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WESTERN WATER BULLETIN 1960

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

COLORADO RIVER

TIJUANA RIVER

SANTA CRUZ RIVER

WHITEWATER DRAW

1960

CONTENTS

CONTENTS–Continued

II Alamo and New Rivers

Quantity of Water

Quality of Water

III Tijuana River

Quantity of Water

Areas

IV Whitewater Draw and Santa Cruz River

Quantity of Water

Areas

FOREWORD

This bulletin is the first annual compilation of stream discharges and other hydrographic data relating to the international aspects of the Colorado River below Imperial Dam, the Tijuana River and other streams crossing the western land boundary. The compilation was prepared jointly by the United States and Mexican Sections of the International Boundary and Water Commission, and includes 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 the information for the year 1960.

Stream gaging on the Colorado River below Imperial Dam began in 1902 when the station at Yuma, Arizona was established. Stage records have been obtained at this station since January 1878. 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, not including 5,500 square miles in the Bill Williams River watershed. In addition, flows ranging from usually minor amounts to infrequent torrential floods may enter the lower Colorado River from the Bill Williams River 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 All-American Canal and Gila Gravity Main 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 1960.

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. The measured return flows include Yuma Main Canal Wasteway, Reservation Main Canal Drain No. 4, Drain 8-B, and Pilot Knob Power Plant and Wasteway entering the river between Yuma and the northerly international boundary, and Cooper, Eleven-Mile, and Twenty-One Mile Wasteways entering the limitrophe section from the United States bank of the river. 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 all of Mexico's guaranteed treaty allotment of Colorado River water has been delivered in the bed of the limitrophe section of the river. The greater portion of such deliveries has 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 Río de las Palmas, which rises in Mexico. Cottonwood Creek crosses the international land boundary 21 miles from the Pacific Ocean to join the Río 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 Río 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 groundwater before reaching the main water course.

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 returns 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, 349 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.

FOREWORD–Continued

Acknowledgments

Other agencies which have contributed to the data published here include the Bureau of Reclamation and the Geological Survey of the U. S. Department of the Interior; the Yuma County Water Users' Association, the Imperial Irrigation District, the city of San Diego, California, the California Water and Telephone Company, and the Ministry of 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 our appreciation.

Units of Measure

Records of stream flow collected by the Mexican Section are initially computed in metric units, but are reported in this bulletin in equivalent English units. Conversion of the mean daily discharges, the monthly average discharge and the monthly volumes from metric to English units is direct. For this reason the monthly average discharge in cubic feet per second and monthly volumes in acre-feet shown for gaging stations operated by the Mexican Section cannot necessarily be obtained in the usual manner from the total monthly flow in second-foot days. The monthly volumes of stream flow in cubic meters are converted to acre-feet by multiplying thousands of cubic meters by 0.81071.

GENERAL HYDROLOGICAL CONDITIONS FOR 1960

Colorado River

Normally there is no measurable amount of runoff from the portion of the Colorado River Basin below Hoover Dam, not including Bill Williams and Gila Rivers. There was no significant amount in 1960. The average seasonal (October 1959-September 1960) rainfall over the upper basin as gaged at 13 index stations was about 11.82 inches as compared to a seasonal average of about 13.76 inches for the 38 seasons 1923-1960. The inflow to Lake Mead formed by Hoover Dam, during the 1960 calendar year was about 9,194,000 acre-feet measured at Grand Canyon or about 75 percent of the 38-year (1923-1960) average annual inflow of 12,319,558 acre-feet. There was a flow of 23,080 acre-feet contributed to the Lower Colorado River during 1960 from the Bill Williams River and 17,770 acre-feet from the Gila River.

The flow of the Colorado River reaching Imperial Dam totaled 7,107,000 acre-feet, about 76 percent of the 26-year average (1935-1960) of 9,361,250 acre-feet. At the northerly international boundary the total flow of the river during 1960 was 2,337,700 acre-feet or about 48 percent of the 1935-1960 average of 4,862,200 acre-feet. At the southerly boundary the flow during 1960 was only 544,000 acre-feet or about 13 percent of the 1935-1960 average of 4,283,700 acre-feet.

The total scheduled treaty waters of the Colorado River delivered to Mexico during 1960 amounted to 1,700,000 acre-feet pursuant to the annual schedules by months for 1960 furnished by Mexico. All deliveries were made in the limitrophe section of the Colorado River in accordance with the request of Mexico.

The total of all flows of the Colorado River entering Mexico in 1960 amounted to 2,507,400 acre-feet, 44 percent of the 1935-1960 average of 5,677,100 acre-feet, as measured 1) in the Colorado River at the northerly international boundary, 2) in the wasteways that discharge into the limitrophe section of the river from the United States bank, and 3) in the canal which discharges waste and drainage waters from the Yuma Project across the southerly land boundary into Mexico near San Luis, Arizona, less diversions in the United States by pumps in the limitrophe section.

No flood peaks of importance occurred in streams of the lower Colorado River Basin during 1960. A maximum instantaneous flow of 11,300 second-feet occurred in the Colorado River at the northerly boundary station, partly as a result of release of sluicing waters at Imperial Dam.

Stored waters at the end of the year in the three major reservoirs on the Colorado River below Lee's Ferry amounted to 21,455,900 acre-feet, 72.4 percent of the usable capacity of 29,636,000 acre-feet. The greater part (19,294,000 acre-feet) of the storage was contained in Lake Mead. There were no reported shortages of Colorado River water for irrigation during 1960 due to drought or accident to the irrigation system.

The total reported acreage irrigated from waters of the Colorado River below Imperial Dam in 1960 was 964,000 acres; 629,000 acres in the United States and 335,000 acres in Mexico.

The suspended sediment load passing the northerly boundary station in 1960 was 254 acre-feet which was about 36 percent of the 1956-1960 average of 703 acre-feet.

The estimated annual tonnage of salts, or total dissolved solids, carried by the river past the northerly international boundary was 2,466,000 tons or 49 percent of the 1943-1960 average.

Tijuana River Basin

The year 1960 was one of very low rainfall and the eighth consecutive year of runoff below the 1936-1937 to 1959-1960 mean. It was the thirteenth dry year in the past fifteen years. Temperatures in the Tijuana basin averaged somewhat below normal during the year, being 1.2 degrees below the long-term mean at Barrett Dam.

Rainfall at Barrett Dam in the upper portion of the basin was 14.20 inches, 80 percent of normal, and at San Diego near the lower end of the basin it was 7.05 inches, or only 64 percent of normal.

Runoff in the basin for 1960 averaged less than 3 percent of average. Above Morena Reservoir, the runoff was 232 acre-feet, or about 3 percent of the 24-year 1936-1937 to 1959-1960 mean of 6,730 acre-feet. At Rodriguez Reservoir the runoff was 600 acre-feet or about 3 percent of the 24-year mean of 20,970 acre-feet. Flow in the Tijuana River at Nestor was only 134 acre-feet or 0.5 percent of the 24-year mean of 28,510 acre-feet.

Combined storage in the three reservoirs in the basin was 3,830 acre-feet at the beginning of the year and 2,175 acre-feet at the end averaging 2,845 acre-feet, or 1.4 percent of the combined capacity of 206,520 acre-feet.

Stored water in Rodriguez Reservoir in 1960 was inadequate for domestic use and no water from the reservoir has been used for irrigation since December 1955. There were no diversions from Morena and Barrett Reservoirs, which are a part of the city of San Diego water supply system, during 1960.

Whitewater Draw

During 1960 the average annual temperature over the watershed was about normal, while the annual precipitation was about 88 percent of normal. Runoff for the year at the gaging station near Douglas, Arizona, of 2,370 acre-feet was about 32 percent of average and the third lowest annual discharge for the 1936-1960 period.

Santa Cruz River

During 1960 the average annual temperature over the watershed was somewhat below normal and the annual precipitation was about 91 percent of the 22-year 1939-1960 mean. Runoff measured at the Nogales gaging station where the stream re-enters the United States was 23,160 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 423 acre-feet. Therefore, neglecting stream flow depletions in Mexico, the records indicate a contribution of about 22,740 acre-feet from the loop of the river lying in Mexico, or approximately 98 percent of the flows reaching the Nogales station.

GENERAL HYDROLOGICAL CONDITIONS FOR 1960–Continued

Alamo and New Rivers

During 1960 the average annual temperature over the drainage area of Alamo and New Rivers as recorded at El Centro, California, was 1.5 degrees below normal and the annual precipitation was only about 31 percent of the long-term mean. The total flow in the Alamo River for the year at the international boundary was 1,920 acre-feet which was about 33 percent of average for the 18-year period 1943-1960. The total flow for 1960 in the New River at the international boundary was 121,310 acre-feet which was about 233 percent of the 1943-1960 average.

Salton Sea

During 1960 the average annual temperature around the Salton Sea was about normal while the annual precipitation recorded at Brawley, California, was approximately 63 percent of the long-term mean of 2.46 inches. The water surface of the Salton Sea rose approximately 0.55 foot during the year. The maximum stage of 234.2 feet below mean sea level was recorded April 17-22, 1960. The minimum stage of 235.2 feet below mean sea level occurred January 1-10, 1960.

COLORADO RIVER AT YUMA, ARIZONA - DISCHARGES

DESCRIPTION: Water-stage recorder and cableway 7 miles upstream from the northerly international land boundary, 1,800 feet downstream from the upper highway and railroad bridges at Yuma, Arizona, 5 miles downstream from the mouth of the Gila River, 19 miles downstream from Imperial Dam, and one-half mile upstream from the mouth of the Yuma Main Canal Wasteway. The zero of the gage is 102.86 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 54 current meter measurements during the year and a continuous record of gage heights. Computations by shifting channel methods. Records collected and furnished by U. S. Geological Survey. 1960 records excellent. Records available: gage heights, January 1878 to December 1960; discharges, January 1902 to December 1960.

REMARKS: Reservoirs on the Colorado River, including Lake Mead, where storage began in 1935, reservoirs on the Gila River, and irrigation diversions and return flows, modify the river flow at this station.

EXTREMES: Prior to 1935: maximum discharge 250,000 second-feet, January 22, 1916; maximum gage height 34.00 feet, same date; minimum discharge 18 second-feet, August 25-27, 1934; minimum gage height 12.70 feet, September 17, 1917; average annual flow 15,094,000 acre-feet; maximum annual flow 25,970,000 acre-feet, 1909; minimum annual flow 2,384,000 acre-feet, 1934. Since 1935; maximum discharge 34,900 second-feet, September 7, 1939; maximum gage height 24.57 feet, same date; minimum discharge 41 second-feet, March 8, 1956; minimum gage height 8.36 feet, July 16, 1947. Reference table below for other comparative flows since 1935.

Mean Daily Discharge in Second-Feet 1960 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,020	417	715	1,540	2,150	957	1,180	1,480	1,080	451	680	1,810
2	825	588	654	1,580	1,550	898	1,200	1,470	1,190	423	922	1,840
3	990	1,150	912	1,560	1,370	868	1,090	1,470	1,430	423	731	1,890
4	1,060	637	1,010	1,560	1,160	691	1,240	1,460	1,200	436	697	1,950
5	675	443	855	1,330	697	732	1,300	1,240	1,120	401	554	1,990
6	675	422	566	1,220	578	858	1,080	1,320	1,100	454	662	2,400
7	951	457	450	1,300	808	872	1,100	1,310	1,110	528	1,130	3,030
8	919	477	445	1,090	560	760	1,190	1,280	1,100	474	1,350	1,040
9	895	688	730	1,080	560	898	1,170	1,240	1,020	401	1,700	958
10	879	815	548	1,220	557	932	1,090	1,390	828	1,140	1,070	877
11	858	497	422	1,180	512	890	1,160	1,440	828	597	647	1,090
12	932	425	417	1,040	450	760	1,240	1,420	835	406	712	1,500
13	975	403	440	1,050	446	805	1,260	1,380	765	393	683	751
14	1,000	447	502	1,310	602	812	1,250	1,380	668	555	658	669
15	1,020	460	609	1,360	837	905	1,200	1,160	1,140	567	618	688
16	1,020	740	1,080	1,280	614	942	1,180	1,110	1,060	546	1,120	586
17	985	562	980	1,280	530	932	1,190	1,080	740	555	1,150	589
18	1,100	510	1,240	1,130	535	938	1,390	1,040	616	536	706	580
19	3,530	546	692	928	700	898	1,380	855	540	1,260	704	840
20	875	518	835	888	560	910	1,420	882	497	1,060	619	908
21	920	462	942	850	828	880	1,410	845	603	1,080	583	708
22	912	507	990	892	1,370	910	1,430	772	656	1,490	571	597
23	895	782	1,320	920	842	931	1,410	720	928	1,170	561	581
24	882	1,180	1,380	992	1,340	912	1,420	860	930	1,050	585	588
25	902	556	1,330	972	1,190	992	1,440	798	564	833	692	655
26	2,840	377	1,350	948	1,220	905	1,460	632	480	653	1,930	992
27	635	405	1,360	968	1,250	1,180	1,450	710	567	685	2,080	792
28	515	900	1,470	982	1,190	1,180	1,430	915	590	612	2,040	578
29	462	1,150	1,560	1,960	1,430	1,190	1,450	890	480	643	1,920	581
30	438		1,570	2,310	1,060	1,260	1,440	795	483	670	1,880	594
31	430		1,540		1,050		1,440	850		677		622
Sum	31,015	17,521	28,914	36,720	28,546	27,598	40,090	34,194	25,148	21,169	29,955	33,274

Current Year 1960 — **Period 1935-1960**

Month	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low						
	High	Low	Day		Day				Average	Maximum	Minimum
Jan.	14.49	10.55	19	10,300	5	527	1,000	61,520	531,168	1,615,000	40,490
Feb.	12.16	10.80	3	1,400	26	355	604	34,750	466,859	1,321,000	24,330
Mar.	12.36	10.78	4	1,720	11	415	933	57,350	465,407	1,097,000	29,760
Apr.	12.94	11.21	30	2,500	21	820	1,224	72,830	345,270	759,900	72,830
May	12.89	10.70	1	2,360	13	438	921	56,620	389,118	1,137,000	36,270
June	11.87	11.07	27	1,240	4	651	920	54,740	359,796	1,376,000	46,850
July	12.21	11.44	31	1,550	3	998	1,293	79,520	324,129	818,600	76,010
Aug.	12.23	11.09	1	1,520	26	616	1,103	67,820	327,443	938,800	29,480
Sept.	12.22	10.76	3	1,520	26	465	838	49,880	325,002	1,198,000	40,310
Oct.	12.00	10.40	22	1,550	2	346	683	41,990	341,776	1,233,000	27,340
Nov.	12.73	10.37	26	2,210	5	483	998	59,410	406,628	1,418,000	30,990
Dec.	13.80	10.55	7	8,900	23	545	1,073	66,000	508,742	1,789,000	34,970
Yearly	14.49	10.37		10,300		346	968	702,400	4,790,978	11,730,000	702,400

COLORADO RIVER AT YUMA, ARIZONA - STAGES

(See Preceding Page For Description)

Mean Daily Gage Height in Feet 1960

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	11.80	11.13	11.22	12.15	12.71	11.42	11.70	12.19	11.70	10.68	10.69	12.32
2	11.54	11.30	11.14	12.16	12.18	11.36	11.74	12.11	11.87	10.60	11.06	12.35
3	11.58	11.90	11.48	12.15	11.96	11.34	11.55	12.07	12.13	10.63	10.77	12.41
4	11.31	11.28	11.61	11.86	11.70	11.12	11.73	11.98	11.92	10.66	10.71	12.48
5	10.75	11.07	11.42	11.50	11.04	11.20	11.70	11.74	11.77	10.63	10.49	12.51
6	10.74	11.06	11.13	11.45	10.92	11.35	11.68	11.84	11.73	10.67	10.68	12.08
7	11.09	11.12	10.99	11.73	11.22	11.36	11.63	11.87	11.76	10.86	11.36	12.06
8	11.04	11.08	10.96	11.55	10.95	11.23	11.73	11.82	11.78	10.78	11.65	11.29
9	10.99	11.34	11.29	11.56	10.90	11.42	11.72	11.76	11.68	10.59	12.03	11.18
10	10.97	11.51	10.96	11.73	10.88	11.47	11.66	11.92	11.47	11.63	11.28	11.08
11	11.00	11.11	10.79	11.67	10.81	11.47	11.70	11.97	11.46	10.81	10.65	11.38
12	11.55	11.04	10.83	11.50	10.72	11.36	11.76	11.97	11.41	10.48	10.76	11.88
13	11.62	11.00	10.92	11.53	10.71	11.35	11.77	11.94	11.32	10.46	10.70	10.92
14	11.67	11.04	10.96	11.83	10.89	11.33	11.76	12.00	11.21	10.76	10.64	10.82
15	11.71	11.00	11.08	11.88	11.18	11.43	11.71	11.77	11.80	10.80	10.56	10.83
16	11.72	11.32	11.67	11.81	10.92	11.45	11.74	11.71	11.70	10.84	11.32	10.63
17	11.67	11.01	11.58	11.88	10.81	11.44	11.82	11.63	11.29	10.89	11.36	10.64
18	11.78	11.00	11.89	11.70	10.85	11.47	12.03	11.54	11.07	10.72	10.72	10.64
19	12.75	11.06	11.25	11.42	11.08	11.50	11.99	11.32	10.98	11.59	10.73	11.06
20	11.71	11.05	11.49	11.34	10.97	11.54	12.00	11.37	10.90	11.35	10.60	11.18
21	11.78	11.00	11.60	11.25	11.37	11.48	11.93	11.37	11.02	11.38	10.52	10.86
22	11.77	10.99	11.68	11.31	12.02	11.46	11.97	11.23	11.13	11.76	10.50	10.62
23	11.77	11.30	12.03	11.37	11.34	11.41	12.00	11.16	11.47	11.38	10.50	10.60
24	11.77	11.80	12.05	11.50	11.92	11.41	12.03	11.34	11.46	11.22	10.55	10.61
25	11.75	11.05	12.01	11.42	11.76	11.56	11.99	11.28	10.99	10.92	10.73	10.72
26	12.48	10.83	12.05	11.36	11.78	11.50	11.99	11.11	10.78	10.62	12.38	11.31
27	11.44	10.89	12.06	11.38	11.82	11.81	11.96	11.23	10.92	10.68	12.60	11.01
28	11.28	11.53	12.13	11.41	11.79	11.73	11.94	11.56	10.98	10.59	12.55	10.60
29	11.22	11.81	12.17	12.44	12.07	11.70	11.99	11.54	10.80	10.66	12.42	10.60
30	11.20		12.17	12.78	11.64	11.76	12.03	11.37	10.77	10.69	12.38	10.62
31	11.13		12.16		11.56		12.10	11.43		10.73		10.66
Avg.		11.19		11.69		11.45		11.65		10.87		11.22
	11.50		11.51		11.40		11.84		11.38		11.13	

RESERVATION CANAL MAIN DRAIN NO. 4 (CALIFORNIA DRAIN)

DESCRIPTION: Water-stage recorder, 500 feet north of the U. S. Highway No. 80 culvert, one-half mile upstream from the mouth of the canal, and 1 mile 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, and thence into the Colorado River on the right bank 6.5 miles upstream from the northerly international land boundary, and one-half mile below the river gaging station at Yuma. Prior to December 31, 1955, published as California Drainage Canal near Yuma, Arizona.

RECORDS: Based on 44 current meter measurements during the year and a continuous record of gage heights. Records are computed and furnished by the U. S. Bureau of Reclamation. 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 to December 1960.

REMARKS: Reservation Canal Main Drain No. 4 collects drainage and waste water from the Reservation Division of the Yuma Project, located in California. The drain discharges to the river by gravity, except during high stages of the Colorado River, when pumping is necessary.

EXTREMES: Prior to 1937, average annual flow 12,800 acre-feet, maximum annual flow 20,190 acre-feet, 1916; minimum annual flow 8,920 acre-feet, 1913. Reference table below for monthly and annual extremes since 1937.

Mean Daily Discharge in Second-Feet 1960 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	49	45	52	69	61	58	61	63	71	62	55	69
2	47	46	63	66	57	59	62	67	71	59	64	63
3	47	49	57	64	58	69	67	72	67	57	63	57
4	47	54	56	59	60	67	69	72	59	56	74	62
5	54	60	62	59	66	75	65	67	57	61	65	57
6	49	53	65	66	64	67	68	74	63	62	58	71
7	48	48	54	68	62	70	70	80	65	65	58	65
8	46	54	57	72	66	76	67	68	71	60	68	58
9	45	73	61	74	61	77	69	75	62	60	62	53
10	44	62	64	65	64	73	65	84	61	64	61	52
11	45	61	64	61	71	81	70	86	64	63	64	52
12	44	55	71	68	70	64	71	85	59	64	61	52
13	48	53	70	75	65	60	73	77	64	64	59	60
14	46	48	66	69	60	66	71	69	65	62	60	69
15	49	45	63	66	60	70	72	72	60	71	70	54
16	44	57	78	69	62	75	75	67	69	60	66	53
17	41	61	75	65	69	75	80	67	63	57	68	55
18	46	61	66	62	63	68	72	68	65	60	61	54
19	69	53	67	60	65	72	69	62	59	63	57	55
20	52	57	68	64	69	66	72	63	58	66	61	65
21	47	58	63	69	77	66	71	74	60	64	59	57
22	46	63	69	66	62	77	74	63	62	61	57	53
23	45	52	70	65	60	77	81	67	59	62	60	52
24	45	57	69	60	61	69	76	70	67	61	63	54
25	50	66	74	59	70	80	71	70	66	64	59	57
26	57	77	68	63	72	62	69	75	62	60	60	55
27	57	72	60	71	60	62	70	78	62	63	53	69
28	65	57	58	74	66	60	72	61	63	59	53	67
29	49	52	60	66	60	56	69	60	60	63	61	55
30	49		62	66	56	63	70	65	60	56	66	54
31	44		65		58		68	70		54		57
Sum	1,649		1,980		2,060		2,191		1,903		1,806	
	1,514		1,997		1,975		2,179		1,894		1,846	

Month	Current Year 1960								Period 1937-1960		
	Extreme Gage Feet		∅ Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low						
	High	Low	Day		Day				Average	Maximum	Minimum
Jan.			19	69	17	41	48.8	3,000	3,381	4,780	877
Feb.			26	77	† 1	45	56.9	3,270	3,208	4,320	563
Mar.			16	78	1	52	64.4	3,960	3,879	5,240	1,240
Apr.			13	75	† 4	59	66.0	3,930	3,935	5,250	1,160
May			21	77	30	56	63.7	3,920	4,032	5,590	992
June			11	81	29	56	68.7	4,090	3,853	5,580	885
July			23	81	1	61	70.3	4,320	4,201	6,550	816
Aug.			11	86	29	60	70.7	4,350	4,140	6,810	861
Sept.			† 1	71	5	57	63.1	3,760	3,981	6,220	889
Oct.			15	71	31	54	61.4	3,770	3,990	5,740	1,040
Nov.			4	74	† 27	53	61.5	3,660	3,741	5,490	994
Dec.			6	71	† 10	52	58.3	3,580	3,663	4,960	966
Yearly				86		41	62.8	45,610	46,004	63,700	12,840

† And other days ∅ Mean daily

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 above the intake of the Colorado River siphon and 3.2 miles below the Siphon Drop Power Plant. This wasteway discharges into the Colorado River on the California side one-half mile downstream from the river gaging station at Yuma, Arizona, and 6.5 miles 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. 1960 records good, except those below 100 second-feet, which are poor. Records obtained and furnished by U. S. Geological Survey. Records available: April 1913 to December 1960.

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, the average annual flow was 297,800 acre-feet; maximum annual flow was 913,700 acre-feet, 1932; minimum annual flow was 114,900 acre-feet, 1917. Since 1935: the maximum mean daily discharge was 2,020 second-feet, December 24-25, 1948; minimum daily discharge, no flow on numerous occasions. Reference table below for other comparative flows since 1935.

Mean Daily Discharge in Second-Feet 1960 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,780	1,470	1,180	1,480	1,650	971	954	1,620	1,340	778	304	1,570
2	1,700	1,310	1,210	1,410	1,730	1,010	1,050	1,410	1,470	581	265	1,630
3	1,240	1,280	1,270	1,530	1,550	1,050	847	1,230	1,510	759	273	1,700
4	140	1,340	1,290	398	1,420	1,060	834	935	1,560	806	253	1,820
5	20	1,460	1,340	33	1,100	1,150	487	925	1,340	740	356	1,700
6	20	1,510	1,560	324	1,190	1,130	1,290	975	1,200	324	414	703
7	20	1,550	1,580	967	1,250	1,110	1,040	1,120	1,240	726	443	16
8	20	1,350	1,540	1,170	1,360	1,120	1,040	1,080	1,340	781	596	26
9	20	1,330	1,440	1,220	1,200	1,170	1,070	1,020	1,340	380	436	28
10	20	1,380	1,130	1,280	1,150	1,190	1,200	1,040	1,370	317	375	136
11	200	1,390	1,120	1,210	1,120	1,320	1,050	1,060	1,330	343	389	210
12	1,670	1,500	1,260	1,220	1,100	1,440	900	1,110	1,140	268	398	153
13	1,700	1,530	1,440	1,250	1,090	1,260	878	1,160	1,100	279	330	362
14	1,800	1,500	1,310	1,270	1,000	1,110	885	1,410	1,150	463	213	583
15	1,840	1,360	1,260	1,280	972	1,020	934	1,440	1,180	580	141	453
16	1,870	1,320	1,290	1,340	1,050	954	1,100	1,410	1,180	1,030	231	269
17	1,860	1,070	1,360	1,600	1,020	950	1,360	1,300	1,200	1,240	211	301
18	1,790	1,280	1,380	1,520	1,060	1,050	1,350	1,130	1,010	768	213	393
19	1,640	1,320	1,430	1,410	1,090	1,290	1,230	1,180	1,070	199	240	372
20	1,780	1,400	1,620	1,290	1,230	1,360	1,130	1,230	1,030	177	243	535
21	1,760	1,470	1,510	1,160	1,410	1,280	891	1,340	995	273	61	435
22	1,750	1,260	1,480	1,190	1,430	1,120	977	1,190	1,170	308	20	103
23	1,780	1,150	1,410	1,280	1,150	875	1,150	1,160	1,210	342	51	141
24	1,790	1,180	1,210	1,390	1,120	950	1,220	1,200	1,240	302	109	134
25	1,670	1,250	1,270	1,230	1,120	1,150	997	1,250	1,250	291	114	125
26	1,450	1,300	1,440	1,130	1,100	1,300	903	1,330	980	254	1,040	581
27	1,580	1,400	1,500	1,090	1,120	1,230	841	1,400	1,110	300	1,730	510
28	1,540	1,440	1,450	1,150	1,250	998	823	1,620	1,270	485	1,660	173
29	1,560	1,370	1,290	1,220	1,350	888	965	1,640	1,220	611	1,480	148
30	1,600		1,330	1,320	1,250	857	1,180	1,460	1,180	455	1,550	137
31	1,420		1,440		1,030		1,430	1,400		620		98
Sum	39,030	39,470	42,340	35,362	37,662	33,363	32,006	38,775	36,725	15,780	14,139	15,545

Current Year 1960 — **Period 1935-1960**

Month	Extreme Gage Feet		Ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low						
	High	Low	Day		Day				Average	Maximum	Minimum
Jan.			16	1,870	† 5	20	1,259	77,410	82,997	110,700	14,450
Feb.			7	1,550	17	1,070	1,361	78,290	71,315	89,140	24,900
Mar.			20	1,620	11	1,120	1,366	83,980	76,192	90,190	7,100
Apr.			17	1,600	5	33	1,179	70,140	75,523	86,580	26,040
May			2	1,730	15	972	1,215	74,700	77,900	88,280	48,440
June			12	1,440	30	857	1,112	66,170	73,017	86,960	53,590
July			31	1,430	5	487	1,032	63,480	76,634	91,220	63,480
Aug.			29	1,640	5	925	1,251	76,910	78,585	89,890	61,760
Sept.			4	1,560	26	980	1,224	72,840	72,403	83,660	27,070
Oct.			17	1,240	20	177	509	31,300	73,808	90,050	31,300
Nov.			27	1,730	22	20	471	28,040	74,097	101,500	18,060
Dec.			4	1,820	7	16	501	30,830	82,280	108,800	13,480
Yearly				1,870		16	1,039	754,100	914,751	1,042,850	653,260

† And other days Ø Mean daily

DRAIN NO. 8-B (ARAZ DRAIN)

DESCRIPTION: This drain discharges into the Colorado River 4.5 miles downstream from river gaging station at Yuma, Arizona, and 2.5 miles upstream from the northerly international boundary. Prior to October 1955, published as Araz Drain.

RECORDS: Computed by Bureau of Reclamation from 52 current meter measurements made by Imperial Irrigation District at a footbridge one-fourth mile above the mouth. Daily discharge records are furnished by the U. S. Geological Survey. Records available: May 1948 to December 1960.

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 upstream, is affected by backwater from the river during ordinary high stages.

EXTREMES: Maximum mean daily discharge, 24 second-feet, September 1, 1953; minimum mean daily discharge, less than 1 second-foot during March and April 1948. Reference table below for other extremes.

Mean Daily Discharge in Second-Feet 1960 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	7	5	5	7	6	7	6	7	8	6	6	6
2	7	5	6	7	6	7	6	7	8	6	6	6
3	7	5	7	7	6	7	7	7	8	6	6	6
4	7	5	7	6	6	7	7	7	8	6	6	6
5	7	5	7	6	6	7	8	6	8	7	7	7
6	7	5	7	6	6	6	8	6	8	7	7	7
7	6	5	7	6	6	6	9	7	8	7	7	7
8	6	5	7	6	6	6	9	7	8	7	7	7
9	6	5	6	6	6	6	9	7	8	7	8	7
10	6	5	6	6	6	6	8	8	8	7	8	7
11	6	5	6	6	6	6	8	8	8	8	8	7
12	5	5	6	7	6	6	8	8	8	8	8	7
13	5	5	6	7	6	6	7	8	9	8	8	7
14	5	5	6	7	6	7	7	8	9	8	7	7
15	5	5	6	7	6	7	7	8	9	7	7	7
16	5	5	5	6	6	7	7	8	9	7	7	7
17	5	6	5	6	6	7	7	8	9	7	7	7
18	5	6	5	6	7	7	7	8	8	7	7	6
19	6	6	5	7	7	7	7	8	8	7	7	6
20	6	6	6	7	7	8	6	7	8	6	7	6
21	6	6	6	7	7	8	6	7	8	6	7	6
22	6	6	6	7	6	8	6	7	8	6	7	6
23	6	6	6	6	6	8	6	8	8	6	7	6
24	6	6	6	6	6	8	7	8	8	7	7	6
25	5	6	6	6	6	7	7	8	7	7	7	6
26	5	6	6	6	6	7	7	8	7	8	7	6
27	5	6	7	6	6	7	7	8	7	8	7	7
28	5	5	7	6	6	6	8	7	7	8	6	7
29	5	5	7	6	7	6	8	7	7	7	6	7
30	5		7	6	7	6	8	7	6	7	6	7
31	5		7		7		8	7		6		7
Sum	178	156	192	191	193	204	226	230	238	215	208	204

Month	Current Year 1960								Period 1948-1960		
	Extreme Gage Feet		Ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low						
	High	Low	Day		Day				Average	Maximum	Minimum
Jan.			† 1	7	†12	5	5.7	353	579	899	307
Feb.			†17	6	† 1	5	5.4	309	498	746	278
Mar.			† 3	7	† 1	5	6.2	381	592	853	353
Apr.			† 1	7	† 4	6	6.4	379	635	1,000	379
May			†18	7	† 1	6	6.2	383	625	966	61
June			†20	8	† 6	6	6.8	405	652	1,030	89
July			† 7	9	† 1	6	7.3	448	752	1,260	139
Aug.			†10	8	† 5	6	7.4	456	833	1,350	228
Sept.			†13	9	30	6	7.9	472	791	1,370	258
Oct.			†11	8	† 1	6	6.9	426	808	1,220	399
Nov.			† 9	8	† 1	6	6.9	413	726	1,240	357
Dec.			† 5	7	† 1	6	6.6	405	670	1,050	341
Yearly				9		5	6.7	4,830	8,161	12,429	1,872

† And other days Ø Mean daily

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 downstream from the intake at Imperial Dam, 6 miles west of Yuma, about one mile north of the northerly international boundary and empties into the Alamo Canal in the United States and thence into Colorado River through Rockwood gates. Water-stage recorder is located on right bank of the All-American Canal, 550 feet upstream from wasteway gates and 1,800 feet from entrance of the power plant. Tailrace gage is on left bank, 680 feet below 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 forebay and tailrace gage is at mean sea level, datum of 1929. Elevation of sill of wasteway gates is 147.88 feet, datum of 1929. Prior to October 1956, this station 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 to December 1960. 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 Rockwood 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 on January 26, 1958; minimum mean daily discharge: no flow during long periods. Reference table below for other extremes since 1944.

Mean Daily Discharge in Second-Feet 1960 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2,090	0	1,160	2,310	0	1,200	1,740	1,630	1,660	0	0	2,850
2	2,150	0	1,130	2,270	0	1,090	2,010	1,690	2,100	0	0	2,600
3	3,170	0	62	1,880	0	1,080	2,180	1,700	2,600	0	0	2,420
4	4,290	0	0	3,380	0	1,100	2,000	1,810	2,830	0	0	2,390
5	3,750	0	0	3,410	0	1,090	2,530	1,730	2,310	0	0	3,180
6	3,780	0	0	2,720	0	1,290	1,770	1,760	2,290	0	0	2,370
7	4,230	0	0	2,070	0	1,400	2,170	1,690	2,030	0	0	2,160
8	4,390	0	0	1,930	0	1,290	2,010	1,820	1,810	0	0	3,120
9	3,970	0	0	2,070	0	1,280	1,860	1,810	1,260	0	0	1,190
10	3,660	0	0	1,760	0	1,630	1,720	2,020	1,120	0	0	71
11	4,320	0	0	1,870	0	1,280	1,840	2,320	1,300	0	0	0
12	2,870	0	0	2,010	0	1,170	1,850	2,480	1,290	0	0	898
13	2,890	0	0	2,240	0	1,370	2,040	2,370	1,120	0	0	1,330
14	2,940	0	0	2,740	0	1,390	2,160	2,320	1,040	0	0	75
15	3,110	0	0	2,320	0	1,600	2,050	2,350	0	0	0	0
16	2,930	0	0	2,150	0	1,650	1,910	2,190	0	0	0	0
17	2,780	0	0	1,960	0	1,480	1,800	1,950	0	0	0	0
18	2,800	0	0	2,140	0	1,420	1,780	1,750	0	0	0	0
19	1,160	0	1,030	2,410	0	1,300	1,970	1,620	0	0	0	0
20	2,570	0	1,480	2,040	0	1,590	2,090	1,460	0	0	0	0
21	2,730	0	2,010	1,810	0	1,880	1,960	1,250	0	0	0	0
22	2,170	0	1,780	1,760	0	1,990	2,100	1,570	0	0	0	0
23	2,140	0	1,750	1,540	0	1,720	2,430	1,300	0	0	0	0
24	1,610	0	2,390	1,300	0	1,440	2,350	1,210	0	0	0	0
25	609	0	2,860	1,390	0	1,290	2,080	1,170	0	0	0	0
26	480	0	3,190	1,310	0	1,250	1,810	1,250	0	0	202	0
27	0	0	3,570	1,810	0	1,450	1,870	1,120	0	0	2,600	0
28	0	0	3,300	1,540	0	1,450	2,110	1,100	0	0	2,710	0
29	0	392	3,590	89	0	1,460	2,050	1,100	0	0	2,280	0
30	0		3,550	0	1,070	1,590	1,790	1,100	0	0	2,750	0
31	0		2,660		1,240		1,660	1,090		0		0
Sum		392		58,229		42,220		51,730		0		24,654
	73,589		35,512		2,310		61,690		24,760		10,542	

Month	Current Year 1960 — Extreme Gage Feet			Ø Extreme Second-Feet			Average Second-Feet	Total Acre-Feet	Period 1944-1960 — Acre-Feet		
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum
Jan.			8	4,390	†27	0	2,374	146,000	45,419	400,200	0
Feb.			29	392	† 1	0	13.5	778	14,432	149,500	0
Mar.			29	3,590	† 4	0	1,146	70,440	39,180	279,300	0
Apr.			5	3,410	30	0	1,941	115,500	83,575	260,900	0
May			31	1,240	† 1	0	74.5	4,580	29,839	165,400	0
June			22	1,990	3	1,080	1,407	83,740	68,619	204,300	0
July			5	2,530	31	1,660	1,990	122,400	109,528	260,000	0
Aug.			12	2,480	31	1,090	1,669	102,600	111,989	270,100	0
Sept.			4	2,830	†15	0	82.5	49,110	75,314	173,300	0
Oct.				0		0	0	0	16,766	51,460	0
Nov.			30	2,750	† 1	0	351	20,910	21,483	182,600	0
Dec.			5	3,180	†11	0	795	48,900	44,174	319,700	0
Yearly				4,390		0	1,054	765,000	660,318	1,944,700	0

† And other days Ø Mean daily

COLORADO RIVER AT NORTHERLY INTERNATIONAL BOUNDARY - DISCHARGES

DESCRIPTION: Water-stage recorder on the left (Arizona) bank and cableway at the point where the northerly international land boundary (California-Baja California) intersects the Colorado River about 7 miles downstream from the Yuma gaging station, 5 miles west of Yuma, Arizona, 1.1 miles upstream from Morelos Diversion Structure, and about one mile downstream from Rockwood Gate. Zero of the gage is at mean sea level, U. S. C. & G. S. datum. Station is operated by the United States Section of the Commission.

RECORDS: Based on 406 meter measurements during the year, 203 by the United States Section, 191 by the Mexican Section of the Commission, 12 by the United States Geological Survey and a continuous record of gage heights. Computation by shifting control methods. Discharges are computed on the basis of a water-stage recorder located 1,680 feet upstream from the northerly international boundary where the remains of an old weir serve as a partial controlling section. A continuous recorded gage height record is available November 15, 1948 to December 31, 1960; daily discharge records available January 1, 1950 to December 31, 1960.

REMARKS: Reservoirs on the Colorado River, including Lake Mead above Hoover Dam where storage began in 1935, reservoirs on the Gila River, and many irrigation diversions and return flows completely modify the river flow at this station. During 1960, the flow at this point represented the total amount of Colorado River water which crossed the northerly international boundary. The flow at this station plus the flow from the three wasteways from the United States in the limitrophe section of the river, less pump diversions from the United States bank in the limitrophe section, and the flow delivered across the southerly land boundary near San Luis, make up the total Colorado River water delivered to Mexico under terms of the 1944 Water Treaty.

EXTREMES: Prior to 1935: maximum instantaneous discharge estimated about 250,000 second-feet, January 22, 1916; minimum discharge, no flow several days during August and September 1934; average annual flow 13,443,000 acre-feet; maximum annual flow 25,480,000 acre-feet, 1907; minimum annual flow, 1,174,000 acre-feet, 1934. Since January 1935: maximum mean daily discharge, about 33,000 second-feet, February 7, 1942; minimum discharge, no flow during April 1935. Reference table below for other extremes.

Mean Daily Discharge in Second-Feet 1960 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	4,870	1,980	3,220	5,520	3,800	3,350	4,030	5,030	4,140	1,510	1,170	6,590
2	4,350	1,860	3,160	5,340	3,340	3,180	4,510	4,930	5,050	1,240	1,270	6,410
3	5,100	2,550	2,460	4,930	3,030	3,290	4,380	4,760	5,660	1,300	1,120	6,220
4	5,440	2,040	2,330	5,350	2,830	3,110	4,330	4,560	5,800	1,500	1,070	6,520
5	4,400	1,970	2,360	5,050	1,940	3,200	4,430	4,170	5,110	1,420	1,040	7,000
6	4,590	2,080	2,300	4,410	1,790	3,460	4,410	4,200	4,890	1,000	1,280	6,090
7	5,160	2,110	2,220	4,470	2,200	3,590	4,610	4,200	4,670	1,270	1,550	5,470
8	5,340	1,940	2,080	4,320	2,050	3,370	4,500	4,460	4,640	1,670	2,040	4,790
9	5,060	1,980	2,240	4,520	1,860	3,580	4,280	4,410	3,910	1,020	2,260	2,650
10	4,800	2,350	1,930	4,410	1,850	4,010	4,220	4,810	3,660	1,480	1,780	1,460
11	5,680	1,980	1,690	4,410	1,730	3,710	4,230	4,960	3,760	1,190	1,160	1,540
12	5,500	1,990	1,770	4,470	1,630	3,620	4,210	5,000	3,570	908	1,290	2,770
13	5,640	1,990	1,960	4,580	1,640	3,710	4,340	5,170	3,300	848	1,120	2,620
14	5,800	1,960	1,940	5,470	1,600	3,590	4,500	5,190	3,100	1,130	1,020	1,670
15	6,000	1,920	1,910	5,220	1,760	3,680	4,380	5,080	2,470	1,470	924	1,290
16	5,840	1,980	2,340	4,980	1,790	3,700	4,560	4,940	2,480	1,580	1,280	1,030
17	5,640	1,700	2,400	4,970	1,720	3,470	4,580	4,400	2,200	1,900	1,630	1,110
18	5,560	1,850	2,730	5,050	1,730	3,590	4,780	4,050	1,820	1,740	1,140	1,190
19	6,580	1,900	3,340	4,800	1,860	3,720	4,940	3,770	1,750	1,550	1,020	1,330
20	5,220	1,890	3,950	4,350	1,900	4,140	5,010	3,600	1,760	1,410	988	1,640
21	5,560	1,910	4,540	3,970	2,330	4,080	4,590	3,500	1,710	1,440	810	1,460
22	4,900	1,840	4,470	4,080	2,890	4,250	4,770	3,710	1,860	1,840	781	900
23	4,810	1,790	4,700	3,760	2,080	3,660	5,320	3,360	2,250	1,640	740	888
24	4,280	2,300	5,340	3,770	2,420	3,400	5,250	3,460	2,440	1,460	821	960
25	3,380	1,920	5,580	3,680	2,460	3,480	4,820	3,470	1,980	1,270	858	930
26	4,950	1,810	6,280	3,480	2,350	3,580	4,430	3,450	1,590	1,040	3,110	1,590
27	2,460	1,950	6,750	4,010	2,550	3,980	4,330	3,490	1,780	982	6,900	1,580
28	2,110	2,340	6,620	3,810	2,470	3,760	4,690	3,890	2,010	1,220	6,730	954
29	2,070	2,880	6,410	3,240	2,820	3,690	4,690	3,930	1,830	1,390	5,820	900
30	2,120		6,860	3,610	3,590	3,820	4,650	3,660	1,790	1,270	6,440	942
31	1,950		6,100		3,510		4,670	3,610		1,520		876
Sum	145,160	58,760	111,980	134,030	71,520	108,770	141,440	131,220	92,980	42,208	59,162	81,370

Current Year 1960 — **Period 1935-1960**

Month	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low						
	High	Low	Day		Day				Average	Maximum	Minimum
Jan.	109.58	104.38	19	11,300	31	1,890	4,680	287,921	587,804	1,644,000	31,900
Feb.	105.70	103.37	29	3,710	17	1,040	2,030	116,549	489,768	1,378,000	60,400
Mar.	107.88	103.85	30	7,120	11	1,640	3,610	222,109	446,348	1,120,000	19,400
Apr.	107.03	104.75	4	6,040	29	2,410	4,470	265,845	328,001	823,850	0
May	105.90	103.62	1	3,960	14	1,550	2,310	141,858	381,678	1,151,000	77,400
June	106.24	105.01	22	4,350	4	3,070	3,630	215,742	338,217	1,175,000	8,500
July	106.81	105.53	23	5,500	5	3,740	4,560	280,542	298,641	763,800	24,400
Aug.	106.73	105.08	14	5,440	23	3,330	4,230	260,271	320,902	791,600	43,800
Sept.	107.83	103.61	3	5,980	26	1,520	3,100	184,423	324,189	1,029,000	60,000
Oct.	105.38	102.56	31	2,040	13	734	1,360	83,718	346,746	1,186,000	64,500
Nov.	108.61	102.99	27	8,040	23	790	1,970	117,346	438,094	1,422,000	56,200
Dec.	109.04	102.82	7	9,680	31	835	2,620	161,395	561,770	1,832,000	42,000
Yearly	109.58	102.56		11,300		734	3,220	2,337,719	4,862,159	10,596,900	722,100

COLORADO RIVER AT NORTHERLY INTERNATIONAL BOUNDARY - STAGES

(See Preceding Page For Description)

Mean Daily Gage Height in Feet 1960

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	106.93	104.40	105.38	106.66	105.64	105.36	105.83	106.50	105.84	*103.53	103.77	107.99
2	106.75	104.36	105.25	106.52	105.41	105.08	106.22	106.42	106.74	*103.28	104.17	107.97
3	107.01	104.88	104.86	106.31	105.38	105.12	106.10	106.34	106.99	*103.23	104.17	107.68
4	107.32	104.40	104.56	106.65	105.29	105.04	106.02	106.18	107.05	103.40	104.34	107.88
5	106.76	104.27	104.64	106.34	104.65	105.10	106.11	105.83	106.56	103.40	104.19	108.16
6	106.70	104.31	104.58	106.02	104.06	105.37	106.15	105.82	106.36	102.88	104.75	107.59
7	107.26	104.37	104.49	106.06	104.10	105.44	106.30	105.83	106.24	103.17	105.13	107.13
8	107.57	104.21	104.35	105.93	103.96	105.19	106.24	106.11	106.23	103.58	105.44	106.84
9	107.28	104.18	104.42	106.06	103.83	105.34	106.07	106.06	105.80	102.90	105.62	105.18
10	106.94	104.55	104.08	105.96	103.78	105.70	105.99	106.34	105.45	103.42	105.17	103.59
11	107.49	104.24	103.89	105.96	103.80	105.57	106.00	106.38	105.54	103.16	104.31	103.65
12	107.35	104.18	103.95	105.93	103.74	105.42	105.96	106.51	105.46	102.75	104.54	105.00
13	107.52	104.18	104.12	106.07	103.68	105.45	106.10	106.47	105.16	102.67	104.26	105.08
14	107.67	104.14	104.11	106.63	103.69	105.32	106.16	106.56	105.12	102.98	104.10	103.83
15	107.83	104.09	104.08	106.42	103.80	105.47	106.03	106.56	104.40	103.40	103.80	103.45
16	107.71	104.21	104.50	106.29	103.87	105.53	106.00	106.37	104.34	103.56	104.35	103.09
17	107.57	103.98	104.55	106.23	103.76	105.41	106.09	106.15	104.02	104.76	104.88	103.13
18	107.44	104.09	104.82	106.28	103.72	105.42	106.40	105.78	103.71	104.52	104.07	103.24
19	108.02	104.13	105.39	106.20	103.96	105.51	106.44	105.47	103.65	104.26	103.95	103.44
20	107.23	104.18	105.90	105.93	103.97	105.84	106.49	105.30	103.67	104.32	103.98	103.73
21	107.44	104.19	106.43	105.85	104.06	105.94	106.22	105.21	103.81	104.36	103.56	*103.68
22	107.07	104.11	106.24	105.87	104.97	106.00	106.35	105.42	103.98	104.90	103.10	*102.95
23	107.02	104.11	106.36	105.83	104.27	105.55	106.69	105.12	104.27	104.66	103.05	102.94
24	106.69	104.48	106.71	105.81	104.54	105.35	106.68	105.33	104.38	104.38	103.35	103.01
25	105.89	104.30	106.94	105.68	104.49	105.44	106.41	105.39	104.18	104.49	103.35	102.98
26	106.65	104.08	107.44	105.55	104.40	105.49	105.98	105.27	103.84	104.09	106.07	103.71
27	105.37	104.12	107.70	105.84	104.50	105.81	105.86	105.27	103.81	104.04	108.22	103.74
28	104.89	104.41	107.58	105.58	104.54	105.63	106.06	105.63	104.02	104.32	108.19	103.03
29	104.67	104.90	107.59	105.31	104.87	105.55	106.36	105.67	103.95	104.58	107.72	102.96
30	104.64		107.55	105.44	105.61	105.66	106.24	105.50	103.82	104.13	107.76	103.00
31	104.43		107.25		105.63		106.20	105.48		104.12		102.87
Avg.	106.81	104.28	105.47	106.04	104.39	105.47	106.19	105.88	104.95	* 103.78	104.78	*104.60

* Partly estimated

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 intake gates for the Alamo Canal at Morelos Dam, 1.1 miles downstream from the northerly international boundary, and about 8 miles downstream from the Yuma gaging station. Zero of the gage is at mean sea level, U. S. C. & G. S. datum.

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 to December 31, 1960.

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 gage height: 112.86 feet January 2, 1958; minimum mean daily gage height: 101.67 feet February 17, 1957.

Mean Daily Gage Height in Feet 1960

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	106.07	103.28	104.26	105.15	104.82	104.56	104.92	105.64	104.92	102.85	103.44	107.61
2	105.87	103.31	104.13	105.02	104.82	104.13	105.31	105.64	105.94	102.66	103.90	107.51
3	106.17	103.77	103.90	104.92	104.92	104.23	105.15	105.51	106.07	102.49	103.97	107.22
4	106.50	103.22	103.54	105.15	104.89	104.27	105.09	105.41	106.07	102.59	104.17	107.41
5	105.91	102.95	103.71	104.92	104.23	104.30	105.12	104.82	105.71	102.59	104.04	107.64
6	105.87	103.05	103.67	104.89	102.99	104.59	105.18	104.69	105.54	102.13	104.63	106.89
7	106.56	103.15	103.51	104.89	102.69	104.63	105.38	104.72	105.48	102.26	104.99	106.46
8	106.96	103.02	103.38	104.82	102.69	104.33	105.28	105.25	105.45	102.76	105.22	106.23
9	106.59	102.99	103.35	104.89	102.62	104.49	105.15	105.18	105.05	102.17	105.38	104.43
10	106.20	103.41	103.02	104.86	102.62	104.86	105.09	105.45	104.63	102.59	104.89	102.33
11	106.76	103.02	102.82	104.92	102.89	104.79	105.05	105.51	104.69	102.30	104.17	102.43
12	106.63	102.79	102.72	104.89	102.95	104.53	105.02	105.54	104.63	101.97	104.33	104.23
13	106.86	102.56	102.82	104.99	102.92	104.49	105.18	105.51	104.23	101.87	104.04	104.07
14	107.02	102.72	102.89	105.15	102.92	104.36	105.02	105.54	104.36	102.13	103.84	102.59
15	107.22	102.89	102.89	105.05	102.92	104.53	104.66	105.61	103.38	102.53	103.54	101.94
16	107.05	103.15	103.18	105.02	103.08	104.63	104.66	105.48	103.22	102.69	104.13	101.74
17	106.89	103.12	103.18	105.02	102.95	104.53	104.86	105.35	u 102.82	104.30	104.59	101.77
18	106.73	103.02	103.38	105.05	102.92	104.46	105.48	104.92	u 102.59	104.23	103.81	101.97
19	107.38	103.05	103.77	105.02	103.15	104.56	105.54	104.40	u 102.59	104.04	103.74	102.13
20	106.53	103.15	104.23	104.99	103.12	104.82	105.51	104.00	u 102.76	104.04	103.71	102.36
21	106.79	103.15	104.99	105.35	103.48	105.02	105.45	103.87	u 103.12	104.13	103.28	102.23
22	106.36	103.05	104.89	105.38	104.20	105.09	105.45	104.46	u 103.22	104.63	102.79	101.77
23	106.36	103.05	104.95	105.35	103.58	104.56	105.68	104.13	u 103.44	104.33	102.72	101.77
24	105.97	103.38	105.05	105.31	103.77	104.33	105.74	104.53	u 103.58	104.10	103.05	101.84
25	105.02	103.28	105.41	105.05	103.67	104.49	105.51	104.69	u 103.44	104.30	103.05	101.80
26	105.74	103.05	106.27	104.95	103.61	104.59	104.43	104.46	u 103.18	103.84	106.04	102.33
27	104.59	103.05	106.53	105.12	103.71	104.95	103.97	104.46	u 103.08	103.90	107.94	102.30
28	104.10	103.18	106.40	104.82	103.71	104.69	104.46	104.79	u 103.18	104.13	107.74	101.90
29	103.81	103.51	106.43	104.69	104.07	104.59	105.51	104.86	u 103.18	104.40	107.22	101.90
30	103.61		106.30	104.69	104.89	104.72	105.38	104.72	u 103.02	103.77	107.28	101.87
31	103.35		106.20		104.99		105.25	104.66		103.77		101.77
Avg.	106.05	103.11	104.25	105.01	103.57	104.57	105.14	104.96	* 104.09	103.24	104.52	103.56

u Estimated * Partly Estimated

INTAKE CANAL AT MORELOS DIVERSION STRUCTURE - DISCHARGES

DESCRIPTION: Water-stage recorder and staff gage located in Mexico on the left (south) bank of the Mexican intake canal approximately 200 feet downstream from the intake gates of Morelos Dam, about 1, 350 feet upstream from confluence with the old Alamo Canal and 2. 2 miles upstream from Matamoros check structure. Zero of gage is at mean sea level, U. S. C. & G. S. datum. Discharge measurements were made by boat in the Alamo Canal 1. 2 miles downstream from gage, until August 3, 1960. Because of serious backwater effects from Matamoros check the main canal station was abandoned for purposes of measurement and since that time records have been computed as the sum of the flows in three canals; Canal del Norte, Canal Alamo, and Canal de Conexion below Matamoros check, about 2. 2 miles below intake structure.

RECORDS: Discharges for 1960 are based on a continuous record of gage heights and generally daily measurements of the canals described above. Records available: November 8, 1950 through December 31, 1960. Records are collected and furnished by the Mexican Section of the Commission.

REMARKS: 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 Rockwood 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 1960 and consequently the records reported below show the total water diverted from the Colorado River to the Alamo Canal during those years. Other diversions from the Colorado River are made by Mexico downstream from Morelos Dam by means of pumps.

EXTREMES: Maximum mean daily discharge, 6, 540 second-feet on August 3, 1958; minimum mean daily discharge 0 second-feet on various days during 1951, 1952, and 1955. Reference table below for other extremes.

Mean Daily Discharge in Second-Feet 1960 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,230	706	2,000	5,540	1,890	3,460	3,990	4,910	4,030	1,350	629	865
2	1,240	805	1,980	5,330	1,820	3,070	4,520	4,730	4,980	1,170	565	925
3	1,260	735	2,100	4,940	1,900	3,340	4,380	4,700	4,980	1,190	554	1,060
4	1,230	812	2,100	5,470	1,970	3,020	4,310	4,410	4,480	1,380	554	1,020
5	1,170	837	2,210	4,940	2,030	3,190	4,410	4,130	4,200	1,240	551	1,060
6	1,030	865	2,210	4,410	1,910	3,460	4,410	4,100	3,850	989	346	1,110
7	957	826	2,100	4,450	1,960	3,640	4,560	4,100	3,530	1,110	335	1,160
8	883	929	2,000	4,340	1,900	3,310	4,480	4,240	3,380	1,460	360	1,120
9	908	999	2,140	4,480	1,780	3,530	4,270	4,170	3,390	957	357	1,040
10	1,020	1,090	1,780	4,310	1,740	3,920	4,170	4,660	3,390	1,270	357	939
11	1,170	1,060	1,640	4,240	1,840	3,740	4,200	4,730	3,740	1,140	360	1,020
12	1,070	1,330	1,660	4,270	1,610	3,570	4,170	4,870	3,570	865	357	1,070
13	961	1,370	1,900	4,450	1,720	3,710	4,310	4,870	3,270	816	357	1,100
14	833	1,470	1,770	5,330	1,590	3,490	4,340	5,010	3,150	1,010	357	1,120
15	883	1,550	1,780	5,050	1,770	3,570	4,270	4,980	2,420	1,360	357	1,090
16	890	1,870	2,160	4,840	1,680	3,670	4,240	4,730	2,430	1,520	424	855
17	855	1,580	2,260	4,660	1,630	3,490	4,340	4,310	2,160	1,450	420	862
18	830	1,770	2,510	4,730	1,620	3,500	4,480	3,880	1,860	1,000	420	1,050
19	805	1,780	3,100	4,730	1,860	3,640	4,770	3,850	1,680	904	410	1,310
20	682	1,870	3,920	4,380	1,820	4,100	4,840	3,530	1,570	893	427	1,570
21	646	1,810	4,520	3,780	2,220	4,030	4,380	3,430	1,640	819	448	1,490
22	590	1,840	4,130	3,740	2,820	4,240	4,590	3,570	1,900	830	533	904
23	551	1,740	4,310	3,600	2,100	3,670	5,090	3,290	2,190	869	551	929
24	554	2,090	4,980	3,470	2,280	3,430	5,050	3,280	2,220	682	551	971
25	579	1,870	5,440	2,910	2,460	3,450	4,870	3,320	1,980	533	607	922
26	509	1,740	5,690	2,520	2,240	3,510	4,380	3,260	1,590	505	579	1,500
27	381	1,800	5,790	2,390	2,530	3,880	4,310	3,260	1,600	551	667	1,580
28	367	1,960	6,000	2,130	2,470	3,780	4,340	3,810	1,900	554	689	1,030
29	516	1,930	5,930	2,140	2,790	3,670	4,630	3,960	1,810	562	682	946
30	639		5,300	1,800	3,530	3,810	4,520	3,530	1,740	607	879	957
31	731		5,830		3,520		4,560	3,500		678		886
Sum	25,970	41,034	101,240	123,370	65,000	107,890	138,180	127,120	84,630	30,264	14,683	33,461

Month	Current Year 1960								Period 1951-1960		
	∅ Extreme Gage Feet		∅ Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
				High		Low					
	High	Low	Day		Day				Average	Maximum	Minimum
Jan.	103.05	98.16	3	1,260	28	367	837	51,504	31,624	99,160	970
Feb.	101.48	98.69	24	2,090	1	706	1,420	81,420	33,591	81,420	9,230
Mar.	105.41	100.75	28	6,000	11	1,640	3,270	200,862	155,913	216,990	97,900
Apr.	105.05	104.46	1	5,540	30	1,800	4,100	244,774	208,940	264,130	172,540
May	104.82	101.74	30	3,530	14	1,590	2,100	128,953	110,051	159,010	66,210
June	103.48	102.82	22	4,240	4	3,020	3,600	214,017	204,753	269,630	156,660
July	105.45	103.08	23	5,090	1	3,990	4,450	274,087	283,777	304,260	252,950
Aug.	105.48	103.58	14	5,010	26	3,260	4,100	252,142	277,565	341,040	252,210
Sept.	105.51	101.57	† 2	4,980	20	1,570	2,820	167,885	175,747	198,090	148,910
Oct.	104.04	100.46	16	1,520	26	505	975	60,029	56,865	90,640	40,520
Nov.	100.89	100.20	30	879	7	335	491	29,125	22,026	93,330	7,520
Dec.	101.80	99.97	27	1,580	16	855	1,080	66,354	40,464	114,320	8,830
Yearly	105.51	98.16		6,000		335	2,450	1,771,152	1,601,316	1,961,550	1,381,110

† And other days ∅ Mean daily

INTAKE CANAL AT MORELOS DIVERSION STRUCTURE - STAGES

(See Preceding Page For Description)

Mean Daily Gage Height in Feet 1960

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	101.87	98.72	101.38	104.69	104.76	103.12	103.08	105.48	104.72	102.85	100.62	100.89
2	101.87	98.69	101.38	104.59	104.76	102.89	103.44	105.45	105.41	102.62	100.59	100.82
3	101.87	98.72	101.57	104.53	104.82	102.89	103.54	105.38	105.51	102.46	100.59	101.21
4	101.84	98.82	101.38	104.69	104.82	102.92	103.48	105.28	105.41	102.59	100.59	101.54
5	101.87	98.82	102.00	104.49	104.17	102.92	103.51	104.63	105.41	102.59	100.52	101.54
6	101.84	98.85	101.35	104.46	102.72	102.99	103.48	104.49	105.41	102.13	100.43	101.80
7	101.87	98.79	100.98	104.53	102.13	103.12	103.58	104.53	105.35	102.23	100.26	101.74
8	101.87	98.85	101.08	104.46	102.03	103.02	103.64	105.15	105.31	102.72	100.23	101.51
9	101.87	99.18	101.25	104.56	102.03	103.08	103.48	105.15	104.95	102.13	100.20	101.48
10	101.84	99.77	101.05	104.53	102.13	103.28	103.28	105.31	104.53	102.53	100.20	101.12
11	101.87	99.51	100.75	104.59	101.87	103.15	103.38	105.35	104.53	102.30	100.23	101.38
12	101.87	99.64	100.89	104.59	101.74	103.02	103.18	105.38	104.53	101.90	100.23	101.61
13	101.87	100.00	100.92	104.66	101.77	103.02	103.44	105.35	104.07	101.71	100.26	101.41
14	101.80	101.18	101.02	104.79	101.77	102.95	103.87	105.38	104.20	102.00	100.26	101.41
15	101.84	101.02	101.21	104.66	101.80	103.05	104.43	105.41	103.12	102.49	100.23	101.02
16	101.84	101.35	101.38	104.66	101.80	103.08	104.43	105.31	102.92	102.66	100.26	99.97
17	101.84	101.18	101.51	104.63	101.77	102.99	104.59	105.25	102.10	103.94	100.26	100.23
18	102.99	101.38	102.03	104.66	101.74	102.89	105.25	104.79	102.00	104.04	100.23	101.12
19	103.05	101.12	102.56	104.66	101.90	102.92	105.28	104.17	101.57	103.67	100.26	101.44
20	98.39	100.89	103.90	104.66	102.10	103.38	105.28	103.77	102.46	103.61	100.20	101.57
21	98.36	100.89	104.63	105.05	102.30	103.48	105.18	103.58	103.08	103.61	100.20	101.41
22	98.33	100.82	104.53	105.05	102.82	103.44	105.18	104.30	103.18	103.61	100.46	100.89
23	98.29	100.82	104.56	105.05	102.36	102.95	105.38	103.97	103.41	103.05	100.59	100.85
24	98.26	101.25	104.63	105.05	102.36	102.82	105.45	104.36	103.51	102.66	100.59	100.92
25	98.26	101.05	104.79	104.92	102.46	102.82	105.25	104.53	103.41	103.44	100.59	101.08
26	102.20	100.85	105.41	104.92	102.46	102.89	104.23	104.30	103.18	101.90	100.59	101.57
27	99.21	100.85	105.38	105.02	102.53	103.08	103.22	104.33	103.05	100.49	100.56	101.44
28	98.16	101.44	105.41	104.76	102.53	103.05	104.04	104.66	103.08	100.52	100.52	101.44
29	98.36	101.48	105.41	104.63	102.72	103.22	105.41	104.69	103.15	100.46	100.56	101.41
30	98.59		104.72	104.66	103.31	103.18	105.22	104.66	102.92	100.46	100.89	101.44
31	98.62		105.41		103.38		105.12	104.56		100.75		101.51
Avg.	100.73	100.20	102.72	104.71	102.64	103.05	104.24	104.80	103.85	102.39	100.41	101.25

COLORADO RIVER IMMEDIATELY BELOW MORELOS DAM - STAGES

DESCRIPTION: Gage painted on sloping concrete apron immediately downstream from Morelos Dam, on the right bank of the river, 1.1 miles downstream from the northerly international boundary, and about 8.0 miles downstream from the Yuma gaging station. Zero of gage is at mean sea level, U. S. C. & G. S. datum.

RECORDS: Mean daily gage heights obtained from hourly gage readings. Records obtained and furnished by the Mexican Section of the Commission. Records available: gage heights only, February 20, 1951 to December 31, 1960.

EXTREMES: Maximum mean daily gage height: 112.80 feet January 2, 1958; minimum mean daily gage height: 99.15 feet March 26, 1951.

Mean Daily Gage Height in Feet 1960

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	106.00	103.25	103.31	100.43	104.13	103.90	103.84	103.84	103.84	102.40	103.51	107.35
2	105.81	103.28	102.99	100.43	103.44	103.81	103.84	103.94	104.95	102.36	103.94	107.25
3	106.10	103.74	101.44	100.43	103.08	103.77	103.87	103.90	105.71	102.33	104.00	107.15
4	106.43	103.18	100.82	100.43	102.49	103.81	103.90	103.90	105.68	102.46	104.23	107.25
5	105.84	102.92	100.62	100.43	100.66	103.97	103.90	103.87	104.72	102.56	104.07	107.58
6	105.81	103.02	100.43	100.43	100.59	104.00	103.94	103.87	104.56	102.20	104.59	106.79
7	106.50	103.12	100.39	100.43	101.21	104.04	103.94	103.87	104.79	102.36	104.99	106.23
8	106.89	102.92	100.39	100.43	100.98	104.00	103.94	103.87	104.76	102.62	105.25	105.81
9	106.53	102.79	100.33	100.43	100.79	103.97	103.94	103.90	104.07	102.23	105.41	104.40
10	106.14	103.18	100.33	100.43	100.33	103.94	103.94	104.04	103.22	102.49	104.95	102.46
11	106.69	102.59	100.33	100.39	100.30	103.94	103.94	104.00	102.49	102.36	104.20	102.53
12	106.56	102.20	100.33	100.26	100.30	103.90	103.97	103.97	102.49	102.03	104.36	104.27
13	106.79	102.03	100.33	100.26	100.30	104.04	103.97	103.97	102.49	101.94	104.10	104.33
14	106.96	101.51	100.33	100.26	100.30	104.04	103.97	103.97	102.46	102.23	103.90	102.72
15	107.15	101.12	100.33	100.26	100.30	104.00	103.97	103.97	102.46	102.66	103.64	102.10
16	106.99	100.62	100.33	100.26	100.30	104.00	103.94	104.00	102.43	102.82	104.20	101.87
17	106.82	100.56	100.33	100.26	100.30	104.00	103.90	103.94	102.40	104.36	104.66	101.84
18	106.66	100.56	100.33	100.26	100.30	104.00	103.90	103.87	102.36	104.23	103.81	101.44
19	107.28	100.56	100.33	100.26	100.30	104.04	103.97	103.77	102.36	104.00	103.74	101.21
20	106.46	100.56	100.33	100.26	100.85	104.13	103.94	103.67	102.40	104.07	103.74	101.21
21	106.73	100.56	100.39	100.26	101.21	104.17	103.94	103.61	102.43	104.13	103.31	101.18
22	106.30	100.52	100.30	100.26	101.74	104.23	103.90	103.64	102.43	104.63	102.79	101.12
23	106.30	100.49	100.26	100.26	101.67	103.97	103.90	103.67	102.46	104.33	102.79	101.12
24	105.91	100.69	100.26	101.05	102.49	103.81	103.90	103.77	102.43	104.10	103.08	101.12
25	104.95	100.59	100.26	102.69	103.15	103.81	103.90	103.81	102.43	104.30	103.08	101.12
26	105.68	100.46	101.05	102.99	103.18	103.81	103.84	103.77	102.43	103.90	105.51	101.44
27	104.53	100.46	102.33	103.74	103.48	103.74	103.67	103.77	102.43	103.94	107.61	101.64
28	104.07	101.21	101.80	103.58	103.51	103.84	103.71	103.81	102.43	104.17	107.64	101.05
29	103.74	102.53	102.07	102.85	103.51	103.87	103.84	103.81	102.43	104.40	107.22	101.02
30	103.54		103.08	103.81	104.23	103.84	103.84	103.87	102.40	103.81	107.32	101.02
31	103.28		100.52		104.04		103.84	103.84		103.81		100.98
Avg.	105.98	101.77	100.86	100.95	101.72	103.95	103.90	103.85	103.16	103.23	104.52	103.18

COOPER WASTEWAY (VALLEY DIVISION, YUMA PROJECT)

DESCRIPTION: Cooper Wasteway discharges part of the regulatory waste water from Valley Division of the Yuma Project in the United States into the limitrophe section of the Colorado River. This wasteway is located 1.5 miles downstream from the northerly international boundary and 0.4 mile downstream from Morelos Diversion Dam, and is one of six measurement points for deliveries of Colorado River water to Mexico pursuant to provisions of the 1944 Water Treaty.

RECORDS: Flow is computed on the basis of head on a control weir, as measured by water-stage recorder, and weir rating as determined by monthly meter measurements. Records obtained by the United States Section of the Commission. Records available: Monthly records of discharge were obtained by the U. S. Bureau of Reclamation for the period January 1934 to March 1950. Daily discharge records are available since March 1950.

EXTREMES: Prior to March 1950: maximum monthly discharge 914 acre-feet January 1940; minimum monthly discharge, zero flow for various months. Since March 1950: maximum instantaneous flow 50.1 second-feet on August 16, 1958, at maximum gage height 113.32 feet; minimum instantaneous flow, no flow during parts of each month. Reference table below for other extremes.

Mean Daily Discharge in Second-Feet 1960 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	2.0	0.6	3.3	1.9	1.8	6.5	* 0.1	0.1	2.0	0	4.0
2	.8	2.5	.1	6.1	.1	6.5	4.9	0	0	7.2	.2	5.4
3	5.0	9.2	.7	3.8	0	.7	2.5	0	0	.2	.5	6.1
4	0	4.1	.6	2.9	0	7.3	.4	5.9	1.4	0	1.3	.3
5	0	5.8	6.2	.1	2.9	4.0	0	8.0	4.7	0	7.2	0
6	0	6.2	8.2	0	3.4	2.1	0	1.6	0	13.0	1.0	0
7	0	7.2	.7	1.7	.3	2.4	.2	6.1	.1	4.4	7.1	0
8	0	2.9	0	.4	3.5	.7	.9	8.2	.3	2.7	.3	0
9	0	.2	0	3.0	3.6	4.0	6.4	.8	2.2	.7	2.9	11.0
10	0	0	1.8	4.9	.3	.6	2.3	.4	1.3	1.8	.7	3.5
11	0	.1	.4	5.2	2.9	.1	.8	9.4	.4	2.2	.8	4.3
12	0	4.3	5.1	1.2	5.2	2.4	1.9	.6	3.8	7.3	.6	3.0
13	0	2.8	2.0	3.0	8.0	2.8	.1	0	9.7	.1	2.1	1.9
14	0	3.2	.1	.6	6.1	2.9	0	0	2.3	4.5	2.1	0
15	0	1.7	.1	.4	2.5	3.9	.3	.2	.5	6.7	3.5	.6
16	1.6	2.3	7.0	.5	1.3	5.4	.5	.4	.6	7.0	.5	4.1
17	1.6	3.0	.2	2.3	2.8	4.5	.5	0	4.4	1.4	0	5.0
18	.8	2.6	0	u 4.3	8.0	2.1	1.5	6.1	7.0	4.7	.7	3.0
19	0	2.0	0	u 1.4	2.3	1.7	8.7	1.1	3.7	6.0	12.8	0
20	0	2.1	0	.6	4.2	.9	.7	.1	1.1	5.3	1.2	1.7
21	.9	4.6	1.4	2.5	3.2	4.3	4.0	0	4.4	3.8	1.0	3.8
22	.4	2.1	1.5	4.4	.1	.4	5.1	1.2	3.1	2.3	0	4.6
23	3.3	3.6	5.3	4.8	.4	.7	1.4	2.5	6.8	1.5	2.1	11.6
24	3.7	3.1	1.0	3.9	1.4	0	3.4	.4	.8	3.8	3.1	9.3
25	.5	3.2	1.3	1.1	4.0	1.9	.5	1.3	.3	4.0	.9	.6
26	.5	8.0	4.9	.2	2.8	2.2	.1	.3	.1	.4	6.4	.3
27	4.8	.6	7.0	3.3	4.8	3.5	.1	1.6	.1	.9	.2	.3
28	.4	3.2	4.8	2.4	.6	.1	.1	0	3.9	4.3	.2	7.8
29	0	1.1	2.8	2.4	1.8	0	0	1.0	6.9	0	0	3.3
30	.1		3.9	1.0	4.5	0	* .2	0	.1	0	.2	7.7
31	1.9		7.7		7.4		* 3.3	0		0		2.3
Sum	26.3	93.7	75.4	*71.7	90.3	69.9	*57.3	* 57.3	70.1	98.2	59.6	105.5

Month	Current Year 1960 Extreme Gage Feet High	Extreme Gage Feet Low	Ø Extreme Second-Feet High Day	High	Low Day	Low	Average Second-Feet	Total Acre-Feet	Period 1935-1960 Acre-Feet Average	Maximum	Minimum
Jan.	112.34	111.00	27	21.6	† 1	0	0.8	52.2	225	914	0
Feb.	112.54	111.00	26	26.6	† 1	0	3.2	186	188	400	6
Mar.	112.52	111.00	†16	26.1	† 2	0	2.4	150	203	517	0
Apr.	112.49	111.00	22	25.4	† 5	0	* 2.4	* 142	225	425	40
May	112.53	111.00	13	26.4	† 2	0	2.9	179	205	440	76
June	112.52	111.00	† 4	26.1	† 3	0	2.3	139	196	595	47
July	112.61	111.00	†19	28.4	† 4	0	* 1.8	* 114	176	516	0
Aug.	112.67	111.00	8	29.8	† 1	0	* 1.8	* 114	133	617	0
Sept.	112.60	111.00	13	28.1	† 1	0	2.3	139	134	462	0
Oct.	112.53	111.00	6	26.4	† 1	0	3.2	195	165	490	0
Nov.	112.58	111.00	5	27.6	† 1	0	2.0	118	194	462	9
Dec.	112.57	111.00	24	27.4	† 4	0	3.4	209	247	592	90
Yearly	112.67	111.00		29.8		0	* 2.4	*1,737.2	2,291	4,500	1,178

† And other days Ø Mean daily u Estimated * Partly estimated

COLORADO RIVER AT MORELOS GAGING STATION - DISCHARGES

DESCRIPTION: Water-stage recorder on the left (Arizona) bank of the river, 40 feet below the cableway, 1.8 miles downstream from the northerly international boundary, 0.7 mile downstream from Morelos Diversion Dam, 1,300 feet below the mouth of Cooper Wasteway and about 9 miles downstream from Yuma, Arizona, along the river levee. Zero of gage is at mean sea level, U. S. C. & G. S. datum.

RECORDS: Based upon 155 current meter measurements during the year, 93 by the United States Section of the Commission; 62 by the Mexican Section of the Commission, and a continuous record of gage heights. Computations by shifting control methods. Records available: daily discharges January 1, 1954 to December 31, 1960; continuous record of gage heights July 20, 1952 to December 31, 1960.

REMARKS: Reservoirs, diversions in United States and Mexico, drainage returns and waste flows modify the river flow at this station. The record at this station, less that of Cooper Wasteway, represents the river flow passing Morelos Diversion Dam.

EXTREMES: Maximum gage height: 112.05 feet December 24, 1957; minimum gage height 99.47 feet, May 28, 1960. Reference table below for other extremes.

Mean Daily Discharge in Second-Feet 1960 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	3,700	1,350	1,270	35.6	2,150	18.4	13.8	10.1	10.6	9.6	439	5,520
2	3,530	1,330	1,160	27.0	1,430	20.8	13.8	13.2	252	11.6	666	5,520
3	3,860	1,770	501	24.0	911	11.6	12.1	14.4	766	6.5	521	5,380
4	4,350	1,270	151	27.0	683	15.0	9.6	16.3	1,410	10.8	514	5,580
5	3,520	1,130	98.6	22.5	38.4	21.4	11.1	18.4	830	24.0	486	6,350
6	3,710	1,180	44.0	21.0	14.0	15.6	9.6	11.1	730	12.5	894	5,300
7	4,350	1,210	24.0	21.0	161	17.0	10.1	11.6	1,070	7.1	1,200	4,240
8	4,690	1,030	27.0	22.5	176	12.6	9.1	11.6	1,190	36.0	1,560	3,490
9	4,150	855	24.0	24.0	104	15.0	10.6	10.1	680	4.4	1,890	1,720
10	3,570	1,170	25.5	28.5	22.5	16.3	9.1	16.3	237	16.5	1,440	525
11	4,200	876	22.5	28.5	21.0	16.3	4.4	21.4	13.5	13.0	802	525
12	4,270	699	24.0	41.2	18.0	14.4	9.1	14.4	13.5	5.6	912	1,480
13	4,610	597	24.0	46.8	24.0	20.6	11.6	13.2	16.5	2.0	732	1,510
14	4,850	360	21.0	30.0	21.0	19.1	10.6	11.6	13.0	4.8	674	530
15	5,060	226	19.5	30.0	18.0	17.0	8.7	12.1	10.0	10.8	682	258
16	4,950	44.0	25.5	28.5	16.5	16.3	8.3	11.6	8.8	10.0	941	188
17	4,870	32.8	16.5	27.0	25.5	15.0	8.3	10.1	10.0	399	1,190	172
18	4,730	30.0	15.0	30.0	46.8	13.2	10.6	13.2	11.6	640	666	90.0
19	6,230	35.6	15.0	41.2	32.8	12.6	19.1	10.1	8.4	420	618	36.5
20	4,710	30.0	15.0	28.5	41.2	10.6	12.6	6.7	7.7	480	650	35.0
21	5,060	28.5	30.0	27.0	44.0	23.0	12.6	6.0	12.0	640	465	36.5
22	4,430	25.5	22.5	32.8	242	21.4	17.0	7.5	11.6	1,040	235	31.0
23	4,260	35.6	21.0	32.8	27.0	8.7	13.8	9.1	15.5	920	194	33.0
24	3,680	64.2	22.5	176	28.5	3.2	14.4	6.3	12.0	750	334	33.0
25	2,640	70.4	25.5	862	18.0	5.6	11.6	7.5	11.2	800	302	25.0
26	4,250	32.8	206	1,060	19.5	7.9	8.3	7.9	10.0	630	2,040	63.5
27	2,280	27.0	586	1,730	24.0	8.7	6.0	8.7	12.4	560	6,270	128
28	1,850	290	519	1,400	18.0	7.0	5.6	8.3	14.2	750	6,100	28.0
29	1,640	848	546	939	25.5	6.3	7.9	9.1	17.3	972	5,500	22.0
30	1,540		1,780	1,710	78.8	10.1	7.5	13.8	10.8	760	5,400	25.0
31	1,370		162		35.6		12.6	12.1		660		25.0
Sum		16,647.4		8,554.4		420.7		353.8		10,606.2		48,899.5
	120,910		7,443.6		6,515.6		329.5		7,415.6		44,317	

Month	Current Year 1960 Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Period 1954-1960 Acre-Feet		
			High		Low						
	High	Low	Day		Day				Average	Maximum	Minimum
Jan.	107.84	102.36	19	10,800	31	1,240	3,900	239,821	407,173	969,540	34,710
Feb.	103.30	99.94	3	2,090	27	25.5	574	33,020	200,876	414,310	17,650
Mar.	104.58	99.72	30	4,780	18	15.0	240	14,764	134,715	630,230	780
Apr.	103.62	99.64	27	2,560	12	19.5	285	16,967	106,745	532,320	899
May	103.62	99.47	1	2,420	28	5.0	210	12,924	120,362	375,970	460
June	100.29	99.52	21	117	24	1.4	14.0	834	27,693	119,980	834
July	100.18	99.55	12	40.0	28	3.2	10.6	654	26,993	89,430	654
Aug.	100.25	99.58	2	59.5	24	4.2	11.4	702	47,475	125,590	702
Sept.	103.57	99.72	4	1,970	20	6.2	247	14,709	29,873	87,830	113
Oct.	103.05	100.71	22	1,160	14	.1	342	21,037	84,200	172,940	11,420
Nov.	106.85	101.92	27	7,420	23	178	1,480	87,901	182,950	356,390	35,510
Dec.	107.54	100.43	7	9,620	29	18.0	1,580	96,991	274,957	643,850	25,040
Yearly	107.84	99.47		10,800		.1	744	540,324	1,644,012	3,957,730	241,931

COLORADO RIVER AT MORELOS GAGING STATION - STAGES

(See Preceding Page For Description)

Mean Daily Gage Height in Feet 1960

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	105.15	102.44	102.29	99.89	103.38	99.94	99.84	99.77	99.73	101.04	102.45	106.05
2	104.93	102.46	102.03	99.85	102.71	99.92	99.85	99.83	*100.59	101.10	102.73	106.05
3	105.25	102.98	100.89	99.80	102.09	99.80	99.83	99.84	102.05	100.97	102.50	105.96
4	105.70	102.35	100.26	99.78	101.63	99.87	99.79	99.86	103.10	101.10	102.46	106.11
5	105.00	102.10	100.12	99.72	100.01	99.98	99.82	99.89	102.56	101.32	102.39	106.47
6	105.00	102.19	99.96	99.70	99.89	99.92	99.79	99.77	102.46	101.18	102.89	105.95
7	105.72	102.24	99.88	99.70	100.45	99.96	99.80	99.79	102.80	101.06	103.20	105.34
8	106.16	102.04	99.86	99.70	100.41	99.89	99.78	99.79	102.93	101.43	103.52	104.99
9	105.75	101.86	99.86	99.70	100.11	99.93	99.81	99.76	102.50	100.91	103.81	103.70
10	105.28	102.25	99.86	99.72	99.72	99.95	99.79	99.87	101.94	101.20	103.50	101.89
11	105.86	101.83	99.83	99.71	99.70	99.94	99.66	99.94	101.23	101.10	102.89	101.85
12	105.75	101.52	99.82	99.75	99.68	99.91	99.79	99.85	101.22	100.96	103.00	103.32
13	106.00	101.36	99.80	99.80	99.71	100.00	99.82	99.83	101.28	100.84	102.77	103.64
14	106.18	100.91	99.76	99.76	99.69	99.98	99.78	99.81	101.21	100.98	102.66	102.26
15	106.34	100.61	99.74	99.75	99.66	99.94	99.74	99.82	101.13	101.16	102.73	101.56
16	106.14	100.07	99.78	99.75	99.65	99.91	99.73	99.83	101.10	101.14	103.09	101.32
17	105.96	100.06	99.73	99.75	99.70	99.89	99.73	99.77	101.13	102.00	103.40	101.27
18	105.73	100.02	99.72	99.77	99.77	99.86	99.78	99.81	101.17	102.49	102.92	100.91
19	106.42	100.02	99.72	99.81	99.70	99.85	99.92	99.75	101.09	102.32	102.81	100.58
20	105.56	100.00	99.72	99.76	99.74	99.81	99.81	99.67	101.07	102.43	102.80	100.58
21	105.96	99.98	99.82	99.75	99.75	100.00	99.81	99.64	101.17	102.49	102.50	100.59
22	105.54	99.96	99.78	99.78	100.34	99.98	99.88	99.68	101.14	102.78	102.06	100.54
23	105.48	100.01	99.80	99.78	99.70	99.78	99.83	99.72	101.21	102.75	101.96	100.57
24	105.07	100.10	99.77	100.27	99.71	99.61	99.85	99.65	101.14	102.67	102.23	100.57
25	104.18	100.12	99.79	101.64	99.62	99.70	99.80	99.68	101.11	102.80	102.15	100.50
26	104.79	99.98	100.40	101.95	99.60	99.75	99.73	99.69	101.08	102.66	103.89	100.80
27	103.77	99.95	101.30	102.87	99.63	99.77	99.66	99.71	101.10	102.63	106.30	101.14
28	103.22	100.66	101.19	102.69	99.59	99.70	99.64	99.69	101.14	102.75	106.39	100.54
29	102.90	101.62	101.31	102.08	99.64	99.69	99.70	99.71	101.16	102.90	105.78	100.47
30	102.75		102.53	102.95	100.15	99.76	99.70	99.80	101.05	102.71	105.88	100.50
31	102.51		100.17		100.10		99.81	99.76		102.63		100.48
Avg.	105.16	101.09	100.27	100.30	100.17	99.87	99.78	99.77	* 101.45	101.82	103.26	102.47

* Partly estimated

ELEVEN MILE WASTEWAY (VALLEY DIVISION, YUMA PROJECT)

DESCRIPTION: Eleven Mile Wasteway is the largest of three wasteways discharging waste water from Valley Division of the Yuma Project in the United States into the limitrophe section of the Colorado River. This wasteway is located in Arizona 4.3 miles downstream from the northerly international boundary and 3.2 miles downstream from Morelos Diversion Dam. This is one of six measurement points for deliveries of Colorado River water to Mexico pursuant to provisions of the 1944 Water Treaty. Station is operated by the United States Section of the Commission.

RECORDS: Flow is computed from head on a control weir as measured by a water-stage recorder, and weir rating as determined by monthly current meter measurements. Records available: monthly records of discharge were obtained by the U. S. Bureau of Reclamation for the period January 1924 to December 1950. Daily discharge records are available since January 1, 1951.

EXTREMES: Prior to January 1951: maximum monthly discharge, 9,570 acre-feet, January 1949; minimum discharge, zero flow on various occasions. Since January 1, 1951: maximum instantaneous flow 344 second-feet August 28, 1958 at gage height 116.44 and maximum gage height 116.87 July 3, 1960; minimum instantaneous discharge, no flow during parts of each year. Reference table below for other extremes.

Mean Daily Discharge in Second-Feet 1960 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	42.0	19.4	15.8	23.3	80.2	19.3	8.5	33.5	21.5	48.7	30.0	29.0
2	12.9	21.4	11.0	8.1	17.8	13.6	20.5	1.7	2.0	106	17.7	30.4
3	104	19.2	6.2	80.3	0	30.5	96.9	.3	32.5	42.9	34.7	33.1
4	88.1	10.1	12.6	41.3	.1	32.1	47.3	30.3	86.0	3.1	46.5	94.8
5	9.5	55.6	4.9	.1	13.4	48.0	1.5	.8	40.0	.9	35.1	43.1
6	2.4	45.0	50.1	.2	12.7	49.6	.1	.7	44.4	11.0	28.8	1.7
7	1.6	36.0	37.1	13.1	11.7	24.9	9.4	35.8	52.2	32.3	48.8	.4
8	.9	25.6	6.0	3.7	39.2	4.3	.6	42.7	38.9	19.6	28.4	1.6
9	.6	15.2	2.9	3.1	29.3	8.2	14.5	47.8	25.4	48.1	19.7	8.0
10	.3	10.0	13.7	27.9	5.1	17.8	65.9	26.6	23.5	45.3	14.2	30.5
11	.1	32.8	2.5	22.9	6.9	39.5	20.7	19.0	20.0	33.6	29.7	37.6
12	24.9	40.0	12.6	15.2	25.8	71.2	17.2	44.7	15.2	26.5	33.7	19.0
13	52.6	15.0	25.4	23.7	14.4	28.0	19.8	35.8	7.9	32.4	51.8	23.6
14	28.4	45.5	29.6	18.9	5.0	10.0	18.0	34.8	20.3	43.6	37.4	15.4
15	20.5	30.2	2.5	20.9	55.8	21.0	42.3	43.4	29.3	39.4	10.0	26.3
16	17.8	1.2	9.9	19.6	18.8	19.0	38.5	25.3	8.6	26.0	21.8	11.9
17	34.8	1.2	30.7	61.4	1.1	17.0	44.4	21.8	22.9	35.9	21.2	21.4
18	34.4	8.8	14.3	26.4	4.1	40.1	18.5	25.9	15.0	27.2	15.7	57.6
19	20.7	42.4	9.8	2.8	16.0	58.9	15.3	37.1	26.0	32.7	10.3	37.7
20	6.2	27.0	16.8	10.2	55.0	19.8	31.0	28.1	17.7	41.6	28.9	21.0
21	2.3	30.6	18.8	2.7	30.7	9.1	7.2	49.2	5.7	38.7	23.6	8.2
22	12.5	11.5	15.5	50.5	15.4	1.9	19.9	44.0	18.4	14.8	1.3	8.9
23	30.9	1.7	19.9	39.5	24.1	18.8	46.5	13.3	42.0	51.4	9.9	17.0
24	21.9	25.0	9.3	76.8	10.5	16.3	41.7	16.0	14.2	27.6	29.3	65.6
25	29.0	29.5	27.3	38.3	14.1	38.6	13.3	40.0	31.0	22.8	52.9	79.3
26	17.8	24.6	37.1	14.2	11.5	32.6	1.6	27.6	15.4	49.4	21.6	22.2
27	10.2	13.9	42.6	25.4	10.5	32.7	.9	26.0	33.6	21.6	28.7	47.8
28	16.0	23.7	18.0	2.0	15.7	16.7	6.2	77.2	24.2	96.8	23.7	18.7
29	46.2	28.0	26.8	14.8	64.1	3.6	33.9	25.1	15.1	48.5	1.3	24.2
30	25.5		30.5	10.2	28.7	6.9	16.1	2.5	21.6	1.6	6.8	12.7
31	43.7		34.6		13.0		75.0	3.8		.6		41.6
Sum	758.7	690.1	594.8	697.5	650.7	750.0	793.2	860.8	770.7	1,070.6	763.5	890.3

Current Year 1960 — **Period 1935-1960**

Month	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low						
	High	Low	Day		Day				Average	Maximum	Minimum
Jan.	116.06	111.72	3	271	†11	0	24.5	1,505	4,843	9,570	263
Feb.	113.60	111.77	5	104	1	.8	23.8	1,369	3,843	8,430	657
Mar.	115.84	111.74	6	253	†10	0.3	19.2	1,180	3,595	6,230	1,000
Apr.	116.34	111.72	3	293	† 5	0	23.2	1,383	3,293	6,300	0
May	116.34	111.72	1	293	† 3	0	21.0	1,291	4,078	9,320	101
June	114.49	111.76	19	157	22	.6	25.0	1,488	3,896	7,440	910
July	116.87	111.72	3	337	6	0	25.6	1,573	3,922	8,320	840
Aug.	116.29	111.72	28	289	3	0	27.8	1,707	3,265	9,740	710
Sept.	114.34	111.75	1	148	† 1	.4	25.7	1,529	2,393	6,140	820
Oct.	116.79	111.72	28	330	31	0	34.5	2,124	3,233	5,680	1,400
Nov.	116.75	111.78	7	326	† 6	.9	25.4	1,514	3,896	8,220	1,480
Dec.	116.55	111.73	4	310	8	.2	28.7	1,766	5,268	9,430	1,460
Yearly	116.87	111.72		337		0	25.4	18,429	45,525	82,900	18,429

† And other days

COLORADO RIVER AT ELEVEN MILE GAGE - STAGES

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

RECORDS: Mean daily gage heights, based upon continuous water-stage records. Records available: continuous records of gage heights, November 1947 to December 1960; once weekly readings obtained by the U. S. Bureau of Reclamation January 1940 to November 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, January 2, 1958; minimum mean daily gage height: 95.93 feet, March 17, 1951.

Mean Daily Gage Height in Feet 1960

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	102.27	99.88	99.84	96.88	101.06	96.73	96.46	96.72	96.59	96.74	98.35	103.59
2	102.00	99.90	99.52	96.74	100.29	96.65	96.52	96.50	97.41	97.05	98.68	103.63
3	102.32	100.48	98.20	97.11	99.49	96.62	96.94	96.48	98.64	96.71	98.52	103.57
4	102.77	99.84	97.06	96.91	99.07	96.70	96.80	96.67	100.41	96.48	98.42	103.75
5	102.12	99.58	97.05	96.58	97.03	96.82	96.49	96.54	99.34	96.63	98.33	104.04
6	102.10	99.65	96.91	96.56	96.87	96.82	96.43	96.46	98.99	96.59	98.97	103.26
7	102.74	99.71	96.79	96.64	97.34	96.71	96.47	96.67	99.50	96.76	99.64	102.51
8	103.10	99.49	96.55	96.56	97.59	96.51	96.39	96.79	99.67	96.84	100.32	102.24
9	102.82	99.28	96.50	96.56	97.28	96.51	96.49	96.76	98.58	96.81	100.78	100.46
10	102.43	99.67	96.53	96.75	96.68	96.60	96.87	96.69	97.78	96.81	100.23	98.43
11	103.00	99.29	96.45	96.72	96.65	96.75	96.51	96.68	96.77	96.80	98.92	98.18
12	102.88	98.90	96.54	96.63	96.73	96.98	96.48	96.78	96.66	96.62	99.22	98.85
13	103.20	98.64	96.63	96.77	96.64	96.74	96.57	96.71	96.64	96.60	98.95	100.30
14	103.34	98.06	96.61	96.73	96.63	96.57	96.51	96.72	96.70	96.72	98.80	98.58
15	103.50	97.80	96.38	96.73	96.88	96.64	96.71	96.79	96.69	96.78	98.40	97.78
16	103.41	96.77	96.47	96.72	96.69	96.61	96.68	96.63	96.53	96.70	98.89	97.45
17	103.27	96.72	96.59	96.99	96.57	96.59	96.72	96.62	96.63	97.92	99.67	97.39
18	103.06	96.70	96.43	96.78	96.65	96.69	96.56	96.63	96.57	98.67	98.78	97.20
19	103.53	96.90	96.36	96.65	96.71	96.84	96.61	96.70	96.67	98.15	98.59	96.78
20	102.79	96.78	96.47	96.63	96.94	96.59	96.69	96.61	96.56	98.48	98.68	96.63
21	103.23	u 96.71	96.62	96.61	96.85	96.61	96.48	96.76	96.51	98.43	98.24	96.58
22	102.95	u 96.64	96.48	96.94	97.37	96.60	96.63	96.74	96.60	99.01	97.65	96.50
23	102.91	u 96.67	96.54	96.90	96.79	96.59	96.75	96.52	96.82	99.05	97.52	96.59
24	102.55	u 96.76	96.44	97.54	96.66	96.46	96.75	96.50	96.61	98.76	97.87	96.80
25	101.72	u 96.78	96.58	99.24	96.58	96.64	96.54	96.70	96.69	98.98	97.91	96.75
26	102.07	96.66	97.35	99.40	96.58	96.64	96.44	96.59	96.56	98.74	100.24	96.71
27	101.12	96.59	98.55	100.41	96.61	96.61	96.41	96.63	96.67	98.51	103.35	97.33
28	100.73	97.18	98.44	100.31	96.59	96.46	96.42	96.93	96.64	98.98	103.66	96.57
29	100.47	98.87	98.58	99.54	96.94	96.34	96.65	96.61	96.58	99.20	103.26	96.50
30	100.24		100.02	100.50	96.99	96.34	96.54	96.50	96.56	98.70	103.39	96.49
31	99.98		97.51		96.69		96.88	96.49		98.48		96.60
Avg.	102.41	* 98.17	97.19	97.40	97.24	96.63	96.59	96.65	97.32	97.67	99.47	98.97

u Estimated * Partly estimated

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

DESCRIPTION: Twenty-one Mile Wasteway is the furthest downstream of the three wasteways discharging waste water from the Valley Division of the Yuma Project in the United States into the limitrophe section of the Colorado River. Twenty-one Mile Wasteway is located 18.5 miles downstream from the northerly international boundary, 17.4 miles downstream from Morelos Diversion Dam and 2.2 miles upstream from the southerly international boundary. This is one of six measurement points for the deliveries of Colorado River water to Mexico pursuant to provisions of the 1944 Water Treaty.

RECORDS: Flow is computed from head on a control weir as measured by a water-stage recorder and weir rating as determined by monthly current meter measurements. Station is operated by the United States Section of the Commission. Records available: monthly records of discharge were obtained by the U. S. Bureau of Reclamation for the period March 1939 to December 1950. Daily discharge records are available since January 1, 1951.

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

EXTREMES: Prior to January 1951: maximum monthly discharge was 2,860 acre-feet January 1946. Minimum monthly discharge, zero flow for various months. Since January 1, 1951: maximum instantaneous flow 102 second-feet on January 24, 1954 at maximum gage height 95.46 feet (present datum); minimum instantaneous flow, zero flow during a part of most months. Reference table below for other extremes.

Mean Daily Discharge in Second-Feet 1960 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	16.3	20.1	26.6	5.5	20.1	13.8	14.2	6.0	6.2	22.7	2.7	7.6
2	11.9	11.7	18.0	4.7	25.2	14.7	12.1	.9	22.5	16.8	14.0	20.1
3	18.9	1.8	23.3	18.9	3.6	15.5	22.6	.2	13.8	24.0	11.4	16.5
4	22.0	10.7	19.0	15.8	0	5.8	19.9	.5	27.4	3.0	10.4	12.2
5	3.3	15.3	8.3	6.7	1.0	7.2	.8	3.6	2.2	.7	9.6	22.3
6	1.3	14.0	13.7	1.4	1.2	13.3	0	1.0	1.4	.3	21.0	1.4
7	.9	10.3	23.7	3.2	5.0	17.6	.8	1.6	15.7	7.2	7.0	.2
8	.7	2.2	2.3	5.7	5.6	3.6	21.1	.3	13.3	3.6	6.5	0
9	.3	14.1	0	.7	13.4	7.3	10.2	2.8	8.1	12.2	15.7	5.8
10	.1	15.6	4.5	11.4	4.5	15.9	24.4	4.9	9.4	9.2	11.1	14.4
11	0	15.5	24.7	7.0	4.9	18.1	13.7	3.6	0	2.9	5.4	19.0
12	0	5.2	12.3	12.5	13.9	35.3	12.5	8.9	11.5	14.3	17.7	14.6
13	8.3	9.0	6.2	8.5	9.3	13.5	12.1	8.0	11.8	9.5	26.4	16.5
14	22.7	7.3	11.1	9.8	28.4	20.7	11.3	10.0	7.7	15.4	15.3	9.6
15	8.1	22.1	7.4	2.9	18.5	16.1	17.9	12.0	3.6	12.8	14.4	19.8
16	7.5	10.7	.2	1.9	14.0	6.0	6.4	12.9	2.3	.6	10.8	18.8
17	9.2	4.1	2.0	18.6	13.0	15.0	19.4	8.5	8.8	3.6	13.9	19.9
18	10.9	6.0	1.7	12.5	6.2	18.4	21.3	13.8	1.8	6.7	9.7	8.6
19	2.1	20.0	38.9	.4	13.2	3.1	24.7	27.7	6.1	4.4	.2	6.2
20	0	9.5	32.0	6.9	10.5	15.7	11.2	8.3	.5	5.7	.1	10.6
21	25.1	9.0	22.5	7.8	8.1	1.2	4.2	27.1	11.8	18.5	7.5	30.1
22	16.5	11.9	16.8	20.4	25.9	8.4	4.8	23.9	2.6	11.8	4.1	23.7
23	15.2	0	13.4	7.0	13.8	32.5	3.9	24.3	5.3	19.7	14.6	22.2
24	5.6	5.9	6.6	4.3	2.7	8.4	2.2	18.3	16.1	7.3	5.4	7.6
25	23.1	11.6	14.0	5.0	1.9	15.5	19.9	28.3	14.0	4.4	16.3	14.8
26	8.6	16.8	15.1	.6	10.7	10.8	8.7	20.3	7.1	12.2	12.1	.4
27	5.6	8.7	15.4	5.0	6.2	14.5	20.2	21.2	3.4	13.8	17.8	9.3
28	16.2	10.5	10.4	6.3	7.7	16.4	6.0	13.0	6.0	9.5	10.3	20.9
29	26.9	18.7	9.6	1.9	27.0	10.3	13.5	23.7	9.8	19.8	.4	10.3
30	21.7		3.1	5.9	17.1	4.9	9.1	1.7	21.4	3.5	.2	11.8
31	6.1		9.2		15.5		2.3	.4		1.2		5.8
Sum	315.1	318.3	412.0	219.2	348.1	399.5	371.4	337.7	271.6	297.3	312.0	401.0

Month	Current Year 1960 Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Period 1939-1960 Acre-Feet		
			High		Low				Average	Maximum	Minimum
	High	Low	Day	High	Day	Low					
Jan.	95.30	92.92	21	74.3	† 9	0	10.2	625	1,206	2,860	397
Feb.	94.42	92.92	† 10	39.0	† 3	0	11.0	631	1,002	2,510	478
Mar.	95.14	92.92	19	66.9	† 9	0	13.3	817	865	1,660	293
Apr.	94.53	92.92	3	42.8	† 2	0	7.3	435	980	1,940	326
May	94.61	92.92	† 14	45.6	† 4	0	11.2	690	1,266	2,470	183
June	94.73	92.92	17	49.8	†11	0	13.3	792	1,104	2,350	292
July	94.80	92.92	27	52.3	† 6	0	12.0	737	966	1,950	192
Aug.	95.05	92.92	19	63.0	† 1	0	10.9	670	974	2,530	200
Sept.	94.73	92.92	24	49.8	† 1	0	9.1	539	852	2,180	122
Oct.	94.83	92.92	23	53.5	† 6	0	9.6	590	1,029	2,100	238
Nov.	94.62	92.92	27	46.0	†22	0	10.4	619	1,241	2,380	567
Dec.	94.73	92.92	20	49.8	† 7	0	12.9	795	1,430	2,680	492
Yearly	95.30	92.92		74.3		0	10.9	7,940	12,915	24,370	6,448

† And other days

DIVERSIONS BY PUMPS IN THE UNITED STATES - LIMITROPHE SECTION

DESCRIPTION: Approximately 11 pumps located along the left bank of the Colorado River in the Limitrophe Section operated by individuals to pump water for irrigating land in the river floodway in the United States.

RECORDS: Monthly quantities of water pumped estimated by the United States Section from weekly readings of running time meters attached to the pumps and pump capacities. Records available: January 1956 through December 1960.

REMARKS: These records are used in the computations of water delivered to Mexico under provisions of the 1944 Water Treaty.

Monthly Discharge in Acre-Feet

Month	Current Year 1960	Period 1956-1960		
		Average	Maximum	Minimum
January	127	167	280	80
February	246	375	500	210
March	317	425	600	317
April	444	459	510	400
May	516	535	770	400
June	595	653	800	490
July	573	631	820	460
August	411	484	800	290
September	194	445	940	194
October	240	298	390	240
November	179	224	330	90
December	99.2	162	230	99.2
Yearly	3,941.2	4,858	6,480	3,941.2

EAST MAIN CANAL WASTEWAY (VALLEY DIVISION, YUMA PROJECT)

DESCRIPTION: Discharges of the East Main Canal Wasteway are determined from a water-stage recorder and control weir located about 300 feet north of the southerly international boundary and 1.5 miles east of the Colorado River. This is one of six measurement points for deliveries of Colorado River water to Mexico pursuant to provisions of the 1944 Water Treaty.

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. During the year 18 measurements were made by the United States Section. Records available: monthly discharges January 1924 to June 1928, January 1932 to December 1933 and April 1935 to December 1960. Daily discharge records are available since November 1, 1953.

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. Beginning in January 1956 flows from this canal discharging into Mexico have been included in deliveries to Mexico in the same manner as waste flows arriving in the bed of the limitrophe section of Colorado River, under terms of an agreement between the two Sections of the Commission.

EXTREMES: Discharges for the current year and extremes since 1935 are shown in the table below.

Mean Daily Discharge in Second-Feet 1960 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	30.8	19.9	7.0	10.5	12.3	7.9	21.4	10.2	24.6	3.0	* 8.8	16.9
2	10.8	5.3	17.5	21.3	15.8	16.2	10.7	7.9	19.9	8.4	13.1	11.4
3	u 23.5	11.2	9.6	16.8	13.7	20.1	15.4	4.1	17.6	6.6	9.4	12.7
4	* 30.9	13.7	6.4	12.0	12.0	32.6	15.8	3.6	9.9	9.8	11.7	14.0
5	16.2	11.5	6.1	24.3	6.5	16.6	26.0	9.7	25.4	11.3	9.1	9.8
6	14.0	7.2	1.3	3.9	6.4	34.3	4.8	10.5	17.2	8.8	10.5	12.4
7	14.0	24.8	12.2	1.3	24.0	22.9	9.1	3.9	5.3	2.8	14.6	8.5
8	11.7	15.2	11.7	9.0	18.8	18.2	12.6	7.9	15.4	9.6	9.1	6.0
9	13.7	11.9	13.1	4.6	11.9	17.8	26.9	12.2	7.5	16.5	12.3	5.7
10	13.7	6.3	8.5	17.2	13.5	26.2	14.2	12.7	8.0	20.3	11.1	8.2
11	9.9	4.8	15.3	26.0	9.9	25.8	26.7	16.5	2.0	16.6	12.2	22.4
12	5.0	16.4	9.6	15.1	8.2	15.3	34.4	1.5	3.9	10.4	4.3	13.8
13	14.7	7.4	11.9	14.7	13.4	14.7	20.3	4.4	4.3	7.3	6.2	15.0
14	31.9	6.0	5.5	9.3	3.3	* 9.8	12.6	7.4	9.8	10.6	12.0	9.5
15	10.8	15.3	4.2	4.0	13.5	14.3	6.9	16.8	9.1	6.2	9.8	17.7
16	16.9	8.7	3.7	2.6	9.0	* 3.7	11.1	6.4	9.4	19.3	22.9	8.8
17	29.4	7.9	15.9	27.7	8.2	* 16.5	3.7	5.6	19.7	20.9	12.6	13.7
18	16.2	11.6	15.7	22.3	25.1	* 19.3	5.9	8.0	10.4	7.1	13.2	16.3
19	38.3	28.7	8.4	4.8	27.7	2.9	2.4	10.2	19.5	2.7	3.3	19.6
20	38.7	19.7	8.2	1.0	16.7	1.1	.6	3.7	5.8	4.7	3.0	5.4
21	7.9	17.0	6.8	.4	15.0	1.7	4.4	8.5	10.3	18.3	19.1	2.0
22	13.8	11.1	4.6	12.6	14.0	1.2	6.6	15.5	16.1	18.0	6.5	2.8
23	21.3	9.0	2.2	6.1	18.5	4.7	3.4	15.1	8.0	24.6	1.5	21.7
24	16.9	9.3	12.4	15.3	16.8	17.3	2.7	12.5	16.7	9.3	1.1	17.6
25	34.4	11.9	13.4	16.6	6.5	7.5	23.4	16.3	13.0	29.3	12.5	17.4
26	22.0	13.6	u 8.1	25.0	15.5	9.0	10.0	12.2	4.0	16.3	21.6	12.0
27	12.5	18.4	u 7.2	17.9	13.5	17.7	14.0	10.0	0	2.7	24.7	12.0
28	1.4	10.8	* 17.4	15.8	14.9	13.9	11.5	9.8	0	10.8	11.8	12.9
29	15.8	22.1	22.0	4.7	16.6	18.1	25.5	2.2	0	9.8	6.5	11.7
30	16.9		23.4	3.0	17.7	26.0	9.4	1.7	0	* 22.0	2.4	11.5
31	46.8		11.8		3.9		22.7	8.0		u 14.0		17.6
Sum	* 600.8	376.7	* 321.1	365.8	422.8	* 453.3	415.1	275.0	312.8	* 378.0	* 316.9	384.0

Current Year 1960 — Period 1935-1960

Month	Extreme Gage Feet		Ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low				Average	Maximum	Minimum
	High	Low	Day		Day						
Jan.			31	46.8	28	1.4	* 19.4	* 1,192	1,533	3,360	u 383
Feb.			19	28.7	11	4.8	13.0	747	1,233	3,170	u 383
Mar.			30	23.4	6	1.3	* 10.4	* 637	1,441	2,920	190
Apr.			17	27.7	21	.4	12.2	726	1,406	3,170	197
May			19	27.7	14	3.3	13.6	839	1,552	3,040	385
June			6	34.3	20	1.1	* 15.1	* 899	1,358	3,660	175
July			12	34.4	20	.6	13.4	823	1,511	3,590	198
Aug.			15	16.8	12	1.5	8.9	545	1,486	3,960	169
Sept.			5	25.4	†27	0	10.4	620	1,309	3,170	159
Oct.			25	29.3	†19	2.7	* 12.2	* 750	1,370	3,280	504
Nov.			27	24.7	24	1.1	* 10.6	* 629	1,526	3,570	430
Dec.			11	22.4	21	2.0	12.4	762	1,527	3,080	438
Yearly				46.8		0	* 12.6	* 9,169	17,252	38,310	* 4,800

u Estimated * Partly estimated † And other days Ø Mean daily

YUMA MAIN DRAIN (VALLEY DIVISION, YUMA PROJECT)

DESCRIPTION: Water-stage recorders located in the forebay and afterbay of the Border Pumping Plant on the Main Drain about 200 feet north of the international boundary near San Luis, Arizona, 1.3 miles east of the Colorado River. This is one of six measurement points for deliveries of Colorado River water to Mexico pursuant to provisions of the 1944 Water Treaty.

RECORDS: Main Drain discharges are lifted 10 to 12 feet at the pumping plant and are computed from pump ratings and the differential head measured by the two gages. Pump ratings are checked by monthly current meter measurements. During the year 12 measurements were made by the United States Section. Records are computed by the Yuma County Water Users' Association, reviewed and furnished to the Commission by the U. S. Geological Survey. Records available: monthly discharges June 1919 to December 1960.

REMARKS: Flows in the Main Drain are principally drainage waters from the Valley Division of the Yuma Project. Both the Main Drain and the East Main Canal Wasteway 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. Beginning in January 1956 the flows from this drain discharging into Mexico have been included in deliveries to Mexico in the same manner as waste flows arriving in the bed of the limitrophe section of Colorado River under terms of an agreement between the two Sections of the Commission.

EXTREMES: Discharges for the current year and extremes since 1935 are shown in the table below.

Mean Daily Discharge in Second-Feet 1960 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	175	176	200	195	192	194	176	204	177	212	184	192
2	192	151	191	199	205	187	192	199	175	206	186	201
3	191	188	199	197	190	197	182	198	180	186	182	195
4	190	192	198	194	192	194	181	190	174	196	190	198
5	162	197	192	191	192	201	179	194	163	189	199	176
6	167	193	194	185	197	187	167	192	166	194	197	183
7	162	205	200	187	193	184	160	193	157	190	194	181
8	156	191	198	183	203	192	163	187	177	198	201	178
9	159	190	198	193	195	189	163	184	172	211	187	187
10	163	192	193	193	180	197	162	200	166	204	188	194
11	161	195	196	200	183	187	167	186	172	203	185	182
12	162	192	192	191	193	196	167	196	181	192	187	177
13	165	193	200	188	201	175	168	195	213	190	198	184
14	170	192	192	201	198	186	170	196	185	192	194	199
15	159	199	193	202	191	185	163	200	201	192	190	183
16	166	190	193	206	203	190	163	177	189	202	186	189
17	163	186	194	208	191	188	172	174	195	211	179	185
18	171	200	190	205	211	178	183	185	188	185	170	199
19	182	191	191	188	206	191	167	194	195	187	204	181
20	167	190	200	182	196	194	166	186	205	191	207	166
21	176	189	213	188	213	182	167	194	218	204	190	172
22	170	168	184	191	191	177	163	188	206	196	177	171
23	174	166	192	189	201	184	156	186	218	193	181	183
24	174	191	182	197	192	193	165	184	213	193	182	191
25	179	171	190	197	195	198	164	177	220	186	195	184
26	175	163	197	196	208	176	154	177	229	192	194	152
27	148	200	191	194	207	180	216	168	207	203	188	169
28	166	205	199	202	214	188	218	176	214	202	173	173
29	175	209	195	200	206	165	195	177	207	208	184	168
30	185		196	198	201	173	188	181	210	196	187	194
31	178		197		188		210	173		182		177
Sum	5,283	5,465	6,040	5,840	6,128	5,608	5,407	5,811	5,773	6,086	5,659	5,664

Month	Extreme Gage Feet		Ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low						
	High	Low	Day		Day				Average	Maximum	Minimum
	Current Year 1960								Period 1935-1960		
Jan.			2	192	27	148	170	10,479	6,924	11,140	1,740
Feb.			29	209	2	151	188	10,840	6,830	10,940	1,640
Mar.			21	213	24	182	195	11,980	7,815	12,170	1,940
Apr.			17	208	20	182	195	11,583	7,587	11,890	1,920
May			28	214	10	180	198	12,155	7,594	13,140	1,950
June			5	201	29	165	187	11,123	6,945	12,040	2,290
July			28	218	26	154	174	10,725	6,631	11,830	2,530
Aug.			1	204	27	168	187	11,526	6,547	11,960	2,560
Sept.			26	229	7	157	192	11,451	6,734	11,560	2,280
Oct.			1	212	31	182	196	12,071	7,742	12,071	2,940
Nov.			20	207	18	170	189	11,224	7,747	12,010	2,800
Dec.			2	201	26	152	183	11,234	7,551	11,480	2,450
Yearly				229		148	188	136,391	86,647	139,380	27,040

Ø Mean daily

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 upstream from the southerly international boundary and 2 miles west of San Luis, Arizona and 19.4 miles downstream from Morelos Dam. Zero of the gage is at mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 51 meter measurements made by boat during the year, 37 by the United States Section and 14 by the Mexican Section, and a continuous record of gage heights. Computations by shifting channel methods. Records available: daily discharges, January 1950 to December 1960; continuous record of gage heights, January 1947 to December 1960. Monthly flows for this station have been derived for the period January 1935-December 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. During periods when a diversion dike across the river channel 2.8 miles below the southerly international boundary caused backwater at the station, discharges are based on the summation of flows in the Colorado River at R.S. 18-S, 4.7 miles upstream from the southerly international boundary, and the Twenty-one Mile wasteway, 1.6 miles upstream from the southerly international boundary.

REMARKS: Reservoirs, diversions in the United States and Mexico, drainage returns and waste flows modify the river at this station. The river flow past this station is depleted by numerous pumps and gravity diversions in Mexico before it reaches the Gulf of California.

EXTREMES: Maximum gage height: 84.84 feet November 29, 1957; minimum gage height: 74.46 feet April 4, 1959. Reference table below for other extremes since 1935.

Mean Daily Discharge in Second-Feet 1960 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	3,600	1,420	1,150	153	2,010	68.6	24.0	29.4	25.1	42.5	620	5,240
2	3,300	1,400	1,180	100	1,880	61.1	21.5	17.4	140	47.4	480	5,070
3	3,200	1,740	948	100	1,170	57.1	30.6	8.0	344	107	565	4,980
4	4,360	1,560	285	190	963	47.4	84.3	9.9	1,340	40.0	480	4,900
5	3,650	1,210	350	76.9	289	51.2	12.6	17.6	1,210	32.1	475	5,360
6	3,020	1,210	209	59.4	101	74.5	8.2	11.6	586	36.5	506	4,900
7	3,400	1,320	209	64.4	103	66.4	9.6	8.6	910	51.2	798	4,120
8	4,490	1,230	91.4	58.9	238	27.9	31.3	29.5	1,170	51.6	1,180	4,410
9	4,810	1,020	76.5	49.5	231	19.9	17.2	38.6	641	73.2	1,620	2,340
10	3,900	1,160	78.9	63.0	91.5	25.3	37.0	31.0	439	68.2	1,700	903
11	4,040	1,190	101	83.5	67.7	35.6	54.1	18.1	129	56.9	917	390
12	4,330	868	86.7	73.7	65.5	85.3	21.9	19.5	85.9	61.3	766	636
13	4,330	745	86.9	71.3	56.9	90.0	18.6	26.9	59.4	46.5	722	1,970
14	4,670	612	113	53.8	89.6	56.5	19.3	34.3	55.3	47.6	680	1,030
15	4,810	528	68.6	73.1	78.1	48.6	26.7	30.9	56.8	57.8	545	459
16	5,280	251	55.0	67.9	105	30.3	18.6	35.4	43.9	36.0	488	410
17	4,920	164	74.3	79.8	53.4	37.5	30.8	23.5	52.8	95.4	945	327
18	4,640	141	64.5	106	53.8	54.2	45.6	29.8	41.0	568	840	312
19	5,360	147	93.7	53.6	68.0	40.0	37.3	40.3	46.5	384	525	216
20	5,140	139	86.8	64.9	78.6	65.7	19.4	28.1	48.1	576	535	160
21	5,100	123	94.8	62.6	104	16.2	19.2	38.1	44.3	500	498	156
22	4,700	119	81.2	88.5	143	25.9	17.8	61.9	31.8	641	351	140
23	4,230	102	83.6	109	169	49.5	24.6	48.6	55.3	835	264	132
24	4,230	121	54.2	89.2	62.3	25.9	43.8	30.9	75.7	673	273	130
25	3,430	173	67.2	575	35.5	30.5	46.0	38.9	53.2	666	354	178
26	2,660	155	123	922	41.0	33.3	23.7	35.3	60.3	755	493	156
27	3,480	112	310	1,440	26.9	45.9	28.0	28.7	31.5	562	3,640	214
28	1,920	113	550	1,630	36.9	25.4	11.8	28.0	57.6	65[illegible]	6,110	204
29	1,790	500	396	916	74.6	18.1	19.0	80.1	41.2	908	5,120	144
30	1,650		760	1,550	117	14.3	16.3	20.6	49.5	812	5,270	134
31	1,450		664		76.7		8.1	13.4		446		134
Sum	119,890	19,573	8,592.3	9,024.0	8,680.0	1,328.1	826.9	912.9	7,924.2	9,931.2	37,760	49,855

Current Year 1960 — **Period** 1935-1960

Month	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low						
	High	Low	Day		Day				Average	Maximum	Minimum
Jan.	81.53	77.20	19	10,100	31	1,300	3,870	237,798	579,604	1,672,000	32,160
Feb.	77.69	74.84	3	1,990	27	95.0	675	38,822	482,962	1,385,000	26,130
Mar.	77.95	74.90	31	1,970	24	42.8	277	17,043	390,901	1,127,000	4,350
Apr.	78.59	75.53	27	1,920	9	44.4	301	17,899	249,718	700,900	977
May	78.50	75.13	2	2,280	27	15.0	280	17,217	341,887	1,160,000	2,490
June	76.29	74.65	13	90.0	28	9.0	44.3	2,634	264,401	1,180,000	2,490
July	75.59	74.64	4	160	30	5.5	26.7	1,640	193,422	772,800	1,640
Aug.	76.00	74.94	29	105	4	6.3	29.4	1,811	215,462	796,000	1,811
Sept.	78.89	74.96	5	1,580	1	12.6	264	15,717	259,353	1,033,000	1,660
Oct.	78.02	74.94	29	988	1	22.0	320	19,698	326,758	1,192,000	9,120
Nov.	80.47	75.76	28	6,520	23	246	1,260	74,896	430,969	1,428,000	36,500
Dec.	80.90	74.96	5	5,820	24	124	1,610	98,886	548,230	1,839,000	30,320
Yearly	81.53	74.64		10,100		5.5	749	544,061	4,283,667	10,688,800	257,230

COLORADO RIVER AT SOUTHERLY INTERNATIONAL BOUNDARY - STAGES

(See Preceding Page For Description)

Mean Daily Gage Height in Feet 1960

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	79.71	77.19	77.06	75.80	78.17	75.45	74.68	75.29	75.19	75.04	76.58	80.41
2	79.53	77.10	77.07	75.67	78.21	75.39	74.92	75.32	76.66	75.08	76.33	80.50
3	79.48	77.44	76.75	75.60	77.50	75.33	75.10	75.24	76.97	75.42	76.55	80.52
4	80.11	77.28	75.71	76.43	77.28	75.28	75.35	75.10	77.87	75.11	76.40	80.54
5	79.82	76.92	75.82	76.56	76.46	75.25	75.15	75.08	78.16	74.97	76.39	80.75
6	79.41	76.95	75.48	76.04	75.70	75.34	74.94	75.05	76.47	74.99	76.47	80.64
7	79.70	77.10	75.47	76.28	75.58	75.35	75.01	75.06	76.96	75.13	76.99	80.07
8	80.24	77.06	75.22	75.92	75.98	75.11	75.20	75.15	77.33	75.26	77.49	79.94
9	80.31	76.80	75.11	76.09	75.94	74.93	75.14	75.11	76.73	75.34	77.94	78.48
10	79.94	77.00	75.06	76.17	75.62	75.33	75.07	75.25	76.28	75.32	78.02	76.98
11	79.96	77.07	75.09	76.20	75.40	75.46	75.18	75.32	75.66	75.27	77.16	75.94
12	80.05	76.71	75.06	76.25	75.37	75.32	75.03	75.74	75.38	75.26	76.95	76.42
13	80.25	76.53	75.07	75.99	75.26	75.47	74.97	75.94	75.32	75.18	76.88	77.89
14	80.44	76.32	75.05	76.46	75.34	75.40	75.04	75.65	75.22	75.18	76.82	76.87
15	80.54	76.18	75.05	77.05	75.29	75.74	75.08	75.85	75.19	75.35	76.57	75.85
16	80.61	75.63	74.92	77.19	75.42	75.35	75.17	75.51	75.16	76.87	76.46	75.65
17	80.45	75.37	75.00	76.99	75.54	75.08	75.15	75.39	75.14	76.45	77.24	75.50
18	80.30	75.28	75.06	77.28	75.21	75.11	75.26	75.18	75.13	76.34	77.09	75.54
19	80.54	75.32	75.26	77.17	75.22	75.09	75.35	75.16	75.10	76.14	76.56	75.27
20	80.24	75.30	75.65	76.88	75.19	75.21	75.35	75.09	75.11	76.35	76.58	75.08
21	80.24	75.23	76.16	75.80	75.47	75.05	75.17	75.07	75.11	76.27	76.51	75.11
22	80.14	75.23	76.05	75.70	76.03	75.09	75.15	75.15	75.05	76.46	76.12	75.08
23	79.87	75.09	75.43	76.52	76.00	75.18	75.40	75.11	75.07	76.93	75.83	75.09
24	79.77	75.08	75.53	77.00	75.55	74.92	75.51	75.09	75.29	76.64	75.84	75.05
25	79.28	75.31	75.58	77.64	75.39	74.98	75.43	75.08	75.12	76.54	76.09	75.25
26	78.72	75.24	75.67	77.67	75.29	74.93	75.17	75.12	75.12	76.73	76.46	75.10
27	79.33	75.01	76.13	77.37	75.27	75.11	75.18	74.95	75.05	76.39	79.44	75.35
28	77.98	75.03	76.86	77.79	75.25	75.05	75.12	75.13	75.05	76.49	*80.37	75.40
29	77.76	76.00	76.00	77.21	75.51	74.75	75.15	75.51	75.05	76.87	80.07	75.60
30	77.60		76.63	77.65	75.58	74.77	75.19	75.16	75.04	76.79	80.12	76.17
31	77.36		77.04		75.65		75.07	75.03		76.30		76.97
Avg.	79.67	76.13	75.71	76.61	75.83	75.19	75.15	75.25	75.73	75.89	*77.14	77.06

* Partly estimated

DIVERSIONS FROM COLORADO RIVER IN MEXICO TO SANCHEZ MEJORADA - SAN LUIS CANALS NEAR SAN LUIS, SONORA

DESCRIPTION: Pumping plant operated by the Ministry of Hydraulic Resources, located on the left bank of the Colorado River immediately downstream from the Mexicali-San Luis highway bridge and about 1,300 feet downstream from the international boundary. Pumping equipment consists of 3 pumps in the Sanchez Mejorada system (2 of 30 inches and 1 of 40 inches) and 2 pumps of 30 inches in the Ejido San Luis system.

RECORDS: Data collected by the Ministry of Hydraulic Resources and furnished by the Mexican Section of the Commission are based upon pump capacities and operation time. Records available: August 1958 to December 1960.

REMARKS: Flow in the Colorado River available for diversion at this point consists of water that is permitted to pass Morelos Dam and of return flows from the Yuma Project in the United States at Cooper, Eleven Mile and Twenty-one Mile Wasteways, less depletions by pumps on both banks of the limitrophe section of river.

Mean Daily Discharge in Second-Feet 1960 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	0	38.8	0	28.3	28.3	28.3	28.3	0	0	0
2	0	0	0	56.5	0	28.3	28.3	28.3	28.3	0	0	0
3	0	0	0	42.4	0	14.1	28.3	28.3	28.3	0	0	0
4	0	0	0	56.5	14.1	28.3	28.3	28.3	28.3	0	0	0
5	0	0	0	53.0	14.1	28.3	28.3	28.3	28.3	0	0	0
6	0	0	14.1	42.4	28.3	7.1	28.3	28.3	28.3	0	0	0
7	0	0	28.3	28.3	28.3	14.1	28.3	28.3	28.3	0	0	0
8	0	0	28.3	28.3	28.3	28.3	28.3	28.3	28.3	0	0	0
9	0	0	28.3	28.3	10.6	10.6	28.3	28.3	28.3	0	0	0
10	0	0	28.3	28.3	0	28.3	28.3	28.3	28.3	0	0	0
11	0	0	28.3	28.3	0	28.3	28.3	28.3	28.3	0	0	0
12	0	0	28.3	28.3	0	28.3	28.3	28.3	28.3	0	0	0
13	0	0	28.3	28.3	7.1	28.3	28.3	28.3	28.3	0	0	0
14	0	0	28.3	0	0	28.3	28.3	60.0	28.3	0	0	0
15	0	0	0	0	0	28.3	28.3	60.0	17.7	0	0	0
16	0	0	0	10.6	7.1	28.3	28.3	60.0	28.3	0	0	0
17	0	0	0	10.6	28.3	28.3	28.3	56.5	28.3	0	0	0
18	0	0	0	0	28.3	28.3	28.3	0	28.3	0	0	0
19	0	0	0	0	28.3	28.3	28.3	0	28.3	0	0	0
20	0	0	28.3	0	28.3	28.3	28.3	28.3	28.3	0	0	0
21	0	0	28.3	0	21.2	28.3	28.3	28.3	28.3	0	0	0
22	0	14.1	28.3	0	28.3	28.3	28.3	28.3	28.3	0	0	0
23	0	0	28.3	0	28.3	28.3	28.3	28.3	28.3	0	0	0
24	0	0	28.3	0	28.3	28.3	24.7	28.3	28.3	0	0	0
25	0	14.1	28.3	0	7.1	28.3	24.7	28.3	28.3	0	0	0
26	0	28.3	28.3	0	14.1	28.3	53.0	28.3	28.3	0	0	0
27	0	28.3	28.3	0	28.3	14.2	28.3	28.3	28.3	0	0	0
28	0	28.3	28.3	0	21.2	28.3	28.3	28.3	28.3	0	0	0
29	0	28.3	28.3	0	28.3	28.3	28.3	28.3	28.3	0	0	0
30	0		28.3	0	28.3	24.7	28.3	28.3	28.3	0	0	0
31	0		28.3		28.3		28.3	28.3		0	0	0
Sum	0	141.4	580.1	508.9	512.8	764.0	894.8	944.0	838.4	0	0	0

Current Year 1960 — Period 1958-1960

Month	Extreme Gage Feet		Ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low				Average	Maximum	Minimum
	High	Low	Day		Day						
Jan.			† 1	0	† 1	0	0	0	0	0	0
Feb.			†26	28.3	† 1	0	4.9	281	263	281	245
Mar.			† 7	28.3	† 1	0	18.7	1,149	820	1,149	490
Apr.			† 2	56.5	†14	0	17.0	1,009	1,012	1,016	1,009
May			† 6	28.3	† 1	0	16.6	1,016	803	1,016	589
June			† 1	28.3	6	7.1	25.4	1,513	1,198	1,513	883
July			26	53.0	†24	24.7	29.0	1,772	886	1,772	0
Aug.			†14	60.0	†18	0	30.4	1,870	3,703	6,612	1,870
Sept.			† 1	28.3	15	17.7	27.9	1,660	1,290	1,660	884
Oct.			† 1	0	† 1	0	0	0	105	315	0
Nov.			† 1	0	† 1	0	0	0	0	0	0
Dec.			† 1	0	† 1	0	0	0	0	0	0
Yearly				60.0		0	14.1	10,269	10,872	11,474	10,269

† And other days Ø Mean daily

WASTEWAY TO COLORADO RIVER AT KILOMETER 27 IN MEXICO

DESCRIPTION: Water-stage recorder with cableway and car over the outlet canal from Canal de Conexion on the right bank of the Colorado River located approximately 0.6 mile downstream from the wasteway structure at Kilometer 27 on Canal de Conexion which is 16.8 miles downstream from Morelos Dam and 0.2 mile south of the crossing of the Mexicali-San Luis and Algodones-Pescaderos road. The recorder housing is on the left bank of the outlet canal immediately upstream from where it discharges into the Colorado River.

RECORDS: Data furnished by the Mexican Section of the Commission. Records for 1960 are good.

REMARKS: The Colorado River Irrigation District in Mexico carries water for irrigation of lands on the left bank of the river in the Canal de Conexión on the right bank from Morelos Dam to Kilometer 27 where it is discharged into the river to be pumped into the left bank canals by the Bacanora and Monumentos pumps.

Mean Daily Discharge in Second-Feet 1960 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	35.3	0	399	706	318	335	530	862	766	424	346	0
2	53.0	0	357	798	328	300	664	865	982	477	106	0
3	45.9	42.4	275	724	335	293	770	830	583	434	247	0
4	45.9	88.3	166	964	427	300	742	724	237	374	406	0
5	45.9	159	109	901	410	265	766	696	388	385	300	0
6	0	159	91.8	886	406	321	706	643	318	364	177	63.6
7	0	102	117	971	406	346	742	643	254	194	45.9	53.0
8	0	53.0	127	865	406	353	840	692	0	335	63.6	77.7
9	0	60.0	106	953	406	434	749	643	91.8	159	63.6	77.7
10	0	0	127	922	396	516	696	784	180	184	63.6	60.0
11	0	0	38.8	943	353	516	682	865	477	219	70.6	70.6
12	24.7	0	212	922	258	445	622	996	618	0	0	159
13	45.9	0	198	922	124	431	643	1,010	512	0	177	28.3
14	45.9	0	187	1,060	106	406	696	996	512	0	56.5	53.0
15	0	84.8	74.2	1,040	131	477	713	1,060	441	233	0	0
16	0	272	141	971	198	530	713	886	392	381	0	0
17	0	385	219	932	187	519	706	819	371	477	0	0
18	0	81.2	290	971	159	547	784	682	293	611	63.6	0
19	0	131	441	968	134	572	869	636	318	0	60.0	0
20	0	240	530	855	117	657	929	618	399	0	60.0	0
21	0	159	590	770	148	696	752	607	392	0	0	0
22	0	254	516	766	194	777	777	604	413	134	0	0
23	0	145	523	788	212	636	925	572	448	297	0	0
24	0	392	590	798	180	505	961	565	431	378	0	0
25	0	307	600	611	290	547	904	593	0	0	0	0
26	31.8	81.2	565	388	300	565	742	614	0	0	0	0
27	7.1	212	533	484	272	636	710	593	0	0	0	0
28	10.6	459	473	286	208	593	692	692	0	0	0	0
29	42.4	494	501	106	219	494	749	830	0	0	0	0
30	42.4		530	272	251	565	766	671	0	318	0	0
31	0		364		335		724	664		388		0
Sum	476.8	4,360.9	9,990.8	23,543	8,214	14,577	23,264	22,955	9,816.8	6,766	2,306.4	642.9

Month	Current Year 1960								Period 1956-1960		
	Extreme Gage Feet		Ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low				Average	Maximum	Minimum
	High	Low	Day		Day						
Jan.			2	53.0	† 6	0	15.5	945	20,367	69,527	0
Feb.			29	494	† 1	0	151	8,679	2,739	8,679	0
Mar.			25	600	11	38.8	322	19,815	12,629	19,815	770
Apr.			14	1,060	29	106	784	46,699	35,766	68,714	15,049
May			4	427	14	106	265	16,293	17,376	22,072	12,580
June			22	777	5	265	487	28,915	23,196	28,915	11,358
July			24	961	1	530	749	46,139	43,683	46,139	41,105
Aug.			15	1,060	24	565	742	45,529	46,865	55,497	24,466
Sept.			2	982	† 8	0	327	19,472	31,513	37,194	19,472
Oct.			18	611	†12	0	218	13,420	6,841	13,532	0
Nov.			4	406	†12	0	77.0	4,574	17,570	69,415	0
Dec.			12	159	† 1	0	20.8	1,274	14,686	70,213	0
Yearly				1,060		0	347	251,756	280,269	346,339	194,011

† And other days Ø Mean daily

DIVERSIONS FROM COLORADO RIVER TO BACANORA AND MONUMENTOS CANALS IN MEXICO

DESCRIPTION: Pumping plant operated by the Ministry of Hydraulic Resources and the Association of Users of the Bacanora and Monumentos Canals, located on the left bank of the Colorado River in Ejido Monumentos in San Luis, Sonora, about 5.0 river miles downstream from the southerly international boundary and immediately downstream from Kilometer 27 Wasteway. Pumping equipment consists of 22 pumps with ownership divided between the Ministry of Hydraulic Resources and the Association of Users as follows: in the Bacanora system, Association of Users, 8 pumps (1 of 30 inches, 5 of 36 inches, and 2 of 42 inches); the Ministry, 11 pumps (5 of 30 inches and 6 of 36 inches), and in Monumentos system the Association of Users have 3 pumps of 36 inches.

RECORDS: Data collected by the Ministry of Hydraulic Resources and furnished by the Mexican Section of the Commission are based upon pump capacities and operation time. Records available: August 1958 to December 1960.

REMARKS: A part of the natural flow in the river at the pumping plant and releases from Canal de Conexión to the river at Kilometer 27 are pumped to the left bank canal system for irrigation and domestic use.

Mean Daily Discharge in Second-Feet 1960 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	0	526	208	230	350	562	509	88.3	0	0
2	0	0	0	593	145	215	431	590	516	357	0	0
3	0	0	0	607	162	244	554	576	540	364	0	0
4	0	0	98.9	639	162	198	569	523	551	307	0	0
5	0	0	88.3	650	177	191	544	466	512	258	0	0
6	0	0	219	650	166	237	519	438	424	240	0	0
7	0	0	191	650	230	272	487	463	424	138	0	0
8	0	0	152	657	180	219	540	477	381	173	0	0
9	0	0	91.8	653	191	290	533	480	134	237	0	0
10	0	0	148	671	212	304	484	526	367	24.7	0	0
11	0	0	88.3	678	212	364	491	607	396	170	0	0
12	0	0	141	660	208	339	463	622	396	0	0	0
13	0	0	148	671	152	328	431	629	307	38.8	0	0
14	0	0	173	657	141	304	498	629	378	0	0	0
15	0	0	162	643	148	297	498	650	335	0	0	0
16	0	0	145	643	95.3	364	512	636	300	0	0	0
17	0	0	109	643	95.3	371	512	572	321	0	0	0
18	0	0	170	643	124	378	554	473	222	0	0	0
19	0	0	191	611	145	413	597	477	212	0	0	0
20	0	0	275	576	131	459	579	466	293	0	0	0
21	0	0	413	547	120	498	519	427	290	0	0	0
22	0	0	374	554	152	562	484	431	283	0	0	0
23	0	0	403	491	215	519	593	403	290	0	0	0
24	0	0	388	501	152	353	685	399	325	0	0	0
25	0	0	403	565	187	399	660	403	95.3	0	0	0
26	0	0	403	491	198	385	487	396	17.7	0	0	0
27	0	0	403	371	191	431	498	371	7.1	0	0	0
28	0	0	403	286	155	424	456	410	14.1	0	0	0
29	0	0	237	222	162	328	487	593	14.1	0	0	0
30	0		45.9	212	205	374	501	490	0	0	0	0
31	0		42.4		205		484	459		0	0	0
Sum	0	0	6,106.6	16,961	5,226.6	10,290	16,000	15,644	8,854.3	2,395.8	0	0

Current Year 1960									Period 1958-1960		
Month	Extreme Gage Feet		∅ Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	High Day	High	Low Day	Low			Average	Maximum	Minimum
Jan.			† 1	0	† 1	0	0	0	109	217	0
Feb.			† 1	0	† 1	0	0	0	105	210	0
Mar.			21	413	† 1	0	197	12,111	14,492	16,874	12,111
Apr.			11	678	30	212	565	33,643	35,825	38,007	33,643
May			7	230	† 16	95.3	168	10,367	17,326	24,285	10,367
June			22	562	5	191	344	20,467	23,665	26,862	20,467
July			24	685	1	350	516	31,738	34,017	36,297	31,738
Aug.			15	650	27	371	505	31,023	38,905	48,947	31,023
Sept.			4	551	30	0	295	17,560	42,606	78,396	17,560
Oct.			3	364	† 12	0	78.4	4,749	2,540	4,749	510
Nov.			† 1	0	† 1	0	0	0	0	0	0
Dec.			† 1	0	† 1	0	0	0	42	126	0
Yearly				685		0	223	161,658	187,690	213,722	161,658

† And other days ∅ Mean daily

WASTEWAY TO COLORADO RIVER AT COLONIA ELIAS IN MEXICO

DESCRIPTION: Wasteway structure located at Kilometer 7+570 of the Barrote Canal on the right bank of the Colorado River in Colonia Elias about 20.5 miles downstream from the southerly international boundary; about 10 miles upstream from the Sonora-Baja California railroad bridge and 4.3 miles upstream from the Miguel C. Rodriguez gaging station. The wasteway gates are located about 2,500 feet from the right bank of the Colorado River.

RECORDS: Data collected by the Ministry of Hydraulic Resources and furnished by the Mexican Section of the Commission are based upon gate openings.

REMARKS: The wasteway structure has 3 manually operated rectangular gates which discharge directly from the Barrote Canal into a wasteway leading to the Colorado River.

Mean Daily Discharge in Second-Feet 1960 — 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	21.2	0	0	0
2	0	0	0	0	0	0	0	0	212	0	0	0
3	0	0	0	0	0	0	0	0	212	0	0	0
4	0	0	0	0	0	0	0	0	212	0	0	0
5	0	0	0	0	0	0	0	0	106	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
30	0		0	0	0	0	0	0	0	0	0	0
31	0		0		0		0	0		0		0
Sum	0	0	0	0	0	0	0	0	763.2	0	0	0

Month	Current Year 1960								Period 1958-1960		
	Extreme Gage Feet		Ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	High Day	High	Low Day	Low			Average	Maximum	Minimum
Jan.				0		0	0	0	897	3,201	0
Feb.				0		0	0	0	118	471	0
Mar.				0		0	0	0	1,866	6,850	0
Apr.				0		0	0	0	1,501	3,707	0
May				0		0	0	0	365	1,163	0
June				0		0	0	0	190	625	0
July				0		0	0	0	1,074	4,296	0
Aug.				0		0	0	0	1,031	1,926	0
Sept.			† 2	212	† 6	0	25.4	1,513	1,219	1,548	523
Oct.				0		0	0	0	256	791	0
Nov.				0		0	0	0	0	0	0
Dec.				0		0	0	0	191	766	0
Yearly				212		0	2.1	1,513	8,708	13,429	1,513

† And other days Ø Mean daily

COLORADO RIVER AT MIGUEL C. RODRIGUEZ IN MEXICO - DISCHARGES

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

RECORDS: Based upon 95 current meter measurements, 42 double and 11 single, made by the Mexican Section of the Commission and a continuous record of gage heights. From June 1951 to July 1954, discharges were computed from gage height records based upon 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 to December 1960.

EXTREMES: Since January 1, 1952: maximum mean daily gage height, 53.38 feet, January 4, 1958, with discharge of 18,500 second-feet; minimum mean daily gage height, 38.09 feet, July 12, 1958, with zero flow; maximum mean daily discharge 20,200 second-feet, December 19, 1952; minimum mean daily discharge, no flow on various days of June 1956, March and April 1957, July 1958 and March 1959.

Mean Daily Discharge in Second-Feet 1960 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	3,480	1,600	1,060	579	1,230	30.7	18.0	17.3	33.2	21.5	840	4,800
2	3,340	1,590	1,510	80.9	1,900	30.4	18.4	15.5	48.4	22.2	816	5,090
3	3,080	1,650	1,480	43.8	1,930	30.7	19.1	14.1	76.3	22.6	629	5,050
4	3,570	2,310	911	40.6	1,150	30.4	19.8	13.8	105	23.0	749	4,940
5	4,060	2,010	242	40.3	1,110	30.7	20.5	13.8	131	23.7	788	5,330
6	3,030	1,630	138	39.9	540	30.0	21.5	13.8	720	22.6	675	5,760
7	3,010	1,610	89.0	36.7	300	29.7	22.2	13.8	305	23.0	660	4,870
8	3,920	1,560	71.3	33.5	225	32.1	22.6	13.4	310	23.3	869	4,380
9	4,560	1,290	76.3	30.4	378	30.7	22.6	13.4	540	22.2	1,260	3,310
10	4,030	1,080	62.2	27.2	396	29.3	22.6	13.4	164	22.2	1,960	1,490
11	3,640	1,240	62.9	24.0	285	27.9	23.0	13.8	121	22.6	2,080	830
12	4,100	1,140	63.2	20.5	99.6	26.5	23.0	14.8	92.9	22.6	975	632
13	4,200	925	57.9	17.3	81.9	25.1	23.3	15.2	86.2	20.1	879	1,440
14	4,630	770	69.9	18.7	66.0	23.7	21.9	15.5	84.4	23.7	932	1,760
15	4,840	657	89.0	28.6	65.3	21.2	20.5	15.9	77.7	27.2	795	1,060
16	5,010	646	50.5	21.2	64.3	20.5	18.7	16.6	68.5	28.6	636	530
17	4,870	646	33.2	22.2	57.9	19.8	17.3	17.0	60.4	33.9	682	406
18	4,800	487	32.8	23.3	52.3	20.1	15.9	18.0	52.6	275	1,280	310
19	4,660	239	32.5	24.7	50.9	19.8	14.5	18.7	44.5	544	1,150	295
20	5,830	364	32.1	43.4	50.1	19.1	13.1	19.8	36.7	284	865	180
21	4,340	466	33.9	76.6	49.8	18.4	14.5	20.8	28.6	360	925	176
22	4,560	367	33.5	84.8	48.0	17.7	16.2	21.9	27.9	381	752	169
23	4,130	682	33.2	92.5	51.6	17.7	18.0	22.6	27.2	682	413	171
24	4,130	268	37.4	101	45.9	17.3	19.8	23.7	26.5	1,090	228	173
25	3,640	597	67.1	109	40.6	17.7	21.9	23.0	25.4	939	204	166
26	2,510	611	58.6	117	39.2	17.3	23.7	22.2	24.7	622	246	177
27	3,570	249	56.2	569	38.8	17.0	25.4	21.2	24.0	636	1,080	179
28	2,150	313	61.8	985	37.8	16.6	23.7	20.5	23.3	491	4,520	282
29	1,790	682	56.2	1,140	37.1	16.6	22.2	19.8	23.3	558	5,300	381
30	1,740		830	791	35.3	17.3	20.5	19.1	23.3	791	4,480	319
31	1,660		872		30.7		18.7	18.0		950		224
Sum	116,880	27,679	8,303.7	5,262.1	10,487.1	702.0	623.1	540.4	3,412.0	9,008.0	37,668	54,880

Month	Current Year 1960 — Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Period 1951-1960 — Acre-Feet		
			High		Low				Average	Maximum	Minimum
	High	Low	Day		Day						
Jan.	47.01	43.70	20	7,450	31	1,580	3,780	231,801	514,202	1,047,732	50,265
Feb.	44.32	41.24	4	2,460	19	217	953	54,880	318,391	696,461	31,303
Mar.	43.93	40.22	2	1,570	20	32.1	268	16,465	233,267	807,342	8,902
Apr.	43.37	40.35	29	1,240	13	17.3	176	10,440	154,874	588,983	5,036
May	44.46	40.45	3	2,330	31	30.4	338	20,790	210,293	732,815	2,332
June	40.62	40.49	8	32.1	† 28	16.6	23.3	1,392	88,471	555,460	266
July	40.65	40.58	27	25.4	20	13.1	20.1	1,236	47,370	264,561	0
Aug.	40.68	40.65	24	23.7	† 8	13.4	17.3	1,072	70,447	309,320	1,072
Sept.	42.68	40.45	6	1,260	† 28	23.3	114	6,765	107,683	572,551	6,765
Oct.	43.41	40.35	24	1,140	15	25.1	291	17,869	168,913	769,939	11,767
Nov.	47.18	41.21	29	5,620	25	185	1,260	74,711	277,780	909,399	59,819
Dec.	47.01	40.75	6	6,000	25	166	1,770	108,873	393,546	1,060,767	40,003
Yearly	47.18	40.22		7,450		13.1	752	546,294	2,569,365	7,923,600	368,144

† And other days

COLORADO RIVER AT MIGUEL C. RODRIGUEZ IN MEXICO - STAGES

(See Preceding Page For Description)

Mean Daily Gage Height in Feet 1960

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	44.98	43.70	43.11	42.22	43.37	40.49	40.58	40.65	40.68	40.52	43.01	46.52
2	44.88	43.67	43.86	40.75	44.09	40.49	40.58	40.65	40.68	40.52	42.98	46.69
3	44.72	43.70	43.83	40.42	44.13	40.50	40.58	40.65	40.78	40.52	42.55	46.62
4	44.95	44.23	42.98	40.39	43.34	40.50	40.58	40.65	40.85	40.52	42.85	46.52
5	45.14	44.03	41.54	40.39	43.11	40.52	40.58	40.65	40.88	40.52	42.95	46.72
6	44.65	43.73	41.14	40.39	41.99	40.52	40.60	40.65	41.96	40.49	42.68	46.92
7	44.65	43.73	40.85	40.39	41.50	40.52	40.62	40.65	41.24	40.49	42.68	46.46
8	45.11	43.70	40.72	40.39	41.27	40.58	40.62	40.65	41.27	40.49	43.11	46.06
9	45.44	43.37	40.75	40.39	41.57	40.58	40.62	40.65	41.67	40.45	43.77	45.24
10	45.18	43.08	40.62	40.39	41.57	40.58	40.62	40.65	40.98	40.45	44.42	43.86
11	45.01	43.31	40.62	40.39	41.31	40.58	40.62	40.65	40.72	40.45	44.42	42.72
12	45.24	43.14	40.62	40.39	u40.65	40.58	40.62	40.68	40.55	40.45	43.11	42.29
13	45.31	42.78	40.55	40.39	40.65	40.58	40.62	40.68	40.52	40.39	42.91	43.57
14	45.54	42.52	40.68	40.39	40.45	40.58	40.62	40.68	40.52	40.39	42.95	43.86
15	45.67	42.22	40.81	40.39	40.45	40.55	40.62	40.68	40.52	40.39	42.65	42.88
16	45.80	42.19	40.45	40.39	40.52	40.55	40.62	40.68	#	40.35	42.19	41.90
17	45.73	42.19	40.22	40.39	40.52	40.55	40.62	40.68	#	40.39	42.29	41.60
18	45.70	41.90	40.22	40.39	40.49	40.58	40.62	40.68	#	41.63	43.24	41.37
19	45.64	41.37	40.22	40.45	40.49	40.58	40.62	40.68	#	42.19	42.95	41.27
20	46.29	41.63	40.22	40.65	40.49	40.58	40.62	40.68	#	41.60	42.42	40.88
21	45.47	41.77	40.26	41.01	40.52	40.58	40.62	40.68	#	41.83	42.45	40.81
22	45.60	41.57	40.26	41.01	40.52	40.58	40.62	40.68	#	41.86	42.13	40.78
23	45.37	41.99	40.26	41.01	40.58	40.58	40.63	40.68	#	42.52	41.60	40.78
24	45.37	41.31	40.32	41.01	40.58	40.58	40.63	40.68	#	43.31	41.27	40.78
25	45.11	41.90	40.68	41.01	40.49	40.60	40.65	40.68	#	43.01	41.27	40.75
26	44.49	41.96	40.58	41.01	40.49	40.60	40.65	40.68	#	42.39	41.50	40.78
27	45.08	41.37	40.55	40.62	40.49	40.58	40.65	40.68	#	42.42	42.88	40.78
28	44.23	41.57	40.62	42.88	40.49	40.58	40.65	40.68	#	42.09	46.56	41.08
29	43.93	42.26	40.55	43.18	40.52	40.58	40.65	40.68	#	42.29	47.01	41.24
30	43.86		42.78	42.59	40.52	40.58	40.65	40.68	#	42.85	46.52	41.04
31	43.77		42.88		40.45		40.65	40.68		43.21		40.78
Avg.	45.09	42.62	41.09	40.86	* 41.21	40.56	40.62	40.67	**40.92	41.32	43.11	43.02

u Estimated # Recorder inoperative ** Based on days of record only * Partly estimated

DIVERSIONS FROM COLORADO RIVER TO ZACATECAS CANAL IN MEXICO

DESCRIPTION: Pumping plant operated by the Ministry of Hydraulic Resources, located on the left bank of the Colorado River in the Colonia Sanchez Corral about 1.2 miles upstream from the Sonora-Baja California railroad bridge and about 29 miles downstream from the southerly international boundary. Plant discharge is into Zacatecas Canal. Pumping equipment consists of 6 pumps, 4 of 36-inch diameter, 1 of 42 inches, and 1 of 48 inches.

RECORDS: Data collected by the Ministry of Hydraulic Resources and furnished by the Mexican Section of the Commission are based upon pump capacities and operation time. Records available: August 1958 to December 1960.

Mean Daily Discharge in Second-Feet 1960 —— Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	162	0	198	198	0	0	42.4	35.3	38.8	70.6	0	17.7
2	162	0	0	198	3.5	0	42.4	35.3	0	70.6	0	28.3
3	162	0	0	198	17.7	0	42.4	35.3	0	35.3	0	35.3
4	138	0	0	148	14.1	0	42.4	35.3	0	35.3	0	88.3
5	162	0	0	198	0	31.8	42.4	35.3	0	35.3	0	113
6	145	0	0	120	0	35.3	42.4	35.3	0	35.3	0	91.8
7	120	0	131	106	17.7	21.2	42.4	35.3	0	70.6	0	77.7
8	141	0	138	148	24.7	35.3	42.4	35.3	0	35.3	0	77.7
9	134	0	120	113	3.5	21.2	42.4	35.3	0	35.3	0	77.7
10	134	0	84.8	120	0	28.3	42.4	35.3	0	35.3	0	134
11	102	0	102	120	14.1	21.2	42.4	35.3	14.1	35.3	0	180
12	162	0	91.8	170	0	28.3	42.4	35.3	0	35.3	0	166
13	162	0	91.8	191	35.3	21.2	42.4	56.5	28.3	35.3	0	187
14	162	0	91.8	120	24.7	21.2	42.4	49.4	35.3	35.3	0	201
15	145	0	91.8	198	21.2	21.2	42.4	63.6	14.1	35.3	0	201
16	98.9	162	91.8	148	0	21.2	42.4	63.6	0	35.3	0	201
17	74.2	148	91.8	141	3.5	21.2	42.4	35.3	0	113	0	170
18	0	162	91.8	138	0	21.2	42.4	35.3	14.1	77.7	0	198
19	0	120	84.8	45.9	0	21.2	42.4	35.3	28.3	77.7	0	198
20	38.8	127	84.8	53.0	0	21.2	42.4	35.3	21.2	77.7	0	198
21	98.9	162	84.8	35.3	7.1	21.2	42.4	35.3	53.0	35.3	0	198
22	127	141	84.8	42.4	0	21.2	42.4	35.3	49.4	35.3	0	198
23	127	162	84.8	0	0	21.2	42.4	35.3	35.3	35.3	0	191
24	162	162	124	0	0	21.2	42.4	35.3	35.3	0	0	198
25	117	162	198	0	53.0	21.2	42.4	35.3	42.4	0	0	198
26	88.3	162	198	0	0	21.2	42.4	35.3	42.4	0	0	198
27	88.3	162	198	3.5	0	21.2	42.4	35.3	35.3	0	0	184
28	131	162	198	0	10.6	21.2	42.4	35.3	35.3	0	0	198
29	109	162	198	7.1	10.6	21.2	42.4	45.9	35.3	0	0	198
30	56.5		198	7.1	0	21.2	42.4	67.1	35.3	0	74.2	198
31	35.3		198		0		42.4	35.3		0		198
Sum	3,545.2	2,156	3,350.4	2,967.3	261.3	604.2	1,314.4	1,228.6	593.2	1,122.7	74.2	4,798.5

Month	Current Year 1960 Extreme Gage Feet High	Extreme Gage Feet Low	Ø Extreme Second-Feet High Day	High	Low Day	Low	Average Second-Feet	Total Acre-Feet	Period 1958-1960 Acre-Feet Average	Maximum	Minimum
Jan.			† 1	162	†18	0	114	7,039	6,174	7,039	5,309
Feb.			†16	162	† 1	0	74.5	4,287	4,420	4,553	4,287
Mar.			† 1	198	† 2	0	108	6,641	6,588	6,641	6,535
Apr.			† 1	198	†23	0	98.9	5,884	4,679	5,884	3,474
May			25	53.0	† 1	0	8.5	518	259	518	0
June			† 6	35.3	† 1	0	20.1	1,197	963	1,197	729
July			† 1	42.4	† 1	42.4	42.4	2,606	2,382	2,606	2,157
Aug.			30	67.1	† 1	35.3	39.6	2,438	4,799	6,144	2,438
Sept.			21	53.0	† 2	0	19.8	1,177	3,625	5,104	1,177
Oct.			17	113	†24	0	36.4	2,228	3,216	6,461	960
Nov.			30	74.2	† 1	0	2.5	147	400	1,054	0
Dec.			†14	201	1	17.7	155	9,512	6,306	9,512	3,094
Yearly				201		0	60.0	43,674	42,056	43,674	40,437

† And other days Ø Mean daily

WASTEWAY TO COLORADO RIVER AT UNION IN MEXICO

DESCRIPTION: Wasteway structure located at Kilometer 21+736 of the Barrote Canal in the Colonia Hidalgo about 1,500 feet from right bank of the Colorado River. The wasteway discharges into the Colorado River at a point about 0.6 mile upstream from the Sonora-Baja California railroad bridge and 30 miles downstream from the southerly international boundary.

RECORDS: Data collected by the Ministry of Hydraulic Resources and furnished by the Mexican Section of the Commission are based upon gate openings. Data available: January 1957 to December 1960.

REMARKS: The wasteway structure has 3 manually operated rectangular gates which discharge from the Barrote Canal into a wasteway leading to the Colorado River.

Mean Daily Discharge in Second-Feet 1960 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	17.7	7.1	31.8	49.4	24.7	53.0	0	0	7.1	0	0	0
2	17.7	7.1	31.8	49.4	24.7	0	0	0	70.6	0	0	35.3
3	17.7	7.1	31.8	49.4	24.7	0	0	0	106	0	0	53.0
4	17.7	7.1	31.8	49.4	24.7	0	0	0	124	0	0	70.6
5	17.7	7.1	31.8	49.4	24.7	0	0	0	106	0	0	70.6
6	17.7	7.1	31.8	49.4	24.7	0	0	0	88.3	0	0	70.6
7	17.7	7.1	31.8	49.4	24.7	0	0	0	88.3	0	0	53.0
8	17.7	7.1	31.8	49.4	24.7	0	0	0	88.3	0	0	45.9
9	17.7	7.1	31.8	49.4	24.7	0	0	0	88.3	0	0	35.3
10	17.7	7.1	31.8	49.4	24.7	0	0	0	88.3	17.7	0	0
11	17.7	7.1	31.8	49.4	24.7	0	0	0	53.0	131	0	35.3
12	17.7	7.1	31.8	49.4	24.7	0	0	0	0	88.3	0	0
13	17.7	7.1	31.8	49.4	24.7	0	0	0	0	184	0	0
14	17.7	7.1	31.8	49.4	24.7	0	0	0	0	184	0	0
15	17.7	7.1	31.8	49.4	24.7	0	0	0	0	208	0	0
16	17.7	7.1	31.8	49.4	24.7	0	0	0	0	268	0	0
17	17.7	7.1	31.8	49.4	24.7	0	0	0	0	283	0	0
18	17.7	7.1	31.8	49.4	24.7	0	0	0	0	258	0	0
19	17.7	7.1	31.8	49.4	24.7	0	0	0	0	283	0	0
20	17.7	10.6	31.8	49.4	24.7	0	0	0	0	258	0	0
21	17.7	10.6	31.8	49.4	24.7	0	0	0	0	290	0	0
22	17.7	10.6	31.8	49.4	24.7	0	0	0	0	230	0	0
23	17.7	10.6	31.8	49.4	24.7	0	0	0	0	180	0	0
24	17.7	10.6	28.3	49.4	24.7	0	0	0	0	17.7	0	0
25	17.7	10.6	28.3	53.0	24.7	0	0	0	0	45.9	0	0
26	17.7	10.6	28.3	53.0	24.7	0	0	0	0	53.0	0	0
27	17.7	10.6	28.3	53.0	24.7	0	0	0	0	88.3	0	0
28	17.7	10.6	28.3	53.0	24.7	0	0	0	0	106	0	0
29	17.7	10.6	28.3	53.0	24.7	0	0	0	0	109	0	0
30	17.7		28.3	88.3	28.3	0	0	0	0	124	0	0
31	17.7		7.1		28.3		0	0		124		0
Sum	548.7	240.9	936.6	1,538.9	772.9	53.0	0	0	908.2	3,530.9	0	469.6

Month	Current Year 1960							Period 1957-1960		
	Extreme Gage Feet		Ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	High Day	High	Low Day	Low			Average	Maximum	Minimum
Jan.			† 1	17.7	† 1	17.7	17.7	1,086	1,647	3,166	0
Feb.			† 20	10.6	† 1	7.1	8.1	477	1,144	2,788	0
Mar.			† 1	31.8	31	7.1	30.0	1,857	4,032	7,074	1,857
Apr.			30	88.3	† 1	49.4	51.2	3,054	2,936	4,462	939
May			† 30	28.3	† 1	24.7	25.1	1,534	2,894	4,413	1,534
June			1	53.0	† 2	0	1.8	105	755	1,505	0
July			† 1	0	† 1	0	0	0	1,643	4,296	0
Aug.			† 1	0	† 1	0	0	0	876	1,857	0
Sept.			4	124	†12	0	30.4	1,800	1,189	1,800	595
Oct.			21	290	† 1	0	114	6,997	2,165	6,997	0
Nov.			† 1	0	† 1	0	0	0	0	0	0
Dec.			† 4	70.6	† 1	0	15.2	932	634	932	0
Yearly				290		0	24.7	17,840	19,917	24,526	17,840

† And other days Ø Mean daily

DIVERSIONS FROM COLORADO RIVER TO MEZQUITAL CANAL IN MEXICO

DESCRIPTION: Pumping plant operated by the Ministry of Hydraulic Resources on the left bank of the Colorado River in Colonia Plan de Ayala about 1.9 miles downstream from the Sonora-Baja California railroad bridge and about 32 miles downstream from the southerly international boundary. Pumping equipment consists of 7 pumps, 5 of 30-inch diameter and 2 of 26 inches.

RECORDS: Data collected by the Ministry of Hydraulic Resources and furnished by the Mexican Section of the Commission are based upon pump capacities and operation time. Data available: August 1958 to February 1960.

REMARKS: Operation of the plant was discontinued on February 29, 1960.

Mean Daily Discharge in Second-Feet 1960 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0										
2	0	0										
3	0	0										
4	0	0										
5	0	0										
6	0	0										
7	0	0										
8	0	0										
9	0	0										
10	0	0										
11	0	0										
12	0	0										
13	0	0										
14	0	0										
15	0	0										
16	0	10.6										
17	0	60.0										
18	0	63.6										
19	0	159										
20	24.7	0										
21	28.3	53.0										
22	7.1	24.7										
23	14.1	14.1										
24	3.5	0										
25	0	0										
26	0	0										
27	0	0										
28	0	0										
29	0	0										
30	0											
31	0											
Sum	77.7	385.0										

Month	Current Year 1960								Period 1958-1960		
	Extreme Gage Feet		Ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low				Average	Maximum	Minimum
	High	Low	Day		Day						
Jan.			21	28.3	† 1	0	2.5	154	1,093		
Feb.			19	159	† 1	0	13.4	764	1,040		
Mar.									1,541		
Apr.									0		
May									0		
June									0		
July									0		
Aug.									1,824		
Sept.									346		
Oct.									595		
Nov.									0		
Dec.									1,042		
Yearly				159		0	1.4	918	7,558		

† And other days Ø Mean daily

DIVERSIONS BY INDIVIDUAL PUMPS IN MEXICO

DESCRIPTION: Pumps operated by private individuals under the control and supervision of the Ministry of Hydraulic Resources, located along the Colorado River, 8 pumps being on the right bank in the limitrophe section and the others along both banks of the river downstream from the southerly international boundary.

RECORDS: Data collected by the Ministry of Hydraulic Resources and furnished by the Mexican Section of the Commission, based upon pump capacities and operation time. Records available: August 1958 to December 1960.

Mean Daily Discharge in Second-Feet 1960 —— Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	0	0	0	3.5	10.6	0	0	0	0	0
2	0	0	0	0	0	7.1	10.6	0	0	0	0	0
3	0	0	0	0	0	10.6	7.1	0	0	0	0	0
4	0	0	0	0	0	0	10.6	0	0	0	0	0
5	0	0	0	0	0	0	0	14.1	0	0	0	0
6	0	0	0	0	0	0	7.1	14.1	14.1	0	0	0
7	0	0	0	0	0	0	0	14.1	7.1	0	0	0
8	0	0	0	0	0	0	0	10.6	10.6	0	0	0
9	0	0	0	0	0	7.1	0	10.6	7.1	0	0	0
10	0	0	0	0	0	7.1	0	0	10.6	7.1	0	0
11	0	0	0	0	7.1	0	0	10.6	0	7.1	0	0
12	0	0	0	0	7.1	0	7.1	0	7.1	10.6	0	0
13	0	0	0	0	10.6	0	10.6	14.1	10.6	7.1	0	0
14	0	0	0	0	10.6	0	0	0	7.1	10.6	0	0
15	0	0	0	0	7.1	7.1	7.1	0	10.6	10.6	0	0
16	0	0	0	0	3.5	7.1	10.6	0	7.1	14.1	0	0
17	0	0	7.1	0	0	10.6	0	0	0	3.5	0	0
18	0	0	17.7	0	0	3.5	14.1	0	0	3.5	0	0
19	17.7	0	17.7	0	0	7.1	7.1	0	0	3.5	0	0
20	17.7	0	17.7	0	0	10.6	7.1	0	0	3.5	0	0
21	17.7	0	7.1	0	0	3.5	0	0	0	0	0	0
22	3.5	0	17.7	7.1	0	7.1	7.1	0	0	0	0	0
23	10.6	0	7.1	7.1	0	0	10.6	14.1	7.1	0	0	0
24	10.6	0	3.5	10.6	0	10.6	7.1	10.6	10.6	0	0	0
25	10.6	0	0	7.1	0	14.1	10.6	14.1	7.1	0	0	0
26	10.6	0	7.1	10.6	0	10.6	7.1	7.1	7.1	0	0	0
27	10.6	0	3.5	7.1	0	10.6	10.6	14.1	7.1	0	0	0
28	10.6	0	0	10.6	7.1	14.1	0	10.6	10.6	0	0	0
29	10.6	0	0	7.1	3.5	10.6	10.6	7.1	7.1	0	0	0
30	10.6		0	10.6	0	0	7.1	10.6	7.1	0	21.2	0
31	10.6		0		0		7.1	7.1		0		0
Sum	152.0	0	106.2	77.9	56.6	162.6	187.6	183.6	155.8	81.2	21.2	0

Month	Current Year 1960								Period 1958-1960		
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
				High		Low					
	High	Low	Day		Day				Average	Maximum	Minimum
Jan.			†19	17.7	† 1	0	4.9	302	329	358	302
Feb.			† 1	0	† 1	0	0	0	396	791	0
Mar.			†18	17.7	† 1	0	3.5	210	148	210	84.3
Apr.			†24	10.6	† 1	0	2.5	154	266	379	154
May			†13	10.6	† 1	0	1.8	112	196	281	112
June			†25	14.1	† 4	0	5.3	322	248	322	175
July			18	14.1	† 5	0	6.0	371	382	392	371
Aug.			† 5	14.1	† 1	0	6.0	364	778	1,648	322
Sept.			6	14.1	† 1	0	5.3	308	586	1,240	210
Oct.			16	14.1	† 1	0	2.5	161	53.5	161	0
Nov.			30	21.2	† 1	0	.7	42.2	51.1	112	0
Dec.			† 1	0	† 1	0	0	0	131	255	0
Yearly				21.2		0	3.2	2,346.2	2,739	3,254	2,346.2

† And other days ∅ Mean daily

COLORADO RIVER AT EL MARITIMO IN MEXICO - DISCHARGES

DESCRIPTION: Water-stage recorder and cableway with car in Mexico 47.6 miles downstream from the southerly international boundary, 18.6 miles downstream from the Sonora-Baja California Railroad bridge and 18.6 miles east of Kilometer 70 of the Mexicali-San Felipe highway. The recorder is located on the right bank of the Colorado River. Zero of gage is 9.84 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based upon 43 current meter measurements during the year and a continuous record of gage heights. Data obtained and furnished by the Mexican Section of the Commission. When affected by tides in the Gulf of California, the discharge is deduced from stage-discharge curves based on measurements at low tide and the discharge at M. C. Rodriguez Station, taking into consideration the pumps and wasteways between the two stations. Records available: incomplete record of stages March 1946 to November 1947; twice daily readings of stages January 1948 to December 1949, and a continuous record of gage heights since installation of recorder February 8, 1956. Current meter measurements have been made periodically since January 21, 1956. Mean daily stages and discharges from January 1, 1960.

REMARKS: The flow past this station is greatly affected by the tides in the Gulf of California, so measurements for basic computations are taken near the date of the first or third quarter moon (neap tide).

EXTREMES: Reference table below for extremes.

Mean Daily Discharge in Second-Feet 1960 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	3,570	1,930	484	706	742	0	0	0	0	0	759	3,470
2	3,570	1,780	819	554	1,150	0	0	0	0	0	819	3,600
3	3,500	1,680	1,060	339	1,600	0	0	0	8.8	0	865	3,850
4	3,370	1,680	1,110	38.8	1,530	0	0	0	20.5	0	872	3,960
5	3,470	1,700	925	38.8	1,270	0	0	0	97.1	0	901	4,100
6	3,520	1,620	650	35.3	1,060	0	0	0	106	0	929	4,240
7	3,460	1,530	452	35.3	795	0	0	0	445	0	918	4,380
8	3,330	1,500	327	38.8	530	0	0	0	291	0	946	4,380
9	3,570	1,430	241	39.6	177	0	0	0	296	0	1,030	4,170
10	3,780	1,300	61.8	35.0	371	0	0	0	509	0	1,150	3,640
11	3,810	1,200	53.0	31.1	371	0	0	0	274	0	1,360	1,810
12	3,780	1,190	53.0	24.7	265	0	0	0	263	0	1,480	1,260
13	3,810	1,120	53.0	14.5	70.6	0	0	0	252	0	1,330	925
14	3,850	918	44.1	0	60.0	0	0	0	241	0	1,260	929
15	3,990	742	60.4	0	53.0	0	0	0	230	0	1,200	943
16	4,100	636	60.4	0	53.0	0	0	0	166	0	1,140	763
17	4,170	629	60.4	0	53.0	0	0	0	132	0	1,080	569
18	4,200	629	31.4	0	53.0	0	0	0	103	0	1,090	434
19	4,200	554	15.2	0	29.3	0	0	0	71.7	28.3	1,180	357
20	4,310	283	10.2	0	11.7	0	0	0	49.1	90.4	1,090	286
21	4,380	410	4.9	0	0	0	0	0	20.1	170	946	222
22	4,240	385	0	0	0	0	0	0	6.0	209	844	151
23	4,170	331	3.2	25.4	0	0	0	0	.4	256	703	124
24	4,030	295	6.0	70.3	0	0	0	0	0	357	576	85.5
25	3,880	311	14.8	82.3	0	0	0	0	0	466	470	48.7
26	3,640	388	36.7	91.8	0	0	0	0	0	554	491	53.0
27	3,340	470	62.2	106	0	0	0	0	0	586	512	37.4
28	3,270	445	61.4	569	0	0	0	0	0	600	1,050	45.2
29	2,770	381	49.4	1,020	0	0	0	0	0	590	2,140	53.0
30	2,370		247	1,130	0	0	0	0	0	614	2,950	63.6
31	2,130		523		0		0	0		671		53.0
Sum	113,580	27,467	7,580	5,026	10,245	0	0	0	3,582	5,192	32,081	49,002

Current Year 1960

Month	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Period Acre-Feet		
			High		Low						
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum
Jan.	18.73	17.03	21	4,410	31	2,010	3,670	225,224			
Feb.	17.03	13.94	1	2,010	24	281	946	54,491			
Mar.	15.42	13.09	4	1,140	22	0	244	15,024			
Apr.	15.32	13.22	30	1,220	† 14	0	168	9,978			
May	16.17	13.09	3	1,680	† 21	0	331	20,317			
June	13.55	12.73		0	† 1	0	0	0			
July	13.48	12.73		0	† 1	0	0	0			
Aug.	13.75	12.47		0	† 1	0	0	0			
Sept.	14.93	12.47	10	533	† 1	0	119	7,101			
Oct.	14.99	12.99	31	717	† 1	0	167	10,298			
Nov.	17.91	14.80	30	3,120	26	456	1,070	63,672			
Dec.	18.54	13.32	7	3,780	31	37.4	1,580	97,155			
Yearly	18.73	12.47		4,410		0	692	503,260			

† And other days

COLORADO RIVER AT EL MARITIMO IN MEXICO - STAGES

(See preceding page for description)

Mean Daily Gage Height in Feet 1960

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	18.18	16.93	14.34	14.47	15.39	13.25	12.76	12.96	12.63	13.06	15.06	17.98
2	18.18	16.73	14.93	14.30	15.75	13.29	12.80	12.93	12.66	13.09	15.16	18.11
3	18.14	16.60	15.29	13.98	16.08	13.29	12.76	12.99	12.99	13.25	15.22	18.24
4	18.08	16.60	15.39	13.75	16.08	13.29	12.76	12.99	13.35	13.39	15.22	18.31
5	18.14	16.63	15.12	13.58	15.81	13.22	12.76	13.06	14.50	13.45	15.26	18.37
6	18.18	16.54	14.67	13.48	15.58	13.16	12.76	13.19	14.76	13.45	15.29	18.44
7	18.14	16.40	14.30	13.42	15.26	13.12	12.86	13.39	14.86	13.35	15.26	18.50
8	18.08	16.37	14.04	13.35	14.96	13.19	13.06	13.62	14.80	13.25	15.29	18.50
9	18.21	16.27	13.85	13.32	14.73	13.29	13.29	13.71	14.76	13.16	15.42	18.41
10	18.34	16.08	13.68	13.35	14.67	13.42	13.39	13.58	14.86	13.09	15.58	18.14
11	18.37	15.91	13.58	13.42	14.70	13.45	13.39	13.39	14.76	13.06	15.88	17.22
12	18.34	15.88	13.52	13.48	14.67	13.42	13.29	13.32	14.63	13.06	16.04	16.44
13	18.37	15.75	13.48	13.55	14.53	13.22	13.16	13.25	14.53	13.06	15.81	15.88
14	18.41	15.49	13.48	13.52	14.34	13.12	13.09	13.22	14.37	13.02	15.72	15.98
15	18.47	15.29	13.45	13.45	14.11	13.06	13.06	13.22	14.17	13.02	15.62	16.11
16	18.54	15.06	13.39	13.32	13.94	12.99	12.99	13.19	14.01	13.02	15.52	15.78
17	18.57	14.90	13.29	13.25	13.85	12.93	12.99	13.16	13.94	13.02	15.42	15.35
18	18.60	14.76	13.19	13.25	13.71	12.89	12.99	13.16	13.88	13.02	15.42	15.03
19	18.60	14.60	13.12	13.22	13.62	12.86	12.96	13.19	13.78	13.12	15.55	14.83
20	18.67	14.34	13.12	13.22	13.52	12.83	12.96	13.19	13.68	13.39	15.58	14.63
21	18.70	14.27	13.12	13.48	13.45	12.83	12.93	13.22	13.42	13.65	15.45	14.63
22	18.64	14.21	13.12	13.58	13.32	12.83	12.93	13.19	13.19	13.85	15.42	14.14
23	18.60	14.07	13.09	13.55	13.22	12.83	12.93	13.19	12.99	13.98	15.29	14.04
24	18.54	13.98	13.09	13.71	13.22	12.80	12.93	13.19	12.80	14.24	15.16	13.85
25	18.47	14.01	13.16	13.91	13.22	12.80	12.93	13.16	12.66	14.50	15.06	13.58
26	18.34	14.17	13.29	14.04	13.12	12.80	12.93	13.12	12.63	14.70	14.93	13.45
27	18.18	14.34	13.39	14.17	13.12	12.76	12.93	12.89	12.60	14.76	14.83	13.32
28	18.14	14.27	13.32	14.47	13.16	12.73	12.93	12.70	12.70	14.80	15.81	13.39
29	17.78	14.14	13.22	14.99	13.19	12.73	12.99	12.60	12.89	14.76	17.22	13.45
30	17.42		13.81	15.29	13.16	12.73	12.99	12.53	12.99	14.80	17.78	13.52
31	17.16		14.27		13.16		12.96	12.50		14.90		13.45
Avg.	18.27	15.32	13.75	13.71	14.21	13.02	12.99	13.12	13.68	13.62	15.55	15.85

SANTA CLARA ESTUARY AT RAILROAD CROSSING IN MEXICO

DESCRIPTION: A measuring section at the entrance to a road culvert 100 feet downstream from the Sonora-Baja California railroad bridge, 400 feet west of Monument C. I. L. A. F. C. 49 and 1.2 miles to the southwest along the road from the village of Riito. No gage has been installed.

RECORDS: Based upon 39 double measurements with current meter during the year. Data obtained and furnished by the Mexican Section of the Commission. Records available, January 1958 to December 1960.

REMARKS: The runoff at this station is from the wasteways on the left bank of the Colorado River and from the Bolsa Drain and flow is through an old channel of the Colorado River into the Gulf of California.

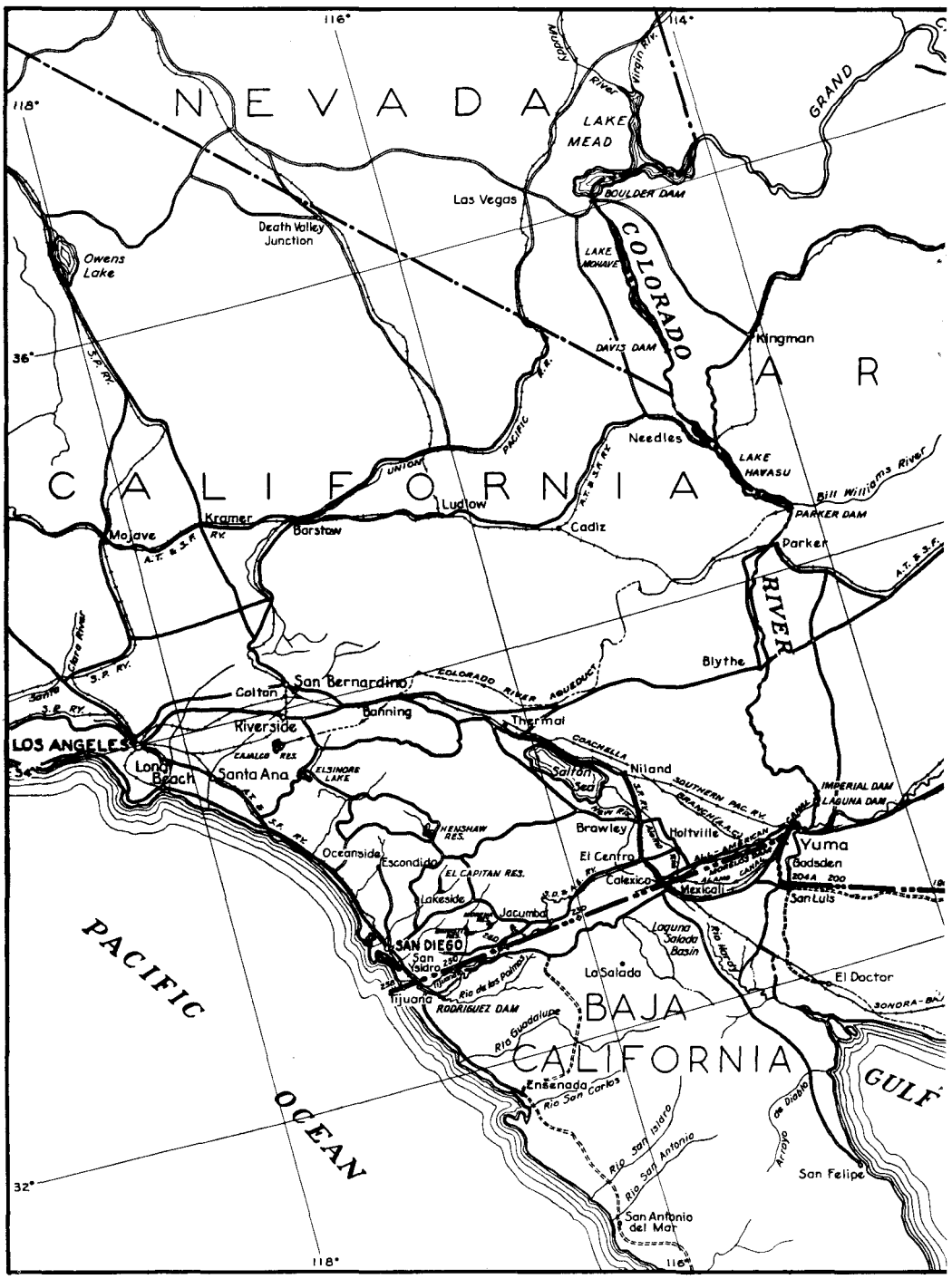
EXTREMES: Maximum measured discharge 91.8 second-feet November 10, 1958; minimum discharge, no flow on various occasions. Reference table below for other extremes.

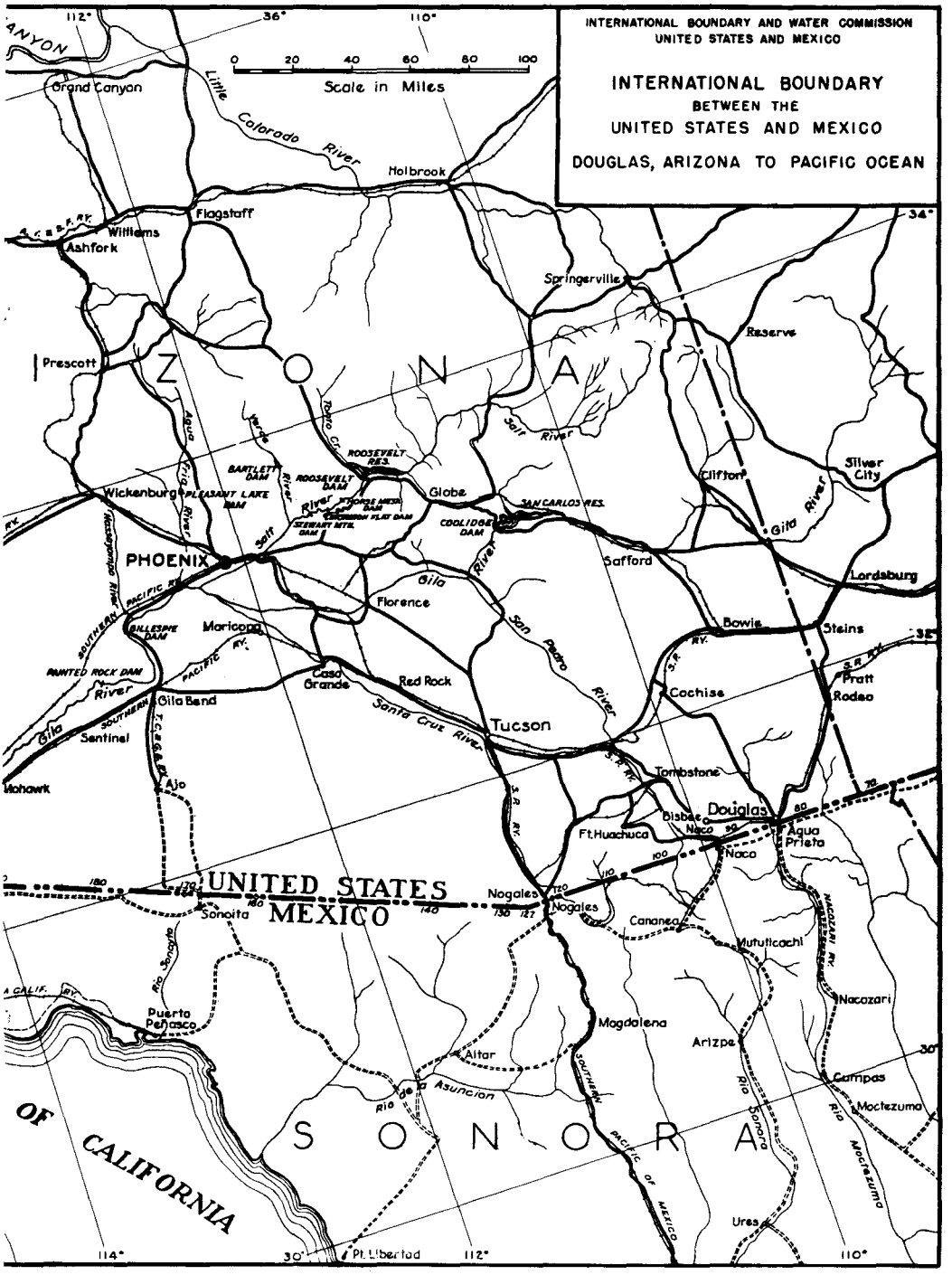
Mean Daily Discharge in Second-Feet 1960 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	18.9	22.0	16.4	10.0	37.6	32.3	1.2	0	9.0	16.2	14.9	.7
2	20.0	22.1	17.0	10.7	35.3	33.4	.9	0	11.3	15.6	14.7	1.5
3	21.2	22.3	18.6	11.4	33.0	34.6	.7	0	13.7	15.0	14.4	2.2
4	22.2	20.9	20.3	12.1	30.7	35.7	.5	0	16.0	14.3	14.1	2.9
5	23.4	19.5	22.0	12.8	31.4	36.8	.2	0	18.3	13.7	13.8	3.7
6	23.0	18.1	23.7	13.5	32.2	38.0	0	0	20.7	13.1	13.5	4.4
7	22.6	16.7	25.4	14.5	33.0	39.1	0	0	23.0	13.4	13.2	5.2
8	22.2	15.3	27.1	15.4	33.8	40.3	0	0	22.5	13.7	12.9	5.0
9	21.8	13.9	28.7	16.4	34.6	41.8	0	0	21.9	14.0	12.6	4.9
10	21.4	12.5	25.2	17.3	35.4	43.3	0	0	21.3	14.3	13.0	4.8
11	21.0	12.4	21.7	18.3	36.2	44.9	0	0	20.7	14.6	13.3	4.7
12	20.6	12.3	18.2	19.2	37.5	46.4	0	0	20.2	14.9	13.8	4.6
13	20.2	12.2	14.6	20.1	38.8	48.0	0	0	19.6	15.2	14.2	4.4
14	19.8	12.1	11.1	22.0	40.2	49.5	0	0	19.0	16.6	14.5	4.3
15	19.4	12.0	7.6	24.0	41.5	51.0	0	0	19.7	17.9	15.0	4.2
16	19.0	11.9	4.0	25.9	42.9	45.1	0	0	20.3	19.4	15.4	4.1
17	18.6	11.8	4.0	27.8	44.2	39.3	0	0	21.0	20.7	15.8	4.0
18	18.2	12.0	3.9	29.7	45.5	33.4	0	0	21.6	22.1	14.7	3.8
19	17.8	12.2	3.9	31.6	45.2	27.5	0	0	22.3	23.5	13.7	3.7
20	18.2	12.4	3.8	33.5	44.9	21.6	0	0	22.9	22.5	12.6	3.6
21	18.6	12.5	3.8	35.5	44.6	15.8	0	0	23.6	21.5	11.5	3.5
22	19.0	12.7	3.7	37.4	44.3	9.9	0	0	22.8	20.6	10.5	3.5
23	19.5	12.9	3.7	39.3	44.0	8.7	0	0	22.0	19.6	9.5	3.6
24	19.9	13.1	4.4	41.2	43.6	7.5	0	0	21.2	18.7	8.1	3.6
25	20.3	13.6	5.1	43.1	43.3	6.3	0	1.0	20.4	17.7	6.7	3.6
26	20.7	14.2	5.8	45.1	41.7	5.2	0	1.9	19.6	16.7	5.4	3.7
27	21.1	14.7	6.5	47.0	40.2	4.0	0	2.9	18.8	16.5	4.1	3.7
28	21.3	15.3	7.2	44.6	38.6	2.8	0	3.8	18.0	16.1	2.7	3.8
29	21.5	15.9	7.9	42.3	37.0	1.6	0	4.7	17.4	15.9	1.3	3.8
30	21.6		8.6	40.0	35.4	1.4	0	5.7	16.8	15.5	0	3.9
31	21.8		9.3		33.9		0	6.6		15.3		3.9
Sum	634.9	429.5	383.2	801.7	1,200.5	845.2	3.5	26.6	585.6	524.8	339.9	117.3

Month	Current Year 1960 Extreme Gage Feet		Ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Period 1958-1960 Acre-Feet		
			High		Low						
	High	Low	Day		Day				Average	Maximum	Minimum
Jan.			5	23.4	19	17.8	20.5	1,259	1,601	1,980	1,259
Feb.			3	22.3	17	11.8	14.8	853	1,242	1,891	853
Mar.			9	28.7	23	3.7	12.4	760	1,195	2,029	760
Apr.			27	47.0	1	10.0	26.7	1,590	2,201	2,709	1,590
May			18	45.5	4	30.7	38.7	2,382	2,412	2,615	2,238
June			15	51.0	30	1.4	28.2	1,676	1,587	1,676	1,529
July			1	1.2	† 6	0	.1	7.3	231	682	3.2
Aug.			31	6.6	† 1	0	.8	52.7	558	1,001	52.7
Sept.			21	23.6	1	9.0	19.5	1,161	1,523	2,059	1,161
Oct.			19	23.5	6	13.1	16.9	1,041	2,707	4,610	1,041
Nov.			17	15.8	30	0	11.3	674	1,941	4,084	674
Dec.			7	5.2	1	.7	3.8	233	596	1,089	233
Yearly				51.0		0	16.1	11,687	17,792	24,596	11,687

† And other days Ø Mean daily


NEVADA
CALIFORNIA
ARIZONA
BAJA CALIFORNIA
PACIFIC OCEAN
GULF
LAKE MEAD
BOULDER DAM
Las Vegas
Death Valley Junction
Owens Lake
LAKE MOHAVE
COLORADO RIVER
DAVIS DAM
Kingman
Needles
LAKE HAVASU
Bill Williams River
PARKER DAM
Parker
Blythe
Mojave
Kramer
Barstow
Cadiz
Ludlow
Colton
San Bernardino
Banning
Riverside
Thermal
LOS ANGELES
Long Beach
Santa Ana
ELSINORE LAKE
CAMELO RES.
COACHELLA
Salton Sea
Niland
Brawley
Holtville
Yuma
El Centro
Calexico
Mexicali
IMPERIAL DAM
LAGUNA DAM
Oceanside
Escondido
HENSHAW RES.
EL CAPITAN RES.
Lakeside
Jacumba
SAN DIEGO
San Ysidro
Tijuana
RODRIGUEZ DAM
Rio de las Palmas
Rio Guadalupe
Laguna Salada Basin
La Salada
El Doctor
Ensenada
Rio San Carlos
Rio San Isidro
Rio San Antonio
San Antonio del Mar
San Felipe
Arroyo de Diablo
Rio Hardy
SONORA-BAJA
116°
118°
114°
36°
32°


INTERNATIONAL BOUNDARY AND WATER COMMISSION
UNITED STATES AND MEXICO
INTERNATIONAL BOUNDARY
BETWEEN THE
UNITED STATES AND MEXICO
DOUGLAS, ARIZONA TO PACIFIC OCEAN
Scale in Miles
0 20 40 60 80 100
Grand Canyon
Little Colorado River
Holbrook
Flagstaff
Williams
Ashfork
Springerville
Reserve
Prescott
Z O N A
Salt River
Verde River
Roosevelt Dam
Bartlett Dam
Roosevelt Res.
Pleasant Lake Dam
Wickenburg
Horseshoe Mesa Dam
Stewart Mtn. Dam
Globe
San Carlos Res.
Coolidge Dam
Clifton
Silver City
Gila River
PHOENIX
Safford
Lordsburg
Florence
Gila River
San Pedro River
Maricopa
Bowie
Steins
Casa Grande
Red Rock
Cochise
Pratt
Rodeo
Gila Bend
Santa Cruz River
Tucson
Sentinel
Tombstone
Mohawk
Ajo
Douglas
Bisbee
Naco
Ft. Huachuca
Agua Prieta
UNITED STATES
MEXICO
Sonoita
Nogales
Cananea
Mututicachi
Nacozari
Rio Sonoyta
Puerto Peñasco
Magdalena
Altar
Arizpe
Campas
Moctezuma
Rio Asuncion
S O N O R A
Rio Sonora
Rio Moctezuma
Southern Pacific of Mexico
Ures
Pt. Libertad
OF CALIFORNIA
112°
36°
110°
34°
114°
30°
112°
110°

COLORADO RIVER AT TIDE GAGE IN MEXICO - STAGES

DESCRIPTION: Automatic stage recorder located at the mouth of the Colorado River as it enters the Gulf of California, 19.9 miles downstream from El Marítimo Gaging Station and 7.5 miles east of Kilometer 85 on the Mexicali-San Felipe highway.

RECORDS: Continuous record of water surface elevations. Records available: November 29, 1952 to December 31, 1960, incomplete because of the continuous silting of the station due to the action of the tides and the flow of the river.

REMARKS: The table shows the maximum and minimum daily elevations of the tides during the periods of record.

Elevation in Feet above Mean Sea Level

DAY	JANUARY		FEBRUARY		MARCH		APRIL		MAY		JUNE	
	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum
1							5.02	4.99	8.76	8.73	8.86	8.86
2							5.18	5.12	8.76	8.73	☾ 8.86	8.79
3							5.12	4.95	8.92	8.76	8.79	8.73
4							☾ 5.05	5.02	☾ 9.02	8.92	8.73	8.66
5							5.05	5.05	9.06	9.02	8.60	8.60
6							5.05	5.05	9.06	9.02	12.66	
7							6.89 7.15	4.79 4.95	9.84 10.50	8.89	11.22 14.90	9.06 9.32
8							7.15 9.97	4.99 7.48	11.42 12.99	8.73 8.73	12.99 16.04	9.35 9.02
9							12.24 12.47	8.17	14.63	12.93	● 13.85 16.17	9.71 9.25
10							13.84 14.44	8.33 8.63	14.11 15.81	10.30 9.12	13.98 16.14	9.91 9.45
11							● 14.80 15.29	8.89 8.99	● 14.67 16.11	9.51 9.38	13.48 15.75	9.97 9.45
12							14.37 15.72	9.19 12.40	14.56 16.14	9.74 9.48	12.11 14.11	9.78 8.96
13							14.40 15.16	9.42 9.12	13.29 15.75	9.84 9.38	10.17 12.50	9.19 8.27
14							13.09 14.47	9.32 5.54	11.71 14.04	9.65 9.09	9.09 10.33	8.50 8.17
15							10.60 12.24	9.19 8.30	9.58 11.58	9.15 8.53	8.79	8.07
16							8.73 9.55	8.46 8.27	9.78	8.27	☽ 8.40	8.04
17							8.30	7.94	☽ 9.12	8.10		8.07
18							☽ 8.04	7.81	8.27	8.14 8.07	8.07 9.06	8.04
19							9.45	7.71	9.12 8.20	8.07 8.01	9.81	8.10 8.14
20							8.60	7.84 7.78	8.99 9.38	8.01	8.76 11.61	8.14 8.27
21							10.83 11.61	8.07 8.40	9.74 11.52	7.94 7.91	9.38 12.14	8.20 8.40
22							12.66 12.53	8.53 8.60	9.91 12.27	8.46 8.30	9.51 12.96	8.20
23					7.94	7.91	11.29 13.35	8.33	9.68 13.52	8.66 9.06	9.91 12.80	8.66 8.27
24					10.20 9.68	7.81 7.35	12.11 13.68	8.89 8.56	11.52 12.76	8.79 8.56	○ 9.88 12.66	8.73 8.20
25					11.68 11.38	6.63 6.04	○ 12.27 13.55	8.96 8.66	○ 9.78 12.47	8.83 8.33	9.68 12.66	8.66 8.23
26					12.07 11.88	6.33	11.48 13.55	9.02 8.60	9.97 11.55	8.66 8.33	9.09 12.04	8.50 8.20
27					○ 12.01 11.94	6.43 6.14	10.63 12.20	9.06 8.43	8.96 11.45	8.56 8.60	9.06 10.96	8.53 8.40
28					10.50 10.83	6.17 5.71	9.51 10.73	8.66 8.33	8.89 10.17	8.66 8.73	9.81	8.53 8.86
29					8.96 9.22	5.87 5.28	8.73 9.71	8.53 8.43	8.92	8.92	8.83	8.46
30					6.99 7.74	5.28 4.99	8.79	8.63 8.76	8.92	8.89	8.46	8.40
31					5.71 5.51	5.05 4.99 4.99			8.89	8.86		

Bold numerals are morning elevations.

○ New Moon ● Full Moon ☾ First Quarter ☽ Last Quarter

COLORADO RIVER AT TIDE GAGE IN MEXICO - STAGES

Elevation in Feet above Mean Sea Level

DAY	JULY		AUGUST		SEPTEMBER		OCTOBER		NOVEMBER		DECEMBER	
	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum
1	8.40	8.40	8.33	7.87	9.02	8.60	11.09 14.04	8.92 9.88	14.63 14.17	10.63 10.56	13.09 11.32	10.89 10.89
2	☾ 8.40	8.40	7.87 9.12	7.68	9.12 14.30	9.02 9.09	13.65 15.22	9.78	15.22 13.88	10.70	13.52 11.55	10.99 10.96
3	8.40	8.33	12.24	8.46	13.12 15.88	9.55 9.32	14.70 15.65	10.30 10.27	● 15.22 13.78	10.63 10.76	● 13.12 11.32	10.99
4	8.33	8.33	9.88 14.63	9.32 8.79	15.26 16.08	10.20 10.04	● 15.78 15.45	10.40 10.50	14.21 11.71	10.60 10.63	12.96 11.35	11.09
5	12.43		12.50 15.62	9.35 8.86	● 15.75 16.27	10.43 10.43	15.62 14.90	10.43 10.50	13.45 11.35	10.40 10.43	12.34 11.22	11.09 11.19
6	11.22 14.37	8.40 8.23	14.37 15.98	9.68 9.35	15.88 16.14	10.76 10.63	14.83 13.09	10.37 10.43	12.14	10.37 10.30	11.48	11.15
7	9.15 15.78	8.86 8.33	● 15.19 16.08	10.07 9.65	15.42 15.19	10.76 10.56	13.25 11.68	10.04 9.94	10.40	10.30 10.27	11.45	11.38
8	● 13.45 16.14	9.32 8.83	15.85 15.94	10.27 10.24	14.11 12.86	10.43 10.17	11.52	9.55	10.27	10.24	11.48	11.42
9	14.50 16.01	9.81 9.25	15.42 14.63	10.50 10.01	12.76 10.30	10.01 9.84	9.19	9.15 9.06	10.24	10.24	11.38	11.35
10	13.98 15.88	9.91 9.22	13.09 12.99	9.91 9.61	10.70	9.51 10.43	9.09	8.99	10.24	10.24	11.35	11.35 11.32
11	13.29 14.96	9.71 9.09	10.66 10.37	9.45 9.12	10.43	10.17	9.06	8.99	☽ 10.30	10.24	☽ 11.25	11.02
12	11.38 12.89	9.25 8.53	8.79	8.92 8.56	☽ 10.17	9.97	☽ 8.99	8.92	10.37	10.30	11.09	11.02 10.93
13	9.84 10.63	8.60 8.14	8.60 8.37	8.60	9.97	9.84	8.96	8.89	10.43	10.37	10.96 10.89	10.89 10.76
14	8.56 8.60	8.14 8.23	☽ 8.40	8.33 8.40	9.84	9.78	8.92	8.92	10.43	10.43	10.76 10.70	10.66 10.56
15	☽ 8.20	8.14 8.20	8.40 8.46	8.40	9.78	9.65	8.92	8.92	10.50 10.66	10.43 10.43 10.37	11.35 10.86	10.50 10.40
16	8.20	8.10	8.46	8.46 8.46	9.65 10.30	9.65	8.92 9.91	8.92	11.71 11.48	10.43 10.01	13.12 11.71	10.37 10.27
17	8.27	8.20	9.42 8.33	8.46 8.33	11.55	9.81	10.04 11.84	8.92 8.92	13.71 12.80	10.24	14.76 12.53	10.40 10.20
18	8.20 8.79	8.14	10.50	8.20	13.12	10.63 10.56	12.43 13.25	9.45 9.45	○ 14.99 13.71	10.10 10.76	○ 15.72 13.39	10.50
19	9.94	8.14	8.92 12.66	8.27 8.27	12.07 13.45	9.38	13.58 14.17	9.78 10.01	15.75 13.22	10.60 10.89	15.94 13.12	10.27 10.63
20	9.81	8.01	13.19	11.88	○ 13.12 14.60	9.74 9.68	○ 14.90 14.50	10.14 10.43	15.26 12.99	10.63 10.86	15.62 12.70	10.37 10.63
21	8.86 8.79	8.07 8.14	11.29 13.58	9.58 9.06	14.17 14.83	10.04 9.94	15.29 13.98	10.33 10.56	14.60 11.65	10.63 10.73	14.07 10.50	10.30 10.30
22	9.38 12.20	8.37 8.17	○ 11.84 14.63	9.58 8.92	14.37 14.47	10.14 10.04	15.09 13.22	10.27 10.60	12.96 10.50	10.50 10.47	11.52	9.91
23	○ 9.51 13.32	8.46 8.14	12.66 14.50	9.94 9.32	13.65 13.25	10.04 9.84	14.30 11.42	10.17 10.37	10.93	10.33	9.97	9.51
24	10.40 12.93	8.76 8.33	12.99 14.44	9.84 9.38	13.02 11.38	9.61 9.51	12.20	9.97	10.33	10.17 10.10	9.28	9.22 9.06
25	10.17 13.19	8.60 8.37	12.53 12.99	9.78 9.19	11.09 9.45	9.09 8.92	10.56	9.84 9.84	☾ 10.10	9.97	☾ 9.06	8.86
26	10.37 12.40	8.73 8.40	11.19 11.48	9.19 8.66	9.51	8.73 8.60	9.97	9.91	9.97	9.71	8.86	8.73
27	* 10.50 11.42	8.60 8.86	10.07 10.50	8.63 8.60	8.60	8.53	☾ 10.04	9.97	9.84	9.78 9.71	8.73 9.32	8.60
28	* 9.12 9.25	8.53 8.53	8.76 8.60	8.60 8.60	☾ 8.53 8.46	8.40	10.17	10.04	9.91 9.81	9.71 9.71	8.53	8.53 8.53
29	* 8.50	8.46	☾ 8.53	8.53 8.53	9.51 8.53	8.46 8.79	11.68	10.10 10.37	10.70 10.43	10.04 10.24	9.65	8.40
30	* 8.46	8.40	8.53	8.53	11.68	8.56 9.06	11.91 13.06	10.60 10.24	12.20 10.96	10.63 10.73	10.89 8.66	8.40 8.23
31	☾ * 8.43	8.37	8.53 9.48	8.53			12.89 13.42	10.30 10.40				

Bold numerals are morning elevations. * Estimated

○ New Moon ● Full Moon ☾ First Quarter ☽ Last Quarter

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 United States Geological Survey.

In Thousands of Acre-Feet

Month	LAKE MEAD (Capacity 27,207.0)		LAKE MOHAVE (Capacity 1,809.8)		HAVASU LAKE (Capacity 688.0)		TOTAL IN UNITED STATES RESERVOIRS (Capacity 29,704.8)	
	1960	Average 1935-1960	1960	Average 1951-1960	1960	Average 1939-1960	1960	Estimated Average
Jan.	19,282.0	16,464.8	1,780.0	1,620.7	540.0	560.8	21,602.0	18,646.3
Feb.	19,121.0	16,044.3	1,728.0	1,668.8	551.7	571.3	21,400.7	18,284.4
Mar.	19,180.0	15,736.2	1,568.0	1,673.9	547.0	584.0	21,295.0	17,994.1
April	19,884.0	15,973.0	1,565.0	1,686.8	581.3	609.6	22,030.3	18,269.4
May	20,544.0	17,420.8	1,540.0	1,719.2	582.1	600.5	22,666.1	19,740.5
June	21,682.0	19,473.8	1,514.0	1,591.5	592.6	607.8	23,788.6	21,673.1
July	21,362.0	19,833.4	1,373.0	1,453.2	597.0	599.5	23,332.0	21,886.1
Aug.	20,564.0	19,526.3	1,390.0	1,391.5	566.9	579.8	22,520.9	21,497.6
Sept.	19,938.0	19,067.6	1,465.0	1,415.7	555.6	576.9	21,958.6	21,060.2
Oct.	19,701.0	18,642.6	1,417.0	1,438.1	554.8	585.1	21,672.8	20,665.8
Nov.	19,575.0	18,233.1	1,412.0	1,521.7	548.1	570.4	21,535.1	20,325.2
Dec.	19,286.0	17,744.5	1,620.0	1,603.6	549.9	566.4	21,455.9	19,914.5
Avg.	20,009.9	17,846.7	1,531.2	1,565.4	563.9	584.3	22,105.0	19,996.4
Max.	21,682.0	27,780.0	1,780.0	1,808.0	597.0	688.7	23,788.6	28,235.0
Min.	19,121.0	* 10,727.0	1,373.0	1,186.0	540.0	76.9	21,295.0	13,062.6

* Minimum since 1940

SUSPENDED SEDIMENT

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-43 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 Colorado silt deposited would occupy a volume of one acre-foot, or one cubic foot of deposited silt would weigh 85 pounds.

Month	1960							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 1956-1960

Jan.	391, 283, 000	83, 400	16	.0213	.2459	.0051	45.2	103.8	341	1.6
Feb.	158, 391, 000	16, 300	13	.0103	.0258	.0071	8.8	40.3	116	1.6
Mar.	301, 847, 000	103, 100	12	.0341	.0485	.0076	55.8	121.5	499	8.8
Apr.	361, 277, 000	60, 300	13	.0167	.0432	.0033	32.6	122.6	434	32.6
May	192, 788, 000	13, 600	14	.0070	.0132	.0018	7.4	47.3	201	4.3
June	293, 191, 000	34, 800	13	.0118	.0241	.0068	18.8	37.3	92.6	18.8
July	381, 254, 000	40, 400	13	.0106	.0141	.0048	21.9	48.4	89.3	21.9
Aug.	353, 707, 000	27, 900	14	.0079	.0144	.0039	15.1	46.8	103	15.1
Sept.	250, 627, 000	16, 300	13	.0065	.0116	.0035	8.8	18.1	43.6	8.8
Oct.	113, 775, 000	4, 900	13	.0043	.0102	.0014	2.7	10.1	20.0	1.9
Nov.	159, 479, 000	21, 600	13	.0135	.0271	.0011	11.7	34.4	89.9	1.0
Dec.	219, 343, 000	45, 700	15	.0208	.1344	.0031	24.7	72.1	174	.6
Yearly	3, 176, 962, 000	468, 300	162	.0147	.2459	.0011	253.5	702.7	2, 202	215

Samples by U. S. Section, and Analyses by Mexican Section, Method A

Colorado River at Southerly International Boundary

Period 1946-1960*

Jan.	323, 167, 000	100, 800	5	.0311	.0524	.0165	54.6			
Feb.	52, 759, 000	12, 600	5	.0238	.0359	.0031	6.8			
Mar.	23, 161, 000	6, 600	3	.0285	.0383	.0088	3.6			
Apr.	24, 325, 000									
May	23, 398, 000									
June	3, 580, 000									
July	2, 229, 000									
Aug.	2, 461, 000									
Sept.	21, 359, 000									
Oct.	26, 770, 000		1							
Nov.	101, 784, 000	38, 200	8	.0375	.0889	.0022	20.7			
Dec.	134, 386, 000	55, 700	6	.0414	.0523	u.0100	30.2			
Yearly	739, 379, 000		28							

Samples by U. S. Section, and Analyses by Mexican Section, Method A
u Estimated * Records incomplete

SUSPENDED SEDIMENT

Month	1960						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

Intake Canal at Morelos Diversion Structure

Period 1956-1960

Jan.	70,029,000	6,262	4	.0089	.0195	0	4.3	7.7	22.3	1.1
Feb.	110,715,000	13,962	4	.0126	.0348	0	9.6	5.7	9.6	2.1
Mar.	273,107,000	119,983	4	.0439	.0647	.0090	64.8	46.8	117	11.1
Apr.	332,812,000	104,677	4	.0315	.0544	.0088	56.5	59.7	121	30.5
May	175,334,000	13,518	5	.0077	.0114	.0051	7.3	17.8	43.9	6.5
June	290,993,000	36,883	4	.0127	.0150	.0099	19.9	40.3	101	19.1
July	372,669,000	48,079	4	.0129	.0167	.0073	25.9	51.6	95.3	25.9
Aug.	342,831,000	29,202	5	.0085	.0107	.0054	15.8	49.4	112	15.8
Sept.	228,269,000	20,657	4	.0090	.0206	.0032	11.2	24.8	59.0	11.2
Oct.	81,620,000	8,333	5	.0102	.0256	.0015	4.5	5.1	10.1	1.0
Nov.	39,600,000	2,325	4	.0059	.0106	.0034	1.2	2.6	9.3	.2
Dec.	90,220,000	12,741	4	.0141	.0307	.0070	6.9	7.1	14.8	1.0
Yearly	2,408,198,000	416,622	51	.0173	.0647	0	228	319	696	200

Samples and Analyses by Mexican Section, Method B

Colorado River at Miguel C. Rodriguez Gaging Station

Jan.	315,174,000	464,273	3	.1473	.1803	.0976	251			
Feb.	74,619,000	25,891	4	.0347	.0844	.0047	13.9			
Mar.	22,387,000	7,599	5	.0339	.0488	.0033	4.1			
Apr.	14,191,000	1,944	4	.0137	.0146	.0037	1.1			
May	28,274,000	2,791	4	.0099	.0166	.0083	1.5			
June	1,893,000	217	5	.0115	.0167	.0040	.1			
July	1,680,000	108	4	.0064	.0098	.0049	.1			
Aug.	1,457,000	360	5	.0247	.0593	0	.2			
Sept.	9,204,000	933	4	.0101	.0394	.0021	.5			
Oct.	24,296,000	7,293	4	.0300	.1007	.0030	4.0			
Nov.	101,582,000	7,401	4	.0073	.0115	0	4.0			
Dec.	148,031,000	16,215	2	.0110	.0123	.0099	8.8			
Yearly	742,788,000	535,025	48	.0072	.1803	0	289			

Samples and Analyses by Mexican Section, Method C

IRRIGATED AREAS ALONG COLORADO RIVER BELOW IMPERIAL DAM
1960

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 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	51,499
Reservation Division	10,749
Yuma Mesa	16,872
Yuma Aux. Project Unit "B" (Yuma Mesa)	2,942
South Gila Valley	10,568
North Gila Valley	6,056
Wellton-Mohawk	54,127
Coachella Valley	62,894
Imperial Valley	434,379
Total in United States	650,036
IN MEXICO:	
Morelos Dam	
Mexicali Valley	* 469,600
Total in United States and Mexico	1,119,636

* An estimated one-third of total acreage is served by pumping from ground water in Mexicali Valley.

MESA DRAIN NEAR CUDAHY IN MEXICO

DESCRIPTION: Staff gage located about 0.9 mile upstream from the pumping plant on the Alamo Canal above the Cudahy check. On October 10, 1960, the gage was moved to Kilometer 18.0 upstream from the pumping plant due to unsatisfactory conditions in the channel at the station. Subsequent measurements were made at various locations on the drain.

RECORDS: Based upon 51 current meter measurements made during the year from the bridge or by wading. Data obtained and furnished by the Mexican Section of the Commission. Records available: July 25, 1956 through December 1960.

REMARKS: Mesa Drain is located immediately south of the Mesa Arenosa. Flow in the drain is modified by pumping for agricultural and domestic use in Mexico above the station.

EXTREMES: Maximum mean daily discharge, 78.0 second-feet February 22, 1960; minimum mean daily discharge, 24.7 second-feet October 31, 1960. Reference table below for other extremes.

Mean Daily Discharge in Second-Feet 1960 —— Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	45.6	55.1	64.6	53.0	57.6	54.0	44.5	50.5	51.2	34.6	25.4	44.1
2	46.6	54.4	62.9	55.4	58.6	54.7	47.7	49.8	48.2	32.8	26.1	43.1
3	48.0	54.0	61.1	58.3	56.5	55.1	50.9	49.4	45.2	31.4	26.5	42.0
4	49.4	53.7	60.0	60.7	54.7	55.4	54.4	48.7	42.0	32.5	27.2	40.6
5	49.4	53.0	59.0	60.4	52.6	55.8	50.9	48.0	38.8	33.9	27.9	39.6
6	49.8	52.3	57.9	60.0	50.5	56.5	47.3	47.3	38.1	35.0	28.6	40.3
7	49.8	51.9	56.9	59.3	48.4	58.6	43.4	47.0	37.4	36.0	29.3	41.0
8	50.1	51.2	54.7	59.0	46.6	60.7	39.9	46.3	36.7	37.4	30.7	41.7
9	50.5	51.6	52.3	58.6	44.5	62.5	36.4	48.7	36.0	38.5	32.5	42.4
10	50.5	51.9	50.1	57.9	47.0	64.6	32.8	51.2	35.7	39.9	34.3	43.1
11	50.9	52.3	48.0	57.6	49.4	66.7	29.3	53.7	35.0	39.2	36.0	43.8
12	50.9	52.6	45.9	57.9	51.9	68.9	29.7	55.8	34.3	38.5	37.4	44.5
13	51.2	53.0	43.8	57.9	54.4	71.0	29.7	58.3	34.3	37.8	39.2	42.7
14	50.9	53.3	41.3	58.3	57.2	69.9	30.0	60.7	34.6	37.1	41.0	41.0
15	50.1	53.7	39.2	58.6	59.7	68.5	30.0	63.2	34.6	36.4	40.6	39.6
16	49.8	54.0	37.1	58.6	62.2	67.5	30.4	62.9	34.6	35.7	40.6	37.8
17	49.4	54.4	35.0	59.0	61.1	66.4	30.4	62.5	35.0	35.3	40.3	36.4
18	48.7	54.7	32.8	59.3	60.4	65.3	30.7	62.2	35.0	35.3	39.9	34.6
19	48.7	60.7	34.3	57.9	59.3	63.9	35.0	61.8	35.3	35.3	39.9	32.8
20	48.7	66.4	35.7	56.9	58.6	62.9	39.2	61.4	36.4	35.3	39.6	33.9
21	48.7	72.4	37.4	55.8	57.9	58.3	43.4	61.1	37.4	35.3	39.6	34.6
22	48.7	78.0	38.8	54.7	56.9	54.0	47.7	60.7	38.5	35.3	40.6	35.3
23	48.7	76.3	40.3	53.7	56.2	49.4	51.9	60.7	39.6	35.3	41.7	36.0
24	48.4	74.9	42.0	52.3	55.8	44.8	56.2	60.7	40.6	35.7	43.1	36.7
25	48.4	73.1	43.4	51.2	55.1	40.3	60.7	60.7	41.7	33.9	44.1	37.4
26	49.4	71.3	45.2	52.3	54.7	35.7	59.0	60.7	42.7	32.5	45.6	38.5
27	50.5	69.6	43.8	53.3	54.4	31.1	57.6	60.7	41.0	31.1	46.6	39.2
28	51.2	67.8	42.4	54.4	54.0	34.6	56.2	60.7	39.2	29.3	48.0	39.9
29	52.3	66.4	44.8	55.4	53.7	37.8	54.7	60.7	37.8	27.9	46.6	40.6
30	53.3		47.7	56.5	53.0	41.0	53.3	57.6	36.0	26.1	45.6	41.3
31	54.0		50.1		53.7		51.9	54.4		24.7		42.4
Sum	1,734.0		1,704.2		1,675.9		1,748.1		1,065.0		1,226.9	
	1,542.6		1,448.5		1,696.6		1,355.2		1,152.9		1,124.5	

Month	Current Year 1960							Period 1956-1960		
	Extreme Gage Feet		∅ Extreme Second-Feet			Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	High Day	High	Low Day	Low		Average	Maximum	Minimum
Jan.			31	54.0	1	45.6	49.8	3,060	2,983	3,072	2,817
Feb.			22	78.0	8	51.2	59.7	3,439	3,020	3,439	2,711
Mar.			1	64.6	18	32.8	46.6	2,873	2,925	3,225	2,677
Apr.			4	60.7	25	51.2	56.9	3,381	2,854	3,381	2,502
May			16	62.2	9	44.5	54.7	3,365	2,986	3,365	2,646
June			13	71.0	27	31.1	55.8	3,324	2,704	3,324	2,386
July			25	60.7	11	29.3	43.8	2,688	2,306	2,688	2,079
Aug.			15	63.2	8	46.3	56.5	3,468	2,658	3,468	2,015
Sept.			1	51.2	†12	34.3	38.5	2,287	2,456	2,720	2,235
Oct.			10	39.9	31	24.7	34.3	2,113	2,788	3,414	2,113
Nov.			28	48.0	1	25.4	37.4	2,230	2,850	3,416	2,230
Dec.			12	44.5	19	32.8	39.6	2,433	2,855	3,155	2,433
Yearly				78.0		24.7	47.7	34,661	33,245	34,661	13,579

† And other days ∅ Mean daily

ALAMO RIVER AT INTERNATIONAL BOUNDARY

DESCRIPTION: Station consists of a staff gage in the United States about 7 miles east of Calexico, California, on the right bank of the Alamo River immediately downstream from the international land boundary between the United States and Mexico, a few feet upstream from a 4-foot Cipolletti weir set 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. During 1960, 12 measurements were made by the United States Section of the Commission. Records obtained and furnished by Imperial Irrigation District. 1960 records excellent. Records available: June 1942 to December 1960.

REMARKS: The flow normally comprises a small portion of drainage water from the Mexicali Valley discharging into the United States.

EXTREMES: Maximum mean daily discharge: 258 second-feet (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. Reference table below for other extremes since 1943.

Mean Daily Discharge in Second-Feet 1960 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.21	2.44	2.67	3.28	2.55	3.15	2.32	1.89	3.67	3.28	2.10	2.21
2	2.21	2.44	2.55	2.44	2.21	2.55	2.55	1.89	3.80	3.28	2.00	2.10
3	2.10	2.55	2.67	2.44	2.21	2.44	2.32	2.21	3.67	3.15	2.10	2.10
4	2.21	2.44	2.91	2.44	2.00	2.44	2.32	2.00	3.67	1.79	2.10	2.10
5	2.32	2.44	2.91	3.54	2.00	2.44	2.55	2.00	3.54	1.68	2.10	2.21
6	2.32	2.79	4.90	3.03	1.89	2.44	2.55	2.10	3.80	1.79	2.10	2.21
7	2.44	2.67	4.48	2.79	2.10	2.44	2.67	2.10	3.67	1.89	2.32	2.32
8	2.21	2.79	3.80	2.44	2.21	2.44	2.44	2.00	4.20	1.68	2.44	2.44
9	2.21	2.79	3.41	2.67	2.21	2.44	3.03	2.00	3.93	1.68	2.21	2.44
10	2.21	3.15	2.91	2.44	2.32	2.44	2.67	2.21	3.67	1.68	2.10	2.32
11	2.21	2.67	5.20	2.55	2.10	2.44	2.79	2.21	3.93	1.79	2.10	2.21
12	2.21	2.67	4.48	2.55	2.00	2.44	2.79	2.10	3.54	1.68	2.10	2.32
13	2.10	2.55	4.34	2.44	1.89	2.32	2.21	2.10	4.20	2.10	2.44	2.32
14	2.21	2.44	4.07	2.44	2.10	2.44	2.21	2.21	4.34	2.10	2.79	2.32
15	2.32	2.44	3.93	2.44	1.79	2.67	3.15	2.32	4.20	1.79	2.91	2.32
16	2.21	2.55	4.20	2.67	1.79	2.55	2.00	2.21	4.20	1.79	2.44	2.21
17	2.21	2.55	3.93	2.55	1.79	2.67	1.79	2.79	4.20	1.89	2.44	2.32
18	2.32	2.55	3.93	2.55	4.20	2.55	1.58	2.79	4.34	1.89	2.32	2.44
19	2.00	2.44	3.93	2.55	2.44	2.44	1.79	2.67	4.34	1.89	2.44	2.44
20	2.10	2.55	4.07	2.55	2.21	2.55	1.89	2.79	4.34	1.89	2.44	2.55
21	2.00	2.91	4.07	2.67	2.10	2.44	2.00	2.67	4.20	1.89	2.32	2.44
22	2.21	2.55	4.07	2.67	2.10	3.15	2.44	2.91	4.20	1.89	2.44	2.55
23	2.32	2.55	3.93	2.67	2.00	3.15	2.10	3.03	4.20	2.21	2.21	2.44
24	2.32	2.32	3.80	4.62	1.89	2.67	1.49	2.91	4.20	2.21	2.55	2.44
25	2.32	2.44	4.20	4.48	1.79	2.67	1.49	3.15	4.20	2.10	2.44	2.44
26	2.44	2.55	4.20	4.34	3.03	2.55	1.49	3.03	4.20	2.10	2.44	2.44
27	2.55	2.55	3.93	4.34	2.21	2.67	1.49	3.03	3.54	2.10	2.44	2.44
28	2.32	2.55	3.54	4.34	2.21	2.67	2.79	3.03	3.67	2.10	2.44	2.44
29	2.44	2.79	3.41	2.10	2.21	2.21	1.79	3.15	3.54	2.00	2.10	2.44
30	2.55		3.41	2.21	2.21	2.32	2.67	3.28	4.07	2.00	2.21	2.67
31	2.55		3.54		2.79		1.89	3.54		2.00		2.44
Sum	70.35	75.12	117.39	87.24	68.55	76.79	69.26	78.32	119.27	63.31	69.58	73.08

Current Year 1960 — **Period 1943-1960**

Month	Extreme Gage Ø Feet High	Extreme Gage Ø Feet Low	Ø Extreme Second-Feet High Day	Ø Extreme Second-Feet High	Ø Extreme Second-Feet Low Day	Ø Extreme Second-Feet Low	Average Second-Feet	Total Acre-Feet	Acre-Feet Average	Acre-Feet Maximum	Acre-Feet Minimum
Jan.	0.33	0.28	†27	2.55	†19	2.00	2.27	140	536	2,790	99
Feb.	0.38	0.31	10	3.15	24	2.32	2.59	149	486	2,820	100
Mar.	0.53	0.33	11	5.20	2	2.55	3.79	233	538	3,150	111
Apr.	0.49	0.29	24	4.62	29	2.10	2.91	173	593	2,220	97
May	0.46	0.26	18	4.20	†15	1.79	2.21	136	442	1,800	73
June	0.38	0.30	† 1	3.15	29	2.21	2.56	152	440	1,690	61
July	0.38	0.23	15	3.15	†24	1.49	2.23	137	396	1,710	59
Aug.	0.41	0.27	31	3.54	† 1	1.89	2.53	155	493	1,670	83
Sept.	0.47	0.41	†14	4.34	† 5	3.54	3.98	237	454	1,410	91
Oct.	0.39	0.25	† 1	3.28	† 5	1.68	2.04	126	496	1,840	102
Nov.	0.36	0.28	15	2.91	2	2.00	2.32	138	513	2,080	86
Dec.	0.34	0.29	30	2.67	† 2	2.10	2.36	145	464	1,690	80
Yearly	0.53	0.23		5.20		1.49	2.65	1,921	5,851	22,150	1,250

† And other days Ø Mean daily

NEW RIVER AT INTERNATIONAL BOUNDARY

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

RECORDS: Based upon 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. Measurements are also made generally once each month by the United States Section of the Commission. Records computed and furnished by the District. 1960 records good. Records available: June 1942 to December 1960.

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 the city of 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 are limited to an average annual quantity of 35,000 acre-feet during any successive five-year period under the provisions of Minute No. 197.

EXTREMES: Maximum mean daily discharge: 554 second-feet April 25, 1960; minimum mean daily discharge: 2 second-feet, 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. Reference table below for other extremes since 1950.

Mean Daily Discharge in Second-Feet 1960 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	244	148	166	189	213	136	135	135	142	144	162	153
2	268	167	173	187	182	134	134	136	142	153	158	151
3	230	174	161	207	176	135	137	136	152	155	161	147
4	208	158	177	212	173	144	138	136	179	153	142	169
5	196	162	187	202	172	152	140	136	195	145	139	158
6	196	190	176	194	171	158	143	134	202	141	139	161
7	196	212	183	187	170	152	149	133	234	139	138	159
8	157	184	168	181	174	147	142	139	226	135	150	167
9	156	190	160	187	175	147	149	143	284	135	147	178
10	158	188	183	187	171	173	149	143	258	138	159	177
11	152	225	185	187	172	152	151	146	200	143	160	181
12	154	191	159	187	174	142	151	147	192	145	150	179
13	165	187	157	189	161	144	149	144	205	144	146	172
14	178	199	168	195	158	154	147	143	179	144	145	162
15	172	251	158	197	157	150	146	148	171	146	147	160
16	188	256	156	207	157	151	144	153	168	149	146	162
17	195	198	156	228	158	160	140	153	163	150	159	160
18	170	165	150	257	161	148	141	156	161	151	154	160
19	199	171	143	277	150	148	139	158	166	154	152	161
20	203	183	144	289	153	149	139	150	166	182	155	159
21	198	164	146	255	176	150	141	137	159	194	152	160
22	163	177	144	225	164	146	146	139	152	200	147	159
23	172	190	145	342	167	141	145	139	148	190	146	158
24	176	165	148	552	176	142	142	142	142	167	149	157
25	159	163	157	554	152	142	139	145	137	157	148	157
26	152	164	156	385	153	135	145	142	133	145	145	160
27	148	200	150	244	152	142	142	142	131	163	148	158
28	181	227	153	209	151	137	140	145	130	156	168	157
29	168	214	166	195	141	135	146	146	130	148	154	158
30	139		172	198	137	137	146	142	133	135	152	158
31	144		168		133		149	140		169		159
Sum	5,585	5,463	4,988	7,305	5,080	4,383	4,444	4,428	5,180	4,770	4,518	5,017

Current Year 1960

Month	Extreme Gage Ø ** Feet		Ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet
	High	Low	High Day	High	Low Day	Low		
Jan.	37.31	38.78	2	268	30	139	180	11,078
Feb.	37.56	38.75	16	256	1	148	188	10,836
Mar.	38.15	38.82	5	187	19	143	161	9,894
Apr.	34.80	38.37	25	554	8	181	243	14,489
May	38.00	39.19	1	213	31	133	164	10,076
June	38.72	39.21	10	173	2	134	146	8,694
July	38.99	39.23	† 11	151	2	134	143	8,815
Aug.	38.87	39.13	19	158	7	133	143	8,783
Sept.	37.37	39.17	9	284	† 28	130	173	10,274
Oct.	38.26	39.25	22	200	† 8	135	154	9,461
Nov.	38.71	39.13	28	168	7	138	151	8,961
Dec.	38.53	38.97	11	181	3	147	162	9,951
Yearly	34.80	39.25		554		130	167	121,312

Period 1943-1960

Acre-Feet		
Average	Maximum	Minimum
4,817	11,078	1,750
3,842	10,836	1,260
3,966	9,894	1,010
4,487	14,489	1,390
3,883	10,076	629
3,394	8,694	1,090
3,305	8,815	817
4,297	10,921	1,140
4,744	11,615	1,800
5,409	11,560	2,080
4,918	10,143	2,480
5,063	12,845	1,760
52,125	121,824	24,570

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

VOLCANO DRAIN TO NEW RIVER IN MEXICO

DESCRIPTION: Volcano Drain is measured at a point about 1,000 feet downstream from the bridge on the connecting road between the Tijuana-Mexicali and Mexicali-San Felipe highways, 5.8 miles upstream from the international boundary and 3.7 miles south of Mexicali, Baja California. The reach chosen for measurements is near where the siphon of the West Main Canal crosses the Volcano Drain.

RECORDS: Based on 50 current meter measurements made by wading during the year. Data obtained and furnished by the Mexican Section of the Commission. Records available: January 1957 through December 1960.

REMARKS: Volcano Drain carries agricultural return flow from a large part of the Mexicali Valley. Levees or structures in the Laguna Mexico and other points upstream which are not subject to control affect the return flows which results in a very irregular discharge.

EXTREMES: Maximum mean daily discharge, 176 second-feet April 22, 1960; minimum mean daily discharge, 42.7 second-feet July 8, 1957. Reference table below for other extremes.

Mean Daily Discharge in Second-Feet 1960 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	107	118	145	145	155	124	114	116	136	156	123	127
2	109	120	144	151	152	125	114	115	141	153	119	131
3	112	122	142	156	153	127	115	114	145	149	115	136
4	114	124	141	150	154	129	116	113	150	144	111	140
5	116	126	139	152	154	131	121	112	155	139	107	144
6	118	128	137	153	155	132	128	112	154	134	103	139
7	120	130	136	154	156	132	134	111	152	129	98.5	135
8	122	132	134	156	157	132	140	110	150	124	102	130
9	124	132	133	157	158	132	146	112	148	119	105	124
10	128	132	131	159	156	132	152	114	146	114	108	119
11	130	133	129	158	154	132	159	116	144	114	111	114
12	130	133	128	160	151	132	154	118	143	113	114	109
13	130	133	126	163	149	131	149	120	143	113	117	110
14	132	133	124	165	147	131	144	122	143	113	120	111
15	134	133	123	168	145	130	139	124	143	113	123	111
16	136	133	121	170	143	130	134	125	143	113	126	112
17	138	133	120	173	139	129	129	125	143	113	129	113
18	140	133	118	176	136	128	125	125	144	116	132	113
19	138	133	119	176	133	127	125	125	144	119	135	114
20	135	132	120	176	130	127	124	125	148	123	138	115
21	133	132	121	176	126	125	123	125	152	126	141	116
22	130	132	122	176	123	123	123	126	156	129	137	118
23	128	134	123	176	119	120	122	125	161	132	133	119
24	126	136	124	176	119	118	121	124	165	136	129	120
25	124	138	125	176	120	116	121	124	169	135	125	121
26	123	141	124	172	120	114	120	123	173	133	121	123
27	122	143	123	169	120	111	120	122	170	132	118	124
28	121	145	123	166	120	112	119	121	167	131	114	125
29	120	147	128	163	120	113	118	121	163	130	118	126
30	120		134	159	120	113	117	126	160	128	123	127
31	119		139		122		117	131		127		129
Sum	3,879	3,841	3,996	4,927	4,306	3,758	3,983	3,722	4,551	3,950	3,595.5	3,795

Current Year 1960 — Period 1957-1960

Month	Extreme Gage Feet		Ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low				Average	Maximum	Minimum
	High	Low	Day		Day						
Jan.			18	140	1	107	125	7,694	5,664	7,694	4,076
Feb.			29	147	1	118	132	7,622	5,412	7,622	3,536
Mar.			1	145	18	118	129	7,929	6,115	7,929	4,491
Apr.			†22	176	1	145	164	9,767	6,808	9,767	4,373
May			† 9	158	†23	119	139	8,542	6,364	8,542	4,675
June			† 6	132	27	111	125	7,454	5,642	7,454	3,547
July			11	159	1	114	129	7,902	5,787	7,902	2,809
Aug.			31	131	8	110	120	7,382	6,880	8,367	4,148
Sept.			26	173	1	136	152	9,027	7,683	9,027	4,912
Oct.			1	156	†16	113	127	7,834	7,016	8,118	4,570
Nov.			21	141	7	98.5	120	7,132	6,171	7,132	4,207
Dec.			5	144	12	109	123	7,529	6,220	7,529	4,511
Yearly				176		98.5	132	95,813	75,763	95,813	50,244

† And other days Ø Mean daily

SIFON WASTEWAY TO NEW RIVER IN MEXICO

DESCRIPTION: Control weir and stage recorder located in the wasteway from the West Main Canal to New River about 650 feet downstream from the wasteway structure, 1,300 feet upstream from the confluence with Volcano Drain, 0.5 mile downstream from Mexicali-San Felipe highway, 5.7 miles upstream from the international land boundary and 3.7 miles south of Mexicali. The Cipolletti type wooden control weir has a 13.45-foot crest and is set in the left bank of the wasteway and near the right bank of Volcano Drain.

RECORDS: Based upon 42 current meter measurements during the year obtained by wading downstream from the station, a rating curve for the weir and a continuous record of gage heights. Data obtained and furnished by the Mexican Section of the Commission. Records available: January 1952 through December 1960. Records reported below are part of the waste flows from the Mexican system of canals discharging into the territory of the United States, which wastes are not to exceed an average annual quantity of 35,000 acre-feet during any successive five-year period under the provisions of Minute No. 197.

REMARKS: Part of the wasteway flow is sometimes used for irrigation before discharging into the Volcano Drain and thence into New River.

EXTREMES: Maximum instantaneous discharge, 102 second-feet March 30, 1953 and March 5, 1956; minimum discharge, no flow on numerous occasions during most years. Reference table below for other extremes.

Mean Daily Discharge in Second-Feet 1960 —— Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.9	3.2	0.4	0.4	3.2	2.5	0	0.7	0.7	0.4	0.4	0
2	4.2	10.2	.7	0	1.1	3.2	.4	.4	.7	.4	.4	0
3	1.4	6.4	.4	0	1.1	0	.7	.4	.7	.4	.4	0
4	.7	4.9	.4	0	.4	0	.4	.4	.7	.4	0	0
5	.7	3.2	.4	.4	.4	0	.4	.4	6.7	.4	.4	0
6	.4	1.1	.4	0	0	0	.4	.4	7.8	.4	.4	0
7	.4	.4	1.8	0	.4	0	.4	.4	.4	.4	3.2	0
8	.4	.4	1.4	0	.4	0	.4	.4	.4	.4	2.1	0
9	.4	.4	.4	0	.4	0	1.1	.4	.4	0	.4	0
10	1.8	.4	.4	1.8	.4	0	1.1	0	.4	0	.4	0
11	1.1	.4	.4	4.6	.4	0	0	.4	.4	0	.4	0
12	.4	.4	.4	0	.4	0	0	.4	.4	0	.4	0
13	7.4	.4	.4	0	.4	0	0	.4	.4	0	.4	0
14	7.4	1.4	.4	0	.4	0	0	.4	.4	.4	.7	0
15	1.1	1.4	.4	0	.4	0	.4	.4	.4	.4	.4	0
16	4.6	.4	0	0	1.1	0	.4	0	.4	.4	.4	0
17	.7	.4	0	0	1.1	0	.7	.4	.4	.4	.4	0
18	.4	.4	0	.4	.7	0	1.1	0	.4	.4	.4	0
19	.4	.4	0	1.1	.4	0	0	0	.4	.4	.4	0
20	.4	.4	0	0	.4	.4	0	0	.4	1.4	0	0
21	.4	.4	0	0	11.3	.4	0	0	.4	2.1	0	0
22	.4	.4	0	0	15.5	.4	.7	1.4	.4	0	0	0
23	.4	2.5	0	0	19.8	0	1.8	.4	.4	0	0	0
24	.4	1.4	0	0	9.9	0	.7	.7	.4	0	0	0
25	1.4	1.4	0	0	.7	.4	3.5	.4	.4	0	0	0
26	.7	2.5	0	3.9	1.4	.7	.4	.4	.4	0	0	0
27	.4	2.5	0	0	0	.7	.4	.4	0	0	0	0
28	0	.7	0	1.4	0	0	.4	.7	0	0	0	0
29	.4	.4	0	0	0	0	0	.7	.4	0	0	0
30	0		0	.4	0	0	.4	1.4	.4	0	0	0
31	.4		.7		0		1.4	.7		0		0
Sum	43.1	48.8	9.4	14.4	72.1	8.7	17.6	13.5	26.1	9.1	12.0	0

Current Year 1960 — **Period 1952-1960**

Month	Extreme Gage Feet		Ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low				Average	Maximum	Minimum
	High	Low	Day		Day						
Jan.			† 13	7.4	† 28	0	1.4	84.3	69.7	293	1.6
Feb.			2	10.2	† 7	.4	1.8	95.7	57.6	96.5	1.6
Mar.			7	1.8	† 16	0	.4	17.8	231	597	6.5
Apr.			11	4.6	† 2	0	.4	28.4	102	660	4.1
May			23	19.8	† 6	0	2.5	141	73.0	141	.8
June			2	3.2	† 3	0	.4	17.0	49.5	186	5.7
July			25	3.5	† 1	0	.7	33.2	68.1	164	8.9
Aug.			† 22	1.4	† 10	0	.4	25.1	161	561	7.3
Sept.			6	7.8	† 27	0	.7	49.5	92.4	225	4.9
Oct.			21	2.1	† 9	0	.4	17.0	158	524	16.2
Nov.			7	3.2	† 4	0	.4	22.7	240	1,367	22.7
Dec.			† 1	0	† 1	0	0	0	106	233	0
Yearly				19.8		0	.7	532	1,407	3,249	532

† And other days Ø Mean daily

WISTERIA CANAL WASTEWAY TO NEW RIVER IN MEXICO

DESCRIPTION: Control weir, staff gage and stage recorder located approximately 160 feet downstream from the wasteway gates of the Cerro Prieto and West Main canals about 1,000 feet downstream from their confluence, in the Colonia Wisteria 4.3 miles from the international land boundary and 3.1 miles south of Mexicali.

RECORDS: Based upon 11 check measurements with current meter during the year obtained by wading, a rating curve for the weir and a continuous record of gage heights. Data obtained and furnished by the Mexican Section of the Commission. Records available: January 1951 through December 1960.

REMARKS: Measurements were taken in various locations downstream from the weir due to condition of the channel. Discharge at this station is dependent upon the operation of the canal system of the Colorado River Irrigation District in Mexico and is very irregular. Records normally comprise the largest single portion of the wastes from the Mexican system of canals discharging into the territory of the United States. Such wastes are limited to an average annual quantity of 35,000 acre-feet during any successive five-year period under the provisions of Minute No. 197.

EXTREMES: Maximum instantaneous discharge, 480 second-feet August 23, 1955; minimum discharge, no flow on various occasions. Reference table below for other extremes.

Mean Daily Discharge in Second-Feet 1960 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	59.0	7.8	7.1	0	37.4	3.5	2.8	3.5	2.5	2.5	32.8	11.7
2	76.3	19.1	15.2	0	10.9	3.5	2.8	2.8	2.5	2.5	24.0	4.9
3	47.0	17.3	10.6	0	4.2	3.5	2.8	2.8	2.5	2.5	25.1	4.6
4	44.1	12.4	26.8	9.5	3.5	3.2	2.8	2.8	2.5	2.5	7.4	23.0
5	37.4	16.6	67.1	11.7	3.9	2.8	2.5	2.5	10.6	2.5	3.9	12.7
6	55.4	53.7	26.8	4.6	3.5	3.2	2.5	2.5	17.0	2.5	3.5	17.0
7	26.5	55.4	34.6	3.5	3.5	3.2	2.5	2.5	41.7	2.5	5.7	14.8
8	7.1	22.6	6.7	3.5	3.2	2.8	2.5	2.8	29.3	2.5	12.0	17.3
9	8.5	24.0	23.3	3.5	7.8	2.8	2.5	3.2	102	2.5	8.1	23.3
10	7.4	14.5	25.4	3.5	3.5	3.2	2.5	2.8	42.0	2.5	11.7	22.2
11	4.9	85.1	4.2	3.5	8.5	3.5	2.5	2.8	17.3	2.5	13.4	18.0
12	5.7	14.1	3.9	3.5	9.9	3.5	2.5	2.5	15.5	2.5	10.2	15.5
13	15.5	38.5	3.5	3.5	4.6	6.4	2.5	2.5	29.0	2.5	5.3	12.7
14	21.9	42.4	14.5	3.5	3.9	13.1	2.5	2.5	7.1	2.5	6.4	3.9
15	34.6	98.5	3.5	3.5	3.5	9.9	2.5	2.5	3.5	2.5	10.6	3.5
16	21.5	76.3	3.9	9.2	3.5	11.3	2.5	2.5	3.2	2.5	8.8	7.8
17	35.7	31.1	3.2	25.1	3.2	10.9	2.5	2.1	2.8	2.5	17.0	4.2
18	18.7	7.1	3.5	55.1	17.3	3.9	2.5	2.5	2.8	2.5	13.1	4.2
19	47.7	16.6	2.8	68.5	3.9	3.9	2.1	2.8	2.8	2.5	11.3	3.9
20	49.8	29.3	4.2	86.9	3.5	3.2	2.1	2.8	2.8	18.7	8.5	3.9
21	36.7	9.2	3.2	52.6	12.4	2.8	2.1	2.5	2.5	31.8	5.3	4.9
22	12.7	35.7	2.8	28.3	3.5	3.2	2.1	2.5	2.8	47.3	4.2	4.6
23	28.3	32.5	2.8	154	3.5	3.2	2.1	2.8	2.5	38.8	3.5	4.2
24	37.4	5.3	2.8	307	13.4	2.8	2.1	2.8	2.5	22.2	4.9	4.2
25	13.1	4.9	2.5	294	6.4	2.8	2.8	2.8	2.5	14.1	5.7	3.9
26	9.5	4.9	2.8	168	8.5	2.8	2.5	2.8	2.5	4.6	3.9	3.9
27	12.4	55.4	2.8	41.7	10.6	2.8	2.1	2.8	2.5	23.3	9.2	3.9
28	119	65.0	6.0	21.2	14.8	2.8	2.1	2.8	2.5	20.1	27.9	3.9
29	12.4	27.5	8.1	9.2	3.5	2.8	2.1	2.8	2.5	12.7	12.4	3.9
30	7.4		9.9	24.4	3.5	2.8	3.5	2.5	2.5	12.7	9.9	3.9
31	7.1		9.9		3.5		6.0	2.5		40.6		3.9
Sum	920.7	922.8	344.4	1,402.5	226.8	130.1	79.9	83.3	364.7	334.4	325.7	274.3

Month	Current Year 1960 Extreme Gage Feet High	Extreme Gage Feet Low	Ø Extreme Second-Feet High Day	High	Low Day	Low	Average Second-Feet	Total Acre-Feet	Period 1951-1960 Acre-Feet Average	Maximum	Minimum
Jan.			28	119	11	4.9	29.7	1,826	1,962	5,065	517
Feb.			15	98.5	†25	4.9	31.8	1,831	1,225	1,915	520
Mar.			5	67.1	25	2.5	10.9	683	1,086	2,201	172
Apr.			24	307	† 1	0	46.6	2,781	1,464	4,433	150
May			1	37.4	† 8	3.2	7.4	451	943	1,891	105
June			14	13.1	† 5	2.8	4.2	259	577	1,448	81.9
July			31	6.0	†19	2.1	2.5	159	448	2,039	59.2
Aug.			1	3.5	17	2.1	2.8	165	904	1,925	129
Sept.			9	102	† 1	2.5	12.0	722	1,090	2,915	101
Oct.			22	47.3	† 1	2.5	10.9	662	1,607	2,993	662
Nov.			1	32.8	† 6	3.5	10.9	646	1,448	2,351	646
Dec.			9	23.3	†15	3.5	8.8	544	1,454	2,501	544
Yearly				307		0	14.8	10,729	14,209	20,624	7,462

† And other days Ø Mean daily

WISTERIA DRAIN TO NEW RIVER IN MEXICO

DESCRIPTION: Wisteria Drain discharges into the basin above the weir of Wisteria Wasteway immediately downstream from the spillway structure of Cerro Prieto and West Main Canals through a 20-inch pipe and thence into New River. The pipe outlet is located in the right bank of the basin in Colonia Wisteria 4.3 miles upstream from the international boundary and about 1.9 miles east of the Tijuana highway from the Tijuana-San Felipe Junction.

RECORDS: Based upon weekly readings of water surface elevation and discharges computed from horizontal pipe formula. *Data obtained and furnished by the Mexican Section of the Commission.* Records available: January 1957 to December 1960.

EXTREMES: Maximum measured discharge, 1.3 second-feet August 31, 1959; minimum, no flow on various occasions during 1960. Maximum monthly volume, 55.9 acre-feet August 1959; minimum monthly volume, 6.5 acre-feet September 1960. Reference table below for other extremes.

Mean Daily Discharge in Second-Feet 1960 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.4	0.7	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0	0.4	0.4
2	.4	.7	.4	.4	.4	.4	.4	.4	.4	0	.4	.4
3	.4	.7	.4	.4	.4	.4	.4	.4	.4	0	.4	0
4	.4	.7	.4	.4	.4	.4	.4	.4	.4	0	.4	0
5	.4	.7	.4	.7	.4	.4	.4	.4	.4	0	.4	0
6	.4	.7	.7	.7	.4	.4	.4	.4	.4	.4	.4	0
7	.4	.7	.7	.7	.4	.4	.4	.4	.4	.4	.4	0
8	.7	.7	.7	.7	.4	.4	.4	.4	0	.4	.4	0
9	.7	.7	.7	1.1	.4	.4	.4	.4	0	.4	.4	0
10	.7	.7	.7	1.1	.4	.4	.4	.4	0	.7	.4	0
11	.7	.7	.7	1.1	.4	.4	.4	.4	0	.4	.4	0
12	.7	.4	.7	1.1	.4	.4	.4	.4	0	.4	.4	.4
13	.7	.4	.7	1.1	.4	.4	.4	.4	0	.4	.4	.4
14	.7	.4	.7	1.1	.4	.4	.4	.4	0	.4	.4	.4
15	.7	.4	.4	1.1	.4	.4	.4	.4	0	.4	.4	.4
16	1.1	.4	.4	1.1	.4	.4	.4	.4	0	.4	.4	.4
17	1.1	.4	.4	1.1	.4	.7	.4	.4	0	.4	.4	.4
18	1.1	.4	.4	1.1	.4	.7	.7	.4	0	.4	.4	.4
19	1.1	.4	.4	1.1	.4	.7	.7	.7	.4	.4	.4	.4
20	1.1	.4	.4	.7	.4	.7	.7	.7	.4	.4	.4	.4
21	1.1	.4	.4	.7	0	.7	.7	.7	0	.4	.4	.4
22	1.1	.4	.4	.7	0	.4	.7	.7	0	.4	.4	.4
23	.7	.4	.4	.7	0	.4	.7	.7	0	.4	.4	.4
24	.7	.4	.4	.7	0	.4	.7	.7	0	.4	.4	.4
25	.7	.4	.4	.7	0	.4	.7	.7	0	.4	.4	.4
26	.7	.4	.4	.7	0	.4	.7	.7	0	.4	.4	.4
27	.7	.4	.4	.7	0	.4	.7	.7	0	.4	.4	.4
28	.7	.4	.4	.7	0	.4	.7	.7	0	.4	.4	.4
29	.7	.4	.4	.4	0	.4	.7	.7	0	.4	.4	.4
30	.7		.4	.4	0	.4	.7	.7	0	.4	.4	.4
31	.7		.4		.4		.4	.4		.4		.4
Sum	22.4	14.9	15.1	23.6	8.4	13.5	16.3	16.0	3.6	10.7	12.0	8.8

Month	Extreme Gage Feet		Ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Period 1957-1960 Acre-Feet		
				High		Low					
	High	Low	Day		Day				Average	Maximum	Minimum
				Current Year 1960							
Jan.			†16	1.1	† 1	0.4	0.7	43.8	21.1	43.8	13.0
Feb.			† 1	.7	†12	.4	.4	28.4	16.2	28.4	12.2
Mar.			† 6	.7	† 1	.4	.4	28.4	17.0	28.4	13.0
Apr.			† 9	1.1	† 1	.4	.7	45.4	26.8	45.4	13.0
May			† 1	.4	†21	0	.4	14.6	14.6	16.2	13.0
June			†17	.7	† 1	.4	.7	24.3	21.1	24.3	13.0
July			†18	.7	† 1	.4	.7	30.8	22.7	35.7	13.0
Aug.			†19	.7	† 1	.4	.7	30.0	27.6	55.9	13.0
Sept.			† 1	.4	† 8	0	.4	6.5	16.2	30.8	6.5
Oct.			10	.7	† 1	0	.4	18.6	17.0	22.7	13.0
Nov.			† 1	.4	† 1	.4	.4	21.1	16.2	21.1	13.0
Dec.			† 1	.4	† 3	0	.4	15.4	15.4	17.0	13.0
Yearly				1.1		0	.4	307	232	307	155

† And other days Ø Mean daily

RIVERA DRAIN TO NEW RIVER IN MEXICO

DESCRIPTION: Rivera Drain begins near the right bank of the West Main Canal, 0.9 mile south of the Sharpe heading and runs westward across the city of Mexicali, Baja California, to discharge into New River 0.9 mile upstream from the international boundary. The gaging station is a rectangular control section in the channel of the drain between "K" and "L" streets, 2.4 miles from its confluence with New River and 3.3 miles from the international boundary.

RECORDS: Based upon 50 current meter measurements made from bridge during the year. Data obtained and furnished by the Mexican Section of the Commission. Records available: January 1957 to December 1960.

REMARKS: Flow at the station consists mainly of agricultural drainage with a small amount of sewage from the city of Mexicali.

EXTREMES: Maximum monthly volume, 898 acre-feet August 1960; minimum monthly volume, 87.6 acre-feet August 1959. Maximum measured discharge 19.1 second-feet October 17, 1960; minimum measured discharge 0.7 second-feet August 17, 1959. Reference table below for other extremes.

Mean Daily Discharge in Second-Feet 1960 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.8	2.5	7.8	13.8	13.4	13.8	14.8	18.7	14.1	9.5	10.6	10.2
2	2.5	3.2	7.8	13.8	12.7	14.5	14.5	17.7	13.4	10.9	10.6	10.6
3	2.5	3.9	8.1	13.8	12.7	15.2	13.8	16.6	12.7	12.4	10.6	11.3
4	2.5	4.2	8.1	13.8	12.4	15.9	13.4	15.5	12.4	12.4	10.2	11.7
5	2.8	4.9	8.5	13.8	12.0	16.6	13.8	14.5	11.7	12.0	10.2	12.0
6	2.8	5.7	8.5	13.4	11.7	17.3	14.1	13.4	10.6	11.7	10.2	11.7
7	3.2	6.4	8.8	13.4	11.3	16.2	14.5	12.4	9.9	11.3	10.2	10.9
8	3.2	7.1	8.5	13.1	11.3	15.5	14.8	11.7	8.8	10.9	10.2	10.6
9	3.5	7.4	7.8	13.1	10.9	14.8	14.8	12.4	8.1	10.9	10.2	10.2
10	3.5	7.8	7.4	12.7	10.9	13.8	15.2	13.1	7.1	10.6	10.6	9.5
11	3.9	8.1	7.1	12.7	10.9	12.7	15.5	13.8	6.4	11.7	10.6	9.2
12	3.9	8.5	6.7	12.7	10.9	12.0	15.5	14.5	5.3	13.1	10.9	8.5
13	4.2	8.8	6.0	12.7	10.6	11.3	15.5	15.5	5.7	14.1	10.9	8.8
14	3.9	9.2	5.7	12.4	10.6	10.9	15.5	16.2	6.4	15.5	10.9	9.2
15	3.9	9.5	5.3	12.4	10.6	10.9	15.9	17.0	6.7	16.6	10.6	9.5
16	3.9	9.2	4.9	12.4	10.6	10.6	15.9	16.2	7.4	18.0	9.9	9.9
17	3.5	8.8	4.2	12.4	10.6	10.6	15.9	15.5	7.8	19.1	9.5	9.9
18	3.5	8.5	3.9	12.4	10.2	10.6	16.2	14.8	8.5	18.4	8.8	10.2
19	3.5	8.1	4.2	13.1	10.2	10.6	14.8	14.1	8.8	17.7	8.5	10.6
20	3.2	7.8	4.6	13.8	10.2	10.2	13.8	13.4	9.2	17.0	7.8	10.6
21	3.2	7.4	4.9	14.5	10.2	11.3	12.7	13.1	9.9	16.2	7.4	10.6
22	3.2	7.1	5.3	15.2	9.9	12.0	11.7	12.4	8.8	15.5	7.8	10.6
23	2.8	7.1	5.7	15.9	9.9	13.1	10.6	12.7	7.8	14.8	7.8	10.9
24	2.8	7.1	6.0	16.6	10.2	14.1	9.2	13.4	7.1	14.1	8.1	10.9
25	2.5	7.1	6.4	17.3	10.6	15.2	8.1	13.8	6.0	13.8	8.5	10.9
26	2.5	7.4	6.7	16.6	10.9	15.9	9.5	14.5	4.9	13.1	8.5	10.9
27	2.5	7.4	7.8	18.4	11.3	17.0	11.3	14.8	3.9	12.7	8.8	10.9
28	2.5	7.4	9.2	15.2	12.0	16.2	12.7	15.5	5.3	12.4	9.2	10.9
29	2.5	7.4	10.2	14.8	12.0	15.9	14.1	15.9	6.7	11.7	9.5	11.3
30	2.5		11.3	14.1	12.7	15.5	15.5	15.2	8.1	11.3	9.9	11.3
31	2.5		12.7		13.4		17.0	14.8		10.6		11.3
Sum	96.2	205.0	220.1	420.3	347.8	410.2	430.6	453.1	249.5	420.0	287.5	325.6

Month	Current Year 1960								Period 1957-1960		
	Extreme Gage Feet		♀ Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low						
	High	Low	Day		Day				Average	Maximum	Minimum
Jan.			13	4.2	† 2	2.5	3.1	191	248	465	118
Feb.			15	9.5	1	2.5	7.1	406	304	444	173
Mar.			31	12.7	18	3.9	7.1	436	318	440	185
Apr.			27	18.4	†14	12.4	14.0	833	405	833	132
May			† 1	13.4	†22	9.9	11.2	691	347	691	165
June			6	17.3	20	10.2	13.7	814	356	814	131
July			31	17.0	25	8.1	13.9	854	344	854	120
Aug.			1	18.7	8	11.7	14.6	899	373	899	87.6
Sept.			1	14.1	27	3.9	8.3	495	285	495	120
Oct.			17	19.1	1	9.5	13.6	833	447	833	232
Nov.			†12	10.9	21	7.4	9.6	571	383	571	244
Dec.			5	12.0	12	8.5	10.5	646	404	646	224
Yearly				19.1		2.5	10.6	7,669	4,213	7,669	2,225

† And other days ♀ Mean daily

PUEBLO NUEVO WASTEWAY TO NEW RIVER IN MEXICO

DESCRIPTION: Control weir and staff gage located in Mexicali, Baja California on the south side of International Avenue between Morelia and Chilpancingo streets in Colonia Pueblo Nuevo about 1,000 feet west of New River and 80 feet south of the international land boundary.

RECORDS: Discharges are computed from head on the control weir based on staff gage readings. Data obtained and furnished by the Mexican Section of the Commission. Records available: January 1956 to December 1960.

REMARKS: The discharges of this wasteway are usually small and consist of overflow from the canal leading to the city pumping plant.

EXTREMES: Maximum monthly volume 136 acre-feet January 1956; minimum monthly volume zero June 1959 and December 1960; estimated maximum discharge 3.5 second-feet June 9, 1958; minimum discharge no flow on numerous occasions. Reference table below for other extremes.

Mean Daily Discharge in Second-Feet 1960 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	0.4	1.1	0	0.4	0.7	0	0.7	0	0	0
2	0	0	.4	1.4	0	.7	.7	0	.7	0	.4	0
3	0	0	.4	1.4	0	.7	.4	0	1.1	0	.4	0
4	0	0	.4	1.4	0	1.1	.4	0	1.1	0	.4	0
5	0	.4	.4	1.4	.4	1.1	.4	0	1.4	0	.4	0
6	0	.7	.4	1.1	.4	1.4	.4	0	1.1	0	.7	0
7	0	1.1	.4	1.1	.4	1.1	.4	0	1.1	0	.7	0
8	0	1.1	.4	.7	.7	1.1	0	0	.7	0	.7	0
9	0	.4	.4	.7	.7	.7	0	0	.7	0	.7	0
10	0	.4	0	.7	.7	.7	0	0	.4	0	.7	0
11	0	.4	0	.4	.4	.4	0	0	.4	0	.4	0
12	0	0	0	.4	.4	0	0	0	0	0	.4	0
13	0	0	0	.4	.4	0	0	0	0	0	.4	0
14	0	0	0	.4	0	0	0	0	0	.4	.4	0
15	.4	.4	0	.4	0	0	0	0	0	.4	.4	0
16	.4	.4	.4	.4	0	0	0	0	.4	.4	.4	0
17	.4	.4	.7	.4	0	.4	0	0	.4	.4	.4	0
18	.4	.4	.7	.4	0	.4	0	0	.4	.4	0	0
19	.4	.4	1.1	.4	.4	.4	0	0	.4	.4	0	0
20	.4	.4	1.1	.4	.4	.4	0	0	.4	.4	0	0
21	.4	.4	1.1	.4	.4	.4	0	0	.4	0	0	0
22	.4	.4	1.1	.4	.7	.7	0	0	.4	0	0	0
23	.4	.4	1.1	.4	.7	.7	0	0	0	0	0	0
24	.4	.4	1.1	.4	.7	1.1	0	0	0	0	0	0
25	.4	.4	.7	.4	.4	1.1	0	0	0	0	0	0
26	.4	.4	.7	.4	.4	1.4	0	0	0	0	0	0
27	0	.4	.7	.4	.4	1.4	0	0	0	0	0	0
28	0	.4	.7	.4	0	1.4	0	0	0	0	0	0
29	0	.4	.7	0	0	1.1	0	0	0	0	0	0
30	0		.7	0	0	1.1	0	.4	0	0	0	0
31	0		1.1		0		0	.4		0		0
Sum	4.8	10.5	17.3	18.2	9.0	21.4	3.4	.8	12.2	2.8	7.9	0

Month	Current Year 1960 Extreme Gage Feet		∅ Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Period 1956-1960 Acre-Feet		
	High	Low	High Day	High	Low Day	Low			Average	Maximum	Minimum
Jan.			† 15	0.4	† 1	0	0	8.1	55.9	136	8.1
Feb.			† 7	1.1	† 1	0	.4	18.6	40.5	92.4	13.0
Mar.			† 19	1.1	†10	0	.4	33.2	32.4	62.4	13.0
Apr.			† 2	1.4	†29	0	.7	34.0	30.8	60.0	4.1
May			† 8	.7	† 1	0	.4	17.0	37.3	69.7	17.0
June			† 6	1.4	†12	0	.7	41.3	29.2	63.2	0
July			† 1	.7	† 8	0	0	6.5	25.1	43.8	6.5
Aug.			† 30	.4	† 1	0	0	1.6	21.1	48.6	1.6
Sept.			5	1.4	†12	0	.4	22.7	17.0	32.4	7.3
Oct.			†14	.4	† 1	0	0	4.9	24.3	38.9	4.9
Nov.			† 6	.7	† 1	0	.4	14.6	37.3	61.6	14.6
Dec.			† 1	0	† 1	0	0	0	25.9	44.6	0
Yearly				1.4		0	.4	203	376	645	203

† And other days ∅ Mean daily

SALTON SEA - ELEVATIONS OF WATER SURFACE

DESCRIPTION: The Salton Sea is situated in Imperial and Riverside counties of California in the United States, 125 miles northwest of the Gulf of California, 18 miles northwest of Brawley, California, near the town of Westmoreland, and 42 miles north of the international boundary between the United States and Mexico. The sea lies in the bottom of a closed basin known as the Salton Sink, which has a drainage area of 8,360 square miles. A water-stage recorder and staff gage are located on the western shore of the sea 15.5 miles northwest of the town of Westmoreland, California. Zero of the gage is 250.00 feet below mean sea level, U. S. C. & G. S. datum.

RECORDS: Records of water surface elevations available from November 1904 to December 1960. From January 1925 to October 22, 1951 records were collected by Imperial Irrigation District and based generally upon one water surface reading each month, determined from a bench mark at Figtree John's Spring about 22 miles 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 1 foot higher than that of the present station, therefore to make the records comparable it is necessary to subtract 1 foot from the elevations of the records obtained at the old station. All records reported below 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 River and New River channels. The bottom of the sea, as determined in 1904, is 274.5 feet below mean sea level, U. S. C. & G. S. datum of 1929, adjustment of 1934 (present datum). Bottom of the sea is given as 273.5, datum of 1901.

EXTREMES: Maximum elevation during year 234.2 feet below mean sea level. Minimum elevation during year 235.2 feet. Prior to 1935 and since the sea was filled by flood waters of the Colorado River in 1905-06, maximum elevation 195.9 feet below mean sea level (present datum), February 10 to March 29, 1907; minimum elevation 251.6 feet below mean sea level in November 1924. Reference table below for extremes since 1935.

Mean Daily Water Surface in Feet Below Mean Sea Level 1960

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	235.2	234.9	234.7	234.4	234.3	234.3	234.5	234.6	234.8	234.9	234.9	234.8
2	235.2	234.9	234.7	234.4	234.3	234.3	234.5	234.6	234.8	234.9	234.9	234.8
3	235.2	234.9	234.7	234.4	234.3	234.3	234.5	234.6	234.8	234.9	234.9	234.8
4	235.2	234.9	234.7	234.4	234.4	234.3	234.5	234.6	234.8	234.9	234.9	234.8
5	235.2	234.9	234.6	234.4	234.4	234.4	234.5	234.6	234.8	234.8	234.9	234.7
6	235.2	234.9	234.6	234.3	234.3	234.4	234.5	234.6	234.8	234.8	234.8	234.7
7	235.2	234.9	234.6	234.3	234.3	234.4	234.5	234.6	234.8	234.9	234.8	234.8
8	235.2	234.9	234.6	234.3	234.3	234.4	234.5	234.6	234.8	234.9	234.8	234.8
9	235.2	234.9	234.6	234.3	234.3	234.4	234.5	234.6	234.8	235.0	234.8	234.8
10	235.2	234.9	234.6	234.3	234.3	234.4	234.5	234.6	234.8	235.0	234.8	234.8
11	235.1	234.9	234.6	234.3	234.3	234.4	234.6	234.6	234.8	235.0	234.8	234.8
12	235.1	234.9	234.6	234.3	234.3	234.4	234.6	234.6	234.8	235.0	234.8	234.8
13	235.1	234.9	234.6	234.3	234.3	234.4	234.6	234.7	234.8	235.0	234.8	234.8
14	235.1	234.9	234.6	234.3	234.3	234.4	234.6	234.7	234.8	235.0	234.8	234.8
15	235.1	234.9	234.6	234.3	234.3	234.4	234.6	234.7	234.8	235.0	234.8	234.8
16	235.1	234.8	234.6	234.3	234.3	234.3	234.6	234.7	234.8	235.0	u234.8	234.8
17	235.1	234.8	234.5	234.2	234.3	234.3	234.6	234.7	234.8	235.0	u234.8	234.8
18	235.1	234.8	234.5	234.2	234.3	234.3	234.6	234.7	234.8	235.0	u234.8	234.8
19	235.1	234.8	234.5	234.2	234.3	234.3	234.5	234.7	234.8	235.0	u234.8	234.7
20	235.1	234.8	234.5	234.2	234.3	234.4	234.5	234.7	234.8	235.0	u234.8	234.7
21	235.1	234.8	234.5	234.2	234.3	234.4	234.5	234.7	234.8	235.0	u234.8	234.7
22	235.1	234.8	234.5	234.2	234.3	234.4	234.6	234.7	234.9	235.0	u234.8	234.7
23	235.0	234.8	234.4	234.3	234.3	234.4	234.6	234.8	234.9	235.0	u234.8	234.7
24	235.0	234.8	234.4	234.3	234.4	234.4	234.6	234.8	234.9	235.0	u234.8	234.7
25	235.0	234.8	234.4	234.3	234.4	234.4	234.6	234.8	234.9	235.0	u234.8	234.7
26	235.0	234.8	234.4	234.3	234.4	234.4	234.6	234.8	234.9	234.9	u234.8	234.7
27	235.0	234.8	234.4	234.4	234.4	234.4	234.6	234.8	234.9	234.9	u234.8	234.7
28	235.0	234.8	234.4	234.4	234.4	234.4	234.6	234.8	234.9	234.9	u234.8	234.6
29	235.0	234.7	234.4	234.4	234.4	234.4	234.6	234.8	234.9	234.9	u234.8	234.6
30	235.0		234.4	234.4	234.4	234.4	234.6	234.8	234.9	234.9	234.8	234.6
31	235.0		234.4		234.3		234.6	234.8		234.9		234.6
Avg.	235.10	234.85	234.54	234.31	234.33	234.37	234.56	234.69	234.83	234.93	u234.81	234.74

Current Year 1960			Period 1935-1960		
Month	∅ Extreme Elev. Feet		Feet		
	High	Low	# Average	# Maximum	‡ Minimum
Jan.	235.0	235.2	241.06	235.10	249.3
Feb.	234.7	234.9	240.72	234.85	248.8
Mar.	234.4	234.7	240.45	234.54	248.6
Apr.	234.2	234.4	240.25	234.31	248.7
May	234.3	234.4	240.23	234.33	248.5
June	234.3	234.4	240.40	234.37	248.8
July	234.5	234.6	240.58	234.56	249.1
Aug.	234.6	234.8	240.79	234.69	249.4
Sept.	234.8	234.9	240.97	234.83	249.4
Oct.	234.8	235.0	241.06	234.93	249.8
Nov.	234.8	234.9	241.05	234.81	250.0
Dec.	234.6	234.8	240.85	234.74	249.6
Yearly	234.2	235.2	240.70	234.31	250.0

Mean monthly ‡ Reading near first day of month u Estimated
∅ Mean daily

Area and Capacity Curve		
Elevation	Area	Capacity
Feet below M. S. L.	Acres	Acre-Feet
274.5	0	0
270.0	90,000	300,000
260.0	150,000	1,200,000
250.0	190,000	2,500,000
240.0	220,000	4,200,000
230.0	245,000	6,200,000
220.0	265,000	8,800,000
210.0	285,000	11,700,000
200.0	305,000	15,000,000
150.0	440,000	33,600,000
100.0	625,000	60,200,000

CHEMICAL ANALYSES AND ELECTRICAL CONDUCTIVITY
1960

The following tables are based on bi-monthly samples from the Alamo and New Rivers taken and analyzed by the State of California Department of Water Resources.

Samples from the Alamo River are taken near the international boundary upstream from seepage pipes from the All-American Canal. *Samples from New River, are taken from the right* bank at road bridge 150 yards north of international boundary. Records of sampling extend from April 1951 through December 1960.

To convert milligram equivalents to parts per million by weight, multiply each ion by its appropriate conversion factor. These factors are: Ca, 20; Mg, 12.16; na, 23; (CO_3 plus HCO_3) expressed as CO_3, 30; SO_4, 48; Cl, 35.5; NO_3, 62. 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 $ECx10^6$ at 25°C is a relative measure of the total salt concentration.

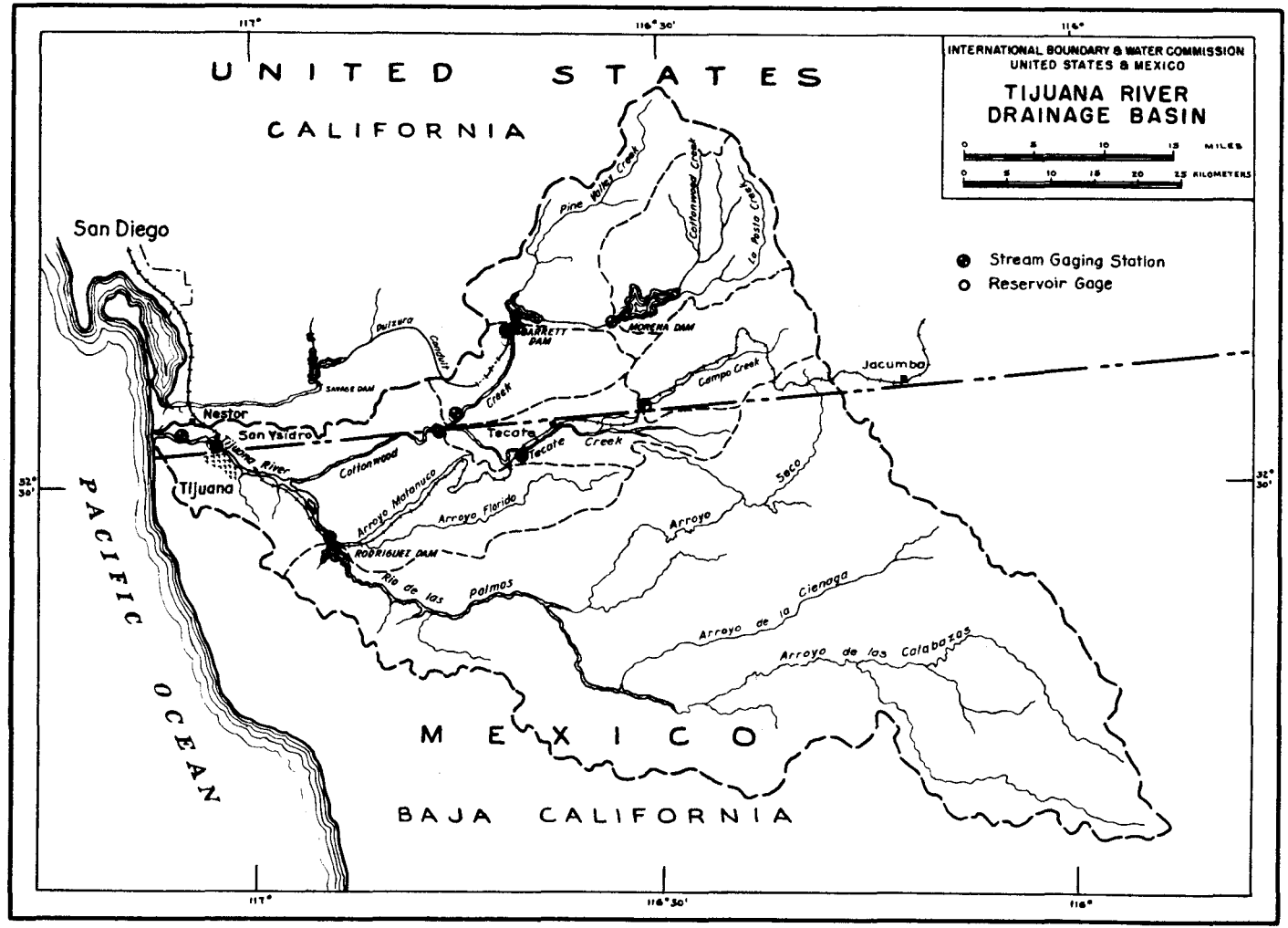
Alamo River

Month	No. of Samples	Dissolved Solids: Tons Per Acre-Foot	Dissolved Solids: Total Tons	ECx10⁶ @25°C	Boron p.p.m.	pH	% Na **	% Cl ***	Mean Milligram Equivalents per Liter: Ca	Mg	Na	CO_3 + HCO_3	SO_4	Cl	NO_3
Jan.	1			6,277	1.62	8.1	62				37.98	6.68		31.58	
Feb.															
Mar.	*1					8.2									
Apr.															
May	1	5.06		5,348	1.52	7.6	60	49	11.58	11.18	35.06	5.96	23.50	28.91	0.29
June															
July	1			5,435	1.88	7.8	63				40.89	5.56		32.99	
Aug.															
Sept.	1	4.72		4,978	1.52	7.8	62	51	9.38	6.74	20.23	5.50	21.13	27.50	0.19
Oct.															
Nov.	1			5,590	2.00	7.6	62				39.06	6.40		36.38	
Dec.															
Total	5														

New River

Month	No. of Samples	Dissolved Solids: Tons Per Acre-Foot	Dissolved Solids: Total Tons	ECx10⁶ @25°C	Boron p.p.m.	pH	% Na **	% Cl ***	Mean Milligram Equivalents per Liter: Ca	Mg	Na	CO_3 + HCO_3	SO_4	Cl	NO_3
Jan.	1			6,497	1.30	8.0	71				46.55	4.44		50.76	
Feb.															
Mar.	1			5,602	1.38	8.0	68				39.06	4.56		38.63	
Apr.															
May	1	4.88		5,633	1.18	8.2	65	68	10.58	9.10	38.98	4.46	13.74	39.48	0.16
June															
July	1			5,587	1.40	8.0	69				41.76	3.80		42.30	
Aug.															
Sept.	1	4.87		5,260	0.88	8.2	65	68	9.38	9.18	36.80	4.06	13.53	37.79	0.21
Oct.															
Nov.	1			5,102	1.22	7.9	69				36.54	4.20		37.93	
Dec.															
Total	6														

* Sample lost ** Percent of total cations *** Percent of total anions


INTERNATIONAL BOUNDARY & WATER COMMISSION
UNITED STATES & MEXICO
TIJUANA RIVER
DRAINAGE BASIN
0 5 10 15 MILES
0 5 10 15 20 25 KILOMETERS
Stream Gaging Station
Reservoir Gage
UNITED STATES
CALIFORNIA
MEXICO
BAJA CALIFORNIA
PACIFIC OCEAN
San Diego
Tijuana
Nestor
San Ysidro
Tecate
Jacumba
Pine Valley Creek
Cottonwood Creek
La Posta Creek
Barrett Dam
Morena Dam
Savage Dam
Campo Creek
Tecate Creek
Cottonwood
Arroyo Matanuco
Arroyo Florido
Arroyo Seco
Rodriguez Dam
Rio de las Palmas
Arroyo de la Cienaga
Arroyo de las Calabazas
117°
116°30'
116°
32°30'

COTTONWOOD CREEK ABOVE MORENA DAM, CALIFORNIA

DESCRIPTION: Staff gage located on east side of outlet tower immediately upstream from face of dam. Morena Dam is located on Cottonwood Creek, 1.8 miles upstream from the confluence of Hauser Creek, 8.5 miles upstream from Barrett Dam and about 20 miles upstream from the international boundary. Zero of gage is 2,882.4 feet above mean sea level.

RECORDS: Computed from monthly reservoir records of storage, releases, spills, leakage, evaporation and rainfall. Data forming the basis for this record computed by the International Boundary and Water Commission, U. S. Section, was furnished by the city of San Diego Water Department. Records available: April 1911 to December 1960. Storage began in Morena Reservoir March 1910.

REMARKS: Records reported below represent all water reaching Morena Reservoir, including rainfall on reservoir water surface. Reservoir capacity and area ratings date from 1910 when Morena Dam was completed. Records for 1960 computed on basis of area-capacity curves as determined from 1948 resurvey. Various changes have been made to the spillway section since construction of the dam. Elevation of present crest of ungated spillway, 157.00 feet, gage datum. Reservoir capacity at spillway crest, 1948 survey, 50,210 acre-feet. The entire capacity of Morena Reservoir comprises a part of the water supply of the city of San Diego, California. Water is released down Cottonwood Creek to Barrett Reservoir as required.

EXTREMES: Prior to 1937, maximum monthly inflow: 37,200 acre-feet, January 1916; minimum: no flow during parts of many years. Reference table below for extremes since 1937.

Monthly Discharge in Acre-Feet

Month	Current Year 1960	Period 1937-1960		
		Average	Maximum	Minimum
January	66.2	624	3,520	7
February	105	1,511	16,700	8
March	42.3	2,339	13,220	27
April	43.2	1,504	11,490	13
May	24.2	530	3,550	8
June	5.5	275	1,660	0
July	6.4	195	1,010	0
August	0	138	1,260	0
September	6.4	95.8	1,070	0
October	0.5	112	1,270	0
November	22.7	197	1,380	1
December	14.0	641	3,590	6
Yearly	336.4	8,163	39,439	238

Note: For months when inflow to the reservoir was small and other quantities were large, discordant figures of inflow may appear. This arises primarily from the difficulty of computing inflow as the residual of several larger quantities, which are not susceptible to measurement with a precision necessary to produce a final answer within desirable limits of accuracy.

COTTONWOOD CREEK BELOW MORENA DAM, CALIFORNIA

DESCRIPTION: Water-stage recorder on upstream side of southeast abutment of Morena Dam. A cable with standard wooden cable car is located about 0.8 mile downstream from Morena Dam. Discharge measurements made at this cable section include leakage, releases and spillway discharges. Immediately below the dam, a water-stage recorder above rectangular weir measures releases from Morena Reservoir.

RECORDS: Computed from monthly records of spillway waste, draft and leakage from Morena Dam. Data forming the basis for this record, computed by the International Boundary and Water Commission, United States Section, was furnished by the city of San Diego Water Department. Records available: January 1911 to December 1960. Storage began in Morena Reservoir March 1910.

REMARKS: Flows at this station are regulated by Morena Dam and records shown represent the water available immediately below Morena Dam. Water is released from Morena Reservoir and flows down the natural channel of Cottonwood Creek to Barrett Reservoir as required. There are no major diversions above Morena Dam. There were no spillway discharges nor draft releases during the calendar year 1960.

EXTREMES: Prior to 1937, maximum monthly discharge: 21,400 acre-feet, February 1916; minimum: no flow during December 1936. Reference table below for extremes since 1937.

Monthly Discharge in Acre-Feet

Month	Current Year 1960	Period 1937-1960		
		Average	Maximum	Minimum
January	3.2	180	1,700	1
February	3.0	492	4,260	2
March	3.4	339	1,490	3
April	3.1	1,258	12,950	1
May	4.8	343	3,040	1
June	4.7	471	7,360	0
July	3.2	267	2,340	1
August	3.2	222	1,550	1
September	3.1	436	5,880	0
October	3.2	130	529	0
November	6.0	175	1,260	0
December	4.8	486	5,350	1
Yearly	45.7	4,799	24,825	26

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 downstream from Morena Dam, 1 mile downstream from the confluence of Pine Valley Creek and about 12 miles upstream from the international boundary. Zero of gage is 1,446.12 feet above mean sea level.

RECORDS: Storage began in Barrett Reservoir in January 1921 and continuous computed records of runoff above the dam are available from that date. Records for the periods 1906-1915 and 1917-1920 were collected at a stream gaging station located at the site. Inflow for January 1921 to December 1960 was computed from monthly reservoir records of storage, releases, spills, leakage, evaporation and rainfall as furnished by the city of San Diego. The area-capacity-elevation curves used are dated 1948, 1951 and 1955, and were furnished by the city of San Diego Water Department. Records of inflow were also computed by the International Boundary and Water Commission, United States Section.

REMARKS: 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. Capacity of reservoir at top of flash gates on spillway (gage height, 168.88 feet) 44,755 acre-feet. Capacity at spillway crest (gage height, 160.88 feet) 37,950 acre-feet. Dead storage, 719 acre-feet below lowest outlet (gage height 58.8 feet), included in these records. The entire capacity of Barrett Reservoir comprises a part of the water supply of the city of San Diego, California.

EXTREMES: Prior to 1937, maximum monthly discharge: 54,800 acre-feet, February 1927; minimum: no flow during several months of various years. Reference table below for extremes since 1937.

Monthly Discharge in Acre-Feet

Month	Current Year 1960	Period 1937-1960		
		Average	Maximum	Minimum
January	43.4	750	3,430	24
February	148	2,088	26,790	10
March	84.2	3,628	18,860	20
April	40.4	2,482	21,630	13
May	38.5	759	5,130	0
June	11.0	309	1,730	0
July	12.4	202	1,010	12
August	4.6	123	579	0
September	3.9	140	759	0
October	10.1	87.6	645	5
November	14.6	148	1,200	0
December	11.6	548	3,380	11.6
Yearly	422.7	11,265	59,387	422.7

Note: For months when inflow to the reservoir was small and other quantities were large, discordant figures of inflow may appear. This arises primarily from the difficulty of computing inflow as the residual of several larger quantities, which are not susceptible to measurement with a precision necessary to produce a final answer within desirable limits of accuracy.

DULZURA CONDUIT BELOW BARRETT DAM, CALIFORNIA

DESCRIPTION: Water-stage recorder 0.5 mile downstream from Barrett Dam on right bank of Dulzura Conduit 50 feet 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 U. S. Geological Survey. Records at present location are good. Records available: January 1909 to December 1960. Records January 1909 to April 1940 from city of San Diego Water Department.

REMARKS: Barrett Dam was completed in 1921. Prior to this date the intake of Dulzura Conduit was located 1.5 miles 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 along the conduit from Barrett, 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 losses in the reach from the reservoir to the gating station.

EXTREMES: Since 1937 maximum mean daily discharge: 55 second-feet, March 15, 1954; minimum discharge: no flow for long periods on many occasions. Reference table below for other extremes since 1937.

Monthly Discharge in Acre-Feet

Month	Current Year 1960	Period 1937-1960		
		Average	Maximum	Minimum
January	0	539	2,350	0
February	0	544	2,130	0
March	0	725	2,330	0
April	0	1,142	2,860	0
May	0	1,270	3,040	0
June	0	1,224	2,920	0
July	0	1,076	2,920	0
August	0	994	2,820	0
September	0	690	2,320	0
October	0	527	2,450	0
November	0	727	2,760	0
December	0	635	2,305	0
Yearly	0	10,093	27,170	0

COTTONWOOD CREEK BELOW BARRETT DAM, CALIFORNIA

DESCRIPTION: Water-stage recorder and cable with wooden 2-seat sit-down type cable car located about 2.5 miles downstream from Barrett Dam and 0.5 mile upstream from Rattlesnake Canyon. The altitude of gage is about 1,000 feet (from topographic map). Leakage is small and is measured by a staff gage and control weir located immediately below the dam.

RECORDS: Prior to February 1952, monthly records of spillway waste were computed by the city of San Diego, California from the depth over the spillway crest, read on the reservoir gage and applied to a broad-crested weir formula. This gaging station was installed to obtain a record of Barrett Dam spills and is operated only when Barrett Reservoir is near or above spillway level. There have been no spillway discharges since May 1943. Records prior to January 1953 furnished by the city of San Diego Water Department, reviewed and revised by the United States Section of this Commission. Subsequent to January 1953 records furnished by the city of San Diego Water Department and the U. S. Geological Survey. Records available: January 1921 to December 1960. Storage began in Barrett Reservoir 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, February 1927; minimum: no flow during several months of various years. Reference table below for extremes since 1937.

Monthly Discharge in Acre-Feet

Month	Current Year 1960	Period 1937-1960		
		Average	Maximum	Minimum
January	0	25.1	590	0
February	0	42.8	990	0
March	.1	1,153	13,390	0
April	0	1,693	33,400	0
May	0	384	7,520	0
June	0	54.0	890	0
July	0	3.0	21	0
August	0	2.7	21	0
September	0	2.2	21	0
October	0	1.9	21	0
November	0	1.4	15	0
December	0	2.2	21	0
Yearly	.1	3,365	50,364	0

COTTONWOOD CREEK ABOVE TECATE CREEK NEAR DULZURA, CALIFORNIA

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

RECORDS: Based upon a continuous record of gage height and current meter measurements or observation of no flow generally made twice each month. Records obtained and furnished by the U. S. Geological Survey. 1960 records good. Records available: October 1936 to December 1960.

REMARKS: Flow is largely controlled by Barrett and Morena Reservoirs, 10 and 18 miles respectively upstream from this station. During 1960 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, February 7, 1937 (gage height 9.65 feet), from rating curve extended above 1,500 second-feet by logarithmic plotting. Minimum discharge: no flow during part of each year. Reference table below for extremes since 1937.

Mean Daily Discharge in Second-Feet 1960 —— Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	1.3	0.1	0	0	0	0	0	0	0	0
2	0	.7	1.1	0	0	0	0	0	0	0	0	0
3	0	.9	1.1	0	0	0	0	0	0	0	0	0
4	0	.8	1.0	0	0	0	0	0	0	0	0	0
5	0	.7	.9	0	0	0	0	0	0	0	0	0
6	0	.6	.8	0	0	0	0	0	0	0	0	0
7	0	.5	.7	0	0	0	0	0	0	0	0	0
8	0	.5	.7	0	0	0	0	0	0	0	0	0
9	0	.9	.6	0	0	0	0	0	0	0	0	0
10	0	1.3	.5	0	0	0	0	0	0	0	0	0
11	0	1.6	.4	0	0	0	0	0	0	0	0	0
12	0	1.3	.4	0	0	0	0	0	0	0	0	0
13	0	1.2	.4	0	0	0	0	0	0	0	0	0
14	0	1.0	.3	0	0	0	0	0	0	0	0	0
15	0	.8	.3	0	0	0	0	0	0	0	0	0
16	0	.8	.2	0	0	0	0	0	0	0	0	0
17	0	.7	.2	0	0	0	0	0	0	0	0	0
18	0	.6	.2	0	0	0	0	0	0	0	0	0
19	0	.7	.1	0	0	0	0	0	0	0	0	0
20	0	.6	.1	0	0	0	0	0	0	0	0	0
21	0	.5	.1	0	0	0	0	0	0	0	0	0
22	0	.5	.1	0	0	0	0	0	0	0	0	0
23	0	.4	.1	0	0	0	0	0	0	0	0	0
24	0	.3	.1	0	0	0	0	0	0	0	0	0
25	0	.3	.2	0	0	0	0	0	0	0	0	0
26	0	.3	.2	0	0	0	0	0	0	0	0	0
27	0	.4	.2	0	0	0	0	0	0	0	0	0
28	0	.4	.2	0	0	0	0	0	0	0	0	0
29	0	1.5	.2	0	0	0	0	0	0	0	0	0
30	0		.1	0	0	0	0	0	0	0	0	0
31	0		.1		0		0	0		0		0
Sum	0	20.8	12.9	.1	0	0	0	0	0	0	0	0

Month	Current Year 1960								Period 1937-1960		
	Extreme Gage Feet		Ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	High Day	High	Low Day	Low			Average	Maximum	Minimum
Jan.				0		0	0	0	265	1,190	0
Feb.			11	1.6	† 1	0	.72	41	824	9,940	0
Mar.			1	1.3	†19	.1	.42	26	2,401	20,880	0
Apr.			1	.1	† 2	0	.003	.2	2,333	40,240	0
May				0		0	0	0	544	10,040	0
June				0		0	0	0	105	1,590	0
July				0		0	0	0	11.6	206	0
Aug.				0		0	0	0	.6	7.7	0
Sept.				0		0	0	0	3.1	72	0
Oct.				0		0	0	0	6.0	101	0
Nov.				0		0	0	0	14.6	203	0
Dec.				0		0	0	0	134	1,110	0
Yearly				1.6		0	.09	67	6,642	66,700	0

† And other days Ø Mean daily

CAMPO CREEK NEAR CAMPO, CALIFORNIA

DESCRIPTION: Water-stage recorder and broad-crested weir 0.5 mile upstream from the international land boundary between the United States and Mexico, on left bank just upstream from California State Highway 94 bridge, 3.5 miles southwest of Campo, California. Low water discharge measurements are made by wading at the gage; high water measurements are made from the bridge. Zero of gage is 2,179.08 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based upon current meter measurements and observation of no flow. Records obtained and furnished by the U. S. Geological Survey. 1960 records good. Records available: October 1936 to December 1960.

REMARKS: Campo Creek originates in the United States and flows southwestward into Mexico where it joins Tecate Creek. A small conservation reservoir a quarter of a mile upstream, completed in August 1956, partially regulates flow.

EXTREMES: Maximum discharge: 880 second-feet, February 6, 1937 (gage height 4.80 feet, present datum), from rating curve extended above 45 second-feet on basis of velocity-depth relation and cross-section area at the control. Minimum discharge: no flow during most of the summer months of each year. Reference table below for other extremes since 1937.

Mean Daily Discharge in Second-Feet 1960 —— Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	0	0	0.1	0	0	0	0	0	0	0
2	0	0	0	0	.1	0	0	0	0	0	0	0
3	0	0	0	0	.1	0	0	0	0	0	0	0
4	0	0	0	0	.1	0	0	0	0	0	0	0
5	0	0	0	0	.1	0	0	0	0	0	0	0
6	0	0	0	0	.1	0	0	0	0	0	0	0
7	0	0	0	0	.1	0	0	0	0	0	0	0
8	0	0	0	0	.1	0	0	0	0	0	0	0
9	0	0	0	0	.1	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	.1	0	0	0	0	0	0	0	0
28	0	0	0	.1	0	0	0	0	0	0	0	0
29	0	0	0	.1	0	0	0	0	0	0	0	0
30	0		0	.1	0	0	0	0	0	0	0	0
31	0		0		0		0	0		0		0
Sum	0	0	0	.4	.9	0	0	0	0	0	0	0

Current Year 1960 — *Period* 1937-1960

Month	Extreme Gage Feet		Ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low						
	High	Low	Day		Day				Average	Maximum	Minimum
Jan.				0		0	0	0	195	906	0
Feb.				0		0	0	0	343	1,730	0
Mar.				0		0	0	0	491	2,360	0
Apr.			†27	.1	† 1	0	.01	.8	344	3,250	0
May			† 1	.1	†10	0	.03	1.8	157	1,540	0
June				0		0	0	0	61.2	719	0
July				0		0	0	0	24.6	361	0
Aug.				0		0	0	0	17.8	321	0
Sept.				0		0	0	0	16.9	264	0
Oct.				0		0	0	0	30.3	543	0
Nov.				0		0	0	0	55.9	542	0
Dec.				0		0	0	0	156	808	0
Yearly				.1		0	.004	2.6	1,893	11,141	0

† And other days Ø Mean daily

TECATE CREEK AT LA PUERTA, BAJA CALIFORNIA

DESCRIPTION: Water-stage recorder, cable with car and Cipolletti-type control weir with a capacity of 41 second-feet immediately downstream from Tecate-Tijuana highway bridge, 3.4 miles from Tecate, Baja California. Cable with car located approximately 1,640 feet downstream from weir.

RECORDS: Based on continuous record of stages and 10 check measurements during 1960. Data obtained and furnished by the Mexican Section of the Commission. Records available: various flow measurements and mean daily stages from January 1, 1946 to December 12, 1951. On December 13, 1951 a weir was installed and mean daily discharges computed from that date until November 30, 1952; from March 5 to September 25, 1953; January 16 to March 11, March 23 to June 15 and October 6 to 16, 1954; January 1, 1955 to May 25, 1956; November 9 to December 7, 1956; December 28, 1956 to January 31, 1957; April 25 to August 20, 1957 and September 11, 1957 to December 31, 1960. Records since 1946 are good.

REMARKS: The National Irrigation Commission of Mexico installed a water-stage recorder in 1925 which has been operated by Secretaria de Agricultura y Fomento although very irregularly. In 1940, the Mexican Section of the Commission constructed a control section of concrete on the old National Road crossing. The small flows through the weir during 1960 were used in Mexico and none crossed the international boundary.

EXTREMES: Maximum monthly flow estimated at 790 acre-feet in January 1946; minimum monthly flow was zero on several occasions. Maximum mean daily discharge was 66.4 second-feet on March 16, 1952. Minimum discharge was zero on several occasions. Reference table below for other extremes.

Mean Daily Discharge in Second-Feet 1960 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.1	1.4	0.6	0.8	0.3	0.3	0.2	0.1	0	0	0	0
2	.1	4.4	.6	.7	.3	.3	.1	.1	0	0	0	0
3	.1	1.7	.6	.6	.3	.3	.1	.1	0	0	0	0
4	.1	1.3	.6	.5	.3	.3	.1	.1	0	0	0	0
5	.1	1.2	.4	.4	.3	.3	.1	.1	0	0	0	0
6	.1	.9	.3	.2	.3	.3	.1	.1	0	0	0	0
7	.1	.6	.3	.1	.3	.3	.1	.1	0	0	0	0
8	.1	.2	.3	.2	.3	.3	.1	.1	0	0	0	0
9	0	.9	.9	.2	.3	.3	.1	0	0	0	0	0
10	0	3.1	.9	.3	.3	.3	.1	0	0	0	0	0
11	0	1.3	.3	.4	.3	.3	.1	0	0	0	0	0
12	2.5	1.3	0	.4	.3	.3	.1	0	0	0	0	0
13	.8	1.2	0	.5	.3	.3	0	0	0	0	0	0
14	.9	.7	0	.5	.3	.3	0	0	0	0	0	0
15	4.6	.6	0	.6	.3	.3	0	0	0	0	0	0
16	1.6	.6	0	.6	.3	.3	0	0	0	0	0	0
17	1.2	.8	0	.7	.3	.3	.1	0	0	0	0	0
18	1.0	.8	.3	.7	.3	.3	.1	0	0	0	0	0
19	1.3	1.3	.3	.8	.3	.3	.1	0	0	0	0	0
20	1.6	.8	.1	.8	.3	.3	.1	0	0	0	0	0
21	1.3	.5	.3	.9	.3	.3	.1	0	0	0	0	0
22	.9	.3	.6	.8	.3	.2	.1	0	0	0	0	0
23	1.3	.5	1.3	.7	.3	.2	.1	0	0	0	0	0
24	.9	.6	.6	.7	.3	.2	.1	0	0	0	0	0
25	.8	.5	.6	.6	.3	.2	.1	0	0	0	0	0
26	.7	.6	.7	.5	.3	.2	.1	0	0	0	0	0
27	.3	.6	.7	.4	.3	.2	.1	0	0	0	0	0
28	.6	.6	.8	.3	.3	.2	.1	0	0	0	0	0
29	.8	.6	.8	.3	.3	.2	.1	0	0	0	0	0
30	.9		.9	.3	.3	.2	.1	0	0	0	0	0
31	1.7		.9		.3		.1	0		0		0
Sum	26.5	29.9	14.7	15.5	9.3	8.1	2.8	.8	0	0	0	0

Current Year 1960									Period 1952-1960		
Month	Extreme Gage Feet		Ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low				Average	Maximum	Minimum
	High	Low	Day		Day						
Jan.			12	* 21.0	11	* 0	0.9	53.5	127	317	30.0
Feb.			2	* 18.1	22	* .1	1.0	59.2	162	398	59.2
Mar.			† 9	.9	† 12	0	.5	30.0	262	773	30.0
Apr.			21	.9	7	.1	.5	31.6	200	422	31.6
May			† 1	.3	† 1	.3	.3	19.5	133	365	9.7
June			† 1	.3	† 29	.2	.3	17.0	77.0	290	.8
July			1	.2	† 13	0	.1	6.5	79.4	266	6.5
Aug.			† 1	.1	† 9	0	0	1.6	103	315	1.6
Sept.			† 1	0	† 1	0	0	0	56.7	206	0
Oct.			† 1	0	† 1	0	0	0	32.4	128	0
Nov.			† 1	0	† 1	0	0	0	35.7	80.3	0
Dec.			† 1	0	† 1	0	0	0	26.8	77.8	0
Yearly				21.0		0	.4	219	⊕ 844	⊕ 1,955	⊕ 219

† And other days Ø Mean daily * Instantaneous ⊕ Annual averages and extremes for 1955 and 1958 to 1960

COTTONWOOD CREEK NEAR INTERNATIONAL BOUNDARY

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

RECORDS: Based upon 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. 1960 records good. Records available: October 1936 to December 1960.

REMARKS: Flow is partially controlled by Barrett and Morena Reservoirs, 11 and 19 miles 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, February 7, 1937 (gage height 8.50 feet) from rating curve extended above 300 second-feet on basis of velocity-mean depth and area computations. Minimum discharge: no flow at times during most years. Reference table below for other extremes since 1937.

Mean Daily Discharge in Second-Feet 1960 —— Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.1	0.1	1.4	0.2	0.2	0	0	0	0	0	0	0
2	.1	.1	.9	.2	.2	0	0	0	0	0	0	0
3	.1	.1	.8	.2	.2	0	0	0	0	0	0	0
4	.1	.1	.7	.2	.2	0	0	0	0	0	0	0
5	.1	.3	.7	.2	.2	0	0	0	0	0	0	0
6	.1	.4	.6	.2	.2	0	0	0	0	0	0	0
7	.1	.4	.6	.2	.1	0	0	0	0	0	0	0
8	.1	.4	.6	.2	.1	0	0	0	0	0	0	0
9	.1	.7	.5	.2	.1	0	0	0	0	0	0	0
10	.1	1.5	.5	.2	.1	0	0	0	0	0	0	0
11	.1	1.5	.4	.2	.1	0	0	0	0	0	0	0
12	.1	1.2	.4	.2	.1	0	0	0	0	0	0	0
13	.1	1.0	.5	.2	.1	0	0	0	0	0	0	0
14	.1	.9	.5	.2	.1	0	0	0	0	0	0	0
15	.1	.8	.4	.2	.1	0	0	0	0	0	0	0
16	.1	.7	.4	.2	.1	0	0	0	0	0	0	0
17	.1	.6	.4	.2	.1	0	0	0	0	0	0	0
18	.1	.6	.4	.2	.1	0	0	0	0	0	0	0
19	.1	.7	.4	.2	.1	0	0	0	0	0	0	0
20	.1	.6	.4	.2	.1	0	0	0	0	0	0	0
21	.1	.6	.4	.2	.1	0	0	0	0	0	0	0
22	.1	.5	.3	.2	0	0	0	0	0	0	0	0
23	.1	.5	.3	.2	0	0	0	0	0	0	0	0
24	.1	.4	.3	.2	0	0	0	0	0	0	0	0
25	.1	.4	.3	.2	0	0	0	0	0	0	0	0
26	.1	.4	.3	.2	0	0	0	0	0	0	0	0
27	.1	.4	.3	.2	0	0	0	0	0	0	0	0
28	.1	.5	.5	.2	0	0	0	0	0	0	0	0
29	.1	1.1	.5	.2	0	0	0	0	0	0	0	0
30	.1		.4	.2	0	0	0	0	0	0	0	0
31	.1		.2		0		0	0		0		0
Sum	3.1	17.5	15.3	6.0	2.7	0	0	0	0	0	0	0

Month	Current Year 1960								Period 1937-1960		
	Extreme Gage Feet		Ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	High Day	High	Low Day	Low			Average	Maximum	Minimum
Jan.			† 1	0.1	† 1	0.1	0.10	6.1	571	2,750	0
Feb.			† 10	1.5	† 1	.1	.60	35	1,494	13,680	1.4
Mar.			1	1.4	31	.2	.49	30	3,807	27,140	1.0
Apr.			† 1	.2	† 1	.2	.20	12	3,186	51,060	.4
May			† 1	.2	† 21	0	.09	5.4	806	14,110	.6
June				0		0	0	0	164	2,630	0
July				0		0	0	0	25.6	312	0
Aug.				0		0	0	0	8.9	171	0
Sept.				0		0	0	0	12.7	152	0
Oct.				0		0	0	0	33.1	705	0
Nov.				0		0	0	0	65.0	839	0
Dec.				0		0	0	0	375	3,330	0
Yearly				1.5		0	.12	88	10,548	97,900	31.3

† And other days Ø Mean daily

RIO DE LAS PALMAS ABOVE RODRIGUEZ DAM, BAJA CALIFORNIA

DESCRIPTION: Rodriguez Dam is located in Mexico on Río de las Palmas, the principal tributary to the Tijuana River, about 5.5 miles upstream from its confluence with Cottonwood Creek, 11 miles upstream from the point where the Tijuana River crosses the international land boundary between the United States and Mexico, and 10 miles southeast of the city of Tijuana, Baja California, Mexico.

RECORDS: Computed from monthly reservoir records of storage, releases, spills, leakage, evaporation and rainfall. Records obtained and furnished by the Ministry of Hydraulic Resources, Government of Mexico. Records available: May 1937 to December 1960. Storage began in Rodriguez Reservoir 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 above mean sea level; at top of spillway gates 410.10 feet above mean sea level. Reservoir capacity at spillway crest 76,210 acre-feet; at top of spillway gates 111,070 acre-feet.

EXTREMES: Maximum monthly inflow: 77,320 acre-feet, April 1941; minimum: no flow during part of most years. Reference table below for other extremes since 1938.

Monthly Discharge in Acre-Feet

Month	Current Year 1960	Period 1938-1960		
		Average	Maximum	Minimum
January	91.3	1,279	6,596	0
February	66.9	3,221	41,295	6
March	90.4	8,687	68,321	4
April	68.1	4,520	77,765	6
May	20.7	554	9,962	0
June	0	96.3	890	0
July	73.1	102	327	0
August	124	61.9	771	0
September	31.9	58.8	465	0
October	8.4	77.1	344	0
November	45.9	124	1,012	0
December	29.4	1,110	15,685	20
Yearly	650.1	19,891	177,642	650

RIO DE LAS PALMAS BELOW RODRIGUEZ DAM, BAJA CALIFORNIA

DESCRIPTION: There is no gage at this station. Rodriguez Dam is located in Mexico on the Río de las Palmas about 5.5 miles upstream from its confluence with Cottonwood Creek and 11 miles upstream from the point where the Tijuana River crosses the international land boundary between the United States and Mexico. Records are derived from observations of flows at leakage weirs and the quantities of water reported below represent the total amount of water that passes the dam and reaches the natural channel of the Río de las Palmas immediately below Rodriguez Reservoir.

RECORDS: Records available: May 1937 to December 1960. Records are computed from Rodriguez Reservoir records and are a combination of 1) releases to the channel; 2) spillway waste; and 3) leakage.

REMARKS: Records are obtained by the Ministry of Hydraulic Resources, Government of Mexico, and furnished by the Mexican Section of the Commission. Draft from the reservoir, not included in these records, was formerly used for irrigation of about 5,000 acres in the river valley below the dam and for municipal water supply for the city of Tijuana, Baja California, Mexico. No water has been used for irrigation since December 1955.

EXTREMES: Maximum monthly: 79,733 acre-feet, April 1941; minimum monthly: 5 acre-feet in July 1956. Reference table below for other extremes since 1938.

Monthly Discharge in Acre-Feet

Month	Current Year 1960	Period 1938-1960		
		Average	Maximum	Minimum
January	7.3	179	494	7
February	6.8	1,811	30,150	6
March	7.3	3,549	59,267	6
April	7.1	3,632	79,733	6
May	7.3	265	2,287	6
June	7.1	181	685	6
July	7.3	163	468	5
August	7.3	154	423	6
September	7.1	155	520	6
October	7.3	163	604	7
November	7.1	167	716	6
December	7.3	161	494	7
Yearly	86.3	10,580	153,139	78

DIVERSIONS FROM RODRIGUEZ RESERVOIR, BAJA CALIFORNIA

DESCRIPTION: Sparling flow meter located immediately below the dam in the pipe line which carries water released from Rodriguez Reservoir to the North and South Canals.

RECORDS: Direct recording by Sparling flow meter. Records obtained and furnished by the Ministry of Hydraulic Resources of Mexico through the Mexican Section of the Commission. Records available: May 1937 to December 1960.

REMARKS: Water was diverted from the Rio de las Palmas at Rodriguez Dam to the North and South Canals. Beginning in January 1957, water was diverted directly into the aqueduct for domestic use for the city of Tijuana. The North Canal delivered water for irrigation in that part of the Tijuana Valley lying in Mexico and north of the Rio de las Palmas. The South Canal is used for delivery of irrigation water to lands in that part of the Tijuana Valley in Mexico lying south of the Rio de las Palmas and the Tijuana Rivers. During 1960 no water was released for irrigation of farm lands.

EXTREMES: Maximum monthly diversions: 1,963 acre-feet, July 1944; minimum: no flow March and April 1941 and August 1960. Reference table below for other extremes since 1938.

Monthly Discharge in Acre-Feet

Month	Current Year 1960	Period 1938-1960		
		Average	Maximum	Minimum
January	224	319	781	25
February	216	356	1,131	23
March	259	434	1,222	0
April	276	635	1,602	0
May	313	886	1,675	313
June	293	1,035	1,856	261
July	149	1,085	1,963	149
August	0	931	1,859	0
September	66.2	747	1,421	66.2
October	54.7	640	1,187	54.7
November	33.2	483	1,037	33.2
December	27.6	417	981	27.6
Yearly	1,911.7	7,968	15,315	1,911.7

TIJUANA RIVER AT INTERNATIONAL BOUNDARY

DESCRIPTION: Water-stage recorder in gage well on right bank of river approximately 500 feet below the international boundary and about 7 miles upstream from the mouth of the river. Station was established May 28, 1947, by the California Water and Telephone Company and removed in March 1960.

RECORDS: Records obtained and furnished by the California Water and Telephone Company. Records available: May 1947 to March 1960. Inspection at regular intervals and the record of other stations indicate that there was no flow across the boundary from March to December 1960 but that there was probably unreported flow in January and February of 1960.

EXTREMES: Since May 1947, maximum discharge was 2,570 second-feet, March 15, 1953. Minimum discharge: no flow during a part or all of each year since 1951. Reference table below for other extremes since 1947.

Monthly Discharge in Acre-Feet

Month	Current Year 1960	Period 1947-1960		
		Average	Maximum	Minimum
January	0	658	4,603	0
February	0	230	1,496	0
March	0	1,354	13,309	0
April	0	414	1,499	0
May	0	72.5	312	0
June	0	47.7	309	0
July	0	37.6	239	0
August	0	32.6	193	0
September	0	39.3	216	0
October	0	62.8	305	0
November	0	89.2	480	0
December	0	190	1,447	0
Yearly	0	3,228	19,822	0

TIJUANA RIVER NEAR NESTOR, CALIFORNIA

DESCRIPTION: Water-stage recorder on county road bridge 4.1 miles downstream from the international land boundary between the United States and Mexico, 2.9 miles upstream from mouth of the river, and 1.7 miles south of Nestor, California. Zero of gage is 15.14 feet above mean sea level, U. S. C. & G. S. datum. From April 10, 1953 to August 5, 1958, station was located 2 miles upstream at different datum. There are no significant inflows to the river between the old and new locations of the gage.

RECORDS: Based upon current meter measurements or observation of no flow generally made once a month. Records obtained and furnished by the U. S. Geological Survey. Records available: October 1914 to September 1915, and October 1922 to December 1960. (October 1922 to September 1936 are from city of San Diego Water Department.)

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, February 7, 1937 (gage height 8.20 feet), obtained from rating curve extended above 2,000 second-feet on basis of velocity-depth relationship, and cross section after peak of the flood. Minimum discharge: no flow during parts of most years. Reference table below for other extremes since 1937.

Mean Daily Discharge in Second-Feet 1960 — 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	13.0	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	2.3	2.4	0	0	0	0	0	0	0	0	0	0
11	.3	.1	0	0	0	0	0	0	0	0	0	0
12	15.0	0	0	0	0	0	0	0	0	0	0	0
13	4.0	0	0	0	0	0	0	0	0	0	0	0
14	12.0	0	0	0	0	0	0	0	0	0	0	0
15	18.0	0	0	0	0	0	0	0	0	0	0	0
16	.2	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
31	0		0		0		0	0		0		0
Sum	51.8	15.5	0	0	0	0	0	0	0	0	0	0

Month	Current Year 1960								Period 1937-1960		
	Extreme Gage Feet		Ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	High Day	High	Low Day	Low			Average	Maximum	Minimum
Jan.			15	18.0	† 1	0	1.67	103	1,068	4,070	0
Feb.			2	13.0	† 1	0	.53	31	5,806	66,920	0
Mar.				0		0	0	0	10,281	107,000	0
Apr.				0		0	0	0	8,835	181,900	0
May				0		0	0	0	986	18,340	0
June				0		0	0	0	166	3,060	0
July				0		0	0	0	33.1	523	0
Aug.				0		0	0	0	23.5	242	0
Sept.				0		0	0	0	34.5	234	0
Oct.				0		0	0	0	118	1,340	0
Nov.				0		0	0	0	188	1,490	0
Dec.				0		0	0	0	970	7,930	0
Yearly				18.0		0	.18	134	28,509	332,749	0

† And other days Ø Mean daily

TIJUANA INTERNATIONAL TRUNK LINE SEWER AT MANHOLE NO. 38

DESCRIPTION: Water-stage recorder and Palmer-Bowlus flume located in the Tijuana trunk line sewer at manhole No. 38, 600 feet downstream from the junction of the San Ysidro and Tijuana branches of the sewer, 0.6 mile north of the international boundary, United States and Mexico, and 0.8 mile southwest of San Ysidro, California; and water-stage recorder and weir in San Ysidro branch at the pumping plant 4700 feet upstream from the junction. Zero of the gage at manhole No. 38 is the invert of the pipe and zero flow occurs at gage height 0.25 feet, which is the crest of the flume.

RECORDS: Computed on basis of depth as recorded immediately upstream from Palmer-Bowlus flume. 1960 records good. Records available: January 29, 1948 to December 1960.

REMARKS: This international sewer was constructed by the Governments of the United States and Mexico in 1938 to correct a serious international sanitation problem. The flow through the sewer includes the sewage flows from the towns of San Ysidro, California and Tijuana, Baja California and discharges into the Pacific Ocean 3.7 miles below this station and 0.7 mile north of the international boundary. Of the flow indicated below for 1960, approximately 96 percent is contributed from the town of Tijuana, Baja California.

EXTREMES: Monthly and annual extremes are shown in the table below.

Month	Total Monthly Flows Millions of Gallons			Mean Daily Flows-Millions of Gallons Per Day					
				Current Year 1960			Period 1948-1960		
	U.S.	Mexico	Total	Maximum	Minimum	Mean	Maximum	Minimum	Mean
Jan.	ᵘ 4.608	* 128.145	132.753	4.977	3.296	4.282	5.112	2.062	3.503
Feb.	* 4.388	119.963	124.351	4.783	3.232	4.288	5.112	2.462	3.542
Mar.	4.653	134.240	138.893	4.783	4.201	4.480	4.880	2.191	3.521
Apr.	5.209	129.871	135.080	4.718	4.201	4.503	4.731	2.055	3.512
May	5.339	134.847	140.186	4.783	4.266	4.522	4.802	1.745	3.535
June	5.339	122.308	127.647	4.589	3.878	4.255	4.660	2.062	3.534
July	5.965	144.766	120.731	4.653	2.521	3.895	4.880	2.101	3.501
Aug.	5.707	92.145	97.852	3.361	2.779	3.157	4.589	2.055	3.433
Sept.	5.410	115.774	121.184	4.653	3.102	4.039	4.660	1.648	3.532
Oct.	4.918	130.549	135.467	4.718	3.619	4.370	5.112	2.236	3.552
Nov.	4.628	132.391	137.019	4.912	4.330	4.567	4.912	2.055	3.611
Dec.	4.628	129.741	134.369	4.653	3.878	4.334	4.731	2.243	3.632
Yearly	60.792	1,484.740	1,545.532	4.977	2.521	4.223	5.112	1.648	3.534

ᵘ Estimated * Partly estimated

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 Water Department, the U. S. Geological Survey and the U. S. Weather Bureau; for Rodriguez Reservoir by the Ministry of Hydraulic Resources, Government of Mexico.

In Acre-Feet

Month	Morena Reservoir Capacity: 50,130		Barrett Reservoir Capacity: 44,755		Rodriguez Reservoir Capacity: 111,635		Total in Tijuana River Basin Reservoirs Capacity: 206,520	
	1960	Average 1937-60	1960	Average 1937-60	1960	Average 1937-60	1960	Average 1937-60
Jan.	918	22,928	1,161	15,725	1,682	46,416	3,761	85,069
Feb.	1,004	23,817	1,294	17,595	1,501	47,553	3,799	88,966
Mar.	1,031	25,617	1,367	19,562	1,287	52,620	3,685	97,799
Apr.	1,040	25,582	1,384	20,343	1,024	52,620	3,448	98,545
May	1,022	25,365	1,384	19,463	682	51,679	3,088	96,507
June	968	24,676	1,343	18,577	347	50,153	2,658	93,406
July	909	24,034	1,294	17,557	241	48,557	2,444	90,149
Aug.	843	23,440	1,246	16,535	337	47,107	2,426	87,082
Sept.	811	22,693	1,207	16,132	276	45,865	2,294	84,690
Oct.	772	22,373	1,191	15,625	210	44,832	2,173	82,829
Nov.	780	22,208	1,199	15,065	210	44,038	2,189	81,311
Dec.	780	22,235	1,199	15,372	196	44,338	2,175	81,946
Avg.	907	23,747	1,272	17,296	666	47,982	2,845	89,025
Max.	1,040	#61,670	1,384	θ45,920	1,682	109,610	3,799	213,600
Min.	772	10	1,161	106	196	196	2,173	2,173

March 31, 1941 - Prior to removal of spillway gates
θ April 30, 1937 - Sandbags were placed on crest of spillway

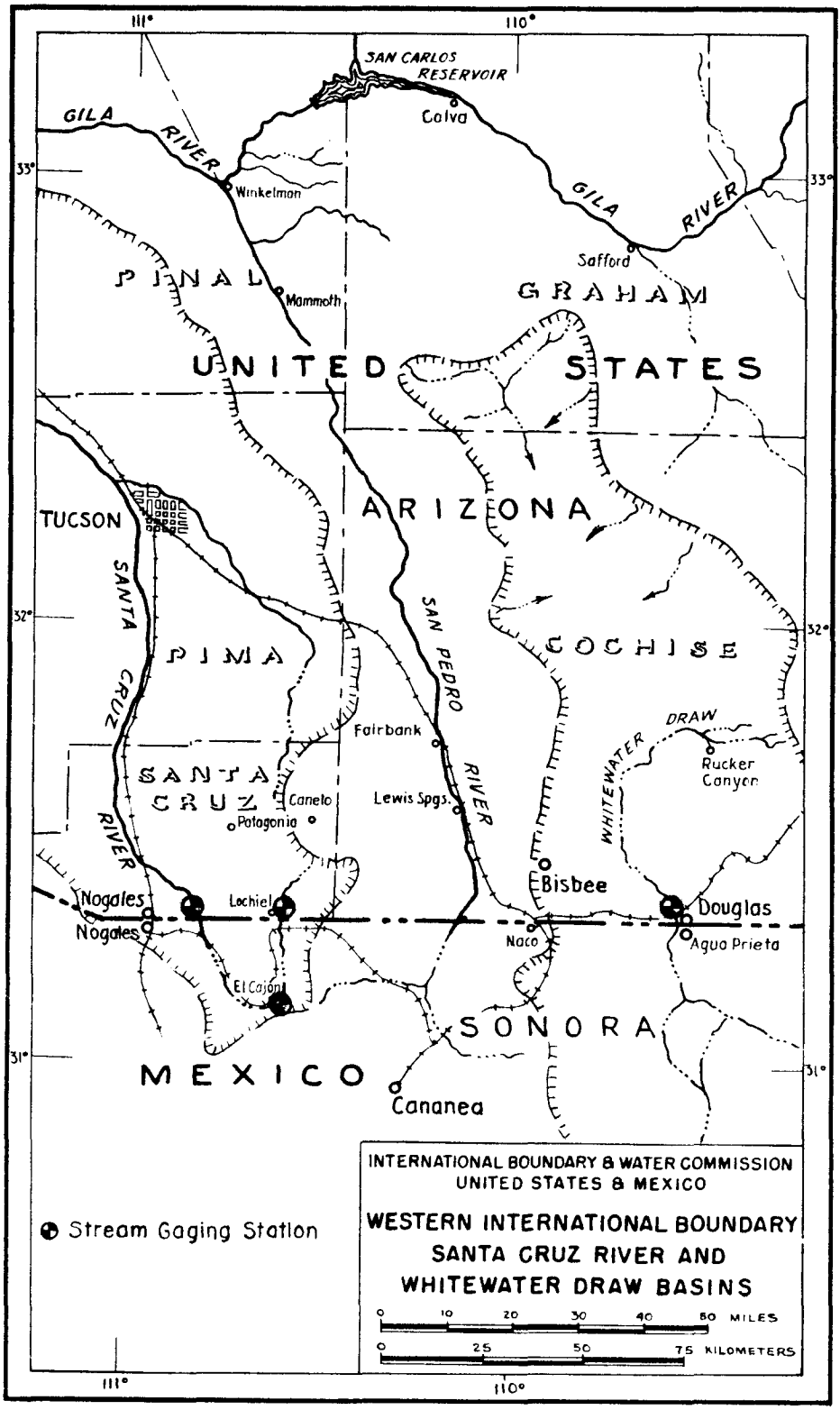
DRAINAGE AREAS ABOVE GAGING STATIONS AND IRRIGATED AREAS ALONG TIJUANA RIVER AND TRIBUTARIES
1960

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 Hydraulic Resources of Mexico through the Mexican Section of the Commission. All irrigation in the Tijuana Basin in 1960 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	a) 75	0	a) 75
Morena Dam to Barrett Dam	133	0	133	0	0	0
above Barrett Dam	247	0	247	a) 75	0	a) 75
below Barrett Dam and above Tecate Creek	65	0	65	a) 145	0	a) 145
above Tecate Creek	312	0	312	a) 220	0	a) 220
Campo Creek						
above International Boundary	82	4	86	a) 320	0	a) 320
Tecate Creek						
above International Boundary (does not include Campo Creek)	19	64	83	0	0	0
Cottonwood Creek						
above International Boundary Station	413	68	481	a) 540	0	a) 540
Rio de las Palmas						
above Rodriguez Dam	7	981	988	0	b) 0	0
Tijuana River						
above Nestor Gaging Station	458	1,266	1,724			
above the Mouth	462	1,269	1,731	3,000	c) 750	3,750

a) Estimated as of 1948. 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 1960 in the Tijuana Irrigation District, Tijuana Valley, Baja California, Mexico, from the Rodriguez Reservoir, but an estimated area of about 750 acres was irrigated by pumping from ground water. Depending upon the availability of water this acreage varies considerably from year to year.


111°
110°
SAN CARLOS RESERVOIR
Calva
GILA RIVER
Winkelman
33°
GILA RIVER
Safford
PINAL
Mammoth
GRAHAM
UNITED STATES
ARIZONA
TUCSON
SANTA CRUZ
32°
PIMA
SAN PEDRO RIVER
COCHISE
Fairbank
DRAW
WHITEWATER
Rucker Canyon
SANTA CRUZ
Canelo
Lewis Spgs.
Patagonia
RIVER
Bisbee
Nogales
Lochiel
Douglas
Nogales
Naco
Agua Prieta
El Cajon
SONORA
31°
MEXICO
Cananea
INTERNATIONAL BOUNDARY & WATER COMMISSION
UNITED STATES & MEXICO
Stream Gaging Station
WESTERN INTERNATIONAL BOUNDARY
SANTA CRUZ RIVER AND
WHITEWATER DRAW BASINS
0 10 20 30 40 50 MILES
0 25 50 75 KILOMETERS

WHITEWATER DRAW NEAR DOUGLAS, ARIZONA

DESCRIPTION: Water-stage recorder located on U. S. Highway 80 bridge between Douglas and Bisbee, Arizona, about 150 yards upstream from the Southern Pacific Railroad Bridge, 1.5 miles upstream from the international boundary and 2 miles west of Douglas, Arizona. Zero of the gage is 3,906.94 feet above mean sea level, U. S. C. & G. S. datum of 1929.

RECORDS: Based on 21 current meter measurements during the year. Computations by shifting control methods. Records obtained and furnished by the U. S. Geological Survey. Records fair except for periods of fragmentary or no gage height record, which are 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 to December 1960 (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 August 10, 1931 (gage height 12.15 feet); maximum estimated discharge, 4,050 second-feet July 27, 1919; minimum discharge, no flow for several days of many years. Since 1936: maximum discharge, 5,060 second-feet August 7, 1955; maximum gage height 14.93 feet July 27, 1959; minimum daily discharge, no flow at times during most years. Reference table below for other extremes since 1936.

Mean Daily Discharge in Second-Feet 1960 —— Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.1	0.4	0.2	0.2	0.2	0.03	0.01	26	0.3	0.1	0.1	0.2
2	3.5	.4	.2	.2	.2	.03	0	21	.1	12	.1	.2
3	.9	.4	.2	.2	.2	.03	.01	16	.08	6.8	.1	.2
4	.5	.4	.2	.2	.2	.02	.01	71	.07	2.1	.1	.2
5	.4	.5	.2	.2	.2	.02	.02	39	.07	u 1	.1	.2
6	.3	.5	.2	.2	.2	.02	2.2	6.4	61	u .4	.1	.2
7	.3	.5	.2	.2	.2	.02	4.7	6.2	47	.2	.1	.2
8	.3	.5	.2	.2	.2	.02	51	4.9	3.6	.2	.1	.2
9	.3	.5	.2	.2	.2	.02	2.6	u 1.0	8.4	3.9	.1	.2
10	.5	.5	.2	.3	.2	.02	.5	27	1.4	.6	.1	.2
11	41	.6	.2	.2	.2	.02	.2	7.8	2.0	.2	.1	.2
12	92	.5	.2	.2	.2	.02	.1	35	.5	.2	.1	.2
13	53	.5	.2	.2	.2	.02	.1	11	.3	.2	.1	.2
14	16	.4	.2	.2	.2	.02	.1	4.0	.3	.1	.2	.1
15	6.2	.4	.2	.2	.2	.02	.05	22	.3	.2	.2	.1
16	2.8	.4	.2	.2	.2	.02	.05	31	.3	.2	.2	.1
17	1.5	.4	.2	.2	.2	.02	.05	7.8	.2	.2	.2	.1
18	.8	.3	.2	.2	.1	.02	.05	2.5	.2	.2	.2	.1
19	.4	.3	.2	.2	.2	.02	.05	1.2	.2	.2	.2	.1
20	.4	.3	.2	.2	.2	.02	.05	43	.2	.1	.2	.1
21	.4	.3	.2	.2	.2	.02	.05	2.7	.2	.1	.2	.1
22	.4	.3	.2	.2	.2	.02	5.1	1.2	.2	.1	.2	.1
23	.4	.2	.2	.2	.2	.01	1.5	.5	.2	.1	.2	.1
24	.4	.2	.3	.2	.1	.02	.2	u 0	.1	.2	.2	.1
25	.4	.2	.3	.2	.1	.02	68	0	.1	.1	.2	.1
26	.4	.2	.3	.2	.1	.01	3.1	0	.1	.1	.2	.1
27	.4	.2	.2	.2	.1	.01	1.1	11	.1	.1	.2	.1
28	.4	.2	.2	.2	.1	.01	1.2	10	.1	.1	.2	.1
29	.4	.2	.2	.2	.1	.01	.7	1.2	.1	.1	.2	.2
30	.4		.2	.2	.05	0	.6	.5	.1	.1	.2	.2
31	.4		.2		.04		214	.8		.1		.2
Sum	227.6	10.7	6.5	6.1	5.19	.56	357.40	* 411.7	127.82	* 30.3	4.7	4.7

Current Year 1960								Period 1936-1960		
Month	Extreme Gage Feet		Ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	High Day	High	Low Day	Low			Average	Maximum	Minimum
Jan.			12	92	† 6	0.3	7.34	451	56.2	451	3.7
Feb.			11	.6	† 23	.2	.37	21	32.7	132	3.8
Mar.			† 24	.3	† 1	.2	.21	13	35.7	130	4.3
Apr.			† 10	.3	† 1	.2	.20	12	33.0	173	1.2
May			† 1	.2	31	.04	.167	10	24.6	138	0
June			† 1	.03	30	0	.019	1.1	212	1,590	0
July			31	214	2	0	11.5	709	2,282	8,110	39
Aug.			4	71	† 24	0	*13.3	* 817	3,670	14,480	58
Sept.			6	61	† 4	.07	4.26	254	741	3,170	.8
Oct.			2	12	† 1	.1	* .98	* 60	197	2,210	.5
Nov.			† 14	.2	† 1	.1	.16	9.3	52.9	352	2.5
Dec.			† 1	.2	† 14	.1	.15	9.3	99.1	1,050	2.6
Yearly				214		0	* 3.26	* 2,370	7,436	22,321	900

u Estimated † And other days Ø Mean daily * Partly estimated

SEWAGE EFFLUENT, AGUA PRIETA, SONORA, AND DOUGLAS, ARIZONA INTERNATIONAL TREATMENT PLANT

DESCRIPTION: Flume in influent line at treatment plant, equipped with stilling well and staff gage, for measuring combined flows of Douglas, Arizona and Agua Prieta, Sonora, and Parshall flume with recording flow meter for measuring flows from the city of Douglas. Flows from Mexico are deduced from total flows and city of Douglas flows.

RECORDS: Combined discharges are computed from daily 11:00 a.m. readings of the staff gages by applying an 11:00 a.m. index determined from 7 days of hourly measurements during which the relationship between mean daily readings and 11:00 a.m. readings was developed. Records available: continuous monthly records since March 1948; daily records March 18, 1948 through December 1950 and January 1952 through December 1960.

REMARKS: 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 and is located in the United States adjacent to the international boundary about one mile west of the Douglas-Agua Prieta Port of Entry. The effluent from the plant is treated in oxidation ponds in Mexico.

EXTREMES: Monthly and annual extremes are shown in table below.

Month	Total Monthly Flows Millions of Gallons			Mean Daily Flows-Millions of Gallons Per Day					
				Current Year 1960			Period 1952-1960		
	U.S.	Mexico	Total	Maximum	Minimum	Mean	Maximum	Minimum	Mean
Jan.	27.467	6.844	34.311	1.158	1.066	1.107	1.158	0.619	0.877
Feb.	25.673	6.255	31.928	1.158	1.044	1.101	1.158	.584	.878
Mar.	27.230	6.923	34.153	1.158	1.044	1.102	1.158	.590	.884
Apr.	28.846	7.587	36.433	1.354	1.089	1.214	1.354	.619	.893
May	28.724	8.052	36.776	1.428	1.044	1.186	1.428	.619	.891
June	31.006	9.703	40.709	1.692	1.112	1.357	1.692	.626	.953
July	33.875	10.423	44.298	1.692	1.066	1.429	1.692	.619	.971
Aug.	39.986	11.110	51.096	1.829	1.354	1.648	1.829	.619	1.012
Sept.	37.818	10.594	48.412	1.884	1.304	1.614	1.884	.626	1.009
Oct.	34.130	9.510	43.640	1.667	1.020	1.408	1.667	.626	.960
Nov.	26.625	9.178	35.803	1.354	.998	1.200	1.354	.619	.927
Dec.	26.613	10.655	37.268	1.582	.965	1.202	1.582	.619	.934
Yearly	367.993	106.834	474.827	1.884	0.965	1.297	1.884	0.584	0.932

SANTA CRUZ RIVER NEAR LOCHIEL, ARIZONA

DESCRIPTION: Water-stage recorder located in the United States near left bank on the downstream side of concrete bridge pier of county highway bridge, 2.5 miles northeast of Lochiel, Arizona and 1.5 miles upstream from the international boundary. The elevation of the zero of the gage has not been determined, but from topographic maps altitude of stream at gage is about 4,620 feet.

RECORDS: Based on 21 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 good except above 3 second-feet and for periods of fragmentary or no gage height record, which are poor. Records available: January 1949 to December 1960.

REMARKS: There are small diversions by ground water pumping for irrigating about 200 acres above station.

EXTREMES: Maximum discharge, 4,520 second-feet July 30, 1950 (gage height 6.75 feet); minimum discharge, no flow for several days of each year. Reference table below for other extremes since 1949.

Mean Daily Discharge in Second-Feet 1960 —— Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.6	0.7	1.4	0.8	0.04	0	0	u 0	0.02	0	0.2	0.2
2	.6	.8	1.4	.8	.07	0	0	u 0	.02	0	.2	.2
3	.6	.8	1.2	.8	.05	0	0	u 0	.02	0	.2	.3
4	.6	.8	1.2	.8	.04	0	0	.6	.01	0	.2	.2
5	.6	.8	1.2	.8	.04	0	0	u .3	.02	0	.2	.2
6	.6	.7	1.0	.6	.02	0	0	u 0	.02	0	.2	.2
7	.6	.7	1.0	.5	.01	0	0	u .2	.02	0	.2	.2
8	.6	.7	.9	.3	.01	0	0	u .1	.02	0	.2	.2
9	.6	.7	.9	.3	.04	0	0	u 2.6	1.1	13	.2	.2
10	.7	.7	.8	.2	.08	0	0	u 2.1	1.6	.05	.2	.2
11	3.9	.8	.9	.2	.06	0	0	.8	.04	.04	.2	.2
12	7.8	.7	.9	.2	.04	0	0	.2	.04	.03	.2	.2
13	1.6	.9	.9	.2	0	0	0	u .3	.04	.03	.2	.2
14	1.3	1.0	.9	.2	.02	0	0	.2	.04	.04	.2	.2
15	1.1	1.1	.9	.2	.08	0	0	u .2	.03	.03	.2	.2
16	1.2	1.2	1.0	.2	.08	0	0	u .1	.03	.04	.2	.2
17	1.1	1.2	1.0	.2	.06	0	0	.03	.02	.05	.2	.2
18	1.1	1.4	.9	.2	.08	0	0	.03	0	.05	.2	.2
19	1.0	1.4	.9	.2	.08	0	0	11	0	.08	.2	.2
20	.9	1.4	.8	.1	.08	0	0	.1	0	.1	.2	.2
21	.9	1.4	.8	.08	.02	0	0	18	0	.1	.2	.2
22	.8	1.5	.8	.1	.04	0	0	u .07	0	.1	.2	.2
23	.8	1.5	.8	.2	.04	0	0	u .02	0	.1	.2	.2
24	.8	1.5	.9	.2	.02	0	0	u .01	0	.2	.2	.2
25	.8	1.5	.8	.2	.02	0	0	u .01	0	.2	.2	.2
26	.7	1.5	.8	.2	0	0	0	.02	0	.2	.2	.2
27	.7	1.4	.7	.2	0	0	0	.03	0	.2	.2	.2
28	.7	1.3	.7	.2	0	0	0	.02	0	.2	.2	.2
29	.7	1.4	.7	.1	0	0	.5	.01	0	.2	.2	.3
30	.7		.7	.06	0	0	38	.02	0	.2	.2	.2
31	.7		.7		0		u .2	.02		.2		.2
Sum	35.4	31.5	28.5	9.34	1.12	0	* 38.7	* 37.09	3.09	15.44	6.0	6.4

Current Year 1960									Period 1949-1960		
Month	Extreme Gage Feet		Ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
				High		Low					
	High	Low	Day		Day				Average	Maximum	Minimum
Jan.			12	7.8	† 1	0.6	1.14	70	28.6	70	3.6
Feb.			† 22	1.5	† 1	.7	1.09	62	22.6	62	5.0
Mar.			† 1	1.4	† 27	.7	.92	57	18.4	57	5.0
Apr.			† 1	.8	30	.06	.311	19	10.5	29	.4
May			† 10	.08	† 13	0	.036	2.2	3.3	10	0
June				0		0	0	0	.4	4.4	0
July			30	38	† 1	0	*1.25	* 77	786	4,270	9.5
Aug.			21	18	† 1	0	*1.20	* 74	1,343	10,120	24
Sept.			10	1.6	† 18	0	.103	6.1	216	1,110	0
Oct.			9	13	† 1	0	.498	31	67.6	337	0
Nov.			† 1	.2	† 1	.2	.20	12	29.3	90	0
Dec.			† 3	.3	† 1	.2	.21	13	28.2	74	0
Yearly				38		0	* .581	* 423	2,554	12,633	423

u Estimated † And other days Ø Mean daily * Partly estimated

SANTA CRUZ RIVER AT EL CAJON, SONORA

DESCRIPTION: Water-stage recorder, cable with car and Cipolletti weir with crest of 26.25 feet and head of 0.82 foot, 4.3 miles southwest of Santa Cruz, Sonora and approximately 30 miles southeast of Nogales, Sonora. The zero of the gage is 4,270.24 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: Data is based on river stages and 68 current meter measurements made during the year. Data obtained and furnished by the Mexican Section of the Commission. Records available: January 14, 1954 to August 31, 1959; from October 1, 1959 to June 14, 1960 and from July 1 to 31, 1960.

REMARKS: Irrigation diversions above the station affect the regimen of the river. A flood in August 1955 destroyed the weir which was repaired in February 1957.

EXTREMES: Maximum instantaneous discharge, 4,590 second-feet on August 6, 1955 with stage of 6.00 feet. Minimum discharge, 1.1 second-feet on May 29, 1956 with stage -0.92 foot. Reference table below for other extremes.

Mean Daily Discharge in Second-Feet 1960 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	12.9	27.1	12.5	6.0	6.6	3.0	2.3					
2	13.2	26.0	10.5	5.0	7.1	2.0	2.3					
3	9.8	25.1	7.8	5.0	4.5	2.1	2.3					
4	8.5	25.1	6.6	5.0	3.7	2.7	2.3					
5	8.5	25.1	6.7	4.9	4.7	3.3	2.3					
6	8.5	24.4	6.7	4.4	5.0	3.7	2.1					
7	8.5	22.2	7.0	4.1	5.8	3.0	2.3					
8	8.5	20.9	6.4	4.1	5.0	2.3	2.3					
9	8.5	20.1	5.9	3.7	4.8	2.3	2.3					
10	9.8	20.7	6.9	4.1	4.8	1.8	2.3					
11	15.9	23.5	6.7	4.1	5.0	2.1	2.3					
12	31.0	20.5	6.4	3.7	5.0	2.3	2.3					
13	37.5	18.5	5.5	4.1	4.3	2.3	2.3					
14	28.3	18.5	5.0	4.1	3.7	2.3	2.3					
15	29.7	18.3	5.0	3.8	3.7		2.3					
16	34.3	17.2	6.1	4.6	3.7		2.3					
17	32.5	17.2	6.5	3.7	3.7		2.3					
18	33.6	16.5	5.8	3.4	3.7		2.3					
19	35.6	15.2	6.1	3.2	3.7		1.9					
20	32.5	14.5	6.2	4.1	3.7		2.0					
21	32.5	14.5	6.1	3.7	2.6		2.1					
22	32.5	14.5	5.0	3.7	2.3		2.3					
23	32.0	15.2	5.0	3.6	2.3		2.3					
24	31.9	15.2	5.0	3.4	2.3		2.0					
25	32.5	14.5	5.4	3.4	2.3		1.7					
26	32.5	14.5	5.0	3.4	2.3		1.7					
27	32.5	14.5	5.0	3.7	2.3		1.7					
28	30.5	14.5	5.8	3.7	2.3		1.7					
29	28.6	13.9	5.9	3.7	2.3		1.7					
30	28.6		5.3	3.7	2.3		2.1					
31	27.7		5.8		2.7		2.3					
Sum	749.4	551.9	195.6	121.1	118.2	35.2	66.7					

Month	Current Year 1960 Extreme Gage Feet High	Extreme Gage Feet Low	Extreme Second-Feet High Day	High	Extreme Second-Feet Low Day	Low	Average Second-Feet	Total Acre-Feet	# Period 1954-1960 Acre-Feet Average	Maximum	Minimum
Jan.	.82	.16	12	78.6	1	5.0	24.2	1,487	522	1,487	209
Feb.	.46	.26	1	28.6	29	11.9	18.9	1,086	362	1,086	99.7
Mar.	.30	.16	1	13.1	†22	5.0	6.3	388	281	498	177
Apr.	.20	.13	1	6.7	†24	3.1	4.0	240	189	306	104
May	.16	.10	† 1	8.1	†22	2.3	3.8	233	126	233	95.7
June									73.8	83.5	55.1
July	.13	.07	6	3.7	†25	1.7	2.1	131	714	1,225	82.7
Aug.									7,235	32,608	500
Sept.									856	1,780	103
Oct.									344	883	80.3
Nov.									368	580	229
Dec.									319	438	184
Yearly									⊕11,649	⊕ 38,880	⊕ 2,311

† And other days # Some months missing ⊕ Annual averages and extremes for 1955-1958

SANTA CRUZ RIVER NEAR NOGALES, ARIZONA

DESCRIPTION: Water-stage recorder, cable with sit-down cable car located 5 miles east of Nogales, Arizona, 3/4 of a mile downstream from the international boundary and 6 miles upstream from the Santa Cruz River bridge on State Highway No. 82. Datum of the gage is 3,702.54 feet above mean sea level, datum of 1929 (levels by International Boundary and Water Commission).

RECORDS: Based on 23 current meter measurements or observation of no flow during the year. Computations by shifting control methods. Records obtained and furnished by the U. S. Geological Survey. Records fair except for periods of fragmentary or no gage height record, which are poor. 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, July 1935 to December 1960.

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 1960.

EXTREMES: Prior to 1936: maximum discharge, 12,000 second-feet August 31, 1935 (gage height 12.3 feet); minimum discharge, no flow for several days each year. Since 1936: maximum discharge, 10,600 second-feet July 10, 1954 (gage height 13.27 feet); minimum discharge, no flow for several days of many years. Reference table below for other extremes since 1936.

Mean Daily Discharge in Second-Feet 1960 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	335	71	30	11	5.2	0.9	0.3	1.2	2.7	0.5	1.7	3.4
2	256	66	27	9.8	4.7	.9	.4	.9	1.7	.5	1.7	3.1
3	168	60	24	10	4.3	.7	.4	1.2	1.4	.5	1.7	3.9
4	118	58	22	9.8	4.3	.7	.5	1.5	1.2	.5	2.0	5.7
5	80	58	20	9.2	4.3	.4	.5	1.2	2.9	.4	2.7	5.7
6	61	57	18	8.5	3.9	.5	.5	.9	7.0	.3	3.9	5.2
7	49	55	18	8.5	3.4	.4	.5	.9	8.2	.3	3.4	5.2
8	42	55	18	7.9	2.7	.4	.5	4.2	15	2.6	3.4	6.2
9	37	54	17	8.5	2.3	.3	.5	2.3	7.4	70	3.1	6.8
10	127	57	16	7.9	2.3	.3	.5	75	31	4.3	3.1	6.8
11	1,830	63	16	7.4	2.7	.2	.4	58	10	3.1	3.1	6.2
12	1,190	57	15	7.9	3.1	.2	.4	u 7	7.9	2.7	3.1	5.2
13	491	52	15	7.4	3.4	.2	.4	u 2	2.3	2.7	2.7	6.8
14	386	49	15	7.4	3.9	.2	.4	25	1.7	2.7	3.1	7.9
15	328	47	14	6.8	3.4	.3	.4	16	1.4	2.7	3.1	7.9
16	356	44	13	6.2	3.1	.3	.4	u 5	1.2	2.7	3.1	7.9
17	305	42	12	6.8	2.7	.3	.3	2.0	1.2	2.7	3.1	6.8
18	241	41	10	6.8	2.3	.4	.3	.5	1.2	3.1	3.1	6.2
19	215	39	11	6.8	2.3	.4	.4	.2	.9	3.1	2.7	6.2
20	183	39	11	6.2	2.3	.5	.4	.5	.9	3.1	3.1	6.2
21	180	36	11	6.2	3.1	.5	.4	219	.7	3.1	2.7	6.8
22	180	36	11	5.7	3.1	.4	.3	29	.7	3.1	2.7	7.4
23	183	34	13	6.2	2.7	.4	9.0	u10	.7	3.1	2.7	7.4
24	188	34	14	6.2	2.3	.4	1.2	u 5	.5	2.7	2.7	6.8
25	175	33	11	6.8	2.3	.3	6.8	3.4	.5	2.3	2.7	6.8
26	163	34	11	7.4	2.3	.3	5.2	3.4	.5	2.0	3.1	6.8
27	149	31	10	7.4	2.3	.3	.7	3.9	.5	2.0	3.4	6.8
28	121	31	9.8	6.8	2.0	.3	.5	3.4	.5	2.0	3.4	6.8
29	104	31	9.8	5.7	1.7	.3	.5	1.4	.5	2.3	3.9	8.5
30	100		10	4.7	1.2	.3	25	1.4	.5	2.0	3.9	14
31	84		11		.9		4.5	2.7		2.0		8.5
Sum	8,425	1,364	463.6	223.9	90.5	12.0	62.5	*488.1	112.8	135.1	88.1	205.9

Month	Current Year 1960 Extreme Gage Feet High	Extreme Gage Feet Low	Ø Extreme Second-Feet High Day	High	Low Day	Low	Average Second-Feet	Total Acre-Feet	Period 1936-1960 Acre-Feet Average	Maximum	Minimum
Jan.			11	1,830	9	37	272	16,710	1,096	16,710	64
Feb.			1	71	† 27	31	47.0	2,710	581	2,710	59
Mar.			1	30	† 28	9.8	15.0	920	435	1,580	98
Apr.			1	11	30	4.7	7.46	444	164	444	19
May			1	5.2	31	.9	2.92	180	63.0	180	2
June			† 1	.9	† 11	.2	.40	24	88.1	1,020	0
July			30	25	† 1	.3	2.02	124	2,727	15,610	124
Aug.			21	219	19	.2	* 15.7	* 968	6,263	45,790	91
Sept.			10	31	† 24	.5	3.76	224	1,162	5,540	17
Oct.			9	70	† 6	.3	4.36	268	291	1,550	11
Nov.			† 6	3.9	† 1	1.7	2.94	175	239	1,140	24
Dec.			30	14	2	3.1	6.64	408	336	1,990	39
Yearly				1,830		.2	* 31.9	* 23,160	13,445	57,671	3,499

u Estimated † And other days Ø Mean daily * Partly estimated

SEWAGE EFFLUENT, NOGALES INTERNATIONAL TREATMENT PLANT

DESCRIPTION: Two 12-inch Parshall flumes, each with a recording flow meter and continuous totalizer, one located at the international boundary for measuring effluent coming from Nogales, Sonora and the second located at the treatment plant in the influent line of secondary settling tank; and two calibrated sludge pumps of which pumping times are recorded. One pumps from primary settling tank into digester and the other recirculates sludge from secondary tank to primary tank. Bypass of raw sewage may be made to Nogales Wash, the quantity being estimated on basis of head in a control box in influent line ahead of primary tank. Nogales international sewage treatment plant is located near the north edge of the city of Nogales, Arizona on right bank of Nogales Wash, approximately 2 miles downstream from the international boundary.

RECORDS: Total effluent is computed by adding to the flow measured in the flume from primary to secondary tank, the sludge pumped from primary tank into digester, which does not pass through this flume; subtracting the sludge recirculated from secondary to primary tank, which passes through this flume twice; and adding those flows of bypassed raw sewage into Nogales Wash. Flows from the United States are deduced from total measured flows less measured flows from Mexico. Records available: continuous monthly record since the plant was placed in operation in August 1951, daily record January 1952 through December 1960.

REMARKS: Nogales international treatment plant treats combined sewage from Nogales, Arizona and Nogales, Sonora by means of primary and secondary sedimentation, sludge digestion, and trickling filters. 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.

EXTREMES: Monthly and annual extremes are shown in the table below.

Month	Total Monthly Flows Millions of Gallons			Mean Daily Flows-Millions of Gallons Per Day					
				Current Year 1960			Period 1952-1960		
	U.S.	Mexico	Total	Maximum	Minimum	Mean	Maximum	Minimum	Mean
Jan.	51.356	44.150	95.506	4.162	2.002	3.081	4.162	0.650	1.550
Feb.	56.542	44.350	100.892	3.762	3.212	3.479	3.762	.650	1.643
Mar.	53.676	44.350	98.026	3.662	2.662	3.162	3.662	.750	1.567
Apr.	52.070	46.700	98.770	3.962	2.767	3.292	3.962	.700	1.557
May	59.245	39.450	98.695	3.634	2.802	3.184	3.634	.550	1.488
June	54.054	35.350	89.404	3.317	2.417	2.980	3.317	.700	1.375
July	56.356	33.350	89.706	3.502	2.402	2.894	3.502	.700	1.411
Aug.	61.926	31.950	93.876	3.587	2.652	3.028	3.587	.750	1.874
Sept.	71.918	34.800	106.718	4.112	2.727	3.557	4.112	.800	2.214
Oct.	65.006	31.150	96.156	3.761	2.402	3.102	3.761	.700	2.020
Nov.	53.425	26.800	80.225	2.902	2.402	2.674	3.510	.800	1.783
Dec.	59.056	23.750	82.806	3.202	2.202	2.671	3.360	.350	1.740
Yearly	694.630	436.150	1,130,780	4.162	2.002	3.092	4.162	0.350	1.685

DRAINAGE AREAS ABOVE GAGING STATIONS AND IRRIGATED AREAS ALONG SANTA CRUZ RIVER AND WHITEWATER DRAW

1960

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 Basin were furnished by the Smoke Control Section, Phelps-Dodge Smelter at Douglas, Arizona.

Designation of Areas	Drainage Basin-Square Miles			Irrigated Areas-Acres		
	United States	Mexico	Total	United States	Mexico	Total
Whitewater Draw:						
Above Douglas, Arizona Gaging Station	1,023	0	1,023	22,500	0	22,500
Santa Cruz River:						
Above Lochiel, Arizona Gaging Station	82	0	82	200	0	200
Lochiel Station to Nogales Station	103	348	451	0	2,390	2,390
Above Nogales, Arizona Gaging Station	185	348	533	200	2,390	2,590