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WESTERN WATER BULLETIN 1966

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

COLORADO RIVER

TIJUANA RIVER

SANTA CRUZ RIVER

WHITEWATER DRAW

1966

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FOREWORD

This bulletin is the seventh 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, solely for the purpose of presenting statistical data relating to stream flow and kindred subjects for the Colorado River from Imperial Dam to the Gulf of California, the Tijuana River and its important tributaries in the United States and Mexico, and other streams, including the Alamo and New Rivers which cross the California-Baja California boundary, and the Santa Cruz River and Whitewater Draw which cross the Arizona-Sonora boundary. This volume contains the information for the year 1966.

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 Gila Gravity Main Canal and All-American Canal for irrigation projects in Arizona, including the Yuma Valley, Gila and Wellton-Mohawk projects, and in California, including the Imperial Valley, Coachella Valley and Reservation Division of Yuma Project. Also, under the provisions of the 1944 Water Treaty, there may be diverted to the All-American Canal at Imperial Dam for delivery to Mexico in the Alamo Canal, or substitute canal, at the northerly boundary, a portion of Mexico's guaranteed annual allotment of waters of the Colorado River. No such diversions were made in 1966.

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

In the limitrophe section of the river, 1.1 miles downstream from the northerly boundary, Morelos Dam, the principal diversion structure for Mexico, was completed and placed in operation on November 8, 1950. Since that date all of Mexico's guaranteed treaty allotment of Colorado River water has been delivered in 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 Rodríguez Reservoir in Mexico.

Whitewater Draw near Douglas, Arizona

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

San Pedro River at Palominas, Arizona

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

FOREWORD

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.

Acknowledgments

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

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

<u>METRIC UNITS</u>	<u>LENGTHS</u>	<u>ENGLISH UNITS</u>
1 Centimeter		0.393701 Inch
1 Meter		3.28084 Feet
1 Kilometer		0.621371 Mile
	<u>AREAS</u>	
1 Square Meter		10.76391 Square Feet
1 Hectare		2.471054 Acres
1 Square Kilometer		0.386102 Square Mile
	<u>VOLUME</u>	
1 Cubic Meter		61023.74 Cubic Inches
1 Cubic Meter		35.31467 Cubic Feet
1 Cubic Meter		1.30795 Cubic Yards
1000 Cubic Meters		0.81071 Acre-Foot
1 Liter		0.264172 U. S. Gallon
	<u>WEIGHTS</u>	
1 Kilogram		2.204623 Pounds
1 Metric Ton		2204.623 Pounds
1 Metric Ton		1.102311 Short Tons (2000 lbs.)

GENERAL HYDROLOGIC CONDITIONS FOR 1966

Colorado River

Normally, there is no measurable amount of runoff from the portion of the Colorado River basin in the United States and Mexico below Hoover Dam, not including Bill Williams and Gila Rivers. There was no significant amount in 1966. The average seasonal (October 1965-September 1966) rainfall over the upper basin, as gaged at 13 index stations, was about 11.20 inches compared to a seasonal average of about 13.75 inches for the 44 seasons (1923-1966). In the lower basin of the Colorado River in Mexico, from Morelos Diversion Dam to the Gulf of California, the average precipitation (1966) measured at 6 index stations was 1.34 inches compared to an average of 1.73 inches during the last 8 years (1959-1966).

The flow of the Colorado River reaching Imperial Dam was 5,853,000 acre-feet, about 67% of the 32-year average (1935-1966) of 8,754,522 acre-feet. At the northerly international boundary, the total flow of the river during 1966 was 1,420,358 acre-feet, about 33% of the 1935-1966 average of 4,255,588 acre-feet. At the southerly international boundary, the flow during 1966 was only 102,409 acre-feet, or about 3% of the 1935-1966 average of 3,510,875 acre-feet. The total flow of the Colorado River reaching the El Marítimo gaging station, 47.9 miles downstream from the southerly international boundary, and 18.6 miles downstream from the Sonora-Baja California railroad bridge, was 102,276 acre-feet in 1966, about 48% of the 1960-1966 average of 214,892 acre-feet.

The total of all flows of the Colorado River entering Mexico in 1966 amounted to 1,656,146 acre-feet, 33% of the 1935-1966 average of 4,950,743 acre-feet, as measured 1) in the Colorado River at the northerly international boundary, 2) in the Wellton-Mohawk Main Outlet Drain Extension near Morelos Dam, 3) in the wasteways that discharge into the limitrophe section of the river from the United States bank, and 4) in the canal which discharges waste and drainage waters from the Yuma Project across the southerly land boundary into Mexico near San Luis, Arizona, 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 1966. A maximum instantaneous flow of 5,650 second-feet occurred in the Colorado River at the northerly boundary station October 5.

Stored waters at the end of the year in the three major reservoirs on the Colorado River below Lee's Ferry amounted to 17,593,400 acre-feet, 59% of the usable capacity of 29,636,000 acre-feet. The greater part (15,481,000 acre-feet) of the storage was contained in Lake Mead (Hoover Dam). There were no reported shortages of Colorado River water for irrigation during 1966 due to drought or accident to the irrigation system.

The total reported acreage irrigated from waters of the Colorado River below Imperial Dam in 1966 was 1,091,412 acres; 652,614 acres in the United States and 438,798 acres in Mexico. An estimated one-third of acreage in Mexico is served by pumping from ground water.

The suspended sediment load passing the northerly boundary station in 1966 was 94.6 acre-feet, about 24% of the 1956-1966 average of 386 acre-feet.

Tijuana River Basin

During 1966 the temperatures at Barrett Dam, California (elevation 1,750 feet) in the upper portion of the basin in the United States averaged 0.4 degrees below the 36-year mean. In the extreme upper portion of the basin in Mexico at San Juan de Dios, Baja California (elevation 3,280 feet), the recorded temperatures during the year averaged 55 degrees, 2 degrees below the long-term average, and at Rodríguez Dam, Baja California (elevation 459 feet), the recorded temperatures averaged 63 degrees, equal to the 21-year normal.

At Barrett Dam in the upper portion of the basin in the United States, the recorded precipitation was 16.29 inches, 93% of normal, and at Chula Vista near the lower end of the basin, 7.16 inches, or 73% of normal. The recorded precipitation at San Juan de Dios in the upper portion of the basin in Mexico, was 13.19 inches, approximately 79% of the normal during the 11-year period, and at Rodríguez Dam in the lower portion of the basin in Mexico, 5.79 inches, 72% of the 29-year average.

Runoff in the basin during 1966 averaged about 27% of normal. Above Morena Reservoir the runoff was 1,273 acre-feet, or about 19% of the 30-year 1937-1966 mean of 6,612 acre-feet. At Rodríguez Reservoir, the runoff was 4,858 acre-feet, or about 31% of the 29-year mean of 15,849 acre-feet.

During 1966 the flow of the Tijuana River at the international boundary was 2,974 acre-feet and the flow in the Tijuana River near Nestor was 2,262 acre-feet.

Whitewater Draw

During 1966, the average annual temperature over the watershed was slightly below normal, while the annual precipitation was above normal. Runoff for the year at the gaging station near Douglas, Arizona, of 9,617 acre-feet was about 130% of average.

GENERAL HYDROLOGIC CONDITIONS FOR 1966

San Pedro River

During 1966, the average annual temperature was below normal. The annual precipitation, as measured at Coronado National Monument Headquarters, was 100% of the 1961-1966 mean of 19.99 inches. The stream flow at the international boundary was 21,831 acre-feet, 94% of the 1951-1966 normal.

Santa Cruz River

During 1966, the average annual temperature over the watershed was somewhat below normal and the annual precipitation was about 125% of the 28-year 1939-1966 mean. Runoff measured at the Nogales gaging station where the stream re-enters the United States was 51,570 acre-feet. The total runoff for the year measured at the gaging station near Lochiel, Arizona, where the stream enters Mexico from the United States was 4,296 acre-feet. Therefore, neglecting stream flow depletions in Mexico, the records indicate a contribution of about 47,274 acre-feet from the loop of the river lying in Mexico, or approximately 92% of the flows reaching the Nogales station.

Alamo and New Rivers

During 1966, the average annual temperature over the drainage areas of the Alamo and New Rivers, as recorded at El Centro, California, and at Mexicali, Baja California, was 72.1 and 72.0 degrees, respectively, 0.3 and 1.0 degrees below the respective normals.

At El Centro, the precipitation was 1.63 inches, 65% of the 36-year average, and in Mexicali the annual precipitation was 1.65 inches, 55% of the 41-year average. The total flow of the New River at the international boundary in 1966 was 102,958 acre-feet which was about 150% of the 1943-1966 normal.

Salton Sea

During 1966, the average annual temperature around the Salton Sea was about 98% of the long-term average while the annual precipitation recorded at Brawley, California, was approximately 111% of the long-term mean of 2.27 inches. The water surface of the Salton Sea rose approximately 0.1 foot during the year. The maximum stage, 232.1 feet below mean sea level, was recorded on several days during April and May 1966. The minimum stage, 233.0 feet below mean sea level, was recorded on several days during September, October, and November 1966.

COLORADO RIVER AT YUMA, ARIZONA - STAGES

DESCRIPTION: Water-stage recorder 200 feet upstream from lower highway bridge, 6.9 miles upstream from the northerly international land boundary, 2,100 feet downstream from the upper highway and railroad bridges at Yuma, Arizona, 4.7 miles downstream from the mouth of the Gila River, 19.1 miles downstream from Imperial Dam, and 0.3 mile upstream from the mouth of the Yuma Main Canal Wasteway. Zero of gage is at mean sea level, U. S. C. & G. S. datum.

RECORDS: Mean daily gage heights are based on continuous water-stage records. Records available: Gage heights, January 1878 through August 10, 1965, furnished by the U. S. Geological Survey. From August 11, 1965 through December 1966, records obtained by the United States Section of this Commission.

EXTREMES: Prior to 1935: Maximum gage height 136.79 feet on January 22, 1916; minimum gage height 115.49 feet on September 17, 1917. Since 1935: Maximum gage height 127.36 feet on September 7, 1939; minimum gage height 111.22 feet on July 16, 1947.

Mean Daily Gage Height in Feet 1966

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	113.22	113.45	113.42	114.04	113.59	113.19	113.22	113.55	113.11	113.18	113.12	113.16
2	113.20	113.29	113.42	114.30	* 113.48	113.19	113.16	113.81	113.09	113.14	113.14	113.12
3	113.17	113.44	113.97	113.87	113.22	113.18	113.17	113.42	113.12	113.14	113.16	113.07
4	113.12	113.51	114.16	113.80	113.13	113.18	113.14	113.30	113.21	113.51	113.16	113.09
5	113.10	113.42	114.09	113.93	113.16	113.21	113.19	113.38	113.44	113.86	113.42	113.05
6	113.14	113.27	113.90	113.95	113.20	113.41	113.18	113.99	113.98	113.30	113.44	113.02
7	113.16	113.23	113.97	113.76	113.26	113.51	113.21	113.78	113.72	113.10	113.29	113.04
8	113.17	113.42	113.94	113.40	113.30	113.21	113.22	113.40	113.34	113.09	113.30	* 113.11
9	113.18	113.70	113.56	113.34	113.37	113.44	113.20	113.32	113.16	113.09	113.21	113.34
10	113.14	114.40	113.94	113.29	113.37	113.13	113.17	113.27	113.10	113.09	113.29	113.32
11	113.13	113.64	113.93	113.94	113.41	113.08	113.24	113.27	113.12	113.09	113.28	113.21
12	113.15	113.34	113.77	113.74	113.54	113.08	113.90	113.26	113.09	113.07	113.20	113.17
13	113.18	113.34	114.36	113.69	113.48	113.05	113.65	113.27	113.36	113.06	113.20	113.20
14	113.19	113.32	113.96	113.28	113.47	113.09	113.31	113.29	115.31	113.06	113.18	113.38
15	113.20	113.40	113.84	113.41	114.05	113.20	113.42	113.21	114.42	113.30	113.20	112.91
16	113.49	114.00	113.84	113.86	113.69	113.19	113.71	113.31	113.50	113.18	113.35	112.88
17	113.48	114.03	113.91	113.37	113.38	113.19	113.75	113.34	113.21	113.07	113.29	112.83
18	113.46	113.20	114.01	113.27	113.18	113.17	113.62	114.06	113.63	113.27	113.30	* 112.96
19	113.26	113.13	114.04	113.23	113.13	113.17	113.30	114.37	113.49	113.26	113.38	113.34
20	113.44	113.06	114.08	113.20	113.14	113.16	113.25	113.88	113.35	113.15	113.24	113.31
21	113.46	113.04	114.11	113.20	113.20	113.18	113.22	113.82	113.46	113.11	113.24	113.32
22	113.20	113.04	114.54	113.71	113.81	113.19	113.23	113.80	113.23	113.10	113.15	113.38
23	113.34	113.09	114.51	113.72	113.75	113.17	113.25	113.60	113.24	113.09	113.27	113.43
24	113.39	113.14	114.28	113.78	113.56	113.20	113.18	113.99	113.20	113.09	113.32	113.38
25	113.34	113.18	114.28	113.80	113.37	113.19	113.36	113.74	113.22	113.08	113.30	113.40
26	113.63	113.27	114.29	113.46	* 113.28	113.17	113.90	113.40	113.18	113.08	113.18	113.38
27	113.40	113.34	115.20	113.43	113.21	113.17	113.47	113.39	113.19	113.08	113.17	113.38
28	113.48	113.82	115.92	113.28	113.20	113.19	113.29	113.30	113.20	113.08	* 113.16	113.39
29	113.47		114.47	113.27	113.20	113.71	113.14	113.28	113.22	113.08	113.17	113.45
30	113.77		114.24	113.31	113.20	113.60	113.18	113.28	113.30	113.09	113.15	113.40
31	113.89		113.97		113.20		113.19	113.29		113.09		113.46
Avg.	113.32	113.41	114.13	113.59	113.37	113.23	113.34	113.53	113.41	113.16	113.24	113.22

* Partly estimated

‡ Estimated

RESERVATION MAIN DRAIN NO. 4 (CALIFORNIA DRAIN)

DESCRIPTION: Water-stage recorder (digital, prior to June 1966, graphic) located 500 feet upstream from the U. S. Highway No. 80 crossing and one 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 200 feet downstream from the spillway structure, and thence into the Colorado River on the right bank, 1,000 feet upstream from Colorado River below Yuma Main Canal Wasteway, and 6.5 miles upstream from the northerly international boundary. Prior to October 1955, published as "California Drainage Canal near Yuma, Arizona."

RECORDS: Based on 33 current meter measurements during the year and a continuous record of gage heights. Records are computed and furnished by the U. S. Geological Survey. Records available: Monthly discharge, January 1913 to April 1920, October 1921 to March 1925, and January 1934 to September 1947; daily and monthly discharge, October 1947 through December 1966.

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

EXTREMES: Prior to 1937: Maximum annual flow 20,190 acre-feet, 1916; minimum annual flow 8,920 acre-feet, 1913.

Mean Daily Discharge in Second Feet 1966 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	39	44	43	58	58	60	74	68	57	52	45	47
2	38	39	42	64	55	60	68	69	56	48	44	45
3	38	40	45	61	56	60	63	71	52	47	45	50
4	38	41	47	54	62	59	63	60	54	" 230	45	50
5	37	39	47	53	62	58	67	62	56	" 225	45	49
6	37	42	52	55	64	62	62	67	58	" 65	56	42
7	37	47	47	58	60	60	62	69	58	" 45	54	46
8	40	45	44	55	67	65	66	72	63	" 45	51	53
9	39	58	45	57	59	66	66	60	54	" 40	45	45
10	37	46	49	57	65	65	63	59	54	" 40	44	43
11	38	46	45	57	62	67	66	59	51	42	53	55
12	38	54	54	57	65	71	67	59	61	45	48	58
13	40	62	49	54	59	65	68	61	87	47	44	44
14	42	41	50	57	65	71	63	59	68	41	44	45
15	40	41	50	60	60	62	62	61	48	40	47	50
16	43	40	52	59	57	64	59	58	45	46	50	45
17	41	47	56	57	57	61	60	60	47	37	48	50
18	40	50	54	55	62	61	59	59	46	38	46	45
19	41	44	53	58	59	64	67	58	51	44	43	50
20	45	54	54	59	70	72	66	61	43	47	42	45
21	49	42	54	56	68	67	62	61	43	46	42	57
22	41	49	54	60	70	68	63	58	43	43	50	49
23	44	45	53	56	58	66	62	56	53	48	51	56
24	40	43	53	57	66	64	64	57	53	45	53	46
25	45	46	59	60	62	63	66	57	59	47	48	45
26	51	46	60	61	62	60	62	55	58	47	50	44
27	50	44	60	57	60	61	70	57	55	54	53	50
28	40	42	57	61	62	60	68	65	56	55	43	51
29	41	55	61	64	63	66	66	59	59	48	48	44
30	39	55	57	66	66	67	71	58	47	52	48	48
31	40	61	61	62	62	69	69	56	45	45	48	46
Sum	1,268	1,277	1,599	1,731	1,924	1,912	2,014	1,891	1,635	1,794	1,425	1,493
Current Year 1966												
Month	Extreme Gage Feet		Ø Extreme Second Feet				Average Second Feet	Total Acre Feet	Period 1937-1966			
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum	
Jan.			26	51	† 5	37	40.9	2,515	3,327	4,780	877	
Feb.			13	62	† 2	39	45.6	2,533	3,168	4,320	563	
Mar.			31	61	2	42	51.6	3,172	3,857	5,240	1,240	
Apr.			2	64	5	53	57.7	3,433	3,891	5,250	1,160	
May			† 20	70	2	55	62.1	3,816	4,004	5,590	992	
June			20	72	5	58	63.7	3,792	3,885	5,580	885	
July			1	74	† 16	59	65.0	3,995	4,203	6,550	816	
Aug.			8	72	26	55	61.0	3,751	4,150	6,810	861	
Sept.			13	87	† 20	43	54.5	3,243	3,942	6,220	889	
Oct.			4	" 230	17	37	57.9	3,558	3,913	5,740	1,040	
Nov.			6	56	† 20	42	47.5	2,826	3,655	5,490	994	
Dec.			12	58	6	42	48.2	2,961	3,561	4,960	966	
Yearly				" 230		37	54.7	39,595	45,555	63,700	12,840	

Ø Mean daily † And other days " Estimated

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 upstream from the intake of the Colorado River siphon, and 3.2 miles downstream from the Siphon Drop Power Plant. This wasteway discharges into the Colorado River on the California side, 1,000 feet upstream from Colorado River below Yuma Main Canal Wasteway, 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. 1966 records good, except those below 100 second-feet, which are poor. Records obtained and furnished by U. S. Geological Survey. Records available: April 1913 through December 1966.

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

EXTREMES: Prior to 1935, when storage began in Lake Mead: Average annual flow, 297,800 acre-feet; maximum annual flow, 913,700 acre-feet, 1932; minimum annual flow, 114,900 acre-feet, 1917. Since 1935: Maximum mean daily discharge, 2,020 second-feet, December 24-25, 1948; minimum mean daily discharge, no flow on numerous occasions.

Mean Daily Discharge in Second Feet 1966 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	19	24	41	19	63	517	33	37	33	21	28	337
2	19	22	131	19	96	470	40	38	21	25	19	323
3	21	19	802	26	450	407	31	38	47	66	28	342
4	36	19	177	26	519	389	36	25	63	76	87	246
5	38	22	184	19	508	393	19	19	24	54	389	219
6	38	45	515	28	482	750	26	24	21	24	450	234
7	52	98	552	21	468	581	28	42	45	38	65	326
8	31	52	300	31	458	19	34	19	42	28	36	282
9	24	54	108	28	411	19	22	19	38	19	21	138
10	40	42	674	36	414	24	41	21	26	24	31	262
11	76	52	615	33	403	33	27	26	42	24	36	347
12	98	501	38	24	308	42	19	22	36	40	47	423
13	123	573	31	26	355	19	27	24	24	36	62	503
14	174	610	33	24	369	19	33	38	33	51	103	695
15	140	691	19	19	229	19	36	19	38	38	81	32
16	31	629	21	19	211	28	36	19	24	24	40	29
17	28	707	28	26	272	27	26	21	109	51	69	32
18	47	19	21	33	396	31	28	31	678	38	25	199
19	95	19	26	42	410	26	19	19	263	24	50	786
20	106	32	31	58	398	26	19	19	396	26	175	769
21	79	30	21	36	372	22	31	40	311	31	210	766
22	96	25	21	824	58	28	42	33	447	36	145	850
23	125	19	31	852	52	40	19	33	525	26	67	923
24	42	19	54	873	176	56	47	24	510	28	154	833
25	266	19	40	757	327	33	52	22	474	30	105	864
26	214	32	24	350	397	28	37	28	439	26	279	873
27	62	31	26	180	418	28	26	20	457	31	310	858
28	55	38	38	268	453	33	31	47	392	31	351	864
29	26	26	26	388	436	19	26	36	403	40	326	952
30	26	26	26	391	387	19	36	40	300	50	350	903
31	24	24	24	469	469	46	46	36	47	47	47	867
Sum		4,443		5,476		4,145		879		1,103		16,077
	2,251		4,678		10,765		973		6,261		4,139	
Current Year 1966										Period 1935-1966		
Month	Extreme Gage Feet		Ø Extreme Second Feet				Average Second Feet	Total Acre Feet	Acre Feet			
	High	Low	Day	High	Low	Day			Average	Maximum	Minimum	
Jan.			25	266	† 1	19	72.6	4,465	69,700	110,700	3,230	
Feb.			17	707	† 3	19	159	8,813	60,750	89,140	2,856	
Mar.			3	802	15	19	151	9,279	65,048	90,190	2,253	
Apr.			24	873	† 1	19	183	10,861	64,957	86,580	2,500	
May			4	519	23	52	347	21,352	67,974	88,280	5,480	
June			6	750	† 8	19	138	8,221	62,855	86,960	3,330	
July			25	52	† 5	19	31.4	1,930	64,392	91,220	1,726	
Aug.			28	47	† 5	19	28.4	1,743	64,747	89,890	1,743	
Sept.			18	678	† 2	21	209	12,419	62,560	83,660	12,419	
Oct.			4	76	† 9	19	35.6	2,188	60,896	90,050	2,176	
Nov.			6	450	2	19	138	8,210	61,837	101,500	3,850	
Dec.			29	952	16	29	519	31,888	69,493	108,800	2,440	
Yearly				952		19	168	121,369	775,209	1,042,850	75,950	

Ø Mean daily

† And other days

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

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

RECORDS: Based on 28 current meter measurements during the year, 15 by the United States Geological Survey, 13 by the United States Section of the Commission, and a continuous record of gage heights. Computations by shifting control methods. Records obtained and furnished by U. S. Geological Survey. Records available: October 1963 through December 1966. Records from January 1951 through September 1963, deduced from "Colorado River at Yuma" plus flows from "Reservation Main Drain No. 4", and "Yuma Main Canal Wasteway."

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

Mean Daily Discharge in Second Feet 1966 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	542	692	740	1,070	922	933	674	842	536	560	525	695
2	554	608	770	1,310	866	926	650	1,000	542	490	520	679
3	554	692	1,500	996	890	870	651	769	578	545	540	695
4	542	740	1,300	947	921	856	639	670	626	955	575	651
5	530	686	1,230	1,050	921	877	661	716	698	1,190	895	635
6	554	620	1,300	1,130	906	1,160	656	1,110	1,040	668	895	618
7	572	656	1,340	1,010	926	1,130	668	1,000	906	535	646	673
8	584	692	1,220	728	933	631	682	721	677	500	624	668
9	566	905	828	716	919	806	650	665	567	485	560	668
10	536	1,360	1,400	686	926	653	649	631	494	490	585	749
11	566	870	1,360	1,110	926	638	674	630	553	515	591	749
12	590	947	947	961	884	644	1,040	624	539	515	560	762
13	614	1,000	1,330	933	905	607	916	633	701	525	570	804
14	656	989	1,040	668	912	626	720	653	2,220	540	560	1,000
15	644	1,040	954	734	1,350	669	783	594	1,400	635	591	422
16	734	1,390	961	1,050	996	668	960	643	729	570	624	395
17	728	1,520	1,000	788	877	666	956	663	608	495	387	387
18	722	602	1,060	692	884	655	890	1,140	1,180	607	454	454
19	644	548	1,080	680	877	656	700	1,330	915	607	657	1,040
20	758	532	1,100	620	863	650	658	962	893	550	673	1,030
21	722	518	1,100	554	884	652	660	947	918	540	651	1,020
22	608	512	1,450	1,300	891	670	669	924	865	530	525	1,090
23	686	524	1,450	1,350	842	673	657	811	899	505	607	1,160
24	704	548	1,260	1,390	870	689	636	1,040	883	500	707	1,090
25	788	578	1,260	1,350	933	671	905	901	890	476	662	1,120
26	940	638	1,250	989	961	642	680	676	826	495	673	1,120
27	710	680	2,130	905	905	641	674	664	837	505	695	1,120
28	746	1,000	2,920	828	891	665	662	653	788	510	701	1,140
29	740		1,420	919	912	920	644	629	839	510	673	1,200
30	884		1,220	940	884	884	650	634	821	545	690	1,160
31	961		1,030		905		662	637		535		1,180
Sum	20,679	22,087	38,950	28,404	28,482	22,428	22,376	24,512	24,968	17,628	18,616	26,174

Month	Current Year 1966							Period 1951-1966			
	Extreme Gage Feet		Extreme Second Feet				Average Second Feet	Total Acre Feet	Acre Feet		
	High	Low	Day	High	Low	Average			Maximum	Minimum	
Jan.	11.04	10.11	21	1,130	15	506	667	41,016	308,323	979,890	41,016
Feb.	11.62	9.99	10	1,680	22	488	789	43,809	227,015	826,600	43,809
Mar.	13.28	10.27	28	3,360	2	662	1,256	77,256	249,887	1,073,270	54,353
Apr.	11.52	10.13	25	1,520	21	518	947	56,339	234,891	845,010	56,339
May	11.50	10.34	15	1,560	2	656	919	56,493	213,687	863,860	56,493
June	11.38	10.08	7	1,480	7	548	748	44,485	205,199	833,970	44,485
July	10.96	9.98	26	1,130	29	488	722	44,382	225,997	649,820	44,382
Aug.	11.50	10.19	19	1,490	31	554	791	48,619	233,915	670,050	48,619
Sept.	12.50	10.01	14	2,540	10	470	832	49,523	190,516	775,390	49,523
Oct.	11.57	9.94	5	1,580	25	449	569	34,965	157,829	802,210	34,965
Nov.	11.26	9.92	6	1,310	20	440	621	36,924	189,333	911,370	36,924
Dec.	11.21	9.74	31	1,290	18	363	844	51,915	246,691	1,114,550	51,915
Yearly	13.28	9.74		3,360		363	809	585,726	2,683,283	10,220,870	585,726

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

(See Preceding Page For Description)

Mean Daily Gage Height in Feet 1966

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	10.26	10.37	10.40	10.99	10.75	10.69	10.29	10.55	10.16	10.17	10.11	10.44
2	10.25	10.22	10.45	11.29	10.67	10.68	10.25	10.80	10.16	10.04	10.09	10.42
3	10.23	10.36	11.40	10.88	10.70	10.60	10.25	10.46	10.22	10.14	10.13	10.45
4	10.21	10.44	11.19	10.81	10.74	10.58	10.23	10.30	10.29	10.75	10.20	10.37
5	10.19	10.35	11.10	10.96	10.73	10.61	10.27	10.37	10.41	11.09	10.71	10.34
6	10.22	10.24	11.18	11.06	10.71	10.99	10.26	10.97	10.92	10.37	10.69	10.31
7	10.25	10.30	11.24	10.90	10.74	10.90	10.28	10.82	10.72	10.12	10.33	10.41
8	10.26	10.36	11.10	10.48	10.75	10.22	10.30	10.41	10.35	10.05	10.30	10.40
9	10.23	10.69	10.56	10.46	10.73	10.50	10.25	10.33	10.17	10.03	10.17	10.40
10	10.18	11.29	11.31	10.41	10.73	10.25	10.25	10.27	10.05	10.03	10.23	10.53
11	10.22	10.63	11.28	11.04	10.73	10.23	10.29	10.28	10.15	10.08	10.23	10.53
12	10.26	10.74	10.74	10.83	10.67	10.24	10.84	10.28	10.13	10.08	10.17	10.55
13	10.30	10.82	11.24	10.79	10.69	10.18	10.66	10.29	10.38	10.10	10.19	10.61
14	10.36	10.80	10.88	10.38	10.70	10.21	10.37	10.33	12.15	10.13	10.18	10.86
15	10.34	10.88	10.76	10.49	11.26	10.28	10.46	10.25	11.32	10.31	10.23	9.89
16	10.49	11.31	10.77	10.96	10.79	10.28	10.73	10.33	10.43	10.19	10.29	9.83
17	10.47	11.45	10.84	10.58	10.64	10.28	10.72	10.37	10.23	10.04	10.28	9.81
18	10.46	10.19	10.92	10.42	10.64	10.26	10.62	11.06	11.08	10.26	10.27	9.95
19	10.33	10.10	10.95	10.40	10.63	10.26	10.33	11.31	10.72	10.26	10.35	10.90
20	10.51	10.08	10.98	10.30	10.61	10.25	10.26	10.85	10.69	10.15	10.37	10.89
21	10.45	10.04	10.99	10.19	10.64	10.25	10.27	10.83	10.73	10.13	10.34	10.88
22	10.26	10.03	11.40	11.28	10.64	10.28	10.28	10.81	10.65	10.11	10.10	10.97
23	10.42	10.05	11.41	11.33	10.57	10.29	10.26	10.63	10.70	10.06	10.26	11.06
24	10.41	10.08	11.20	11.38	10.60	10.31	10.23	10.98	10.68	10.05	10.45	10.98
25	10.55	10.13	11.21	11.33	10.69	10.29	10.39	10.78	10.69	10.00	10.36	11.01
26	10.76	10.23	11.19	10.87	10.73	10.24	10.87	10.43	10.60	10.04	10.40	11.00
27	10.41	10.30	12.11	10.74	10.65	10.23	10.47	10.41	10.61	10.07	10.45	11.00
28	10.47	10.79	12.88	10.63	10.63	10.28	10.31	10.40	10.53	10.07	10.46	11.02
29	10.45		11.40	10.75	10.66	10.67	10.10	10.36	10.62	10.07	10.41	11.10
30	10.67		11.17	10.77	10.62	10.62	10.22	10.36	10.58	10.15	10.44	11.05
31	10.78		10.93		10.65		10.25	10.37		10.12		11.07
Avg.	10.38	10.47	11.13	10.79	10.70	10.40	10.37	10.55	10.57	10.17	10.31	10.61

DRAIN NO. 8-B (ARAZ DRAIN)

DESCRIPTION: This drain discharges into the Colorado River 3.9 miles downstream from Colorado River below Yuma Main Canal Wasteway, and 2.5 miles upstream from the northerly international boundary. Prior to October 1955, published as "Araz Drain."

RECORDS: Daily discharge records are furnished by Bureau of Reclamation from 88 current meter measurements during the year, 52 by Imperial Irrigation District at a footbridge one-fourth mile above the mouth, 27 by Bureau of Reclamation, and 9 by U. S. Geological Survey. Monthly records furnished by the U. S. Geological Survey. Records available: May 1948 through December 1966.

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: Mean daily discharge: Maximum, 24 second-feet on September 1, 1953; minimum, 0.1 second-foot several days in February 1966.

Mean Daily Discharge in Second Feet 1966 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.4	1.4	1.2	2.3	2.7	1.8	1.6	1.6	2.1	2.0	1.4	1.6
2	2.4	1.4	1.2	2.3	2.7	1.8	1.6	1.6	2.1	2.0	1.4	1.6
3	2.4	1.3	1.2	2.3	2.7	1.8	1.6	1.7	2.1	2.0	1.4	1.6
4	2.4	1.3	1.2	2.3	2.7	1.8	1.6	1.7	2.1	2.0	1.5	1.6
5	1.4	1.3	1.2	2.3	2.7	1.8	1.6	1.7	2.1	2.0	1.5	1.6
6	1.4	1.3	1.2	2.3	2.1	1.8	1.6	1.7	2.1	2.0	1.5	1.5
7	1.4	1.3	1.2	1.3	2.1	1.8	1.6	1.7	2.1	2.0	1.5	1.5
8	1.4	1.3	1.2	1.3	2.1	1.8	1.6	1.8	2.1	2.0	1.5	1.5
9	1.4	1.3	1.2	1.3	2.1	1.9	1.6	1.8	2.1	2.0	1.5	1.5
10	1.4	.1	1.2	1.3	2.1	1.9	1.6	1.8	2.1	2.0	1.5	1.4
11	1.4	.1	1.2	1.3	2.1	1.9	1.6	1.8	2.1	2.0	1.5	1.4
12	1.4	.1	1.2	1.3	1.2	1.9	1.6	1.8	2.1	2.0	1.5	1.4
13	1.5	.1	1.2	1.3	1.2	1.9	1.6	1.8	2.1	2.0	1.5	1.4
14	1.5	.1	1.2	2.7	1.2	1.9	1.6	1.9	2.1	2.0	1.6	1.4
15	1.5	.1	1.2	2.7	1.2	1.9	1.6	1.9	2.1	1.9	1.6	1.3
16	1.5	.1	1.2	2.7	1.2	1.9	1.6	1.9	2.1	1.9	1.6	1.3
17	1.5	.1	2.0	2.7	1.2	1.9	1.6	1.9	2.0	1.8	1.6	1.3
18	1.5	.1	2.0	2.7	1.2	1.8	1.6	2.0	2.0	1.8	1.6	1.3
19	1.5	.1	2.0	2.7	1.2	1.8	1.6	2.0	2.0	1.7	1.6	1.2
20	1.5	.1	2.0	2.7	1.2	1.8	1.6	2.0	2.0	1.7	1.6	1.2
21	1.5	.1	2.0	2.7	1.2	1.8	1.6	2.0	2.0	1.6	1.6	1.2
22	1.5	.1	2.0	2.1	1.2	1.8	1.6	2.0	2.0	1.6	1.6	1.2
23	1.5	1.2	2.3	2.1	1.2	1.7	1.6	2.0	2.0	1.5	1.6	1.2
24	1.5	1.2	2.3	2.1	1.2	1.7	1.6	2.1	2.0	1.5	1.6	1.2
25	1.5	1.2	2.3	2.1	1.2	1.7	1.6	2.1	2.0	1.4	1.6	1.2
26	1.5	1.2	2.3	2.1	1.2	1.7	1.6	2.1	2.0	1.4	1.6	1.2
27	1.4	1.2	2.3	2.1	1.8	1.6	1.6	2.1	2.0	1.4	1.6	1.2
28	1.4	1.2	2.3	2.1	1.8	1.6	1.6	2.1	2.0	1.4	1.6	1.2
29	1.4		2.3	2.7	1.8	1.6	1.6	2.1	2.0	1.4	1.6	1.2
30	1.4		2.3	2.7	1.8	1.6	1.6	2.2	2.0	1.4	1.6	1.2
31	1.4		2.3		1.8		1.6	2.2		1.4		1.2
Sum	48.8	20.4	51.9	64.6	53.1	53.7	49.6	59.1	61.6	54.8	46.4	41.8

Month	Extreme Gage Feet		Extreme Second Feet				Average Second Feet	Total Acre Feet	Period May 1948-1966		
	High	Low	Day		Low				Average	Maximum	Minimum
			Day	Day	Day	Day					
Jan.			† 1	2.4	† 5	1.4	1.6	96.8	468	899	96.8
Feb.			† 1	1.4	† 10	.1	.7	40.5	405	746	40.5
Mar.			† 23	2.3	† 1	1.2	1.7	103	490	853	103
Apr.			† 14	2.7	† 7	1.3	2.2	128	516	1,000	128
May			† 1	2.7	† 12	1.2	1.7	105	511	966	61
June			† 9	1.9	† 27	1.6	1.8	107	536	1,030	89
July				1.6		1.6	1.6	98.4	612	1,260	98.4
Aug.			† 30	2.2	† 1	1.6	1.9	117	678	1,350	117
Sept.			† 1	2.1	† 17	2.0	2.1	122	644	1,370	122
Oct.			† 1	2.0	† 25	1.4	1.8	109	652	1,220	109
Nov.			† 14	1.6	† 1	1.4	1.5	92.0	585	1,240	92.0
Dec.			† 1	1.6	† 19	1.2	1.3	82.9	535	1,050	82.9
Yearly				2.7		0.1	1.7	1,202	6,632	12,429	1,202

Ø Mean daily

† And other days

PILOT KNOB POWER PLANT AND WASTEWAY NEAR PILOT KNOB, CALIFORNIA

DESCRIPTION: The Pilot Knob Power Plant and Wasteway is located on the All-American Canal, 20.8 miles 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, about one mile upstream from the northerly international boundary. 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 to the power plant. Datum of gage is 150.00 feet above mean sea level. Tailrace gage is on left bank, 680 feet downstream from power plant with automatic recording equipment in control house. All bypass gates are equipped with calibrated openings which are read on all gate changes. Datum of tailrace gage is at mean sea level; elevation of sill of wasteway gates is 147.88 feet, U. S. C. & G. S. datum. 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 through December 1966. 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.

Mean Daily Discharge in Second Feet 1966 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,000	0	1,400	2,260	0	0	1,770	2,500	1,850	0	0	0
2	1,800	0	1,040	1,880	0	0	2,220	2,700	1,820	0	0	0
3	2,760	0	0	2,080	0	0	2,470	2,970	1,770	0	0	0
4	1,190	0	0	2,290	0	0	2,800	3,410	1,700	1,580	0	0
5	63	0	0	2,430	0	0	2,970	3,610	1,690	3,580	0	0
6	0	0	0	2,440	0	0	2,960	3,300	2,420	0	0	0
7	0	0	0	2,470	0	302	2,900	3,320	1,420	433	0	0
8	0	1,360	361	2,650	0	1,320	2,920	3,320	1,650	0	0	0
9	0	709	904	2,700	0	1,130	2,940	3,300	1,800	0	0	0
10	0	582	0	2,660	0	1,260	2,940	3,440	1,850	0	0	0
11	0	770	41	2,560	0	1,360	2,860	3,430	1,840	0	0	0
12	0	0	1,000	2,590	0	1,390	2,480	3,480	1,800	0	0	0
13	0	0	1,010	2,350	0	1,420	2,560	3,440	1,800	0	0	0
14	0	0	1,490	2,540	0	1,570	2,810	3,430	1,750	0	0	40
15	0	0	1,560	2,420	0	1,520	2,660	3,190	1,660	0	0	957
16	0	0	1,500	1,770	0	1,500	2,670	2,950	1,040	0	0	1,220
17	0	46	1,480	1,730	0	1,520	2,700	2,800	1,000	0	0	0
18	0	1,310	1,430	1,340	0	1,560	2,670	2,520	0	0	0	1,140
19	0	1,740	1,330	1,150	0	1,540	2,640	2,340	0	0	0	0
20	670	1,940	1,570	1,080	0	1,540	2,640	2,700	0	0	0	0
21	969	2,050	1,860	1,010	0	1,560	2,650	2,700	0	0	0	0
22	0	2,080	1,650	0	0	1,560	2,260	2,710	0	0	0	0
23	0	2,090	1,910	0	0	1,600	2,260	2,700	0	0	0	0
24	0	2,040	2,220	0	0	1,500	2,300	2,360	0	0	0	0
25	0	2,030	2,200	0	0	1,490	2,250	2,150	0	0	0	0
26	0	1,960	2,200	0	0	1,480	1,910	2,360	0	0	0	0
27	0	1,950	2,200	0	0	1,510	2,050	2,150	0	0	0	0
28	0	1,480	2,270	0	0	1,490	2,140	1,830	0	0	0	0
29	0	0	2,310	0	0	1,230	2,380	1,540	0	0	0	0
30	0	0	2,160	0	0	1,240	2,290	1,560	0	0	0	0
31	0	0	2,350	0	0	0	2,340	1,520	0	0	0	0
Sum	8,452	24,137	39,446	44,400	0	33,592	78,410	85,730	27,790	8,013	0	4,537
Current Year 1966												
Month	Extreme Gate Feet		Extreme Second Feet				Average Second Feet	Total Acre Feet	Acre Feet			
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum	
Jan.			3	2,760	† 6	0	273	16,764	41,923	400,200	0	0
Feb.			23	2,090	† 1	0	862	47,875	15,352	149,500	0	0
Mar.			31	2,350	† 3	0	1,270	78,240	54,781	279,300	0	0
Apr.			9	2,700	† 2	0	1,480	88,066	87,890	260,900	0	0
May				0		0	0	0	24,097	165,400	0	0
June			23	1,600	† 1	0	1,120	66,629	67,384	204,300	0	0
July			5	2,970	1	1,770	2,530	155,524	115,534	260,000	0	0
Aug.			5	3,610	31	1,520	2,760	170,043	119,732	270,100	0	0
Sept.			† 1	1,850	† 18	0	926	55,121	64,575	173,300	0	0
Oct.			5	3,580	† 1	0	258	15,894	13,741	51,460	0	0
Nov.				0		0	0	0	19,010	182,600	0	0
Dec.			16	1,220	† 1	0	146	8,999	37,267	319,700	0	0
Yearly				3,610		0	971	703,155	661,286	1,944,700	0	0

∅ Mean daily

† And other days

WELLTON-MOHAWK DRAINAGE WATER DISCHARGED TO COLORADO RIVER ABOVE MORELOS DAM

DESCRIPTION: Diversion structure (Main Outlet Drain Extension No. 1) in Wellton-Mohawk Drainage Extension Channel for diverting water to the Gila River, 0.5 mile upstream from the confluence of the Gila and Colorado Rivers. A continuous water-stage recorder immediately upstream from outlet structure (Main Outlet Drain Extension No. 2), 0.4 mile downstream from diversion structure which diverts water from the Extension Channel directly to the Colorado River at a point 0.8 mile upstream from the northerly international boundary, and 1.9 miles upstream from Morelos Dam. The Gila River enters the Colorado River 13 miles upstream from Morelos Dam.

RECORDS: Partial diversions of the Extension Channel flow at M. O. D. E. No. 1 were determined from the gate openings, rated by discharge measurements below the outlet. Diversions of the total Extension Channel flow were determined at an upstream measuring station at channel station 9+00. Flows diverted at M. O. D. E. No. 2 were based on 48 discharge measurements during the year and a continuous record of gage heights. Records furnished by Bureau of Reclamation. The record shown below is the combination of diversions at M. O. D. E. No. 1 and M. O. D. E. No. 2. Records available: February 10, 1961 through December 1966.

REMARKS: Pursuant to Minute No. 218 of the Commission, an extension to the Wellton-Mohawk Drainage Conveyance Channel was constructed along the left bank of the Colorado River to a point immediately below Morelos Dam, a distance of about 12 miles, and placed in operation on November 16, 1965. Drainage flows may be discharged to the Gila River and thence to the Colorado River at the diversion structure, M. O. D. E. No. 1, at the upstream end of the extension; and directly to the Colorado River at the structure above Morelos Dam, M. O. D. E. No. 2, and at the structure immediately below Morelos Dam, M. O. D. E. No. 3, the record of which is shown on page 22.

Mean Daily Discharge in Second Feet 1966 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	No	Dec.
1	0	0	0	292	190	161	277	276	266	5.2	0	0
2	0	0	0	295	186	161	277	273	282	0	1	0
3	0	0	0	295	185	158	274	265	285	0	0	0
4	0	0	30.2	216	185	155	276	276	287	0	0	0
5	0	0	150	290	186	158	269	274	281	0	0	0
6	0	0	175	288	190	198	269	274	277	0	0	0
7	0	0	178	138	194	241	273	276	282	0	0	0
8	0	0	176	290	195	268	268	276	281	0	0	0
9	0	0	206	290	194	224	273	271	282	0	0	0
10	0	0	234	285	194	190	274	266	284	0	0	0
11	0	0	269	285	190	189	279	273	292	0	0	0
12	0	0	279	279	195	195	274	268	295	0	0	0
13	0	0	279	287	192	237	274	266	290	0	0	0
14	0	0	285	293	190	208	269	265	284	0	0	0
15	0	0	287	293	190	234	326	261	282	0	0	0
16	0	0	287	290	192	228	297	239	281	0	0	0
17	0	0	279	292	195	230	287	249	237	0	0	0
18	0	0	277	287	196	231	173	314	198	0	0	0
19	0	0	277	290	189	255	287	293	169	0	0	65.2
20	0	0	279	287	192	214	289	287	161	0	0	69.8
21	0	0	282	239	189	210	284	287	162	0	0	69.8
22	0	0	274	244	194	206	284	303	131	0	0	69.8
23	0	0	268	247	186	216	282	170	107	0	0	69.1
24	0	0	282	249	186	271	282	285	104	0	0	69.8
25	0	0	289	244	177	285	281	287	103	0	0	70.6
26	0	0	287	185	176	279	281	289	113	0	0	73.7
27	0	0	287	185	171	279	277	287	126	0	0	71.4
28	0	0	295	194	195	282	274	284	126	0	0	55.0
29	0	0	289	194	162	281	276	282	122	0	0	53.6
30	0	0	279	188	159	281	274	271	129	0	0	50.1
31	0	0	292		162		274	258		0	0	52.9
Sum	0	0	7,071.2	7,731	5,777	6,725	8,554	8,445	6,519	5.2	0	840.8
Current Year 1966											Period 1961-1966	
Month	Extreme Gage Feet		Extreme Second Feet				Average Second Feet	Total Acre Feet	Acre Feet			
	High	Low	Day		Low	Average			Maximum	Minimum		
			Day	Day								
Jan.			0		0	0	0	11,004	19,450	0		
Feb.			0		0	0	0	10,188	16,780	0		
Mar.			28	295	† 1	0	228	15,589	18,740	8,430		
Apr.			† 2	295	7	138	258	15,334	18,570	11,950		
May			18	196	30	159	186	11,459	15,320	11,459		
June			25	285	4	155	224	13,339	15,449	19,190		
July			15	326	18	173	276	16,967	17,707	19,295		
Aug.			18	314	23	170	272	16,750	17,241	18,887		
Sept.			12	295	25	103	217	12,930	15,215	18,310		
Oct.			1	5.2	† 2	0		10.3	11,842	18,620		
Nov.			0	0	0	0	0	0	11,325	17,630		
Dec.			26	73.7	† 1	0	27.1	1,668	9,871	18,990		
Yearly						0	142	102,483	166,587	215,080		

† 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, 6.4 miles downstream from Colorado River below Yuma Main Canal Wasteway, 5 miles west of Yuma, Arizona, 1.1 miles upstream from Morelos Diversion Structure, and about one mile downstream from Rockwood Gate. Zero of 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 447 current meter measurements during the year, 125 by the United States Section, 310 by the Mexican Section of the Commission, 12 by the U. S. Geological Survey, and a continuous record of gage heights. Computations 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 gage height record is available November 15, 1948 through December 1966; daily discharge records available January 1, 1950 through December 1966.

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 regulate the river flow at this station except for infrequent flood flows. During 1966, the flow at this point represented the total amount of Colorado River water which crossed the northerly international boundary.

EXTREMES: Prior to January 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.

Mean Daily Discharge in Second Feet 1966 — Annual and Period Summary

Day	J	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,670	814	2,170	3,580	1,300	1,250	* 2,640	3,620	2,670	791	663	765
2	2,080	636	1,850	3,470	1,240	1,240	* 3,010	3,980	2,660	680	662	743
3	3,240	701	1,580	3,310	1,210	1,190	* 3,270	4,060	2,640	700	674	746
4	1,870	782	1,540	3,300	1,260	1,150	* 3,540	4,380	2,630	2,050	678	730
5	764	724	1,530	3,420	1,260	1,180	3,750	4,540	2,620	4,550	1,020	649
6	657	701	1,620	3,500	1,240	1,450	3,810	4,640	2,670	3,170	992	662
7	668	725	1,680	3,430	1,250	1,760	3,770	4,640	2,690	1,180	823	685
8	682	2,000	1,830	3,560	1,270	2,170	3,730	4,390	2,650	668	745	711
9	682	1,820	2,040	3,710	1,240	2,150	3,690	4,280	2,690	667	694	690
10	658	1,810	1,690	3,640	1,270	2,050	3,770	4,380	2,650	659	647	768
11	681	1,880	1,840	3,860	1,260	2,100	3,730	4,310	2,710	668	645	799
12	690	968	2,160	3,770	1,250	2,210	3,680	4,380	2,690	671	628	814
13	710	1,040	2,620	3,550	1,220	2,200	3,710	4,340	2,750	674	653	806
14	739	1,050	2,860	3,440	1,230	2,340	3,700	4,350	3,750	662	644	1,110
15	765	1,110	2,860	3,380	1,560	2,370	3,610	4,070	3,430	766	647	1,400
16	800	1,410	2,760	3,150	1,450	2,340	3,570	3,820	2,160	751	673	1,630
17	839	1,660	2,740	2,760	1,280	2,350	3,590	3,680	1,840	638	668	1,650
18	808	1,870	2,840	2,290	1,260	2,350	3,650	3,750	1,560	748	670	1,660
19	760	2,200	2,740	2,040	1,290	2,390	3,600	3,680	1,280	761	713	1,240
20	1,280	2,380	2,960	2,000	1,220	2,340	3,560	3,700	1,210	696	743	1,190
21	1,880	2,490	3,260	1,840	1,250	2,300	3,620	3,690	1,260	693	723	1,180
22	675	2,480	3,350	1,540	1,270	2,310	3,260	3,670	1,140	698	576	1,230
23	697	2,570	3,580	1,670	1,220	2,410	3,210	3,670	1,160	667	621	1,310
24	759	2,510	3,710	1,780	1,170	2,460	3,230	3,650	1,150	656	756	1,210
25	785	2,560	3,760	1,800	1,240	2,410	3,230	3,420	1,160	652	717	1,250
26	1,020	2,540	3,710	1,370	1,250	2,400	3,250	3,380	1,120	649	700	1,240
27	754	2,570	4,300	1,260	1,240	2,460	3,230	3,190	1,140	668	762	1,230
28	805	2,520	5,420	1,160	1,260	2,440	3,140	2,800	1,100	670	770	1,190
29	748		4,040	1,230	1,270	2,350	3,250	2,490	1,110	674	731	1,280
30	928		3,510	1,290	1,260	2,390	3,220	2,500	1,110	680	720	1,250
31	972		3,570	1,230	1,230		3,270	2,460		674		1,250
Sum		46,521	86,120	80,100	39,220	62,510	107,290	117,910	61,400	29,531	21,358	33,068
	31,069											

Month	Current Year 1966						Period 1935-1966				
	Extreme Gage Feet			Extreme Second Feet			Average Second Feet	Total Acre Feet	Acre Feet		
	High	Low	Day	High	Low	Day			Average	Maximum	Minimum
Jan.	106.11	102.20	3	5,530	5	610	1,000	61,624	498,382	1,644,000	31,900
Feb.	104.86	102.18	28	3,070	2	594	1,660	92,273	415,696	1,378,000	60,400
Mar.	106.37	103.06	28	5,620	9	1,240	2,780	170,817	397,464	1,120,000	19,400
Apr.	105.10	102.73	11	4,020	28	1,060	2,670	158,876	301,567	823,850	0
May	103.36	102.69	15	1,810	2	1,060	1,270	77,792	328,409	1,151,000	77,400
June	103.94	102.71	24	2,520	5	1,110	2,080	123,987	302,429	1,175,000	8,500
July	105.01	103.93	6	3,830	1	2,500	3,460	212,807	282,433	763,800	24,400
Aug.	105.65	103.67	6	4,710	31	2,250	3,800	233,871	302,072	791,600	43,800
Sept.	105.27	102.54	14	4,150	28	1,005	2,050	121,785	285,471	1,029,000	60,000
Oct.	106.82	102.01	5	5,650	14	607	953	58,574	294,347	1,186,000	49,309
Nov.	102.90	101.89	6	1,325	22	558	712	42,363	372,269	1,422,000	42,363
Dec.	103.52	102.03	18	2,120	5	600	1,070	65,589	475,049	1,832,000	42,000
Yearly	106.82	101.89		5,650		558	1,960	1,420,358	4,255,588	10,596,900	722,100

* Partly estimated

COLORADO RIVER AT NORTHERLY INTERNATIONAL BOUNDARY - STAGES

(See Preceding Page For Description)

Mean Daily Gage Height in Feet 1966

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	103.31	102.50	103.81	104.78	102.93	102.87	104.07	104.77	103.98	102.31	102.10	102.21
2	103.86	102.23	103.58	104.70	102.87	102.85	104.37	105.04	103.98	102.19	102.14	102.18
3	105.69	102.34	103.34	104.60	102.86	102.79	104.58	105.08	103.96	102.20	102.17	102.20
4	103.86	102.45	103.29	104.61	102.89	102.78	104.81	105.37	103.96	103.45	102.16	102.19
5	102.41	102.36	103.30	104.67	102.89	102.80	104.97	105.53	103.97	106.08	102.59	102.11
6	102.23	102.31	103.37	104.71	102.87	103.05	104.98	*105.54	104.00	105.43	102.53	102.11
7	102.28	102.31	103.41	104.67	102.88	103.32	104.90	*105.52	104.05	104.44	102.36	102.13
8	102.27	103.61	103.55	104.77	102.90	103.66	104.89	105.31	104.05	103.24	102.24	102.16
9	102.27	103.52	103.73	104.81	102.89	103.69	104.90	105.24	104.08	102.18	102.16	*102.15
10	102.26	103.45	103.48	104.75	102.89	103.60	104.95	105.32	104.06	102.13	102.11	102.26
11	102.25	103.55	103.56	104.96	102.89	103.66	104.90	105.28	104.10	102.14	102.12	102.28
12	102.26	102.67	103.84	104.89	102.88	103.71	104.87	105.32	104.06	102.14	102.09	102.29
13	102.30	102.78	104.12	104.71	102.86	103.71	104.86	105.30	104.09	102.14	102.12	102.27
14	102.35	102.77	104.31	104.63	102.86	103.80	104.86	105.32	104.88	*102.14	102.13	102.61
15	102.42	102.85	104.28	104.58	103.18	103.85	104.76	105.09	104.72	*102.30	102.16	102.93
16	102.42	103.15	104.23	104.37	103.03	103.82	104.76	104.88	103.44	*102.31	102.19	103.15
17	102.46	103.36	104.23	104.16	102.84	103.83	104.78	104.78	103.37	*102.12	102.16	103.18
18	102.47	103.57	104.26	103.84	102.85	103.84	104.78	104.79	103.12	*102.25	102.11	103.19
19	102.40	103.83	104.20	103.70	102.87	103.87	104.74	104.75	102.86	102.28	102.16	102.79
20	102.93	103.97	104.36	103.56	102.84	103.82	104.72	104.76	102.78	102.20	102.20	102.70
21	103.52	104.02	104.59	103.44	102.85	103.81	104.74	104.75	102.82	102.20	102.16	102.70
22	102.34	104.03	104.64	103.21	102.87	103.85	104.47	104.74	102.71	102.19	101.95	102.74
23	102.32	104.06	104.85	103.31	102.82	103.90	104.46	104.75	102.72	102.15	102.04	102.83
24	102.40	104.06	104.94	103.38	102.77	103.89	104.46	104.77	102.72	102.13	102.22	102.77
25	102.43	104.10	104.94	103.37	102.83	103.87	104.46	104.57	102.71	102.09	102.18	102.79
26	102.70	104.11	104.92	103.02	102.86	103.85	104.47	104.53	102.68	102.12	102.15	102.78
27	102.39	104.13	105.43	102.89	102.85	103.87	104.42	104.36	102.69	102.13	102.23	102.76
28	102.46	104.07	106.23	102.82	102.86	103.87	104.35	104.10	102.66	102.14	102.23	102.74
29	102.38		105.28	102.91	102.84	103.83	104.44	103.85	102.68	102.14	102.17	102.81
30	102.61		104.86	102.93	102.82	103.84	104.44	103.82	102.71	102.18	102.18	102.79
31	102.67		104.84		102.84		104.50	103.82		102.19		102.81
Avg.	102.67	103.29	104.25	104.06	102.88	103.60	104.67	104.87	103.49	102.56	102.18	102.57

* 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 gates of the Intake 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 0.16 foot below 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 through December 1966.

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, 112.70 feet on January 2, 1958; minimum mean daily gage height, 101.51 feet on February 17, 1957.

Mean Daily Gage Height in Feet 1966

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	102.49	101.97	102.99	103.71	102.20	102.20	103.12	103.71	103.12	101.90	101.80	101.84
2	103.02	101.77	102.76	103.64	102.17	102.17	103.35	103.87	103.12	101.84	101.80	101.80
3	105.25	101.87	102.56	103.54	102.17	102.13	103.54	103.90	103.12	101.84	101.80	101.80
4	103.22	101.94	102.53	103.54	102.20	102.10	103.71	104.13	103.12	102.76	101.80	101.80
5	101.87	101.87	102.53	103.61	102.20	102.13	103.84	104.30	103.12	105.25	102.13	101.71
6	101.74	101.84	102.56	103.64	102.20	102.33	103.84	104.27	103.15	105.02	102.10	101.71
7	101.77	101.84	102.62	103.61	102.20	102.59	103.77	104.27	103.25	104.33	101.97	101.74
8	101.77	102.72	102.69	103.67	102.23	102.82	103.81	104.10	103.28	102.99	101.90	101.74
9	101.77	102.82	102.85	103.71	102.20	102.85	103.81	104.07	103.31	101.77	101.84	101.74
10	101.74	102.59	102.66	103.64	102.23	102.79	103.84	104.10	103.28	101.77	101.77	101.84
11	101.74	102.82	102.72	103.77	102.20	102.82	103.81	104.07	103.31	101.80	101.77	101.84
12	101.77	102.07	102.92	103.77	102.20	102.85	103.81	104.10	103.28	101.80	101.74	101.84
13	101.80	102.13	103.18	103.64	102.17	102.89	103.77	104.10	103.31	101.80	101.77	101.84
14	101.84	102.17	103.31	103.58	102.17	102.95	103.77	104.10	103.90	101.80	101.84	102.10
15	101.87	102.23	103.31	103.54	102.40	102.99	103.74	103.94	103.81	101.87	101.87	102.30
16	101.87	102.40	103.25	103.38	102.30	102.95	103.74	103.81	102.99	101.90	101.87	102.46
17	101.94	102.56	103.28	103.25	102.20	102.95	103.74	103.74	102.79	101.77	101.80	102.46
18	101.94	102.69	103.25	102.99	102.20	102.99	103.77	103.74	102.56	101.87	101.74	102.46
19	101.87	102.89	103.18	102.89	102.20	102.99	103.71	103.71	102.36	101.87	101.77	102.20
20	102.23	103.05	103.31	102.72	102.17	102.99	103.71	103.71	102.33	101.80	101.80	102.13
21	102.72	103.12	103.51	102.62	102.20	102.95	103.74	103.71	102.36	101.80	101.80	102.13
22	101.84	103.12	103.58	102.46	102.20	102.99	103.51	103.67	102.26	101.80	101.64	102.17
23	101.84	103.15	103.67	102.53	102.17	103.05	103.51	103.67	102.23	101.77	101.71	102.23
24	101.90	103.15	103.74	102.59	102.13	103.02	103.48	103.71	102.20	101.77	101.84	102.17
25	101.90	103.18	103.74	102.59	102.17	103.02	103.48	103.58	102.20	101.77	101.80	102.20
26	102.10	103.15	103.74	102.33	102.17	102.99	103.51	103.54	102.20	101.77	101.77	102.20
27	101.87	103.18	104.10	102.23	102.17	102.99	102.48	103.41	102.20	101.80	101.84	102.20
28	101.94	103.15	104.72	102.13	102.20	102.99	103.44	103.25	102.20	101.80	101.84	102.17
29	101.87		104.17	102.23	102.17	102.95	103.48	103.05	102.20	101.77	101.80	102.23
30	102.03		103.74	102.23	102.17	102.99	103.48	103.02	102.20	101.80	101.80	102.20
31	102.07		103.74		102.17		103.51	103.02		101.84		102.20
Avg.	102.12	102.55	103.26	103.13	102.20	102.78	103.64	103.79	102.83	102.18	101.82	102.05

INTAKE CANAL AT MORELOS DIVERSION STRUCTURE - DISCHARGES

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

RECORDS: The records are deduced from the flows arriving in the limitrophe section of the Colorado River at the northerly international boundary, the flows that pass downstream from the structure, and leakage through the structure. Records available: November 8, 1950 through 1966. Records obtained and furnished by the Mexican Section of the Commission.

REMARKS: The canal is operated with a minimum hydraulic slope to permit the maximum retention of silt above Matamoros Check and the lower velocities in the canal do not permit measuring the flow with a current meter. Records for this station show the amounts of Colorado River water diverted at Morelos Diversion Dam to the Intake Canal and thence to the Alamo Canal for use in Mexico. Water for use in Mexico may also be diverted to the Alamo Canal in the United States directly from the river at 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 1966 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, August 3, 1958; maximum mean daily gage height, 107.22 feet on November 8, 1950. Minimum daily discharge, no flow on various occasions.

Mean Daily Discharge in Second Feet 1966 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,600	809	2,140	3,570	1,290	1,240	2,620	3,060	2,660	777	657	763
2	1,700	625	1,820	3,450	1,230	1,230	2,990	3,960	2,650	646	657	738
3	1,750	689	1,560	3,290	1,200	1,180	3,250	4,030	2,630	667	667	742
4	1,290	770	1,520	3,290	1,250	1,130	3,520	4,380	2,620	2,010	671	727
5	749	717	1,500	3,400	1,250	1,160	3,740	4,520	2,610	4,240	1,010	646
6	639	696	1,590	3,490	1,230	1,430	3,780	4,630	2,660	3,130	982	657
7	643	713	1,650	3,410	1,240	1,740	3,740	4,630	2,680	1,100	816	682
8	660	1,940	1,830	3,530	1,250	2,150	3,710	4,380	2,640	646	735	706
9	660	1,420	2,030	3,710	1,220	2,150	3,670	4,270	2,680	653	689	685
10	636	1,660	1,680	3,640	1,250	2,040	3,740	4,380	2,640	639	643	763
11	660	1,670	1,830	3,850	1,240	2,090	3,710	4,310	2,700	646	639	795
12	675	957	2,150	3,740	1,230	2,200	3,670	4,380	2,680	643	618	809
13	692	1,040	2,610	3,530	1,200	2,180	3,710	4,310	2,730	650	643	802
14	720	1,040	2,850	3,430	1,210	2,320	3,670	4,340	3,740	643	632	1,110
15	752	1,100	2,840	3,370	1,540	2,360	3,600	4,030	3,420	745	639	1,390
16	791	1,400	2,750	3,140	1,430	2,320	3,570	3,810	2,150	731	667	1,620
17	826	1,650	2,730	2,750	1,270	2,330	3,570	3,670	1,830	614	660	1,650
18	791	1,850	2,830	2,280	1,250	2,340	3,640	3,740	1,550	727	664	1,660
19	738	2,190	2,730	2,030	1,270	2,380	3,600	3,670	1,270	738	706	1,240
20	1,270	2,370	2,950	1,990	1,210	2,330	3,530	3,670	1,200	678	727	1,190
21	1,870	2,450	3,250	1,840	1,240	2,280	3,600	3,670	1,250	671	696	1,180
22	667	2,430	3,340	1,530	1,250	2,290	3,250	3,640	1,130	675	551	1,230
23	696	2,540	3,570	1,660	1,200	2,390	3,200	3,640	1,150	643	597	1,310
24	759	2,480	3,710	1,770	1,150	2,440	3,220	3,640	1,140	632	735	1,210
25	773	2,520	3,740	1,790	1,230	2,390	3,210	3,400	1,150	629	696	1,250
26	1,010	2,510	3,710	1,360	1,240	2,380	3,230	3,360	1,110	629	685	1,240
27	749	2,540	4,270	1,250	1,230	2,440	3,210	3,170	1,130	660	749	1,230
28	784	2,480	5,400	1,150	1,260	2,430	3,120	2,790	1,090	660	756	1,190
29	735		4,030	1,220	1,250	2,330	3,230	2,480	1,110	657	717	1,270
30	922		3,500	1,280	1,240	2,370	3,210	2,490	1,110	671	710	1,250
31	968		3,570		1,220		3,260	2,440		664		1,250
Sum	28,175	45,256	85,680	79,740	38,770	62,040	106,770	117,430	61,110	28,514	21,014	32,985
Current Year 1966												
Period 1950-1966												
Month	Extreme Gage Feet		Extreme Second Feet				Average Second Feet	Total Acre Feet	Acre Feet			
	High	Low	Day	High	Low	Day			Average	Maximum	Minimum	
Jan.	102.66	98.65	21	1,870	10	636	908	55,875	50,386	114,523		966
Feb.	102.79	99.44	† 23	2,540	2	625	1,610	89,707	49,483	101,685		9,232
Mar.	104.76	101.87	28	5,400	5	1,500	2,760	169,846	163,937	216,994		97,902
Apr.	103.38	99.80	11	3,850	28	1,150	2,660	158,162	198,924	264,127	158,162	
May	100.69	99.74	15	1,540	24	1,150	1,250	76,966	101,522	159,010		66,207
June	101.67	99.74	† 24	2,440	4	1,130	2,070	123,056	182,187	269,632		121,865
July	103.51	101.64	6	3,780	1	2,620	3,440	211,803	255,832	304,263		196,351
Aug.	103.97	101.25	† 6	4,630	31	2,440	3,780	232,915	255,013	341,044		185,235
Sept.	103.31	99.51	14	3,740	28	1,090	2,040	121,221	150,932	198,095		93,489
Oct.	105.74	99.05	5	4,240	17	614	918	56,554	50,279	90,639		10,453
Nov.	100.23	98.98	5	1,010	22	551	699	41,684	34,225	103,954		7,516
Dec.	100.98	99.08	18	1,660	5	646	1,060	65,338	53,924	131,440		8,825
Yearly	105.74	98.65		5,400		551	1,940	1,403,127	1,549,606	1,961,556		1,380,630

Ø Mean daily

† And other days

INTAKE CANAL AT MORELOS DIVERSION STRUCTURE - STAGES

(See Preceding Page For Description)

Mean Daily Gage Height in Feet 1966

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	101.77	99.77	102.17	102.79	99.93	99.77	101.61	102.62	101.48	99.11	99.02	99.18
2	102.10	99.67	102.07	102.72	99.84	99.77	102.00	102.95	101.48	98.98	99.05	99.11
3	101.87	99.77	101.94	102.72	99.77	99.67	102.33	103.02	101.44	99.05	99.05	99.15
4	101.64	99.80	101.97	102.72	99.84	99.70	102.95	103.38	101.44	100.69	99.05	99.15
5	101.12	99.77	102.03	102.76	99.80	99.80	103.22	103.64	101.44	105.02	99.54	99.02
6	100.98	99.70	102.00	102.79	99.77	100.16	103.08	103.67	101.44	104.86	99.48	99.05
7	100.62	99.77	102.03	102.79	99.77	100.75	102.92	103.64	101.44	104.27	99.34	99.05
8	99.05	101.41	102.07	102.85	99.80	101.31	102.95	103.44	101.41	102.46	99.18	99.08
9	98.65	101.31	102.10	102.85	99.77	101.31	102.95	103.41	101.41	99.11	99.05	99.08
10	98.56	100.75	102.07	102.82	99.77	101.28	102.99	103.48	101.41	99.05	98.98	99.25
11	98.56	101.87	102.00	103.05	99.77	101.31	102.99	103.41	101.44	99.05	98.98	99.31
12	98.62	99.34	102.17	102.95	99.70	101.38	102.99	103.44	101.41	99.05	98.95	99.34
13	98.62	99.48	102.26	102.82	99.70	101.35	102.95	103.44	101.48	99.05	99.02	99.28
14	98.69	99.44	102.33	102.79	99.70	101.41	102.99	103.48	102.59	99.02	98.95	99.93
15	98.79	99.54	102.33	102.76	100.20	101.41	102.92	103.28	102.72	99.21	98.95	100.33
16	98.75	100.00	102.30	102.66	100.03	101.38	102.95	102.92	101.54	99.25	99.02	100.52
17	98.85	100.36	102.33	102.59	99.77	101.38	102.89	102.76	100.49	98.98	99.02	100.49
18	98.82	100.98	102.36	102.46	99.74	101.41	102.76	102.72	100.20	99.18	99.02	100.52
19	98.75	101.97	102.33	102.46	99.77	101.41	102.69	102.69	99.84	99.18	99.08	100.20
20	99.61	102.20	102.36	101.21	99.74	101.38	102.66	102.72	99.70	99.08	99.15	100.16
21	101.87	102.17	102.46	100.72	99.74	101.35	102.69	102.69	99.77	99.08	99.08	100.13
22	100.16	102.17	102.43	100.43	99.74	101.41	102.46	102.69	99.61	99.08	98.88	100.20
23	99.84	102.20	102.59	100.52	99.70	101.44	102.36	102.69	99.61	99.02	98.98	100.23
24	99.87	102.20	102.82	100.62	99.67	101.41	102.26	102.69	99.57	99.02	99.21	100.20
25	99.90	102.23	102.79	100.66	99.74	101.38	102.30	102.53	99.61	98.98	99.15	100.26
26	100.00	102.23	102.79	100.16	99.74	101.38	102.36	102.49	99.54	99.02	99.08	100.20
27	99.90	102.23	103.15	99.93	99.74	101.41	102.26	102.26	99.57	99.02	99.21	100.20
28	99.87	102.23	103.94	99.80	99.77	101.41	102.20	101.80	99.51	99.02	99.21	100.16
29	99.90		103.58	99.90	99.74	101.35	102.26	101.61	99.54	99.02	99.11	100.23
30	99.97		102.79	99.93	99.70	101.38	102.26	101.51	99.57	99.08	99.11	100.23
31	100.00		102.79		99.70		102.33	101.28		99.11		100.23
Avg.	99.86	100.88	102.43	101.87	99.78	101.04	102.63	102.85	100.72	99.78	99.10	99.79

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 the gage is 0.16 foot below 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 heights February 20, 1951 to June 6, 1966; a continuous record of gage heights June 7 through December 1966.

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

EXTREMES: Maximum mean daily gage height, 112.63 feet on January 2, 1958; minimum mean gage height, 98.26 feet on March 23 and April 20, 1966.

Mean Daily Gage Height in Feet 1966

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	100.75	100.56	100.75	98.39	99.15	99.34	98.49	98.69	98.95	101.02	101.05	100.85
2	101.90	100.56	100.75	98.39	99.15	99.34	98.49	98.72	98.95	101.15	101.05	100.85
3	105.18	100.59	100.75	98.39	99.15	99.31	98.52	98.75	98.95	101.15	101.05	100.89
4	102.43	100.56	100.59	98.36	99.18	99.34	98.56	98.72	98.92	101.21	101.05	100.89
5	100.66	100.56	100.00	98.33	99.15	99.34	98.59	98.75	98.95	102.36	101.08	100.89
6	100.66	100.59	99.84	98.36	99.15	99.21	98.59	98.75	99.05	101.38	101.05	100.89
7	100.62	100.62	99.84	98.33	99.08	98.95	98.56	98.79	99.02	101.41	101.05	100.89
8	100.59	100.82	99.77	98.33	99.08	98.72	98.59	98.79	98.98	101.18	101.05	100.82
9	100.59	102.23	99.54	98.33	99.08	98.98	98.62	98.82	99.02	101.18	100.98	100.85
10	100.59	101.15	99.21	98.33	99.11	99.18	98.59	98.82	99.02	101.18	101.05	100.82
11	100.59	101.41	98.72	98.36	99.11	99.15	98.59	98.82	99.02	101.21	101.05	100.79
12	100.59	100.52	98.56	98.36	99.11	99.18	98.62	98.85	98.98	101.21	101.05	100.79
13	100.56	100.49	98.56	98.36	99.08	98.88	98.59	98.85	99.02	101.18	101.02	100.79
14	100.56	100.56	98.56	98.33	99.08	99.11	98.59	98.85	99.02	101.15	101.02	100.75
15	100.56	100.56	98.52	98.29	99.08	99.05	98.59	98.98	98.98	101.15	100.98	100.75
16	100.56	100.33	98.49	98.29	99.08	99.05	98.59	98.85	98.82	101.12	100.98	100.72
17	100.56	100.59	98.49	98.29	99.08	99.02	98.56	98.82	99.51	101.12	100.98	100.69
18	100.59	100.62	98.43	98.29	99.08	98.98	98.59	98.88	99.93	101.08	100.98	100.72
19	100.59	100.62	98.39	98.29	99.18	98.82	98.62	98.85	100.13	101.08	100.95	100.46
20	100.56	100.59	98.39	98.26	99.11	99.11	98.62	98.88	100.16	101.08	100.98	100.39
21	100.59	100.66	98.43	98.72	99.15	99.15	98.59	98.88	100.16	101.08	100.98	100.36
22	100.59	100.75	98.36	98.79	99.15	99.11	98.62	98.92	100.26	101.12	100.98	100.36
23	100.59	100.69	98.26	98.72	99.15	98.98	98.59	98.95	100.43	101.12	100.95	100.33
24	100.59	100.72	98.29	98.72	99.25	98.52	98.59	98.92	100.43	101.12	100.92	100.30
25	100.59	100.72	98.36	98.69	99.15	98.49	98.62	98.92	100.43	101.12	100.89	100.30
26	100.59	100.75	98.33	99.08	99.18	98.46	98.65	98.95	100.39	101.08	100.89	100.30
27	100.59	100.75	98.36	99.05	99.21	98.49	98.65	98.92	100.36	101.12	100.92	100.26
28	100.59	100.75	98.39	99.02	99.18	98.49	98.62	98.95	100.33	101.12	100.89	100.30
29	100.56		98.39	99.11	99.34	98.49	98.65	98.95	100.33	101.12	100.92	100.33
30	100.59		98.46	99.11	99.34	98.49	98.65	98.95	100.33	101.12	100.92	100.33
31	100.59		98.39	99.15	99.34	98.52	98.62	99.05	100.36	101.05	100.89	100.39
	100.59		98.39	99.38			98.62	99.11		101.05		100.39
Avg.	100.84	100.73	98.97	98.52	99.15	98.96	98.59	98.86	99.56	101.18	100.99	100.62

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

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

RECORDS: Based on 23 discharge measurements and a continuous record of gage heights. Station is operated by the United States Section of the Commission. Records available: November 16, 1965 through 1966.

REMARKS: Pursuant to Minute No. 218 of the Commission, an extension to the Wellton-Mohawk Drainage Conveyance Channel was constructed along the left bank of the Colorado River to a point immediately below Morelos Dam, a distance of about 12 miles, and placed in operation on November 16, 1965. Drainage flows may be discharged to the Gila River and thence to the Colorado River at the diversion structure, Main Outlet Drain Extension No. 1, at the upstream end of the extension; directly to the Colorado River at Main Outlet Drain Extension No. 2, 1.9 miles upstream from Morelos Dam; and immediately below Morelos Dam at this station, Main Outlet Drain Extension No. 3. The combined 1966 record of discharges to the river above Morelos Dam through M.O.D.E. No. 1 and No. 2 is shown on page 15.

Mean Daily Discharge in Second Feet 1966 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	299	282	286	0	101	124	0	0	0	276	290	282
2	296	280	282	0	97.2	122	0	0	0	283	290	283
3	294	279	279	0	93.3	121	0	0	0	289	292	288
4	291	279	236	0	92.4	120	0	0	0	295	292	289
5	288	275	125	0	92.4	121	0	0	0	292	295	289
6	289	283	105	0	87.5	97.8	0	0	0	292	290	286
7	286	283	105	0	83.7	51.7	0	0	0	290	292	284
8	285	285	104	0	83.7	24.0	0	0	0	292	288	284
9	286	272	78.0	0	82.8	59.6	0	0	0	292	280	286
10	285	266	47.3	0	82.8	89.4	0	0	0	295	292	286
11	285	269	9.4	0	81.9	87.5	0	0	0	295	295	283
12	286	261	3.4	0	82.8	89.4	0	0	0	292	296	282
13	283	265	2.8	0	82.8	45.7	0	0	0	288	292	283
14	285	266	2.8	0	82.8	78.0	0	0	0	286	290	284
15	288	265	2.8	0	82.8	62.5	0	0	0	289	289	286
16	285	217	2.5	0	83.7	64.1	0	0	0	289	289	* 277
17	286	275	2.2	0	84.7	58.3	0	0	42.3	284	290	* 266
18	294	277	1.7	0	89.4	58.3	0	0	83.1	284	290	* 282
19	291	275	1.7	0	95.3	40.5	0	0	106	284	290	* 214
20	291	272	1.4	0	94.3	74.5	0	0	113	284	292	206
21	291	270	1.4	35.5	92.4	74.5	0	0	115	288	292	209
22	289	269	1.4	34.4	93.3	73.6	0	0	140	292	292	208
23	291	273	1.1	33.8	104	50.4	0	0	164	290	289	205
24	291	269	.6	33.1	105	0	0	0	164	290	283	202
25	291	279	.6	31.1	94.3	0	0	0	161	290	283	206
26	291	288	.6	92.7	98.9	0	0	0	150	289	283	202
27	291	282	.6	91.4	99.6	0	0	0	141	296	289	201
28	283	284	.8	86.6	96.3	0	0	0	140	298	290	222
29	282		3.8	99.2	125	0	0	0	140	294	288	227
30	286		.3	106	125	0	0	7.7	143	292	286	235
31	285		0		126		0	9.9		292		233
Sum	8,944	7,640	1,689.2	643.8	2,917.1	1,787.8	0	17.6	1,802.4	8,982	8,689	7,870

Month	Current Year 1966						Period				
	Extreme Gage Feet		Extreme Second Feet			Average Second Feet	Total Acre Feet	Acre Feet			
	High	Low	Day	High	Low			Average	Maximum	Minimum	
Jan.	3.10	2.99	1	299	29	282	289	17,740			
Feb.	3.03	2.52	26	288	16	217	273	15,154			
Mar.	3.02	0	1	286	31	0	54.5	3,350			
Apr.	1.59	0	30	106	† 1	0	21.5	1,277			
May	1.84	1.40	31	126	11	81.9	94.1	5,786			
June	1.82	0	1	124	† 24	0	59.6	3,546			
July	0	0		0	0	0	0	0			
Aug.	.27	0	31	9.9	† 1	0	.6	34.9			
Sept.	2.16	0	† 23	164	† 1	0	60.1	3,575			
Oct.	3.11	2.98	28	298	† 1	276	290	17,816			
Nov.	3.09	2.98	12	296	9	280	290	17,234			
Dec.	3.04	2.50	† 4	289	27	201	254	15,610			
Yearly	3.11	0		299		0	140	101,123			

∅ Mean daily † And other days ‡ Estimated * Partly estimated

COOPER WASTEWAY (VALLEY DIVISION, YUMA PROJECT)

DESCRIPTION: Water-stage recorder and control weir on wasteway for discharging regulatory waste water from the Cooper Canal to the Colorado River. This wasteway is located 1.5 miles downstream from the northerly international boundary and 0.4 mile downstream from Morelos Diversion Dam. This is one of 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.

RECORDS: Flow is computed from head on the weir measured by the water-stage recorder and weir rating determined by monthly meter measurements. Station operated by the United States Section of the Commission. Records available: Daily discharge, March 1950 through December 1966, obtained by the United States Section; monthly discharge, January 1934 through March 1950, by the Bureau of Reclamation.

EXTREMES: Prior to March 1950, maximum monthly discharge, 914 acre-feet, January 1940; minimum monthly discharge, zero for various months. Since March 1950, maximum instantaneous discharge, 79.3 second-feet, June 19, 1965, at maximum gage height of 114.13 feet; minimum instantaneous discharge, zero during parts of each month.

Mean Daily Discharge in Second Feet 1966 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.5	1.6	0.6	0.4	0.4	4.2	0.9	0.2	4.2	0.3	0.3	1.7
2	.5	5.4	2.1	.2	.3	.6	1.6	0	1.6	.7	4.1	2.1
3	2.3	.8	4.0	1.6	2.0	1.6	1.8	0	4.3	0	1.3	5.1
4	.7	1.6	1.7	.3	.6	2.9	.9	.7	.7	5.0	.3	1.5
5	.5	.6	1.6	.3	1.3	1.0	1.8	1.5	2.0	1.7	3.4	2.7
6	.6	2.6	1.5	.8	0	.2	2.0	1.4	1.8	1.4	.1	.6
7	.6	1.5	1.2	2.9	1.4	.5	.4	.6	2.9	1.0	0	.2
8	2.6	.2	2.8	2.2	.4	0	.6	.6	1.2	.6	1.1	4.5
9	.9	0	.4	1.2	.2	0	.6	1.1	1.2	0	.1	1.6
10	.5	2.0	4.3	1.7	1.5	.5	.6	.8	1.3	0	.3	0
11	3.5	.7	1.9	.8	4.9	2.2	.6	1.4	.6	2.7	4.9	0
12	2.0	2.4	1.1	5.3	.5	.3	.4	5.2	.5	2.4	.6	.1
13	.9	.8	.4	2.3	.4	1.3	.2	.8	.4	.9	0	2.7
14	.9	.4	1.4	4.6	1.7	1.7	2.0	.5	7.2	.3	0	1.7
15	.9	3.9	1.9	1.3	.6	.7	1.2	.1	1.5	0	2.4	1.9
16	2.5	1.5	10.0	.5	3.7	8	5.1	1.1	.1	.4	2.1	.6
17	1.0	1.4	4.6	.6	1.0	5.8	.3	* .9	0	1.6	.4	.9
18	1.0	.2	1.7	2.6	.7	.4	3.2	.6	0	1.6	.7	1.1
19	.8	1.7	3.2	1.2	6.0	.6	.5	.6	0	3.1	2.7	3.9
20	2.3	.6	3.2	4.4	1.1	.8	.5	3.5	.6	1.9	3.5	.8
21	2.7	2.0	1.4	1.9	.2	1.1	1.5	1.7	1.6	1.5	.2	5.0
22	4.1	.3	.5	4.4	.7	.3	1.2	1.7	.9	.4	0	.3
23	1.0	.2	.6	.1	.9	.8	.5	5.3	.4	0	0	2.5
24	1.0	7.3	.6	.1	2.2	.5	2.4	2.4	.2	1.0	.6	.5
25	.3	1.7	1.0	.9	.4	.4	3.9	1.2	.6	0	.3	4.0
26	.2	.6	3.4	.6	.3	2.0	3.3	1.3	1.9	.1	1.4	2.5
27	.4	.7	10.0	.7	.2	2.4	1.8	1.0	1.4	3.1	1.5	7.2
28	.4	.7	1.2	.7	2.1	5.2	1.4	2.3	0	4.3	.4	1.7
29	.1	.4	.4	.4	3.3	3.7	.8	.7	1.8	2.3	0	1.7
30	7.3	.3	1.3	.1	2.5	2.9	.9	.1	.4	0	.2	4.9
31	5.7	.2	.2		1.5		.8	0		0		.7
Sum	48.7	43.4	69.2	46.3	40.6	45.0	45.7	39.3	41.3	38.3	32.9	64.7
	Current Year 1966						Period 1935-1966					
Month	Extreme Gage Feet		Extreme Second Feet				Average Second Feet	Total Acre Feet	Acre Feet			
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum	
Jan.	112.50	111.00	22	25.6	29	0	1.6	96.6	204	914	0	
Feb.	112.57	111.00	21	27.4	† 6	0	1.6	86.1	178	400	6	
Mar.	112.65	111.00	16	29.4	14	0	2.2	137	190	517	0	
Apr.	112.59	111.00	12	27.8	8	0	1.5	91.8	205	425	40	
May	112.38	111.00	19	22.6	† 5	0	1.3	80.5	193	440	76	
June	112.59	111.00	4	27.8	† 8	0	1.5	89.3	182	595	47	
July	112.36	111.00	25	22.1	22	0	1.5	90.6	166	516	0	
Aug.	112.37	111.00	24	22.4	† 1	0	1.3	78.0	127	617	0	
Sept.	112.41	111.00	1	23.4	† 1	0	1.4	81.9	130	462	0	
Oct.	112.43	111.00	27	23.8	† 1	0	1.2	76.0	157	490	0	
Nov.	112.42	111.00	19	23.6	† 1	0	1.1	65.3	183	462	9	
Dec.	112.40	111.00	8	23.1	† 2	0	2.1	128	219	592	71.4	
Yearly	112.65	111.00		29.4		0	1.5	1,101.1	2,134	4,500	1,094.8	

* Partly estimated

† And other days

COLORADO RIVER AT MORELOS GAGING STATION - DISCHARGES

DESCRIPTION: Water-stage recorder on the left (Arizona) bank of the river, and cableway 1.8 miles downstream from the northerly international boundary, 0.7 mile downstream from Morelos Diversion Dam, and about 9 miles downstream from Yuma, Arizona, along the river levee. The cableway and recorder are 1,260 feet and 1,300 feet, respectively, below the mouth of Cooper Wasteway. Zero of gage is at mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 184 current meter measurements during the year, 95 by the United States Section, 89 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 through December 1966; continuous record of gage heights, July 20, 1952 through December 1966.

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 and Main Outlet Drain Extension No. 3, represents the river flow passing Morelos Diversion Dam.

EXTREMES: Maximum instantaneous discharge, 22,240 second-feet on January 4, 1955; maximum gage height, 112.18 feet on January 28, 1958. Minimum discharge, no flow on various occasions.

Mean Daily Discharge in Second Feet 1966 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	374	288	321	18.0	112	139	19.5	16.0	19.6	292	298	296
2	679	298	314	16.8	108	136	19.5	17.0	16.0	318	296	294
3	1,790	292	305	16.2	105	138	20.0	19.0	17.0	322	294	300
4	876	292	261	14.2	102	143	19.0	18.5	14.4	336	294	303
5	305	284	156	16.2	105	145	20.0	19.0	14.0	597	300	310
6	309	292	136	16.2	102	117	21.0	19.0	14.4	337	300	305
7	311	296	133	18.0	100	68.6	19.5	21.4	16.0	368	298	296
8	309	343	108	18.6	100	42.7	18.0	18.5	14.4	314	300	294
9	307	677	91.8	15.6	102	64.4	18.0	19.5	13.6	307	287	298
10	307	423	56.0	15.6	100	103	16.5	18.5	14.4	314	294	296
11	310	480	24.9	16.2	107	102	16.5	19.0	14.0	321	298	294
12	305	273	16.2	19.8	102	100	18.0	22.2	14.0	323	305	296
13	303	269	15.0	18.0	98.5	63.3	17.5	18.5	16.0	313	301	296
14	303	276	19.0	17.4	103	97.0	18.5	18.0	16.8	307	301	294
15	303	282	22.2	15.6	100	77.2	18.5	34.2	14.3	309	301	294
16	298	228	25.4	13.8	103	79.8	18.5	17.0	10.2	310	294	289
17	301	290	20.4	14.4	94.0	78.5	15.6	17.5	44.4	310	292	276
18	313	298	19.8	15.0	98.5	72.0	20.8	18.5	89.1	307	291	287
19	313	292	19.2	14.4	120	50.0	16.0	18.5	112	310	298	231
20	307	288	18.0	14.4	107	88.0	17.0	18.8	120	305	310	210
21	303	311	19.2	40.4	103	92.5	16.0	17.5	120	310	319	220
22	301	316	13.8	45.6	112	92.5	17.5	17.7	140	316	316	215
23	294	307	11.4	41.2	120	72.8	16.0	21.4	170	314	312	213
24	292	311	10.2	41.2	121	20.4	16.0	19.0	172	316	305	211
25	303	320	14.4	41.2	103	19.5	19.0	18.0	170	314	303	217
26	298	322	15.6	90.0	113	19.0	18.5	18.5	161	309	301	213
27	298	316	20.4	102	108	21.0	18.5	16.5	143	307	303	215
28	303	327	19.8	100	102	20.5	18.5	16.5	141	312	305	226
29	294		24.0	107	145	21.6	18.0	16.5	147	312	301	235
30	298		15.6	117	141	20.5	17.5	18.5	145	301	298	247
31	296		16.2		136		16.0	25.2		303		246
Sum	11,903	8,991	2,262.5	1,050.0	3,373.0	2,304.8	559.4	593.9	2,113.6	10,034	9,015	8,217

Month	Current Year 1966						Period 1954-1966				
	Extreme Gage Feet		Extreme Second Feet				Average Second Feet	Total Acree Feet	Acree Feet		
	High	Low	Day	High	Low	Day			Average	Maximum	Minimum
Jan.	105.09	99.74	3	2,030	30	288	384	23,609	233,589	969,540	949
Feb.	103.53	99.20	9	1,280	16	202	321	17,833	117,426	414,310	977
Mar.	99.94	97.56	1	339	22	7.0	73.0	4,488	75,183	630,230	780
Apr.	98.71	97.57	30	147	20	10.2	35.0	2,083	58,906	532,320	899
May	98.95	98.41	29	172	17	92.5	109	6,690	69,142	375,970	460
June	98.85	97.59	5	161	28	16.5	76.8	4,572	15,730	119,980	834
July	97.82	97.55	18	32.6	17	14.8	18.0	1,110	15,059	89,430	654
Aug.	99.16	97.59	15	202	16	14.4	19.2	1,178	26,237	125,590	702
Sept.	99.57	97.80	23	174	16	9.2	70.5	4,192	19,648	87,830	113
Oct.	103.34	99.50	5	951	1	152	324	19,902	59,564	172,940	9,750
Nov.	100.56	100.34	21	321	9	285	300	17,881	113,709	356,390	4,869
Dec.	100.39	99.65	5	310	24	208	265	16,298	158,870	643,850	1,111
Yearly	105.09	97.55		2,030		7.0	166	119,836	963,063	3,957,730	101,758

COLORADO RIVER AT MORELOS GAGING STATION - STAGES

(See Preceding Page For Description)

Mean Daily Gage Height in Feet 1966

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	100.26	99.77	99.80	97.73	98.52	98.79	97.63	97.61	97.88	100.30	100.54	100.34
2	101.36	99.75	99.80	97.72	98.50	98.75	97.63	97.63	97.84	100.47	100.54	100.33
3	104.59	99.73	99.78	97.73	98.49	98.74	97.65	97.66	97.88	100.49	100.54	100.35
4	101.95	99.73	99.55	97.70	98.47	98.76	97.63	97.64	97.83	100.58	100.53	100.36
5	99.94	99.70	98.89	97.69	98.49	98.76	97.66	97.66	97.84	101.85	100.55	100.39
6	99.91	99.75	98.73	97.70	98.47	98.59	97.68	97.67	97.86	100.81	100.54	100.36
7	99.87	99.78	98.74	97.72	98.45	98.22	97.65	97.71	97.90	100.85	100.52	100.31
8	99.86	99.92	98.65	97.71	98.44	97.94	97.63	97.68	97.88	100.57	100.52	100.29
9	99.84	101.50	98.47	97.67	98.44	98.16	97.63	97.71	97.88	100.53	100.45	100.30
10	99.83	100.31	98.23	97.68	98.45	98.51	97.60	97.70	97.90	100.57	100.50	100.27
11	99.83	100.67	97.92	97.68	98.48	98.50	97.60	97.72	97.89	100.61	100.53	100.24
12	99.82	99.63	97.82	97.72	98.45	98.49	97.61	97.78	97.89	100.62	100.55	100.23
13	99.81	99.61	97.80	97.69	98.43	98.14	97.60	97.71	97.95	100.59	100.51	100.23
14	99.81	99.63	97.83	97.68	98.42	98.41	97.62	97.70	98.02	100.54	100.49	100.22
15	99.80	99.63	97.82	97.64	98.42	98.27	97.63	97.89	97.95	100.54	100.47	100.22
16	99.77	99.36	97.87	97.62	98.47	98.29	97.63	97.74	97.84	100.54	100.46	100.19
17	99.76	99.65	97.79	97.63	98.43	98.27	97.57	97.75	98.34	100.53	100.48	100.12
18	99.82	99.67	97.78	97.65	98.44	98.23	97.63	97.76	98.85	100.50	100.48	100.18
19	99.80	99.65	97.77	97.64	98.55	98.05	97.59	97.75	99.07	100.52	100.47	99.87
20	99.81	99.64	97.75	97.64	98.51	98.38	97.61	97.77	99.15	100.52	100.49	99.75
21	99.82	99.75	97.77	97.96	98.48	98.41	97.60	97.77	99.15	100.53	100.50	99.79
22	99.81	99.78	97.68	97.99	98.52	98.41	97.63	97.79	99.30	100.57	100.46	99.74
23	99.79	99.75	97.64	97.94	98.56	98.23	97.59	97.86	99.55	100.56	100.44	99.72
24	99.79	99.76	97.67	97.94	98.60	97.68	97.59	97.81	99.56	100.58	100.40	99.69
25	99.81	99.79	97.71	97.93	98.49	97.63	97.65	97.80	99.55	100.58	100.39	99.71
26	99.80	99.80	97.71	98.35	98.53	97.62	97.64	97.82	99.52	100.57	100.38	99.68
27	99.80	99.77	97.77	98.37	98.58	97.65	97.64	97.80	99.44	100.58	100.39	99.68
28	99.77	99.82	97.74	98.36	98.54	97.67	97.63	97.81	99.41	100.61	100.39	99.73
29	99.75		97.80	98.47	98.80	97.68	97.62	97.83	99.43	100.61	100.37	99.77
30	99.79		97.73	98.54	98.78	97.66	97.62	97.88	99.46	100.55	100.35	99.83
31	99.80		97.72		98.76		97.60	97.99		100.56		99.82
Avg.	100.10	99.83	98.18	97.85	98.51	98.23	97.62	97.75	98.53	100.61	100.47	100.06

ELEVEN MILE WASTEWAY (VALLEY DIVISION, YUMA PROJECT)

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

RECORDS: Flow is computed from head on the weir measured by the water-stage recorder and weir rating determined by monthly current meter measurements. Station operated by the United States Section of the Commission. Records available: Daily discharge, January 1951 through December 1966, obtained by the United States Section; monthly discharge, January 1924 through December 1950, by Bureau of Reclamation.

EXTREMES: Prior to January 1951, maximum monthly discharge, 9,740 acre-feet in August 1940; minimum monthly discharge, zero in April 1941. Since January 1, 1951, maximum instantaneous discharge, 800 second-feet on December 3, 1961, at a maximum gage height of 117.60 feet; minimum instantaneous discharge, zero during parts of most years.

Mean Daily Discharge in Second Feet 1966 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.6	12.8	0.8	1.0	0.6	1.1	1.4	25.1	0.6	8.6	3.2	10.5
2	1.6	8.6	2.6	1.1	9.3	1.2	.8	2.5	.7	10.4	1.5	2.5
3	1.6	5.3	1.4	55.9	1.9	1.2	.8	3.3	3.2	16.0	2.3	1.1
4	1.6	* 1.7	1.3	34.0	2.7	1.3	1.2	.9	11.7	8.0	4.3	28.6
5	1.6	* 6.7	2.8	1.9	6.3	4.2	1.2	.8	17.7	1.7	.9	46.4
6	3.2	*57.6	9.8	1.0	.5	10.3	.6	.9	1.2	.7	23.5	6.4
7	2.7	*45.3	.9	.5	.7	.5	2.6	3.1	.6	.9	1.5	2.8
8	6.9	4.8	1.0	.4	.5	2.5	17.4	1.4	1.4	1.4	1.2	.8
9	1.6	2.9	9.5	3.3	1.5	.8	.5	2.0	2.1	4.5	1.1	1.0
10	1.5	4.9	.8	2.2	.6	1.0	9.6	7.4	.6	19.7	1.2	1.0
11	1.6	1.6	.8	1.3	1.8	5.1	5.6	2.0	3.8	.9	1.2	20.2
12	1.6	4.9	1.7	1.1	4.9	13.2	.6	1.4	4.1	2.6	1.1	4.2
13	1.6	3.9	6.9	.8	4.7	.8	2.0	5.6	8.7	2.8	1.1	2.3
14	1.7	1.4	1.8	.7	.8	2.0	2.4	.7	4.5	15.7	1.6	.8
15	1.7	2.2	.9	.6	9.2	1.3	4.4	.7	1.7	3.3	1.2	7.1
16	1.5	1.3	2.1	.5	.8	1.6	.5	.9	.9	.7	9.8	1.4
17	7.2	8.2	4.9	.5	1.1	.7	1.3	3.1	.8	.8	14.3	.6
18	6.5	5.6	.9	.7	2.7	.7	.9	15.9	.8	3.7	.7	2.2
19	4.1	9.7	4.3	4.5	.8	4.4	.8	3.2	6.6	14.1	3.0	7.8
20	17.6	4.5	3.6	4.8	.6	13.3	.7	11.3	5.7	6.4	67.4	5.6
21	10.5	4.9	3.3	.5	.7	.8	.7	2.6	2.7	4.3	47.8	.8
22	1.8	6.3	2.1	5.2	3.5	.8	2.6	1.0	5.5	13.5	1.1	1.1
23	1.8	1.3	1.0	7.8	10.1	.8	2.1	.9	.7	2.6	.8	3.7
24	4.7	1.3	.9	7.4	1.0	2.6	2.6	.7	.7	7.7	1.1	3.2
25	3.7	6.0	1.3	4.6	1.1	3.2	6.4	.8	3.2	4.6	1.6	.7
26	5.3	9.5	2.7	1.6	.8	3.9	1.0	.8	8.9	12.2	.7	1.7
27	1.7	8.9	5.6	.7	.9	5.7	3.2	5.8	10.8	5.5	2.6	10.7
28	1.6	1.6	3.7	.7	1.9	.7	.5	53.6	10.2	52.3	8.2	3.6
29	2.1		4.6	.8	3.2	.7	6.5	29.0	1.6	54.8	1.0	1.1
30	1.7		1.1	.8	.9	.8	5.8	1.6	9.6	2.2	3.5	2.6
31	4.6		1.1		3.2		99.4	1.8		1.4		7.9
Sum	108.5	233.7	86.2	146.9	79.3	87.2	186.1	190.8	131.3	284.0	210.5	190.4
Current Year 1966										Period 1935-1966		
Month	Extreme Gage Feet		Extreme Second Feet				Average Second Feet	Total Acre Feet	Acre Feet			
	High	Low	Day	High	Low	Day			Acre Feet	Average	Maximum	Minimum
							Day	Day				
Jan.	112.66	111.80	20	48.2	16	0.5	3.5	215	4,134	9,570	215	
Feb.	116.08	111.80	4	322	9	.5	8.3	464	3,314	8,430	464	
Mar.	112.58	111.82	6	42.5	2	.7	2.8	171	3,104	6,230	171	
Apr.	116.30	111.78	3	360	8	.4	4.9	291	2,871	6,300	0	
May	112.91	111.78	2	65.6	8	.4	2.6	157	3,481	9,320	101	
June	112.69	111.80	6	50.3	7	.5	2.9	173	3,295	7,440	173	
July	116.56	111.78	31	415	9	.4	6.0	369	3,337	8,320	221	
Aug.	114.78	111.77	28	178	31	.3	6.2	378	2,812	9,740	378	
Sept.	112.69	111.80	30	50.3	1	.5	4.4	260	2,073	6,140	133	
Oct.	114.51	111.79	28	159	31	.5	9.2	563	2,796	5,680	372	
Nov.	115.98	111.79	20	307	23	.5	7.0	418	3,323	8,220	418	
Dec.	114.90	111.80	4	186	7	.5	6.1	378	4,449	9,430	378	
Yearly	116.56	111.77		415		0.3	5.3	3,837	38,989	82,900	3,837	

* Partly estimated

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 on continuous water-stage records. Records available: Continuous record of gage heights, November 1947 through December 1966; once weekly readings obtained by the U. S. Bureau of Reclamation January 1940 through October 1947.

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

EXTREMES: Since November 1947, maximum mean daily gage height, 108.20 feet, January 2, 1958; minimum mean daily gage height, 95.29 feet, July 12, 1966.

Mean Daily Gage Height in Feet 1966

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	97.50	97.17	97.19	95.31	96.00	96.24	95.32	95.57	95.45	97.28	97.46	97.25
2	98.37	97.16	97.20	95.30	96.06	96.21	95.30	95.36	95.43	97.55	97.45	97.23
3	101.52	97.13	97.15	95.62	96.02	96.20	95.32	95.36	95.50	97.58	97.46	97.25
4	99.71	97.12	97.00	95.63	96.01	96.22	95.33	95.33	95.52	97.64	97.46	97.34
5	97.45	97.14	96.40	95.37	96.04	96.24	95.34	95.34	95.61	98.83	97.47	97.48
6	97.39	97.32	96.28	95.36	95.98	96.17	95.36	95.36	95.48	97.85	97.56	97.25
7	97.33	97.34	96.23	95.36	95.97	95.84	95.35	95.44	95.50	97.84	97.46	97.20
8	97.31	97.26	96.14	95.36	95.97	95.63	95.53	95.42	95.51	97.59	97.44	97.19
9	97.26	98.99	96.07	95.38	95.97	95.73	95.34	95.43	95.55	97.54	97.39	97.20
10	97.25	97.52	95.81	95.36	95.97	96.03	95.43	95.49	95.51	97.65	97.41	97.17
11	97.25	98.27	95.62	95.35	96.00	96.06	95.40	95.48	95.57	97.58	97.45	97.23
12	97.25	97.08	95.50	95.35	95.99	96.09	95.29	95.49	95.58	97.57	97.46	97.16
13	97.22	97.04	95.50	95.37	95.98	95.75	95.31	95.50	95.66	97.55	97.41	97.15
14	97.22	97.04	95.45	95.34	95.95	95.97	95.33	95.47	95.67	97.58	97.41	97.13
15	97.21	97.04	95.44	95.31	95.99	95.87	95.37	95.62	95.66	97.53	97.39	97.18
16	97.19	96.79	95.48	95.30	95.99	95.88	95.33	95.50	95.54	97.51	97.43	97.13
17	97.20	97.06	95.46	95.30	95.97	95.85	95.30	* 95.54	95.80	97.49	97.44	97.06
18	97.24	97.07	95.40	95.31	95.98	95.83	95.33	‡ 95.63	96.47	97.48	97.38	97.14
19	97.22	97.08	95.43	95.36	96.06	95.66	95.32	‡ 95.52	96.45	97.54	97.40	96.92
20	97.26	97.04	95.41	95.33	96.04	96.03	95.33	‡ 95.59	96.50	97.49	97.68	96.78
21	97.26	97.13	95.42	95.53	96.01	95.99	95.33	‡ 95.54	96.47	97.50	97.63	96.77
22	97.21	97.17	95.35	95.62	96.04	95.98	95.38	* 95.50	96.58	97.57	97.36	96.74
23	97.19	97.11	95.30	95.60	96.11	95.91	95.35	95.57	96.75	97.52	97.33	96.75
24	97.20	97.11	95.31	95.59	96.11	95.43	95.37	95.56	96.75	97.55	97.30	96.71
25	97.20	97.15	95.34	95.57	96.03	95.39	95.45	95.56	96.75	97.52	97.27	96.71
26	97.19	97.20	95.33	95.84	96.04	95.36	95.39	95.57	96.75	97.55	97.28	96.71
27	97.17	97.17	95.40	95.90	96.08	95.41	95.41	95.62	96.69	97.53	97.30	96.74
28	97.15	97.19	95.37	95.88	96.04	* 95.32	95.36	95.88	96.67	97.76	97.33	96.78
29	97.13		95.41	95.94	96.24	‡ 95.36	95.44	95.75	96.63	97.79	97.26	96.82
30	97.17		95.33	96.02	96.22	‡ 95.34	95.42	95.48	96.68	97.48	97.25	96.88
31	97.20		95.32		96.24		96.11	95.57		97.47		96.90
Av9.	97.50	97.25	95.78	95.50	96.04	95.83	95.39	95.52	96.02	97.61	97.41	97.03

* Partly estimated

‡ Estimated

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

DESCRIPTION: Water-stage recorder and control weir on wasteway for discharging water from the West Main Canal to the Colorado River. This wasteway is located in Arizona 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. It is the farthest 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.

RECORDS: Flow is computed from head on the weir measured by the water-stage recorder and weir rating determined by monthly current meter measurements. Station operated by the United States Section of the Commission. Records available: Daily discharge, January 1951 through December 1966, obtained by the United States Section; monthly discharge, March 1939 through December 1950, by Bureau of Reclamation.

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

EXTREMES: Prior to January 1951, maximum monthly discharge, 2,860 acre-feet in January 1946; minimum monthly discharge, 122 acre-feet in September 1950. Since January 1, 1951, maximum instantaneous discharge, 102 second-feet on January 24, 1954, at a maximum gage height of 95.46 feet (present datum); minimum instantaneous discharge, zero during a part of most months.

Mean Daily Discharge in Second Feet 1966 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.9	5.3	3.4	0.5	0	1.5	1.2	18.8	7.8	8.8	0.2	0.3
2	1.7	5.0	2.3	0	0	2.9	.2	1.0	5.0	6.0	1.7	.7
3	4.4	6.2	1.6	8.8	.3	4.3	.5	0	.1	5.4	2.2	.7
4	1.2	5.5	5.6	26.1	.2	2.8	4.6	.2	0	7.2	.6	20.1
5	4.4	1.8	2.3	3.1	.9	2.7	7.8	0	0	3.0	.4	34.1
6	7.1	11.5	.4	.5	0	.4	1.8	4.8	.2	.2	.3	3.2
7	7.1	27.4	3.9	.5	.2	.2	3.3	8.0	5.5	0	10.7	.7
8	.7	3.5	4.9	7.0	4.6	1.7	6.3	.5	3.1	14.0	8.5	.2
9	.4	.6	9.6	1.0	.2	4.3	.8	0	.6	3.0	.9	1.8
10	.4	4.4	.9	.3	1.7	.7	0	1.1	7.9	1.2	8.6	7.0
11	.4	18.5	7.4	1.3	.5	3.4	.1	6.2	3.9	10.6	3.3	0
12	2.6	2.4	3.8	10.1	.4	9.4	.1	3.4	2.1	2.4	3.0	.2
13	6.3	5.2	4.8	1.2	.1	1.7	.2	5.3	1.2	.6	15.6	.2
14	2.3	3.7	5.0	.6	.1	.6	.3	1.7	.1	0	.7	1.4
15	3.9	1.9	1.8	.4	1.4	6.4	.1	3.7	1.2	2.1	1.6	.2
16	4.8	10.6	1.0	.1	3.4	0	2.6	.3	3.0	5.3	.2	.2
17	.6	13.2	.4	.8	.8	0	4.2	3.3	7.0	7.3	5.7	.8
18	.5	.4	.7	9.2	1.5	4.9	.1	3.0	11.8	.5	8.4	2.8
19	5.1	.6	4.1	11.8	1.9	6.2	.9	8.5	5.1	5.3	4.0	1.5
20	1.0	* .8	8.3	6.1	.2	1.8	.2	5.0	.7	0	23.8	0
21	3.2	* .4	4.6	.8	.1	.8	.2	0	.8	5.1	13.9	0
22	1.6	7.5	3.6	4.1	1.3	7.2	1.3	0	4.2	8.8	1.6	0
23	.4	3.6	1.3	4.5	3.2	8.8	.1	1.4	1.0	9.9	1.3	5.3
24	.4	0	0	.4	.7	7.4	6.7	.1	6.1	2.6	1.2	1.0
25	.4	3.4	1.0	1.6	.8	3.2	1.8	1.7	4.5	5.0	3.9	1.1
26	2.5	0	12.1	.1	1.1	1.2	.8	7.0	4.7	10.5	5.1	1.4
27	.8	4.5	4.9	4.7	0	.1	2.1	7.3	8.8	5.0	1.1	.3
28	.2	10.5	1.3	6.9	.7	.4	1.6	16.9	6.9	29.6	.4	.2
29	.2	.7	.7	5.9	.4	1.5	7.2	19.2	0	33.1	4.2	3.5
30	3.1		3.4	1.5	3.2	.3	5.0	.8	4.4	3.2	7.0	1.6
31	9.4		4.0				16.6	0		.5		1.1
Sum	79.0	158.4	109.1	119.9	29.9	86.8	78.7	129.2	107.7	196.2	140.1	91.2
Month	Current Year 1966						Period 1939-1966					
	Extreme Gage Feet		Extreme Second Feet			Average Second Feet	Total Acre Feet	Acre Feet				
	High	Low	Day	High	Day			Low	Average	Maximum	Minimum	
Jan.	94.30	92.92	3	31.0	30	0	2.5	157	1,046	2,860	157	
Feb.	94.50	92.92	11	38.5	† 10	0	5.7	314	894	2,510	284	
Mar.	94.19	92.92	9	27.2	† 1	0	3.5	216	820	1,660	216	
Apr.	94.88	92.92	1	53.7	† 1	0	4.0	238	883	1,940	237	
May	93.81	92.92	3	15.3	† 1	0	1.0	59.3	1,094	2,470	59.3	
June	94.16	92.92	19	26.1	† 1	0	2.9	172	955	2,350	172	
July	94.34	92.92	31	32.4	† 0	0	2.5	156	825	1,950	127	
Aug.	94.66	92.92	28	44.9	† 3	0	4.2	256	862	2,530	200	
Sept.	94.22	92.92	10	28.2	† 1	0	3.6	214	770	2,180	122	
Oct.	94.90	92.92	28	54.5	† 7	0	6.3	389	926	2,100	217	
Nov.	94.56	92.94	21	40.9	†	.1	4.7	278	1,071	2,380	194	
Dec.	94.78	92.92	4	49.7	† 11	0	2.9	181	1,211	2,680	125	
Yearly	94.90	92.92		54.5		0	3.6	2,630.3	11,357	24,370	2,630.3	

* Partly estimated

† And other days

DIVERSIONS BY PUMPS IN THE UNITED STATES - LIMITROPHE SECTION

DESCRIPTION: Approximately 7 pumps (4 operating) 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: Quantities of water pumped are estimated by the United States Section of the Commission from weekly readings of running time meters attached to the pumps, and pump capacities. Records available: January 1956 through December 1966.

REMARKS: These records are used in the computations of water delivered to Mexico.

Mean Daily Discharge in Second Feet 1966 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	0	0	0	13.1	0	0	0	0	0	0
2	0	0	0	0	0	8.1	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	8.0	0	3.9	0	0	0	0	2.1
5	0	3.6	0	5.1	0	0	3.0	0	0	0	0	7.2
6	0	4.5	0	16.8	0	0	8.0	0	0	0	0	0
7	0	0	0	25.4	0	0	0	0	0	0	0	0
8	0	0	0	7.3	4.2	0	0	0	0	0	0	0
9	0	0	0	0	0	6.9	9.5	0	0	0	0	0
10	0	0	0	0	12.4	6.0	9.5	0	0	0	0	0
11	0	0	0	12.3	2.7	1.5	0	0	0	0	0	0
12	0	0	0	23.6	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	2.4	0	0	1.8	0	0	0	0
15	0	0	0	0	0	0	0	4.5	0	0	0	0
16	0	0	0	0	8.0	0	1.2	0	0	0	0	0
17	0	0	0	0	1.5	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	5.4	0
19	0	0	0	7.2	0	0	0	0	0	0	7.2	0
20	0	0	0	0	0	8.0	0	0	0	0	2.4	0
21	0	0	0	3.6	0	0	0	0	0	0	0	0
22	0	5.1	0	1.5	0	0	8.6	0	0	0	0	0
23	0	0	3.0	0	0	3.9	11.2	0	7.1	0	0	0
24	0	0	0	0	0	4.8	0	0	0	0	0	0
25	0	0	0	9.5	0	0	9.3	0	0	0	0	0
26	0	0	2.7	15.5	8.8	0	.6	0	0	0	0	0
27	0	0	0	0	17.5	0	0	0	0	0	0	0
28	0	0	0	0	12.4	0	0	3.5	3.5	0	0	8.8
29	0	0	0	0	0	0	0	9.2	0	0	0	0
30	0	0	0	2.4	0	0	2.4	0	0	0	0	0
31	0	0	0	0	13.2	0	4.5	0	0	0	0	4.4
Sum	0	13.2	5.7	130.2	91.1	52.3	71.7	19.0	10.6	0	15.0	22.5
Current Year 1966								Period 1956-1966				
Month	Extreme Gage Feet		β Extreme Second Feet				Average Second Feet	Total Acre Feet	Acre Feet			
	High	Low	Day	High	Day	Low	Feet	Acre Feet	Average	Maximum	Minimum	
Jan.			22	0		0	0	0	160	280	0	
Feb.			23	5.1	† 1	0	.5	26.2	281	500	26.2	
Mar.			23	3.0	† 1	0	.2	11.3	368	600	11.3	
Apr.			7	25.4	† 1	0	4.3	258	469	670	258	
May			27	17.5	† 1	0	2.9	181	520	770	181	
June			1	13.1	† 3	0	1.7	104	554	800	104	
July			23	11.2	† 1	0	2.3	142	563	820	142	
Aug.			29	9.2	† 1	0	.6	37.7	380	800	37.7	
Sept.			23	7.1	† 1	0	.4	21.0	357	940	21.0	
Oct.				0		0	0	0	248	390	0	
Nov.			19	7.2	† 1	0	.5	29.8	191	330	29.8	
Dec.			28	8.8	† 1	0	.7	44.6	142	230	0	
Yearly				25.4		0	1.2	856	4,233	6,480	856	

β Mean daily

† And other days

EAST MAIN CANAL WASTEWAY (VALLEY DIVISION, YUMA PROJECT)

DESCRIPTION: Water-stage recorder and control weir located about 300 feet north of the southerly international land boundary and 1.5 miles east of the Colorado River.

RECORDS: Wasteway discharges computed by United States Section of the Commission beginning November 1, 1953, from head on control weir as measured by water-stage recorder and weir ratings as determined by current meter measurements. Records available: October 1946 through December 1966. Records of monthly discharges also are available for the periods January 1924 through June 1928, January 1932 through December 1933, and April 1935 through September 1946.

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

Mean Daily Discharge in Second Feet 1966 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	6.6	11.2	9.4	5.3	2.6	2.4	0	3.6	1.0	12.9	0	7.2
2	5.3	3.9	3.2	5.3	10.3	.1	0	2.1	.7	6.6	1.7	10.4
3	7.7	3.4	7.4	4.7	5.1	2.0	6.9	4.0	6.8	17.2	0	11.1
4	1.5	7.7	8.0	5.5	.9	12.5	12.4	0	1.5	8.6	1.2	11.2
5	5.8	1.1	3.7	6.2	2.6	5.0	.9	10.4	8.4	2.1	13.7	13.7
6	.8	0	1.3	2.1	2.4	4.2	2.8	1.4	12.5	2.6	11.5	9.5
7	.8	.2	14.0	5.1	.4	2.7	.1	3.1	8.6	2.7	10.3	5.8
8	10.0	8.9	5.2	4.2	2.1	2.0	0	12.0	3.5	0	.5	1.1
9	2.7	7.0	6.2	11.1	7.9	.8	* .6	18.9	3.4	5.1	5.1	1.0
10	4.6	16.1	12.7	7.9	15.4	.8	* .1	2.3	16.2	1.2	2.9	1.4
11	1.8	.6	10.1	5.8	9.5	.1	* 4.9	.1	5.5	2.9	13.2	9.6
12	.2	5.1	.8	2.4	11.1	12.0	2.5	3.7	14.6	6.5	5.3	4.5
13	6.4	11.6	2.8	9.2	8.8	8.3	4.4	3.2	7.5	9.9	1.5	6.1
14	5.2	14.8	.7	5.3	13.4	.2	6.9	0	6.5	3.2	5.1	7.2
15	13.4	7.8	9.1	.2	4.1	0	15.9	1.7	.1	6.5	1.8	13.5
16	16.6	12.1	9.8	0	4.4	0	7.6	6.5	0	24.7	6.3	16.0
17	10.6	4.7	4.2	8.9	0	0	.1	11.3	1.2	32.4	12.7	8.3
18	10.9	6.8	9.0	29.8	1.5	0	3.5	15.2	6.4	5.4	12.5	19.2
19	14.4	3.5	3.0	5.5	1.0	0	10.1	.9	9.3	3.9	5.9	15.7
20	13.7	11.9	.2	3.7	1.9	0	.1	2.3	11.5	2.8	20.2	3.8
21	7.5	4.8	1.9	3.3	3.6	2.2	5.0	0	5.7	2.8	28.9	4.0
22	2.8	2.0	.8	7.0	.3	.3	0	19.8	3.4	10.0	15.3	1.6
23	.5	13.5	2.6	0	6.6	4.4	.7	2.2	8.5	* 13.4	2.2	.9
24	3.9	6.3	7.5	8.9	3.7	.4	6.0	1.2	6.8	‡ 3.2	.2	2.2
25	8.3	0	.7	1.3	0	0	12.7	2.5	9.3	‡ 11.1	10.3	17.2
26	4.6	.2	7.9	17.3	7.2	6.8	7.8	.9	.8	6.6	9.3	22.9
27	7.7	0	5.1	12.6	.3	12.1	8.0	2.9	.4	7.5	4.7	9.9
28	6.3	.1	14.4	11.4	7.9	1.1	13.9	8.8	3.1	2.0	13.5	10.9
29	3.6		2.0	7.7	3.6	5.2	8.1	25.1	4.5	10.0	1.3	8.9
30	7.8		4.3	14.0	10.1	4.7	15.0	13.2	2.5	6.7	8.4	4.6
31	14.2		.7		3.6		7.1	5.1		0		13.8
Sum	206.2	165.3	168.7	211.7	152.3	90.3	164.1	184.4	170.2	230.5	225.5	273.2
Current Year 1966									Period 1935-1966			
Month	Extreme Gage Feet		Extreme Second Feet				Average Second Feet	Total Acre Feet	Acre Feet			
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum	
Jan.	90.82	90.15	18	28.4	† 4	0	6.7	409	1,388	3,360	‡ 383	
Feb.	91.04	90.15	8	47.1	† 2	0	5.9	328	1,149	3,170	328	
Mar.	91.02	90.15	13	45.2	† 2	0	5.4	335	1,334	2,920	190	
Apr.	91.26	90.15	17	68.8	† 3	0	7.1	420	1,306	3,170	197	
May	91.12	90.15	3	54.6	† 1	0	4.9	302	1,439	3,040	302	
June	91.02	90.15	4	45.2	† 1	0	3.0	179	1,224	3,660	175	
July	91.26	90.15	25	68.8	† 1	0	5.3	325	1,325	3,590	182	
Aug.	91.24	90.15	29	66.7	† 1	0	5.9	366	1,344	3,960	169	
Sept.	91.06	90.15	24	48.9	† 1	0	5.7	338	1,212	3,170	159	
Oct.	91.08	90.15	17	50.8	† 5	0	7.4	457	1,270	3,280	432	
Nov.	91.01	90.15	11	44.3	† 1	0	7.5	447	1,410	3,570	430	
Dec.	90.93	90.15	19	37.3	† 8	0	8.8	542	1,388	3,080	438	
Yearly	91.26	90.15		68.8		0	6.1	4,448	15,789	38,310	4,448	

* Partly estimated

‡ Estimated

† And other days

YUMA MAIN DRAIN (VALLEY DIVISION, YUMA PROJECT)

DESCRIPTION: Water-stage recorders located in the forebay and afterbay of the Boundary 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.

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, 4 measurements were made by the United States Section of the Commission. Records obtained and computed by the United States Section of the Commission. Records available: Monthly discharges June 1919 through December 1951; daily discharges January 1952 through December 1966.

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 and is considered as part of the volumes arriving at the limitrophe section of the river.

Mean Daily Discharge in Second Feet 1966 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	145	147	164	163	172	181	162	181	163	196	181	181
2	151	141	171	172	172	178	156	179	171	199	181	178
3	147	145	174	159	164	182	166	176	176	195	185	160
4	141	141	178	170	177	173	170	175	175	194	194	159
5	152	142	184	167	176	169	165	180	169	181	182	163
6	149	145	184	162	179	171	160	181	172	176	182	152
7	145	149	181	156	183	167	162	181	175	184	184	151
8	149	149	169	160	195	167	162	185	175	181	173	152
9	154	148	182	162	185	173	167	176	169	176	179	152
10	146	149	179	175	182	163	169	177	173	186	176	146
11	151	145	183	158	188	173	171	175	173	184	167	152
12	143	141	180	166	189	167	165	181	179	190	177	152
13	147	151	171	172	187	169	166	179	179	185	181	152
14	153	145	181	177	178	178	160	187	174	181	185	171
15	154	150	173	167	188	180	172	185	179	188	175	167
16	146	152	175	169	187	169	165	178	187	194	181	177
17	156	158	182	182	178	163	169	166	183	197	186	170
18	158	160	185	184	178	164	173	180	191	176	183	174
19	144	158	184	159	172	125	175	179	189	174	178	174
20	143	164	182	158	177	173	177	174	185	178	174	165
21	143	158	184	160	182	172	177	180	173	180	192	168
22	152	157	182	164	193	172	185	183	183	188	174	160
23	145	157	183	158	197	151	184	174	162	187	177	165
24	145	166	185	168	186	155	170	170	181	183	169	172
25	141	160	161	173	187	158	182	164	183	182	181	166
26	145	152	167	179	194	165	174	173	189	174	176	168
27	150	173	172	166	178	156	177	170	185	182	179	163
28	132	171	167	175	178	157	170	180	193	181	188	172
29	150	163	163	171	184	160	166	172	200	182	184	171
30	151	160	160	165	180	149	172	168	196	180	182	177
31	149		180		156		181	157		175		167
Sum	4,577	4,274	5,466	5,017	5,622	4,980	5,270	5,466	5,382	5,709	5,406	5,097
Current Year 1966								Period 1935-1966				
Month	Extreme Gage Feet		Extreme Second Feet				Average Second Feet	Total Acre Feet	Acre Feet			
	High	Low	High		Low	Average			Maximum	Minimum		
			Day	Day								
Jan.			18	158	28	132	148	9,078	7,523	11,203	1,740	
Feb.			27	173	† 2	141	153	8,477	7,448	11,988	1,640	
Mar.			† 18	185	30	160	176	10,842	8,563	12,430	1,940	
Apr.			18	184	7	156	167	9,951	8,271	11,890	1,920	
May			23	197	31	156	181	11,151	8,378	13,140	1,950	
June			3	182	19	125	166	9,878	7,687	12,040	2,290	
July			22	185	2	156	170	10,453	7,458	11,830	2,530	
Aug.			14	187	31	157	176	10,842	7,386	11,960	2,560	
Sept.			29	200	23	162	179	10,675	7,457	11,560	2,280	
Oct.			2	199	† 19	174	184	11,324	8,506	12,385	2,940	
Nov.			4	194	11	167	180	10,723	8,343	12,010	2,800	
Dec.			1	181	10	146	164	10,110	8,074	11,480	2,450	
Yearly				200		125	171	123,504	95,094	139,380	27,040	

Ø Mean daily † And other days

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

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

RECORDS: Records obtained and computed by the United States Section of the Commission. Records available: January 1935 through 1966.

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

Mean Daily Discharge in Second Feet 1966 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	152	158	173	168	175	183	162	185	164	209	181	188
2	156	145	174	177	182	178	156	181	172	206	183	188
3	155	148	181	164	169	184	173	180	183	212	185	171
4	142	149	186	176	178	186	182	175	176	202	195	170
5	158	143	188	173	179	174	166	190	177	183	196	177
6	150	145	185	164	181	175	163	182	184	179	194	162
7	146	149	195	161	183	170	162	184	184	187	194	157
8	159	158	174	164	197	169	162	197	178	181	174	153
9	157	155	188	173	193	174	* 168	195	172	181	184	153
10	151	165	192	183	197	164	* 169	179	189	187	179	147
11	153	146	193	164	198	173	* 176	175	178	187	180	162
12	143	146	181	168	200	179	168	185	194	196	182	156
13	153	163	174	181	196	177	170	182	186	195	182	158
14	158	160	182	182	191	178	167	187	180	184	190	178
15	167	158	182	167	192	180	188	187	179	194	177	180
16	163	164	185	169	191	169	173	184	187	219	187	193
17	167	163	186	191	178	163	169	177	184	229	199	178
18	169	167	194	214	180	164	176	195	197	181	196	193
19	158	162	187	164	173	125	185	180	198	178	184	190
20	157	176	182	162	179	173	177	176	196	181	194	169
21	150	163	186	163	186	174	182	180	179	183	221	172
22	155	159	183	171	193	172	185	203	186	198	189	162
23	146	170	186	158	204	155	185	176	170	* 200	179	166
24	149	172	192	177	190	155	176	171	188	* 186	169	174
25	149	160	162	174	187	158	195	166	192	193	191	183
26	150	152	175	196	201	172	182	174	190	181	185	191
27	158	173	177	179	178	168	185	173	185	190	184	173
28	138	171	181	186	186	158	184	189	196	183	202	183
29	154		165	179	188	165	174	197	204	192	185	180
30	159		164	179	190	154	187	181	198	187	190	182
31	163		181		160		188	162		175		181
Sum	4,785	4,440	5,634	5,227	5,775	5,069	5,435	5,648	5,546	5,939	5,631	5,370
Current Year 1966									Period 1935-1966			
Month	Extreme Gage Feet		Extreme Second Feet				Average Second	Total	Acre Feet			
	High	Low	Day	High	Low	Day	Feet	Acre Feet	Average	Maximum	Minimum	
Jan.			18	169	28	138	155	9,487	8,911	12,131	* 2,123	
Feb.			20	176	5	143	159	8,805	8,597	12,970	* 2,023	
Mar.			7	195	25	162	181	11,177	9,897	13,704	* 2,322	
Apr.			18	214	23	158	174	10,371	9,577	12,982	2,117	
May			23	204	31	160	186	11,453	9,817	13,900	2,473	
June			4	186	19	125	169	10,057	8,911	12,570	2,525	
July			25	195	2	156	175	10,778	8,783	12,420	2,927	
Aug.			22	203	31	162	182	11,208	8,730	12,657	2,989	
Sept.			29	204	1	164	185	11,013	8,669	12,450	2,602	
Oct.			17	229	31	175	191	11,781	9,776	13,898	3,444	
Nov.			21	221	24	169	188	11,170	9,753	12,712	3,407	
Dec.			† 16	193	10	147	173	10,652	9,462	12,050	2,888	
Yearly				229		125	178	127,952	110,883	149,010	31,840	

* Partly estimated

∅ Mean daily

† And other days

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

RECORDS: During the period August 1 to September 23, 1966, a diversion dike across the river channel about 1,200 feet below the southerly international boundary caused backwater at this station, and 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, 2.2 miles upstream from the southerly international boundary. Computations by shifting control methods. Records available: Daily discharges, January 1950 through December 1966; continuous record of gage heights, January 1947 through December 1966. Monthly flows for this station have been derived for the period January 1935 through 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.

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

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

Mean Daily Discharge in Second Feet 1966 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	402	289	294	39.3	92.5	97.0	* 10.4	± 60.5	0	97.0	225	237
2	388	289	294	37.6	94.0	94.0	9.0	± 18.3	* .5	0	154	228
3	920	297	294	36.8	94.0	92.5	8.6	± 2.0	0	178	234	234
4	1,540	285	294	88.1	88.0	101	9.0	0	0	201	228	246
5	599	285	243	55.0	91.0	101	9.3	0	0	213	228	302
6	361	285	183	35.2	91.0	102	8.6	0	0	336	231	277
7	334	356	160	28.5	86.5	82.0	6.2	0	0	255	243	246
8	321	301	155	22.8	85.0	58.0	6.2	0	0	258	237	237
9	313	421	147	29.9	83.5	46.3	8.3	0	0	231	228	237
10	313	450	121	32.0	78.4	56.1	3.4	0	0	234	222	243
11	313	498	104	32.8	82.0	78.4	4.8	0	0	246	231	240
12	309	348	83.5	31.3	88.0	89.5	5.1	0	0	222	234	249
13	305	277	76.0	22.8	88.0	88.0	.2	0	0	216	252	240
14	301	269	71.2	31.3	86.5	50.4	0	0	0	213	240	240
15	301	261	65.6	32.0	85.0	62.3	.2	0	0	219	237	237
16	293	253	64.5	31.3	91.0	52.0	2.0	0	0	219	237	243
17	285	253	61.2	30.6	79.6	50.0	2.5	0	0	219	240	237
18	289	277	57.0	31.3	79.6	50.0	.2	0	0	216	249	234
19	301	277	55.0	33.6	83.5	48.1	0	0	* 6.3	219	243	237
20	301	273	56.0	33.6	91.0	45.4	0	0	± 31.0	219	255	198
21	321	269	54.0	32.8	89.5	54.0	0	0	± 55.0	210	302	186
22	313	285	49.0	42.7	86.5	57.0	0	0	± 70.0	222	258	183
23	301	285	44.5	53.0	92.5	63.4	0	0	72.4	228	243	183
24	293	281	41.8	47.2	101	47.9	0	0	78.4	225	237	183
25	289	285	40.0	49.0	98.8	25.7	0	0	89.5	228	234	183
26	289	297	42.7	40.9	89.5	20.2	0	0	91.0	237	237	180
27	285	297	47.2	63.6	86.5	19.0	0	0	94.0	243	237	183
28	285	305	45.4	85.0	80.8	15.9	0	0	89.5	258	237	183
29	273	42.7	83.5	80.8	14.0	0	± 4.5	86.5	312	237	192	192
30	277	41.8	89.5	108	* 12.8	0	± 12.0	85.0	261	240	204	204
31	293	42.7	102	102	0	.9	± 2.0	0	231	231	216	216
Sum	11,708	8,548	3,370.8	1,303.0	2,754.0	1,773.9	94.9	* 99.3	849.1	7,020.0	7,184	6,927
Current Year 1966												
Period 1935-1966												
Month	Extreme Gage Feet		Extreme Second Feet				Average Second Feet	Total Acre Feet	Acre Feet			
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum	
Jan.	78.15	75.95	4	1,660	29	273	378	23,222	476,612	1,672,000	1,821	
Feb.	76.80	75.84	10	675	16	238	305	16,955	396,649	1,385,000	2,040	
Mar.	75.96	74.70	7	298	25	40.0	109	6,686	319,066	1,127,000	1,493	
Apr.	75.32	74.40	4	121	13	18.2	43.4	2,584	203,708	700,900	977	
May	75.18	74.94	30	111	10	73.6	88.8	5,462	279,517	1,160,000	1,045	
June	75.15	74.24	6	106	30	11.6	59.1	3,518	152,164	1,180,000	143	
July	74.28	73.90	9	12.0	† 13	0	3.1	188	157,261	772,800	0	
Aug.	75.59	73.90	1	∅ 60.5	† 4	0	* 3.2	* 197	175,245	796,000	0	
Sept.	77.00	73.90	27	98.8	† 1	0	28.3	1,684	211,804	1,033,000	0	
Oct.	76.20	75.13	6	383	1	86.5	226	13,924	270,252	1,192,000	9,120	
Nov.	76.05	75.72	21	316	10	219	239	14,249	356,021	1,428,000	7,180	
Dec.	76.08	75.54	5	344	22	180	223	13,740	449,576	1,839,000	2,320	
Yearly	78.15	73.90		1,660		0	141	102,409	3,510,875	10,688,800	98,204	

± Estimated * Partly estimated ∅ Mean daily † And other days

COLORADO RIVER AT SOUTHERLY INTERNATIONAL BOUNDARY - STAGES

(See Preceding Page For Description)

Mean Daily Gage Height in Feet 1966

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	76.27	75.97	75.95	74.68	75.07	75.10	74.21	74.72	73.90	75.20	75.72	75.76
2	76.24	75.96	75.95	74.66	75.08	75.08	74.17	75.49	73.92	75.49	75.73	75.76
3	77.11	75.97	75.94	74.65	75.09	75.06	74.16	74.47	73.90	75.59	75.74	75.75
4	77.99	75.93	75.94	75.10	75.05	75.11	74.18	73.90		75.66	75.74	75.79
5	76.66	75.93	75.79	74.84	75.07	75.11	74.18			75.70	75.74	75.96
6	76.24	75.94	75.60	74.64	75.07	75.13	74.17			76.06	75.75	75.88
7	76.20	76.12	75.52	74.56	75.04	75.01	74.12			75.81	75.79	75.78
8	76.15	75.99	75.51	74.49	75.04	74.82	74.14			75.80	75.77	75.75
9	76.11	76.26	75.47	74.58	75.03	74.71	74.17			75.69	75.74	75.75
10	76.09	76.37	75.34	74.60	74.99	74.78	74.01			75.68	75.73	75.77
11	76.08	76.48	75.25	74.60	75.02	74.93	74.04			75.71	75.77	75.76
12	76.07	76.15	75.12	74.58	75.06	74.99	74.04			75.69	75.77	75.78
13	76.05	75.96	75.06	74.46	75.06	74.97	73.91			75.68	75.82	75.75
14	76.04	75.93	75.02	74.57	75.05	74.75	73.90			75.66	75.77	75.75
15	76.04	75.91	74.97	74.58	75.04	74.88	73.91			75.69	75.76	75.74
16	76.02	75.89	74.96	74.57	75.08	74.77	73.97			75.69	75.76	75.76
17	76.01	75.88	74.94	74.56	75.00	74.75	73.98			75.70	75.76	75.75
18	76.02	75.93	74.91	74.56	75.00	74.75	73.91		73.90	75.69	75.79	75.74
19	76.03	75.93	74.89	74.59	75.03	74.72			74.14	75.70	75.77	75.75
20	76.00	75.92	74.90	74.59	75.08	74.69			75.42	75.71	75.82	75.62
21	76.03	75.91	74.88	74.58	75.07	74.77			76.41	75.69	76.00	75.58
22	76.02	75.94	74.82	74.69	75.05	74.78			76.14	75.72	75.84	75.57
23	76.00	75.94	74.77	74.80	75.08	74.82			75.10	75.74	75.79	75.57
24	75.99	75.93	74.74	74.75	75.12	74.70			75.14	75.72	75.77	75.57
25	75.98	75.94	74.72	74.77	75.11	74.46			75.21	75.72	75.76	75.56
26	75.98	75.97	74.75	74.69	75.05	74.36			75.21	75.74	75.77	75.54
27	75.98	75.97	74.79	74.87	75.03	74.33			75.22	75.75	75.76	75.54
28	75.98	75.98	74.77	75.01	74.99	74.32		73.90	75.17	75.79	75.76	75.54
29	75.95		74.73	75.00	74.99	74.29		74.36	75.14	75.96	75.76	75.57
30	75.95		74.72	75.04	75.16	* 74.27		74.58	75.12	75.82	75.77	75.60
31	75.98		74.73		75.13		73.93	73.96		75.73		75.64
Avg.	76.17	76.00	75.14	74.69	75.06	74.77				75.71	75.77	75.70

* Partly estimated

WASTEWAY TO COLORADO RIVER AT KILOMETER 27 IN MEXICO

DESCRIPTION: Water-stage recorder and cableway located on the left bank of the Canal de Conexión wasteway, immediately upstream from where it discharges into the Colorado River, 0.6 mile downstream from the wasteway gates on Canal de Conexión, 16.8 miles downstream from Morelos Dam, and 0.2 mile south of the junction of the Mexicali-San Luis and Algodones-Pescaderos highways.

RECORDS: Data obtained and computed by the Colorado River Irrigation District of the Ministry of Hydraulic Resources and furnished by the Mexican Section of the Commission. Records shown in table below are waste returns to the Colorado River. 1966 records good. Records available: April 1956 through December 1966.

REMARKS: The Colorado River Irrigation District transports water for irrigation of land on the left bank of the Colorado River by the Canal de Conexión to a point called Kilometer 27. At this point, flows may be returned to the river through the wasteway or diverted to the Bacanora-Monumentos Canal system through the Sánchez Mejorada Siphon, which was placed in operation on June 28, 1963.

Mean Daily Discharge in Second Feet 1966 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	190	0	0	0	0	0	0	0	0	0	0	0
2	275	0	0	0	0	0	0	0	0	0	0	0
3	190	0	0	0	0	0	0	0	0	0	0	0
4	243	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	42.0	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	42.4	329	0	0	0	0	0	0	0	0	0	0
21	279	512	0	0	0	0	0	0	0	0	0	0
22	0	364	0	0	0	0	0	0	0	0	0	0
23	0	484	0	0	0	0	0	0	0	0	0	0
24	0	417	0	0	0	0	0	0	0	0	0	0
25	0	470	0	0	0	0	0	0	0	0	0	0
26	0	399	0	0	0	0	0	0	0	0	0	0
27	0	392	0	0	0	0	0	0	0	0	0	0
28	0	247	0	0	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0
31	33.9	0	0	0	0	0	0	0	0	0	0	0
Sum	1,253.3	3,614	0	0	0	0	0	0	0	42.0	0	0
Current Year 1966									Period 1956-66			
Month	Extreme Gage Feet		Extreme Second Feet			Average Second Feet	Total Acre Feet	Acre Feet				
	High	Low	Day	High	Low			Average	Maximum	Minimum		
Jan.			21	279	† 5	0	40.3	2,483	9,379	69,527	0	
Feb.			21	512	† 1	0	129	7,167	1,887	8,679	0	
Mar.				0	0	0	0	0	10,916	35,492	0	
Apr.				0	0	0	0	0	24,060	68,714	0	
May				0	0	0	0	0	10,381	22,072	0	
June				0	0	0	0	0	16,577	28,915	0	
July				0	0	0	0	0	26,007	46,139	0	
Aug.				0	0	0	0	0	28,099	55,497	0	
Sept.				0	0	0	0	0	16,925	37,194	0	
Oct.			6	42.0	† 1	0	1.4	83.5	6,137	20,512	0	
Nov.				0	0	0	0	0	14,406	69,415	0	
Dec.				0	0	0	0	0	9,141	70,213	0	
Yearly				512		0	14.1	9,734	168,156	346,339	4,268	

† And other days Ø 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 and the town of San Luis Río Colorado, Sonora; about 10 miles upstream from the Sonora-Baja California railroad bridge and 4.3 miles upstream from the Miguel C. Rodríguez Gaging Station. The wasteway gates are located about 2,500 feet from the right bank of the Colorado River.

RECORDS: Data obtained by the Ministry of Hydraulic Resources and furnished by the Mexican Section of the Commission are based on gate openings. Records available: January 1957 through December 1966.

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 1966 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0
31	0	0	0	0	0	0	0	0	0	0	0	0
Sum	0	0	0	0	0	0	0	0	0	0	0	0
Current Year 1966								Period 1957-1966				
Month	Extreme Gate Feet		Extreme Second Feet		Average Second Feet	Total Acre Feet	Acre Feet					
	High	Low	Day	Day			Average	Maximum	Minimum			
Jan.				0	0	0	756	3,201	0			
Feb.				0	0	0	520	4,097	0			
Mar.				0	0	0	831	6,850	0			
Apr.				0	0	0	640	3,707	0			
May				0	0	0	146	1,163	0			
June				0	0	0	75.4	625	0			
July				0	0	0	430	4,296	0			
Aug.				0	0	0	413	1,926	0			
Sept.				0	0	0	498	1,548	0			
Oct.				0	0	0	149	791	0			
Nov.				0	0	0	358	1,891	0			
Dec.				0	0	0	440	3,047	0			
Yearly				0	0	0	5,255	13,429	0			

COLORADO RIVER AT MIGUEL C. RODRIGUEZ IN MEXICO - DISCHARGES

DESCRIPTION: Water-stage recorder and cableway located in Mexico on the left bank of the Colorado River about 24.5 miles 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 on 62 current meter measurements made during the year, 43 double and 19 single, and a continuous record of gage heights. Data obtained and furnished by the Mexican Section of the Commission. From June 1951 to July 1954, discharges were computed from gage height records based on daily gage readings at 8:00 a.m., Pacific Standard Time. A continuous record of gage heights obtained since July 21, 1954. Records available: June 1951 through December 1966.

REMARKS: Diversions and return flows modify the flow of the river at this station. On many occasions the flow at this station consists solely of seepage from canals which run parallel and adjacent to the river at a higher elevation.

EXTREMES: Since January 1, 1952: Maximum mean daily gage height, 53.28 feet on January 4, 1958 with a discharge of 18,500 second-feet; minimum mean daily gage height, 37.86 feet on June 11, 1965, with a discharge of 1.4 second-feet; maximum mean daily discharge, 20,200 second-feet on December 19, 1952 with a gage height of 52.30 feet; minimum mean daily discharge, no flow on various occasion.

Mean Daily Discharge in Second Feet 1966 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	961	118	288	4.6	4.2	14.8	0	0	13.8	15.2	99.2	160
2	717	125	199	4.9	4.2	21.5	0	0	10.9	15.2	97.5	156
3	788	119	145	4.9	4.2	15.5	0	0	8.1	15.2	95.3	156
4	1,900	118	145	4.6	3.9	9.2	0	0	5.7	13.1	95.3	151
5	3,130	117	138	5.3	3.5	7.4	0	0	2.8	13.1	95.3	156
6	636	119	118	6.4	3.5	9.2	0	0	0	20.5	97.5	178
7	381	123	96.8	5.3	14.1	9.2	0	0	0	28.3	97.5	174
8	311	143	89.3	4.6	14.1	12.4	0	0	0	20.5	99.2	156
9	274	133	84.8	4.9	11.7	9.5	0	0	0	20.5	95.3	147
10	256	184	79.1	4.6	8.8	9.2	0	0	0	15.2	93.6	142
11	219	209	70.3	4.6	8.8	10.9	0	0	0	0	91.8	147
12	184	299	64.3	3.9	6.7	9.5	0	0	0	0	93.6	147
13	158	186	59.7	3.9	11.3	10.9	0	0	0	0	97.5	151
14	141	138	53.3	3.5	13.8	12.4	0	0	0	0	99.2	147
15	141	125	50.9	3.5	13.4	10.2	0	0	0	7.8	99.2	142
16	131	117	47.3	4.2	13.4	8.1	0	0	0	13.1	97.5	138
17	131	111	42.7	4.2	17.7	6.4	0	0	0	9.9	95.3	142
18	137	105	8.1	3.9	21.9	6.4	0	0	0	0	93.6	142
19	136	119	7.4	1.4	13.1	3.5	0	0	0	20.5	95.3	142
20	127	129	7.4	4.2	12.0	6.0	0	0	0	41.0	93.6	147
21	134	200	7.4	4.9	14.8	12.4	0	0	0	58.6	93.6	133
22	388	340	6.7	3.9	17.3	12.4	0	0	0	63.9	105	115
23	155	317	6.7	4.6	15.5	15.9	0	0	0	68.9	117	110
24	121	317	6.0	4.6	14.1	12.0	0	0	0	76.6	127	106
25	109	296	6.0	4.6	18.0	0	0	0	0	84.0	129	106
26	111	297	5.7	3.2	24.4	0	0	0	11.3	84.0	129	106
27	108	281	5.3	2.8	20.8	0	0	0	11.3	91.8	129	106
28	106	291	5.3	3.5	12.4	0	0	0	11.3	99.2	129	101
29	103		5.3	5.3	6.4	0	0	0	11.3	102	129	101
30	99.9		4.6	4.9	3.9	0	0	0	11.3	120	129	101
31	103		4.6		4.2		0	0		122		106
Sum	12,396.9	5,176	1,858.0	129.7	356.1	246.7	0	0	97.8	1,240.1	3,138.9	4,212
Current Year 1966										Period June 1951 - 1966		
Month	Extreme Gage Feet		Extreme Second Feet			Average Second Feet	Total Acre Feet	Acre Feet				
	High	Low	Day	High	Day			Low	Average	Maximum	Minimum	
Jan.	44.62	39.99	5	3,130	† 30	99.9	399	24,583	319,395	1,047,732	426	
Feb.	41.80	39.83	12	347	18	104	185	10,260	200,389	696,461	317	
Mar.	41.83	38.29	1	353	† 30	4.2	60.0	3,689	140,950	807,342	0	
Apr.	38.42	38.06	† 6	19.8	19	1.1	4.2	258	93,237	588,983	0	
May	38.52	38.19	26	31.1	31	3.2	11.7	707	129,882	732,815	0	
June	38.42	38.06	2	21.5	† 25	0	8.1	490	55,469	555,460	0	
July	38.35	38.12	0	0	0	0	0	0	29,760	264,561	0	
Aug.	38.55	38.19	0	0	0	0	0	0	44,187	309,320	0	
Sept.	38.68	38.48	1	13.8	† 6	0	3.2	194	69,098	572,551	0	
Oct.	40.09	38.45	† 30	12.5	† 11	0	39.9	2,459	113,212	769,939	2,459	
Nov.	40.03	39.70	† 25	129	11	91.8	105	6,227	188,034	909,399	6,227	
Dec.	39.90	39.24	6	178	28	101	136	8,346	254,915	1,060,767	687	
Yearly	44.62	38.06		3,130		0	79.1	57,212	1,602,367	7,923,600	57,212	

‡ Estimated † And other days

COLORADO RIVER AT MIGUEL C. RODRIGUEZ IN MEXICO - STAGES

(See Preceding Page For Description)

Mean Daily Gage Height in Feet 1966

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	42.45	40.03	41.34	38.29	38.29	38.39	38.22	38.29	38.52	38.68	39.86	39.70
2	42.09	40.06	40.65	38.29	38.29	38.42	38.29	38.32	38.55	38.68	39.83	39.67
3	42.22	39.99	40.12	38.29	38.29	38.39	38.32	38.32	38.48	38.68	39.80	39.67
4	43.47	39.99	40.06	38.25	38.25	38.32	38.29	38.32	38.48	38.65	39.80	39.63
5	44.19	39.96	40.03	38.29	38.22	38.29	38.25	38.35	38.48	38.65	39.80	39.67
6	41.77	39.96	39.83	38.39	38.22	38.32	38.29	38.45	38.48	38.75	39.83	39.83
7	40.91	39.99	39.57	38.29	38.32	38.32	38.22	38.45	38.48	38.85	39.83	39.80
8	40.68	40.19	39.47	38.25	38.32	38.35	38.16	38.48	38.48	38.75	39.86	39.67
9	40.55	40.06	39.40	38.29	38.29	38.32	38.22	38.45	38.52	38.75	39.80	39.60
10	40.49	40.52	39.34	38.29	38.25	38.29	38.19	38.45	38.55	38.68	39.76	39.57
11	40.42	40.72	39.21	38.29	38.25	38.29	38.25	38.39	38.52	38.55	39.73	39.60
12	40.35	41.31	39.11	38.25	38.22	38.25	38.29	38.45	38.52	38.55	39.76	39.60
13	40.29	40.52	39.04	38.25	38.29	38.25	38.25	38.45	38.52	38.52	39.83	39.63
14	40.26	40.09	38.91	38.22	38.32	38.25	38.12	38.45	38.55	38.45	39.86	39.60
15	40.22	39.99	38.88	38.25	38.32	38.22	38.25	38.45	38.62	38.58	39.86	39.57
16	40.16	39.93	38.81	38.29	38.32	38.19	38.29	38.45	38.65	38.65	39.83	39.53
17	40.12	39.90	38.71	38.25	38.35	38.16	38.22	38.48	38.62	38.62	39.80	39.57
18	40.16	39.86	38.65	38.19	38.39	38.16	38.16	38.39	38.58	38.55	39.76	39.57
19	40.16	39.93	38.62	38.06	38.32	38.09	38.12	38.39	38.58	38.75	39.80	39.57
20	40.12	39.93	38.58	38.19	38.32	38.16	38.12	38.39	38.58	39.01	39.76	39.60
21	40.16	40.45	38.58	38.22	38.35	38.12	38.25	38.45	38.58	39.24	39.80	39.50
22	41.11	41.47	38.52	38.19	38.39	38.25	38.25	38.45	38.58	39.30	39.96	39.37
23	40.26	41.54	38.52	38.22	38.39	38.29	38.22	38.39	38.58	39.37	39.96	39.34
24	40.12	41.63	38.45	38.25	38.39	38.25	38.32	38.29	38.58	39.47	39.83	39.30
25	40.06	41.57	38.45	38.25	38.42	38.19	38.35	38.35	38.58	39.57	39.76	39.30
26	40.06	41.54	38.42	38.16	38.48	38.19	38.29	38.39	38.62	39.57	39.76	39.30
27	40.06	41.40	38.39	38.16	38.45	38.19	38.22	38.35	38.62	39.67	39.73	39.30
28	40.06	41.44	38.39	38.19	38.39	38.19	38.16	38.32	38.58	39.76	39.70	39.27
29	40.03		38.35	38.39	38.29	38.16	38.25	38.45	38.58	39.80	39.70	39.27
30	39.99		38.29	38.35	38.22	38.16	38.25	38.52	38.65	40.03	39.70	39.27
31	39.99		38.29	38.29	38.22		38.25	38.52		40.06		39.30
Avg.	40.74	40.50	39.06	38.25	38.32	38.25	38.24	38.41	38.56	39.01	39.80	39.52

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 obtained by the Ministry of Hydraulic Resources and furnished by the Mexican Section of the Commission are based on gate openings. Records available: January 1957 through December 1966.

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 1966 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	17.7	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	14.1	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	98.9	0	0	0	0	0	0	0	0	0	0	0
22	28.3	0	0	0	0	0	0	0	0	0	0	0
23	10.6	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0
31	0	0	0	0	0	0	0	0	0	0	0	0
Sum	169.6	0	0	0	0	0	0	0	0	0	0	0
Current Year 1966								Period 1957-1966				
Month	Extreme Gage Feet		Extreme Second Feet			Average Second Feet	Total Acre Feet	Acre Feet				
	High	Low	Day	High	Day			Low	Average	Maximum	Minimum	
Jan.			21	98.9	† 2	0	5.3	336	1,193	3,166	0	
Feb.				0		0	0	0	648	2,788	0	
Mar.				0		0	0	0	1,613	7,074	0	
Apr.				0		0	0	0	1,175	4,462	0	
May				0		0	0	0	1,451	4,413	0	
June				0		0	0	0	302	1,505	0	
July				0		0	0	0	657	4,296	0	
Aug.				0		0	0	0	350	1,857	0	
Sept.				0		0	0	0	494	1,800	0	
Oct.				0		0	0	0	1,074	6,997	0	
Nov.				0		0	0	0	345	3,413	0	
Dec.				0		0	0	0	400	1,205	0	
Yearly				98.9		0	0.4	336	9,703	26,526	124	

† And other days

COLORADO RIVER AT EL MARITIMO IN MEXICO - DISCHARGES

DESCRIPTION: Water-stage recorder and cableway in Mexico, 47.6 miles downstream from the southerly international boundary, 18.6 miles downstream from the Sonora-Baja California railroad bridge, and 3.7 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 on 50 current meter measurements made during the year and a continuous record of gage heights. Data obtained and furnished by the Mexican Section of the Commission. During 1966, the mean daily discharges were deduced from stage-discharge curves based on measurements at low tide and the discharge at Miguel C. Rodríguez Gaging Station, taking into consideration the drains and wasteways which flow from the Hardy River to the Colorado River immediately upstream from El Maritimo. Records available: Mean daily stages and discharges from January 1, 1960 through December 1966. Incomplete record of gage heights, March 1, 1946 through November 1947; twice daily readings of gage heights, January 1, 1948, through December 1949; continuous record of gage heights since installation of water-stage recorder February 8, 1956.

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

EXTREMES: Maximum discharge, 4,410 second-feet, January 21, 1960; minimum discharge, no flow on various occasions.

Mean Daily Discharge in Second Feet 1966 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,330	171	224	122	45.9	34.3	32.8	42.0	89.7	40.3	233	209
2	879	165	169	109	39.9	39.6	30.4	42.4	86.2	38.5	238	221
3	657	160	184	108	51.2	43.8	29.3	42.7	84.4	36.4	251	232
4	798	155	111	108	48.0	45.6	28.3	43.4	82.6	36.7	256	245
5	1,270	156	113	104	48.7	45.2	27.9	39.6	81.2	38.8	261	247
6	1,790	145	110	107	49.8	44.5	29.0	40.3	66.0	39.2	273	246
7	1,300	139	108	108	50.9	40.3	28.3	47.7	63.9	44.1	276	223
8	858	135	111	109	60.0	23.7	30.7	55.1	53.3	43.1	274	210
9	763	130	114	110	69.2	21.5	30.7	49.1	55.4	43.8	273	196
10	664	124	113	111	65.3	21.9	31.4	62.9	56.2	44.5	278	191
11	657	119	115	111	51.6	23.0	32.1	62.9	57.6	46.6	127	192
12	519	137	109	117	56.5	31.4	35.0	65.3	59.3	45.6	107	211
13	498	154	104	95.7	51.9	39.6	35.3	65.3	59.0	50.9	112	237
14	473	125	97.8	101	55.8	29.3	35.3	69.9	65.0	39.9	116	238
15	452	124	90.4	74.5	59.3	36.0	35.3	74.9	61.8	40.6	126	233
16	221	102	104	74.5	63.2	37.4	35.7	67.1	60.7	41.0	131	225
17	131	101	105	75.2	67.1	40.3	37.1	66.7	63.9	41.0	131	235
18	283	100	107	75.6	70.6	38.8	38.8	68.5	60.7	44.8	132	245
19	459	99.2	109	62.5	74.5	38.5	43.1	75.9	57.6	43.1	138	251
20	431	98.5	110	68.9	78.4	37.8	48.4	77.7	57.9	42.4	145	260
21	322	77.7	111	74.9	75.2	36.4	48.0	78.8	56.2	42.0	154	276
22	456	96.8	111	71.0	78.0	34.6	48.7	80.2	56.2	41.3	156	289
23	498	156	109	83.7	80.9	35.0	50.1	80.2	47.0	40.6	158	280
24	388	193	114	76.6	71.7	33.2	47.0	86.5	43.4	40.3	167	267
25	357	212	111	69.2	54.4	31.8	44.1	83.7	41.0	36.0	175	280
26	268	230	114	63.9	37.1	32.1	44.5	94.3	38.5	224	178	285
27	250	227	112	50.1	29.7	32.8	44.5	95.7	37.8	225	182	289
28	231	225	109	51.9	28.3	32.5	43.8	95.3	38.1	225	185	277
29	213	116	116	49.4	29.7	29.7	42.7	95.3	40.3	225	192	270
30	194	108	108	52.3	31.1	31.4	43.8	91.8	39.9	225	196	313
31	176	114	114	29.7	29.7	42.7	85.1	85.1	226	226	300	300
Sum	17,786	4,051.2	3,637.2	2,594.9	1,703.6	1,042.0	1,174.8	2,126.3	1,760.8	2,391.5	5,622	7,673
Current Year 1966												
Month	Ø Extreme Gage Feet		Ø Extreme Second Feet				Average Second Feet	Total Acre Feet	Period 1960-1966			
	High	Low	Day	High	Low	Average			Maximum	Minimum		
Jan.	16.60	15.94	6	1,790	17	131	572	35,276	54,882	225,224	1,111	
Feb.	16.34	16.04	25	231	21	77.7	145	8,034	26,560	55,735	3,351	
Mar.	16.37	15.85	1	224	15	90.4	117	7,218	7,793	16,226	98.9	
Apr.	15.94	15.39	1	122	29	49.4	86.5	5,146	5,090	9,978	269	
May	15.42	14.90	23	80.9	28	28.3	55.1	3,379	13,180	31,886	128	
June	14.90	14.44	4	45.6	9	21.5	34.6	2,066	2,656	6,600	0	
July	14.44	14.17	23	50.1	5	27.9	37.8	2,331	1,479	4,096	0	
Aug.	14.44	14.17	27	95.7	5	39.6	68.5	4,217	1,841	4,787	0	
Sept.	14.60	14.34	1	89.7	27	37.8	58.6	3,493	6,145	23,532	0	
Oct.	14.53	14.37	31	226	3	36.4	77.0	4,743	16,849	57,672	1,549	
Nov.	14.90	14.50	† 6	283	11	106	188	11,150	44,267	94,442	7,173	
Dec.	15.03	14.90	30	318	† 9	191	248	15,222	34,147	97,155	2,174	
Yearly	16.60	14.17		1,790		21.5	141	102,275	214,892	503,260	76,623	

Ø Mean daily

† And other days

COLORADO RIVER AT EL MARITIMO IN MEXICO - STAGES

(See Preceding Page For Description)

Mean Daily Gage Height in Feet 1966

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	16.47	16.11	16.34	15.88	15.39	14.90	14.44	14.21	14.37	14.40	14.53	14.93
2	16.27	16.11	16.34	15.91	15.39	14.86	14.40	14.21	14.40	14.40	14.53	14.93
3	16.17	16.11	16.27	15.88	15.35	14.83	14.37	14.21	14.40	14.37	14.60	14.96
4	16.21	16.11	16.24	15.81	15.35	14.83	14.34	14.21	14.40	14.40	14.60	14.96
5	16.34	16.11	16.21	15.78	15.35	14.83	14.34	14.21	14.40	14.44	14.63	14.96
6	16.47	16.11	16.21	15.78	15.32	14.80	14.34	14.24	14.40	14.44	14.67	14.96
7	16.31	16.11	16.21	15.81	15.29	14.73	14.34	14.21	14.40	14.44	14.67	14.93
8	16.17	16.11	16.21	15.78	15.32	14.73	14.34	14.21	14.37	14.44	14.67	14.93
9	16.14	16.11	16.21	15.78	15.26	14.73	14.30	14.21	14.40	14.47	14.67	14.90
10	16.11	16.11	16.17	15.75	15.22	14.70	14.27	14.21	14.40	14.47	14.67	14.90
11	16.11	16.11	16.14	15.72	15.22	14.70	14.27	14.21	14.40	14.44	14.70	14.90
12	16.08	16.14	16.14	15.72	15.19	14.67	14.27	14.21	14.37	14.47	14.70	14.93
13	16.08	16.17	16.14	15.68	15.19	14.63	14.24	14.21	14.40	14.47	14.70	14.96
14	16.08	16.14	16.11	15.65	15.19	14.63	14.21	14.24	14.44	14.40	14.73	14.96
15	16.08	16.14	16.11	15.65	15.19	14.63	14.21	14.24	14.47	14.44	14.76	14.96
16	16.01	16.11	16.11	15.65	15.16	14.63	14.21	14.27	14.50	14.44	14.76	14.93
17	15.98	16.11	16.04	15.68	15.16	14.60	14.21	14.27	14.53	14.44	14.76	14.96
18	16.04	16.11	16.01	15.65	15.12	14.57	14.21	14.30	14.53	14.44	14.76	14.96
19	16.11	16.11	16.01	15.55	15.06	14.53	14.21	14.34	14.50	14.47	14.76	14.96
20	16.11	16.11	16.01	15.55	15.06	14.53	14.21	14.34	14.50	14.47	14.80	14.96
21	16.08	16.08	16.01	15.52	15.06	14.53	14.21	14.34	14.47	14.50	14.83	14.99
22	16.14	16.11	15.94	15.55	15.06	14.53	14.21	14.30	14.47	14.50	14.83	14.99
23	16.17	16.21	15.88	15.52	15.06	14.50	14.21	14.34	14.47	14.50	14.83	14.99
24	16.14	16.27	15.91	15.49	15.06	14.50	14.21	14.34	14.47	14.50	14.83	14.96
25	16.14	16.31	15.91	15.49	15.03	14.50	14.21	14.37	14.47	14.50	14.86	14.99
26	16.11	16.34	15.91	15.49	15.03	14.47	14.21	14.40	14.44	14.50	14.86	14.99
27	16.11	16.34	15.88	15.45	15.03	14.47	14.21	14.40	14.40	14.50	14.86	14.99
28	16.11	16.34	15.88	15.45	14.99	14.47	14.21	14.40	14.40	14.50	14.90	14.99
29	16.11		15.91	15.42	14.96	14.44	14.21	14.40	14.44	14.50	14.90	14.99
30	16.11		15.85	15.42	14.93	14.44	14.21	14.40	14.44	14.50	14.90	15.03
31	16.11		15.85	14.90	14.90		14.21	14.37		14.53		14.99
Avg.	16.15	16.16	16.07	15.65	15.16	14.63	14.26	14.28	14.44	14.46	14.74	14.96

SANTA CLARA ESTUARY AT RAILROAD CROSSING IN MEXICO

DESCRIPTION: A measuring section located in a drain constructed by the Ministry of Hydraulic Resources that crosses the railroad at Kilometer 66, 400 feet west of Monument C. I. L. A. FC-49, and 1.2 miles to the southwest from the village of Ritto. From August 31, 1964 to June 15, 1966, measurements were obtained at a site located between the railroad culvert (Kilometer 66-A) and the highway culvert. After June 15 the measuring site was relocated downstream along the same drain, a point 4.8 miles to the south of the railroad.

RECORDS: Based on 48 double current meter measurements made during the year. Data obtained and furnished by the Mexican Section of the Commission. Records available: January 1958 through December 1966.

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

EXTREMES: Maximum discharge, 91.8 second-feet on November 10, 1958; minimum discharge, no flow on various occasions.

Mean Daily Discharge in Second Feet 1966 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	7.1	5.3	5.3	4.2	3.5	6.7	4.2	14.5	22.6	30.7	25.4	20.1
2	7.1	5.7	5.3	3.9	3.9	6.0	5.3	14.1	23.7	30.4	25.1	19.8
3	6.7	5.7	4.9	3.9	3.9	6.0	6.0	13.8	25.1	29.7	24.7	19.8
4	6.4	5.7	4.9	3.9	4.6	6.4	6.7	14.8	26.1	29.0	24.4	19.8
5	6.4	5.7	4.9	3.9	4.9	6.4	7.4	16.2	27.2	28.3	24.0	19.4
6	6.4	5.7	4.9	3.9	5.3	6.7	8.1	17.3	28.6	27.5	23.7	19.4
7	6.0	5.7	4.9	3.9	5.7	7.1	8.8	18.4	27.9	27.5	23.3	19.1
8	6.0	5.7	4.6	3.9	6.4	7.1	10.2	19.4	26.8	27.5	23.0	19.1
9	5.7	6.0	4.6	3.9	6.7	7.4	11.7	20.5	26.1	27.9	22.6	19.1
10	5.7	5.7	4.6	3.9	7.1	6.7	13.1	21.9	25.4	27.9	22.6	18.7
11	5.7	5.7	4.6	3.9	7.1	6.0	14.5	23.0	24.7	27.9	22.6	18.7
12	5.7	5.7	4.2	3.9	7.4	5.3	15.5	24.0	24.0	27.9	22.6	18.4
13	5.3	5.7	4.2	3.9	7.4	4.9	17.0	23.7	24.4	27.9	22.6	18.4
14	5.3	5.3	4.2	3.9	7.8	4.2	18.4	23.3	24.7	28.3	22.6	18.4
15	5.3	5.3	4.2	3.9	7.8	3.5	19.8	23.0	25.1	28.3	23.0	18.4
16	5.3	5.3	4.2	3.9	7.8	3.9	19.4	22.6	25.4	28.3	22.6	18.4
17	5.3	5.3	4.2	3.9	8.1	4.6	19.1	22.2	25.8	28.3	22.2	18.4
18	5.3	5.3	4.2	4.2	8.1	4.9	18.7	21.9	26.1	28.3	21.9	18.0
19	5.3	5.3	4.2	4.2	8.5	5.7	18.4	21.5	26.8	28.3	21.5	18.0
20	5.7	5.3	4.2	4.2	8.5	6.4	18.0	23.7	27.2	27.9	21.2	18.0
21	5.7	5.3	4.2	4.2	8.8	6.7	17.7	25.4	27.9	27.5	20.8	18.0
22	5.7	5.3	4.2	3.9	9.2	7.4	17.7	27.2	28.6	27.5	20.5	18.0
23	6.0	5.3	4.2	3.9	9.5	7.8	17.3	29.0	29.3	27.2	20.5	17.7
24	6.0	5.3	4.2	3.9	9.9	7.4	17.0	30.7	30.0	26.8	20.1	17.7
25	6.0	5.3	4.2	3.9	9.9	6.7	16.6	29.7	30.7	26.8	20.1	17.7
26	6.0	5.3	4.2	3.5	10.2	6.0	16.2	28.6	31.4	26.5	20.1	17.7
27	5.7	5.3	4.2	3.5	9.5	5.7	15.9	27.5	32.1	26.1	20.1	17.7
28	5.7	5.3	4.2	3.5	9.2	4.9	15.5	26.8	32.8	26.1	20.1	17.7
29	5.7		4.2	3.5	8.5	4.2	15.5	25.8	32.1	26.1	20.1	17.7
30	5.7		4.2	3.5	7.8	3.5	15.2	24.7	31.4	25.8	20.1	18.4
31	5.3		4.2		7.1		14.8	23.7		25.8		19.1
Sum	181.2	153.5	137.5	116.5	230.1	176.2	439.7	698.9	820.0	860.0	664.1	574.8
Current Year 1966												
Month	Extreme Gage Feet		Extreme Second Feet				Average Second Feet	Total Acre Feet	Period 1958-1966			
	High	Low	High		Low	Average			Maximum	Minimum		
			Day		Day							
Jan.			† 1	7.1	† 13	5.3	5.7	358	639	1,981	0	
Feb.			9	6.0	† 1	5.3	5.3	303	507	1,892	0	
Mar.			† 1	5.3	† 12	4.2	4.6	275	567	2,031	0	
Apr.			† 1	4.2	† 26	3.5	3.9	231	969	2,706	0	
May			26	10.2	† 1	3.5	7.4	456	1,130	2,615	0	
June			23	7.8	† 15	3.5	6.0	349	710	1,677	0	
July			15	19.8	† 1	4.2	14.1	872	226	872	0	
Aug.			24	30.7	3	13.8	22.6	1,386	400	1,386	0	
Sept.			28	32.8	† 1	22.6	27.2	1,627	794	2,058	0	
Oct.			1	30.7	† 30	25.8	27.5	1,706	1,334	4,610	0	
Nov.			1	25.4	† 24	20.1	22.2	1,317	979	4,088	122	
Dec.			1	20.1	† 23	17.7	18.4	1,139	482	1,139	73.5	
Yearly				32.8		3.5	13.8	10,020	8,737	24,595	1,107	

∅ Mean daily † And other days

STORED WATER IN LARGE RESERVOIRS OF THE COLORADO RIVER

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

In Thousands of Acre-Feet

Month	LAKE MEAD (Capacity 27,207.0)		LAKE MOHAVE (Capacity 1,810.0)		HAVASU LAKE (Capacity 619.4)		TOTAL IN UNITED STATES RESERVOIRS (Capacity 29,636.4)	
	1966	Average 1935-1966	1966	Average 1951-1966	1966	Average 1939-1966	1966	Estimated Average
Jan.	15,502.0	16,558.4	1,768.0	1,650.6	540.7	558.0	17,810.7	18,767.0
Feb.	15,589.0	16,208.4	1,699.0	1,680.9	545.4	562.8	17,833.4	18,452.1
Mar.	15,502.0	15,890.8	1,736.0	1,681.1	559.4	577.7	17,797.4	18,149.6
Apr.	15,492.0	16,106.3	1,710.0	1,698.5	593.0	605.0	17,795.0	18,409.8
May	15,592.0	17,375.8	1,745.0	1,739.0	601.8	600.8	17,938.8	19,715.6
June	15,552.0	19,129.8	1,603.0	1,608.4	604.4	604.6	17,759.4	21,342.8
July	15,295.0	19,370.1	1,494.0	1,467.6	588.4	594.4	17,377.4	21,432.1
Aug.	15,069.0	19,046.7	1,404.0	1,394.3	561.6	576.9	17,034.6	21,017.9
Sept.	15,004.0	18,625.3	1,384.0	1,397.4	564.6	572.6	16,952.6	20,595.3
Oct.	15,092.0	18,262.9	1,382.0	1,420.1	556.4	578.4	17,030.4	20,261.4
Nov.	15,231.0	17,919.0	1,493.0	1,504.4	545.4	565.6	17,269.4	19,989.0
Dec.	15,481.0	17,506.8	1,574.0	1,616.9	538.4	561.1	17,593.4	19,684.8
Avg.	15,366.8	17,666.7	1,582.7	1,571.6	566.6	579.8	17,516.1	19,818.1
Max.	15,592.0	27,780.0	1,768.0	1,808.0	604.4	688.7	17,938.8	28,235.0
Min.	15,004.0	* 10,727.0	1,382.0	1,186.0	538.4	76.9	16,952.6	13,062.6

* Minimum since 1940

SUSPENDED SILT

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

A. By lowering a D-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 deposited silt would occupy a volume of one acre-foot, or one cubic foot of deposited silt would weigh 85 pounds.

Month	1966					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 1956-1966

Jan.	83,747,000	3,100	13	0.0037	0.0087	0.0009	1.7	50.6	336	1.6
Feb.	125,399,000	12,400	12	.0099	.0166	.0016	6.7	22.1	116	1.6
Mar.	232,140,000	43,900	13	.0189	.0470	.0077	23.7	69.4	499	8.8
Apr.	215,912,000	23,200	13	.0107	.0164	.0046	12.6	64.3	434	9.4
May	105,719,000	5,000	12	.0047	.0079	.0027	2.7	24.2	201	2.7
June	168,498,000	9,800	12	.0058	.0079	.0044	5.3	22.6	92.6	5.1
July	289,205,000	23,200	12	.0080	.0133	.0047	12.6	31.2	89.3	7.4
Aug.	317,831,000	28,600	14	.0090	.0346	.0041	15.5	29.0	103	7.9
Sept.	165,506,000	11,300	12	.0068	.0366	.0034	6.1	13.1	43.6	2.9
Oct.	79,602,000	7,500	13	.0094	.0267	.0020	4.1	6.3	20.0	.8
Nov.	57,571,000	2,000	8	.0035	.0043	.0024	1.1	18.2	89.9	1.0
Dec.	89,135,000	4,700	5	.0053	.0082	.0027	2.5	35.3	174	.6
Yearly	1,930,265,000	174,700	139	0.0090	0.0470	0.0009	94.6	386	2,198	91.1

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

Intake Canal at Morelos Diversion Structure

Period 1952-1966

Jan.	75,972,000	2,766	4	0.0036	0.0053	0.0028	1.5	6.4	22.3	0.2
Feb.	121,972,000	8,489	4	.0070	.0138	.0023	4.6	6.8	19.4	.9
Mar.	230,935,000	40,284	5	.0174	.0275	.0130	21.7	57.6	154	11.1
Apr.	215,049,000	29,247	4	.0136	.0169	.0037	15.8	52.2	121	15.8
May	104,648,000	4,859	4	.0046	.0055	.0038	2.6	14.8	51.2	2.6
June	167,316,000	12,442	4	.0074	.0106	.0044	6.7	43.1	109	6.7
July	287,982,000	43,816	5	.0152	.0240	.0076	23.7	61.3	156	11.9
Aug.	316,687,000	62,004	4	.0196	.0295	.0040	33.5	56.6	135	14.2
Sept.	164,820,000	17,349	5	.0105	.0311	.0038	9.4	23.4	64.7	2.8
Oct.	76,895,000	7,166	7	.0093	.0373	.0010	3.9	5.4	12.0	.3
Nov.	56,677,000	1,951	3	.0034	.0051	.0018	1.1	2.6	9.3	.2
Dec.	88,839,000	4,054	5	.0046	.0070	.0028	2.2	5.4	14.8	1.1
Yearly	1,907,792,000	234,427	54	0.0123	0.0373	0.0010	127	336	696	102.1

Samples and Analyses by Mexican Section, Method B

SUSPENDED SILT

Month	1966						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 Southerly International Boundary

Period 1946-1966

Jan.	31,559,000	1,400	4	0.0044	0.0083	0.0014	0.8			
Feb.	23,042,000	700	4	.0030	.0056	.0014	.4			
Mar.	9,086,000	300	1	.0033	.0049	∓ .0010	.2			
Apr.	3,512,000		0							
May	7,423,000		0							
June	4,781,000		0							
July	255,000		0							
Aug.	268,000		0							
Sept.	2,289,000		0							
Oct.	18,923,000		0							
Nov.	19,364,000		0							
Dec.	18,673,000		0							
Yearly	139,175,000		9							

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

Colorado River at Miguel C. Rodríguez Gaging Station

Period 1960-1966

Jan.	33,425,000	3,800	12	0.0114	0.0580	0.0020	2.0	39.9	251	0
Feb.	13,950,000	1,182	9	.0085	.0146	.0029	.6	5.6	13.9	0
Mar.	5,015,000	369	6	.0074	.0208	.0030	.2	.8	4.1	0
Apr.	351,000	37	4	.0107	.0140	.0059		.2	1.1	0
May	961,000	77	4	.0080	.0228	.0020	.1	.6	1.5	0
June	666,000	46	4	.0070	.0190	.0012			.1	0
July	0	0	0				0		.1	0
Aug.	0	0	0				0	.1	.2	0
Sept.	263,000	53	2	.0201	.0302	.0031		.7	4.5	0
Oct.	3,343,000	559	3	.0167	.0370	.0050	.3	4.1	20.8	.1
Nov.	8,412,000	902	4	.0106	.0208	.0042	.5	6.6	36.0	.3
Dec.	11,348,000	1,597	3	.0141	.0188	.0089	.9	6.3	13.0	0
Yearly	77,789,000	8,622	51	0.0111	0.0580	0.0012	4.7	65.0	289	4.7

Samples and Analyses by Mexican Section, Method C

CHEMICAL ANALYSES OF WATER SAMPLES 1966

The tables below are based on chemical analyses of weekly samples from the Colorado River at the Northerly International Boundary taken by the United States Section of this Commission and analyzed by the United States Geological Survey. Samples from the Intake Canal at Morelos Diversion Structure were taken by the Mexican Section of this Commission and analyzed by the Ministry of Hydraulic Resources.

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; (CO₃ plus HCO₃) expressed as CO₃, 30; SO₄, 48; Cl, 35.5; NO₃, 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 ECx10⁶ at 25°C, is a relative measure of the total salt concentration.

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

Colorado River at Northerly International Boundary

Jan.	5	1.47	90,300	1,840		7.9	51	44	5.78	2.90	9.16	3.51	6.51	7.83
Feb.	4	1.26	117,000	1,690		7.8	46	38	5.52	3.34	7.55	3.14	7.08	6.19
Mar.	4	1.67	286,000	2,030		7.8	52	45	6.00	3.60	10.50	3.21	7.79	9.09
Apr.	4	1.84	292,000	2,230		7.9	53	45	6.56	4.06	11.95	3.36	8.98	10.22
May	5	1.98	154,000	2,340		7.9	53	45	6.89	4.14	12.58	3.63	9.40	10.57
June	4	1.89	234,000	2,320		7.8	54	46	6.52	4.18	12.55	3.46	9.17	10.59
July	5	1.70	361,000	2,040		7.8	51	44	5.96	3.90	10.29	3.10	8.18	8.87
Aug.	6	1.71	401,000	2,120		7.8	52	45	6.07	3.93	10.92	3.11	8.32	9.50
Sept.	4	1.72	210,000	2,110		7.9	53	43	6.22	3.82	11.24	3.31	8.78	9.19
Oct.	5	1.58	92,300	2,090		7.8	53	44	6.16	3.80	11.10	3.71	8.17	9.16
Nov.	4	1.65	70,000	1,950		7.8	51	40	5.97	3.48	10.03	3.60	8.09	7.78
Dec.	5	1.54	101,000	1,890		7.8	52	42	5.78	3.16	9.80	3.37	7.55	7.82
Mean @	Ø55	1.70	Ø2,408,600	2,080		7.8	52	44	6.14	3.79	10.79	3.30	8.28	9.13
Period Avg.		1.87	3,036,000	2,270		7.8	53	47	6.65	4.13	12.02	3.27	8.76	10.77
Tons of Constituents 1966									237,000	89,000	479,000	191,000	768,000	626,000
Avg. Tons Period 1962-1966									294,000	111,000	611,000	216,000	928,000	848,000

Intake Canal at Morelos Diversion Structure

Jan.	31	1.56	87,500	1,885		8.2	49		5.30	4.06	9.07	3.30	6.79	8.35
Feb.	28	1.37	124,000	1,663		8.1	46		4.99	3.74	7.54	2.95	7.04	6.29
Mar.	30	1.74	295,000	2,035		7.9	52		5.13	4.44	10.38	2.96	7.50	9.45
Apr.	30	1.85	292,000	2,208		8.1	51		5.91	4.68	11.13	3.04	8.51	10.17
May	31	2.01	155,000	2,353		8.1	52		6.34	4.86	11.95	3.40	8.92	10.86
June	30	1.94	240,000	2,288		8.0	52		6.11	4.58	11.64	3.43	8.57	10.32
July	31	1.78	376,000	2,065		8.1	52		5.56	4.25	10.46	3.15	8.30	8.82
Aug.	31	1.73	403,000	2,032		8.1	51		5.37	4.35	10.26	3.10	8.12	8.76
Sep.	30	1.79	218,000	2,096		8.1	52		5.53	4.45	10.66	3.31	8.43	8.90
Oct.	31	1.62	91,600	2,040		8.2	52		5.31	4.33	10.43	3.48	7.90	8.70
Nov.	30	1.73	72,200	1,992		8.3	52		5.27	4.23	10.12	3.61	7.91	8.10
Dec.	30	1.60	104,000	1,864		8.2	50		4.99	4.04	9.26	3.44	7.43	7.41
Mean @	Ø363	1.73	Ø2,458,000	2,043		8.1	51		5.48	4.33	10.24	3.26	7.95	8.84
Period Avg.		1.89	2,683,000	2,230		8.0	51		6.08	4.83	11.28	3.37	8.22	10.60
Tons of Constituents 1966									191,000	91,000	413,000	337,000	669,000	554,000
Avg. Tons Period 1962-1966									214,000	102,000	452,000	347,000	701,000	651,000

** Percent of total cations

*** Percent of total anions

Ø Weighted mean

Ø Total

ELECTRICAL CONDUCTIVITY OF WATER SAMPLES 1966

The following tables show electrical conductivity, expressed in mhos per centimeter cube x 10⁶ at 25°C, of individual water samples taken at Colorado River and New River stations and in Mexican canals. Samples were taken at the Northerly and Southerly International Boundary stations by the United States Section of this Commission and conductivity determinations were made by the United States Geological Survey. Samples for the Intake Canal at Morelos Dam, Sánchez Mejorada Canal, Miguel C. Rodríguez Gaging Station, El Marfimo Gaging Station, and New River at International Boundary were taken by the Mexican Section of the Commission and determinations were made by the Ministry of Hydraulic Resources.

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

January		March		April		June		July		August		October		November	
3	1,540	4	1,560	19	2,600	1	2,390	13	2,100	25	2,290	6	1,430	18	2,050
4	1,590	5	2,190	20	2,450	2	2,280	14	2,030	26	2,310	7	1,600	19	2,040
5	2,050	7	2,300	21	2,400	3	2,330	15	2,040	27	2,320	8	2,000	20	1,910
6	2,150	8	2,220	22	2,360	4	2,310	16	2,070	28	2,300	9	2,000	21	1,800
7	2,270	9	2,000	23	2,360	5	2,270	17	2,230	29	2,380	10	2,060	22	1,790
10	2,360	10	2,320	24	2,340	6	2,260	18	2,030	30	2,330	11	2,100	23	2,030
11	2,090	11	2,390	25	2,280	7	2,360	19	2,070	31	1,990	12	2,070	24	1,950
12	1,980	12	2,250	26	2,310	8	2,420	20	2,090			13	2,060	25	1,990
13	1,940	13	2,140	27	2,470	8	2,350	21	2,020	1	2,060	14	2,340	26	2,040
14	1,940	14	2,190	28	2,440	9	2,290	22	2,140	2	2,090	15	2,130	27	1,940
17	1,890	15	2,160	29	2,470	10	2,200	23	2,190	3	2,100	16	2,080	28	1,930
18	1,850	16	2,240	29	2,530	11	2,140	24	2,220	4	2,140	17	2,240	29	1,960
19	2,000	17	2,240	30	2,400	12	2,190	25	2,160	5	2,130	18	2,220	30	1,920
20	1,890	18	2,240	30	2,410	13	2,350	26	2,180	6	2,080	19	2,170		
21	1,510	19	2,220			14	2,130	27	2,210	7	2,110	20	2,220	1	1,930
24	1,800	20	2,160	1	2,390	15	2,310	28	2,170	8	2,160	21	2,210	2	1,970
25	1,860	21	2,100	2	2,410	16	2,240	29	2,140	9	2,060	22	2,200	3	1,950
26	1,800	22	2,040	3	2,470	17	2,260	30	2,120	10	2,090	23	2,270	4	1,920
27	1,930	23	2,060	4	2,370	18	2,230	31	2,110	11	2,060	24	2,300	5	2,000
28	1,890	24	2,080	5	2,340	19	2,430			12	2,080	24	2,240	6	1,940
31	1,840	25	2,020	6	2,370	20	2,230	1	2,020	13	2,080	25	2,160	7	1,980
		26	2,060	7	2,320	21	2,230	2	1,990	14	1,750	26	2,150	8	1,910
1	1,870	27	2,020	8	2,360	22	2,200	3	1,940	15	1,820	27	2,150	9	1,910
2	2,200	28	1,850	9	2,390	23	2,110	4	1,920	16	2,160	28	2,160	10	1,810
3	1,920	29	2,020	10	2,400	24	2,290	5	1,920	17	2,300	29	2,110	11	1,820
4	1,990	30	2,010	11	2,420	25	2,400	6	1,970	18	2,170	30	2,140	12	1,840
7	2,130	31	2,130	12	2,410	26	2,400	7	1,990	19	2,210	31	2,100	13	1,810
8	1,540			13	2,420	27	2,410	8	2,000	20	2,320			14	1,570
9	1,450	1	2,160	14	2,420	28	2,410	9	1,930	21	2,370	1	2,140	15	1,380
10	1,660	2	2,240	15	2,320	29	2,440	10	1,910	22	2,380	2	2,090	16	1,360
11	1,420	3	2,230	16	2,210	29	2,430	11	2,040	23	2,330	3	2,150	17	1,380
14	1,530	4	2,200	17	2,420	30	2,360	12	2,070	23	2,070	4	2,070	18	1,530
15	1,600	5	2,170	18	2,470			13	2,050	24	2,030	5	1,840	19	1,590
16	1,660	6	2,160	18	2,510	1	2,220	14	2,320	25	2,050	6	2,000	20	2,070
17	1,590	7	2,080	19	2,430	2	2,050	15	2,080	26	2,050	7	1,910	21	2,060
18	1,570	8	2,060	20	2,420	3	1,990	16	2,120	27	2,150	8	2,010	22	2,090
21	1,500	9	2,120	21	2,390	5	1,950	17	2,170	28	2,100	9	2,000	23	2,020
23	1,500	10	2,100	23	2,400	6	1,970	18	2,140	29	2,140	10	2,090	24	2,000
24	1,490	11	2,140	24	2,430	7	2,030	19	2,170	30	2,160	11	2,090	25	2,010
25	1,470	12	2,040	25	2,470	8	2,020	20	2,170			12	2,080	26	2,100
28	1,540	13	2,060	26	2,430	9	2,010	21	2,400	1	1,840	13	2,080	27	2,150
		14	2,100	27	2,360	10	2,070	22	2,200	2	1,990	14	2,090	28	2,000
1	1,460	15	2,140	28	2,420	11	2,060	23	2,190	3	1,960	15	2,120	29	1,960
2	1,530	16	2,270	29	2,320	12	2,050	24	2,230	4	1,900	16	2,080	30	1,830
3	1,550	18	2,370	31	2,310			25	2,310	5	1,400	17	2,060	31	1,970

ELECTRICAL CONDUCTIVITY OF WATER SAMPLES
1966

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

January		February		April		May		July		August		October		November	
1	1,650	16	1,600	3	2,200	19	2,350	3	2,000	17	2,100	1	1,850	16	2,050
2	1,650	17	1,600	4	2,100	20	2,300	4	2,000	18	2,100	2	1,950	17	2,025
3	1,500	18	1,550	5	2,150	21	2,375	5	2,000	19	2,125	3	1,950	18	2,050
4	1,600	19	1,525	6	2,125	22	2,375	6	1,950	20	2,100	4	1,700	19	2,100
5	1,950	20	1,550	7	2,050	23	2,400	7	1,950	21	2,050	5	1,300	20	1,900
6	2,150	21	1,600	8	2,050	24	2,375	8	2,025	22	2,200	6	1,400	21	1,750
7	2,200	22	1,500	9	2,025	25	2,450	9	2,050	23	2,200	7	1,650	22	1,850
8	2,200	23	1,500	10	2,050	26	2,375	10	2,000	24	2,200	8	1,900	23	2,000
9	2,250	24	1,500	11	1,975	27	2,400	11	2,000	25	2,275	9	2,000	24	1,950
10	2,275	25	1,500	12	1,950	28	2,400	12	2,050	26	2,250	10	2,025	25	1,950
11	2,050	26	1,525	13	2,025	29	2,300	13	2,050	27	2,300	11	2,075	26	2,000
12	1,975	27	1,525	14	2,075	30	2,275	14	2,050	28	2,200	12	2,100	27	1,900
13	1,950	28	1,500	15	2,050	31	2,300	15	2,000	29	2,300	13	2,150	28	1,900
14	1,900			16	2,150			16	2,050	30	2,275	14	2,250	29	2,000
15	1,850	1	1,475	17	2,200	1	2,275	17	2,050	31	2,025	15	2,200	30	1,900
16	1,825	2	1,525	18	2,300	2	2,275	18	1,950			16	2,100		
17	1,800	3	1,525	19	2,500	3	2,800	19	2,000	September		16	2,100	December	
18	1,850	4	1,525	20	2,400	4	2,275	20	2,050	1	2,050	17	2,200	1	1,950
19	2,000	5	2,150	21	2,300	5	2,275	21	2,000	2	2,050	18	2,200	3	1,950
20	1,900	7	2,250	22	2,300	6	2,275	22	2,175	3	2,150	19	2,150	4	1,925
21	1,500	8	2,200	23	2,375	7	2,400	23	2,200	4	2,150	20	2,250	5	1,950
22	1,825	9	2,050	24	2,350	8	2,300	24	2,200	5	2,100	21	2,150	6	1,950
23	1,825	10	2,225	25	2,250	9	2,250	25	2,175	6	2,100	22	2,150	7	1,925
24	1,800	11	2,300	26	2,300	10	2,200	26	2,200	7	2,100	23	2,300	8	1,950
25	1,875	12	2,250	27	2,350	11	2,175	27	2,200	8	2,050	24	2,250	9	1,900
26	1,750	13	2,100	28	2,450	12	2,150	28	2,200	9	2,025	25	2,250	10	1,850
27	1,950	14	2,150	29	2,450	13	2,300	29	2,150	10	2,100	26	2,150	11	1,850
28	1,850	15	2,200	30	2,400	14	2,150	30	2,000	11	2,050	27	2,150	12	1,750
29	1,925	16	2,250			15	2,275	31	2,050	12	2,150	28	2,150	13	1,800
30	1,800	17	2,200	1	2,375	16	2,250			13	2,050	29	2,150	14	1,550
31	1,800	18	2,150	2	2,300	17	2,250	August		14	1,850	30	2,100	15	1,400
		19	2,150	3	2,400	18	2,250	1	2,000	15	1,850	31	2,025	16	1,400
		20	2,150	4	2,300	19	2,400	2	1,900	16	2,250			17	1,400
		21	2,100	5	2,350	20	2,200	3	1,850	17	2,100	November		18	1,475
		22	2,050	6	2,350	21	2,200	4	1,800	18	2,150	2	2,050	19	1,950
		23	2,025	7	2,375	22	2,200	5	1,850	19	2,300	3	2,100	20	2,000
		24	2,025	8	2,375	23	2,200	6	1,850	20	2,250	4	2,000	21	2,000
		25	2,025	9	2,400	24	2,250	7	1,850	21	2,250	5	1,850	22	2,000
		26	2,000	10	2,350	25	2,350	8	1,850	22	2,150	6	2,000	23	1,950
		27	1,950	11	2,400	26	2,400	9	1,850	23	2,025	7	1,900	24	2,000
		28	1,700	12	2,400	27	2,350	10	1,850	24	2,050	8	1,950	25	2,050
		29	1,625	13	2,375	28	2,400	11	1,900	25	2,025	9	2,000	26	2,100
		30	1,450	14	2,400	29	2,400	12	1,900	26	2,100	10	2,100	27	2,200
		31	1,600	15	2,150	30	2,300	13	1,950	27	2,100	11	2,100	28	2,000
				16	2,200			14	1,950	28	2,100	12	2,050	29	1,900
				17	2,375			15	1,950	29	2,100	13	2,100	30	1,850
				18	2,400			16	2,000	30	2,100	14	2,050	31	1,950
												15	2,050		

Colorado River at Southerly International Boundary

January	January	January	February	March	March	April	June	
4	2,820	11	8,100	25	8,140	23	5,820	
7	7,570	18	7,960			1	6,620	
						15	2,770	
						1	2,640	
						8	2,490	
							28	2,300

ELECTRICAL CONDUCTIVITY OF WATER SAMPLES

1966

Date	ECx10 ⁶ @25°C										
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Sánchez Mejorada Canal

January	February	April	May	July	August	October	November
4 2,700	18 2,400	4 2,600	25 2,600	11 2,500	24 2,600	5 2,600	23 2,600
12 2,500	23 2,500	15 2,600	31 2,625	21 2,600	31 2,550	20 2,600	29 2,550
19 2,600	March	21 3,700	June	25 2,600	September	25 2,700	December
25 2,700	3 2,600	28 2,600	7 2,650	August	6 2,500	November	1 2,600
February	18 3,100	May	13 2,600	1 2,650	12 2,500	3 2,500	8 2,300
3 2,500	24 2,600	4 2,625	20 2,700	12 2,500	20 2,500	11 2,600	28 2,400
10 2,600	31 2,500	13 2,550	27 2,650	16 2,600	27 2,600	19 2,550	

Colorado River at Miguel C. Rodríguez Gaging Station

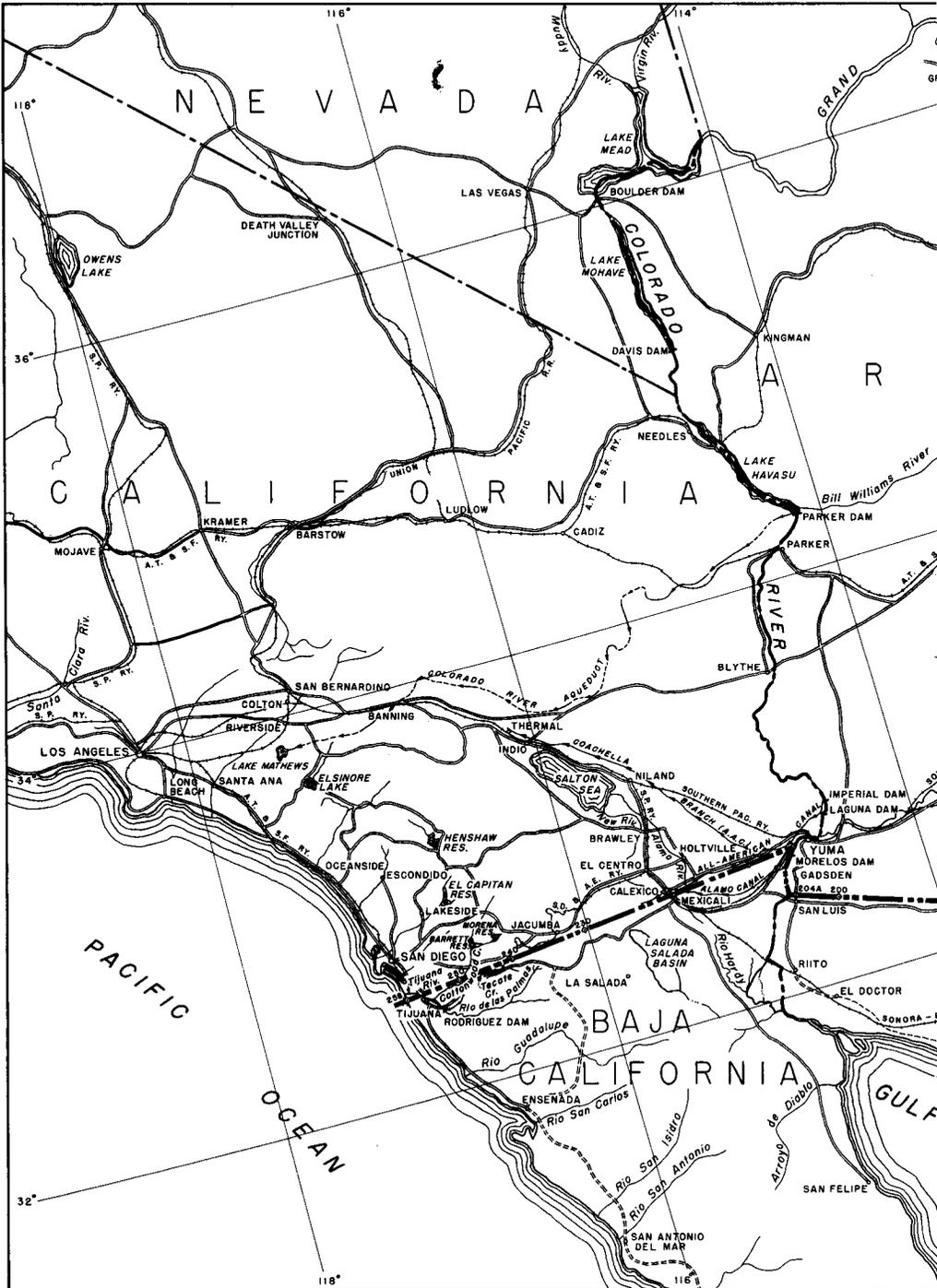
January	February	March	April	June	August	October	November
17 7,500	4 7,500	3 3,700	15 3,400	2 4,250	19 3,200	6 3,000	30 7,250
19 7,500	8 6,000	4 6,250	20 3,200	9 4,000	24 3,200	21 2,600	December
24 7,500	14 5,000	7 5,750	29 3,250	15 3,150	September	27 6,750	8 7,250
26 7,300	18 5,250	15 3,800	May	23 3,000	1 3,200	31 5,500	14 7,000
28 8,000	21 5,750	23 3,100	3 3,300	30 3,225	6 3,200	November	23 7,000
31 7,500	23 3,300	30 3,300	10 3,600	July	12 3,200	7 7,250	29 6,900
February	25 3,000	April	19 4,000	6 2,200	20 3,200	15 6,750	
2 6,750	28 3,800	4 3,500	26 4,400	7 3,000	28 3,200	24 6,500	

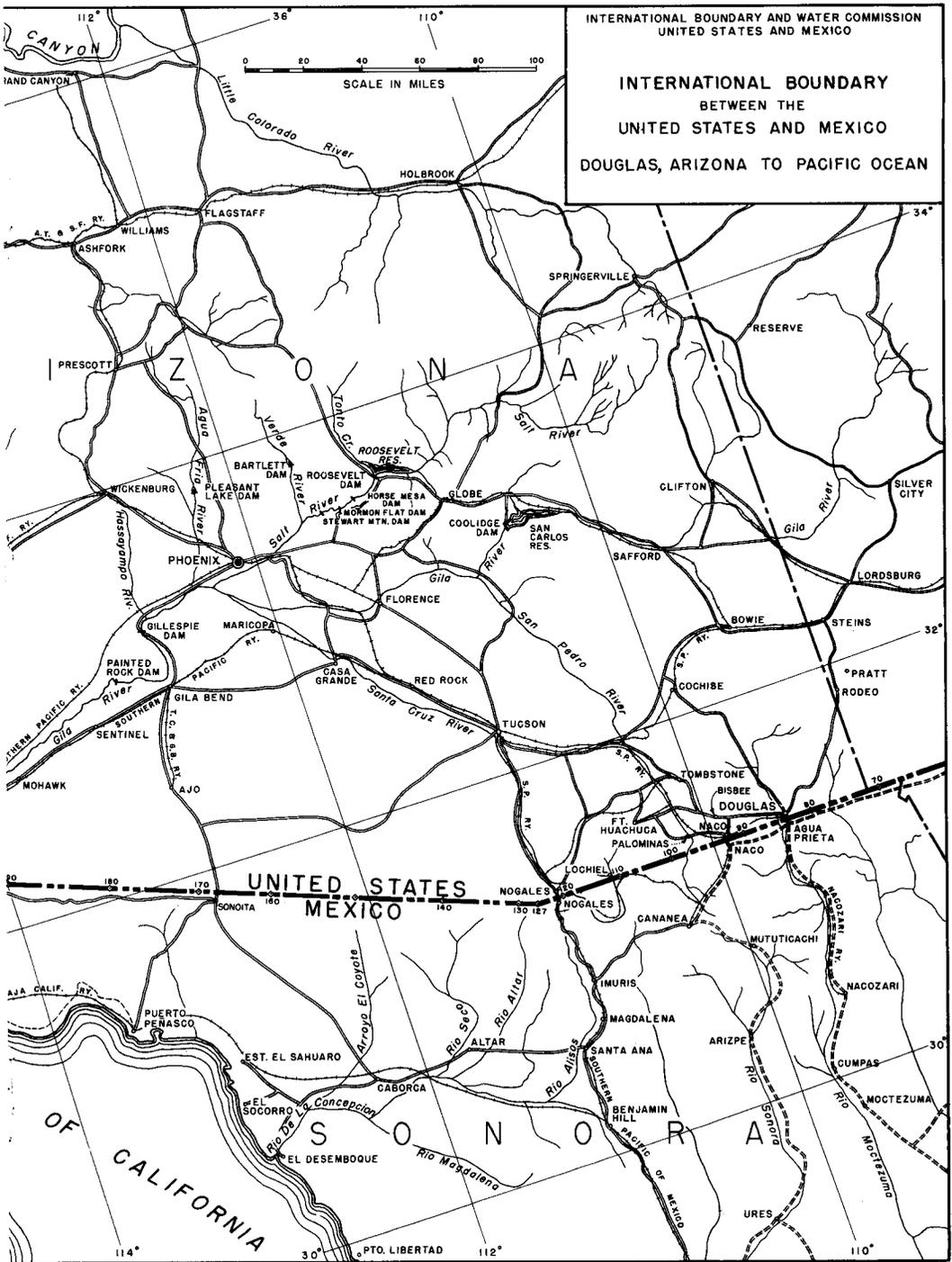
Colorado River at El Maritimo Gaging Station

January	January	February	March	May	June	September	November
3 5,000	26 7,500	21 6,900	18 6,750	3 11,800	23 20,000	1 15,000	16 8,750
6 3,100	31 7,500	23 5,000	23 7,800	10 13,500	30 22,000	October	25 7,000
10 7,400	February	25 4,000	30 6,500	19 12,500	July	6 19,500	December
12 7,600	2 7,500	28 4,200	April	26 11,800	7 23,000	18 20,000	2 9,000
17 8,000	4 8,000	March	15 11,000	June	13 24,000	26 11,500	12 8,500
19 8,000	8 8,750	4 6,500	20 11,500	2 13,000	August	November	23 7,750
21 7,600	14 4,500	7 8,000	29 11,750	9 19,000	3 29,000	2 9,000	29 8,000
24 5,750	18 7,000	15 7,000		15 20,000	18 22,000	9 8,000	

New River at International Boundary

January	February	April	May	July	August	October	November
5 8,500	22 5,500	4 6,500	25 8,000	14 11,000	25 7,500	5 7,500	22 5,500
13 8,100	March	16 7,000	June	21 8,500	8 7,750	14 7,250	December
27 7,000	1 5,250	22 6,700	1 8,250	25 8,000	September	19 6,500	1 6,000
February	16 6,500	29 6,750	8 7,400	August	17 7,500	November	7 6,250
1 7,500	22 7,000	May	14 8,000	1 8,000	21 7,000	1 5,750	23 7,500
8 7,500	29 7,000	4 8,000	22 8,000	10 9,000	29 9,000	10 5,750	27 6,500
15 7,500		12 8,000	29 9,500	19 8,000		17 5,500	





RAINFALL ON THE COLORADO RIVER WATERSHED IN INCHES

Tabulated below are monthly records of rainfall at stations located in California and Arizona in the United States and in Baja California and Sonora in Mexico, with averages for their periods of record. Records of daily rainfall amounts, where available, are on file in the offices of the United States or Mexican Sections of this Commission. For location, elevation, period of record, and the observer, see alphabetical listings of these stations on page 53 in this bulletin.

In United States

Month	Brawley, California		El Centro, California		Blythe, California		Davis Dam No. 2, Arizona		Yuma Citrus Station, Arizona	
	1966	Average 1931-1966	1966	Average 1931-1966	1966	Average 1931-1966	1966	Average 1955-1966	1966	Average 1931-1966
Jan.	0.43	0.32	0.29	0.36	0.97	0.47	T	0.39	0.39	0.39
Feb.	.06	.32	.21	.36	.09	.42	.51	.45	.17	.35
Mar.	.43	.13	.12	.18	.76	.38	.24	.32	.20	.20
Apr.	T	.09	0	.12	0	.16	0	.41	0	.13
May	0	.01	0	0	0	.02	.31	.10	0	.01
June	T	.01	0	.01	0	.03	0	0	0	.02
July	T	.02	0	.08	T	.18	.04	.19	.15	.17
Aug.	0	.28	0	.33	.10	.77	.14	.54	.13	.43
Sept.	.85	.30	.13	.25	T	.33	.43	.32	.31	.34
Oct.	.70	.23	.82	.25	1.05	.29	.77	.38	.04	.41
Nov.	.06	.11	.06	.11	.58	.26	.31	.51	0	.15
Dec.	T	.45	T	.47	.18	.57	1.03	.56	0	.41
Yearly	2.53	2.27	1.63	2.52	3.73	3.88	3.78	4.17	1.39	3.01

In Mexico

Month	Los Algodones, Baja California		Mexicali, Baja California		Ampac, Baja California		Bataques, Baja California		San Luis, R. C., Sonora	
	1966	Average 1948-1966	1966	Average 1926-1966	1966	Average 1949-1966	1966	Average 1948-1966	1966	Average 1949-1966
Jan.	0.63	0.47	0.28	0.35	0.35	0.28	T	0.39	0.51	0.31
Feb.	.04	.20	.12	.35	.28	.16	0	.08	0	.12
Mar.	0	.08	.12	.20	.08	.12	0	.04	.04	.08
Apr.	0	.08	T	.12	0	.08	0	.08	0	0
May	.04	0	T	0	T	0	0	0	0	0
June	0	0	T	0	0	0	0	0	0	0
July	.16	.08	.24	.08	0	.04	.08	0	0	.12
Aug.	.04	.20	0	.31	0	.39	0	.08	0	.39
Sept.	.24	.16	.47	.31	0	.04	0	.04	.08	.16
Oct.	.79	.35	.35	.28	1.77	.28	T	.24	T	.16
Nov.	T	.12	.08	.12	.08	.04	T	.08	T	0
Dec.	.08	.31	T	.87	.12	.28	0	.24	0	.31
Yearly	2.01	1.97	1.65	2.99	2.68	1.73	0.08	1.18	0.63	1.50

Month	Delta, Baja California		Kilometer 50, Baja California		Riito, Sonora		El Mayor, Baja California		San Felipe, Baja California	
	1966	Average 1948-1966	1966	Average 1952-1966	1966	Average 1959-1966	1966	Average 1949-1966	1966	Average 1948-1966
Jan.	0.31	0.39	0.43	0.71	0.35	0.31	0.43	0.20	0.24	0.28
Feb.	0	.08	.28	.24	.24	.04	.63	.12	.47	.08
Mar.	0	.08	.08	.28	T	0	.08	.12	0	.16
Apr.	0	.04	0	.16	0	0	0	.04	0	.08
May	0	0	0	.04	0	0	0	0	0	0
June	0	0	0	0	T	0	0	0	.08	.08
July	0	.04	0	.16	T	0	.04	.08	0	.12
Aug.	0	.12	0	.39	T	.12	0	.35	0	.31
Sept.	0	.12	.20	.20	.12	.20	.55	.39	3.94	.43
Oct.	0	.16	.28	.43	0	.08	.75	.24	0	.35
Nov.	0	.04	0	.24	0	.16	0	.08	0	.08
Dec.	.08	.31	.08	.35	.08	.51	.28	.31	.55	.39
Yearly	0.39	1.34	1.34	1.81	1.18	2.76	2.01	5.28	2.48	

T Trace

LOCATION OF RAINFALL STATIONS ON THE COLORADO RIVER WATERSHED

The precipitation records of the stations listed alphabetically below began on the date shown and extend through 1966.

In United States

NAME OF STATION	LATI- TUDE	LONGI- TUDE	δ ELEV. (FT.)	RECORD BEGAN	OBSERVER
* Blythe, California	33° 37'	114° 36'	268	1909	State Division of Forestry
Brawley, California	32° 57'	115° 33'	100	1908	Agricultural Research Service
* Davis Dam No. 2, Arizona	35° 12'	114° 34'	657	1954	U. S. Bureau of Reclamation
El Centro, California	32° 46'	115° 34'	30	1930	El Centro Water Department
Yuma Citrus Station, Arizona	32° 37'	114° 39'	191	1923	University of Arizona Experimental Farm

In Mexico

NAME OF STATION	LATI- TUDE	LONGI- TUDE	δ ELEV. (FT.)	RECORD BEGAN	OBSERVER
Ampac, Baja California	32° 34'	115° 26'	16	1949	Jabonera del Pacifico
Bataques, Baja California	32° 33'	115° 04'	** 66	1948	Hydraulic Resources
Delta, Baja California	32° 21'	115° 11'	** 39	1948	Hydraulic Resources
El Mayor, Baja California	32° 08'	115° 15'	** 33	1949	Hydraulic Resources
Kilometer 50, Baja California	32° 15'	115° 03'	49	1952	Hydraulic Resources
Los Algodones, Baja California	32° 42'	114° 44'	115	1948	Hydraulic Resources
Mexicali, Baja California	32° 40'	115° 28'	13	1926	Hydraulic Resources
Riito, Sonora	32° 10'	114° 57'	** 39	1959	Hydraulic Resources
* San Felipe, Baja California	31° 02'	114° 53'	33	1948	Hydraulic Resources
San Luis, R. C., Sonora	32° 28'	114° 47'	131	1949	Hydraulic Resources

* Not shown on map δ Elevation above mean sea level except Brawley and El Centro which are elevations below mean sea level

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

EVAPORATION IN THE COLORADO RIVER BASIN IN INCHES

Tabulated below are records of evaporation observed at two stations in Arizona and at seven stations in Baja California and Sonora, Mexico. The stations in the United States are operated by the U. S. Bureau of Reclamation and by the University of Arizona Experimental Farm. The stations in Mexico are operated by the Ministry of Hydraulic Resources. The type of pan used at all these stations was the U. S. Weather Bureau standard pan, four feet in diameter. For specific location of these stations, refer to data opposite the same station name shown in "Location of Rainfall Stations," page 53 in this bulletin.

In United States

Month	Davis Dam No. 2, Arizona		Yuma Citrus Station, Arizona	
	1966	Average 1955-1966	1966	Average 1931-1966
Jan.	6.77	7.43	3.28	3.89
Feb.	6.03	7.53	4.23	4.92
Mar.	9.47	10.30	7.22	Ø 7.88
Apr.	15.51	13.64	10.78	10.34
May	17.41	17.15	13.26	13.44
June	18.76	20.00	14.37	14.66
July	19.16	20.72	13.85	15.90
Aug.	19.12	18.51	13.22	13.99
Sept.	14.63	14.94	9.97	11.16
Oct.	13.05	12.20	7.43	8.04
Nov.	7.31	8.84	4.65	5.11
Dec.	7.74	8.36	3.82	3.72
Total	154.96	159.62	106.08	Ø 113.05

In Mexico

Month	Los Algodones, Baja California		Mexicali, Baja California		Bataques, Baja California	
	1966	Av. 1949-55 1961-1966	1966	Average 1926-1966	1966	Average 1963-1966
Jan.	3.46	4.13	2.24	2.60	3.70	4.17
Feb.	4.37	5.20	3.11	3.46	4.96	5.04
Mar.	6.93	7.05	5.24	5.83	6.85	7.32
Apr.	10.67	9.61	8.15	7.91	8.78	9.29
May	11.61	12.20	10.16	10.51	9.96	11.93
June	13.43	12.64	12.64	11.50	10.63	11.85
July	13.03	12.83	11.97	11.73	12.40	12.32
Aug.	11.77	11.61	11.69	10.00	12.01	9.21
Sept.	9.49	9.57	8.27	8.11	9.02	8.86
Oct.	6.97	7.72	6.06	5.59	6.06	5.55
Nov.	5.00	4.72	3.66	3.39	9.72	5.24
Dec.	4.84	4.02	2.99	2.44	5.75	3.98
Total	101.57	103.07	86.18	83.07	99.84	94.84

Month	Delta, Baja California		Riito, Sonora		El Mayor, Baja California		San Felipe, Baja California	
	1966	Average 1959-1966	1966	Average 1963-1966	1966	Average 1953-1966	1966	Average 1952-1966
Jan.	1.93	3.27	3.31	3.15	3.15	3.66	4.92	5.16
Feb.	3.50	4.33	3.31	4.57	3.86	4.33	5.91	5.91
Mar.	6.26	6.30	5.39	6.02	5.55	6.22	7.09	6.85
Apr.	8.70	8.19	6.06	6.69	8.03	8.27	9.29	8.58
May	9.41	10.20	8.94	8.50	8.50	10.04	10.31	10.71
June	10.20	10.94	8.43	9.69	10.43	11.54	10.98	11.06
July	8.94	11.18	8.94	10.28	12.91	12.83	10.91	11.65
Aug.	9.37	9.53	9.80	7.44	12.01	11.97	11.46	10.75
Sept.	6.10	7.56	7.36	6.77	9.61	10.71	9.09	10.12
Oct.	6.97	5.87		4.53	7.56	8.15	8.74	8.62
Nov.	3.90	3.58	2.05	3.23	5.28	4.88	5.98	6.22
Dec.	3.70	3.07	3.78	3.11	5.51	3.98	5.20	5.24
Total	78.98	84.25		* 73.39	92.40	96.18	99.88	101.02

* 1964

Ø One year missing

TEMPERATURE IN THE COLORADO RIVER BASIN IN DEGREES FAHRENHEIT

The maximum, minimum, and monthly mean temperature observations for United States stations are from daily readings of thermometers generally exposed in a shelter located a few feet above sod-covered ground. The maximum and minimum temperatures shown for the stations in Mexico are from daily maximum and minimum thermometer observations, with maximum and minimum for their periods of record. For specific location, elevation, period of record, and the observer, refer to data opposite same station name as shown in "Location of Rainfall Stations," page 53 in this bulletin.

In the United States

Month	Blythe, California				Davis Dam No. 2, Arizona				Yuma Citrus Station, Arizona			
	1966			Average 1931-66	1966			Average 1955-66	1966			Average 1931-66
	Mean	Max.	Min.		Mean	Max.	Min.		Mean	Max.	Min.	
Jan.	49.5	73	27	52.4	# 49.7	67	28	52.7	# 49.6	73	27	53.0
Feb.	53.1	77	27	57.0	# 51.6	72	31	56.2	# 52.2	79	28	56.8
Mar.	63.4	100	30	63.0	# 62.6	88	32	62.0	62.0	93	30	
Apr.	71.4	98	43	70.7	72.5	98	49	70.5	70.5	97	41	69.3
May	80.0	105	56	77.4	# 82.1	106	58	78.6	78.1	103	50	76.1
June	# 85.9	115	59	84.9	# 88.0	114	64	88.4	83.3	113	54	83.5
July	91.7	114	65	91.9	# 93.8	116	69	94.7	90.2	113	66	91.3
Aug.	# 92.3	113	68	91.0	# 95.3	117	72	93.4	92.0	111	65	90.7
Sept.	84.5	110	59	85.1	# 87.2	109	67	86.0	85.5	112	63	85.4
Oct.	72.1	96	42	73.4	# 72.3	94	40	75.1	72.3	96	43	74.0
Nov.	61.5	92	35	60.1	# 62.7	87	39	61.6	63.1	94	33	61.6
Dec.	# 53.6	82	29	53.6	# 55.1	77	34	55.3	55.3	83	28	55.0
Yearly	# 71.6	115	27	71.7	# 72.7	117	28	72.9	# 71.2	113	27	

Month	Brawley, California				El Centro, California							
	1966			Average 1931-66	1966			Average 1931-66				
	Mean	Max.	Min.		Mean	Max.	Min.					
Jan.	51.3	76	26	53.7	51.3	82	27	53.5				
Feb.	54.0	79	29	58.0	54.3	78	30	57.6				
Mar.	63.3	94	32	63.5	64.2	100	31	63.2				
Apr.	71.5	99	45	71.1	# 70.6	99	44	70.5				
May	78.3	104	52	78.0	77.8	104	44	77.5				
June	84.3	110	55	85.4	84.4	114	52	85.0				
July	90.3	115	63	92.4	90.6	118	60	91.9				
Aug.	91.8	114	65	92.0	91.8	115	59	91.1				
Sept.	84.7	112	58	86.8	84.9	113	59	85.8				
Oct.	72.2	97	43	75.6	73.7	97	46	74.9				
Nov.	62.7	96	36	62.5	64.1	94	37	62.1				
Dec.	55.6	87	26	55.5	56.9	95	29	55.1				
Yearly	71.7	115	26	72.9	# 72.1	118	27	72.4				

In Mexico

Month	Los Algodones, Baja California				Mexicali, Baja California				Ampac, Baja California			
	1966		1948-1966		1966		1926-1966		1966		1949-1966	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
Jan.	77	32	86	23	75	27	93	19	75	27	88	21
Feb.	81	34	95	28	79	32	93	23	79	27	91	23
Mar.	99	37	100	32	95	32	100	32	97	32	97	28
Apr.	99	50	109	37	100	46	106	34	100	45	106	27
May	104	55	117	43	102	54	117	43	104	50	115	41
June	115	61	126	52	111	57	120	52	115	55	120	50
July	113	70	118	61	115	66	118	55	117	63	120	54
Aug.	111	70	120	61	111	64	118	54	113	57	118	55
Sept.	111	66	122	54	109	61	122	48	111	57	118	48
Oct.	97	46	111	32	99	48	109	39	95	43	108	32
Nov.	93	37	100	27	93	39	99	28	91	36	93	21
Dec.	84	36	88	28	86	28	90	25	84	30	88	21
Yearly	115	32	126	23	115	27	122	19	117	27	120	21

One or more days missing

TEMPERATURE IN THE COLORADO RIVER BASIN IN DEGREES FAHRENHEIT

In Mexico

Month	Bataques, Baja California				San Luis, R. C., Sonora				Delta, Baja California			
	1966		1948-1966		1966		1949-1966		1966		1948-1966	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
Jan.	86	32	113	25	θ	θ	100	19	75	32	97	30
Feb.	90	41	97	19	93	32	109	27	82	32	99	28
Mar.	113	43	113	25	108	34	108	32	100	36	108	28
Apr.	117	50	118	16	111	43	115	37	100	50	115	32
May	117	50	124	34	θ	θ	115	41	109	54	124	32
June	135	52	135	43	θ	θ	126	45	117	55	133	36
July	127	50	133	45	θ	θ	124	59	118	64	135	45
Aug.	126	54	129	46	θ	θ	122	59	122	57	140	52
Sept.	122	50	135	39	117	59	118	52	135	61	135	39
Oct.	108	50	118	41	115	54	118	43	117	48	117	36
Nov.	106	50	115	32	113	54	113	30	113	39	120	32
Dec.	97	32	97	25	100	41	102	23	104	28	104	27
Yearly	135	32	135	16			126	19	135	28	140	27

Month	Kilometer 50, Baja California				Riito, Sonora				El Mayor, Baja California			
	1966		1952-1966		1966		1959-1966		1966		1949-1966	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
Jan.	75	25	91	21	75	25	91	19	90	27	108	25
Feb.	82	27	97	21	81	28	95	21	86	32	93	27
Mar.	93	30	99	28	95	34	100	25	90	37	100	34
Apr.	100	43	106	30	100	43	109	37	97	41	108	36
May	109	46	117	36	104	50	115	43	100	41	113	37
June	109	45	117	39	115	52	124	45	113	48	122	37
July	109	55	120	45	113	63	140	52	118	66	122	39
Aug.	118	50	118	50	113	63	122	46	113	66	122	41
Sept.	106	50	115	39	118	57	118	39	115	50	120	34
Oct.	81	39	108	36	θ	θ	115	34	108	48	120	37
Nov.	79	32	104	25	118	34	118	27	102	36	120	34
Dec.	75	27	95	21	84	23	86	21	106	34	106	19
Yearly	118	25	120	21			140	19	118	27	122	19

Month	San Felipe, Baja California									
	1966		1948-1966							
	Max.	Min.	Max.	Min.						
Jan.	72	32	99	32						
Feb.	73	36	102	32						
Mar.	88	43	104	32						
Apr.	88	52	113	37						
May	102	57	120	41						
June	97	57	124	50						
July	102	66	124	50						
Aug.	100	70	135	41						
Sept.	100	63	126	37						
Oct.	90	50	117	41						
Nov.	90	41	118	21						
Dec.	88	32	97	28						
Yearly	102	32	135	21						

θ Record incomplete

IRRIGATED AREAS ALONG COLORADO RIVER BELOW IMPERIAL DAM 1966

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	46,331
Reservation Division	10,042
Yuma Mesa	16,768
Yuma Aux. Project Unit "B" (Yuma Mesa)	3,221
South Gila Valley	9,714
North Gila Valley	5,482
Wellton-Mohawk	60,062
Coachella Valley	57,239
Imperial Valley	437,529
Warren Act	1,240
Non-Project lands adjacent to Colorado River	4,986
Total in United States	652,614
IN MEXICO:	
Morelos Dam	
Mexicali Valley	* 438,798
Total in United States and Mexico	1,091,412

* 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, bridge, and measuring section located at Kilometer 1+500, about 0.9 mile upstream from the pumping plant to the Alamo Canal above Cudahy Check. From October 10, 1960 until August 1962, measurements were made at various locations on the drain.

RECORDS: Based on 47 current meter measurements, 44 double and 3 single, 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 1966.

REMARKS: Mesa Drain is located immediately south of the sand hills. Flow in the drain, consisting of ground water and agricultural returns, is modified by pumping for agricultural and domestic use in Mexico above the station.

EXTREMES: Maximum measured discharge, 78.0 second-feet on February 22, 1960; minimum measured discharge, zero several days in August 1965.

Mean Daily Discharge in Second Feet 1966 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	42.0	30.0	29.0	25.8	22.2	28.6	14.1	27.9	9.2	40.6	35.7	37.1
2	41.3	29.3	28.6	25.1	23.0	25.1	16.6	27.5	9.5	41.0	36.0	39.2
3	40.6	28.6	27.9	24.4	23.3	21.5	18.7	26.8	9.9	41.7	36.7	41.3
4	40.3	29.0	27.9	24.0	24.0	18.0	21.2	26.5	10.2	42.0	37.4	43.4
5	39.6	29.3	27.9	23.3	24.0	14.5	23.7	26.1	10.6	42.4	38.1	45.6
6	39.2	29.7	27.9	22.6	23.7	10.9	26.1	25.4	11.3	42.0	38.5	47.7
7	38.8	29.7	27.9	22.6	23.7	7.4	26.8	25.1	9.9	42.0	39.2	49.8
8	38.5	30.0	27.9	22.6	23.3	3.9	27.5	24.4	8.8	42.0	39.9	51.9
9	38.1	30.4	27.9	23.0	23.3	4.6	28.3	24.0	7.8	41.7	40.3	54.0
10	37.4	30.4	27.5	23.0	23.0	5.3	29.3	23.3	6.7	41.7	41.0	56.2
11	37.1	30.7	27.5	23.0	23.0	5.7	30.0	23.0	8.5	41.3	41.7	58.3
12	36.7	31.1	27.5	23.0	22.6	6.4	29.3	22.2	10.2	41.3	42.0	60.4
13	36.7	31.4	27.5	23.0	22.6	6.7	29.0	21.2	12.0	41.3	42.4	59.7
14	36.4	31.8	27.5	23.0	23.0	7.4	28.3	19.8	13.4	41.0	43.1	59.3
15	36.4	32.1	27.5	23.0	23.3	8.5	27.5	18.7	15.2	41.0	43.4	58.6
16	36.0	32.5	27.5	22.2	24.0	9.9	27.2	17.7	17.0	41.0	43.8	58.3
17	36.0	32.8	27.5	21.5	24.4	10.9	26.5	16.2	18.7	40.6	44.1	57.9
18	35.7	33.2	27.5	20.5	24.7	12.0	25.8	15.2	20.1	40.6	44.5	57.2
19	35.7	32.8	27.5	19.8	25.4	13.1	25.4	13.8	21.2	40.3	45.2	56.9
20	35.3	32.8	27.2	19.1	25.8	14.5	24.7	12.7	22.6	38.8	44.1	56.5
21	35.3	32.5	27.2	18.4	26.1	15.5	24.0	11.3	24.0	37.4	43.1	55.8
22	35.0	32.5	27.2	18.7	26.8	16.6	25.1	10.2	26.5	36.0	41.7	55.4
23	35.0	32.5	27.2	18.7	27.2	15.5	26.1	9.2	29.0	34.3	40.6	55.1
24	34.6	32.1	26.8	19.1	27.5	14.5	26.8	7.7	31.4	32.8	39.6	54.4
25	34.6	31.4	26.8	19.4	27.9	13.4	27.9	6.7	34.3	31.4	39.2	54.0
26	33.9	31.1	26.8	19.8	28.6	12.4	27.9	7.1	36.7	31.8	38.8	53.3
27	33.2	30.4	26.8	19.8	29.3	11.3	27.9	7.4	39.2	32.5	38.5	53.0
28	32.5	29.7	26.5	20.1	30.0	10.6	27.9	7.8	39.6	33.2	38.1	52.6
29	31.8		26.5	20.8	30.7	9.2	27.9	8.1	39.9	33.9	37.8	51.9
30	31.4		26.5	21.5	31.4	11.7	27.9	8.5	40.3	34.3	37.4	51.6
31	30.7		26.1		32.1		27.9	8.8		35.0		50.9
Sum		869.8		650.8		365.6		530.3		1,196.9		1,637.3
	1,125.8		849.5		789.9		803.3		593.7		1,211.9	
Current Year 1966										Period 1956-1966		
Month	Extreme Gage Feet		Extreme Second Feet			Average Second Feet	Total Acre Feet	Acre Feet				
	High	Low	Day	High	Low			Average	Maximum	Minimum		
Jan.			1	42.0	31	30.7	36.4	2,234	2,694	3,072	2,234	
Feb.			18	33.2	3	28.6	31.1	1,725	2,551	3,439	1,725	
Mar.			1	29.0	31	26.1	27.5	1,686	2,606	3,225	1,686	
Apr.			1	25.8	21	18.4	21.5	1,291	2,466	3,381	1,291	
May			31	32.1	1	22.2	25.4	1,566	2,499	3,365	1,566	
June			1	28.6	8	3.9	12.4	726	1,846	3,324	726	
July			11	30.0	1	14.1	25.8	1,593	1,770	2,688	803	
Aug.			1	27.9	25	6.7	17.0	1,051	1,841	3,468	434	
Sept.			30	40.3	10	6.7	19.8	1,180	2,061	2,720	1,180	
Oct.			5	42.0	25	31.4	38.5	2,374	2,413	3,414	1,893	
Nov.			19	45.2	1	35.7	40.3	2,405	2,386	3,416	1,708	
Dec.			12	60.4	1	37.1	52.6	3,244	2,743	3,244	2,139	
Yearly				60.4		3.9	29.0	21,075	26,843	34,661	21,075	

Ø Mean daily

ALAMO RIVER AT INTERNATIONAL BOUNDARY

DESCRIPTION: Staff gage located on the right bank of the river, about 7 miles east of Calexico, California, immediately downstream from the international land boundary between the United States and Mexico and a few feet upstream from a 4-foot 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. Records obtained and furnished by Imperial Irrigation District. 1966 records excellent. Records available: June 1942 through December 1966.

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

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

Mean Daily Discharge in Second Feet 1966 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.00	2.21	2.67	2.21	2.32	1.30	1.58	2.32	2.00	2.44	2.55	2.21
2	2.10	2.21	2.32	2.21	2.32	1.30	1.58	2.32	1.89	2.44	2.67	2.21
3	1.89	2.21	2.32	2.44	2.32	1.79	1.89	2.21	1.89	2.32	2.67	2.21
4	2.00	1.79	2.21	2.44	2.21	1.79	1.89	2.21	1.89	2.44	2.67	2.21
5	3.03	1.89	2.21	2.44	2.21	1.58	1.89	2.00	2.00	2.44	2.55	2.21
6	3.03	2.00	2.55	2.44	2.21	1.58	1.89	2.00	2.00	2.32	2.44	2.21
7	2.10	2.00	2.55	2.32	2.21	1.68	1.89	2.21	1.89	2.79	2.44	2.00
8	2.10	1.89	2.55	2.32	1.68	1.39	1.79	2.21	1.89	2.67	2.55	2.00
9	2.00	2.32	2.21	2.44	1.68	1.39	1.79	2.21	2.00	2.55	2.21	2.00
10	2.10	2.32	2.21	2.00	1.68	1.49	1.68	2.21	2.00	2.44	2.21	2.00
11	1.89	2.21	2.10	2.10	1.58	2.32	1.79	2.10	1.89	2.21	2.44	2.10
12	1.89	2.10	2.21	1.79	1.58	1.89	2.21	1.89	1.89	2.55	2.44	1.89
13	1.89	2.10	1.89	1.89	1.79	1.58	1.79	1.79	2.10	2.32	2.10	2.32
14	1.89	2.10	2.00	1.89	1.79	1.58	1.89	1.68	2.10	2.55	2.21	1.89
15	1.89	2.21	2.21	2.32	1.89	1.68	1.89	1.79	2.10	2.44	2.55	2.00
16	2.10	2.21	2.21	1.89	1.89	1.68	1.79	1.79	2.32	2.44	2.67	2.44
17	2.21	2.21	2.21	1.89	1.89	1.68	1.89	1.79	2.21	2.32	2.67	2.44
18	2.21	2.00	2.21	1.89	2.10	1.68	1.89	1.89	2.32	2.44	2.55	2.44
19	2.21	2.00	2.21	2.00	2.10	1.68	1.79	1.89	2.32	2.44	2.55	2.44
20	2.21	2.00	2.32	2.00	2.21	1.68	2.21	1.79	2.21	2.44	2.44	2.32
21	2.21	2.00	2.32	2.00	2.21	1.68	2.10	1.68	2.55	2.67	2.55	2.00
22	2.10	2.00	2.32	2.21	2.21	1.39	1.89	1.79	2.44	2.67	2.55	2.00
23	2.00	2.00	2.21	2.21	2.21	1.39	1.89	1.79	2.44	2.55	2.21	2.00
24	2.00	2.00	2.21	2.21	2.10	1.89	2.00	1.79	2.44	2.44	2.21	2.00
25	2.10	2.00	2.21	2.21	1.79	1.89	1.89	1.68	2.44	2.55	2.32	1.89
26	1.79	2.00	2.21	2.21	2.00	2.10	2.00	2.21	2.44	2.67	2.44	2.00
27	1.79	2.91	2.21	2.21	2.10	2.10	2.21	2.10	2.32	2.67	2.32	2.00
28	1.89	2.79	2.21	2.21	2.10	2.10	2.21	2.10	2.44	2.67	2.55	2.55
29	1.89		2.21	2.00	2.44	1.89	2.21	2.10	2.44	2.67	2.55	2.44
30	2.21		2.21	2.00	2.32	1.89	2.21	2.00	2.44	2.67	2.21	2.00
31	2.21		2.21		2.21		2.44	2.00		2.67		2.00
Sum	64.93	59.68	69.90	64.39	63.35	51.06	60.06	61.54	65.30	77.90	73.49	66.42

Month	Current Year 1966							Period 1943-1966			
	Ø Extreme Gage Feet		Ø Extreme Second Feet			Average Second Feet	Total Acre Feet	Acre Feet			
	High	Low	Day	High	Low			Day	Average	Maximum	Minimum
Jan.	0.37	0.26	† 5	3.03	† 26	1.79	2.09	129	440	2,790	99
Feb.	.36	.26	27	2.91	4	1.79	2.13	118	398	2,822	100
Mar.	.34	.27	1	2.67	13	1.89	2.25	139	447	3,154	111
Apr.	.32	.26	† 3	2.44	12	1.79	2.15	128	485	2,222	97
May	.32	.24	29	2.44	† 11	1.58	2.04	126	369	1,799	73
June	.31	.21	11	2.32	† 1	1.20	1.70	101	367	1,686	61
July	.32	.24	31	2.44	† 1	1.58	1.94	119	334	1,712	59
Aug.	.31	.25	† 1	2.32	† 14	1.68	1.99	122	406	1,672	83
Sept.	.33	.27	21	2.55	† 2	1.89	2.18	130	379	1,406	91
Oct.	.35	.30	7	2.79	11	2.21	2.51	155	411	1,845	102
Nov.	.34	.29	† 2	2.67	13	2.10	2.45	146	419	2,080	86
Dec.	.33	.27	28	2.55	† 12	1.89	2.14	132	384	1,686	80
Yearly	0.37	0.21		3.03		1.30	2.13	1,545	4,839	22,146	1,251

Ø Mean daily † And other days

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 on a continuous record of gage heights and weekly current meter measurements, supplemented by additional measurements during periods of high flow by the Imperial Irrigation District. Measurements are also made generally once each month by the United States Section of the Commission. Records computed and furnished by the District. 1966 records good. Records available: June 1942 through December 1966.

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

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

Mean Daily Discharge in Second Feet 1966 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	175	162	245	194	132	131	61	137	130	127	145	130
2	170	160	245	190	133	127	57	133	128	126	143	130
3	172	158	214	185	130	130	65	130	131	133	145	129
4	165	157	190	184	125	127	69	130	129	134	147	128
5	162	145	185	180	122	124	73	130	121	133	151	131
6	200	141	182	175	116	124	78	127	127	136	152	125
7	165	142	177	167	113	117	50	133	137	189	155	120
8	165	146	174	157	109	116	55	134	136	139	171	117
9	162	144	167	153	108	115	124	134	135	139	162	113
10	163	150	168	147	108	114	114	137	141	141	158	106
11	157	172	172	149	108	112	108	137	131	145	159	100
12	147	196	177	150	110	112	99	140	128	149	158	99
13	143	177	174	154	110	110	93	139	127	144	151	96
14	144	178	171	162	110	109	100	143	125	145	150	94
15	141	172	161	169	112	109	108	152	135	147	156	99
16	142	163	158	157	115	112	112	158	147	146	161	100
17	146	160	158	151	116	112	116	160	169	148	160	103
18	151	156	159	159	141	110	121	153	194	152	160	106
19	159	159	159	169	144	107	121	153	196	156	154	115
20	172	162	157	179	137	107	121	152	181	161	150	114
21	175	222	160	187	130	107	106	153	165	162	152	120
22	179	184	159	177	127	100	99	153	157	165	156	127
23	182	173	158	170	131	93	97	144	145	165	154	127
24	187	225	158	169	147	70	100	142	135	162	151	126
25	182	207	163	183	160	70	92	154	123	158	149	127
26	177	188	166	172	153	73	102	151	122	158	141	129
27	175	207	171	149	145	75	130	145	121	157	136	128
28	175	229	172	140	138	67	136	142	120	153	133	130
29	172		173	139	132	52	139	141	127	149	132	132
30	169		189	136	127	55	133	144	127	148	132	133
31	168		192		129		130	140		150		134
Sum	5,142	4,835	5,444	4,953	3,918	3,087	3,109	4,421	4,190	4,617	4,524	3,668
Current Year 1966												
Month	Extreme Gage ** Feet		Extreme Second Feet				Average Second Feet	Total Acre Feet	Period 1943-1966			
	High	Low	Day	High	Low	Average			Maximum	Minimum		
Jan.	40.53	41.15	6	200	15	141	166	10,199	6,656	20,160	1,751	
Feb.	40.22	41.15	28	229	6	141	173	9,590	5,438	17,845	1,258	
Mar.	40.09	41.05	† 1	245	20	157	176	10,798	5,791	12,660	1,008	
Apr.	40.73	41.33	1	194	30	136	165	9,824	5,931	14,489	1,390	
May	41.15	41.59	25	160	† 9	108	126	7,771	5,193	10,618	629	
June	41.27	42.19	1	131	29	52	103	6,123	4,605	9,689	1,087	
July	41.47	42.36	29	139	7	50	100	6,167	4,459	9,086	817	
Aug.	41.11	41.61	17	160	6	127	143	8,769	5,566	10,921	1,139	
Sept.	41.00	41.62	19	196	28	120	140	8,311	5,833	12,688	1,795	
Oct.	40.71	41.47	7	189	2	126	149	9,158	6,218	11,710	2,081	
Nov.	40.95	41.38	8	171	† 29	132	151	8,973	6,023	12,323	2,483	
Dec.	41.38	41.74	31	134	14	94	118	7,275	6,776	21,205	1,763	
Yearly	40.09	42.36		245		50	142	102,958	68,489	138,906	24,573	

‡ Mean daily

** Feet below mean sea level

† And other days

VOLCANO DRAIN TO NEW RIVER IN MEXICO

DESCRIPTION: Volcano Drain is measured at a point about 1,000 feet downstream from the highway bridge at the junction of the Tijuana-San Felipe highway, 5.8 miles upstream from the international boundary and 3.7 miles south of Mexicali, Baja California. Measurements obtained at a point near the crossing of the siphon of the West Main Canal and Volcano Drain.

RECORDS: Based on 43 current meter measurements, 35 double and 8 single, made by wading during the year. Data obtained and furnished by the Mexican Section of the Commission. Records available: January 1957 through December 1966.

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

EXTREMES: Maximum measured discharge, 249 second-feet on July 22, 1964; minimum measured discharge, 8.1 second-feet on May 16, 1964.

Mean Daily Discharge in Second Feet 1966 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	129	115	106	101	93.2	85.5	46.6	55.4	119	98.9	91.1	89.7
2	126	115	106	101	93.2	84.0	47.3	59.0	119	98.9	95.3	88.6
3	123	115	106	101	93.2	82.6	48.0	62.9	119	99.2	99.6	87.9
4	120	115	105	101	93.2	81.2	48.7	66.4	119	99.6	104	86.9
5	117	115	105	102	91.5	80.2	49.1	69.9	118	99.9	108	85.8
6	116	115	105	104	89.7	78.8	49.8	73.8	118	99.9	113	85.1
7	114	115	104	106	87.9	77.3	51.2	77.3	118	99.6	117	84.0
8	113	115	104	107	86.2	75.9	52.6	80.9	118	99.6	121	85.1
9	112	115	104	109	84.8	75.2	54.4	84.8	117	99.6	125	85.8
10	110	114	103	111	83.0	74.5	55.8	88.3	117	99.2	130	86.9
11	109	114	103	113	81.2	73.8	57.2	95.0	116	99.2	127	87.9
12	107	114	103	114	79.5	73.5	58.6	102	115	99.2	124	88.6
13	106	114	102	116	80.2	72.7	60.4	108	115	98.9	122	89.7
14	106	114	102	118	80.9	72.0	61.8	115	115	98.9	119	90.8
15	107	114	102	119	81.2	71.0	61.4	121	114	98.2	117	91.5
16	107	111	101	121	81.9	69.6	61.1	128	114	97.8	114	92.5
17	108	108	102	120	82.6	68.5	60.7	127	113	97.1	112	93.6
18	108	105	99.9	119	83.3	67.1	60.0	127	117	96.8	108	94.3
19	109	102	98.9	118	83.7	66.0	59.7	126	121	96.1	105	95.3
20	109	99.6	98.2	117	84.4	65.0	59.3	125	125	95.7	102	96.4
21	110	96.4	97.5	115	85.1	63.6	59.0	124	129	95.3	99.2	97.1
22	111	93.6	96.8	114	85.8	62.5	58.3	124	125	95.0	96.1	98.2
23	111	95.3	97.5	111	86.2	60.0	57.2	123	121	94.6	95.3	95.7
24	112	97.1	98.2	107	86.9	57.6	56.5	122	117	94.3	94.6	93.2
25	112	98.9	98.9	104	87.6	55.1	55.8	121	113	93.9	93.9	90.4
26	112	101	99.6	100	87.2	53.0	55.8	121	110	93.2	93.2	87.9
27	113	103	100	97.1	86.9	50.5	55.8	121	106	92.9	92.5	85.5
28	113	105	101	93.6	86.5	48.0	55.8	120	102	92.5	91.8	86.9
29	114	102	93.6	86.5	86.5	45.6	55.4	120	98.2	92.2	91.1	88.6
30	114	101	93.6	86.2	86.2	46.3	55.4	120	98.5	91.8	90.4	90.1
31	115		101	85.8	85.8		55.4	120		91.5		91.8
Sum	3,493	3,034.9	3,153.5	3,246.9	2,665.5	2,036.6	1,724.1	3,228.7	3,466.7	2,999.5	3,192.1	2,791.8
Current Year 1966									Period 1957-1966			
Month	Extreme Gage Feet		Extreme Second Feet				Average Second Feet	Total Acre Feet	Acre Feet			
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum	
Jan.			1	129	13	106	113	6,933	6,671	9,142	4,076	
Feb.			† 1	115	22	93.6	108	6,025	6,132	8,165	3,536	
Mar.			1	106	22	96.8	99.9	6,254	7,042	9,347	4,491	
Apr.			16	121	† 28	93.6	108	6,438	7,753	11,914	4,373	
May			† 1	93.2	12	79.5	85.8	5,287	6,919	8,971	4,675	
June			1	85.5	29	45.6	67.8	4,040	5,926	7,676	3,547	
July			14	61.8	1	46.6	55.8	3,420	5,860	7,996	2,809	
Aug.			16	128	1	55.4	104	6,402	6,489	8,367	3,647	
Sept.			21	129	29	98.2	115	6,879	7,014	9,027	4,912	
Oct.			† 5	99.9	31	91.5	96.8	5,950	6,386	8,118	4,570	
Nov.			10	130	30	90.4	106	6,333	5,825	7,511	3,570	
Dec.			22	98.2	7	84.0	90.1	5,538	6,316	7,528	4,511	
Yearly				130		45.6	96.1	69,499	78,333	95,812	50,244	

‡ Mean daily † And other days

WISTERIA WASTEWAY TO NEW RIVER IN MEXICO

DESCRIPTION: Staff gage located near operator's house upstream from wasteway gates, 1,000 feet downstream from the confluence of the Cerro Prieto and West Main Canals of the Colorado River Irrigation District in Colonia Wisteria, 4.3 miles upstream from the international boundary, 1.9 miles east of the highway to Tijuana at the Tijuana-San Felipe junction, 3.0 miles west of the highway to San Felipe, and 3.1 miles south of Mexicali. The wasteway structure is composed of three rectangular gates, two of which operate manually and one automatically.

RECORDS: Based on gate openings and water surface elevations upstream from the wasteway gates obtained by the Ministry of Hydraulic Resources and 43 check measurements during the year at various locations by the Mexican Section of the Commission. Records computed and furnished by the Mexican Section of the Commission. Records available: January 1951 through December 1966. 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 of the Commission.

EXTREMES: Maximum instantaneous discharge, 675 second-feet on January 24, 1962; minimum discharge, no flow on various occasions.

Mean Daily Discharge in Second Feet 1966 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	^u 0.7	0.4	41.0	0.7	0.7	0	0	0.7	0	0.7	0.4	0.4
2	^u .7	.4	46.6	.7	.4	0	0	.7	0	.7	1.1	.4
3	^u .7	.4	10.6	.7	.4	0	0	.7	0	16.2	1.4	.4
4	^u .7	.4	^u .7	.7	.4	0	0	.7	0	56.2	2.1	.4
5	10.9	.7	^u .7	.7	.4	0	0	.7	^u .4	.7	2.8	.4
6	27.9	.7	^u .7	.7	.4	0	0	.4	^u .4	.7	3.2	.4
7	.4	.7	^u .7	.7	.4	0	0	.4	^u .7	.7	3.9	.4
8	.4	.7	^u .7	.7	.4	0	.4	.4	.7	.7	4.6	.4
9	.4	^u .7	^u .7	.7	.4	0	.4	.4	.7	.7	4.9	.4
10	.4	1.1	^u .7	.7	.4	0	.7	.4	.7	.4	5.7	.4
11	.4	16.6	^u .7	1.1	.4	0	.7	.4	.7	.4	5.3	.4
12	.4	24.7	^u .7	1.1	.4	0	1.1	.4	.7	.4	4.6	.4
13	.4	.7	^u .7	1.1	.4	0	1.1	0	.4	.4	4.2	.4
14	.4	^u .7	^u .7	1.1	0	0	1.4	0	.4	.4	3.9	.4
15	.4	.7	^u .7	1.1	0	0	1.4	0	.4	.4	3.5	.7
16	.4	^u .7	.7	1.1	0	0	1.4	0	.4	.4	2.8	.7
17	.4	^u .7	.7	1.1	0	0	1.4	0	.4	.4	2.5	.7
18	.4	^u .7	.7	1.1	0	0	1.1	0	.4	.4	2.1	.7
19	.4	^u .7	.7	.7	0	0	1.1	0	.4	.4	1.8	.7
20	.4	^u .7	1.1	.7	0	0	1.1	0	.4	.4	1.8	.7
21	.7	57.2	1.1	.7	0	0	1.1	0	.4	.4	1.4	.7
22	.7	2.5	1.1	.7	0	0	1.1	0	.4	.4	1.1	.7
23	.7	^u 2.5	1.1	.7	0	0	1.1	0	.4	.4	1.1	.7
24	.7	19.1	1.1	.7	0	0	1.1	0	.4	.4	1.1	.7
25	.7	13.4	1.1	.7	0	0	1.1	0	.4	.4	.7	.4
26	.7	3.5	1.1	.7	0	0	1.1	0	.4	.4	.7	.4
27	.7	35.7	1.1	.7	0	0	1.1	0	.4	.4	.7	.4
28	.7	41.7	1.1	.7	0	0	1.1	0	.4	.4	.7	.4
29	.7		1.1	.7	0	0	.7	0	.7	.4	.4	.7
30	.4		1.1	.7	0	0	.7	0	.7	.4	.4	.7
31	.4		1.1	.7	0	0	.7	0	.7	.4	.4	.7
Sum		228.7		24.2		0		6.3		86.1		16.7
	54.3		122.6		5.5		24.2		12.8		70.9	
Current Year 1966												
Month	Extreme Gage Feet		Ø Extreme Second Feet			Average Second Feet	Total Acre Feet	Period 1951-1966				
	High	Low	Day	High	Low			Average	Maximum	Minimum		
Jan.			6	27.9	† 7	0.4	1.8	106	2,153	8,735	15.4	
Feb.			21	57.2	† 1	.4	8.1	453	1,334	7,218	7.0	
Mar.			2	46.6	† 4	.7	3.9	242	989	2,568	0	
Apr.			† 11	1.1	† 1	.7	.7	47.7	960	4,433	0	
May			† 11	.7	† 14	0	0	9.1	664	1,892	0	
June				0		0	0	0	395	1,450	0	
July			† 14	1.4	† 1	0	.7	46.9	308	2,040	0	
Aug.			† 1	.7	† 13	0	.4	11.9	607	1,926	11.9	
Sept.			† 7	.7	† 1	0	.4	23.8	836	2,915	21.0	
Oct.			4	56.2	† 10	.4	2.8	169	1,151	2,993	11.9	
Nov.			10	5.7	† 1	.4	2.5	140	1,285	3,768	15.4	
Dec.			31	1.1	† 1	.4	.4	31.5	1,895	8,669	21.7	
Yearly				57.2		0	1.8	1,282	12,578	27,083	411	

^u Estimated

Ø Mean daily

† And other days

WISTERIA DRAIN TO NEW RIVER IN MEXICO

DESCRIPTION: Wisteria Drain discharges into the stilling 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 on weekly readings of water surface elevations, discharges are computed from horizontal pipe formula. Data furnished by the Mexican Section of the Commission. Records available: January 1957 through December 1966.

EXTREMES: Maximum mean daily discharge, 2.1 second-feet, January 23, 1964; minimum, no flow on various occasions. Maximum monthly volume, 58.1 acre-feet, January 1964; minimum monthly volume, zero during August, October, and November 1966.

Mean Daily Discharge in Second Feet 1966 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.4	0.4	0.4	0.4	0.4	0	0.4	0	0	0	0	0
2	.4	.4	.4	.4	.4	0	.4	0	0	0	0	0
3	.4	.4	.4	.4	.4	0	0	0	0	0	0	0
4	.4	.7	.4	.4	0	0	0	0	0	0	0	0
5	.4	.7	.4	.4	0	0	0	0	0	0	0	0
6	.4	.7	.4	.4	0	0	0	0	0	0	0	0
7	.4	1.1	.4	.4	0	0	0	0	0	0	0	0
8	.4	1.1	.4	.4	0	.4	0	0	0	0	0	0
9	.4	1.1	.4	.4	0	0	0	0	0	0	0	0
10	0	.7	.4	.7	0	0	0	0	0	0	0	0
11	0	.7	.4	.7	0	0	0	0	0	0	0	.4
12	0	.7	.4	.7	0	0	.4	0	0	0	0	.4
13	0	.4	.4	.7	0	0	.4	0	0	0	0	.4
14	0	.4	.4	.7	0	0	.4	0	0	0	0	.4
15	0	.4	.4	.7	0	0	.4	0	0	0	0	.4
16	0	.4	.4	.7	0	.4	.4	0	0	0	0	.4
17	0	.4	.4	.7	0	.4	.4	0	0	0	0	.4
18	.4	.4	.4	.7	0	.4	.4	0	0	0	0	.4
19	.4	.4	.4	.7	0	.4	.4	0	0	0	0	.4
20	.4	.4	.4	.7	0	.7	.4	0	0	0	0	.7
21	.4	.4	.4	.7	0	.7	.4	0	.4	0	0	.7
22	.4	.4	.7	.7	0	.7	.4	0	0	0	0	.7
23	.4	.4	.4	.7	0	.7	.4	0	0	0	0	.7
24	.4	.4	.4	.4	0	.7	0	0	0	0	0	.7
25	.4	.4	.4	.4	0	.7	0	0	0	0	0	.7
26	.4	.4	.4	.4	0	.4	0	0	0	0	0	.7
27	.4	.4	.4	.4	0	.4	0	0	0	0	0	.7
28	.4	.4	.4	.4	0	.4	0	0	0	0	0	.7
29	.4	.4	.4	.4	0	.4	0	0	0	0	0	1.1
30	.4	.4	.4	.4	0	.4	0	0	0	0	0	1.1
31	.4	.4	.4	.4	0	0	0	0	0	0	0	1.1
Sum	9.2	15.1	12.7	16.2	1.2	8.2	5.6	0	0.4	0	0	13.2
Current Year 1966						Period 1957-1966						
Month	Extreme Gage Feet		Ø Extreme Second Feet				Average Second Feet	Total Acre Feet	Acre Feet			
	High	Low	High		Low	Average			Maximum	Minimum		
			Day	Day								
Jan.			† 1	0.4	† 10	0	0.4	16.1	26.3	58.1	7.0	
Feb.			† 7	1.1	† 1	.4	.4	28.1	21.6	32.2	12.2	
Mar.			22	.7	† 1	.4	.4	22.4	25.6	52.5	8.4	
Apr.			† 10	.7	† 1	.4	.4	30.8	30.2	47.7	8.4	
May			† 1	.4	† 4	0	0	2.1	15.6	28.7	2.1	
June			† 20	.7	† 1	0	.4	15.4	17.0	27.6	2.1	
July			† 1	.4	† 3	0	0	9.8	17.2	35.7	7.0	
Aug.				0		0	0	0	19.4	55.9	0	
Sept.			21	.4	† 1	0	0	.7	14.5	31.5	.7	
Oct.				0		0	0	0	13.5	26.6	0	
Nov.				0		0	0	0	18.3	46.2	0	
Dec.			† 29	1.1	† 1	0	.4	25.2	24.2	49.0	13.0	
Yearly				1.1		0	0.4	151	243	357	125	

Ø Mean daily

† And other days

RIVERA DRAIN TO NEW RIVER IN MEXICO

DESCRIPTION: Parshall flume located 5.0 miles from the confluence of the drain with the New River and 328 feet south of the point where the Mexicali-Compuertas highway crosses the drain.

RECORDS: Based on 47 double measurements made during the year. Data obtained and furnished by the Mexican Section of the Commission. Records available: January 1957 through December 1966. Prior to January 1963, measurements were obtained at a rectangular control section in the channel of the drain between "K" and "L" streets in the city of Mexicali.

REMARKS: Rivera Drain begins near the right bank of the West Main Canal, 0.9 mile south of Sharpe Heading, and runs westward across Mexicali, Baja California, and discharges into New River 0.9 mile upstream from the international boundary. Flow at the station consists mainly of agricultural drainage with a small amount of sewage from Mexicali, Baja California.

EXTREMES: Since January 1963: Maximum measured discharge, 3.9 second-feet on March 6, 1963; minimum measured discharge, zero on several days during October 1965 and December 1966.

Mean Daily Discharge in Second Feet 1966 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.8	1.4	2.8	2.5	2.1	1.4	1.1	0.7	1.1	0.7	1.1	1.8
2	1.8	1.8	2.8	2.5	2.1	1.4	1.1	.7	1.1	.7	1.1	1.4
3	1.4	1.8	2.8	2.5	2.1	1.4	1.1	.7	1.1	.7	1.4	1.4
4	1.4	1.8	2.8	2.5	2.5	1.1	1.1	1.1	1.1	.7	1.4	1.4
5	1.4	2.1	2.8	2.5	2.1	1.1	1.1	1.1	1.1	.7	1.4	1.4
6	1.8	2.1	2.8	2.5	2.1	1.1	1.1	1.1	1.1	.7	1.4	1.4
7	1.8	2.1	2.8	2.5	2.1	.7	1.1	1.1	1.1	.7	1.4	1.4
8	1.8	2.1	2.8	2.5	2.1	1.1	1.1	1.1	1.1	.7	1.4	1.4
9	1.8	2.1	3.2	2.1	2.1	1.1	1.1	1.1	1.1	.7	1.4	1.4
10	1.8	2.1	3.2	2.1	1.8	1.1	1.4	1.1	1.1	.7	1.4	1.1
11	1.8	2.1	3.2	2.1	1.8	1.4	1.4	1.1	1.1	.7	1.4	1.1
12	1.8	2.1	3.2	2.1	1.8	1.4	1.4	1.4	1.1	.7	1.4	1.1
13	1.8	2.1	3.2	2.1	1.8	1.4	1.1	1.4	1.1	.7	1.4	1.1
14	1.8	2.1	3.2	2.1	1.8	1.4	1.1	1.4	1.1	.7	1.4	1.1
15	1.8	2.1	3.5	2.1	1.8	1.4	1.1	1.4	1.4	.7	1.4	1.1
16	1.4	2.1	3.5	1.8	1.8	1.4	1.1	1.8	1.4	.7	1.4	1.1
17	1.4	2.1	3.2	1.8	1.8	1.4	1.1	1.4	1.4	.7	1.4	1.1
18	1.4	2.1	3.2	1.8	1.8	1.4	1.1	1.4	1.4	.7	1.4	.7
19	1.4	2.1	3.2	1.8	1.8	1.4	1.1	1.4	1.4	.7	1.4	.7
20	1.4	2.5	2.8	1.8	1.8	1.1	1.1	1.4	1.8	.7	1.4	.7
21	1.4	2.5	2.8	1.8	1.8	1.1	1.1	1.4	1.4	.7	1.4	.7
22	1.4	2.5	2.8	1.8	1.8	1.1	1.1	1.1	1.4	1.1	1.4	.7
23	1.4	2.5	2.8	1.8	1.8	1.1	1.1	1.1	1.1	1.1	1.4	.7
24	1.4	2.5	2.8	1.8	1.8	1.1	1.1	1.1	1.1	1.1	1.4	.4
25	1.4	2.5	2.8	1.8	1.8	1.1	1.1	1.1	.7	1.1	1.4	.4
26	1.4	2.5	2.8	1.8	1.8	1.1	1.1	1.1	.7	1.1	1.4	0
27	1.4	2.8	2.8	1.8	1.8	1.1	1.1	1.1	.7	1.1	1.8	0
28	1.4	2.8	2.8	1.8	1.8	1.1	1.1	1.1	.7	1.1	1.8	0
29	1.4		2.8	1.8	1.8	1.1	.7	1.1	.7	1.1	1.8	.4
30	1.4		2.5	2.1	1.8	1.1	.7	1.1	.7	1.1	1.8	.4
31	1.4		2.5		1.4		.7	1.1		1.1		.4
Sum	48.2	61.4	91.2	62.0	58.5	36.2	33.8	36.3	33.4	25.7	43.0	28.0
Current Year 1966												
Month	Extreme Gage Feet		Extreme Second Feet				Average Second Feet	Total Acre Feet	Period 1963-1966			
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum	
Jan.			† 1	1.8	† 3	1.4	1.4	95.7	110	129	95.7	
Feb.			† 27	2.8		1.4	2.1	122	119	127	110	
Mar.			† 15	3.5	† 30	2.5	2.8	182	157	182	129	
Apr.			† 1	2.5	† 16	1.8	2.1	122	121	161	88.4	
May			† 4	2.5	† 31	1.4	1.8	115	106	126	90.0	
June			† 1	1.4	† 7	.7	1.1	70.8	82.7	108	67.9	
July			† 10	1.4	† 29	.7	1.1	65.2	75.6	87.6	65.2	
Aug.			16	1.8	† 1	.7	1.1	70.8	84.3	117	70.8	
Sept.			20	1.8	† 25	.7	1.1	65.2	73.1	94.9	56.0	
Oct.			† 22	1.1	† 1	.7	.7	50.4	62.0	83.5	41.3	
Nov.			† 27	1.8	† 1	1.1	1.4	85.1	82.7	88.4	70.8	
Dec.			1	1.8	† 26	0	1.1	54.6	87.6	108	54.6	
Yearly				3.5		0	1.4	1,098	1,163	1,325	1,098	

∅ Mean daily

† And other days

WASTE WATERS FROM MEXICAN SYSTEM OF CANALS ENTERING THE UNITED STATES

DESCRIPTION: During 1966, the discharge to New River in Mexico was from Wisteria Wasteway only, located 2.9 miles upstream from the international boundary in Colonia Wisteria, at the wasteway gates of the Cerro Prieto and East Main Canals.

RECORDS: Computations of flows from Wisteria Wasteway are based on gate openings and water surface elevations upstream from the wasteway made by the Ministry of Hydraulic Resources, and of weekly measurements taken downstream from the weir by the Mexican Section of this Commission. Data furnished by the Mexican Section of this Commission. Records available: Wisteria Wasteway, January 1951 through 1966; Sifón Wasteway, January 1952 through April 1964; Pueblo Nuevo Wasteway, January 1956 through 1965.

REMARKS: Records for Sifón and Pueblo Nuevo Wasteways are shown in previously published bulletins 1960 through 1965; flows from these two stations are used for irrigation and no longer reach New River.

Monthly Discharge in Acre-Feet

Month	Current Year 1966	Period 1956-1966		
		Average	Maximum	Minimum
January	106	2,215	8,758	15.4
February	453	1,475	7,281	19.6
March	242	831	2,610	21.7
April	47.7	619	2,843	16.1
May	9.1	366	1,141	9.1
June	0	268	1,477	0
July	46.9	141	348	0
August	11.9	422	1,413	11.9
September	23.8	508	2,081	21.0
October	169	746	2,024	11.9
November	140	1,121	3,784	15.4
December	32.3	2,090	8,691	21.7
Yearly	1,282	10,801	27,430	741

SALTON SEA - ELEVATIONS OF WATER SURFACE

DESCRIPTION: Water-stage recorder and staff gage located on the western shore of the Salton Sea, 15.5 miles northwest of Westmoreland, California. 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, 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. Zero of 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 through December 1966. 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 one foot higher than that of the present station, therefore to make the records comparable it is necessary to subtract one foot from the elevations of the records obtained at the old station. All records reported below and the area and capacity table are adjusted to the datum of the present station. The area and capacity table dated January 8, 1965, is based on resurveys made in 1957 above elevation -240 feet and in 1962 below elevation -236 feet.

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 is 277.7 feet below mean sea level, U. S. C. & G. S. datum.

EXTREMES: Maximum elevation during year, 232.1 feet below mean sea level. Minimum elevation during year, 233.0 feet below mean sea level. Prior to 1935, and since the sea was filled by flood waters of the Colorado River 1905-1906, 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.

Mean Daily Water Surface in Feet Below Mean Sea Level 1966

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	232.9	232.7	232.6	232.2	232.1	232.2	232.3	232.5	232.8	233.0	233.0	232.9
2	232.9	232.7	232.6	232.2	232.1	232.2	232.3	232.5	232.9	233.0	233.0	232.9
3	232.9	232.7	232.5	232.2	232.1	232.3	232.3	232.5	232.9	233.0	233.0	232.9
4	232.9	232.7	232.5	232.2	232.1	232.3	232.4	232.5	232.9	233.0	233.0	232.9
5	232.9	232.7	232.5	232.2	232.1	232.3	232.4	232.5	232.9	233.0	233.0	232.9
6	232.9	232.7	232.5	232.2	232.1	232.3	232.4	232.5	232.9	233.0	233.0	232.9
7	232.9	232.7	232.5	232.2	232.1	232.3	232.4	232.5	232.9	233.0	233.0	232.9
8	232.9	232.7	232.4	232.2	232.1	232.3	232.4	232.5	232.9	233.0	233.0	232.9
9	232.9	232.6	232.4	232.2	232.2	232.3	232.4	232.5	232.9	233.0	233.0	232.8
10	232.9	232.6	232.4	232.2	232.2	232.3	232.4	232.5	232.9	233.0	233.0	232.8
11	232.9	232.6	232.4	232.2	232.2	232.3	232.4	232.5	232.9	233.0	233.0	232.8
12	232.8	232.6	232.4	232.2	232.2	232.3	232.4	232.5	232.9	233.0	233.0	232.8
13	232.8	232.6	232.4	232.2	232.2	232.3	232.4	232.5	232.9	233.0	233.0	232.8
14	232.8	232.6	232.3	232.2	232.2	232.3	232.4	232.6	233.0	233.0	233.0	232.8
15	232.8	232.6	232.3	232.2	232.2	232.3	232.4	232.5	232.9	233.0	233.0	232.8
16	232.7	232.6	232.3	232.2	232.2	232.3	232.4	232.6	232.9	233.0	232.9	232.8
17	232.7	232.6	232.3	232.2	232.2	232.3	232.4	232.6	232.9	233.0	232.9	232.8
18	232.8	232.6	232.3	232.2	232.2	232.3	232.4	232.6	233.0	233.0	232.9	232.8
19	232.8	232.6	232.3	232.2	232.2	232.3	232.5	232.6	233.0	233.0	232.9	232.8
20	232.8	232.6	232.3	232.2	232.2	232.3	232.5	232.6	233.0	233.0	232.9	232.8
21	232.8	232.5	232.3	232.2	232.2	232.3	232.5	232.6	233.0	233.0	232.9	232.8
22	232.8	232.5	232.2	232.2	232.2	232.3	232.5	232.6	233.0	233.0	232.9	232.8
23	232.8	232.5	232.2	232.1	232.2	232.3	232.5	232.6	232.9	233.0	233.0	232.7
24	232.8	232.5	232.2	232.1	232.2	232.3	232.5	232.7	232.9	233.0	232.9	232.7
25	232.8	232.5	232.2	232.1	232.2	232.3	232.5	232.7	233.0	233.0	232.9	232.7
26	232.8	232.5	232.2	232.1	232.2	232.3	232.5	232.7	233.0	233.0	232.9	232.7
27	232.8	232.5	232.2	232.1	232.2	232.3	232.5	232.7	233.0	233.0	232.9	232.7
28	232.8	232.5	232.2	232.1	232.2	232.3	232.5	232.7	233.0	233.0	232.9	232.7
29	232.8	232.2	232.2	232.1	232.2	232.3	232.5	232.7	233.0	233.0	232.9	232.8
30	232.8	232.2	232.1	232.1	232.2	232.3	232.5	232.8	233.0	233.0	232.9	232.8
31	232.7	232.2	232.2	232.2	232.2	232.3	232.5	232.8	233.0	233.0	232.9	232.8
Avg	232.8	232.6	232.3	232.2	232.2	232.3	232.4	232.6	232.9	233.0	232.9	232.8

Month	Current Year 1966		Period 1935-1966			Area and Capacity Table		
	Ø Extreme Elev. Feet		Elevation Feet			Elevation Feet below M. S. L.	Area Acres	Capacity Acre-Feet
	High	Low	# Average	# Maximum	‡ Minimum			
Jan.	232.7	232.9	239.60	232.05	249.3	277.7	0	0
Feb.	232.5	232.7	239.27	231.79	248.8	274.0	20,600	25,700
Mar.	232.2	232.6	239.01	231.57	248.6	270.0	62,900	188,700
Apr.	232.1	232.2	238.81	231.39	248.7	266.0	94,600	510,600
May	232.1	232.2	238.80	231.54	248.5	260.0	122,600	1,170,000
June	232.2	232.3	239.97	231.71	248.8	256.0	134,700	1,684,000
July	232.3	232.5	239.14	231.92	249.1	252.0	148,800	2,250,000
Aug.	232.5	232.8	239.34	232.17	249.4	244.0	179,700	3,562,000
Sept.	232.8	233.0	239.52	232.49	249.4	240.0	196,900	4,315,000
Oct.	233.0	233.0	239.59	232.49	249.8	235.0	221,800	5,360,000
Nov.	232.9	233.0	239.58	232.30	250.0	230.0	235,800	6,504,000
Dec.	232.7	232.9	239.41	232.23	249.6	220.0	262,000	8,993,000
Yearly	232.1	233.0	239.25	232.06	250.0	210.0	288,500	11,740,000
						200.0	315,500	14,760,000

† Estimated * Partly estimated Ø Mean daily
 ‡ Mean monthly † Reading near first day of month

CHEMICAL ANALYSES OF WATER SAMPLES

1966

The tables below 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 450 feet north of international boundary. Records of sampling extend from April 1951 through December 1966.

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; (CO₃ plus HCO₃) expressed as CO₃, 30; SO₄, 48; Cl, 35.5; NO₃, 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 ECx10⁶ at 25°C, is a relative measure of the total salt concentration.

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

Alamo River

Jan.	1	5.32		5,767	1.85	7.7	62	52	12.08	11.59	38.98	6.28	23.17	32.46	0.39
Feb.	1	4.06		4,462	1.25	7.9	61	50	9.53	9.21	28.71	5.23	18.08	23.77	.06
Mar.															
Apr.	1	5.46		5,747	2.05	7.4	61	52	12.23	11.75	37.58	5.56	23.96	32.04	.12
May															
June	1	3.54		3,759	.65	7.1	60	51	8.73	7.48	23.93	4.44	15.56	20.67	.12
July															
Aug.	1	5.76		5,917	1.70	7.5	61	53	13.02	13.15	40.89	6.08	25.23	35.81	.12
Sept.															
Oct.	1	3.00		3,367	.78	7.7	58	48	8.28	6.33	20.18	4.71	13.35	16.36	.04
Nov.															
Dec.															
Total	6														

New River

Jan.	1	6.66		7,893	1.90	7.4	69	77	12.62	9.29	54.55	5.82	12.25	60.94	0.27
Feb.															
Mar.	1	5.52		6,274	1.50	7.3	66	72	11.03	8.96	42.20	4.20	13.96	46.14	.19
Apr.															
May	1	7.07		8,000	1.90	7.4	66	79	18.66	8.22	56.33	9.61	8.22	65.51	.16
June															
July	1	8.01		8,850	2.20	6.9	68	74	14.67	12.66	62.42	4.12	19.39	68.24	.12
Aug.															
Sept.	1	7.04		7,782	1.60	7.2	64	71	15.07	12.66	52.20	5.00	18.55	58.66	.12
Oct.															
Nov.	1	4.86		5,682	1.60	7.1	66	69	10.58	8.05	38.06	4.48	13.31	39.48	.14
Dec.															
Total	6														

** Percent of total cations

*** Percent of total anions

COTTONWOOD CREEK ABOVE MORENA DAM, CALIFORNIA

DESCRIPTION: Staff gage located on east side of outlet tower immediately upstream from face of Morena Dam. The dam is located on Cottonwood Creek 1.8 miles upstream from the mouth 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, U. S. C. & G. S. datum.

RECORDS: Reservoir inflows shown below were computed from monthly reservoir records of storage, releases, spills, leakage, evaporation, and rainfall, by the International Boundary and Water Commission, United States Section. They represent all water reaching Morena Reservoir, including rainfall on reservoir water surface. Basic data were furnished by the city of San Diego, California. Records available: April 1911 through December 1966.

REMARKS: Storage began in Morena Reservoir March 1910. Reservoir capacity and area ratings date from 1910 when Morena Dam was completed. Records for 1966 computed on basis of area-capacity curves determined from 1948 re-survey. Various changes have been made to the spillway section since construction of the dam. Elevation of present crest of ungated spillway is 157.00 feet, gage datum. Reservoir capacity at spillway crest, 1948 survey, is 50,210 acre-feet. The entire capacity of Morena Reservoir is used to furnish a part of the water supply of the city of San Diego, California. Water is released from Morena Reservoir down Cottonwood Creek to Barrett Reservoir as required.

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

Monthly Discharge in Acre-Feet

Month	Current Year 1966	Period 1937-1966		
		Average	Maximum	Minimum
January	97.8	506	3,520	4.8
February	118	1,219	16,700	8
March	81.2	1,881	13,220	19.3
April	24.0	1,210	11,490	3.3
May	16.5	426	3,550	0
June	11.8	221	1,660	0
July	.8	157	1,010	0
August	5.9	111	1,260	0
September	1.1	77.3	1,070	0
October	8.6	90.8	1,270	0
November	11.4	165	1,380	0
December	896	548	3,590	4.4
Yearly	1,273	6,612	39,439	121

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

RECORDS: Monthly records shown below represent the water available immediately below Morena Dam, consisting of spillway waste, draft, and leakage from the dam. They are computed by the International Boundary and Water Commission, United States Section, from basic data furnished by the city of San Diego, California. Records available: January 1911 through December 1966.

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

EXTREMES: Prior to 1937, maximum monthly discharge, 21,400 acre-feet, February 1916; minimum, zero during December 1936.

Monthly Discharge in Acre-Feet

Month	Current Year 1966	Period 1937-1966		
		Average	Maximum	Minimum
January	1.7	144	1,700	1
February	1.6	394	4,260	1.5
March	1.7	272	1,490	1.7
April	2.0	1,007	12,950	1
May	1.7	274	3,040	1
June	2.4	377	7,360	0
July	.6	214	2,340	.6
August	.6	178	1,550	.6
September	.6	349	5,880	0
October	.6	105	529	0
November	.6	140	1,260	0
December	1.7	389	5,350	1
Yearly	15.8	3,843	24,825	15.6

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, one mile downstream from the mouth 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, U. S. C. & G. S. datum.

RECORDS: Records reported below represent all water reaching Barrett Dam from the sub-basin below Morena Dam including rainfall on the reservoir water surface. Leakage, releases and spills from Morena Reservoir are not included. The inflows were computed from monthly reservoir records of storage, releases, spills, leakage, evaporation and rainfall furnished by the city of San Diego, California. Records available: January 1921 through December 1966. Records of stream flow for a station at the dam site are also available for the periods 1906-1915 and 1917-1920.

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

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

Monthly Discharge in Acre-Feet

Month	Current Year 1966	Period 1937-1966		
		Average	Maximum	Minimum
January	481	619	3,430	5.2
February	857	1,706	26,790	7.6
March	476	2,940	18,860	14.1
April	126	2,013	21,630	10.2
May	1.1	608	5,130	0
June	219	255	1,730	0
July	158	167	1,010	0
August	14.5	100	579	0
September	7.3	113	759	0
October	9.3	71.0	645	.1
November	14.8	146	1,200	0
December	2,853	551	3,380	5.5
Yearly	5,217	9,289	59,387	129

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 and the city of San Diego, California. Records at present location are good. Records available: January 1909 through December 1966.

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 Dam, being reported as "Dulzura Conduit near Dulzura" and the draft from Barrett Reservoir was computed from the discharges obtained at the conduit gaging station, multiplied by the factor 1.05 to allow for channel losses in the reach from the reservoir to the gaging station.

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

Mean Daily Discharge in Second Feet 1966 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	0	0	0	34	44	0	0	0	0	0
2	0	0	0	0	0	44	43	0	0	0	0	0
3	0	0	0	0	0	44	41	0	0	0	0	0
4	0	0	0	0	0	45	43	0	0	0	0	0
5	0	0	0	0	0	45	43	0	0	0	0	0
6	0	0	0	0	0	44	37	0	0	0	0	0
7	0	0	0	0	0	45	28	0	0	0	0	0
8	0	0	0	0	0	45	21	0	0	0	0	0
9	0	0	0	0	0	44	15	0	0	0	0	0
10	0	0	0	0	0	42	11	0	0	0	0	0
11	0	0	0	0	0	42	6.4	0	0	0	0	0
12	0	0	0	0	.5	42	.1	0	0	0	0	0
13	0	0	0	0	0	42	0	0	0	0	0	0
14	0	0	0	0	0	43	0	0	0	0	0	0
15	0	0	0	0	0	16	0	0	0	0	0	0
16	0	0	0	0	6.1	.2	0	0	0	0	0	0
17	0	0	0	0	12	15	0	0	0	0	0	0
18	0	0	0	0	28	36	0	0	0	0	0	0
19	0	0	0	0	16	40	0	0	0	0	0	0
20	0	0	0	0	11	44	0	0	0	0	0	0
21	0	0	0	0	4.8	48	0	0	0	0	0	0
22	0	0	0	0	4.6	50	0	0	0	0	0	2.6
23	0	0	0	0	3.2	49	0	0	0	0	0	5.9
24	0	0	0	0	.1	48	0	0	0	0	0	6.0
25	0	0	0	0	22	47	0	0	0	0	0	5.8
26	0	0	0	0	42	46	0	0	0	0	0	4.9
27	0	0	0	0	44	49	0	0	0	0	0	4.8
28	0	0	0	0	44	51	0	0	0	0	0	11.8
29	0	0	0	0	22	48	0	0	0	0	0	16.7
30	0	0	0	0	3.3	46	0	0	0	0	0	16.6
31	0	0	0	0	11		0	0	0	0	0	16.4
Sum	0	0	0	0	274.6	1,234.2	332.5	0	0	0	0	91.5
Current Year 1966								Period 1937-1966				
Month	Extreme Gage Feet		Extreme Second Feet				Average Second Feet	Total Acre Feet	Acre Feet			
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum	
Jan.				0		0	0	432	2,350	0		
Feb.				0		0	0	435	2,130	0		
Mar.				0		0	0	580	2,330	0		
Apr.				0		0	0	913	2,860	0		
May			†27	44	†1	0	8.9	545	1,034	3,040	0	
June			28	51	16	.2	41.1	2,448	1,060	2,920	0	
July			1	44	†13	0	10.7	660	883	2,920	0	
Aug.				0		0	0	795	2,820	0		
Sept.				0		0	0	552	2,320	0		
Oct.				0		0	0	422	2,450	0		
Nov.				0		0	0	582	2,760	0		
Dec.			29	16.7	†1	0	3.0	181	514	2,305	0	
Yearly				51		0	5.3	3,834	8,202	27,170	0	

Ø Mean daily

† And other days

COTTONWOOD CREEK BELOW BARRETT DAM, CALIFORNIA

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

RECORDS: Data furnished by the city of San Diego, California. Prior to January 1953, the records were furnished by the city of San Diego and reviewed and revised by the United States Section of this Commission. The recorder is to be operated only when Barrett Reservoir is near or above spillway level. There have been no spillway discharges since May 1943. Spillway discharges included in the period record below were computed by the city of San Diego from the head on the spillway crest, read on the reservoir gage, and applied to a broad-crested weir formula. Records available: January 1921 through December 1966. Storage began in Barrett Reservoir in January 1921.

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

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

Monthly Discharge in Acre-Feet

Month	Current Year 1966	Period 1937-1966		
		Average	Maximum	Minimum
January	0.3	20.1	590	0
February	.4	34.3	990	0
March	.3	922	13,390	0
April	.2	1,355	33,400	0
May	.1	307	7,520	0
June	.1	43.3	890	0
July	0	2.4	21	0
August	0	2.2	21	0
September	0	1.7	21	0
October	0	1.5	21	0
November	0	1.1	15	0
December	1.4	1.8	21	0
Yearly	2.8	2,692	50,364	0

COTTONWOOD CREEK ABOVE TECATE CREEK NEAR DULZURA, CALIFORNIA

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

RECORDS: Based on a continuous record of gage heights and current meter measurements or observation of no flow generally made twice each month. Records obtained and furnished by the U. S. Geological Survey. Records available: October 1936 through December 1966.

REMARKS: Flow is largely controlled by Barrett and Morena Reservoirs, 10 and 18 miles, respectively, upstream from this station. During 1966 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.

Mean Daily Discharge in Second Feet 1966 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	7.6	0.9	0.7	0.1	0	0	0	0	0	0	0	0
2	6.1	.6	1.2	.1	0	0	0	0	0	0	0	0
3	5.1	.5	.8	.1	0	0	0	0	0	0	0	0
4	4.4	.4	.5	.1	0	0	0	0	0	0	0	0
5	3.7	.4	.5	.1	0	0	0	0	0	0	0	39
6	3.2	.7	.5	0	0	0	0	0	0	0	0	238
7	2.7	2.5	.4	0	0	0	0	0	0	0	0	259
8	2.3	2.3	.3	0	0	0	0	0	0	0	0	42
9	2.0	1.7	.3	0	0	0	0	0	0	0	0	23
10	1.9	2.0	.3	0	0	0	0	0	0	0	0	15
11	1.6	2.0	.3	0	0	0	0	0	0	0	0	10
12	1.5	1.6	.3	0	0	0	0	0	0	0	0	7.0
13	1.3	1.5	.3	0	0	0	0	0	0	0	0	5.4
14	1.3	1.3	.3	0	0	0	0	0	0	0	0	4.2
15	1.3	1.2	.3	0	0	0	0	0	0	0	0	3.4
16	1.2	1.1	.2	0	0	0	0	0	0	0	0	2.5
17	1.1	1.1	.2	0	0	0	0	0	0	0	0	2.2
18	1.1	1.1	.2	0	0	0	0	0	0	0	0	1.9
19	1.0	1.0	.1	0	0	0	0	0	0	0	0	1.6
20	1.2	1.0	.1	0	0	0	0	0	0	0	0	1.3
21	1.2	.9	.1	0	0	0	0	0	0	0	0	1.2
22	.9	.7	.1	0	0	0	0	0	0	0	0	1.0
23	.8	.6	.1	0	0	0	0	0	0	0	0	.9
24	.7	.7	.1	0	0	0	0	0	0	0	0	.8
25	.6	.7	.2	0	0	0	0	0	0	0	0	.7
26	.5	.9	.2	0	0	0	0	0	0	0	0	.7
27	.7	.8	.2	0	0	0	0	0	0	0	0	.6
28	.5	.6	.2	0	0	0	0	0	0	0	0	.5
29	.4	.2	.2	0	0	0	0	0	0	0	0	.5
30	1.4	.1	.1	0	0	0	0	0	0	0	0	.8
31	1.6	.1	.1	0	0	0	0	0	0	0	0	.5
Sum	60.9	30.8	9.4	0.5	0	0	0	0	0	0	0	663.7
Month	Current Year 1966								Period 1937-1966			
	Extreme Gage Feet		Extreme Second Feet				Average Second Feet	Total Acre Feet	Acre Feet			
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum	
Jan.			1	0 7.6	29	0.4	2.0	121	216	1,190	0	
Feb.			7	0 2.5	† 4	.4	1.1	61.1	665	9,940	0	
Mar.			2	0 1.2	† 19	.1	.3	18.6	1,925	20,880	0	
Apr.			† 1	0 .1	† 6	0	0	1,872	1,872	40,240	0	
May				0		0	0	0	435	10,040	0	
June				0		0	0	0	83.8	1,590	0	
July				0		0	0	0	9.3	206	0	
Aug.				0		0	0	0	.5	7.7	0	
Sept.				0		0	0	0	2.6	72	0	
Oct.				0		0	0	0	4.9	101	0	
Nov.				0		0	0	0	26.4	440	0	
Dec.			6	832	† 1	0	21.4	1,316	161	1,316	0	
Yearly				832		0	2.1	1,518	5,402	66,700	0	

0 Mean daily

† And other days

CAMPO CREEK NEAR CAMPO, CALIFORNIA

DESCRIPTION: Water-stage recorder and broad-crested weir on left bank, 0.5 mile upstream from the international land boundary between the United States and Mexico, just upstream from bridge on California State Highway 94, 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 2,178.92 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on current meter measurements and observation of no flow. Records obtained and furnished by the U. S. Geological Survey. Records available: October 1936 through December 1966.

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

EXTREMES: Maximum discharge 880 second-feet, February 6, 1937 (gage height 4.80 feet, present datum), from rating curve extended above 110 second-feet on basis of velocity-depth relation and cross-section area at the control. Minimum discharge, no flow during most months since 1960.

Mean Daily Discharge in Second Feet 1966 — Annual and Period Summary

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

Month	Extreme Gage Feet		Extreme Second Feet		Average Second Feet	Total Acre Feet	Period 1937-1966					
	High	Low	Day	High			Low	Day	Acre Feet			
					Average	Maximum			Minimum			
Jan.			30	0	0.1	† 1	0	0	0.2	156	906	0
Feb.				0			0	0	0	275	1,730	0
Mar.				0			0	0	0	393	2,360	0
Apr.				0			0	0	0	275	3,250	0
May				0			0	0	0	126	1,540	0
June				0			0	0	0	49.0	719	0
July				0			0	0	0	19.7	361	0
Aug.				0			0	0	0	14.3	321	0
Sept.				0			0	0	0	13.6	264	0
Oct.				0			0	0	0	24.2	543	0
Nov.				0			0	0	0	44.8	542	0
Dec.			5	0	.1	† 1	0	0	.2	124	808	0
Yearly				0	0.1		0	0	0.4	1,515	11,141	0

Ø Mean daily

† And other days

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 gage is 542.42 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on a continuous record of gage heights and current meter measurements or observation of no flow generally made twice each month. Records obtained and furnished by the U. S. Geological Survey. 1966 records good. Records available: October 1936 through December 1966.

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 for part of most years.

Mean Daily Discharge in Second Feet 1966 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	9.0	3.2	2.0	0.3	0	0	0	0	0	0	0	0
2	7.8	2.4	2.7	.3	0	0	0	0	0	0	0	0
3	6.9	1.9	2.3	.2	0	0	0	0	0	0	0	0
4	5.5	1.7	1.7	.2	0	0	0	0	0	0	0	0
5	5.1	1.8	1.7	.2	0	0	0	0	0	0	0	43
6	4.6	2.4	1.6	.2	0	0	0	0	0	0	0	476
7	3.9	5.3	1.3	.1	0	0	0	0	0	0	0	657
8	3.5	6.0	1.1	.1	0	0	0	0	0	0	0	63
9	3.4	4.4	1.1	.1	0	0	0	0	0	0	0	32
10	3.2	5.1	1.1	.1	0	0	0	0	0	0	0	27
11	2.9	4.8	1.1	.1	0	0	0	0	0	0	0	13
12	2.6	3.9	1.1	0	0	0	0	0	0	0	0	9.8
13	2.4	3.5	1.1	0	0	0	0	0	0	0	0	6.8
14	2.3	3.2	1.1	0	0	0	0	0	0	0	0	5.3
15	2.3	2.9	1.1	0	0	0	0	0	0	0	0	4.3
16	1.9	2.7	1.0	0	0	0	0	0	0	0	0	3.4
17	1.9	2.7	1.0	0	0	0	0	0	0	0	0	3.2
18	1.9	2.6	.9	0	0	0	0	0	0	0	0	2.9
19	1.9	2.6	.8	0	0	0	0	0	0	0	0	2.5
20	2.3	2.6	.7	0	0	0	0	0	0	0	0	2.5
21	2.6	2.4	.7	0	0	0	0	0	0	0	0	2.4
22	2.0	1.8	.6	0	0	0	0	0	0	0	0	2.1
23	2.0	1.7	.4	0	0	0	0	0	0	0	0	1.9
24	1.8	1.8	.4	0	0	0	0	0	0	0	0	1.9
25	1.7	2.0	.6	0	0	0	0	0	0	0	0	1.8
26	1.8	2.7	.4	0	0	0	0	0	0	0	0	1.9
27	2.4	2.3	.4	0	0	0	0	0	0	0	0	1.7
28	2.1	2.1	.4	0	0	0	0	0	0	0	0	1.7
29	2.0		.4	0	0	0	0	0	0	0	0	1.8
30	4.2		.4	0	0	0	0	0	0	0	0	2.7
31	5.3		.3	0	0	0	0	0	0	0	0	1.8
Sum		82.5		1.9		0	0	0	0	0	0	1,373.4
	103.2		31.5		0	0	0	0	0	0	0	
Current Year 1966												
Month	Extreme Gage Feet		Extreme Second Feet				Average Second Feet	Total Acre Feet	Period 1937-1966			
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum	
Jan.			1	Ø 9.0	25	Ø 1.7	3.3	205	463	2,750	0	
Feb.			8	Ø 6.0	† 4	Ø 1.7	3.0	164	1,204	13,680	0	
Mar.			2	Ø 2.7	31	Ø .3	1.0	62.5	3,052	27,140	0	
Apr.			† 1	.3			.1		2,553	51,060	0	
May				0			0		645	14,110	0	
June				0			0		131	2,630	0	
July				0			0		20.5	312	0	
Aug.				0			0		7.2	171	0	
Sept.				0			0		10.3	152	0	
Oct.				0			0		26.5	705	0	
Nov.				0			0		67.6	839	0	
Dec.	5.56		7	1,770		0	44.3	2,724	402	3,330	0	
Yearly				1,770		0	4.4	3,159	8,582	97,900	0	

Ø Mean daily

† And other days

INFLOWS TO RODRIGUEZ RESERVOIR, BAJA CALIFORNIA

DESCRIPTION: Rodríguez 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 boundary between the United States and Mexico, and 10 miles southeast of Tijuana, Baja California.

RECORDS: Computed from monthly reservoir records of storage, releases, spills, leakage, evaporation and rainfall. Records obtained by the Ministry of Hydraulic Resources through May 1961; from June 1961 through March 1966 by the Junta de Agua Potable y Alcantarillado del Distrito Urbano of Tijuana, Baja California, and from April 1966 by the State of Baja California Commission of Public Service for Tijuana. Records furnished by the Mexican Section of the Commission. Records available: May 1937 through December 1966. Storage began in Rodríguez Reservoir on September 22, 1936.

REMARKS: Records of runoff represent all water reaching Rodríguez 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.

Monthly Discharge in Acre-Feet

Month	Current Year 1966	Period 1938-1966		
		Average	Maximum	Minimum
January	650	960	6,569	0
February	695	2,582	41,295	5.8
March	315	6,905	68,321	4.2
April	253	3,617	77,790	0
May	188	451	9,962	0
June	125	83.5	891	0
July	0	85.1	326	0
August	0	53.8	770	0
September	0	53.3	466	0
October	3.2	65.8	344	0
November	41.1	173	1,940	0
December	2,694	1,070	15,686	12.8
Yearly	4,965	16,100	177,668	254

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 by the Ministry of Hydraulic Resources through May 1961; from June 1961 through March 1966 by the Junta de Agua Potable y Alcantarillado del Distrito Urbano of Tijuana, Baja California, and from April 1966 by the State of Baja California Commission of Public Service for Tijuana. Records furnished by the Mexican Section of the Commission. Records available: May 1937 through December 1966.

REMARKS: Since the dam was completed in 1937, water has been diverted directly into the aqueduct for domestic use for Tijuana, Baja California and into the North and South Canals for irrigation in Mexico. The North Canal delivers water to lands in the Tijuana Valley north of the Río de las Palmas and the South Canal delivers water to lands in the valley south of the Río de las Palmas and the Tijuana River. During 1966, no water was released for irrigation of farm lands.

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

Monthly Discharge in Acre-Feet

Month	Current Year 1966	Period 1938-1966		
		Average	Maximum	Minimum
January	260	265	782	2.3
February	204	295	1,132	1.9
March	222	357	1,223	0
April	238	516	1,602	0
May	198	713	1,676	1.8
June	112	831	1,857	1.9
July	343	877	1,963	1.9
August	342	752	1,859	0
September	293	607	1,420	1.9
October	290	522	1,187	1.9
November	197	399	1,037	2.3
December	299	351	981	0
Yearly	3,047	6,486	15,317	59.6

TIJUANA RIVER AT INTERNATIONAL BOUNDARY

DESCRIPTION: Water-stage recorder on right bank about 350 feet downstream from the international boundary and about 0.8 mile west of the international gate at San Ysidro, California. Zero of gage is at mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 10 current meter measurements and observations of no flow and a continuous record of gage heights. Records obtained and furnished by the United States Section of the Commission. Records available: May 1947 through December 1966.

EXTREMES: Since May 1947: Maximum instantaneous discharge, 2,570 second-feet, March 15, 1952; minimum discharge, no flow during part or all of each year since 1951.

Mean Daily Discharge in Second Feet 1966 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.4	1.8	0	0	0	0	0	0	0	0	0	0
2	1.8	.8	.1	0	0	0	0	0	0	0	0	0
3	.4	.6	.1	0	0	0	0	0	0	0	0	0
4	.1	.3	.1	0	0	0	0	0	0	0	0	0
5	.1	.1	.1	0	0	0	0	0	0	0	0	23.9
6	.1	33.4	.1	0	0	0	0	0	0	0	0	103
7	0	19.2	.1	0	0	0	0	0	0	0	11.9	1,050
8	0	3.4	0	0	0	0	0	0	0	0	.8	153
9	0	1.1	0	0	0	0	0	0	0	0	.1	41.1
10	0	.7	0	0	0	0	0	0	0	0	.8	3.1
11	0	.7	0	0	0	0	0	0	0	0	.8	0
12	0	.3	0	0	0	0	0	0	0	0	.3	0
13	0	.1	0	0	0	0	0	0	0	0	0	0
14	0	.1	0	0	0	0	0	0	0	0	0	0
15	0	.1	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	4.6	0	0	0	0	0	0	0	0	0	0	0
28	.6	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	29.0	0	0	0	0	0	0	0	0	0	0	0
31	7.4	0	0	0	0	0	0	0	0	0	0	0
Sum	47.5	62.7	0.6	0	0	0	0	0	0	0	14.7	1,374.1

Month	Extreme Gage Feet		Current Year 1966				Average Second Feet	Total Acre Feet	Period 1947-1966		
	High	Low	Extreme Second Feet		Day	Average			Maximum	Minimum	
			High	Low							
Jan.	46.80	45.28	30	72.0	† 7	0	1.5	94.2	482	4,603	0
Feb.	47.12	45.30	6	106	† 16	0	2.2	124	179	1,496	0
Mar.	45.40	45.30	† 2	0.1	† 1	0	.02	1.2	957	13,309	0
Apr.				0	0	0	0	0	308	2,926	0
May				0	0	0	0	0	51.1	312	0
June				0	0	0	0	0	33.5	309	0
July				0	0	0	0	0	26.4	239	0
Aug.				0	0	0	0	0	22.9	193	0
Sept.				0	0	0	0	0	29.7	216	0
Oct.				0	0	0	0	0	44.0	305	0
Nov.	47.17	45.30	7	113	† 1	0	.5	29.2	123	1,084	0
Dec.	51.25	45.35	7	2,390	† 1	0	44.3	2,725	325	2,725	0
Yearly	51.25	45.28		2,390		0	4.1	2,973.6	2,581.6	19,882	0

† And other days

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 on current meter measurements or observation of no flow generally made twice a month. Records obtained and furnished by the U. S. Geological Survey. Records available: October 1914 to September 1915, and October 1922 to December 1966 (October 1922 through May 1936 are from city of San Diego, California).

REMARKS: The flow at this station is partially controlled by Morena and Barrett reservoirs on Cottonwood Creek in the United States and by Rodriguez Reservoir on Río 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. 1966 records good.

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.

Mean Daily Discharge in Second Feet 1966 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0
5	1.9	0	0	0	0	0	0	0	0	0	0	0
6	3.9	.2	0	0	0	0	0	0	0	0	0	0
7	1.4	2.8	0	0	0	0	0	0	0	0	0	907
8	0	.1	0	0	0	0	0	0	0	0	0	191
9	0	0	0	0	0	0	0	0	0	0	0	31
10	0	0	0	0	0	0	0	0	0	0	0	.2
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	.1	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	.1	0	0	0	0	0	0	0	.1	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	.3	0	0	0	0	0	0	0	0	0	0	0
31	.4	0	0	0	0	0	0	0	0	0	0	0
Sum	8.1	3.1	0	0	0	0	0	0	0.1	0	0	1,129.2

Month	Extreme Gage Feet		Current Year 1966				Average Second Feet	Total Acre Feet	Period 1937-1966		
	High	Low	Extreme Second Feet		Acre Feet	Acre Feet					
			Day	High		Day			Low	Average	Maximum
Jan.			6	Ø	3.9	0	0.26	16.1	857	4,070	0
Feb.			7	Ø	2.8	0	.11	6.1	4,645	66,920	0
Mar.					0	0	0	0	8,225	107,000	0
Apr.					0	0	0	0	7,068	181,900	0
May					0	0	0	0	789	18,340	0
June					0	0	0	0	133	3,060	0
July					0	0	0	0	26.6	523	0
Aug.					0	0	0	0	18.9	242	0
Sept.			24	Ø	.1	0	.003	.2	27.6	234	0
Oct.					0	0	0	0	94.5	1,340	0
Nov.					0	0	0	0	157	1,490	0
Dec.			7		2,020	0	36.4	2,239.7	862	7,930	0
Yearly					2,020	0	3.12	2,262.1	22,903.6	332,749	0

Ø Mean daily

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 Rodríguez 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 Rodríguez Reservoirs are based on the capacities as determined by the following surveys: Morena 1948; Barrett 1948, 1951, and 1955; and Rodríguez 1927, when the reservoir area was initially surveyed.

Records for Morena and Barrett Reservoirs are obtained and furnished by the City of San Diego, the U. S. Geological Survey, and the U. S. Weather Bureau. Records for Rodríguez Reservoir obtained and furnished by the Junta de Agua Potable y Alcantarillado del Distrito Urbano de Tijuana, Baja California, through March 1966, and beginning April through December 1966, records obtained and furnished by the State Department of Public Works and Services for Tijuana, Baja California.

In Acre-Feet

Month	Morena Reservoir, California (Capacity 50,210)		Barrett Reservoir, California (Capacity 44,760)		Rodríguez Reservoir, Baja California (Capacity 111,880)		Total in Tijuana River Basin Reservoirs (Capacity 206,850)	
	1966	Average 1937-1966	1966	Average 1937-1966	1966	Average 1937-1966	1966	Average 1937-1966
Jan.	572	18,442	2,986	12,878	4,324	37,315	7,882	68,635
Feb.	676	19,161	3,832	14,406	4,631	38,021	9,139	71,588
Mar.	734	20,608	4,274	16,013	4,495	41,571	9,503	78,192
Apr.	719	20,582	4,351	16,659	4,293	41,576	9,363	78,817
May	690	20,402	3,711	15,930	4,153	41,495	8,554	77,827
June	647	19,844	1,460	15,139	3,967	40,263	6,074	75,246
July	599	19,322	841	14,293	3,313	38,960	4,753	72,575
Aug.	546	18,838	816	13,466	2,759	37,781	4,121	70,085
Sept.	507	18,234	798	13,138	2,350	36,775	3,655	68,147
Oct.	476	17,974	790	12,728	1,953	35,929	3,219	66,631
Nov.	476	17,847	795	12,304	1,728	35,351	2,999	65,502
Dec.	1,362	17,902	3,459	12,652	4,044	35,745	8,865	66,299
Average	667	19,096	2,343	14,134	3,501	38,398	6,511	71,628
Maximum	1,362	# 61,670	4,351	Ø 45,920	4,631	109,608	9,503	213,600
Minimum	476	10	790	106	1,728	0	2,999	1,264

March 31, 1941 - Prior to removal of spillway gates

Ø April 30, 1937 - Sand bags were placed on crest of spillway

RAINFALL ON THE TIJUANA RIVER WATERSHED IN INCHES

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

In United States

Month	Morena Dam, California		Barrett Dam, California		Marron Valley, California		Potrero, California	
	1966	Average 1906-1966	1966	Average 1907-1966	1966	Average 1951-1966	1966	Average 1914-1966
Jan.	1.32	3.85	1.43	3.37	1.39	2.62	1.55	3.43
Feb.	1.83	3.96	1.78	3.50	1.36	2.01	1.16	3.86
Mar.	1.56	3.46	1.66	2.94	.48	2.23	1.38	2.98
Apr.	.02	1.82	T	1.60	0	1.46	.01	1.86
May	.16	.65	.07	.58	.11	.47	.24	.68
June	.06	.13	.09	.06	T	.04	.42	.08
July	.14	.39	T	.09	0	.02	T	.19
Aug.	.18	.52	0	.20	0	.15	T	.18
Sept.	.21	.35	.02	.27	.01	.24	.04	.26
Oct.	.40	.91	.43	.72	.35	.33	.37	.75
Nov.	1.19	1.53	1.03	1.29	.59	1.52	.76	1.42
Dec.	7.39	3.35	9.78	2.94	11.27	2.31	7.12	3.25
Yearly	14.46	20.92	16.29	17.56	15.56	13.40	13.05	18.94

Month	Sawday Ranch, California		Chula Vista, California				
	1966	Average 1950-1966	1966	Average 1930-1966			
Jan.	1.93	3.05	1.36	1.86			
Feb.	1.70	2.35	1.09	1.82			
Mar.	1.54	2.83	.22	1.46			
Apr.	0	1.84	0	.86			
May	.03	.50	.01	.25			
June	.02	.04	T	.05			
July	.49	.51	.09	.01			
Aug.	.33	.79	0	.08			
Sept.	T	.41	.01	.18			
Oct.	.59	.43	.68	.43			
Nov.	1.10	1.78	1.58	1.00			
Dec.	8.38	2.29	2.12	1.79			
Yearly	16.11	16.82	7.16	9.79			

In Mexico

Month	La Rumorosa, Baja California		Tecate, Baja California		Tijuana, Baja California		Rodríguez Dam, Baja California	
	1966	Average 1946-1966	1966	Av. 1946-59 & 1961-1966	1966	Av. 1948-59 & 1961-1966	1966	Average 1938-1966
Jan.	0	.75	1.54	2.32	1.46	1.81	1.02	1.42
Feb.	0	.39	.47	1.22	.91	1.22	.63	1.30
Mar.	.79	.51	.35	1.77	.08	1.10	.24	1.38
Apr.	0	.43	0	1.10	0	.67	T	.79
May	0	.04	.20	.35	0	.24	.04	.12
June	.24	.04	.31	.08	0	.04	.08	0
July	.08	.24	0	.08	0	0	T	0
Aug.	0	.75	0	.16	0	.04	0	.08
Sept.	0	.20	0	.12	0	.16	T	.28
Oct.	0	.39	.47	.35	.79	.31	.24	.31
Nov.	.16	.28	.94	1.06	.16	.98	.35	.79
Dec.	1.77	.75	8.58	2.05	4.72	1.34	3.11	1.69
Yearly	3.03	4.57	12.87	11.26	8.11	8.58	5.79	8.03

T Trace

RAINFALL ON THE TIJUANA RIVER WATERSHED IN INCHES

In Mexico

Month	Valle de las Palmas, Baja California		El Pinal, Baja California		San Juan de Dios, Baja California			
	1966	Average 1948-1966	1966	Average 1964-1966	1966	Average 1956-1966		
Jan.	1.02	1.61	1.38	1.02	.94	2.05		
Feb.	.71	.98	2.17	2.36	.94	2.05		
Mar.	.98	1.14	1.18	1.65	.98	1.77		
Apr.	0	.59	.28	3.35	0	1.38		
May	0	.12	.04	.04	.04	.31		
June	0	0	0	0	.39	.28		
July	0	.04	.39	.35	.31	.75		
Aug.	0	.04	.12	1.14	1.02	.71		
Sept.	0	.20	.04	.16	.47	.43		
Oct.	.08	.20	.43	.20	1.73	.63		
Nov.	.47	.79	1.65	2.52	1.46	1.30		
Dec.	.87	1.02	6.65	5.35	4.88	1.69		
Yearly	4.13	7.01	14.33	19.84	13.19	16.69		

LOCATION OF RAINFALL STATIONS

In United States

NAME OF STATION	LATI- TUDE	LONGI- TUDE	δ ELEV. (FT.)	RECORD BEGAN	OBSERVER
Barrett Dam, California	32° 41'	116° 40'	1,750	1907	City of San Diego
Campo, California	32° 37'	116° 28'	2,630	1877	Archie C. Leach
Chula Vista, California	32° 36'	117° 06'	9	1930	Western Salt Company
Marron Valley, California	32° 34'	116° 46'	550	1951	Fred Mellor
Morena Dam, California	32° 41'	116° 32'	3,010	1906	City of San Diego
Potrero California	32° 37'	116° 37'	2,390	1914	L. W. Whitehouse
Sawday Ranch, California	32° 45'	116° 29'	3,200	1950	William Tulloch

In Mexico

NAME OF STATION	LATI- TUDE	LONGI- TUDE	δ ELEV. (FT.)	RECORD BEGAN	OBSERVER
El Pinal, Baja California	u 32° 12'	u 116° 17'	u 4,429	1964	Hydraulic Resources
La Rumorosa, Baja California	32° 33'	116° 03'	3,937	1946	Hydraulic Resources
Rodríguez Dam, Baja California	32° 26'	116° 55'	459	1938	Hydraulic Resources
San Juan de Dios, Baja California	32° 08'	116° 10'	u 3,280	1956	Hydraulic Resources
Tecate, Baja California	32° 32'	116° 39'	1,690	1946	Hydraulic Resources
Tijuana, Baja California	32° 31'	117° 02'	180	1948	Hydraulic Resources
Valle de las Palmas, Baja California	32° 23'	116° 40'	148	1948	Hydraulic Resources

δ Elevation above mean sea level

u Estimated from topographic maps

EVAPORATION IN THE TIJUANA RIVER BASIN IN INCHES

Tabulated below are records of evaporation observed at four stations in California and at four stations in Baja California, with averages for their periods of record. The stations in California are observed by Western Salt Company, City of San Diego, California, and the United States Section of the Commission; those in Baja California are observed by the Ministry of Hydraulic Resources. For specific location of these stations, refer to data opposite same station name shown in "Location of Rainfall Stations," page 83 in this bulletin.

Types of pans used:

1. Barrett Reservoir: January 1921 through September 1926, square 3-foot by 3-foot by 18-inch deep floating pan. October 1926 through 1966, square 3-foot by 3-foot by 18-inch deep land pan set 15 inches in ground.
2. Chula Vista: September 1918 through 1966, U. S. Weather Bureau 4-foot diameter pan, 10 inches deep, set on 2-inch by 4-inch timber grill.
3. Marron Valley: February 1951 to April 30, 1956, 2-foot diameter screened pan, 36 inches deep with automatic level attachment. From April 30, 1956 through April 29, 1963, same type of pan 22.5 inches in diameter. From April 30, 1963 to date, 2-foot diameter screened pan, same type.
4. Morena Reservoir: October 1915 through December 1921, square 3-foot by 3-foot by 18-inch deep floating pan. January 1922 through August 1926 records are the average of evaporation in a square 3-foot by 3-foot by 18-inch deep floating pan and a land pan of the same dimensions. September 1926 through 1966, square 3-foot by 3-foot by 18-inch deep land pan set 15 inches in ground.
5. All stations in Mexico: U. S. Weather Bureau 4-foot diameter pan.

In United States

Month	Morena Dam, California		Barrett Dam, California		Marron Valley, California		Chula Vista, California	
	1966	Average 1916-66	1966	Average 1921-66	1966	Average 1951-66	1966	Average 1919-66
Jan.	1.19	2.29	1.51	1.88	2.16	2.78	2.79	2.81
Feb.	1.96	2.35	1.85	2.23	2.84	3.28	3.36	3.33
Mar.	3.13	3.66	3.42	3.62	3.82	4.06	4.82	4.99
Apr.	5.31	4.95	5.16	4.93	6.61	5.51	6.00	5.86
May	6.38	6.94	5.70	7.07	5.39	6.84	5.96	6.88
June	7.84	8.92	7.31	8.66	7.18	8.23	6.73	7.00
July	8.14	10.44	8.78	10.34	8.64	9.87	7.59	7.63
Aug.	8.27	9.70	8.52	9.69	9.14	9.37	8.47	7.30
Sept.	5.94	7.87	6.28	7.94	7.13	8.14	6.52	6.07
Oct.	5.71	5.53	4.59	5.59	6.14	6.61	5.37	4.86
Nov.	1.90	3.67	2.25	3.53	3.46	4.53	3.62	3.62
Dec.	1.13	2.63	1.25	2.19	2.16	3.17	2.44	2.74
Total	56.90	68.95	56.62	67.67	64.67	72.42	63.67	63.09

In Mexico

Month	Tecate, Baja California		Tijuana, Baja California		Rodríguez Dam, Baja California		Valle de las Palmas, Baja California	
	1966	Average 1961-66	1966	Av. 1952-59 1961-66	1966	Av. 1939-42 1946-66	1966	Average 1952-66
Jan.	2.95	3.23	θ	2.83	2.32	3.82	3.46	3.62
Feb.	3.43	3.27	θ	3.31	2.83	3.90	3.46	3.58
Mar.	5.00	4.02	3.54	4.02	4.57	5.08	5.59	5.20
Apr.	6.38	5.63	5.71	4.84	5.79	5.87	8.46	6.93
May	6.57	6.38	5.83	5.83	5.51	7.40	8.23	7.95
June	7.95	6.10	6.65	5.71	7.40	8.11	10.08	9.69
July	9.06	9.41	θ	6.61	8.11	9.13	12.64	11.30
Aug.	9.80	9.02	7.95	6.89	8.27	8.35	12.05	10.59
Sept.	6.73	6.93	6.26	5.94	6.22	7.13	9.80	8.90
Oct.	7.01	6.46	5.67	4.57	5.39	5.98	6.26	6.50
Nov.	3.86	3.58	3.23	3.35	3.07	5.20	3.94	4.53
Dec.	4.13	3.43	2.68	2.95	2.72	4.37	4.29	4.13
Total	72.87	69.57		55.51	62.20	74.92	88.27	81.42

θ Record incomplete

TEMPERATURE IN THE TIJUANA RIVER BASIN IN DEGREES FAHRENHEIT

The maximum, minimum, and monthly mean temperature observations for United States stations are from daily readings of thermometers generally exposed in a shelter located a few feet above sod-covered ground. The maximum and minimum temperatures shown for the stations in Mexico are from daily maximum and minimum thermometer observations, with maximum and minimum for their periods of record. For specific location, elevation, period of record, and the observer, refer to data opposite same station name as shown in "Location of Rainfall Stations," page 83 in this bulletin.

In United States

Month	Barrett Dam, California				Chula Vista, California				Campo, California			
	1966			Average 1931-66	1966			Average 1931-66	1966			Average 1951-66
	Mean	Max.	Min.		Mean	Max.	Min.		Mean	Max.	Min.	
Jan.	46.7	78	24	48.5	52.0	# 73	# 36	52.3	44.8	72	16	46.5
Feb.	46.8	72	24	50.2	52.6	# 72	# 36	53.6	45.0	69	20	47.6
Mar.	54.6	86	29	53.3	55.0	# 76	# 36	55.1	51.9	86	24	49.1
Apr.	60.0	92	36	58.2	59.3	# 79	# 46	58.0	55.4	91	27	53.9
May	64.3	94	43	62.8	61.9	# 70	# 51	60.6	60.3	91	33	57.9
June	68.5	99	# 41	68.1	64.3	# 71	# 51	62.9	66.1	99	32	64.6
July	74.5	100	46	76.0	66.8	# 74	# 58		72.5	99	39	73.1
Aug.	77.1	102	47	76.1	70.5	78	# 61		74.7	99	42	73.2
Sept.	70.8	103	43	72.4	66.8	79	51		62.9	100	38	69.1
Oct.	62.4	# 93	33	64.3	64.7	85	48	62.8	61.3	90	29	61.3
Nov.	55.8	92	29	55.9	59.6	96	42		54.6	86	22	52.4
Dec.	50.7	82	24	50.9	55.0	# 71	# 35	54.4				
Yearly	61.0	103	24	61.4	60.7	96	35					

In Mexico

Month	La Rumorosa, Baja California				Tecate, Baja California				Tijuana, Baja California			
	1966		1946-1966		1966		1946-59 & 1961-66		1966		1948-59 & 1961-66	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
Jan.	64	21	81	5	75	27	86	21	91	27	91	27
Feb.	64	23	82	10	73	28	90	21	86	37	102	32
Mar.	75	27	88	16	91	32	91	27	88	37	90	34
Apr.	86	32	91	23	90	32	99	32	97	46	97	34
May	86	39	97	28	88	43	100	36	86	54	97	43
June	97	43	113	34	93	37	104	37	93	50	99	41
July	97	57	104	50	95	37	115	36	0	0	120	46
Aug.	97	50	102	46	97	45	113	34	100	59	106	52
Sept.	97	41	104	34	102	39	115	37	100	52	120	46
Oct.	82	43	93	25	95	36	106	34	102	48	117	43
Nov.	79	28	88	14	91	36	97	27	108	32	108	32
Dec.	72	25	81	10	81	25	90	23	81	36	81	25
Yearly	97	21	113	5	102	25	115	21	108	27	120	25

Month	Rodríguez Dam, Baja California				Valle de las Palmas, Baja California				El Pinal, Baja California			
	1966		1938-1966		1966		1948-1966		1966		1964-1966	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
Jan.	79	34	88	27	79	23	88	12	68	16	72	16
Feb.	77	34	91	32	73	25	99	23	64	21	73	21
Mar.	84	34	88	32	100	32	100	28	75	23	75	23
Apr.	93	43	93	36	95	37	104	32	82	32	82	28
May	99	48	99	37	93	46	100	39	68	34	81	27
June	84	50	108	46	97	46	108	43	91	36	91	30
July	86	55	104	50	102	48	120	48	93	39	95	39
Aug.	93	57	104	52	100	48	108	48	95	43	102	39
Sept.	91	50	108	48	104	50	117	43	93	39	102	39
Oct.	95	45	108	43	99	39	108	37	81	37	95	34
Nov.	95	39	99	30	97	32	97	19	77	28	79	28
Dec.	79	36	93	27	82	30	91	21	64	27	79	27
Yearly	95	34	108	27	104	23	120	12	95	16	102	16

One or more days missing

0 Record incomplete

8 1956 missing

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

1966

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 1966 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	a) 0	0	a) 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	19	64	83	0	0	0
(does not include Campo Creek)						
Cottonwood Creek						
above International Boundary	413	68	481	a) 540	0	a) 540
Station						
Río de las Palmas						
above Rodríguez Dam	7	981	988	0	b) 0	0
Tijuana River						
above Nestor Gaging Station	458	1,266	1,724	3,000	c) 350	3,350
above the Mouth	462	1,269	1,731			

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 1966 in the Tijuana Irrigation District, Tijuana Valley, Baja California, Mexico, from the Rodríguez Reservoir, but an estimated area of about 350 acres was irrigated by pumping from ground water. Depending upon the availability of water this acreage varies considerably from year to year.



WHITEWATER DRAW NEAR DOUGLAS, ARIZONA

DESCRIPTION: Water-stage recorder located on U. S. Highway 80 bridge between Douglas and Bisbee, Arizona, about 450 feet upstream from the Southern Pacific Railroad bridge, 1.5 miles upstream from the international boundary, and 2 miles west of Douglas, Arizona. Zero of gage is 3,906.94 feet above mean sea level, U. S. C. & G. S. datum of 1929.

RECORDS: Based on 14 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 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 through December 1966 (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.

Mean Daily Discharge in Second Feet 1966 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.1	0.1	0	0	0	0	2.3	191	1.5	0.4	0.3	0.2
2	.1	.1	0	0	0	0	.3	44	1.4	.4	.3	.2
3	.1	.1	0	0	0	0	.1	19	2.3	.4	.3	.1
4	.1	.1	0	0	0	0	.1	14	1.1	.4	.2	.1
5	.1	.1	0	0	0	0	0	400	.8	.4	.2	.1
6	.1	.1	0	0	0	0	0	656	15	.4	.2	.1
7	.1	.1	0	0	0	0	0	16	61	.4	.3	.1
8	.1	.1	0	0	0	0	0	60	24	.4	.3	.1
9	.1	.1	0	0	0	0	0	9.1	9.0	.4	.3	.1
10	.1	.1	0	0	0	0	0	3.6	3.8	.3	.3	.1
11	.1	.1	0	0	0	0	0	2.3	2.4	.3	.3	.1
12	.1	.1	0	.3	0	0	0	1.0	154	.3	.3	.1
13	.1	.1	0	.1	0	0	0	13	23	.2	.2	.1
14	.1	.1	0	0	0	0	0	1.0	71	.3	.2	.1
15	.1	.1	0	1.4	0	0	0	.4	171	.3	.2	.1
16	.1	0	0	1.0	0	0	0	6.2	101	.3	.2	.1
17	.1	0	0	.1	0	0	0	6.2	13	.2	.2	.1
18	.2	0	0	0	0	0	0	2.3	16	7.0	.3	.2
19	.2	0	0	0	0	0	0	.2	122	1.5	.3	.1
20	.1	0	0	0	0	0	0	16	26	1.0	.3	.2
21	.1	0	0	0	0	0	0	3.7	29	.5	.3	.2
22	.1	0	0	0	0	0	0	.7	19	.4	.3	.2
23	.1	0	0	0	0	0	0	6.7	21	.4	.3	.1
24	.1	0	0	0	0	0	0	59	12	.4	.3	.1
25	.1	0	0	0	0	0	0	7.8	5.0	.4	.3	.2
26	.1	0	0	0	0	0	0	.6	2.0	.4	.3	.2
27	.1	0	0	0	0	0	0	32	1.2	.4	.3	.1
28	.1	0	0	0	0	0	0	684	1.0	.4	.3	.1
29	.1	0	0	0	0	0	0	1,160	.9	.6	.3	.1
30	.1	0	0	0	0	54	0	230	.8	.5	.3	.1
31	.1	0	0	0	0	0	0	166	3.8	.3	.3	.1
Sum	3.3	1.5	0	2.9	0	54	2,378.0	1,709.3	680.2	10.0	6.2	3.3
Current Year 1966									Period 1936-1966			
Month	Extreme Gage Feet		Extreme Second Feet				Average Second Feet	Total Acre Feet	Acre Feet			
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum	
Jan.			† 18	0.2	† 1	0.1	0.11	6.5	50.9	451	1.0	
Feb.			† 1	.1	† 16	0	.05	3.0	27.0	132	0	
Mar.				0	0	0	0	0	29.3	130	0	
Apr.			15	1.4	† 1	0	.10	5.8	27.1	173	0	
May				0	0	0	0	0	19.9	138	0	
June			30	54	† 1	0	1.8	107	174	1,590	0	
July			29	1,160	† 5	0	76.7	4,717	# 2,285	8,110	39	
Aug.			6	656	15	.4	55.1	3,390	# 3,488	14,480	.3	
Sept.			15	171	† 22	.4	22.7	1,349	# 819	3,170	.8	
Oct.				.4	† 13	.2	.32	19.8	166	2,210	.4	
Nov.				.3	† 19	.1	.21	12.3	49.7	352	.2	
Dec.				.2	† 3	.1	.11	6.5	89.5	1,050	.4	
Yearly				1,160		0	13.3	9,617		22,321	900	

Ø Mean daily

† And other days

1947 Records not available

SEWAGE EFFLUENT, DOUGLAS, ARIZONA AND AGUA PRIETA, SONORA 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 1966.

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.

Month	Total Monthly Flows			Mean Daily Flows-Millions of Gallons Per Day					
	Millions of Gallons			Current Year 1966			Period 1952-1966		
	U.S.	Mexico	Total	Maximum	Minimum	Mean	Maximum	Minimum	Mean
Jan.	28.065	15.395	43.460	1.474	1.252	1.402	1.474	0.619	1.018
Feb.	24.803	12.863	37.666	1.407	1.256	1.345	1.784	.584	1.023
Mar.	28.386	13.912	42.298	1.441	1.150	1.364	1.455	.590	1.023
Apr.	26.949	13.583	40.532	1.485	1.033	1.351	1.514	.619	1.041
May	26.160	18.269	44.429	1.595	1.276	1.433	1.595	.619	1.052
June	29.474	15.339	44.813	1.733	1.327	1.494	1.733	.626	1.113
July	33.468	16.843	50.311	3.209	1.370	1.623	3.209	.619	1.174
Aug.	34.647	14.290	48.937	1.985	1.371	1.578	1.985	.619	1.191
Sept.	30.501	14.988	45.489	1.856	1.385	1.516	1.884	.626	1.179
Oct.	29.808	14.742	44.550	1.496	1.354	1.440	1.667	.626	1.116
Nov.	27.897	13.550	41.447	1.460	1.092	1.382	1.481	.619	1.075
Dec.	28.408	14.776	43.184	1.482	1.296	1.393	1.650	.619	1.076
Yearly	348.566	178.550	527.116	3.209	1.033	1.444	3.209	0.584	1.090

SAN PEDRO RIVER AT PALOMINAS, ARIZONA

DESCRIPTION: Water-stage recorder located near left bank on the downstream side of pier on bridge on State Highway No. 92, 0.7 mile east of Palominas, 2.5 miles upstream from Green Brush Draw, 4.5 miles downstream from international boundary, and 12 miles southwest of Bisbee, Arizona. Zero of gage is 4,187.62 feet above mean sea level (State Highway bench mark).

RECORDS: Based on current meter measurements or observations of no flow during the year. Records available: May 1930 to October 1933, May 1935 to July 1941, and July 1950 through December 1966. Records obtained and furnished by U. S. Geological Survey.

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

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

Mean Daily Discharge in Second Feet 1966 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	16	8.2	14	0.2	0.2	0	0.7	50	84	13	3.0	4.4
2	18	7.3	12	.3	.2	0	.2	24	73	11	3.0	4.4
3	15	6.9	11	.6	.2	0	.1	21	61	11	3.3	4.7
4	14	6.9	8.2	.5	.2	0	.1	61	48	9.1	3.8	4.7
5	13	6.9	7.3	.5	.2	0	.1	228	38	9.1	4.1	4.7
6	13	6.5	7.7	.5	.2	0	0	681	33	8.6	4.4	4.4
7	12	8.2	8.2	.5	.2	0	.3	71	29	8.2	4.7	4.7
8	11	46	8.6	.3	.3	0	46	28	27	7.7	5.4	5.1
9	10	38	7.7	.4	.4	0	2.1	15	24	7.3	5.1	5.1
10	9.0	50	7.7	.3	.3	0	1.0	47	23	6.5	5.1	4.7
11	8.0	50	6.5	.5	.1	0	1.0	73	25	6.1	4.7	4.7
12	8.0	51	6.1	1.0	.1	0	1.9	20	118	5.1	4.7	4.7
13	8.0	51	5.1	1.1	.1	0	3.0	44	96	5.1	5.1	4.1
14	8.0	46	5.4	1.2	.1	0	3.0	17	92	5.1	4.7	3.8
15	7.0	38	5.1	1.4	.1	0	3.8	17	113	4.7	4.4	3.5
16	7.0	36	4.1	1.0	.1	0	2.8	28	133	4.7	4.4	3.3
17	7.0	33	3.5	.3	.1	0	1.2	568	60	4.1	4.4	2.8
18	13	29	3.0	.2	.1	0	.8	667	40	4.1	4.1	3.0
19	13	25	2.5	.1	.1	0	12	646	30	4.1	4.1	3.3
20	13	24	2.5	.1	.1	0	4.1	408	20	4.1	4.1	4.4
21	12	20	2.5	.1	.1	0	16	426	15	4.1	4.1	5.4
22	10	17	2.1	.1	0	0	8.4	237	17	3.8	4.1	4.7
23	9.6	17	.8	.1	0	0	3.7	462	14	3.5	4.1	4.7
24	9.6	17	.5	.1	0	0	22	425	12	3.5	4.1	4.7
25	9.1	16	.2	.1	0	0	4.0	136	11	3.3	4.4	5.4
26	8.6	16	.2	.1	0	0	.2	124	10	3.3	4.4	5.1
27	9.6	15	.5	.1	0	0	291	109	19	3.3	4.1	5.4
28	10	15	.8	.1	0	0	1,110	80	20	3.5	4.1	5.1
29	8.6		.8	.1	0	0	171	136	37	3.5	4.1	5.1
30	8.2		1.1	.2	0	.1	50	282	15	3.0	4.1	5.4
31	8.2		.6		0		51	92		3.0		5.8
Sum	326.5	700.9	146.3	12.1	3.5	0.1	1,811.5	6,223	1,337	176.5	128.2	141.3
Current Year 1966									Period 1951-1966			
Month	Extreme Gage Feet		Extreme Second Feet				Average Second Feet	Total Acre Feet	Acre Feet			
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum	
Jan.			2	Ø 18	†15	7.0	10.5	648	786	7,813	2.6	
Feb.			†12	Ø 51	6	6.5	25.0	1,390	350	1,390	3.0	
Mar.			1	Ø 14	†25	.2	4.7	290	242	580	39.3	
Apr.			15	Ø 1.4	†19	.1	.4	24.0	91.9	330	8.1	
May			9	Ø .4	†22	0	.1	6.9	20.3	68.8	0	
June			30	Ø .1	†1	0	0	.2	228	1,391	0	
July	8.57		28	3,610	6	0	58.4	3,593	6,878	17,238	523	
Aug	7.95		6	2,990	9	15	201	12,343	11,792	36,369	165	
Sept.			16	Ø 133	26	10	44.6	2,652	2,001	16,344	28.4	
Oct.			1	Ø 13	†30	3.0	5.7	350	181	1,201	0	
Nov.			8	Ø 5.4	†1	3.0	4.3	254	151	609	0	
Dec.			31	Ø 5.8	17	2.8	4.6	280	447	3,986	6.2	
Yearly				3,610		0	30.2	21,831	23,168	55,364	4,400	

Ø Mean daily † And other days

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 topographic maps indicate the elevation of the stream bed at the gage is about 4,620 feet.

RECORDS: Based on 11 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 through December 1966.

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

EXTREMES: Maximum discharge, 4,810 second-feet, September 12, 1965 (gage height 8.90 feet); minimum discharge, no flow for several days of each year.

Mean Daily Discharge in Second Feet 1966 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.3	3.7	3.9	3.2	1.7	0.3	0	0.8	9.9	12	2.7	1.8
2	1.5	3.7	3.9	3.2	1.5	.3	0	.3	9.9	8.7	2.4	1.8
3	2.4	3.7	3.9	3.0	1.4	.3	.1	.3	9.9	6.7	2.3	1.8
4	2.6	3.5	3.7	2.8	1.4	.4	.1	.2	10	7.6	2.3	1.8
5	2.8	3.5	3.7	2.7	1.3	.3	0	1.0	9.9	6.2	2.2	1.8
6	3.0	3.5	3.7	2.3	1.1	.2	0	6.1	9.9	5.9	2.2	1.7
7	3.0	4.4	3.7	2.4	1.1	.1	.2	.8	8.7	5.9	2.3	1.7
8	3.2	6.2	3.7	2.4	1.1	.2	2.7	.3	8.0	5.9	2.7	1.7
9	3.5	6.9	3.9	2.4	1.0	.2	.4	.2	8.0	5.9	3.3	1.7
10	3.7	5.6	4.1	2.4	1.0	.3	.3	.2	7.6	5.9	2.4	1.7
11	3.7	6.7	4.1	2.8	1.0	.3	.2	.3	28	5.9	2.3	1.7
12	3.7	11	4.1	2.8	.8	.3	.2	.3	47	5.9	2.3	1.7
13	3.7	9.5	4.1	2.6	.7	.3	.2	.3	9.8	5.6	2.2	1.7
14	3.7	6.2	4.1	2.7	.7	.3	.2	.3	9.1	5.4	2.1	1.7
15	3.9	4.4	4.1	2.8	.6	.3	.2	.3	8.7	4.9	2.1	1.7
16	3.9	3.9	4.2	2.7	.6	.3	.2	.3	12	4.6	2.1	1.7
17	3.7	3.9	4.2	2.6	.4	.3	.4	288	9.9	4.6	2.0	1.7
18	5.6	3.7	4.2	2.4	.4	.2	.3	430	9.5	4.4	2.0	1.7
19	5.4	3.7	4.4	2.2	.3	.3	1.7	26	9.1	3.9	2.0	1.7
20	4.6	3.7	4.4	2.4	.3	.2	4.9	182	8.3	3.5	2.0	1.7
21	4.6	3.7	4.6	2.4	.3	.2	.6	30	8.0	3.5	2.0	1.7
22	4.6	3.7	4.9	2.3	.4	.1	.4	5.9	6.9	3.5	2.0	1.7
23	4.4	3.7	4.4	2.3	.4	0	.4	5.8	6.9	3.5	2.1	1.7
24	4.1	3.7	4.2	2.4	.4	0	.6	9.1	6.7	3.5	2.1	1.7
25	3.9	3.7	4.2	2.4	.4	0	.4	6.7	6.7	3.3	2.0	1.7
26	3.7	3.7	4.2	2.3	.4	0	.4	6.7	6.4	3.3	2.0	1.7
27	3.9	3.9	4.1	2.2	.3	.2	.9	9.6	6.4	3.2	1.8	1.6
28	4.2	3.9	4.1	2.1	.3	.1	28	8.0	13	3.2	1.8	1.6
29	3.7		3.9	1.8	.3	.1	1.2	11	9.1	3.0	1.8	1.6
30	3.7		3.7	1.7	.4	0	2.7	4.4	8.3	2.8	1.8	1.6
31	4.1		3.5		.3		3.8	9.5		2.8		1.6
Sum	113.8	131.4	125.9	74.7	22.3	6.1	51.7	1,044.7	321.6	155.0	65.3	52.7
Current Year 1966								Period 1949-1966				
Month	Extreme Gage Feet		Extreme Second Feet				Average Second Feet	Total Acre Feet	Acre Feet			
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum	
Jan.			18	5.6		1	3.67	226	39.3		226	1.3
Feb.			12	11	† 4	3.5	4.69	261	34.9		261	1.8
Mar.			22	4.9	31	3.5	4.06	250	31.0		250	.7
Apr.			† 1	3.2	30	1.7	2.49	148	17.8		148	0
May			1	1.7	† 19	.3	.72	44.2	5.4		44.2	0
June			4	.4	† 23	0	.20	12.1	1.0		12.1	0
July			28	28	† 1	0	1.67	103	589		4,270	1.6
Aug.			18	430	† 4	.2	33.7	2,072	1,286		10,120	.08
Sept.			12	47	† 26	6.4	10.7	638	400		2,634	0
Oct.			1	12	† 30	2.8	5.00	307	95.7		448	0
Nov.			9	3.3	† 27	1.8	2.18	130	41.4		182	0
Dec.			† 1	1.8	† 27	1.6	1.70	105	43.7		188	0
Yearly				430		0	5.93	4,296	2,585		12,633	126

β Mean daily

† And other days

SANTA CRUZ RIVER AT EL CAJON, SONORA

DESCRIPTION: Water-stage recorder, cableway, and Cipolletti weir with crest length of 26.25 feet and depth of 0.82 foot, 4.3 miles southwest of Santa Cruz, Sonora and approximately 30 miles southeast of Nogales, Sonora. Zero of gage is 4,270.24 feet above mean sea level, U. S. C. & G. S. datum, which is the same elevation as the crest of the weir.

RECORDS: Data is based on river stages and on current meter measurements made during the year. Data obtained and furnished by the Mexican Section of the Commission. Records available: January 14, 1954 through August 1959; October 1, 1959 to June 14, 1960; July 1960; January 6, 1961 to September 5, 1963; October 15, 1963 to August 3, 1964; January 9 to February 11 and April 1 through December 1965; January through December 1966.

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, 0.2 second-foot several days during April 1961 with stage of 0.03 foot.

Mean Daily Discharge in Second Feet 1966 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	20.5	19.4	21.5	3.9	2.5	5.3	2.1	16.6	52.6	21.9	16.2	10.9
2	21.2	19.8	21.5	3.5	2.8	4.6	2.1	13.4	45.2	26.1	15.9	10.6
3	21.5	19.1	21.5	3.5	2.8	4.6	1.8	13.1	38.5	22.2	16.2	10.9
4	21.9	18.4	20.8	3.2	2.5	2.8	2.1	35.7	32.1	23.0	16.2	10.9
5	22.6	18.0	20.1	3.2	2.1	2.1	2.8	59.3	28.6	22.2	16.2	10.6
6	12.4	17.7	19.8	3.2	2.5	2.1	2.8	80.2	25.1	21.2	16.2	11.7
7	23.3	21.9	19.4	2.8	3.2	2.1	2.5	31.8	23.7	21.2	15.9	11.7
8	22.6	31.1	18.4	3.2	3.5	2.1	2.1	15.5	21.9	20.8	16.2	10.6
9	21.9	52.3	17.3	3.2	2.8	1.8	2.1	14.1	20.8	20.5	17.0	10.6
10	21.2	46.3	17.0	3.5	2.8	1.4	2.5	37.1	19.4	20.1	15.9	10.6
11	20.8	55.4	16.6	4.2	2.8	1.8	2.8	29.3	19.4	19.8	14.5	10.9
12	20.1	62.5	15.2	4.2	3.2	1.8	3.9	16.6	50.5	19.4	14.1	11.3
13	19.4	56.5	14.8	4.2	2.5	1.8	4.2	20.1	37.1	19.4	14.1	11.3
14	18.7	38.8	14.1	3.9	2.5	1.8	4.2	17.3	27.5	19.1	14.1	10.9
15	19.1	30.0	13.4	3.5	2.8	2.1	4.9	13.1	26.8	19.1	14.1	11.3
16	18.0	27.2	13.1	2.8	2.1	2.1	4.9	17.0	27.2	18.4	14.1	12.4
17	17.7	25.4	13.1	2.8	2.1	2.1	19.4	124	24.4	18.4	14.1	11.7
18	25.4	24.4	12.7	3.2	2.1	2.5	13.4	229	22.6	18.0	13.8	11.7
19	26.1	23.3	12.0	3.5	2.1	2.8	15.2	209	20.5	17.0	13.1	12.0
20	20.8	23.0	11.7	4.2	2.1	2.8	36.0	172	19.4	18.0	13.1	12.4
21	21.2	22.6	12.0	3.9	2.1	2.1	20.5	152	18.4	17.3	12.7	12.0
22	19.4	22.2	11.7	4.6	1.8	2.5	11.3	99.6	17.0	17.0	12.7	11.3
23	18.0	22.2	11.3	3.9	1.8	3.5	7.1	97.5	18.4	16.6	12.7	12.0
24	17.7	21.9	10.6	3.2	2.1	3.2	41.3	89.0	21.2	16.2	12.7	12.4
25	17.0	21.9	10.2	2.5	2.5	3.2	40.3	73.5	20.8	16.2	12.7	13.1
26	17.0	21.5	9.9	2.8	2.5	3.2	12.0	62.2	20.8	16.2	12.4	14.1
27	18.7	21.5	8.5	3.2	2.5	2.5	12.7	71.0	23.3	16.2	12.4	17.0
28	20.5	21.2	8.1	2.8	2.8	2.5	46.6	72.4	28.3	16.6	12.0	11.7
29	19.4		7.8	2.8	2.5	2.5	21.9	63.2	25.4	16.6	10.6	11.7
30	18.4		7.4	2.5	3.2	2.1	17.3	104	23.3	16.2	10.6	11.7
31	19.8		6.4		3.9		17.3	80.2		16.2		11.7
Sum	622.3	805.5	437.9	101.9	79.5	77.8	380.1	2,128.8	800.2	587.1	422.5	363.7
Current Year 1966									Period # 1954 - 1966			
Month	Extreme Gage Feet		Extreme Second Feet				Average Second Feet	Total Acre Feet	Acre Feet			
	High	Low	Day	High	Low	Day			Average	Maximum	Minimum	
Jan.	0.52	0.26	19	32.1	6	12.4	20.1	1,234	548	1,486	208	
Feb.	0.92	0.33	11	83.7	6	17.0	28.6	1,598	452	1,598	98.1	
Mar.	0.39	0.10	1	22.6	31	4.6	14.1	868	354	868	176	
Apr.	0.13	0.03	22	5.3	28	1.8	3.5	203	221	528	74.9	
May	0.10	0.03	31	4.2	† 4	1.8	2.5	157	199	512	101	
June	0.13	0.03	3	6.4	† 7	1.1	2.5	154	146	486	63.1	
July	1.64	0.03	24	186	† 2	1.8	12.4	755	746	1,227	83.5	
Aug.	2.72	0.26	19	399	† 4	12.4	68.5	4,221	4,885	32,608	229	
Sept.	1.05	0.33	12	102	22	15.9	26.8	1,587	1,081	3,000	106	
Oct.	0.56	0.33	2	35.3	† 24	15.9	19.1	1,165	409	1,165	78.5	
Nov.	0.33	0.20	9	18.0	† 29	10.2	14.1	838	402	838	134	
Dec.	0.36	0.20	27	18.7	4	9.2	11.7	721	448	831	186	
Yearly	2.72	0.03		399		1.1	18.7	13,502	11,565	38,895	2,317	

† And other days # Some months & years incomplete

SANTA CRUZ RIVER NEAR NOGALES, ARIZONA

DESCRIPTION: Water-stage recorder, cable with sit-down cable car located 5.5 miles east of Nogales, Arizona, 0.75 mile downstream from the international boundary and 6 miles upstream from the Santa Cruz River bridge on State Highway No. 82. Zero of gage is 3,702.54 feet above mean sea level, U. S. C. & G. S. datum (levels by International Boundary and Water Commission).

RECORDS: Based on 10 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 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 through December 1966.

REMARKS: Liversion 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 1966.

EXTREMES: Prior to 1936: Maximum discharge, 12,000 second-feet on 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 on July 10, 1954 (gage height 13.27 feet); minimum discharge, no flow for several days of many years.

Mean Daily Discharge in Second Feet 1966 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	102	67	69	25	5.7	0.3	0.1	72	100	39	21	13
2	74	61	67	22	5.7	.3	.1	19	88	42	21	13
3	59	56	65	22	5.7	.2	0	12	78	42	21	14
4	48	52	63	21	5.7	.2	0	7.6	72	46	20	15
5	42	46	59	19	5.7	.2	0	373	69	44	20	15
6	36	45	58	19	5.7	.2	0	396	67	39	21	15
7	33	54	56	19	5.3	.2	0	122	59	33	20	19
8	31	631	50	17	4.5	.2	0	50	54	32	21	17
9	31	780	48	15	4.2	.2	.1	32	50	31	27	15
10	27	619	46	13	4.2	.2	0	102	46	31	23	14
11	28	488	46	13	4.2	.2	0	200	46	28	21	14
12	27	440	45	13	4.2	.2	0	140	90	27	19	14
13	27	370	45	13	3.7	.2	0	172	112	26	19	14
14	26	285	44	12	2.4	.2	0	112	76	26	20	13
15	26	216	40	12	2.4	.2	0	46	95	26	19	13
16	25	174	39	14	2.4	.2	0	40	92	25	19	12
17	27	146	39	12	2.4	.2	9.8	780	59	25	19	13
18	228	129	38	11	2.4	.2	0	1,680	46	23	17	13
19	370	112	38	11	1.8	.1	6.5	1,330	42	23	17	12
20	203	108	38	10	1.4	.1	35	1,550	40	22	19	12
21	182	105	36	11	.9	.1	.9	1,160	40	25	18	12
22	140	102	36	11	.7	.1	.2	330	36	26	18	12
23	110	98	34	9.4	.6	.1	.2	263	34	26	17	12
24	85	92	34	8.2	.5	.1	.3	478	33	27	17	12
25	72	90	36	10	.5	0	80	178	34	26	16	12
26	63	88	34	9.4	.5	0	5	148	33	26	15	12
27	59	81	34	8.8	.5	0	3	349	36	26	14	14
28	83	76	32	8.2	.4	8.1	342	304	69	25	14	15
29	81		32	6.1	.4	.1	538	118	50	25	14	15
30	74		29	5.7	.4	.1	237	213	40	22	14	17
31	69		27		.3		59	268		20		19
Sum	2,488	5,611	1,357	400.8	85.4	12.7	1,317.2	11,044.6	1,786	904	561	432
Current Year 1966								Period 1936-1966				
Month	Extreme Gage Feet		Extreme Second Feet				Average Second Feet	Total Acre Feet	Acre Feet			
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum	
Jan.			19	370	16	25	80.3	4,935	1,255	16,710	62	
Feb.			9	780	6	45	200	11,129	900	11,129	59	
Mar.			1	69	31	27	43.8	2,692	500	2,692	95	
Apr.			1	25	30	5.7	13.4	795	194	795	19	
May			† 1	5.7	31	.3	2.8	169	63.6	180	2	
June			28	8.1	† 25	0	.4	25.2	73.1	1,020	0	
July			29	538	† 3	0	42.5	2,613	2,585	15,610	45	
Aug.			18	1,680	† 4	7.6	35.6	21,907	6,651	45,790	91	
Sept.			13	112	† 24	33	59.5	3,542	1,384	7,507	17	
Oct.			4	46	† 31	20	29.2	1,793	350	1,550	1.2	
Nov.			9	27	† 27	14	18.7	1,113	273	1,140	1.2	
Dec.			† 7	19	† 16	12	13.9	857	1,203	21,200	27	
Yearly				1,680		0	71.2	51,570	15,432	57,671	3,499	

Ø Mean daily

† And other days

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 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 1966.

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.

Month	Total Monthly Flows			Mean Daily Flows-Millions of Gallons Per Day					
	Millions of Gallons			Current Year 1966			Period 1952-1966		
	U.S.	Mexico	Total	Maximum	Minimum	Mean	Maximum	Minimum	Mean
Jan.	* 58.300	63.700	* 122.000	* 4.800	* 3.300	3.900	* 4.800	0.650	1.916
Feb.	* 55.770	60.900	* 116.670	* 6.130	* 3.255	4.167	* 6.130	.650	2.009
Mar.	* 48.715	53.200	* 101.915	* 3.640	* 3.065	3.288	3.662	.750	1.913
Apr.	* 45.882	50.100	* 95.982	* 3.640	* 2.682	3.199	3.962	.700	1.862
May	* 42.032	45.900	* 87.932	* 3.065	* 2.490	2.837	3.634	.550	1.775
June	39.400	46.100	85.500	3.200	2.400	2.850	3.317	.700	1.680
July	38.300	44.400	82.700	3.100	2.200	2.668	3.502	.700	1.719
Aug.	42.700	50.900	93.600	3.300	2.600	3.010	3.587	.750	2.045
Sept.	35.300	60.100	95.400	3.500	2.700	3.180	4.112	.800	2.300
Oct.	45.900	50.200	96.100	3.300	3.000	3.100	3.761	.700	2.191
Nov.	49.100	40.400	89.500	3.200	2.700	2.983	3.510	.800	1.968
Dec.	48.100	39.100	87.200	3.000	2.500	2.813	* 5.200	.350	1.981
Yearly	549.499	605.000	1,154.499	* 6.130	2.200	3.163	* 6.130	0.350	1.946

* Partly estimated

RAINFALL ON THE SANTA CRUZ RIVER WATERSHED IN INCHES

Tabulated below are monthly records of rainfall with averages for their periods of record at stations located in Arizona. Five stations are operated and maintained by the United States Section of this Commission and three by the U. S. Weather Bureau. For location, elevation, period of record, type of gage in use, and the observer, see alphabetical listing of stations at bottom of page following the monthly record.

Month	Meigs Ranch, Arizona		Jones Ranch, Arizona		Greene Cattle Company, Arizona		Nogales Sanitation Plant 2N, Arizona	
	1966	Average 1952-1966	1966	Average 1952-1966	1966	Average 1953-1966	1966	Average 1953-1966
Jan.	0	# 0.95	0		1.35	0.94	2.02	1.14
Feb.	0	# .38	.80		1.10	.51	1.99	.57
Mar.	0	# .86	0		0	.73	.02	.78
Apr.	0	# .25	0	0.25	0	.12	0	.14
May	0	.06	0	.03	0	.09	.02	.05
June	.50	.49	0		.80	.47	1.09	.37
July	5.28	4.74	5.40	5.94	5.00	4.44	4.53	4.35
Aug.	7.11	4.88	7.75		6.20	3.44	5.95	4.50
Sept.	2.00	1.45	2.50		2.00	1.29	5.33	1.36
Oct.	0	.78	0		2.50	.95	.22	.99
Nov.	.75	.52	.50		.01	.43	.48	.57
Dec.	.62	1.02	0	1.13	.35	.97	.28	1.23
Yearly	16.26	16.38	16.95		19.31	14.38	21.93	16.05

Month	Nogales, Arizona		San Rafael Ranch, Arizona		Canelo, Arizona		Patagonia, Arizona	
	1966	Average 1914-1966	1966	Average 1924-1966	1966	Average 1930-1966	1966	Average 1930-1966
Jan.	2.02	1.11	1.43		1.61	1.21	2.02	1.29
Feb.	1.96	.84	1.20		1.74	1.09	2.26	1.03
Mar.	T	.75	T		.09	.75	.07	.81
Apr.	.03	.30	0	0.39	.12	.37	.02	.34
May	.01	.13	0	.10	.18	.12	.07	.15
June	1.36	.45	.21	.75	.17	.91	.08	.47
July	5.35	4.05	7.16	4.55	4.35	4.27	5.79	4.53
Aug.	5.81	4.02	8.71	4.16	5.31	4.58	5.82	4.28
Sept.	5.19	1.61	2.21	1.79	3.48	1.69	3.97	1.85
Oct.	.20	.74	.61		.08	.86	.55	.82
Nov.	.57	.71	.62	.64	.65	.77	.95	.80
Dec.	.30	1.25	.38	1.17	.48	1.37	.82	1.33
Yearly	22.80	15.96	22.53		18.26	17.99	22.42	17.70

Some months missing † Estimated
T Trace

LOCATION OF RAINFALL STATIONS

NAME OF STATION	TYPE GAGE	LATITUDE	LONGITUDE	ELEV. (FT.)	RECORD BEGAN	OBSERVER
Canelo	S	31° 33'	110° 32'	4,985	1930	R. E. Ewing
Greene Cattle Company (San Rafael)	R	31° 22'	110° 35'	4,644	June 1952	I. B. & W. C.
Jones Ranch	S	31° 22'	110° 36'	4,960	Mar. 1952	I. B. & W. C.
Meigs Ranch	S	31° 26'	110° 36'	4,836	Mar. 1952	I. B. & W. C.
Nogales	R	31° 21'	110° 55'	3,808	1914	I. B. & W. C.
Nogales Sanitation Plant 2N	S	31° 21'	110° 56'	3,757	June 1952	I. B. & W. C.
Patagonia	S	31° 33'	110° 45'	4,044	1930	O. J. Rothrock
San Rafael Ranch	S	31° 21'	110° 37'	4,741	1924	San Rafael Ranch

S Standard 8" rain gage R Recording rain gage

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

Tabulated below are monthly records of temperature, humidity, evaporation, and wind at the station two miles north of the Nogales Sanitation Plant in Arizona. This station is operated and maintained by the United States Section of this Commission. Also tabulated below are the monthly records of temperature and evaporation for a station at San Lázaro, Sonora, located approximately 6.5 miles southwest of Santa Cruz, Sonora, and approximately 22 miles southeast of Nogales, Sonora. This station is operated and maintained by the Mexican Section of the Commission. The equipment at the Nogales Sanitation Plant - 2N consists of: Standard 8-inch rain gage, 48-inch diameter evaporation pan with stillwell and hook gage, maximum and minimum thermometer, anemometer (registers miles), hygrothermograph, and psychrometer, hand turbine type. The equipment at the station at San Lázaro, Sonora, consists of: Maximum and minimum thermometer, standard 8-inch rain gage and a 48-inch diameter evaporation pan.

For specific location of these two stations, refer to data opposite same station name shown in "Location of Rainfall Stations," page 96 of this bulletin.

In United States

Temperature - Degrees Fahrenheit

Month	Nogales Sanitation Plant - 2N		
	1966		
	Mean	Max.	Min.
Jan.	42.6	78	18
Feb.	41.4	72	17
Mar.	53.2	81	15
Apr.	57.9	85	28
May	66.3	96	32
June	74.4	102	41
July	79.1	102	59
Aug.	76.3	95	58
Sept.	ó 70.8	101	51
Oct.	ó 60.8	86	30
Nov.	54.4	93	21
Dec.	46.3	79	13
Yearly	ó 60.3	102	13

ó One or more days missing

Mean Relative Humidity - Percent

Month	Nogales Sanitation Plant - 2N	
	1966	
	Max.	Min.
Jan.	100	24
Feb.	100	0
Mar.	100	27
Apr.	92	35
May	91	28
June	86	27
July	100	45
Aug.	100	72
Sept.	100	62
Oct.	100	22
Nov.	100	22
Dec.	100	45
Yearly	100	0

Evaporation - Inches

Month	Nogales Sanitation Plant - 2N	
	1966	Average #1953-1966
Jan.	† 4.05	3.49
Feb.	† 4.59	4.57
Mar.	† 7.84	7.22
Apr.	11.01	9.81
May	15.22	12.67
June	16.01	13.78
July	11.33	9.86
Aug.	† 8.19	7.33
Sept.	6.97	7.50
Oct.	8.41	6.87
Nov.	5.14	4.33
Dec.	3.85	3.19
Total	102.61	90.62

† Adjusted to full month # Some months missing

Mean Wind Speed - Miles per Hour

Month	Nogales Sanitation Plant - 2N	
	1966	Average 1953-1966
Jan.	2.1	2.1
Feb.	2.4	2.4
Mar.	2.4	2.7
Apr.	2.1	2.5
May	2.3	2.4
June	2.1	2.2
July	1.7	1.5
Aug.	.9	.8
Sept.	.9	1.0
Oct.	1.5	1.5
Nov.	1.9	1.4
Dec.	1.8	1.7
Yearly	1.8	1.8

In Mexico

Temperature - Degrees Fahrenheit

Month	San Lázaro, Sonora			
	1966		1961-1966	
	Max.	Min.	Max.	Min.
Jan.	70	21	93	14
Feb.	70	19	88	16
Mar.	79	32	99	23
Apr.	84	32	106	32
May	93	36	117	32
June	100	46	124	43
July	102	61	126	52
Aug.	95	59	117	52
Sept.	93	52	115	39
Oct.	84	34	111	34
Nov.	81	32	102	21
Dec.	79	18	95	18
Yearly	102	18	126	14

Evaporation - Inches

Month	San Lázaro, Sonora	
	1966	Average 1961-1966
Jan.	2.36	3.58
Feb.	3.31	4.09
Mar.	6.42	6.97
Apr.	7.68	9.53
May	11.14	12.17
June	11.22	12.32
July	7.76	8.11
Aug.	5.91	7.28
Sept.	7.40	7.01
Oct.	6.42	6.89
Nov.	4.45	4.33
Dec.	3.23	3.43
Yearly	77.28	86.61

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

1966

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
Santa Cruz River:						
Above Lochiel, Arizona Gaging Station	82	0	82	200	0	200
Lochiel Station to Nogales Station	103	348	451	0	2,300	2,300
Above Nogales, Arizona Gaging Station	185	348	533	200	2,300	2,500
Whitewater Draw:						
Above Douglas, Arizona Gaging Station	1,023	0	1,023	32,036	0	32,036