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WESTERN WATER BULLETIN 1979

Flow of
The Colorado River
and other
Western Boundary Streams
and
Related Data

COLORADO RIVER
TIJUANA RIVER
SANTA CRUZ RIVER
SAN PEDRO RIVER
WHITEWATER DRAW

1979

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FOREWORD

This bulletin is the twentieth annual compilation of stream discharges and other hydrographic data relating to international aspects of the Colorado River below Imperial Dam, the Tijuana River, and other streams crossing the western land boundary of the United States and Mexico. The compilation was prepared jointly by the United States and Mexican Sections of the International Boundary and Water Commission, solely for the purpose of presenting statistical data relating to stream flow and kindred subjects for the Colorado River from Imperial Dam to the Gulf of California, the Tijuana River and its important tributaries in the United States and Mexico, and other streams, including the Alamo and New Rivers which cross the California-Baja California boundary, and the Santa Cruz River and Whitewater Draw which cross the Arizona-Sonora boundary. This volume contains information for the year 1979.

Stream gaging on the Colorado River below Imperial Dam began in 1902 when the station at Yuma, Arizona was established. Stage records were obtained at this station from January 1878 until December 1973, when it was discontinued. Continuous stream gaging on the Tijuana River and its important tributaries in the United States and in Mexico began in 1936. Each government operates the gaging stations located within its own country.

Colorado River below Imperial Dam

Below Imperial Dam, the Colorado River flows southward 10 miles to the mouth of the Gila River, thence westward 11 miles to Pilot Knob Mountain, and south 1 mile to the point where the northerly international land boundary, between California and Baja California, intersects the river. From this point the river continues to flow southward and forms the boundary between the United States and Mexico for a distance of about 22 miles to the point where the southerly international land boundary between Arizona and Sonora intersects the river. From this point the river continues to flow southward about 90 miles to discharge into the Gulf of California.

The ordinary flows of Colorado River below Imperial Dam are largely controlled by releases at Hoover Dam, completed in 1935. The releases are further regulated at Davis Dam, completed in 1950, and by Parker and Imperial Dams, completed in 1938. Small amounts of runoff may occasionally be contributed to the flow in the lower river from the usually dry arroyos draining the 10,900 square miles along the river from Hoover Dam to the mouth of the Gila River. In addition, flows ranging from usually minor amounts to infrequent torrential floods may enter the lower Colorado River from the Bill Williams River draining about 717 square miles below Alamo Dam and Lake, completed in 1963, and from the Gila River, draining about 7,300 square miles below Painted Rock Dam and Reservoir, completed in January 1960.

At Imperial Dam, diversions are made to Gila Gravity Main Canal and All-American Canal for irrigation projects in Arizona, including the Yuma Valley, Gila and Wellton-Mohawk projects; and in California, including the Imperial Valley, Coachella Valley and Reservation Division of Yuma Project. Also, under the provisions of the 1944 Water Treaty, there may be diverted to the All-American Canal at Imperial Dam for delivery to Mexico in the Alamo Canal, or substitute canal, at the northerly boundary, a portion of Mexico's guaranteed annual allotment of waters of the Colorado River. No such diversions were made in 1979.

Below Laguna Dam, measured and unmeasured flows are returned to the river principally as waste and drainage water from the irrigation projects in the United States. Waste and drainage waters from irrigation projects in the United States also cross the boundary into Mexico near San Luis, Arizona without returning to the river in the United States.

In the limitrophe section of the river, 1.1 miles downstream from the northerly boundary, Morelos Dam, the principal diversion structure for Mexico, was completed and placed in operation on November 8, 1950. Since that date almost all the Colorado River flows that cross the northerly boundary (except emergency deliveries to Tijuana beginning in August 1972) have been diverted to the Alamo Canal at Morelos Dam.

Tijuana River Basin

The total drainage area of the Tijuana River basin is 1,731 square miles, of which 27 percent lies in the United States and 73 percent in Mexico. This river is formed by the principal tributaries, Cottonwood Creek, which rises in the United States and Rio de las Palmas, which rises in Mexico. Cottonwood Creek crosses the international land boundary 21 miles from the Pacific Ocean to join the Rio de las Palmas in Mexico. From the confluence of these tributaries, the Tijuana River flows northwesterly 5 miles to cross the land boundary into the United States near San Ysidro, California and Tijuana, Baja California, and then flows westerly 6 miles to discharge into the Pacific Ocean 2 miles north of the boundary. The flow of Cottonwood Creek is partially controlled by Barrett and Morena Reservoirs in the United States, and the flow of the Rio de las Palmas is partially controlled by Rodriguez Reservoir in Mexico.

Whitewater Draw near Douglas, Arizona

Whitewater Draw rises in the United States and flows south into Mexico, crossing the international boundary near Douglas, Arizona, eventually discharging into the Gulf of California through the Yaqui River in Mexico. The total drainage area above the Douglas Gaging Station is 1,023 square miles. A number of mountain streams in the upper reaches of the basin are diverted for irrigation, but they would normally sink or go to ground water before reaching the main water course.

FOREWORD

San Pedro River at Palominas, Arizona

The San Pedro River rises in Mexico and flows north into the United States, crossing the boundary near Palominas, Arizona and thence northwesterly into the Gila River. The river in the vicinity of the international boundary drains an area of 741 square miles, of which 649 square miles are in Mexico.

Santa Cruz River near Nogales and Lochiel, Arizona

The Santa Cruz River rises in the United States and flows south into Mexico, crossing the international boundary near Lochiel, Arizona and returning to the United States near Nogales, Arizona, eventually discharging into the Gila River southwest of Phoenix, Arizona. The drainage area of the Santa Cruz River above Nogales station is 533 square miles. Of this amount, 348 square miles lie in Mexico. There are a few ground water irrigation diversions above the Lochiel station in Arizona and an unknown amount of water diverted for irrigation in Mexico.

Acknowledgments

Other agencies which have contributed to the data published herein include the Bureau of Reclamation and the Geological Survey of the U. S. Department of the Interior; the National Weather Service, Department of Commerce; the Yuma County Water Users' Association; the Imperial Irrigation District; the city of San Diego, California; the Otay Municipal Water District; and the Ministry of Agriculture and Hydraulic Resources of Mexico. Specific notation is made of each of the above named agencies, where the data appear. The courtesy and cooperation of those who have made these contributions are acknowledged with appreciation.

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 and annual 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 the total monthly flow in second-foot days. For the same 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	0.393701 Inch
1 Meter	3.28084 Feet
1 Kilometer	0.621371 Mile
	<u>AREAS</u>
1 Square Meter	10.76391 Square Feet
1 Hectare	2.471054 Acres
1 Square Kilometer	0.386102 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-Foot
1 Liter	0.264172 U.S. Gallon
	<u>WEIGHTS</u>
1 Kilogram	2.204623 Pounds
1 Metric Ton	2204.623 Pounds
1 Metric Ton	1.102311 Short Tons (2000 lbs)

Beginning in 1976, as a step toward eventual publication of this bulletin in metric units only, 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, except for those stations operated by the Mexican Section, where the metric system of units is used.

GENERAL HYDROLOGIC CONDITIONS FOR 1979

Colorado River

Normally, there is no measurable amount of runoff from the portion of the Colorado River basin in the United States and Mexico below Hoover Dam, not including Bill Williams and Gila Rivers. There was no significant amount in 1979. In the lower basin of the Colorado River in Mexico, from Morelos Diversion Dam to the Gulf of California, the average precipitation during 1979 measured at 6 index stations was 4.72 inches, compared to an average of 2.83 inches during the last 21 years (1959 to 1979).

The flow of the Colorado River reaching Imperial Dam was 6,129,400 acre-feet, about 77% of the 45-year average (1935-1979) of 7,913,980 acre-feet. At the northerly international boundary the total flow of the river during 1979 was 3,078,625 acre-feet, about 89% of the 1935-1979 average of 3,457,107 acre-feet. At the southerly international boundary, the flow during 1979 was 916,712 acre-feet, or about 36% of the 1935-1979 average of 2,548,489 acre-feet. The total flow of the Colorado River reaching the M. C. Rodriguez gaging station, 24.5 miles downstream from the southerly international boundary and 4.5 miles upstream from the Sonora-Baja California railroad bridge, was 840,573 acre-feet in 1979, about 92% of the 1951-1979 average of 910,607 acre-feet.

The total of all flows of the Colorado River entering Mexico in 1979 amounted to 3,345,418 acre-feet, 83% of the 1935-1979 average of 4,033,608 acre-feet, as measured 1) in the Colorado River at the northerly international boundary, 2) in the Wellton-Mohawk Main Outlet Drain Extension near Morelos Dam, 3) in the wasteways that discharge into the limitrophe section of the river from the United States bank, 4) in the canal which discharges waste and drainage waters from the Yuma Project across the southerly land boundary into Mexico near San Luis, Arizona, 5) emergency delivery of Colorado River water for use in Tijuana, Baja California, and 6) in the Wellton-Mohawk Bypass Drain at southerly land boundary near San Luis, Arizona.

No flood peaks of importance occurred in streams of the lower Colorado River basin during 1979. A maximum instantaneous flow of 9,680 second-feet occurred in the Colorado River at the northerly boundary station on August 15, 1979.

Stored waters at the end of the year in the three major reservoirs on the Colorado River below Lee's Ferry amounted to 24,812,700 acre-feet, 87% of the usable capacity of 28,588,400 acre-feet. The greater part (22,623,000 acre-feet) of the storage was contained in Lake Mead (Hoover Dam). There were no reported shortages of Colorado River for irrigation during 1979 due to drought or accident to the irrigation system.

The total reported acreage irrigated from waters of the Colorado River below Imperial Dam in 1979 was 1,225,322 acres; 680,956 acres in the United States and 544,366 acres in Mexico. An estimated 34% of acreage in Mexico is served by pumping from ground water.

The suspended sediment load passing the northerly boundary station in 1979 was 292.7 acre-feet, about 130% of the 1956-1979 average of 224.7 acre-feet.

Tijuana River Basin

During 1979, the temperatures at Barrett Dam, California (elevation 1,750 feet) in the upper portion of the basin in the United States averaged 62.4 degrees, 1.2 degrees above the 49-year mean. In the extreme upper portion of the basin in Mexico at San Juan de Dios, Baja California (elevation 3,280 feet), the recorded temperatures during the year averaged 54 degrees, 2 degrees below the long-term average; and at Rodriguez Dam, Baja California (elevation 459 feet), the recorded temperatures averaged 64 degrees, 2 degrees above the normal for many years.

At Barrett Dam in the upper portion of the basin in the United States, the 1979 recorded precipitation was 19.25 inches, 111% of normal; and at Chula Vista near the lower end of the basin, 10.13 inches, or 106% of normal. The recorded precipitation at San Juan de Dios in the upper portion of the basin in Mexico, was 19.25 inches, approximately 123% of the normal during the 24-year period; and at Rodriguez Dam in the lower portion of the basin in Mexico 7.95 inches, 95% of the 42-year average.

Runoff in the basin during 1979 averaged more than 316% of normal. Above Morena Reservoir the runoff was 20,631 acre-feet, or about 359% of the 43-year 1937-1979 mean of 5,751 acre-feet. At Rodriguez Reservoir, the runoff was 43,324 acre-feet, or about 299% of the 42-year mean of 14,500 acre-feet.

The flow of the Tijuana River at the international boundary was 52,764 acre-feet during 1979, and the flow in the Tijuana River near Nestor was 40,113 acre-feet.

Whitewater Draw

During 1979, the average annual temperature over the watershed was slightly below normal, while the annual precipitation was below normal. Runoff for the year at the gaging station near Douglas, Arizona of 3,226 acre-feet was about 49% of average.

GENERAL HYDROLOGIC CONDITIONS FOR 1979

San Pedro River

During 1979, the average annual temperature was below normal. The annual precipitation, as measured at Coronado National Monument Headquarters, was 73% of the 1961-1979 mean of 19.94 inches. The stream flow at the international boundary was 38,834 acre-feet, 165% of the 1951-1979 normal.

Santa Cruz River

During 1979, the average annual temperature over the watershed was somewhat below normal and the annual precipitation was about 82% of the 41-year 1939-1979 mean. Runoff measured at the Nogales gaging station, where the stream re-enters the United States, was 48,266 acre-feet. The total runoff for the year measured at the gaging station near Lochiel, Arizona, where the stream enters Mexico from the United States, was 4,592 acre-feet. Therefore, neglecting stream flow depletions in Mexico, the records indicate a contribution of about 43,674 acre-feet from the loop of the river lying in Mexico, or approximately 90% of the flow reaching the Nogales station.

Alamo and New Rivers

During 1979, the average annual temperature over the drainage area of the Alamo River, as recorded at El Centro, California, was 71.6 degrees, 0.6 degree below normal; and over the drainage area of the New River, as recorded at Mexicali, Baja California, it was 73.0 degrees, 1 degree above the 54-year average.

At El Centro, the precipitation was 3.07 inches, about 121% of the 49-year average; and in Mexicali the annual precipitation was 4.13 inches, 135% of the 54-year average. The total flow of the New River at the international boundary in 1979 was 144,904 acre-feet, which was about 176% of the 1943-1979 normal.

Salton Sea

During 1979, the average annual temperature around the Salton Sea was about 99% of the long-term average, while the annual precipitation recorded at Brawley, California, was approximately 140% of the long-term mean of 2.55 inches. The water surface of the Salton Sea continued to rise during the year. The maximum stage, 228.1 feet below mean sea level, was recorded during May. The minimum stage, 229.1 feet below mean sea level, was recorded on January 1-5.

EMERGENCY DELIVERIES OF COLORADO RIVER WATERS FOR USE IN TIJUANA, BAJA CALIFORNIA

DESCRIPTION: Delivery of water is measured at a metering station located adjacent to the international boundary near Tijuana, and approximately 2.5 miles (4.0 km) east of the International Boundary Monument #253. The metering station consists of two venturi tubes, 20 inches (50.8 cm) and 18 inches (45.7 cm) and two BIP recorders.

RECORDS: Based on totalizer readings read at approximately 8:00 a.m. each day and on continuous chart readings furnished by the Otay Municipal Water District. Records available since August 13, 1972. These records reflect a 12% loss incurred in conveying the water from the point of diversion above Parker Dam to the international boundary.

REMARKS: Emergency deliveries of Colorado River waters for use in Tijuana began August 13, 1972 pursuant to Minute No. 240 of this Commission. The deliveries are conveyed approximately 323 miles (520 km) using the following conveyance works: The diversion works from Lake Havasu above Parker Dam and the Colorado River Aqueduct, the San Diego Aqueducts, the Otay Reservoir and facilities of the Otay Municipal Water District. Furthermore, the following additional facilities were constructed as provided in Minute 240; new pumps at the Otay Pumping Station, approximately 5,800 feet (1,768 m) of 24-inch (61.0 cm) pipe and various valves, meters and accessories near the international boundary. The facilities were developed to circumvent serious water shortages predicted for Tijuana.

Mean Daily Discharge in Second-Feet 1979 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.4	1.5	0	0	0	0	0	0	0	0	0	0
2	3.2	2.6	0	0	0	0	0	0	0	0	0	0
3	3.1	2.5	0	0	0	0	0	0	0	0	0	0
4	2.4	2.8	0	0	0	0	0	0	0	0	0	0
5	1.7	1.8	0	0	0	0	0	0	0	0	0	0
6	1.8	2.3	0	0	0	0	0	0	0	0	0	0
7	3.9	2.8	0	0	0	0	0	0	0	0	0	0
8	1.9	2.8	0	0	0	0	0	0	0	0	0	0
9	1.7	2.9	0	0	0	0	0	0	0	0	0	0
10	1.9	3.3	0	0	0	0	0	0	0	0	0	0
11	1.3	2.9	0	0	0	0	0	0	0	0	0	0
12	1.2	2.1	0	0	0	0	0	0	0	0	0	0
13	2.4	2.5	0	0	0	0	0	0	0	0	0	0
14	2.0	2.6	0	0	0	0	0	0	0	0	0	0
15	1.9	.4	0	0	0	0	0	0	0	0	0	0
16	1.7	1.7	0	0	0	0	0	0	0	0	0	0
17	1.9	2.5	0	0	0	0	0	0	0	0	0	0
18	2.1	1.6	0	0	0	0	0	0	0	0	0	0
19	2.1	1.8	0	0	0	0	0	0	0	0	0	0
20	2.2	2.3	0	0	0	0	0	0	0	0	0	0
21	2.2	1.8	0	0	0	0	0	0	0	0	0	0
22	2.2	2.1	0	0	0	0	0	0	0	0	0	0
23	2.7	2.1	0	0	0	0	0	0	0	0	0	0
24	2.1	2.0	0	0	0	0	0	0	0	0	0	0
25	1.9	2.0	0	0	0	0	0	0	0	0	0	0
26	2.5	1.9	0	0	0	0	0	0	0	0	0	0
27	2.3	1.8	0	0	0	0	0	0	0	0	0	0
28	1.9	.4	0	0	0	0	0	0	0	0	0	0
29	1.9	0	0	0	0	0	0	0	0	0	0	0
30	2.5	0	0	0	0	0	0	0	0	0	0	0
31	1.8	0	0	0	0	0	0	0	0	0	0	0
Sum	66.8	59.8	0	0	0	0	0	0	0	0	0	0
Current Year 1979									Period 1973-1979			
Month	Extreme Gage Feet		* 0 Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet			
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum	
Jan.			7	3.9	12	1.2	2.2	132	678	902	132	
Feb.			10	3.3	115	.4	2.1	119	609	813	119	
Mar.				0			0	0	619	849	0	
Apr.				0			0	0	618	857	0	
May				0			0	0	668	887	0	
June				0			0	0	668	986	0	
July				0			0	0	683	1,021	0	
Aug.				0			0	0	678	918	0	
Sept.				0			0	0	588	904	0	
Oct.				0			0	0	613	905	0	
Nov.				0			0	0	577	902	0	
Dec.				0			0	0	577	993	0	
Yearly				3.9		0	0.3	251	7,576	10,258	251	
	Meters		Cubic Meters per Second				Thousands of Cubic Meters					
				0.11		0	0.01	310	9,345	12,653	310	

* Includes 12% losses

0 Mean daily

! And other days

RESERVATION MAIN DRAIN NO. 4 (CALIFORNIA DRAIN)

DESCRIPTION: Water-stage recorder (digital) located 500 feet (152 m) upstream from railroad culvert and one mile (1.6 km) northwest of Yuma, Arizona. Discharge measurements are made from a footbridge immediately below the gage. The drainage canal discharges into the outfall channel of the Yuma Main Canal Wasteway 200 feet (61.0 m) downstream from the spillway structure, and thence into the Colorado River on the right bank, 1,000 feet (305 m) upstream from Colorado River below Yuma Main Canal Wasteway, and 6.5 miles (10.5 km) upstream from the northerly international boundary. Prior to October 1955, published as "California Drainage Canal near Yuma, Arizona."

RECORDS: Based on current meter measurements and a continuous record of gage heights. Records are computed and furnished by the U. S. Geological Survey. Records available: Monthly discharge, January 1913 to April 1920, October 1921 to March 1925, and January 1934 to September 1947; daily and monthly discharge, October 1947 through 1979.

REMARKS: Reservation Main Drain No. 4 collects drainage and wastewater from the area east of the Yuma Main Canal on the Reservation Division of the Yuma Project, located in California. Since 1939, collection of seepage from the All-American Canal has caused large increases in drainage flows. Average annual flow prior to 1937 was 12,800 acre-feet (15,789,000 m³). Monthly and annual averages since 1937 are shown in the table below.

EXTREMES: Prior to 1937: Maximum annual flow 20,190 acre-feet (24,904,000 m³), 1916; minimum annual flow 8,920 acre-feet (11,003,000 m³), 1913.

Mean Daily Discharge in Second-Feet 1979 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	39	43	45	48	41	45	65	57	58	47	53	55
2	48	41	44	46	42	57	69	56	57	49	52	55
3	46	39	47	44	44	55	64	56	57	49	51	53
4	44	37	51	45	44	53	63	56	60	51	52	53
5	46	36	50	47	44	53	63	57	50	52	45	53
6	45	37	50	47	48	54	64	58	50	54	47	50
7	41	35	51	43	48	57	62	60	49	53	46	50
8	40	33	52	44	47	56	63	59	48	51	46	48
9	43	34	53	44	49	55	66	60	48	52	45	46
10	42	35	58	48	49	54	67	61	47	51	45	46
11	41	35	52	47	49	57	64	62	46	51	46	45
12	41	35	49	48	52	62	64	68	46	51	47	45
13	43	37	48	46	53	78	62	65	47	49	50	44
14	39	36	46	44	53	46	61	68	47	50	50	42
15	40	39	49	48	53	52	64	68	46	52	49	42
16	46	41	49	48	53	55	62	76	45	54	50	43
17	49	42	49	48	52	58	61	75	47	54	50	43
18	43	42	47	50	53	60	63	72	49	54	53	43
19	41	41	53	55	56	62	59	77	47	52	51	43
20	39	40	48	52	57	59	63	78	46	52	52	44
21	36	41	49	50	58	59	61	69	46	51	55	43
22	38	41	48	52	59	61	58	65	46	51	57	43
23	40	41	49	56	55	61	58	64	46	52	56	42
24	44	44	51	54	54	60	59	66	48	52	55	41
25	44	44	50	59	54	58	60	65	47	51	56	41
26	40	44	50	53	54	61	65	62	49	52	57	43
27	40	45	53	47	53	60	68	62	48	51	58	44
28	40	44	51	56	53	61	62	59	48	50	57	43
29	44	44	55	48	54	62	59	58	49	52	56	43
30	50	56	56	50	55	61	60	59	48	55	55	42
31	50				55		60	58		57		42
Sum		1,102		1,467	1,591	1,732	1,939	1,976	1,465	1,602	1,542	1,410
	1,322		1,553									

Current Year 1979						Period 1937-1979					
Sum	1,322	1,553	1,467	1,591	1,732	1,939	1,976	1,465	1,602	1,542	1,410

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.			130	50	21	36	42.6	2,622	3,150	4,780	877
Feb.			27	45	8	33	39.4	2,186	2,980	4,320	563
Mar.			10	58	2	44	50.1	3,080	3,640	5,240	1,240
Apr.			25	59	7	43	48.9	2,910	3,686	5,250	1,160
May			22	59	1	41	51.3	3,156	3,815	5,590	992
June			13	78	1	45	57.7	3,435	3,683	5,580	885
July			2	69	122	58	62.5	3,846	3,953	6,550	816
Aug.			20	78	12	56	63.7	3,919	3,930	6,810	861
Sept.			4	60	16	45	48.8	2,906	3,717	6,220	889
Oct.			31	57	1	47	51.7	3,178	3,729	5,740	1,040
Nov.			27	58	15	45	51.4	3,059	3,482	5,490	994
Dec.			11	55	124	41	45.5	2,797	3,362	4,960	966
Yearly				78		33	51.2	37,094	43,127	63,700	12,840
	Meters		Cubic Meters per Second				Thousands of Cubic Meters				
			2.21		0.93	1.45	45,755	53,197	78,573	15,838	

Ø Mean daily

! And other days

YUMA MAIN CANAL WASTEWAY TO COLORADO RIVER AT YUMA, ARIZONA

DESCRIPTION: The wasteway receives water from the Yuma Main Canal at the check structure on the canal, 1,645 feet (501 m) upstream from the intake of the Colorado River siphon, and 3.2 miles (5.1 km) downstream from the Siphon Drop Power Plant. This wasteway discharges into the Colorado River on the California side, 1,000 feet (305 m) upstream from Colorado River below Yuma Main Canal Wasteway, and 6.5 miles (10.5 km) upstream from the northerly international land boundary.

RECORDS: Discharge is computed as the difference between the measured discharge of the Yuma Main Canal at the Siphon Drop Power Plant upstream and that of the same canal below the Colorado River siphon, with deductions for small irrigation diversions from the canal between the two gaging stations. Records obtained and furnished by U. S. Geological Survey. Records available: April 1913 through 1979.

REMARKS: The wasteway discharges to the river the flow in excess of irrigation water in the Yuma Main Canal. This excess flow, in addition to the irrigation water, was diverted from the All-American Canal into the Yuma Main Canal and utilized for power purposes at the Siphon Drop Power Plant.

EXTREMES: Prior to 1935, when storage began in Lake Mead: Average annual flow, 297,800 acre-feet; (367,333,000 m³); maximum annual flow, 913,700 acre-feet (1,127,040,000 m³), 1932; minimum annual flow, 114,900 acre-feet (141,728,000 m³), 1917. Since 1935: Maximum mean daily discharge, 220 second-feet (57.2 m³/sec), December 24-25, 1948; minimum mean daily discharge, no flow on numerous occasions.

Mean Daily Discharge in Second-Feet 1979 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
1	57	16	18	20	17	19	18	18	20	16	17	7.5	
2	923	18	18	20	17	19	19	18	19	16	19	7.7	
3	805	20	18	18	18	19	19	18	19	17	18	9.0	
4	809	22	18	18	17	19	18	18	19	17	107	9.0	
5	782	23	18	18	17	20	18	18	19	17	5.2	9.6	
6	804	23	18	18	18	19	18	18	19	18	5.8	9.7	
7	838	22	18	17	18	19	18	18	18	16	15	9.9	
8	844	22	19	17	17	20	18	18	18	16	2.8	9.7	
9	676	22	19	18	17	20	18	18	18	17	4.1	11	
10	689	22	106	17	18	22	18	18	18	17	11	9.7	
11	658	22	20	16	18	19	17	18	19	16	17	10	
12	651	22	20	16	19	19	17	19	18	16	9.7	9.7	
13	666	21	20	17	19	19	18	19	17	16	9.8	9.8	
14	676	21	91	17	18	19	18	18	16	17	9.7	9.7	
15	681	20	20	17	18	19	18	19	15	16	9.5	10	
16	629	20	20	17	20	19	29	20	16	18	14.0	9.9	
17	618	19	20	16	20	18	18	22	16	17	15.0	10	
18	479	19	20	17	18	18	19	19	17	17	15.0	9.8	
19	16	18	297	17	18	18	17	19	16	17	12.0	10	
20	16	18	20	17	18	18	18	18	16	18	11.0	10	
21	16	19	20	16	19	17	18	17	16	31	11	10	
22	16	18	20	15	18	17	18	18	14	17	10	10	
23	16	19	20	16	19	17	18	20	15	17	13	10	
24	16	18	20	17	21	18	16	19	15	17	10	10	
25	16	19	20	120	20	18	17	19	16	17	10	10	
26	16	17	20	827	19	18	17	19	16	17	10	10	
27	16	17	20	711	19	18	22	20	16	16	9.5	10	
28	16	17	20	337	20	18	18	19	16	16	8.0	10	
29	16	20	108	23	18	18	18	20	16	7	7.5	10	
30	16	20	20	20	19	18	19	20	16	17	7.3	10	
31	16	20	20	19	19	18	18	20	16	17	10	10	
Sum	12,493	554	1,038	2,535	576	559	570	582	509	534	423.9	301.7	
Current Year 1979													
Month	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total	Period 1935-1979				
	High	Low	Day	High	Low	Day	Acres-Feet	Acres-Feet					
Jan.			2	923	119	16	403	24,780	53,483	110,700	3,215		
Feb.			5	23	1	16	19.8	1,099	46,395	89,140	1,099		
Mar.			19	297	1	18	33.5	2,059	46,562	90,190	469		
Apr.			26	827	22	15	84.5	5,028	47,107	86,580	873		
May			29	23	1	17	18.6	1,142	55,890	88,280	1,142		
June			10	22	121	17	18.6	1,109	48,896	86,960	1,109		
July			16	29	24	16	18.4	1,131	46,065	91,220	452		
Aug.			17	22	21	17	18.8	1,154	46,591	89,890	456		
Sept.			1	20	22	14	17.0	1,010	49,896	83,660	1,010		
Oct.			21	31	1	16	17.2	1,059	46,957	90,050	1,059		
Nov.			4	107	8	2.8	14.1	841	46,959	1,010,500	841		
Dec.			9	11	1	7.5	9.73	598	51,418	108,800	598		
Yearly				923		2.8	56.6	41,010	586,219	1,042,850	41,010		
Yearly	Meters		Cubic Meters per Second				Thousands of Cubic Meters						
				26.1		0.08	1.60	50,585	723,095	1,286,345	50,585		

Ø Mean daily

! And other days

**COLORADO RIVER BELOW YUMA MAIN CANAL WASTEWAY
AT YUMA, ARIZONA - DISCHARGES**

DESCRIPTION: Water-stage recorder located in California on the right bank of the river, 1,000 feet (305 m) downstream from the mouth of the Yuma Main Canal Wasteway, 0.6 mile (1.0 km) downstream from the abandoned gaging station on the Colorado River at Yuma, 5.2 miles (8.4 km) downstream from the mouth of the Gila River, 19.6 miles (31.5 km) downstream from Imperial Dam, and 6.4 miles (10.3 km) upstream from the northerly international boundary. Zero of the gage is 101.99 feet (31.09 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on current meter measurements and a continuous record of gage heights. Computations by shifting control methods. Records obtained and furnished by U. S. Geological Survey. Records available: October 1963 through 1979. Records from January 1951 through September 1963 deduced from "Colorado River at Yuma" plus flows from "Reservoir Main Drain No. 4" and "Yuma Main Canal Wasteway."

REMARKS: Reservoirs on the Colorado River, power developments, transmountain diversions, reservoirs on the Gila River, irrigation diversions, and return flows modify the river flow at this station.

Mean Daily Discharge in Second-Feet 1979 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	510	1,140	2,010	2,360	2,400	2,590	2,370	2,440	2,670	2,680	2,660	2,560
2	1,290	1,170	2,040	2,330	2,380	2,510	2,460	2,320	2,610	2,620	2,680	2,550
3	1,120	1,220	2,160	2,280	2,400	2,470	2,430	2,290	2,590	2,610	2,600	2,580
4	1,120	1,250	2,240	2,320	2,410	2,430	2,350	2,260	2,640	2,700	2,600	2,590
5	1,100	1,300	2,280	2,500	2,430	2,430	2,290	2,250	2,700	2,710	2,490	2,690
6	1,110	1,320	2,320	2,520	2,440	2,410	2,300	2,490	2,700	2,640	2,470	2,740
7	1,290	1,380	2,350	2,480	2,400	2,410	2,290	2,490	2,670	2,560	2,620	2,710
8	1,150	1,510	2,380	2,450	2,370	2,410	2,360	2,430	2,550	2,550	2,720	2,640
9	990	1,580	2,420	2,390	2,450	2,390	2,670	2,310	2,510	2,620	2,740	2,610
10	994	1,530	2,390	2,390	2,530	2,380	2,510	2,320	2,490	2,660	2,610	2,610
11	973	1,540	2,320	2,330	2,530	2,370	2,360	2,340	2,510	2,660	2,570	2,680
12	972	1,570	2,220	2,350	2,510	2,360	2,360	2,490	2,530	2,660	2,670	2,710
13	982	1,580	2,180	2,320	2,490	2,470	2,310	2,610	2,530	2,580	2,720	2,700
14	988	1,590	2,260	2,290	2,460	2,720	2,320	2,520	2,610	2,520	2,670	2,720
15	983	1,620	2,260	2,280	2,440	2,520	2,330	2,590	2,510	2,580	2,640	2,640
16	997	1,660	2,270	2,200	2,460	2,400	2,320	2,770	2,520	2,640	2,580	2,580
17	1,010	1,830	2,260	2,140	2,480	2,370	2,320	2,960	2,730	2,670	2,510	2,570
18	1,110	1,910	2,260	2,150	2,520	2,330	2,330	2,800	2,770	2,640	2,500	2,670
19	1,650	1,950	2,510	2,180	2,530	2,330	2,300	3,050	2,760	2,520	2,480	2,550
20	1,330	1,950	2,170	2,190	2,600	2,330	2,350	3,180	2,640	2,510	2,480	2,530
21	1,760	1,940	2,190	2,180	2,950	2,340	2,480	2,750	2,590	2,490	2,630	2,560
22	1,760	1,960	2,220	2,320	2,900	2,330	2,410	2,620	2,590	2,520	2,680	2,540
23	1,320	1,980	2,270	2,340	2,700	2,330	2,410	2,640	2,640	2,550	2,620	2,510
24	1,220	2,010	2,400	2,160	2,710	2,360	2,450	2,800	2,790	2,570	2,540	2,510
25	1,380	2,030	2,450	2,280	2,740	2,370	2,480	2,710	2,780	2,570	2,560	2,510
26	1,480	2,010	2,440	3,200	2,720	2,400	2,760	2,650	2,720	2,530	2,640	2,540
27	1,450	2,000	2,380	3,210	2,690	2,400	2,790	2,640	2,690	2,450	2,620	2,720
28	1,580	2,010	2,370	2,810	2,700	2,400	2,450	2,640	2,650	2,450	2,650	2,740
29	1,470		2,420	2,510	2,700	2,420	2,400	2,670	2,670	2,530	2,580	2,620
30	1,110		2,430	2,430	2,670	2,360	2,390	2,750	2,670	2,620	2,560	2,580
31	1,110		2,440	2,630	2,630	2,560	2,560	2,740	2,640	2,640	2,530	2,530
Sum		46,540	71,310	71,890	79,340	72,340	74,910	80,520	79,030	80,250	78,090	80,990
	37,169											
Current Year 1979										Period 1951-1979		
Month	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total	Acres-Feet			
	High	Low	Day	High	Day	Low	Acres-Feet	Average	Maximum	Minimum		
Jan.	11.96	9.27	22	1,960	1	438	1,199	73,724	193,363	979,890	29,857	
Feb.	12.16	10.47	24	2,040	3	1,060	1,662	92,311	145,823	826,600	33,790	
Mar.	13.18	12.15	19	2,560	1	2,000	2,300	141,441	159,763	1,073,270	34,604	
Apr.	14.67	12.86	26	3,320	3	2,120	2,396	142,592	152,187	943,010	33,687	
May	14.01	12.99	21	3,010	7	2,330	2,559	157,369	152,148	863,860	56,493	
June	13.69	13.00	14	2,750	19	2,300	2,411	143,484	140,135	833,970	33,856	
July	14.13	13.13	27	2,900	5	2,290	2,416	148,582	146,647	649,820	34,413	
Aug.	14.79	13.15	20	3,270	5	2,230	2,597	159,709	152,790	670,050	33,610	
Sept.	13.88	13.37	24	2,810	10	2,480	2,634	156,754	136,264	775,930	43,182	
Oct.	13.80	13.35	4	2,720	27	2,430	2,589	159,174	111,546	802,210	34,965	
Nov.	14.00	13.36	4	2,850	6	2,430	2,603	154,889	127,643	911,370	34,832	
Dec.	13.80	13.39	28	2,760	23	2,500	2,613	160,641	158,637	1,114,550	33,023	
Yearly	14.79	9.27		3,320		438	2,335	1,690,670	1,776,946	10,220,870	513,755	
	Meters		Cubic Meters per Second				Thousands of Cubic Meters					
	4.51	2.83		94.0		12.4	66.1	2,085,425	2,191,845	12,607,341	633,712	

! And other days

**COLORADO RIVER BELOW YUMA MAIN CANAL WASTEWAY
AT YUMA, ARIZONA - STAGES**

(See Preceding Page For Description)

Mean Daily Gage Height in Feet 1979

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	9.43	10.60	12.17	12.99	13.10	13.36	13.20	13.42	13.68	13.73	13.69	13.53
2	10.98	10.66	12.22	12.94	13.08	13.26	13.36	13.27	13.59	13.64	13.73	13.51
3	10.68	10.73	12.44	12.88	13.12	13.20	13.33	13.23	13.55	13.62	13.61	13.55
4	10.68	10.78	12.56	12.96	13.14	13.15	13.21	13.19	13.62	13.76	13.62	13.56
5	10.64	10.88	12.65	13.25	13.15	13.15	13.13	13.19	13.72	13.77	13.44	13.72
6	10.66	10.90	12.72	13.30	13.17	13.13	13.16	13.56	13.71	13.67	13.41	13.78
7	10.71	11.01	12.79	13.24	13.10	13.13	13.15	13.58	13.66	13.55	13.65	13.74
8	10.72	11.22	12.85	13.22	13.06	13.13	13.25	13.51	13.49	13.53	13.82	13.61
9	10.42	11.33	12.92	13.14	13.17	13.11	13.74	13.32	13.42	13.63	13.84	13.58
10	10.43	11.26	12.87	13.14	13.30	13.11	13.52	13.36	13.39	13.71	13.84	13.56
11	10.38	11.28	12.76	13.08	13.29	13.09	13.29	13.38	13.41	13.69	13.59	13.67
12	10.38	11.33	12.62	13.12	13.26	13.09	13.28	13.62	13.44	13.70	13.75	13.71
13	10.38	11.35	12.57	13.09	13.23	13.25	13.22	13.83	13.45	13.57	13.82	13.70
14	10.39	11.37	12.68	13.07	13.19	13.65	13.24	13.69	13.57	13.48	13.75	13.71
15	10.38	11.42	12.69	13.06	13.16	13.34	13.26	13.82	13.41	13.58	13.70	13.58
16	10.39	11.48	12.71	12.96	13.18	13.15	13.25	14.10	13.43	13.66	13.61	13.50
17	10.41	11.75	12.72	12.90	13.21	13.11	13.24	14.41	13.76	13.72	13.51	13.48
18	10.59	11.88	12.72	12.93	13.27	13.04	13.26	14.14	13.82	13.68	13.49	13.64
19	11.49	11.94	13.09	13.00	13.28	13.04	13.21	14.50	13.81	13.49	13.46	13.46
20	10.94	11.93	12.59	13.03	13.38	13.05	13.29	14.66	13.62	13.46	13.45	13.43
21	11.66	11.94	12.63	13.03	13.93	13.07	13.48	13.98	13.54	13.45	13.67	13.47
22	11.65	11.98	12.67	13.26	13.85	13.04	13.38	13.77	13.54	13.49	13.75	13.45
23	10.92	12.03	12.75	13.33	13.54	13.04	13.38	13.78	13.62	13.54	13.64	13.41
24	10.75	12.09	12.96	13.01	13.56	13.09	13.44	14.00	13.85	13.56	13.53	13.41
25	11.00	12.14	13.03	13.14	13.61	13.10	13.49	13.84	13.84	13.56	13.55	13.41
26	11.17	12.11	13.03	14.49	13.57	13.15	13.91	13.72	13.75	13.51	13.67	13.47
27	11.12	12.12	12.94	14.48	13.53	13.17	13.95	13.68	13.70	13.39	13.83	13.75
28	11.35	12.14	12.93	13.84	13.54	13.18	13.44	13.66	13.64	13.37	13.67	13.77
29	11.16		13.00	13.33	13.54	13.24	13.36	13.68	13.66	13.51	13.56	13.58
30	10.55		13.01	13.16	13.49	13.16	13.34	13.80	13.66	13.64	13.52	13.52
31	10.54		13.03		13.43		13.60	13.79		13.67		13.46
Avg.	10.74	11.49	12.75	13.21	13.34	13.16	13.37	13.73	13.61	13.59	13.63	13.57

**YUMA MESA OUTLET DRAIN
TO COLORADO RIVER NEAR YUMA, ARIZONA**

DESCRIPTION: Venturi meter with recorder 0.3 mile (0.5 km) from outlet to Colorado River, 0.5 mile (0.8 km) west of Joe Henry Memorial Park in Yuma, Arizona. Outlet is 1.7 miles (2.7 km) downstream from the mouth of Yuma Main Canal Wasteway.

RECORDS: Records are furnished by U. S. Geological Survey. Monthly discharge July 1970 through 1979. Prior to July 21, 1972, records furnished by U. S. Bureau of Reclamation.

REMARKS: Records show water pumped from wells on the Yuma Mesa and conveyed by underground conduit to Colorado River.

Mean Daily Discharge in Second-Foot 1979 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	43	0	0	40	0	0	24	18	35	34	34	40
2	43	0	4.1	45	0	0	24	21	35	34	34	40
3	43	0	40	45	0	0	24	24	35	34	34	40
4	43	0	40	45	0	0	24	24	35	34	34	40
5	43	0	40	45	0	9.4	24	24	35	34	34	40
6	23	0	40	45	0	31	24	24	35	34	34	40
7	3.5	0	40	45	0	31	24	24	35	34	33	40
8	23	0	40	45	0	30	23	24	35	34	34	40
9	44	0	40	45	0	30	18	24	35	34	34	40
10	44	0	40	45	0	30	18	24	35	34	34	40
11	44	0	39	45	0	30	18	24	35	34	34	40
12	44	0	32	45	0	30	18	24	35	34	34	39
13	44	0	29	45	0	30	18	24	35	34	34	39
14	44	0	27	45	0	30	18	23	35	34	34	39
15	44	0	30	45	0	30	18	18	35	28	34	39
16	33	0	30	45	0	30	18	23	35	6.6	34	39
17	6.8	0	30	45	0	30	18	25	35	22	34	39
18	0	0	30	45	0	30	17	25	35	34	34	39
19	0	0	30	44	0	30	14	24	35	34	34	39
20	0	0	10	44	0	30	18	27	35	34	34	39
21	0	0	0	44	0	30	18	31	35	34	34	39
22	0	0	0	42	0	26	18	35	35	34	34	39
23	0	0	0	44	0	24	18	35	35	34	36	39
24	0	0	0	42	0	24	18	35	34	34	39	39
25	0	0	0	7.6	0	24	18	35	30	33	39	39
26	0	0	0	39	0	24	18	35	25	33	39	35
27	0	0	0	43	0	24	18	33	34	34	39	36
28	0	0	0	45	0	24	18	34	34	34	40	39
29	0	0	0	45	0	24	18	35	34	34	37	39
30	0	0	0	24	0	24	18	35	34	34	40	39
31	0	0	0	0	0	0	18	35	34	34	39	39
Sum	612.3	0	611.1	1,268.6	0	709.4	600	846	1,030	1,006.6	1,056	1,213
Current Year 1979									Period 1971-1979			
Month	Extreme Gage Feet		Extreme Second-Foot				Average Second-Foot	Total Acre-Feet	Acre-Feet			
	High	Low	Day	High	Low	Day			Average	Maximum	Minimum	
Jan.			1 9	44	118	0	19.8	1,214	2,841	5,840	0	
Feb.				0	0	0	0	0	2,681	4,830	0	
Mar.			1 3	40	1 0	0	19.7	1,212	3,127	5,430	4	
Apr.			1 2	45	25	7.6	42.3	2,516	2,884	5,120	242	
May				0	0	0	0	0	2,790	4,933	0	
June			1 6	31	1 1	0	23.6	1,407	2,977	4,828	0	
July			1 1	24	19	14	19.4	1,190	3,444	5,510	692	
Aug.			122	35	1 1	18	27.3	1,678	3,556	6,000	180	
Sept.			1 1	35	26	25	34.3	2,043	3,417	5,880	0	
Oct.			1 1	34	16	6.6	32.5	1,997	3,413	5,360	157	
Nov.			128	40	7	33	35.2	2,095	3,502	5,290	313	
Dec.			1 1	40	26	35	39.1	2,406	3,677	5,970	0	
Yearly				45		0	24.5	17,758	38,309	58,680	1,753	
	Meters		Cubic Meters per Second				Thousands of Cubic Meters					
				1.3		0	0.7	21,904	47,254	72,381	2,162	

Ø Mean daily

! And other days

DRAIN NO. 8-B (ARAZ DRAIN)

DESCRIPTION: This drain discharges into the Colorado River 4.0 miles (6.4 km) downstream from Colorado River below Yuma Main Canal Wasteway, and 2.5 miles (4.0 km) upstream from the northerly international boundary. Prior to October 1955, published as "Araz Drain".

RECORDS: Records are furnished by the U. S. Geological Survey from current meter measurements during the year. Records available: May 1948 through 1979.

REMARKS: Drain 8-B, which was constructed in February 1948, collects seepage water in the westerly section of the Reservation Division of the Yuma Project which lies in California. Flow in the drain between the mouth and the U. S. Highway No. 80 culvert, about 3,200 feet (975 m) upstream, is affected by backwater from the river during ordinary high stages.

EXTREMES: Mean daily discharge: Maximum 24 second-feet (0.68 m³/sec) on September 1, 1953; minimum, 0.1 second-foot (0.003 m³/sec) several days in February 1966.

Mean Daily Discharge in Second-Feet 1979 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.6	0.8	1.0	1.3	1.3	1.9	2.1	4.5	4.3	4.6	5.3	2.9
2	.6	.8	1.0	1.3	1.3	1.9	2.1	4.5	4.3	4.8	5.2	2.9
3	.6	.9	1.0	1.3	1.3	1.9	2.1	4.5	4.3	4.9	5.2	2.9
4	.6	.9	1.0	1.3	1.3	1.9	2.1	4.5	4.3	5.0	5.1	2.9
5	.6	.9	1.0	1.3	1.4	1.9	2.1	4.5	4.3	5.1	5.0	2.9
6	.6	.9	1.0	1.3	1.4	1.9	2.1	4.5	4.3	5.3	4.9	2.9
7	.6	.9	1.0	1.3	1.4	2.0	2.1	4.4	4.4	5.3	4.9	2.9
8	.7	.9	1.0	1.3	1.5	2.0	2.1	4.4	4.4	5.3	4.8	2.9
9	.7	.9	1.0	1.3	1.5	2.0	2.1	4.4	4.4	5.3	4.7	2.9
10	.7	.9	1.1	1.3	1.5	2.0	2.1	4.4	4.4	5.3	4.7	2.9
11	.7	.9	1.1	1.3	1.6	2.0	2.1	4.4	4.4	5.3	4.6	2.9
12	.7	.9	1.1	1.3	1.6	2.0	2.1	4.4	4.4	5.3	4.5	2.9
13	.7	.9	1.1	1.3	1.6	2.0	2.1	4.4	4.4	5.3	4.5	2.9
14	.7	.9	1.1	1.3	1.7	2.0	2.0	4.4	4.4	5.3	4.4	2.9
15	.7	.9	1.1	1.3	1.7	2.1	2.0	4.4	4.4	5.3	4.3	2.9
16	.7	.9	1.1	1.3	1.7	2.1	2.0	4.4	4.4	5.3	4.3	2.9
17	.7	.9	1.2	1.3	1.8	2.1	2.0	4.4	4.4	5.3	4.2	2.9
18	.7	1.0	1.2	1.3	1.8	2.1	2.0	4.4	4.4	5.3	4.1	2.9
19	.7	1.0	1.2	1.3	1.8	2.1	2.0	4.4	4.4	5.3	4.1	2.9
20	.8	1.0	1.2	1.3	1.9	2.1	2.0	4.4	4.4	5.3	4.0	2.9
21	.8	1.0	1.2	1.3	1.9	2.1	2.7	4.4	4.5	5.3	3.9	2.9
22	.8	1.0	1.2	1.3	1.9	2.1	3.2	4.4	4.5	5.3	3.8	2.9
23	.8	1.0	1.2	1.3	1.9	2.1	3.9	4.4	4.5	5.3	3.8	2.9
24	.8	1.0	1.2	1.3	1.9	2.1	4.2	4.3	4.5	5.3	3.7	2.9
25	.8	1.0	1.3	1.2	1.9	2.1	4.5	4.3	4.5	5.3	3.6	2.9
26	.8	1.0	1.3	1.2	1.9	2.1	4.5	4.3	4.5	5.3	1.4	2.9
27	.8	1.0	1.3	1.2	1.9	2.1	4.5	4.3	4.5	5.3	1.6	2.9
28	.8	1.0	1.3	1.2	1.9	2.1	4.5	4.3	4.5	5.3	2.0	2.9
29	.8	1.3	1.2	1.9	2.1	2.1	4.5	4.3	4.5	5.3	2.3	2.9
30	.8	1.3	1.2	1.9	2.1	2.1	4.5	4.3	4.5	5.3	2.6	2.9
31	.8	1.3	1.3	1.9	1.9		4.5	4.3	4.5	5.3	2.6	2.9
Sum	22.2	26.1	35.4	38.4	52.0	61.0	86.8	136.2	132.4	162.2	121.5	89.9
Current Year 1979												
Month	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Period 1948-1979			
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum	
Jan.			120	0.8	! 1	0.6	0.72	44.0	310	899	39.3	
Feb.			118	1.0	! 1	.8	.93	51.8	257	746	40.5	
Mar.			125	1.3	! 1	1.0	1.14	70.2	328	853	62.7	
Apr.			! 1	1.3	125	1.2	1.28	76.2	345	1,000	66.8	
May			120	1.9	! 1	1.3	1.68	103	348	966	58.3	
June			115	2.1	! 1	1.9	2.03	121	364	1,030	67.4	
July			125	4.5	!14	2.0	2.80	172	416	1,260	72.8	
Aug.			! 1	4.5	124	4.3	4.39	270	464	1,350	73.8	
Sept.			121	4.5	! 1	4.3	4.41	253	445	1,370	53.6	
Oct.			! 6	5.3	! 1	4.6	5.23	322	454	1,220	55.3	
Nov.			! 1	5.3	26	1.4	4.05	241	410	1,240	57.7	
Dec.			! 1	2.9	! 1	2.9	2.90	178	367	1,050	42.2	
Yearly				5.3		0.6	2.64	1,912	4,518	12,429	774	
	Meters		Cubic Meters per Second				Thousands of Cubic Meters					
				0.15		0.02	0.07	2,359	5,573	15,331	955	

0 Mean daily

! And other days

PILOT KNOB POWER PLANT AND WASTEWAY NEAR PILOT KNOB, CALIFORNIA

DESCRIPTION: The Pilot Knob Power Plant and Wasteway is located on the All-American Canal, 20.8 miles (33.5 km) downstream from the intake at Imperial Dam, 6 miles (9.7 km) west of Yuma, about one mile (1.6 km) north of the northerly international boundary and empties into the old Alamo Canal in the United States and thence into the Colorado River through Rookwood gates, about one mile (1.6 km) upstream from the northerly international boundary. Water-stage recorder is located in forebay on right bank of the All-American Canal, 550 feet (168 m) upstream from wasteway gates and 1,800 feet (549 m) from entrance to the power plant. Datum of gage is 150.00 feet (45.72 m) above mean sea level. Tailrace gage is on left bank, 680 feet (207 m) downstream from power plant with automatic recording equipment in control house. All bypass gates are equipped with calibrated openings which are read on all gate changes. Datum of tailrace gage is at mean sea level; elevation of sill of wasteway gates is 147.88 feet (45.07 m), U. S. C. & G. S datum. Prior to October 1956, this station was published as "Pilot Knob Wasteway near Pilot Knob, California".

RECORDS: Daily discharge is computed from flowmeter equipment and head and openings on wasteway gates or from head and gate opening on wicket and wasteway gates. Records furnished by the U. S. Geological Survey. Records available: July 1944 through 1979. The wasteway was operated for the purpose of diverting Colorado River water to the Alamo Canal for use in Mexico from July 1944 to November 8, 1950 in accordance with arrangements between the United States and Mexico for emergency use of the All-American Canal facilities. Records since 1950 show water released through Pilot Knob Power Plant and Wasteway from the All-American Canal and returned to the Colorado River through Rookwood gates.

REMARKS: Pilot Knob Wasteway was completed in 1938, and the first flow occurred on February 5, 1939. Pilot Knob Power Plant was completed in January 1957, and the first flow occurred on January 14, 1957.

EXTREMES: Maximum mean daily discharge, 8,350 second-feet (236 m³/sec) on January 26, 1958; minimum daily discharge, no flow during long periods.

Mean Daily Discharge in Second-Feet 1979 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,080	0	0	1,060	0	2,500	3,300	3,000	2,780	2,000	1,630	1,620
2	0	0	0	1,220	1,020	2,500	3,300	3,170	2,900	2,000	1,500	1,500
3	0	0	0	1,320	1,020	2,500	3,350	3,200	2,900	2,010	1,500	1,500
4	0	0	0	1,400	1,000	2,500	3,350	3,500	2,900	2,000	1,430	1,350
5	0	0	0	1,220	1,500	2,500	3,450	3,500	2,930	2,000	1,350	1,200
6	0	0	0	1,180	1,500	2,500	3,450	3,500	2,960	2,000	1,500	1,200
7	0	0	0	1,300	1,500	2,500	3,450	3,500	2,810	2,010	1,550	1,200
8	0	0	0	1,330	1,500	2,500	3,450	3,500	2,800	2,070	1,700	1,200
9	0	0	0	1,410	2,000	2,500	3,450	3,470	2,600	2,200	1,490	1,140
10	0	0	0	1,420	2,000	2,500	3,450	2,720	2,500	2,200	1,300	1,380
11	0	0	0	1,400	2,000	2,470	3,450	3,500	2,500	2,100	1,610	1,640
12	0	0	0	1,430	2,000	2,470	3,450	4,540	2,500	2,000	1,330	1,570
13	0	0	0	1,500	2,500	2,470	3,600	6,150	2,500	2,000	1,200	1,010
14	0	0	0	1,550	2,530	1,720	3,600	6,940	2,340	2,000	1,200	1,320
15	0	0	0	1,540	2,530	1,600	3,730	5,330	2,030	2,570	1,190	1,080
16	0	0	0	1,620	2,530	1,980	3,440	3,420	1,980	3,530	1,200	1,000
17	0	0	0	1,700	2,530	2,590	3,350	4,270	2,100	2,730	1,320	1,650
18	0	0	0	1,660	2,520	2,920	3,350	6,000	2,200	1,940	1,520	1,640
19	0	0	46	1,610	2,500	3,000	3,450	4,850	2,370	1,590	1,640	1,500
20	0	0	2,370	1,600	2,500	3,000	4,210	3,320	2,700	1,440	1,990	1,500
21	0	0	3,530	1,600	2,500	3,000	6,050	3,100	2,560	1,850	2,000	1,500
22	0	0	2,320	1,490	2,500	3,000	6,670	3,200	2,570	2,000	1,950	1,790
23	0	0	2,800	1,100	2,500	3,000	4,700	2,720	2,700	2,050	1,810	1,200
24	0	0	2,880	1,020	2,500	3,090	3,500	2,200	2,520	2,300	2,100	1,200
25	0	0	2,600	862	2,830	3,130	3,500	2,300	2,510	1,690	2,120	1,200
26	0	0	1,630	0	2,840	3,000	3,320	2,600	2,500	1,500	2,240	3,000
27	0	0	1,140	0	2,830	3,000	3,200	2,700	2,500	1,500	2,000	2,110
28	0	0	1,010	0	2,760	3,000	3,200	2,700	2,500	1,560	2,000	1,740
29	0	0	988	0	2,500	3,000	3,200	2,800	2,500	1,710	1,990	1,400
30	0	0	993	0	2,500	3,050	3,180	2,810	2,500	1,800	1,930	1,350
31	0	0	1,040	0	2,500	3,000	3,000	2,700	2,500	1,800	1,800	1,660
Sum	1,080	0	23,347	34,542	65,940	79,490	113,150	111,310	76,660	62,150	49,290	45,350

Month	Extreme Gage Feet		Current Year 1979				Average Second-Feet	Total Acre-Feet	Period 1944-1979		
	High	Low	Extreme Second-Feet		Average	Maximum			Minimum		
	Day	Day	High	Low							
Jan.			1	1,080	1	2	34.8	2,142	37,423	400,200	0
Feb.				0	1	0	0	0	22,572	149,500	0
Mar.			21	3,530	1	1	753	46,308	77,757	279,300	0
Apr.			17	1,700	126	0	1,151	68,513	103,627	260,900	0
May			26	2,940	1	0	2,127	130,790	21,174	165,400	0
June			25	3,130	15	1,600	2,650	157,666	62,952	204,300	0
July			22	6,670	31	3,000	3,650	224,430	117,204	260,000	0
Aug.			14	6,940	124	2,300	3,591	220,780	118,895	270,100	0
Sept.			6	2,960	16	1,980	2,555	152,053	49,846	173,300	0
Oct.			16	3,530	20	1,440	2,005	123,273	12,426	123,273	0
Nov.			26	2,240	15	1,190	1,643	97,765	15,304	182,600	0
Dec.			26	3,000	16	1,000	1,463	89,950	43,857	319,700	0
Yearly				6,940		0	1,815	1,313,670	683,037	1,944,700	0
	Meters		Cubic Meters per Second				Thousands of Cubic Meters				
			197		0	51.4	1,620,399	842,519	2,398,768	0	

0 Mean daily ! And other days

COLORADO RIVER AT NORTHERLY INTERNATIONAL BOUNDARY - STAGES

(See Preceding Page For Description)

Mean Daily Gage Height in Feet 1979

Day	Jan.	Feb.	March	April	May	* June	* July	Aug.	Sept.	Oct.	Nov.	Dec.
1	103.46	103.34	103.54	105.02	103.94	107.94	106.84	106.47	106.23	107.18	106.75	106.24
2	103.10	103.32	103.58	105.22	104.96	107.69	106.94	106.46	106.29	106.92	106.31	105.95
3	102.99	103.52	103.69	105.18	104.87	107.46	106.91	106.46	106.25	106.83	106.27	105.97
4	103.08	104.05	103.75	105.27	104.96	107.26	106.84	106.67	106.26	107.02	106.24	105.93
5	103.08	104.08	103.79	105.27	105.83	107.18	106.86	106.67	106.37	106.95	105.85	105.64
6	103.04	103.82	103.81	105.25	106.17	107.04	106.84	106.83	106.60	106.86	105.96	105.79
7	103.04	103.63	103.87	105.31	106.26	106.92	106.84	106.82	106.41	106.76	106.10	105.78
8	103.01	103.24	103.90	105.32	106.32	106.75	106.87	106.81	106.44	106.76	106.60	105.66
9	102.89	103.24	103.93	105.34	107.23	106.66	107.07	106.70	106.28	107.05	106.51	105.52
10	102.79	103.23	103.88	105.39	107.62	106.61	106.98	106.28	106.30	107.04	106.10	105.53
11	102.79	103.00	103.85	105.35	107.70	106.51	106.80	106.73	106.61	106.90	106.11	106.12
12	102.80	103.17	103.78	105.36	107.86	106.41	106.82	108.22	106.81	106.75	106.12	106.39
13	102.77	103.35	103.71	105.43	108.33	106.40	106.86	110.66	107.02	106.86	105.82	105.67
14	102.81	103.50	103.77	105.43	108.23	106.08	106.84	110.98	107.07	106.84	105.85	105.80
15	102.79	103.44	103.82	105.42	108.27	105.82	106.95	110.21	106.46	107.23	105.83	105.66
16	102.78	103.30	103.82	105.39	108.33	106.04	106.79	108.20	106.31	108.90	105.78	105.25
17	102.66	103.32	103.83	105.39	108.31	106.55	106.82	109.45	106.82	108.08	105.74	105.60
18	102.73	103.63	103.82	105.42	108.20	106.68	106.77	110.46	107.32	107.47	105.94	106.19
19	103.53	103.66	104.05	105.41	108.11	106.65	106.82	110.14	107.64	106.63	106.00	105.78
20	103.09	103.52	105.86	105.41	108.07	106.72	107.46	108.96	107.91	106.46	106.35	105.56
21	103.81	103.48	107.69	105.39	108.37	106.72	109.76	108.36	107.72	106.69	106.56	105.62
22	104.37	103.46	106.05	105.39	108.52	106.78	110.09	108.16	107.63	107.16	106.74	106.02
23	103.11	103.51	106.37	105.18	108.36	106.78	108.68	107.66	107.74	107.26	106.41	105.21
24	102.85	103.60	106.75	104.95	108.45	106.82	106.93	106.68	107.74	107.56	106.66	105.05
25	103.21	103.66	106.51	105.01	108.80	106.82	107.14	106.32	107.71	106.79	106.72	105.04
26	104.37	103.63	105.69	104.63	108.92	106.69	107.23	106.32	107.63	106.37	107.09	106.94
27	104.33	103.53	105.06	104.88	108.81	106.68	107.24	106.22	107.57	106.27	106.70	106.78
28	104.75	103.53	104.92	104.95	108.67	106.63	106.86	106.16	107.56	106.09	106.72	106.26
29	105.08		104.91	104.22	108.32	106.65	106.69	106.21	107.56	106.31	106.70	105.63
30	103.64		104.93	103.99	108.30	106.62	106.66	106.35	107.55	106.65	106.66	105.43
31	103.33		104.96		108.05		106.61	106.22		106.74		105.69
Avg.	103.29	103.49	104.58	105.17	107.52	106.75	107.16	107.58	106.99	106.95	106.31	105.80

* Partly estimated

COOPER WASTEWAY (VALLEY DIVISION, YUMA PROJECT)

DESCRIPTION: Water-stage recorder and control weir on wasteway for discharging regulatory waste water from the Cooper Canal to the Colorado River. This wasteway is located 0.5 mile (0.8 km) downstream from the northerly international boundary and 0.6 mile (1.0 km) upstream from Morelos Diversion Dam. Prior to July 14, 1971, the wasteway was located 0.4 mile (0.6 km) downstream from Morelos Diversion Dam. This wasteway discharges waste water from the Valley Division of the Yuma Project in the United States into the Colorado River. Since July 14, 1971, zero of the gage is 117.64 feet (35.86 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Flow is computed from head on the weir measured by the water-stage recorder and weir rating determined by current meter measurements. Station operated by the United States Section of the Commission. Records available: Daily discharge, March 1950 through 1979 obtained by the United States Section; monthly discharge, January 1934 through March 1950 by the Bureau of Reclamation.

EXTREMES: Prior to March 1950, maximum monthly discharge 914 acre-feet (1,127,000 m³) in January 1940; minimum monthly discharge, zero for various months. Since March 1950, maximum instantaneous discharge, 79.3 second-feet (2.25 m³/sec) on June 19, 1965, at a maximum gage height of 114.13 feet (34.79 m) (old datum); minimum instantaneous discharge, zero during parts of each month.

Mean Daily Discharge in Second-Feet 1979 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
1	0.1	0.1	1.4	7.8	0	2.2	9.6	0	0	1.1	1.7	0.8	
2	0	.1	1.2	.2	0	.1	* 3.2	0	0	.2	.1	.6	
3	1.5	.1	4.5	0	0	2.1	* .4	1.4	0	.2	2.4	.1	
4	.4	.1	2.0	0	0	.1	.1	6.2	1.1	.1	3.2	0	
5	1.3	0	.4	0	0	0	6.2	.8	4.9	2.7	.2	0	
6	3.2	0	.1	0	0	.6	.3	.6	0	.9	.1	0	
7	.2	0	0	0	3.5	.1	.1	.3	2.6	.1	0	.7	
8	.1	0	1.2	0	7.7	0	.1	.1	.3	.1	0	.5	
9	0	1.8	2.5	2.5	.4	0	0	6.1	4.5	.1	0	.6	
10	0	.4	.2	2.7	.2	0	0	.2	.4	.7	0	4.7	
11	.8	.1	.1	2.1	.1	0	0	.2	3.5	1.3	4.6	3.2	
12	1.4	1.1	.2	.1	2.1	0	0	.1	3.2	2.0	.1	3.5	
13	2.5	7.7	.1	2.4	.1	0	0	.7	4.7	2.3	0	3.3	
14	.7	.6	.6	.7	0	7.0	0	.2	.8	0	1.0	6.8	
15	.1	.2	2.8	.3	2.7	0	0	0	1.8	0	.2	.5	
16	11.2	0	.1	.2	.1	0	0	.1	6.4	0	.2	1.0	
17	.6	3.2	.1	0	.7	2.0	0	0	0	0	.4	6.0	
18	.1	2.8	.1	0	2.4	0	1.9	.1	0	.5	.4	.2	
19	0	.7	0	0	0	1.5	.6	.1	0	1.2	.1	0	
20	0	3.8	0	0	1.1	.7	.6	.1	0	.8	0	0	
21	0	1.4	.7	0	.1	.7	3.0	.1	0	1.0	4.8	.5	
22	.1	.1	3.4	2.0	0	3.1	.3	.2	0	1.5	6.3	.3	
23	4.7	.1	.7	.6	0	1.8	.2	1.9	0	0	5.5	.1	
24	.5	4.8	1.8	.7	0	.3	.1	3.5	3.9	0	.4	.1	
25	.3	.3	1.7	.2	0	.2	0	.1	2.6	0	.2	.1	
26	2.3	.2	2.0	.1	1.8	.1	0	0	.6	0	.2	0	
27	4.1	1.3	4.7	.2	3.5	.1	0	* .2	1.5	0	.2	0	
28	.2	1.2	1.2	14.3	.4	1.2	0	* 1.5	2.1	.3	5.5	4.8	
29	.1	1.3	1.3	.2	.2	0	0	.5	.8	.1	2.8	2.2	
30	.1	6.6	.2	0	0	.1	2.1	.1	1.2	0	3.6	10.4	
31	.1	3.1	0	0	0	0	1.1	.1	0	3.9	0	2.9	
Sum	36.7	32.2	44.8	38.6	27.1	24.2	29.9	25.5	46.9	21.1	44.2	53.9	
Current Year 1979												Period 1935-1979	
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.	1.91	0	16	33.4	1	2	1.2	72.8	165	914	0		
Feb.	1.13	0	17	16.8	1	4	0	1.2	63.9	146	400	6.0	
Mar.	1.85	0	30	32.1	1	6	0	1.4	88.9	158	517	0	
Apr.	2.37	0	28	43.8	1	2	0	1.3	76.6	166	425	27.8	
May	2.45	0	7	45.6	1	2	0	.9	53.8	164	440	40.3	
June	2.02	0	14	35.8	1	1	0	.8	48.0	151	595	40.9	
July	2.30	0	1	42.2	1	10	0	1.0	59.3	141	516	0	
Aug.	2.16	0	9	39.0	1	1	0	.8	50.6	108	617	0	
Sept.	1.68	0	4	28.4	1	2	0	1.6	93.0	106	462	0	
Oct.	1.49	0	13	24.3	1	15	0	.7	41.9	133	490	0	
Nov.	1.32	0	4	20.7	1	7	0	1.5	87.7	156	462	9.0	
Dec.	1.32	0	128	20.7	1	1	0	1.7	107	178	592	13.7	
Yearly	2.45	0		45.6		0	1.2	844	1,772	4,500	638		
	Meters		Cubic Meters per Second				Thousands of Cubic Meters						
	0.75	0		1.29		0	0.03	1,041	2,186	5,551	787		

* Partly estimated ! And other days

COLORADO RIVER IMMEDIATELY ABOVE MORELOS DAM - STAGES

DESCRIPTION: Water-stage recorder located on the right bank of the Colorado River in Mexico attached to the upstream abutment of the gates of the Intake Canal at Morelos Dam, 1.1 miles (1.8 km) downstream from the northerly international boundary, and about 7.5 miles (12.1 km) downstream from the Colorado River below Yuma Main Canal Wasteway. Since April 17, 1969, zero of the gage is at mean sea level, U. S. C. & G. S. datum; prior to that date, zero of the gage was 0.16 foot (0.05 m) below mean sea level.

RECORDS: Records obtained and furnished by the Mexican Section of the Commission. Records available: Staff gage height records November 8, 1950 to June 3, 1951; a continuous record of gage heights June 4, 1951 through 1979.

REMARKS: Prior to June 4, 1951, when a continuous water-stage recorder was installed, mean daily gage height records were determined from hourly readings of a staff gage.

EXTREMES: Since November 8, 1950: Maximum mean daily elevation above mean sea level, 113.48 feet (34.59 m) on August 18, 1977; minimum mean daily elevation above mean sea level, 101.51 feet (30.94 m) on February 17, 1957.

Mean Daily Gage Height in Feet 1979

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	102.76	102.92	102.66	103.71	103.08	107.45	105.22	105.09	104.89	106.63	106.10	105.58
2	102.46	102.95	102.66	104.00	103.90	107.15	105.28	105.09	104.89	106.53	105.84	105.31
3	102.36	103.18	102.76	103.71	103.44	106.82	105.31	105.12	104.92	106.40	105.74	105.35
4	102.53	103.81	102.79	103.71	103.77	106.59	105.31	105.25	104.92	106.59	105.71	105.22
5	102.56	103.81	102.85	103.74	105.09	106.46	105.31	105.28	105.12	106.50	105.28	104.99
6	102.49	103.48	102.85	103.74	105.58	106.20	105.28	105.31	105.58	106.43	105.45	105.15
7	102.49	103.22	102.89	103.81	105.71	106.04	105.28	105.35	105.38	106.30	105.61	105.09
8	102.43	102.56	102.89	103.87	105.77	105.71	105.28	105.38	105.51	106.30	106.10	104.99
9	102.36	102.46	102.89	103.97	106.73	105.51	105.38	105.35	105.48	106.59	106.04	104.72
10	102.26	102.49	102.89	104.20	107.19	105.35	105.38	105.35	105.61	106.56	105.54	104.79
11	102.26	102.13	102.89	104.20	107.25	105.05	105.22	105.38	106.07	106.40	105.64	105.48
12	102.26	102.43	102.82	104.07	107.32	104.82	105.28	107.35	106.30	106.27	105.54	105.77
13	102.20	102.69	102.79	104.13	107.81	104.82	105.28	110.07	106.56	106.43	105.31	104.82
14	102.26	102.92	102.85	104.13	107.84	104.46	105.28	110.30	106.56	106.40	105.31	105.18
15	102.23	102.82	102.89	104.04	107.81	104.33	105.35	109.58	105.94	106.82	105.31	104.95
16	102.23	102.56	102.85	103.90	107.91	104.63	105.48	107.68	105.81	108.46	105.22	104.46
17	102.07	102.49	102.85	104.00	107.84	104.82	105.58	108.86	106.33	107.68	105.25	105.05
18	102.10	102.92	102.85	104.20	107.74	104.82	105.54	109.81	106.89	107.12	105.38	105.45
19	102.89	102.92	103.02	104.20	107.64	104.95	105.54	109.55	107.25	106.23	105.48	104.89
20	102.43	102.72	104.79	104.17	107.56	105.15	106.30	108.40	107.51	106.00	105.81	104.49
21	103.22	102.66	106.82	104.00	107.87	105.25	108.92	107.84	107.32	106.30	106.04	104.63
22	103.90	102.59	104.46	103.94	108.04	105.35	109.15	107.61	107.22	106.79	106.23	105.15
23	102.46	102.66	104.86	104.00	107.91	105.35	107.78	107.12	107.32	106.89	105.87	104.00
24	102.17	102.79	105.35	104.04	108.01	105.28	105.68	105.97	107.32	107.19	106.14	103.71
25	102.69	102.85	104.86	104.23	108.33	105.25	105.91	105.35	107.28	106.36	106.23	103.74
26	104.10	102.82	104.10	104.44	108.46	105.25	106.10	105.25	107.19	105.94	106.59	106.17
27	104.07	102.69	103.67	103.84	108.37	105.18	106.14	104.79	107.12	105.77	106.17	106.10
28	104.49	102.66	103.58	104.30	108.20	105.12	105.68	104.72	107.12	105.58	106.14	105.35
29	104.82		103.54	103.38	107.84	105.12	105.41	104.89	107.12	105.91	106.14	104.53
30	103.35		103.54	103.05	107.84	105.12	105.41	105.05	107.12	106.23	106.10	104.27
31	102.99		103.58		107.68		105.41	104.86		106.30		104.66
Avg.	102.76	102.82	103.44	103.94	106.96	105.45	105.77	106.56	106.33	106.53	105.77	104.95

INTAKE CANAL AT MORELOS DIVERSION STRUCTURE - DISCHARGES

DESCRIPTION: Water-stage recorder and staff gage on left bank of Intake Canal, 200 feet (61.0 m) downstream from the intake at Morelos Dam, 1,350 feet (410 m) upstream from the point where it joins the old Alamo Canal, 2.2 miles (3.5 km) upstream from Matamoros Check, and about one mile (1.6 km) south of the northerly international boundary. The zero of the gage is 0.16 foot (0.05 m) below mean sea level, U. S. C. & G. S. datum.

RECORDS: The records are deduced from the flows arriving in the limitrophe section of the Colorado River at the northerly international boundary, the flows that pass downstream from the structure, and leakage through the structure. Records available: November 8, 1950 through 1979. Records obtained and furnished by the Mexican Section of the Commission.

REMARKS: The canal is operated with a minimum hydraulic slope to permit the maximum retention of silt above Matamoros Check, and the lower velocities in the canal do not permit measuring the flow with a current meter. Records for this station show the amounts of Colorado River water diverted at Morelos Diversion Dam to the Intake Canal and thence to the Alamo Canal for use in Mexico. Water for use in Mexico may also be diverted to the Alamo Canal in the United States directly from the river at Rookwood Heading or by means of Imperial Dam, the All-American Canal, and certain facilities of the Imperial Irrigation District under conditions set forth in the 1944 Water Treaty. No diversions of the above nature have been made during the years 1951 through 1979, and consequently the records reported below show the total water diverted from the Colorado River to the Alamo Canal during those years.

EXTREMES: Maximum mean daily discharge, 6,540 second-feet (185 m³/sec), August 3, 1958; maximum mean daily gage height 107.05 feet (32.63 m) November 8, 1950. Minimum daily discharge, no flow on various occasions.

Mean Daily Discharge in Second-Feet 1979 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,780	703	2,020	3,530	2,450	2,260	5,090	4,240	4,310	2,190	2,040	2,300
2	1,440	706	2,070	3,710	2,750	2,420	5,160	4,660	4,410	2,160	2,110	2,250
3	1,330	685	2,210	3,740	2,900	2,640	5,160	4,770	4,480	2,120	2,040	2,250
4	1,330	583	2,270	3,850	2,780	2,820	5,090	4,980	4,380	2,160	2,130	2,220
5	1,300	579	2,330	3,850	2,750	2,830	5,010	5,010	4,310	2,260	2,050	2,210
6	1,290	735	2,360	3,810	2,620	2,960	4,800	4,870	3,960	2,270	2,090	2,210
7	1,290	795	2,410	3,880	2,590	3,110	4,840	5,010	3,850	2,280	2,170	2,200
8	1,300	1,100	2,440	3,920	2,590	3,270	4,870	5,090	3,490	2,220	2,190	2,230
9	1,170	1,300	2,480	3,920	2,520	3,370	4,870	5,010	3,330	2,220	2,070	2,240
10	1,150	1,200	2,420	3,920	2,370	3,470	4,660	5,090	3,090	2,430	1,980	2,440
11	1,120	1,290	2,380	3,880	2,330	3,570	4,730	5,050	2,710	2,380	2,260	2,380
12	1,120	1,480	2,300	3,920	2,300	3,640	4,840	4,130	2,690	2,340	2,190	2,320
13	1,120	1,640	2,240	3,990	2,240	3,670	5,050	3,120	2,680	2,130	2,220	2,160
14	1,130	1,670	2,300	3,990	2,240	3,500	5,050	3,180	2,350	2,070	2,150	2,290
15	1,130	1,670	2,360	3,960	2,260	3,710	5,050	3,310	2,250	2,300	2,160	2,190
16	1,170	1,680	2,350	3,960	2,290	4,170	5,120	3,230	2,400	2,130	2,180	2,110
17	1,110	1,780	2,370	3,960	2,300	4,480	5,190	3,010	2,470	2,130	2,210	2,400
18	1,170	1,940	2,350	3,990	2,310	4,520	5,300	3,160	2,040	1,750	2,290	2,450
19	1,200	1,980	2,610	3,960	2,310	4,660	5,470	3,060	2,080	1,840	2,250	2,460
20	1,140	1,940	3,440	3,960	2,370	4,840	5,050	2,700	2,050	1,730	2,400	2,560
21	1,200	1,910	3,600	3,960	2,470	5,120	4,450	2,530	2,010	1,830	2,440	2,600
22	1,180	1,930	3,740	3,960	2,410	5,300	4,480	2,540	2,020	1,770	2,460	2,640
23	1,120	1,950	3,880	3,670	2,290	5,330	4,200	2,740	2,140	1,660	2,330	2,530
24	1,140	2,010	4,200	3,370	2,170	5,300	4,520	3,100	2,200	1,590	2,360	2,610
25	982	2,060	4,240	3,340	2,090	5,190	4,630	3,400	2,190	1,770	2,310	2,590
26	844	2,030	4,030	3,130	2,020	5,230	4,410	3,810	2,210	1,820	2,320	2,870
27	749	2,000	3,740	3,316	2,040	5,010	4,310	4,030	2,160	1,880	2,350	2,560
28	738	2,010	3,600	3,070	2,070	5,010	4,170	4,340	2,080	1,870	2,390	2,650
29	629		3,600	2,620	2,200	4,940	4,170	4,380	2,240	1,560	2,310	2,590
30	646		3,600	2,490	2,190	4,910	4,170	4,200	2,230	2,010	2,320	2,550
31	650		3,490		2,170		4,240	4,240		2,030		2,690
Sum	34,683	41,343	89,466	110,602	73,423	121,256	148,145	122,016	84,840	63,323	66,787	74,782
	Current Year 1979		Extreme Second-Feet				Average Second-Feet	Total	Period 1950-1979			
Month	Extreme Gage Feet		Day		Day		Second-Feet	Acres-Feet	Acres-Feet			
	High	Low	High	Low	High	Low			Average	Maximum	Minimum	
Jan.	103.05	101.67	1	1,780	29	629	1,120	68,791	65,051	116,737	966	
Feb.	103.05	101.67	25	2,060	7	579	1,480	82,001	66,225	107,233	9,232	
Mar.	103.87	101.51	25	4,240	1	2,020	2,890	177,453	168,569	216,904	97,902	
Apr.	104.43	102.23	113	3,990	30	2,490	3,670	219,375	195,537	264,127	153,792	
May	103.35	101.84	3	2,900	26	2,020	2,370	145,631	95,539	159,010	66,207	
June	105.18	102.30	23	5,330	1	2,260	4,030	240,508	154,400	269,632	95,177	
July	105.35	104.17	19	5,470	128	4,170	4,770	293,840	218,644	304,263	135,153	
Aug.	105.18	103.38	8	5,090	21	2,530	3,920	242,014	214,640	341,044	130,298	
Sept.	104.72	102.89	3	4,480	21	2,010	2,830	168,277	121,528	198,095	53,633	
Oct.	103.15	102.82	10	2,430	24	1,590	2,040	125,598	54,671	125,598	10,453	
Nov.	103.25	102.95	22	2,460	110	1,980	2,220	132,470	43,869	132,470	7,516	
Dec.	103.77	103.12	26	2,870	16	2,110	2,410	148,328	76,021	148,328	8,825	
Yearly	105.35	101.51		5,470		579	2,810	2,044,287	1,475,534	2,044,287	1,272,332	
	Meters		Cubic Meters per Second				Thousands of Cubic Meters					
	32.11	30.94		155		16.4	79.6	2,521,601	1,820,052	2,521,601	1,569,404	

∅ Mean daily

! And other days

INTAKE CANAL AT MORELOS DIVERSION STRUCTURE - STAGES

(See Preceding Page For Description)

Mean Daily Gage Height in Feet 1979

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	102.66	101.84	102.00	103.44	102.46	102.36	104.79	104.53	104.63	103.02	103.02	103.18
2	102.36	101.80	102.03	103.77	102.99	102.36	104.86	104.79	104.63	103.02	103.02	103.18
3	102.30	101.80	101.84	103.35	103.05	102.53	104.86	104.82	104.63	103.02	103.02	103.18
4	102.49	101.80	101.87	103.35	103.02	102.76	104.86	104.95	104.63	103.02	103.02	103.18
5	102.53	101.80	102.00	103.35	103.05	102.85	104.86	104.99	104.59	103.02	103.05	103.22
6	102.46	101.80	102.17	103.35	103.02	103.02	104.82	104.99	104.27	103.02	103.05	103.18
7	102.43	101.77	102.53	103.38	103.02	103.41	104.82	105.02	104.17	103.02	103.05	103.22
8	102.40	101.87	102.56	103.48	103.05	103.44	104.86	105.02	104.04	103.05	103.08	103.18
9	102.33	101.90	102.13	103.58	103.02	103.51	104.86	105.02	104.00	103.05	103.05	103.31
10	102.17	101.87	102.07	103.87	102.99	103.61	104.79	104.99	103.87	103.02	103.05	103.35
11	102.20	101.90	101.97	103.90	102.99	103.61	104.76	105.05	103.61	103.02	103.02	103.28
12	102.23	102.23	101.67	103.77	102.95	103.74	104.86	104.46	103.41	103.05	103.02	103.22
13	102.17	102.66	101.94	103.87	102.99	103.84	104.86	104.20	103.28	103.05	103.02	103.15
14	102.23	102.89	101.90	103.84	102.85	103.87	104.89	104.20	103.22	103.05	103.05	103.22
15	102.20	102.76	101.90	103.67	102.69	104.04	104.95	104.13	103.18	103.05	103.02	103.18
16	102.10	102.30	101.71	103.51	102.76	104.33	105.09	104.17	103.18	103.02	103.02	103.18
17	101.87	101.90	101.61	103.64	102.69	104.53	105.18	104.20	103.18	103.02	103.05	103.28
18	101.94	102.85	101.57	103.94	102.40	104.53	105.18	104.07	103.12	103.02	103.05	103.35
19	101.94	102.82	101.84	103.94	102.40	104.59	105.22	103.84	103.05	103.02	103.08	103.31
20	102.03	102.56	103.21	103.90	102.40	104.76	104.66	103.67	103.02	103.02	103.18	103.35
21	102.00	102.46	103.58	103.71	102.36	104.86	104.36	103.51	103.05	103.02	103.18	103.35
22	102.00	102.26	103.67	103.58	102.36	104.99	104.49	103.51	103.02	103.02	103.18	103.38
23	102.03	102.46	103.71	103.74	102.23	104.95	104.43	103.48	103.05	103.05	103.18	103.44
24	102.07	102.69	103.67	103.87	102.00	104.89	104.49	103.54	102.99	103.02	103.22	103.51
25	101.90	102.76	103.67	104.10	102.03	104.86	104.49	103.87	103.02	103.02	103.18	103.54
26	101.84	102.69	103.61	102.92	102.03	104.82	104.49	104.07	103.05	103.02	103.22	103.58
27	101.80	102.33	103.28	103.58	102.03	104.76	104.49	104.36	103.02	103.05	103.18	103.51
28	101.80	102.17	103.12	104.17	102.03	104.69	104.46	104.43	103.02	103.05	103.22	103.51
29	101.80		103.05	103.18	102.03	104.69	104.49	104.56	103.02	103.02	103.18	103.51
30	101.84		103.08	102.40	102.03	104.66	104.49	104.49	103.02	103.02	103.18	103.51
31	101.80		103.12		102.10		104.49	104.56		103.02		103.51
Avg.	102.13	102.26	102.53	103.61	102.59	104.00	104.76	104.36	103.54	103.02	103.08	103.31

COLORADO RIVER IMMEDIATELY BELOW MORELOS DAM - STAGES

DESCRIPTION: Water-stage recorder located on the right bank of the Colorado River in Mexico immediately downstream from Morelos Dam, 1.1 miles (1.8 km) downstream from the northerly international boundary, and about 7.5 miles (12.1 km) downstream from the Colorado River below Yuma Main Canal Wasteway. Since April 17, 1969, zero of the gage is at mean sea level, U. S. C. & G. S. datum; prior to that date, zero of the gage was 0.16 foot (0.05 m) below mean sea level.

RECORDS: Records obtained and furnished by the Mexican Section of the Commission. Records available: Staff gage heights, February 20, 1951 to June 6, 1966; continuous record of gage heights June 7, 1966 through 1979.

REMARKS: On June 7, 1966 a continuous water-stage recorder was installed; prior to this date, mean daily gage heights were determined from hourly readings of staff gage.

EXTREMES: Maximum mean daily gage height, 113.42 feet (34.57 m) on August 18, 1977; minimum mean gage height, 98.13 feet (29.91 m) several days during March and April 1967.

Mean Daily Gage Height in Feet 1979

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	98.79	102.85	98.69	98.65	98.23	107.41	103.02	104.99	104.33	106.56	106.07	105.51
2	98.75	102.89	98.69	98.65	102.79	107.09	103.44	104.30	104.53	106.46	105.77	105.25
3	98.75	103.12	98.62	98.65	103.05	106.79	103.51	104.04	104.46	106.33	105.68	105.28
4	98.75	103.74	98.62	98.62	103.64	106.53	103.81	104.04	104.59	106.53	105.64	105.15
5	98.75	103.74	98.72	98.62	104.99	106.40	104.23	103.97	105.02	106.43	105.22	104.92
6	98.72	103.44	98.69	98.59	105.48	106.17	104.53	104.56	105.51	106.36	105.38	105.09
7	98.69	103.15	98.65	98.59	105.61	105.97	104.43	104.33	105.31	106.23	105.54	105.05
8	98.72	102.00	98.65	98.56	105.64	105.64	104.53	104.07	105.45	106.27	106.04	104.92
9	98.72	102.17	98.62	98.62	106.63	105.48	105.12	103.84	105.38	106.53	105.97	104.66
10	98.75	102.46	98.59	98.62	107.12	105.31	105.28	101.80	105.51	106.50	105.48	104.72
11	98.75	102.07	98.56	98.62	107.19	105.02	104.82	103.97	105.97	106.36	105.58	105.38
12	98.75	100.23	98.62	98.62	107.28	104.72	104.63	107.22	106.23	106.20	105.48	105.68
13	98.75	98.92	98.52	98.52	107.78	104.72	104.86	110.01	106.43	106.36	105.25	104.89
14	98.75	98.88	98.52	98.49	107.81	103.77	104.66	110.24	106.46	106.33	105.25	105.09
15	98.75	98.82	98.56	98.49	107.78	101.15	104.72	109.48	105.87	106.79	105.25	104.89
16	98.75	98.75	98.56	98.49	107.84	100.62	103.71	107.58	105.77	108.40	105.15	104.43
17	98.79	98.75	98.56	98.49	107.81	102.82	103.08	108.79	106.27	107.64	105.18	104.99
18	99.15	98.75	98.56	98.49	107.68	104.00	102.92	109.71	106.82	107.02	105.31	105.38
19	102.69	98.79	98.56	98.39	107.58	103.35	103.08	109.48	107.19	106.17	105.41	104.82
20	101.77	98.72	102.62	98.36	107.51	102.43	105.51	108.33	107.45	105.94	105.77	104.43
21	103.18	98.72	106.69	98.29	107.81	101.87	108.79	107.78	107.25	106.23	105.97	104.56
22	103.87	98.69	103.97	98.29	107.97	100.66	109.06	107.55	107.15	106.73	106.17	105.09
23	101.71	98.65	104.76	98.29	107.84	100.95	107.71	107.05	107.25	106.82	105.81	103.94
24	101.18	98.65	105.31	98.29	107.97	101.74	105.64	105.94	107.25	107.12	106.07	103.67
25	102.40	98.65	104.82	98.29	108.30	102.46	105.81	105.28	107.22	106.30	106.14	103.71
26	103.97	98.65	101.35	98.23	108.40	101.51	105.97	105.18	107.12	105.87	106.50	106.07
27	103.94	98.65	98.85	98.23	108.30	101.84	106.04	104.72	107.05	105.71	106.10	106.04
28	104.36	98.65	98.75	98.23	108.14	102.10	105.58	104.40	107.05	105.51	106.10	105.25
29	104.72		98.72	98.20	107.81	102.43	105.31	104.56	107.09	105.84	106.07	104.46
30	103.28		98.69	98.20	107.78	102.53	105.35	104.95	107.05	106.17	106.00	104.20
31	102.92		98.65		107.64		105.38	104.46		106.27		104.59
Avg.	100.59	100.43	99.90	98.46	106.69	103.77	104.99	106.00	106.20	106.46	105.71	104.92

**WELLTON-MOHAWK DRAINAGE WATER DISCHARGED TO COLORADO RIVER
BELOW MORELOS DAM**

DESCRIPTION: Water-stage recorder located on downstream end of the Wellton-Mohawk Drainage Extension Channel on the Arizona bank of the Colorado River at the east end of the weir section of Morelos Dam, 1.1 miles (1.8 km) downstream from the northerly international boundary. The elevation of the zero of the gage has not been determined.

RECORDS: Based on discharge measurements and a continuous record of gage heights. Station is operated by the United States Section of the Commission. Records available: November 16, 1965 through 1979.

REMARKS: Pursuant to Minute 218 of the Commission, an extension to the Wellton-Mohawk Drainage Conveyance Channel was constructed along the left bank of the Colorado River to a point immediately below Morelos Dam, a distance of about 12 miles (19.3 km), and placed in operation on November 16, 1965. Drainage flows may be discharged on an emergency basis to the Gila River and thence to the Colorado River at the diversion structure, Main Outlet Drain Extension No. 1, at the upstream end of the extension; directly to the Colorado River at Main Outlet Drain Extension No. 2, 1.9 miles (3.1 km) upstream from Morelos Dam; and directly to the Colorado River immediately below Morelos Dam at this station, Main Outlet Drain Extension No. 3. On July 14, 1972, Minute No. 241 of the Commission became effective. The Minute called for discharge of all Wellton-Mohawk drainage waters to be made below Morelos Dam. On August 30, 1973, Minute No. 242 of the Commission became effective. The Minute called for construction of a concrete-lined bypass drain from Morelos Dam to the Santa Clara Slough in Mexico. On June 23, 1977, the first flow was recorded in the bypass drain. Drainage flows through Main Outlet Extension No. 3 will be only on an emergency basis.

Mean Daily Discharge in Second-Feet 1979 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0.2	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0.3	0	0	0	0	0	0	0
14	0	0	0	0	0.8	0	0	0	0	0	0	0
15	0	0	0	0	0.4	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0
31	0	0	0	0	0	0	0	0	0	0	0	0
Sum	0	0	0	0	1.5	0.2	0	0	0	0	0	0

Month	Extreme Gage Feet		Current Year 1979				Average Second-Feet	Total Acre-Feet	Period 1966-1979		
	High	Low	Extreme Second-Feet		Total	Acre-Feet					
			Day	High		Day	Low	Average	Maximum	Minimum	
Jan.				0		0	0	13,865	18,718	0	
Feb.				0		0	0	10,791	16,992	0	
Mar.				0		0	0	7,533	18,506	0	
Apr.				0		0	0	6,272	18,061	0	
May	0.06	0	14	1.2	1 1	0	3.0	10,272	19,091	0	
June	.04	0	4	.8	1 1	0	.4	7,974	18,756	0	
July				0		0	0	7,305	18,946	0	
Aug.				0		0	0	7,548	19,188	0	
Sept.				0		0	0	10,544	18,474	0	
Oct.				0		0	0	14,530	19,200	0	
Nov.				0		0	0	14,161	18,478	0	
Dec.				0		0	0	12,863	19,121	0	
Yearly	0.06	0		1.2		0	0	3.4	123,658	214,781	3.4
	Meters		Cubic Meters per Second				Thousands of Cubic Meters				
	0.02	0		0.03		0	0	4.19	152,531	264,930	4.19

1 And other days

COLORADO RIVER AT MORELOS GAGING STATION - DISCHARGES

DESCRIPTION: Water-stage recorder on the left (Arizona) bank of the river, and cableway 1.8 miles (2.9 km) downstream from the northerly international boundary, 0.7 mile (1.1 km) downstream from Morelos Diversion Dam, and about 9 miles (14.5 km) downstream from Yuma, Arizona, along the river levee. Zero of gage is at mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on current meter measurements and a continuous record of gage heights. Computations by shifting control methods. Records available: Daily discharges, January 1, 1954 though 1979; continuous record of gage heights, July 20, 1952 through 1979.

REMARKS: Reservoirs, diversions in the United States and Mexico, drainage returns, and waste flows modify the river flow at this station. The record at this station, less Main Outlet Drain Extension No. 3, represents the river flow passing Morelos Diversion Dam.

EXTREMES: Maximum instantaneous discharge, 22,240 second-feet (630 m³/sec) on January 4, 1955; maximum gage height, 112.85 feet (34.40 m) on August 18, 1977. Minimum discharge, no flow on various occasions.

Mean Daily Discharge in Second-Feet 1979 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	10.9	497	10.0	13.4	9.7	2,740	703	1,430	1,160	2,580	2,350	1,990
2	10.4	503	11.2	12.8	671	2,530	815	1,130	1,230	2,480	2,120	1,850
3	10.5	566	8.9	11.2	586	2,330	835	1,030	1,190	2,410	2,060	1,870
4	10.5	739	8.6	10.9	720	2,180	908	1,040	1,260	2,570	2,020	1,820
5	10.0	752	10.7	10.9	1,130	2,090	1,050	1,000	1,460	2,490	1,790	1,690
6	9.4	655	10.8	11.2	1,320	1,940	1,150	1,270	1,820	2,430	1,930	1,780
7	9.2	577	10.9	10.9	1,370	1,840	1,130	1,190	1,700	2,350	2,030	1,760
8	9.2	352	11.3	10.9	1,410	1,650	1,160	1,080	1,790	2,370	2,380	1,700
9	9.2	365	11.4	14.0	1,930	1,560	1,420	999	1,750	2,580	2,320	1,580
10	9.2	421	8.9	15.3	2,300	1,490	1,490	233	1,830	2,550	1,980	1,610
11	9.9	302	8.0	15.8	2,300	1,360	1,330	1,010	2,140	2,430	2,060	1,990
12	9.3	144	9.7	15.2	2,360	1,260	1,240	3,130	2,300	2,320	1,980	2,160
13	8.6	17.4	7.7	11.5	2,860	1,240	1,320	5,840	2,410	2,430	1,830	1,680
14	8.3	15.6	7.7	10.9	2,870	960	1,230	6,300	2,480	2,410	1,830	1,800
15	8.6	15.0	7.5	10.9	2,850	347	1,280	5,440	2,070	2,750	1,830	1,670
16	8.6	14.1	7.5	13.1	2,930	224	927	3,360	1,980	4,350	1,790	1,460
17	8.8	13.1	7.5	13.5	2,880	644	708	4,570	2,350	3,600	1,800	1,760
18	23.0	12.8	7.2	14.0	2,740	978	672	5,620	2,780	3,120	1,870	1,960
19	468	13.1	7.5	14.7	2,630	792	691	5,300	3,040	2,410	1,920	1,670
20	311	11.9	782	15.0	2,560	533	1,800	4,140	3,260	2,250	2,150	1,480
21	579	11.8	2,130	11.9	2,890	388	4,320	3,610	3,100	2,480	2,290	1,530
22	740	11.6	776	10.9	3,100	196	4,550	3,420	3,020	2,820	2,420	1,840
23	349	11.0	1,050	13.8	2,940	206	3,350	2,950	3,100	2,960	2,170	1,240
24	204	10.0	1,200	13.7	3,120	380	1,680	2,070	3,100	3,190	2,360	1,110
25	399	10.0	1,060	15.0	3,600	568	1,840	1,660	3,120	2,530	2,410	1,120
26	768	10.0	387	11.9	3,790	319	1,960	1,630	3,050	2,200	2,710	2,740
27	765	9.4	21.7	10.9	3,650	394	2,040	1,370	3,010	2,070	2,370	2,570
28	892	9.2	16.5	10.9	3,470	465	1,740	1,220	3,000	1,930	2,370	2,010
29	1,040	15.1	10.6	3,110	535	1,600	1,280	2,990	2,990	2,160	2,350	1,510
30	615	14.4	9.7	3,090	564	1,590	1,470	2,980	2,410	2,310	1,380	1,590
31	530	13.5		2,950		1,580	1,210		2,480			
Sum	7,843.6	6,069.0	7,639.2	375.4	74,066.7	32,703	48,109	77,002	70,470	80,110	63,800	53,920
Current Year 1979												
Month	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total	Period 1954-1979			
	High	Low	Day	High	Day	Low	Acres-Feet	Average	Maximum	Minimum		
Jan.	104.48	97.52	29	1,130	116	8.0	253	15,558	126,606	969,540	949	
Feb.	103.09	97.40	4	790	28	8.9	217	12,038	64,930	414,310	977	
Mar.	107.04	97.31	21	2,670	18	7.0	246	15,152	63,472	630,230	659	
Apr.	98.49	97.27	25	57.8	30	9.7	12.5	745	33,755	532,320	745	
May	108.23	97.26	26	4,080	1	9.4	2,390	146,909	45,700	375,970	460	
June	107.15	98.48	1	2,850	22	47.0	1,090	64,865	14,719	119,980	507	
July	108.90	101.16	121	4,680	3	425	1,550	95,423	15,424	95,423	584	
Aug.	109.96	98.90	15	6,540	10	15.0	2,480	152,731	26,015	152,731	618	
Sept.	107.19	103.44	20	3,320	1	990	2,350	139,775	23,297	139,775	113	
Oct.	108.38	105.11	16	4,710	28	1,910	2,580	158,896	44,420	172,940	383	
Nov.	106.31	104.65	26	2,890	17	1,740	2,130	126,545	68,901	356,390	355	
Dec.	106.85	103.22	26	3,660	24	1,110	1,740	106,949	90,914	643,850	1,111	
Yearly	109.96	97.26		6,540		7.0	1,430	1,035,586	598,153	3,957,730	92,518	
	Meters		Cubic Meters per Second				Thousands of Cubic Meters					
	33.52	29.64		185		0.20	40.5	1,277,385	737,816	4,881,820	114,120	

* Partly estimated

! And other days

COLORADO RIVER AT MORELOS GAGING STATION - STAGES

(See Preceding Page For Description)

Mean Daily Gage Height in Feet 1979

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	97.62	101.68	97.44	97.54	97.27	107.01	102.47	104.68	103.94	106.20	105.66	105.06
2	97.60	101.71	97.47	97.52	102.25	106.72	102.95	103.90	104.14	106.08	105.38	104.79
3	97.61	102.03	97.40	97.47	102.17	106.42	103.00	103.58	104.05	105.98	105.30	104.83
4	97.60	102.86	97.39	97.45	102.80	106.18	103.31	103.59	104.17	106.18	105.24	104.72
5	97.59	102.92	97.46	97.44	104.42	106.04	103.82	103.46	104.63	106.09	104.83	104.46
6	97.57	102.47	97.46	97.44	105.01	105.80	104.15	104.21	105.19	106.02	105.02	104.64
7	97.56	102.12	97.46	97.42	105.14	105.64	104.07	103.96	105.00	105.92	105.18	104.58
8	97.56	100.91	97.47	97.41	105.26	105.31	104.15	103.68	105.16	105.93	105.69	104.47
9	97.56	100.80	97.48	97.48	106.29	105.13	104.81	103.40	105.08	106.20	105.60	104.24
10	97.56	101.28	97.40	97.50	106.74	104.99	104.99	100.12	105.21	106.16	105.10	104.27
11	97.59	100.69	97.37	97.51	106.83	104.68	104.63	103.42	105.66	106.02	105.21	104.98
12	97.56	99.23	97.42	97.49	106.90	104.42	104.38	106.84	105.89	105.87	105.08	105.26
13	97.54	97.80	97.35	97.38	107.40	104.39	104.60	109.60	106.04	106.01	104.83	104.43
14	97.53	97.70	97.35	97.36	107.41	103.36	104.36	109.84	106.12	105.99	104.84	104.65
15	97.54	97.64	97.34	97.35	107.39	100.58	104.50	109.14	105.56	106.39	104.83	104.42
16	97.54	97.58	97.34	97.41	107.46	99.81	103.26	107.22	105.43	108.03	104.75	103.97
17	97.55	97.55	97.33	97.42	107.42	102.19	102.53	108.47	105.95	107.24	104.77	104.56
18	97.70	97.54	97.32	97.44	107.29	103.56	* 102.37	109.39	106.50	106.67	104.91	104.93
19	101.35	97.55	97.33	97.45	107.19	102.82	* 102.44	109.10	106.83	105.78	104.99	104.41
20	100.53	97.51	101.56	97.45	107.12	101.70	105.11	108.04	107.10	105.57	105.36	104.02
21	102.05	97.51	106.23	97.36	107.42	100.97	108.54	107.49	106.91	105.87	105.56	104.11
22	103.02	97.49	103.28	97.33	107.59	99.75	108.77	107.28	106.81	106.33	105.75	104.61
23	100.64	97.47	104.18	97.40	107.44	100.02	107.44	106.75	106.92	106.43	105.39	103.51
24	99.66	97.44	104.52	97.40	107.55	100.91	105.31	105.64	106.91	106.72	105.66	103.23
25	100.96	97.44	104.36	97.43	107.86	101.85	105.57	104.99	106.87	105.91	105.73	103.25
26	103.16	97.44	100.83	97.34	107.99	100.61	105.74	104.92	106.79	105.49	106.09	105.67
27	103.15	97.42	97.80	97.31	107.87	101.00	105.79	104.43	106.74	105.33	105.67	105.58
28	103.68	97.41	97.64	97.31	107.72	101.34	105.33	104.10	106.73	105.14	105.67	104.86
29	104.19		97.60	97.30	107.40	101.71	105.09	104.23	106.72	105.44	105.65	104.07
30	102.28		97.57	97.27	107.38	101.85	105.06	104.64	106.70	105.75	105.58	103.82
31	101.74		97.54		107.24		105.04	104.09		105.84		104.19
Avg.	99.44	99.26	98.83	97.41	106.23	103.23	104.63	105.62	105.86	106.08	105.31	104.47

* Partly estimated

ELEVEN MILE WASTEWAY (VALLEY DIVISION, YUMA PROJECT)

DESCRIPTION: Water-stage recorder and control weir on wasteway for discharging water from the West Main Canal to the Colorado River. This wasteway is located in Arizona, 4.3 miles (6.9 km) downstream from the northerly international boundary and 3.2 miles (5.1 km) downstream from Morelos Diversion Dam. It is the largest of three wasteways discharging waste water from the Valley Division of the Yuma Project in the United States into the limnithropic section of the Colorado River.

RECORDS: Flow is computed from head on the weir measured by the water-stage recorder and weir rating determined by current meter measurements. Station operated by the United States Section of the Commission. Records available: Daily discharge, January 1951 through 1979, obtained by the United States Section; monthly discharge, January 1924 through 1950, by Bureau of Reclamation.

EXTREMES: Prior to January 1951, maximum monthly discharge, 9,740 acre-feet (12,014,000 m³) in August 1940; minimum monthly discharge, zero in April 1941. Since January 1, 1951, maximum instantaneous discharge, 800 second-feet (22.7 m³/sec) on December 3, 1961, at a maximum gage height of 117.60 feet (35.84 m); minimum instantaneous discharge, zero during parts of most years.

Mean Daily Discharge in Second-Feet 1979 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.2	0.2	0.2	53.3	0.3	0.1	0.3	0.1	0.3	0.2	0.4	0.2
2	.2	.1	.1	36.5	.2	.1	.3	.1	.3	.3	.4	42.5
3	.3	42.6	.2	4.5	.2	47.5	.2	.1	.3	.3	.5	32.0
4	.1	29.7	48.5	3.3	.1	33.8	.1	.1	.3	.4	41.4	4.2
5	.1	3.5	33.4	.1	.1	.9	.2	.2	.3	.4	52.7	3.1
6	0	3.2	2.3	.2	.1	.2	.2	.2	.3	.4	4.9	.3
7	0	2.1	.6	.1	.1	.2	.2	.2	.3	.4	2.9	.3
8	0	.1	0	.1	.1	.2	.2	.2	.3	.3	.8	.3
9	0	.1	0	.2	.1	.2	.2	.2	.4	.4	.4	.3
10	0	.2	0	.1	.1	.2	.2	.3	.4	.3	.3	.6
11	.2	.2	0	.1	.2	.1	.3	.3	.6	.2	.5	.2
12	0	.3	0	.1	.3	.1	.3	49.1	.4	.4	.3	.2
13	0	.3	0	.1	.1	0	.3	30.4	.4	.2	.2	.2
14	0	.2	0	.1	.3	.1	.3	.7	.4	.4	.3	.3
15	0	.1	0	.1	.2	.1	.3	.1	.5	.2	.4	.3
16	.6	.1	.1	.1	.2	.2	.2	.2	.4	.4	.2	.4
17	.1	.1	.1	.1	.2	.1	.3	.2	.4	.4	.2	.3
18	.1	.2	.1	.1	.2	.5	.3	.2	.4	.4	.4	.2
19	.1	.2	.1	.2	.2	.2	.4	.3	.8	.4	.3	.2
20	.1	.2	.1	.3	.2	.2	.4	.2	.5	.4	.4	.2
21	.1	.3	.1	.2	.1	.2	.4	.3	.5	.4	.2	.3
22	.1	.3	.1	.3	.1	.2	.4	.3	.6	.4	.3	.2
23	.2	.3	.3	.2	.2	.3	.4	.4	.6	.3	.4	.2
24	.2	.2	.2	.2	.2	.2	.2	.3	.6	.3	.2	.2
25	.2	.3	.2	.3	.2	.2	.1	.3	.3	.3	.2	.2
26	.2	.3	.1	.2	.2	.2	.2	.3	.2	.4	.3	.2
27	.2	.2	.2	.2	.2	.2	.3	.2	.2	.4	.2	.3
28	.2	.2	.1	.2	.1	.2	.1	.2	.2	.4	.3	.3
29	.3	.1	.1	.2	.1	.2	.1	.2	.2	.4	.2	.4
30	.2	.1	.1	.2	.1	.2	.1	.2	.2	.3	.2	.4
31	.3	.1	.1	.1	.1	.1	.1	.2	.4	.4	.6	.6
Sum	4.3	85.8	87.4	101.9	5.1	87.1	7.6	86.3	11.6	10.8	110.4	89.6

Month	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	High	Day	Low	Average			Maximum	Minimum	
	Day	Day	Day	Day	Day	Day	Day	Day	Day		
Jan.	112.21	111.72	16	10.7	15	0	0.1	8.5	2,977	9,570	0
Feb.	114.87	111.74	3	184	18	.1	3.1	170	2,413	8,430	14.5
Mar.	115.41	111.72	4	231	17	0	2.8	173	2,276	6,230	59.1
Apr.	116.08	111.73	1	322	16	.1	3.4	202	2,101	6,300	0
May	111.79	111.73	1	.5	17	.1	.2	10.1	2,497	9,320	8.3
June	115.73	111.72	3	270	16	0	2.9	173	2,385	7,440	71.2
July	111.80	111.74	27	.6	13	.1	.2	15.1	2,395	8,320	12.7
Aug.	116.31	111.73	12	362	114	.1	2.8	171	2,064	9,740	98.4
Sept.	111.83	111.75	19	1.0	11	.2	.4	23.0	1,495	6,140	6.0
Oct.	111.82	111.75	14	.9	11	.2	.3	21.4	2,038	5,680	11.9
Nov.	114.90	111.74	4	186	19	.1	3.7	219	2,443	8,220	18.8
Dec.	115.08	111.75	2	199	11	.2	2.9	178	3,228	9,430	61.9
Yearly	116.31	111.72		362		0	1.9	1,364	28,312	82,900	943
	Meters		Cubic Meters per Second				Thousands of Cubic Meters				
	35.45	34.05		10.3		0	0.05	1,682	34,923	102,250	1,163

1 And other days

COLORADO RIVER AT ELEVEN MILE GAGE - STAGES

DESCRIPTION: Water-stage recorder on the left (Arizona) bank of the river, 4.3 miles (6.9 km) downstream from northerly international boundary, 3.2 miles (5.1 km) downstream from Morelos Diversion Dam, about 50 feet (15 m) downstream from the mouth of Eleven Mile Wasteway of the Yuma Project, and 11 miles (17.7 km) downstream from Yuma, Arizona, along the river levee. The zero of the gage is at mean sea level, U. S. C. & G. S. datum.

RECORDS: Mean daily gage heights based on continuous water-stage records. Records available: Continuous record of gage heights, November 1947 through 1979; once weekly readings obtained by the U. S. Bureau of Reclamation, January 1940 through October 1947.

REMARKS: This station is maintained by the United States Section of the Commission as part of the continuing study of channel conditions in the limitrophe section of the river.

EXTREMES: Since November 1947, maximum mean daily gage height, 108.20 feet (32.98 m) on January 2, 1958; minimum mean daily gage height, 94.95 feet (28.94 m) on June 22, 1968.

Mean Daily Gage Height in Feet 1979

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	95.67	98.55	95.54	95.98	95.49	103.27	99.18	101.22	100.54	102.67	102.41	101.90
2	95.65	98.53	95.55	95.02	98.74	102.91	99.52	100.50	100.77	102.64	102.14	101.68
3	95.64	98.79	95.52	95.71	98.89	102.69	99.78	100.20	100.70	102.57	102.07	101.70
4	95.64	99.47	95.85	95.65	99.28	102.46	99.89	100.15	100.68	102.73	102.08	101.65
5	95.64	99.43	95.95	95.60	100.49	102.31	100.28	100.08	101.19	102.68	101.71	101.28
6	95.63	99.12	95.63	95.59	101.11	102.11	100.62	100.71	101.79	102.61	101.80	101.44
7	95.62	98.89	95.60	95.58	101.29	101.94	100.56	100.62	101.61	102.54	101.93	101.39
8	95.62	98.06	95.57	95.57	101.37	101.65	100.62	100.27	101.75	102.52	102.37	101.28
9	95.62	97.73	95.57	95.60	102.21	101.49	101.14	100.03	101.71	102.77	102.32	101.09
10	95.61	98.27	95.53	95.60	102.73	101.34	101.37	97.50	101.82	102.74	101.89	101.03
11	95.63	97.76	95.52	95.61	102.84	101.05	101.07	99.87	102.19	102.64	101.93	101.72
12	95.62	96.93	95.54	95.60	102.91	100.87	100.83	102.76	102.42	102.50	101.89	102.05
13	95.61	95.78	95.50	95.55	103.37	100.83	101.02	105.64	102.54	102.63	101.62	101.33
14	95.60	95.72	95.49	95.54	103.45	100.17	100.86	105.86	102.64	102.62	101.63	101.14
15	95.60	95.69	95.48	95.54	103.40	98.05	100.94	105.44	102.18	102.82	101.62	101.20
16	95.63	95.65	95.48	95.56	103.49	97.20	100.10	103.54	101.97	104.33	101.54	100.80
17	95.61	95.63	95.48	95.58	103.45	98.90	99.25	104.60	102.44	103.67	101.53	100.95
18	95.61	95.63	95.47	95.58	103.35	100.08	99.13	105.42	102.90	103.27	101.70	101.50
19	98.02	95.63	95.47	95.58	103.26	99.61	99.12	105.35	103.19	102.50	101.76	101.27
20	97.78	95.61	97.99	95.58	103.19	98.69	101.19	104.33	103.44	102.34	102.06	100.87
21	98.56	95.60	102.40	95.53	103.44	98.10	104.55	103.82	103.30	102.47	102.26	100.95
22	99.44	95.59	100.02	95.51	103.63	97.25	104.82	103.58	103.20	102.91	102.44	101.44
23	98.06	95.58	100.29	95.55	103.49	97.34	103.90	103.22	103.30	102.99	102.13	100.43
24	96.99	95.56	101.08	95.56	103.61	97.95	101.78	102.16	103.29	103.26	102.34	100.07
25	97.86	95.56	100.63	95.58	103.88	98.82	101.98	101.57	103.28	102.63	102.42	100.09
26	99.51	95.56	98.35	95.52	104.05	97.84	102.12	101.48	103.19	102.23	102.75	102.11
27	99.57	95.55	95.94	95.50	103.96	98.07	102.19	101.02	103.18	102.10	102.42	102.54
28	99.93	95.54	95.78	95.50	103.81	98.37	101.82	100.69	103.15	101.91	102.43	101.83
29	100.47		95.72	95.50	103.51	98.62	101.54	100.78	103.18	102.13	102.41	101.06
30	99.10		95.69	95.49	103.50	98.76	101.53	101.22	102.91	102.45	102.36	100.72
31	98.58		95.66		103.39		101.51	101.71		102.53		101.07
Avg.	96.94	96.84	96.62	95.60	102.41	99.96	101.10	102.08	102.35	102.69	102.07	101.28

TWENTY-ONE MILE WASTEWAY (VALLEY DIVISION, YUMA PROJECT)

DESCRIPTION: Water-stage recorder and control weir on wasteway for discharging water from the West Main Canal to the Colorado River. On September 27, 1977 recorder moved upstream to site used prior to May 1, 1971. The site used from May 1, 1971 to September 20, 1977 was located 200 feet (61 m) downstream on wasteway. This wasteway is located in Arizona, 18.5 miles (29.8 km) downstream from the northerly international boundary, 17.4 miles (28.0 km) downstream from Morelos Diversion Dam, and 2.2 miles (3.5 km) upstream from the southerly international boundary. It is the farthest downstream of the two wasteways discharging waste water from the Valley Division of the Yuma Project in the United States into the limitrophe section of the Colorado River. The elevation of the zero of the gage at the new location has not been determined.

RECORDS: Flow is computed from head on the weir measured by the water-stage recorder and weir rating determined by current meter measurements. Station operated by the United States Section of the Commission. Records available: Daily discharge, January 1951 through 1979, obtained by the United States Section; monthly discharge, March 1939 through 1950, by Bureau of Reclamation.

REMARKS: This wasteway was completed and flow began March 14, 1939. Since May 13, 1944, waste water from the West Main Canal which previously discharged across the southerly land boundary has been returned to the Colorado River through this wasteway. The West Main Canal Wasteway was completed in February of 1971, and the waste water from the West Main Canal is normally discharged across the southerly land boundary.

EXTREMES: Prior to January 1951, maximum monthly discharge 2,860 acre-feet (3,528,000 m³) in January 1946; minimum monthly discharge, 122 acre-feet (150,000 m³) in September 1950. Since January 1, 1951, maximum instantaneous discharge, 102 second-feet (2.89 m³/sec) on January 24, 1954, at a maximum gage height of 95.46 feet (29.10 m) (old datum); minimum instantaneous discharge, zero during a part of most months.

Mean Daily Discharge in Second-Feet 1979 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0
31	0	0	0	0	0	0	0	0	0	0	0	0
Sum	0	0	0	0	0	0	0	0	0	0	0	0
Current Year 1979								Period 1939-1979				
Month	Extreme Gage Feet		Extreme Second-Foot			Average Second-Foot	Total Acre-Feet	Acre-Feet				
	High	Low	High	Day	Low			Average	Maximum	Minimum		
Jan.	0	0	0	0	0	0	0	735	2,860	0		
Feb.	0	0	0	0	0	0	0	634	2,510	0		
Mar.	0	0	0	0	0	0	0	583	1,660	0		
Apr.	0	0	0	0	0	0	0	628	1,940	0		
May	0	0	0	0	0	0	0	764	2,470	0		
June	0	0	0	0	0	0	0	667	2,350	0		
July	0	0	0	0	0	0	0	576	1,950	0		
Aug.	0	0	0	0	0	0	0	604	2,530	0		
Sept.	0	0	0	0	0	0	0	543	2,180	0		
Oct.	0	0	0	0	0	0	0	658	2,100	0		
Nov.	0	0	0	0	0	0	0	760	2,380	0		
Dec.	0	0	0	0	0	0	0	838	2,680	0		
Yearly	0	0	0	0	0	0	0	7,990	24,370	0		
	Meters		Cubic Meters per Second			Thousands of Cubic Meters						
	0	0	0	0	0	0	0	9,856	30,060	0		

EAST MAIN CANAL WASTEWAY (VALLEY DIVISION, YUMA PROJECT)

DESCRIPTION: Water-stage recorder and control weir located about 300 feet (91.4 m) north of the international boundary near San Luis, Arizona and 1.5 miles (2.4 km) east of the Colorado River. From September 28, 1977 to April 6, 1978, recorder moved west 100 feet (30.5 m) to a temporary bypass channel. On April 7, 1978 recorder was moved back to original site.

RECORDS: Wasteway discharges computed by United States Section of the Commission beginning November 1, 1953, from head on control weir as measured by water-stage recorder and weir ratings as determined by current meter measurements. Records available: October 1946 through 1979. Records of monthly discharges also are available for the periods January 1924 through June 1928, January 1932 through 1933, and April 1935 through September 1946.

REMARKS: Wasteway discharges from the East Main Canal comprise regulatory waste and drainage waters from the eastern half of the Valley Division of the Yuma Project and are considered as part of the volumes arriving at the limitrophe section of the Colorado River.

Mean Daily Discharge in Second-Foot 1979 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.7	1.9	6.9	3.2	10.5	1.0	0.6	3.7	17.7	18.8	3.1	0.2
2	4.1	.7	7.9	.8	7.0	5.4	1.4	2.5	18.9	21.1	4.9	2.0
3	5.2	.9	.8	2.8	5.6	2.7	3.5	.3	10.2	9.9	10.7	.3
4	5.9	6.7	.2	4.0	3.9	1.6	4.3	4.0	6.1	6.9	7.9	.1
5	21.2	9.2	4.2	4.4	1.0	7.1	4.1	.8	1.9	3.2	11.7	2.2
6	7.4	.7	2.1	6.9	2.1	4.3	2.1	13.5	1.1	2.9	2.0	9.0
7	9.1	2.8	.7	1.9	2.8	11.7	.4	7.7	5.8	3.3	.7	2.9
8	3.8	6.4	8.2	9.3	8.0	6.5	2.6	3.4	4.8	2.0	.3	1.8
9	2.4	3.8	14.1	1.0	4.2	5.5	2.0	13.6	.5	4.3	.1	9.5
10	1.0	.4	7.5	1.0	3.6	.4	7.3	6.6	.1	2.6	0	7.3
11	4.3	1.8	1.9	3.0	19.6	2.5	1.6	6.3	4.0	6.6	0	1.0
12	7.5	.4	2.9	3.7	8.0	.3	3.9	7.3	8.3	2.4	6.5	7.7
13	2.1	1.7	5.3	5.3	1.9	.1	8.8	9.9	6.4	6.6	9.4	5.9
14	1.4	1.0	3.1	2.3	1.6	1.8	6.1	.5	4.4	6.1	3.3	6.7
15	3.4	.9	5.8	2.5	4.2	.5	.6	4.3	5.4	8.6	6.6	6.6
16	8.3	5.2	12.6	2.1	2.0	3.4	.1	7.0	10.1	4.9	11.5	27.1
17	17.8	2.1	5.5	.3	.1	14.5	.4	6.7	25.8	6.8	1.3	15.0
18	7.9	9.2	3.9	0	.2	15.8	.2	1.2	6.6	1.9	.7	1.4
19	2.6	9.0	12.0	1.7	.2	7.1	2.5	2.2	2.7	1.2	.6	1.0
20	1.4	3.7	1.0	3.9	2.4	16.2	7.1	.8	10.3	3.1	4.8	.6
21	.4	4.0	.6	2.1	17.5	1.5	5.1	.2	13.3	5.0	.4	5.1
22	.1	1.7	2.0	5.5	11.1	1.8	1.5	0	4.9	3.2	6.7	3.7
23	0	12.7	2.6	10.4	7.2	2.6	9.1	0	9.5	1.8	6.6	7.9
24	2.4	1.2	.5	.8	6.2	.9	10.1	.8	18.0	8.4	1.2	3.8
25	13.0	1.5	6.8	2.6	11.7	.4	10.3	8.9	.8	4.4	.3	.5
26	4.3	.8	4.8	10.0	10.6	3.1	6.7	1.6	.5	3.7	.1	5.6
27	1.2	4.9	5.5	8.9	6.2	6.2	8.4	13.8	2.0	2.1	5.0	1.3
28	6.1	3.6	.8	4.8	.4	6.4	6.5	5.0	2.6	3.4	13.1	2.4
29	.6		3.7	17.7	.1	1.1	2.4	12.8	6.6	13.5	1.4	.7
30	7.0		8.8	7.3	4.1	2.2	2.0	2.6	12.3	4.6	.8	.5
31	3.0		5.4		2.6		3.8	7.7		1.6		10.6
Sum	156.6	98.9	148.1	130.2	166.6	134.6	125.5	155.7	221.6	174.9	121.7	150.4
Current Year 1979								Period 1935-1979				
Month	Extreme Gage Feet		Extreme Second-Foot				Average Second-Foot	Total Acre-Feet	Acre-Feet			
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum	
Jan.			25	30.3	122	0	5.1	311	1,102	3,360	90.0	
Feb.			21	37.2	110		3.5	196	925	3,170	196	
Mar.			21	50.7	22	.3	4.8	294	1,072	2,920	190	
Apr.			26	41.6	110	0	4.3	258	1,040	3,170	197	
May			25	50.1	114	0	5.4	330	1,147	3,040	228	
June			16	42.2	110	0	4.5	267	978	3,660	175	
July			13	46.7	116	0	4.0	249	1,056	3,590	182	
Aug.			9	34.0	13	0	5.0	309	1,075	3,960	169	
Sept.			117	30.8	10	0	7.4	440	1,008	3,170	159	
Oct.			12	26.1	27	.4	5.6	347	1,049	3,280	347	
Nov.			3	26.1	19	0	4.1	241	1,139	3,570	241	
Dec.			16	33.5	14	0	4.9	298	1,111	3,080	247	
Yearly				50.7		0	4.9	3,540	12,702	38,310	3,330	
	Meters		Cubic Meters per Second				Thousands of Cubic Meters					
			1.44		0	0.14	4,367	15,668	47,255	4,108		

! And other days

YUMA MAIN DRAIN (VALLEY DIVISION, YUMA PROJECT)

DESCRIPTION: Water-stage recorders located in the forebay and afterbay, with flow meters in the four discharge pipes at the Boundary Pumping Plant on the Main Drain about 200 feet (61 m) north of the international boundary near San Luis, Arizona, 1.3 miles (2.1 km) east of the Colorado River.

RECORDS: Main Drain discharges are lifted 10 (3.05) to 12 feet (3.66 m) at the pumping plant. Prior to April 1, 1969, discharges were computed from pump ratings and the differential head measured by the two gages. Beginning April 1, 1969, discharges were computed from flow meter charts. Pump ratings and flow meter discharges are checked by current meter measurements. Records obtained and computed by the United States Section of the Commission. Records available: Monthly discharges, June 1919 through 1951; daily discharges January 1952 through 1979.

REMARKS: Flows in the Main Drain are principally drainage waters from the Valley Division of the Yuma Project. The Main Drain, the East Main Canal Wasteway, West Main Canal Wasteway, and 242 Lateral discharge into Mexico at the international land boundary near San Luis, Sonora. The water is used for irrigation in Mexico on the left (Sonora) bank of the Colorado River and is considered as part of the volumes arriving at the limitrophe section of the river.

Mean Daily Discharge in Second-Foot 1979 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	79.9	85.1	89.9	113	107	131	124	122	113	135	126	108
2	77.7	84.6	95.4	106	112	119	107	123	111	122	130	101
3	85.2	84.6	88.7	90.4	109	123	109	117	118	120	141	104
4	84.7	84.3	94.4	100	111	116	113	122	100	123	142	104
5	84.7	76.1	93.5	102	99.6	113	113	128	101	127	122	102
6	90.6	78.3	91.8	109	106	106	104	127	91.3	119	118	109
7	89.3	82.0	90.1	99.0	108	119	118	118	99.1	124	114	113
8	80.9	77.8	95.6	122	110	119	117	122	125	125	107	117
9	81.9	85.1	90.1	110	113	121	115	115	119	125	106	110
10	81.0	87.1	105	109	110	110	122	123	122	135	108	108
11	81.0	91.9	95.5	104	118	107	116	125	108	143	120	108
12	89.8	78.2	98.2	100	109	108	121	135	110	129	130	116
13	82.7	80.8	103	110	103	104	117	138	107	125	122	110
14	82.7	87.1	105	103	103	111	114	122	111	132	119	110
15	83.5	93.5	98.8	105	98.9	112	131	120	107	129	124	125
16	90.8	85.9	112	104	99.3	114	126	132	98.6	138	123	133
17	107	94.6	97.7	101	108	122	121	134	91.2	134	115	120
18	100	98.9	131	105	105	123	129	125	104	126	113	105
19	88.6	90.5	105	102	107	120	116	117	112	123	110	99.8
20	84.5	82.3	96.2	98.1	100	109	113	126	115	127	115	100
21	78.8	84.3	95.1	98.3	93.8	119	132	120	112	126	119	112
22	78.8	85.0	93.7	103	114	106	126	112	124	122	119	103
23	79.8	109	94.9	85.8	120	120	130	112	139	127	118	103
24	83.1	88.7	103	104	120	121	133	116	126	128	113	105
25	98.8	95.4	105	110	119	117	133	108	107	119	106	104
26	86.4	90.0	106	114	110	113	133	108	102	125	111	99.9
27	80.0	95.9	104	123	103	112	139	108	126	133	114	109
28	81.7	100	99.2	112	97.5	121	140	110	124	120	114	101
29	75.2	110	113	115	116	113	129	129	123	130	111	96.3
30	84.6	105	111	116	120	111	109	109	124	124	116	102
31	84.2	109	109	123	123	127	112	112	128	128	116	103
Sum	2,637.9	2,457.0	3,101.8	3,166.6	3,368.1	3,472	3,763	3,735	3,370.2	3,943	3,546	3,341.0
Current Year 1979									Period 1935-1979			
Month	Extreme Gage Feet		Extreme Second-Foot				Average Second-Foot	Total Acre-Feet	Acre-Feet			
	High	Low	Day	High	Low	Day			Average	Maximum	Minimum	
Jan.			17	107	29	75.2	85.1	5,232	7,692	11,203	1,740	
Feb.			23	109	5	76.1	87.8	4,873	7,581	11,988	1,640	
Mar.			18	131	3	88.7	100	6,152	8,692	12,430	1,940	
Apr.			27	123	23	85.8	106	6,281	8,514	11,890	1,920	
May			31	123	21	93.8	109	6,681	8,718	13,140	1,950	
June			1	131	13	104	116	6,887	8,095	12,040	2,290	
July			28	140	6	104	121	7,464	7,991	11,830	2,530	
Aug.			13	138	125	108	120	7,408	7,928	11,960	2,560	
Sept.			23	139	17	91.2	112	6,685	7,924	11,568	2,280	
Oct.			11	143	1	119	127	7,821	8,842	12,385	2,940	
Nov.			4	142	1	106	118	7,033	8,453	12,010	2,800	
Dec.			16	133	29	96.3	108	6,627	8,133	11,480	2,450	
Yearly				143		75.2	109	79,144	98,563	139,380	27,040	
	Meters		Cubic Meters per Second				Thousands of Cubic Meters					
				4.05		2.13	3.09	97,623	121,576	171,924	33,354	

∅ Mean daily

! And other days

WEST MAIN CANAL WASTEWAY (VALLEY DIVISION, YUMA PROJECT)

DESCRIPTION: Water-stage recorder located about 0.3 mile (0.5 km) upstream from outlet to Yuma Main Drain, which is 175 feet (53.3 m) upstream from East Main Canal Wasteway and 0.4 mile (0.6 km) west of San Luis, Arizona. Prior to August 1, 1975, the recorder was located about 150 feet (45.7 m) upstream from outlet to Yuma Main Drain.

RECORDS: Wasteway discharges computed by United States Section of the Commission beginning February 23, 1971, from water-stage recorder and ratings as determined by current meter measurements.

REMARKS: Wasteway discharges from West Main Canal Wasteway comprise regulatory waste from the West Main Canal.

Mean Daily Discharge in Second-Feet 1979 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.4	10.8	1.6	31.7	0.2	16.4	3.4	1.2	3.6	8.5	2.2	7.1
2	.1	24.1	6.6	27.5	1.9	5.3	1.4	3.3	21.7	9.7	3.4	17.6
3	5.9	27.4	23.3	3.1	4.0	19.7	2.9	.8	11.5	3.4	6.2	29.4
4	10.4	28.9	30.3	.6	4.5	27.1	2.4	7.2	7.6	2.0	19.2	5.6
5	.9	3.5	27.4	.3	2.0	3.5	12.7	9.4	.8	.6	20.0	.7
6	.7	.5	2.9	1.3	5.1	.8	9.5	7.6	.7	1.0	3.2	.5
7	3.7	.3	.6	2.2	2.5	2.2	1.7	3.1	9.6	3.2	.8	6.8
8	5.8	.2	.5	7.6	3.9	8.2	1.8	4.1	4.5	10.8	.4	1.4
9	7.5	.1	1.3	12.2	8.7	3.1	2.9	.9	.3	10.6	.3	2.8
10	2.4	.2	3.4	4.1	9.8	3.1	3.5	1.0	1.6	3.1	.2	8.3
11	.5	.3	1.9	.2	7.0	.8	2.8	6.9	10.0	3.1	5.7	1.5
12	2.5	6.4	1.3	1.4	3.6	9.6	6.6	13.2	7.3	12.6	8.3	2.1
13	3.7	12.9	3.3	7.0	1.0	1.3	2.3	26.3	8.7	3.2	4.8	2.5
14	4.8	11.1	7.4	.7	.6	.5	2.5	1.9	1.0	1.0	8.3	.6
15	4.6	18.0	.9	.5	.8	.2	2.4	.5	1.3	.6	7.0	.4
16	2.5	9.9	5.6	3.5	1.4	.1	* 1.7	.2	5.5	2.2	1.5	.4
17	1.5	12.8	1.9	.1	1.4	.2	* 2.8	.4	3.5	6.3	3.0	3.8
18	1.1	12.5	9.0	.8	1.8	5.9	5.4	1.9	6.7	4.5	7.0	2.0
19	.9	1.3	5.1	1.1	3.2	3.5	2.2	5.0	2.7	1.1	2.1	.7
20	.7	5.2	.4	.7	2.6	.1	.5	7.7	16.3	4.2	7.6	1.8
21	.6	4.9	0	6.1	3.6	.3	4.9	.6	6.2	2.9	4.1	1.9
22	.4	.8	.1	2.3	3.0	1.3	1.0	5.4	5.3	1.1	4.3	12.8
23	.3	10.9	.2	.3	.6	4.7	1.1	4.2	4.5	2.9	16.2	1.3
24	.4	13.7	2.4	1.1	8.5	1.4	.3	1.9	2.8	2.1	.8	.6
25	14.0	10.7	5.5	8.0	9.3	.9	2.8	.2	4.4	.6	2.9	.6
26	7.0	3.6	6.5	2.2	11.1	1.6	7.4	.4	3.6	.8	3.2	3.2
27	4.2	19.8	2.9	2.2	1.0	9.1	8.4	6.2	1.2	.6	1.8	2.3
28	.7	1.1	4.0	6.3	4.5	4.2	3.3	4.3	19.2	6.5	.3	3.5
29	.3	8.5	19.2	9.1	1.2	3.8	2.5	6.0	2.0	2.0	2.6	3.5
30	1.3	3.1	1.1	9.8	1.5	3.6	1.0	13.2	6.8	.6	11.5	.5
31	4.5	15.0		6.1	9.1	1.4		.4	3.2	3.2		3.0
Sum	94.3	251.9	182.9	155.4	132.6	137.8	109.4	129.7	191.3	121.2	148.0	140.2
Month	Current Year 1979							Period 1971-1979				
	Extreme Gage Feet		Extreme Second-Foot				Average Second-Foot	Total Acre-Feet	Acre-Feet			
	High	Low	Day	High	Low	Average			Maximum	Minimum		
Jan.	1.97	0.02	25	31.8	1	0.1	3.0	187	366	565	187	
Feb.	2.47	0	2	48.2	9	0	9.0	500	492	681	252	
Mar.	2.30	0	31	42.3	121	0	5.9	363	521	939	203	
Apr.	2.28	0	1	41.6	1	5	0	5.2	308	396	664	
May	1.76	0	10	25.5	1	0	4.3	263	296	434	148	
June	2.22	0	4	39.7	115	0	4.6	273	317	480	107	
July	1.75	.02	25	25.2	24	.1	3.5	217	307	556	93.2	
Aug.	2.35	0	13	44.0	17	0	4.2	257	319	536	98.0	
Sept.	2.32	0	2	43.0	1	0	6.4	379	410	768	190	
Oct.	1.77	.06	12	25.8	1	.3	3.9	240	393	726	133	
Nov.	2.33	0	4	43.3	11	0	4.9	294	405	541	175	
Dec.	2.10	.01	3	35.8	12	0	4.5	278	393	610	188	
Yearly	2.47	0		48.2		0	4.9	3,559	4,615	6,229	2,869	
	Meters		Cubic Meters per Second				Thousands of Cubic Meters					
	0.75	0		1.37		0	0.14	4,390	5,693	7,683	3,539	

* Partly estimated

! And other days

242 WELL FIELD NEAR SAN LUIS, ARIZONA

DESCRIPTION: Water-stage recorder and 12-foot (3.7 m) Parshall flume located 100 feet (30.5 m) upstream from confluence of East Main Canal Wasteway, 110 feet (33.5 m) north of the southerly land boundary, and 1.4 miles (2.3 km) east of the Colorado River.

RECORDS: Based on current meter measurements and a continuous record of gage heights. The station is operated by the United States Section of the Commission. Records available: October 18, 1978 through 1979.

REMARKS: Records show the pumping of ground water from the 242 well field east of San Luis, Arizona.

Mean Daily Discharge in Second-Feet 1979 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	0	0	0	0	4.3	0	0	0	0	0
2	0	0	0	0	0	0	.8	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	6.1	0	0
5	0	0	0	0	0	0	2.0	0	0	1.0	0	0
6	0	0	0	0	0	0	5.1	0	0	.4	0	0
7	0	0	0	0	0	0	1.0	0	0	0	0	0
8	0	4.8	0	0	0	0	.4	0	0	0	0	0
9	0	3.7	0	0	0	0	.2	0	0	0	0	0
10	0	.6	0	0	0	0	2.8	0	0	0	0	0
11	0	.1	0	0	0	0	4.0	0	0	0	0	0
12	0	0	0	0	0	0	.6	0	0	0	0	0
13	0	0	0	0	0	0	.4	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
16	.5	0	0	0	0	.2	0	0	0	0	0	0
17	.9	0	0	0	0	.4	0	0	0	12.8	0	0
18	.7	0	0	0	0	0	0	0	0	3.0	0	0
19	.6	0	0	0	0	1.6	0	0	0	1.2	0	0
20	.4	0	0	0	0	.9	0	0	0	.5	0	0
21	.2	0	0	0	0	.1	0	0	0	.1	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	.2	0	0	0	0	0	0	0	0	0	0
24	.2	0	0	0	0	.4	0	0	0	0	0	0
25	1.2	0	0	0	3.8	1.2	0	0	0	0	0	0
26	.7	.2	1.5	0	.9	3.5	0	0	0	0	0	0
27	.4	.4	.6	0	.4	.6	0	0	0	0	0	0
28	.4	0	.3	0	.2	0	0	0	0	0	0	0
29	.2	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	2.3	0	0	0	0	0	0
31	0	0	0	0	0	0	0	0	0	0	0	0
Sum	6.4	10.0	2.4	0	5.7	10.8	21.6	0	0	25.1	0	0
Current Year 1979								Period				
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.			16	1.9	11	0	0.2	12.7				
Feb.			8	32.8	11	0	.4	19.8				
Mar.			26	15.2	11	0	.1	4.8				
Apr.				0		0	0	0				
May			25	9.0	11	0	.2	11.3				
June			119	10.6	11	0	.4	21.4				
July			6	12.1	13	0	.7	42.8				
Aug.				0		0	0	0				
Sept.				0		0	0	0				
Oct.			17	56.9	11	0	.8	49.8				
Nov.				0		0	0	0				
Dec.				0		0	0	0				
Yearly				56.9		0	0.2	163				
	Meters		Cubic Meters per Second				Thousands of Cubic Meters					
				1.61		0	0.01	201				

1 And other days

**TOTAL FLOWS CROSSING INTERNATIONAL BOUNDARY
INTO MEXICO NEAR SAN LUIS, SONORA**

DESCRIPTION: The tabulated data below are the combined flows of the East Main Canal Wasteway, West Main Canal Wasteway, 242 Lateral, and the Yuma Main Drain and represent the total water crossing the international land boundary into the Sanchez Mejorada Canal near San Luis, Arizona. The Mexican Section maintains a water-stage recorder in Mexico on right bank of Sanchez Mejorada Canal and obtains check measurements on a bridge located 0.2 mile (0.3 km) downstream from the international boundary, 1.2 miles (1.9 km) east of the Colorado River and 0.6 mile (1.0 km) west of San Luis, Sonora.

RECORDS: Records obtained and computed by the United States Section of the Commission. Records available: East Main Canal Wasteway and Yuma Main Drain from January 1935 through 1979; West Main Canal Wasteway from February 23, 1971 through 1979; 242 Lateral November 1978 through 1979.

REMARKS: Descriptions and flows of the individual stations, East Main Canal Wasteway, West Main Canal Wasteway, the Yuma Main Drain, and 242 Lateral are published separately in this bulletin on pages 29, 31, 30, and 32.

Mean Daily Discharge in Second-Foot 1979 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	82.0	97.8	98.4	148	118	148	132	127	134	162	131	115
2	81.9	109	110	134	121	130	111	129	152	153	138	121
3	96.3	113	113	96.3	119	145	115	118	140	133	158	134
4	100	120	125	105	119	145	120	133	114	138	169	110
5	107	88.8	125	107	103	124	132	138	104	132	154	105
6	98.7	79.5	96.8	117	113	111	121	148	93.1	123	123	118
7	102	85.1	91.4	103	113	133	121	129	114	130	116	123
8	90.5	89.2	104	139	122	134	122	130	134	138	106	120
9	91.8	92.7	106	123	126	130	120	130	120	140	106	122
10	84.4	88.3	116	114	123	114	136	131	124	141	108	124
11	85.8	94.1	99.3	107	145	110	124	138	122	153	126	110
12	99.8	85.0	102	105	121	118	132	156	125	144	145	126
13	88.5	95.4	112	122	106	105	128	174	122	135	136	118
14	88.9	99.2	116	106	105	113	123	124	116	139	131	117
15	91.5	112	106	108	104	113	134	125	114	138	138	132
16	102	101	130	110	103	118	128	139	114	145	136	160
17	127	110	105	101	110	137	124	141	120	160	119	139
18	110	121	144	106	107	145	135	128	117	135	121	108
19	92.7	101	122	105	110	132	121	124	117	126	113	102
20	87.0	91.2	97.6	103	105	126	121	134	142	135	127	102
21	80.0	93.2	95.7	106	115	121	142	121	132	134	124	119
22	79.3	87.5	95.8	111	128	109	128	117	134	126	130	120
23	80.1	133	97.7	96.5	128	127	140	116	153	132	141	112
24	86.1	104	106	106	135	123	143	119	147	138	115	109
25	127	108	117	121	144	120	146	117	112	124	109	105
26	98.4	94.6	119	126	133	121	147	110	106	130	114	109
27	85.8	121	113	134	111	128	156	128	129	136	121	113
28	88.9	105	104	123	103	132	150	119	146	130	127	107
29	76.3	122	150	124	118	119	119	144	136	146	115	100
30	92.9	117	119	130	126	116	113	150	135	135	117	114
31	91.7	129		132		132		120		133		117
Sum	2,894.3	2,819.6	3,435.7	3,451.8	3,676	3,756	4,019	4,020	3,783.1	4,264	3,814	3,631
Current Year 1979								Period 1935-1979				
Month	Extreme Gage Feet		Extreme Second-Foot				Average Second-Foot	Total Acre-Feet	Acre-Feet			
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum	
Jan.			117	127	29	76.3	93.4	5,743	9,173	12,131	* 2,123	
Feb.			23	133	6	79.5	101	5,589	9,018	12,970	* 2,023	
Mar.			18	144	7	91.4	111	6,814	10,290	13,704	* 2,322	
Apr.			29	150	3	96.3	115	6,847	9,950	12,982	2,117	
May			11	145	! 5	103	119	7,285	10,172	13,900	2,473	
June			1	148	13	105	125	7,448	9,411	12,570	2,525	
July			27	156	2	111	130	7,973	9,397	12,420	2,927	
Aug.			13	174	26	110	130	7,974	9,322	12,657	2,989	
Sept.			23	153	6	93.1	126	7,504	9,342	12,450	2,602	
Oct.			1	162	6	123	138	8,458	10,334	13,898	3,444	
Nov.			4	169	! 8	106	127	7,568	9,997	12,712	3,407	
Dec.			16	160	29	100	117	7,203	9,637	12,050	2,888	
Yearly				174		76.3	119	86,406	116,043	149,010	31,840	
	Meters		Cubic Meters per Second				Thousands of Cubic Meters					
				4.93		2.16	3.37	106,581	143,138	183,802	39,274	

! Mean daily

! And other days

* Partly estimated

COLORADO RIVER AT SOUTHERLY INTERNATIONAL BOUNDARY - DISCHARGES

DESCRIPTION: Water-stage recorder located in Mexico on the right bank of the river about 1,000 feet (305 m) upstream from the southerly international boundary, 2 miles (3.2 km) west of San Luis, Arizona, and 21.9 miles (35.2 km) downstream from Morelos Dam. The zero of the gage is at mean sea level, U. S. C. & G. S. datum.

RECORDS: Records obtained and furnished by the United States Section of the Commission. Computations by shifting control methods. Records available: Daily discharges, January 1950 through 1979; continuous record of gage heights, January 1947 through 1979. Monthly flows for this station have been derived for the period January 1935 through 1949 based on the computed records of monthly flows of the Colorado River at the northerly international boundary combined with the measured monthly flows from the wasteways discharging into the boundary section of the river from the Yuma Project in Arizona.

REMARKS: Reservoirs, diversions in the United States and Mexico, drainage returns, and waste flows modify the river flow at this station.

EXTREMES: Since January 1950: Maximum instantaneous discharge, 28,610 second-feet (810 m³/sec) on December 18, 1952; maximum gage height, 84.84 feet (25.86 m) on November 29, 1957. Minimum discharge, no flow on several occasions since September 1, 1956.

Mean Daily Discharge in Second-Feet 1979 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	344	0	0	0	2,590	411	1,410	1,170	2,740	2,400	2,170
2	0	345	0	0	0	2,420	521	1,190	1,150	2,450	2,160	1,830
3	0	348	0	0	117	2,240	619	995	1,180	2,390	2,100	1,850
4	0	457	0	0	290	2,120	644	852	1,160	2,360	2,030	1,810
5	0	532	0	0	377	1,950	710	920	1,240	2,470	1,970	1,640
6	0	523	0	0	591	1,860	816	914	1,530	2,390	1,820	1,640
7	0	472	0	0	782	1,680	874	1,100	1,620	2,320	1,860	1,670
8	0	410	0	0	885	1,590	867	957	1,610	2,250	2,090	1,610
9	0	221	0	0	1,010	1,430	922	902	1,680	2,370	2,300	1,530
10	0	317	0	0	1,410	1,310	1,130	670	1,640	2,480	2,100	1,380
11	0	262	0	0	1,650	1,240	1,130	388	1,780	2,460	1,840	1,670
12	0	222	0	0	1,790	1,120	1,010	1,090	2,020	2,300	2,050	1,980
13	0	52.6	0	0	1,930	1,010	988	3,330	2,170	2,310	1,760	1,890
14	0	8.9	0	0	2,210	1,040	1,040	4,900	2,300	2,350	1,750	1,540
15	0	.3	0	0	2,260	612	970	5,400	2,220	2,350	1,750	1,720
16	0	0	0	0	2,310	163	1,010	3,940	1,780	3,410	1,730	1,430
17	0	0	0	0	2,370	243	642	3,490	2,020	3,920	1,660	1,670
18	0	0	0	0	2,380	560	575 *	4,460	2,340	3,440	1,730	1,370
19	0	0	0	0	2,320	745	532 *	5,420	2,650	2,570	1,740	1,760
20	88.1	0	0	0	2,280	562	676 *	4,680	2,940	2,210	1,830	1,460
21	123	0	391	0	2,290	389	2,580 *	3,700	3,030	2,060	2,090	1,400
22	265	0	1,040	0	2,520	238	3,500 *	3,060	2,890	2,480	2,270	1,520
23	332	0	576	0	2,550	140	3,760 *	2,940	2,900	2,670	2,250	1,580
24	137	0	790	0	2,520	148	2,170	2,270	2,950	2,860	2,160	1,090
25	140	0	931	0	2,600	333	1,670	1,790	2,960	2,850	2,330	1,080
26	291	0	800	0	2,940	335	1,730	1,490	2,930	2,220	2,460	1,320
27	447	0	150	0	2,910	205	1,780 *	1,420	2,870	2,100	2,500	2,720
28	500	0	26.2	0	2,890	269	1,760 *	1,250	2,870	1,930	2,330	2,140
29	599	0	6.7	0	2,810	312	1,560 *	1,110	2,840	1,890	2,350	1,690
30	628	0	0	0	2,710	378	1,460 *	1,280	2,870	2,230	2,320	1,380
31	411	0	0	0	2,690		1,420 *	1,290		2,350		1,310
Sum	3,961.1	4,514.8	4,710.9	0	56,392	29,232	39,477	68,608	65,310	77,190	61,730	51,050
Current Year 1979								Period: 1935-1979				
Month	Extreme Gage Feet		Extreme Second-Feet			Average Second-Feet	Total Acre-Feet	Acre-Feet				
	High	Low	Day	High	Day			Average	Maximum	Minimum		
Jan.	77.76	73.10	30	685	1 1	128	7,857	343,266	1,672,000	1,821		
Feb.	77.21	73.25	5	543	115	0	161	8,955	1,385,000	2,040		
Mar.	79.08	73.25	22	1,220	1 1	0	152	9,344	1,127,000	798		
Apr.		73.35		0		0	0	146,532	700,900	0		
May	82.05	73.35	26	3,080	1 1	1,820	111,852	203,436	1,160,000	0		
June	81.43	74.91	1	2,650	17	75.0	974	57,981	1,180,000	0		
July	82.65	76.56	23	3,960	1	382	1,270	78,301	1,157,000	0		
Aug.	83.82	75.22	119	5,580	11	125	2,210	136,082	1,300,000	0		
Sept.	81.15	78.23	120	3,050	2	1,100	2,180	129,540	1,033,000	0		
Oct.	82.11	79.56	116	4,420	29	1,870	2,490	153,104	1,192,000	0		
Nov.	80.53	79.16	127	2,670	18	1,630	2,060	122,440	1,428,000	0		
Dec.	80.72	77.90	27	2,870	24	1,060	1,650	101,256	1,839,000	2,320		
Yearly	83.82	73.10		5,580		0	1,270	916,712	2,548,489	10,688,800	61,569	
	Meters		Cubic Meters per Second			Thousands of Cubic Meters						
	25.55	22.28		158		0	36.0	1,130,755	3,143,536	13,184,528	75,945	

* Partly estimated

! And other days

COLORADO RIVER AT SOUTHERLY INTERNATIONAL BOUNDARY - STAGES

(See Preceding Page For Description)

Mean Daily Gage Height in Feet 1979

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	73.10	76.44	73.25	73.35	73.35	81.32	76.66	79.10	78.42	80.76	80.21	79.90
2	73.10	76.45	73.25	73.35	73.35	81.06	77.03	78.64	78.37	80.40	79.90	79.44
3	73.10	76.46	73.25	73.35	75.44	80.75	77.33	78.19	78.45	80.32	79.81	79.46
4	73.10	76.85	73.25	73.35	76.19	80.54	77.40	77.82	78.39	80.29	79.72	79.40
5	73.10	77.16	73.25	73.35	76.60	80.26	77.63	77.99	78.60	80.43	79.64	79.13
6	73.10	77.15	73.25	73.35	77.49	80.10	77.97	77.97	79.12	80.32	79.42	79.12
7	73.10	76.97	73.25	73.35	78.16	79.81	78.15	78.43	79.29	80.24	79.48	79.17
8	73.10	76.72	73.25	73.35	78.49	79.66	78.13	78.08	79.27	80.15	79.78	79.08
9	73.10	75.84	73.25	73.35	78.80	79.39	78.28	77.94	79.37	80.30	80.04	78.94
10	73.10	76.26	73.25	73.35	79.64	79.15	78.78	77.22	79.32	80.44	79.79	78.67
11	73.10	76.07	73.25	73.35	80.08	79.02	78.78	76.19	79.53	80.41	79.44	79.15
12	73.10	75.86	73.25	73.35	80.31	78.75	78.50	78.36	79.86	80.21	79.72	79.60
13	73.10	74.56	73.25	73.35	80.55	78.50	78.43	81.87	80.04	80.23	79.32	79.45
14	73.10	73.91	73.25	73.35	81.01	78.57	78.56	83.37	80.22	80.28	79.30	78.92
15	73.10	73.30	73.25	73.35	81.08	77.32	78.39	83.72	80.11	80.28	79.31	79.19
16	73.10	73.25	73.25	73.35	81.16	75.48	78.49	82.48	79.53	81.32	79.29	78.72
17	73.10	73.25	73.25	73.35	81.25	75.94	77.42	82.07	79.85	81.80	79.20	78.58
18	73.10	73.25	73.25	73.35	81.25	77.14	* 77.20	82.95	80.27	81.47	79.31	79.40
19	73.10	73.25	73.25	73.35	81.17	77.74	* 77.06	83.70	80.65	80.56	79.34	79.24
20	74.43	73.25	73.25	73.35	81.12	77.16	* 77.50	83.13	81.01	80.10	79.48	78.76
21	75.10	73.25	75.81	73.35	81.13	76.58	* 81.24	82.25	81.12	79.91	79.83	78.66
22	76.02	73.25	78.62	73.35	81.46	75.94	* 82.33	81.69	80.95	80.44	80.06	78.88
23	76.33	73.25	77.30	73.35	81.50	75.41	* 82.51	81.57	80.96	80.61	80.02	78.96
24	75.12	73.25	77.92	73.35	81.46	75.48	* 80.51	80.58	81.03	80.84	79.91	77.99
25	75.20	73.25	78.31	73.35	81.56	76.36	79.62	79.76	81.04	80.80	80.12	77.96
26	76.12	73.25	77.98	73.35	81.93	76.37	79.72	79.24	81.00	80.01	80.28	78.45
27	76.81	73.25	75.31	73.35	81.94	75.81	* 79.99	79.09	80.92	79.86	80.33	80.54
28	77.04	73.25	74.24	73.35	81.96	76.12	* 79.75	78.74	80.93	79.64	80.11	79.82
29	77.43		73.68	73.35	81.70	76.28	* 79.41	78.43	80.89	79.60	80.14	79.18
30	77.54		73.35	73.35	81.53	76.55	* 79.21	78.80	80.92	79.99	80.10	78.65
31	76.66		73.35	73.35	81.49		* 79.37	76.76		80.14		78.51
Avg.	74.28	74.72	74.22	73.35	79.81	77.95	78.75	79.94	79.98	80.39	79.75	79.06

* Partly estimated

WASTEWAY TO COLORADO RIVER AT KILOMETER 27 IN MEXICO

DESCRIPTION: Water-stage recorder and cableway located on the left bank of the canal wasteway immediately upstream from where it discharges into the Colorado River, 0.6 mile (1.0 km) downstream from the wasteway gates on the Central Feeder Canal on the right bank of the Colorado River, 16.8 miles (27.0 km) downstream from Morelos Dam, and 820 feet (250 m) south of the junction of the Mexicoali-San Luis and Algodones-Pescaderos highways.

RECORDS: Data obtained and computed by the Colorado River Irrigation District of the Ministry of Agriculture and Hydraulic Resources and furnished by the Mexican Section of the Commission. Records shown in table below are waste returns to the Colorado River. Records available: April 1956 through 1979.

REMARKS: The Colorado River Irrigation District transports water for irrigation of land on the left bank of the Colorado River by the Central Feeder Canal to a point called Kilometer 27. At this point, flows may be returned to the river through the wasteway or diverted to the Bacanora-Monumentos Canal system through the Sanchez Mejorada Siphon, which was placed in operation on June 28, 1963. As part of the rehabilitation works, started in 1968, of the Colorado River Irrigation District, the Canal de Conexion was enlarged and lined, and is now known as the Central Feeder Canal.

Monthly Discharge in Acre-Feet

Month	Current Year 1979	Period 1956-1979		
		Average	Maximum	Minimum
January	30,475	6,341	69,527	0
February	2,136	1,869	14,279	0
March	972	5,152	35,492	0
April	540	11,723	68,714	0
May	6,003	7,206	22,072	0
June	18,496	8,374	28,915	0
July	11,516	12,400	46,139	0
August	10,802	13,729	55,497	0
September	11,532	9,039	37,194	0
October	18,486	4,144	20,512	0
November	17,227	7,420	69,415	0
December	11,667	5,659	70,213	0
Yearly	139,852	85,142	346,339	0
	Thousands of Cubic Meters			
	172,506	105,022	427,205	0

COLORADO RIVER AT MIGUEL C. RODRIGUEZ IN MEXICO - DISCHARGES

DESCRIPTION: Water-stage recorder and cableway located in Mexico on the left bank of the Colorado River about 24.5 miles (39.4 km) downstream from the southerly international boundary, 44.5 miles (71.6 km) downstream from Morelos Dam and 4.5 miles (7.2 km) upstream from the Sonora-Baja California railroad bridge. The zero of the gage is at mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 39 double and 3 single current meter measurements made during the year and a continuous record of gage heights. Data obtained and furnished by the Mexican Section of the Commission. From June 1951 to July 1954, discharges were computed from gage height records based on daily gage readings at 8:00 a.m., Pacific Standard Time. A continuous record of gage heights obtained since July 21, 1954. Records available: June 1951 through 1979.

REMARKS: The flows at this gage show the seepage from canals that run parallel at higher elevations and adjacent to the river. On June 23, 1977 the drainage water discharged below Morelos Dam was diverted to the Santa Clara Estuary; also better utilization of irrigation waters has reduced the waste returns to a minimum. Normal flows are measured by wading at a section located 2,000 feet (600 m) below the gage. Occasionally there are high flows from excess water arriving at Morelos Dam; discharge-measurements are then made at the gage and the discharge-relationship curve extended for greater flows.

EXTREMES: Since January 1, 1952: Maximum mean daily gage height, 53.28 feet (16.24 m) on January 4, 1958 with a discharge of 18,500 second-feet (524 m³/sec); minimum mean daily gage height, 37.73 feet (11.50 m) on July 18 and 19, 1970 with a discharge of 2.8 second-feet (0.08 m³/sec); maximum mean daily discharge, 20,200 second-feet (571 m³/sec) on December 19, 1952 with a gage height of 52.30 feet (15.94 m); minimum mean daily discharge, no flow on various occasions.

Mean Daily Discharge in Second-Feet 1979 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	7.4	108	43.8	6.7	7.1	2,250	622	1,250	1,190	2,780	2,450	2,560
2	7.4	112	37.4	6.4	7.8	2,200	629	1,070	950	2,870	2,330	2,530
3	7.4	116	31.1	7.8	12.7	2,060	678	971	893	2,930	2,220	2,500
4	7.4	120	24.4	9.5	14.1	1,960	731	915	798	2,930	2,150	2,480
5	7.4	124	18.0	10.9	13.4	1,830	770	830	660	2,890	2,070	2,450
6	7.1	128	11.7	12.4	16.2	1,690	749	749	720	2,910	2,070	2,260
7	7.1	132	11.3	14.1	55.1	1,740	731	742	1,430	2,810	2,030	2,070
8	7.1	137	11.3	15.5	131	1,690	720	770	1,560	2,730	1,980	1,860
9	11.3	141	10.9	17.0	213	1,610	731	830	1,620	2,750	1,910	1,830
10	15.5	145	10.9	18.4	308	1,570	759	830	1,580	2,790	1,910	1,740
11	19.4	149	10.6	20.1	456	1,570	840	777	1,510	2,640	1,940	1,760
12	23.7	153	10.6	21.5	544	1,320	893	770	1,470	2,600	2,000	1,700
13	27.9	147	10.2	23.0	611	1,070	893	809	1,510	2,560	2,030	1,710
14	32.1	141	10.2	24.7	752	911	851	1,580	1,640	2,480	1,940	1,660
15	36.4	134	9.9	26.1	943	646	819	2,570	1,700	2,420	1,890	1,590
16	40.6	127	9.5	27.5	1,130	611	840	2,870	1,800	2,480	1,810	1,540
17	44.5	121	9.5	29.3	1,280	579	862	3,190	1,860	2,540	1,740	1,510
18	48.7	115	9.2	30.7	1,380	452	788	3,510	1,930	2,600	1,780	1,610
19	53.0	108	9.2	32.1	1,480	501	667	3,850	2,000	2,720	1,810	1,660
20	57.2	102	8.8	33.5	1,540	572	646	4,200	2,050	2,700	1,960	1,700
21	61.4	95.3	8.8	35.3	1,600	607	646	4,200	2,050	2,730	2,050	1,610
22	65.7	89.0	8.5	36.7	1,640	646	830	4,200	2,120	2,780	2,070	1,590
23	69.6	82.6	8.5	38.1	1,710	636	1,730	3,640	2,180	2,720	2,180	1,540
24	73.8	75.9	8.1	39.9	1,980	572	2,410	3,220	2,240	2,700	2,420	1,450
25	78.0	69.6	7.8	41.3	2,040	572	2,660	2,950	2,270	2,680	2,600	1,260
26	82.3	69.2	7.8	42.7	2,100	530	2,280	2,590	2,410	2,540	2,620	1,260
27	86.5	56.9	7.4	44.5	2,140	523	1,910	1,730	2,500	2,420	2,750	1,480
28	90.8	50.1	7.4	45.9	2,200	501	1,660	2,000	2,500	2,290	2,700	1,790
29	94.6		7.1	47.3	2,250	466	1,690	2,250	2,530	2,290	2,640	1,960
30	98.9		7.1	48.7	2,260	459	1,510	1,950	2,510	2,660	2,580	1,790
31	103		6.7		2,300		1,320	1,510	2,480			1,700
Sum	1,373.4	3,140.9	393.8	808.0	33,116.0	32,345	33,877	63,330	52,280	82,410	64,600	56,120
Current Year 1979									Period 1951-1979			
Month	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total	Acre-Feet			
	High	Low	Day	High	Day	Low	Acres-Feet	Average	Maximum	Minimum		
Jan.	43.44	41.44	31	103	1	6	7.1	44.1	2,724	174,699	1,047,732	426
Feb.	44.95	38.35	12	153	28	50.1	112	6,229	110,098	696,461	317	
Mar.	44.29	38.32	1	43.8	31	6.7	12.7	781	77,676	807,342	0	
Apr.	40.03	39.83	30	48.7	2	6.4	26.8	1,603	51,341	588,983	0	
May	49.31	39.70	31	2,300	1	7.1	1,070	65,685	73,081	732,815	0	
June	49.21	43.96	1	2,250	18	424	1,080	64,155	33,707	555,460	0	
July	49.18	44.26	25	2,700	1	607	1,090	67,195	19,410	264,561	0	
Aug.	51.57	44.69	120	4,200	6	710	2,040	125,612	30,007	309,320	0	
Sept.	48.95	44.46	29	2,570	5	653	1,740	103,695	42,888	572,551	0	
Oct.	49.18	47.64	1	3,2930	29	2,100	2,660	163,458	70,310	769,939	0	
Nov.	48.88	46.92	27	2,760	17	1,730	2,150	128,134	110,639	909,399	173	
Dec.	48.56	45.60	1	2,560	25	1,150	1,810	111,302	146,879	1,060,767	502	
Yearly	51.57	38.32		4,200		6.4	1,150	840,573	910,607	7,923,600	25,036	
	Meters		Cubic Meters per Second				Thousands of Cubic Meters					
	15.72	11.68		119		0.18	32.7	1,036,836	1,123,222	9,773,655	30,882	

1 And other days

COLORADO RIVER AT MIGUEL C. RODRIGUEZ IN MEXICO - STAGES

(See Preceding Page For Description)

Mean Daily Gage Height in Feet 1979

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	42.09	43.44	39.99	40.03	39.70	49.21	44.32	46.26	46.10	48.92	48.33	48.56
2	42.09	43.14	39.99	40.03	39.73	49.15	44.36	45.77	45.44	49.08	48.10	48.49
3	42.13	43.04	39.99	39.99	39.96	48.92	44.55	45.51	45.28	49.18	47.90	48.43
4	42.09	42.98	39.96	39.99	40.03	48.75	44.75	45.34	44.98	49.18	47.74	48.39
5	42.09	42.91	39.99	39.99	39.99	48.52	44.88	45.08	44.49	49.11	47.57	48.33
6	44.99	42.91	39.99	39.99	40.09	48.23	44.82	44.82	44.72	49.15	47.57	47.97
7	41.93	43.21	39.99	40.03	40.98	48.33	44.75	44.78	46.69	48.98	47.51	47.57
8	41.90	43.47	39.99	40.03	41.83	48.23	44.72	44.88	46.98	48.85	47.41	47.18
9	41.80	43.47	40.03	40.03	42.55	48.06	44.75	45.08	47.11	48.88	47.28	47.11
10	41.67	43.31	40.03	40.03	43.24	47.97	44.85	45.08	47.01	48.95	47.28	46.95
11	41.67	44.95	40.03	40.03	44.16	47.97	45.11	44.91	46.88	48.69	47.34	46.98
12	41.63	42.16	39.99	40.03	44.69	47.31	45.28	44.88	46.78	48.62	47.44	46.85
13	41.47	41.44	39.99	39.99	45.01	46.62	45.28	45.01	46.88	48.56	47.51	46.88
14	41.47	41.01	40.12	39.99	45.64	46.13	45.14	47.01	47.15	48.39	47.34	46.78
15	41.44	40.62	40.16	39.99	46.23	45.21	45.05	48.95	47.28	48.26	47.24	46.65
16	41.44	40.09	40.19	39.96	46.78	45.01	45.11	49.48	47.47	48.39	47.08	46.56
17	41.44	40.09	40.32	39.96	47.21	44.85	45.18	50.00	47.60	48.52	46.95	46.49
18	41.57	40.09	41.04	39.96	47.47	44.13	44.95	50.52	47.74	48.62	47.01	46.69
19	41.80	40.09	41.63	39.93	47.74	44.46	44.52	51.05	47.87	48.82	47.08	46.78
20	41.96	40.06	41.99	39.93	47.90	44.82	44.42	51.57	47.97	48.79	47.38	46.85
21	42.16	40.06	42.42	39.96	48.03	44.98	44.42	51.57	47.97	48.85	47.54	46.69
22	42.29	40.03	43.04	39.93	48.13	45.21	45.08	51.57	48.10	48.92	47.57	46.62
23	42.42	40.03	43.31	39.90	48.26	45.14	47.34	50.72	48.23	48.82	47.80	46.56
24	42.49	40.03	43.57	39.90	48.79	44.82	48.65	50.07	48.39	48.79	48.26	46.36
25	42.55	40.03	43.64	39.86	48.88	44.82	49.11	49.61	48.52	48.75	48.62	45.90
26	43.01	40.03	44.29	39.86	48.98	44.62	48.43	48.98	48.65	48.52	48.65	45.90
27	43.24	39.99	41.93	39.83	49.05	44.59	47.70	47.34	48.82	48.26	48.88	46.42
28	43.41	39.99	41.34	39.83	49.15	44.46	47.18	47.87	48.82	48.03	48.79	47.05
29	43.41		40.65	39.83	49.21	44.23	47.24	48.36	48.88	48.03	48.69	47.38
30	43.44		40.32	39.83	49.25	44.19	46.88	47.77	48.85	48.72	48.59	47.05
31	43.44		40.03		49.31		46.42	46.88	48.39	48.39		46.85
Avg.	42.19	42.32	40.98	39.96	45.41	46.29	45.67	47.64	47.24	48.72	47.74	47.08

WASTEWAY TO COLORADO RIVER AT KILOMETER 38 IN MEXICO

DESCRIPTION: Wasteway to the Colorado River on the left bank of new Barrote Canal at old dam and bridge at Kilometer 18+251 (old Kilometer 38+000). The wasteway is located in the Colonia Bojorquez 0.8 mile (1.3 km) upstream from the Sonora-Baja California railroad bridge, 3.7 miles (5.9 km) downstream from the Miguel C. Rodriguez gaging station, and 28.1 miles (45.3 km) downstream from the southerly international boundary.

RECORDS: The records are computed by the Ministry of Agriculture and Hydraulic Resources and based upon gate openings. Records available: January 1964 through 1979.

REMARKS: The wasteway structure on the left bank of the Colorado River has two manually operated radial gates 9.8 feet (3.0 m) wide. It discharges into a dirt canal 656 feet (200 m) long with a total capacity of 459 second-feet (13.0 m³/sec) which discharges to the river.

Monthly Discharge in Acre-Feet

Month	Current Year 1979	Period 1964-1979		
		Average	Maximum	Minimum
January	1,332	255	1,453	0
February	392	144	953	0
March	133	95.7	572	0
April	0	3.2	51.9	0
May	1,363	113	1,363	0
June	1,106	69.1	1,106	0
July	1,288	80.5	1,288	0
August	2,383	154	2,383	0
September	1,543	156	1,543	0
October	3,047	464	3,047	0
November	14,510	1,051	14,510	0
December	7,365	544	7,365	0
Yearly	34,462	3,130	34,462	0
	Thousands of Cubic Meters			
	42,509	3,861	42,509	0

COLORADO RIVER AT EL MARITIMO IN MEXICO - STAGES

DESCRIPTION: Water-stage recorder and cableway in Mexico, 47.6 miles (76.6 km) downstream from the southerly international boundary, 18.6 miles (30.0 km) downstream from the Sonora-Baja California railroad bridge and 3.7 miles (6.0 km) east of Kilometer 70 of the Mexicali-San Felipe highway. The recorder is located on the right bank of the Colorado River. The zero of the gage is 9.84 feet (3.00 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Records obtained and computed by the Mexican Section of the Commission. Records available: Mean daily discharges from January 1960 through 1968. Incomplete record of gage heights, March 1, 1946 through November 1947; twice daily readings of gage heights, January 1, 1948 through December 1949; continuous record of gage heights since installation of water-stage recorder February 8, 1956. Mean daily gage heights, January 1960 through 1979.

REMARKS: In former years, the flow past this station was affected by the tides in the Gulf of California. After July 1968, measurement by current meter was suspended; beginning in 1969, twice daily readings of gage heights and no record of mean daily discharges.

EXTREMES: January 1960 through 1968: Maximum daily discharge, 4,380 second-feet (124 m³/sec), January 21 and December 7 and 8, 1960; minimum discharge, no flow on various occasions. Maximum monthly discharge, 225,224 acre-feet (277,811,000 m³) January 1960; minimum monthly discharge, zero during various months of several years. Annual maximum discharge, 503,260 acre-feet (620,765,000 m³) during 1960; minimum 59,335 acre-feet (73,189,000 m³) in 1968. January 1960 through 1979: Maximum instantaneous gage height, 18.73 feet (5.71 m) on January 21, 1960; minimum gage height, 12.47 feet (3.80 m) on August 31 and September 1, 1960.

Mean Daily Gage Height in Feet 1979

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	15.09	15.49	15.49	15.35	14.99	17.39	16.80	17.62	17.59	18.18	18.14	18.24
2	15.09	15.49	15.49	15.35	14.99	17.42	16.73	17.55	17.59	18.18	18.14	18.24
3	15.09	15.49	15.49	15.35	14.99	17.45	16.70	17.45	17.55	18.21	18.14	18.21
4	15.09	15.49	15.49	15.35	14.99	17.55	16.67	17.39	17.52	18.21	18.14	18.18
5	15.09	15.49	15.49	15.32	14.99	17.59	16.70	17.36	17.52	18.18	18.14	18.18
6	15.09	15.49	15.45	15.32	14.99	17.59	16.70	17.32	17.49	18.14	18.14	18.14
7	15.09	15.49	15.45	15.29	14.96	17.59	16.70	17.26	17.49	18.14	18.14	18.11
8	15.12	15.49	15.45	15.29	14.96	17.59	16.67	17.19	17.45	18.14	18.14	18.11
9	15.12	15.49	15.45	15.26	14.99	17.52	16.67	17.19	17.45	18.14	18.14	18.08
10	15.16	15.49	15.45	15.26	14.99	17.45	16.67	17.13	17.45	18.14	18.14	18.04
11	15.16	15.49	15.42	15.22	15.06	17.39	16.63	17.16	17.45	18.14	18.14	18.04
12	15.19	15.49	15.42	15.22	15.03	17.32	16.67	17.19	17.45	18.14	18.14	17.98
13	15.22	15.49	15.42	15.22	15.06	17.29	16.70	17.19	17.45	18.14	18.14	17.98
14	15.22	15.49	15.42	15.22	15.16	17.19	16.70	17.26	17.45	18.14	18.11	17.91
15	15.26	15.49	15.42	15.22	15.29	17.16	16.70	17.32	17.49	18.14	18.11	17.91
16	15.29	15.49	15.42	15.22	15.49	17.06	16.70	17.45	17.52	18.14	18.11	17.81
17	15.29	15.49	15.39	15.19	15.62	16.99	16.73	17.59	17.52	18.14	18.11	17.78
18	15.29	15.49	15.39	15.16	15.85	16.93	16.73	17.81	17.59	18.14	18.04	17.72
19	15.32	15.49	15.39	15.16	15.91	16.86	16.77	17.95	17.65	18.14	18.04	17.59
20	15.35	15.49	15.39	15.12	16.14	16.80	16.86	18.04	17.72	18.14	18.04	17.52
21	15.35	15.49	15.35	15.09	16.40	16.83	16.93	18.11	17.72	18.14	18.04	17.39
22	15.35	15.49	15.35	15.09	16.54	16.86	17.06	18.18	17.78	18.14	17.98	17.39
23	15.35	15.49	15.35	15.06	16.67	16.86	17.13	18.27	17.98	18.14	17.98	17.39
24	15.35	15.49	15.35	15.03	16.73	16.86	17.32	18.70	18.04	18.14	18.04	17.36
25	15.39	15.49	15.35	15.03	16.86	16.86	17.39	18.77	18.08	18.14	18.11	17.39
26	15.39	15.49	15.35	15.03	16.90	16.86	17.45	18.54	18.11	18.14	18.14	17.45
27	15.39	15.49	15.35	14.99	16.93	16.86	17.52	18.11	18.11	18.14	18.14	17.52
28	15.39	15.49	15.35	14.99	17.06	16.90	17.59	17.98	18.14	18.14	18.21	17.62
29	15.42	15.49	15.35	14.99	17.13	16.86	17.62	17.72	18.18	18.14	18.24	17.65
30	15.42	15.49	15.35	14.99	17.32	16.86	17.65	17.62	18.18	18.14	18.24	17.72
31	15.45	15.49	15.35	14.99	17.59	17.59	17.62	17.59	17.59	18.14	18.14	17.78
Avg.	15.26	15.49	15.42	15.19	15.81	17.16	16.96	17.68	17.68	18.14	18.11	17.81

STORED WATER IN LARGE RESERVOIRS OF THE COLORADO RIVER

Data are presented below for all large storage reservoirs in the Colorado River basin below Lee's Ferry, all of which are located in the United States. The monthly figures represent usable contents on the last day of the month, in thousands of acre-feet. The capacities indicated are usable capacities at the top of the spillway gates in closed position, for those dams having controlled spillways; for all others, capacities indicated are at spillway level. Records furnished by the U. S. Geological Survey.

In Thousands of Acre-Feet

Month	LAKE MEAD (Capacity 26,159.0)		LAKE MOHAVE (Capacity 1,810.0)		HAVASU LAKE (Capacity 619.4)		TOTAL IN UNITED STATES RESERVOIRS (Capacity 28,588.4)	
	1979	Average 1935-1979	1979	Average 1951-1979	1979	Average 1939-1979	1979	Estimated Average
Jan.	22,747	17,163	1,730	1,650	536.9	553.7	25,013.9	19,366.7
Feb.	23,297	16,923	1,657	1,674	532.4	557.3	25,486.4	19,154.3
Mar.	23,067	16,650	1,671	1,670	538.7	571.9	25,276.7	18,891.9
Apr.	22,918	16,756	1,531	1,673	546.1	601.6	24,995.1	19,030.6
May	22,563	17,632	1,644	1,733	581.3	603.3	24,788.3	19,968.3
June	22,270	18,871	1,608	1,622	565.6	604.5	24,443.6	21,097.5
July	22,179	19,046	1,475	1,489	561.8	592.1	24,215.8	21,127.1
Aug.	22,300	18,833	1,477	1,431	562.5	575.2	24,339.5	20,839.2
Sept.	22,242	18,570	1,428	1,417	569.6	570.8	24,239.6	20,557.8
Oct.	22,216	18,331	1,420	1,437	560.9	572.1	24,196.9	20,340.1
Nov.	22,433	18,126	1,534	1,516	560.7	561.1	24,527.7	20,203.1
Dec.	22,623	17,897	1,638	1,606	551.7	556.2	24,812.7	20,059.2
Avg.	22,571	17,900	1,568	1,576	555.7	576.6	24,694.7	20,052.6
Max.	23,297	27,780	1,730	1,808	581.3	688.7	25,486.4	28,235.0
Min.	22,179	* 10,727	1,420	1,186	532.4	76.9	24,196.9	13,062.6

* Minimum since 1940

SUSPENDED SILT

The following tables are based on determinations of gravimetric percentages of dry silt in water samples taken at each station by one of the following methods:

A. By lowering a D-48 depth integrating sampler at verticals located at centers of sections of equal discharge in the river cross section, being careful to approach but not strike the bottom. The samples obtained in the section are combined to comprise a composite sample for that date.

B. By lowering a D-43 depth integrating sampler at verticals located at centers of each span of the service bridge across the Alamo Canal, being careful to approach but not strike the bottom. The samples obtained in the section are combined to comprise a composite sample for that date.

C. By sampling at the stream surface with a separate bottle at each of three points, spaced 1/6, 1/2, and 5/6 of the stream width. The gravimetric percentage in each sample is determined, a coefficient of 1.10 is applied to the average of the three, and the product applied to the volume of the stream flow represented by that set of samples.

For ease of comparison, the assumption is made that 1,847 tons of deposited silt would occupy a volume of one acre-foot, or one cubic foot of deposited silt would weigh 85 pounds.

Month	1979						Period of Record		
	Tons		No. of Samples	Gravimetric Percentages			Acre-Feet at 1,847 Tons Per Acre Foot		
	Water	Silt		Average	Maximum Sample	Minimum Sample	Average	Maximum	Minimum

Colorado River at Northerly International Boundary

										Period 1956-1979	
Jan.	114,507,000	6,200	5	0.0054	0.0126	0.0015	3.4	24.8	336	1.4	
Feb.	127,688,000	25,300	4	.0198	.0273	.0137	13.7	12.6	116	1.6	
Mar.	261,575,000	61,200	4	.0234	.0291	.0165	33.1	40.2	499	8.8	
Apr.	299,151,000	45,800	4	.0153	.0204	.0090	24.8	37.5	434	7.9	
May	397,430,000	48,100	5	.0121	.0212	.0081	26.0	13.8	201	2.3	
June	414,870,000	73,000	3	.0176	.0223	.0092	39.5	14.8	92.6	2.8	
July	528,810,000	75,100	3	.0142	.0168	.0122	40.7	19.9	89.3	3.4	
Aug.	536,223,000	55,200	5	.0103	.0141	.0068	29.9	19.7	103	3.8	
Sept.	418,455,000	31,800	4	.0076	.0128	.0056	17.2	8.4	43.6	1.6	
Oct.	386,568,000	22,000	5	.0057	.0063	.0048	11.9	4.0	20.0	.5	
Nov.	351,848,000	33,800	4	.0096	.0136	.0050	18.3	9.7	89.9	.5	
Dec.	346,727,000	63,100	4	.0182	.0350	.0093	34.2	19.3	174	.6	
Yearly	4,183,851,000	540,600	50	0.0133	0.0350	0.0015	292.7	224.7	2,198	59.2	

Samples by U. S. Section and analyses by United States Bureau of Reclamation, Method A

Intake Canal at Morelos Diversion Structure

										Period 1952-1979	
Jan.	93,534,000	6,546	5	0.0070	0.0100	0.0052	3.6	5.3	22.3	0.2	
Feb.	111,497,000	11,299	4	.0101	.0114	.0074	6.1	5.5	19.4	.9	
Mar.	241,280,000	118,367	4	.0491	.1115	.0098	64.0	39.6	154	5.3	
Apr.	298,281,000	70,815	5	.0237	.0437	.0096	38.3	36.3	121	7.5	
May	198,013,000	27,287	4	.0138	.0375	.0037	14.8	9.9	51.2	1.5	
June	327,015,000	76,228	4	.0233	.0261	.0123	41.3	26.8	109	3.1	
July	399,530,000	100,088	5	.0251	.0293	.0194	54.1	38.3	156	4.1	
Aug.	329,062,000	66,849	4	.0203	.0244	.0154	36.1	35.6	135	3.8	
Sept.	228,803,000	25,487	4	.0111	.0180	.0046	13.8	14.8	64.7	1.9	
Oct.	170,774,000	9,156	5	.0054	.0068	.0043	4.9	3.9	12.0	.3	
Nov.	180,118,000	12,608	4	.0070	.0082	.0058	6.8	2.3	9.3	.2	
Dec.	201,680,000	26,875	4	.0133	.0213	.0073	14.7	5.7	18.6	1.1	
Yearly	2,779,587,000	551,603	52	0.0174	0.1115	0.0037	298	224	696	51.4	

Samples and analyses by Mexican Section, Method B

Colorado River at Southerly International Boundary

										Period 1946-1979	
Jan.	10,678,000	0	0				0				
Feb.	12,170,000	0	0				0				
Mar.	12,698,000	0	0				0				
Apr.	0	0	0				0				
May	152,007,000	6,500	2	0.0043	0.0060	0	3.5				
June	78,796,000	5,700	1	.0072	.0086	.0062	3.1				
July	106,411,000	10,200	1	.0096	.0107	.0086	5.5				
Aug.	184,935,000	21,600	1	.0117	.0127	.0097	11.7				
Sept.	176,045,000	17,000	1	.0096	.0101	.0090	9.2				
Oct.	208,068,000	44,700	1	.0214	.0337	.0102	24.2				
Nov.	166,396,000	68,400	1	.0410	.0443	.0346	37.0				
Dec.	137,607,000	41,900	1	.0304	.0406	.0167	22.7				
Yearly	1,245,812,000	216,000	9	0.0173	0.0443	0	116.9				

Samples by U. S. Section and analyses by United States Bureau of Reclamation, Method A

SUSPENDED SILT

Month	1979					Period of Record			
	Tons		No. of Samples	Gravimetric Percentages			Acre-Feet at 1,847 Tons Per Acre Foot		
	Water	Silt		Average	Maximum Sample	Minimum Sample	Average	Maximum	Minimum

Colorado River at Miguel C. Rodriguez Gaging Station

Period 1960-1979

Month	Tons	Silt	No. of Samples	Average	Maximum Sample	Minimum Sample	Average	Maximum	Minimum	
Jan.	3,704,000	304	1	0.0082	0.0090	0.0066	0.2	14.3	251	0
Feb.	8,470,000	780	1	.0092	.0101	.0071	.4	2.2	13.9	0
Mar.	1,062,000	200	1	.0188	.0487	.0061	.1	.5	4.1	0
Apr.	2,179,000	703	1	.0323	.0520	.0208	.4	.2	1.1	0
May	89,310,000	11,314	7	.0127	.0220	.0040	6.1	.6	6.1	0
June	87,230,000	14,814	5	.0170	.0318	.0102	8.0	.5	8.0	0
July	91,364,000	27,608	5	.0302	.0360	.0201	14.9	.8	14.9	0
Aug.	170,793,000	61,454	4	.0360	.0520	.0091	33.2	1.8	33.2	0
Sept.	140,993,000	16,937	4	.0120	.0150	.0093	9.2	.8	9.2	0
Oct.	222,251,000	27,766	4	.0125	.0140	.0111	15.0	2.4	20.8	0
Nov.	174,222,000	22,690	3	.0130	.0209	.0110	12.2	3.2	36.0	0
Dec.	151,336,000	24,586	4	.0162	.0283	.0060	13.3	3.1	13.3	0
Yearly	1,142,916,000	209,157	40	0.0182	0.0520	0.0060	113	30.3	289	1.6

Samples and analyses by Mexican Section, Method C

CHEMICAL ANALYSES OF WATER SAMPLES 1979

The table below is based on chemical analyses of weekly samples from the Colorado River at the Northerly International Boundary taken by the United States Section of the Commission and analyzed by the U.S. Geological Survey.

To convert milligram equivalents to parts per million by weight, multiply each ion by its appropriate conversion factor. These factors are: Ca, 20.04; Mg, 12.16; Na 22.99; (CO₃ plus HCO₃) expressed as CO₃, 30.00; SO₄, 48.03; Cl, 35.45; NO₃, 62.00. To convert tons per acre-foot to parts per million, multiply tons per acre-foot by 735.5. Electrical conductivity, reported in the tables as EC x 10⁶ at 25° C, is a relative measure of the total salt concentration.

Month	No. of Samples	Dissolved Solids		ECx10 ⁶ @25°C	Boron p. p. m.	pH	% Na **	% Cl ***	Mean Milligram Equivalents per Liter						
		Tons Per Acre-Foot	Total Tons						Ca	Mg	Na	CO ₃ + HCO ₃	SO ₄	Cl	NO ₃

Colorado River at Northerly International Boundary

Jan.	5	1.33	112,000	1,566		7.9	50	33	5.09	2.94	7.94	3.48	7.24	5.28
Feb.	4	.92	86,400	1,153		7.7	53	41	3.58	1.72	5.94	3.07	3.60	4.67
Mar.	4	.92	177,000	1,150		7.7	51	38	3.63	1.85	5.72	3.00	4.01	4.27
Apr.	5	.97	214,000	1,185		7.8	51	36	3.87	1.90	5.97	3.09	4.49	4.21
May	4	.99	290,000	1,200		7.9	49	33	4.09	1.96	5.87	3.09	4.95	3.96
June	4	.99	302,000	1,195		7.9	48	32	4.07	2.06	5.76	3.08	5.06	3.82
July	5	1.00	389,000	1,193		8.0	48	31	4.05	2.13	5.75	2.98	5.31	3.68
Aug.	4	1.00	395,000	1,189		8.0	49	32	4.23	2.18	6.12	2.96	5.08	3.83
Sept.	3	.99	305,000	1,196		8.1	48	33	3.96	2.27	5.75	2.98	5.07	4.00
Oct.	5	1.01	287,000	1,215		8.1	49	36	4.14	2.08	5.92	2.98	4.90	4.37
Nov.	4	1.04	269,000	1,243		7.9	51	38	4.05	2.13	6.32	2.86	4.97	4.77
Dec.	5	1.05	268,000	1,294		7.8	51	38	3.96	2.34	6.46	2.95	4.97	4.94
Mean	Ø 52	1.02	Ø 3,094,400	1,233		7.9	50	35	4.06	2.13	6.13	3.04	4.98	4.32
Period Avg.	1.54		2,319,344	1,857		8.0			5.72	3.42	9.57	3.30	8.08	7.37
Tons of Constituents	1979								341,000	108,000	590,000	382,000	1,001,000	641,000
Avg. Tons	Period 1962-1979								235,000	85,200	452,000	205,000	789,000	541,000

** Percent of total cations *** Percent of total anions Ø Weighted mean Ø Total

ELECTRICAL CONDUCTIVITY OF WATER SAMPLES

1979

The following tables show electrical conductivity, expressed in mhos per centimeter x 10^6 at 25°C, of individual water samples taken at Colorado River stations and in Mexican canals. Samples were taken at the northerly international boundary by both Sections of the Commission and at the southerly international boundary by the United States Section. Conductivity determinations were made by the United States Geological Survey. Samples for the Intake Canal at Morelos Dam and Miguel C. Rodriguez Gaging Station were taken by the Mexican Section of the Commission, and determinations were made by the Ministry of Agriculture and Hydraulic Resources of Mexico.

Electrical conductivity is a relative indication of the concentration of dissolved solids in the water samples.

Date	ECx10 ⁶ @25°C										
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Colorado River at Northerly International Boundary

January	February	April	May	July	August	October	November
1 1,610	15 1,140	1 1,170	16 1,180	1 1,210	16 1,240	1 1,200	16 1,220
2 1,680	16 1,140	2 1,160	17 1,180	2 1,200	17 1,220	2 1,240	17 1,230
3 1,820	17 1,190	3 1,180	18 1,180	3 1,200	18 1,220	3 1,210	18 1,250
4 1,690	18 1,160	4 1,170	19 1,190	4 1,200	19 1,220	4 1,200	19 1,240
5 1,670	19 1,130	5 1,160	20 1,190	5 1,190	20 1,220	5 1,210	20 1,230
6 1,630	20 1,110	6 1,160	21 1,190	6 1,190	21 1,220	6 1,220	21 1,220
7 1,600	21 1,100	7 1,170	22 1,200	7 1,190	22 1,200	7 1,230	22 1,220
8 1,600	22 1,090	8 1,160	23 1,190	8 1,190	23 1,170	8 1,220	23 1,230
9 1,720	23 1,080	9 1,160	24 1,200	9 1,190	24 1,190	9 1,220	24 1,240
10 1,710	24 1,080	10 1,170	25 1,190	10 1,190	25 1,190	10 1,220	25 1,260
11 1,750	25 1,080	11 1,160	26 1,190	11 1,180	26 1,180	11 1,210	26 1,270
12 1,730	26 1,070	12 1,170	27 1,230	12 1,180	27 1,180	12 1,210	27 1,270
13 1,750	27 1,070	13 1,180	28 1,220	13 1,190	28 1,170	13 1,200	28 1,250
14 1,780	28 1,060	14 1,180	29 1,210	14 1,190	29 1,170	14 1,200	29 1,250
15 1,790	March	15 1,190	30 1,190	15 1,200	30 1,170	15 1,230	30 1,250
16 1,750	1 1,060	16 1,190	31 1,180	16 1,190	31 1,170	16 1,230	December
17 1,660	2 1,060	17 1,190	June	17 1,200	September	17 1,210	1 1,250
18 1,640	3 1,110	18 1,200	1 1,180	18 1,190	1 1,200	18 1,210	2 1,240
19 1,470	4 1,100	19 1,210	2 1,190	19 1,180	2 1,220	19 1,230	3 1,230
20 1,400	5 1,090	20 1,220	3 1,200	20 1,180	3 1,200	20 1,240	4 1,250
21 1,380	6 1,140	21 1,210	4 1,190	21 1,190	4 1,180	21 1,240	5 1,260
22 1,430	7 1,140	22 1,230	5 1,190	22 1,190	5 1,180	22 1,210	6 1,280
23 1,420	8 1,130	23 1,220	6 1,180	23 1,200	6 1,170	23 1,230	7 1,220
24 1,390	9 1,160	24 1,230	7 1,160	24 1,200	7 1,160	24 1,220	8 1,210
25 1,360	10 1,170	25 1,220	8 1,170	25 1,180	8 1,150	25 1,210	9 1,270
26 1,400	11 1,170	26 1,210	9 1,210	26 1,190	9 1,200	26 1,210	10 1,270
27 1,380	12 1,160	27 1,220	10 1,240	27 1,190	10 1,200	27 1,220	11 1,220
28 1,400	13 1,150	28 1,230	11 1,200	28 1,190	11 1,190	28 1,200	12 1,230
29 1,410	14 1,150	29 1,200	12 1,190	29 1,190	12 1,200	29 1,200	13 1,240
30 1,330	15 1,130	30 1,200	13 1,160	30 1,180	13 1,190	30 1,220	14 1,240
31 1,320	16 1,130	May	14 1,180	31 1,190	14 1,210	31 1,210	15 1,220
February	17 1,120	1 1,190	15 1,200	August	15 1,230	November	16 1,200
1 1,290	18 1,120	2 1,220	16 1,200	1 1,190	16 1,220	1 1,210	17 1,280
2 1,280	19 1,150	3 1,200	17 1,210	2 1,200	17 1,200	2 1,210	18 1,270
3 1,270	20 1,180	4 1,190	18 1,210	3 1,200	18 1,200	3 1,230	19 1,260
4 1,250	21 1,180	5 1,210	19 1,210	4 1,200	19 1,190	4 1,240	20 1,260
5 1,250	22 1,190	6 1,210	20 1,200	5 1,200	20 1,180	5 1,240	21 1,270
6 1,220	23 1,200	7 1,210	21 1,200	6 1,200	21 1,190	6 1,240	22 1,290
7 1,220	24 1,190	8 1,210	22 1,200	7 1,200	22 1,210	7 1,230	23 1,290
8 1,230	25 1,210	9 1,190	23 1,200	8 1,200	23 1,220	8 1,220	24 1,320
9 1,240	26 1,180	10 1,200	24 1,200	9 1,210	24 1,210	9 1,210	25 1,330
10 1,200	27 1,160	11 1,200	25 1,180	10 1,190	25 1,210	10 1,220	26 1,380
11 1,180	28 1,160	12 1,240	26 1,180	11 1,180	26 1,200	11 1,230	27 1,310
12 1,170	29 1,160	13 1,250	27 1,190	12 1,170	27 1,190	12 1,210	28 1,250
13 1,160	30 1,160	14 1,190	28 1,190	13 1,160	28 1,200	13 1,220	29 1,270
14 1,160	31 1,150	15 1,190	29 1,180	14 1,190	29 1,220	14 1,210	30 1,270
			30 1,190	15 1,210	30 1,240	15 1,210	31 1,310

* Estimated

ELECTRICAL CONDUCTIVITY OF WATER SAMPLES

1979

Date	ECx10 ⁶ @25°C												
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Intake Canal at Morelos Diversion Structure

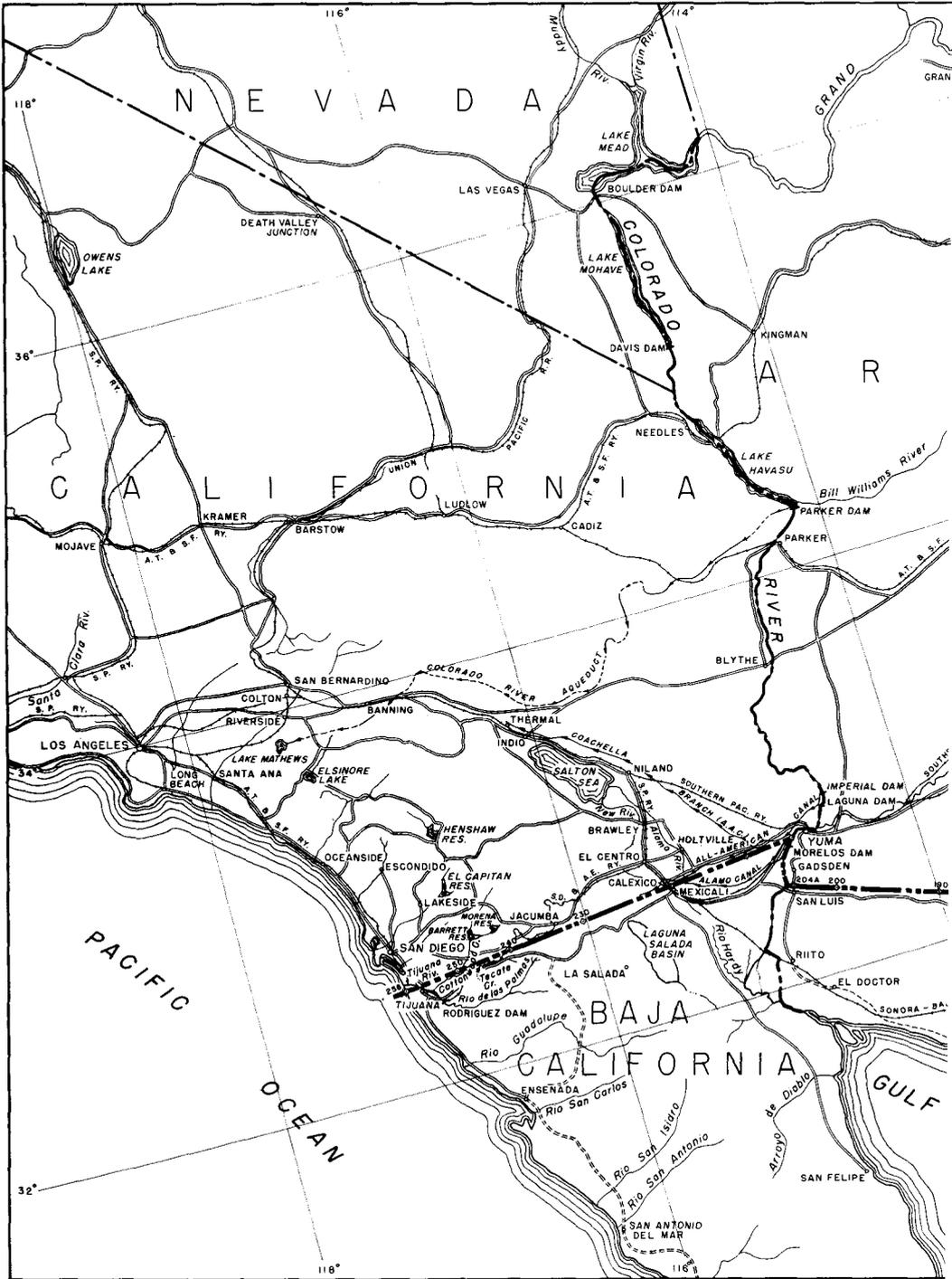
January	February	April	May	July	August	October	November
1 1,630	15 1,140	1 1,160	16 1,180	1 1,210	16 1,240	1 1,230	16 1,210
2 1,690	16 1,140	2 1,160	17 1,190	2 1,200	17 1,220	2 1,240	17 1,240
3 1,820	17 1,180	3 1,170	18 1,170	3 1,210	18 1,240	3 1,230	18 1,260
4 1,710	18 1,160	4 1,180	19 1,180	4 1,210	19 1,220	4 1,210	19 1,260
5 1,680	19 1,130	5 1,170	20 1,200	5 1,200	20 1,210	5 1,220	20 1,230
6 1,660	20 1,110	6 1,170	21 1,200	6 1,190	21 1,220	6 1,240	21 1,240
7 1,630	21 1,100	7 1,170	22 1,200	7 1,200	22 1,200	7 1,250	22 1,240
8 1,640	22 1,100	8 1,180	23 1,190	8 1,190	23 1,190	8 1,220	23 1,240
9 1,750	23 1,110	9 1,180	24 1,180	9 1,190	24 1,180	9 1,220	24 1,230
10 1,710	24 1,100	10 1,180	25 1,200	10 1,200	25 1,230	10 1,230	25 1,270
11 1,790	25 1,100	11 1,170	26 1,200	11 1,180	26 1,230	11 1,220	26 1,270
12 1,740	26 1,090	12 1,170	27 1,220	12 1,190	27 1,190	12 1,210	27 1,270
13 1,780	27 1,070	13 1,200	28 1,230	13 1,200	28 1,190	13 1,200	28 1,270
14 1,800	28 1,080	14 1,200	29 1,200	14 1,190	29 1,180	14 1,210	29 1,250
15 1,790	March	15 1,190	30 1,200	15 1,190	30 1,160	15 1,240	30 1,260
16 1,730	1 1,070	16 1,190	31 1,200	16 1,200	31 1,170	16 1,240	December
17 1,650	2 1,070	17 1,200	June	17 1,190	September	17 1,230	1 1,270
18 1,650	3 1,120	18 1,230	1 1,170	18 1,200	1 1,210	18 1,220	2 1,260
19 1,370	4 1,110	19 1,230	2 1,200	19 1,190	2 1,220	19 1,230	3 1,240
20 1,400	5 1,100	20 1,210	3 1,200	20 1,180	3 1,220	20 1,250	4 1,250
21 1,390	6 1,150	21 1,230	4 1,190	21 1,180	4 1,190	21 1,240	5 1,270
22 1,430	7 1,140	22 1,230	5 1,200	22 1,190	5 1,190	22 1,220	6 1,270
23 1,430	8 1,130	23 1,220	6 1,180	23 1,210	6 1,180	23 1,230	7 1,230
24 1,410	9 1,170	24 1,250	7 1,150	24 1,200	7 1,170	24 1,220	8 1,220
25 1,390	10 1,180	25 1,230	8 1,180	25 1,200	8 1,160	25 1,220	9 1,270
26 1,400	11 1,180	26 1,230	9 1,210	26 1,190	9 1,200	26 1,210	10 1,270
27 1,400	12 1,160	27 1,230	10 1,250	27 1,190	10 1,210	27 1,230	11 1,230
28 1,410	13 1,150	28 1,230	11 1,200	28 1,240	11 1,200	28 1,220	12 1,240
29 1,440	14 1,150	29 1,210	12 1,210	29 1,230	12 1,210	29 1,220	13 1,230
30 1,360	15 1,160	30 1,230	13 1,160	30 1,180	13 1,200	30 1,220	14 1,230
31 1,320	16 1,140	May	14 1,180	31 1,190	14 1,210	31 1,220	15 1,240
February	17 1,130	1 1,200	15 1,210	August	15 1,240	November	16 1,280
1 1,310	18 1,130	2 1,220	16 1,210	1 1,200	16 1,230	1 1,210	17 1,270
2 1,290	19 1,150	3 1,200	17 1,210	2 1,190	17 1,210	2 1,220	18 1,280
3 1,300	20 1,170	4 1,200	18 1,220	3 1,200	18 1,220	3 1,230	19 1,250
4 1,250	21 1,190	5 1,220	19 1,210	4 1,230	19 1,220	4 1,250	20 1,250
5 1,260	22 1,190	6 1,200	20 1,210	5 1,230	20 1,230	5 1,260	21 1,270
6 1,230	23 1,210	7 1,220	21 1,200	6 1,200	21 1,230	6 1,250	22 1,280
7 1,220	24 1,200	8 1,200	22 1,200	7 1,200	22 1,270	7 1,240	23 1,310
8 1,240	25 1,220	9 1,190	23 1,210	8 1,200	23 1,280	8 1,240	24 1,330
9 1,230	26 1,190	10 1,210	24 1,200	9 1,200	24 1,270	9 1,230	25 1,330
10 1,210	27 1,150	11 1,200	25 1,200	10 1,200	25 1,250	10 1,230	26 1,380
11 1,200	28 1,170	12 1,250	26 1,200	11 1,210	26 1,250	11 1,240	27 1,340
12 1,170	29 1,170	13 1,250	27 1,200	12 1,230	27 1,230	12 1,210	28 1,370
13 1,160	30 1,160	14 1,200	28 1,200	13 1,160	28 1,260	13 1,230	29 1,270
14 1,160	31 1,170	15 1,200	29 1,170	14 1,190	29 1,270	14 1,210	30 1,280
			30 1,190	15 1,200	30 1,280	15 1,220	31 1,310

Colorado River at Southerly International Boundary

January	February	March	May	June	June	August	October
22 1,390	6 1,240	22 1,150	22 1,160	5 1,120	29 1,160	7 1,190	2 1,180
26 1,400	9 1,230	May	29 1,150	12 1,130	July	September	November
		11 1,180		19 1,190	3 1,190	4 1,180	6 1,230

Colorado River at Miguel C. Rodriguez Gaging Station

January	May	May	June	August	September	October	November
8 2,990	7 2,160	31 1,170	25 1,180	6 1,130	10 1,190	15 1,240	26 1,190
February	14 1,230	June	July	13 1,150	17 1,200	22 1,210	December
12 2,890	17 1,180	4 1,150	2 1,150	20 1,120	24 1,200	29 1,190	3 1,250
March	21 1,190	7 1,170	9 1,180	27 1,150	October	November	10 1,200
5 2,880	24 1,210	11 1,160	16 1,190	September	1 1,210	6 1,200	17 1,250
April	28 1,210	18 1,230	23 1,140	3 1,220	8 1,200	12 1,220	28 1,230
1 2,690			30 1,170				



RAINFALL ON THE COLORADO RIVER WATERSHED IN INCHES

Tabulated below are monthly records of rainfall at stations located in California and Arizona in the United States and in Baja California and Sonora in Mexico, with averages for their periods of record. Records of daily rainfall amounts, where available, are on file in the offices of the United States or Mexican Sections of the Commission. For location, elevation, period of record, and the observer, see alphabetical listings of these stations on page 51 in this bulletin.

In United States

Month	Brawley, California		El Centro, California		Blythe, California		Yuma Citrus Station, Arizona			
	1979	Average 1931-1979	1979	Average 1931-1979	1979	Average 1931-1979	1979	Average 1931-1979		
Jan.	1.13	0.34	1.20	0.36	1.17	0.46	2.44	0.42		
Feb.	.21	.30	.12	.32	.17	.42	.11	.35		
Mar.	1.26	.20	.38	.17	.61	.38	.41	.24		
Apr.	0	.10	0	.10	0	.13	0	.12		
May	.25	.01	.06	.01	.63	.03	.42	.02		
June	0	.01	0	.01	0	.04	T	.02		
July	.46	.05	.43	.09	.12	.17	.45	.16		
Aug.	.22	.37	.88	.35	.52	.78	1.69	.52		
Sept.	0	.34	0	.27	.02	.37	T	.36		
Oct.	0	.25	0	.25	0	.30	T	.42		
Nov.	0	.17	0	.18	0	.25	T	.18		
Dec.	.03	.41	0	.42	.21	.50	.05	.39		
Yearly	3.56	2.55	3.07	2.53	3.45	3.83	5.57	3.20		

In Mexico

Month	Los Algodones, Baja California		Mexicali, Baja California		Bataques, Baja California		San Luis, R. C., Sonora		Delta, Baja California	
	1979	Average 1948-1979	1979	Average 1926-1979	1979	Average 1948-1979	1979	Average 1949-1979	1979	Average 1948-1979
Jan.	2.09	0.43	1.61	0.35	1.69	0.39	3.11	0.35	1.77	0.39
Feb.	.04	.20	.08	.31	.12	.16	.12	.28	.08	.20
Mar.	.31	.12	.31	.20	.31	.08	.12	.16	.39	.12
Apr.	0	.08	0	.12	0	.08	0	.08	0	.08
May	.24	T	.04	T	.24	T	.63	.04	.20	.04
June	0	T	0	T	T	.04	0	.04	0	T
July	.12	.08	1.14	.12	0	.04	.59	.24	.51	.04
Aug.	2.48	.43	.94	.35	.51	.16	1.18	.47	1.81	.20
Sept.	0	.20	0	.39	0	.12	0	.28	0	.24
Oct.	T	.31	0	.31	0	.31	0	.39	0	.35
Nov.	0	.16	T	.16	.08	.16	T	.51	T	.16
Dec.	.08	.31	T	.71	.04	.24	.04	.47	.04	.28
Yearly	5.35	2.36	4.13	3.07	2.99	1.69	5.79	2.80	4.80	2.05

Month	Colonia Juarez, Baja California		Laguna Salada, Baja California		Riito, Sonora		Santa Clara, Sonora			
	1979	Average 1952-1979	1979	Average 1974-1979	1979	Average 1959-1979	1979	Average 1971-1979		
Jan.	1.97	0.55	1.38	0.31	1.81	0.31	1.69	0.35		
Feb.	.04	.28	0	0	0	.20	.08	.20		
Mar.	.16	.24	0	T	.39	.12	.47	.12		
Apr.	0	.12	0	.20	0	.04	0	.08		
May	.39	.04	.20	T	.16	T	.20	.04		
June	0	T	*	0	0	.04	0	T		
July	1.06	.16	*	.24	.67	.12	0	0		
Aug.	.79	.31	*	.47	1.02	.24	.71	.16		
Sept.	0	.28	*	1.42	0	.55	.20	.39		
Oct.	0	.51	*	.28	0	.47	0	.83		
Nov.	.16	.28	*	.16	0	.28	0	.04		
Dec.	0	.35	*	.47	0	.35	.12	.28		
Yearly	4.57	2.48	*	3.78	4.06	2.80	3.46	2.44		

* Did not register

T Trace

LOCATION OF RAINFALL STATIONS ON THE COLORADO RIVER WATERSHED

The precipitation records of the stations listed alphabetically below began on the date shown and extend through 1979.

In the United States

NAME OF STATION	LATI-TUDE	LONGI-TUDE	δ ELEV. (FT.)	RECORD BEGAN	OBSERVER
* Blythe, California	33° 37'	114° 36'	268	1909	State Division of Forestry
Brawley, California	32° 57'	115° 33'	100	1908	Agricultural Research Service
El Centro, California	32° 46'	115° 34'	30	1930	El Centro Water Department
Yuma Citrus Station, Arizona	32° 37'	114° 39'	191	1923	University of Arizona Experimental Farm

In Mexico

NAME OF STATION	LATI-TUDE	LONGI-TUDE	δ ELEV. (FT.)	RECORD BEGAN	OBSERVER
Bataques, Baja California	32° 33'	115° 04'	** 66	1948	# S. A. R. H.
Delta, Baja California	32° 21'	115° 11'	** 39	1948	S. A. R. H.
Colonia Juarez, Baja California	32° 15'	115° 03'	49	1952	S. A. R. H.
Laguna Salada, Baja California	32° 12'	115° 44'	236	1974	S. A. R. H.
Los Algodones, Baja California	32° 42'	114° 44'	115	1948	S. A. R. H.
Mexicali, Baja California	32° 40'	115° 28'	13	1926	S. A. R. H.
Riito, Sonora	32° 10'	114° 57'	** 39	1959	S. A. R. H.
San Luis, R. C., Sonora	32° 28'	114° 47'	131	1949	S. A. R. H.
Santa Clara, Sonora	31° 42'	114° 29'	49	1971	S. A. R. H.

δ Elevation above mean sea level except Brawley and El Centro which are elevations below mean sea level

** Elevations obtained from International Boundary and Water Commission topographic maps

Ministry of Agriculture and Hydraulic Resources

* Not shown on map

EVAPORATION IN THE COLORADO RIVER BASIN IN INCHES

Tabulated below are records of evaporation observed at one station in Arizona and at nine stations in Baja California and Sonora, Mexico. The station in the United States is operated by the University of Arizona Experimental Farm. The stations in Mexico are operated by the Ministry of Agriculture and Hydraulic Resources. The type of pan used at all these stations was the National Weather Service standard pan of 4-foot diameter. For specific location of these stations, refer to data opposite the same station name shown in "Location of Rainfall Stations," page 51 in this bulletin.

In the United States

Month	Yuma Citrus Station, Arizona	
	1979	Average 1931-1979
Jan.	2.66	3.87
Feb.	3.69	4.81
Mar.	5.93	7.51
Apr.	9.47	10.13
May	12.03	13.09
June	13.98	14.36
July	14.28	15.47
Aug.	11.64	13.67
Sept.	9.99	10.81
Oct.	6.71	7.62
Nov.	4.56	4.98
Dec.	4.46	3.68
Yearly	99.40	110.00

In Mexico

Month	Los Algodones, Baja California		Mexicali, Baja California		Bataques, Baja California		San Luis, R. C., Sonora		Delta, Baja California	
	1979	Average 1949-1955 1961-1979	1979	Average 1926-1979	1979	Average 1963-1979	1979	Average 1953-1979	1979	Average 1948-1979
Jan.	3.35	4.29	2.05	2.60	2.28	3.70	2.13	3.31	2.48	3.23
Feb.	4.88	5.20	3.66	3.54	4.25	4.72	3.62	4.06	3.46	4.33
Mar.	7.05	7.48	5.47	5.91	6.14	6.97	5.51	6.30	4.96	6.30
Apr.	11.34	10.16	8.46	7.99	9.17	9.02	8.98	8.43	7.36	8.15
May	13.70	12.80	11.02	10.59	12.28	11.85	11.22	11.10	9.37	10.31
June	15.75	13.90	13.31	11.73	12.48	12.68	12.95	12.76	7.91	11.50
July	15.51	13.70	12.91	11.85	12.80	12.60	13.11	13.98	11.57	12.01
Aug.	12.44	12.44	10.00	10.16	10.59	10.83	10.39	12.52	10.79	10.79
Sept.	11.61	10.24	8.82	8.15	9.76	9.06	8.43	9.65	8.54	8.62
Oct.	8.94	7.99	6.97	5.79	7.40	6.38	6.50	5.83	6.85	6.26
Nov.	6.77	5.24	3.78	3.43	4.92	4.69	4.06	4.25	3.74	4.33
Dec.	5.91	4.25	3.07	2.48	4.53	3.50	3.46	3.19	3.90	3.31
Yearly	117.24	109.09	89.53	84.25	96.61	96.06	90.35	96.77	80.94	83.03

Month	Colonia Juarez, Baja California		Laguna Salada, Baja California		Riito, Sonora		Santa Clara, Sonora			
	1979	Average 1970-1979	1979	Average 1974-1978	1979	Average 1963-1979	1979	Average 1971-1979		
Jan.	2.44	3.27	3.78	4.06	1.77	3.03	3.46	5.28		
Feb.	4.17	4.21	4.41	4.49	2.95	4.09	3.66	4.80		
Mar.	5.83	6.22	6.50	7.09	4.96	5.98	5.87	6.26		
Apr.	8.50	7.68	7.40	8.31	7.24	7.64	7.56	7.64		
May	9.21	9.88	8.74	10.98	10.47	10.20	10.91	8.74		
June	11.18	11.61	*	13.94	11.38	11.61	11.06	11.46		
July	11.10	11.57	*	13.19	12.32	12.24	10.66	11.02		
Aug.	9.33	10.47	*	12.13	9.69	10.28	10.63	10.75		
Sept.	9.33	8.86	*	6.85	9.21	8.19	8.74	9.17		
Oct.	7.80	6.54	*	6.73	6.61	5.63	7.68	7.52		
Nov.	5.83	4.69	*	4.84	3.78	3.62	5.83	5.87		
Dec.	5.20	3.50	*	3.46	3.58	2.87	5.08	5.39		
Yearly	89.92	88.50	*	98.94	83.98	87.64	91.14	94.21		

* No record

TEMPERATURE IN THE COLORADO RIVER BASIN IN DEGREES FAHRENHEIT

The maximum, minimum, and monthly mean temperature observations for United States stations are from daily readings of thermometers generally exposed in a shelter located a few feet above sod-covered ground. The maximum and minimum temperatures shown for the stations in Mexico are from daily maximum and minimum thermometer observations, with maximum and minimum for their periods of record. For specific location, elevation, period of record, and the observer, refer to data opposite same station name as shown in "Location of Rainfall Stations," page 51 in this bulletin.

In the United States

Month	Blythe, California				Yuma Citrus Station, Arizona				Brawley, California			
	1979			Average 1931-79	1979			Average 1931-79	1979			Average 1931-79
	Mean	Max.	Min.		Mean	Max.	Min.		Mean	Max.	Min.	
Jan.	48.9	72	28	52.4	48.7	70	28	52.9	50.4	71	28	53.5
Feb.	55.3	79	32	57.2	53.9	79	30	56.9	56.0	78	33	57.9
Mar.	61.5	88	37	62.9	60.2	88	37	62.0	61.4	87	38	63.1
Apr.	69.7	97	38	70.0	68.2	95	39	68.5	68.9	97	43	69.8
May	77.5	105	46	77.4	75.7	104	44	75.8	75.5	103	42	77.3
June	86.0	116	54	85.3	84.7	115	54	83.6	85.9	116	58	85.1
July	91.7	116	63	92.2	88.7	118	56	91.0	90.5	117	62	91.9
Aug.	87.3	114	63	90.9	85.4	111	59	90.2	87.4	113	61	91.3
Sept.	87.2	114	60	85.0	86.4	112	59	85.0	88.6	111	66	86.2
Oct.	74.2	102	46	73.2	72.6	104	33	73.6	76.4	104	42	75.0
Nov.	58.0	79	38	60.2	57.7	82	26	61.3	60.0	84	31	62.4
Dec.	54.8	82	32	53.2	55.5	81	33	54.5	56.6	85	32	54.9
Yearly	71.0	116	28	71.7	69.8	118	26	71.3	71.5	117	28	72.4

Month	El Centro, California											
	1979			Average 1931-79								
	Mean	Max.	Min.		Mean	Max.	Min.		Mean	Max.	Min.	
Jan.	51.6	75	27	53.6								
Feb.	56.2	78	34	57.9								
Mar.	61.9	88	37	62.9								
Apr.	69.4	97	44	69.5								
May	76.7	102	49	77.2								
June	85.9	116	57	85.0								
July	90.6	115	64	91.8								
Aug.	87.6	113	65	91.0								
Sept.	88.7	112	64	85.6								
Oct.	75.1	105	41	74.6								
Nov.	59.7	83	31	62.1								
Dec.	56.3	84	32	54.6								
Yearly	71.6	116	27	72.2								

In Mexico

Month	Laguna Salada, Baja California				Los Algodones, Baja California				Mexicali, Baja California			
	1979		1974-1979		1979		1948-1979		1979		1926-1979	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
Jan.	77	28	84	18	68	30	88	23	75	30	93	19
Feb.	84	39	95	27	79	36	95	28	81	34	93	23
Mar.	95	34	95	32	88	39	100	32	90	41	100	30
Apr.	99	37	100	36	93	43	109	37	99	46	106	34
May	99	37	111	37	99	46	117	43	102	52	117	43
June			120	50	113	57	126	52	115	61	120	48
July			122	54	115	63	118	61	115	64	118	55
Aug.			118	52	108	64	120	61	113	68	118	54
Sept.			117	59	111	66	122	54	113	68	122	48
Oct.			118	36	106	45	111	32	104	45	109	32
Nov.			95	28	82	32	100	27	82	34	104	28
Dec.			86	19	82	36	90	23	86	34	90	23
Yearly			122	18	115	30	126	23	115	30	122	19

**TEMPERATURE IN THE COLORADO RIVER BASIN
IN DEGREES FAHRENHEIT**

In Mexico

Month	San Luis, R. C., Sonora				Delta, Baja California				Colonia Juarez, Baja California			
	1979		1949-1979		1979		1948-1979		1979		1964-1979	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
Jan.	72	30	100	19	77	36	104	27	70	30	91	19
Feb.	81	36	109	27	82	39	104	28	79	32	97	21
Mar.	90	43	108	28	91	46	113	28	90	39	99	25
Apr.	97	45	115	37	99	41	118	32	95	45	115	30
May	104	48	115	41	102	54	129	32	102	46	117	36
June	118	59	126	45	115	63	133	36	115	54	122	39
July	115	63	126	59	113	66	135	45	117	55	122	45
Aug.	113	66	122	55	111	68	140	52	111	61	118	50
Sept.	115	68	118	50	111	70	135	39	113	61	122	39
Oct.	106	43	118	32	106	55	117	34	109	45	118	36
Nov.	86	30	113	28	86	39	120	32	84	34	104	25
Dec.	84	34	102	23	84	43	104	27	81	34	97	19
Yearly	118	30	126	19	115	36	140	27	117	30	122	19

Month	Riito, Sonora				Santa Clara, Sonora				Bataques, Baja California			
	1979		1949-1979		1979		1971-1979		1979		1948-1979	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
Jan.	72	27	91	19	68	36	90	18	70	30	113	16
Feb.	81	32	95	21	77	41	90	23	79	34	99	21
Mar.	88	37	100	25	84	45	90	37	90	39	113	25
Apr.	99	43	109	36	90	54	102	46	95	45	118	16
May	104	46	115	41	97	57	106	50	104	48	124	34
June	115	54	124	45	100	64	117	57	117	52	135	43
July	117	59	140	52	104	70	115	64	117	61	133	45
Aug.	111	61	122	46	100	70	106	68	111	68	129	46
Sept.	111	57	118	39	104	73	108	61	115	63	135	39
Oct.	104	39	115	30	100	54	102	41	106	41	118	32
Nov.	84	28	118	27	82	39	93	36	84	32	115	32
Dec.	84	32	86	21	81	43	82	25	82	34	97	25
Yearly	117	27	140	19	104	36	117	18	117	30	135	16

IRRIGATED AREAS ALONG COLORADO RIVER BELOW IMPERIAL DAM

1979

The total drainage area within the Colorado River basin is about 246,000 square miles, of which 184,600 square miles lie above Imperial Dam and about 61,400 square miles are below the dam. Of the area below Imperial Dam, 59,400 square miles are in the United States and about 2,000 square miles are in Mexico. The area below Imperial Dam includes the Gila River watershed with a total area of about 58,200 square miles, of which about 1,100 square miles are in Mexico.

The irrigated areas tabulated below comprise the areas in the United States and Mexico which are served by diversions from the Colorado River at or below Imperial Dam. The diversions are supplemented by some pumping from wells in both countries. The areas in the United States include: 1) those within the U. S. Bureau of Reclamation Projects and in the North and South Gila Valleys located near Yuma, Arizona, the data for which are furnished by the U. S. Bureau of Reclamation; 2) those within the Coachella Valley, California, the data for which are furnished by the Coachella Valley County Water District and State of California Department of Water Resources; and 3) those within the Imperial Valley, California, the data for which are furnished by the Imperial Irrigation District. The areas in Mexico include those in the Mexicali Valley located in the states of Baja California and Sonora, the data for which are furnished by the Ministry of Agriculture and Hydraulic Resources of Mexico. The areas tabulated below refer to the total areas farmed, and insofar as possible, duplication of irrigated areas because of double cropping has been eliminated.

Point of Diversion from Colorado River and Designation of Areas	Total Irrigated Areas Acres
IN UNITED STATES:	
Imperial Dam	
Yuma Valley Division	44,030
Reservation Division	12,892
Yuma Mesa	18,055
Yuma Aux. Project Unit "B" (Yuma Mesa)	3,289
South Gila Valley	9,951
North Gila Valley	5,963
Wellton-Mohawk	57,806
Coachella Valley	56,212
Imperial Valley	460,118
Warren Act	80
Non-Project lands adjacent to Colorado River	12,560
Total in United States	680,956
IN MEXICO:	
Morelos Dam	
Mexicali Valley	* 544,366
Total in United States and Mexico	1,225,322

* An estimated 34% of total acreage is served by pumping from ground water in Mexicali Valley

ALAMO RIVER AT INTERNATIONAL BOUNDARY

DESCRIPTION; Staff gage located on the right bank of the river, about 7 miles (11.3 km) east of Calexico, California, immediately downstream from the international land boundary between the United States and Mexico and a few feet upstream from a 4-foot (1.22 m) Cipolletti weir in the throat of a twin-tube concrete culvert which carries the river flow under the All-American Canal.

RECORDS: Computed on the basis of head on the Cipolletti weir from daily staff gage readings, and weir ratings as determined by monthly current meter measurements. Records obtained and furnished by Imperial Irrigation District. Records available: June 1942 through 1979.

REMARKS: The flow at this station normally comprises seepage from the All-American Canal and drainage water from the Mexicali Valley which enters the United States.

EXTREMES: Maximum mean daily discharge, 258 second-feet (7.31 m³/sec) (estimated), April 13, 1946; minimum discharge, no flow July 22-23, 29-30, 1949. Prior to the period of record, and since 1900, considerably higher flows occurred. During the years 1905 to 1907, when the Colorado River flowed into the Salton Sea, a part of its flow passed through the Alamo River channel.

Mean Daily Discharge in Second-Feet 1979 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.92	1.92	2.23	2.65	2.54	2.34	1.46	1.64	1.28	1.00	0.87	1.55
2	1.92	1.92	2.23	2.65	2.44	1.55	1.18	1.64	1.28	1.18	1.00	1.55
3	1.64	1.92	2.34	2.65	2.44	1.46	1.18	1.64	1.18	1.18	1.00	1.55
4	1.92	1.92	2.34	2.54	2.44	1.64	1.46	1.64	1.18	1.00	1.00	1.55
5	1.92	1.92	2.34	2.54	2.23	1.74	1.37	1.92	2.34	1.00	1.00	1.74
6	2.13	1.92	2.34	2.65	2.34	1.92	1.37	1.92	2.75	1.00	1.00	1.64
7	2.13	1.92	2.44	2.65	1.92	1.92	1.64	1.74	2.75	1.00	1.83	1.92
8	2.34	1.92	2.44	2.54	1.74	1.92	1.64	3.38	1.55	1.00	2.02	1.92
9	2.34	1.92	2.44	2.54	2.13	1.92	1.64	2.13	1.46	1.00	2.02	1.92
10	2.13	1.92	2.44	2.54	2.13	1.64	1.74	2.13	1.37	1.28	2.34	2.13
11	2.13	1.92	2.44	2.54	2.13	1.64	1.64	2.13	1.37	1.18	1.74	2.13
12	1.92	1.92	2.34	2.54	1.92	1.64	1.64	15.97	1.92	1.18	2.54	1.92
13	1.92	2.02	2.34	2.54	1.64	1.92	1.64	4.07	1.92	1.28	1.46	1.64
14	1.92	2.13	2.44	2.65	1.74	1.92	2.13	2.86	1.64	1.28	1.46	1.64
15	1.92	2.13	2.44	2.65	1.64	1.37	2.13	2.44	1.46	1.00	1.74	1.64
16	1.92	2.13	2.44	2.65	1.83	1.37	1.55	2.13	1.46	1.37	1.92	1.64
17	2.34	2.13	2.44	2.54	2.23	1.18	1.92	4.21	1.46	1.00	1.92	1.74
18	2.13	1.92	2.44	2.65	1.64	1.37	2.75	2.65	1.46	.87	1.74	1.74
19	2.02	1.92	2.44	2.65	1.64	1.37	1.92	2.75	1.37	.74	1.55	1.74
20	2.02	1.92	2.44	2.65	1.74	1.00	1.92	2.75	1.37	.87	1.46	2.54
21	2.02	2.23	4.07	2.44	1.74	1.37	2.44	3.38	1.37	1.00	1.37	1.74
22	1.92	2.23	3.24	2.34	2.65	2.75	2.44	2.13	1.00	.81	1.37	1.74
23	1.92	2.13	3.65	2.44	2.13	4.07	1.92	1.92	1.00	.87	1.37	1.74
24	2.13	2.13	3.24	2.54	3.10	2.13	1.92	2.13	1.00	.87	1.46	1.74
25	2.13	2.13	3.65	2.44	2.65	1.74	1.74	2.13	1.00	.87	1.46	1.92
26	2.13	2.13	2.54	2.44	2.54	1.55	1.74	1.92	1.00	.87	1.55	1.92
27	2.13	2.02	3.52	2.23	2.23	1.46	1.74	2.13	1.00	.87	1.92	1.92
28	2.13	2.02	3.79	2.44	2.02	2.34	1.55	2.13	1.00	.87	1.74	1.92
29	2.13	2.54	2.44	2.34	2.13	1.55	1.55	1.28	1.00	.87	1.55	2.02
30	1.92	2.54	2.44	2.34	1.55	1.55	1.55	1.28	1.00	.87	1.55	2.02
31	1.92	2.54	2.54	2.34	2.34	1.55	1.55	1.18	1.18	.87	2.02	2.02
Sum	63.11	56.36	83.10	76.20	66.58	53.92	54.06	83.35	42.94	31.05	46.95	56.54
Current Year 1979								Period 1943-1979				
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.	0.34	0.27	1 8	2.34	3	1.64	2.04	125	331	2,790	99	
Feb.	.33	.30	121	2.23	1 1	1.92	2.01	112	300	2,822	90.2	
Mar.	.48	.33	21	4.07	1 1	2.23	2.68	165	338	3,154	87.1	
Apr.	.37	.33	1 1	2.65	27	2.23	2.54	151	361	2,222	97	
May	.41	.27	24	3.10	113	1.64	2.15	132	281	1,799	73	
June	.48	.20	23	4.07	20	1.00	1.80	107	276	1,686	61	
July	.38	.22	18	2.75	1 2	1.18	1.74	107	253	1,712	59	
Aug.	1.13	.22	12	15.97	31	1.18	2.69	165	303	1,672	65.7	
Sept.	.38	.20	1 6	2.75	122	1.00	1.43	85.2	285	1,406	83.5	
Oct.	.24	.16	16	1.37	19	.74	1.00	61.6	306	1,845	61.6	
Nov.	.36	.18	12	2.54	1	.87	1.56	93.1	314	2,080	62.4	
Dec.	.36	.26	20	2.54	1 1	1.55	1.82	112	293	1,686	80	
Yearly	1.13	0.16		15.97		0.74	1.96	1,416	3,641	22,146	1,071	
	Meters		Cubic Meters per Second				Thousands of Cubic Meters					
	0.34	0.05		0.45		0.02	0.06	1,747	4,491	27,317	1,321	

Ø Mean daily † And other days

NEW RIVER AT INTERNATIONAL BOUNDARY

DESCRIPTION: Water-stage recorder located on the left (west) bank of the river in the limits of the city of Calexico, California, 1,400 feet (427 m) downstream (north) from the international land boundary between the United States and Mexico. Measurements are made from a foot bridge at the gage.

RECORDS: Based on a continuous record of gage heights and weekly current meter measurements, supplemented by additional measurements during periods of high flow, by the Imperial Irrigation District. Records computed and furnished by the District. Records available: June 1942 through 1979.

REMARKS: The New River flows northward from Mexico into the United States and thence into the Salton Sea. The flow at this station normally comprises 1) a portion of the waste and drainage water from the irrigation system in the Mexicali Valley, and 2) sewage and other wastes from Mexicali, Baja California. Flood waters enter the river from local drainage in Mexico, and such waters can reach damaging rates during violent desert storms. Waste flows from the Mexican system of canals are limited to an average annual quantity of 35,000 acre-feet (43,172,000 m³) during any successive five-year period under the provisions of Minute No. 197 of the Commission.

EXTREMES: Maximum mean daily discharge, 691 second-feet (19.6 m³/sec) on December 3, 1962; minimum mean daily discharge, 2 second-feet (0.06 m³/sec) on May 14, 1945. Prior to the period of record, and since 1900, much higher flows occurred. During the years 1905 to 1907, when the Colorado River flowed into the Salton Sea, a considerable part of its flow passed through the New River channel.

Mean Daily Discharge in Second-Feet 1979 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	116	173	164	170	183	167	406	173	186	146	203	160
2	124	168	163	177	185	203	347	175	191	146	182	164
3	134	211	173	160	192	224	314	167	192	145	219	166
4	140	225	175	163	205	242	334	168	200	146	198	172
5	148	216	173	162	189	248	398	185	183	146	180	168
6	163	182	173	172	181	250	430	195	180	145	175	163
7	175	155	172	165	179	265	442	200	177	151	185	174
8	176	141	175	162	170	268	436	191	177	159	177	163
9	159	147	165	172	188	281	445	169	180	168	174	156
10	153	151	163	171	208	320	473	164	177	170	183	157
11	158	146	156	171	200	328	475	170	181	166	173	156
12	143	149	160	173	182	337	403	284	183	166	171	155
13	133	152	164	185	186	340	350	368	187	166	164	149
14	134	148	161	180	182	346	321	362	173	164	169	149
15	133	145	160	178	181	339	300	282	162	167	173	148
16	183	143	162	181	174	319	314	242	160	* 175	177	162
17	217	145	159	186	157	228	323	216	168	* 175	162	179
18	261	146	157	186	151	186	326	214	170	195	158	169
19	226	146	167	187	148	182	341	214	167	183	159	165
20	176	149	185	184	169	192	538	238	163	203	153	152
21	161	151	194	190	193	194	564	233	157	159	159	152
22	153	150	209	175	200	204	457	223	151	188	166	152
23	183	153	192	175	221	257	350	196	147	191	163	156
24	225	152	175	189	214	302	368	178	147	185	155	158
25	232	156	178	198	199	334	345	172	146	182	157	165
26	260	149	178	187	189	353	326	171	143	178	161	204
27	221	146	182	180	169	376	375	156	143	158	155	255
28	166	151	186	194	170	395	288	165	141	159	150	207
29	150		184	189	187	435	220	168	142	161	148	177
30	143		177	190	195	469	194	170	142	164	154	167
31	152		171		185		179	171		213		169
Sum	5,298	4,446	5,353	5,352	5,732	8,584	11,382	6,380	5,016	5,220	5,103	5,189
Current Year 1979									Period 1943-1979			
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.	40.69	42.28	18	261	1	116	171	10,508	7,769	20,160	1,751	
Feb.	41.14	42.08	4	225	8	141	159	8,819	6,540	17,845	1,258	
Mar.	41.38	41.97	22	209	11	156	173	10,618	7,313	12,960	1,008	
Apr.	41.50	41.75	25	198	3	160	178	10,616	7,570	14,489	1,390	
May	41.07	41.91	23	221	19	148	185	11,369	6,747	11,369	629	
June	38.38	41.77	30	469	1	167	286	17,026	5,861	17,026	1,087	
July	37.77	41.31	21	564	31	179	367	22,576	5,980	22,576	817	
Aug.	39.07	41.61	13	368	27	156	206	12,655	6,751	12,655	1,139	
Sept.	41.39	41.81	4	200	28	141	167	9,949	6,773	12,688	1,795	
Oct.	41.05	41.80	31	213	1	145	168	10,354	7,022	13,902	2,081	
Nov.	41.14	41.85	3	219	29	148	170	10,122	6,691	12,323	2,483	
Dec.	40.68	41.77	27	255	15	148	167	10,292	7,436	21,205	1,763	
Yearly	37.77	42.28		564		116	200	144,904	82,453	144,904	24,573	
	Meters		Cubic Meters per Second				Thousands of Cubic Meters					
	11.51	12.89		16.0		3.3	5.7	178,738	101,705	178,738	30,311	

* Estimated Ø Mean daily ** Feet below mean sea level † And other days

WASTES FROM MEXICALI POTABLE WATER PLANT TO NEW RIVER IN MEXICO

DESCRIPTION: An 11.5-foot (3.50 m) Parshall flume installed by the State Commission of Public Services of Mexicali. Located 1.2 miles (2.0 km) upstream of the pumping plant on the supply canal. Excess water discharges into an open channel, thence into a 36-inch (91 cm) diameter pipe that empties into Rivera Drain (Drain 134), which is 1.2 miles (2.0 km) below the plant and 1.2 miles (2.0 km) south of the international boundary. From this point the waste is carried by a closed concrete box conduit into New River.

RECORDS: During 1979 the mean daily flows were computed from the total inflow to the potable water plant as measured at the Parshall flume, less the water pumped to the city and the water used in the maintenance of the plant. The records are obtained and furnished by the State Commission of Public Services of Mexicali. Records available: January 1968 through December 1979.

REMARKS: The plant began operation on September 28, 1963 by the State Commission of Public Services of Mexicali. Before 1968 the flow was small and infrequent. The potable water plant obtains water from the West Main Canal, which is a part of Mexico's system of canals in the Colorado Irrigation System. Excess water discharges into a closed conduit that empties into New River 0.9 mile (1.4 km) upstream of the international boundary.

EXTREMES: Maximum instantaneous discharge, 81.9 second-feet (2.32 m³/sec) on March 26, 1969; minimum instantaneous discharge, zero during several days in 1977, 1978, and 1979.

Mean Daily Discharge in Second-Feet 1979 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
1	2.1	0	3.2	1.1	1.8	2.1	1.8	2.1	1.8	1.8	2.1	1.8	
2	2.8	0	3.2	1.8	1.1	1.8	2.1	1.8	1.8	1.8	2.1	2.1	
3	0	0	2.1	1.8	0	2.1	2.1	1.8	1.8	1.8	2.1	2.1	
4	0	0	2.1	1.8	0	2.1	2.1	1.8	1.8	1.8	2.8	2.8	
5	0	0	2.8	1.8	4.6	1.8	2.1	1.8	1.8	1.8	2.1	2.1	
6	2.1	0	2.1	1.8	3.2	2.5	2.1	1.8	1.8	1.8	2.1	0	
7	1.1	0	2.1	1.8	.7	0	1.8	2.1	2.5	1.8	3.9	3.2	
8	0	0	2.1	2.5	2.8	0	1.8	2.1	1.8	1.8	2.1	2.1	
9	0	0	2.1	1.8	2.5	2.1	2.1	1.8	1.8	1.8	2.1	1.1	
10	0	2.8	2.1	1.8	1.8	1.8	0	1.8	1.8	1.8	2.1	3.9	
11	0	0	2.1	2.1	1.1	2.1	2.1	1.8	1.8	1.8	2.1	2.8	
12	0	0	2.5	2.1	1.1	1.8	2.1	1.8	1.8	1.8	2.8	2.8	
13	2.1	0	3.9	2.1	1.1	0	2.1	1.8	1.8	1.8	2.1	3.9	
14	2.1	0	3.9	2.5	2.5	1.8	2.1	1.8	1.8	1.8	3.2	1.8	
15	0	0	2.1	2.1	2.8	1.8	1.8	1.8	1.8	2.1	2.1	0	
16	0	0	4.2	2.5	2.1	1.8	2.1	1.8	1.8	1.8	2.1	3.2	
17	0	0	3.2	2.5	.7	1.8	2.1	1.8	2.1	1.4	2.1	2.8	
18	0	0	2.1	2.5	.7	1.8	1.8	1.8	1.8	1.8	2.8	2.8	
19	0	2.1	2.1	2.5	3.5	2.5	0	1.8	1.8	1.8	2.1	4.9	
20	0	0	3.2	2.1	2.1	1.8	0	1.8	1.8	0	2.1	2.8	
21	0	1.1	2.1	2.5	2.1	1.8	2.1	1.8	1.8	1.4	2.1	2.1	
22	0	0	2.1	2.1	2.1	2.1	2.8	1.8	1.4	4.9	.4	2.1	
23	0	.7	4.2	2.1	2.5	1.8	2.1	1.8	1.8	2.8	3.2	2.8	
24	0	.7	3.2	2.1	2.8	1.8	2.8	1.8	1.8	2.1	2.8	2.1	
25	0	4.2	3.2	2.1	2.5	1.8	2.5	1.8	1.8	1.8	6.0	2.1	
26	1.8	2.8	2.1	.7	2.1	1.8	1.8	1.8	1.8	1.8	2.1	0	
27	0	1.1	2.8	2.1	1.8	1.8	2.8	1.8	1.8	1.8	2.1	0	
28	1.8	0	3.2	1.8	2.5	1.8	2.8	1.8	1.8	1.8	2.1	0	
29	0	0	3.2	2.1	2.5	1.8	32.8	2.1	1.8	0	3.2	0	
30	0	0	3.2	2.1	1.8	1.8	2.1	1.8	1.8	2.8	2.1	0	
31	0	0	2.8		2.1		1.8	1.8		2.1		0	
Sum		15.9	15.5	85.5	60.4	60.7	51.2	90.8	56.2	53.7	56.9	73.5	60.4
Current Year 1979													
Month	Extreme Gage Feet		Ø Extreme Second-Feet				Average Second-Feet	Total	Period 1968-1979				
	High	Low	Day	High	Day	Low	Acre-Feet	Average	Maximum	Minimum			
Jan.			2	2.8	1 3	0	0.4	31.5	233	520	31.5		
Feb.			25	4.2	1 1	0	.7	30.8	201	311	30.8		
Mar.			116	4.2	1 3	2.1	2.8	169	288	871	123		
Apr.			1 8	2.5	26	.7	2.1	120	261	431	120		
May			5	4.6	1 3	0	2.1	121	289	435	121		
June			1 6	2.5	1 7	0	1.8	101	255	409	101		
July			29	32.8	110	0	2.8	180	332	528	137		
Aug.			1 1	2.1	1 2	1.8	1.8	111	349	596	111		
Sept.			7	2.5	22	1.4	1.8	106	340	549	106		
Oct.			22	4.9	120	0	1.8	113	309	507	113		
Nov.			25	6.0	22	.4	2.5	146	265	504	109		
Dec.			19	4.9	1 6	0	2.1	120	263	597	115		
Yearly				32.8		0	1.8	1,350	3,392	5,359	1,350		
	Meters		Cubic Meters per Second				Thousands of Cubic Meters						
				0.93		0	0.05	1,665	4,184	6,610	1,665		

Ø Mean daily

! And other days

WASTE WATERS FROM MEXICAN SYSTEM OF CANALS ENTERING THE UNITED STATES

DESCRIPTION: During 1979 the only flow to the New River in Mexico was from the Mexicali Potable Water Plant, which discharges into Rivera Drain (Drain 134), and thence to New River. There were no discharges during 1979 from Wisteria Wasteway, located 4.3 miles (7.0 km) upstream from the international boundary in Colonia Wisteria.

RECORDS: Records of the Potable Water Plant are based on flows measured on a Parshall flume less pumping to the city. Records obtained and furnished by the State Commission of Public Services of Mexicali. Records available: Wisteria Wasteway, January 1951 through 1975; Sifon Wasteway, January 1952 to April 30, 1964; Pueblo Nuevo Wasteway, January 1956 through 1965; and the Potable Water Plant, January 1968 through December 1979.

REMARKS: To obtain data for Sifon and Pueblo Nuevo Wasteways, see bulletins 1 to 6 (1960-1965) and for Wisteria Wasteway; bulletins 1 to 16 (1960-1975). For data on wastes from Potable Water Plant, see page 58 of this bulletin.

Monthly Discharge in Acre-Feet

Month	Current Year 1979	Period 1956-1979		
		Average	Maximum	Minimum
January	31.5	1,187	8,758	15.4
February	30.8	796	7,281	19.6
March	169	530	2,610	21.7
April	120	417	2,843	16.1
May	121	321	1,141	9.1
June	5,670	486	5,670	0
July	10,251	653	10,251	0
August	2,956	487	2,956	0
September	106	409	2,081	21.0
October	113	622	3,474	8.4
November	146	692	3,784	0
December	120	1,098	8,691	0
Yearly	19,834	7,699	27,430	399
	Thousands of Cubic Meters			
	24,465	9,497	33,835	492

SALTON SEA - ELEVATIONS OF WATER SURFACE

DESCRIPTION: Water-stage recorder and staff gage located on the western shore of the Salton Sea, 15.5 miles (24.9 km) northwest of Westmoreland, Imperial County, California. The Salton Sea is the sink of a closed basin which has a drainage area of 8,360 square miles (21,652 km²). Zero of the gage is 250.00 feet (76.2 m) below mean sea level, U. S. C. & G. S. datum.

RECORDS: Records of water surface elevations available from November 1904 through 1979. From January 1925 to October 22, 1951, once monthly records of elevations were collected by Imperial Irrigation District from a bench mark at Figtree John's Spring, about 22 miles (35.4 km) northwest along the western shore from the present gage. Since October 24, 1951, a continuous record of gage heights has been obtained by the U. S. Geological Survey at new gaging station published as "Salton Sea near Westmoreland, California." The elevation of the old station is at a datum of one foot (0.30 m) higher than that of the present station. All records reported below and the area and capacity table are adjusted to the datum of the present station.

REMARKS: Runoff from the basin, irrigation drainage and waste water from Imperial and Coachella Valleys in the United States, and drainage and waste water from part of the Mexicali Valley in Mexico discharge into the Salton Sea. Water from Mexico enters the United States in the Alamo and New River channels. The bottom of the sea is 277.7 feet (84.6 m) below mean sea level, U. S. C. & G. S. datum.

EXTREMES: Maximum elevation during year, 228.0 feet (69.5 m) below mean sea level. Minimum elevation during year, 229.1 feet (69.8 m) below mean sea level. Extremes for period of record, maximum elevation 195.9 feet (59.7 m) below mean sea level, February 10 to March 29, 1907; minimum elevation since 1906, 251.6 feet (76.7 m) below mean sea level in November 1924.

Mean Daily Water Surface Elevation in Feet below Mean Sea Level - 1979

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	229.1	# 228.9	# 228.6	# 228.3	# 228.1	# 228.0	# 228.2	# 228.2	# 228.3	228.4	228.6	228.7
2	229.1									228.4	228.6	228.6
3	229.1									228.4	228.6	228.6
4	229.1									228.4	228.7	228.6
5	229.1									228.4	228.6	228.6
6	229.0									228.4	228.6	228.6
7	229.0									228.4	228.6	228.6
8	229.0									228.4	228.7	228.6
9	229.0									228.4	228.6	228.6
10	229.0									228.4	228.6	228.6
11	229.0									228.4	228.6	228.5
12	229.0									228.4	228.6	228.6
13	229.0									228.4	228.6	228.6
14	229.0									228.4	228.6	228.6
15	228.9									228.5	228.6	228.6
16	228.9									228.5	228.6	228.6
17	# 228.9									228.5	228.6	228.6
18	228.9									228.5	228.6	228.6
19	228.9									228.5	228.6	228.6
20	228.9									228.5	228.6	228.6
21	228.9									228.5	228.6	228.6
22	228.9									228.6	228.7	228.5
23	228.9									228.6	228.7	228.5
24	228.9									228.6	228.7	228.5
25	228.9									228.6	228.7	228.5
26	228.9									228.6	228.6	228.5
27	228.9									228.6	228.7	228.5
28	228.9									228.6	228.7	228.5
29	228.9									228.5	228.7	228.5
30	228.9									228.6	228.7	228.5
31	228.9									228.6	228.6	228.5
Avg.	# 229.0	# 228.8	# 228.4	# 228.2	# 228.0	# 228.1	# 228.2	# 228.2	# 228.4	228.5	228.6	228.6

Month	Current Year 1979		Period 1935-1979		
	# Extreme Elevation Feet		Elevation Feet		
	High	Low	# Average	Maximum	! Minimum
Jan.	228.9	229.1	237.21	228.9	249.3
Feb.			236.90	228.8	248.8
Mar.			236.64	228.4	248.6
Apr.			236.44	228.2	248.7
May			236.42	228.0	248.5
June			236.58	228.1	248.8
July			236.74	228.2	249.1
Aug.			236.92	228.2	249.4
Sept.			237.11	228.4	249.4
Oct.	228.4	228.6	237.17	228.5	249.8
Nov.	228.6	228.7	237.19	228.6	250.0
Dec.	228.5	228.7	237.06	228.6	249.6
Yearly			236.86	# 228.0	250.0

Area and Capacity Table		
Elevation	Area	Capacity
Feet Below M.S.L.	Acres	Acres-Feet
277.7	0	0
274.0	20,600	25,700
270.0	62,900	188,700
266.0	94,600	510,600
260.0	122,600	1,170,000
256.0	134,700	1,684,000
252.0	148,800	2,250,000
244.0	179,700	3,562,000
240.0	196,900	4,315,000
235.0	221,800	5,360,000
230.0	235,800	6,504,000
220.0	262,000	8,993,000
210.0	288,500	11,740,000
200.0	315,500	14,760,000

* Elevations estimated from January 17 through September 30, 1979 based on data from other gages

Mean daily

Mean monthly

! Reading near first day of month

**CHEMICAL ANALYSES OF WATER SAMPLES
1979**

The tables below are based on quarterly samples from the Alamo River taken and analyzed by the State of California Department of Water Resources. Beginning December 1971, not all constituents analyzed. New River samples are collected monthly and analyzed by the U. S. Geological Survey.

Samples from the Alamo River are taken north of the international boundary at downstream end of box culvert under the All-American Canal. Flow at this point includes drainage flows across international boundary and flows from drain intercepts along toe of south bank of All-American Canal. Samples from New River are taken from the right bank at road bridge 450 feet north of international boundary. Records of sampling extend from April 1951 through 1979.

To convert milligram equivalents to parts per million by weight, multiply each ion by its appropriate conversion factor. These factors are: Ca, 20.04; Mg, 12.16; Na 22.99; (CO₃ plus HCO₃) expressed as CO₃, 30.00; SO₄, 48.03; Cl, 35.45; NO₃, 62.00. To convert tons per acre-foot to parts per million, multiply tons per acre-foot by 735.5. Electrical conductivity, reported in the tables as EC x 10⁶ at 25°C, is a relative measure of the total salt concentration.

Month	No. of Samples	Dissolved Solids		ECx10 ⁶ @25°C	Boron p.p.m.	pH	% Na **	% Cl ***	Mean Milligram Equivalents per Liter					
		Tons Per Acre-Foot	Total Tons						Ca	Mg	Na	CO ₃ + HCO ₃	SO ₄	Cl

Alamo River

Jan.																	
Feb.																	
Mar.																	
Apr.																	
May	1	3.58	383	3,830		8.0							16.89		21.13		
June																	
July																	
Aug.																	
Sept.	1	4.07	347	4,200		8.2								18.45		23.24	
Oct.																	
Nov.																	
Dec.	1	4.34	486	4,480		8.4								19.57		25.33	

New River

Jan.	2	5.90	62,000	7,070		7.5	68	72	12.97	9.54	48.72	5.05	15.03	52.52			
Feb.	2	6.03	53,200	7,190		7.2	71	75	11.83	9.21	51.33	4.52	13.99	55.35			
Mar.	2	7.06	75,000	7,870		7.6	70	75	13.92	11.02	58.20	4.75	17.45	65.22			
Apr.	2	6.93	73,600	8,490		7.4	69	73	14.12	12.01	57.42	5.05	17.91	62.06			
May	3	5.66	64,300	6,360		7.5	67	71	11.83	10.20	45.15	5.31	15.30	50.07			
June	2	3.89	66,200	4,560		7.4	67	68	8.48	6.83	31.23	3.84	11.49	32.44			
July	1	2.98	67,300	4,240		7.4	67		7.24	4.44	23.71		10.20	22.99			
Aug.	1	6.08	76,900	8,200		7.5	69		12.48	9.87	50.02		14.99	56.42			
Sept.	1	6.35	63,200	7,900		7.4	70		12.48	9.87	52.20		16.86	56.42			
Oct.	1	5.03	52,100	6,400		7.6	66		11.98	8.22	39.15		14.16	45.13			
Nov.	1	5.55	56,200	7,010		7.6	75		9.48	7.65	52.20		12.28	47.95			
Dec.		No	data available														

** Percent of total cations

*** Percent of total anions

ELECTRICAL CONDUCTIVITY OF WATER SAMPLES**1979**

The following table shows electrical conductivity, expressed in mhos per centimeter x 10⁶ at 25°C, of individual water samples from the New River in Mexico at the international boundary. Samples were taken by the Mexican Section of the Commission, who also made the determinations.

Electrical conductivity is a relative indication of the concentration of dissolved solids in the water samples.

Date	ECx10 ⁶ @25°C												
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New River at International Boundary

January	February	April	May	July	August	October	November
2 7,200	20 7,040	3 6,910	22 7,120	3 7,040	21 6,910	2 7,080	19 7,040
9 6,990	27 7,100	10 6,980	29 6,990	10 6,810	28 7,460	9 7,120	27 7,300
16 6,610	March	17 7,040	June	17 6,930	September	16 7,010	December
23 6,800	6 6,900	24 7,190	5 7,050	24 7,100	4 7,100	23 7,160	4 6,980
30 7,300	13 7,210	30 7,010	12 7,160	31 6,980	11 7,010	30 7,150	11 7,040
February	20 7,090	May	19 6,920	August	18 6,800	November	18 7,220
6 7,010	27 7,200	8 6,910	26 6,990	7 7,150	25 6,790	6 6,990	24 8,560
13 6,950		15 6,690		14 6,500		13 7,200	31 7,810

COTTONWOOD CREEK ABOVE MORENA DAM, CALIFORNIA

DESCRIPTION: Staff gage located on east side of outlet tower immediately upstream from face of Morena Dam. The dam is located on Cottonwood Creek 1.8 miles (2.9 km) upstream from the mouth of Hauser Creek, 8.5 miles (13.7 km) upstream from Barrett Dam, and about 20 miles (32.2 km) upstream from the international boundary. The zero of the gage is 2,882.4 feet (878.56 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Reservoir inflows shown below were computed from monthly reservoir records of storage, releases, spills, leakage, evaporation, and rainfall, by the International Boundary and Water Commission, United States Section. They represent all water reaching Morena Reservoir, including rainfall on reservoir water surface. Basic data were furnished by the city of San Diego, California. Records April 1911 through 1979.

REMARKS: Storage began in Morena Reservoir March 1910. Reservoir capacity and area ratings date from 1910 when Morena Dam was completed. Records for 1979 computed on basis of area-capacity curves determined from 1948 resurvey. Various changes have been made to the spillway section since construction of the dam. Elevation of the present crest of ungated spillway is 157.00 feet (47.85 m), gage datum. Reservoir capacity at spillway crest, 1948 survey, is 50,210 acre-feet (61,934,000 m³). The entire capacity of Morena Reservoir is used to furnish a part of the water supply of the city of San Diego, California. Water is released from Morena Reservoir down Cottonwood Creek to Barrett Reservoir as required.

EXTREMES: Prior to 1937, maximum monthly inflow, 37,200 acre-feet (45,886,000 m³), January 1916; minimum no flow during parts of many years.

Monthly Discharge in Acre-Feet

Month	Current Year 1979	Period 1937-1979		
		Average	Maximum	Minimum
January	898	411	3,520	0
February	1,460	1,020	16,700	8.0
March	6,259	1,757	13,220	19.3
April	4,279	1,045	11,490	3.3
May	4,063	421	4,063	0
June	1,864	204	1,864	0
July	1,125	138	1,125	0
August	20.4	83.1	1,260	0
September	19.2	57.8	1,070	0
October	64.5	68.5	1,270	0
November	26.8	126	1,380	0
December	552	420	3,590	4.4
Yearly	20,631	5,751	39,439	121
	Thousands of Cubic Meters			
	25,448	7,094	48,648	149

COTTONWOOD CREEK BELOW MORENA DAM, CALIFORNIA

DESCRIPTION: Two water-stage recorders, one on the upstream side of the southeast abutment of Morena Dam for measuring head on the spillway crest and one immediately below the dam with a rectangular control weir for measuring ordinary reservoir releases, and cableway located about 0.8 mile (1.3 km) downstream from the dam. Discharge measurements made at the cableway include leakage, controlled releases, and spillway discharges.

RECORDS: Monthly records shown below represent the water available immediately below Morena Dam, consisting of spillway waste, draft, and leakage from the dam. They are computed by the International Boundary and Water Commission, United States Section, from basic data furnished by the city of San Diego, California. Records available: January 1911 through 1979.

REMARKS: Flows at this station are regulated by Morena Dam; storage began March 1910. Water is released from Morena Reservoir as required and flows down the natural channel of Cottonwood Creek to Barrett Reservoir. There are no major diversions above Morena Dam.

EXTREMES: Prior to 1937, maximum monthly discharge, 21,400 acre-feet (26,397,000 m³), February 1916; minimum, no flow during several months of various years.

Monthly Discharge in Acre-Feet

Month	Current Year 1979	Period 1937-1979		
		Average	Maximum	Minimum
January	0	101	1,700	0
February	0	283	4,260	0
March	0	326	4,113	0
April	0	703	12,950	0
May	0	192	3,040	0
June	0	263	7,360	0
July	0	151	2,340	0
August	0	131	1,550	0
September	0	245	5,880	0
October	0	73.2	529	0
November	0	98.6	1,260	0
December	0	272	5,350	0
Yearly	0	2,839	24,825	0
	Thousands of Cubic Meters			
	0	3,502	30,621	0

COTTONWOOD CREEK ABOVE BARRETT DAM, CALIFORNIA

DESCRIPTION: Staff gage located immediately upstream from face of dam on west side of outlet tower. Barrett Dam is located on Cottonwood Creek 8.5 miles (13.7 km) downstream from Morena Dam, 1 mile (1.6 km) downstream from the mouth of Pine Valley Creek and about 12 miles (19.3 km) upstream from the international boundary. Zero of gage is 1,446.12 feet (440.78 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Records reported below represent all water reaching Barrett Dam from the sub-basin below Morena Dam, including rainfall on the reservoir water surface. Leakage, releases, and spills from Morena Reservoir are not included. The inflows were computed from monthly reservoir records of storage, releases, spills, leakage, evaporation, and rainfall furnished by the city of San Diego, California. Records available: January 1921 through 1979. Records of stream flow for a station at the dam site are also available for the periods 1906-1915 and 1917-1920.

REMARKS: Storage began at Barrett Reservoir in January 1921. The area-capacity-elevation curves used in the inflow calculations are dated 1948, 1951, and 1955 and were furnished by the city of San Diego, California. Capacity of reservoir at top of flash gates on spillway (gage height 168.88 feet (51.47 m)) is 44,755 acre-feet (55,205,000 m³). Capacity at spillway crest (gage height 160.88 feet (49.04 m)) is 37,950 acre-feet (46,811,000 m³). Dead storage, 719 acre-feet (887,000 m³) below lowest outlet (gage height 58.88 feet (17.95 m)) is included in these capacities. The entire capacity of Barrett Reservoir is used to furnish a part of the water supply of the city of San Diego, California.

EXTREMES: Prior to 1937, maximum monthly discharge, 54,800 acre-feet (67,595,000 m³) February 1927; minimum, no flow during several months of various years.

Monthly Discharge in Acre-Feet

Month	Current Year 1979	Period 1937-1979		
		Average	Maximum	Minimum
January	1,918	571	3,430	5.2
February	5,265	1,578	26,790	7.6
March	8,032	2,940	19,305	14.1
April	6,469	1,750	21,630	10.2
May	5,019	619	5,130	0
June	1,100	231	1,730	0
July	706	146	1,010	0
August	596	89.1	596	0
September	458	96.0	759	0
October	547	66.0	645	.1
November	229	128	1,200	0
December	346	442	3,380	1.7
Yearly	30,685	8,656	59,387	129
	Thousands of Cubic Meters			
	37,850	10,677	73,253	159

DULZURA CONDUIT BELOW BARRETT DAM, CALIFORNIA

DESCRIPTION: Water-stage recorder 0.5 mile (0.8 km) downstream from Barrett Dam on right bank of Dulzura Conduit 50 feet (15.2 m) upstream from road crossing to Barrett Dam. Elevation of gage has not been determined.

RECORDS: Computed on basis of head on control section of flume, as measured by water-stage recorder, and rating curve determined from current meter measurements. Records obtained and furnished by the city of San Diego, California. Records available: January 1909 through 1979.

REMARKS: Barrett Dam was completed in 1921. Prior to this date the intake of Dulzura Conduit was located 1.5 miles (2.4 km) upstream. The conduit carries diversions from Barrett Reservoir on Cottonwood Creek westerly across the divide into Otay Reservoir for municipal use by the city of San Diego. Prior to September 30, 1958, station was located 8 miles (12.9 km) along the conduit from Barrett Dam, being reported as "Dulzura Conduit near Dulzura"; and the draft from Barrett Reservoir was computed from the discharges obtained at the conduit gaging station, multiplied by the factor 1.05 to allow for channel loss in the reach from the reservoir to the gaging station.

EXTREMES: Since 1937: Maximum mean daily discharge, 55 second-feet (1.56 m³/sec) on March 15, 1954; minimum discharge, no flow for long periods on many occasions.

Mean Daily Discharge in Second-Feet 1979 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	25.7	0.20	0	0.20	23.9	27.5	27.8	27.3	28.8	28.8	0.20	0.20
2	0	.20	0	.20	23.9	27.5	27.8	27.1	28.8	28.6	.23	.20
3	0	.20	0	.20	23.9	27.5	27.8	27.1	28.8	28.6	.26	.20
4	0	.20	0	.20	23.9	27.5	27.8	27.1	28.8	28.8	.26	.20
5	0	.20	0	.20	23.9	27.5	27.8	27.1	28.8	28.8	.26	.20
6	0	.20	0	.20	24.1	27.5	27.8	27.1	28.8	28.8	.20	.20
7	0	.20	0	.20	24.1	27.5	27.8	29.2	28.8	28.8	.20	.20
8	0	.20	0	.20	24.1	27.5	27.5	29.2	28.8	28.6	.20	.20
9	0	.20	0	.20	24.1	27.5	27.5	29.2	28.8	28.6	.20	.20
10	0	.20	0	.20	24.1	27.5	27.5	29.2	28.8	30.1	.20	.20
11	0	.20	0	.20	24.1	27.5	27.5	29.2	28.8	29.8	.20	.23
12	0	.20	0	.20	24.1	27.5	27.5	29.0	28.6	29.8	.20	.23
13	0	.20	0	.20	24.1	27.5	27.5	29.0	28.6	29.8	.20	.20
14	0	.20	0	.20	24.1	27.5	27.5	29.0	28.6	29.8	.20	.20
15	0	.20	0	.17	24.1	27.5	27.5	29.0	28.6	29.8	.20	.23
16	0	.20	0	.17	24.1	27.5	27.5	29.0	28.6	29.6	.20	.23
17	0	.20	0	.17	24.1	27.5	27.5	29.0	28.6	29.6	.20	.23
18	.23	.20	0	.17	24.1	27.5	27.5	29.0	28.6	.20	.20	.26
19	.20	.20	0	.17	24.1	27.5	27.5	29.0	28.6	.20	.20	.26
20	.20	.20	0	0	24.1	27.5	27.5	29.0	28.4	.20	.20	.26
21	.20	.20	0	0	24.1	27.8	27.5	29.0	28.6	.20	.20	.26
22	.20	.20	0	0	24.1	27.8	27.5	28.8	28.6	.20	.20	.26
23	.20	.20	0	.17	27.5	27.8	27.5	28.8	28.6	.20	.20	.26
24	.20	.20	0	.17	27.5	27.8	27.5	28.8	28.6	.20	.20	.26
25	.20	.20	0	4.37	27.5	27.8	27.5	28.8	28.6	.17	.20	.26
26	.20	.20	0	11.4	27.5	27.8	27.5	28.8	28.6	.20	.20	.26
27	.20	.20	0	19.3	27.5	27.8	27.3	28.8	28.6	.20	.20	.26
28	.20	.20	0	23.9	27.5	27.8	27.3	28.8	28.8	.20	.20	.26
29	.20	.20	0	23.9	27.5	27.8	27.3	28.8	28.8	.20	.20	.26
30	.20	.20	0	23.9	27.5	27.8	27.3	28.8	28.8	.20	.20	.26
31	.20	.20	0		27.5		27.3	28.8		.20		.26
Sum	28.53	5.60	0	110.76	776.7	828.0	853.6	886.8	860.6	499.47	6.21	7.19

Month	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Period 1937-1979			
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum	
	Jan.			1	25.7	1	2	0	0.92	56.6	332	2,350
Feb.			1	.20	1	1	.20	.20	11.1	338	2,130	0
Mar.				0			0	0	0	496	2,330	0
Apr.			128	23.9	120	0	3.69	220	781	2,860	0	
May			123	27.5	1	1	23.9	25.1	1,511	901	3,040	0
June			121	27.8	1	1	27.5	27.6	1,642	946	2,920	0
July			1	27.8	127	2	27.5	27.6	1,693	790	2,920	0
Aug.			1	29.2	1	2	27.1	28.6	1,759	683	2,820	0
Sept.			1	28.8	20		28.4	28.7	1,707	450	2,320	0
Oct.			10	30.1	25		.17	16.1	991	352	2,450	0
Nov.			1	.26	1	1	.20	.21	12.3	440	2,760	0
Dec.			1	.26	1	1	.20	.23	14.3	412	2,305	0
Yearly				30.1		0	13.3		9,647.3	6,921	27,170	0
	Meters		Cubic Meters per Second				Thousands of Cubic Meters					
				0.85		0	0.38		11,900	8,537	33,514	0

Ø Mean daily

! And other days

COTTONWOOD CREEK BELOW BARRETT DAM, CALIFORNIA

DESCRIPTION: Water-stage recorder and cableway located about 2.5 miles (4.0 km) downstream from Barrett Dam and 0.5 mile (0.8 km) upstream from Rattlesnake Canyon for measuring Barrett Dam spills; and staff gage and control weir located immediately below the dam for measuring leakage. The elevation of the gage is about 1,000 feet (305 m) (from topographic map).

RECORDS: Data furnished by the city of San Diego, California. Prior to January 1953, the records were furnished by the city of San Diego and reviewed and revised by the United States Section of the Commission. The recorder is to be operated only when Barrett Reservoir is near or above spillway level. There have been spillway discharges in May 1943; March and April 1979. Spillway discharges included in the period record below were computed by the city of San Diego from the head on the spillway crest, read on the reservoir gage, and applied to a broad-crested weir formula. Records available: January 1921 through 1979. Storage began in Barrett Reservoir in January 1921.

REMARKS: Records reported below represent the water available in the natural channel of Cottonwood Creek immediately below Barrett Dam. Records of draft from Barrett Reservoir are not included, inasmuch as all releases are made to Dulzura Conduit which transports water outside the basin. Leakage is mainly through the spillway gates.

EXTREMES: Prior to 1937, maximum monthly discharge 38,400 acre-feet (47,366,000 m³) February 1927; minimum, no flow during several months of various years.

Monthly Discharge in Acre-Feet

Month	Current Year 1979	Period 1937-1979		
		Average	Maximum	Minimum
January	0	14.1	590	0
February	0	24.0	990	0
March	804	662	13,390	0
April	6,012	1,085	33,400	0
May	0	214	7,520	0
June	0	30.2	890	0
July	0	1.7	21	0
August	0	1.5	21	0
September	0	1.2	21	0
October	0	1.1	21	0
November	0	.8	15	0
December	0	1.3	21	0
Yearly	6,816	2,037	50,364	0
	Thousands of Cubic Meters			
	8,407	2,513	62,123	0

COTTONWOOD CREEK ABOVE TECATE CREEK NEAR DULZURA, CALIFORNIA

DESCRIPTION: Water-stage recorder and cableway located 1.6 miles (2.6 km) upstream from the international land boundary between the United States and Mexico, 0.8 mile (1.3 km) upstream from the confluence with Tecate Creek, and 5.1 miles (8.2 km) south of Dulzura, California. Low water discharge measurements are made by wading at the gage; high water measurements are made from the cableway, which is located 700 feet (213 m) downstream from the gage. Zero of the gage is 569.40 feet (173.55 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on a continuous record of gage heights and current meter measurements or observation of no flow generally made twice each month. Records obtained and furnished by the U. S. Geological Survey. Records available: October 1936 through 1979.

REMARKS: Flow is largely controlled by Barrett and Morena Reservoirs, 10 (16.1 km) and 18 miles (29.0 km), respectively, upstream from this station. During 1979 there were no releases or spills to the natural channel of Cottonwood Creek at Barrett Dam, the lowermost dam in Cottonwood Creek Basin.

EXTREMES: Maximum discharge 4,340 second-feet (123 m³/sec) February 7, 1937 (gage height 9.65 feet) (2.94 m), from rating curve extended above 1,500 second-feet (42.5 m³/sec) by logarithmic plotting. Minimum discharge, no flow during part of each year.

Mean Daily Discharge in Second-Feet 1979 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.3	42	26	325	8.0	2.2	0.01	0	0	0	0	0.25
2	1.2	55	26	305	8.4	2.4	.01	0	0	0	0	.25
3	1.2	44	33	277	8.1	2.3	.01	0	0	0	0	.25
4	1.2	34	26	250	7.2	2.0	.02	0	0	0	0	.25
5	2.7	29	23	225	7.2	1.9	.03	0	0	0	0	.26
6	10	25	20	203	6.9	1.8	.02	0	0	0	0	.26
7	5.4	23	18	187	7.0	1.8	.02	0	0	0	0	.25
8	3.5	21	16	175	7.6	1.9	.01	0	0	0	0	.25
9	3.1	19	15	170	7.9	1.2	0	0	0	0	0	.26
10	2.9	17	14	165	6.7	.73	0	0	0	0	0	.29
11	2.6	15	12	136	5.7	.43	0	0	0	0	0	.31
12	2.5	13	11	98	4.7	.30	0	0	0	0	0	.28
13	2.2	12	11	95	4.0	.20	0	0	0	0	0	.27
14	2.0	14	10	93	3.4	.13	0	0	0	0	0	.27
15	2.1	14	9.6	90	2.9	.09	0	0	0	0	0	.27
16	5.2	13	9.8	88	2.9	.09	0	0	0	0	0	.27
17	9.2	12	19	86	2.7	.17	0	0	0	0	0	.28
18	15	11	25	84	2.4	.42	0	0	0	0	0	.29
19	15	10	25	81	2.5	.40	0	0	0	0	0	.30
20	11	9.7	49	78	2.9	.36	0	0	0	0	0	.31
21	8.3	21	84	75	2.8	.28	0	0	0	0	0	.35
22	6.7	33	63	72	2.3	.23	0	0	0	0	0	.35
23	5.6	28	44	69	2.1	.14	0	0	0	0	0	.33
24	6.0	29	38	61	1.9	.11	0	0	0	0	0	.33
25	8.0	21	34	19	1.8	.13	0	0	0	0	.19	.36
26	8.9	18	31	13	1.8	.10	0	0	0	0	.28	.38
27	6.3	16	45	11	1.9	.06	0	0	0	0	.29	.36
28	7.9	15	356	9.8	1.9	.03	0	0	0	0	.26	.34
29	11		208	9.0	2.0	.02	0	0	0	0	.24	.33
30	8.4		253	8.3	2.0	.02	0	0	0	0	.24	.34
31	15		311		2.1		0	0	0	0		.37
Sum	191.4	613.7	1,891.4	3,558.1	131.7	21.94	0.13	0	0	0	1.50	9.26
Current Year 1979								Period 1937-1979				
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.			118	15.0	1	1.2	6.17	380	194	1,190	0	
Feb.			2	55	20	9.7	21.9	1,217	607	9,940	0	
Mar.			28	356	15	9.6	61	3,752	1,743	20,880	0	
Apr.			1	325	30	8.3	119	7,057	1,505	40,240	0	
May			2	8.4	125	1.8	4.25	261	317	10,040	0	
June			2	2.4	129	.02	.73	43.5	59.7	1,590	0	
July			5	.03	1	9	0	0	6.4	206	0	
Aug.				0	0	0	0	.3	.3	7.7	0	
Sept.				0	0	0	0	0	1.7	72	0	
Oct.				0	0	0	0	0	3.2	101	0	
Nov.			27	.29	1	1	0	.05	3.0	440	0	
Dec.			26	.38	1	1	.25	.30	18.4	1,316	0	
Yearly				356		0	17.6	12,732	4,578	66,700	0	
	Meters		Cubic Meters per Second				Thousands of Cubic Meters					
				10.1		0	0.50	15,705	5,647	82,274	0	

Ø Mean daily

! And other days

CAMPO CREEK NEAR CAMPO, CALIFORNIA

DESCRIPTION: Water-stage recorder and broad-crested weir on left bank, 0.5 mile (0.8 km) upstream from the international land boundary between the United States and Mexico, just upstream from the bridge on California State Highway 94, 3.5 miles (5.6 km) southwest of Campo, California. Zero of gage is 2,178.92 feet (664.13 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on current meter measurements and observation of no flow. Records obtained and furnished by the U. S. Geological Survey. Records available: October 1936 through 1979.

REMARKS: Campo Creek originates in the United States and flows southwestward into Mexico where it joins Tecate Creek. The flow at this station is partially regulated by a small conservation reservoir a quarter of a mile (0.4 km) upstream, completed in August 1956.

EXTREMES: Maximum discharge 880 second-feet (24.9 m³/sec), February 6, 1937 (gage height 4.80 feet (1.46 m) present datum), from rating curve extended above 110 second-feet (3.12 m³/sec) on basis of velocity-depth relation and cross-section area at the control. Minimum discharge, no flow during part of most years.

Mean Daily Discharge in Second-Feet 1979 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.40	2.9	3.2	11.0	4.9	2.3	0.66	0.35	0.36	0.33	0.20	0.32
2	.38	2.8	7.6	9.9	5.7	2.4	.71	.36	.34	.23	.17	.31
3	.41	2.7	4.6	8.2	5.6	2.4	.76	.37	.31	.15	.17	.32
4	.43	2.5	3.5	7.1	5.0	2.3	.75	.38	.30	.14	.74	.31
5	.72	2.3	3.2	9.1	4.5	2.3	.73	1.4	.31	.15	.47	.33
6	.93	2.3	2.9	7.5	4.5	2.2	.72	.72	.30	.15	.36	.35
7	.59	2.2	2.8	7.0	4.0	2.2	.70	.49	.31	.31	.37	.34
8	.54	2.1	2.8	6.9	3.5	2.1	.65	.33	.35	.35	.43	.34
9	.55	2.1	2.8	6.9	3.5	1.7	.63	.32	.30	.27	.41	.35
10	.54	2.1	2.6	7.1	3.2	1.6	.60	.31	.27	.15	.36	.35
11	.53	2.1	2.9	6.3	3.0	1.5	.60	.29	.25	.17	.34	.38
12	.58	2.3	3.4	6.1	2.9	1.4	.59	.28	.25	.18	.31	.37
13	.55	2.2	3.0	5.7	2.8	1.4	.53	.34	.30	.19	.30	.37
14	.54	2.5	2.7	5.2	2.7	1.3	.40	.37	.33	.21	.30	.34
15	.62	2.5	2.6	5.2	2.7	1.2	.36	.42	.31	.21	.28	.35
16	1.5	2.6	2.7	4.8	2.7	1.2	.45	.47	.32	.23	.29	.35
17	2.2	1.6	4.0	4.9	2.7	1.3	.45	.45	.31	.28	.30	.35
18	2.2	1.9	4.3	4.5	2.6	1.3	.47	.44	.30	.31	.36	.37
19	2.1	2.2	4.5	4.4	2.7	1.3	.53	.84	.33	1.0	.35	.38
20	1.6	2.2	11	4.2	2.8	1.2	.52	.81	.33	1.1	.34	.39
21	1.3	2.9	21	4.3	2.8	1.2	.44	.50	.32	.62	.33	.40
22	1.3	3.1	13	4.3	2.5	1.2	.23	.42	.30	.26	.32	.50
23	1.3	3.1	8.5	4.0	2.4	1.1	.12	.38	.29	.29	.35	.45
24	1.5	3.3	6.2	4.1	2.4	1.1	.37	.36	.28	.30	.36	.42
25	1.9	3.0	5.5	4.4	2.4	.98	.42	.34	.27	.28	.36	.43
26	2.1	2.8	5.4	4.3	2.4	.89	.45	.34	.24	.27	.37	.48
27	1.8	2.7	7.2	4.5	2.4	.80	.50	.34	.24	.27	.38	.46
28	2.1	2.6	45	4.6	2.4	.70	.65	.35	.30	.26	.34	.43
29	2.3		34	4.8	2.4	.69	.59	.41	.27	.57	.32	.41
30	1.9		19	4.9	2.4	.67	.36	.40	.30	.55	.32	.40
31	2.1		14		2.3		.35	.38		.18		.41
Sum	37.51	69.6	255.9	176.2	98.8	43.93	16.29	13.96	8.98	9.96	10.30	11.76
Month	Current Year 1979							Period 1937-1979				
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet			
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum	
Jan.			29	2.3	2	0.38	1.21	74.4	111	906	0	
Feb.			24	3.3	17	1.6	2.49	138	196	1,730	0	
Mar.			28	45	110	2.6	8.25	508	307	2,360	0	
Apr.			1	11	23	4.0	5.87	389	210	3,250	0	
May			2	5.7	31	2.3	3.19	196	98.4	1,540	0	
June			1	2.4	30	.67	1.46	87.1	39.6	719	0	
July			3	.76	23	.12	.53	32.3	16.0	361	0	
Aug.			5	1.4	12	.28	.45	27.7	11.4	321	0	
Sept.			1	.36	126	.24	.30	17.8	10.6	264	0	
Oct.			20	1.1	4	.14	.32	19.8	17.9	543	0	
Nov.			4	.74	1	.17	.34	20.4	32.6	542	0	
Dec.			22	.50	1	.31	.38	23.3	88.8	808	0	
Yearly				45		0.12	2.06	1,494	1,139	11,747	0	
	Meters		Cubic Meters per Second				Thousands of Cubic Meters					
				1.27		0	0.06	1,843	1,405	13,742	0	

0 Mean daily

1 And other days

COTTONWOOD CREEK NEAR INTERNATIONAL BOUNDARY

DESCRIPTION: Water-stage recorder and cableway, 0.6 mile (1.0 km) upstream from the international land boundary between the United States and Mexico, 0.5 mile (0.8 km) downstream from the confluence of Cottonwood Creek and Tecate Creek, and 5.5 miles (8.9 km) south of Dulzura, California. Low water discharge measurements are made by wading at the gage. The zero of the gage is 542.42 feet (165.33 m) above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on a continuous record of gage heights and current meter measurements or observation of no flow. Records obtained and furnished by the U. S. Geological Survey. Records available: October 1936 through 1979.

REMARKS: Flow is partially controlled by Barrett and Morena Reservoirs, 11 (17.7 km) and 19 miles (30.6 km), respectively, upstream from this station. The flow at this station represents the amount of water passing the Marron Dam site.

EXTREMES: Maximum discharge, 4,700 second-feet (133 m³/sec), February 7, 1937 (gage height 8.50 feet) (2.59 m) from rating curve extended above 300 second-feet (8.50 m³/sec) on basis of velocity, mean depth and area computations. Minimum discharge, no flow for part of most years.

Mean Daily Discharge in Second-Feet 1979 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.1	111	62	586	12	5.4	0.37	0.35	0.22	0.11	1.5	2.1
2	2.8	133	149	548	13	5.8	.34	.36	.19	.11	1.6	1.8
3	2.8	95	66	507	13	5.6	.32	.37	.19	.11	1.6	1.5
4	3.0	64	45	469	11	4.9	.30	.34	.16	.11	1.7	1.6
5	5.6	47	35	428	9.5	5.1	.28	.41	.19	.11	1.8	1.7
6	23	36	29	393	9.5	4.8	.26	.41	.19	.11	1.8	1.9
7	11	30	24	359	9.6	4.8	.29	.38	.19	.10	2.0	2.0
8	6.6	25	22	334	11	5.0	.39	.41	.19	.11	2.1	2.1
9	6.0	22	21	323	11	4.2	.57	.41	.19	.11	2.1	2.1
10	5.5	19	18	310	8.8	3.4	.61	.45	.16	.10	2.2	2.3
11	5.2	16	16	251	7.4	2.5	.48	.45	.16	.09	2.2	2.3
12	5.1	14	15	167	6.4	1.6	.49	.49	.16	.08	2.2	2.3
13	4.6	12	15	164	5.5	1.3	.45	.45	.19	.08	2.0	2.3
14	4.2	20	14	161	4.8	1.0	.43	.45	.19	.08	1.9	1.6
15	4.3	15	14	161	4.5	.77	.38	.41	.19	.08	1.9	2.1
16	12	14	15	160	4.7	.68	.33	.41	.19	.09	1.7	2.2
17	22	12	55	159	4.7	.81	.28	.38	.19	.10	1.7	2.2
18	36	11	52	157	4.6	1.3	.26	.41	.16	.11	1.7	2.3
19	35	10	61	155	5.0	1.6	.28	.45	.16	.13	1.8	2.4
20	19	9.5	139	150	6.2	1.5	.30	.41	.16	.19	1.8	2.6
21	14	40	294	145	6.3	1.3	.28	.41	.16	.21	1.7	2.7
22	11	55	197	140	5.4	1.4	.28	.41	.16	.19	1.5	2.7
23	9.3	44	108	134	4.9	1.2	.30	.41	.16	.18	1.7	2.6
24	9.7	46	75	119	5.8	2.5	.28	.38	.16	.47	1.9	2.6
25	13	28	58	29	5.3	2.4	.29	.30	.10	.87	2.0	2.9
26	16	22	48	18	4.7	1.9	.30	.26	.10	.92	2.1	3.1
27	9.8	20	109	15	4.3	1.5	.31	.22	.10	1.0	2.1	2.5
28	12	18	798	14	4.6	.84	.31	.22	.10	1.2	2.1	2.3
29	20	598	13	4.5	.58	.30	.22	.10	1.3	2.1	2.3	2.3
30	12	581	12	5.0	.43	.33	.22	.08	1.3	2.1	2.4	2.4
31	27	601		5.0		.33	.22		1.4		2.1	2.9
Sum	370.6	988.5	4,334	6,581	218.0	76.11	10.72	11.47	4.84	11.15	56.6	70.4
Current Year 1979									Period 1937-1979			
Month	Extreme Gage Feet		Extreme Second-Foot				Average Second-Foot	Total	Acre-Feet			
	High	Low	Day	High	Low	Day	Average	Acre-Feet	Average	Maximum	Minimum	
Jan.			18	36	1 2	2.8	12.0	735	416	2,750	0	
Feb.			2	133	20	9.5	35.3	1,961	1,080	13,680	0	
Mar.			28	798	114	14	140	8,596	2,984	27,140	0	
Apr.			1	586	30	12	219	13,053	2,149	51,060	0	
May			1 2	13	27	4.3	7.0	432	475	14,110	0	
June			2	5.8	30	.43	2.5	151	99.5	2,630	0	
July			10	.61	1 6	.26	.3	21.3	17.0	312	0	
Aug.			12	.49	127	.22	.4	22.8	7.0	171	0	
Sept.			1	.22	30	.08	.2	9.6	9.4	152	0	
Oct.			31	1.4	112	.08	.4	22.1	21.1	705	0	
Nov.			110	2.2	1 1	1.5	1.9	112	56.9	839	0	
Dec.			26	3.1	3	1.5	2.3	140	311	3,330	0	
Yearly			798		0.08	34.9	25,256	7,626	97,900	0		
	Meters		Cubic Meters per Second				Thousands of Cubic Meters					
		22.6	0	0.99	31,153	9,407	120,759	0				

Ø Mean daily

! And other days

INFLOWS TO RODRIGUEZ RESERVOIR, BAJA CALIFORNIA

DESCRIPTION: Rodriguez Dam is located in Mexico on Rio de las Palmas, the principal tributary to the Tijuana River, about 5.6 miles (9.0 km) upstream from its confluence with Cottonwood Creek, 10.6 miles (17.0 km) upstream from the point where the Tijuana River crosses the international boundary between the United States and Mexico, and 9.9 miles (16.0 km) southeast of Tijuana, Baja California.

RECORDS: Computed from monthly reservoir records of storage, releases, spills, leakage, evaporation, rainfall and including Emergency Deliveries of Colorado River Water to Tijuana beginning in August 1972. The Emergency Deliveries of Colorado River Water to Tijuana are made pursuant to Minute 240 of this Commission. Records obtained by the Ministry of Agriculture and Hydraulic Resources through May 1961; from June 1961 through March 1966 by the Junta de Agua Potable y Alcantarillado del Distrito Urbano de Tijuana, Baja California, and from April 1966 by the State of Baja California Commission of Public Services for Tijuana. Records furnished by the Mexican Section of the Commission. Records available: May 1937 through 1979. Storage began in Rodriguez Reservoir on September 22, 1936.

REMARKS: Records of runoff represent all water reaching Rodriguez Reservoir, including rainfall on the reservoir water surface. Area-capacity-elevation rating for reservoir used in the computations is dated 1927 when the reservoir area was initially surveyed. Elevation of crest of spillway 380.08 feet (115.85 m) above mean sea level; at top of spillway gates 410.10 feet (125.00 m) above mean sea level. Reservoir capacity at spillway crest 76,210 acre-feet (94,000,000 m³); at top of spillway gates 111,070 acre-feet (137,000,000 m³).

EXTREMES: Maximum monthly inflow, 77,790 acre-feet (95,953,000 m³); April 1941; minimum, no flow during part of most years.

Monthly Discharge in Acre-Feet

Month	Current Year 1979			Period 1938-1979		
	Natural Inflow	*Otay Aqueduct	Total	Average	Maximum	Minimum
January	3,191	0	3,191	934	6,569	0
February	9,993	0	9,993	2,516	41,295	5.8
March	22,932	0	22,932	6,962	68,321	4.2
April	7,214	0	7,214	2,826	77,790	0
May	661	0	661	349	9,962	0
June	0	0	0	66.7	891	0
July	35.3	0	35.3	74.2	326	0
August	.8	0	.8	53.5	770	0
September	0	0	0	59.2	466	0
October	31.0	0	31.0	69.0	344	0
November	27.2	0	27.2	150	1,940	0
December	11.5	0	11.5	782	15,686	8.4
Yearly	44,096	0	44,096	14,840	177,668	254
	Thousands of Cubic Meters					
	54,392	0	54,392	18,305	219,151	313

* Inflow from the supply of water from Otay Aqueduct for the city of Tijuana

DIVERSIONS FROM RODRIGUEZ RESERVOIR, BAJA CALIFORNIA

DESCRIPTION: Sparling flow meter located immediately below the dam in the pipeline which carries water from Rodriguez Reservoir to Gate No. 1 (Poblado Presa) and to Gate No. 2 (City Aqueduct). Formerly, water for irrigation was also diverted to the North and South Canals.

RECORDS: Direct recording by Sparling flow meter. Records through May 1961 were obtained by the Ministry of Agriculture and Hydraulic Resources; from June 1961 to March 1966 by the Junta de Agua Potable y Alcantarillado del Distrito Urbano de Tijuana; and from April 1966 through 1979 by the State of Baja California Commission of Public Services for Tijuana. Records furnished by the Mexican Section of the Commission. Records available: May 1937 through 1979.

REMARKS: Beginning in January 1937, diversions for irrigation began from both sides for the Tijuana valley and for domestic use at the village by Rodriguez Dam and the city of Tijuana. Since February 1960, no water has been released for irrigation of farmlands.

EXTREMES: Maximum monthly diversion, 1,963 acre-feet (2,421,000 m³), July 1944; minimum, no flow March and April 1941, August 1960, and December 1962.

Monthly Discharge in Acre-Feet

Month	Current Year 1979	Period 1938-1979		
		Average	Maximum	Minimum
January	387	212	782	1.5
February	457	239	1,132	.8
March	683	294	1,223	0
April	799	408	1,602	0
May	852	546	1,676	1.8
June	874	634	1,857	1.9
July	850	672	1,963	1.9
August	869	589	1,859	0
September	878	489	1,420	1.9
October	775	418	1,187	1.9
November	763	328	1,037	1.9
December	836	293	981	0
Yearly	9,022	5,122	15,317	29.3
	Thousands of Cubic Meters			
	11,129	6,318	18,893	36.2

TIJUANA RIVER AT INTERNATIONAL BOUNDARY

DESCRIPTION: Water-stage recorder on upstream side of new Dairy Mart road bridge about 0.7 miles (1.1 km) north of boundary and 2.3 miles (3.7 km) west of the international gate at San Ysidro, California. Zero of the gage has not been determined. The gage was destroyed by high water on April 20. A new gage on top of the north levee was used from April 20. The gage is located 0.7 miles (1.1 km) downstream from boundary and 1.1 miles (1.8 km) upstream from former site on the new Dairy Mart road bridge. Zero of gage is 38.04 feet (11.59 m) mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on current meter measurements and observations of no flow and a continuous record of gage heights. Records obtained and furnished by the United States Section of the Commission. Records available: May 1947 through 1979.

EXTREMES: Since May 1947: Maximum instantaneous discharge, 3,700 second-feet (105 m³/sec), March 1, 1978; minimum discharge, no flow during many years since 1951.

Mean Daily Discharge in Second-Feet 1979 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.6	245	192	922	34.7	9.0	4.3	4.9	4.3	4.1	4.7	3.9
2	2.0	297	190	687	32.3	10.0	4.3	4.9	4.3	4.0	4.8	3.9
3	2.6	259	146	538	29.9	11.0	4.3	4.9	4.3	4.1	5.0	3.9
4	3.6	146	89.3	506	27.5	10.0	4.3	4.9	* 4.3	4.2	5.4	4.5
5	25.4	105	77.3	655	25.4	8.2	4.9	4.9	* 4.3	4.1	5.0	4.8
6	# 136	83.1	66.5	363	25.4	7.3	4.6	4.9	* 4.3	3.9	5.4	4.8
7	# 31.1	58.4	55.7	288	19.7	6.8	4.6	4.9	* 4.3	3.9	10.9	4.6
8	# 16.9	53.0	46.7	242	27.5	9.0	4.9	4.9	* 4.3	3.8	5.9	4.6
9	# 13.4	48.8	44.6	336	25.4	8.2	4.6	4.9	* 4.3	3.8	4.4	4.7
10	9.0	44.6	36.2	579	21.5	8.2	4.6	4.9	* 4.3	3.7	4.8	4.8
11	9.0	38.3	32.0	456	16.5	8.2	4.9	4.9	* 4.3	3.6	4.7	4.8
12	11.2	32.0	28.8	199	22.5	5.4	* 4.9	4.9	* 4.6	3.6	4.6	4.6
13	12.3	30.4	25.6	174	15.0	4.9	* 4.9	4.9	* 4.6	3.5	5.0	4.6
14	11.2	36.5	24.0	166	12.2	5.4	4.9	5.4	* 4.6	3.4	5.4	4.4
15	23.3	44.6	22.4	166	10.0	5.4	4.9	5.4	* 4.6	3.4	5.0	4.6
16	166	36.2	20.8	152	9.0	5.7	* 5.4	5.9	* 4.6	3.3	4.6	4.8
17	197	38.3	93.7	152	15.3	6.6	* 5.4	* 7.3	* 4.6	3.2	4.8	4.8
18	214	38.3	59.0	145	32.3	6.6	* 5.9	* 7.3	* 4.6	3.3	4.8	4.7
19	183	36.2	114	142	32.3	7.5	5.9	* 6.6	* 4.6	3.3	4.8	4.8
20	96.6	34.1	172	138	27.5	5.4	5.9	* 6.6	* 3.8	19.0	5.4	2.6
21	56.1	75.4	300	131	19.7	7.8	5.4	* 5.9	3.8	5.1	6.2	2.6
22	45.9	66.1	326	138	11.0	6.9	5.4	7.3	4.1	4.4	5.8	2.8
23	45.9	80.0	290	128	10.0	5.4	5.9	7.3	4.1	4.7	5.8	3.1
24	47.9	74.6	607	117	9.0	4.9	5.9	7.3	4.2	4.6	5.8	3.1
25	56.6	69.2	164	105	9.0	4.9	5.9	* 8.2	4.2	4.8	5.8	3.1
26	50.0	55.7	217	77.2	7.3	4.3	5.4	* 5.4	4.1	4.6	6.2	3.3
27	47.9	46.7	226	56.8	7.3	4.1	5.4	* 4.6	4.1	4.6	4.6	3.3
28	42.7	42.5	627	42.1	7.3	4.1	4.9	4.6	4.2	4.7	4.5	3.3
29	39.2		1,320	39.6	8.2	4.0	4.9	4.3	4.2	4.6	4.1	3.3
30	50.0		1,130	37.2	9.0	3.9	4.6	4.3	4.2	4.6	4.0	3.3
31	303		1,130		9.0		4.9	4.3		* 4.6		3.3
Sum	1,951.4	2,215.0	7,873.6	7,877.9	568.7	199.1	157.0	171.7	129.1	140.5	158.2	123.7
Current Year 1979										Period 1947-1979		
Month	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total	Acre-Feet			
	High	Low	Day	High	Day	Low	Acres-Feet	Average	Maximum	Minimum		
Jan.			31	699	2	1.6	62.9	3,871	740	9,159	0	
Feb.			2	408	12	28.8	79.1	4,393	632	7,868	0	
Mar.			29	1,570	16	16.0	254	15,617	2,487	43,023	0	
Apr.			1	1,130	30	37.2	263	15,626	752	15,626	0	
May			12	72.0	128	6.6	18.3	1,128	91.1	1,128	0	
June			21	19.7	127	3.9	6.6	395	32.9	395	0	
July			23	7.3	11	4.3	5.1	311	25.4	311	0	
Aug.			25	8.2	129	4.1	5.5	341	32.9	341	0	
Sept.			22	5.0	120	3.8	4.3	256	33.2	256	0	
Oct.			20	107	116	3.2	4.5	279	45.3	305	0	
Nov.			7	85.0	30	3.9	5.3	314	115	1,084	0	
Dec.			4	7.2	20	2.3	4.0	285	282	2,725	0	
Yearly				1,570		1.6	59.1	42,776	5,269	64,695	0	
	Meters		Cubic Meters per Second				Thousands of Cubic Meters					
				44.5		0.05	1.67	52,764	6,499	79,801	0	

* Partly estimated

Estimated

! And other days

TIJUANA RIVER NEAR NESTOR, CALIFORNIA

DESCRIPTION: Water-stage recorder on county road bridge 4.1 miles (6.6 km) downstream from the international land boundary between the United States and Mexico, 2.9 miles (4.7 km) upstream from mouth of the river, and 1.7 miles (2.7 km) south of Nestor, California. The zero of the gage is 15.14 feet (4.61 m) above mean sea level, U. S. C. & G. S. datum. From April 10, 1953 to August 5, 1958, station was located 2 miles (3.2 km) upstream at different datum.

RECORDS: Based on current meter measurements or observation of no flow. Records obtained and furnished by the U. S. Geological Survey. Records available: October 1914 through September 1915, and October 1922 through 1979 (October 1922 through May 1936 are from city of San Diego, California.)

REMARKS: The flow at this station is partially controlled by Morena and Barrett Reservoirs on Cottonwood Creek in the United States and by Rodriguez Reservoir on Rio de las Palmas in Mexico. Some diversions for irrigation are normally made in Mexico whenever surface runoff occurs in the river or in its two principal tributaries.

EXTREMES: Since October 1, 1936: Maximum discharge, 17,700 second-feet (501 m³/sec), February 7, 1937 (gage height 8.20 feet (2.50 m)), obtained from rating curve extended above 2,000 second-feet (56.6 m³/sec) on basis of velocity-depth relationship, and cross section after peak of the flood. Minimum discharge, no flow during parts of most years.

Mean Daily Discharge in Second-Feet 1979 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.03	234	98	1,100	26	10	2.2	3.3	2.0	3.0	3.0	0.07
2	0	242	146	861	26	11	2.2	3.5	1.8	3.0	3.0	0
3	0	163	119	712	26	10	1.8	3.3	1.6	2.8	2.6	0
4	0	101	66	523	25	12	2.2	3.3	1.6	2.3	2.8	.03
5	16	71	49	896	24	12	2.5	3.0	1.4	2.3	2.6	.51
6	110	52	37	468	24	11	2.5	3.3	.67	2.3	2.6	.94
7	25	43	29	282	20	8.5	2.5	2.5	.94	2.3	3.0	1.1
8	12	39	23	234	23	7.5	2.8	2.3	1.2	2.3	.03	1.2
9	5.3	34	19	329	21	5.8	2.8	2.2	1.4	2.2	4.1	1.3
10	3.0	29	18	732	19	5.1	2.8	2.2	1.3	2.2	3.0	2.2
11	1.6	24	15	616	17	3.8	3.3	2.3	1.3	2.3	2.8	2.3
12	.08	21	13	197	23	3.3	3.5	2.8	1.0	2.3	2.6	1.8
13	.85	16	13	117	29	3.8	3.3	2.8	1.2	2.3	2.8	1.2
14	.38	18	11	111	24	3.8	3.3	2.8	1.4	2.2	3.0	1.2
15	4.1	21	9.8	108	20	3.8	3.0	2.8	2.0	2.0	2.6	2.0
16	121	15	9.1	111	21	4.4	3.5	2.8	2.2	2.0	2.3	2.2
17	144	15	77	108	20	4.4	3.3	2.8	2.0	2.2	2.3	2.2
18	109	14	48	111	18	4.1	3.8	3.3	2.2	2.3	2.6	2.6
19	97	12	93	114	19	4.1	4.8	3.3	2.2	2.3	2.3	2.3
20	51	9.8	152	114	19	4.1	4.1	3.0	3.7	47	2.0	1.0
21	77	46	279	120	19	5.1	3.5	2.5	7.4	20	2.0	1.2
22	18	37	310	114	21	5.5	3.3	2.3	2.5	5.8	2.2	1.3
23	13	43	280	108	20	3.8	3.5	2.2	3.0	4.4	2.3	1.2
24	11	39	705	105	17	3.0	3.5	2.2	3.0	4.1	2.3	1.6
25	17	34	236	91	16	2.8	3.0	2.3	3.3	4.4	2.3	2.0
26	13	27	200	44	13	2.8	3.3	2.2	3.3	4.1	2.8	2.6
27	12	24	162	35	12	2.3	3.3	1.6	3.3	3.2	2.2	3.2
28	12	16	686	31	12	2.3	3.3	1.6	3.5	2.8	1.8	3.0
29	13		1,460	29	12	2.3	3.5	1.4	3.3	2.8	.67	2.6
30	15		1,240	26	11	2.2	3.3	1.4	3.0	2.6	.09	2.6
31	217		1,230		11		3.3	1.8		2.6		2.6
Sum	1,118.34	1,439.8	7,832.9	8,547	608	164.6	97.0	79.1	68.71	148.4	70.69	50.05
Current Year 1979								Period 1937-1979				
Month	Extreme Gage Feet		Extreme Second-Feet			Average Second-Feet	Total Acre-Feet	Acre-Feet				
	High	Low	Day	High	Low			Average	Maximum	Minimum		
Jan.			31	217	1 2	0	36.1	2,218	871	9,299	0	
Feb.			2	242	20	9.8	51.4	2,856	3,551	66,920	0	
Mar.			29	1,460	16	9.1	253	15,536	7,324	107,000	0	
Apr.			1	1,100	30	26	285	16,953	5,398	181,900	0	
May			13	29	130	11	19.6	1,206	584	18,340	0	
June			1 4	12	30	2.2	5.49	326	100	3,060	0	
July			19	4.8	3	1.8	3.13	192	22.8	523	0	
Aug.			2	3.5	129	1.4	2.55	157	16.7	242	0	
Sept.			21	7.4	6	.67	2.29	136	22.3	234	0	
Oct.			20	47.0	115	2.0	4.79	294	72.7	1,340	0	
Nov.			9	4.1	8	.03	2.36	140	128	1,490	0	
Dec.			27	3.2	1 2	0	1.61	99.3	621	7,930	0	
Yearly				1,460		0	55.4	40,113.3	18,712	332,749	0	
	Meters		Cubic Meters per Second			Thousands of Cubic Meters						
				41.3		0	1.57	49,479	23,081	410,443	0	

0 Mean daily 1 And other days

STORED WATER IN RESERVOIRS, TIJUANA RIVER BASIN

Data are presented below for all storage reservoirs in the Tijuana River Basin. The data represent contents on the last day of the month in acre-feet. The reservoir capacities indicated are total capacities at the top of the spillway gates in closed position on the controlled spillways of Barrett and Rodriguez Dam, and at spillway level for Morena Dam, which has had an uncontrolled spillway since the spillway gates were removed in 1942. The records of storage reported below for Morena, Barrett, and Rodriguez Reservoirs are based on the capacities as determined by the following surveys: Morena 1948; Barrett 1948, 1951, and 1955; and Rodriguez 1927, when the reservoir area was initially surveyed.

Records for Morena and Barrett Reservoirs are obtained and furnished by the city of San Diego, the U. S. Geological Survey, and the National Weather Service. Records for Rodriguez Reservoir obtained and furnished by the State of Baja California Commission of Public Services for Tijuana.

In Acre-Feet

Month	MORENA RESERVOIR, CALIFORNIA (Capacity 50,210)		BARRETT RESERVOIR, CALIFORNIA (Capacity 44,760)		RODRIGUEZ RESERVOIR, BAJA CALIFORNIA (Capacity 111,880)		TOTAL IN TIJUANA RIVER BASIN RESERVOIRS (Capacity 206,850)	
	1979	Average 1937-1979	1979	Average 1937-1979	1979	Average 1937-1979	1979	Average 1937-1979
Jan.	13,246	13,928	25,710	10,123	73,966	28,282	112,922	52,333
Feb.	19,399	14,692	30,871	11,544	82,971	29,430	133,241	55,666
Mar.	23,330	15,942	37,947	13,569	97,311	33,691	158,588	63,202
Apr.	26,950	16,088	37,947	14,062	98,576	33,807	163,473	63,957
May	28,170	15,989	41,119	13,541	97,311	33,850	166,600	63,380
June	28,586	15,577	40,157	12,806	95,161	32,833	163,904	61,216
July	28,017	15,159	38,698	12,035	92,933	31,780	159,648	58,974
Aug.	27,283	14,764	37,124	11,315	90,832	30,818	155,239	56,897
Sept.	26,440	14,296	35,479	11,013	88,847	29,997	150,766	55,306
Oct.	25,743	14,076	34,764	10,671	86,979	29,306	147,486	54,053
Nov.	26,069	13,994	34,841	10,355	85,267	28,826	146,177	53,175
Dec.	26,250	14,068	35,043	10,596	83,594	29,042	144,887	53,706
Average	24,957	14,881	35,808	11,802	89,479	30,972	150,244	57,655
Maximum	28,586	# 61,670	41,119	* 45,920	98,576	109,608	166,600	213,600
Minimum	13,246	10	25,710	106	73,966	0	112,922	1,264

March 31, 1941 - Prior to removal of spillway gates

* April 30, 1937 - Sandbags were placed on crest of spillway

**RAINFALL ON THE TIJUANA RIVER WATERSHED
IN INCHES**

Tabulated below are monthly records of rainfall with averages for their periods of record at stations located in California and Baja California. Daily records, where available, are on file in the offices of the United States and Mexican Sections of the Commission. For location, elevation, period of record, and the observer, see alphabetical listing of these stations on page 78.

In United States

Month	Morena Dam, California		Barrett Dam, California		Marron Valley, California		Potrero, California		Sawday Ranch, California	
	1979	Average 1906-1979	1979	Average 1907-1979	1979	Average 1951-1979	1979	Average 1914-1979	1979	Average 1950-1979
Jan.	4.88	3.72	5.25	3.33	5.20	2.70	5.35	3.36	5.56	3.10
Feb.	3.11	3.68	4.26	3.35	2.30	2.05	3.22	3.59	3.86	2.50
Mar.	6.37	3.40	7.07	3.02	5.50	2.54	6.57	3.07	7.18	3.02
Apr.	.04	1.71	.05	1.56	0	1.33	T	1.77	.03	1.62
May	1.32	.62	.24	.56	.30	.41	.35	.63	.23	.44
June	0	.14	0	.07	0	.07	0	.10	0	.06
July	.05	.35	.26	.11	.30	.03	.24	.19	.10	.42
Aug.	.24	.51	.01	.21	0	.14	T	.20	.71	.68
Sept.	.23	.38	0	.26	.90	.30	0	.28	.25	.42
Oct.	.79	.88	1.05	.71	.80	.43	1.17	.74	1.10	.54
Nov.	.33	1.57	.33	1.38	.30	1.50	.40	1.51	.28	1.72
Dec.	1.04	3.20	.73	2.83	.20	2.17	.30	3.07	.69	2.39
Yearly	18.40	20.16	19.25	17.39	15.80	13.67	17.60	18.51	19.99	16.91

Month	Campo, California		Chula Vista, California		Lower Otay Dam, California		Brown Field, California			
	1979	Average 1900-1979	1979	Average 1930-1979	1979	Average 1906-1979	1979	Average 1964-1979		
Jan.	3.99	2.97	4.56	1.81	3.91	2.09	3.69	1.68		
Feb.	1.95	3.21	2.14	1.70	1.72	1.47	1.45	1.31		
Mar.	4.88	2.74	2.50	1.54	4.10	1.99	3.40	1.88		
Apr.	.03	1.43	.04	.81	.03	1.07	.05	1.02		
May	.19	.52	.12	.25	.07	.31	.16	.24		
June	0	.07	.02	.05	.02	.07	.05	.07		
July	T	.50	T	.02	.05	.04	.01	.05		
Aug.	.16	.49	.02	.10	T	.12	T	.16		
Sept.	.04	.34	0	.17	0	.22	0	.18		
Oct.	.82	.63	.44	.41	.58	.34	.47	.33		
Nov.	.26	1.35	.27	1.05	.23	1.31	.45	1.53		
Dec.	.69	2.52	.02	1.63	.10	1.48	.05	1.75		
Yearly	13.01	16.77	10.13	9.54	10.81	10.51	9.78	10.20		

In Mexico

Month	La Rumorosa, Baja California		Tecate, Baja California		Tijuana, Baja California		Rodriguez Dam, Baja California		Valle de Las Palmas, Baja California	
	1979	Average 1945-1979	1979	Average 1946-1959 1961-1979	1979	Average 1948-1959 1961-1979	1979	Average 1938-1979	1979	Average 1948-1979
Jan.	2.80	0.83	3.90	2.48	3.39	1.73	2.91	1.54	2.95	1.50
Feb.	.31	.51	1.61	1.57	.98	1.42	.79	1.34	1.06	1.18
Mar.	.47	.55	5.59	2.17	3.23	1.46	3.15	1.50	3.66	1.30
Apr.	0	.31	.08	1.06	T	.63	T	.75	0	.59
May	.04	.08	.28	.31	.04	.20	.04	.16	.16	.12
June	0	.04	.04	.12	T	.04	T	.04	0	.04
July	.67	.31	.04	.12	.08	.04	.35	T	.43	.04
Aug.	2.52	.71	0	.20	T	.04	T	.12	0	.12
Sept.	.47	.31	0	.12	0	.16	0	.24	0	.24
Oct.	0	.39	1.06	.39	.43	.31	.31	.35	.24	.20
Nov.	0	.51	.39	1.26	.24	1.06	.28	.91	.28	.75
Dec.	.08	.71	.47	2.13	.04	1.34	.12	1.54	.94	1.06
Yearly	7.36	5.31	13.46	12.60	8.43	8.46	7.95	8.39	9.72	7.32

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RAINFALL ON THE TIJUANA RIVER WATERSHED IN INCHES

In Mexico

Month	El Pinal, Baja California		San Juan de Dios, Baja California						
	1979	Average 1964-1979	1979	Average 1956-1979					
Jan.	5.71	2.52	7.17	2.32					
Feb.	1.77	2.87	■	2.24					
Mar.	6.14	3.23	5.28	2.13					
Apr.	.12	1.69	.04	1.10					
May	.83	.47	.55	.28					
June	0	.04	0	.12					
July	■	.67	1.42	1.06					
Aug.	■	.71	0	.87					
Sept.	.08	.79	.39	.55					
Oct.	.98	.43	1.10	.63					
Nov.	.47	1.85	.31	1.34					
Dec.	.83	3.15	.75	2.01					
Yearly	**	18.35	**	15.71					

* No record

** Incomplete record

LOCATION OF RAINFALL STATIONS ON THE TIJUANA RIVER WATERSHED

In United States

NAME OF STATION	LATI- TUDE	LONGI- TUDE	Ø ELEV. (FT.)	RECORD BEGAN	OBSERVER
Barrett Dam, California	32° 41'	116° 40'	1,623	1907	City of San Diego
Brown Field, California	32° 34'	116° 59'	515	1964	City of San Diego
Campo, California	32° 38'	116° 28'	2,630	1877	Archie C. Leach
Chula Vista, California	32° 36'	117° 06'	9	1930	Western Salt Company
Lower Otay Dam, California	32° 37'	116° 56'	540	1906	City of San Diego
Marron Valley, California	32° 34'	116° 46'	550	1951	County of San Diego
Morena Dam, California	32° 41'	116° 31'	3,075	1906	City of San Diego
Potrero, California	32° 37'	116° 36'	2,400	1914	County of San Diego
Sawday Ranch, California	32° 45'	116° 29'	3,200	1950	William Tulloch

In Mexico

NAME OF STATION	LATI- TUDE	LONGI- TUDE	Ø ELEV. (FT.)	RECORD BEGAN	OBSERVER
El Pinal, Baja California	■ 32° 11'	■ 116° 17'	■ 4,429	1964	■ S. A. R. H.
La Rumorosa, Baja California	32° 31'	116° 04'	3,937	1945	S. A. R. H.
Rodriguez Dam, Baja California	32° 26'	116° 55'	459	1938	S. A. R. H.
San Juan de Dios, Baja California	31° 59'	116° 00'	■ 3,280	1956	S. A. R. H.
Tecate, Baja California	32° 33'	116° 39'	1,690	1946	S. A. R. H.
Tijuana, Baja California	32° 31'	117° 02'	180	1948	S. A. R. H.
Valle de Las Palmas, Baja California	32° 23'	116° 40'	148	1948	S. A. R. H.

Ø Elevation above mean sea level

■ Estimated from topographic maps

■ Ministry of Agriculture and Hydraulic Resources

EVAPORATION IN THE TIJUANA RIVER BASIN IN INCHES

Tabulated below are records of evaporation observed at four stations in California and at five stations in Baja California, with averages for their periods of record. The stations in California are observed by Western Salt Company, city of San Diego, California, and the United States Section of the Commission; those in Baja California are observed by the Ministry of Agriculture and Hydraulic Resources of Mexico. For specific location of these stations, refer to data opposite same station name shown in "Location of Rainfall Stations," page 78 in this bulletin.

Types of pans used:

1. Barrett Reservoir: January 1921 through September 1926, square 3-foot by 3-foot by 18-inch deep floating pan. October 1926 through 1979, square 3-foot by 3-foot by 18-inch deep land pan set 15 inches in ground.
2. Chula Vista: September 1918 through 1979, National Weather Service 4-foot diameter pan, 10 inches deep, set on 2 by 4-inch-timber grill.
3. Morena Reservoir: October 1915 through December 1921, square 3-foot by 3-foot by 18-inch deep floating pan. January 1922 through August 1926 records are the average of evaporation in a square 3-foot by 3-foot by 18-inch deep floating pan and a land pan of the same dimensions. September 1926 through 1979, square 3-foot by 3-foot by 18-inch deep land pan set 15 inches in ground.
4. Lower Otay Dam: January 1950 through 1979, square 3-foot by 3-foot by 18-inch deep land pan set 15 inches in ground.

In the United States

Month	Morena Dam, California		Barrett Dam, California		Chula Vista, California		Lower Otay Dam, California	
	1979	Average 1916-1979	1979	Average 1921-1979	1979	Average 1919-1979	1979	Average 1950-1979
Jan.	0.75	2.16	1.85	1.87	3.96	2.86	0.25	1.91
Feb.	.80	2.20	1.91	2.21	3.09	3.36	1.33	2.32
Mar.	1.30	3.42	2.83	3.46	4.76	4.99	1.69	3.38
Apr.	3.73	4.73	4.38	4.75	6.30	5.97	3.69	4.64
May	4.59	6.63	5.41	6.77	6.89	6.84	3.81	6.18
June	6.62	8.58	7.52	8.32	7.01	6.95	4.28	6.84
July	7.34	9.88	8.62	9.88	7.83	7.59	5.98	8.36
Aug.	5.93	9.17	7.70	9.28	7.21	7.33	5.68	7.90
Sept.	4.81	7.33	7.60	7.58	6.78	6.11	8.43	6.53
Oct.	1.68	5.13	4.16	5.32	4.89	4.91	4.36	4.74
Nov.	1.40	3.37	2.72	3.34	3.58	3.63	2.38	2.83
Dec.	2.42	2.41	2.41	2.07	3.66	2.78	2.77	2.16
Yearly	41.37	65.01	57.11	64.85	65.96	63.32	44.65	57.79

In Mexico

Month	Tecate, Baja California		Tijuana, Baja California		Rodriguez Dam, Baja California		Valle de las Palmas, Baja California		San Juan de Dios, Baja California	
	1979	Average 1961-1973	1979	Average 1952-1959 1961-1976	1979	Average 1939-1942 1946-1979	1979	Average 1952-1979	1979	Average 1956-1979
Jan.		3.27		3.07	1.93	4.57	2.36	3.54	#	2.72
Feb.		3.31		3.50	2.44	3.70	2.40	3.50	#	2.76
Mar.		4.29		3.94	2.99	4.76	3.07	4.96	#	4.13
Apr.		5.20		4.84	5.59	5.67	5.87	6.38		4.92
May		6.14		5.75	6.34	7.09	7.40	7.60		5.98
June		6.38		5.83	7.99	7.80	7.32	9.21		8.66
July		8.62		6.69	8.31	8.78	9.76	10.75		10.20
Aug.		8.27		6.97	6.97	8.07	7.01	9.88		8.46
Sept.		6.81		5.83	7.48	6.85	9.17	8.46		7.09
Oct.		6.38		4.76	4.37	5.67	5.12	6.18		4.25
Nov.		3.86		3.50	4.06	4.72	4.80	4.45		3.62
Dec.		3.54		3.03	4.17	3.70	4.80	3.86	#	3.19
Yearly		67.87		57.13	62.64	70.75	69.09	78.43		60.71

Ø Partly estimated

Registered incomplete

* Did not register

TEMPERATURE IN THE TIJUANA RIVER BASIN IN DEGREES FAHRENHEIT

The maximum, minimum, and monthly average temperature observations for United States stations are from daily readings of thermometers generally exposed in a shelter located a few feet above sod-covered ground. The maximum and minimum temperatures shown for the stations in Mexico are from daily maximum and minimum thermometer observations, with maximum and minimum for their periods of record. For specific location, elevation, period of record, and the observer, refer to data opposite same station name as shown in "Location of Rainfall Stations," page 78 in this bulletin.

In the United States

Month	Barrett Dam, California				Campo, California				Chula Vista, California			
	1979			Average 1931- 1979	1979			Average 1951- 1979	1979			Average 1931- 1979
	Mean	Max.	Min.		Mean	Max.	Min.		Mean	Max.	Min.	
Jan.	47.4	68	28	48.6	43.1	71	10	47.2	53.5	67	36	53.5
Feb.	49.8	76	32	50.4	46.4	78	20	48.4	52.8	67	38	54.6
Mar.	53.3	80	34	53.1	49.4	79	25	49.7	56.4	80	41	55.7
Apr.	58.7	81	39	57.5	53.2	82	28	51.7	58.6	73	46	57.5
May	63.1	91	42	62.6	58.8	92	27	58.5	62.4	88	47	60.5
June	71.4	105	48	68.3	67.0	106	31	65.5	65.8	93	54	63.3
July	75.8	101	51	76.0	71.6	103	35	73.3	66.6	76	57	66.8
Aug.	74.1	99	53	76.0	69.6	100	37	72.8	69.3	80	59	68.9
Sept.	78.8	107	54	72.3	73.3	103	37	68.5	71.2	90	59	67.9
Oct.	65.7	94	40	64.1	60.2	94	25	60.0	64.4	79	45	63.8
Nov.	56.1	81	31	55.7	50.0	75	16	52.5	58.0	75	37	58.9
Dec.	54.9	87	32	50.4	49.8	82	20	46.9	57.0	78	40	54.1
Yearly	62.4	107	28	61.2	57.7	106	10	57.9	61.3	93	36	60.5

Month	Potrero, California											
	1979			Average 1975- 1979								
	Mean	Max.	Min.									
Jan.	44.8	69	19	50.8								
Feb.	49.0	81	23	50.8								
Mar.	51.4	84	28	51.1								
Apr.	57.1	87	33	54.3								
May	61.0	94	36	60.6								
June	71.5	106	39	70.4								
July	74.8	101	41	75.8								
Aug.	71.8	98	43	74.1								
Sept.	77.2	111	45	72.4								
Oct.	63.2	97	33	65.2								
Nov.	54.2	80	25	56.8								
Dec.	53.8	84	24	52.1								
Yearly	60.8	111	19	61.2								

In Mexico

Month	La Rumorosa, Baja California				Tecate, Baja California				Tijuana, Baja California			
	1979		1946-1979		1979		1946-1979		1979		1948-1979	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
Jan.	61	18	81	5	68	25	100	16	72	36	93	27
Feb.	75	27	82	10	77	28	100	18	75	37	102	32
Mar.	72	32	88	16	82	28	97	23	84	39	93	34
Apr.	79	34	91	23	81	36	100	28	82	45	97	34
May	86	36	97	28	97	37	100	36	100	45	100	43
June	100	45	113	34	106	43	106	32	108	50	108	41
July	97	54	104	39	102	46	115	36	93	46	120	46
Aug.	97	52	102	46	97	43	113	34	93	57	106	52
Sept.	95	52	104	34	104	48	115	36	104	54	120	46
Oct.	95	41	95	25	95	41	106	27	82	46	117	41
Nov.	95	25	95	14	84	27	97	27	86	39	108	34
Dec.	84	25	84	10	88	30	97	23	91	39	99	25
Yearly	100	18	113	5	106	25	115	16	108	36	120	25

DRAINAGE AREAS ABOVE GAGING STATIONS AND IRRIGATED AREAS ALONG TIJUANA RIVER AND TRIBUTARIES

1979

The total area within Tijuana River basin is 1,731 square miles, as determined from the best available maps from both the United States and Mexico. The drainage areas shown below are tabulated according to their downstream sequence.

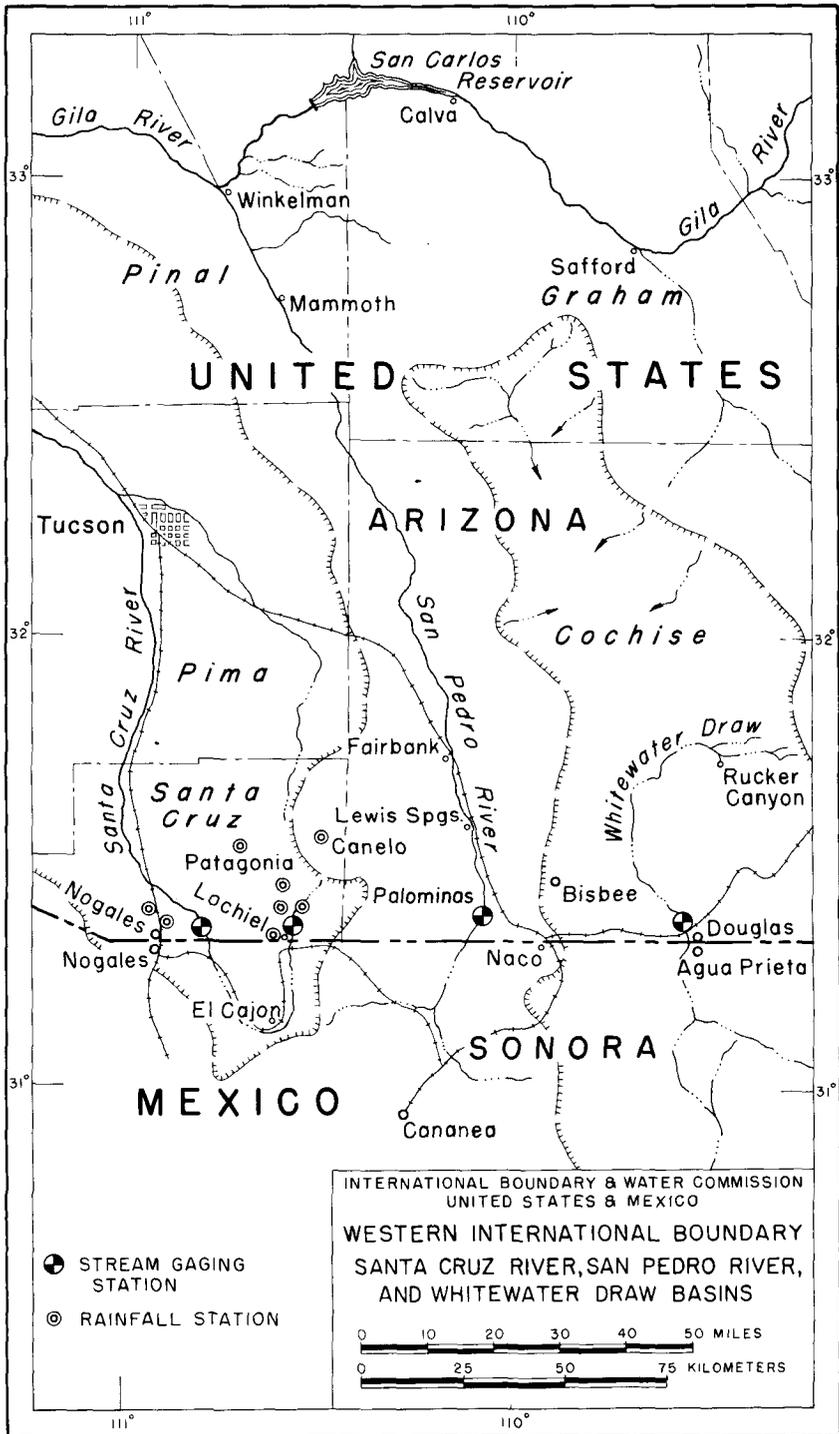
The irrigated areas, tabulated in downstream sequence, are from the most reliable sources available. Those in the United States were furnished by the United States Department of Agriculture and the State Engineer, State of California, or estimated from aerial photographs. Those in Mexico were furnished by the Ministry of Agriculture and Hydraulic Resources of Mexico through the Mexican Section of the Commission. All irrigation in the Tijuana River basin in 1979 was by pumping from ground water.

Designation of Areas	Drainage Basin-Square Miles			Irrigated Areas-Acres		
	United States	Mexico	Total	United States	Mexico	Total
Cottonwood Creek above Morena Dam	114	0	114	0	0	0
Morena Dam to Barrett Dam	133	0	133	0	0	0
above Barrett Dam	247	0	247	0	0	0
below Barrett Dam and above Tecate Creek	65	0	65	0	0	0
above Tecate Creek	312	0	312	0	0	0
Campo Creek above International Boundary	82	4	86	0	0	0
Tecate Creek above International Boundary (not including Campo Creek)	19	64	83	0	0	0
Cottonwood Creek above International Boundary Station	413	68	481	(a)	100	0
Rio de las Palmas above Rodriguez Dam	7	981	988	0	(b)	0
Tijuana River above Nestor Gaging Station	458	1,266	1,724			
above the Mouth	462	1,269	1,731	800	(c)	0

(a) Estimated. During extremely dry years these areas may be materially reduced.

(b) Areas in upper valleys may be irrigated by pumping from ground water.

(c) There was no irrigation in 1979 in the Tijuana Irrigation District, Tijuana Valley, Baja California, Mexico, from the Rodriguez Reservoir.



WHITEWATER DRAW NEAR DOUGLAS, ARIZONA

DESCRIPTION: Water-stage recorder located on U. S. Highway 80 bridge between Douglas and Bisbee, Arizona, about 450 feet (137 m) upstream from the Southern Pacific Railroad bridge, 1.5 miles (2.4 km) upstream from the international boundary, and 2 miles (3.2 km) west of Douglas, Arizona. Zero of gage is 3,909.14 feet (1,191.51 m) above mean sea level, U. S. C. & G. S. datum of 1929. Location April 26, 1972 to April 10, 1974 was 200 feet (61.0 m) upstream from bridge. Datum 4.40 feet (1.34 m) higher.

RECORDS: Based on current meter measurements or observations of no flow during the year. Computations by shifting control methods. Records obtained and furnished by the U. S. Geological Survey. Records poor. Records available: August to October 1911 (gage heights and discharge measurements only), July to October 1912, January to June 1913, October 1913, December 1913 to June 1914, February to June 1915, October 1915 to September 1919, October 1919 to April 1922 (gage heights and discharge measurements only), June 1930 to December 1933, May 1935 to July 1947, October 1947 through 1979 (July 1954 to March 1955 monthly discharge only).

REMARKS: Diversions above this station are mainly by pumping from ground water for irrigation. Records show flow at the international boundary into Mexico except for some smelter waste water entering the stream a short distance below this station.

EXTREMES: Prior to 1936: Maximum recorded discharge, 3,450 second-feet (97.7 m³/sec) August 10, 1931 (gage height 12.15 feet (3.70 m); maximum estimated discharge, 4,050 second-feet (115 m³/sec) July 27, 1919; minimum discharge, no flow for several days of many years. Since 1936: Maximum discharge, 5,060 second-feet (143 m³/sec) August 7, 1955; maximum gage height 16.55 feet (5.04 m) July 29, 1966; minimum daily discharge, no flow at times during most years.

Mean Daily Discharge in Second-Feet 1979 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	0	0	0	0	0	18	0	0	0	0
2	0	0	0	0	0	0	0	12	0	0	0	0
3	0	0	0	0	0	0	0	4.9	0	0	0	0
4	0	0	0	0	0	5.9	0	18	0	0	0	0
5	0	0	0	0	0	3.8	0	87	0	0	0	0
6	0	0	0	0	0	.10	0	14	0	0	0	0
7	0	0	0	0	0	0	0	17	0	0	0	0
8	0	0	0	0	0	0	0	168	0	0	0	0
9	0	0	0	0	0	0	0	14	0	0	0	0
10	0	0	0	0	0	0	0	12	0	0	0	0
11	0	0	0	0	0	0	0	12	0	0	0	0
12	0	0	0	0	0	0	0	.70	0	0	0	0
13	0	0	0	0	0	0	0	8.0	0	0	0	0
14	0	0	0	0	0	0	0	14	0	0	0	0
15	0	0	0	0	0	0	0	86	0	0	0	0
16	0	0	0	0	0	0	0	16	0	0	0	0
17	.30	0	0	0	0	0	.70	5.4	0	0	0	0
18	27	0	0	0	0	0	18	.50	0	0	0	0
19	20	0	0	.18	0	0	232	9.9	0	0	0	0
20	11	0	0	.29	0	0	533	11	0	0	0	0
21	4.0	0	0	.25	0	0	114	.80	0	0	0	0
22	2.2	0	0	.21	0	0	18	.10	0	0	0	0
23	1.3	0	0	.17	0	0	13	0	0	0	0	0
24	.90	0	0	0	0	0	3.5	0	0	0	0	0
25	.70	0	0	0	3.6	0	.70	0	0	0	0	0
26	3.3	0	0	0	.36	0	.40	0	0	0	0	0
27	.60	0	0	0	.24	0	9.1	0	0	0	0	0
28	.60	0	0	0	.20	0	15	0	0	0	0	0
29	.46	0	0	0	.10	0	13	14	0	0	0	0
30	.32	0	0	0	0	0	10	10	0	0	0	0
31	0	0	0	0	0	0	4.3	.80	0	0	0	0
Sum	72.68	0	0	1.10	4.50	9.80	984.70	554.10	0	0	0	0
Current Year 1979										Period 1936-1979		
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.	6.04		18	51	11	0	2.34	144	40.0	451	0	
Feb.				0		0	0	0	19.6	132	0	
Mar.				0		0	0	0	28.4	295	0	
Apr.	2.36		19	38	11	0	.04	2.2	19.5	173	0	
May	3.81		25	12	11	0	.15	8.9	14.3	138	0	
June	5.25		4	18	11	0	.33	19.4	123	1,590	0	
July	9.20		20	1,100	11	0	31.8	1,953	2,081 #	8,110	39	
Aug.	7.92		8	406	123	0	17.9	1,099	3,120 #	14,480	0	
Sept.				0		0	0	9	723 #	3,170	0	
Oct.				0		0	0	0	306	6,103	0	
Nov.				0		0	0	0	36.8	352	0	
Dec.				0		0	0	0	119	2,363	0	
Yearly	9.20			1,100		0	4.46	3,226	6,630.6	22,321	900	
	Meters		Cubic Meters per Second				Thousands of Cubic Meters					
	2.80			31.2		0	0.13	3,979	8,179	27,533	1,110	

1 And other days # 1947 records not included

SEWAGE INFLUENT, DOUGLAS, ARIZONA INTERNATIONAL TREATMENT PLANT

DESCRIPTION: Parshall flume in influent line to the international treatment plant, equipped with Simplex digital meter for measuring combined sewage flows from Douglas, Arizona and Agua Prieta, Sonora; and Parshall flume with recorder for measuring the sewage from Douglas. Flows from Agua Prieta are deduced from total flows and the city of Douglas flows; however, since April 8, 1968, all sewage flows from Agua Prieta have been diverted to new oxidation ponds located in Mexico, 1.6 miles (2.6 km) south of the international boundary.

RECORDS: Continuous monthly records since March 1948; daily records from March 18, 1948 through 1950 and from January 1952 through 1979.

REMARKS: The Douglas-Agua Prieta International Treatment Plant was constructed by the governments of the United States and Mexico in 1947 to correct a serious international sanitation problem. The plant is located in the United States adjacent to the international boundary about one mile (1.6 km) west of the Douglas-Agua Prieta Port of Entry. Prior to December 1970, the treatment of sewage was complemented by the use of old oxidation ponds in Mexico adjacent to the international boundary. Since December 1970, sewage effluent from the plant flows into Mexico and then across to the right bank of the Agua Prieta Arroyo, by means of a canal bridge, to be used for irrigation.

Month	Total Monthly Flows			Mean Daily Flows-Millions of Gallons Per Day					
	Millions of Gallons			Current Year 1979			Period 1952-1979		
	U.S.	Mexico	Total	Maximum	Minimum	Mean	Maximum	Minimum	Mean
Jan.	40,110	0	40,110	1.460	1.100	1.294	1.618	0.619	1.065
Feb.	38,650	0	38,650	1.480	1.150	1.380	1.784	.584	1.078
Mar.	40,850	0	40,850	1.490	1.170	1.318	1.598	.590	1.074
Apr.	41,410	0	41,410	1.640	1.110	1.380	1.640	.619	1.073
May	36,180	0	36,180	1.850	.635	1.206	1.850	.619	1.079
June	39,130	0	39,130	2.060	.800	1.304	2.060	.626	1.133
July	44,490	0	44,490	2.010	1.070	1.435	3.209	.619	1.187
Aug.	46,190	0	46,190	1.640	1.310	1.490	1.985	.619	1.208
Sept.	44,090	0	44,090	1.610	1.340	1.470	1.884	.626	1.178
Oct.	44,260	0	44,260	1.770	1.060	1.428	1.770	.626	1.124
Nov.	43,160	0	43,160	1.580	1.310	1.439	1.586	.619	1.097
Dec.	45,720	0	45,720	2.040	1.230	1.475	2.040	.500	1.089
Yearly	504,240	0	504,240	2.060	0.635	1.385	3.209	0.500	1.115

**SEWAGE INFLUENT, AGUA PRIETA, SONORA
INTERNATIONAL OXIDATION PONDS**

DESCRIPTION: Parshall flume equipped with staff gage in influent line to oxidation ponds. Since April 8, 1968, all sewage from Agua Prieta, Sonora has been diverted to oxidation ponds, which are located in Mexico; if necessary, sewage from Douglas, Arizona may be included, but this has never been done.

RECORDS: Discharges are computed from daily 11:00 a.m. readings of the staff gage by applying an index for that hour, determined from 7 days of hourly measurements from which the relationship between mean daily readings and 11:00 a.m. readings was developed. Records available: Mean daily flows from April 8, 1968 through 1979.

REMARKS: The construction of the international oxidation ponds in Agua Prieta, Sonora was completed in April 1968 by the government of Mexico, fulfilling an international agreement to solve the problem of insufficient capacity at the international treatment plant in Douglas, where the combined flows from Douglas and Agua Prieta were treated. If necessary, sewage from Agua Prieta may be treated in this plant, but since the completion of the oxidation ponds, this has never been done. The ponds are located 1.6 miles (2.6 km) south of international monument 85a.

Month	Total Monthly Flows			Mean Daily Flows-Millions of Gallons Per Day					
	Millions of Gallons			Current Year 1979			Period 1968-1979		
	U.S.	Mexico	Total	Maximum	Minimum	Mean	Maximum	Minimum	Mean
Jan.	0	17.216	17.216	0.630	0.436	0.555	0.640	0.394	0.491
Feb.	0	16.123	16.123	.630	.436	.576	.726	.394	.498
Mar.	0	17.818	17.818	.630	.436	.575	.666	.394	.479
Apr.	0	17.250	17.250	.630	.436	.584	.666	.394	.485
May	0	18.074	18.074	.630	.436	.583	.666	.394	.512
June	0	18.067	18.067	.630	.436	.602	.630	.394	.515
July	0	18.125	18.125	.630	.436	.585	.691	.259	.515
Aug.	0	18.074	18.074	.630	.436	.583	.967	0	.470
Sept.	0	17.250	17.250	.630	.436	.575	.630	0	.526
Oct.	0	17.645	17.645	.630	.436	.569	.630	0	.495
Nov.	0	17.812	17.812	.630	.436	.594	.717	.394	.513
Dec.	0	18.125	18.125	.630	.436	.585	.709	.394	.513
Yearly	0	211.579	211.579	0.630	0.436	0.580	0.967	0	0.501

SAN PEDRO RIVER AT PALOMINAS, ARIZONA

DESCRIPTION: Water-stage recorder located near left bank on downstream side of the bridge pier at Highway 92, 0.7 mile (1.1 km) east of Palominas, 2.5 miles (4.0 km) upstream from Green Brush Draw, 4.5 miles (7.2 km) downstream from international boundary, and 12 miles (19 km) southwest of Bisbee, Arizona. Zero of gage is 4,187.62 feet (1,276.39 m) above mean sea level (State Highway bench mark).

RECORDS: Based on current meter measurements or observations of no flow during the year. Records available: May 1930 to October 1933, May 1935 to July 1941, and July 1950 through 1979. Records obtained and furnished by U. S. Geological Survey.

REMARKS: There are some small diversions for irrigation of a few hundred acres above this station, mostly in Mexico. Record shows approximate flow of river at international boundary.

EXTREMES: Maximum daily discharge, 22,000 second-feet (623 m³/sec) on August 14, 1940 (gage height 16.16 feet (4.93 m) present datum), from rating curve extended above 5,600 second-feet (159 m³/sec) on basis of slope-area measurement of peak flow; no flow at times in most summers. Greatest flood known occurred on September 28, 1926 (gage height, about 23.9 feet (7.28 m) present datum, from flood marks; discharge not determined).

Mean Daily Discharge in Second-Feet 1979 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	528	140	43	23	8.7	3.7	2.9	1.0	2.5	0	0	0.71
2	200	140	44	26	6.1	3.2	2.5	1.0	2.0	0	0	.62
3	110	130	50	25	5.8	5.0	2.5	10	2.0	0	0	.44
4	100	125	51	24	6.0	163	2.5	36	2.0	0	0	.71
5	95	120	42	23	5.5	75	2.3	72	1.5	0	0	1.2
6	150	110	31	20	5.5	24	3.5	40	1.5	0	1.0	1.2
7	223	105	32	19	5.0	14	3.0	28	1.5	0	1.0	1.2
8	168	100	31	22	5.0	10	2.7	70	1.0	0	1.0	1.1
9	128	95	29	20	5.0	7.4	.35	46	1.0	0	1.1	1.0
10	109	90	28	19	4.5	6.2	.35	43	1.0	0	1.1	0
11	102	80	30	21	4.5	5.5	.09	35	.50	0	.80	0
12	92	75	29	19	4.5	4.2	0	32	.50	0	.86	0
13	88	72	28	17	4.5	3.5	0	29	.50	0	.80	0
14	79	70	26	12	4.0	3.2	0	57	0	0	.16	0
15	74	68	22	12	3.9	2.7	63	121	0	0	.56	.35
16	69	63	21	10	4.0	2.0	14	37	0	0	.18	.80
17	686	48	22	11	4.5	2.0	5.4	20	0	0	.08	1.0
18	5,710	41	23	10	5.0	.91	49	15	0	0	.28	1.5
19	1,180	40	24	9.8	4.5	.61	388	12	0	0	1.1	1.6
20	625	38	23	10	4.0	.45	98	11	0	0	.01	1.0
21	350	36	32	10	4.0	.47	44	9.4	0	0	.03	1.1
22	250	36	56	9.1	4.0	1.7	20	8.1	0	0	.06	1.2
23	200	36	51	9.0	4.0	2.9	10	7.3	0	0	.02	1.5
24	160	36	44	8.4	3.5	3.3	5.0	6.5	0	0	.11	1.8
25	714	34	38	9.0	3.8	3.7	2.0	5.4	0	0	.57	2.3
26	732	40	32	9.4	4.0	.96	1.5	5.0	0	0	1.4	3.0
27	370	46	27	6.2	4.4	1.0	2.0	4.3	0	0	1.1	2.4
28	224	43	25	7.2	5.1	.60	10	3.7	0	0	1.2	2.2
29	171	26	7.9	3.1	.47	2.0	3.2	0	0	0	.86	2.2
30	160	25	10	3.5	.45	1.0	2.5	0	0	0	.47	2.2
31	150		23	3.6		1.0	2.6		0	0		2.0
Sum	13,997	2,057	1,008	439.0	143.5	352.12	738.59	774.0	17.50	0	15.85	36.33
Current Year 1979								Period 1951-1979				
Month	Extreme Gage Feet		Extreme Second-Feet			Average Second-Feet	Total	Acre-Feet				
	High	Low	Day	High	Day	Low	Acre-Feet	Average	Maximum	Minimum		
Jan.	13.88	3.95	18	12,000	16	66	452	27,763	1,534	27,763	2.6	
Feb.		3.84	1	140	26	26	73.5	4,080	577	4,080	3.0	
Mar.	4.02	3.68	22	68	16	18	32.5	1,999	542	4,659	13.3	
Apr.	3.65	3.22	1	26	28	5.1	14.6	871	127	871	0	
May	3.30	3.09	1	11	29	1.2	4.63	285	44.2	285	0	
June	6.12	3.00	4	1,350	20	.30	11.7	698	185	1,391	0	
July	6.31		18	1,490	112	0	23.8	1,465	6,103	17,238	184	
Aug.	4.91		15	217	1	1.0	25.0	1,535	8,969	36,369	165	
Sept.	3.13		1	2.7	114	0	.58	34.7	1,727	16,344	11.3	
Oct.				0	0	0	0	0	1,863	47,322	0	
Nov.	4.17		26	1.9	1	1	.53	31.4	248	2,563	0	
Dec.	4.24		26	4.3	110	0	1.17	72.1	1,575	25,479	6.2	
Yearly	13.88			12,000		0	53.6	38,834	23,514	62,788	4,400	
	Meters		Cubic Meters per Second			Thousands of Cubic Meters						
	4.23			340		0	1.52	47,901	29,004	77,448	5,427	

! And other days

SANTA CRUZ RIVER NEAR NOGALES, ARIZONA

DESCRIPTION: Water-stage recorder, cable with sit-down cable car located 5.5 miles (8.9 km) east of Nogales, Arizona, 0.8 mile (1.3 km) downstream from the international boundary and 6 miles (9.7 km) upstream from the Santa Cruz bridge on State Highway No. 82. Zero of gage is 3,702.54 feet (1,128.53 m) above mean sea level, U. S. C. & G. S. datum (levels by International Boundary and Water Commission).

RECORDS: Based on current meter measurements or observation of no flow during the year. Records obtained and furnished by the U. S. Geological Survey. 1979 records fair. Records available: March to November 1907 and April 1909 to December 1912 (discharge measurements and fragmentary gage height record); January 1913 to June 1922 (October 1915 to September 1916, monthly discharges only); May 1930 to December 1933; and July 1935 through 1979.

REMARKS: Diversions in both countries affect the flow at this station. The major diversions occur in Mexico for domestic and irrigation uses. There are no storage dams above the station as of December 1979.

EXTREMES: Maximum discharge, 33,500 second-feet (949 m³/sec) on October 9, 1977 (gage height 15.5 feet) (4.72 m); minimum discharge, no flow for several days of many years.

Mean Daily Discharge in Second-Feet 1979 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	478	250	68	52	24	11	0.10	70	6.4	0.40	0	1.6
2	334	245	81	52	24	10	0	129	2.6	.40	0	1.6
3	304	184	72	48	20	10	0	76	2.5	.40	0	1.6
4	256	184	55	44	16	12	0	151	2.0	.40	0	2.3
5	220	240	55	44	16	12	0	107	2.0	.40	0	3.0
6	322	230	54	44	18	16	0	37	1.6	.40	0	3.3
7	340	161	54	44	16	12	0	29	1.1	.30	0	3.7
8	262	165	54	43	16	12	0	50	.90	.30	.10	3.0
9	220	154	52	44	19	7.7	0	24	.90	.20	0	3.5
10	215	127	48	44	19	7.0	0	34	.70	.20	0	4.1
11	200	118	46	43	16	4.8	0	24	.70	.10	0	4.1
12	192	118	43	43	13	4.6	0	124	.80	.10	0	4.6
13	180	118	43	43	13	4.4	0	118	.30	0	0	4.4
14	177	118	43	43	12	4.8	0	137	.20	0	0	3.7
15	177	115	42	43	13	2.8	0	147	.40	0	0	3.5
16	177	112	39	43	12	1.7	0	70	.60	0	0	3.5
17	758	110	39	40	12	1.1	0	34	.20	0	0	3.9
18	2,750	96	43	39	12	1.1	2.7	18	.30	0	0	3.9
19	630	96	41	39	12	1.1	24	16	.25	0	.10	3.7
20	391	96	39	36	14	1.1	19	16	.25	0	.70	4.1
21	280	93	93	34	12	1.0	7.0	16	.25	0	.80	3.9
22	220	88	98	33	13	1.0	8.0	16	.25	0	1.3	2.5
23	200	81	81	34	12	.45	9.0	16	.25	0	1.1	2.6
24	220	81	68	36	12	.45	7.4	12	.30	0	1.1	3.5
25	3,060	79	57	30	12	.15	3.0	12	.25	0	1.3	3.5
26	1,150	70	55	26	12	.15	4.8	12	.30	0	1.3	3.9
27	481	70	55	26	13	.10	8.0	11	.35	0	1.3	2.8
28	334	70	55	25	13	.10	7.4	11	.35	0	1.6	2.5
29	274		55	22	12	.10	7.7	11	.30	0	1.6	2.2
30	240		54	23	12	.10	98	10	.35	0	1.6	2.3
31	225		54		12		14	7.0		0		2.6
Sum	15,267	3,669	1,736	1,160	452	140.80	220.10	1,545.0	27.65	3.60	13.90	99.4
Current Year 1979								Period 1936-1979				
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.	8.50	4.72	18	7,180	15	154	492	30,282	1,737	30,282	0	
Feb.	4.96	4.51	5	286	24	66	131	7,277	1,101	11,129	0	
Mar.	4.69	4.40	21	118	20	36	56.0	3,443	1,099	12,454	0	
Apr.	4.50	4.19	1	57	26	19	38.7	2,301	301	2,301	0	
May	4.37	4.19	10	25	18	10	14.6	897	88.3	897	0	
June	4.28		6	19	125	0	4.69	279	63.9	1,020	0	
July	5.07		30	322	1	0	7.10	437	2,776	15,610	45	
Aug.	5.61	4.05	3	952	1	.50	49.8	3,064	5,811	45,790	91	
Sept.		4.10	1	6.4	114	.20	.92	54.8	1,340	7,507	0	
Oct.	4.10		1	.40	112	0	.12	7.1	1,683	59,025	0	
Nov.	4.13		22	1.7	1	0	.46	27.6	465	7,384	0	
Dec.	4.30	4.09	12	5.8	2	1.3	3.21	197	2,358	33,568	0	
Yearly	8.50			7,180		0	66.7	48,266	18,823	66,030	3,499	
	Meters		Cubic Meters per Second			Thousands of Cubic Meters						
	2.59			203		0	1.89	59,536	23,218	81,447	4,316	

! And other days

SEWAGE INFLUENT, NOGALES INTERNATIONAL TREATMENT PLANT

DESCRIPTION: Three 24-inch (61.0 cm) Parshall flumes, each with a recording flow meter and continuous totalizer, one located at the international boundary for measuring effluent from Nogales, Sonora, one located in the influent line to the treatment plant, and one on the plant effluent line. Nogales International Treatment Plant is located approximately 6 miles (9.7 km) north of the international boundary.

RECORDS: Flows from the United States are deduced from total plant influent less the flows measured crossing the international boundary from Mexico. Records available: Continuous monthly record for plant influent since August 1951, daily records for plant influent, January 1952 through 1979.

REMARKS: Prior to December 18, 1971 the plant was located along the right bank of Nogales Wash, approximately two miles (3.2 km) north of the international boundary. Nogales International Treatment Plant treats combined sewage from Nogales, Arizona and Nogales, Sonora by means of aerated stabilization lagoons. Chlorination of plant effluent, which may be used for irrigation of lands lying north of the plant, is carried out by the United States at its expense.

Month	Total Monthly Flows			Mean Daily Flows-Millions of Gallons Per Day					
	Millions of Gallons			Current Year 1979			Period 1952-1979		
	U.S.	Mexico	Total	Maximum	Minimum	Mean	Maximum	Minimum	Mean
Jan.	134.113	79.208	213.321	7.942	6.264	6.881	7.942	0.650	2.835
Feb.	102.787	72.743	175.530	7.031	5.691	6.269	7.031	.650	2.869
Mar.	110.176	80.913	191.089	7.922	5.699	6.164	7.922	.750	2.852
Apr.	89.262	78.010	167.272	6.078	5.050	5.576	6.130	.700	2.749
May	86.703	82.766	169.469	6.168	4.958	5.467	6.168	.550	2.644
June	80.047	76.288	156.335	5.509	4.793	5.211	5.509	.700	2.512
July	85.967	79.253	165.220	6.103	4.755	5.330	6.149	.700	2.592
Aug.	90.730	82.052	172.782	6.148	5.031	5.574	6.148	.750	2.868
Sept.	96.494	58.157	154.651	5.799	4.466	5.155	5.799	.800	3.109
Oct.	88.613	73.398	162.011	5.606	4.943	5.226	9.807	.700	3.019
Nov.	86.180	* 88.267	174.447	6.267	5.215	5.815	10.235	.800	2.933
Dec.	83.669	85.215	* 168.884	5.974	4.867	5.448	11.478	.350	2.906
Yearly	1,134.741	936.270	2,071.011	7.942	4.466	5.676	11.478	0.350	2.824

* Partly estimated

RAINFALL ON THE SANTA CRUZ RIVER WATERSHED IN INCHES

Tabulated below are the monthly records of rainfall with averages for their periods of record at stations located in Arizona and one in Sonora, Mexico. Two stations are operated and maintained by the United States Section of the Commission, three by the National Weather Service, and one by the Mexican Section of the Commission. For location, elevation, period of record, type of gage in use, and the observer, see alphabetical listing of stations on page 92.

In the United States

Month	San Rafael #2, Arizona		Canelo, Arizona		Patagonia, Arizona		Nogales, Arizona		Nogales Sanitation Plant 6N, Arizona	
	1979	Average 1973-1979	1979	Average 1930-1979	1979	Average 1930-1979	1979	Average 1914-1979	1979	Average 1953-1979
Jan.	4.49	1.57	3.69	1.18	3.06	1.23	2.53	1.05	3.28	1.07
Feb.	.48	1.08	.64	1.05	.53	1.04	.44	.85	.58	.71
Mar.	1.37	.99	1.38	.79	2.15	.88	1.90	.79	1.26	.82
Apr.	0	.35	T	.35	0	.33	0	.29	0	.18
May	.21	.06	.39	.13	.24	.16	.74	.14	1.99	.17
June	.64	.47	.80	.80	.30	.51	.43	.46	.50	.41
July	3.08	5.88	1.57	4.21	2.05	4.48	2.53	4.30	3.21	4.81
Aug.	1.45	2.74	1.90	4.22	1.74	4.00	1.97	3.84	1.70	3.63
Sept.	.75		.54	1.73	.35	1.82	.55	1.62	.46	1.57
Oct.	0		.07	.99	.33	1.05	.06	.90	.22	1.27
Nov.	0		.37	.77	.42	.80	.26	.72	.51	.67
Dec.	.18		.12	1.33	.31	1.37	.19	1.28	.23	1.26
Yearly	12.65		11.47	17.55	11.48	17.67	11.60	16.24	13.94	16.57

In Mexico

Month	San Lazaro, Sonora							
	1979	Average 1961-1979						
Jan.	3.54	0.98						
Feb.	1.93	.79						
Mar.	1.50	.75						
Apr.	0	.35						
May	.08	.12						
June	.31	.43						
July	3.70	4.53						
Aug.	3.94	3.23						
Sept.	.31	1.61						
Oct.	0	1.18						
Nov.	.08	.71						
Dec.	.08	1.26						
Yearly	15.47	15.12						

LOCATION OF RAINFALL STATIONS ON THE SANTA CRUZ WATERSHED

The precipitation records of the stations listed alphabetically below begin on the data shown and extend through 1979.

In United States

NAME OF STATION	TYPE GAGE	LATITUDE	LONGITUDE	ELEV. (FT.)	RECORD BEGAN	OBSERVER
Canelo, Arizona	S	31° 33'	110° 32'	5,010	1930	R. E. Ewing
Nogales, Arizona	R	31° 21'	110° 55'	3,808	1914	Milford L. Noon
Nogales Sanitation Plant 6N, Arizona	S	31° 25'	110° 57'	3,560	June 1952	I. B. & W. C.
Patagonia, Arizona	S	31° 33'	110° 45'	4,190	1930	George R. Proctor
San Rafael #2, Arizona	S	31° 22'	110° 38'	4,860	Jan. 1973	I. B. & W. C.

In Mexico

NAME OF STATION	TYPE GAGE	LATITUDE	LONGITUDE	ELEV. (FT.)	RECORD BEGAN	OBSERVER
San Lazaro, Sonora	S	31° 18'	110° 38'	4,199	Mar. 1954	I. B. & W. C. Mexican Section

S Standard 8" rain gage

R Recording rain gage

**TEMPERATURE, HUMIDITY, EVAPORATION, AND WIND
IN THE SANTA CRUZ RIVER BASIN**

Tabulated below are monthly records of temperature, humidity, evaporation and wind at the station located at the Nogales Sanitation Plant in Arizona 6 miles (9.7 km) north of the international boundary. December 18, 1971 the station was moved to correspond with a new Nogales Sanitation Plant. Prior to this date, the station was located 2 miles (3.2 km) north of the international boundary at the old Nogales Sanitation Plant. This station is operated and maintained by the United States Section of the Commission. Also tabulated below are the monthly records of temperature and evaporation for a station at San Lazaro, Sonora, located approximately 6.5 miles (10.5 km) southwest of Santa Cruz, Sonora and approximately 22 miles (35 km) southeast of Nogales, Sonora. This station is operated and maintained by the Mexican Section of the Commission. The equipment at the Nogales Sanitation Plant - 6N consists of: Standard 8-inch (203 mm) rain gage, 48-inch (1,219 mm) evaporation pan with stillwell and hook gage, maximum and minimum thermometer, anemometer (registers miles), hygromograph, and psychrometer, hand turbine type. The equipment at the station at San Lazaro, Sonora consists of: Maximum and minimum thermometer, standard 8-inch (203 mm) rain gage and a 48-inch (1,219 mm) diameter evaporation pan.

For specific location of these two stations, refer to data opposite same station name shown in "Location of Rainfall Stations," page 92 of this bulletin.

In United States

Temperature - Degrees Fahrenheit

Month	Nogales Sanitation Plant - 6N		
	1979		
	Mean	Max.	Min.
Jan.	42.6	72	10
Feb.	46.7	83	21
Mar.	50.4	80	24
Apr.	57.2	88	27
May	66.1	94	30
June	76.8	106	43
July	76.4	107	52
Aug.	71.2	98	45
Sept.	74.0	103	45
Oct.	63.2	97	26
Nov.	48.5	81	12
Dec.	45.8	79	15
Yearly	59.9	107	10

Mean Relative Humidity - Percent

Month	Nogales Sanitation Plant - 6N	
	1979	
	Max.	Min.
Jan.	100	40
Feb.	100	39
Mar.	100	42
Apr.	90	16
May	95	14
June	100	16
July	100	32
Aug.	100	50
Sept.	100	50
Oct.	100	23
Nov.	100	34
Dec.	100	32
Yearly	100	14

Evaporation - Inches

Month	Nogales Sanitation Plant - 6N	
	1979	Average 1953-1979
	Jan.	**3.66
Feb.	4.34	4.60
Mar.	5.64	7.27
Apr.	8.42	9.56
May	11.02	12.29
June	12.17	13.80
July	12.69	10.42
Aug.	7.14	8.28
Sept.	9.87	8.15
Oct.	8.86	7.01
Nov.	5.67	4.57
Dec.	4.35	3.42
Yearly	93.83	92.95

Mean Wind Speed - Miles Per Hour

Month	Nogales Sanitation Plant - 6N	
	1979	Average 1953-1979
	Jan.	2.0
Feb.	1.9	2.3
Mar.	2.2	2.6
Apr.	2.1	2.6
May	2.6	2.5
June	2.2	2.4
July	1.6	1.6
Aug.	1.5	1.1
Sept.	1.0	1.2
Oct.	1.7	1.6
Nov.	.5	1.6
Dec.	.6	1.7
Yearly	1.6	1.9

In Mexico

Temperature - Degrees Fahrenheit

Month	San Lazaro, Sonora			
	1979		1961-1979	
	Max.	Min.	Max.	Min.
Jan.	68	14	93	10
Feb.	77	28	88	16
Mar.	77	28	99	19
Apr.	84	28	106	18
May	91	39	117	28
June	104	50	124	39
July	104	50	126	50
Aug.	97	54	117	52
Sept.	100	48	115	39
Oct.	93	32	111	32
Nov.	79	19	102	19
Dec.	79	27	95	4
Yearly	104	14	126	4

Evaporation - Inches

Month	San Lazaro, Sonora	
	1979	Average 1961-1979
	Jan.	1.97
Feb.	4.25	4.72
Mar.	5.00	6.97
Apr.		9.69
May		11.81
June	14.21	12.76
July	12.83	8.58
Aug.	8.23	7.52
Sept.	10.12	7.52
Oct.	9.21	6.89
Nov.	5.51	4.65
Dec.	5.08	3.58
Yearly		87.95

* One or more days missing
 † Adjusted to full month
 ** Ten-year average

**DRAINAGE AREAS ABOVE GAGING STATIONS AND IRRIGATED AREAS ALONG
SANTA CRUZ RIVER, SAN PEDRO RIVER, AND WHITEWATER DRAW
1979**

The drainage basin areas tabulated below are derived from the best available maps from both the United States and Mexico.

Data on irrigated areas in the Whitewater Draw and San Pedro Basins were furnished by the Soil Conservation Service at Douglas, Arizona.

Designation of Areas	Drainage Basin - Square Miles			Irrigated Areas - Acres		
	United States	Mexico	Total	United States	Mexico	Total
Santa Cruz River:						
Above Lochiel, Arizona Gaging Station	82	0	82	200	0	200
Above El Cajon, Mexico Gaging Station	179	125	304	200	2,352	2,552
Above Nogales, Arizona Gaging Station	185	348	533	200	2,696	2,896
San Pedro River:						
Above Palominas, Arizona Gaging Station	92	649 *	741	1,026	3,459	4,485
Whitewater Draw:						
Above Douglas, Arizona Gaging Station	1,023	0	1,023	32,000	0	32,000

* An additional 47 square miles in Mexico is tributary to the San Pedro River downstream from this station