	2.03	.91	1.60		1.96
Aug.	3.70	2.81	2.44	2.46	2.35	1.80	1.26	1.67		2.33
Sep.	6.54	4.23	3.62	3.57	4.53	2.46	3.70	2.91		3.08
Oct.	0	2.61	1.22	2.32	.20	1.63	.55	2.47		2.77
Nov.	0	1.13		1.22	.59	1.75	.20	1.09		.91
Dec.	.04	.62		.72	0	1.08	.20	.71		.73
Yearly	16.78	22.42		20.27	32.53	23.60		19.45		22.14

Month	Zaragoza, Coahuila		Muzquiz, Coahuila		Sabinas, Coahuila		Ocampo, Coahuila		Presa Carranza, Coahuila	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	0.04	1.34	0	0.84	0	0.60	1.22	0.53	T	0.70
Feb.	.20	.75	.71	.63	.31	.68		.28	.59	.67
Mar.	.04	.66	0	.73	.04	.37		.18	T	.47
Apr.	0	2.06	.04	1.15	0	1.29	0	.76	T	1.29
May	2.68	3.83	1.85	3.68	3.39	2.71	1.26	1.25	2.09	2.15
June		3.42	2.99	3.39	2.36	2.20	3.39	1.71	2.05	1.83
July	7.44	1.60	13.27	2.94	5.75	1.49	1.38	1.61	.94	1.01
Aug.	3.94	2.02	2.76	2.96	3.82	2.08	2.48	1.54	6.26	1.97
Sep.	4.96	2.35	5.39	4.93	7.28	3.47	2.32	1.98	8.86	3.03
Oct.	2.20	1.99	.51	2.13	.98	1.88	.87	1.06	.71	1.73
Nov.	0	1.20	.08	1.15	0	.62	0	.44	0	.58
Dec.	.28	.89	0	.82	.12	.50	.20	.43	0	.62
Yearly		22.11		27.60		24.05		17.89		11.77
										21.50
										16.05

Month	Cuatro Ciénegas, Coahuila		Lag. de Salinillas, Nuevo Leon		Villa Hidalgo, Coahuila		Colombia (SARH), Nuevo Leon		San Nicolas, Nuevo Leon	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	0	0.35	0.12	0.68	0.08	0.73	0.47	0.80	0.20	0.97
Feb.	0	.34	.98	.76	.71	.84	2.32	.85	1.14	.96
Mar.	0	.13	.12	.52		.68	1.26	.65	.16	.73
Apr.	.12	.38	.04	1.35	T	1.75	2.09	2.00	.31	1.95
May	.67	.82	3.58	2.44	1.38	2.80	3.66	2.94	2.83	3.56
June	.08	.77	.94	1.98	3.98	2.33	3.23	2.07	.12	2.65
July	2.48	.95	1.38	1.01	1.50	1.21	3.86	1.29	2.36	1.32
Aug.	1.77	1.15	4.72	2.25	2.68	2.13	1.57	.59	1.50	1.90
Sep.	7.99	1.53	9.02	3.19	2.36	3.25	.08	1.26	3.58	2.10
Oct.	.12	.81	.79	2.06	1.26	2.11	.51	2.57	2.20	2.40
Nov.	0	.42	.08	.68	0	.90	0	.84	.04	.47
Dec.	.35	.47	.08	.62	T	.78	.71	.85	.16	.78
Yearly	13.58	8.12	21.85	17.54		19.51		16.71	14.60	19.79

Month	Jarita, Nuevo Leon		Anahuac, Nuevo Leon		Nv. Laredo (M. S. of Mexico), Tamps.		Lampazos, Nuevo Leon		Espinazo, Nuevo Leon	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	0.55	0.64	0.08	0.74	0.39	0.81	0	0.77	0.35	1.40
Feb.	2.87	1.06	.79	.69		.91	.94	.76	.28	.52
Mar.	.24	.51	.20	.52	.31	.64	0	.47	T	.13
Apr.	1.54	1.72	.24	1.28	.12	1.32		1.30	.98	1.65
May	3.46	3.33	6.10	2.59	.35	2.53		2.31	.91	2.85
June	0	1.84	.83	2.09	.39	2.24	0	2.82	.83	1.17
July	5.00	1.41	1.97	1.41	5.91	1.34	1.69	1.79	1.42	1.62
Aug.	3.50	2.11	2.40	2.32	3.23	1.67	2.60	1.83	1.14	1.45
Sep.	T	2.52	2.56	3.06	3.70	2.87	8.15	4.97	6.69	2.37
Oct.	.63	1.97	1.26	1.74	3.54	2.01	.24	1.96	.35	1.53
Nov.	.67	1.12	0	.67	0	.98	0	.73	0	.42
Dec.	.20	.83	.16	.74	.12	.89	0	.56	.04	.50
Yearly	18.66	19.06	16.59	17.85		18.21		20.27	12.99	15.61

RAINFALL ON THE RIO GRANDE WATERSHED

IN MEXICO

IN INCHES

Month	Villaldama, Nuevo Leon		Vallecillo, Nuevo Leon		La Popa, Nuevo Leon		Ojo de Agua (Sabinas), N. L.		Garza Ayala, Nuevo Leon	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	0.28	1.37	0.63	0.81	0	0.50	0.08	1.52	0.79	0.88
Feb.	.43	.54	.98	.80	0	.59	.08	.87	.63	.68
Mar.	.16	.24	.20	.48	0	.21	0	.35	.08	.44
Apr.	.79	1.87	.31	1.95	.24	.56	.12	1.82	.83	1.79
May	.55	2.06	.98	2.03	.35	1.01	.08	3.79	3.23	2.20
June	1.10	2.96	1.89	3.11	.59	1.47	.87	2.04	1.61	2.30
July	7.20	2.13	2.52	1.63	1.46	1.19	4.17	1.87	4.37	3.78
Aug.	4.09	2.85	8.50	2.11	.35	1.57	13.66	3.21	8.90	2.51
Sep.	14.80	4.99	5.59	4.14	2.83	2.72		1.94	6.06	4.10
Oct.	.24	1.26	1.57	1.94	1.97	.72		1.60	1.02	2.39
Nov.	0	.65	0	.79	0	.57		.35	0	1.52
Dec.	.12	.58	.24	.69	0	.62		.34	0	.46
Yearly	29.76	21.50	23.41	20.48	7.79	11.73		19.70	27.52	23.05

Month	Hipolito, Coahuila		Fresnillo, Nuevo Leon		Mina, Nuevo Leon		Icamole, Nuevo Leon		General Cepeda, Coahuila	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	1.18	0.76	0.04	1.23	0.12	0.63	0.12	0.44	0.63	0.53
Feb.	0	.39	.08	.51	.31	.41	.12	.31	0	.47
Mar.	0	.41	1.54	.99	.12	.16	.04	.15	.20	.25
Apr.	0	.66	0	.56	.63	.65	.51	.41	.98	.49
May	0	.61		1.12	1.06	.85	.59	.80	.55	.89
June	0	.30		.66	.83	1.39	T	.87	3.27	2.10
July	0	.52		.45	.20	1.23	1.81	.62	4.13	3.11
Aug.	0	.65	.75	.26	4.72	1.65	1.18	.82		2.86
Sep.	1.18	1.03		1.81	9.21	3.15	3.98	2.01		2.79
Oct.	.39	.70		.41	.39	.95	0	.95		1.19
Nov.	0	.33		.34	0	.62	0	.61		.49
Dec.	0	.21		.66	0	.46	0	.45		.56
Yearly	2.75	6.57		9.00	17.59	12.15	8.35	8.44		15.73

Month	Hacienda Mamulique, Nuevo Leon		Paras, Nuevo Leon		Nueva Cd. Guerrero, Tamaulipas		La Escondida, Nuevo Leon		Rinconada, Nuevo Leon	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	0.91	1.00	0	0.84	0.71	0.99	0.75	1.72	0.71	0.43
Feb.	.35	.40	.28	.76	1.81	1.04	1.46	1.18	.47	.32
Mar.	.59	.45	.43	.56	.63	.52	.87	.84	T	.19
Apr.	1.14	1.79	.43	.95	2.52	1.50	.55	3.07	2.17	.57
May	1.02	1.72	1.02	2.14	5.39	2.78	1.69	2.32	.63	.67
June	.59	2.79	0	2.79	1.46	2.59	2.87	3.56	.98	1.06
July	2.80	2.85	7.72	1.68	2.09	1.31	10.55	1.95	.79	.62
Aug.		3.04	3.27	2.32	4.45	2.14	10.16	4.25	1.22	1.20
Sep.		4.42	4.49	3.37	1.81	3.87	9.41	4.40	12.52	2.15
Oct.		1.75	2.28	2.18	.31	1.98	2.95	2.17	0	.88
Nov.		1.14	0	.83	1.14	1.02	0	.69	0	.36
Dec.		1.03	.08	.61	.71	.78	0	1.81	0	.38
Yearly		22.38	20.00	19.03	23.03	20.52	41.26	27.96	19.49	8.83

Month	Ramos Arizpe, Coahuila		Gomez Farias, Coahuila		Cienega de Flores, Nuevo Leon		Saltillo, Coahuila		Aguaqueguas, Nuevo Leon	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	0.71	0.51	1.57	1.79	0.94	1.20	1.26	0.62		1.94
Feb.	0	.37	.08	.76	.79	.94	.12	.54		.88
Mar.	.08	.27	.28	.15	.39	.97	.12	.38	.43	.66
Apr.	1.22	.52	2.01	1.26	.91	1.48	1.06	.80	1.30	2.01
May	1.14	.93	1.22	1.62	1.65	2.59	.71	1.23		3.22
June	1.69	1.05	2.28	2.14	2.17	3.30	1.22	2.10	.87	2.15
July	5.12	1.40	2.68	2.02	3.62	2.30	5.75	2.55	5.24	1.98
Aug.	1.85	1.32	2.52	2.28	4.76	4.28	3.98	2.47	7.36	3.07
Sep.	7.68	1.79	2.64	2.26	6.73	5.56	7.32	2.72	6.46	2.51
Oct.	.35	.82	.28	1.07	.28	2.51	.24	1.26	2.36	2.38
Nov.	.39	.46	0	.42	0	1.09	.04	.77	0	.82
Dec.	0	.48	0	.79	T	1.14	.04	.63		.54
Yearly	20.23	9.92	15.56	16.56	22.24	27.36	21.94	16.07		22.16

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RAINFALL ON THE RIO GRANDE WATERSHED

IN MEXICO

IN INCHES

Month	Higuera, Nuevo Leon		Topo Chico, Nuevo Leon		San Antonio de las Alazanas, Coahuila		Apodaca, Nuevo Leon		Monterrey, Nuevo Leon	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	1.77	0.78	1.18	0.57	2.05	1.20	1.22	0.74	1.10	0.65
Feb.	.67	.63	.91	.57	.39	.72	1.26	.80	.59	.68
Mar.	.16	.66	.28	.49	0	.41	.43	.60	.20	.72
Apr.	1.22	1.29	.91	1.18	2.05	1.09	.87	1.36	.75	1.16
May	.91	2.15	2.83	1.70	.98	1.95	4.41	2.38	2.05	1.83
June	1.46	2.66	4.06	2.31	2.95	2.64	6.77	3.00	5.98	2.83
July	3.98	2.22	1.34	1.56	5.98	3.41	.87	1.97	1.02	2.36
Aug.	5.47	3.36	6.81	3.01	4.72	3.08	7.60	3.09	5.39	3.21
Sep.	8.94	4.91	12.20	4.86	5.83	2.71	2.76	5.02	10.47	6.08
Oct.	2.32	1.85	.63	3.01		1.74	1.02	2.10	1.22	3.11
Nov.	.08	.77	0	.71		.97	0	.84	0	1.16
Dec.	.12	.74	0	.47		.94	.35	.79	T	.71
Yearly	27.10	22.02	31.15	20.44		20.86	27.56	22.69	28.77	24.50

Month	La Huasteca, Nuevo Leon		Ejido Marin, Nuevo Leon		Las Comitas, Nuevo Leon		La Cruz, Nuevo Leon		Huachichil, Coahuila	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	0.59	0.72	1.61	1.43	1.02	0.41	2.76	1.27	3.90	3.26
Feb.	0	.16	.98	.79	.08	.42	.08	.68	2.05	1.62
Mar.	1.14	.22	.28	.53	.20	.21	.79	.38	0	.46
Apr.	.91	.54	1.02	1.57	2.36	.78	1.85	1.38	.55	1.55
May	1.18	2.04	1.89	2.92	1.81	1.20	1.22	2.08	2.64	3.11
June	.71	1.49	1.77	2.77	2.05	2.31	9.41	3.18	2.87	2.66
July	3.15	1.39	2.24	1.82	2.05	1.72	6.77	3.22	4.29	4.19
Aug.	5.59	1.65	7.36	2.59	2.32	3.12	15.16	4.22		1.69
Sep.	1.69	3.69	3.90	3.96	18.46	5.01	20.79	6.64	2.09	2.52
Oct.	.98	1.11	.63	1.57	.16	1.68	.63	2.15	.16	1.43
Nov.	0	.24	0	.56	T	.47	.24	.77	.51	.64
Dec.	.08	.48	T	1.39	T	.38	.91	.52	2.28	1.10
Yearly	16.02	13.73	21.68	21.90	30.51	17.71	60.61	26.49		24.23

Month	Cd. Mier, Tamaulipas		General Trevino, Nuevo Leon		Cerralvo, Nuevo Leon		La Arena, Nuevo Leon		Pajonal, Nuevo Leon	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.		1.07	0.79	1.49	1.50	0.81	1.26	0.91	1.46	0.72
Feb.		1.19	.63	1.16	1.06	.70	.79	.75	.12	.63
Mar.		.60	.59	.71	2.01	.63	.55	.59	.55	.31
Apr.	.71	1.51	.31	2.17	2.40	1.79	1.38	1.36	1.54	1.18
May	2.28	2.72	1.77	3.63	2.64	3.39	4.17	3.02		2.13
June	.98	2.63	.91	2.52	2.28	3.38	3.58	3.23		2.61
July	5.39	1.33	4.65	1.23	6.30	1.94	.67	2.78	4.13	2.52
Aug.	2.76	2.53	8.58	2.63	9.06	3.42	5.59	3.37	2.40	3.53
Sep.	6.34	4.42		4.22	11.73	5.19	7.32	5.30	17.20	5.70
Oct.	1.73	2.08	1.97	1.91	7.56	2.70	.20	2.54	.28	1.88
Nov.	0	1.02	0	.75	T	.70	T	.78	0	.51
Dec.	.04	.82	0	1.17	.08	.52	T	.66	0	.54
Yearly		21.92		23.59	46.62	25.17	25.51	25.29		22.26

Month	Tepehua, Nuevo Leon		Santa Catarina, Nuevo Leon		Cerritos, Nuevo Leon		Laguna de Sanchez, Nuevo Leon		Potrero de Abrego, Coahuila	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	0.20	1.73	1.14	0.73		1.01	2.09	0.79	1.57	2.68
Feb.	.83	.73	.31	.42		.84	0	.61	0	.64
Mar.	.51	.66	.08	.31	.16	.53	.75	.38	.35	.39
Apr.	1.34	2.17	.87	.78	1.30	1.64	2.09	1.21	.55	1.18
May	2.01	4.41	.39	1.07	1.97	4.19	1.81	1.93	1.54	1.72
June	9.88	3.90	.39	1.90	8.35	6.47	.67	3.37	.51	1.66
July	1.57	1.84	25.28	1.67	3.19	5.11	5.24	2.52	1.22	.39
Aug.	7.01	3.79		2.65	6.26	5.37	7.52	4.26	5.16	1.83
Sep.	8.98	5.61		4.68	18.62	11.97	17.80	6.65	5.75	2.90
Oct.	.43	1.58		1.62	1.57	3.82	.39	2.50	.24	.82
Nov.	.04	.73		.53	.35	.66	.12	.66		.37
Dec.	T	1.07		.54	0	.44	0	.54	0	.65
Yearly	32.80	28.22		16.90		42.05	38.48	25.42		15.23

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RAINFALL ON THE RIO GRANDE WATERSHED

IN MEXICO

IN INCHES

Month	Tunel San Foo., Nuevo Leon		Rodrigo Gomez Res., Nuevo Leon		Carbonera, Nuevo Leon		Miguel Aleman, Tamaulipas		Adjuntas, Nuevo Leon	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.		1.28	1.77	1.00	0.39	1.00	1.73	1.15		1.01
Feb.	1.10	1.17	.43	.95	.16	.58	1.65	1.20	1.46	.64
Mar.	.43	1.34	.16	1.03	.28	.49	.31	.40	.83	.44
Apr.	1.69	2.34	1.30	1.80	2.95	1.17	.16	1.71	3.50	1.85
May	2.01	3.91	1.65	2.95	0	1.91	2.95	2.48	4.72	3.18
June	5.39	6.28	5.12	5.57	.91	2.58	0	3.06	5.75	6.99
July	5.28	4.06	2.99	4.02	3.46	2.86	2.28	1.83		4.42
Aug.	7.17	6.73	7.76	6.07	4.53	2.91	2.40	1.87		5.35
Sep.	18.98	11.43	16.50	9.85	1.42	2.50	4.80	4.96		11.28
Oct.	.83	5.54	.75	4.87	.16	1.78	2.32	2.10	0	4.24
Nov.	0	1.61	T	1.29	0	.95	0	.90	12.95	2.14
Dec.	.67	1.05	0	.88	0	.94	0	.83		.42
Yearly		46.74	38.43	40.28	14.26	19.67	18.60	22.49		41.96

Month	Casillas, Nuevo Leon		Cienega del Toro, Nuevo Leon		Los Ramones, Nuevo Leon		Villa Allende, Nuevo Leon		Mimbres, Nuevo Leon	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	1.61	0.90	1.69	1.34	1.85	0.86		1.17		1.63
Feb.	0	.57	0	.52	.59	.74		1.26		1.12
Mar.	0	.54	1.06	.70	.63	.66		1.24	2.01	1.07
Apr.	2.01	1.16	3.15	1.69	1.38	1.44		2.66		1.70
May	2.13	2.31	1.77	2.47	2.64	2.90	2.76	3.90		2.74
June	1.93	3.34	.87	2.41	4.02	3.30	8.23	5.63		3.35
July	5.47	2.57	3.39	2.92	2.17	1.86	5.16	3.56	3.27	2.77
Aug.	6.81	3.12	5.51	3.12	5.39	3.49	9.29	5.46	3.50	3.43
Sep.	1.42	4.40	5.51	3.36	7.95	5.61	15.28	9.28	2.83	3.86
Oct.		2.33	.79	1.92	1.42	2.60	1.61	5.07	.24	2.04
Nov.		.70	0	.79	T	.70	T	1.58	.87	1.20
Dec.		.49	0	.74	T	.63	.04	1.06	1.69	1.16
Yearly		22.43	23.74	21.98	28.04	24.79		41.87		26.07

Month	Rusio, Nuevo Leon		Cerro Prieto, Nuevo Leon		Los Herrera, (La Tableta), N.L.		Rayones, Nuevo Leon		Madero(Los Aldamas) Nuevo Leon	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	0.16	0.79	1.46	1.06	1.22	0.75	0.83	0.51	1.10	1.27
Feb.	2.01	.62	.67	.63	.71	.66	.04	.40	.24	.82
Mar.	.67	.53	.79	.54	.75	.62	.20	.32	.39	.73
Apr.	2.09	1.36	1.02	1.47	.87	1.37	1.69	1.11	.98	1.32
May	1.26	1.75	3.78	4.55	2.99	2.92	1.26	1.84	3.58	3.36
June	.83	2.07	5.12	3.85	1.42	2.76	1.30	2.12	.20	3.56
July	2.91	1.77	2.09	2.10	3.50	1.87	1.61	1.21	5.35	2.43
Aug.	3.46	1.99	5.51	3.30		2.65	7.76	2.81	8.66	4.32
Sep.	2.05	2.03	13.78	5.34	.94	4.62	14.02	3.56	8.46	5.31
Oct.	.20	1.36	.31	2.53	1.42	2.18	.39	1.53	1.46	1.63
Nov.	.12	.73	.08	.71	0	.63	0	.42	0	.47
Dec.	0	.82	.55	.83	0	.58	.12	.38	T	.99
Yearly	15.76	15.82	35.16	26.91		21.61	29.22	16.21	30.42	26.21

Month	Montemorelos, Nuevo Leon		Galeana, Nuevo Leon		Las Enramadas, Nuevo Leon		Iturbide, Nuevo Leon		Cabezones, Nuevo Leon	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	1.46	0.94	0.75	0.69	0.55	0.98	0.94	0.72	1.42	1.15
Feb.	.47	.94	.16	.44	.43	.70	.79	.64	.59	.84
Mar.	.51	1.11	.79	.35	.59	.68	1.30	.61	.87	1.10
Apr.	1.61	2.33	1.93	1.46	3.46	1.82	3.19	1.31	1.97	2.54
May	1.61	3.45	1.69	1.93	1.57	2.98		2.18	4.25	4.14
June	.08	3.99	1.34	2.08	2.13	3.27	2.40	3.40	3.58	4.19
July	6.69	2.42	3.11	1.68	2.13	2.26	3.39	2.68	2.87	2.90
Aug.	5.31	4.16	5.55	2.45	6.06	3.75	6.46	4.21	14.72	5.49
Sep.	18.78	6.90	2.72	3.14	9.49	6.46	15.75	6.24	15.20	8.51
Oct.	1.93	3.72	.28	1.30	0	2.49	.47	2.37	.55	3.26
Nov.	.04	1.58	.12	.28	0	.73	.20	.53	0	1.04
Dec.	0	.92	0	.64	0	.80	.16	.60	.08	.84
Yearly	38.49	32.46	18.44	16.44	26.41	26.92		25.49	46.10	36.00

T Trace

RAINFALL ON THE RIO GRANDE WATERSHED

IN MEXICO

IN INCHES

Month	Fobladores, Nuevo Leon		El Cuchillo, Nuevo Leon		Linares, Nuevo Leon		El Realito, Nuevo Leon		General Bravo, Nuevo Leon	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	0.71	1.93	1.38	0.76	1.30	0.93	1.61	1.25	1.54	0.85
Feb.	.35	1.02	.55	.58	.55	.86	.35	.51	.55	.61
Mar.	.79	.65	.35	.50	.94	1.03	1.10	.55	.31	.55
Apr.		2.04	1.50	1.39	1.14	2.35	2.01	1.72	.51	1.47
May		2.52	3.54	2.49	3.46	3.78	.71	3.03	2.17	2.97
June		2.58	1.97	2.65	6.30	4.01	1.06	3.18	4.45	2.70
July	0	1.29	2.24	1.86	1.73	2.66	1.93	2.40	4.49	2.16
Aug.	6.61	1.61	6.89	2.87	13.07	3.85	5.91	3.69	5.04	2.68
Sep.	7.68	4.07	9.13	4.52	11.14	6.37	2.17	5.40	12.76	4.49
Oct.	.35	1.15	1.26	2.28	.20	3.40	.12	1.63	2.01	1.94
Nov.	.24	.48	0	.56	.08	1.12	.16	.41	0	.85
Dec.	0	2.19	.24	.58	0	1.05	0	.81	.04	.78
Yearly		21.53	29.05	21.04	39.91	31.41	17.13	24.58	33.87	22.05

Month	San Diego, Nuevo Leon		Comales, Tamaulipas		El Brasil, Nuevo Leon		Camargo, Tamaulipas		Valadezes, Tamaulipas	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	0.43	2.47	1.46	0.94	0.67	1.44	1.57	1.10	0.94	1.31
Feb.	.20	.40	1.54	.87	.71	1.22	1.42	1.03	2.01	1.13
Mar.	0	.49	.28	.61	.12	.43	.87	.53	.71	.55
Apr.	1.85	4.88	.28	1.59	1.42	1.76	.87	1.59	1.18	1.45
May	.98	5.84	.98	2.23	1.77	3.04	2.20	2.77	.79	2.94
June	.39	4.58	.31	2.27	.83	1.54	.35	2.80	.59	3.45
July	1.30	1.57	3.54	1.40	2.68	1.78	3.46	1.38	6.18	1.70
Aug.	5.55	4.42	3.23	2.59	1.89	2.22	2.09	2.11	1.61	2.16
Sep.	11.02	6.47	5.94	3.98	10.20	4.01	7.17	4.46	4.53	4.32
Oct.	0	1.44	1.02	2.30	1.06	1.41	1.93	2.16	1.38	2.29
Nov.	.91	.62	0	.73	0	.53	0	1.00	0	1.11
Dec.	0	1.05	0	.83	0	.89	0	.81	0	.94
Yearly	22.63	34.23	18.58	20.34	21.35	20.27	21.93	21.74	19.92	23.35

Month	La Pomona, Nuevo Leon		Vaquería, Nuevo Leon		Bajo Río San Juan, Tamps., No. 2-29		El Guervito, Nuevo Leon		Bajo Río San Juan, Tamps., No. 2-38	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	1.14	1.69	1.18	1.93	0.87	1.33		2.00	1.54	1.37
Feb.	.47	.66	.63	.99	1.57	1.19		1.02	2.28	.99
Mar.	.31	.91	1.57	1.23	.39	.47		1.12	.59	.51
Apr.	1.61	2.37	1.10	1.69	1.10	1.40		1.69	1.46	1.34
May	1.30	5.04	1.57	4.22	.75	3.58	2.64	2.36	3.11	3.52
June	3.15	3.25	1.61	2.76		3.25	2.13	2.11	1.22	3.28
July	1.73	2.13	.94	1.39		1.46	.47	.40	1.61	1.78
Aug.	3.66	2.80	6.46	2.77		2.29	2.17	.74	2.17	3.06
Sep.	14.21	5.17	11.22	4.41		3.85	9.45	2.78	6.69	3.73
Oct.	.31	1.07	1.06	1.59		2.36		1.68	.79	1.96
Nov.	.04	.60	.04	.68		1.00		.78	0	1.14
Dec.	.08	1.14	.12	1.67		1.03		.39	0	1.05
Yearly	28.01	26.83	27.50	25.33		23.21		17.07	21.46	23.73

Month	Bajo Río San Juan, Tamps., No. 2-33		Reynosa, Tamaulipas		Bajo Río San Juan, Tamps., No. 3-60		Bajo Río San Juan, Tamps., No. 3-58		Bajo Río San Juan, Tamps., No. 3-55	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	1.61	1.38	2.44	1.27	2.95	1.58	4.09	1.78	3.86	1.90
Feb.	1.69	1.03	2.13	1.12	1.97	1.28	2.72	1.41	2.99	1.65
Mar.	.20	.50	.55	.72	1.50	.61	1.46	.65	1.38	.69
Apr.	1.34	1.50	.31	1.20		1.46	2.17	1.51	2.64	1.84
May	2.24	4.22	2.80	2.90		2.89	1.81	2.99	.94	2.80
June	.28	2.91	.24	2.32		3.30	3.35	2.96	.94	3.23
July	.67	1.72	.55	1.56		1.96	.59	2.55	2.40	2.45
Aug.	3.82	2.80	4.25	1.94		2.36	3.23	2.50	5.31	2.69
Sep.	5.12	3.92	6.26	3.67		4.90	5.87	4.88	4.92	4.34
Oct.	2.24	2.27	2.44	2.27		2.71	.98	2.57	2.44	2.76
Nov.	0	1.03	0	.91		.95	0	.94	0	.83
Dec.	0	1.09	.08	.94		1.24	0	1.15	.24	1.17
Yearly	19.21	24.37	22.05	20.82		25.24	26.27	25.89	28.06	26.35

RAINFALL ON THE RIO GRANDE WATERSHED

IN MEXICO

IN INCHES

Month	Bajo Rio San Juan, Tamps., No. 3-47		Bajo Rio San Juan, Tamps., 3-48A		Bajo Rio San Juan, Tamps., No. 3-63		Retamal, Tamaulipas		Bajo Rio Bravo, Tamps., No. 3-15	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	3.23	1.84	2.52	2.17	3.78	1.72	3.94	1.20	3.46	1.74
Feb.	2.44	1.37	1.93	2.29	2.28	1.77	2.48	1.20	2.09	1.45
Mar.	1.42	.62	1.54	.78	.98	.56	1.61	.66	2.20	.78
Apr.	3.15	1.56	.59	.48	1.65	1.33	.91	1.41	.51	1.89
May	1.89	3.44	.83	2.89	1.18	2.72	.59	2.72	0	2.81
June	1.06	3.20	.71	3.18	1.10	3.46	1.38	2.49	1.50	3.53
July	.55	2.27	.79	1.66	.79	1.92	.63	1.59	2.17	2.52
Aug.	4.53	2.47	4.02	1.38	5.91	2.90	2.80	2.58	9.88	3.57
Sep.	5.31	4.22	5.39	4.84	5.79	5.01	6.77	3.67	5.24	4.36
Oct.	2.83	2.21	1.85	1.46	3.03	2.35	1.06	2.39	0	2.58
Nov.	0	.88	0	.68	0	.80	T	1.15	0	1.09
Dec.	0	1.16	0	1.84	0	1.17	.04	1.09	0	1.44
Yearly	26.41	25.24	20.17	23.65	26.49	25.71	22.21	22.15	27.05	27.76

Month	Bajo Rio Bravo, Tamps., No. 4-16		Bajo Rio Bravo, Tamps., No. 3-14		Bajo Rio Bravo, Tamps., No. 3-17		Bajo Rio Bravo, Tamps., No. 4-8		Bajo Rio Bravo, Tamps., No. 2-6	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	5.51	1.76	2.72	1.48	3.35	1.73	4.29	1.85	4.84	2.03
Feb.	3.98	1.44	5.20	1.46	2.48	1.40	1.89	1.40	3.07	1.49
Mar.	1.69	.77	1.06	.56	1.02	.65	.87	.84	.83	.77
Apr.	1.14	1.99	.31	1.41	0	1.40	.43	2.17	0	1.55
May	1.30	2.88	.91	3.48	.79	2.79	1.18	3.06	.98	2.94
June	1.57	3.72	3.46	2.82	1.14	2.95	1.34	2.90	2.40	2.68
July	1.02	2.11	.51	2.39	.98	2.38	.79	2.68	1.10	2.34
Aug.	.35	3.48	2.87	2.53	3.62	3.23	5.63	4.10		3.41
Sep.	7.09	5.15	4.84	3.96	5.55	4.95	0	5.14		4.92
Oct.	.98	2.57	1.57	2.33	T	2.41	1.30	2.61	1.57	2.82
Nov.	0	1.24	0	.87	0	1.25	0	1.24	0	1.40
Dec.	.39	1.21	T	1.33	0	1.40	0	1.15	.28	1.18
Yearly	25.02	28.32	23.45	24.62	18.93	26.54	17.72	29.14		27.53

Month	Bajo Rio Bravo, Tamps., No. 4-10		Control, Tamaulipas		Bajo Rio Bravo, Tamps., No. 2-5		Valle Hermoso, Tamaulipas		Bajo Rio Bravo, Tamps., No. 1-2	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	5.31	1.84	3.62	1.42	7.20	2.16	5.94	1.26	2.64	1.69
Feb.	2.72	1.78	2.56	1.15	3.03	1.46	1.81	1.27	2.28	1.72
Mar.	1.61	.99	.55	.63	1.06	1.02	0	.69	1.77	.62
Apr.	.31	2.10	.04	1.62	T	1.63	0	1.90	.20	1.55
May	1.10	2.59	3.58	2.93	T	2.72	1.02	2.55	.51	3.17
June	1.89	2.77	1.69	2.81	3.46	2.90	1.30	3.13	1.14	3.08
July	.98	2.30	.31	1.82	.31	2.08	.51	2.07	.35	1.95
Aug.	7.40	3.35	2.32	3.18	5.31	3.45	1.89	2.69	5.63	3.68
Sep.	1.77	5.57	9.65	5.13	6.42	4.92	2.48	5.05		4.64
Oct.	2.01	2.55	1.10	2.70	.79	2.85	2.01	2.58	2.28	2.81
Nov.	0	1.10	.47	1.25	T	1.19	T	1.38		1.31
Dec.	0	1.00	T	1.15	0	1.24	T	.97		1.06
Yearly	25.10	27.94	25.89	25.79	27.58	27.62	16.96	25.54		27.24

Month	Bajo Rio Bravo, Tamps., No. 1-4		Bajo Rio Bravo, Tamps., No. 1-3		Bajo Rio Bravo, Tamps., No. 1-12		Bajo Rio Bravo, Tamps., No. 1-13		Bajo Rio Bravo, Tamps., No. 2-7	
	1988	Average	1988	Average	1988	Average	1988	Average	1988	Average
Jan.	6.18	1.97	4.92	1.80	2.95	1.90	3.86	1.92	3.78	1.75
Feb.	2.13	1.29	2.17	1.30	1.85	1.36	1.65	1.24	1.54	1.27
Mar.	2.20	.79	2.56	.65		.59	.28	.53	.91	.76
Apr.	.16	1.93	T	1.73	0	1.95	0	1.62		2.53
May	.98	2.74	.91	2.63	.43	3.10	.59	1.95	T	2.75
June	3.78	3.07	2.36	2.85	1.50	2.73	1.18	2.84	1.61	3.23
July	.16	1.98	T	1.77	.35	2.68	T	1.95	T	2.26
Aug.	3.07	3.13		2.76	3.35	3.10	3.86	3.38	6.89	4.07
Sep.	6.85	5.16		5.35		5.45	5.31	5.05		5.18
Oct.	1.50	2.69		2.73		3.24	3.39	2.46	2.56	2.38
Nov.	0	1.11		1.34		1.26	0	.93	0	1.23
Dec.	.20	1.29		1.42		1.36	0	1.06	0	1.05
Yearly	27.21	27.15		26.33		28.72	20.12	24.93		28.46

T Trace

RAINFALL ON THE RIO GRANDE WATERSHED

IN MEXICO

IN INCHES

Month	Bajo Rio Bravo, Tamps., No. 2-11		Matamoros, Tamaulipas						
	1988	Average	1988	Average					
Jan.	2.76	1.85	4.65	1.94					
Feb.	3.74	1.55	2.13	1.76					
Mar.	.47	.70	1.61	.57					
Apr.	0	2.39	T	1.97					
May	.98	2.61	.47	2.76					
June	3.07	3.66	3.66	3.41					
July	.20	2.63	1.22	2.54					
Aug.	8.70	4.03	2.44	4.13					
Sep.	5.39	5.42	6.26	6.43					
Oct.	2.13	2.79	1.65	3.44					
Nov.	0	1.16	T	1.44					
Dec.		1.27	0	1.82					
Yearly		30.06	24.09	32.21					

T Trace

AVERAGE RAINFALL ON SUBDIVISIONS OF THE RIO GRANDE WATERSHED
WITH AVERAGES FOR THE 118 YEARS 1871 - 1988, INCLUSIVE
IN INCHES

The Precipitation records of all stations on or adjacent to the watershed subdivisions listed below have been used, with proper weighting for area, in calculating the average rainfalls shown here. The drainage area for each subdivision is shown in parentheses. The hundreds of individual records are delineated in the various "Indexes to Precipitation Records" shown in Water Bulletins Nos. 10, 14, 22, 26, and Supplement 40A.

Month	El Paso to Fort Quitman (2,677 Square Miles)		Fort Quitman to Above Rio Conchos (3,056 Square Miles)		* Above Rio Conchos to Johnson Ranch (3,782 Square Miles)		Johnson Ranch to Foster Ranch (12,982 Square Miles)	
	1988	Period Average	1988	Period Average	1988	Period Average	1988	Period Average
Jan.	0.10	0.45	0.06	0.40	0.00	0.35	0.01	0.48
Feb.	0.22	0.37	0.06	0.27	0.13	0.28	0.09	0.37
Mar.	0.04	0.32	0.06	0.25	0.02	0.19	0.08	0.39
Apr.	0.27	0.27	0.21	0.35	0.10	0.41	0.29	0.79
May	0.59	0.43	0.37	0.62	0.66	0.80	2.61	1.50
June	0.63	0.82	0.83	1.26	1.44	1.20	0.96	1.71
July	2.93	2.20	2.43	2.86	2.96	1.87	3.10	1.83
Aug.	2.79	1.88	2.51	2.42	1.88	1.95	0.96	2.06
Sept.	0.74	1.44	1.19	2.01	0.64	1.64	2.66	2.19
Oct.	0.37	0.93	0.25	1.06	0.35	0.89	0.52	1.26
Nov.	0.05	0.43	0.00	0.42	0.00	0.35	0.00	0.59
Dec.	0.08	0.59	0.12	0.54	0.27	0.41	0.28	0.55
Yearly	8.81	10.13	8.09	12.46	8.45	10.34	11.56	13.72

Month	Pecos River below Sheffield (3,390 Square Miles)		# Foster Ranch to Amistad Dam (2,799 Square Miles)		Devils River (4,305 Square Miles)		+ Amistad Dam to Eagle Pass (1,625 Square Miles)	
	1988	Period Average	1988	Period Average	1988	Period Average	1988	Period Average
Jan.	0.01	0.68	0.00	0.51	0.10	0.67	0.06	0.73
Feb.	0.08	0.85	0.12	0.64	0.10	0.74	0.23	0.90
Mar.	0.02	0.75	0.08	0.73	0.08	1.03	0.13	0.96
Apr.	0.27	1.80	0.01	1.32	0.76	1.74	0.16	1.70
May	1.90	1.86	0.77	1.98	2.59	2.61	1.22	2.88
June	0.93	2.42	0.29	2.16	1.64	2.64	1.86	2.54
July	3.16	1.81	4.14	1.27	5.43	1.80	2.16	1.84
Aug.	0.43	1.99	0.42	1.63	2.10	2.13	1.43	1.92
Sept.	4.75	2.50	4.16	2.33	3.55	2.92	3.82	3.02
Oct.	0.07	1.90	0.89	1.47	0.48	2.23	0.78	2.10
Nov.	0.00	0.91	0.00	0.77	0.00	1.46	0.09	1.04
Dec.	0.18	0.75	0.22	0.64	0.39	0.98	0.26	0.87
Yearly	11.80	18.22	11.10	15.45	17.22	20.95	12.20	20.50

Month	! Eagle Pass to Laredo (3,795 Square Miles)		** Laredo to Falcon Dam (3,369 Square Miles)		## Falcon Dam to Rio Grande City (468 Square Miles)		United States Side Below Rio Grande City (986 Square Miles)	
	1988	Period Average	1988	Period Average	1988	Period Average	1988	Period Average
Jan.	0.33	0.71	0.52	0.78	1.25	0.91	2.62	1.30
Feb.	0.59	0.79	0.62	0.81	0.89	0.86	2.00	1.15
Mar.	0.08	0.89	0.49	0.78	0.44	0.89	1.72	1.01
Apr.	0.04	1.62	0.48	1.43	0.39	1.22	0.36	1.37
May	1.26	3.10	3.04	3.19	3.14	2.44	1.05	2.84
June	2.74	2.48	0.79	2.04	0.39	2.13	1.40	2.55
July	2.14	1.48	3.54	2.05	2.89	1.87	1.48	1.80
Aug.	2.15	2.25	3.35	1.89	1.62	2.10	3.06	2.36
Sept.	3.80	2.97	3.95	3.01	6.30	3.49	5.73	4.37
Oct.	1.82	1.90	4.36	1.74	2.66	1.95	1.42	2.53
Nov.	0.02	0.94	0.15	1.48	0.02	0.79	0.10	1.35
Dec.	0.09	0.96	0.17	0.84	0.07	0.69	0.04	1.24
Yearly	15.06	20.09	21.46	20.04	20.06	19.34	20.98	23.87

* Excluding Rio Conchos, Alamito Creek, and Terlingua Creek

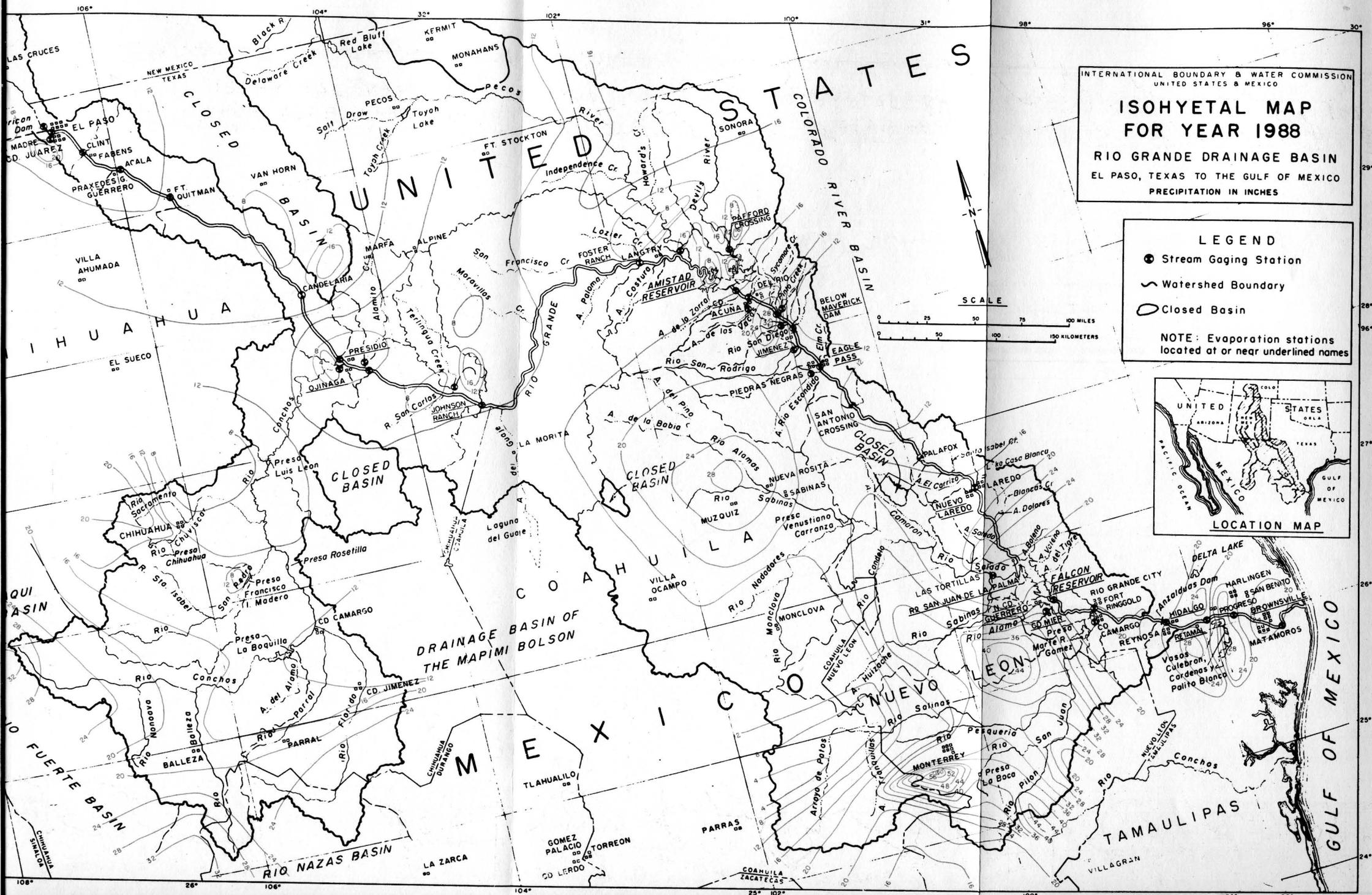
Excluding Pecos and Devils Rivers

. Excluding Arroyo Las Vacas, San Felipe Creek, Pinto Creek, Rio San Diego and Rio Rodrigo

! Excluding Rio Escondido

** Excluding Rio Salado above old Cd. Guerrero

Excluding Rio Alamo and Rio San Juan



INTERNATIONAL BOUNDARY & WATER COMMISSION
 UNITED STATES & MEXICO

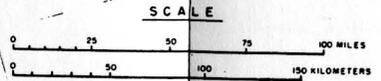
ISOHYETAL MAP FOR YEAR 1988

RIO GRANDE DRAINAGE BASIN
 EL PASO, TEXAS TO THE GULF OF MEXICO
 PRECIPITATION IN INCHES

LEGEND

- Stream Gaging Station
- ~ Watershed Boundary
- Closed Basin

NOTE: Evaporation stations located at or near underlined names



EL PASO
 MADRE
 CD. JUAREZ
 CLINT
 FABENS
 ACALA
 PRAYEDÉS G. GUERRERO
 FT. QUITMAN
 VAN HORN
 SOIL DRAW
 TOYOH LAKE
 Pecos

VILLA AHUMADA
 EL SUECO
 QUINAGA
 JOHNSON RANCH
 R. San Carlos

CHIHUAHUA
 RIO SACRAMENTO
 RIO CHIVICUA
 PRESA CHIHUAHUA
 RIO SIO ISABEL
 PRESA ROSSETILLA
 PRESA FRANCISCO
 T. MADERO

BALLEZA
 RIO MONTEVIDEO
 RIO PARRAL
 RIO FLOREDO
 RIO JIMENEZ
 RIO NAZAS BASIN

FT. STOCKTON
 INDEPENDENCE CR.
 MARFA
 ALPINE
 SAN FRANCISCO CR.
 FOSTER RANCH
 LANGTRY
 AMISTAD RESERVOIR
 A. de la Zorra
 A. de los Vinos
 RIO SAN DIEGO
 RIO SAN RODRIGO
 JIMENEZ
 RIO ESCOBEDO
 SAN ANTONIO CROSSING

LA MORITA
 RIO ALAMOS
 RIO SABINOS
 MUZQUIZ
 PRESA VENUSTIANO CARRANZO
 RIO NABOBARES
 MONCLOVA
 RIO MANCLOVA

VILLA OCAMPO
 LAS TORTILLAS
 RIO SAN JUAN DE LA PALMA
 RIO SABINES
 RIO ALAMO
 RIO MONTEVIDEO

MONTERREY
 RIO PERAQUERIA
 RIO SAN JUAN
 RIO PARRAL
 RIO SAN JUAN

COAHUILA
 TLAHUALILO
 GOMEZ PALACIO
 TORREON
 CD. LERDO
 COAHUILA ZACATECAS

SONORA
 HOWARD'S CR.
 DEVILS RIVER
 PAPERFOLD CROSSING

BELOW MAVERICK DAM
 EAGLE PASS
 RIO ESCOBEDO
 SAN ANTONIO CROSSING

NEW ROSITA
 PRESA VENUSTIANO CARRANZO
 RIO NABOBARES
 MONCLOVA
 RIO MANCLOVA

LEON
 RIO PERAQUERIA
 RIO SAN JUAN
 RIO PARRAL
 RIO SAN JUAN

COAHUILA
 TLAHUALILO
 GOMEZ PALACIO
 TORREON
 CD. LERDO
 COAHUILA ZACATECAS

DELTA LAKE
 HARLINGEN
 SAN BENITO
 PROGRESO
 BROWNSVILLE
 MATAMOROS
 VASOS
 CULEBRON
 CORDENAS Y LA PALMA
 PALITO BLANCO

REYNOSA
 CAMARGO
 RIO GRANDE CITY
 FORT RINGGOLD
 RIO GRANDE CITY

REYNOSA
 CAMARGO
 RIO GRANDE CITY
 FORT RINGGOLD
 RIO GRANDE CITY

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 RIO GRANDE CITY
 FORT RINGGOLD
 RIO GRANDE CITY

REYNOSA
 CAMARGO
 RIO GRANDE CITY
 FORT RINGGOLD
 RIO GRANDE CITY

LOCATION OF RAINFALL STATIONS ON THE RIO GRANDE WATERSHED

The precipitation records of stations listed below began on the date shown and extend through 1988. For detailed information regarding sources of data, specific periods of record, and other pertinent matters relative to these and additional rainfall stations on the Rio Grande watershed, see "Index to Precipitation Records" in Water Bulletins Nos. 10, 14, 22, 26, and Supplement 40A. With the exception of Las Cruces, New Mexico, all United States precipitation stations listed below are in Texas, while those in Mexico are in the indicated state as shown.

IN THE UNITED STATES

NAME OF STATION	TYPE GAGE	LATI-TUDE	LONGI-TUDE	ELEV. (FT.)	RECORD BEGAN	WATERSHED SUBDIVISION	OBSERVER
Adobes	S	29° 46'	104° 34'	2,550	# 1950	Fort Quitman - Above Rio Conchos	T.C. DAVIS
American Dam	S	31° 47'	106° 32'	3,730	# 1938	El Paso - Fort Quitman	I. B. & W. C.
Amistad Dam	R	29° 28'	101° 02'	1,150	July 1962	Foster Ranch - Amistad Dam	I. B. & W. C.
Amistad Reservoir near Comstock	C	29° 33'	101° 13'	1,130	# 1970	Foster Ranch - Amistad Dam	I. B. & W. C.
Apache Ranch	C	27° 56'	99° 56'	500	# 1953	Eagle Pass - Laredo	Banch Foreman
Baker, A. A. Ranch	R	29° 44'	101° 09'	1,720	July 1962	Devils River	I. B. & W. C.
Big Satan Creek Station	C	29° 40'	100° 58'	1,150	Nov. 1968	Devils River	I. B. & W. C.
Bricker Ranch	S	29° 58'	101° 52'	1,680	May 1952	Johnson Ranch - Langtry	Lena Bricker
Brite, J. G. Ranch	R	29° 33'	101° 01'	1,150	#Sep. 1962	Devils River	I. B. & W. C.
Brotherton Ranch	V	29° 42'	101° 19'	1,400	1961	Foster Ranch - Amistad Dam	Perry Calk
Buoy No. 11	C	29° 31'	101° 10'	**	#Dec. 1969	Foster Ranch - Amistad Dam	I. B. & W. C.
CCWID #11 (Bayview Dist. Off.) Avg. 11 Gages	S	26° 08'	97° 21'	25	# 1952	Lower Rio Grande Valley	CCWID #11
CCWID #19 (Adams Gardens)	S	26° 10'	97° 47'	50	1952	Lower Rio Grande Valley	CCWID #19
Coal Mine	R	28° 48'	100° 28'	770	#Mar. 1959	Amistad Dam - Eagle Pass	I. B. & W. C.
Comstock	R	29° 41'	101° 10'	1,530	May 1939	Foster Ranch - Amistad Dam	I. B. & W. C.
Corralitos Ranch	C	27° 07'	99° 25'	346	1953	Laredo - Falcon Dam	I. B. & W. C.
Cow Creek near Comstock	C	29° 37'	101° 12'	1,310	Apr. 1965	Foster Ranch - Amistad Dam	I. B. & W. C.
Crane, Ed Ranch	S	29° 51'	101° 05'	1,630	# 1955	Devils River	Ed Crane
Dead Mans Canyon near Comstock	C	29° 47'	101° 19'	1,320	Sep. 1967	Pecos River below Sheffield	I. B. & W. C.
Devils Lake	R	29° 35'	100° 59'	1,158	#May 1939	Devils River	I. B. & W. C.
Devils River at Caithorn Ranch	S	30° 05'	101° 07'	1,656	#Apr. 1976	Devils River	I. B. & W. C.
Eagle Pass	S	28° 42'	100° 30'	815	1964	Eagle Pass - Laredo	I. B. & W. C.
Edinburg Filtration Plant	S	26° 18'	98° 10'	100	1952	Lower Rio Grande Valley	City of Edinburg
El Indio	S	28° 31'	100° 19'	725	# 1941	Eagle Pass - Laredo	Glen Stidham
Evans Creek near Comstock	C	29° 32'	101° 06'	1,180	July 1969	Devils River	I. B. & W. C.
Falcon Dam	S	26° 33'	99° 08'	323	Apr. 1950	Laredo - Falcon Dam	I. B. & W. C.
Farias Ranch	R	28° 26'	100° 20'	720	#Mar. 1959	Eagle Pass - Laredo	I. B. & W. C.
Fawcett, H. K. Ranch	C	29° 52'	100° 54'	1,550	# 1941	Devils River	I. B. & W. C.
Feely	C	29° 34'	101° 07'	1,250	#Apr. 1965	Foster Ranch - Amistad Dam	I. B. & W. C.
Fletcher, H. T. Ranch	S	30° 12'	104° 16'	5,100	# 1939	Alamito Creek	H. Mitchell, Jr.
Fort Hancock Bridge	S	31° 16'	105° 51'	3,500	#Apr. 1940	El Paso - Fort Quitman	I. B. & W. C.
Foster, Ross Ranch	C	29° 47'	101° 45'	1,230	May 1961	Johnson Ranch - Foster Ranch	I. B. & W. C.
Garciasville	R	26° 20'	98° 41'	200	#Apr. 1957	Lower Rio Grande Valley	I. B. & W. C.
Gillis Headquarters Ranch	S	29° 37'	100° 47'	1,410	1968	Amistad Dam - Eagle Pass	Jake Schiller
Gillis Ranch	S	29° 41'	101° 03'	1,440	# 1965	Devils River	Walter Gillis
Goldwire Ranch	C	29° 44'	100° 57'	1,685	Nov. 1968	Devils River	I. B. & W. C.
Guayuco Arroyo	R	31° 10'	105° 40'	3,600	#May 1940	El Paso - Fort Quitman	I. B. & W. C.
Harlow Ranch	C	29° 50'	101° 11'	1,695	Mar. 1969	Devils River	I. B. & W. C.
Huisache Ranch	C	26° 57'	99° 21'	383	Aug. 1953	Laredo - Falcon Dam	I. B. & W. C.
Hutto Ranch No. 1	R	29° 30'	100° 50'	1,240	1964	Devils River	I. B. & W. C.
Hutto Ranch No. 2	R	29° 29'	100° 54'	1,210	1964	Devils River	I. B. & W. C.
Indio Ranch	S	28° 31'	100° 22'	700	1959	Eagle Pass - Laredo	Earnest Scales
James, Lewis Ranch	S	30° 11'	102° 07'	2,275	1966	Johnson Ranch - Foster Ranch	Lewis James
Johnson Ranch	C	29° 01'	103° 23'	2,050	#July 1933	Johnson Ranch - Foster Ranch	I. B. & W. C.
Keisling Farm	S	28° 23'	100° 17'	740	Dec. 1958	Eagle Pass - Laredo	Robert Smith
Kelly, P. W. Ranch	S	29° 46'	101° 12'	1,750	# 1965	Foster Ranch - Amistad Dam	Bobby Kelly
King, Martin Ranch	R	29° 44'	101° 22'	1,460	Nov. 1954	Foster Ranch - Amistad Dam	I. B. & W. C.
La Feria Materials Yard	V	26° 10'	97° 50'	60	# 1960	Lower Rio Grande Valley	CCWID #3
La Feria Pumping Plant	S	26° 03'	97° 50'	60	# 1952	Lower Rio Grande Valley	CCWID #3

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

LOCATION OF RAINFALL STATIONS ON THE RIO GRANDE WATERSHED

IN THE UNITED STATES

NAME OF STATION	TYPE GAGE	LATI-TUDE	LONGI-TUDE	ELEV. (FT.)	RECORD BEGAN	WATERSHED SUBDIVISION	OBSERVER
La Joya	C	26° 15'	98° 29'	150	# 1957	Lower Rio Grande Valley	I. B. & W. C.
La Mota Ranch	S	29° 33'	103° 59'	3,854	# 1943	Alamito Creek	John Rice
Laredo Water Plant	S	27° 33'	99° 31'	410	# 1930	Eagle Pass - Laredo	Laredo Wtr. Plt.
Las Cruces, New Mexico	S	32° 19'	106° 47'	3,893	1975	Caballo Dam - El Paso	I. B. & W. C.
Las Moras Creek	S	29° 00'	100° 38'	800	1958	Amistad Dam - Eagle Pass	Lou McGehee
Lateral No. 12 Headgate	C	28° 54'	100° 34'	800	1959	Amistad Dam - Eagle Pass	I. B. & W. C.
Laughlin Air Force Base	S	29° 21'	100° 47'	1,080	Dec. 1958	Amistad Dam - Eagle Pass	U. S. A. F.
Lewis, Billie C., Jr. Ranch	S	29° 33'	100° 40'	1,400	# 1964	Amistad Dam - Eagle Pass	Billie C. Lewis, Jr.
Long Ranch	R	29° 28'	100° 57'	1,140	Oct. 1971	Devils River	I. B. & W. C.
Los Ebanos	C	26° 14'	98° 34'	150	#Apr. 1957	Lower Rio Grande Valley	I. B. & W. C.
Lowry, Cliff Ranch	R	29° 39'	100° 52'	1,490	Jun. 1962	Devils River	I. B. & W. C.
Lowry Ranch No. 2	R	29° 37'	100° 56'	1,160	May 1965	Devils River	I. B. & W. C.
Middle Fork San Pedro	C	29° 30'	100° 53'	1,170	#June 1969	Devils River	I. B. & W. C.
Miers, H. T. Ranch Hdqts.	R	29° 44'	100° 51'	1,760	# 1957	Devils River	I. B. & W. C.
Miers, H. T. Ranch No. 2	R	29° 44'	100° 53'	1,600	Apr. 1964	Devils River	I. B. & W. C.
Miller, Eugene Ranch	S	30° 26'	101° 10'	2,150	July 1975	Devils River	Eugene Miller
Mitchell, Kerr Ranch	S	30° 13'	104° 00'	4,450	# 1941	Alamito Creek	Mrs. K. Mitchell
Neely Ranch	S	30° 59'	105° 32'	3,350	#Aug. 1941	Fort Quitman - Above Rio Conchos	Mrs. Tom Neely
Normandy	S	28° 55'	100° 36'	780	#Dec. 1958	Amistad Dam - Eagle Pass	Fannin G. Lowe
North Fork San Pedro	C	29° 31'	100° 53'	1,144	June 1969	Devils River	I. B. & W. C.
Owens Ranch	S	30° 45'	101° 40'	2,170	#July 1963	Pecos River below Sheffield	Mrs. W. W. Owens
Pafford Crossing	C	29° 41'	101° 00'	1,180	Feb. 1960	Devils River	I. B. & W. C.
Pecos River near Langtry Station	C	29° 48'	101° 27'	1,260	July 1967	Pecos River below Sheffield	I. B. & W. C.
Penitas (Edinburg Pumping Plant)	S	26° 14'	98° 27'	100	July 1957	Lower Rio Grande Valley	B. Leadbetter
Pinto Creek Station	C	29° 09'	100° 43'	870	#Dec. 1958	Amistad Dam - Eagle Pass	I. B. & W. C.
Presidio (I.B.&W.C. Gage)	S	29° 32'	104° 22'	2,599	#Oct. 1949	Above Rio Conchos - Johnson Ranch	I. B. & W. C.
Prosser Ranch No. 1	C	29° 54'	101° 14'	1,710	Mar. 1965	Pecos River below Sheffield	I. B. & W. C.
Prosser Ranch No. 2	C	29° 59'	101° 16'	1,850	#Mar. 1965	Devils River	I. B. & W. C.
Prosser Ranch No. 3	C	30° 02'	101° 16'	2,020	#Mar. 1965	Pecos River below Sheffield	I. B. & W. C.
Redford	C	29° 29'	104° 13'	2,500	July 1954	Above Rio Conchos - Johnson Ranch	I. B. & W. C.
Rio Grande near Dryden	S	29° 49'	102° 09'	1,350	May 1976	Johnson Ranch - Foster Ranch	I. B. & W. C.
Roma (International Bridge)	S	26° 24'	99° 01'	230	# 1941	Falcon Dam - Rio Grande City	Starr County Bridge Co.
Rough Canyon nr. Del Rio	C	29° 35'	100° 56'	1,147	June 1969	Devils River	I. B. & W. C.
San Benito Pump	S	26° 03'	97° 45'	50	Oct. 1933	Lower Rio Grande Valley	I. B. & W. C.
Sellers Ranch	C	29° 34'	101° 02'	1,190	#Feb. 1960	Devils River	I. B. & W. C.
Shafter	V	29° 49'	104° 19'	3,920	#July 1968	Above Rio Conchos - Johnson Ranch	Raymond Wylie
Stewart Ranch	R	29° 35'	100° 52'	1,330	#Feb. 1960	Devils River	I. B. & W. C.
Study Butte	S	29° 19'	103° 32'	2,550	July 1977	Terlingua Creek	Shirley Willard
Terlingua Creek Station	C	29° 12'	103° 36'	2,215	Mar. 1952	Above Rio Conchos - Johnson Ranch	I. B. & W. C.
Trees Farm	R	28° 38'	100° 25'	720	#Mar. 1959	Eagle Pass - Laredo	I. B. & W. C.
Van Dalsem Farm	C	28° 27'	100° 19'	700	# 1959	Eagle Pass - Laredo	I. B. & W. C.
Vinegarone	C	29° 57'	100° 46'	1,780	May 1966	Devils River	I. B. & W. C.
Walker Ranch	C	29° 50'	101° 14'	1,530	July 1969	Devils River	I. B. & W. C.
Wardlaw Standart Ranch	S	29° 19'	100° 38'	1,070	Apr. 1977	Pinto Creek	Hadly Wardlaw
Whitehead, Tuffy Ranch	R	29° 38'	101° 07'	1,420	July 1962	Devils River	I. B. & W. C.
Yarborough Ranch	S	30° 06'	103° 36'	4,550	# 1966	Johnson Ranch - Foster Ranch	H. D. Smith
Zapata Water Plant	S	26° 54'	99° 16'	380	#May 1953	Laredo - Falcon Dam	Zapata Wtr. Plt.
Zuberbueler Ranch	S	29° 41'	101° 14'	1,460	Feb. 1975	Foster Ranch - Amistad Dam	J.U. Zuberbueler

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

LOCATION OF RAINFALL STATIONS ON THE RIO GRANDE WATERSHED

IN MEXICO

NAME OF STATION	TYPE GAGE	LATI-TUDE	LONGI-TUDE	ELEV. (FT.)	RECORD BEGAN	WATERSHED SUBDIVISION	OBSERVER
Adjuntas, Nuevo Leon	S	25° 18'	100° 08'	!	# 1958	Rio San Juan	S. A. R. H.
Agualeguas, Nuevo Leon	S	26° 18'	99° 33'	!	# 1979	Rio Alamo	S. A. R. H.
Amistad Reservoir near Tlaloc, Coahuila	C	29° 26'	101° 07'	1,250	1970	Foster Ranch - Amistad Dam	I. B. & W. C.
Apodaca, Nuevo Leon	S	25° 46'	100° 11'	1,330	#Feb. 1964	Rio San Juan	S. A. R. H.
Bachiniva, Chihuahua	S	28° 46'	107° 15'	6,250	# 1952	Adjacent to Rio Conchos	Meteor. Service of Chihuahua
Balleza, Chihuahua	S	26° 57'	106° 21'	5,870	# 1903	Rio Conchos	Meteor. Service of Chihuahua
Cabezones, Nuevo Leon	S	24° 59'	99° 45'	!	# 1962	Adjacent to Rio San Juan	S. A. R. H.
Campo Agricola Experimental, Chihuahua	S	31° 22'	106° 00'	3,560	# 1958	El Paso - Fort Quitman	I. N. I. A.
Carbonera, Nuevo Leon	S	24° 49'	100° 47'	!	# 1958	Rio San Juan	S. A. R. H.
Carichio, Chihuahua	S	27° 55'	107° 04'	!	#May 1961	Rio Conchos	Meteor. Service of Chihuahua
Casillas, Nuevo Leon	S	25° 12'	100° 12'	4,060	# 1958	Rio San Juan	S. A. R. H.
Cerralvo, Nuevo Leon	R	26° 05'	99° 37'	1,130	#Nov. 1938	Rio San Juan	S. A. R. H.
Cerritos, Nuevo Leon	S	25° 31'	100° 12'	!	# 1958	Rio San Juan	S. A. R. H.
Cerro Prieto, Nuevo Leon	S	25° 56'	99° 23'	885	#May 1958	Rio San Juan	S. A. R. H.
Chihuahua, Chihuahua	S	28° 38'	106° 04'	4,760	# 1900	Rio Conchos	Meteor. Service of Chihuahua
Cienega de Flores, Nuevo Leon	R	25° 57'	100° 10'	1,770	#Apr. 1938	Rio San Juan	S. A. R. H.
Cienega del Toro, Nuevo Leon	S	25° 05'	100° 20'	7,010	# 1958	Rio San Juan	S. A. R. H.
Cd. Acuna, Coahuila	S	29° 20'	100° 57'	900	1951	Amistad Dam - Eagle Pass	I. B. & W. C.
Cd. Anahuac, Nuevo Leon	S	27° 15'	100° 08'	656	#June 1933	Rio Salado	S. A. R. H.
Cd. Camargo, Chihuahua	S	27° 42'	105° 10'	3,950	#Oct. 1957	Rio Conchos	Meteor. Service of Chihuahua
Cd. Camargo, Tamaulipas	S	26° 19'	98° 50'	225	# 1953	Rio San Juan	S. A. R. H.
Cd. Delicias, Chihuahua	S	28° 11'	105° 28'	3,710	#Aug. 1933	Rio Conchos	Meteor. Service of Chihuahua
Cd. Guerrero, Chihuahua	S	28° 33'	107° 29'	6,560	#May 1903	Adjacent to Rio Conchos	Meteor. Service of Chihuahua
Cd. Juarez, Chihuahua	S	31° 44'	106° 28'	3,740	# 1903	El Paso - Fort Quitman	Meteor. Service of Chihuahua
Cd. Mier, Tamaulipas	S	26° 26'	99° 09'	260	Oct. 1955	Falcon Dam - Rio Grande City	I. B. & W. C.
Cd. Miguel Aleman, Tamaulipas	S	26° 24'	99° 02'	180	1964	Falcon Dam - Rio Grande City	S. A. R. H.
Cd. Reynosa, Tamaulipas	R	26° 06'	98° 19'	130	# 1941	Lower Rio Grande Valley	S. A. R. H.
Colombia, Nuevo Leon	S	27° 42'	99° 45'	!	#Sept. 1976	Eagle Pass - Laredo	S. A. R. H.
Colonia Anahuac, Chihuahua	S	28° 29'	106° 44'	6,550	1961	Rio Conchos	Celulosa de Chih. S.A.
Comales, Tamaulipas	R	26° 11'	98° 55'	260	#Mar. 1938	Rio San Juan	S. A. R. H.
Control, Tamaulipas	S	25° 58'	97° 49'	59	#June 1942	Lower Rio Grande Valley	S. A. R. H.
Coyame, Chihuahua	S	29° 28'	105° 06'	!	#Nov. 1961	Rio Conchos	Meteor. Service of Chihuahua
Cuatro Ciénegas, Coahuila	S	26° 59'	102° 04'	2,430	#June 1923	Rio Salado	S. A. R. H.
Cuahtemoc, Chihuahua	S	28° 24'	106° 52'	7,250	#June 1923	Adjacent to Rio Conchos	Meteor. Service of Chihuahua
Ejido Marin, Nuevo Leon	S	25° 50'	100° 00'	!	#Mar. 1979	Rio San Juan	S. A. R. H.
El Brasil, Nuevo Leon	S	25° 53'	98° 59'	!	# 1979	Rio San Juan	S. A. R. H.
El Cuarenta, Chihuahua	S	30° 33'	105° 50'	!	# 1961	Adjacent to Fort Quitman Above Rio Conchos	Meteor. Service of Chihuahua
El Cuchillo, Nuevo Leon	S	25° 43'	99° 16'	590	#June 1938	Rio San Juan	S. A. R. H.
El Cuervito, Nuevo Leon	S	25° 54'	98° 40'	!	# 1980	Rio San Juan	S. A. R. H.
El Maguey, Chihuahua	S	27° 37'	106° 09'	4,380	#July 1955	Rio Conchos	Meteor. Service of Chihuahua
El Pajonal, Nuevo Leon	S	25° 29'	100° 23'	5,020	# 1958	Rio San Juan	S. A. R. H.
El Realito, Nuevo Leon	S	25° 18'	99° 21'	!	# 1970	Rio San Juan	S. A. R. H.
El Retamal, Tamaulipas	S	26° 02'	98° 03'	82	#Oct. 1949	Lower Rio Grande Valley	I. B. & W. C.

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

LOCATION OF RAINFALL STATIONS ON THE RIO GRANDE WATERSHED

IN MEXICO

NAME OF STATION	TYPE GAGE	LATI-TUDE	LONGI-TUDE	ELEV. (FT.)	RECORD BEGAN	WATERSHED SUBDIVISION	OBSERVER
El Rusio, Nuevo Leon	S	24° 42'	100° 26'	6,570	# 1956	Adjacent to Rio San Juan	S. A. R. H.
El Sitio, Chihuahua	S	27° 34'	105° 16'	!	#July 1955	Rio Conchos	Meteor. Service of Chihuahua
El Vergel, Chihuahua	S	26° 22'	105° 30'	7,350	# 1957	Rio Conchos	Meteor. Service of Chihuahua
Emiliano Zapata, Coahuila	S	29° 1'	100° 49'	!	#Mar. 1976	Eagle Pass - Laredo	S. A. R. H.
Escalon, Chihuahua	S	26° 45'	104° 20'	4,160	# 1957	Adjacent to Rio Conchos	Meteor. Service of Chihuahua
Escuela Superior de Agricultura, Chihuahua	S	31° 42'	106° 27'	3,690	1980	El Paso - Fort Quitman	S. A. R. H.
Escuela Tecnica Agropecuaria, Chihuahua	S	31° 23'	106° 06'	3,580	1958	El Paso - Fort Quitman	S. A. R. H.
Espinazo, Nuevo Leon	S	26° 15'	101° 5'	!	# 1980	Rio Salado	S. A. R. H.
Fresnillo, Nuevo Leon	S	26° 26'	99° 53'	!	# 1982	Rio Alamo	S. A. R. H.
Galeana, Nuevo Leon	S	24° 50'	100° 4'	5,430	# 1958	Adjacent to Rio San Juan	S. A. R. H.
Gallego, Chihuahua	S	29° 50'	106° 23'	5,100	# 1958	Adjacent to Rio Conchos	Meteor. Service of Chihuahua
Garza Ayala, Nuevo Leon	S	26° 29'	100° 3'	!	# 1968	Rio Salado	S. A. R. H.
General Bravo, Nuevo Leon	S	25° 48'	99° 11'	590	#Sept. 1906	Rio San Juan	S. A. R. H.
General Cepeda, Coahuila	S	25° 23'	101° 29'	4,920	#Aug. 1926	Rio San Juan	S. A. R. H.
General Trevino, Nuevo Leon	S	26° 13'	99° 29'	!	#Oct. 1976	Rio Alamo	S. A. R. H.
Gomez Farias, Coahuila	S	24° 58'	101° 53'	!	#June 1979	Rio San Juan	S. A. R. H.
Hacienda de Mamulique, Nuevo Leon	S	26° 7'	100° 14'	!	#Sept. 1973	Rio San Juan	S. A. R. H.
Hidalgo del Parral, Chihuahua	S	26° 56'	105° 39'	5,740	!	Rio Conchos	Meteor. Service of Chihuahua
Higuera, Nuevo Leon	S	25° 58'	100° 1'	1,640	#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'	!	# 1980	Rio San Juan	S. A. R. H.
Icamole, Nuevo Leon	S	25° 55'	100° 43'	4,900	# 1958	Rio San Juan	S. A. R. H.
Iturbide, Nuevo Leon	S	24° 44'	99° 54'	!	1941	Adjacent to Rio San Juan	S. A. R. H.
Jarita, Nuevo Leon	C	27° 26'	99° 48'	680	#Mar. 1961	Laredo - Falcon Dam	S. A. R. H.
Jimenez, Chihuahua	S	27° 8'	104° 55'	4,490	# 1951	Rio Conchos	Meteor. Service of Mexico
Jimenez, Coahuila	S	29° 4'	100° 40'	810	# 1951	Amistad Dam - Foster Ranch	I. B. & W. C.
Km. 135, Chihuahua	S	28° 22'	105° 37'	3,940	# 1962	Rio Conchos	S. A. R. H.
La Amistad, Coahuila	S	29° 27'	101° 5'	!	Feb. 1977	Amistad Dam - Eagle Pass	I. B. & W. C.
La Arena, Nuevo Leon	S	25° 46'	100° 1'	!	# 1968	Rio San Juan	S. A. R. H.
La Cruz, Nuevo Leon	S	25° 28'	100° 26'	!	# 1958	Rio San Juan	S. A. R. H.
La Escondida, Nuevo Leon	S	26° 16'	99° 46'	!	# 1979	Rio San Juan	S. A. R. H.
La Huasteca, Nuevo Leon	S	25° 30'	100° 30'	!	# 1978	Rio San Juan	S. A. R. H.
La Pomona, Nuevo Leon	S	24° 59'	99° 12'	!	Mar. 1979	Rio San Juan	S. A. R. H.
La Popa, Nuevo Leon	S	26° 10'	100° 50'	3,230	# 1958	Rio San Juan	S. A. R. H.
La Trasquila, Chihuahua	S	29° 8'	107° 8'	!	# 1962	Adjacent to Rio Conchos	S. A. R. H.
Laguna de Salinillas, Nuevo Leon	S	27° 26'	100° 23'	750	# 1940	Rio Salado	S. A. R. H.
Laguna de Sanchez, Nuevo Leon	R	25° 22'	100° 17'	6,500	#Apr. 1941	Rio San Juan	S. A. R. H.
Lampazos, Nuevo Leon	S	27° 2'	100° 30'	1,120	# 1958	Rio Salado	Meteor. Service of Mexico
Las Burras, Chihuahua	S	28° 31'	105° 26'	3,590	#July 1949	Rio Conchos	S. A. R. H.
Las Comitas, Nuevo Leon	S	25° 30'	100° 24'	1,670	# 1940	Rio San Juan	S. A. R. H.
Las Enramadas, Nuevo Leon	S	25° 30'	99° 31'	730	#Sept. 1926	Rio San Juan	S. A. R. H.
Las Virgenes, Chihuahua	S	28° 10'	105° 38'	4,070	# 1943	Rio Conchos	S. A. R. H.
Lazaro Cardenas, Chihuahua	S	28° 23'	105° 37'	3,940	# 1961	Rio Conchos	Meteor. Service of Chihuahua
Linares, Nuevo Leon	R	24° 52'	99° 34'	1,180	# 1900	Adjacent to Rio San Juan	S. A. R. H.
Los Herreras (La Tableta) Nuevo Leon	R	25° 54'	99° 24'	820	#Sept. 1939	Rio San Juan	S. A. R. H.
Los Ramones, Nuevo Leon	R	25° 42'	99° 38'	260	#Sept. 1939	Rio San Juan	S. A. R. H.
Maclovio Herrera, Chihuahua	S	29° 4'	105° 9'	3,220	# 1924	Rio Conchos	Meteor. Service of Chihuahua
Madero (Los Aldamas), Nuevo Leon	S	26° 2'	99° 12'	!	#May 1970	Rio San Juan	S. A. R. H.

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

LOCATION OF RAINFALL STATIONS ON THE RIO GRANDE WATERSHED

IN MEXICO

NAME OF STATION	TYPE	LATI- TUDE	LONGI- TUDE	ELEV. (FT.)	RECORD BEGAN	WATERSHED SUBDIVISION	OBSERVER	
Maijoma, Chihuahua	S	28° 55'	104° 21'	4,270	#Aug. 1955	Rio Conchos	Meteor. Service of Chihuahua	
Majalca, Chihuahua	S	28° 53'	106° 21'	6,860	June 1963	Rio Conchos	Meteor. Service of Chihuahua	
Manuel Benavides, Chihuahua	S	29° 06'	103° 54'	!	#Oct. 1961	Above Rio Conchos - Johnson Ranch	Meteor. Service of Mexico	
Matamoros, Tamaulipas	S	25° 52'	97° 30'	33	#	1958	Lower Rio Grande Valley	S. A. R. H.
Meoqui, Chihuahua	S	28° 16'	105° 29'	3,790		1961	Rio Conchos	Meteor. Service of Chihuahua
Mimbres, Nuevo Leon	S	24° 58'	100° 16'	!	#	1958	Rio San Juan	S. A. R. H.
Mina, Nuevo Leon	S	26° 00'	100° 32'	!	#	1958	Rio San Juan	S. A. R. H.
Montemorelos, Nuevo Leon	S	25° 12'	99° 50'	1,420	#Aug. 1904	Rio San Juan	S. A. R. H.	
Monterrey, Nuevo Leon	S	25° 40'	100° 18'	1,740	#	1896	Rio San Juan	S. A. R. H.
Muzquiz, Coahuila	S	27° 53'	101° 31'	1,650	#	1923	Rio Salado	S. A. R. H.
Nonoava, Chihuahua	S	27° 29'	106° 44'	!	#	1963	Rio Conchos	Meteor. Service of Chihuahua
Nueva Cd. Guerrero, Tamaulipas	S	26° 34'	99° 14'	350	#May 1954	Laredo - Falcon Dam	I. B. & W. C.	
Nuevo Laredo, Tamaulipas	S	27° 30'	99° 30'	430	#	1909	Eagle Pass - Laredo	Meteor. Service of Mexico
Ojinaga, Chihuahua	S	29° 34'	104° 24'	2,590	#Apr. 1954	Rio Conchos	I. B. & W. C.	
Ojinaga, Chihuahua	S	29° 34'	104° 24'	2,625	#Nov. 1906	Rio Conchos	Meteor. Service of Chihuahua	
Ocampo, Coahuila	S	27° 19'	102° 24'	3,770	#May 1960	Rio Salado	S. A. R. H.	
Ojo Caliente, Chihuahua	S	27° 41'	105° 12'	4,010		1942	Rio Conchos	S. A. R. H.
Ojo de Agua (en Sabinas), Hidalgo, Nuevo Leon	S	26° 30'	100° 11'	!		1980	Rio Salado	S. A. R. H.
Palestina, Coahuila	S	29° 09'	100° 59'	1,080	#	1931	Rio San Diego	S. A. R. H.
Paras, Nuevo Leon	S	26° 30'	99° 31'	541	#	1958	Rio Alamo	S. A. R. H.
Piedras Negras, Coahuila	S	28° 43'	100° 31'	820	#	1951	Amistad Dam - Eagle Pass	Meteor. Service of Mexico
Pobladores, Nuevo Leon	S	25° 31'	99° 24'	!	#	1982	Rio San Juan	S. A. R. H.
Posta Zootecnica, Chihuahua	S	28° 41'	106° 04'	4,740	#	1957	Rio Conchos	Meteor. Service of Chihuahua
Potrero de Abrego, Chihuahua	S	25° 17'	100° 21'	!		1980	Rio San Juan	S. A. R. H.
Presa Amistad, Coahuila	R	29° 26'	101° 02'	920		1959	Amistad - Eagle Pass	I. B. & W. C.
Presa Cabeceras, Coahuila	S	29° 02'	101° 05'	!	#	1964	Amistad Dam - Eagle Pass	S. A. R. H.
Presa Centenario, Coahuila	S	29° 13'	100° 57'	!	#	1964	Arroyo Las Vacas	S. A. R. H.
Presa Chihuahua, Chihuahua	S	28° 34'	106° 10'	5,230	Oct. 1961	Rio Conchos	S. A. R. H.	
Presa La Boquilla, Chihuahua	S	27° 32'	105° 25'	4,330	#	1910	Rio Conchos	Elec. Industry of Mexico
Presa Luis L. Leon, Chihuahua	S	28° 57'	105° 17'	!	Oct. 1964	Rio Conchos	S. A. R. H.	
Presa Rodrigo Gomez, Nuevo Leon	S	25° 25'	100° 07'	1,460	#	1923	Rio San Juan	S. A. R. H.
Presa San Miguel, Coahuila	S	29° 02'	100° 57'	1,000	#	1964	Rio San Diego	S. A. R. H.
Presa V. Carranza, Coahuila	S	27° 31'	100° 37'	790	#June 1927	Rio Salado	S. A. R. H.	
Progreso, Coahuila	S	27° 25'	101° 00'	1,210	#Feb. 1943	Rio Salado	S. A. R. H.	
Ramos Arizpe, Coahuila	S	25° 32'	100° 57'	4,590	#Apr. 1907	Rio San Juan	S. A. R. H.	
Rancho La Cuparrosa, Coahuila	R	29° 30'	101° 15'	1,150	#	1970	Foster Ranch - Amistad Dam	I. B. & W. C.
Rayones, Nuevo Leon	S	25° 01'	100° 05'	1,970	#Oct. 1926	Rio San Juan	S. A. R. H.	
Rinconada, Nuevo Leon	S	25° 41'	100° 42'	4,790	#Apr. 1944	Rio San Juan	S. A. R. H.	
Rosario, Durango	S	26° 30'	105° 38'	!		1962	Rio Conchos	S. A. R. H.
Sabinas, Coahuila	S	27° 51'	101° 07'	1,120	#May 1922	Rio Salado	S. A. R. H.	
Saltillo, Coahuila	S	25° 26'	101° 00'	5,280	#	1886	Rio San Juan	S. A. R. H.
Samalayuca, Chihuahua	S	31° 21'	106° 28'	4,180		1958	El Paso - Ft. Quitman	Meteor. Service of Chihuahua
San Antonio, Durango	S	26° 25'	105° 21'	5,430	#	1943	Rio Conchos	S. A. R. H.
San Antonio de Las Alazanas, Coahuila	S	25° 16'	100° 35'	!	#	1958	Rio San Juan	S. A. R. H.
San Diego, Nuevo Leon	S	25° 14'	99° 15'	!	#Feb 1978	Rio San Juan	S. A. R. H.	
San Juanito, Chihuahua	S	27° 58'	107° 36'	!	#	1959	Adjacent to Rio Conchos	Meteor. Service of Chihuahua
San Nicolas, Nuevo Leon	S	25° 45'	100° 17'	!	#	1978	Rio San Juan	S. A. R. H.
Santa Catarina, Nuevo Leon	R	25° 40'	100° 29'	2,230	#Oct. 1937	Rio San Juan	S. A. R. H.	

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

LOCATION OF RAINFALL STATIONS ON THE RIO GRANDE WATERSHED

IN MEXICO

NAME OF STATION	TYPE GAGE	LATI-TUDE	LONGI-TUDE	ELEV. (FT.)	RECORD BEGAN	WATERSHED SUBDIVISION	OBSERVER
Stas. - Bajo Rio Bravo							
# 1 - 2	S	25° 56'	97° 46'	!	1964	Lower Rio Grande Valley	S. A. R. H.
# 1 - 3	S	25° 50'	97° 42'	!	1964	Lower Rio Grande Valley	S. A. R. H.
# 1 - 4	S	25° 51'	97° 45'	!	1964	Lower Rio Grande Valley	S. A. R. H.
# 1 - 12	S	25° 56'	97° 38'	!	1964	Lower Rio Grande Valley	S. A. R. H.
# 1 - 13	S	25° 44'	97° 40'	!	1964	Lower Rio Grande Valley	S. A. R. H.
# 2 - 5	S	25° 48'	97° 49'	!	1964	Lower Rio Grande Valley	S. A. R. H.
# 2 - 6	S	25° 44'	97° 53'	!	1964	Lower Rio Grande Valley	S. A. R. H.
# 2 - 7	S	25° 39'	97° 42'	!	1964	Lower Rio Grande Valley	S. A. R. H.
# 2 - 11	S	25° 35'	97° 46'	!	1964	Lower Rio Grande Valley	S. A. R. H.
# 3 - 14	S	25° 56'	97° 59'	!	1964	Lower Rio Grande Valley	S. A. R. H.
# 3 - 15	S	25° 46'	98° 01'	!	1964	Lower Rio Grande Valley	S. A. R. H.
# 3 - 17	S	25° 49'	97° 58'	!	1964	Lower Rio Grande Valley	S. A. R. H.
# 4 - 8	S	25° 40'	97° 55'	!	1964	Lower Rio Grande Valley	S. A. R. H.
# 4 - 10	S	25° 36'	97° 52'	!	1964	Lower Rio Grande Valley	S. A. R. H.
# 4 - 16	S	25° 35'	98° 00'	!	1964	Lower Rio Grande Valley	S. A. R. H.
Stas. - Bajo Rio San Juan							
# 2 - 29	S	26° 10'	98° 38'	!	1964	Lower Rio Grande Valley	S. A. R. H.
# 2 - 33	S	26° 10'	98° 28'	!	1964	Lower Rio Grande Valley	S. A. R. H.
# 2 - 38	S	26° 06'	98° 34'	!	1964	Lower Rio Grande Valley	S. A. R. H.
# 3 - 47	S	25° 58'	98° 07'	!	1964	Lower Rio Grande Valley	S. A. R. H.
# 3 - 48A	S	25° 52'	98° 05'	92	1983	Lower Rio Grande Valley	S. A. R. H.
# 3 - 55	S	25° 52'	98° 12'	!	1964	Lower Rio Grande Valley	S. A. R. H.
# 3 - 58	S	25° 40'	98° 11'	!	1964	Lower Rio Grande Valley	S. A. R. H.
# 3 - 60	S	25° 46'	98° 10'	!	1964	Lower Rio Grande Valley	S. A. R. H.
# 3 - 63	S	25° 41'	98° 06'	!	1964	Lower Rio Grande Valley	S. A. R. H.
Tepehuaaje, Nuevo Leon	S	25° 32'	100° 15'	!	#June 1979	Rio San Juan	S. A. R. H.
Topo Chico, Nuevo Leon	R	25° 44'	100° 20'	1,640	#Aug. 1939	Rio San Juan	S. A. R. H.
Tunel San Francisco Nuevo Leon	S	25° 25'	100° 10'	!	# 1958	Rio San Juan	S. A. R. H.
Valadecees, Tamaulipas	S	26° 14'	98° 40'	!	1964	Lower Rio Grande Valley	S. A. R. H.
Vallecillo, Nuevo Leon	S	26° 40'	99° 59'	900	#June 1958	Rio Salado	S. A. R. H.
Valle de Allende, Chihuahua	S	26° 56'	105° 23'	!	#Mar. 1962	Rio Conchos	Meteor. Service of Chihuahua
Valle Hermoso, Tamaulipas	S	25° 41'	97° 48'	52	#June 1949	Lower Rio Grande Valley	S. A. R. H.
Vaqueria, Nuevo Leon	S	25° 08'	99° 04'	!	#Mar. 1979	Rio San Juan	S. A. R. H.
Villa Aldama, Chihuahua	S	25° 50'	105° 55'	4,140	1961	Rio Conchos	Meteor. Service of Chihuahua
Villaldama, Nuevo Leon	S	26° 30'	100° 25'	1,540	#Apr. 1979	Rio Salado	S. A. R. H.
Villa Allende, Nuevo Leon	S	25° 17'	100° 01'	2,210	#Nov. 1938	Rio San Juan	S. A. R. H.
Villa Coronado, Chihuahua	S	26° 44'	105° 08'	4,790	#Aug. 1964	Rio Conchos	Meteor. Service of Chihuahua
Villa Hidalgo, Coahuila	S	27° 47'	99° 52'	660	1951	Eagle Pass - Laredo	I. B. & W. C.
Zaragoza, Coahuila	S	28° 29'	100° 55'	1,210	#Aug. 1977	Eagle Pass - Laredo	S. A. R. H.

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

EVAPORATION IN THE RIO GRANDE BASIN
IN THE UNITED STATES
IN INCHES

Tabulated below are records of evaporation observed at eight stations in Texas operated by the United States Section of the Commission from Presidio to Brownsville. At all stations, the exposure to wind was uniform and relatively unimpeded. The sites were kept cleared of all high brush and trees within 150 feet, and all brush, tall weeds, and other obstructions within 100 feet of the fenced enclosures. Within the enclosures all vegetation has been eradicated or kept trimmed to within 3 inches of the ground surface. For specific location of these stations, refer to data opposite same station name shown in "Location of Rainfall Stations on the Rio Grande Watershed," on preceding pages of this bulletin.

Records were obtained by means of:

1. Standard National Weather Service pan. A circular pan, 4 feet in diameter and 10 inches deep, made of 22-gage galvanized iron, is set on a wooden platform with the rim of the pan 15 inches above the ground. The water level is maintained between 2 and 3 inches below the rim of the pan and is measured with a micrometer gage. This type of pan was in operation at Amistad Dam and Falcon Dam.
2. A circular pan, 2 feet in diameter and 36 inches deep, made of 22-gage galvanized iron, is set in the ground with the rim of the pan 3 inches above the ground surface and the top covered with a circular screen of No. 4 (1/4" mesh) galvanized hardware cloth. This type of pan, equipped with an automatic feed tank that maintains the water at a level 3 inches below the rim of the pan, was in operation at Martin King Ranch and Eagle Pass.
3. An evaporimeter, developed by the United States Section of the Commission and calibrated against a 2-foot pan described above, was in operation at Presidio, Johnson Ranch, Long Ranch, and at a site 7 miles east of Brownsville.

Month	Presidio		Johnson Ranch		Martin King Ranch		Long Ranch	
	1988	Average 1950-1988	1988	Average 1950-1988	1988	Average 1956-1988	1988	Average 1971-1988
Jan.	1.62	3.50	3.59	3.30	2.54	3.10	2.02	2.20
Feb.	2.00	4.80	3.92	4.80	3.50	3.60	2.76	2.70
Mar.	4.12	7.60	8.87	8.00	7.38	6.20	5.57	4.60
Apr.	6.24	9.30	9.28	10.00	8.90	7.60	7.50	5.70
May	7.09	10.70	10.20	11.30	8.22	8.20	8.62	5.90
June	7.00	11.50	9.25	11.50	9.68	9.80	9.61	7.20
July	5.50	10.90	8.05	11.60	9.85	11.20	9.33	8.50
Aug.	5.93	10.10	8.05	10.50	10.46	10.70	8.20	7.80
Sept.	6.42	8.40	9.17	8.60	11.03	8.00	8.03	6.10
Oct.	3.62	6.60	6.87	6.80	4.89	5.60	6.36	4.20
Nov.	2.65	4.50	7.75	4.40	5.46	3.90	2.20	2.80
Dec.	1.56	3.30	3.87	3.20	3.22	3.10	1.50	2.20
Total	53.75	91.20	88.87	94.00	85.13	81.00	71.70	59.90

Month	Amistad Dam		Eagle Pass		Falcon Dam 4-Foot Pan		Brownsville	
	1988	Average 1963-1988	1988	Average 1964-1988	1988	Average 1956-1988	1988	Average 1958-1988
Jan.	3.68	3.70	3.29	3.20	4.12	3.90	6.50	3.00
Feb.	4.50	4.70	3.77	3.60	4.46	5.10	3.64	3.60
Mar.	9.38	8.20	6.44	5.70	8.55	8.30	4.42	4.90
Apr.	11.58	10.00	8.94	7.20	10.04	10.10	6.21	6.00
May	12.38	10.80	9.41	7.50	10.93	11.40	7.20	5.90
June	12.45	12.60	11.02	9.60	12.99	13.10	7.37	6.40
July	12.76	14.50	9.41	10.90	14.14	15.10	6.58	7.30
Aug.	12.18	13.40	7.47	10.30	11.60	13.50	8.28	7.10
Sept.	9.32	9.90	7.05	7.70	9.09	9.80	5.93	5.50
Oct.	6.10	7.40	5.12	6.00	7.90	7.50	5.68	4.90
Nov.	6.06	5.00	4.54	4.20	6.05	5.30	5.82	3.90
Dec.	3.77	3.70	2.96	3.40	4.81	3.90	4.60	3.00
Total	104.16	103.90	79.42	79.30	104.68	107.00	72.23	61.50

EVAPORATION IN THE RIO GRANDE BASIN
IN MEXICO
IN INCHES

Tabulated below are records of evaporation observed at ten stations operated and maintained by the Mexican Section of the Commission. Nine stations are along the Rio Grande from Cd. Juarez, Chihuahua to Retamal, Tamaulipas, and one is located on the Rio Conchos near Ojinaga, Chihuahua. At all stations, except Ojinaga, the sites were kept cleared of all high brush and trees within 150 feet, and of all brush and tall weeds within 100 feet of the fenced enclosures. The Ojinaga station is 30 feet landward of the east Rio Conchos levee with a concrete V-shaped irrigation ditch and road between the levee and the 8 x 8-meter woven wire pen, which encloses a 150-cm evaporation pan and a 70 x 50-cm shelter with thermometers. Inside the enclosures, all vegetation has been eradicated or kept trimmed to within 3 inches of the ground surface. The exposure to wind was uniform and relatively unimpeded. For specific location of these stations, refer to data opposite same station name shown in "Location of Rainfall Stations on the Rio Grande Watershed."

The type of pan used at all these stations was a standard National Weather Service-type pan, 4 feet in diameter and 10 inches deep, made of 22-gage galvanized iron, set on a wooden platform with the rim of the pan 16 inches above the ground. The water level was maintained between 2 and 3 inches below the rim of the pan and was measured with a micrometer gage.

Data for other evaporation stations in the Rio Grande basin in Mexico, which were operated by various Mexican agencies, are available in Water Bulletin No. 58 published by the Mexican Section of the Commission.

Month	Cd. Juarez, Chihuahua		Ojinaga, Chihuahua		La Amistad, Coahuila		Cd. Acuna, Coahuila		Jimenez, Coahuila	
	1988	Average 1969-1988	1988	Average 1954-1988	1988	Average 1977-1988	1988	Average 1951-1988	1988	Average 1951-1988
Jan.	3.43	3.60	2.91	3.40	2.80	3.50	2.60	3.30	3.74	3.60
Feb.	4.17	4.50	4.41	4.80	4.21	4.60	3.74	4.40	5.47	4.70
Mar.	8.50	7.80	7.13	8.20	8.03	7.40	7.64	7.50	4.21	7.30
Apr.	9.53	9.70	7.28	10.40	9.17	9.50	9.49	8.70	11.14	8.20
May	11.61	11.10	9.76	12.40	9.45	9.60	10.71	9.60	10.39	9.10
June	11.97	12.00	6.73	12.90	10.87	11.30	10.43	11.20	11.34	10.90
July	9.72	10.80		12.80	11.85	13.50	10.79	12.90	11.06	12.40
Aug.	7.52	9.50		11.00	10.83	12.80	9.21	11.70	10.08	11.40
Sep.	7.83	7.90		8.60	8.03	9.70	8.03	8.50	8.54	8.40
Oct.	3.50	5.90		6.60	5.12	7.10	5.43	6.00	5.98	6.00
Nov.		4.10		4.20	4.84	4.70	4.09	3.80	6.10	4.00
Dec.		3.10		3.20	3.43	3.40	2.72	2.90	3.82	3.30
Total		90.00		98.50	88.63	97.10	84.88	90.50	91.87	89.30

Month	Villa Hidalgo, Coahuila		Nuevo Laredo, Tamaulipas		Nueva Cd. Guerrero, Tamaulipas		Cd. Mier, Tamaulipas		Retamal, Tamaulipas	
	1988	Average 1951-1988	1988	Average 1964-1988	1988	Average 1954-1988	1988	Average 1955-1988	1988	Average 1951-1988
Jan.	3.43	3.70	2.91	4.20	2.72	3.30	2.99	3.50	4.17	3.90
Feb.	4.06	4.90	3.54	5.30	3.35	4.20	4.06	4.70	4.09	4.50
Mar.	2.20	7.30	3.39	8.70	7.20	7.10	5.71	7.60	6.14	6.60
Apr.	10.87	9.30	7.91	10.70	8.27	8.60	7.87	9.30	6.42	7.70
May	9.61	10.50	9.25	11.70	9.53	9.90	9.45	10.40	7.01	8.10
June	10.51	12.50	10.79	13.50	11.61	11.30	11.02	12.00	7.87	8.80
July	9.88	14.20	11.30	15.20	11.77	12.90	11.57	13.70	10.04	9.80
Aug.	8.27	13.00	9.33	14.00	9.21	12.00	10.24	12.30	8.03	9.60
Sep.	8.03	9.50	8.07	10.50	7.80	8.70	8.43	9.40	10.04	7.50
Oct.	6.34	7.10	6.38	7.90	6.10	6.50	6.97	7.20	7.01	6.10
Nov.	4.41	4.70	4.21	5.40	5.08	4.50	5.12	4.80	5.87	4.40
Dec.	3.39	3.60	2.83	4.10	3.62	3.30	4.06	3.60	4.49	3.80
Total	81.00	100.30	79.91	111.20	86.26	92.30	87.49	98.50	81.18	80.80

TEMPERATURE, HUMIDITY, AND WIND

The maximum and minimum temperatures shown for the stations in Mexico are from daily maximum and minimum thermometer observations. The mean monthly temperatures are averages of these daily maximum and minimum temperatures.

The mean monthly temperatures and relative humidities shown for stations in the United States were integrated from continuous records of hygrothermographs, housed in louvered shelters, with the sensing elements of the instruments 16 inches above the ground and 9 feet southwest of either a 2 or 4-foot diameter evaporation pan. The maximum and minimum temperatures shown below are the extreme temperatures for the month as recorded on the charts except for Falcon Dam and Amistad Dam, where the readings are based on daily maximum and minimum thermometer observations.

Monthly mean wind velocities are based on the total miles of wind movement indicated by a standard 3-cup anemometer installed and operated according to specifications for a Class A National Weather Service evaporation station.

TEMPERATURE - DEGREES IN FAHRENHEIT

IN THE UNITED STATES

Month	Amistad Dam, Texas				Eagle Pass, Texas				Falcon Dam, Texas			
	Mean 1988	Average 1963-1988	1988		Mean 1988	Average 1964-1988	1988		Mean 1988	Average 1950-1988	1988	
			Max.	Min.			Max.	Min.			Max.	Min.
Jan.	47.0	49.8	77	22	48.8	50.7	80	23	52.8	54.3	81	34
Feb.	53.9	53.8	88	28	56.7	55.5	90	27	56.3	59.0	93	30
Mar.	62.7	62.6	94	35	64.6	64.5	97	32	72.3	66.9	97	44
Apr.	71.8	71.0	101	43	73.5	70.0	103	40	74.5	74.5	100	46
May	76.8	72.7	98	58	79.0	77.8	100	57	82.9	79.9	102	66
June	82.6	81.9	111	67	83.5	82.8	114	65	84.0	83.7	110	67
July	84.0	84.6	103	70	83.5	85.8	103	70	89.0	85.6	105	70
Aug.	83.2	84.1	102	68	84.2	85.4	106	70	88.0	85.2	107	73
Sept.	78.6	78.9	99	63	80.7	79.9	98	62	80.7	80.5	101	64
Oct.	69.6	70.0	91	54	73.1	70.9	91	54	78.2	73.1	100	56
Nov.	62.4	60.0	95	31	64.7	61.0	95	33	68.3	63.8	97	42
Dec.	52.8	52.2	76	32	51.2	53.5	73	32	62.0	57.1	89	35
Yearly	68.8	68.5	111	22	70.3	69.8	114	23	74.1	72.0	110	39

IN MEXICO

Month	Cd. Juarez, Chihuahua				Ojinaga, Chihuahua				La Amistad, Coahuila			
	Mean 1988	Average 1960-1988	1988		Mean 1988	Average 1954-1988	1988		Mean 1988	Average 1977-1988	1988	
			Max.	Min.			Max.	Min.			Max.	Min.
Jan.	44.6	46.0	72	25	48.2	49.5	84	12	50.0	49.2	77	25
Feb.	53.6	50.1	79	28	53.6	54.1	90	25	55.4	53.5	88	28
Mar.	57.2	56.9	86	28	59.0	61.3	91	25	66.2	62.8	100	32
Apr.	64.4	64.3	88	36	66.2	69.9	95	36	75.2	70.9	100	46
May	73.4	73.2	99	41	75.2	78.5	106	43	78.8	77.9	100	55
June	80.6	81.4	100	55	84.2	85.0	111	55	86.0	83.8	115	68
July	82.4	83.3	100	63	84.2	86.0	106	63	87.8	87.6	104	70
Aug.	78.8	80.9	97	63	84.2	84.2	102	64	86.0	87.6	106	70
Sept.	75.2	75.1	95	52	77.0	77.1	100	54	82.4	82.3	102	64
Oct.	69.8	65.3	91	48	75.2	70.0	99	52	69.8	72.1	91	37
Nov.	53.6	53.7	86	28	59.0	57.8	91	23	64.4	62.5	99	34
Dec.	44.6	46.5	70	19	50.0	50.8	81	25	53.6	53.2	79	30
Yearly	64.9	64.7	100	19	68.0	68.7	111	12	71.3	70.3	115	25

Month	Cd. Acuna, Coahuila				Jimenez, Coahuila				Villa Hidalgo, Coahuila			
	Mean 1988	Average 1951-1988	1988		Mean 1988	Average 1951-1988	1988		Mean 1988	Average 1951-1988	1988	
			Max.	Min.			Max.	Min.			Max.	Min.
Jan.	44.6	48.5	75	18	48.2	52.3	81	25	48.2	52.9	77	32
Feb.	50.0	53.7	83	23	55.4	56.3	90	27	53.6	56.7	86	32
Mar.	62.6	62.5	102	32	69.8	63.5	99	28	71.6	65.4	90	48
Apr.	69.8	71.1	99	34	71.6	71.3	102	36	69.8	73.3	97	36
May	75.2	77.8	95	50	77.0	77.5	100	46	77.0	79.4	102	52
June	82.4	83.7	111	64	84.2	83.4	115	64	80.6	84.4	109	63
July	84.2	86.5	102	66	87.8	85.9	106	70	84.2	86.2	100	66
Aug.	84.2	86.1	104	66	86.0	85.7	108	55	82.4	86.5	106	68
Sept.	78.8	80.0	100	55	82.4	80.8	102	61	78.8	81.4	97	57
Oct.	69.8	70.8	88	48	73.4	71.9	95	50	69.8	72.3	97	45
Nov.	59.0	58.7	93	25	66.2	61.2	99	32	62.6	61.5	91	32
Dec.	50.0	50.8	75	25	55.4	54.1	81	28	53.6	54.5	91	32
Yearly	67.6	69.2	111	18	71.5	70.3	115	25	69.4	71.3	109	32

TEMPERATURE, HUMIDITY, AND WIND

TEMPERATURE - DEGREES IN FAHRENHEIT

IN MEXICO

Month	Nuevo Laredo, Tamps., C.I.L.A.				Nueva Cd. Guerrero, Tamaulipas				Cd. Mier, Tamaulipas			
	Mean 1988	Average 1964-1988	1988		Mean 1988	Average 1958-1988	1988		Mean 1988	Average 1955-1988	1988	
			Max.	Min.			Max.	Min.			Max.	Min.
			Jan.	51.8			55.1	79			27	51.8
Feb.	60.8	59.8	95	34	59.0	59.6	86	32	60.8	59.6	91	36
Mar.	69.8	70.0	97	36	68.0	67.7	95	41	69.8	67.9	97	43
Apr.	77.0	76.9	99	46	75.2	75.9	100	50	77.0	75.9	104	45
May	82.4	82.0	99	63	80.6	81.0	99	66	82.4	80.9	106	66
June	87.8	86.3	109	68	86.0	85.1	109	68	87.8	85.2	111	64
July	87.8	88.0	102	72	87.8	86.6	104	66	89.6	87.1	106	64
Aug.	86.0	88.2	102	72	86.0	86.8	106	70	89.6	87.2	109	72
Sept.	82.4	84.0	97	64	82.4	82.7	99	64	84.2	82.7	102	63
Oct.	75.2	76.1	88	59	77.0	75.3	91	59	78.8	75.2	97	54
Nov.	68.0	66.5	90	43	69.8	66.3	95	46	71.6	65.8	99	41
Dec.	59.0	60.0	81	37	62.6	58.5	88	36	62.6	58.6	90	32
Yearly	74.0	74.4	109	27	73.9	73.4	109	32	75.7	73.4	111	32

Month	Retamal, Tamaulipas										
	Mean 1988	Average 1951-1988	1988								
			Max.	Min.							
			Jan.	57.2							
Feb.	64.4	62.7	95	32							
Mar.	71.6	69.6	99	43							
Apr.	78.8	76.3	104	48							
May	82.4	80.2	109	64							
June	86.0	84.0	106	68							
July	89.6	85.5	106	68							
Aug.	89.6	86.4	108	72							
Sept.	86.0	83.3	100	66							
Oct.	80.6	77.2	102	61							
Nov.	75.2	68.5	100	46							
Dec.	66.2	62.2	99	39							
Yearly	77.3	74.6	109	32							

TEMPERATURE, HUMIDITY, AND WIND

MEAN WIND SPEED - MILES PER HOUR

IN THE UNITED STATES

Month	Martin King Ranch, Texas		Amistad Dam, Texas		Eagle Pass, Texas		Falcon Dam, Texas	
	1988	Average 1957-1988	1988	Average 1963-1988	1988	Average 1963-1988	1988	Average 1950-1988
Jan.	3.9	3.8	2.9	3.0	3.5	2.8	3.2	3.5
Feb.	4.0	4.5	3.2	3.5	9.9	3.6	3.5	4.1
Mar.	5.7	5.9	4.1	4.2	5.3	3.8	4.6	4.6
Apr.	5.2	6.1	3.6	4.2	4.7	4.1	3.8	5.1
May	6.1	6.6	4.3	4.2	5.3	3.9	4.9	5.1
June	5.2	7.2	3.3	4.4	5.1	3.9	4.2	5.4
July	5.6	6.7	3.4	4.2	4.0	3.9	4.8	5.6
Aug.	4.9	6.2	2.7	3.7	2.7	3.5	3.4	4.8
Sept.	4.2	5.1	3.1	3.4	3.4	3.1	3.6	3.8
Oct.	4.0	4.7	2.4	3.2	1.8	2.6	2.1	3.3
Nov.	3.7	4.0	2.6	3.0	1.9	2.5	2.1	3.5
Dec.	3.4	3.5	2.9	2.9	2.1	2.4	2.5	3.2
Yearly	4.7	5.4	3.2	3.7	4.1	3.3	3.6	4.3

MEAN RELATIVE HUMIDITY - PERCENT

IN THE UNITED STATES

Month	Amistad Dam, Texas		Eagle Pass, Texas		Falcon Dam, Texas	
	1988	Average 1963-1988	1988	Average 1964-1988	1988	Average 1950-1988
Jan.	58.3	62.6	64.8	63.9	65.8	67.6
Feb.	57.2	60.0	64.6	60.6	69.1	65.3
Mar.	42.3	54.5	50.7	56.7	----	62.9
Apr.	38.4	56.9	36.9	58.2	----	62.7
May	52.5	64.5	56.1	65.2	----	66.4
June	51.8	63.9	62.6	64.3	61.1	65.1
July	57.5	60.0	67.9	59.9	61.0	61.8
Aug.	58.0	60.3	68.1	61.5	64.4	62.5
Sept.	44.6	64.6	66.0	66.8	65.7	66.8
Oct.	31.4	64.5	68.5	67.9	64.4	66.9
Nov.	24.8	62.3	56.8	66.9	60.6	67.0
Dec.	27.7	61.3	60.0	66.8	63.4	67.3
Yearly	45.4	61.3	60.3	63.2	----	65.2

IN MEXICO

Nueva Cd. Guerrero, Tamaulipas		
Month	1988	Average August 1961-1988
Jan.	81	77
Feb.	80	75
Mar.	68	71
Apr.	69	71
May	76	76
June	68	74
July	71	72
Aug.	77	72
Sept.	74	77
Oct.	72	76
Nov.	68	76
Dec.	81	78
Yearly	74	75

DRAINAGE BASIN AND IRRIGATED AREAS
ALONG THE RIO GRANDE AND TRIBUTARIES - 1988

The total area within the outer rim of the Rio Grande basin is about 335,500 square miles, but it contains large areas, especially along its southwestern boundary, that contribute no surface runoff to the Rio Grande. Such noncontributing areas constitute about 47 percent of the total area, leaving 176,333 square miles of productive watershed which is listed in the tabulation below.

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

On the United States side, only the areas irrigated in 1988 are shown, except that in the reaches below Falcon Dam, the figures shown represent acreages which were subject to irrigation in 1988 but for which data on the portion actually irrigated is not known. On the Mexican side, part of the data may have been gathered previous to 1988. The irrigated area data tabulated are the best data that could be obtained.

DESIGNATION OF AREAS AND GAGING STATIONS	Drainage Basin Square Miles			Irrigated Areas - Acres		
	United States	Mexico	Total	United States	Mexico	Total
Above Elephant Butte Dam	25,923	0	25,923	0	0	0
Elephant Butte Dam to Caballo Dam	1,295	0	1,295	0	0	0
Above Caballo Dam	27,218	0	27,218	0	0	0
Caballo Dam to American Dam	2,053	0	2,053	83,073	0	83,073
Above American Dam	29,271	0	29,271	83,073	0	83,073
American Dam to Acala Station	672	544	1,216	47,237	13,186	60,423
Above Acala Gaging Station	29,943	544	30,487	130,310	13,186	143,496
Acala Station to Fort Quitman Station	663	794	1,457	15,043	0	15,043
Above Fort Quitman Gaging Station	30,606	1,338	31,944	145,353	13,186	158,539
Fort Quitman Station to Above Presidio Station	1,646	1,410	3,056	a) 60	a) 188	248
Above Presidio Station above Rio Conchos	32,252	2,748	35,000	145,413	13,374	158,787
Rio San Pedro above Francisco I. Madero Dam	0	4,161	4,161	0	12,121	12,121
Rio Conchos above Boquilla Dam	0	3,970	3,970	0	28,133	28,133
Boquilla Dam to Luis L. Leon Dam	0	14,861	14,861	0	219,207	219,207
Luis L. Leon Dam to mouth of river	0	3,412	3,412	0	52,374	52,374
Rio Conchos - Total	0	26,404	26,404	0	311,835	311,835
Alamito Creek above Gaging Station	1,504	0	1,504	0	0	0
Presidio Station Above Rio Conchos to Presidio Station below Rio Conchos - excluding above tributaries	340	91	431	2,423	245	2,668
Presidio Station above Rio Conchos to Presidio Station below Rio Conchos - Total	1,844	26,495	28,339	2,423	312,080	314,503
Above Presidio Station below Rio Conchos	34,096	29,243	63,339	147,836	325,454	473,290
Terlingua Creek above Gaging Station	1,070	0	1,070	0	0	0
Presidio Station below Rio Conchos to Johnson Ranch Station - excluding Terlingua Creek	1,093	2,258	3,351	882	1,537	2,419
Presidio Station below Rio Conchos to Johnson Ranch Station - Total	2,163	2,258	4,421	882	1,537	2,419
Above Johnson Ranch Gaging Station	36,259	31,501	67,760	148,718	326,991	475,709
Johnson Ranch Station to Foster Ranch Station	6,412	6,570	12,982	55	0	55
Above Foster Ranch Gaging Station	42,671	38,071	80,742	148,773	326,991	475,764
Foster Ranch Station to Langtry Station	182	505	687	0	0	0
Above Langtry Gaging Station (Discontinued)	42,853	38,576	81,429	148,773	326,991	475,764
Pecos River above Girvin (In the State of Texas)	29,562	0	29,562	10,213	0	10,213
Pecos River, Girvin to Station near Langtry Station near Langtry to Station at Mouth (Discontinued)	5,617	0	5,617	812	0	812
Pecos River - Total	35,308	0	35,308	11,025	0	11,025
Devils River above Pafford Crossing	3,961	0	3,961	0	0	0
Pafford Crossing to Station at Mouth (Discontinued)	344	0	344	0	0	0
Devils River - Total	4,305	0	4,305	0	0	0
Langtry Station to Amistad Dam - excluding above tributaries	217	1,875	2,092	0	0	0
Langtry Station to Amistad Dam - Total	39,830	1,875	41,705	11,025	0	11,025
Above Amistad Dam	82,683	40,451	123,134	159,798	326,991	486,789
Amistad Dam to Below Amistad Dam Gaging Station	5	4	9	0	0	0
Above the Below Amistad Dam Gaging Station	82,688	40,455	123,143	159,798	326,991	486,789
Below Amistad Dam Station to Del Rio Station	60	100	160	345	0	345
Above Del Rio Gaging Station	82,748	40,555	123,303	160,143	326,991	487,134
Arroyo Las Vacas above Gaging Station	0	350	350	0	361	361
San Felipe Creek above Gaging Station	46	0	46	1,630	0	1,630
Pinto Creek Above Gaging Station	249	0	249	250	0	250
Rio San Diego above Gaging Station	0	853	853	0	7,665	7,665
Gaging Station to mouth of river	0	6	6	0	217	217
Rio San Diego - Total	0	859	859	0	7,882	7,882

DRAINAGE BASIN AND IRRIGATED AREAS
ALONG THE RIO GRANDE AND TRIBUTARIES - 1988

DESIGNATION OF AREAS AND GAGING STATIONS	Drainage Basin Square Miles			Irrigated Areas - Acres		
	United States	Mexico	Total	United States	Mexico	Total
Del Rio Station to Jimenez Station - excluding above tributaries	669	110	779	b) 37,508	3,805	41,313
Del Rio Station to Jimenez Station - Total Above the Jimenez Gaging Station	964	1,319	2,283	39,388	12,048	51,436
	83,712	41,874	125,586	199,531	339,039	538,570
Rio San Rodrigo above Gaging Station	0	1,049	1,049	0	0	0
Rio San Rodrigo - Total	0	1,049	1,049	0	0	0
Jimenez Station to Maverick Power Plant - excluding Rio San Rodrigo	287	114	401	1,415	2,135	3,550
Jimenez Station to Maverick Power Plant - Total Above Maverick Power Plant	287	1,163	1,450	1,415	2,135	3,550
	83,999	43,037	127,036	200,946	341,174	542,120
Maverick Power Plant to Piedras Negras Station Above Piedras Negras Gaging Station	244	32	276	160	0	160
	84,243	43,069	127,312	201,106	341,174	542,280
Rio Escondido above Gaging Station	0	1,459	1,459	0	198	198
Rio Escondido - Total	0	1,471	1,471	0	198	198
Piedras Negras Station to El Indio Station - excluding Rio Escondido	237	206	443	320	4,823	5,143
Piedras Negras Station to El Indio Station - Total Above El Indio Gaging Station	237	1,677	1,914	320	5,021	5,341
	84,480	44,746	129,226	201,426	346,195	547,621
El Indio Gaging Station to Villa Hidalgo Station (Discontinued) Above Villa Hidalgo Gaging Station	629	1,683	2,312	966	4,848	5,814
	85,109	46,429	131,538	202,392	351,043	553,435
Villa Hidalgo Station to Laredo Station Above Laredo Gaging Station	607	433	1,040	3,059	8,004	11,063
	85,716	46,862	132,578	205,451	359,047	564,498
Rio Salado above Venustiano Carranza Dam	0	15,831	15,831	0	3,274	3,274
Rio Salado above Las Tortillas Gaging Station	0	23,155	23,155	0	57,939	57,939
Rio Salado above River Road Crossing	0	23,323	23,323	0	61,213	61,213
Laredo Station to Falcon Dam - excluding Rio Salado	2,042	1,327	3,369	e) 5,095	2,086	7,181
Laredo Station to Falcon Dam - Total Amistad Dam to Falcon Dam - excluding above tributaries Above Falcon Dam	2,042	24,650	26,692	5,095	63,299	68,394
	4,780	4,009	8,789	48,868	25,701	74,569
	87,758	71,512	159,270	210,546	422,346	632,892
Rio Alamo above Gaging Station	0	1,675	1,675	0	7,660	7,660
Rio San Juan above Marte Gomez Dam	0	12,745	12,745	0	2,995	2,995
Rio San Juan - Marte Gomez Dam to Camargo Gaging Station	0	195	195	0	187,674	187,674
Rio San Juan - Total	0	12,949	12,949	0	190,669	190,669
Falcon Dam to Rio Grande City Station - excluding above tributaries	222	246	468	4,995	4,500	9,495
Falcon Dam to Rio Grande City Station - Total Above Rio Grande City Gaging Station	222	14,870	15,092	4,995	202,829	207,824
	87,980	86,382	174,362	215,541	625,175	840,716
Rio Grande City Station to Anzalduas Dam Anzalduas Canal	952	798	1,750	178,114	22,232	200,346
Above Anzalduas Dam	88,932	87,180	176,112	393,655	1,117,648	1,511,303
Anzalduas Dam to Progreso Station (Discontinued) Above Progreso Gaging Station	13	163	176	125,370	1,646	127,016
	88,945	87,343	176,288	519,025	1,119,294	1,638,319
Progreso Station to San Benito Station Above San Benito Gaging Station	7	9	16	320,166	4,102	324,268
	88,952	87,352	176,304	839,191	1,123,396	1,962,587
San Benito Station to Brownsville Station Falcon Dam to Brownsville Station - excluding Rio Alamo and Rio San Juan	14	15	29	89,616	1,752	91,368
Above Brownsville Gaging Station	1,208	1,231	2,439	718,261	504,473	1,222,734
Brownsville Station to Gulf of Mexico Falcon Dam to Gulf of Mexico - excluding Rio Alamo and Rio San Juan	88,966	87,367	176,333	928,807	1,125,148	2,053,955
				4,212	0	4,212
Amistad Dam to Gulf of Mexico excluding above tributaries Above Gulf of Mexico				722,473	504,473	1,226,946
				771,341	530,174	1,301,515
				933,019	1,125,148	2,058,167

a) Total area irrigated from the Rio Grande at least once during the year; additional irrigations from this source dependent on availability of river water in this reach.

b) Includes 36,088 acres irrigated from the Maverick Canal below Mile 13 gaging station.

c) Includes 110 acres irrigated from small reservoirs.

08-4507.00 SUPPLEMENTARY DATA - INTERNATIONAL AMISTAD RESERVOIR

DEDUCED INFLOWS

Considering that a knowledge of the mean daily inflows reaching the International Amistad Reservoir would serve a useful purpose, such data have been deduced for 1988 showing the flows as closely as they can be approximated. These data are based on the daily operation of the International Amistad Reservoir, taking into account: a) record of gage heights at the dam; b) releases; c) filtrations; d) elevation-area-capacity tables based on 1981 survey; and e) rate of evaporation measured at the dam.

Flow contributions from different sources, river channel losses, reservoir evaporation, accuracy of gage-height records, displacement due to wind action on the reservoir, and bank storage and return incident to changes in reservoir level, all tend to cause variations in the deduced determinations; and the inflows shown below should not necessarily be in agreement with the combined flow of the Rio Grande at Foster Ranch, Pecos River near Langtry, and Devils River at Pafford Crossing.

In spite of the deficiencies noted above and others that may occur, the data shown below represent a reasonable approximation of the flows entering the International Amistad Reservoir.

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,730	1,850	1,910	1,950	2,200	3,130	6,390	4,150	4,570	5,200	2,860	1,980
2	1,610	1,920	2,200	1,970	1,840	3,200	3,880	4,400	4,180	4,720	2,890	1,930
3	1,490	1,910	2,140	2,010	1,770	2,400	3,590	4,570	5,470	4,560	2,900	1,880
4	1,530	1,980	1,960	2,280	1,740	2,140	2,920	6,730	5,550	2,610	2,730	1,890
5	1,670	2,100	2,370	2,720	1,950	1,770	3,370	6,270	5,860	2,560	2,680	1,840
6	1,790	2,050	2,480	2,720	1,970	2,050	3,050	5,790	4,080	1,850	2,610	1,850
7	1,800	2,070	2,740	2,520	2,370	2,450	3,130	6,110	3,380	1,980	2,580	2,020
8	1,820	2,080	2,740	2,550	2,900	2,410	3,520	7,380	3,480	1,700	2,650	2,100
9	1,770	2,050	2,510	2,590	2,920	2,440	4,950	6,530	3,910	2,910	2,730	1,860
10	1,820	1,980	2,510	2,320	3,040	2,260	5,090	4,970	3,980	2,860	2,660	1,970
11	1,810	1,980	2,560	2,020	3,100	2,160	18,100	5,350	3,800	2,930	2,420	1,970
12	1,910	1,940	2,160	2,270	3,090	2,140	10,700	4,420	3,690	2,780	2,410	1,950
13	1,950	1,910	1,860	2,350	2,700	1,860	7,360	4,580	3,480	2,910	2,380	1,960
14	1,870	1,880	1,580	2,210	2,120	2,200	5,810	4,790	3,550	2,240	2,320	2,160
15	1,960	1,800	1,410	2,400	2,290	2,890	4,280	5,270	3,410	2,300	2,500	2,100
16	1,990	1,900	1,360	2,710	2,490	4,380	3,770	4,730	3,350	2,340	2,270	2,060
17	1,970	1,960	1,220	2,810	2,900	4,470	3,700	4,120	7,950	2,420	2,110	1,850
18	2,000	1,960	1,350	2,640	2,970	3,940	5,050	4,600	70,600	2,560	2,290	1,840
19	2,000	2,020	1,540	2,670	3,290	3,620	4,350	4,610	26,500	2,700	2,200	2,010
20	2,060	2,020	1,730	2,700	5,740	2,320	6,630	4,730	14,000	2,730	2,090	2,020
21	2,130	1,980	1,760	2,690	6,070	2,350	8,030	4,890	13,100	2,920	2,110	1,970
22	2,000	1,980	1,810	2,770	4,500	1,280	9,160	5,150	3,880	3,050	1,870	2,120
23	2,010	1,940	1,950	2,850	3,590	2,280	8,140	5,590	3,840	3,040	1,970	2,230
24	2,010	1,900	2,220	2,910	2,380	2,290	6,010	5,840	5,400	2,670	2,130	1,980
25	1,910	1,960	2,110	2,620	1,890	3,810	3,900	5,350	5,360	2,680	2,050	2,010
26	1,810	1,970	2,160	2,530	4,090	3,100	3,520	5,230	4,580	2,550	1,970	2,230
27	1,810	1,930	2,180	2,180	3,390	3,320	3,190	4,300	4,320	2,540	2,020	2,180
28	1,750	1,960	2,280	2,220	3,160	3,510	3,610	4,740	4,050	2,800	1,870	2,000
29	1,750	1,770	2,260	2,180	2,140	4,940	3,660	4,410	6,120	2,940	2,010	1,960
30	1,710		2,080	2,320	2,400	4,520	3,460	4,570	5,330	3,090	1,900	1,920
31	1,740		1,860		3,330		3,670	4,400		3,210		1,910
Sum	57,180	56,750	63,000	73,680	90,330	85,630	165,990	159,070	240,770	88,350	70,180	61,750

Month	Current Year 1988						Period 1973-1988				
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum
Jan.			21	2,130	3	1,490	1,840	113,415	118,135	263,901	72,708
Feb.			5	2,100	29	1,770	1,960	112,562	115,495	222,466	73,688
Mar.			7	2,740	17	1,220	2,030	124,959	149,177	304,417	93,840
Apr.			24	2,910	1	1,950	2,460	146,142	161,748	354,458	86,703
May			21	6,070	4	1,740	2,910	179,167	192,257	307,497	103,515
June			29	4,940	22	1,280	2,850	169,845	204,719	418,612	103,948
July			11	18,100	4	2,920	5,350	329,236	223,432	689,085	86,995
Aug.			8	7,380	17	4,120	5,130	315,511	251,236	515,925	129,570
Sept.			16	70,600	15	3,350	8,030	477,560	375,193	2,091,428	92,815
Oct.			1	5,200	8	1,700	2,850	175,240	315,552	950,737	89,772
Nov.			3	2,900	122	1,870	2,240	139,200	151,975	454,512	67,616
Dec.			123	2,230	15	1,840	1,990	122,479	120,257	260,410	58,459
Yearly				70,600		1,220	3,310	2,405,316	2,379,176	4,328,998	1,406,554
	Meters		Cubic Meters per Second				Thousands of Cubic Meters				
				2,000		34.6	93.7	2,966,909	2,934,666	5,339,732	1,734,956

☉ Mean daily ! And other days

08-4611.00 SUPPLEMENTARY DATA - INTERNATIONAL FALCON RESERVOIR
DEDUCED INFLOWS

Considering that a knowledge of the mean daily inflows reaching the International Falcon Reservoir would serve a useful purpose, such data have been deduced for 1988 showing the flows as closely as they can be approximated. These data are based on the daily operation of the International Falcon Reservoir, taking into account: a) record of gage heights at the dam; b) releases as measured at both hydroelectric plants and outlet works; c) elevation-area-capacity tables based on 1971-1972 surveys; and d) rate of evaporation measured at the dam and Nueva Cd. Guerrero applied to an area one foot higher than the average area of two consecutive days.

Flow contributions from different sources, irrigation diversion between Laredo and Falcon, river channel losses, reservoir evaporation, accuracy of gage-height records, displacement due to wind action on the reservoir, and bank storage and return incident to changes in reservoir level, all tend to cause variations in the deduced determinations; and the inflows shown below should not necessarily be in agreement with the combined flow of the Rio Grande at Laredo and the Rio Salado at Las Tortillas.

In spite of the deficiencies noted above and others that may occur, the data shown below represent a reasonable approximation of the flows entering the International Falcon Reservoir.

Mean Daily Discharge in Second-Feet 1988 — Annual and Period Summary

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2,990	3,380	3,250	2,120	3,030	7,630	3,220	2,320	5,440	12,100	5,540	1,590
2	586	3,570	2,410	2,600	3,380	9,500	3,420	2,840	4,370	9,360	7,200	1,600
3	1,100	2,060	2,070	2,570	2,890	9,640	2,260	3,640	5,690	9,040	4,980	2,110
4	1,180	4,340	1,400	1,920	2,620	5,160	2,940	4,870	4,700	7,950	6,820	2,180
5	1,950	1,360	2,020	2,250	3,240	4,170	3,520	4,770	4,770	6,040	4,170	2,450
6	1,940	2,140	1,960	1,640	1,770	4,340	2,610	4,800	2,480	5,970	1,490	2,060
7	777	1,420	1,570	1,770	2,670	3,390	3,040	5,440	3,520	5,470	4,100	2,810
8	2,000	2,960	2,590	2,080	3,320	3,380	3,030	5,970	3,710	5,190	1,870	2,800
9	1,580	2,020	1,130	2,250	4,100	3,990	2,870	7,060	3,810	5,190	4,410	2,560
10	696	2,740	1,380	957	4,590	2,830	2,550	6,220	3,710	4,240	3,920	2,100
11	1,700	2,920	3,390	2,900	8,330	4,240	2,140	6,890	3,570	3,740	3,250	1,770
12	2,340	2,870	3,080	2,230	3,420	2,370	2,910	7,100	3,410	4,590	5,330	918
13	964	2,400	2,930	1,370	1,970	5,650	3,170	5,010	4,100	4,200	3,880	985
14	1,650	2,510	611	1,970	2,760	3,480	5,930	5,300	4,410	4,520	4,170	3,140
15	2,520	2,490	872	2,130	964	3,740	4,590	8,100	5,470	5,030	4,480	2,800
16	3,280	2,340	378	3,050	2,650	3,050	4,770	3,640	8,970	5,330	5,090	1,830
17	2,500	2,280	1,210	3,180	2,630	3,470	4,770	2,970	10,300	5,860	3,430	1,760
18	2,720	2,450	731	2,010	1,430	3,500	4,730	5,330	16,100	6,110	2,730	901
19	2,290	2,460	837	1,220	2,200	2,670	3,810	4,130	23,700	6,710	4,770	1,380
20	2,310	1,430	403	1,630	4,240	2,000	7,520	4,410	22,200	6,070	3,330	2,590
21	1,600	1,770	569	2,290	4,630	1,600	4,870	4,560	23,200	5,440	2,690	2,530
22	1,600	1,820	1,600	5,510	3,570	1,540	3,710	6,390	21,900	4,270	1,880	2,150
23	1,880	2,570	2,350	3,350	6,180	463	6,390	5,790	17,200	4,730	2,690	2,100
24	2,670	1,570	2,830	4,730	6,390	1,220	8,930	5,230	17,700	4,200	2,270	2,120
25	2,140	2,030	2,900	4,770	6,220	851	8,260	5,580	19,600	3,230	2,380	1,730
26	2,590	3,000	2,220	4,130	4,170	1,890	5,720	7,350	16,400	4,060	2,960	2,630
27	2,400	2,730	2,010	1,630	5,930	3,810	8,510	6,990	15,100	4,590	3,040	2,600
28	2,430	3,190	2,440	2,970	5,440	5,160	4,480	5,120	15,300	14,200	1,230	2,160
29	2,530	3,530	2,270	3,530	3,460	3,190	4,940	5,860	21,300	15,800	2,840	2,340
30	3,400	1,730	3,520	4,100	3,850	4,910	4,910	4,840	17,900	14,900	1,540	2,980
31	2,370	1,800		4,480			2,660	5,010		12,500		2,610
Sum	62,683	72,850	56,941	78,277	116,784	111,774	137,180	159,530	330,530	210,650	108,180	66,284
Current Year 1988								Period 1968-1988				
Month	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet			
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum	
Jan.			30	3,400	2	586	2,020	124,317	135,780	252,619	50,635	
Feb.			4	4,340	5	1,360	2,510	144,503	160,842	453,053	54,934	
Mar.			11	3,390	16	378	1,840	112,955	172,619	431,073	53,064	
Apr.			22	5,510	10	957	2,610	155,249	180,331	576,717	49,911	
May			3	8,330	15	964	3,780	231,626	318,765	768,748	101,854	
June			11	9,640	23	463	3,740	221,715	300,200	770,709	46,609	
July			24	8,930	11	2,140	4,410	272,155	285,860	1,056,340	33,481	
Aug.			26	7,350	1	2,320	5,160	316,409	259,331	1,023,293	64,413	
Sept.			19	23,700	6	2,480	11,000	655,653	385,258	1,442,682	104,535	
Oct.			29	15,800	25	3,230	6,780	417,786	330,507	1,365,884	56,661	
Nov.			2	7,200	28	1,230	3,600	214,577	170,990	538,929	40,660	
Dec.			14	3,140	18	901	2,140	131,510	136,591	304,865	42,870	
Yearly				23,700		378	4,130	2,998,465	2,837,074	6,234,950	1,280,067	
	Meters		Cubic Meters per Second				Thousands of Cubic Meters					
				671		10.7	117	3,698,553	3,499,624	7,690,727	1,578,946	

0 Mean daily

CORRECTIONS TO PREVIOUS WATER BULLETIN

Water Bulletin and Page Number	Heading	Reference	Published As	Correction
57 - 45	08-4539.00 Diversions from the Rio Grande Maverick Canal at Mile 13 near Quemado, Texas	REMARKS paragraph, second line	In 1986, 10,927 acres (4,422 ha) of land were irrigated between this station and the power plant, and 27,502 acres (11,130 ha) were irrigated from the extension, making a total of 38,429 acres (15,552 ha). A total of 885,102 acre-feet (1,091,756,000 m ³)	In 1987, 11,123 acres (4,501 ha) of land were irrigated between this station and the power plant, and 25,568 acres (10,347 ha) were irrigated from the extension, making a total of 36,691 acre (14,848 ha). A total of 908,383 acre-feet (1,120,472,000 m ³)
57 - 51	08-4576.00 Maverick Canal Extension Below the Power Plant Near Eagle Pass, Texas	Average Rainfall		
		Month	Average Rainfall Inches***	Average Rainfall Inches***
			High Low	1987 1939-1987
		Jan.	.78 .86	.86 .78
		Feb.	.89 2.36	2.23 .89
		Mar.	.63 .82	.82 .64
		Apr.	1.79 2.52	2.44 1.79
		May	3.12 5.60	5.60 3.12
		June	2.34 8.36	8.36 2.34
		July	1.41 1.86	1.86 1.41
		Aug.	2.00 1.41	1.41 2.00
		Sept.	2.78 1.01	1.01 2.78
		Oct.	2.22 0.00	.01 2.22
		Nov.	.77 .36	.36 .77
		Dec.	.73 .92	.92 .73
		Yearly	19.46 26.08	25.88 19.47
			Millimeters	Millimeters
			494.30 662.40	657 495
57 - 51		REMARKS paragraph, fourth line	In 1986, 27,502 acres (11,130 ha) of land north and south of Eagle Pass were irrigated. A total of 12,381 acre-feet (15,272,000 m ³)	In 1987, 25,568 acre (10,347 ha) of land north and south of Eagle Pass were irrigated. A total of 20,871 acre-feet (25,744,000 m ³)
57 - 76	08-4754.00 Diversions from the Rio Grande United States Side, Falcon Dam to the Gulf of Mexico	Average Rainfall Period of Record	1954 - 1987	1957 - 1987
57 - 129	Evaporation in the Rio Grande Basin In the United States In Inches	Brownsville Average Evaporation Period of Record	Average 1986 - 1987	Average 1958 - 1987
	Drainage Basin and Irrigated Areas	Irrigated Areas - Acres United States		
57 - 134		Pinto Creek Above Gaging Sta.	80	400
57 - 135		Del Rio Station to Jimenez Station - excluding above tributaries	b) 36,691	b) 38,111
57 - 135		Del Rio Station to Jimenez Station - Total	38,401	40,141
57 - 135		Above the Jimenez Gaging Sta.	217,487	219,227
		Mexico		
57 - 135		Amistad Dam to Falcon Dam - excluding above tributaries	96,274	13,502
57 - 135		Amistad Dam to Gulf of Mexico excluding above tributaries	617,827	535,055

CORRECTIONS TO PREVIOUS WATER BULLETIN

<u>Water Bulletin and Page Number</u>	<u>Heading</u>	<u>Reference</u>	<u>Published As</u>	<u>Correction</u>
		Irrigated Areas - Acres Total		
57 - 134		Pinto Creek Above Gaging Sta.	80	400
57 - 135		Del Rio Station to Jimenez Station - excluding above tributaries	41,178	42,598
57 - 135		Del Rio Station to Jimenez Station - Total	55,631	57,371
57 - 135		Amistad Dam to Falcon Dam - excluding above tributaries	144,885	63,533
57 - 135		Amistad Dam to Gulf of Mexico excluding above tributaries	1,385,376	1,304,024