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WESTERN WATER BULLETIN 1962

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

COLORADO RIVER

TIJUANA RIVER

SANTA CRUZ RIVER

WHITEWATER DRAW

1962

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# FOREWORD

This bulletin is the third annual compilation of stream discharges and other hydrographic data relating to the international aspects of the Colorado River below Imperial Dam, the Tijuana River and other streams crossing the western land boundary. The compilation was prepared jointly by the United States and Mexican Sections of the International Boundary and Water Commission, and includes data relating to stream flow and kindred subjects for the Colorado River from Imperial Dam to the Gulf of California, the Tijuana River and its important tributaries in the United States and Mexico, and other streams, including the Alamo and New Rivers which cross the California-Baja California boundary, and the Santa Cruz River and Whitewater Draw which cross the Arizona-Sonora boundary. This volume contains the information for the year 1962.

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 1962.

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 but are included in the deliveries of Treaty waters to Mexico.

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 Rodriguez Reservoir in Mexico.

## Whitewater Draw near Douglas, Arizona

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

## Santa Cruz River Near Nogales and Lochiel, Arizona

The Santa Cruz River rises in the United States and flows south into Mexico crossing the international boundary near Lochiel, Arizona, and returns to the United States near Nogales, Arizona, eventually discharging into the Gila River southwest of Phoenix, Arizona. The drainage area of the Santa Cruz River above Nogales station is 533 square miles. Of this amount, 349 square miles lie in Mexico. There are a few ground water irrigation diversions above the Lochiel station in Arizona and an unknown amount of water diverted for irrigation in Mexico.

## FOREWORD–Continued

### Acknowledgments

Other agencies which have contributed to the data published 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, the California Water and Telephone Company, and the Ministry of Hydraulic Resources of Mexico. Specific notation is made of each of the above-named agencies, where the data appear. The courtesy and cooperation of those who have made these contributions are acknowledged with our appreciation.

### Units of Measure

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

# GENERAL HYDROLOGIC CONDITIONS FOR 1962

## Colorado River

Normally there is no measurable amount of runoff from the portion of the Colorado River basin below Hoover Dam, not including Bill Williams and Gila Rivers. There was no significant amount in 1962. The average seasonal (October 1961-September 1962) rainfall over the upper basin as gaged at 13 index stations was about 12.45 inches as compared to a seasonal average of about 13.79 inches for the 40 seasons 1923-1962. The inflow to Lake Mead formed by Hoover Dam, during the 1962 calendar year was about 14,839,000 acre-feet measured at Grand Canyon or about 121% of the 40-year (1923-1962) average annual inflow of 12,268,032 acre-feet. There was a flow of 19,080 acre-feet contributed to the lower Colorado River during 1962 from the Bill Williams River and 3,280 acre-feet from the Gila River.

The flow of the Colorado River reaching Imperial Dam totaled 6,458,000 acre-feet, about 71% of the 28-year average (1935-1962) of 9,147,974 acre-feet. At the northerly international boundary the total flow of the river during 1962 was 1,810,655 acre-feet or about 39% of the 1935-1962 average of 4,639,238 acre-feet. At the southerly boundary the flow during 1962 was only 308,124 acre-feet or about 8% of the 1935-1962 average of 3,995,012 acre-feet.

The total scheduled treaty waters of the Colorado River delivered to Mexico during 1962 amounted to 1,500,000 acre-feet pursuant to the annual schedules by months for 1962 furnished by Mexico. All deliveries were made in the limitrophe section of the Colorado River in accordance with the request of Mexico.

The total of all flows of the Colorado River entering Mexico in 1962 amounted to 1,976,870 acre-feet, 37% of the 1935-1962 average of 5,407,880 acre-feet, as measured 1) in the Colorado River at the northerly international boundary, 2) in the wasteways that discharge into the limitrophe section of the river from the United States bank, and 3) in the canal which discharges waste and drainage waters from the Yuma Project across the southerly land boundary into Mexico near San Luis, Arizona, less diversions in the United States by pumps in the limitrophe section.

No flood peaks of importance occurred in streams of the lower Colorado River basin during 1962. A maximum instantaneous flow of 9,340 second-feet occurred in the Colorado River at the northerly boundary station.

Stored waters at the end of the year in the three major reservoirs on the Colorado River below Lee's Ferry amounted to 25,219,000 acre-feet, 85% of the usable capacity of 29,636,000 acre-feet. The greater part (22,980,000 acre-feet) of the storage was contained in Lake Mead. There were no reported shortages of Colorado River water for irrigation during 1962 due to drought or accident to the irrigation system.

The total reported acreage irrigated from waters of the Colorado River below Imperial Dam in 1962 was 1,063,345 acres; 623,656 acres in the United States and 439,689 acres in Mexico.

The suspended sediment load passing the northerly boundary station in 1962 was 98.1 acre-feet which was about 18% of the 1956-1962 average of 536.2 acre-feet.

## Tijuana River Basin

The year 1962 was one of very low rainfall and the tenth consecutive year of runoff below the 1936-1937 to 1961-1962 mean. It was the fifteenth dry year in the past sixteen years. Temperatures in the Tijuana River basin averaged somewhat below normal during the year, being 1.2 degrees below the long-term mean at Barrett Dam.

Rainfall at Barrett Dam in the upper portion of the basin was 13.58 inches, 77% of normal, and at Chula Vista near the lower end of the basin it was 6.72 inches or only 68% of normal.

Runoff in the basin for 1962 averaged less than 5% of average. Above Morena Reservoir the runoff was 292.7 acre-feet or about 4% of the 26-year mean of 7,550.4 acre-feet. At Rodriguez Reservoir the runoff was 548.8 acre-feet or about 3% of the 25-year mean of 18,344 acre-feet.

Combined storage in the three reservoirs in the basin was 1,554 acre-feet at the beginning of the year and 1,939 acre-feet at the end averaging 1,746 acre-feet, or about 1% of the combined capacity of 206,850 acre-feet.

Stored water in Rodriguez Reservoir in 1962 was inadequate for domestic use and no water from the reservoir has been used for irrigation since December 1955. There were no diversions from Morena and Barrett Reservoirs, which are a part of the city of San Diego water supply system, during 1962.

## Whitewater Draw

During 1962 the average annual temperature over the watershed was about normal, while the annual precipitation was about 72% of normal. Runoff for the year at the gaging station near Douglas, Arizona, of 1,110 acre-feet was about 16% of average and the third lowest annual discharge for the 1936-1962 period.

## Santa Cruz River

During 1962 the average annual temperature over the watershed was somewhat below normal and the annual precipitation was about 71% of the 24-year 1939-1962 mean. Runoff measured at the Nogales gaging station where the stream reenters the United States was 8,670 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 126 acre-feet. Therefore, neglecting stream flow depletions in Mexico, the records indicate a contribution of about 8,544 acre-feet from the loop of the river lying in Mexico, or approximately 99% of the flows reaching the Nogales station.

## GENERAL HYDROLOGIC CONDITIONS FOR 1962–Continued

### Alamo and New Rivers

During 1962 the average annual temperature over the drainage area of Alamo and New Rivers as recorded at El Centro, California, was 0.6 degree below normal and the annual precipitation was about 77% of the long-term mean. The total flow in the Alamo River at the international boundary for 1962 was 1,705 acre-feet which was about 31% of average for the 20-year period 1943-1962. The total flow in the New River at the international boundary for 1962 was 132,179 acre-feet which was about 223% of the 1943-1962 average.

### Salton Sea

During 1962 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 86% of the long-term mean of 2.26 inches. The water surface of the Salton Sea rose approximately 0.8 foot during the year. The maximum stage, 233.3 feet below mean sea level, was recorded on several days during April and May 1962. The minimum stage, 234.3 feet below mean sea level, was recorded on January 1, 1962.

# COLORADO RIVER AT YUMA, ARIZONA - DISCHARGES

DESCRIPTION: Water-stage recorder and cableway 500 feet upstream from lower highway bridge, 7 miles upstream from the northerly international land boundary, 1,800 feet downstream from the upper highway and railroad bridges at Yuma, Arizona, 5 miles downstream from the mouth of the Gila River, 19 miles downstream from Imperial Dam, and one-half mile upstream from the mouth of the Yuma Main Canal Wasteway. Zero of gage is 102.86 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 46 current meter measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records collected and furnished by U. S. Geological Survey. 1962 records excellent. Records available: Gage heights, January 1878 through December 1962; discharges, January 1902 through December 1962.

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

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

## Mean Daily Discharge in Second-Feet 1962 — Annual and Period Summary

| Day | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1,120 | 811 | 870 | 898 | 1,020 | 811 | 1,240 | 1,240 | 977 | 951 | 834 | 2,180 |
| 2 | 661 | 793 | 829 | 912 | 1,020 | 805 | 1,220 | 1,200 | 996 | 862 | 1,800 | 2,160 |
| 3 | 637 | 787 | 856 | 912 | 968 | 829 | 1,170 | 1,290 | 993 | 926 | 2,220 | 2,050 |
| 4 | 1,940 | 793 | 879 | 947 | 982 | 842 | 1,220 | 1,290 | 1,120 | 890 | 2,290 | 1,990 |
| 5 | 1,840 | 1,110 | 870 | 968 | 1,200 | 919 | 1,240 | 1,190 | 1,470 | 867 | 2,250 | 1,950 |
| 6 | 849 | 829 | 829 | 968 | 1,330 | 905 | 1,220 | 1,230 | 1,520 | 1,580 | 2,130 | 2,000 |
| 7 | 781 | 733 | 811 | 1,270 | 1,300 | 817 | 1,180 | 1,210 | 1,370 | 1,910 | 2,390 | 1,950 |
| 8 | 757 | 745 | 856 | 1,330 | 1,190 | 842 | 1,190 | 1,240 | 1,040 | 2,260 | 2,440 | 2,030 |
| 9 | 751 | 733 | 829 | 1,310 | 1,150 | 823 | 1,250 | 1,240 | 944 | 2,930 | 2,120 | 2,050 |
| 10 | 715 | 745 | 856 | 1,280 | 1,130 | 912 | 1,260 | 1,240 | 1,150 | 2,700 | 1,550 | 2,010 |
| 11 | 721 | 769 | 961 | 1,200 | 1,120 | 898 | 1,220 | 1,330 | 952 | 2,600 | 1,080 | 2,000 |
| 12 | 1,190 | 775 | 1,280 | 1,320 | 1,140 | 849 | 1,200 | 1,290 | 915 | 1,820 | 1,020 | 2,020 |
| 13 | 805 | 751 | 1,100 | 1,360 | 1,160 | 823 | 1,190 | 1,270 | 828 | 1,020 | 946 | 2,010 |
| 14 | 751 | 751 | 1,140 | 1,330 | 1,180 | 817 | 1,280 | 1,230 | 791 | 984 | 932 | 1,900 |
| 15 | 745 | 733 | 1,210 | 1,340 | 1,150 | 842 | 1,270 | 1,160 | 813 | 986 | 924 | 1,830 |
| 16 | 745 | 721 | 1,240 | 1,340 | 1,280 | 841 | 1,280 | 1,210 | 835 | 841 | 1,100 | 1,730 |
| 17 | 817 | 727 | 1,240 | 1,320 | 1,640 | 915 | 1,250 | 1,250 | 886 | 838 | 999 | 1,710 |
| 18 | 823 | 745 | 1,240 | 1,340 | 1,540 | 1,170 | 1,210 | 1,170 | 1,000 | 869 | 920 | 1,920 |
| 19 | 811 | 799 | 1,190 | 1,320 | 1,270 | 1,180 | 1,200 | 1,260 | 1,230 | 869 | 953 | 2,450 |
| 20 | 870 | 805 | 1,200 | 1,320 | 1,200 | 1,190 | 1,210 | 1,300 | 965 | 820 | 1,040 | 2,250 |
| 21 | 891 | 793 | 1,240 | 1,320 | 1,130 | 1,200 | 1,280 | 1,280 | 856 | 820 | 1,090 | 2,070 |
| 22 | 856 | 802 | 1,230 | 1,360 | 1,070 | 1,340 | 1,210 | 1,350 | 847 | 827 | 939 | 1,900 |
| 23 | 849 | 847 | 1,200 | 1,380 | 975 | 1,230 | 1,200 | 1,230 | 860 | 848 | 1,010 | 2,070 |
| 24 | 912 | 933 | 1,190 | 1,300 | 863 | 1,240 | 1,190 | 984 | 864 | 834 | 1,000 | 2,170 |
| 25 | 919 | 905 | 1,270 | 1,310 | 870 | 1,270 | 1,170 | 970 | 983 | 883 | 1,060 | 1,980 |
| 26 | 849 | 926 | 1,170 | 1,340 | 863 | 1,270 | 1,210 | 998 | 1,090 | 932 | 1,870 | 1,890 |
| 27 | 793 | 877 | 1,090 | 1,320 | 856 | 1,260 | 1,230 | 1,000 | 1,070 | 802 | 2,560 | 1,940 |
| 28 | 817 | 849 | 1,050 | 1,340 | 905 | 1,260 | 1,240 | 1,040 | 979 | 779 | 2,360 | 1,900 |
| 29 | 817 | | 1,130 | 1,070 | 947 | 1,260 | 1,260 | 954 | 898 | 772 | 2,130 | 1,960 |
| 30 | 817 | | 849 | 989 | 898 | 1,240 | 1,240 | 988 | 949 | 760 | 2,160 | 1,970 |
| 31 | 817 | | 884 | | 823 | | 1,250 | 1,060 | | 778 | | 1,940 |
| Sum | 22,587 | | 36,714 | | 30,600 | | 36,694 | | 36,558 | | | 61,980 |
| | 27,666 | | 32,589 | | 34,170 | | 37,980 | | 30,191 | | 46,117 | |

| Month | Current Year 1962 | | | | | | | | Period 1935-1962 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ø Extreme Gage Feet | | Ø Extreme Second-Feet | | | | Average Second-Feet | Total Acre-Feet | Acre-Feet | | |
| | | | | High | | Low | | | | | |
| | High | Low | Day | | Day | | | | Average | Maximum | Minimum |
| Jan. | 11.84 | 10.58 | 4 | 1,940 | 3 | 637 | 892 | 54,870 | 497,321 | 1,615,000 | 40,490 |
| Feb. | 11.28 | 10.73 | 5 | 1,110 | 16 | 721 | 807 | 44,800 | 436,607 | 1,321,000 | 24,330 |
| Mar. | 11.52 | 10.88 | 12 | 1,280 | 7 | 811 | 1,051 | 64,640 | 436,854 | 1,097,000 | 29,760 |
| Apr. | 11.61 | 11.01 | 23 | 1,380 | 1 | 898 | 1,224 | 72,820 | 325,406 | 759,900 | 61,530 |
| May | 12.00 | 10.90 | 17 | 1,640 | 31 | 823 | 1,102 | 67,780 | 365,565 | 1,137,000 | 36,270 |
| June | 11.54 | 10.87 | 22 | 1,340 | 2 | 805 | 1,020 | 60,690 | 339,085 | 1,376,000 | 46,850 |
| July | 11.56 | 11.42 | †14 | 1,280 | † 3 | 1,170 | 1,225 | 75,330 | 305,964 | 818,600 | 64,300 |
| Aug. | 11.66 | 11.13 | 22 | 1,350 | 29 | 954 | 1,184 | 72,780 | 308,993 | 938,800 | 29,480 |
| Sept. | 11.92 | 11.02 | 6 | 1,520 | 14 | 791 | 1,006 | 59,880 | 305,750 | 1,198,000 | 40,310 |
| Oct. | 12.81 | 10.76 | 9 | 2,930 | 30 | 760 | 1,179 | 72,510 | 321,709 | 1,233,000 | 27,340 |
| Nov. | 12.70 | 10.52 | 27 | 2,560 | 1 | 834 | 1,537 | 91,470 | 382,196 | 1,418,000 | 30,990 |
| Dec. | 12.56 | 11.96 | 19 | 2,450 | 17 | 1,710 | 1,999 | 122,900 | 478,443 | 1,789,000 | 34,970 |
| Yearly | 12.81 | 10.52 | | 2,930 | | 637 | 1,189 | 860,500 | 4,503,893 | 11,730,000 | 683,000 |

† And other days  Ø Mean daily

# COLORADO RIVER AT YUMA, ARIZONA - STAGES

(See Preceding Page For Description)

## Mean Daily Gage Height in Feet 1962

| Day | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 11.45 | 10.82 | 10.97 | 11.01 | 11.15 | 10.88 | 11.49 | 11.51 | 11.27 | 11.17 | 10.87 | 12.40 |
| 2 | 10.76 | 10.80 | 10.91 | 11.03 | 11.16 | 10.87 | 11.48 | 11.46 | 11.28 | 11.03 | 12.03 | 12.41 |
| 3 | 10.72 | 10.80 | 10.95 | 11.03 | 11.08 | 10.91 | 11.42 | 11.57 | 11.27 | 11.19 | 12.38 | 12.24 |
| 4 | 11.84 | 10.82 | 11.00 | 11.07 | 11.10 | 10.93 | 11.48 | 11.46 | 11.46 | 11.24 | 12.44 | 12.18 |
| 5 | 11.84 | 11.28 | 10.97 | 11.09 | 11.40 | 11.04 | 11.51 | 11.49 | 11.87 | 11.08 | 12.40 | 12.15 |
| 6 | 10.79 | 10.90 | 10.91 | 11.09 | 11.55 | 11.02 | 11.48 | 11.49 | 11.92 | 11.78 | 12.30 | 12.19 |
| 7 | 10.68 | 10.75 | 10.91 | 11.47 | 11.51 | 10.89 | 11.43 | 11.47 | 11.16 | 12.14 | 12.51 | 12.15 |
| 8 | 10.65 | 10.79 | 10.88 | 11.55 | 11.37 | 10.93 | 11.44 | 11.50 | 11.34 | 12.46 | 12.55 | 12.22 |
| 9 | 10.64 | 10.75 | 10.95 | 11.52 | 11.32 | 10.90 | 11.52 | 11.51 | 11.21 | 12.81 | 12.29 | 12.23 |
| 10 | 10.58 | 10.82 | 10.91 | 11.49 | 11.30 | 11.03 | 11.53 | 11.50 | 11.49 | 12.65 | 11.78 | 12.20 |
| 11 | 10.60 | 10.81 | 11.10 | 11.39 | 11.29 | 11.01 | 11.48 | 11.62 | 11.26 | 12.52 | 11.22 | 12.19 |
| 12 | 11.35 | 10.82 | 11.52 | 11.54 | 11.32 | 10.94 | 11.45 | 11.57 | 11.22 | 11.97 | 11.14 | 12.21 |
| 13 | 10.74 | 10.78 | 11.29 | 11.59 | 11.34 | 10.90 | 11.44 | 11.56 | 11.09 | 11.18 | 11.03 | 12.20 |
| 14 | 10.66 | 10.78 | 11.34 | 11.55 | 11.37 | 10.89 | 11.56 | 11.51 | 11.02 | 11.16 | 11.01 | 12.11 |
| 15 | 10.65 | 10.75 | 11.43 | 11.56 | 11.33 | 10.93 | 11.56 | 11.41 | 11.07 | 11.15 | 11.02 | 12.05 |
| 16 | 10.65 | 10.73 | 11.46 | 11.56 | 11.57 | 10.95 | 11.55 | 11.47 | 11.10 | 10.93 | 11.32 | 11.98 |
| 17 | 10.78 | 10.74 | 11.46 | 11.54 | 12.00 | 11.05 | 11.52 | 11.52 | 11.16 | 10.94 | 11.19 | 11.96 |
| 18 | 10.79 | 10.77 | 11.47 | 11.56 | 11.88 | 11.37 | 11.47 | 11.44 | 11.33 | 10.97 | 11.01 | 12.13 |
| 19 | 10.77 | 10.86 | 11.40 | 11.54 | 11.49 | 11.37 | 11.46 | 11.55 | 11.65 | 10.97 | 11.04 | 12.56 |
| 20 | 10.87 | 10.87 | 11.41 | 11.54 | 11.42 | 11.37 | 11.47 | 11.60 | 11.32 | 10.90 | 11.16 | 12.40 |
| 21 | 10.90 | 10.85 | 11.46 | 11.54 | 11.33 | 11.37 | 11.56 | 11.57 | 11.13 | 10.90 | 11.23 | 12.25 |
| 22 | 10.85 | 10.89 | 11.45 | 11.58 | 11.25 | 11.54 | 11.47 | 11.66 | 11.10 | 10.91 | 11.02 | 12.11 |
| 23 | 10.85 | 11.00 | 11.42 | 11.61 | 11.12 | 11.41 | 11.46 | 11.50 | 11.12 | 10.94 | 11.17 | 12.25 |
| 24 | 10.94 | 11.15 | 11.40 | 11.51 | 10.96 | 11.43 | 11.44 | 11.20 | 11.13 | 10.92 | 11.18 | 12.34 |
| 25 | 10.95 | 11.02 | 11.51 | 11.52 | 10.97 | 11.48 | 11.42 | 11.17 | 11.30 | 10.98 | 11.23 | 12.19 |
| 26 | 10.86 | 11.05 | 11.38 | 11.56 | 10.96 | 11.48 | 11.47 | 11.21 | 11.49 | 11.04 | 12.11 | 12.10 |
| 27 | 10.77 | 10.98 | 11.28 | 11.54 | 10.95 | 11.48 | 11.49 | 11.20 | 11.44 | 10.85 | 12.70 | 12.14 |
| 28 | 10.81 | 10.94 | 11.23 | 11.56 | 11.02 | 11.49 | 11.50 | 11.25 | 11.26 | 10.82 | 10.52 | 12.11 |
| 29 | 10.82 | | 11.33 | 11.22 | 11.08 | 11.50 | 11.53 | 11.13 | 11.13 | 10.78 | 12.31 | 12.16 |
| 30 | 10.82 | | 10.94 | 11.11 | 11.01 | 11.48 | 11.50 | 11.20 | 11.22 | 10.76 | 12.36 | 12.17 |
| 31 | 10.82 | | 10.99 | | 10.90 | | 11.52 | 11.36 | | 10.78 | | 12.15 |
| Avg. | 10.88 | 10.87 | 11.21 | 11.42 | 11.27 | 11.16 | 11.49 | 11.44 | 11.29 | 11.29 | 11.62 | 12.20 |

# RESERVATION CANAL MAIN DRAIN NO. 4 (CALIFORNIA DRAIN)

DESCRIPTION: Water-stage recorder, 500 feet upstream from the U. S. Highway No. 80 culvert, one half mile upstream from the mouth of the canal, and 1 mile northwest of Yuma, Arizona. Discharge measurements are made from a footbridge immediately below the gage. The drainage canal discharges into the outfall channel of the Yuma Main Canal Wasteway, and thence into the Colorado River on the right bank 6.5 miles upstream from the northerly international land boundary, and one half mile below the Yuma gaging station. Prior to December 31, 1955, published as "California Drainage Canal near Yuma, Arizona."

RECORDS: Based on 51 current meter measurements during the year and a continuous record of gage heights. Records are computed and furnished by the U. S. Bureau of Reclamation. Records available: Monthly discharge, January 1913 to April 1920, October 1921 to March 1925, and January 1934 to September 1947; daily and monthly discharge, October 1947 through December 1962.

REMARKS: Reservation Canal Main Drain No. 4 collects drainage and waste water from the Reservation Division of the Yuma Project, located in California. The drain discharges to the river by gravity, except during high stages of the Colorado River, when pumping is necessary. 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 1962 — Annual and Period Summary

| Day | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 43 | 54 | 51 | 73 | 63 | 68 | 67 | 71 | 70 | 68 | 59 | 58 |
| 2 | 58 | 53 | 52 | 72 | 72 | 73 | 60 | 72 | 66 | 72 | 63 | 52 |
| 3 | 60 | 50 | 56 | 64 | 76 | 82 | 69 | 74 | 58 | 69 | 63 | 50 |
| 4 | 61 | 46 | 58 | 68 | 73 | 70 | 68 | 87 | 67 | 74 | 65 | 57 |
| 5 | 47 | 45 | 61 | 67 | 73 | 78 | 67 | 77 | 78 | 61 | 62 | 73 |
| 6 | 44 | 49 | 63 | 70 | 69 | 87 | 79 | 65 | 71 | 61 | 57 | 57 |
| 7 | 44 | 57 | 67 | 77 | 64 | 87 | 70 | 79 | 77 | 57 | 76 | 55 |
| 8 | 44 | 63 | 67 | 75 | 69 | 85 | 70 | 87 | 85 | 61 | 71 | 55 |
| 9 | 55 | 61 | 65 | 64 | 71 | 78 | 67 | 90 | 73 | 61 | 63 | 64 |
| 10 | 54 | 55 | 59 | 77 | 71 | 80 | 64 | 98 | 60 | 58 | 53 | 51 |
| 11 | 49 | 53 | 55 | 75 | 70 | 78 | 67 | 95 | 59 | 69 | 52 | 58 |
| 12 | 53 | 53 | 55 | 79 | 84 | 72 | 71 | 80 | 71 | 74 | 52 | 67 |
| 13 | 49 | 51 | 51 | 75 | 79 | 77 | 82 | 72 | 66 | 69 | 59 | 72 |
| 14 | 51 | 49 | 55 | 84 | 65 | 77 | 76 | 77 | 58 | 60 | 70 | 70 |
| 15 | 45 | 48 | 59 | 66 | 68 | 75 | 69 | 82 | 61 | 57 | 64 | 53 |
| 16 | 49 | 56 | 59 | 64 | 73 | 75 | 81 | 86 | 59 | 61 | 59 | 49 |
| 17 | 48 | 55 | 54 | 64 | 74 | 76 | 70 | 89 | 67 | 60 | 53 | 49 |
| 18 | 49 | 52 | 65 | 66 | 70 | 68 | 71 | 83 | 90 | 69 | 53 | 68 |
| 19 | 52 | 49 | 57 | 66 | 74 | 76 | 83 | 68 | 73 | 66 | 54 | 55 |
| 20 | 47 | 49 | 67 | 64 | 70 | 84 | 78 | 63 | 67 | 62 | 65 | 49 |
| 21 | 46 | 69 | 73 | 63 | 67 | 76 | 93 | 71 | 62 | 56 | 63 | 49 |
| 22 | 46 | 59 | 67 | 68 | 70 | 68 | 73 | 86 | 71 | 54 | 64 | 48 |
| 23 | 59 | 61 | 62 | 70 | 77 | 72 | 63 | 88 | 65 | 52 | 60 | 47 |
| 24 | 60 | 61 | 58 | 68 | 76 | 69 | 62 | 86 | 58 | 54 | 54 | 47 |
| 25 | 62 | 52 | 57 | 84 | 80 | 77 | 72 | 77 | 78 | 64 | 53 | 47 |
| 26 | 50 | 50 | 56 | 81 | 89 | 75 | 75 | 86 | 78 | 57 | 49 | 48 |
| 27 | 45 | 51 | 59 | 68 | 68 | 78 | 82 | 80 | 110 | 59 | 73 | 53 |
| 28 | 44 | 51 | 57 | 64 | 60 | 80 | 87 | 69 | 72 | 53 | 56 | 52 |
| 29 | 43 | | 63 | 60 | 63 | 78 | 67 | 83 | 65 | 52 | 63 | 55 |
| 30 | 47 | | 59 | 58 | 71 | 85 | 62 | 77 | 67 | 53 | 62 | 47 |
| 31 | 54 | | 61 | | 63 | | 81 | 81 | | 67 | | 47 |
| Sum | 1,558 | 1,502 | 1,848 | 2,094 | 2,212 | 2,304 | 2,246 | 2,479 | 2,102 | 1,910 | 1,810 | 1,702 |

**Current Year 1962** — **Period 1937-1962**

| Month | Extreme Gage Feet | | Ø Extreme Second Feet | | | | Average Second Feet | Total Acre Feet | Acre Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | High | | Low | | | | Average | Maximum | Minimum |
| | High | Low | Day | | Day | | | | | | |
| Jan. | | | 25 | 62 | † 1 | 43 | 50.3 | 3,090 | 3,377 | 4,780 | 877 |
| Feb. | | | 21 | 69 | 5 | 45 | 53.6 | 2,980 | 3,202 | 4,320 | 563 |
| Mar. | | | 21 | 73 | † 1 | 51 | 59.6 | 3,670 | 3,873 | 5,240 | 1,240 |
| Apr. | | | † 14 | 84 | 30 | 58 | 69.8 | 4,150 | 3,938 | 5,250 | 1,160 |
| May | | | 26 | 89 | 28 | 60 | 71.4 | 4,390 | 4,040 | 5,590 | 992 |
| June | | | † 6 | 87 | † 1 | 68 | 76.8 | 4,570 | 3,888 | 5,580 | 885 |
| July | | | 21 | 93 | 2 | 60 | 72.5 | 4,450 | 4,225 | 6,550 | 816 |
| Aug | | | 10 | 98 | 20 | 63 | 80.0 | 4,920 | 4,190 | 6,810 | 861 |
| Sept. | | | 27 | 110 | † 3 | 58 | 70.1 | 4,170 | 3,997 | 6,220 | 889 |
| Oct. | | | † 4 | 74 | † 23 | 52 | 61.6 | 3,790 | 3,984 | 5,740 | 1,040 |
| Nov. | | | 7 | 76 | 26 | 49 | 60.3 | 3,590 | 3,729 | 5,490 | 994 |
| Dec. | | | 5 | 73 | † 23 | 47 | 54.9 | 3,380 | 3,630 | 4,960 | 966 |
| Yearly | | | | 110 | | 43 | 65.1 | 47,150 | 46,073 | 63,700 | 12,840 |

† And other days Ø Mean daily

# YUMA MAIN CANAL WASTEWAY TO COLORADO RIVER AT YUMA, ARIZONA

DESCRIPTION: The wasteway receives water from the Yuma Main Canal at the check structure on the canal, 1,645 feet 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 0.4 mile (revised) downstream from the Yuma Gaging Station, 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. 1962 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 1962.

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 1962 — Annual and Period Summary

| Day | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 20 | 30 | 25 | 25 | 30 | 48 | 51 | 50 | 433 | 111 | 103 | 512 |
| 2 | 20 | 25 | 25 | 25 | 25 | 50 | 55 | 60 | 342 | 60 | 110 | 644 |
| 3 | 20 | 33 | 70 | 25 | 28 | 87 | 35 | 40 | 268 | 392 | 125 | 152 |
| 4 | 24 | 50 | 123 | 27 | 26 | 60 | 35 | 40 | 348 | 698 | 125 | 26 |
| 5 | 25 | 49 | 53 | 35 | 154 | 40 | 35 | 124 | 277 | 276 | 55 | 34 |
| 6 | 35 | 44 | 40 | 48 | 50 | 25 | 50 | 50 | 222 | 57 | 39 | 23 |
| 7 | 30 | 35 | 40 | 55 | 25 | 32 | 55 | 30 | 260 | 101 | 48 | 26 |
| 8 | 25 | 115 | 27 | 65 | 25 | 35 | 66 | 30 | 225 | 74 | 44 | 54 |
| 9 | 25 | 56 | 44 | 45 | 25 | 30 | 42 | 67 | 174 | 23 | 68 | 60 |
| 10 | 25 | 303 | 50 | 30 | 30 | 76 | 25 | 55 | 240 | 23 | 100 | 24 |
| 11 | 25 | 25 | 40 | 30 | 25 | 94 | 25 | 55 | 370 | 51 | 66 | 23 |
| 12 | 575 | 30 | 48 | 40 | 25 | 74 | 25 | 99 | 456 | 49 | 55 | 23 |
| 13 | 25 | 30 | 36 | 40 | 30 | 50 | 25 | 129 | 425 | 100 | 54 | 34 |
| 14 | 25 | 30 | 25 | 25 | 30 | 57 | 35 | 105 | 318 | 170 | 81 | 32 |
| 15 | 25 | 40 | 30 | 60 | 30 | 91 | 116 | 25 | 431 | 112 | 158 | 73 |
| 16 | 25 | 35 | 30 | 30 | 533 | 150 | 50 | 25 | 417 | 68 | 461 | 169 |
| 17 | 30 | 30 | 30 | 30 | 546 | 109 | 45 | 55 | 332 | 123 | 457 | 199 |
| 18 | 45 | 70 | 55 | 30 | 538 | 50 | 51 | 202 | 389 | 71 | 140 | 148 |
| 19 | 35 | 25 | 25 | 40 | 57 | 73 | 35 | 226 | 637 | 56 | 50 | 38 |
| 20 | 65 | 35 | 25 | 50 | 30 | 75 | 45 | 159 | 650 | 38 | 38 | 30 |
| 21 | 70 | 77 | 50 | 60 | 29 | 77 | 50 | 129 | 422 | 46 | 38 | 23 |
| 22 | 41 | 147 | 65 | 60 | 30 | 86 | 33 | 117 | 303 | 50 | 74 | 54 |
| 23 | 55 | 435 | 50 | 60 | 30 | 43 | 30 | 122 | 308 | 54 | 284 | 79 |
| 24 | 39 | 633 | 95 | 35 | 30 | 74 | 35 | 163 | 336 | 40 | 384 | 138 |
| 25 | 49 | 81 | 115 | 30 | 36 | 32 | 30 | 123 | 371 | 64 | 257 | 156 |
| 26 | 50 | 86 | 73 | 50 | 47 | 25 | 35 | 55 | 738 | 95 | 285 | 87 |
| 27 | 25 | 50 | 45 | 75 | 103 | 25 | 65 | 55 | 499 | 76 | 553 | 80 |
| 28 | 30 | 42 | 30 | 50 | 44 | 25 | 50 | 55 | 105 | 132 | 347 | 72 |
| 29 | 55 | | 35 | 50 | 30 | 25 | 75 | 50 | 52 | 50 | 124 | 66 |
| 30 | 35 | | 25 | 35 | 63 | 25 | 35 | 119 | 120 | 70 | 326 | 92 |
| 31 | 55 | | 25 | | 60 | | 25 | 567 | | 102 | | 141 |
| Sum | 1,628 | 2,641 | 1,449 | 1,260 | 2,764 | 1,743 | 1,364 | 3,181 | 10,468 | 3,432 | 5,049 | 3,312 |

**Current Year** 1962 — **Period** 1935-1962

| Month | Extreme Gage Feet | | ø Extreme Second-Feet | | | | Average Second-Feet | Total Acre-Feet | Acre-Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | High | | Low | | | | Average | Maximum | Minimum |
| | High | Low | Day | | Day | | | | | | |
| Jan. | | | 12 | 575 | † 1 | 20 | 52.5 | 3,230 | 78,629 | 110,700 | 3,230 |
| Feb. | | | 24 | 633 | † 2 | 25 | 94.3 | 5,240 | 67,912 | 89,140 | 5,240 |
| Mar. | | | 4 | 123 | † 1 | 25 | 46.7 | 2,870 | 73,728 | 90,190 | 2,870 |
| Apr. | | | 27 | 75 | † 1 | 25 | 42.0 | 2,500 | 72,723 | 86,580 | 2,500 |
| May | | | 17 | 546 | † 2 | 25 | 89.2 | 5,480 | 74,291 | 88,280 | 5,480 |
| June | | | 16 | 150 | † 6 | 25 | 58.1 | 3,460 | 70,328 | 86,960 | 3,460 |
| July | | | 15 | 116 | † 10 | 25 | 44.0 | 2,710 | 73,272 | 91,220 | 2,710 |
| Aug. | | | 31 | 567 | † 15 | 25 | 103 | 6,310 | 73,629 | 89,890 | 6,310 |
| Sept. | | | 26 | 738 | 29 | 52 | 349 | 20,760 | 68,872 | 83,660 | 20,760 |
| Oct. | | | 4 | 698 | † 9 | 23 | 111 | 6,810 | 68,989 | 90,050 | 5,880 |
| Nov. | | | 27 | 553 | † 20 | 38 | 168 | 10,010 | 69,421 | 101,500 | 7,250 |
| Dec. | | | 2 | 644 | † 6 | 23 | 107 | 6,570 | 77,142 | 108,800 | 6,570 |
| Yearly | | | | 738 | | 20 | 105 | 75,950 | 868,936 | 1,042,850 | 75,950 |

† And other days ø Mean daily

## DRAIN NO. 8-B (ARAZ DRAIN)

DESCRIPTION: This drain discharges into the Colorado River 4.5 miles downstream from the Yuma Gaging Station and 2.5 miles upstream from the northerly international boundary. Prior to October 1955, published as "Araz Drain."

RECORDS: Computed by Bureau of Reclamation from 52 current meter measurements by Imperial Irrigation District at a footbridge one-fourth mile above the mouth. Daily discharge records furnished by the U. S. Geological Survey. Records available: May 1948 through December 1962.

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, less than 1 second-foot during March and April 1948.

### Mean Daily Discharge in Second Feet 1962 — Annual and Period Summary

| Day | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5 | 4 | 5 | 5 | 7 | 6 | 6 | 9 | 7 | 7 | 6 | 6 |
| 2 | 5 | 4 | 5 | 6 | 7 | 6 | 6 | 9 | 7 | 7 | 6 | 6 |
| 3 | 4 | 4 | 5 | 6 | 7 | 6 | 6 | 9 | 7 | 7 | 6 | 5 |
| 4 | 4 | 4 | 5 | 6 | 6 | 6 | 6 | 8 | 7 | 7 | 6 | 5 |
| 5 | 4 | 4 | 5 | 6 | 6 | 6 | 6 | 8 | 7 | 7 | 6 | 5 |
| 6 | 4 | 5 | 5 | 6 | 6 | 7 | 6 | 8 | 7 | 7 | 7 | 5 |
| 7 | 4 | 5 | 4 | 6 | 6 | 7 | 6 | 7 | 7 | 7 | 7 | 5 |
| 8 | 5 | 5 | 4 | 6 | 6 | 7 | 6 | 7 | 7 | 7 | 7 | 5 |
| 9 | 5 | 5 | 4 | 6 | 6 | 7 | 6 | 7 | 7 | 7 | 7 | 5 |
| 10 | 5 | 5 | 4 | 6 | 6 | 6 | 6 | 7 | 7 | 7 | 7 | 5 |
| 11 | 5 | 5 | 4 | 6 | 6 | 6 | 6 | 7 | 7 | 7 | 7 | 5 |
| 12 | 5 | 5 | 5 | 6 | 6 | 6 | 6 | 7 | 7 | 7 | 6 | 5 |
| 13 | 5 | 5 | 5 | 6 | 7 | 5 | 6 | 8 | 7 | 7 | 6 | 5 |
| 14 | 5 | 5 | 5 | 6 | 7 | 5 | 6 | 8 | 7 | 6 | 6 | 5 |
| 15 | 5 | 5 | 5 | 6 | 7 | 5 | 6 | 8 | 7 | 6 | 6 | 5 |
| 16 | 5 | 5 | 5 | 6 | 7 | 6 | 7 | 8 | 7 | 6 | 6 | 5 |
| 17 | 4 | 5 | 5 | 6 | 8 | 6 | 7 | 8 | 7 | 6 | 6 | 6 |
| 18 | 4 | 5 | 5 | 5 | 8 | 6 | 7 | 8 | 7 | 6 | 6 | 6 |
| 19 | 4 | 5 | 5 | 5 | 7 | 6 | 7 | 8 | 7 | 6 | 6 | 6 |
| 20 | 4 | 4 | 5 | 5 | 7 | 7 | 7 | 8 | 7 | 6 | 6 | 6 |
| 21 | 4 | 4 | 5 | 5 | 7 | 7 | 7 | 8 | 7 | 6 | 6 | 6 |
| 22 | 4 | 4 | 5 | 5 | 7 | 7 | 7 | 8 | 7 | 6 | 6 | 6 |
| 23 | 4 | 4 | 5 | 5 | 6 | 7 | 7 | 8 | 7 | 6 | 6 | 6 |
| 24 | 4 | 5 | 5 | 5 | 6 | 7 | 7 | 8 | 7 | 7 | 6 | 6 |
| 25 | 4 | 5 | 5 | 6 | 6 | 6 | 7 | 8 | 7 | 7 | 6 | 6 |
| 26 | 4 | 5 | 5 | 6 | 6 | 6 | 7 | 8 | 7 | 7 | 6 | 5 |
| 27 | 4 | 5 | 5 | 6 | 6 | 6 | 7 | 7 | 7 | 7 | 6 | 5 |
| 28 | 4 | 5 | 5 | 6 | 6 | 6 | 7 | 7 | 7 | 7 | 6 | 5 |
| 29 | 4 | | 5 | 6 | 6 | 6 | 8 | 7 | 7 | 6 | 6 | 5 |
| 30 | 4 | | 5 | 6 | 6 | 6 | 8 | 7 | 7 | 6 | 6 | 5 |
| 31 | 4 | | 5 | | 6 | | 8 | 7 | | 6 | | 5 |
| Sum | 135 | 131 | 150 | 172 | 201 | 186 | 205 | 240 | 210 | 204 | 186 | 166 |

| Month | Current Year 1962 Extreme Gage Feet High | Extreme Gage Feet Low | Ø Extreme Second Feet High Day | High | Low Day | Low | Average Second Feet | Total Acre Feet | Period May 1948-1962 Acre Feet Average | Maximum | Minimum |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan. | | | † 1 | 5 | † 3 | 4 | 4.4 | 268 | 544 | 899 | 268 |
| Feb. | | | † 6 | 5 | † 1 | 4 | 4.7 | 260 | 471 | 746 | 260 |
| Mar. | | | † 1 | 5 | † 7 | 4 | 4.8 | 298 | 560 | 853 | 298 |
| Apr. | | | † 2 | 6 | † 1 | 5 | 5.7 | 341 | 596 | 1,000 | 341 |
| May | | | † 17 | 8 | † 4 | 6 | 6.5 | 399 | 593 | 966 | 61 |
| June | | | † 6 | 7 | † 13 | 5 | 6.2 | 369 | 616 | 1,030 | 89 |
| July | | | † 29 | 8 | † 1 | 6 | 6.6 | 407 | 710 | 1,260 | 139 |
| Aug | | | † 1 | 9 | † 7 | 7 | 7.7 | 476 | 785 | 1,350 | 228 |
| Sept. | | | † 1 | 7 | † 1 | 7 | 7.0 | 417 | 744 | 1,370 | 258 |
| Oct. | | | † 1 | 7 | † 14 | 6 | 6.6 | 405 | 757 | 1,220 | 399 |
| Nov. | | | † 6 | 7 | † 1 | 6 | 6.2 | 369 | 680 | 1,240 | 357 |
| Dec. | | | † 1 | 6 | † 3 | 5 | 5.4 | 329 | 629 | 1,050 | 329 |
| Yearly | | | | 9 | | 4 | 6.0 | 4,340 | 7,685 | 12,429 | 4,340 |

† And other days Ø Mean daily

# PILOT KNOB POWER PLANT AND WASTEWAY NEAR PILOT KNOB, CALIFORNIA

DESCRIPTION: The Pilot Knob power plant and wasteway is located on the All-American Canal, 20.8 miles downstream from the intake at Imperial Dam, 6 miles west of Yuma, about one mile north of the northerly international boundary and empties into the Alamo Canal in the United States and thence into Colorado River through Rockwood gates, 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 1962. 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 1962 — Annual and Period Summary

| Day | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1,560 | 18 | 1,210 | 3,050 | 1,340 | 1,200 | 1,580 | 1,930 | 0 | 0 | 0 | 0 |
| 2 | 1,850 | 0 | 1,180 | 2,950 | 1,410 | 1,110 | 1,670 | 1,650 | 0 | 0 | 1,060 | 0 |
| 3 | 1,540 | 0 | 1,130 | 2,690 | 1,140 | 1,100 | 1,740 | 1,660 | 0 | 0 | 2,680 | 0 |
| 4 | 230 | 0 | 1,340 | 2,540 | 986 | 1,150 | 1,680 | 1,650 | 0 | 0 | 4,190 | 0 |
| 5 | 179 | 0 | 1,950 | 2,360 | 667 | 1,200 | 1,360 | 1,650 | 0 | 0 | 5,360 | 0 |
| 6 | 1,200 | 0 | 2,180 | 2,130 | 0 | 1,250 | 1,370 | 1,650 | 0 | 0 | 6,180 | 0 |
| 7 | 1,200 | 0 | 2,000 | 1,900 | 0 | 1,260 | 1,370 | 1,650 | 0 | 0 | 6,120 | 0 |
| 8 | 1,210 | 0 | 1,500 | 1,830 | 0 | 1,270 | 1,370 | 1,650 | 0 | 0 | 3,670 | 0 |
| 9 | 1,200 | 0 | 1,480 | 2,100 | 0 | 1,300 | 1,550 | 1,650 | 0 | 0 | 1,270 | 0 |
| 10 | 1,380 | 0 | 1,320 | 2,030 | 0 | 1,290 | 1,600 | 1,650 | 0 | 0 | 1,020 | 0 |
| 11 | 1,310 | 0 | 1,280 | 2,270 | 0 | 1,240 | 1,690 | 1,660 | 0 | 0 | 1,040 | 0 |
| 12 | 367 | 0 | 1,040 | 2,300 | 0 | 1,260 | 1,940 | 1,650 | 0 | 0 | 1,180 | 0 |
| 13 | 1,080 | 0 | 1,400 | 2,310 | 0 | 1,340 | 2,000 | 1,650 | 0 | 0 | 1,010 | 0 |
| 14 | 1,250 | 0 | 1,570 | 2,480 | 0 | 1,530 | 1,990 | 1,650 | 0 | 0 | 1,010 | 0 |
| 15 | 1,350 | 0 | 1,660 | 2,560 | 0 | 1,570 | 1,930 | 1,650 | 0 | 0 | 524 | 0 |
| 16 | 1,360 | 0 | 1,800 | 2,200 | 0 | 1,900 | 1,860 | 1,420 | 0 | 0 | 0 | 0 |
| 17 | 1,660 | 0 | 1,910 | 2,360 | 0 | 2,250 | 1,830 | 1,750 | 0 | 0 | 0 | 0 |
| 18 | 2,230 | 0 | 2,320 | 2,510 | 577 | 1,980 | 1,870 | 1,920 | 0 | 0 | 0 | 0 |
| 19 | 2,110 | 0 | 2,430 | 2,330 | 1,560 | 1,870 | 1,850 | 1,970 | 0 | 0 | 0 | 1,410 |
| 20 | 1,900 | 0 | 2,890 | 2,320 | 1,660 | 1,590 | 1,870 | 2,430 | 0 | 0 | 0 | 1,830 |
| 21 | 2,180 | 0 | 3,730 | 1,670 | 1,180 | 1,460 | 1,960 | 2,170 | 0 | 0 | 0 | 721 |
| 22 | 1,730 | 0 | 3,030 | 1,630 | 1,010 | 1,430 | 2,360 | 1,800 | 0 | 0 | 0 | 0 |
| 23 | 1,920 | 0 | 3,090 | 1,670 | 1,000 | 1,450 | 2,340 | 1,170 | 0 | 0 | 0 | 0 |
| 24 | 2,730 | 414 | 2,510 | 1,340 | 998 | 1,450 | 2,240 | 1,170 | 0 | 0 | 0 | 0 |
| 25 | 3,460 | 1,620 | 2,580 | 1,260 | 1,170 | 1,510 | 1,930 | 1,430 | 0 | 0 | 0 | 0 |
| 26 | 3,470 | 1,380 | 2,670 | 1,190 | 1,050 | 1,540 | 1,890 | 1,660 | 0 | 0 | 0 | 0 |
| 27 | 3,170 | 1,060 | 2,680 | 1,070 | 1,100 | 1,610 | 1,880 | 1,780 | 894 | 0 | 0 | 0 |
| 28 | 1,760 | 985 | 2,600 | 1,100 | 1,080 | 1,550 | 1,850 | 1,390 | 2,580 | 0 | 0 | 0 |
| 29 | 1,300 | | 2,570 | 1,110 | 1,600 | 1,610 | 1,990 | 1,420 | 1,570 | 0 | 0 | 0 |
| 30 | 1,030 | | 3,150 | 1,500 | 1,740 | 1,660 | 1,870 | 1,040 | 1,330 | 0 | 0 | 0 |
| 31 | 1,020 | | 3,060 | | 1,310 | | 1,960 | 0 | | 0 | | 0 |
| Sum | 49,936 | 5,477 | 65,260 | 60,760 | 22,578 | 43,930 | 56,390 | 49,570 | 6,374 | 0 | 36,314 | 3,961 |

| Month | Current Year 1962 — Extreme Gage Feet | | Ø Extreme Second-Feet | | | | Average Second-Feet | Total Acre-Feet | Period 1944-1962 — Acre-Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | High | Low | High Day | High | Low Day | Low | | | Average | Maximum | Minimum |
| Jan. | | | 26 | 3,470 | 5 | 179 | 1,611 | 99,050 | 47,136 | 400,200 | 0 |
| Feb. | | | 25 | 1,620 | † 2 | 0 | 196 | 10,860 | 13,879 | 149,500 | 0 |
| Mar. | | | 21 | 3,730 | 12 | 1,040 | 2,105 | 129,400 | 44,917 | 279,300 | 0 |
| Apr. | | | 1 | 3,050 | 27 | 1,070 | 2,025 | 120,500 | 83,867 | 260,900 | 0 |
| May | | | 30 | 1,740 | † 6 | 0 | 728 | 44,780 | 29,055 | 165,400 | 0 |
| June | | | 17 | 2,250 | 3 | 1,100 | 1,464 | 87,130 | 67,196 | 204,300 | 0 |
| July | | | 22 | 2,360 | 5 | 1,360 | 1,819 | 111,800 | 109,409 | 260,000 | 0 |
| Aug. | | | 20 | 2,430 | 31 | 0 | 1,599 | 98,320 | 112,496 | 270,100 | 0 |
| Sept. | | | 28 | 2,580 | † 1 | 0 | 212 | 12,640 | 69,166 | 173,300 | 0 |
| Oct. | | | | 0 | 0 | 0 | 0 | 0 | 15,001 | 51,460 | 0 |
| Nov. | | | 6 | 6,180 | † 1 | 0 | 1,210 | 72,030 | 23,013 | 182,600 | 0 |
| Dec. | | | 20 | 1,830 | † 1 | 0 | 128 | 7,860 | 40,716 | 319,700 | 0 |
| Yearly | | | | 6,180 | | 0 | 1,097 | 794,400 | 655,851 | 1,944,700 | 0 |

† And other days Ø Mean daily

## COLORADO RIVER AT NORTHERLY INTERNATIONAL BOUNDARY - DISCHARGES

DESCRIPTION: Water-stage recorder on the left (Arizona) bank and cableway at the point where the northerly international land boundary (California-Baja California) intersects the Colorado River about 7 miles downstream from the Yuma Gaging Station, 5 miles west of Yuma, Arizona, 1.1 miles upstream from Morelos Diversion Structure, and about one mile downstream from Rockwood Gate. Zero of 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 331 current meter measurements during the year, 214 by the United States Section, 104 by the Mexican Section of the Commission, 13 by the United States Geological Survey, and a continuous record of gage heights. Computation by shifting control methods. Discharges are computed on the basis of a water-stage recorder located 1,680 feet upstream from the northerly international boundary where the remains of an old weir serve as a partial controlling section. A continuous gage height record is available November 15, 1948 through December 1962; daily discharge records available January 1, 1950 through December 1962.

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 1962, the flow at this point represented the total amount of Colorado River water which crossed the northerly international boundary. The flow at this station plus the flow from the three wasteways from the United States in the limitrophe section of the river, less pump diversions from the United States bank in the limitrophe section, plus the flow delivered across the southerly land boundary near San Luis, make up the total Colorado River water delivered to Mexico under terms of the 1944 Water Treaty.

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

### Mean Daily Discharge in Second-Feet 1962 — Annual and Period Summary

| Day | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2,620 | 993 | 2,170 | 4,150 | 2,470 | 2,210 | 2,930 | 3,390 | 1,510 | 1,290 | 1,030 | 2,640 |
| 2 | 2,740 | 941 | 2,120 | 4,100 | 2,430 | 2,100 | 3,050 | 3,130 | 1,460 | 1,140 | 2,890 | 2,810 |
| 3 | 2,430 | 913 | 2,060 | 3,730 | 2,150 | 2,150 | 3,050 | 3,140 | 1,420 | 1,360 | 4,910 | 2,340 |
| 4 | 2,060 | 962 | 2,370 | 3,650 | 2,040 | 2,150 | 2,980 | 3,180 | 1,520 | 1,680 | 6,430 | 2,080 |
| 5 | 2,170 | 1,270 | 2,950 | 3,620 | 2,000 | 2,220 | 2,750 | 3,080 | 1,950 | 1,540 | 7,280 | 2,120 |
| 6 | 2,150 | 1,070 | 3,130 | 3,250 | 1,580 | 2,380 | 2,740 | 3,000 | 1,870 | 1,430 | 8,520 | 2,100 |
| 7 | 2,100 | 941 | 2,990 | 3,300 | 1,470 | 2,280 | 2,680 | 3,160 | 1,890 | 1,890 | 8,860 | 2,020 |
| 8 | 2,050 | 1,050 | 2,430 | 3,310 | 1,380 | 2,160 | 2,690 | 3,060 | 1,490 | 2,500 | 6,220 | 2,200 |
| 9 | 2,040 | 1,000 | 2,460 | 3,650 | 1,290 | 2,140 | 2,920 | 3,070 | 1,310 | 3,310 | 3,470 | 2,240 |
| 10 | 2,090 | 1,160 | 2,290 | 3,400 | 1,280 | 2,250 | 2,900 | 3,120 | 1,420 | 3,210 | 2,930 | 2,150 |
| 11 | 2,130 | 1,070 | 2,290 | 3,620 | 1,240 | 2,240 | 3,020 | 3,200 | 1,510 | 3,000 | 2,620 | 2,060 |
| 12 | 2,140 | 958 | 2,610 | 3,920 | 1,250 | 2,180 | 3,190 | 3,180 | 1,490 | 2,090 | 2,570 | 2,110 |
| 13 | 2,050 | 952 | 2,640 | 3,840 | 1,280 | 2,210 | 3,280 | 3,250 | 1,430 | 1,290 | 2,330 | 2,130 |
| 14 | 2,100 | 927 | 2,940 | 3,930 | 1,360 | 2,370 | 3,370 | 3,190 | 1,210 | 1,210 | 2,140 | 2,050 |
| 15 | 2,230 | 930 | 3,110 | 4,100 | 1,280 | 2,510 | 3,430 | 3,120 | 1,340 | 1,250 | 2,060 | 2,030 |
| 16 | 2,180 | 879 | 3,260 | 3,770 | 1,770 | 2,820 | 3,290 | 2,850 | 1,420 | 1,170 | 1,510 | 2,010 |
| 17 | 2,480 | 818 | 3,360 | 3,700 | 2,350 | 3,240 | 3,190 | 3,290 | 1,340 | 1,170 | 1,680 | 2,030 |
| 18 | 3,070 | 916 | 3,740 | 3,940 | 2,880 | 3,190 | 3,300 | 3,590 | 1,430 | 1,180 | 1,190 | 2,160 |
| 19 | 2,850 | 906 | 3,860 | 3,760 | 3,120 | 3,080 | 3,300 | 3,660 | 1,920 | 1,140 | 1,100 | 3,540 |
| 20 | 2,880 | 948 | 4,210 | 3,860 | 3,070 | 2,950 | 3,260 | 4,180 | 1,770 | 1,060 | 1,240 | 4,320 |
| 21 | 3,140 | 972 | 5,150 | 3,080 | 2,500 | 2,790 | 3,420 | 3,740 | 1,470 | 1,030 | 1,260 | 2,910 |
| 22 | 2,870 | 994 | 4,430 | 3,010 | 2,260 | 2,940 | 3,780 | 3,580 | 1,380 | 1,020 | 1,160 | 2,040 |
| 23 | 2,720 | 1,280 | 4,550 | 3,240 | 2,170 | 2,740 | 3,760 | 2,790 | 1,340 | 1,050 | 1,300 | 2,160 |
| 24 | 3,700 | 1,940 | 3,900 | 2,690 | 2,000 | 2,760 | 3,620 | 2,500 | 1,360 | 1,020 | 1,430 | 2,310 |
| 25 | 4,740 | 2,700 | 4,120 | 2,630 | 2,200 | 2,910 | 3,330 | 2,710 | 1,410 | 1,110 | 1,360 | 2,170 |
| 26 | 4,440 | 2,550 | 4,160 | 2,650 | 2,050 | 2,920 | 3,290 | 2,800 | 1,820 | 1,200 | 1,840 | 1,980 |
| 27 | 4,150 | 2,090 | 4,010 | 2,490 | 2,100 | 3,010 | 3,410 | 2,860 | 2,500 | 1,100 | 3,020 | 2,080 |
| 28 | 2,800 | 1,920 | 3,830 | 2,480 | 2,260 | 2,850 | 3,370 | 2,520 | 3,870 | 1,110 | 2,960 | 1,980 |
| 29 | 2,200 | | 3,910 | 2,200 | 2,630 | 2,980 | 3,600 | 2,500 | 2,610 | 980 | 2,360 | 2,120 |
| 30 | 1,920 | | 4,200 | 2,540 | 2,940 | 2,930 | 3,380 | 2,120 | 2,490 | 980 | 2,500 | 2,140 |
| 31 | 1,840 | | 4,120 | | 2,370 | | 3,410 | 1,560 | | 932 | | 2,130 |
| Sum | 81,080 | 34,050 | 103,370 | 101,610 | 63,170 | 77,660 | 99,690 | 94,520 | 50,950 | 45,442 | 90,170 | 71,160 |

**Current Year** 1962 — **Period** 1935-1962

| Month | Extreme Gage Feet | | Extreme Second-Feet | | | | Average Second-Feet | Total Acre-Feet | Acre-Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | High | | Low | | | | Average | Maximum | Minimum |
| | High | Low | Day | | Day | | | | | | |
| Jan. | 107.95 | 103.48 | 25 | 5,050 | 12 | 1,530 | 2,620 | 160,820 | 556,217 | 1,644,000 | 31,900 |
| Feb. | 104.57 | 103.11 | 25 | 2,880 | 17 | 800 | 1,220 | 67,537 | 460,791 | 1,378,000 | 60,400 |
| Mar. | 107.08 | 103.80 | 21 | 5,710 | 1 | 1,950 | 3,330 | 205,031 | 429,342 | 1,120,000 | 19,400 |
| Apr. | 106.06 | 104.14 | 1 | 4,270 | 30 | 2,080 | 3,390 | 201,540 | 318,681 | 823,850 | 0 |
| May | 106.41 | 103.92 | 19 | 3,560 | 12 | 1,190 | 2,040 | 125,296 | 362,802 | 1,151,000 | 77,400 |
| June | 107.89 | 104.26 | 17 | 3,660 | 2 | 2,060 | 2,590 | 154,036 | 325,754 | 1,175,000 | 8,500 |
| July | 105.39 | 104.43 | 22 | 3,860 | 7 | 2,610 | 3,220 | 197,732 | 292,592 | 763,800 | 24,400 |
| Aug. | 105.60 | 103.27 | 20 | 4,400 | 31 | 1,310 | 3,050 | 187,478 | 312,469 | 791,600 | 43,800 |
| Sept. | 105.55 | 103.14 | 28 | 4,430 | 14 | 1,180 | 1,700 | 101,058 | 308,440 | 1,029,000 | 60,000 |
| Oct. | 109.01 | 102.98 | 9 | 4,620 | 31 | 884 | 1,470 | 90,133 | 327,314 | 1,186,000 | 59,272 |
| Nov. | 110.80 | 103.58 | 6 | 9,340 | 1 | 1,010 | 3,010 | 178,850 | 415,233 | 1,422,000 | 56,200 |
| Dec. | 106.43 | 104.19 | 20 | 5,310 | 26 | 1,940 | 2,300 | 141,144 | 529,603 | 1,832,000 | 42,000 |
| Yearly | 110.80 | 102.98 | | 9,340 | | 800 | 2,500 | 1,810,655 | 4,639,238 | 10,596,900 | 722,100 |

# COLORADO RIVER AT NORTHERLY INTERNATIONAL BOUNDARY - STAGES

(See Preceding Page For Description)

## Mean Daily Gage Height in Feet 1962

| Day | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 104.92 | 103.56 | 103.98 | 105.96 | 104.31 | 105.77 | 104.71 | 104.95 | 103.45 | 103.19 | 103.61 | 104.53 |
| 2 | 104.56 | 103.54 | 103.97 | 105.89 | 104.44 | 105.74 | 104.76 | 104.66 | 103.39 | 103.02 | 104.62 | 104.68 |
| 3 | 104.48 | 103.51 | 103.95 | 105.63 | 104.32 | 106.79 | 104.77 | 104.72 | 103.32 | 103.23 | 107.07 | 104.41 |
| 4 | 104.07 | 103.57 | 104.17 | 105.57 | 104.08 | 105.78 | 104.77 | 104.74 | 103.44 | 103.52 | 109.50 | 104.29 |
| 5 | 104.04 | 104.06 | 104.64 | 105.43 | 105.24 | 105.80 | 104.53 | 104.70 | 103.70 | 103.78 | 110.42 | 104.27 |
| 6 | 104.03 | 103.81 | 104.98 | 105.19 | 105.11 | 105.83 | 104.52 | 104.63 | 103.44 | 105.45 | 110.53 | 104.24 |
| 7 | 103.97 | 103.48 | 105.02 | 105.21 | 104.62 | 105.77 | 104.49 | 104.64 | 103.69 | 106.05 | 110.00 | 104.25 |
| 8 | 103.93 | 103.64 | 104.73 | 105.21 | 104.39 | 105.78 | 104.49 | 104.63 | 103.38 | 107.40 | 108.14 | 104.31 |
| 9 | 103.91 | 103.56 | 104.74 | 105.48 | 104.29 | 105.77 | 104.67 | 104.69 | 103.22 | 107.64 | 106.10 | 104.34 |
| 10 | 103.97 | 103.77 | 104.57 | 105.38 | 104.24 | 105.82 | 104.68 | 104.67 | 103.35 | 107.74 | 105.92 | 104.31 |
| 11 | 103.98 | 103.70 | 104.56 | 105.55 | 104.18 | 105.78 | 104.73 | 104.73 | 103.39 | 107.23 | 105.77 | 104.28 |
| 12 | 103.99 | 103.49 | 104.62 | 105.66 | 104.18 | 105.70 | 104.89 | 104.70 | 103.39 | 105.80 | 105.78 | 104.32 |
| 13 | 103.96 | 103.49 | 104.62 | 105.67 | 104.26 | 104.96 | 104.93 | 104.74 | 103.36 | 104.67 | 105.73 | 104.32 |
| 14 | 103.98 | 103.46 | 104.88 | 105.77 | 104.39 | 104.41 | 104.99 | 104.71 | 103.36 | 104.40 | 105.74 | 104.27 |
| 15 | 104.06 | 103.44 | 105.12 | 105.89 | 104.26 | 104.42 | 105.04 | 104.65 | 104.86 | 104.34 | 105.64 | 104.27 |
| 16 | 104.02 | 103.38 | 105.33 | 105.56 | 105.03 | 105.51 | 104.92 | 104.42 | 103.34 | 103.97 | 104.69 | 104.25 |
| 17 | 104.26 | 103.33 | 105.32 | 105.60 | 105.70 | 106.98 | 104.89 | 104.80 | 103.26 | 103.89 | 104.85 | 104.26 |
| 18 | 104.77 | 103.49 | 105.67 | 105.82 | 106.07 | 105.59 | 104.93 | 104.97 | 103.36 | 104.02 | 103.87 | 104.35 |
| 19 | 106.88 | 103.46 | 105.79 | 105.64 | 106.08 | 106.02 | 104.89 | 105.04 | 103.72 | 103.97 | 103.68 | 105.19 |
| 20 | 107.72 | 103.52 | 106.03 | 105.69 | 106.09 | 105.85 | 104.91 | 105.46 | 103.58 | 103.81 | 103.88 | 105.73 |
| 21 | 107.66 | 103.53 | 106.67 | 105.05 | 105.93 | 105.04 | 105.06 | 105.16 | 103.32 | 103.77 | 103.91 | 104.75 |
| 22 | 107.42 | 103.59 | 106.38 | 104.96 | 105.68 | 104.77 | 105.33 | 104.93 | 103.24 | 103.72 | 103.79 | 104.29 |
| 23 | 107.57 | 103.83 | 106.19 | 105.14 | 104.67 | 104.58 | 105.28 | 104.41 | 103.23 | 103.80 | 104.04 | 104.36 |
| 24 | 107.33 | 103.79 | 105.65 | 104.68 | 104.08 | 104.58 | 105.16 | 104.16 | 103.26 | 103.70 | 104.31 | 104.45 |
| 25 | 107.05 | 104.40 | 105.86 | 104.54 | 104.24 | 104.67 | 104.88 | 104.27 | 103.32 | 103.86 | 104.26 | 104.37 |
| 26 | 106.74 | 104.29 | 105.92 | 104.61 | 104.08 | 104.65 | 104.87 | 104.37 | 103.68 | 104.01 | 104.73 | 104.28 |
| 27 | 106.67 | 103.93 | 105.84 | 104.44 | 104.17 | 104.70 | 104.92 | 104.47 | 104.18 | 103.81 | 105.87 | 104.33 |
| 28 | 105.54 | 103.82 | 105.66 | 104.46 | 104.43 | 104.65 | 104.88 | 104.16 | 105.19 | 103.79 | 105.47 | 104.32 |
| 29 | 104.90 | | 105.72 | 104.26 | 105.29 | 104.71 | 105.05 | 104.13 | 104.37 | 103.48 | 104.42 | 104.34 |
| 30 | 104.72 | | 106.01 | 104.48 | 105.98 | 104.76 | 104.88 | 103.86 | 104.21 | 103.47 | 104.48 | 104.37 |
| 31 | 104.65 | | 105.93 | | 105.82 | | 104.94 | 103.49 | | 103.58 | | 104.39 |
| Avg. | 105.15 | 103.66 | 105.24 | 105.28 | 104.83 | 105.37 | 104.86 | 104.60 | 103.60 | 104.46 | 105.69 | 104.42 |

# 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 gage is at mean sea level, U. S. C. & G. S. datum.

RECORDS: Records obtained and furnished by the Mexican Section of the Commission. Records available: Staff gage height records November 8, 1950 to June 3, 1951; a continuous record of gage heights June 4, 1951 through December 1962.

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

EXTREMES: Since November 8, 1950: Maximum mean daily gage height, 112.86 feet January 2, 1958; minimum mean daily gage height, 101.67 feet February 17, 1957.

## Mean Daily Gage Height in Feet 1962

| Day | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 103.84 | 103.12 | 102.76 | 105.12 | 103.02 | 105.54 | 103.38 | 103.54 | 102.56 | 102.43 | 103.38 | 103.61 |
| 2 | 103.22 | 103.18 | 102.76 | 105.02 | 103.22 | 105.54 | 103.44 | 103.35 | 102.56 | 102.30 | 103.84 | 103.67 |
| 3 | 103.58 | 103.18 | 102.76 | 104.76 | 103.51 | 105.58 | 103.44 | 103.41 | 102.49 | 102.43 | 106.69 | 103.58 |
| 4 | 102.99 | 103.22 | 102.89 | 104.69 | 103.15 | 105.58 | 103.44 | 103.41 | 102.56 | 102.59 | 109.32 | 103.51 |
| 5 | 102.76 | 103.71 | 103.25 | 104.46 | 104.99 | 105.58 | 103.28 | 103.38 | 102.69 | 103.22 | 110.24 | 103.41 |
| 6 | 102.76 | 103.48 | 103.84 | 104.10 | 104.89 | 105.61 | 103.28 | 103.31 | 102.69 | 105.38 | 110.24 | 103.41 |
| 7 | 102.72 | 103.12 | 104.20 | 104.17 | 104.36 | 105.54 | 103.25 | 103.35 | 102.72 | 106.27 | 109.65 | 103.48 |
| 8 | 102.66 | 103.28 | 104.00 | 104.17 | 104.13 | 105.54 | 103.25 | 103.35 | 102.53 | 107.32 | 107.64 | 103.51 |
| 9 | 102.66 | 103.22 | 104.00 | 104.56 | 104.00 | 105.54 | 103.38 | 103.38 | 102.49 | 107.51 | 105.64 | 103.51 |
| 10 | 102.69 | 103.41 | 103.77 | 104.46 | 103.97 | 105.58 | 103.41 | 103.35 | 102.56 | 107.71 | 105.58 | 103.51 |
| 11 | 102.72 | 103.35 | 103.74 | 104.69 | 103.90 | 105.54 | 103.41 | 103.41 | 102.56 | 107.15 | 105.54 | 103.48 |
| 12 | 102.69 | 103.15 | 103.67 | 104.69 | 103.90 | 105.45 | 103.54 | 103.38 | 102.56 | 105.68 | 105.54 | 103.48 |
| 13 | 102.69 | 103.15 | 103.61 | 104.69 | 103.97 | 104.49 | 103.58 | 103.41 | 102.53 | 104.56 | 105.54 | 103.51 |
| 14 | 102.69 | 103.08 | 103.94 | 104.86 | 104.07 | 103.35 | 103.58 | 103.38 | 102.79 | 104.23 | 105.54 | 103.51 |
| 15 | 102.79 | 103.08 | 104.30 | 105.02 | 103.97 | 103.22 | 103.64 | 103.35 | 104.59 | 104.17 | 105.41 | 103.51 |
| 16 | 102.76 | 103.02 | 104.56 | 104.53 | 104.76 | 104.95 | 103.54 | 103.18 | 102.56 | 103.77 | 104.49 | 103.51 |
| 17 | 102.92 | 102.99 | 104.49 | 104.59 | 105.41 | 106.66 | 103.51 | 103.48 | 102.49 | 103.67 | 104.59 | 103.51 |
| 18 | 103.48 | 103.15 | 104.92 | 104.89 | 105.77 | 105.05 | 103.54 | 103.61 | 102.53 | 103.81 | 103.51 | 103.58 |
| 19 | 106.66 | 103.12 | 105.09 | 104.66 | 105.77 | 105.64 | 103.51 | 103.64 | 102.69 | 103.74 | 103.28 | 104.20 |
| 20 | 107.58 | 103.18 | 105.28 | 104.76 | 105.77 | 105.48 | 103.51 | 103.90 | 102.62 | 103.58 | 103.48 | 104.40 |
| 21 | 107.51 | 103.18 | 105.84 | 103.84 | 105.68 | 104.33 | 103.64 | 103.71 | 102.53 | 103.51 | 103.51 | 103.71 |
| 22 | 107.32 | 103.25 | 105.61 | 103.74 | 105.41 | 103.67 | 103.84 | 103.58 | 102.49 | 103.48 | 103.38 | 103.54 |
| 23 | 107.45 | 103.28 | 105.25 | 104.00 | 104.04 | 103.25 | 103.84 | 103.18 | 102.49 | 103.54 | 103.64 | 103.58 |
| 24 | 107.09 | 102.56 | 104.56 | 103.38 | 103.08 | 103.18 | 103.77 | 102.95 | 102.49 | 103.44 | 103.97 | 103.64 |
| 25 | 106.63 | 103.05 | 104.92 | 103.22 | 103.18 | 103.28 | 103.51 | 103.02 | 102.53 | 103.64 | 103.90 | 103.54 |
| 26 | 106.30 | 103.05 | 105.09 | 103.31 | 102.99 | 103.31 | 103.51 | 103.12 | 102.69 | 103.77 | 104.30 | 103.51 |
| 27 | 106.23 | 102.76 | 104.95 | 103.12 | 103.05 | 103.35 | 103.54 | 103.18 | 102.99 | 103.58 | 105.51 | 103.54 |
| 28 | 105.12 | 102.66 | 104.76 | 103.15 | 103.51 | 103.31 | 103.51 | 102.95 | 103.84 | 103.54 | 104.89 | 103.54 |
| 29 | 104.46 | | 104.82 | 102.99 | 104.76 | 103.35 | 103.64 | 102.95 | 103.38 | 103.22 | 103.61 | 103.58 |
| 30 | 104.33 | | 105.18 | 103.15 | 105.61 | 103.38 | 103.51 | 102.79 | 103.15 | 103.18 | 103.61 | 103.58 |
| 31 | 104.20 | | 105.09 | | 105.58 | | 103.54 | 102.59 | | 103.35 | | 103.58 |
| Avg. | 104.31 | 103.14 | 104.32 | 104.23 | 104.30 | 104.66 | 103.51 | 103.31 | 102.74 | 104.19 | 105.32 | 103.59 |

# 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 at mean sea level, U. S. C. & G. S. datum.

RECORDS: The diversions are computed from the sum of the flows of the Conexión, Alamo, and del Norte Canals below Matamoros check. Discharges for 1962 based on a continuous record of gage heights and generally daily measurements of the canals described above. Records available: November 8, 1950 through December 1962. Records are collected 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 do not permit measuring 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 1962 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; minimum mean daily discharge, zero on various days during 1951, 1952, 1955, 1961, and 1962.

## Mean Daily Discharge in Second-Feet 1962 — Annual and Period Summary

| Day | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1,640 | 184 | 2,010 | 4,170 | 2,410 | 2,150 | 2,970 | 3,420 | 1,540 | 1,370 | 0 | 2,510 |
| 2 | 2,610 | 0 | 2,030 | 4,100 | 2,650 | 2,030 | 3,080 | 3,040 | 1,440 | 1,190 | 1,100 | 2,860 |
| 3 | 2,210 | 0 | 2,020 | 3,740 | 2,150 | 2,070 | 3,120 | 3,150 | 1,320 | 1,380 | 1,700 | 2,080 |
| 4 | 2,010 | 0 | 2,250 | 3,640 | 1,880 | 2,090 | 3,090 | 3,110 | 1,410 | 1,820 | 1,290 | 1,190 |
| 5 | 2,040 | 0 | 2,800 | 3,530 | 1,730 | 2,200 | 2,780 | 3,100 | 1,800 | 1,060 | 1,290 | 1,540 |
| 6 | 2,140 | 0 | 3,000 | 3,290 | 823 | 2,280 | 2,740 | 3,030 | 1,810 | 86.5 | 1,740 | 1,370 |
| 7 | 1,980 | 0 | 2,950 | 3,290 | 0 | 2,200 | 2,680 | 3,040 | 1,880 | 207 | 2,920 | 1,590 |
| 8 | 1,960 | 0 | 2,460 | 3,260 | 0 | 2,160 | 2,680 | 3,000 | 1,450 | 0 | 3,080 | 2,190 |
| 9 | 1,940 | 0 | 2,460 | 3,600 | 0 | 2,180 | 2,940 | 3,040 | 1,200 | 0 | 2,980 | 2,220 |
| 10 | 2,030 | 0 | 2,250 | 3,470 | 0 | 2,320 | 2,940 | 3,070 | 1,360 | 0 | 2,840 | 2,200 |
| 11 | 2,090 | 0 | 2,300 | 3,640 | 0 | 2,270 | 3,010 | 3,150 | 1,470 | 0 | 2,250 | 2,060 |
| 12 | 2,030 | 0 | 2,510 | 3,880 | 0 | 2,220 | 3,170 | 3,150 | 1,430 | 0 | 2,310 | 2,180 |
| 13 | 2,080 | 0 | 2,620 | 3,920 | 0 | 2,300 | 3,240 | 3,190 | 1,440 | 0 | 2,150 | 2,130 |
| 14 | 2,020 | 0 | 2,900 | 4,030 | 0 | 2,490 | 3,320 | 3,160 | 1,060 | 0 | 2,240 | 2,060 |
| 15 | 2,160 | 0 | 3,020 | 4,100 | 0 | 2,480 | 3,400 | 3,070 | 1,220 | 0 | 1,420 | 2,130 |
| 16 | 2,130 | 0 | 3,200 | 3,780 | 0 | 2,550 | 3,280 | 2,780 | 1,300 | 0 | 0 | 2,020 |
| 17 | 2,360 | 0 | 3,300 | 3,740 | 901 | 3,140 | 3,190 | 3,240 | 1,230 | 0 | 0 | 2,040 |
| 18 | 2,810 | 0 | 3,670 | 4,060 | 2,740 | 3,170 | 3,230 | 3,510 | 1,320 | 0 | 0 | 2,110 |
| 19 | 2,480 | 0 | 3,920 | 3,850 | 3,080 | 2,990 | 3,170 | 3,570 | 1,800 | 0 | 0 | 2,780 |
| 20 | 2,620 | 0 | 4,100 | 3,880 | 3,070 | 2,910 | 3,190 | 4,130 | 1,730 | 0 | 0 | 3,150 |
| 21 | 2,750 | 0 | 4,380 | 3,280 | 2,620 | 2,860 | 3,430 | 3,780 | 1,360 | 0 | 0 | 2,980 |
| 22 | 2,470 | 0 | 4,410 | 3,120 | 2,350 | 2,840 | 3,780 | 3,480 | 1,250 | 0 | 0 | 1,950 |
| 23 | 2,020 | 215 | 4,380 | 3,350 | 2,380 | 2,710 | 3,740 | 2,800 | 1,230 | 0 | 0 | 2,100 |
| 24 | 1,760 | 1,710 | 3,880 | 2,830 | 1,910 | 2,730 | 3,640 | 2,450 | 1,290 | 0 | 0 | 2,200 |
| 25 | 1,240 | 2,460 | 4,060 | 2,660 | 1,960 | 2,860 | 3,280 | 2,550 | 1,330 | 0 | 0 | 2,190 |
| 26 | 1,130 | 2,390 | 4,060 | 2,790 | 1,920 | 2,860 | 3,200 | 2,790 | 1,810 | 0 | 618 | 1,960 |
| 27 | 1,030 | 2,010 | 3,990 | 2,550 | 2,070 | 2,970 | 3,310 | 2,920 | 2,320 | 0 | 2,350 | 2,100 |
| 28 | 752 | 1,860 | 3,810 | 2,550 | 2,150 | 2,840 | 3,280 | 2,560 | 4,030 | 0 | 2,760 | 1,980 |
| 29 | 675 | | 3,920 | 2,340 | 2,320 | 2,940 | 3,500 | 2,480 | 2,710 | 0 | 2,260 | 2,120 |
| 30 | 271 | | 4,270 | 2,540 | 2,980 | 3,050 | 3,300 | 2,060 | 2,540 | 0 | 2,430 | 2,170 |
| 31 | 283 | | 4,100 | | 2,380 | | 3,320 | 1,560 | | 0 | | 2,120 |
| Sum | 57,721 | 10,829 | 101,030 | 102,980 | 46,474 | 76,860 | 99,000 | 93,380 | 49,080 | 7,113.5 | 39,728 | 66,280 |

**Current Year** 1962 — **Period** Nov. 1950-1962

| Month | Extreme Gage Ø Feet | | Ø Extreme Second-Feet | | | | Average Second-Feet | Total Acre-Feet | Acre-Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | High | | Low | | | | Average | Maximum | Minimum |
| | High | Low | Day | | Day | | | | | | |
| Jan. | 105.48 | 101.90 | 18 | 2,810 | 30 | 271 | 1,860 | 114,523 | 43,239 | 114,523 | 966 |
| Feb. | 102.56 | 99.51 | 25 | 2,460 | † 2 | 0 | 385 | 21,461 | 36,692 | 82,934 | 9,232 |
| Mar. | 103.74 | 102.10 | 22 | 4,410 | 1 | 2,010 | 3,260 | 200,463 | 164,067 | 216,994 | 97,902 |
| Apr. | 103.44 | 102.39 | 1 | 4,170 | 29 | 2,340 | 3,430 | 204,217 | 206,881 | 264,127 | 172,535 |
| May | 105.61 | 102.36 | 19 | 3,080 | † 7 | 0 | 1,500 | 92,166 | 108,140 | 159,010 | 66,207 |
| June | 105.64 | 102.79 | 18 | 3,170 | 2 | 2,030 | 2,560 | 152,439 | 197,283 | 269,632 | 152,439 |
| July | 103.31 | 102.85 | 22 | 3,780 | † 7 | 2,680 | 3,190 | 196,351 | 271,619 | 304,263 | 196,351 |
| Aug. | 103.71 | 102.59 | 20 | 4,130 | 31 | 1,560 | 3,010 | 185,235 | 264,686 | 341,044 | 185,235 |
| Sept. | 104.66 | 102.53 | 28 | 4,030 | 14 | 1,060 | 1,640 | 97,356 | 163,194 | 198,095 | 97,356 |
| Oct. | 105.18 | | 4 | 1,820 | † 8 | 0 | 230 | 14,129 | 52,685 | 90,639 | 14,129 |
| Nov. | 105.61 | | 8 | 3,080 | † 1 | 0 | 1,320 | 78,822 | 25,943 | 93,335 | 7,516 |
| Dec. | 104.30 | 103.48 | 20 | 3,150 | 4 | 1,190 | 2,140 | 131,440 | 45,322 | 131,440 | 8,825 |
| Yearly | 105.64 | | | 4,410 | | 0 | 2,060 | 1,488,602 | 1,582,293 | 1,961,556 | 1,381,113 |

† And other days Ø Mean daily

# INTAKE CANAL AT MORELOS DIVERSION STRUCTURE - STAGES

(See Preceding Page For Description)

## Mean Daily Gage Height in Feet 1962

| Day | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 102.36 | 102.26 | 102.17 | 103.44 | 102.36 | 105.54 | 102.92 | 103.15 | 102.56 | 102.46 | | 103.61 |
| 2 | 102.59 | 101.87 | 102.10 | 103.44 | 102.59 | 105.54 | 102.99 | 102.95 | 102.56 | 102.33 | 101.41 | 103.71 |
| 3 | 102.46 | 101.71 | 102.10 | 103.28 | 103.41 | 105.58 | 102.99 | 102.99 | 102.53 | 102.46 | 104.86 | 103.61 |
| 4 | 102.00 | 101.57 | 102.23 | 103.22 | 103.08 | 105.58 | 102.99 | 102.99 | 102.59 | 102.59 | 105.51 | 103.58 |
| 5 | 102.13 | 101.41 | 102.59 | 103.18 | 104.99 | 105.58 | 102.89 | 102.99 | 102.69 | 103.25 | 105.48 | 103.51 |
| 6 | 101.94 | 101.41 | 102.95 | 103.08 | 105.31 | 105.61 | 102.85 | 102.92 | 102.66 | 105.09 | 105.48 | 103.48 |
| 7 | 101.94 | 101.38 | 102.79 | 103.15 | 104.46 | 105.58 | 102.89 | 102.95 | 102.69 | 105.09 | 105.58 | 103.54 |
| 8 | 101.90 | 101.35 | 102.20 | 103.15 | 103.97 | 105.58 | 102.89 | 102.99 | 102.56 | 105.18 | 105.51 | 103.58 |
| 9 | 101.97 | 101.31 | 102.17 | 103.18 | 103.71 | 105.58 | 103.02 | 102.99 | 102.53 | 104.59 | 105.58 | 103.58 |
| 10 | 102.00 | 101.28 | 102.13 | 103.02 | 103.48 | 105.58 | 103.02 | 102.99 | 102.56 | 103.74 | 105.58 | 103.58 |
| 11 | 102.03 | 101.28 | 102.13 | 103.08 | 103.31 | 105.54 | 103.02 | 103.02 | 102.59 | 102.95 | 105.58 | 103.58 |
| 12 | 102.10 | 101.28 | 102.30 | 103.28 | 103.18 | 105.48 | 103.12 | 102.99 | 102.56 | 102.26 | 105.58 | 103.54 |
| 13 | 102.17 | 101.18 | 102.30 | 103.28 | 103.05 | 104.46 | 103.12 | 103.05 | 102.56 | 101.57 | 105.58 | 103.58 |
| 14 | 102.07 | 101.02 | 102.56 | 103.28 | 102.92 | 103.18 | 103.12 | 103.05 | 102.85 | 100.95 | 105.61 | 103.54 |
| 15 | 102.17 | 100.92 | 102.76 | 103.31 | 102.82 | 103.08 | 103.15 | 102.99 | 104.66 | 100.20 | 105.48 | 103.58 |
| 16 | 102.10 | 100.82 | 102.89 | 103.22 | 102.69 | 104.92 | 103.08 | 102.85 | 102.59 | 98.92 | 104.69 | 103.54 |
| 17 | 102.30 | 100.66 | 102.92 | 103.28 | 104.13 | 105.64 | 103.08 | 103.15 | 102.53 | | 104.07 | 103.58 |
| 18 | 102.99 | 100.43 | 103.05 | 103.35 | 105.61 | 105.02 | 103.12 | 103.28 | 102.56 | | 103.48 | 103.61 |
| 19 | 105.28 | 100.16 | 103.18 | 103.28 | 105.61 | 105.61 | 103.08 | 103.35 | 102.62 | | 102.99 | 104.17 |
| 20 | 105.45 | 99.93 | 103.48 | 103.28 | 105.61 | 105.48 | 103.08 | 103.71 | 102.59 | | 102.59 | 104.30 |
| 21 | 105.48 | 99.70 | 103.74 | 102.95 | 105.58 | 104.30 | 103.18 | 103.48 | 102.56 | | 102.36 | 103.61 |
| 22 | 105.38 | 99.51 | 103.74 | 102.79 | 105.38 | 103.54 | 103.31 | 103.35 | 102.53 | | 101.94 | 103.58 |
| 23 | 105.48 | 100.00 | 103.71 | 102.99 | 104.04 | 102.85 | 103.28 | 102.85 | 102.53 | | 101.44 | 103.61 |
| 24 | 104.53 | 101.77 | 103.31 | 102.76 | 103.05 | 102.79 | 103.28 | 102.62 | 102.53 | | 101.08 | 103.61 |
| 25 | 103.18 | 102.46 | 103.28 | 102.56 | 103.15 | 102.85 | 103.05 | 102.69 | 102.56 | | 100.62 | 103.58 |
| 26 | 103.38 | 102.56 | 103.64 | 102.49 | 102.95 | 102.89 | 102.99 | 102.72 | 102.66 | | 102.13 | 103.54 |
| 27 | 103.31 | 102.07 | 103.54 | 102.43 | 102.99 | 102.89 | 103.05 | 102.79 | 102.85 | | 105.48 | 103.58 |
| 28 | 102.69 | 102.00 | 103.31 | 102.43 | 103.48 | 102.89 | 103.05 | 102.66 | 103.61 | | 104.92 | 103.61 |
| 29 | 102.76 | | 103.31 | 102.39 | 104.76 | 102.89 | 103.18 | 102.72 | 103.31 | | 103.64 | 103.58 |
| 30 | 102.33 | | 103.51 | 102.46 | 105.58 | 102.92 | 103.05 | 102.72 | 103.05 | | 103.61 | 103.61 |
| 31 | 102.56 | | 103.44 | | 105.58 | | 103.12 | 102.59 | | | | 103.61 |
| Avg. | 102.94 | 101.19 | 102.89 | 103.03 | 103.96 | 104.50 | 103.06 | 102.99 | 102.74 | | | 103.62 |

# COLORADO RIVER IMMEDIATELY BELOW MORELOS DAM - STAGES

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

RECORDS: Mean daily gage heights obtained from hourly gage readings. Records obtained and furnished by the Mexican Section of the Commission. Records available: Gage heights only, February 20, 1951 through December 1962.

EXTREMES: Maximum mean daily gage height, 112.80 feet, January 2, 1958; minimum mean daily gage height, 99.08 feet, November 30, 1962 and several days during December 1962.

## Mean Daily Gage Height in Feet 1962

| Day | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 102.76 | 103.18 | 99.41 | 99.44 | 99.31 | 99.61 | 99.34 | 99.34 | 99.34 | 99.38 | 103.44 | 99.08 |
| 2 | 100.59 | 103.28 | 99.41 | 99.44 | 99.34 | 99.54 | 99.38 | 99.34 | 99.34 | 99.34 | 102.95 | 99.08 |
| 3 | 101.35 | 103.25 | 99.34 | 99.41 | 99.34 | 99.57 | 99.38 | 99.38 | 99.34 | 99.34 | 106.63 | 100.69 |
| 4 | 100.03 | 103.28 | 99.31 | 99.41 | 99.31 | 99.61 | 99.34 | 99.34 | 99.34 | 99.38 | 109.32 | 102.49 |
| 5 | 99.93 | 103.81 | 99.34 | 99.41 | 99.34 | 99.64 | 99.31 | 99.34 | 99.34 | 99.41 | 110.30 | 101.87 |
| 6 | 99.93 | 103.54 | 99.41 | 99.41 | 101.94 | 99.61 | 99.34 | 99.38 | 99.34 | 103.97 | 110.37 | 102.30 |
| 7 | 99.93 | 103.18 | 99.93 | 99.41 | 104.36 | 99.61 | 99.31 | 99.38 | 99.34 | 105.35 | 109.74 | 100.20 |
| 8 | 99.93 | 103.38 | 99.44 | 99.41 | 104.13 | 99.64 | 99.34 | 99.34 | 99.34 | 106.79 | 107.71 | 99.08 |
| 9 | 100.00 | 103.28 | 99.44 | 99.41 | 104.04 | 99.64 | 99.44 | 99.34 | 99.34 | 107.38 | 102.17 | 99.08 |
| 10 | 99.93 | 103.51 | 99.38 | 99.41 | 103.97 | 99.61 | 99.34 | 99.34 | 99.34 | 107.58 | 99.90 | 99.08 |
| 11 | 99.97 | 103.44 | 99.38 | 99.38 | 103.90 | 99.64 | 99.34 | 99.34 | 99.34 | 107.12 | 99.70 | 99.08 |
| 12 | 99.97 | 103.22 | 99.34 | 99.41 | 103.90 | 99.64 | 99.34 | 99.34 | 99.34 | 105.64 | 99.67 | 99.08 |
| 13 | 99.97 | 103.22 | 99.41 | 99.38 | 104.00 | 99.54 | 99.38 | 99.34 | 99.34 | 104.59 | 99.61 | 99.08 |
| 14 | 99.97 | 103.18 | 99.41 | 99.41 | 104.13 | 99.47 | 99.34 | 99.38 | 99.34 | 104.26 | 99.57 | 99.08 |
| 15 | 99.97 | 103.15 | 99.38 | 99.38 | 104.00 | 99.47 | 99.31 | 99.34 | 99.38 | 104.17 | 100.95 | 99.08 |
| 16 | 100.00 | 103.08 | 99.38 | 99.38 | 104.76 | 99.47 | 99.34 | 99.34 | 99.34 | 103.81 | 104.30 | 99.08 |
| 17 | 99.97 | 103.05 | 99.38 | 99.38 | 102.62 | 99.51 | 99.38 | 99.34 | 99.34 | 103.74 | 104.63 | 99.08 |
| 18 | 99.97 | 103.22 | 99.38 | 99.41 | 99.97 | 99.47 | 99.34 | 99.34 | 99.34 | 103.87 | 103.54 | 99.08 |
| 19 | 100.46 | 103.18 | 99.38 | 99.38 | 99.80 | 99.51 | 99.34 | 99.38 | 99.34 | 103.81 | 103.35 | 101.28 |
| 20 | 101.12 | 103.25 | 99.47 | 99.38 | 99.74 | 99.47 | 99.41 | 99.34 | 99.34 | 103.64 | 103.54 | 103.51 |
| 21 | 102.13 | 103.28 | 102.66 | 99.34 | 99.74 | 99.44 | 99.38 | 99.38 | 99.34 | 103.58 | 103.58 | 99.08 |
| 22 | 102.03 | 103.35 | 100.95 | 99.34 | 99.74 | 99.41 | 99.34 | 99.38 | 99.34 | 103.54 | 103.41 | 99.08 |
| 23 | 103.25 | 102.89 | 100.52 | 99.34 | 99.70 | 99.41 | 99.38 | 99.34 | 99.34 | 103.61 | 103.71 | 99.08 |
| 24 | 105.05 | 99.70 | 99.48 | 99.31 | 99.64 | 99.41 | 99.34 | 99.34 | 99.34 | 103.51 | 104.00 | 99.08 |
| 25 | 106.59 | 99.97 | 99.57 | 99.41 | 99.61 | 99.41 | 99.34 | 99.34 | 99.34 | 103.71 | 103.97 | 99.08 |
| 26 | 106.30 | 100.13 | 99.61 | 99.38 | 99.57 | 99.41 | 99.38 | 99.34 | 99.34 | 103.84 | 102.30 | 99.08 |
| 27 | 106.23 | 99.54 | 99.48 | 99.31 | 99.61 | 99.34 | 99.38 | 99.38 | 99.38 | 103.64 | 99.67 | 99.08 |
| 28 | 105.12 | 99.51 | 99.48 | 99.34 | 99.64 | 99.34 | 99.34 | 99.38 | 99.34 | 103.61 | 99.90 | 99.08 |
| 29 | 104.46 | | 99.48 | 99.31 | 99.61 | 99.38 | 99.34 | 99.38 | 99.34 | 103.28 | 99.15 | 99.08 |
| 30 | 104.33 | | 99.48 | 99.31 | 99.61 | 99.38 | 99.34 | 99.38 | 99.34 | 103.25 | 99.08 | 99.08 |
| 31 | 104.13 | | 99.44 | | 99.61 | | 99.38 | 99.34 | | 103.41 | | 99.08 |
| Avg. | 101.79 | 102.64 | 99.63 | 99.38 | 101.23 | 99.51 | 99.35 | 99.35 | 99.34 | 103.60 | 103.34 | 99.69 |

# 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 and is one of six measurement points for deliveries of Colorado River water to Mexico pursuant to provisions of the 1944 Water Treaty.

RECORDS: Flow is computed 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 1962, 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, 50.1 second-feet, August 16, 1958, at maximum gage height of 113.32 feet; minimum instantaneous discharge, zero during parts of each month.

## Mean Daily Discharge in Second-Feet 1962 — Annual and Period Summary

| Day | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.6 | 1.4 | 0.4 | 0.5 | 0.9 | 1.3 | 1.9 | 0.2 | 3.9 | 0.1 | 4.2 | 1.1 |
| 2 | 0 | .4 | .4 | .5 | 1.3 | 4.3 | 0 | .3 | .4 | 0 | 5.5 | 3.0 |
| 3 | 0 | 3.7 | 3.4 | 0 | 2.9 | .7 | 0 | .3 | .8 | 0 | 5.0 | .4 |
| 4 | 0 | .2 | .4 | 0 | .3 | .3 | 0 | 5.3 | .4 | 2.6 | 4.7 | 0 |
| 5 | 0 | 0 | .2 | .9 | 1.4 | .8 | 2.0 | 5.8 | 0 | 10.0 | 5.3 | 0 |
| 6 | 0 | 0 | 0 | 3.8 | 2.2 | .5 | 2.2 | .1 | 2.3 | 4.3 | 1.3 | .3 |
| 7 | .2 | 0 | 0 | 3.9 | .7 | 1.4 | 6.1 | 0 | .5 | 3.2 | 0 | 3.6 |
| 8 | .2 | 0 | 2.1 | 2.9 | 0 | 5.2 | 12.0 | 0 | .6 | 1.6 | 4.5 | .8 |
| 9 | 1.4 | 1.5 | 5.8 | 2.0 | 0 | .9 | 4.6 | 1.1 | 1.0 | 1.4 | 4.2 | .7 |
| 10 | 1.5 | 5.5 | 3.6 | .4 | .1 | 8.7 | 0 | 1.5 | 8.8 | 1.0 | .9 | .5 |
| 11 | 2.1 | 0 | 3.8 | .9 | .9 | .6 | .7 | 0 | 4.5 | 2.5 | 1.1 | .5 |
| 12 | 1.9 | 0 | 1.2 | 2.5 | 3.1 | .2 | 1.3 | .4 | 2.3 | 1.5 | 1.8 | .4 |
| 13 | 5.3 | .7 | .2 | 1.5 | 1.5 | 0 | 4.6 | .5 | 3.5 | 5.6 | .2 | .4 |
| 14 | .9 | .7 | .5 | 2.3 | 4.1 | 3.2 | 3.8 | 7.6 | .6 | 1.5 | .2 | 6.6 |
| 15 | 2.4 | 1.6 | 4.0 | 1.1 | 0 | 9.2 | .2 | 3.8 | 1.9 | 4.0 | 6.7 | .2 |
| 16 | .8 | 6.0 | .1 | .5 | .4 | .7 | .6 | 1.5 | 14.0 | 10.0 | .2 | 1.2 |
| 17 | .8 | .3 | 3.1 | .4 | 2.1 | 3.3 | 0 | .6 | 5.1 | 3.4 | 4.7 | .5 |
| 18 | 2.5 | 4.4 | 2.6 | .2 | 3.8 | .2 | 0 | 1.2 | 0 | 6.9 | 4.4 | .6 |
| 19 | 1.3 | 4.4 | 1.8 | .9 | .3 | 0 | .1 | 3.2 | .2 | 8.0 | 2.6 | .4 |
| 20 | 1.8 | 4.3 | 1.9 | 3.0 | 0 | 0 | 7.9 | .8 | .9 | 5.3 | 9.6 | .2 |
| 21 | 2.3 | 1.9 | 4.5 | 0 | 0 | 1.7 | .2 | .6 | .6 | 12.0 | 6.2 | 2.6 |
| 22 | 2.9 | .8 | 6.6 | 3.9 | .2 | .1 | 3.0 | .2 | 3.9 | .9 | 3.5 | 2.1 |
| 23 | 3.8 | .1 | 1.9 | .5 | 2.0 | .5 | 3.9 | .3 | 3.9 | 1.6 | .4 | 3.4 |
| 24 | 5.3 | 1.5 | 1.0 | .3 | 1.4 | .4 | 1.8 | 1.2 | 4.2 | 2.6 | .2 | 1.2 |
| 25 | 6.3 | .5 | .3 | 1.1 | 5.2 | .2 | .8 | 3.8 | 3.2 | 2.7 | 5.2 | .1 |
| 26 | 0 | .2 | .2 | .8 | 2.4 | .2 | 2.4 | 3.2 | 0 | .2 | 0 | 1.3 |
| 27 | 0 | 1.6 | 1.5 | 1.4 | 7.5 | .2 | 1.3 | .5 | .5 | .1 | 1.9 | .1 |
| 28 | .1 | .4 | 3.6 | 1.7 | 2.8 | 1.2 | 0 | 1.6 | .6 | 4.5 | 4.7 | 2.0 |
| 29 | 0 | | .4 | 2.2 | 3.8 | 3.0 | 0 | 1.8 | 2.8 | .3 | 4.0 | 2.7 |
| 30 | 0 | | .4 | .1 | 1.1 | 3.4 | 0 | 0 | 2.3 | 0 | 4.7 | 8.3 |
| 31 | 0 | | 2.0 | | 8.1 | | .2 | 0 | | 0 | | 4.9 |
| Sum | 44.4 | 42.1 | 57.9 | 40.2 | 60.5 | 52.4 | 61.6 | 47.4 | 73.7 | 97.8 | 97.9 | 50.1 |

**Current Year** 1962 | **Period** 1935-1962

| Month | Extreme Gage Feet | | Extreme Second-Feet | | | | Average Second-Feet | Total Acre-Feet | Acre-Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | High | | Low | | | | | | |
| | High | Low | Day | | Day | | | | Average | Maximum | Minimum |
| Jan. | 112.43 | 111.00 | 13 | 23.8 | † 1 | 0 | 1.4 | 88.1 | 216 | 914 | 0 |
| Feb. | 112.45 | 111.00 | 16 | 24.4 | † 1 | 0 | 1.5 | 83.5 | 186 | 400 | 6 |
| Mar. | 112.49 | 111.00 | 22 | 25.4 | † 5 | 0 | 1.9 | 115 | 199 | 517 | 0 |
| Apr. | 112.39 | 111.00 | 29 | 22.8 | † 3 | 0 | 1.3 | 79.7 | 219 | 425 | 40 |
| May | 112.38 | 111.00 | 12 | 22.6 | † 2 | 0 | 2.0 | 120 | 202 | 440 | 76 |
| June | 112.62 | 111.00 | 10 | 28.6 | † 1 | 0 | 1.7 | 104 | 190 | 595 | 47 |
| July | 112.51 | 111.00 | 13 | 25.8 | † 1 | 0 | 2.0 | 123 | 173 | 516 | 0 |
| Aug. | 112.49 | 111.00 | 14 | 25.4 | † 6 | 0 | 1.5 | 94.0 | 130 | 617 | 0 |
| Sept. | 112.70 | 111.00 | 16 | 30.6 | † 1 | 0 | 2.4 | 146 | 136 | 462 | 0 |
| Oct. | 112.92 | 111.00 | 5 | 36.7 | † 1 | 0 | 3.2 | 194 | 165 | 490 | 0 |
| Nov. | 112.65 | 111.00 | 4 | 29.4 | † 1 | 0 | 3.3 | 194 | 193 | 462 | 9 |
| Dec. | 112.45 | 111.00 | 29 | 24.4 | † 3 | 0 | 1.6 | 99.4 | 237 | 592 | 90 |
| Yearly | 112.92 | 111.00 | | 36.7 | | 0 | 2.0 | 1,440.7 | 2,246 | 4,500 | 1,178 |

† 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 112 current meter measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: Daily discharges, January 1, 1954 through December 1962; continuous record of gage heights, July 20, 1952 through December 1962.

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

EXTREMES: Maximum gage height 112.05 feet December 24, 1957; minimum gage height 98.49 feet December 27, 1962.

## Mean Daily Discharge in Second-Feet 1962 — Annual and Period Summary

| Day | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 799 | 902 | 24.0 | 22.6 | 19.1 | 25.7 | 17.7 | 15.3 | 12.5 | 14.7 | 1,040 | 29.4 |
| 2 | 85.0 | 946 | 21.9 | 24.0 | 22.6 | 24.8 | 15.9 | 15.9 | 12.5 | 14.3 | 1,120 | 28.7 |
| 3 | 232 | 928 | 21.9 | 23.3 | 24.8 | 25.7 | 15.3 | 18.4 | 12.5 | 13.8 | 2,980 | 456 |
| 4 | 29.1 | 964 | 20.5 | 21.2 | 21.2 | 28.2 | 14.8 | 20.5 | 12.5 | 15.2 | 5,150 | 894 |
| 5 | 22.6 | 1,260 | 19.8 | 21.2 | 24.0 | 27.4 | 14.8 | 24.0 | 10.5 | 18.5 | 6,200 | 638 |
| 6 | 20.5 | 1,120 | 22.7 | 22.6 | 754 | 30.0 | 13.1 | 15.3 | 12.5 | 1,160 | 6,260 | 804 |
| 7 | 19.8 | 958 | 85.8 | 22.6 | 1,540 | 30.0 | 13.1 | 13.6 | 11.0 | 1,780 | 5,550 | 243 |
| 8 | 17.7 | 1,100 | 27.4 | 23.3 | 1,380 | 30.8 | 19.1 | 14.8 | 10.5 | 2,440 | 3,730 | 29.4 |
| 9 | 19.8 | 1,030 | 28.2 | 23.3 | 1,330 | 28.2 | 19.8 | 14.8 | 12.5 | 3,110 | 673 | 27.4 |
| 10 | 17.0 | 1,130 | 25.7 | 22.6 | 1,310 | 30.8 | 14.2 | 14.8 | 12.5 | 3,440 | 74.6 | 26.3 |
| 11 | 18.4 | 1,070 | 24.8 | 23.3 | 1,260 | 32.5 | 13.6 | 13.6 | 15.3 | 3,100 | 57.1 | 25.8 |
| 12 | 17.7 | 928 | 24.8 | 25.7 | 1,280 | 30.0 | 14.8 | 12.5 | 15.3 | 2,050 | 49.2 | 24.7 |
| 13 | 19.8 | 910 | 24.8 | 25.7 | 1,340 | 25.7 | 17.0 | 13.1 | 18.9 | 1,330 | 43.5 | 23.6 |
| 14 | 16.4 | 904 | 27.4 | 24.8 | 1,450 | 23.3 | 17.7 | 19.1 | 16.7 | 1,200 | 40.6 | 25.8 |
| 15 | 16.4 | 916 | 30.0 | 24.0 | 1,360 | 30.0 | 13.1 | 16.4 | 24.9 | 1,260 | 418 | 23.1 |
| 16 | 19.8 | 865 | 26.6 | 22.6 | 1,710 | 21.9 | 14.2 | 16.6 | 27.7 | 1,170 | 1,580 | 23.1 |
| 17 | 19.8 | 820 | 26.6 | 22.6 | 989 | 26.6 | 15.3 | 11.0 | 20.5 | 1,160 | 1,790 | 23.1 |
| 18 | 21.2 | 916 | 27.4 | 25.7 | 49.7 | 22.6 | 14.2 | 10.5 | 14.2 | 1,190 | 1,190 | 23.1 |
| 19 | 105 | 922 | 27.4 | 25.7 | 42.0 | 26.6 | 15.9 | 16.3 | 15.9 | 1,140 | 1,080 | 608 |
| 20 | 234 | 976 | 31.3 | 23.3 | 35.4 | 25.7 | 17.0 | 17.7 | 14.8 | 1,050 | 1,200 | 1,380 |
| 21 | 541 | 976 | 700 | 19.1 | 32.5 | 22.6 | 13.1 | 15.9 | 14.8 | 1,020 | 1,230 | 30.1 |
| 22 | 441 | 1,020 | 293 | 17.7 | 31.6 | 19.8 | 12.5 | 15.3 | 14.2 | 1,010 | 1,190 | 20.2 |
| 23 | 843 | 979 | 230 | ð 19.1 | 27.4 | 19.1 | 15.3 | 15.9 | 14.2 | 1,020 | 1,340 | 19.3 |
| 24 | 2,120 | 21.9 | 35.4 | ð 16.5 | 21.2 | 17.0 | 13.6 | 14.8 | 15.9 | 1,010 | 1,490 | 18.8 |
| 25 | 3,500 | 62.8 | 43.4 | ð 25.3 | 22.6 | 17.7 | 13.6 | 17.0 | 17.0 | 1,110 | 1,440 | 16.7 |
| 26 | 3,150 | 86.9 | 53.6 | ð 23.2 | 21.9 | 17.7 | 16.3 | 15.9 | 14.2 | 1,200 | 949 | 16.4 |
| 27 | 3,100 | 30.8 | 31.6 | ð 18.6 | 22.6 | 17.7 | 19.0 | 14.8 | 15.9 | 1,100 | 92.6 | 16.4 |
| 28 | 2,060 | 26.6 | 29.1 | ð 20.3 | 25.0 | 19.1 | 14.8 | 15.3 | 17.0 | 1,100 | 136 | 16.4 |
| 29 | 1,560 | | 24.8 | ð 19.0 | 25.7 | 21.9 | 14.8 | 15.9 | 19.8 | 965 | 36.0 | 17.1 |
| 30 | 1,470 | | 24.0 | * 19.1 | 26.6 | 21.2 | 15.3 | 15.3 | 16.4 | 976 | 32.6 | 18.8 |
| 31 | 1,350 | | 23.3 | | 30.1 | | 14.8 | 10.1 | | 1,030 | | 18.8 |
| Sum | 22,769.0 | | 668.0 | | 740.3 | | 480.4 | | | 38,197.5 | | 5,565.5 |
| | 21,886.0 | | 2,057.2 | | 16,229.0 | | 473.7 | | 463.1 | | 48,162.2 | |

| Month | Current Year 1962 | | | | | | | Period 1954-1962 | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Extreme Gage Feet | | Extreme Second-Feet | | | Average Second-Feet | Total Acre-Feet | Acre-Feet | | |
| | | | High | | Low | | | | | |
| | High | Low | Day | | Day | | | Average | Maximum | Minimum |
| Jan. | 105.96 | 99.54 | 25 | 3,730 | 16 | 14.2 | 706 | 43,410 | 326,429 | 969,540 | 34,710 |
| Feb. | 103.41 | 99.20 | 5 | 1,530 | 25 | 14.2 | 813 | 45,162 | 163,729 | 414,310 | 17,650 |
| Mar. | 102.73 | 99.21 | 21 | 1,110 | 5 | 19.1 | 66.4 | 4,080 | 105,374 | 630,230 | 780 |
| Apr. | | | | | | | * 22.3 | * 1,325 | 83,321 | 532,320 | 899 |
| May | 104.48 | 99.15 | 17 | 2,090 | 1 | 17.0 | 524 | 32,190 | 97,355 | 375,970 | 460 |
| June | 99.80 | 99.32 | 15 | 51.9 | 26 | 13.1 | 24.7 | 1,468 | 21,834 | 119,980 | 834 |
| July | 99.84 | 99.22 | 27 | 65.0 | 7 | 9.2 | 15.3 | 940 | 21,223 | 89,430 | 654 |
| Aug. | 99.60 | 99.16 | 20 | 37.2 | 31 | 7.4 | 15.5 | 953 | 37,162 | 125,590 | 702 |
| Sept. | 99.80 | 99.19 | 15 | 61.4 | 1 | 8.8 | 15.4 | 919 | 23,457 | 87,830 | 113 |
| Oct. | 107.86 | 99.31 | 10 | 4,260 | 3 | 13.3 | 1,230 | 75,764 | 75,094 | 172,940 | 10,682 |
| Nov. | 109.72 | 98.79 | 6 | 6,700 | 30 | 30.6 | 1,610 | 95,528 | 156,821 | 356,390 | 35,214 |
| Dec. | 104.31 | 98.49 | 20 | 2,130 | 27 | 16.0 | 180 | 11,039 | 221,255 | 643,850 | 11,039 |
| Yearly | | | | | | | 435 | 312,778 | 1,333,054 | 3,957,730 | 176,626 |

* Partly estimated ð Deduced

# COLORADO RIVER AT MORELOS GAGING STATION - STAGES

(See Preceding Page For Description)

## Mean Daily Gage Height in Feet 1962

| Day | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 102.15 | 102.47 | 99.34 | 99.26 | 99.18 | 99.61 | 99.41 | 99.30 | 99.27 | 99.34 | 102.83 | 98.77 |
| 2 | 100.16 | 102.53 | 99.31 | 99.27 | 99.22 | 99.60 | 99.38 | 99.30 | 99.26 | 99.33 | 102.47 | 98.76 |
| 3 | 100.86 | 102.49 | 99.31 | 99.26 | 99.23 | 99.61 | 99.37 | 99.34 | 99.26 | 99.32 | 105.73 | 100.31 |
| 4 | 99.72 | 102.53 | 99.28 | 99.24 | 99.18 | 99.64 | 99.36 | 99.38 | 99.26 | 99.35 | 108.33 | 101.92 |
| 5 | 99.65 | 103.00 | 99.27 | 99.24 | 99.22 | 99.63 | 99.36 | 99.43 | 99.22 | 99.42 | 109.30 | 101.35 |
| 6 | 99.63 | 102.77 | 99.31 | 99.25 | 101.40 | 99.65 | 99.33 | 99.31 | 99.25 | 103.41 | 109.38 | 101.79 |
| 7 | 99.62 | 102.43 | 99.75 | 99.24 | 103.55 | 99.64 | 99.32 | 99.28 | 99.22 | 104.61 | 108.79 | 99.83 |
| 8 | 99.60 | 102.58 | 99.32 | 99.24 | 103.33 | 99.65 | 99.41 | 99.30 | 99.21 | 105.99 | 106.90 | 98.65 |
| 9 | 99.64 | 102.50 | 99.33 | 99.23 | 103.24 | 99.61 | 99.41 | 99.31 | 99.24 | 106.52 | 101.80 | 98.62 |
| 10 | 99.58 | 102.69 | 99.29 | 99.22 | 103.21 | 99.64 | 99.32 | 99.31 | 99.24 | 106.74 | 99.92 | 98.60 |
| 11 | 99.58 | 102.62 | 99.28 | 99.24 | 103.13 | 99.65 | 99.31 | 99.30 | 99.29 | 106.29 | 99.73 | 98.59 |
| 12 | 99.57 | 102.42 | 99.27 | 99.28 | 103.14 | 99.62 | 99.33 | 99.29 | 99.30 | 104.95 | 99.64 | 98.58 |
| 13 | 99.61 | 102.42 | 99.27 | 99.28 | 103.21 | 99.55 | 99.37 | 99.31 | 99.34 | 103.94 | 99.56 | 98.56 |
| 14 | 99.56 | 102.38 | 99.29 | 99.27 | 103.36 | 99.50 | 99.38 | 99.42 | 99.31 | 103.62 | 99.52 | 98.60 |
| 15 | 99.57 | 102.37 | 99.31 | 99.26 | 103.22 | 99.58 | 99.30 | 99.37 | 99.44 | 103.59 | 100.66 | 98.55 |
| 16 | 99.63 | 102.31 | 99.27 | 99.24 | 103.91 | 99.49 | 99.32 | 99.35 | 99.49 | 103.25 | 103.56 | 98.54 |
| 17 | 99.62 | 102.25 | 99.27 | 99.24 | 102.27 | 99.55 | 99.34 | 99.25 | 99.41 | 103.13 | 103.91 | 98.54 |
| 18 | 99.62 | 102.41 | 99.27 | 99.26 | 99.94 | 99.51 | 99.31 | 99.24 | 99.32 | 103.24 | 102.94 | 98.54 |
| 19 | 100.04 | 102.38 | 99.27 | 99.25 | 99.87 | 99.56 | 99.33 | 99.33 | 99.34 | 103.17 | 102.76 | 100.51 |
| 20 | 100.75 | 102.46 | 99.31 | 99.23 | 99.80 | 99.54 | 99.35 | 99.36 | 99.32 | 103.02 | 102.93 | 102.91 |
| 21 | 101.60 | 102.46 | 101.86 | 99.18 | 99.77 | 99.50 | 99.28 | 99.33 | 99.32 | 102.98 | 102.95 | 98.75 |
| 22 | 101.42 | 102.53 | 100.58 | 99.17 | 99.76 | 99.45 | 99.28 | 99.31 | 99.31 | 102.97 | 102.83 | 98.59 |
| 23 | 102.39 | 102.21 | 100.26 | | 99.72 | 99.44 | 99.33 | 99.32 | 99.30 | 103.02 | 103.04 | 98.57 |
| 24 | 104.11 | 99.32 | 99.37 | | 99.65 | 99.40 | 99.30 | 99.30 | 99.33 | 102.94 | 103.33 | 98.56 |
| 25 | 105.76 | 99.60 | 99.40 | | 99.66 | 99.41 | 99.29 | 99.34 | 99.35 | 103.07 | 103.28 | 98.51 |
| 26 | 105.44 | 99.82 | 99.51 | | 99.64 | 99.40 | 99.32 | 99.31 | 99.30 | 103.20 | 101.87 | 98.50 |
| 27 | 105.39 | 99.43 | 99.34 | | 99.64 | 99.40 | 99.35 | 99.29 | 99.33 | 102.99 | 99.40 | 98.50 |
| 28 | 104.28 | 99.38 | 99.32 | | 99.66 | 99.42 | 99.30 | 99.30 | 99.36 | 102.97 | 99.63 | 98.50 |
| 29 | 103.66 | | 99.29 | | 99.66 | 99.46 | 99.30 | 99.32 | 99.40 | 102.71 | 98.87 | 98.51 |
| 30 | 103.53 | | 99.28 | 99.18 | 99.65 | 99.45 | 99.31 | 99.32 | 99.36 | 102.69 | 98.82 | 98.55 |
| 31 | 103.32 | | 99.27 | | 99.66 | | 99.30 | 99.22 | | 102.80 | | 98.54 |
| Avg. | 101.26 | 101.96 | 99.48 | | 100.94 | 99.54 | 99.33 | 99.32 | 99.31 | 103.05 | 102.82 | 99.18 |

# 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 Diversion Dam. It is the largest of three wasteways discharging waste water from the Valley Division of the Yuma Project in the United States into the limitrophe section of the Colorado River and is one of six measurement points for deliveries of Colorado River water to Mexico pursuant to provisions of the 1944 Water Treaty.

RECORDS: Flow is computed 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 1962, 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, 9,570 acre-feet, January 1949; minimum discharge, zero on various occasions. Since January 1, 1951, maximum instantaneous discharge, 800 second-feet, December 3, 1961, at a maximum gage height of 117.60 feet; minimum instantaneous discharge, zero during parts of each year.

## Mean Daily Discharge in Second-Feet 1962 — Annual and Period Summary

| Day | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 89.1 | 19.7 | 17.4 | 74.4 | 2.7 | 12.8 | 102 | 4.2 | 11.2 | 8.3 | 31.4 | 37.9 |
| 2 | 3.7 | 23.3 | 17.3 | 31.6 | 16.1 | 13.1 | 23.9 | 3.2 | 35.6 | 25.3 | 50.1 | 156 |
| 3 | 1.8 | 23.3 | 20.8 | 1.2 | 15.9 | 40.2 | .6 | 10.7 | 33.9 | 12.2 | 28.3 | 10.7 |
| 4 | 1.5 | 78.6 | 98.9 | 7.1 | 10.2 | 43.9 | 10.3 | 36.4 | 25.5 | 1.8 | 8.1 | 2.2 |
| 5 | .6 | 25.6 | 23.8 | 42.7 | 24.1 | 3.5 | 14.7 | 81.4 | 21.4 | 14.7 | 18.1 | 2.1 |
| 6 | 22.3 | 2.9 | 2.8 | 13.1 | 87.9 | 1.5 | 21.5 | 19.5 | 12.4 | 16.2 | 15.1 | 13.6 |
| 7 | 90.3 | 21.2 | 16.6 | 17.5 | 27.9 | 21.2 | 35.7 | .7 | 12.4 | 18.9 | 1.5 | 11.7 |
| 8 | 32.0 | 41.5 | 43.7 | 24.6 | .9 | 20.7 | 39.9 | 3.8 | 24.0 | 16.4 | 5.3 | 4.7 |
| 9 | 20.4 | 27.8 | 8.0 | 16.1 | 14.4 | 13.1 | 25.3 | 8.2 | 8.8 | 10.5 | 27.2 | 31.9 |
| 10 | 45.3 | 17.2 | 29.5 | 2.7 | 11.0 | 27.2 | 12.4 | 16.1 | 12.0 | 11.0 | 15.5 | 15.5 |
| 11 | 25.1 | 26.2 | 36.2 | 12.2 | 16.9 | 22.4 | 9.6 | 4.9 | 28.1 | 1.6 | 1.9 | 33.9 |
| 12 | 40.6 | 22.0 | 28.3 | 6.7 | 31.3 | 18.2 | 7.1 | 37.6 | 5.6 | 14.2 | 33.6 | 26.8 |
| 13 | 17.6 | 34.6 | 5.8 | 8.5 | 34.7 | 9.4 | 15.3 | 34.9 | 5.3 | 16.7 | 27.7 | 20.2 |
| 14 | 27.0 | 48.1 | 8.4 | 3.6 | 20.8 | 14.1 | 22.7 | 15.9 | 3.7 | 32.6 | 37.3 | 34.7 |
| 15 | 4.3 | 22.5 | 30.9 | 6.8 | 10.7 | 18.2 | 51.6 | 7.0 | 23.5 | 33.0 | 25.4 | 16.1 |
| 16 | 16.5 | 12.3 | 13.9 | 33.2 | 24.3 | 10.0 | 28.7 | 13.0 | 13.1 | 31.8 | 32.2 | 15.8 |
| 17 | 13.4 | 29.5 | 22.5 | 10.0 | 22.2 | 29.5 | 4.9 | 23.1 | 10.5 | 17.8 | 38.5 | 14.9 |
| 18 | 25.6 | 20.8 | 30.0 | 17.9 | 8.4 | 30.0 | 9.7 | 29.1 | 6.8 | 34.3 | 16.5 | 32.5 |
| 19 | 12.4 | 45.2 | 18.5 | 27.5 | 20.4 | 10.6 | 23.2 | 31.3 | 7.2 | 11.7 | 17.9 | 7.0 |
| 20 | 22.5 | 26.0 | 29.8 | 33.8 | 24.0 | 2.6 | 11.4 | 13.2 | 12.8 | * 18.5 | 9.2 | 2.7 |
| 21 | 44.5 | 36.5 | 25.2 | ᵘ 5.0 | 26.1 | 4.2 | 10.1 | 10.3 | 13.3 | ᵘ 18.0 | 31.2 | 31.6 |
| 22 | 15.8 | 20.6 | 32.4 | ᵘ 28.0 | 2.9 | 22.5 | 15.3 | 18.6 | 31.5 | * 18.3 | 36.7 | 19.0 |
| 23 | 19.0 | 22.6 | 19.4 | * 18.9 | 17.0 | 25.0 | 23.9 | 6.0 | 27.2 | 4.1 | 28.6 | 24.5 |
| 24 | 34.5 | 28.1 | 10.4 | 2.1 | 23.8 | 19.0 | 5.7 | 23.2 | 25.7 | 1.7 | 14.0 | 24.4 |
| 25 | 30.6 | 51.5 | 28.8 | 4.4 | 8.2 | 22.0 | 25.1 | 19.4 | 2.1 | 8.1 | 17.9 | 14.8 |
| 26 | 7.3 | 11.0 | 15.9 | 1.8 | 1.8 | 9.6 | 9.9 | 27.1 | 9.4 | 13.6 | 20.8 | 29.0 |
| 27 | 10.3 | 13.5 | 12.6 | 14.8 | 11.5 | 10.6 | 11.6 | 19.4 | 52.2 | 7.4 | 1.6 | 9.2 |
| 28 | 25.9 | 4.4 | 7.2 | 33.8 | 17.6 | 6.6 | 23.3 | 86.6 | 27.3 | 60.7 | 20.0 | 44.0 |
| 29 | 4.1 | | 13.7 | 42.2 | 13.6 | 7.4 | 47.2 | 29.8 | 40.0 | 28.6 | 38.5 | 27.5 |
| 30 | 9.5 | | 6.2 | 21.3 | 12.5 | 26.7 | 28.8 | 1.0 | 44.0 | 1.7 | 38.9 | 20.3 |
| 31 | 10.8 | | 18.8 | | 1.8 | | 4.1 | .9 | | 12.3 | | 33.2 |
| Sum | 724.3 | 756.5 | 693.7 | 563.5 | 561.6 | 515.8 | 675.5 | 636.5 | 586.5 | 522.0 | 689.0 | 768.4 |

**Current Year** 1962 — **Period** 1935-1962

| Month | Extreme Gage Feet | | Extreme Second-Feet | | | | Average Second-Feet | Total Acre-Feet | Acre-Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | High | | Low | | | | | | |
| | High | Low | Day | High | Day | Low | | | Average | Maximum | Minimum |
| Jan. | 114.55 | 111.72 | 1 | 162 | † 5 | 0 | 23.4 | 1,437 | 4,607 | 9,570 | 263 |
| Feb. | 116.66 | 111.80 | 8 | 440 | †13 | 1.2 | 27.0 | 1,500 | 3,674 | 8,430 | 657 |
| Mar. | 116.06 | 111.84 | 4 | 319 | † 2 | 1.7 | 22.4 | 1,376 | 3,437 | 6,230 | 1,000 |
| Apr. | 116.08 | 111.72 | 1 | 322 | 4 | 0 | 18.8 | 1,118 | 3,161 | 6,300 | 0 |
| May | 116.30 | 111.72 | 6 | 360 | † 8 | 0 | 18.1 | 1,114 | 3,889 | 9,320 | 101 |
| June | 113.42 | 111.77 | 4 | 94.1 | 6 | .8 | 17.2 | 1,023 | 3,691 | 7,440 | 910 |
| July | 116.31 | 111.72 | 1 | 362 | † 3 | 0 | 21.8 | 1,340 | 3,732 | 8,320 | 840 |
| Aug. | 116.28 | 111.72 | 28 | 356 | † 7 | 0 | 20.5 | 1,262 | 3,118 | 9,740 | 710 |
| Sept. | 114.03 | 111.79 | 27 | 130 | †25 | 1.0 | 19.6 | 1,163 | 2,311 | 6,140 | 820 |
| Oct. | 116.14 | 111.80 | 28 | 331 | † 1 | 1.2 | 16.8 | 1,035 | 3,097 | 5,680 | 1,035 |
| Nov. | 114.08 | 111.81 | 1 | 133 | 7 | 1.3 | 23.0 | 1,367 | 3,711 | 8,220 | 1,252 |
| Dec. | 116.61 | 111.80 | 2 | 428 | 5 | 1.2 | 24.8 | 1,524 | 4,995 | 9,430 | 1,372 |
| Yearly | 116.66 | 111.72 | | 440 | | 0 | 21.1 | 15,259 | 43,423 | 82,900 | 15,259 |

† And other days ᵘ Estimated * 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 1962; 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, 95.93 feet, March 17, 1951.

## Mean Daily Gage Height in Feet 1962

| Day | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 99.20 | 99.47 | 96.79 | 96.96 | 96.41 | 96.69 | 97.06 | 96.30 | 96.32 | 96.42 | 99.54 | 96.32 |
| 2 | 97.01 | 99.51 | 96.75 | 96.72 | 96.47 | 96.64 | 96.60 | 96.30 | 96.57 | 96.57 | 99.24 | 96.80 |
| 3 | 97.77 | 99.48 | 96.77 | 96.52 | 96.50 | 96.84 | 96.40 | 96.42 | 96.61 | 96.42 | 102.04 | 97.21 |
| 4 | 96.65 | 99.58 | 97.14 | 96.58 | 96.48 | 96.94 | 96.44 | 96.61 | 96.53 | 96.35 | 104.49 | 98.73 |
| 5 | 96.52 | 99.95 | 96.74 | 96.81 | 96.60 | 96.64 | 96.53 | 96.93 | 96.47 | 96.51 | 105.21 | 98.27 |
| 6 | 96.63 | 99.79 | 96.63 | 96.62 | 98.31 | 96.59 | 96.52 | 96.50 | 96.37 | 99.44 | 105.56 | 98.68 |
| 7 | 97.11 | 99.41 | 97.08 | 96.67 | 100.41 | 96.75 | 96.63 | 96.31 | 96.38 | 101.09 | 105.11 | 97.22 |
| 8 | 96.69 | 99.61 | 96.92 | 96.69 | 100.24 | 96.75 | 96.69 | 96.35 | 96.48 | 102.24 | 103.57 | 96.11 |
| 9 | 96.60 | 99.51 | 96.71 | 96.65 | 100.16 | 96.69 | 96.60 | 96.45 | 96.31 | 102.72 | 99.00 | 96.20 |
| 10 | 96.75 | 99.61 | 96.83 | 96.52 | 100.13 | 96.85 | 96.40 | 96.45 | 96.38 | 103.08 | 96.86 | 96.10 |
| 11 | 96.58 | 99.68 | 96.85 | 96.58 | 100.06 | 96.79 | 96.39 | 96.37 | 96.53 | 102.70 | 96.66 | 96.11 |
| 12 | 96.71 | 99.40 | 96.75 | 96.58 | 100.08 | 96.73 | 96.34 | 96.62 | 96.32 | 101.46 | 96.72 | 96.08 |
| 13 | 96.58 | 99.46 | 96.57 | 96.58 | 100.16 | 96.63 | 96.46 | 96.63 | 96.30 | 100.65 | 96.63 | 96.04 |
| 14 | 96.55 | 99.42 | 96.62 | 96.55 | 100.23 | 96.63 | 96.55 | 96.50 | 96.26 | 100.26 | 96.64 | 96.13 |
| 15 | 96.41 | 99.37 | 96.80 | 96.55 | 100.10 | 96.68 | 96.70 | 96.35 | 96.49 | 100.22 | 97.52 | 96.04 |
| 16 | 96.52 | 99.31 | 96.66 | 96.72 | 100.71 | 96.59 | 96.59 | 96.41 | 96.48 | 99.87 | 100.22 | 96.00 |
| 17 | 96.53 | 99.26 | 96.71 | 96.54 | 99.61 | 96.73 | 96.44 | 96.50 | 96.43 | 99.68 | 100.68 | 96.02 |
| 18 | 96.60 | 99.39 | 96.77 | 96.58 | 97.11 | 96.74 | 96.39 | 96.51 | 96.35 | 99.88 | 99.72 | 96.07 |
| 19 | 96.86 | 99.44 | 96.70 | 96.65 | 96.97 | 96.58 | 96.52 | 96.61 | 96.42 | 99.76 | 99.51 | 97.32 |
| 20 | 97.67 | 99.46 | 96.77 | 96.73 | 96.93 | 96.50 | 96.45 | 96.48 | 96.39 | 99.62 | 99.66 | 99.99 |
| 21 | 98.18 | 99.47 | 98.71 | 96.48 | 96.92 | 96.49 | 96.42 | 96.40 | 96.36 | 99.61 | 99.72 | 96.37 |
| 22 | 98.22 | 99.48 | 98.02 | 96.65 | 96.77 | 96.59 | 96.44 | 96.51 | 96.53 | 99.58 | 99.64 | 96.13 |
| 23 | 99.03 | 99.46 | 97.54 | 96.60 | 96.82 | 96.64 | 96.55 | 96.37 | 96.51 | 99.62 | 99.81 | 96.16 |
| 24 | 100.54 | 97.05 | 96.72 | 96.42 | 96.78 | 96.60 | 96.37 | 96.50 | 96.56 | 99.50 | 100.12 | 96.13 |
| 25 | 102.06 | 97.30 | 96.76 | 96.38 | 96.71 | 96.61 | 96.54 | 96.48 | 96.35 | 99.68 | 100.10 | 95.99 |
| 26 | 101.76 | 97.17 | 96.74 | 96.46 | 96.58 | 96.50 | 96.42 | 96.58 | 96.38 | 99.84 | 99.04 | 96.09 |
| 27 | 101.79 | 96.86 | 96.64 | 96.48 | 96.70 | 96.50 | 96.41 | 96.48 | 96.70 | 99.66 | 96.54 | 95.96 |
| 28 | 101.00 | 96.73 | 96.57 | 96.63 | 96.74 | 96.50 | 96.52 | 96.79 | 96.58 | 99.71 | 96.96 | 96.13 |
| 29 | 100.45 | | 96.63 | 96.73 | 96.72 | 96.50 | 96.71 | 96.55 | 96.69 | 99.41 | 96.39 | 96.06 |
| 30 | 100.36 | | 96.56 | 96.57 | 96.71 | 96.62 | 96.58 | 96.28 | 96.67 | 99.31 | 96.36 | 96.04 |
| 31 | 100.22 | | 96.64 | | 96.63 | | 96.34 | 96.24 | | 99.45 | | 96.08 |
| Avg. | 98.11 | 99.06 | 96.87 | 96.61 | 97.99 | 96.65 | 96.52 | 96.48 | 96.46 | 99.69 | 99.64 | 96.60 |

# 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 and is one of six measurement points for deliveries of Colorado River water to Mexico pursuant to provisions of the 1944 Water Treaty.

RECORDS: Flow is computed 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 1962, 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, January 1946; minimum monthly discharge, zero for various months. Since January 1, 1951, maximum instantaneous discharge, 102 second-feet, January 24, 1954 at 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 1962 — Annual and Period Summary

| Day | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 19.8 | 2.4 | 0 | 7.8 | 9.6 | 4.7 | 5.8 | 5.1 | 3.3 | 4.7 | 5.5 | 9.8 |
| 2 | 4.4 | 13.8 | 0 | 24.0 | 13.2 | 10.6 | 17.4 | 7.0 | 14.1 | 17.9 | 19.3 | 16.4 |
| 3 | 1.1 | 11.9 | 1.4 | 3.6 | 5.5 | 9.7 | 1.0 | 7.0 | 13.3 | 20.0 | 19.7 | 13.8 |
| 4 | .7 | 23.1 | 12.9 | 1.0 | 5.9 | 1.5 | .5 | 10.0 | 4.7 | 25.4 | 13.3 | 2.0 |
| 5 | .5 | 16.8 | 13.7 | 14.0 | 5.3 | 5.2 | 4.3 | 20.7 | 13.5 | 25.4 | 17.8 | 1.9 |
| 6 | .4 | 2.5 | 1.2 | 15.5 | 5.2 | 8.7 | 10.0 | 28.3 | 11.6 | 37.9 | 25.4 | 1.9 |
| 7 | 15.6 | 1.1 | .4 | 2.4 | 9.2 | 3.4 | 2.9 | 2.1 | 10.8 | 15.5 | 9.8 | 12.7 |
| 8 | 10.6 | 3.7 | .3 | 8.7 | .9 | .4 | 7.7 | 1.1 | 6.8 | 18.1 | 12.4 | 2.9 |
| 9 | 3.7 | 12.4 | 8.6 | 12.7 | .2 | 4.8 | 15.3 | 10.6 | 10.6 | 11.9 | 5.8 | 9.4 |
| 10 | 14.8 | 7.6 | 3.2 | 8.9 | .2 | 4.8 | 12.7 | 9.7 | 14.2 | 15.1 | 11.7 | 4.5 |
| 11 | 12.1 | 9.2 | 32.6 | 15.9 | .7 | 3.4 | 8.6 | 3.9 | 7.1 | 7.1 | 15.6 | 10.6 |
| 12 | 12.7 | 21.5 | 17.0 | 14.6 | 2.9 | 2.3 | 10.6 | 20.9 | 9.2 | 18.2 | 12.4 | 15.0 |
| 13 | 7.6 | 7.2 | 11.0 | 15.2 | 13.6 | 3.4 | 13.3 | 12.4 | 16.9 | 24.2 | 13.7 | 13.2 |
| 14 | 1.2 | 17.4 | 12.3 | 15.3 | 11.4 | 7.2 | 13.6 | 2.1 | 10.9 | 23.0 | 16.4 | 2.7 |
| 15 | 4.4 | 15.8 | 7.7 | 17.8 | 17.7 | 9.5 | 31.7 | 8.7 | 6.4 | 16.3 | 21.4 | 2.6 |
| 16 | 5.4 | 16.7 | 2.8 | 29.0 | 11.4 | 10.9 | 21.0 | 6.7 | 1.1 | 9.7 | 14.8 | 6.8 |
| 17 | 9.1 | 22.0 | 2.5 | 6.6 | 4.3 | 2.3 | 2.7 | 5.0 | .9 | 8.0 | 10.7 | 16.7 |
| 18 | 7.8 | 17.5 | 13.2 | 10.2 | 8.0 | 2.0 | 5.8 | 4.6 | 2.8 | 4.0 | 16.0 | 16.5 |
| 19 | 7.7 | 18.4 | 22.5 | 4.3 | 15.3 | 7.3 | 2.0 | 13.4 | 1.2 | 13.8 | 22.8 | 11.2 |
| 20 | 6.1 | 9.9 | 19.8 | 14.8 | 11.3 | 1.6 | 7.0 | 8.5 | 1.1 | 24.4 | 12.7 | 2.2 |
| 21 | 12.6 | 10.2 | 16.5 | 13.7 | 15.3 | 2.2 | 5.1 | 7.4 | 4.4 | 4.5 | 2.4 | 4.9 |
| 22 | 5.2 | 8.1 | 10.1 | 5.1 | 12.2 | 8.5 | .8 | 11.0 | 14.0 | 10.7 | 4.4 | 14.1 |
| 23 | .7 | 14.0 | 7.8 | 13.4 | 11.2 | 29.5 | 2.3 | 11.2 | 17.6 | 18.8 | 10.0 | 4.7 |
| 24 | 13.2 | 3.0 | 9.4 | 11.6 | 3.1 | 21.8 | .8 | 17.8 | 24.8 | 16.3 | 20.1 | 6.3 |
| 25 | 9.4 | 0 | 1.5 | 3.2 | .7 | 7.6 | 1.0 | 16.1 | 15.1 | 1.9 | 14.8 | 2.1 |
| 26 | 2.5 | 0 | 11.6 | 2.5 | .4 | 18.2 | 1.2 | 6.2 | 20.8 | 2.5 | 16.8 | 2.8 |
| 27 | 0 | 0 | .9 | 3.4 | 9.5 | 9.6 | 5.4 | 1.0 | 31.7 | 2.1 | 7.3 | 10.7 |
| 28 | 14.5 | 0 | 10.9 | 1.2 | 13.4 | 6.2 | 8.4 | 5.7 | 43.0 | 3.8 | 11.0 | 3.6 |
| 29 | 19.3 | | 10.9 | 4.8 | 6.3 | 7.0 | 6.8 | 24.6 | 20.1 | 9.4 | 7.1 | 10.8 |
| 30 | 11.9 | | 8.5 | 15.5 | 5.9 | 6.2 | 9.2 | 1.5 | 23.8 | 2.8 | 14.3 | 5.8 |
| 31 | 2.0 | | 17.2 | | 5.7 | | 6.4 | 1.0 | | 2.0 | | 8.5 |
| Sum | 237.0 | 286.2 | 288.4 | 316.7 | 235.5 | 220.5 | 241.3 | 291.3 | 375.8 | 415.4 | 405.4 | 247.1 |

**Current Year** 1962 | **Period** 1939-1962

| Month | Extreme Gage Feet | | Extreme Second-Feet | | | | Average Second-Feet | Total Acre-Feet | Acre-Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | High | | Low | | | | | | |
| | High | Low | Day | | Day | | | | Average | Maximum | Minimum |
| Jan. | 94.31 | 92.92 | 10 | 35.2 | † 26 | 0 | 7.6 | 470 | 1,155 | 2,860 | 397 |
| Feb. | 95.09 | 92.92 | 12 | 63.6 | † 24 | 0 | 10.2 | 568 | 965 | 2,510 | 478 |
| Mar. | 94.70 | 92.92 | 11 | 48.8 | † 1 | 0 | 9.3 | 572 | 859 | 1,660 | 293 |
| Apr. | 94.62 | 92.97 | 30 | 46.0 | 5 | .3 | 10.6 | 628 | 953 | 1,940 | 326 |
| May | 94.35 | 92.95 | 13 | 36.6 | † 9 | .2 | 7.6 | 467 | 1,206 | 2,470 | 183 |
| June | 94.64 | 92.99 | 23 | 46.7 | 1 | .4 | 7.4 | 437 | 1,063 | 2,350 | 292 |
| July | 94.84 | 93.01 | 27 | 54.0 | † 11 | .5 | 7.8 | 479 | 925 | 1,950 | 192 |
| Aug. | 94.57 | 93.06 | 6 | 44.2 | 3 | .8 | 9.4 | 578 | 936 | 2,530 | 200 |
| Sept. | 94.96 | 93.07 | 27 | 58.6 | 17 | .9 | 12.5 | 745 | 838 | 2,180 | 122 |
| Oct. | 94.89 | 93.12 | 5 | 55.9 | 1 | 1.3 | 13.4 | 824 | 1,007 | 2,100 | 238 |
| Nov. | 94.71 | 92.92 | 6 | 49.2 | † 9 | 0 | 13.5 | 804 | 1,185 | 2,380 | 327 |
| Dec. | 94.31 | 92.92 | 17 | 35.2 | † 8 | 0 | 8.0 | 490 | 1,351 | 2,680 | 477 |
| Yearly | 95.09 | 92.92 | | 63.6 | | 0 | 9.8 | 7,062 | 12,443 | 24,370 | 6,448 |

† And other days

# DIVERSIONS BY PUMPS IN THE UNITED STATES - LIMITROPHE SECTION

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

RECORDS: Quantities of water pumped 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 1962.

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

## Mean Daily Discharge in Second-Feet 1962 — Annual and Period Summary

| Day | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 0 | 5 | 12 | 3 | 13 | 9 | 7 | 5 | 6 | 2 | 8 |
| 2 | 0 | 0 | 5 | 9 | 3 | 13 | 10 | 6 | 5 | 6 | 2 | 8 |
| 3 | 0 | 0 | 5 | 9 | 3 | 13 | 10 | 6 | 7 | 6 | 2 | 3 |
| 4 | 0 | 0 | 5 | 9 | 2 | 8 | 10 | 6 | 6 | 6 | 1 | 3 |
| 5 | 0 | 1 | 6 | 9 | 2 | 8 | 10 | 6 | 5 | 6 | 2 | 3 |
| 6 | 0 | 1 | 6 | 9 | 2 | 8 | 9 | 4 | 5 | 6 | 2 | 3 |
| 7 | 0 | 1 | 6 | 9 | 8 | 8 | 9 | 4 | 5 | 6 | 2 | 2 |
| 8 | 2 | 1 | 6 | 9 | 8 | 8 | 8 | 3 | 5 | 7 | 2 | 2 |
| 9 | 2 | 1 | 6 | 10 | 8 | 8 | 10 | 3 | 5 | 8 | 1 | 2 |
| 10 | 2 | 2 | 6 | 10 | 8 | 7 | 10 | 3 | 3 | 8 | 1 | 1 |
| 11 | 2 | 2 | 5 | 10 | 8 | 12 | 10 | 3 | 3 | 8 | 1 | 1 |
| 12 | 3 | 7 | 3 | 11 | 9 | 12 | 8 | 3 | 3 | 8 | 3 | 1 |
| 13 | 3 | 7 | 4 | 11 | 9 | 12 | 10 | 10 | 3 | 8 | 3 | 1 |
| 14 | 3 | 7 | 4 | 11 | 11 | 12 | 10 | 11 | 2 | 8 | 3 | 1 |
| 15 | 2 | 7 | 4 | 11 | 11 | 12 | 11 | 11 | 2 | 4 | 4 | 1 |
| 16 | 1 | 7 | 4 | 10 | 11 | 12 | 12 | 11 | 2 | 4 | 4 | 0 |
| 17 | 1 | 8 | 4 | 10 | 11 | 12 | 13 | 11 | 6 | 4 | 4 | 1 |
| 18 | 1 | 8 | 4 | 10 | 11 | 11 | 14 | 11 | 6 | 4 | 4 | 1 |
| 19 | 1 | 7 | 3 | 10 | 11 | 11 | 14 | 11 | 6 | 4 | 7 | 1 |
| 20 | 1 | 7 | 3 | 10 | 12 | 11 | 14 | 7 | 6 | 4 | 7 | 1 |
| 21 | 1 | 7 | 3 | 9 | 7 | 11 | 14 | 7 | 6 | 4 | 7 | 2 |
| 22 | 5 | 7 | 3 | 9 | 7 | 10 | 14 | 7 | 6 | 7 | 7 | 2 |
| 23 | 5 | 7 | 3 | 9 | 7 | 10 | 5 | 7 | 5 | 7 | 6 | 2 |
| 24 | 5 | 7 | 3 | 9 | 7 | 10 | 5 | 7 | 6 | 7 | 6 | 2 |
| 25 | 5 | 6 | 2 | 10 | 7 | 10 | 5 | 7 | 6 | 7 | 6 | 1 |
| 26 | 6 | 5 | 11 | 10 | 8 | 10 | 5 | 7 | 6 | 7 | 8 | 0 |
| 27 | 6 | 5 | 11 | 10 | 8 | 10 | 5 | 7 | 5 | 6 | 9 | 0 |
| 28 | 6 | 5 | 12 | 10 | 12 | 10 | 5 | 6 | 5 | 6 | 9 | 0 |
| 29 | 1 | | 12 | 10 | 13 | 10 | 6 | 6 | 5 | 2 | 9 | 0 |
| 30 | 1 | | 12 | 3 | 13 | 9 | 7 | 5 | 5 | 2 | 9 | 0 |
| 31 | 0 | | 12 | | 10 | | 7 | 5 | | 2 | | 2 |
| Sum | 65 | 123 | 178 | 288 | 250 | 311 | 289 | 208 | 145 | 178 | 133 | 55 |

| Month | Current Year 1962 | | | | | | | | Period 1956-1962 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Extreme Gage Feet | | Ø Extreme Second-Feet | | | | Average Second-Feet | Total Acre-Feet | Acre-Feet | | |
| | | | High | | Low | | | | | | |
| | High | Low | Day | | Day | | | | Average | Maximum | Minimum |
| Jan. | | | †26 | 6 | † 1 | 0 | 2.1 | 129 | 166 | 280 | 80 |
| Feb. | | | †17 | 8 | † 1 | 0 | 4.4 | 244 | 342 | 500 | 210 |
| Mar. | | | †28 | 12 | 25 | 2 | 5.7 | 353 | 411 | 600 | 317 |
| Apr. | | | 1 | 12 | 30 | 3 | 9.6 | 571 | 465 | 571 | 389 |
| May | | | †29 | 13 | † 4 | 2 | 8.1 | 496 | 525 | 770 | 400 |
| June | | | † 1 | 13 | 10 | 7 | 10.4 | 617 | 610 | 800 | 385 |
| July | | | †18 | 14 | †23 | 5 | 9.3 | 573 | 612 | 820 | 460 |
| Aug. | | | †14 | 11 | † 8 | 3 | 6.7 | 413 | 448 | 800 | 290 |
| Sept. | | | 3 | 7 | †14 | 2 | 4.8 | 288 | 425 | 940 | 194 |
| Oct. | | | † 9 | 8 | †29 | 2 | 5.7 | 353 | 314 | 390 | 240 |
| Nov. | | | †27 | 9 | † 4 | 1 | 4.4 | 264 | 239 | 330 | 90 |
| Dec. | | | † 1 | 8 | †16 | 0 | 1.8 | 109 | 157 | 230 | 99.2 |
| Yearly | | | | 14 | | 0 | 6.1 | 4,410 | 4,714 | 6,480 | 3,941 |

† And other days Ø Mean daily

# EAST MAIN CANAL WASTEWAY (VALLEY DIVISION, YUMA PROJECT)

DESCRIPTION: Water-stage recorder and control weir located about 300 feet north of the international boundary and 1.5 miles east of the Colorado River. This is one of six measurement points for deliveries of Colorado River water to Mexico pursuant to provisions of the 1944 Water Treaty.

RECORDS: Wasteway discharges computed by United States Section of the Commission beginning November 1, 1953, from head on control weir as measured by water-stage recorder and weir ratings as determined by current meter measurements. During the year 12 measurements were made by the United States Section. Records available: Monthly discharges January 1924 through June 1928, January 1932 through December 1933, and April 1935 through December 1962; daily discharges October 1946 through December 1962.

REMARKS: Wasteway discharges from the East Main Canal comprise regulatory waste and drainage waters from the eastern half of the Valley Division of the Yuma Project. Beginning in January 1956 flows from this canal discharging into Mexico have been included in deliveries to Mexico in the same manner as waste flows arriving in the bed of the limitrophe section of Colorado River, under terms of an agreement between the two Sections of the Commission.

## Mean Daily Discharge in Second-Feet 1962 — Annual and Period Summary

| Day | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 13.7 | 27.2 | 30.9 | 13.0 | 19.0 | 11.3 | 24.1 | 11.0 | 26.2 | 6.9 | 20.8 | 25.7 |
| 2 | 7.4 | 29.5 | 8.1 | 24.3 | 13.5 | 4.0 | .1 | 17.4 | 47.4 | 21.8 | 24.6 | .3 |
| 3 | 2.0 | 33.5 | 45.6 | 35.7 | 24.8 | 20.9 | 8.9 | 23.0 | 19.9 | 37.1 | 32.8 | 3.0 |
| 4 | .8 | 44.5 | 46.1 | 31.0 | 10.9 | 18.6 | 17.0 | 25.5 | 11.3 | 20.9 | 31.2 | 14.1 |
| 5 | 0 | 36.3 | 40.8 | 7.5 | 26.8 | 19.7 | 23.1 | 18.5 | .9 | 30.7 | 23.4 | 21.8 |
| 6 | 0 | 36.7 | 28.5 | 29.4 | 21.8 | 24.7 | 11.4 | 16.3 | 27.3 | 25.6 | 32.0 | 19.4 |
| 7 | 1.8 | 14.0 | 26.4 | 6.6 | 9.5 | 23.9 | 9.1 | 15.1 | 25.6 | 17.8 | 49.6 | 17.0 |
| 8 | 25.3 | 27.5 | 24.9 | 30.2 | 21.2 | 5.5 | 3.1 | 10.3 | 16.1 | 33.3 | 37.5 | 16.5 |
| 9 | 15.7 | 19.2 | 31.9 | 4.6 | 15.8 | 14.6 | 1.7 | 16.1 | 26.1 | 20.5 | 49.3 | 21.0 |
| 10 | 15.2 | 21.3 | 21.4 | 15.8 | 11.4 | 23.8 | 16.2 | 33.3 | 9.7 | 14.0 | 40.4 | 7.0 |
| 11 | 16.7 | 31.9 | 25.0 | 14.6 | 30.8 | 5.2 | 16.9 | 9.0 | 15.6 | 39.5 | 20.1 | 4.0 |
| 12 | 10.2 | 28.1 | 3.8 | 9.1 | 28.7 | 26.8 | 10.3 | 1.8 | 16.1 | 43.0 | 40.3 | 22.1 |
| 13 | 28.9 | 22.7 | 33.3 | 10.9 | 20.2 | 11.3 | 10.5 | 17.3 | 27.1 | 46.1 | 34.2 | 29.7 |
| 14 | 29.4 | 6.1 | 15.2 | 5.3 | 30.5 | 24.9 | .4 | 11.4 | 44.5 | 32.9 | 29.4 | 22.8 |
| 15 | 15.9 | 14.1 | 22.8 | 23.3 | 13.3 | 10.0 | 14.9 | 11.5 | 37.1 | 41.0 | 34.4 | 28.7 |
| 16 | 30.7 | 13.2 | 22.3 | 40.4 | 3.4 | 16.3 | 8.3 | 15.2 | 33.4 | 9.8 | 12.4 | 22.7 |
| 17 | 10.4 | 39.5 | 15.5 | 8.3 | 12.0 | 9.9 | 7.6 | 3.9 | 46.0 | 1.9 | 20.5 | 16.0 |
| 18 | 21.1 | 37.0 | 20.7 | 3.2 | 15.9 | 16.6 | 2.1 | 9.6 | 38.4 | 5.9 | 32.0 | 8.6 |
| 19 | 19.2 | 21.2 | 20.1 | 11.6 | 18.8 | 11.4 | .8 | 22.7 | 31.3 | 32.2 | 40.7 | 5.5 |
| 20 | 18.2 | 7.3 | 1.1 | 14.4 | 18.6 | 1.5 | 1.1 | 23.6 | 19.4 | 29.8 | 3.6 | 16.0 |
| 21 | 13.0 | 2.0 | .7 | 13.9 | 39.6 | 4.2 | 8.3 | 2.2 | 12.9 | 17.7 | .5 | 8.1 |
| 22 | 29.3 | 3.9 | 2.5 | 16.2 | 33.3 | 13.4 | .9 | 1.4 | 5.7 | 27.1 | 10.7 | 13.3 |
| 23 | 18.2 | 7.3 | 39.4 | 25.4 | 21.0 | 7.3 | 4.6 | 10.0 | 26.0 | 10.8 | 46.9 | 17.8 |
| 24 | 10.9 | 36.4 | 21.0 | 5.5 | 21.6 | 12.3 | 5.7 | 17.5 | 34.0 | 7.7 | 36.9 | 13.1 |
| 25 | 22.4 | 22.9 | 36.1 | 15.8 | 19.0 | 20.7 | 12.5 | 16.8 | 2.3 | 20.1 | 35.0 | 10.5 |
| 26 | 23.7 | 39.1 | 35.3 | 28.0 | 30.5 | 12.0 | 7.4 | 38.6 | 13.6 | 42.2 | 33.6 | 10.5 |
| 27 | 28.7 | 25.1 | 14.3 | 15.9 | 48.4 | 30.1 | 23.2 | 45.4 | 27.6 | 41.5 | 32.1 | 14.7 |
| 28 | 15.7 | 14.3 | 13.2 | 8.2 | 42.8 | 27.8 | 26.2 | 28.8 | 33.8 | 38.5 | 31.9 | 18.7 |
| 29 | 12.3 | | 26.9 | 37.8 | 21.1 | 15.5 | 24.7 | 19.6 | 15.5 | 21.6 | 40.3 | 9.1 |
| 30 | 5.7 | | 20.0 | 26.1 | 27.7 | 30.8 | 41.0 | 18.1 | 3.2 | 9.8 | 23.0 | 21.6 |
| 31 | 11.6 | | 12.2 | | 26.1 | | 27.2 | 12.1 | | 15.3 | | 22.6 |
| Sum | 474.1 | 661.8 | 706.0 | 532.0 | 698.0 | 475.0 | 369.3 | 523.0 | 694.0 | 763.0 | 900.1 | 481.9 |

| Month | Extreme Gage Feet | | Ø Extreme Second-Feet | | | | Average Second-Feet | Total Acre-Feet | Period 1935-1962 Acre-Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | High | | Low | | | | | | |
| | High | Low | Day | | Day | | | | Average | Maximum | Minimum |
| Jan. | | | 16 | 30.7 | † 5 | 0 | 15.3 | 940 | 1,487 | 3,360 | ᵘ 383 |
| Feb. | | | 4 | 44.5 | 21 | 2.0 | 23.6 | 1,313 | 1,218 | 3,170 | ᵘ 383 |
| Mar. | | | 4 | 46.1 | 21 | .7 | 22.8 | 1,400 | 1,417 | 2,920 | 190 |
| Apr. | | | 16 | 40.4 | 18 | 3.2 | 17.7 | 1,055 | 1,387 | 3,170 | 197 |
| May | | | 27 | 48.4 | 16 | 3.4 | 22.5 | 1,384 | 1,534 | 3,040 | 385 |
| June | | | 30 | 30.8 | 20 | 1.5 | 15.8 | 942 | 1,321 | 3,660 | 175 |
| July | | | 30 | 41.0 | 2 | .1 | 11.9 | 732 | 1,451 | 3,590 | 198 |
| Aug. | | | 27 | 45.4 | 22 | 1.4 | 16.9 | 1,037 | 1,449 | 3,960 | 169 |
| Sept. | | | 2 | 47.4 | 5 | .9 | 23.1 | 1,377 | 1,299 | 3,170 | 159 |
| Oct. | | | 13 | 46.1 | 17 | 1.9 | 24.6 | 1,513 | 1,365 | 3,280 | 504 |
| Nov. | | | 7 | 49.6 | 21 | .5 | 30.0 | 1,785 | 1,521 | 3,570 | 430 |
| Dec. | | | 13 | 29.7 | 2 | .3 | 15.5 | 956 | 1,491 | 3,080 | 438 |
| Yearly | | | | 49.6 | | 0 | 19.9 | 14,434 | 16,940 | 38,310 | * 4,800 |

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

# YUMA MAIN DRAIN (VALLEY DIVISION, YUMA PROJECT)

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

RECORDS: Main Drain discharges are lifted 10 to 12 feet at the pumping plant and are computed from pump ratings and the differential head measured by the two gages. Pump ratings are checked by monthly current meter measurements. During the year 11 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 1962.

REMARKS: Flows in the Main Drain are principally drainage waters from the Valley Division of the Yuma Project. Both the Main Drain and the East Main Canal Wasteway discharge into Mexico at the international land boundary near San Luis, Sonora. The water is used for irrigation in Mexico on the left (Sonora) bank of the Colorado River. Beginning in January 1956 the flows from this drain discharging into Mexico have been included in deliveries to Mexico in the same manner as waste flows arriving in the bed of the limitrophe section of Colorado River under terms of an agreement between the two Sections of the Commission.

## Mean Daily Discharge in Second-Feet 1962 — Annual and Period Summary

| Day | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 174 | 161 | 179 | 183 | 185 | 196 | 188 | 173 | 172 | 194 | 202 | 177 |
| 2 | 147 | 156 | 188 | 195 | 196 | 198 | 193 | 176 | 183 | 188 | 208 | 177 |
| 3 | 150 | 154 | 186 | 187 | 206 | 201 | 176 | 182 | 172 | 196 | 203 | 180 |
| 4 | 153 | 160 | 181 | 193 | 202 | 214 | 190 | 178 | 167 | 200 | 195 | 177 |
| 5 | 149 | 152 | 176 | 197 | 210 | 195 | 182 | 189 | 171 | 189 | 198 | 174 |
| 6 | 144 | 148 | 169 | 188 | 185 | 208 | 177 | 181 | 173 | 206 | 191 | 177 |
| 7 | 156 | 146 | 161 | 191 | 209 | 197 | 188 | 187 | 178 | 203 | 202 | 173 |
| 8 | 168 | 148 | 168 | 221 | 195 | 194 | 195 | 178 | 186 | 212 | 158 | 168 |
| 9 | 159 | 162 | 180 | 203 | 195 | 193 | 185 | 163 | 169 | 200 | 177 | 174 |
| 10 | 151 | 175 | 189 | 190 | 192 | 202 | 188 | 159 | 197 | 203 | 177 | 166 |
| 11 | 148 | 174 | 190 | 190 | 184 | 200 | 180 | 181 | 185 | 206 | 178 | 180 |
| 12 | 155 | 173 | 181 | 195 | 193 | 188 | 189 | 173 | 181 | 201 | 178 | 175 |
| 13 | 159 | 164 | 177 | 197 | 213 | 194 | 177 | 187 | 189 | 214 | 200 | 173 |
| 14 | 144 | 165 | 165 | 198 | 208 | 199 | 180 | 176 | 183 | 213 | 160 | 179 |
| 15 | 161 | 175 | 180 | 221 | 200 | 190 | 188 | 179 | 183 | 201 | 175 | 180 |
| 16 | 165 | 165 | 184 | 207 | 218 | * 193 | 206 | 177 | 169 | 197 | 175 | 181 |
| 17 | 157 | 165 | 208 | 194 | 211 | * 193 | 176 | 174 | 181 | 203 | 193 | 188 |
| 18 | 150 | 174 | 195 | 194 | 222 | 192 | 171 | 190 | 178 | 195 | 191 | 171 |
| 19 | 157 | 191 | 200 | 194 | 193 | 183 | 178 | 185 | 185 | 203 | 214 | 176 |
| 20 | 169 | 167 | 187 | 205 | 209 | 177 | 177 | 181 | 180 | 209 | 181 | 167 |
| 21 | 167 | 185 | 180 | 193 | 209 | 187 | 184 | 177 | 179 | 205 | 172 | 170 |
| 22 | 148 | 182 | 187 | 193 | 202 | 168 | 182 | 179 | 190 | 204 | 172 | 158 |
| 23 | 147 | 181 | 181 | 199 | 201 | 190 | 182 | 182 | 196 | 208 | 179 | 161 |
| 24 | 165 | 172 | 189 | 193 | 202 | 176 | 176 | 179 | 205 | 197 | 178 | 167 |
| 25 | 173 | 175 | 186 | 192 | 202 | 185 | 177 | 178 | 205 | 202 | 175 | 170 |
| 26 | 153 | 161 | 186 | 193 | 192 | 181 | 178 | 181 | 197 | 187 | 174 | 144 |
| 27 | 138 | 165 | 178 | 204 | 207 | 182 | 183 | 169 | 201 | 197 | 172 | 160 |
| 28 | 155 | 180 | 191 | 209 | 203 | 179 | 180 | 170 | 195 | 207 | 181 | 166 |
| 29 | 151 | | 174 | 210 | 198 | 195 | 193 | 179 | 206 | 205 | 175 | 172 |
| 30 | 113 | | 173 | 198 | 203 | 189 | 186 | 186 | 197 | 203 | 175 | 169 |
| 31 | 151 | | 176 | | 202 | | 179 | 172 | | 196 | | 170 |
| Sum | 4,777 | 4,676 | 5,645 | 5,927 | 6,247 | 5,739 | 5,684 | 5,521 | 5,553 | 6,244 | 5,509 | 5,320 |

**Current Year** 1962 — **Period** 1935-1962

| Month | Extreme Gage Feet | | Ø Extreme Second-Feet | | | | Average Second-Feet | Total Acre-Feet | Acre-Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | High | | Low | | | | Average | Maximum | Minimum |
| | High | Low | Day | | Day | | | | | | |
| Jan. | | | 1 | 174 | 30 | 113 | 154 | 9,475 | 7,146 | 11,140 | 1,740 |
| Feb. | | | 19 | 191 | 7 | 146 | 167 | 9,275 | 7,047 | 10,940 | 1,640 |
| Mar. | | | 17 | 208 | 7 | 161 | 182 | 11,197 | 8,092 | 12,192 | 1,940 |
| Apr. | | | † 8 | 221 | 1 | 183 | 198 | 11,756 | 7,873 | 11,890 | 1,920 |
| May | | | 18 | 222 | 11 | 184 | 202 | 12,391 | 7,914 | 13,140 | 1,950 |
| June | | | 4 | 214 | 22 | 168 | 191 | 11,383 | 7,252 | 12,040 | 2,290 |
| July | | | 16 | 206 | 18 | 171 | 183 | 11,274 | 6,962 | 11,830 | 2,530 |
| Aug. | | | 18 | 190 | 10 | 159 | 178 | 10,951 | 6,870 | 11,960 | 2,560 |
| Sept. | | | 29 | 206 | 4 | 167 | 185 | 11,014 | 7,028 | 11,560 | 2,280 |
| Oct. | | | 13 | 214 | 26 | 187 | 201 | 12,385 | 8,057 | 12,385 | 2,940 |
| Nov. | | | 19 | 214 | 8 | 158 | 184 | 10,927 | 7,972 | 12,010 | 2,800 |
| Dec. | | | 17 | 188 | 26 | 144 | 172 | 10,552 | 7,749 | 11,480 | 2,450 |
| Yearly | | | | 222 | | 113 | 183 | 132,580 | 89,962 | 139,380 | 27,040 |

† And other days  Ø Mean daily  * Partly estimated

# COLORADO RIVER AT SOUTHERLY INTERNATIONAL BOUNDARY - DISCHARGES

DESCRIPTION: Water-stage recorder located in Mexico on the right bank of the river about 1,000 feet 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 1962, two diversion dikes across the river channel 0.1 mile and 2.8 miles, respectively, 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, 1.6 miles upstream from the southerly international boundary. Computations by shifting channel methods. Records available: Daily discharges, January 1950 through December 1962; continuous record of gage heights, January 1947 through December 1962. 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 numerous pumps and gravity diversions before it reaches the Gulf of California.

EXTREMES: Maximum gage height, 84.84 feet, November 29, 1957; minimum gage height, 73.60 feet, July 23, 1962.

## Mean Daily Discharge in Second-Feet 1962 — Annual and Period Summary

| Day | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1,130 | 1,140 | 93.6 | 72.0 | 48.0 | 37.2 | 25.3 | 11.0 | 7.6 | 30.1 | 1,000 | 162 |
| 2 | 209 | 952 | 91.8 | 101 | 42.6 | 41.2 | 64.9 | 11.3 | 18.9 | 17.6 | 1,070 | 171 |
| 3 | 231 | 931 | 86.2 | 56.5 | 44.0 | 42.6 | 12.5 | 10.2 | 28.9 | 25.7 | 1,170 | 195 |
| 4 | 151 | 938 | 84.4 | 42.6 | 46.6 | 46.6 | 7.1 | 14.6 | 16.7 | 26.8 | 2,970 | 691 |
| 5 | 86.0 | 1,030 | 148 | 66.8 | 46.6 | 35.8 | 20.8 | 36.5 | 21.7 | 27.9 | 4,410 | 745 |
| 6 | 76.9 | 1,190 | 72.0 | 75.5 | 68.5 | 30.1 | 26.5 | 68.3 | 17.9 | 284 | 5,360 | 685 |
| 7 | 133 | 959 | 65.0 | 46.6 | 1,040 | 30.1 | 14.9 | 13.0 | 16.9 | 1,020 | 5,530 | 691 |
| 8 | 107 | 994 | 93.6 | 45.3 | 1,180 | 35.8 | 15.0 | 5.7 | 14.1 | 1,470 | 4,810 | 234 |
| 9 | 77.2 | 1,060 | 73.1 | 65.0 | 1,070 | 48.0 | 31.5 | 15.0 | 17.6 | 1,970 | 2,380 | 150 |
| 10 | 108 | 966 | 52.7 | 56.5 | 1,150 | 46.6 | 18.2 | 14.3 | 19.2 | 2,580 | 534 | 135 |
| 11 | 78.0 | 1,180 | 96.0 | 49.7 | 1,170 | 44.0 | 11.8 | 11.6 | 14.9 | 2,560 | 307 | 125 |
| 12 | 77.5 | 966 | 84.5 | 53.1 | 1,180 | 48.0 | 15.6 | 27.2 | 20.2 | 2,190 | 238 | 125 |
| 13 | 88.6 | 952 | 62.0 | 53.1 | 1,220 | 29.0 | 17.9 | 26.4 | 21.6 | 1,860 | 219 | 122 |
| 14 | 61.2 | 904 | 60.0 | 37.2 | 1,250 | 37.2 | 21.3 | 11.4 | 15.6 | 1,320 | 197 | 109 |
| 15 | 61.4 | 917 | 66.8 | 39.9 | 1,260 | 30.1 | 37.9 | 13.6 | 10.7 | 1,270 | 186 | 118 |
| 16 | 54.9 | 868 | 77.2 | 79.0 | 1,270 | 27.5 | 32.0 | 10.4 | 11.2 | 1,200 | 910 | 101 |
| 17 | 70.6 | 856 | 68.5 | 61.6 | 1,710 | 24.8 | 11.2 | 7.9 | 11.5 | 1,050 | 1,590 | 109 |
| 18 | 63.3 | 862 | 73.8 | 54.8 | 337 | 42.9 | 11.7 | 8.6 | 10.1 | 1,070 | 1,370 | 109 |
| 19 | 64.7 | 959 | 91.8 | 54.8 | 155 | 35.6 | 6.6 | 20.7 | 5.8 | 1,060 | 1,170 | 111 |
| 20 | 228 | 910 | 89.9 | 44.0 | 125 | 19.9 | 14.0 | 22.9 | 8.0 | 1,080 | 1,140 | 1,080 |
| 21 | 245 | 931 | 173 | 49.7 | 118 | 13.0 | 7.0 | 16.8 | 8.8 | 989 | 1,160 | 705 |
| 22 | 533 | 980 | 766 | 37.2 | 93.6 | 16.2 | 3.8 | 16.2 | 17.7 | 1,010 | 1,200 | 198 |
| 23 | 493 | 1,080 | 197 | 54.8 | 84.4 | 45.3 | 12.1 | 17.2 | 23.5 | 996 | 1,150 | 145 |
| 24 | 1,170 | 546 | 254 | 53.1 | 68.5 | 43.9 | 10.2 | 21.4 | 36.0 | 1,010 | 1,370 | 128 |
| 25 | 3,150 | 202 | 84.4 | 25.7 | 51.4 | 31.3 | 6.5 | 23.7 | 32.1 | 989 | 1,420 | 107 |
| 26 | 3,030 | 197 | 88.0 | 18.4 | 35.8 | 23.8 | 4.6 | 13.5 | 32.0 | 1,050 | 1,420 | 99.0 |
| 27 | 3,170 | 155 | 59.9 | 27.9 | 38.6 | 22.9 | 8.1 | 9.9 | 43.8 | 1,100 | 454 | 101 |
| 28 | 2,500 | 125 | 51.4 | 29.0 | 61.6 | 16.5 | 11.1 | 16.7 | 81.7 | 1,010 | 289 | 90.5 |
| 29 | 1,670 | | 58.2 | 39.9 | 55.4 | 15.6 | 20.3 | 69.6 | 47.8 | 1,100 | 208 | 97.0 |
| 30 | 1,620 | | 51.4 | 68.5 | 53.1 | 21.0 | 41.0 | 13.7 | 52.3 | 946 | 171 | 92.0 |
| 31 | 1,380 | | 58.2 | | 51.4 | | 24.7 | 5.6 | | 968 | | 89.0 |
| Sum | 22,118.3 | 23,750 | 3,472.4 | 1,559.2 | 15,125.1 | 982.5 | 566.1 | 584.9 | 684.8 | 33,280.1 | 45,403 | 7,819.5 |

| Current Year 1962 | | | | | | | | | Period 1935-1962 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Month | Extreme Gage Feet | | Extreme Second-Feet | | | | Average Second-Feet | Total Acre-Feet | Acre-Feet | | |
| | | | High | | Low | | | | Average | Maximum | Minimum |
| | High | Low | Day | | Day | | | | | | |
| Jan. | 79.31 | 75.01 | 25 | 3,340 | 19 | 51.2 | 713 | 43,871 | 541,204 | 1,672,000 | 32,160 |
| Feb. | 77.57 | 75.11 | 1 | 1,390 | 28 | 103 | 848 | 47,107 | 451,142 | 1,385,000 | 26,130 |
| Mar. | 77.63 | 74.77 | 22 | 917 | 30 | 46.3 | 112 | 6,887 | 363,357 | 1,127,000 | 3,683 |
| Apr. | 75.33 | 74.52 | 2 | 160 | 26 | 15.8 | 52.0 | 3,092 | 232,103 | 700,900 | 977 |
| May | 77.99 | 74.60 | 17 | 1,880 | 26 | 27.9 | 488 | 30,000 | 318,640 | 1,160,000 | 2,490 |
| June | 76.30 | 74.18 | 11 | 68.5 | 28 | 4.4 | 32.8 | 1,949 | 245,656 | 1,180,000 | 1,949 |
| July | 76.90 | 73.60 | 2 | 105 | 21 | 2.6 | 18.3 | 1,123 | 179,675 | 772,800 | 790 |
| Aug. | 75.78 | 73.87 | 29 | 95.2 | 17 | 3.0 | 18.9 | 1,160 | 200,154 | 796,000 | 1,160 |
| Sept. | 75.36 | 73.87 | 28 | 112 | 21 | 3.1 | 22.8 | 1,358 | 240,925 | 1,033,000 | 1,358 |
| Oct. | 79.32 | 74.24 | 11 | 2,826 | 3 | 11.4 | 1,070 | 66,010 | 306,117 | 1,192,000 | 9,120 |
| Nov. | 81.65 | 75.29 | 7 | 5,700 | 30 | 155 | 1,510 | 90,056 | 404,597 | 1,428,000 | 33,461 |
| Dec. | 77.55 | 74.89 | 20 | 1,500 | 28 | 87.5 | 252 | 15,510 | 511,442 | 1,839,000 | 15,510 |
| Yearly | 81.65 | 73.60 | | 5,700 | | 2.6 | 426 | 308,124 | 3,995,012 | 10,688,800 | 176,867 |

# COLORADO RIVER AT SOUTHERLY INTERNATIONAL BOUNDARY - STAGES

(See Preceding Page For Description)

## Mean Daily Gage Height in Feet 1962

| Day | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 77.33 | 77.29 | 75.06 | 74.92 | 74.83 | 74.64 | 74.90 | 74.13 | 73.89 | 74.46 | 77.04 | 75.32 |
| 2 | 75.93 | 77.04 | 75.05 | 75.09 | 74.78 | 74.67 | 76.49 | 74.01 | 73.96 | 74.33 | 77.16 | 75.35 |
| 3 | 75.59 | 77.02 | 75.02 | 74.84 | 74.78 | 74.68 | 76.21 | 73.96 | 74.12 | 74.42 | 77.29 | 75.42 |
| 4 | 75.50 | 77.03 | 75.01 | 74.76 | 74.79 | 74.72 | 75.19 | 74.03 | 74.20 | 74.43 | 79.44 | 76.37 |
| 5 | 75.16 | 77.17 | 75.29 | 74.92 | 74.79 | 74.64 | 74.81 | 74.09 | 74.24 | 74.44 | 80.73 | 76.46 |
| 6 | 75.08 | 77.37 | 74.94 | 74.98 | 74.93 | 74.56 | 75.64 | 74.76 | | 75.64 | 81.43 | 76.37 |
| 7 | 75.19 | 77.04 | 74.90 | 74.80 | 77.24 | 74.54 | 75.06 | 74.37 | | 77.20 | 81.54 | 76.38 |
| 8 | 75.20 | 77.06 | 75.07 | 74.78 | 77.51 | 74.56 | 74.95 | 74.05 | | 77.70 | 81.05 | 75.43 |
| 9 | 75.06 | 77.12 | 75.26 | 74.89 | 77.33 | 74.66 | 75.11 | 73.95 | | 78.34 | 78.82 | 75.15 |
| 10 | 75.58 | 77.03 | 76.00 | 74.83 | 77.35 | 74.65 | 74.87 | 74.16 | 74.23 | 79.05 | 76.32 | 75.09 |
| 11 | 75.54 | 77.34 | 77.02 | 74.79 | 77.29 | 74.64 | 74.88 | 74.02 | 74.17 | 79.02 | 75.80 | 75.05 |
| 12 | 75.43 | 77.09 | 75.40 | 74.80 | 77.29 | 74.68 | 74.75 | 74.13 | 74.16 | 78.58 | 75.59 | 75.04 |
| 13 | 75.47 | 77.10 | 75.08 | 74.80 | 77.33 | 74.51 | 74.88 | 74.34 | 74.20 | 78.20 | 75.52 | 75.03 |
| 14 | 75.25 | 77.03 | 75.02 | 74.69 | 77.36 | 74.55 | 74.62 | 74.11 | 74.38 | 77.48 | 75.43 | 74.96 |
| 15 | 75.21 | 77.05 | 75.00 | 74.72 | 77.37 | 74.47 | 75.18 | 74.02 | 74.44 | 77.42 | 75.38 | 75.00 |
| 16 | 75.14 | 76.97 | 75.06 | 74.96 | 77.38 | 75.55 | 75.31 | 73.94 | 73.96 | 77.32 | 76.70 | 74.92 |
| 17 | 75.17 | 76.95 | 75.01 | 74.86 | 77.84 | 74.75 | 74.73 | 73.90 | 73.87 | 77.11 | 77.63 | 74.95 |
| 18 | 75.19 | 76.95 | 75.04 | 74.82 | 75.92 | 75.14 | 74.78 | 73.89 | 73.89 | 77.14 | 77.37 | 74.95 |
| 19 | 75.20 | 77.09 | 75.14 | 74.82 | 75.42 | 76.11 | 74.50 | 73.88 | 73.88 | 77.13 | 77.11 | 74.96 |
| 20 | 75.70 | 77.01 | 75.13 | 74.94 | 75.27 | 75.80 | 74.51 | 74.03 | 73.88 | 77.16 | 77.08 | 76.86 |
| 21 | 75.99 | 77.01 | 75.44 | 74.95 | 75.21 | 74.72 | 74.63 | 74.22 | 73.88 | 77.03 | 77.11 | 76.28 |
| 22 | 76.55 | 77.05 | 77.17 | 74.82 | 75.07 | 74.77 | 74.39 | 74.97 | 74.14 | 77.06 | 77.17 | 75.32 |
| 23 | 76.12 | 77.16 | 75.76 | 74.90 | 75.00 | 75.39 | *73.86 | 74.52 | 74.57 | 77.04 | 77.10 | 75.15 |
| 24 | 77.15 | 76.22 | 75.61 | 74.86 | 74.90 | 76.21 | 74.26 | 74.23 | 74.40 | 77.06 | 77.36 | 75.09 |
| 25 | 79.00 | 75.46 | 75.05 | 74.64 | 74.78 | 75.88 | 74.02 | 74.26 | 74.82 | 77.04 | 77.42 | 75.00 |
| 26 | 79.11 | 75.46 | 75.06 | 74.55 | 74.67 | 75.69 | 73.92 | 74.92 | 74.57 | 77.13 | 77.42 | 74.96 |
| 27 | 79.26 | 75.32 | 74.90 | 74.64 | 74.69 | 74.88 | 73.93 | 75.36 | 74.62 | 77.19 | 76.03 | 74.97 |
| 28 | 78.88 | 75.20 | 74.83 | 74.66 | 74.84 | 74.99 | 73.93 | 75.55 | 74.78 | 77.05 | 75.74 | 74.91 |
| 29 | 77.97 | | 74.85 | 74.76 | 75.37 | 74.85 | 74.11 | 75.64 | 74.52 | 77.16 | 75.49 | 74.96 |
| 30 | 77.87 | | 74.80 | 74.95 | 75.87 | 75.06 | 74.35 | 74.69 | 74.60 | 76.94 | 75.35 | 74.94 |
| 31 | 77.58 | | 74.83 | | 74.76 | | 74.27 | 73.94 | | 76.96 | | 74.92 |
| Avg. | 76.27 | 76.81 | 75.25 | 74.82 | 75.87 | 74.97 | 74.74 | 74.32 | | 76.91 | 77.35 | 75.34 |

* Partly estimated

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

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

RECORDS: Data collected by the Ministry of Hydraulic Resources and furnished by the Mexican Section of the Commission are based on pump capacities and operation time. Records available: August 1958 through December 1962.

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

## Mean Daily Discharge in Second-Feet 1962 — Annual and Period Summary

| Day | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | 28.3 | 14.1 | 10.6 | 17.7 | 0 | 0 | 0 | 0 |
| 2 | 0 | 0 | 0 | 0 | 28.3 | 0 | 3.5 | 35.3 | 0 | 0 | 0 | 0 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 14.1 | 35.3 | 0 | 0 | 0 | 0 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 14.1 | 38.8 | 0 | 0 | 0 | 0 |
| 5 | 0 | 0 | 0 | 0 | 28.3 | 0 | 3.5 | 17.7 | 3.5 | 0 | 0 | 0 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 3.5 | 17.7 | 3.5 | 10.6 | 0 | 0 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 7.1 | 17.7 | 3.5 | 21.2 | 0 | 0 |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 3.5 | 17.7 | 0 | 14.1 | 0 | 0 |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17.7 | 3.5 | 14.1 | 0 | 10.6 |
| 10 | 0 | 0 | 10.6 | 0 | 0 | 0 | 7.1 | 17.7 | 3.5 | 14.1 | 0 | 14.1 |
| 11 | 0 | 0 | 28.3 | 0 | 0 | 14.1 | 7.1 | 17.7 | 0 | 14.1 | 0 | 0 |
| 12 | 0 | 0 | 28.3 | 0 | 0 | 0 | 3.5 | 17.7 | 3.5 | 14.1 | 0 | 0 |
| 13 | 0 | 0 | 28.3 | 0 | 0 | 0 | 7.1 | 17.7 | 3.5 | 14.1 | 0 | 0 |
| 14 | 0 | 0 | 28.3 | 0 | 0 | 0 | 0 | 17.7 | 3.5 | 0 | 0 | 0 |
| 15 | 0 | 0 | 28.3 | 0 | 0 | 0 | 0 | 10.6 | 0 | 0 | 0 | 0 |
| 16 | 0 | 0 | 0 | 0 | 0 | 10.6 | 10.6 | 0 | 0 | 0 | 0 | 0 |
| 17 | 0 | 0 | 28.3 | 0 | 0 | 17.7 | 10.6 | 0 | 0 | 0 | 0 | 0 |
| 18 | 0 | 0 | 28.3 | 0 | 0 | 17.7 | 3.5 | 0 | 0 | 0 | 0 | 0 |
| 19 | 0 | 0 | 28.3 | 0 | 0 | 17.7 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20 | 0 | 0 | 28.3 | 0 | 0 | 17.7 | 3.5 | 0 | 0 | 0 | 0 | 14.1 |
| 21 | 0 | 0 | 28.3 | 0 | 17.7 | 17.7 | 0 | 0 | 0 | 0 | 0 | 14.1 |
| 22 | 0 | 0 | 21.2 | 0 | 28.3 | 10.6 | 0 | 7.1 | 0 | 0 | 0 | 14.1 |
| 23 | 0 | 0 | 60.0 | 0 | 28.3 | 7.1 | 0 | 17.7 | 0 | 0 | 0 | 14.1 |
| 24 | 0 | 0 | 28.3 | 0 | 28.3 | 14.1 | 0 | 17.7 | 7.1 | 0 | 0 | 14.1 |
| 25 | 0 | 0 | 28.3 | 0 | 0 | 17.7 | 7.1 | 17.7 | 10.6 | 0 | 0 | 14.1 |
| 26 | 0 | 0 | 28.3 | 0 | 0 | 17.7 | 10.6 | 17.7 | 10.6 | 0 | 0 | 14.1 |
| 27 | 0 | 0 | 28.3 | 0 | 0 | 17.7 | 10.6 | 17.7 | 7.1 | 0 | 0 | 14.1 |
| 28 | 0 | 0 | 28.3 | 0 | 0 | 14.1 | 10.6 | 17.7 | 10.6 | 0 | 0 | 14.1 |
| 29 | 0 | | 28.3 | 0 | 0 | 7.1 | 10.6 | 17.7 | 0 | 0 | 0 | 7.1 |
| 30 | 0 | | 28.3 | 0 | 53.0 | 7.1 | 10.6 | 28.3 | 0 | 0 | 0 | 7.1 |
| 31 | 0 | | 28.3 | | 42.4 | | 10.6 | 0 | | 0 | | 7.1 |
| Sum | 0 | 0 | 601.2 | 0 | 282.9 | 240.5 | 183.6 | 474.0 | 74.0 | 116.4 | 0 | 172.9 |

| Month | Current Year 1962 — Extreme Gage Feet | | Extreme Second-Feet | | | | Average Second-Feet | Total Acre-Feet | Period 1958-1962 — Acre-Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | High | | Low | | | | | | |
| | High | Low | Day | | Day | | | | Average | Maximum | Minimum |
| Jan. | | | | 0 | | 0 | 0 | 0 | 669 | 2,675 | 0 |
| Feb. | | | | 0 | | 0 | 0 | 0 | 336 | 820 | 0 |
| Mar. | | | 23 | 60.0 | † 1 | 0 | 19.4 | 1,197 | 1,166 | 1,828 | 490 |
| Apr. | | | | 0 | | 0 | 0 | 0 | 782 | 1,107 | 0 |
| May | | | 30 | 53.0 | † 3 | 0 | 9.2 | 564 | 698 | 1,016 | 564 |
| June | | | † 17 | 17.7 | † 2 | 0 | 8.1 | 473 | 1,107 | 1,562 | 473 |
| July | | | † 3 | 14.1 | † 9 | 0 | 6.0 | 363 | 3,715 | 12,724 | 0 |
| Aug. | | | 4 | 38.8 | † 16 | 0 | 15.2 | 944 | 2,658 | 6,612 | 944 |
| Sept. | | | 25 | 10.6 | † 1 | 0 | 2.5 | 152 | 883 | 1,660 | 152 |
| Oct. | | | 7 | 21.2 | † 1 | 0 | 3.9 | 232 | 109 | 315 | 0 |
| Nov. | | | | 0 | | 0 | 0 | 0 | 0 | 0 | 0 |
| Dec. | | | † 10 | 14.1 | † 1 | 0 | 5.7 | 342 | 68.1 | 342 | 0 |
| Yearly | | | | 60.0 | | 0 | 5.7 | 4,269 | 12,243 | 22,963 | 4,269 |

† And other days

# WASTEWAY TO COLORADO RIVER AT KILOMETER 27 IN MEXICO

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

RECORDS: Data collected by the Colorado River Irrigation District of the Ministry of Hydraulic Resources and furnished by the Mexican Section of the Commission. 1962 records good. Records available: April 1956 through December 1962.

REMARKS: The Colorado River Irrigation District in Mexico transports water for irrigation of lands on the left bank of the Colorado River by the Canal de Conexión to a point called Kilometer 27 at which point water is discharged into the river for pumping to the canals on the left bank by the Bacanora and Monumentos pumps. A dike is constructed across the river channel at this point so that no flow is allowed to pass downstream except for minor seepage.

## Mean Daily Discharge in Second-Feet 1962 — Annual and Period Summary

| Day | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 554 | 321 | 166 | 434 | 530 | 0 | 848 | 0 | 710 |
| 2 | 498 | 0 | 124 | 554 | 293 | 194 | 434 | 477 | 0 | 918 | 0 | 1,210 |
| 3 | 452 | 0 | 88.3 | 530 | 201 | 166 | 438 | 523 | 0 | 865 | 0 | 0 |
| 4 | 0 | 0 | 106 | 512 | 152 | 152 | 473 | 335 | 0 | 1,270 | 0 | 0 |
| 5 | 0 | 0 | 106 | 509 | 117 | 138 | 417 | 427 | 0 | 1,320 | 0 | 0 |
| 6 | 0 | 0 | 251 | 484 | 124 | 159 | 420 | 519 | 0 | 0 | 0 | 0 |
| 7 | 0 | 0 | 268 | 463 | 102 | 194 | 385 | 519 | 0 | 0 | 1,590 | 0 |
| 8 | 0 | 0 | 265 | 463 | 0 | 191 | 438 | 509 | 0 | 0 | 1,550 | 431 |
| 9 | 0 | 0 | 212 | 484 | 0 | 194 | 431 | 512 | 0 | 0 | 1,590 | 540 |
| 10 | 0 | 0 | 187 | 413 | 0 | 198 | 434 | 501 | 276 | 0 | 1,440 | 315 |
| 11 | 0 | 0 | 172 | 441 | 0 | 265 | 417 | 526 | 272 | 0 | 1,380 | 344 |
| 12 | 0 | 0 | 187 | 477 | 0 | 244 | 441 | 494 | 281 | 0 | 1,310 | 119 |
| 13 | 0 | 0 | 230 | 480 | 0 | 290 | 459 | 491 | 263 | 0 | 1,110 | 77.3 |
| 14 | 0 | 0 | 265 | 498 | 0 | 311 | 459 | 448 | 255 | 0 | 699 | 81.9 |
| 15 | 0 | 0 | 318 | 569 | 0 | 293 | 452 | 448 | 269 | 0 | 403 | 242 |
| 16 | 0 | 0 | 558 | 484 | 0 | 300 | 452 | 392 | 183 | 0 | 0 | 448 |
| 17 | 0 | 0 | 583 | 484 | 0 | 403 | 431 | 337 | 269 | 0 | 0 | 137 |
| 18 | 0 | 0 | 583 | 593 | 367 | 480 | 431 | 0 | 183 | 0 | 0 | 314 |
| 19 | 0 | 0 | 569 | 569 | 622 | 494 | 410 | 0 | 155 | 0 | 0 | 1,300 |
| 20 | 0 | 0 | 512 | 639 | 586 | 459 | 399 | 735 | 118 | 0 | 0 | 1,850 |
| 21 | 0 | 0 | 470 | 554 | 530 | 424 | 452 | 735 | 106 | 0 | 0 | 1,360 |
| 22 | 0 | 0 | 371 | 459 | 477 | 417 | 530 | 713 | 0 | 0 | 0 | 33.2 |
| 23 | 0 | 0 | 332 | 544 | 0 | 403 | 526 | 759 | 124 | 0 | 0 | 0 |
| 24 | 0 | 0 | 427 | 477 | 0 | 388 | 530 | 597 | 131 | 0 | 0 | 19.4 |
| 25 | 0 | 0 | 498 | 378 | 0 | 374 | 498 | 526 | 131 | 0 | 0 | 245 |
| 26 | 0 | 0 | 547 | 388 | 0 | 360 | 459 | 1,010 | 124 | 0 | 0 | 0 |
| 27 | 0 | 0 | 565 | 364 | 88.3 | 417 | 498 | 1,010 | 117 | 0 | 816 | 0 |
| 28 | 0 | 0 | 484 | 374 | 141 | 424 | 509 | 1,020 | 512 | 0 | 671 | 0 |
| 29 | 0 | | 494 | 353 | 106 | 424 | 526 | 975 | 70.6 | 0 | 579 | 0 |
| 30 | 0 | | 530 | 335 | 134 | 431 | 523 | 0 | 70.6 | 0 | 484 | 0 |
| 31 | 0 | | 558 | | 134 | | 480 | 0 | | 0 | | 0 |
| Sum | 950 | 0 | 10,860.3 | 14,426 | 4,495.3 | 9,353 | 14,186 | 16,068 | 3,910.2 | 5,221 | 13,622 | 9,776.8 |

| Current Year 1962 | | | | | | | | | Period 1956-1962 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Month | Extreme Gage Feet | | Ø Extreme Second-Feet | | | | Average Second-Feet | Total Acre-Feet | Acre-Feet | | |
| | | | High | | Low | | | | Average | Maximum | Minimum |
| | High | Low | Day | | Day | | | | | | |
| Jan. | | | 2 | 498 | † 1 | 0 | 30.7 | 1,884 | 14,176 | 69,527 | 0 |
| Feb. | | | | 0 | | 0 | 0 | 0 | 1,950 | 8,679 | 0 |
| Mar. | | | † 17 | 583 | 1 | 0 | 350 | 21,537 | 17,924 | 35,492 | 770 |
| Apr. | | | 20 | 639 | 30 | 335 | 480 | 28,613 | 34,360 | 68,714 | 15,049 |
| May | | | 19 | 622 | † 8 | 0 | 145 | 8,917 | 15,432 | 22,072 | 8,917 |
| June | | | 19 | 494 | 5 | 138 | 312 | 18,548 | 22,829 | 28,915 | 11,358 |
| July | | | † 22 | 530 | 7 | 385 | 459 | 28,141 | 40,867 | 46,139 | 28,141 |
| Aug. | | | 28 | 1,020 | † 18 | 0 | 519 | 31,894 | 44,156 | 55,497 | 24,466 |
| Sept. | | | 28 | 512 | † 1 | 0 | 130 | 7,754 | 25,857 | 37,194 | 7,754 |
| Oct. | | | 5 | 1,320 | † 6 | 0 | 168 | 10,367 | 6,701 | 13,532 | 0 |
| Nov. | | | 9 | 1,590 | † 1 | 0 | 456 | 27,023 | 16,900 | 69,415 | 0 |
| Dec. | | | 20 | 1,850 | † 3 | 0 | 315 | 19,388 | 13,671 | 70,213 | 0 |
| Yearly | | | | 1,850 | | 0 | 280 | 204,067 | 256,731 | 346,339 | 194,011 |

† And other days Ø Mean daily

# DIVERSIONS FROM COLORADO RIVER TO BACANORA AND MONUMENTOS CANALS IN MEXICO

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

RECORDS: Data collected by the Ministry of Hydraulic Resources and furnished by the Mexican Section of the Commission are based on pump capacities and operation time. Records available: August 1958 through December 1962.

REMARKS: A part of the natural flow in the river at the pumping plant and releases from Canal de Conexión to the river at Kilometer 27 are pumped to the left bank canal system for irrigation and domestic use. Construction began February 2, 1962 on the Sanchez Mejorada siphon which, when completed, will replace the pumping plant. On the Bacanora Canal, at Kilometer 1+258, a gaging station was constructed in 1959 with a water-stage recorder and cableway which has not been placed in operation.

## Mean Daily Discharge in Second-Feet 1962 — Annual and Period Summary

| Day | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 45.9 | 84.8 | 583 | 233 | 131 | 371 | 445 | 0 | 0 | 0 | 0 |
| 2 | 0 | 63.6 | 152 | 590 | 177 | 162 | 353 | 431 | 0 | 0 | 0 | 0 |
| 3 | 3.5 | 0 | 162 | 558 | 265 | 159 | 353 | 466 | 0 | 0 | 0 | 0 |
| 4 | 0 | 0 | 162 | 516 | 148 | 127 | 385 | 420 | 0 | 0 | 0 | 0 |
| 5 | 0 | 0 | 230 | 554 | 124 | 131 | 403 | 431 | 0 | 0 | 0 | 0 |
| 6 | 0 | 0 | 290 | 583 | 106 | 131 | 399 | 459 | 0 | 0 | 0 | 0 |
| 7 | 0 | 0 | 275 | 473 | 10.6 | 152 | 378 | 463 | 0 | 0 | 0 | 0 |
| 8 | 7.1 | 24.7 | 283 | 459 | 0 | 145 | 388 | 427 | 0 | 0 | 0 | 0 |
| 9 | 3.5 | 0 | 283 | 509 | 0 | 155 | 381 | 445 | 0 | 0 | 0 | 0 |
| 10 | 0 | 21.2 | 191 | 473 | 0 | 159 | 378 | 445 | 184 | 0 | 0 | 0 |
| 11 | 0 | 42.4 | 155 | 456 | 0 | 212 | 385 | 441 | 208 | 0 | 0 | 0 |
| 12 | 0 | 42.4 | 258 | 470 | 0 | 205 | 357 | 441 | 194 | 0 | 0 | 0 |
| 13 | 0 | 42.4 | 240 | 494 | 0 | 222 | 403 | 420 | 205 | 0 | 0 | 0 |
| 14 | 0 | 42.4 | 237 | 487 | 0 | 173 | 410 | 367 | 208 | 0 | 0 | 0 |
| 15 | 0 | 10.6 | 240 | 554 | 0 | 222 | 403 | 350 | 159 | 0 | 0 | 0 |
| 16 | 0 | 0 | 53.0 | 586 | 0 | 191 | 420 | 321 | 180 | 0 | 0 | 0 |
| 17 | 0 | 0 | 540 | 516 | 0 | 268 | 434 | 148 | 191 | 0 | 0 | 0 |
| 18 | 0 | 0 | 526 | 569 | 0 | 420 | 434 | 0 | 148 | 0 | 0 | 0 |
| 19 | 0 | 0 | 558 | 632 | 0 | 392 | 403 | 0 | 109 | 0 | 0 | 0 |
| 20 | 14.1 | 0 | 505 | 650 | 0 | 420 | 374 | 0 | 102 | 0 | 0 | 0 |
| 21 | 45.9 | 0 | 491 | 604 | 31.8 | 385 | 473 | 261 | 95.3 | 0 | 0 | 0 |
| 22 | 117 | 0 | 607 | 519 | 0 | 374 | 519 | 720 | 109 | 0 | 0 | 0 |
| 23 | 88.3 | 0 | 576 | 537 | 0 | 321 | 523 | 675 | 113 | 0 | 0 | 0 |
| 24 | 184 | 0 | 551 | 378 | 0 | 275 | 530 | 533 | 124 | 0 | 0 | 0 |
| 25 | 173 | 0 | 480 | 403 | 0 | 286 | 466 | 466 | 98.9 | 0 | 0 | 0 |
| 26 | 208 | 0 | 554 | 335 | 0 | 268 | 424 | 759 | 106 | 0 | 0 | 0 |
| 27 | 91.8 | 38.8 | 547 | 290 | 45.9 | 290 | 427 | 766 | 88.3 | 0 | 0 | 0 |
| 28 | 70.6 | 98.9 | 477 | 290 | 138 | 314 | 438 | 770 | 413 | 0 | 0 | 0 |
| 29 | 42.4 | | 477 | 311 | 81.2 | 332 | 463 | 763 | 230 | 0 | 0 | 0 |
| 30 | 24.7 | | 480 | 290 | 109 | 367 | 494 | 371 | 60.0 | 0 | 0 | 0 |
| 31 | 35.3 | | 523 | | 134 | | 438 | 0 | | 0 | | 0 |
| Sum | 1,109.2 | 473.3 | 11,187.8 | 14,699 | 1,603.5 | 7,389 | 13,007 | 13,004 | 3,325.5 | 0 | 0 | 0 |

| Current Year 1962 | | | | | | | | | Period 1958-1962 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Month | Extreme Gage Feet | | Ø Extreme Second-Feet | | | | Average Second-Feet | Total Acre-Feet | Acre-Feet | | |
| | | | High | | Low | | | | Average | Maximum | Minimum |
| | High | Low | Day | | Day | | | | | | |
| Jan. | | | 26 | 208 | † 1 | 0 | 36.0 | 2,204 | 606 | 2,204 | 0 |
| Feb. | | | 28 | 98.9 | † 3 | 0 | 17.0 | 945 | 609 | 1,282 | 0 |
| Mar. | | | 22 | 607 | 16 | 53.0 | 360 | 22,188 | 21,090 | 33,187 | 12,111 |
| Apr. | | | 20 | 650 | †27 | 290 | 487 | 29,088 | 32,431 | 38,007 | 28,985 |
| May | | | 3 | 265 | † 8 | 0 | 51.9 | 3,186 | 11,960 | 24,285 | 3,186 |
| June | | | † 18 | 420 | 4 | 127 | 246 | 14,668 | 20,300 | 26,862 | 14,668 |
| July | | | 24 | 530 | † 2 | 353 | 420 | 25,798 | 31,503 | 36,297 | 25,798 |
| Aug. | | | 28 | 770 | †18 | 0 | 420 | 25,796 | 35,400 | 48,947 | 25,796 |
| Sept. | | | 28 | 413 | † 1 | 0 | 111 | 6,606 | 29,080 | 78,396 | 6,606 |
| Oct. | | | | 0 | | 0 | 0 | 0 | 1,887 | 4,749 | 0 |
| Nov. | | | | 0 | | 0 | 0 | 0 | 0 | 0 | 0 |
| Dec. | | | | 0 | | 0 | 0 | 0 | 25 | 126 | 0 |
| Yearly | | | | 770 | | 0 | 179 | 130,480 | 169,494 | 213,722 | 130,480 |

† 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. Rodriguez gaging station. The wasteway gates are located about 2,500 feet from the right bank of the Colorado River.

RECORDS: Data collected by the Ministry of Hydraulic Resources and furnished by the Mexican Section of the Commission are based on gate openings. Records available: January 1957 through December 1962.

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 1962 — 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 | 88.3 |
| 2 | 0 | 0 | 0 | 70.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 88.3 |
| 3 | 0 | 0 | 0 | 70.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17.7 |
| 4 | 0 | 0 | 0 | 63.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10.6 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7.1 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 70.6 | 35.3 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 53.0 | 24.7 |
| 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 | 88.3 | 0 |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 88.3 | 0 |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 106 | 0 |
| 14 | 21.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 106 | 0 |
| 15 | 45.9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 88.3 | 0 |
| 16 | 45.9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 106 |
| 17 | 84.8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 124 |
| 18 | 91.8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 106 |
| 19 | 148 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 106 |
| 20 | 148 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 88.3 |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 88.3 |
| 22 | 14.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 106 |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 88.3 |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 98.9 |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 88.3 |
| 26 | 28.3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 56.5 |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 21.2 |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 141 | 0 |
| 29 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 106 | 88.3 |
| 30 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 106 | 70.6 |
| 31 | 0 | | 0 | | 0 | | 0 | 0 | | 0 | | 28.3 |
| Sum | 628.0 | 0 | 0 | 204.8 | 0 | 0 | 0 | 0 | 0 | 0 | 953.5 | 1,537.0 |

| Month | Extreme Gage Feet | | Ø Extreme Second-Feet | | | | Average Second-Feet | Total Acre-Feet | Period 1957-1962 Acre-Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | High | | Low | | | | | | |
| | High | Low | Day | | Day | | | | Average | Maximum | Minimum |
| | | | **Current Year 1962** | | | | | | | | |
| Jan. | | | † 19 | 148 | † 1 | 0 | 20.1 | 1,248 | 806 | 3,201 | 0 |
| Feb. | | | | 0 | | 0 | 0 | 0 | 183 | 631 | 0 |
| Mar. | | | | 0 | | 0 | 0 | 0 | 1,244 | 6,850 | 0 |
| Apr. | | | † 2 | 70.6 | † 1 | 0 | 6.7 | 406 | 1,068 | 3,707 | 0 |
| May | | | | 0 | | 0 | 0 | 0 | 243 | 1,163 | 0 |
| June | | | | 0 | | 0 | 0 | 0 | 126 | 625 | 0 |
| July | | | | 0 | | 0 | 0 | 0 | 716 | 4,296 | 0 |
| Aug. | | | | 0 | | 0 | 0 | 0 | 687 | 1,926 | 0 |
| Sept. | | | | 0 | | 0 | 0 | 0 | 813 | 1,548 | 0 |
| Oct. | | | | 0 | | 0 | 0 | 0 | 171 | 791 | 0 |
| Nov. | | | 28 | 141 | † 1 | 0 | 31.8 | 1,891 | 315 | 1,891 | 0 |
| Dec. | | | 17 | 124 | † 8 | 0 | 49.4 | 3,047 | 636 | 3,047 | 0 |
| Yearly | | | | 148 | | 0 | 8.8 | 6,593 | 7,009 | 13,429 | 631 |

† And other days Ø Mean daily

# COLORADO RIVER AT MIGUEL C. RODRIGUEZ IN MEXICO - DISCHARGES

DESCRIPTION: Water-stage recorder and cableway located in Mexico on 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. Water-stage recorder was moved from the right bank to the left bank of the Colorado River on May 29, 1961. Zero of gage is at mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 57 current meter measurements, 41 double and 16 single, made by the Mexican Section of the Commission and a continuous record of gage heights. From June 1951 to July 1954, discharges were computed from gage height records based 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 1962.

EXTREMES: Since January 1, 1952: Maximum mean daily gage height, 53.28 feet on January 4, 1958, with discharge of 18,500 second-feet; minimum mean daily gage height, 38.09 feet on July 12, 1958, with zero flow; maximum mean daily discharge, 20,200 second-feet on December 19, 1952, gage height of 15.94 feet; minimum mean daily discharge, no flow on various days of June 1956, March and April 1957, July 1958 and March 1959.

## Mean Daily Discharge in Second-Feet 1962 — Annual and Period Summary

| Day | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 890 | 1,320 | 85.8 | 9.5 | 26.8 | 26.8 | 11.7 | 8.5 | 10.2 | 4.6 | 886 | 964 |
| 2 | 1,080 | 957 | 71.0 | 9.5 | 35.3 | 63.9 | 12.0 | 7.1 | 10.2 | 18.4 | 908 | 1,120 |
| 3 | 696 | 915 | 59.0 | 9.9 | 112 | 128 | 12.7 | 5.7 | 9.9 | 388 | 932 | 1,330 |
| 4 | 396 | 922 | 54.7 | 8.5 | 224 | 76.6 | 9.2 | 5.7 | 9.5 | 773 | 1,190 | 777 |
| 5 | 228 | 943 | 57.6 | 10.2 | 97.8 | 30.7 | 11.7 | 6.7 | 8.8 | 918 | 2,730 | 819 |
| 6 | 208 | 996 | 42.7 | 13.4 | 120 | 17.3 | 12.0 | 5.7 | 8.8 | 752 | 3,880 | 738 |
| 7 | 153 | 1,080 | 42.0 | 13.4 | 215 | 18.0 | 9.9 | 3.2 | 8.5 | 833 | 5,260 | 759 |
| 8 | 153 | 932 | 35.3 | 16.6 | 643 | 16.2 | 9.5 | 9.5 | 8.5 | 1,090 | 6,220 | 833 |
| 9 | 135 | 939 | 35.0 | 15.2 | 932 | 13.8 | 11.7 | 7.8 | 8.5 | 1,220 | 5,580 | 699 |
| 10 | 102 | 953 | 36.0 | 10.2 | 961 | 13.8 | 6.7 | 6.4 | 8.5 | 1,590 | 3,920 | 689 |
| 11 | 90.1 | 915 | 32.5 | 8.8 | 989 | 11.3 | 9.5 | 9.2 | 8.8 | 2,050 | 2,330 | 498 |
| 12 | 84.0 | 982 | 36.4 | 8.8 | 1,000 | 9.9 | 7.8 | 7.8 | 8.5 | 2,290 | 1,540 | 438 |
| 13 | 72.7 | 901 | 32.1 | 10.9 | 1,030 | 9.9 | 7.8 | 10.9 | 8.8 | 1,840 | 1,240 | 477 |
| 14 | 72.7 | 904 | 25.1 | 14.5 | 1,050 | 9.9 | 7.4 | 11.3 | 8.8 | 1,560 | 1,070 | 448 |
| 15 | 84.4 | 918 | 34.3 | 9.5 | 1,070 | 9.9 | 7.4 | 11.3 | 8.8 | 1,210 | 1,070 | 284 |
| 16 | 96.1 | 936 | 32.5 | 9.5 | 1,100 | 8.5 | 10.6 | 6.7 | 8.8 | 1,020 | 848 | 284 |
| 17 | 108 | 922 | 44.1 | 13.8 | 1,210 | 10.2 | 10.2 | 5.7 | 8.8 | 1,020 | 996 | 530 |
| 18 | 125 | 893 | 90.1 | 17.3 | 1,190 | 10.6 | 8.5 | 7.8 | 9.2 | 985 | 1,410 | 406 |
| 19 | 186 | 908 | 167 | 17.7 | 583 | 10.9 | 8.1 | 9.2 | 9.2 | 1,010 | 1,240 | 572 |
| 20 | 310 | 968 | 145 | 16.6 | 756 | 11.3 | 9.9 | 8.8 | 9.2 | 999 | 1,070 | 1,330 |
| 21 | 403 | 939 | 65.3 | 38.8 | 667 | 8.1 | 8.1 | 7.1 | 9.2 | 978 | 1,050 | 2,260 |
| 22 | 367 | 943 | 29.3 | 21.5 | 399 | 6.4 | 7.1 | 8.1 | 9.2 | 922 | 1,070 | 1,540 |
| 23 | 331 | 957 | 25.4 | 15.9 | 202 | 6.4 | 7.1 | 10.6 | 9.2 | 925 | 1,080 | 554 |
| 24 | 317 | 978 | 61.8 | 46.3 | 118 | 6.4 | 6.0 | 11.3 | 9.2 | 946 | 1,100 | 357 |
| 25 | 809 | 554 | 91.8 | 25.8 | 79.8 | 6.4 | 7.1 | 10.2 | 9.2 | 939 | 1,250 | 332 |
| 26 | 2,340 | 307 | 67.8 | 12.7 | 62.9 | 6.7 | 6.0 | 8.8 | 9.2 | 939 | 1,310 | 392 |
| 27 | 2,510 | 247 | 84.4 | 10.6 | 42.4 | 6.7 | 6.0 | 11.3 | 9.2 | 992 | 1,080 | 238 |
| 28 | 2,610 | 151 | 21.9 | 6.0 | 35.0 | 8.5 | 6.0 | 9.9 | 9.5 | 1,020 | 1,070 | 208 |
| 29 | 2,180 | | 10.2 | 6.0 | 27.9 | 10.6 | 8.5 | 7.1 | 17.3 | 953 | 1,360 | 203 |
| 30 | 1,730 | | 9.2 | 6.0 | 25.4 | 8.5 | 12.4 | 6.4 | 9.2 | 943 | 876 | 252 |
| 31 | 1,610 | | 7.8 | | 23.0 | | 10.2 | 6.0 | | 879 | | 242 |
| Sum | 20,477.0 | 24,280 | 1,633.1 | 433.4 | 15,027.3 | 582.2 | 278.8 | 251.8 | 280.7 | 32,007.0 | 55,566 | 20,573 |

**Current Year** 1962 — **Period** #June 1951-1962

| Month | Extreme Gage Feet | | Extreme Second-Feet | | | | Average Second-Feet | Total Acre-Feet | Acre-Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | High | | Low | | | | | | |
| | High | Low | Day | | Day | | | | Average | Maximum | Minimum |
| Jan. | 46.26 | 41.44 | 28 | 2,680 | 14 | 67.1 | 660 | 40,622 | 426,664 | 1,047,732 | 31,871 |
| Feb. | 44.62 | 41.14 | 1 | 1,420 | 28 | 107 | 869 | 48,167 | 267,904 | 696,461 | 31,303 |
| Mar. | 41.70 | 40.12 | 19 | 193 | 31 | 7.8 | 52.6 | 3,238 | 191,366 | 807,342 | 2,387 |
| Apr. | 40.72 | 40.03 | † 21 | 65.3 | † 28 | 6.0 | 14.5 | 860 | 126,893 | 588,983 | 860 |
| May | 44.69 | 40.03 | 18 | 1,450 | 1 | 18.4 | 484 | 29,798 | 174,831 | 732,815 | 707 |
| June | 41.08 | 39.73 | 3 | 164 | † 22 | 6.4 | 19.4 | 1,154 | 73,884 | 555,460 | 266 |
| July | 39.83 | 39.63 | 30 | 14.5 | 24 | 4.9 | 8.8 | 553 | 39,576 | 264,561 | 0 |
| Aug. | 39.80 | 39.57 | † 14 | 11.3 | 7 | 2.5 | 8.1 | 499 | 58,813 | 309,320 | 499 |
| Sept. | 42.78 | 39.67 | 29 | 441 | 7 | 8.5 | 9.2 | 557 | 89,886 | 572,551 | 557 |
| Oct. | 46.78 | 39.99 | 12 | 2,320 | 1 | 4.6 | 1,030 | 63,492 | 146,290 | 769,939 | 2,859 |
| Nov. | 50.95 | 42.52 | 8 | 6,360 | 28 | 777 | 1,850 | 110,265 | 243,117 | 909,399 | 29,335 |
| Dec. | 46.26 | 40.39 | 21 | 2,480 | 29 | 190 | 664 | 40,820 | 335,510 | 1,060,767 | 40,003 |
| Yearly | 50.95 | 39.57 | | 6,360 | | 2.5 | 473 | 340,025 | 2,146,552 | 7,923,600 | 154,769 |

† And other days # Some months missing

# COLORADO RIVER AT MIGUEL C. RODRIGUEZ IN MEXICO - STAGES

(See Preceding Page For Description)

## Mean Daily Gage Height in Feet 1962

| Day | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 43.77 | 44.49 | 41.04 | 40.16 | 40.16 | 40.16 | 39.80 | 39.73 | 39.70 | 39.99 | 43.41 | 43.14 |
| 2 | 44.06 | 43.86 | 40.94 | 40.16 | 40.29 | 40.55 | 39.80 | 39.70 | 39.76 | 40.42 | 43.47 | 43.54 |
| 3 | 43.31 | 43.67 | 40.85 | 40.16 | 40.78 | 40.91 | 39.80 | 39.67 | 39.80 | 42.49 | 43.54 | 44.00 |
| 4 | 42.59 | 43.67 | 40.81 | 40.12 | 41.24 | 40.62 | 39.73 | 39.67 | 39.80 | 43.73 | 44.19 | 42.55 |
| 5 | 42.09 | 43.73 | 40.85 | 40.16 | 40.72 | 40.16 | 39.76 | 39.70 | 39.73 | 44.13 | 46.92 | 42.65 |
| 6 | 42.03 | 43.93 | 40.72 | 40.22 | 40.81 | 39.96 | 39.76 | 39.67 | 39.76 | 43.57 | 48.36 | 42.42 |
| 7 | 41.83 | 44.06 | 40.72 | 40.22 | 41.21 | 39.96 | 39.73 | 39.60 | 39.80 | 43.77 | 49.90 | 42.45 |
| 8 | 41.83 | 43.64 | 40.65 | 40.29 | 42.55 | 39.93 | 39.73 | 39.76 | 39.80 | 44.46 | 50.79 | 42.65 |
| 9 | 41.77 | 43.64 | 40.62 | 40.26 | 43.31 | 39.90 | 39.76 | 39.73 | 39.73 | 44.75 | 50.20 | 42.29 |
| 10 | 41.63 | 43.67 | 40.62 | 40.16 | 43.44 | 39.90 | 39.67 | 39.70 | 39.80 | 45.60 | 48.43 | 42.26 |
| 11 | 41.57 | 43.57 | 40.55 | 40.12 | 43.57 | 39.86 | 39.73 | 39.76 | 39.83 | 46.46 | 46.33 | 41.67 |
| 12 | 41.54 | 43.77 | 40.58 | 40.12 | 43.60 | 39.83 | 39.70 | 39.73 | 39.80 | 46.72 | 44.95 | 41.47 |
| 13 | 41.47 | 43.54 | 40.52 | 40.16 | 43.67 | 39.83 | 39.70 | 39.80 | 39.83 | 46.23 | 44.29 | 41.60 |
| 14 | 41.47 | 43.54 | 40.42 | 40.22 | 43.70 | 39.83 | 39.70 | 39.80 | 39.83 | 45.51 | 43.90 | 41.50 |
| 15 | 41.54 | 43.57 | 40.55 | 40.12 | 43.77 | 39.83 | 39.70 | 39.80 | 39.83 | 44.55 | 43.90 | 40.88 |
| 16 | 41.60 | 43.60 | 40.55 | 40.12 | 43.83 | 39.80 | 39.76 | 39.70 | 39.83 | 44.36 | 43.24 | 40.88 |
| 17 | 41.67 | 43.57 | 40.72 | 40.19 | 44.09 | 39.83 | 39.76 | 39.67 | 39.86 | 44.09 | 43.67 | 41.77 |
| 18 | 41.73 | 43.50 | 41.11 | 40.26 | 44.06 | 39.83 | 39.73 | 39.73 | 39.93 | 43.80 | 44.62 | 41.37 |
| 19 | 41.96 | 43.54 | 41.57 | 40.26 | 42.45 | 39.83 | 39.73 | 39.76 | 39.93 | 43.83 | 44.23 | 41.90 |
| 20 | 42.39 | 43.64 | 41.50 | 40.22 | 42.95 | 39.83 | 39.76 | 39.76 | 39.93 | 43.80 | 43.80 | 43.90 |
| 21 | 42.65 | 43.60 | 41.04 | 40.49 | 42.72 | 39.76 | 39.73 | 39.73 | 39.93 | 43.73 | 43.73 | 45.87 |
| 22 | 42.55 | 43.60 | 40.68 | 40.29 | 41.93 | 39.73 | 39.70 | 39.76 | 39.96 | 43.57 | 43.77 | 44.36 |
| 23 | 42.45 | 43.64 | 40.65 | 40.19 | 41.21 | 39.73 | 39.70 | 39.80 | 40.03 | 43.57 | 43.77 | 41.83 |
| 24 | 42.42 | 43.77 | 41.04 | 40.52 | 40.85 | 39.73 | 39.67 | 39.80 | 40.03 | 43.60 | 43.80 | 41.17 |
| 25 | 43.64 | 42.72 | 41.21 | 40.32 | 40.65 | 39.73 | 39.70 | 39.76 | 40.03 | 43.57 | 44.13 | 41.08 |
| 26 | 45.80 | 41.96 | 41.01 | 40.12 | 40.52 | 39.73 | 39.67 | 39.73 | 40.03 | 43.57 | 44.23 | 41.31 |
| 27 | 46.03 | 41.77 | 41.08 | 40.09 | 40.35 | 39.73 | 39.67 | 39.76 | 40.06 | 43.70 | 43.67 | 40.65 |
| 28 | 46.16 | 41.37 | 40.42 | 40.03 | 40.26 | 39.76 | 39.67 | 39.73 | 40.16 | 43.77 | 43.64 | 40.49 |
| 29 | 45.60 | | 40.19 | 40.03 | 40.16 | 39.80 | 39.73 | 39.67 | 41.04 | 43.60 | 44.26 | 40.45 |
| 30 | 45.05 | | 40.16 | 40.03 | 40.12 | 39.76 | 39.80 | 39.63 | 40.06 | 43.57 | 43.01 | 40.68 |
| 31 | 44.88 | | 40.12 | | 40.09 | | 39.76 | 39.63 | | 43.41 | | 40.62 |
| Avg. | 42.87 | 43.45 | 40.76 | 40.19 | 41.91 | 39.93 | 39.73 | 39.72 | 39.92 | 43.93 | 45.01 | 42.05 |

# DIVERSIONS FROM COLORADO RIVER TO ZACATECAS CANAL IN MEXICO

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

RECORDS: Data collected by the Ministry of Hydraulic Resources and furnished by the Mexican Section of the Commission are based on pump capacities and operation time. Records available: August 1958 through December 1962.

REMARKS: The flows of the Colorado River passing this pumping plant consist of the flows which pass Miguel C. Rodriguez, 4.5 miles upstream from the pumping plant.

## Mean Daily Discharge in Second-Feet 1962 — Annual and Period Summary

| Day | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 35.3 | 0 | 3.5 | 14.1 | 0 | 0 | 28.3 | 21.2 | 21.2 | 0 | 0 | 0 |
| 2 | 70.6 | 0 | 0 | 28.3 | 21.2 | 0 | 28.3 | 21.2 | 21.2 | 0 | 0 | 0 |
| 3 | 106 | 0 | 0 | 28.3 | 0 | 0 | 28.3 | 21.2 | 21.2 | 0 | 0 | 0 |
| 4 | 106 | 0 | 0 | 28.3 | 35.3 | 21.2 | 21.2 | 21.2 | 21.2 | 0 | 0 | 0 |
| 5 | 106 | 0 | 42.4 | 28.3 | 10.6 | 53.0 | 21.2 | 21.2 | 21.2 | 0 | 0 | 0 |
| 6 | 106 | 0 | 35.3 | 28.3 | 0 | 42.4 | 21.2 | 21.2 | 21.2 | 0 | 0 | 0 |
| 7 | 106 | 0 | 35.3 | 28.3 | 0 | 14.1 | 21.2 | 21.2 | 21.2 | 0 | 0 | 0 |
| 8 | 70.6 | 0 | 24.7 | 28.3 | 0 | 28.3 | 21.2 | 21.2 | 21.2 | 0 | 0 | 0 |
| 9 | 70.6 | 0 | 35.3 | 28.3 | 0 | 28.3 | 21.2 | 21.2 | 21.2 | 0 | 0 | 0 |
| 10 | 106 | 42.4 | 35.3 | 14.1 | 0 | 28.3 | 21.2 | 21.2 | 21.2 | 0 | 0 | 0 |
| 11 | 106 | 0 | 35.3 | 21.2 | 0 | 28.3 | 21.2 | 21.2 | 21.2 | 0 | 0 | 14.1 |
| 12 | 106 | 0 | 35.3 | 10.6 | 0 | 28.3 | 21.2 | 21.2 | 21.2 | 0 | 0 | 0 |
| 13 | 106 | 0 | 35.3 | 28.3 | 0 | 28.3 | 28.3 | 21.2 | 21.2 | 0 | 0 | 17.7 |
| 14 | 70.6 | 0 | 35.3 | 28.3 | 0 | 28.3 | 28.3 | 21.2 | 21.2 | 0 | 0 | 24.7 |
| 15 | 141 | 0 | 35.3 | 24.7 | 0 | 28.3 | 28.3 | 21.2 | 21.2 | 0 | 0 | 21.2 |
| 16 | 141 | 42.4 | 24.7 | 17.7 | 0 | 28.3 | 28.3 | 21.2 | 21.2 | 0 | 0 | 21.2 |
| 17 | 141 | 0 | 0 | 28.3 | 0 | 28.3 | 28.3 | 21.2 | 21.2 | 0 | 0 | 14.1 |
| 18 | 141 | 0 | 0 | 10.6 | 0 | 7.1 | 21.2 | 21.2 | 21.2 | 0 | 0 | 14.1 |
| 19 | 141 | 0 | 21.2 | 21.2 | 0 | 28.3 | 21.2 | 21.2 | 21.2 | 0 | 0 | 28.3 |
| 20 | 177 | 0 | 45.9 | 10.6 | 0 | 28.3 | 21.2 | 21.2 | 21.2 | 0 | 0 | 56.5 |
| 21 | 177 | 0 | 28.3 | 21.2 | 0 | 28.3 | 21.2 | 21.2 | 21.2 | 0 | 0 | 81.2 |
| 22 | 177 | 0 | 28.3 | 28.3 | 0 | 28.3 | 21.2 | 21.2 | 21.2 | 0 | 0 | 106 |
| 23 | 106 | 0 | 0 | 28.3 | 0 | 28.3 | 21.2 | 21.2 | 21.2 | 0 | 0 | 56.5 |
| 24 | 106 | 0 | 0 | 17.7 | 0 | 28.3 | 21.2 | 21.2 | 21.2 | 0 | 0 | 21.2 |
| 25 | 0 | 0 | 28.3 | 56.5 | 0 | 28.3 | 21.2 | 21.2 | 21.2 | 0 | 0 | 21.2 |
| 26 | 0 | 0 | 17.7 | 28.3 | 0 | 28.3 | 21.2 | 21.2 | 21.2 | 0 | 0 | 14.1 |
| 27 | 0 | 0 | 45.9 | 28.3 | 0 | 28.3 | 21.2 | 21.2 | 21.2 | 0 | 0 | 14.1 |
| 28 | 0 | 0 | 42.4 | 17.7 | 0 | 28.3 | 21.2 | 21.2 | 7.1 | 0 | 0 | 81.2 |
| 29 | 0 | | 28.3 | 0 | 0 | 28.3 | 21.2 | 21.2 | 0 | 0 | 0 | 81.2 |
| 30 | 0 | | 21.2 | 0 | 0 | 28.3 | 21.2 | 21.2 | 0 | 0 | 0 | 81.2 |
| 31 | 0 | | 24.7 | | 0 | | 21.2 | 21.2 | | 0 | | 56.5 |
| Sum | 2,719.7 | 84.8 | 745.2 | 682.4 | 67.1 | 760.4 | 714.0 | 657.2 | 579.5 | 0 | 0 | 826.3 |

| Month | Current Year 1962 | | | | | | | | Period 1958-1962 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Extreme Gage Feet | | Extreme Second-Feet | | | | Average Second-Feet | Total Acre-Feet | Acre-Feet | | |
| | | | High | | Low | | | | Average | Maximum | Minimum |
| | High | Low | Day | | Day | | | | | | |
| Jan. | | | †20 | 177 | † 25 | 0 | 87.6 | 5,394 | 6,947 | 10,045 | 5,309 |
| Feb. | | | †10 | 42.4 | † 1 | 0 | 3.2 | 168 | 4,268 | 8,063 | 168 |
| Mar. | | | †20 | 45.9 | † 2 | 0 | 24.0 | 1,470 | 4,614 | 6,641 | 1,470 |
| Apr. | | | 25 | 56.5 | † 29 | 0 | 22.6 | 1,350 | 3,299 | 5,884 | 1,350 |
| May | | | 4 | 35.3 | † 1 | 0 | 2.1 | 136 | 778 | 2,459 | 0 |
| June | | | 5 | 53.0 | † 1 | 0 | 25.4 | 1,506 | 1,423 | 2,259 | 729 |
| July | | | † 1 | 28.3 | † 4 | 21.2 | 23.0 | 1,415 | 2,110 | 2,606 | 1,415 |
| Aug. | | | † 1 | 21.2 | † 1 | 21.2 | 21.2 | 1,303 | 3,822 | 6,144 | 1,303 |
| Sept. | | | 19 | 21.2 | † 29 | 0 | 19.4 | 1,152 | 2,965 | 5,104 | 1,152 |
| Oct. | | | | 0 | | 0 | 0 | 0 | 2,148 | 6,461 | 0 |
| Nov. | | | | 0 | | 0 | 0 | 0 | 240 | 1,054 | 0 |
| Dec. | | | 22 | 106 | † 1 | 0 | 26.8 | 1,642 | 4,112 | 9,512 | 0 |
| Yearly | | | | 177 | | 0 | 21.2 | 15,536 | 34,582 | 43,674 | 15,536 |

† And other days

# WASTEWAY TO COLORADO RIVER AT UNION IN MEXICO

DESCRIPTION: Wasteway structure located at Kilometer 214+736 of the Barrote Canal in the Colonia Hidalgo about 1,500 feet from right bank of the Colorado River. The wasteway discharges into the Colorado River at a point about 0.6 mile upstream from the Sonora-Baja California railroad bridge and 30 miles downstream from the southerly international boundary.

RECORDS: Data collected by the Ministry of Hydraulic Resources and furnished by the Mexican Section of the Commission are based on gate openings. Records available: January 1957 through December 1962.

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 1962 — 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 | 53.0 |
| 2 | 0 | 0 | 0 | 0 | 70.6 | 0 | 0 | 0 | 0 | 0 | 0 | 38.8 |
| 3 | 0 | 0 | 0 | 0 | 70.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | 0 | 0 | 0 | 0 | 63.6 | 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 | 10.6 | 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 | 28.3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13 | 31.8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14 | 38.8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15 | 35.3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16 | 35.3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17 | 35.3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18 | 45.9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 19 | 21.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20 | 28.3 | 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 | 14.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 28 | 10.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 29 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 31 | 45.9 | | 0 | | 0 | | 0 | 0 | | 0 | | 0 |
| Sum | 381.4 | 0 | 0 | 0 | 204.8 | 0 | 0 | 0 | 0 | 0 | 0 | 91.8 |

| Month | Current Year 1962 | | | | | | | | Period 1957-1962 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Extreme Gage Feet | | Extreme Second-Feet | | | | Average Second-Feet | Total Acre-Feet | Acre-Feet | | |
| | | | High | | Low | | | | | | |
| | High | Low | Day | | Day | | | | Average | Maximum | Minimum |
| Jan. | | | † 18 | 45.9 | † 1 | 0 | 12.4 | 756 | 1,531 | 3,166 | 0 |
| Feb. | | | | 0 | | 0 | 0 | 0 | 762 | 2,788 | 0 |
| Mar. | | | | 0 | | 0 | 0 | 0 | 2,688 | 7,074 | 0 |
| Apr. | | | | 0 | | 0 | 0 | 0 | 1,958 | 4,462 | 0 |
| May | | | † 2 | 70.6 | † 1 | 0 | 6.7 | 406 | 1,998 | 4,413 | 0 |
| June | | | | 0 | | 0 | 0 | 0 | 503 | 1,505 | 0 |
| July | | | | 0 | | 0 | 0 | 0 | 1,095 | 4,296 | 0 |
| Aug. | | | | 0 | | 0 | 0 | 0 | 585 | 1,857 | 0 |
| Sept. | | | | 0 | | 0 | 0 | 0 | 793 | 1,800 | 0 |
| Oct. | | | | 0 | | 0 | 0 | 0 | 1,443 | 6,997 | 0 |
| Nov. | | | | 0 | | 0 | 0 | 0 | 0 | 0 | 0 |
| Dec. | | | 1 | 53.0 | † 3 | 0 | 2.8 | 182 | 453 | 932 | 0 |
| Yearly | | | | 70.6 | | 0 | 1.8 | 1,345 | 13,808 | 24,526 | 1,345 |

† And other days

# DIVERSIONS BY INDIVIDUAL PUMPS IN MEXICO

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

RECORDS: Data collected by the Ministry of Hydraulic Resources and furnished by the Mexican Section of the Commission are based on pump capacities and operation time. Records available: August 1958 through December 1962.

## Mean Daily Discharge in Second-Feet 1962 — Annual and Period Summary

| Day | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | 7.1 | 0 | 7.1 | 3.5 | 7.1 | 0 | 0 | 0 |
| 2 | 0 | 0 | 0 | 0 | 10.6 | 0 | 10.6 | 10.6 | 10.6 | 0 | 0 | 0 |
| 3 | 0 | 0 | 0 | 0 | 7.1 | 3.5 | 10.6 | 10.6 | 10.6 | 0 | 0 | 0 |
| 4 | 0 | 0 | 0 | 0 | 3.5 | 7.1 | 10.6 | 10.6 | 10.6 | 0 | 0 | 0 |
| 5 | 0 | 0 | 0 | 0 | 10.6 | 10.6 | 10.6 | 14.1 | 14.1 | 0 | 0 | 0 |
| 6 | 0 | 0 | 0 | 0 | 3.5 | 7.1 | 7.1 | 10.6 | 7.1 | 0 | 0 | 0 |
| 7 | 0 | 0 | 0 | 0 | 0 | 7.1 | 10.6 | 14.1 | 3.5 | 0 | 0 | 0 |
| 8 | 0 | 3.5 | 0 | 0 | 0 | 3.5 | 10.6 | 14.1 | 7.1 | 0 | 0 | 3.5 |
| 9 | 0 | 3.5 | 0 | 0 | 0 | 0 | 10.6 | 10.6 | 7.1 | 0 | 0 | 14.1 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 10.6 | 10.6 | 3.5 | 0 | 0 | 0 |
| 11 | 0 | 0 | 0 | 0 | 0 | 10.6 | 14.1 | 10.6 | 0 | 0 | 0 | 0 |
| 12 | 0 | 0 | 0 | 0 | 0 | 10.6 | 10.6 | 0 | 3.5 | 0 | 0 | 0 |
| 13 | 0 | 0 | 0 | 0 | 0 | 14.1 | 14.1 | 10.6 | 3.5 | 0 | 0 | 0 |
| 14 | 0 | 0 | 0 | 0 | 0 | 10.6 | 10.6 | 10.6 | 3.5 | 0 | 0 | 0 |
| 15 | 0 | 0 | 0 | 0 | 0 | 7.1 | 14.1 | 10.6 | 0 | 0 | 0 | 7.1 |
| 16 | 0 | 0 | 0 | 0 | 0 | 3.5 | 3.5 | 7.1 | 0 | 7.1 | 0 | 10.6 |
| 17 | 0 | 0 | 0 | 0 | 0 | 7.1 | 7.1 | 0 | 0 | 10.6 | 0 | 7.1 |
| 18 | 0 | 0 | 0 | 0 | 0 | 10.6 | 10.6 | 0 | 0 | 7.1 | 0 | 10.6 |
| 19 | 0 | 0 | 0 | 0 | 3.5 | 10.6 | 10.6 | 0 | 0 | 0 | 0 | 0 |
| 20 | 0 | 3.5 | 0 | 0 | 7.1 | 3.5 | 7.1 | 3.5 | 0 | 0 | 0 | 0 |
| 21 | 0 | 3.5 | 0 | 0 | 3.5 | 3.5 | 10.6 | 10.6 | 0 | 0 | 0 | 0 |
| 22 | 0 | 0 | 0 | 0 | 0 | 3.5 | 3.5 | 14.1 | 0 | 3.5 | 0 | 0 |
| 23 | 3.5 | 0 | 0 | 0 | 0 | 3.5 | 10.6 | 3.5 | 0 | 0 | 0 | 0 |
| 24 | 0 | 0 | 0 | 0 | 0 | 7.1 | 10.6 | 14.1 | 0 | 0 | 0 | 7.1 |
| 25 | 3.5 | 0 | 0 | 0 | 3.5 | 10.6 | 0 | 3.5 | 0 | 0 | 0 | 10.6 |
| 26 | 0 | 3.5 | 0 | 0 | 3.5 | 10.6 | 0 | 3.5 | 0 | 0 | 0 | 7.1 |
| 27 | 0 | 0 | 0 | 0 | 7.1 | 0 | 0 | 3.5 | 0 | 0 | 0 | 0 |
| 28 | 0 | 0 | 0 | 0 | 10.6 | 0 | 0 | 14.1 | 0 | 0 | 0 | 0 |
| 29 | 0 | | 0 | 0 | 10.6 | 10.6 | 7.1 | 10.6 | 0 | 0 | 0 | 0 |
| 30 | 0 | | 0 | 0 | 10.6 | 10.6 | 10.6 | 0 | 7.1 | 0 | 0 | 0 |
| 31 | 0 | | 0 | | 10.6 | | 7.1 | 0 | | 0 | | 0 |
| Sum | 7.0 | 17.5 | 0 | 0 | 113.0 | 187.2 | 261.5 | 239.9 | 98.9 | 28.3 | 0 | 77.8 |

| Month | Current Year 1962 | | | | | | | | Period 1958-1962 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Extreme Gage Feet | | Extreme Second-Feet | | | | Average Second-Feet | Total Acre-Feet | Acre-Feet | | |
| | | | High | | Low | | | | | | |
| | High | Low | Day | | Day | | | | Average | Maximum | Minimum |
| Jan. | | | †23 | 3.5 | † 1 | 0 | 0.4 | 19.5 | 169 | 358 | 0 |
| Feb. | | | † 8 | 3.5 | † 1 | 0 | .7 | 33.2 | 251 | 791 | 0 |
| Mar. | | | | 0 | | 0 | 0 | 0 | 113 | 210 | 0 |
| Apr. | | | | 0 | | 0 | 0 | 0 | 203 | 379 | 0 |
| May | | | † 2 | 10.6 | † 7 | 0 | 3.9 | 235 | 238 | 322 | 112 |
| June | | | 13 | 14.1 | † 1 | 0 | 6.4 | 378 | 310 | 378 | 175 |
| July | | | †11 | 14.1 | †25 | 0 | 8.1 | 506 | 418 | 506 | 371 |
| Aug. | | | † 5 | 14.1 | †12 | 0 | 7.4 | 459 | 630 | 1,648 | 322 |
| Sept. | | | 5 | 14.1 | †11 | 0 | 3.2 | 199 | 444 | 1,240 | 199 |
| Oct. | | | 17 | 10.6 | † 1 | 0 | 1.1 | 60.8 | 73.8 | 161 | 0 |
| Nov. | | | | 0 | | 0 | 0 | 0 | 30.8 | 112 | 0 |
| Dec. | | | 9 | 14.1 | † 1 | 0 | 2.1 | 132 | 105 | 255 | 0 |
| Yearly | | | | 14.1 | | 0 | 2.8 | 2022.5 | 2,496 | 3,132 | 2,022.5 |

† 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 31 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. Records available: Mean daily stages and discharges from January 1, 1960 through 1962. 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. When affected by tides in the Gulf of California, the discharge is deduced from stage-discharge curves based on measurements at low tide and the discharge at Miguel C. Rodriguez, taking into consideration the pumps and wasteways between the two stations.

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 during parts of each year.

## Mean Daily Discharge in Second-Feet 1962 — Annual and Period Summary

| Day | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 908 | 1,812 | 360 | 0 | 88.6 | 103 | 0 | 0 | 0 | 198 | 883 | 1,006 |
| 2 | 823 | 1,649 | 314 | 0 | 115 | 83.3 | 0 | 0 | 0 | 210 | 915 | 961 |
| 3 | 742 | 1,501 | 271 | 0 | 150 | 67.8 | 0 | 0 | 0 | 234 | 915 | 968 |
| 4 | 600 | 1,420 | 238 | 0 | 186 | 51.6 | 0 | 0 | 0 | 292 | 932 | 971 |
| 5 | 456 | 1,342 | 207 | 0 | 213 | 36.7 | 0 | 0 | 0 | 427 | 1,091 | 858 |
| 6 | 360 | 1,314 | 182 | 0 | 233 | 23.3 | 0 | 0 | 0 | 643 | 1,526 | 830 |
| 7 | 283 | 1,307 | 159 | 0 | 251 | 10.6 | 0 | 0 | 0 | 745 | 1,956 | 812 |
| 8 | 216 | 1,278 | 135 | 0 | 317 | 0 | 0 | 0 | 0 | 784 | 2,468 | 809 |
| 9 | 155 | 1,204 | 110 | 0 | 512 | 0 | 0 | 0 | 0 | 819 | 2,981 | 805 |
| 10 | 94.3 | 1,151 | 86.9 | 0 | 735 | 0 | 0 | 0 | 0 | 978 | 3,277 | 784 |
| 11 | 42.7 | 1,127 | 66.4 | 0 | 897 | 0 | 0 | 0 | 0 | 1,310 | 3,079 | 766 |
| 12 | 0 | 1,077 | 46.3 | 0 | 950 | 0 | 0 | 0 | 0 | 1,688 | 2,546 | 727 |
| 13 | 28.3 | 1,049 | 29.0 | 0 | 982 | 0 | 0 | 0 | 0 | 1,769 | 1,925 | 706 |
| 14 | 48.4 | 982 | 13.8 | 0 | 989 | 0 | 0 | 0 | 0 | 1,681 | 1,624 | 717 |
| 15 | 71.0 | 939 | 0 | 0 | 1,014 | 0 | 0 | 0 | 0 | 1,504 | 1,501 | 710 |
| 16 | 92.2 | 893 | 0 | 0 | 1,035 | 0 | 0 | 0 | 0 | 1,275 | 1,427 | 667 |
| 17 | 128 | 851 | 0 | 0 | 1,024 | 0 | 0 | 0 | 0 | 1,183 | 1,335 | 678 |
| 18 | 174 | 809 | 0 | 0 | 1,031 | 0 | 0 | 0 | 0 | 1,074 | 1,356 | 773 |
| 19 | 260 | 784 | 0 | 0 | 953 | 0 | 0 | 0 | 0 | 1,003 | 1,427 | 745 |
| 20 | 438 | 759 | 0 | 0 | 752 | 0 | 0 | 0 | 0 | 1,003 | 1,356 | 791 |
| 21 | 851 | 735 | 0 | 0 | 671 | 0 | 0 | 0 | 18.4 | 999 | 1,285 | 989 |
| 22 | 1,282 | 710 | 0 | 0 | 593 | 0 | 0 | 0 | 36.0 | 996 | 1,261 | 1,183 |
| 23 | 1,437 | 689 | 0 | 0 | 480 | 0 | 0 | 0 | 52.6 | 950 | 1,261 | 1,006 |
| 24 | 1,490 | 664 | 0 | 0 | 396 | 0 | 0 | 0 | 69.9 | 925 | 1,240 | 809 |
| 25 | 1,586 | 625 | 0 | 0 | 323 | 0 | 0 | 0 | 85.1 | 901 | 1,285 | 699 |
| 26 | 1,798 | 533 | 0 | 0 | 281 | 0 | 0 | 0 | 105 | 893 | 1,356 | 657 |
| 27 | 1,865 | 480 | 0 | 0 | 242 | 0 | 0 | 0 | 123 | 908 | 1,381 | 618 |
| 28 | 2,232 | 417 | 0 | 23.0 | 211 | 0 | 0 | 0 | 136 | 918 | 1,335 | 597 |
| 29 | 2,412 | | 0 | 45.9 | 178 | 0 | 0 | 0 | 158 | 932 | 1,335 | 565 |
| 30 | 2,221 | | 0 | 66.7 | 148 | 0 | 0 | 0 | 180 | 922 | 1,356 | 547 |
| 31 | 1,942 | | 0 | | 125 | | 0 | 0 | | 911 | | 526 |
| Sum | 25,035.9 | 28,101 | 2,218.4 | 135.6 | 16,075.6 | 376.3 | 0 | 0 | 964.0 | 29,075 | 47,615 | 24,280 |

**Current Year 1962** — **Period 1960-1962**

| Month | Extreme Gage Feet | | Extreme Second-Feet | | | | Average Second-Feet | Total Acre-Feet | Acre-Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | High | | Low | | | | | | |
| | High | Low | Day | | Day | | | | Average | Maximum | Minimum |
| Jan. | 17.13 | 14.11 | 29 | 2,412 | 12 | 0 | 809 | 49,657 | 91,997 | 225,224 | 1,111 |
| Feb. | 16.70 | 15.39 | 1 | 1,872 | 28 | 399 | 1,003 | 55,735 | 40,757 | 55,735 | 12,045 |
| Mar. | 15.39 | 14.01 | 1 | 374 | † 15 | 0 | 71.7 | 4,399 | 6,508 | 15,024 | 98.9 |
| Apr. | 14.24 | 13.94 | 30 | 66.7 | † 1 | 0 | 4.6 | 269 | 4,337 | 9,978 | 269 |
| May | 16.21 | 13.98 | 18 | 1,091 | 1 | 88.6 | 519 | 31,886 | 17,444 | 31,886 | 128 |
| June | 14.50 | 13.62 | 1 | 106 | † 8 | 0 | 12.7 | 746 | 249 | 746 | 0 |
| July | 13.71 | 13.42 | | 0 | | 0 | 0 | 0 | 0 | 0 | 0 |
| Aug. | 13.78 | 13.32 | | 0 | | 0 | 0 | 0 | 0 | 0 | 0 |
| Sept. | 13.81 | 13.39 | 30 | 180 | † 1 | 0 | 32.1 | 1,912 | 3,004 | 7,101 | 0 |
| Oct. | 16.47 | 13.65 | 13 | 1,840 | 1 | 198 | 939 | 57,672 | 23,173 | 57,672 | 1,549 |
| Nov. | 18.44 | 15.88 | 10 | 3,327 | 1 | 872 | 1,586 | 94,442 | 62,889 | 94,442 | 30,553 |
| Dec. | 16.73 | 15.55 | 22 | 1,225 | 31 | 526 | 784 | 48,163 | 60,622 | 97,155 | 36,550 |
| Yearly | 18.44 | 13.32 | | 3,327 | | 0 | 476 | 344,881 | 310,980 | 503,260 | 84,799 |

† And other days

# COLORADO RIVER AT EL MARITIMO IN MEXICO - STAGES

(See Preceding Page For Description)

## Mean Daily Gage Height in Feet 1962

| Day | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 15.78 | 16.63 | 15.32 | 14.01 | 13.98 | 14.47 | 13.62 | 13.52 | 13.45 | 13.68 | 15.88 | 16.60 |
| 2 | 15.78 | 16.50 | 15.22 | 14.01 | 14.01 | 14.40 | 13.65 | 13.52 | 13.45 | 13.65 | 15.94 | 16.54 |
| 3 | 15.78 | 16.37 | 15.12 | 14.04 | 14.11 | 14.37 | 13.68 | 13.48 | 13.45 | 13.68 | 15.94 | 16.57 |
| 4 | 15.62 | 16.31 | 15.06 | 14.14 | 14.17 | 14.30 | 13.65 | 13.45 | 13.52 | 13.88 | 15.98 | 16.60 |
| 5 | 15.39 | 16.24 | 14.99 | 14.21 | 14.17 | 14.24 | 13.65 | 13.45 | 13.45 | 14.21 | 16.24 | 16.40 |
| 6 | 15.26 | 16.24 | 14.96 | 14.21 | 14.14 | 14.17 | 13.62 | 13.42 | 13.42 | 14.63 | 16.86 | 16.31 |
| 7 | 15.16 | 16.27 | 14.93 | 14.17 | 14.11 | 14.07 | 13.58 | 13.39 | 13.45 | 14.83 | 17.36 | 16.24 |
| 8 | 15.09 | 16.27 | 14.90 | 14.17 | 14.27 | 14.01 | 13.58 | 13.39 | 13.42 | 14.90 | 17.81 | 16.21 |
| 9 | 15.03 | 16.21 | 14.83 | 14.14 | 14.76 | 13.98 | 13.55 | 13.39 | 13.39 | 14.96 | 18.21 | 16.17 |
| 10 | 14.90 | 16.17 | 14.76 | 14.11 | 15.16 | 13.94 | 13.52 | 13.39 | 13.39 | 15.22 | 18.41 | 16.11 |
| 11 | 14.76 | 16.17 | 14.70 | 14.04 | 15.35 | 13.94 | 13.52 | 13.35 | 13.39 | 15.72 | 18.27 | 16.04 |
| 12 | 14.70 | 16.14 | 14.60 | 14.01 | 15.52 | 13.88 | 13.45 | 13.35 | 13.39 | 16.14 | 17.88 | 15.94 |
| 13 | 14.40 | 16.14 | 14.53 | 14.01 | 15.65 | 13.85 | 13.42 | 13.35 | 13.48 | 16.40 | 17.32 | 15.88 |
| 14 | 14.21 | 16.08 | 14.47 | 14.01 | 15.75 | 13.81 | 13.42 | 13.39 | 13.65 | 16.44 | 16.99 | 15.88 |
| 15 | 14.17 | 16.04 | 14.44 | 14.01 | 15.85 | 13.78 | 13.45 | 13.48 | 13.75 | 16.37 | 16.83 | 15.85 |
| 16 | 14.14 | 16.01 | 14.40 | 13.98 | 15.94 | 13.78 | 13.45 | 13.55 | 13.78 | 16.21 | 16.73 | 15.75 |
| 17 | 14.27 | 15.98 | 14.34 | 13.98 | 16.01 | 13.71 | 13.48 | 13.65 | 13.81 | 16.14 | 16.60 | 15.75 |
| 18 | 14.44 | 15.94 | 14.30 | 13.98 | 16.11 | 13.71 | 13.52 | 13.75 | 13.78 | 16.04 | 16.63 | 15.91 |
| 19 | 14.73 | 15.94 | 14.27 | 13.98 | 16.08 | 13.75 | 13.55 | 13.75 | 13.71 | 15.94 | 16.73 | 15.85 |
| 20 | 15.29 | 15.94 | 14.30 | 13.98 | 15.81 | 13.71 | 13.55 | 13.68 | 13.71 | 15.94 | 16.63 | 15.91 |
| 21 | 16.17 | 15.94 | 14.24 | 13.98 | 15.75 | 13.71 | 13.55 | 13.65 | 13.71 | 15.94 | 16.54 | 16.31 |
| 22 | 16.73 | 15.94 | 14.21 | 13.98 | 15.65 | 13.71 | 13.52 | 13.62 | 13.68 | 15.94 | 16.50 | 16.67 |
| 23 | 16.77 | 15.94 | 14.17 | 14.01 | 15.42 | 13.68 | 13.52 | 13.58 | 13.65 | 15.88 | 16.50 | 16.40 |
| 24 | 16.67 | 15.94 | 14.14 | 14.04 | 15.22 | 13.65 | 13.52 | 13.55 | 13.65 | 15.85 | 16.47 | 16.04 |
| 25 | 16.63 | 15.91 | 14.14 | 14.01 | 15.06 | 13.65 | 13.52 | 13.52 | 13.62 | 15.81 | 16.54 | 15.85 |
| 26 | 16.73 | 15.75 | 14.11 | 14.01 | 14.96 | 13.65 | 13.52 | 13.55 | 13.65 | 15.81 | 16.63 | 15.78 |
| 27 | 16.67 | 15.62 | 14.11 | 14.04 | 14.86 | 13.65 | 13.52 | 13.52 | 13.65 | 15.85 | 16.67 | 15.72 |
| 28 | 16.90 | 15.45 | 14.11 | 14.01 | 14.80 | 13.65 | 13.52 | 13.52 | 13.62 | 15.88 | 16.60 | 15.68 |
| 29 | 17.09 | | 14.07 | 14.01 | 14.70 | 13.65 | 13.48 | 13.52 | 13.65 | 15.91 | 16.60 | 15.62 |
| 30 | 16.96 | | 14.04 | 13.98 | 14.60 | 13.62 | 13.48 | 13.48 | 13.68 | 15.91 | 16.63 | 15.58 |
| 31 | 16.73 | | 14.04 | | 14.53 | | 13.48 | 13.45 | | 15.91 | | 15.55 |
| Avg. | 15.58 | 16.07 | 14.51 | 14.04 | 15.05 | 13.88 | 13.53 | 13.51 | 13.58 | 15.47 | 16.83 | 16.06 |

# SANTA CLARA ESTUARY AT RAILROAD CROSSING IN MEXICO

DESCRIPTION: A measuring section at the entrance to a road culvert 100 feet downstream from the Sonora-Baja California railroad bridge at Kilometer 65, 400 feet west of Monument C. I. L. A. F. C. 49 and 1.2 miles to the southwest along the road from the village of Riito. No gage has been installed.

RECORDS: Based on 25 double measurements with current meter during the year. Data obtained and furnished by the Mexican Section of the Commission. Records available: January 1958 through December 1962.

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, November 10, 1958; minimum discharge, no flow on various occasions.

## Mean Daily Discharge in Second Feet 1962 — Annual and Period Summary

| Day | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.5 | 0 | 0.5 | 4.0 | 3.7 | 7.9 | 0.6 | 0 | 0 | 0 | 0 | 0 |
| 2 | .3 | .5 | 1.0 | 3.6 | 4.2 | 7.0 | .5 | 0 | 0 | 0 | 0 | 0 |
| 3 | 0 | 1.1 | 1.4 | 3.3 | 4.8 | 6.1 | .4 | 0 | 0 | 0 | 0 | 0 |
| 4 | 0 | 1.6 | 1.9 | 2.9 | 5.3 | 5.3 | .2 | 0 | 0 | 0 | 0 | 0 |
| 5 | .1 | 2.2 | 2.4 | 2.6 | 5.9 | 4.4 | .1 | 0 | 0 | 0 | 0 | 0 |
| 6 | .1 | 2.7 | 2.9 | 2.3 | 6.4 | 3.6 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7 | .2 | 3.2 | 3.4 | 4.0 | 7.0 | 3.3 | 0 | 0 | 0 | 0 | 0 | .2 |
| 8 | .2 | 3.7 | 3.9 | 5.7 | 8.7 | 3.1 | 0 | 0 | 0 | 0 | 0 | .4 |
| 9 | .3 | 4.3 | 3.6 | 7.4 | 10.4 | 2.9 | 0 | 0 | 0 | 0 | 0 | .6 |
| 10 | .4 | 4.8 | 3.4 | 9.1 | 12.1 | 2.6 | 0 | 0 | 0 | 0 | 0 | .8 |
| 11 | .4 | 5.4 | 3.1 | 10.8 | 13.8 | 2.4 | 0 | 0 | 0 | 0 | 0 | 1.1 |
| 12 | .4 | 5.9 | 2.9 | 10.1 | 14.1 | 2.1 | 0 | 0 | 0 | 0 | 0 | 1.3 |
| 13 | .5 | 6.5 | 2.6 | 9.4 | 14.3 | 1.9 | 0 | 0 | 0 | 0 | 0 | 1.5 |
| 14 | .5 | 7.0 | 2.4 | 8.7 | 14.6 | 1.7 | 0 | 0 | 0 | 0 | 0 | 1.7 |
| 15 | .6 | 7.5 | 2.5 | 7.9 | 14.9 | 1.4 | 0 | 0 | 0 | 0 | u 0 | 1.7 |
| 16 | .6 | 6.7 | 2.7 | 7.2 | 15.1 | 1.4 | 0 | 0 | 0 | 0 | u 1.4 | 1.8 |
| 17 | .7 | 6.0 | 2.9 | 6.5 | 15.4 | 1.4 | 0 | 0 | 0 | 0 | u 2.9 | 1.8 |
| 18 | .7 | 5.2 | 3.0 | 5.8 | 14.7 | 1.5 | 0 | 0 | 0 | 0 | u 4.4 | 1.9 |
| 19 | .8 | 4.4 | 3.2 | 5.3 | 14.0 | 1.5 | 0 | 0 | 0 | 0 | u 5.9 | 1.9 |
| 20 | .7 | 3.7 | 3.4 | 4.8 | 13.2 | 1.6 | 0 | 0 | 0 | 0 | u 7.3 | 1.9 |
| 21 | .6 | 2.9 | 3.5 | 4.3 | 12.5 | 1.6 | 0 | 0 | 0 | 0 | u 8.8 | 1.9 |
| 22 | .5 | 2.2 | 3.7 | 3.8 | 11.8 | 1.6 | 0 | 0 | 0 | 0 | u 10.2 | 1.8 |
| 23 | .4 | 1.4 | 3.8 | 3.4 | 11.1 | 1.5 | 0 | 0 | 0 | 0 | 11.7 | 1.7 |
| 24 | .4 | 1.1 | 4.1 | 2.9 | 10.4 | 1.4 | 0 | 0 | 0 | 0 | 10.1 | 1.7 |
| 25 | .2 | .8 | 4.4 | 2.4 | 9.7 | 1.3 | 0 | 0 | 0 | 0 | 8.4 | 1.6 |
| 26 | .2 | .6 | 4.7 | 1.9 | 9.4 | 1.1 | 0 | 0 | 0 | 0 | 6.7 | 1.6 |
| 27 | .1 | .3 | 5.0 | 1.4 | 9.1 | 1.0 | 0 | 0 | 0 | 0 | 5.0 | 1.5 |
| 28 | 0 | 0 | 5.3 | 2.0 | 8.9 | .9 | 0 | 0 | 0 | 0 | 3.4 | 1.6 |
| 29 | 0 | | 4.9 | 2.5 | 8.7 | .8 | 0 | 0 | 0 | 0 | 1.7 | 1.7 |
| 30 | 0 | | 4.6 | 3.1 | 8.4 | .7 | 0 | 0 | 0 | 0 | 0 | 1.8 |
| 31 | 0 | | 4.3 | | 8.1 | | 0 | 0 | | 0 | | 1.9 |
| Sum | 10.4 | 91.7 | 101.4 | 149.1 | 320.7 | 75.0 | 1.8 | 0 | 0 | 0 | * 87.9 | 37.4 |

**Current Year 1962** | **Period 1958-1962**

| Month | Extreme Gage Feet | | Ø Extreme Second Feet | | | | Average Second Feet | Total Acre Feet | Acre Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | High | | Low | | | | | | |
| | High | Low | Day | | Day | | | | Average | Maximum | Minimum |
| Jan. | | | 19 | 0.8 | † 3 | 0 | 0.4 | 21.1 | 1,002 | 1,980 | 21.1 |
| Feb. | | | 15 | 7.5 | † 1 | 0 | 3.3 | 182 | 803 | 1,891 | 105 |
| Mar. | | | 28 | 5.3 | 1 | .5 | 3.3 | 202 | 876 | 2,029 | 202 |
| Apr. | | | 11 | 10.8 | 27 | 1.4 | 5.0 | 297 | 1,633 | 2,709 | 297 |
| May | | | 17 | 15.4 | 1 | 3.7 | 10.3 | 636 | 1,857 | 2,615 | 636 |
| June | | | 1 | 7.9 | 30 | .7 | 2.5 | 148 | 1,150 | 1,676 | 148 |
| July | | | 1 | .6 | † 6 | 0 | .1 | 3.2 | 195 | 682 | 3.2 |
| Aug | | | | 0 | | 0 | 0 | 0 | 395 | 1,001 | 0 |
| Sept. | | | | 0 | | 0 | 0 | 0 | 991 | 2,059 | 0 |
| Oct. | | | | 0 | | 0 | 0 | 0 | 1,874 | 4,610 | 0 |
| Nov. | | | 23 | 11.7 | † 1 | 0 | * 2.9 | * 174 | 1,341 | 4,084 | * 174 |
| Dec. | | | 20 | 1.9 | † 1 | 0 | 1.2 | 74.6 | 422 | 1,089 | 74.6 |
| Yearly | | | | 15.4 | | 0 | 2.4 | 1,737.9 | 12,538 | 24,596 | 1,737.9 |

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

# STORED WATER IN LARGE RESERVOIRS OF THE COLORADO RIVER

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

**In Thousands of Acre-Feet**

| Month | LAKE MEAD (Capacity 27, 207.0) | | LAKE MOHAVE (Capacity 1,810.0) | | HAVASU LAKE (Capacity 619.4) | | TOTAL IN UNITED STATES RESERVOIRS (Capacity 29,636.4) | |
|---|---|---|---|---|---|---|---|---|
| | 1962 | Average 1935-1962 | 1962 | Average 1951-1962 | 1962 | Average 1939-1962 | 1962 | Estimated Average |
| Jan. | 17,898.0 | 16,606.0 | 1,681.0 | 1,632.0 | 566.7 | 560.4 | 20,145.7 | 18,798.4 |
| Feb. | 18,246.0 | 16,219.7 | 1,751.0 | 1,678.4 | 532.6 | 568.2 | 20,529.6 | 18,466.3 |
| Mar. | 18,030.0 | 15,906.4 | 1,706.0 | 1,677.4 | 559.0 | 582.4 | 20,295.0 | 18,166.2 |
| April | 19,363.0 | 16,162.9 | 1,698.0 | 1,691.6 | 608.4 | 608.4 | 21,669.4 | 18,462.9 |
| May | 21,933.0 | 17,602.7 | 1,740.0 | 1,724.5 | 599.4 | 600.2 | 24,272.4 | 19,927.4 |
| June | 23,698.0 | 19,600.8 | 1,623.0 | 1,596.4 | 591.4 | 606.6 | 25,912.4 | 21,803.8 |
| July | 24,545.0 | 19,949.7 | 1,440.0 | 1,452.7 | 579.2 | 597.6 | 26,564.2 | 22,000.0 |
| Aug. | 24,089.0 | 19,633.1 | 1,368.0 | 1,389.7 | 577.9 | 579.6 | 26,034.9 | 21,602.4 |
| Sept. | 23,622.0 | 19,189.2 | 1,348.0 | 1,404.6 | 567.6 | 576.2 | 25,537.6 | 21,170.0 |
| Oct. | 23,480.0 | 18,795.4 | 1,387.0 | 1,428.9 | 556.9 | 582.7 | 25,423.9 | 20,807.0 |
| Nov. | 23,252.0 | 18,407.3 | 1,486.0 | 1,516.0 | 551.7 | 569.0 | 25,289.7 | 20,492.3 |
| Dec. | 22,980.0 | 17,941.5 | 1,699.0 | 1,618.1 | 540.0 | 564.2 | 25,219.0 | 20,123.8 |
| Avg. | 21,761.3 | 18,001.2 | 1,577.2 | 1,567.5 | 569.2 | 583.0 | 23,907.7 | 20,151.7 |
| Max. | 24,545.0 | 27,780.0 | 1,751.0 | 1,808.0 | 608.4 | 688.7 | 26,564.2 | 28,235.0 |
| Min. | 17,898.0 | * 10,727.0 | 1,348.0 | 1,186.0 | 532.6 | 76.9 | 20,145.7 | 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 | 1962 | | | | | | | 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 1956-1962

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Jan. | 218,554,000 | 11,900 | 13 | 0.0054 | 0.0216 | 0.0021 | 6.4 | 76.2 | 341 | 1.6 |
| Feb. | 91,783,000 | 5,200 | 12 | .0057 | .0104 | .0026 | 2.8 | 30.3 | 116 | 1.6 |
| Mar. | 278,637,000 | 32,000 | 13 | .0115 | .0218 | .0033 | 17.3 | 93.2 | 499 | 8.8 |
| Apr. | 273,893,000 | 17,300 | 13 | .0063 | .0102 | .0039 | 9.4 | 91.6 | 434 | 9.4 |
| May | 170,277,000 | 9,100 | 13 | .0053 | .0078 | .0032 | 4.9 | 35.4 | 201 | 4.3 |
| June | 209,335,000 | 11,600 | 12 | .0055 | .0087 | .0024 | 6.3 | 30.4 | 92.6 | 6.3 |
| July | 268,718,000 | 23,600 | 13 | .0088 | .0115 | .0049 | 12.8 | 40.2 | 89.3 | 12.8 |
| Aug. | 254,783,000 | 15,500 | 14 | .0061 | .0103 | .0028 | 8.4 | 36.9 | 103 | 8.4 |
| Sept. | 137,338,000 | 5,400 | 9 | .0039 | .0094 | .0011 | 2.9 | 14.1 | 43.6 | 2.9 |
| Oct. | 122,491,000 | 10,600 | 25 | .0086 | .0420 | .0008 | 5.7 | 8.3 | 20.0 | 1.6 |
| Nov. | 243,057,000 | 26,500 | 12 | .0109 | .0214 | .0026 | 14.3 | 26.8 | 89.9 | 1.0 |
| Dec. | 191,815,000 | 12,800 | 12 | .0067 | .0147 | .0029 | 6.9 | 52.8 | 174 | .6 |
| Yearly | 2,460,681,000 | 181,500 | 161 | 0.0074 | 0.0420 | 0.0011 | 98.1 | 536.2 | 2,202 | 98.1 |

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

## Colorado River at Southerly International Boundary

Period 1946-1962

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Jan. | 59,621,000 | | 0 | | | | | | | |
| Feb. | 64,019,000 | 7,000 | 6 | 0.0109 | 0.0177 | 0.0040 | 3.8 | | | |
| Mar. | 9,359,000 | | 0 | | | | | | | |
| Apr. | 4,203,000 | | 0 | | | | | | | |
| May | 40,770,000 | 2,800 | 4 | .0069 | .0090 | .0010 | 1.5 | | | |
| June | 2,649,000 | | 0 | | | | | | | |
| July | 1,526,000 | | 0 | | | | | | | |
| Aug. | 1,576,000 | | 0 | | | | | | | |
| Sept. | 1,846,000 | | 0 | | | | | | | |
| Oct. | 89,708,000 | 15,500 | 7 | .0172 | .0541 | .0010 | 8.4 | | | |
| Nov. | 122,386,000 | 22,300 | 6 | .0182 | .0344 | .0032 | 12.1 | | | |
| Dec. | 21,078,000 | 2,500 | 3 | .0118 | .0342 | .0030 | 1.4 | | | |
| Yearly | 418,741,000 | | 26 | | | | | | | |

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

# SUSPENDED SILT

## Intake Canal at Morelos Diversion Structure

Period 1952-1962

| Month | 1962 Tons Water | 1962 Tons Silt | 1962 No. of Samples | 1962 Gravimetric Percentages Average | 1962 Gravimetric Percentages Maximum Sample | 1962 Gravimetric Percentages Minimum Sample | 1962 Acre-Feet at 1,847 Tons Per Acre Foot | Period of Record Acre-Feet at 1,847 Tons Per Acre Foot Average | Period of Record Acre-Feet at 1,847 Tons Per Acre Foot Maximum | Period of Record Acre-Feet at 1,847 Tons Per Acre Foot Minimum |
|---|---|---|---|---|---|---|---|---|---|---|
| Jan. | 155,713,000 | 24,458 | 4 | 0.0138 | 0.0317 | 0.0041 | 13.2 | 7.0 | 22.3 | 0.2 |
| Feb. | 29,180,000 | 1,648 | 1 | .0056 | .0079 | .0041 | .9 | 7.4 | 19.4 | .9 |
| Mar. | 272,563,000 | 33,772 | 4 | .0124 | .0188 | .0083 | 18.2 | 68.1 | 154 | 11.1 |
| Apr. | 277,668,000 | 29,732 | 5 | .0107 | .0179 | .0055 | 16.1 | 62.8 | 121 | 16.1 |
| May | 125,315,000 | 10,676 | 2 | .0085 | .0179 | .0047 | 5.8 | 18.7 | 51.2 | 5.8 |
| June | 207,268,000 | 27,533 | 4 | .0133 | .0305 | .0052 | 14.8 | 55.1 | 109 | 14.8 |
| July | 266,973,000 | 55,096 | 5 | .0206 | .0263 | .0159 | 29.8 | 73.9 | 156 | 25.9 |
| Aug. | 251,859,000 | 72,980 | 5 | .0290 | .0552 | .0053 | 39.4 | 67.4 | 135 | 15.4 |
| Sept. | 132,372,000 | 5,275 | 4 | .0040 | .0056 | .0020 | 2.8 | 28.1 | 64.7 | 2.8 |
| Oct. | 19,211,000 | 674 | 1 | .0035 | .0035 | .0035 | .3 | 6.1 | 12.0 | .3 |
| Nov. | 107,172,000 | 9,125 | 4 | .0085 | .0170 | .0041 | 5.0 | 2.3 | 9.3 | .2 |
| Dec. | 178,716,000 | 22,190 | 5 | .0124 | .0335 | .0023 | 12.0 | 5.8 | 14.8 | 1.1 |
| Yearly | 2,024,010,000 | 293,159 | 44 | 0.0119 | 0.0552 | 0.0020 | 158.3 | 402.4 | 696.3 | 158.3 |

Samples and Analyses by Mexican Section, Method B

## Colorado River at Miguel C. Rodriguez Gaging Station

Period Jan. 1960-Dec. 1962

| Month | 1962 Tons Water | 1962 Tons Silt | 1962 No. of Samples | 1962 Gravimetric Percentages Average | 1962 Gravimetric Percentages Maximum Sample | 1962 Gravimetric Percentages Minimum Sample | 1962 Acre-Feet at 1,847 Tons Per Acre Foot | Period of Record Acre-Feet at 1,847 Tons Per Acre Foot Average | Period of Record Acre-Feet at 1,847 Tons Per Acre Foot Maximum | Period of Record Acre-Feet at 1,847 Tons Per Acre Foot Minimum |
|---|---|---|---|---|---|---|---|---|---|---|
| Jan. | 55,233,000 | 9,125 | 4 | 0.0165 | 0.0697 | 0.0049 | 4.9 | 87.4 | 251 | 4.9 |
| Feb. | 65,491,000 | 15,504 | 5 | .0237 | .0619 | .0058 | 8.3 | 9.8 | 13.9 | 7.2 |
| Mar. | 4,403,000 | 774 | 4 | .0176 | .0555 | .0081 | .4 | 1.7 | 4.1 | .4 |
| Apr. | 1,170,000 | 77 | 4 | .0066 | .0092 | .0040 | .1 | .4 | 1.1 | .1 |
| May | 40,515,000 | 2,432 | 7 | .0060 | .0139 | .0030 | 1.3 | 1.0 | 1.5 | .1 |
| June | 1,570,000 | 162 | 5 | .0103 | .0185 | .0059 | .1 | .1 | .1 | .1 |
| July | 752,000 | 127 | 4 | .0169 | .0360 | .0064 | .1 | .1 | .1 | 0 |
| Aug. | 678,000 | 74 | 5 | .0109 | .0170 | .0061 | 0 | .1 | .2 | 0 |
| Sept. | 757,000 | 69 | 4 | .0092 | .0376 | .0031 | 0 | .2 | .5 | 0 |
| Oct. | 86,329,000 | 38,374 | 8 | .0445 | .1456 | .0058 | 20.8 | 8.3 | 20.8 | .1 |
| Nov. | 149,925,000 | 66,576 | 5 | .0444 | .1035 | .0117 | 36.0 | 13.5 | 36.0 | .7 |
| Dec. | 55,502,000 | 23,953 | 4 | .0432 | .0929 | .0089 | 13.0 | 10.9 | 13.0 | 8.8 |
| Yearly | 462,325,000 | 157,247 | 59 | 0.0208 | 0.1456 | 0.0030 | 85.0 | 133.4 | 289 | 26.3 |

Samples and Analyses by Mexican Section, Method C

# ELECTRICAL CONDUCTIVITY OF WATER SAMPLES
## 1962

The following tables show electrical conductivity, expressed in mhos per centimeter cube x $10^6$ at 25°C, of individual water samples taken at Colorado River stations. The determinations for the Northerly and Southerly International Boundary stations, with the exception of those designated by an asterisk, were made by the United States Section of this Commission. The determinations for the Intake Canal at Morelos Dam station were made by the Mexican Section of this Commission.

### Colorado River at Northerly International Boundary

| Date | ECx10⁶ @25°C | Date | ECx10⁶ @25°C | Date | ECx10⁶ @25°C | Date | ECx10⁶ @25°C | Date | ECx10⁶ @25°C | Date | ECx10⁶ @25°C | Date | ECx10⁶ @25°C | Date | ECx10⁶ @25°C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| January | | February | | March | | April | | May | | July | | August | | September | |
| 1 | 3,120 | 6 | 4,210 | 14 | *2,200 | 19 | *2,000 | 25 | 2,730 | 1 | *2,250 | 7 | 2,150 | 12 | 2,940 |
| 1 | *1,400 | 6 | *3,800 | 15 | 2,260 | 20 | 2,020 | 25 | *2,550 | 2 | 2,050 | 7 | *2,100 | 12 | *2,800 |
| 2 | 3,200 | 7 | 4,300 | 15 | *2,050 | 20 | *2,000 | 26 | *2,600 | 2 | *2,250 | 8 | 2,120 | 13 | 2,840 |
| 2 | *1,500 | 7 | *4,200 | 16 | 2,130 | 21 | *2,250 | 27 | *2,600 | 3 | 2,180 | 8 | *2,200 | 13 | *2,800 |
| 3 | 3,670 | 8 | 3,540 | 16 | *2,100 | 22 | *2,350 | 28 | 2,540 | 3 | *2,250 | 9 | 2,080 | 14 | 3,380 |
| 4 | 3,460 | 8 | *3,400 | 17 | *2,100 | 23 | 2,210 | 28 | *2,500 | 4 | *2,200 | 9 | *2,200 | 14 | *3,300 |
| 4 | *2,600 | 9 | 4,210 | 18 | *2,000 | 23 | *2,150 | 29 | 2,440 | 5 | 2,100 | 10 | 2,110 | 15 | 3,060 |
| 5 | 2,970 | 9 | *4,050 | 19 | 2,100 | 24 | 2,330 | 29 | *2,200 | 5 | *2,300 | 10 | *2,150 | 15 | *2,900 |
| 5 | *2,500 | 10 | *4,400 | 19 | *1,900 | 24 | *2,300 | 30 | *2,250 | 6 | 2,190 | 11 | *2,100 | 16 | *3,000 |
| 6 | *1,600 | 11 | *4,200 | 20 | 2,010 | 25 | 2,410 | 31 | 2,440 | 6 | *2,300 | 12 | *2,100 | 17 | 3,100 |
| 7 | *1,600 | 12 | 4,520 | 20 | *1,800 | 25 | *2,400 | 31 | *2,350 | 7 | *2,250 | 13 | 2,020 | 17 | *3,050 |
| 8 | 4,270 | 12 | *4,400 | 21 | 1,890 | 26 | 2,400 | June | | 8 | *2,250 | 13 | *2,050 | 18 | 2,910 |
| 8 | *2,300 | 13 | 4,360 | 21 | *1,600 | 26 | *2,300 | 1 | 2,520 | 9 | 2,060 | 14 | 2,040 | 18 | *3,000 |
| 9 | 3,120 | 13 | *4,300 | 22 | 1,920 | 27 | 2,410 | 1 | *2,400 | 9 | *2,200 | 14 | *2,100 | 19 | 2,620 |
| 9 | *1,600 | 14 | 4,440 | 22 | *1,750 | 27 | *2,400 | 2 | *2,500 | 10 | 2,080 | 15 | 2,050 | 19 | *2,700 |
| 10 | 3,030 | 14 | *4,300 | 23 | 1,890 | 28 | *2,400 | 3 | *2,400 | 10 | *2,250 | 15 | *2,100 | 20 | 2,660 |
| 10 | *2,500 | 15 | 4,450 | 23 | *1,800 | 29 | *2,500 | 4 | 2,520 | 11 | 2,070 | 16 | 2,190 | 20 | *2,500 |
| 11 | 3,000 | 15 | *4,250 | 24 | *1,900 | 30 | 2,480 | 4 | *2,300 | 11 | *2,150 | 16 | *2,250 | 21 | 3,060 |
| 11 | *2,800 | 16 | 4,260 | 25 | *1,850 | 30 | *2,200 | 5 | 2,480 | 12 | 2,050 | 17 | 2,020 | 21 | *2,900 |
| 12 | 2,620 | 16 | *4,250 | 26 | 1,950 | May | | 5 | *2,400 | 12 | *2,150 | 17 | *2,050 | 22 | 3,220 |
| 12 | *2,600 | 17 | *4,550 | 26 | *1,900 | 1 | 2,490 | 6 | 2,500 | 13 | 2,010 | 18 | *2,000 | 22 | *3,200 |
| 13 | 2,810 | 18 | *4,200 | 27 | 1,910 | 1 | *2,500 | 6 | *2,350 | 13 | *2,100 | 19 | *2,000 | 23 | 3,270 |
| 13 | *2,800 | 19 | 4,260 | 27 | *1,800 | 2 | 2,410 | 7 | 2,570 | 14 | *2,100 | 20 | 1,810 | 23 | *3,300 |
| 14 | 2,700 | 19 | *4,300 | 28 | 1,730 | 2 | *2,200 | 7 | *2,400 | 15 | *2,000 | 20 | *1,900 | 24 | 3,220 |
| 14 | *2,600 | 20 | 4,090 | 28 | *1,650 | 3 | 2,580 | 8 | 2,630 | 16 | 2,050 | 21 | 1,960 | 24 | *3,200 |
| 15 | 2,630 | 20 | *4,100 | 29 | 1,550 | 3 | *2,600 | 8 | *2,400 | 16 | *2,150 | 21 | *1,950 | 25 | 3,400 |
| 15 | *2,800 | 21 | 4,200 | 29 | *1,500 | 4 | 2,730 | 9 | *2,400 | 17 | 2,090 | 22 | 1,890 | 25 | *3,300 |
| 16 | 2,620 | 21 | *3,800 | 30 | 1,410 | 4 | *2,700 | 10 | *2,400 | 17 | *2,150 | 22 | *2,000 | 26 | 2,720 |
| 16 | *2,700 | 22 | *3,900 | 30 | *1,350 | 5 | 2,680 | 11 | 2,510 | 18 | 2,010 | 23 | 2,160 | 26 | *2,650 |
| 17 | 2,600 | 23 | 3,610 | 31 | *1,950 | 5 | *2,700 | 11 | *2,400 | 18 | *2,100 | 23 | *2,250 | 27 | 2,600 |
| 17 | *2,500 | 23 | *3,300 | April | | 6 | *3,000 | 12 | 2,630 | 19 | 2,040 | 24 | 2,400 | 27 | *2,750 |
| 18 | 2,210 | 24 | *2,800 | 1 | *1,850 | 7 | 3,060 | 12 | *2,400 | 19 | *2,100 | 24 | *2,500 | 28 | 1,780 |
| 18 | *2,350 | 25 | *2,200 | 2 | 1,960 | 7 | *3,150 | 13 | 2,550 | 20 | 2,040 | 25 | *2,400 | 28 | *1,900 |
| 19 | 2,290 | 26 | 2,310 | 2 | *1,850 | 8 | 3,320 | 13 | *2,550 | 20 | *2,100 | 26 | *2,400 | 29 | *2,150 |
| 19 | *2,350 | 26 | *2,300 | 3 | 2,060 | 8 | *3,200 | 14 | 2,620 | 21 | *2,100 | 27 | 2,120 | 30 | *2,400 |
| 20 | *2,400 | 27 | 2,620 | 3 | *2,050 | 9 | 3,390 | 14 | *2,350 | 22 | *2,050 | 27 | *2,150 | October | |
| 21 | *2,200 | 27 | *2,600 | 4 | 2,040 | 9 | *3,300 | 15 | 2,700 | 23 | 1,920 | 28 | 2,440 | 1 | 3,290 |
| 22 | 2,490 | 28 | 2,670 | 4 | *2,050 | 10 | 3,560 | 15 | *2,500 | 23 | *2,100 | 28 | *2,400 | 1 | *3,300 |
| 22 | *2,550 | 28 | *2,700 | 5 | 2,040 | 10 | *3,400 | 16 | *2,300 | 24 | 1,910 | 29 | 2,190 | 2 | 3,640 |
| 23 | 2,470 | March | | 5 | *2,050 | 11 | 3,430 | 17 | *2,350 | 24 | *2,000 | 29 | *2,300 | 2 | *3,700 |
| 23 | *2,500 | 1 | 2,560 | 6 | 2,130 | 11 | *3,400 | 18 | 2,230 | 25 | 1,990 | 30 | 2,540 | 3 | 3,670 |
| 24 | 1,920 | 1 | *2,300 | 6 | *2,200 | 12 | *3,300 | 18 | *2,200 | 25 | *2,300 | 30 | *2,600 | 3 | *3,600 |
| 25 | 1,940 | 2 | 2,550 | 7 | *2,000 | 13 | *3,300 | 19 | 2,190 | 26 | 1,990 | 31 | 2,890 | 4 | 2,900 |
| 25 | *2,000 | 2 | *2,500 | 8 | *2,200 | 14 | 3,450 | 19 | *2,250 | 26 | *2,200 | 31 | *2,900 | 4 | *3,000 |
| 26 | 1,980 | 3 | *2,600 | 9 | 1,990 | 14 | *3,300 | 20 | 2,190 | 27 | 2,000 | September | | 5 | *2,900 |
| 26 | *2,000 | 4 | *2,050 | 9 | *2,050 | 15 | 3,700 | 20 | *2,200 | 27 | *2,100 | 1 | *3,000 | 6 | *3,700 |
| 27 | *2,100 | 5 | 2,230 | 10 | 2,120 | 15 | *3,400 | 21 | 2,280 | 28 | *2,200 | 2 | *3,100 | 7 | *2,800 |
| 28 | *2,600 | 5 | *2,100 | 10 | *2,150 | 16 | 3,380 | 21 | *2,400 | 29 | *2,100 | 3 | *3,050 | 8 | 2,290 |
| 29 | 2,690 | 6 | 2,130 | 11 | 2,030 | 16 | *2,800 | 22 | 2,190 | 30 | 1,980 | 4 | 3,140 | 8 | *2,500 |
| 29 | *2,700 | 6 | *1,950 | 11 | *2,000 | 17 | 3,270 | 22 | *2,250 | 30 | *2,100 | 4 | *3,200 | 9 | 1,940 |
| 30 | 2,990 | 7 | 2,170 | 12 | 2,080 | 17 | *2,700 | 23 | *2,300 | 31 | 1,980 | 5 | 2,630 | 9 | *3,200 |
| 30 | *3,000 | 7 | *2,000 | 12 | *2,000 | 18 | 2,460 | 24 | *2,200 | 31 | *2,100 | 5 | *2,700 | 10 | 3,220 |
| 31 | 3,030 | 8 | 2,320 | 13 | 2,030 | 18 | *2,400 | 25 | 2,150 | August | | 6 | 2,720 | 10 | 1,730 |
| 31 | *2,900 | 8 | *2,300 | 13 | *2,000 | 19 | *2,200 | 25 | *2,150 | 1 | 1,950 | 6 | *2,700 | 10 | 2,900 |
| February | | 9 | 2,340 | 14 | *1,950 | 20 | *2,200 | 26 | 2,120 | 1 | *2,100 | 7 | 2,490 | 10 | *1,775 |
| 1 | 4,480 | 9 | *2,400 | 15 | *1,950 | 21 | 2,480 | 26 | *2,200 | 2 | 2,090 | 7 | *2,550 | 11 | 1,710 |
| 1 | *4,300 | 10 | *2,300 | 16 | 1,990 | 21 | *2,400 | 27 | 2,140 | 2 | *2,200 | 8 | 3,020 | 11 | *1,700 |
| 2 | 4,460 | 11 | *2,300 | 16 | *2,050 | 22 | 2,610 | 27 | *2,200 | 3 | 2,090 | 8 | *2,900 | 12 | 4,180 |
| 2 | *4,300 | 12 | 2,260 | 17 | 2,010 | 22 | *2,500 | 28 | 2,230 | 3 | *2,250 | 9 | *3,350 | 12 | *3,700 |
| 3 | *4,500 | 12 | *2,100 | 17 | *2,000 | 23 | 2,550 | 28 | *2,300 | 4 | *2,150 | 10 | 3,350 | 13 | 4,050 |
| 4 | *4,000 | 13 | 2,350 | 18 | 2,020 | 23 | *2,550 | 29 | 2,170 | 5 | *2,100 | 10 | *3,300 | 13 | *3,700 |
| 5 | 4,120 | 13 | *2,200 | 18 | *1,900 | 24 | 2,800 | 29 | *2,300 | 6 | 2,180 | 11 | 2,860 | 14 | 1,780 |
| 5 | *3,300 | 14 | 2,390 | 19 | 2,020 | 24 | *2,700 | 30 | *2,200 | 6 | *2,150 | 11 | *2,700 | 14 | *3,500 |

* Determinations made by the Mexican Section of this Commission

# ELECTRICAL CONDUCTIVITY OF WATER SAMPLES

## 1962

## Colorado River at Northerly International Boundary

| Date | ECx10⁶ @25°C | Date | ECx10⁶ @25°C | Date | ECx10⁶ @25°C | Date | ECx10⁶ @25°C | Date | ECx10⁶ @25°C | Date | ECx10⁶ @25°C | Date | ECx10⁶ @25°C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| October | | October | | November | | November | | November | | December | | December | | December | |
| 15 | 3,400 | 25 | 3,950 | 2 | 2,160 | 12 | *2,450 | 22 | *3,600 | 1 | *2,450 | 11 | *2,700 | 20 | *1,900 |
| 15 | *3,400 | 25 | *3,700 | 2 | *2,200 | 13 | *2,650 | 23 | 3,760 | 2 | *2,300 | 12 | 2,650 | 21 | 2,230 |
| 16 | *3,700 | 26 | 3,760 | 3 | *1,950 | 14 | 2,720 | 23 | *3,450 | 3 | 2,360 | 12 | *2,600 | 21 | *2,200 |
| 17 | 3,760 | 26 | *3,500 | 4 | *1,700 | 14 | *2,650 | 24 | *3,200 | 3 | *2,350 | 13 | 2,650 | 22 | *2,600 |
| 17 | *4,000 | 27 | *3,700 | 5 | 1,640 | 15 | 2,680 | 25 | *3,200 | 4 | 2,620 | 13 | *2,600 | 23 | *2,650 |
| 18 | 3,610 | 28 | *3,200 | 5 | *1,600 | 15 | *2,550 | 26 | 3,140 | 4 | *2,600 | 14 | 2,720 | 24 | *2,550 |
| 18 | *3,500 | 29 | 3,750 | 6 | 1,610 | 16 | 3,810 | 26 | *2,900 | 5 | 2,710 | 14 | *2,600 | 25 | *2,650 |
| 19 | *3,600 | 29 | *3,700 | 6 | *1,700 | 16 | *3,600 | 27 | 2,510 | 5 | *2,600 | 15 | *2,600 | 26 | 2,750 |
| 20 | *3,600 | 30 | 3,590 | 7 | *1,800 | 17 | *2,900 | 27 | *2,300 | 6 | 2,620 | 16 | *2,650 | 26 | *2,750 |
| 21 | *3,700 | 30 | *3,500 | 8 | 1,740 | 18 | *3,600 | 28 | 2,310 | 6 | *2,600 | 17 | 2,700 | 27 | 2,660 |
| 22 | 3,730 | 31 | 3,650 | 8 | *2,050 | 19 | 3,700 | 28 | *2,250 | 7 | 2,740 | 17 | *2,700 | 27 | *2,650 |
| 22 | *3,700 | 31 | *3,500 | 9 | 2,100 | 19 | *3,600 | 29 | 2,700 | 7 | *2,600 | 18 | 2,560 | 28 | 2,610 |
| 23 | 3,430 | November | | 9 | *2,200 | 20 | 3,460 | 29 | *2,600 | 8 | *2,600 | 18 | *2,550 | 28 | *2,600 |
| 23 | *3,400 | 1 | 3,930 | 10 | *2,250 | 20 | *3,500 | 30 | 2,550 | 9 | *2,600 | 19 | 2,530 | 29 | *2,600 |
| 24 | 3,830 | 1 | *3,700 | 11 | *2,650 | 21 | 3,500 | 30 | *2,500 | 10 | 2,620 | 19 | *2,550 | 30 | *2,600 |
| 24 | *3,800 | 2 | 2,880 | 12 | 2,500 | 21 | *3,300 | | | 10 | *2,600 | 20 | 1,910 | 31 | 2,640 |
| | | | | | | | | | | 11 | 2,750 | | | 31 | *2,650 |

* Determinations made by the Mexican Section of this Commission

## Intake Canal at Morelos Diversion Structure

| January | | February | | April | | May | | July | | August | | October | | November | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1,900 | 16 | 4,400 | 2 | 1,950 | 18 | 2,400 | 2 | 2,200 | 17 | 2,000 | 1 | 3,200 | 16 | 3,500 |
| 2 | 2,600 | 17 | 4,550 | 3 | 2,000 | 19 | 2,200 | 3 | 2,200 | 18 | 1,900 | 2 | 3,600 | 17 | 2,900 |
| 3 | 2,450 | 18 | 4,200 | 4 | 2,000 | 20 | 2,200 | 4 | 2,100 | 19 | 1,900 | 3 | 3,600 | 18 | 3,600 |
| 4 | 2,800 | 19 | 4,300 | 5 | 2,050 | 21 | 2,400 | 5 | 2,300 | 20 | 1,800 | 4 | 2,900 | 19 | 3,600 |
| 5 | 2,800 | 20 | 4,100 | 6 | 2,200 | 22 | 2,550 | 6 | 2,300 | 21 | 1,900 | 5 | 2,900 | 20 | 3,500 |
| 6 | 3,000 | 21 | 3,800 | 7 | 2,050 | 23 | 2,450 | 7 | 2,250 | 22 | 1,950 | 6 | 3,700 | 21 | 3,400 |
| 7 | 3,000 | 22 | 4,000 | 8 | 2,200 | 24 | 2,600 | 8 | 2,250 | 23 | 2,250 | 7 | 3,000 | 22 | 3,600 |
| 8 | 2,800 | 23 | 3,400 | 9 | 2,050 | 25 | 2,550 | 9 | 2,200 | 24 | 2,400 | 8 | 2,300 | 23 | 3,450 |
| 9 | 2,900 | 24 | 2,900 | 10 | 2,000 | 26 | 2,600 | 10 | 2,200 | 25 | 2,300 | 9 | 3,000 | 24 | 3,300 |
| 10 | 2,750 | 25 | 2,250 | 11 | 2,000 | 27 | 2,600 | 11 | 2,150 | 26 | 2,200 | 10 | 2,050 | 25 | 3,200 |
| 11 | 2,700 | 26 | 2,350 | 12 | 2,050 | 28 | 2,400 | 12 | 2,100 | 27 | 2,100 | 11 | 2,400 | 26 | 2,900 |
| 12 | 2,600 | 27 | 2,600 | 13 | 2,000 | 29 | 2,100 | 13 | 2,000 | 28 | 2,400 | 12 | 3,800 | 27 | 2,300 |
| 13 | 2,800 | 28 | 2,700 | 14 | 1,900 | 30 | 2,200 | 14 | 2,000 | 29 | 2,300 | 13 | 3,700 | 28 | 2,200 |
| 14 | 2,700 | March | | 15 | 1,900 | 31 | 2,400 | 15 | 2,000 | 30 | 2,550 | 14 | 3,500 | 29 | 2,600 |
| 15 | 2,700 | 1 | 2,550 | 16 | 2,000 | June | | 16 | 2,100 | 31 | 2,800 | 15 | 3,400 | 30 | 2,500 |
| 16 | 2,700 | 2 | 2,600 | 17 | 2,000 | 1 | 2,500 | 17 | 2,150 | September | | 16 | 3,700 | December | |
| 17 | 2,400 | 3 | 2,700 | 18 | 1,900 | 2 | 2,500 | 18 | 2,050 | 1 | 2,900 | 17 | 4,000 | 1 | 2,450 |
| 18 | 2,200 | 4 | 2,400 | 19 | 1,950 | 3 | 2,500 | 19 | 2,050 | 2 | 3,100 | 18 | 3,500 | 2 | 2,300 |
| 19 | 2,450 | 5 | 2,225 | 20 | 1,950 | 4 | 2,300 | 20 | 2,050 | 3 | 3,150 | 19 | 3,600 | 3 | 2,350 |
| 20 | 2,500 | 6 | 2,100 | 21 | 2,100 | 5 | 2,500 | 21 | 2,050 | 4 | 3,200 | 20 | 3,600 | 4 | 2,600 |
| 21 | 2,200 | 7 | 2,100 | 22 | 2,250 | 6 | 2,450 | 22 | 2,050 | 5 | 2,600 | 21 | 3,700 | 5 | 2,600 |
| 22 | 2,400 | 8 | 2,300 | 23 | 2,100 | 7 | 2,500 | 23 | 2,100 | 6 | 2,600 | 22 | 3,700 | 6 | 2,600 |
| 23 | 2,250 | 9 | 2,500 | 24 | 2,250 | 8 | 2,500 | 24 | 2,000 | 7 | 2,550 | 23 | 3,400 | 7 | 2,700 |
| 24 | 1,950 | 10 | 2,500 | 25 | 2,400 | 9 | 2,400 | 25 | 2,000 | 8 | 2,900 | 24 | 3,800 | 8 | 2,600 |
| 25 | 1,300 | 11 | 2,500 | 26 | 2,300 | 10 | 2,400 | 26 | 2,050 | 9 | 3,350 | 25 | 3,800 | 9 | 2,600 |
| 26 | 1,350 | 12 | 2,200 | 27 | 2,400 | 11 | 2,400 | 27 | 2,000 | 10 | 3,300 | 26 | 3,500 | 10 | 2,600 |
| 27 | 1,400 | 13 | 2,300 | 28 | 2,300 | 12 | 2,500 | 28 | 2,100 | 11 | 2,700 | 27 | 3,700 | 11 | 2,700 |
| 28 | 2,100 | 14 | 2,200 | 29 | 2,450 | 13 | 2,500 | 29 | 2,100 | 12 | 2,800 | 28 | 3,200 | 12 | 2,600 |
| 29 | 2,300 | 15 | 2,150 | 30 | 2,200 | 14 | 2,350 | 30 | 2,050 | 13 | 2,800 | 29 | 3,600 | 13 | 2,600 |
| 30 | 2,600 | 16 | 2,100 | May | | 15 | 2,500 | 31 | 2,050 | 14 | 3,200 | 30 | 3,600 | 14 | 2,600 |
| 31 | 2,600 | 17 | 2,100 | 1 | 2,400 | 16 | 2,250 | August | | 15 | 2,900 | 31 | 3,500 | 15 | 2,650 |
| February | | 18 | 2,050 | 2 | 2,200 | 17 | 2,300 | 1 | 2,050 | 16 | 3,000 | November | | 16 | 2,650 |
| 1 | 4,300 | 19 | 1,950 | 3 | 2,500 | 18 | 2,200 | 2 | 2,200 | 17 | 3,050 | 1 | 3,800 | 17 | 2,700 |
| 2 | 4,300 | 20 | 1,900 | 4 | 2,600 | 19 | 2,200 | 3 | 2,200 | 18 | 3,100 | 2 | 2,200 | 18 | 2,600 |
| 3 | 4,500 | 21 | 1,700 | 5 | 2,700 | 20 | 2,100 | 4 | 2,100 | 19 | 2,750 | 3 | 1,650 | 20 | 1,700 |
| 4 | 4,150 | 22 | 1,750 | 6 | 3,000 | 21 | 2,200 | 5 | 2,100 | 20 | 2,500 | 4 | 1,400 | 21 | 2,050 |
| 5 | 3,400 | 23 | 1,800 | 7 | 3,150 | 22 | 2,200 | 6 | 2,150 | 21 | 2,900 | 5 | 1,300 | 22 | 2,600 |
| 6 | 3,800 | 24 | 1,950 | 8 | 3,200 | 23 | 2,300 | 7 | 2,150 | 22 | 3,200 | 6 | 1,300 | 23 | 2,650 |
| 7 | 4,200 | 25 | 1,850 | 9 | 3,300 | 24 | 2,200 | 8 | 2,100 | 23 | 3,300 | 7 | 1,325 | 24 | 2,550 |
| 8 | 3,400 | 26 | 1,900 | 10 | 3,400 | 25 | 2,150 | 9 | 2,100 | 24 | 3,200 | 8 | 1,500 | 25 | 2,650 |
| 9 | 4,050 | 27 | 1,800 | 11 | 3,400 | 26 | 2,200 | 10 | 2,100 | 25 | 3,400 | 9 | 2,200 | 26 | 2,750 |
| 10 | 4,400 | 28 | 1,650 | 12 | 3,000 | 27 | 2,200 | 11 | 2,050 | 26 | 2,650 | 10 | 2,200 | 27 | 2,650 |
| 11 | 4,200 | 29 | 1,500 | 13 | 3,300 | 28 | 2,200 | 12 | 2,050 | 27 | 2,750 | 11 | 2,600 | 28 | 2,600 |
| 12 | 4,500 | 30 | 1,400 | 14 | 3,300 | 29 | 2,100 | 13 | 2,050 | 28 | 1,800 | 12 | 2,500 | 29 | 2,600 |
| 13 | 4,300 | 31 | 1,950 | 15 | 3,400 | 30 | 2,200 | 14 | 2,050 | 29 | 2,100 | 13 | 2,600 | 30 | 2,600 |
| 14 | 4,300 | April | | 16 | 2,800 | July | | 15 | 2,100 | 30 | 2,350 | 14 | 2,600 | 31 | 2,650 |
| 15 | 4,250 | 1 | 1,900 | 17 | 2,700 | 1 | 2,300 | 16 | 2,200 | | | 15 | 2,550 | | |

# ELECTRICAL CONDUCTIVITY OF WATER SAMPLES

## 1962

| Date | ECx10⁶ @25°C | Date | ECx10⁶ @25°C | Date | ECx10⁶ @25°C | Date | ECx10⁶ @25°C | Date | ECx10⁶ @25°C | Date | ECx10⁶ @25°C | Date | ECx10⁶ @25°C | Date | ECx10⁶ @25°C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

### Colorado River at Southerly International Boundary

| January | | March | | May | | June | | July | | August | | September | | November | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | *2,600 | 9 | *2,050 | 4 | 2,110 | 1 | 2,070 | 6 | 1,480 | 3 | 1,370 | 6 | *1,475 | 2 | 3,680 |
| 17 | *1,900 | 16 | *2,200 | 4 | *2,000 | 2 | *1,950 | 7 | *1,600 | 3 | *1,600 | 7 | 1,350 | 9 | 2,100 |
| 31 | *3,100 | 22 | *2,250 | 11 | 3,640 | 8 | 1,900 | 13 | 1,470 | 10 | 1,330 | 14 | 1,390 | 13 | *2,200 |
| February | | 30 | *2,250 | 11 | *3,300 | 9 | *2,200 | 14 | *1,400 | 10 | *1,400 | 14 | *1,400 | 21 | *3,300 |
| 9 | *4,100 | April | | 18 | 2,930 | 14 | *1,800 | 20 | 1,470 | 16 | *1,500 | 28 | *1,450 | 23 | 3,800 |
| 16 | *4,000 | 6 | *1,600 | 18 | *2,800 | 15 | 1,870 | 20 | *1,550 | 24 | 1,390 | October | | December | |
| 22 | *3,800 | 13 | *1,900 | 25 | 2,440 | 23 | *1,550 | 27 | 2,180 | 24 | *1,450 | 5 | *1,500 | 4 | *2,100 |
| March | | 18 | *1,750 | 26 | *2,300 | 27 | *1,450 | 27 | *2,200 | 31 | 1,400 | 20 | *3,500 | 11 | *2,100 |
| 2 | *2,500 | 24 | *1,800 | | | 29 | 1,640 | | | | | 26 | 3,760 | 26 | *2,100 |
| | | | | | | | | | | | | 27 | *3,500 | | |

* Determinations made by the Mexican Section of this Commission

# 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 52 in this bulletin.

## In the United States

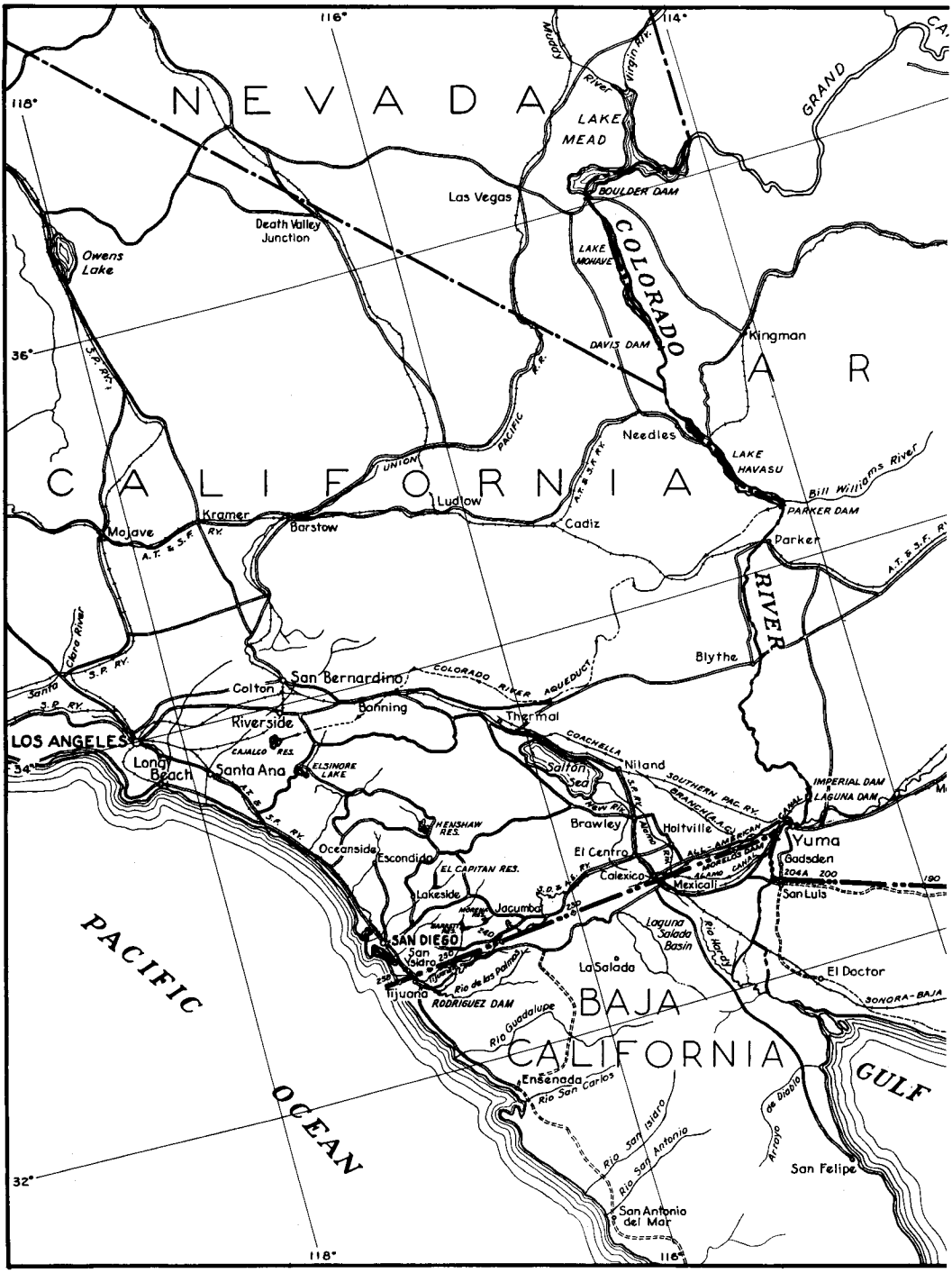
| Month | Brawley, California | | El Centro, California | | Blythe, California | | Davis Dam No. 2, Arizona | | Yuma Citrus Station, Arizona | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1962 | Average 1931-1962 | 1962 | Average 1931-1962 | 1962 | Average 1931-1962 | 1962 | Average 1955-1962 | 1962 | Average 1931-1962 |
| Jan. | 0.63 | 0.34 | 0.92 | 0.40 | 0.90 | 0.49 | 0.06 | 0.54 | 0.54 | 0.39 |
| Feb. | .21 | .33 | .15 | .39 | .32 | .46 | .58 | .42 | .04 | .39 |
| Mar. | .08 | .12 | .04 | .19 | .04 | .38 | 0 | .30 | .14 | .22 |
| Apr. | 0 | .07 | 0 | .11 | 0 | .12 | 0 | .18 | 0 | .11 |
| May | 0 | .01 | 0 | 0 | 0 | .02 | T | .11 | 0 | .01 |
| June | 0 | .01 | 0 | .01 | 0 | .03 | .04 | 0 | 0 | .02 |
| July | 0 | .02 | 0 | .09 | 0 | .20 | .06 | .23 | 0 | .19 |
| Aug. | 0 | .31 | 0 | .37 | 0 | .80 | 0 | .70 | 0 | .46 |
| Sept. | T | .27 | 0 | .24 | 0 | .31 | .32 | .26 | .20 | .32 |
| Oct. | .05 | .23 | 0 | .23 | 0 | .25 | .18 | .38 | .01 | .42 |
| Nov. | T | .10 | 0 | .09 | 0 | .21 | 0 | .34 | T | .12 |
| Dec. | .98 | .45 | .88 | .48 | .59 | .56 | .20 | .32 | .39 | .37 |
| Yearly | 1.95 | 2.26 | 1.99 | 2.60 | 1.85 | 3.83 | 1.44 | 3.78 | 1.32 | 3.02 |

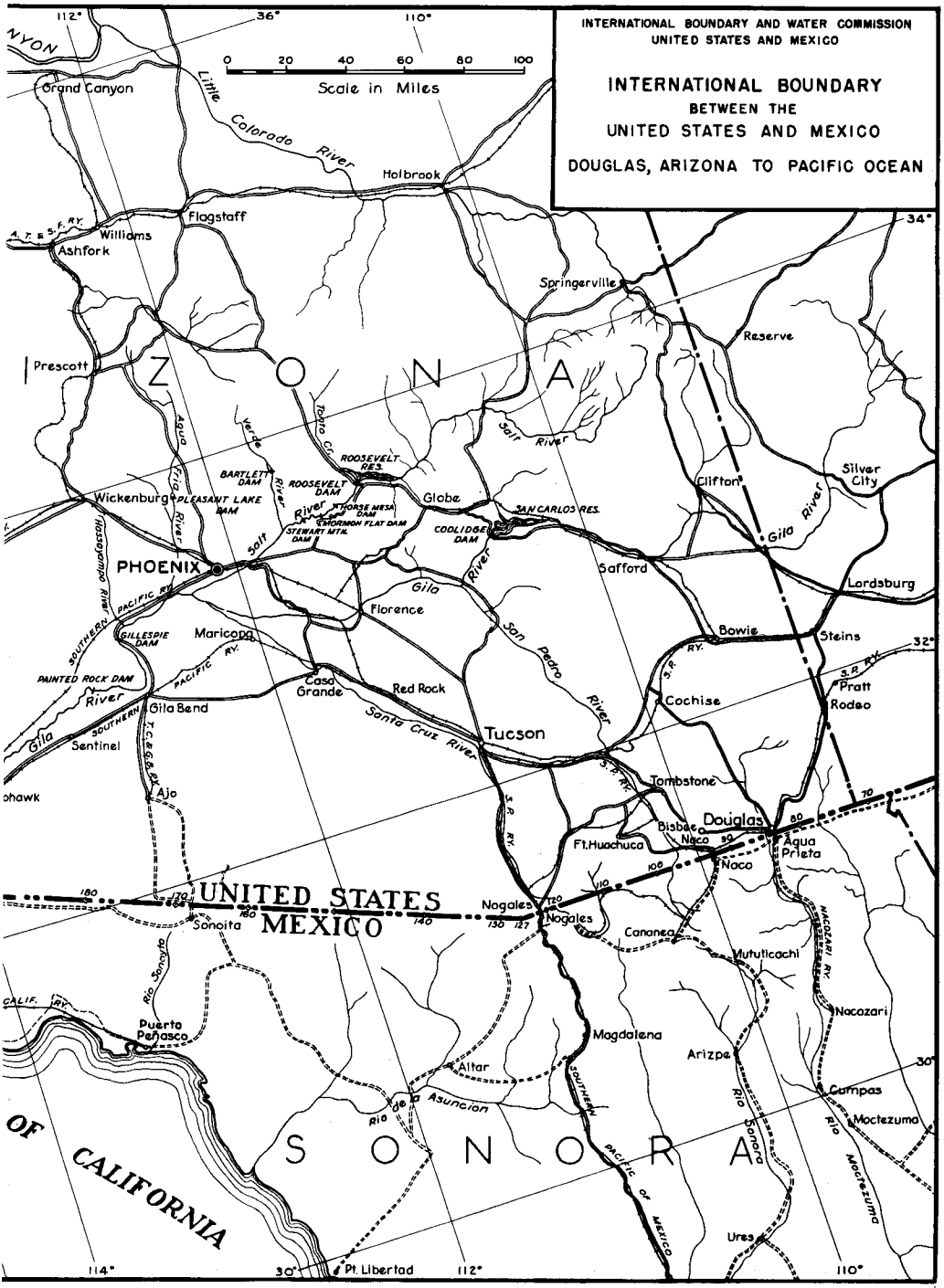
## In Mexico

| Month | Los Algodones, Baja California | | Mexicali, Baja California | | Ampac, Baja California | | Bataques, Baja California | | San Luis, R. C., Sonora | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1962 | Average 1948-1962 | 1962 | Average 1926-1962 | 1962 | Average 1949-1962 | 1962 | Average 1948-1962 | 1962 | Average 1949-1962 |
| Jan. | 0.35 | 0.47 | 1.02 | 0.39 | 0.28 | 0.28 | 0 | 0.51 | 0.39 | 0.31 |
| Feb. | .16 | .16 | .08 | .35 | 0 | .12 | .12 | .04 | T | .08 |
| Mar. | 0 | .12 | .08 | .20 | .59 | .16 | 0 | .04 | .16 | .08 |
| Apr. | 0 | .04 | 0 | .12 | 0 | .08 | 0 | .04 | 0 | .04 |
| May | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| June | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| July | 0 | .04 | 0 | .08 | 0 | .04 | 0 | 0 | | .16 |
| Aug. | 0 | .20 | 0 | .35 | 0 | .43 | 0 | .08 | T | .43 |
| Sept. | T | .04 | .04 | .31 | 0 | .04 | T | 0 | .08 | .04 |
| Oct. | 0 | .28 | 0 | .24 | 0 | .08 | 0 | .24 | T | .12 |
| Nov. | T | .04 | T | .12 | 0 | .04 | T | .04 | T | 0 |
| Dec. | .39 | .24 | 1.34 | .91 | 1.30 | .20 | T | .16 | .59 | .24 |
| Yearly | 0.90 | 1.57 | 2.56 | 3.11 | 2.17 | 1.50 | 0.12 | 1.10 | | 1.54 |

| Month | Delta, Baja California | | Kilometer 50, Baja California | | Riito, Sonora | | El Mayor, Baja California | | San Felipe, Baja California | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1962 | Average 1948-1962 | 1962 | *Average 1952-1962 | 1962 | Average 1959-1962 | 1962 | Average 1949-1962 | 1962 | Average 1948-1962 |
| Jan. | 0.55 | 0.43 | 0.71 | 0.39 | 0.63 | 0.43 | 0.28 | 0.24 | 0.35 | 0.28 |
| Feb. | .04 | .04 | 0 | .16 | T | 0 | 0 | .08 | .12 | .08 |
| Mar. | 0 | .08 | 0 | .12 | T | 0 | .20 | .16 | .63 | .24 |
| Apr. | 0 | .04 | 0 | .04 | 0 | 0 | 0 | .04 | 0 | .12 |
| May | 0 | 0 | 0 | .04 | 0 | 0 | .04 | 0 | 0 | 0 |
| June | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | .12 |
| July | 0 | .04 | 0 | .12 | T | 0 | 0 | .08 | 0 | .16 |
| Aug. | 0 | .12 | 0 | .35 | 0 | .04 | .04 | .43 | 0 | .35 |
| Sept. | 0 | .08 | 0 | .04 | .31 | .28 | .35 | .31 | 1.02 | .24 |
| Oct. | 0 | .16 | | .12 | 0 | .08 | 0 | .12 | 0 | .35 |
| Nov. | T | .04 | 0 | .24 | .04 | 0 | 0 | .04 | 0 | 0 |
| Dec. | 1.26 | .31 | .28 | .20 | .08 | .83 | 1.93 | .35 | 1.38 | .39 |
| Yearly | 1.85 | 1.26 | | 1.65 | 1.06 | 1.06 | 2.84 | 1.89 | 3.50 | 2.40 |

T Trace * Based on records for the period 1952-1959 and 1961-1962


NEVADA
CALIFORNIA
ARIZONA
BAJA CALIFORNIA
PACIFIC OCEAN
GULF
LAKE MEAD
BOULDER DAM
COLORADO
LAKE MOHAVE
DAVIS DAM
LAKE HAVASU
PARKER DAM
Bill Williams River
Las Vegas
Death Valley Junction
Owens Lake
Kingman
Needles
Ludlow
Barstow
Mojave
Kramer
Cadiz
Parker
Blythe
RIVER
San Bernardino
Colton
Riverside
Banning
Thermal
Salton Sea
Niland
COLORADO RIVER AQUEDUCT
COACHELLA
SOUTHERN PAC. RY.
IMPERIAL DAM
LAGUNA DAM
LOS ANGELES
Long Beach
Santa Ana
ELSINORE LAKE
CAJALCO RES.
HENSHAW RES.
EL CAPITAN RES.
Oceanside
Escondido
Lakeside
Jacumba
Brawley
Holtville
El Centro
Calexico
Mexicali
Yuma
Gadsden
San Luis
SAN DIEGO
San Ysidro
Tijuana
Rio de las Palmas
RODRIGUEZ DAM
Laguna Salada Basin
La Salada
El Doctor
SONORA-BAJA
Rio Guadalupe
Ensenada
Rio San Carlos
Rio San Isidro
Rio San Antonio
San Antonio del Mar
San Felipe
Arroyo de Diablo
Virgin R.
Muddy River
GRAND CA
118°
116°
114°
36°
34°
32°


INTERNATIONAL BOUNDARY AND WATER COMMISSION
UNITED STATES AND MEXICO
INTERNATIONAL BOUNDARY
BETWEEN THE
UNITED STATES AND MEXICO
DOUGLAS, ARIZONA TO PACIFIC OCEAN
Scale in Miles
0 20 40 60 80 100
112°
36°
110°
34°
32°
30°
114°
Grand Canyon
Little Colorado River
Holbrook
Flagstaff
Williams
Ashfork
A. T. & S. F. RY.
Springerville
Reserve
Prescott
Z O N A
Verde River
Tonto Cr.
Salt River
ROOSEVELT RES.
BARTLETT DAM
ROOSEVELT DAM
HORSE MESA DAM
MORMON FLAT DAM
STEWART MTN. DAM
PLEASANT LAKE DAM
Wickenburg
Globe
SAN CARLOS RES.
COOLIDGE DAM
Clifton
Silver City
Gila River
Safford
Lordsburg
PHOENIX
Hassayampa River
PACIFIC RY.
SOUTHERN PACIFIC RY.
GILLESPIE DAM
Maricopa
Florence
Gila River
San Pedro River
Bowie
Steins
S. P. RY.
PAINTED ROCK DAM
Casa Grande
Red Rock
Cochise
Pratt
Rodeo
Gila Bend
Sentinel
Santa Cruz River
Tucson
T. C. & G. RY.
Ajo
Tombstone
Douglas
Bisbee
Naco
Agua Prieta
Ft. Huachuca
UNITED STATES
MEXICO
Nogales
Sonoita
Rio Sonoita
Cananea
Mututicachi
MACOZARI RY.
Nacozari
CALIF. RY.
Puerto Peñasco
Magdalena
Altar
Arizpe
Rio Asuncion
Rio Sonora
Rio Moctezuma
Campas
Moctezuma
SOUTHERN PACIFIC OF MEXICO
S O N O R A
OF CALIFORNIA
Ures
Pt. Libertad

# LOCATION OF RAINFALL STATIONS ON THE COLORADO RIVER WATERSHED

The precipitation records of the stations listed alphabetically below begin on the date shown and extend through 1962. The state in which each station is located follows the name of the station.

## In the United States

| NAME OF STATION | LATITUDE | LONGITUDE | ð 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 | LATITUDE | LONGITUDE | ð ELEV. (FT.) | RECORD BEGAN | OBSERVER |
|---|---|---|---|---|---|
| Ampac, Baja California | 32° 34' | 115° 26' | 16 | 1949 | Jabonera del Pacífico |
| Bataques, Baja California | 32° 33' | 115° 04' | 16 | 1948 | Hydraulic Resources |
| Delta, Baja California | 32° 21' | 115° 11' | 16 | 1948 | Hydraulic Resources |
| El Mayor, Baja California | 32° 08' | 115° 15' | 10 | 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' | 13 | 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 ð Elevation above mean sea level

# 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 with the exception of Ampac, which is operated by the Jabonera del Pacífico. 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 52 in this bulletin.

## In the United States

| Month | Davis Dam, No. 2, Arizona | | Yuma Citrus Station, Arizona | |
|---|---|---|---|---|
| | 1962 | Average 1955-1962 | 1962 | Average 1931-1962 |
| Jan. | 10.50 | 7.48 | 4.37 | 3.99 |
| Feb. | 5.94 | 7.06 | 3.53 | 4.94 |
| Mar. | 9.29 | 10.56 | 6.53 | 7.93 |
| Apr. | 15.74 | 13.99 | 9.92 | 10.41 |
| May | 17.21 | 17.33 | 11.63 | 13.55 |
| June | 20.37 | 20.47 | 12.86 | 14.75 |
| July | 22.41 | 21.07 | 14.65 | 16.09 |
| Aug. | 20.87 | 18.60 | 12.44 | 14.13 |
| Sept. | 15.92 | 15.11 | 9.54 | 11.32 |
| Oct. | 13.66 | 12.32 | 6.44 | 8.15 |
| Nov. | 8.50 | 9.61 | 3.66 | 5.26 |
| Dec. | 10.31 | 8.81 | 2.98 | 3.77 |
| Total | 170.72 | 162.41 | 98.55 | 114.29 |

## In Mexico

| Month | Los Algodones, Baja California | | Mexicali, Baja California | | Ampac, Baja California | | San Luis, R. C., Sonora | |
|---|---|---|---|---|---|---|---|---|
| | 1962 | Avg. 1949-55 1961-1962 | 1962 | Average 1926-1962 | 1962 | Average 1953-1962 | 1962 | Average 1953-1962 |
| Jan. | 5.71 | 4.17 | 2.76 | 2.64 | 3.31 | 2.80 | 2.83 | 3.39 |
| Feb. | 3.82 | 5.00 | 2.99 | 3.46 | 3.11 | 3.70 | 3.35 | 4.21 |
| Mar. | 5.71 | 6.77 | 5.51 | 5.83 | 5.00 | 6.02 | 5.16 | 6.61 |
| Apr. | 11.97 | 9.29 | 8.78 | 7.91 | 8.66 | 8.82 | 8.70 | 8.90 |
| May | 13.50 | 11.73 | 10.91 | 10.51 | 11.62 | 11.57 | 10.39 | 11.22 |
| June | 13.50 | 12.13 | 12.09 | 11.46 | 11.85 | 11.38 | 12.60 | 12.99 |
| July | 13.78 | 12.05 | 13.03 | 11.69 | 12.28 | 11.50 | | 14.57 |
| Aug. | 13.27 | 11.65 | 12.21 | 10.04 | 11.38 | 9.76 | 14.37 | 13.19 |
| Sept. | 9.33 | 9.45 | 8.50 | 8.15 | 8.03 | 7.36 | 11.42 | 10.08 |
| Oct. | 7.21 | 7.83 | 6.14 | 5.59 | 6.38 | 4.92 | 7.76 | 6.85 |
| Nov. | 5.08 | 4.76 | 3.11 | 3.39 | 3.50 | 3.31 | 5.04 | 4.41 |
| Dec. | 4.21 | 3.90 | 1.65 | 2.44 | 2.48 | 3.03 | 4.09 | 3.58 |
| Total | 107.09 | 101.10 | 87.68 | 83.15 | 87.60 | 83.15 | | 101.54 |

| Month | Delta, Baja California | | El Mayor, Baja California | | San Felipe, Baja California | |
|---|---|---|---|---|---|---|
| | 1962 | Average 1959-1962 | 1962 | Average 1953-1962 | 1962 | Average 1952-1962 |
| Jan. | 4.33 | 4.02 | 4.76 | 3.39 | 6.69 | 5.39 |
| Feb. | 2.68 | 4.29 | 3.66 | 4.21 | 3.35 | 5.75 |
| Mar. | 5.43 | 6.41 | 6.26 | 6.30 | 4.88 | 6.81 |
| Apr. | 9.61 | 8.58 | 9.61 | 8.54 | 9.29 | 8.54 |
| May | 10.24 | 10.39 | 10.20 | 9.96 | 10.59 | 10.75 |
| June | 11.54 | 11.34 | 13.94 | 11.85 | 10.16 | 11.10 |
| July | 12.44 | 11.81 | 15.87 | 13.07 | 12.09 | 11.93 |
| Aug. | 11.10 | 10.12 | 14.45 | 12.05 | 12.24 | 10.91 |
| Sept. | 7.99 | 7.99 | 12.76 | 10.87 | 9.05 | 10.31 |
| Oct. | 6.06 | 6.14 | 8.38 | 8.19 | 8.19 | 8.82 |
| Nov. | 4.02 | 4.13 | 4.92 | 4.88 | 5.08 | 6.34 |
| Dec. | | 3.43 | 3.54 | 3.31 | 5.12 | 5.28 |
| Total | | 90.16 | 108.35 | 95.98 | 96.73 | 101.30 |

# TEMPERATURE IN THE COLORADO RIVER BASIN

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 averages 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 52 in this bulletin.

## Degrees Fahrenheit

## In the United States

| Month | Blythe, California | | | | Davis Dam No. 2, Arizona | | | | Yuma Citrus Station, Arizona | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1962 | | | Average 1931-62 | 1962 | | | Average 1955-62 | 1962 | | | Average 1931-62 |
| | Mean | Max. | Min. | | Mean | Max. | Min. | | Mean | Max. | Min. | |
| Jan. | 53.1 | 84 | 19 | 52.7 | 52.1 | 76 | 25 | 53.6 | 52.3 | # 83 | # 23 | 53.3 |
| Feb. | 57.4 | 85 | 26 | 57.1 | 57.2 | 81 | 35 | 56.5 | 56.5 | 83 | 27 | 57.0 |
| Mar. | 58.2 | 93 | 27 | 63.2 | 57.8 | 91 | 35 | 62.8 | 57.0 | 91 | 29 | 62.4 |
| Apr. | 74.8 | 104 | 42 | 71.0 | 75.6 | 102 | 48 | 71.6 | 72.5 | 102 | 40 | 69.7 |
| May | 74.7 | 105 | 44 | 77.5 | 76.5 | 102 | 53 | 78.7 | 71.8 | 105 | 45 | 76.2 |
| June | 84.5 | 113 | 51 | 85.2 | 87.6 | 114 | 60 | 90.0 | 82.1 | 114 | 52 | 83.9 |
| July | 90.6 | 111 | 63 | 92.1 | 94.9 | 113 | 73 | 95.0 | 89.4 | 112 | 58 | 91.5 |
| Aug. | 92.1 | 114 | 61 | 91.0 | 95.1 | 117 | 73 | 93.2 | 91.2 | # 114 | # 58 | 90.8 |
| Sept. | 86.0 | 112 | 57 | 85.4 | 88.6 | 111 | 62 | 86.5 | 85.8 | 111 | 56 | 85.6 |
| Oct. | 72.9 | 102 | 48 | 73.3 | 75.1 | 100 | 55 | 74.5 | 72.7 | # 103 | # 48 | 73.9 |
| Nov. | 62.8 | 91 | 38 | 60.1 | 64.7 | 89 | 44 | 61.6 | 63.9 | 94 | 33 | 61.6 |
| Dec. | 53.9 | 79 | 25 | 53.7 | 57.7 | 75 | 33 | 55.9 | 55.2 | 80 | 28 | 55.2 |
| Yearly | 71.8 | 114 | 19 | 71.9 | 73.6 | 117 | 25 | 73.4 | 70.9 | 114 | 23 | 71.8 |

| Month | Brawley, California | | | | El Centro, California | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1962 | | | Average 1931-62 | 1962 | | | Average 1931-62 | | | | |
| | Mean | Max. | Min. | | Mean | Max. | Min. | | | | | |
| Jan. | 53.1 | 85 | 23 | 53.9 | 54.0 | 86 | 21 | 53.7 | | | | |
| Feb. | 57.5 | 81 | 27 | 58.0 | 57.7 | 80 | 28 | 57.7 | | | | |
| Mar. | 57.5 | 91 | 30 | 63.8 | 57.9 | 90 | 30 | 63.4 | | | | |
| Apr. | 73.4 | 102 | 46 | 71.5 | 72.7 | 102 | 42 | 70.8 | | | | |
| May | 72.7 | 103 | 47 | 78.3 | 71.7 | 102 | 40 | 77.7 | | | | |
| June | 82.7 | 113 | 54 | 85.9 | 83.0 | 114 | 52 | 85.3 | | | | |
| July | 89.1 | 112 | 62 | 92.7 | 89.3 | 113 | 63 | 92.0 | | | | |
| Aug. | 92.1 | 114 | 66 | 92.2 | 92.5 | 114 | 65 | 91.2 | | | | |
| Sept. | 86.2 | 112 | 58 | 87.3 | 86.6 | 112 | 59 | 86.1 | | | | |
| Oct. | 74.4 | 105 | 52 | 75.7 | 75.4 | 103 | 52 | 74.8 | | | | |
| Nov. | 65.6 | 96 | 38 | 62.6 | 65.2 | 94 | 39 | 62.0 | | | | |
| Dec. | 56.6 | 83 | 31 | 55.7 | 56.6 | 82 | 32 | 55.1 | | | | |
| Yearly | 71.7 | 114 | 23 | 73.1 | 71.9 | 114 | 21 | 72.5 | | | | |

## In Mexico

| Month | Los Algodones, Baja California | | | | Mexicali, Baja California | | | | Ampac, Baja California | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1962 | | 1948-1962 | | 1962 | | 1926-1962 | | 1962 | | 1949-1962 | |
| | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. |
| Jan. | 86 | 32 | 86 | 23 | 84 | 25 | 93 | 19 | 84 | 25 | 88 | 21 |
| Feb. | 84 | 37 | 95 | 28 | 82 | 28 | 93 | 23 | 82 | 30 | 91 | 23 |
| Mar. | 93 | 32 | 100 | 32 | 91 | 34 | 100 | 32 | 90 | 30 | 95 | 28 |
| Apr. | 104 | 50 | 106 | 37 | 104 | 46 | 106 | 34 | 104 | 41 | 106 | 27 |
| May | 104 | 52 | 117 | 43 | 104 | 46 | 117 | 45 | 106 | 45 | 115 | 41 |
| June | 113 | 55 | 126 | 52 | 115 | 52 | 120 | 52 | 115 | 52 | 120 | 52 |
| July | 111 | 64 | 118 | 61 | 113 | 64 | 118 | 55 | 113 | 64 | 120 | 54 |
| Aug. | 113 | 66 | 120 | 61 | 115 | 61 | 118 | 54 | 115 | 59 | 118 | 55 |
| Sept. | 115 | 63 | 122 | 54 | 111 | 59 | 122 | 48 | 113 | 57 | 118 | 48 |
| Oct. | 104 | 52 | 111 | 32 | 106 | 54 | 109 | 39 | 108 | 48 | 108 | 32 |
| Nov. | 95 | 41 | 100 | 27 | 95 | 37 | 99 | 28 | 93 | 32 | 93 | 27 |
| Dec. | 82 | 34 | 88 | 28 | 81 | 32 | 90 | 25 | 82 | 32 | 88 | 21 |
| Yearly | 115 | 32 | 126 | 23 | 115 | 25 | 122 | 19 | 115 | 25 | 120 | 21 |

# One or more days missing

# TEMPERATURE IN THE COLORADO RIVER BASIN

## Degrees Fahrenheit
## In Mexico

| Month | Bataques, Baja California | | | | San Luis, R. C., Sonora | | | | Delta, Baja California | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1962 | | 1948-1962 | | 1962 | | 1949-1962 | | 1962 | | 1948-1962 | |
| | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. |
| Jan. | 88 | 32 | 113 | 30 | 84 | 25 | 100 | 19 | 86 | 32 | 97 | 30 |
| Feb. | 86 | 37 | 97 | 19 | 82 | 36 | 109 | 27 | 84 | 34 | 99 | 28 |
| Mar. | 99 | 32 | 109 | 25 | 90 | 32 | 102 | 32 | 93 | 37 | 108 | 28 |
| Apr. | 115 | 41 | 117 | 16 | 104 | 45 | 106 | 39 | 106 | 50 | 115 | 32 |
| May | 115 | 41 | 124 | 34 | 106 | 46 | 115 | 45 | 106 | 50 | 124 | 32 |
| June | 122 | 50 | 135 | 43 | 115 | 54 | 126 | 54 | 115 | 52 | 133 | 36 |
| July | 118 | 59 | 131 | 45 | | | 124 | 59 | 113 | 61 | 135 | 45 |
| Aug. | 120 | 54 | 129 | 46 | 120 | 64 | 122 | 59 | 115 | 63 | 140 | 52 |
| Sept. | 111 | 57 | 135 | 39 | 117 | 59 | 118 | 52 | 113 | 61 | 124 | 39 |
| Oct. | 108 | 50 | 118 | 41 | 97 | 43 | 118 | 43 | 104 | 43 | 113 | 36 |
| Nov. | 97 | 41 | 115 | 32 | 84 | 37 | 100 | 30 | 97 | 41 | 120 | 32 |
| Dec. | 81 | 32 | 95 | 28 | 86 | 37 | 102 | 23 | 84 | 36 | 104 | 28 |
| Yearly | 122 | 32 | 135 | 16 | | | 126 | 19 | 115 | 32 | 140 | 28 |

| Month | Kilometer 50, Baja California | | | | Riito, Sonora | | | | El Mayor, Baja California | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1962 | | 1950-59&61-62 | | 1962 | | 1949-1962 | | 1962 | | 1949-1962 | |
| | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. |
| Jan. | 79 | 30 | 90 | 21 | 88 | 25 | 91 | 19 | 86 | 36 | 86 | 25 |
| Feb. | 82 | 30 | 97 | 21 | 82 | 23 | 95 | 21 | 81 | 34 | 93 | 27 |
| Mar. | 75 | 30 | 99 | 28 | 90 | 27 | 100 | 25 | 82 | 36 | 97 | 36 |
| Apr. | 93 | 36 | 106 | 32 | 104 | 41 | 106 | 37 | 97 | 37 | 108 | 36 |
| May | 91 | 50 | 117 | 39 | 106 | 43 | 115 | 43 | 102 | 41 | 113 | 37 |
| June | 109 | 50 | 117 | 39 | 115 | 48 | 124 | 45 | 108 | 41 | 122 | 37 |
| July | 111 | 61 | 120 | 45 | 113 | 59 | 140 | 55 | 113 | 46 | 122 | 39 |
| Aug. | 109 | 61 | 117 | 52 | 117 | 61 | 122 | 46 | 113 | 52 | 122 | 41 |
| Sept. | 100 | 50 | 115 | 39 | 109 | 57 | 118 | 39 | 113 | 55 | 120 | 37 |
| Oct. | | | 108 | 36 | 102 | 48 | 115 | 34 | 100 | 50 | 106 | 37 |
| Nov. | 97 | 39 | 104 | 25 | 91 | 36 | 102 | 27 | 91 | 41 | 106 | 34 |
| Dec. | 82 | 32 | 95 | 21 | 81 | 32 | 86 | 21 | 88 | 41 | 100 | 19 |
| Yearly | | | 120 | 21 | 117 | 23 | 140 | 19 | 113 | 34 | 122 | 19 |

| Month | San Felipe, Baja California | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1962 | | 1948-1962 | | | | | | | | | |
| | Max. | Min. | Max. | Min. | | | | | | | | |
| Jan. | 95 | 32 | 99 | 32 | | | | | | | | |
| Feb. | 93 | 28 | 102 | 32 | | | | | | | | |
| Mar. | 97 | 32 | 104 | 32 | | | | | | | | |
| Apr. | 109 | 50 | 113 | 37 | | | | | | | | |
| May | 109 | 48 | 115 | 41 | | | | | | | | |
| June | 115 | 57 | 124 | 50 | | | | | | | | |
| July | 113 | 64 | 124 | 50 | | | | | | | | |
| Aug. | 117 | 68 | 135 | 41 | | | | | | | | |
| Sept. | 115 | 61 | 126 | 37 | | | | | | | | |
| Oct. | 109 | 54 | 117 | 41 | | | | | | | | |
| Nov. | 104 | 45 | 118 | 34 | | | | | | | | |
| Dec. | 90 | 34 | 97 | 32 | | | | | | | | |
| Yearly | 117 | 28 | 135 | 32 | | | | | | | | |

# IRRIGATED AREAS ALONG COLORADO RIVER BELOW IMPERIAL DAM
## 1962

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 | 43,979 |
| Reservation Division | 10,193 |
| Yuma Mesa | 16,295 |
| Yuma Aux. Project Unit "B" (Yuma Mesa) | 3,129 |
| South Gila Valley | 11,355 |
| North Gila Valley | 5,940 |
| Wellton-Mohawk | 51,735 |
| Coachella Valley | 51,473 |
| Imperial Valley | 429,557 |
| Total in United States | 623,656 |
| IN MEXICO: | |
| Morelos Dam | |
| Mexicali Valley | * 439,689 |
| Total in United States and Mexico | 1,063,345 |

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

# MESA DRAIN NEAR CUDAHY IN MEXICO

DESCRIPTION: Staff gage located at Kilometer 18.0, about 0.9 mile upstream from the pumping plant on the Alamo Canal above Cudahy check. Measurements are made at various locations on the drain. Beginning August 1962, measurements were obtained at Kilometer 1+500.

RECORDS: Based on 40 current meter measurements, 36 double and 4 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 1962.

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, February 22, 1960; minimum measured discharge, 13.8 second-feet, June 19, 1962.

## Mean Daily Discharge in Second Feet 1962 — Annual and Period Summary

| Day | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 38.8 | 39.2 | 40.3 | 33.2 | 39.9 | 31.8 | | | 32.1 | 43.8 | 46.3 | 43.4 |
| 2 | 39.6 | 40.3 | 41.3 | 32.1 | 39.2 | 32.5 | | | 32.5 | 42.7 | 45.6 | 45.2 |
| 3 | 39.9 | 41.7 | 42.4 | 31.1 | 38.5 | 33.5 | | | 32.8 | 42.0 | 45.2 | 47.0 |
| 4 | 40.6 | 42.7 | 43.8 | 29.7 | 38.1 | 34.6 | | | 33.2 | 41.3 | 44.5 | 47.0 |
| 5 | 37.1 | 43.8 | 44.8 | 27.9 | 37.4 | 32.8 | | | 31.8 | 40.3 | 44.1 | 47.0 |
| 6 | 37.1 | 44.8 | 45.9 | 26.1 | 36.7 | 31.1 | | | 30.4 | 39.6 | 43.4 | 47.3 |
| 7 | 37.4 | 44.5 | 46.3 | 24.4 | 36.0 | 29.3 | | | 29.3 | 38.8 | 44.1 | 47.3 |
| 8 | 37.4 | 43.8 | 46.6 | 22.6 | 35.7 | 27.9 | | | 27.9 | 38.1 | 44.8 | 47.3 |
| 9 | 41.3 | 43.4 | 47.0 | 20.8 | 35.0 | 26.1 | | | 26.5 | 37.8 | 45.6 | 47.7 |
| 10 | 41.7 | 43.1 | 47.7 | 19.1 | 35.0 | 24.4 | | | 25.1 | 37.8 | 46.3 | 47.7 |
| 11 | 42.4 | 42.7 | 48.0 | 22.2 | 35.0 | 23.0 | | | 26.1 | 37.8 | 47.0 | 47.7 |
| 12 | 42.7 | 42.4 | 48.4 | 25.4 | 35.0 | 21.5 | | | 27.2 | 37.8 | 47.7 | 47.3 |
| 13 | 43.1 | 42.0 | 48.7 | 28.3 | 35.3 | 20.5 | | | 28.6 | 37.8 | 47.3 | 47.0 |
| 14 | 43.8 | 41.3 | 48.4 | 31.4 | 35.3 | 19.4 | | | 29.7 | 37.4 | 47.0 | 46.6 |
| 15 | 44.1 | 41.0 | 47.7 | 34.6 | 35.3 | 18.4 | | | 30.7 | 37.4 | 46.3 | 46.3 |
| 16 | 44.8 | 40.6 | 47.3 | 37.4 | 35.3 | 17.3 | | | 32.1 | 37.4 | 45.9 | 45.9 |
| 17 | 43.4 | 40.3 | 46.6 | 40.6 | 35.7 | 16.2 | | | 33.2 | 37.4 | 45.6 | 45.9 |
| 18 | 42.4 | 39.9 | 45.9 | 41.0 | 35.7 | 15.2 | | | 33.9 | 37.4 | 44.8 | 45.6 |
| 19 | 41.0 | 39.6 | 45.6 | 41.3 | 35.7 | 13.8 | | | 34.3 | 37.1 | 44.5 | 45.2 |
| 20 | 39.9 | 38.8 | 44.8 | 42.0 | 39.2 | * 13.8 | | | 35.0 | 37.1 | 43.1 | 44.8 |
| 21 | 38.8 | 38.8 | 43.8 | 42.4 | 42.4 | * 13.8 | | 25.1 | 35.7 | 37.1 | 41.7 | 44.5 |
| 22 | 37.4 | 38.8 | 43.1 | 43.1 | 41.0 | * 13.8 | | 25.8 | 36.4 | 37.1 | 40.6 | 44.1 |
| 23 | 37.4 | 38.5 | 42.0 | 43.4 | 39.6 | * 13.8 | | 26.5 | 36.7 | 36.7 | 39.2 | 43.8 |
| 24 | 37.4 | 38.5 | 41.0 | 44.1 | 38.1 | * 13.8 | | 27.2 | 37.4 | 38.5 | 37.8 | 43.4 |
| 25 | 37.4 | 38.1 | 39.9 | 43.4 | 36.7 | * 13.8 | | 27.9 | 38.1 | 39.9 | 36.7 | 43.1 |
| 26 | 37.4 | 38.1 | 38.8 | 42.7 | 35.7 | * 13.8 | | 29.0 | 39.2 | 41.3 | 35.3 | 42.7 |
| 27 | 37.4 | 38.1 | 37.8 | 42.0 | 34.3 | * 13.8 | | 29.7 | 40.3 | 42.7 | 37.1 | 42.4 |
| 28 | 37.1 | 39.2 | 36.7 | 41.7 | 32.8 | * 13.8 | | 30.4 | 41.0 | 44.1 | 38.5 | 42.0 |
| 29 | 37.1 | | 35.7 | 41.0 | 31.4 | * 13.8 | | 30.7 | 42.0 | 45.6 | 40.3 | 41.7 |
| 30 | 37.1 | | 35.0 | 40.3 | 29.7 | * 13.8 | | 31.1 | 43.1 | 47.3 | 42.0 | 41.3 |
| 31 | 38.1 | | 33.9 | | 30.7 | | | 31.8 | | 46.6 | | 41.0 |
| Sum | 1,231.1 | 1,144.0 | 1,345.2 | 1,035.3 | 1,121.4 | 621.1 | | | 1,002.3 | 1,233.7 | 1,298.3 | 1,399.2 |

**Current Year 1962**

| Month | Extreme Gage Feet | | Ø Extreme Second Feet | | | | Average Second Feet | Total Acre Feet |
|---|---|---|---|---|---|---|---|---|
| | | | High | | Low | | | |
| | High | Low | Day | | Day | | | |
| Jan. | | | 16 | 44.8 | † 5 | 37.1 | 39.6 | 2,443 |
| Feb. | | | 6 | 44.8 | †25 | 38.1 | 41.0 | 2,269 |
| Mar. | | | 13 | 48.7 | 31 | 33.9 | 43.4 | 2,668 |
| Apr. | | | 24 | 44.1 | 10 | 19.1 | 34.6 | 2,054 |
| May | | | 21 | 42.4 | 30 | 29.7 | 36.0 | 2,224 |
| June | | | 4 | 34.6 | †19 | 13.8 | 20.8 | 1,231 |
| July | | | | | | | | |
| Aug | | | | | | | | |
| Sept. | | | 30 | 43.1 | 10 | 25.1 | 33.5 | 1,988 |
| Oct. | | | 30 | 47.3 | 23 | 36.7 | 39.9 | 2,448 |
| Nov. | | | 12 | 47.7 | 26 | 35.3 | 43.4 | 2,575 |
| Dec. | | | † 9 | 47.7 | 31 | 41.0 | 45.2 | 2,775 |
| Yearly | | | | | | | | |

**Period 1956-1962**

| Acre Feet | | |
|---|---|---|
| Average | Maximum | Minimum |
| 2,780 | 3,072 | 2,443 |
| 2,725 | 3,439 | 2,269 |
| 2,767 | 3,225 | 2,392 |
| 2,645 | 3,381 | 2,054 |
| 2,719 | 3,365 | 2,147 |
| 2,265 | 3,324 | 1,231 |
| 2,178 | 2,688 | 1,795 |
| 2,482 | 3,468 | 1,779 |
| 2,323 | 2,720 | 1,988 |
| 2,610 | 3,414 | 2,062 |
| 2,614 | 3,416 | 1,708 |
| 2,742 | 3,155 | 2,260 |
| 30,648 | 34,661 | 25,455 |

† And other days Ø Mean daily * Partly estimated

# ALAMO RIVER AT INTERNATIONAL BOUNDARY

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

RECORDS: Computed on the basis of head on the Cipolletti weir from daily staff gage readings, and weir ratings as determined by monthly current meter measurements. Records obtained and furnished by Imperial Irrigation District. 1962 records excellent. Records available: June 1942 through December 1962.

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 1962 — Annual and Period Summary

| Day | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.00 | 2.55 | 2.00 | 3.93 | 3.41 | 2.21 | 2.55 | 1.39 | 1.49 | 2.00 | 1.79 | 2.44 |
| 2 | 2.00 | 2.44 | 1.89 | 3.67 | 4.20 | 2.21 | 2.55 | 1.58 | 1.49 | 2.00 | 1.89 | 2.44 |
| 3 | 2.00 | 2.00 | 1.89 | 4.20 | 3.03 | 2.21 | 2.21 | 1.39 | 1.68 | 2.00 | 1.89 | 2.55 |
| 4 | 2.00 | 2.67 | 2.67 | 3.15 | 2.67 | 2.32 | 2.21 | 1.49 | 1.58 | 2.00 | 1.89 | 2.44 |
| 5 | 2.00 | 2.00 | 1.89 | 2.21 | 2.67 | 2.44 | 2.21 | 1.49 | 1.68 | 2.00 | 1.89 | 2.21 |
| 6 | 1.89 | 2.00 | 2.67 | 2.67 | 2.55 | 2.00 | 2.21 | 1.58 | 1.89 | 2.32 | 1.89 | 2.91 |
| 7 | 1.89 | 2.00 | 3.67 | 2.55 | 2.67 | 2.32 | 2.21 | 1.20 | 1.68 | 2.55 | 1.89 | 3.93 |
| 8 | 1.89 | 2.00 | 3.67 | 2.55 | 3.28 | 2.44 | 2.21 | 1.39 | 1.58 | 2.55 | 2.44 | 4.20 |
| 9 | 2.00 | 2.00 | 3.80 | 2.55 | 2.91 | 2.55 | 2.21 | 1.49 | 1.58 | 2.32 | 3.03 | 3.93 |
| 10 | 2.00 | 2.00 | 3.67 | 2.21 | 2.91 | 2.32 | 2.21 | 1.49 | 1.79 | 2.44 | 3.03 | 3.67 |
| 11 | 2.00 | 2.00 | 3.80 | 2.67 | 2.21 | 2.55 | 2.21 | 1.49 | 1.58 | 2.44 | 2.79 | 3.93 |
| 12 | 2.00 | 1.79 | 3.67 | 2.79 | 2.21 | 2.44 | 2.32 | 1.58 | 1.68 | 2.55 | 2.67 | 3.41 |
| 13 | 2.21 | 1.79 | 3.67 | 2.67 | 2.10 | 2.32 | 2.32 | 1.49 | 1.58 | 2.00 | 2.79 | 3.15 |
| 14 | 2.21 | 1.79 | 3.93 | 2.79 | 2.10 | 2.55 | 2.21 | 1.58 | 1.79 | 2.10 | 2.32 | 2.91 |
| 15 | 2.21 | 1.79 | 3.15 | 2.67 | 2.10 | 2.55 | 2.21 | 1.58 | 1.79 | 2.00 | 2.00 | 2.67 |
| 16 | 2.21 | 1.89 | 2.91 | 2.67 | 2.10 | 2.44 | 2.21 | 1.58 | 1.79 | 2.21 | 2.55 | 3.15 |
| 17 | 2.21 | 1.79 | 2.91 | 2.91 | 1.68 | 2.44 | 2.10 | 1.49 | 2.00 | 2.21 | 3.67 | 2.67 |
| 18 | 2.21 | 1.79 | 2.79 | 2.67 | 2.21 | 2.44 | 2.32 | 1.58 | 1.79 | 2.10 | 3.54 | 3.15 |
| 19 | 2.00 | 1.79 | 2.91 | 2.79 | 2.00 | 2.44 | 2.21 | 1.49 | 2.21 | 2.21 | 3.28 | 3.80 |
| 20 | 2.00 | 1.79 | 3.54 | 3.41 | 2.00 | 2.79 | 1.58 | 1.49 | 2.21 | 2.21 | 3.93 | 3.67 |
| 21 | 2.21 | 1.79 | 2.44 | 3.41 | 2.00 | 2.79 | 1.58 | 1.49 | 2.21 | 2.10 | 3.15 | 4.07 |
| 22 | 2.32 | 2.00 | 2.67 | 2.79 | 1.79 | 2.79 | 1.49 | 1.68 | 2.21 | 2.10 | 2.67 | 3.93 |
| 23 | 2.21 | 1.89 | 2.55 | 4.07 | 2.21 | 2.44 | 1.49 | 1.79 | 2.10 | 2.10 | 2.79 | 3.93 |
| 24 | 2.00 | 2.00 | 2.55 | 4.07 | 3.03 | 2.55 | 1.68 | 1.58 | 2.00 | 2.00 | 2.10 | 3.80 |
| 25 | 2.00 | 1.89 | 2.79 | 3.15 | 1.89 | 3.03 | 1.68 | 1.58 | 2.00 | 2.00 | 2.44 | 2.79 |
| 26 | 2.00 | 1.89 | 2.91 | 2.67 | 1.89 | 3.03 | 1.68 | 1.58 | 2.00 | 2.00 | 2.55 | 3.41 |
| 27 | 2.00 | 1.68 | 3.03 | 2.67 | 1.79 | 2.79 | 1.89 | 1.49 | 2.00 | 2.00 | 2.67 | 2.55 |
| 28 | 2.55 | 2.00 | 4.07 | 2.44 | 2.00 | 2.79 | 1.58 | 1.49 | 2.00 | 2.00 | 2.67 | 2.55 |
| 29 | 2.67 | | 3.93 | 2.21 | 1.89 | 2.67 | 1.68 | 1.68 | 2.00 | 1.79 | 2.55 | 2.79 |
| 30 | 2.55 | | 3.80 | 2.32 | 2.00 | 2.55 | 1.49 | 1.49 | 2.00 | 1.89 | 2.55 | 2.55 |
| 31 | 2.44 | | 3.67 | | 2.10 | | 1.49 | 1.58 | | 1.79 | | 2.67 |
| Sum | 65.88 | 55.01 | 95.51 | 87.53 | 73.60 | 75.41 | 62.20 | 47.27 | 55.38 | 65.98 | 77.31 | 98.27 |

**Current Year 1962** | **Period 1943-1962**

| Month | Extreme Gage Height Ø Feet | | Extreme Second-Feet | | | | Average Second-Feet | Total Acre-Feet | Acre-Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | High | | Low | | | | | | |
| | High | Low | Day | | Day | | | | Average | Maximum | Minimum |
| Jan. | 0.34 | 0.27 | 29 | 2.67 | † 6 | 1.89 | 2.13 | 131 | 497 | 2,790 | 99 |
| Feb. | .34 | .25 | 4 | 2.67 | 27 | 1.68 | 1.96 | 109 | 450 | 2,820 | 100 |
| Mar. | .45 | .27 | 28 | 4.07 | † 2 | 1.89 | 3.08 | 189 | 503 | 3,150 | 111 |
| Apr. | .46 | .30 | 3 | 4.20 | † 5 | 2.21 | 2.92 | 174 | 550 | 2,220 | 97 |
| May | .46 | .25 | 2 | 4.20 | 17 | 1.68 | 2.37 | 146 | 412 | 1,800 | 73 |
| June | .37 | .28 | † 25 | 3.03 | 6 | 2.00 | 2.51 | 150 | 411 | 1,690 | 61 |
| July | .33 | .23 | † 1 | 2.55 | †22 | 1.49 | 2.01 | 123 | 371 | 1,710 | 59 |
| Aug. | .26 | .20 | 23 | 1.79 | 7 | 1.20 | 1.52 | 94 | 457 | 1,670 | 83 |
| Sept. | .30 | .23 | † 19 | 2.21 | † 1 | 1.49 | 1.85 | 110 | 421 | 1,410 | 91 |
| Oct. | .33 | .26 | † 7 | 2.55 | †29 | 1.79 | 2.13 | 131 | 460 | 1,840 | 102 |
| Nov. | .44 | .26 | 20 | 3.93 | 1 | 1.79 | 2.58 | 153 | 475 | 2,080 | 86 |
| Dec. | .46 | .30 | 8 | 4.20 | 5 | 2.21 | 3.17 | 195 | 433 | 1,690 | 80 |
| Yearly | 0.46 | 0.20 | | 4.20 | | 1.20 | 2.36 | 1,705 | 5,440 | 22,150 | 1,250 |

† And other days Ø Mean daily

# NEW RIVER AT INTERNATIONAL BOUNDARY

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

RECORDS: Based 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. 1962 records good. Records available: June 1942 through December 1962.

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 1962 — Annual and Period Summary

| Day | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 93 | 214 | 139 | 197 | 163 | 206 | 112 | 110 | 62 | 149 | 115 | 572 |
| 2 | 105 | 178 | 158 | 210 | 172 | 170 | 103 | 131 | 91 | 163 | 116 | 586 |
| 3 | 559 | 140 | 162 | 267 | 166 | 160 | 117 | 144 | 139 | 168 | 119 | 691 |
| 4 | 598 | 134 | 164 | 162 | 172 | 167 | 138 | 146 | 151 | 163 | 132 | 515 |
| 5 | 242 | 134 | 164 | 129 | 194 | 173 | 149 | 140 | 147 | 146 | 246 | 330 |
| 6 | 156 | 135 | 163 | 137 | 200 | 178 | 148 | 123 | 117 | 139 | 210 | 376 |
| 7 | 153 | 132 | 164 | 153 | 204 | 167 | 145 | 116 | 83 | 136 | 204 | 302 |
| 8 | 156 | 130 | 169 | 158 | 199 | 150 | 133 | 111 | 72 | 128 | 239 | 246 |
| 9 | 158 | 129 | 150 | 171 | 197 | 137 | 125 | 118 | 86 | 121 | 248 | 351 |
| 10 | 156 | 130 | 135 | 176 | 189 | 136 | 124 | 118 | 143 | 118 | 268 | 419 |
| 11 | 161 | 128 | 133 | 179 | 185 | 152 | 123 | 115 | 147 | 122 | 352 | 358 |
| 12 | 173 | 126 | 131 | 179 | 180 | 148 | 123 | 89 | 144 | 125 | 329 | 436 |
| 13 | 154 | 123 | 133 | 178 | 174 | 140 | 119 | 69 | 127 | 124 | 283 | 381 |
| 14 | 152 | 122 | 177 | 175 | 170 | 122 | 115 | 86 | 90 | 123 | 265 | 277 |
| 15 | 130 | 122 | 198 | 178 | 161 | 119 | 112 | 107 | 71 | 118 | 278 | 273 |
| 16 | 113 | 120 | 236 | 179 | 152 | 120 | 111 | 122 | 72 | 111 | 316 | 155 |
| 17 | 113 | 121 | 200 | 177 | 146 | 123 | 111 | 107 | 107 | 99 | 169 | 183 |
| 18 | 142 | 119 | 189 | 192 | 148 | 121 | 110 | 82 | 133 | 97 | 159 | 393 |
| 19 | 412 | 125 | 220 | 188 | 345 | 122 | 113 | 70 | 121 | 97 | 150 | 439 |
| 20 | 289 | 122 | 183 | 300 | 119 | 123 | 120 | 85 | 111 | 95 | 145 | 167 |
| 21 | 350 | 117 | 267 | 226 | 125 | 115 | 122 | 115 | 96 | 97 | 142 | 198 |
| 22 | 631 | 116 | 391 | 217 | 142 | 126 | 124 | 142 | 82 | 92 | 137 | 255 |
| 23 | 624 | 117 | 376 | 179 | 123 | 141 | 125 | 132 | 87 | 96 | 110 | 292 |
| 24 | 615 | 119 | 349 | 153 | 120 | 158 | 126 | 105 | 128 | 108 | 88 | 388 |
| 25 | 670 | 132 | 273 | 146 | 115 | 155 | 126 | 87 | 138 | 110 | 84 | 385 |
| 26 | 654 | 328 | 211 | 148 | 127 | 161 | 124 | 107 | 137 | 112 | 74 | 346 |
| 27 | 670 | 173 | 195 | 144 | 146 | 159 | 118 | 149 | 140 | 112 | 77 | 376 |
| 28 | 643 | 129 | 191 | 144 | 151 | 153 | 104 | 147 | 126 | 112 | 301 | 378 |
| 29 | 414 | | 202 | 150 | 173 | 148 | 99 | 147 | 110 | 111 | 391 | 274 |
| 30 | 385 | | 205 | 153 | 244 | 144 | 100 | 115 | 116 | 115 | 466 | 205 |
| 31 | 293 | | 200 | | 251 | | 102 | 86 | | 115 | | 144 |
| Sum | 10,164 | 3,915 | 6,228 | 5,345 | 5,353 | 4,394 | 3,721 | 3,521 | 3,374 | 3,722 | 6,213 | 10,691 |

| Month | Current Year 1962 — Extreme Gage Ø ** Feet | | Ø Extreme Second-Feet | | | | Average Second-Feet | Total Acre-Feet | Period 1943-1962 — Acre-Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | High | | Low | | | | Average | Maximum | Minimum |
| | High | Low | Day | | Day | | | | | | |
| Jan. | 34.61 | 40.35 | † 25 | 670 | 1 | 93 | 328 | 20,160 | 5,852 | 20,160 | 1,751 |
| Feb. | 37.60 | 40.18 | 26 | 328 | 22 | 116 | 140 | 7,765 | 4,309 | 10,836 | 1,258 |
| Mar. | 37.40 | 40.12 | 22 | 391 | 12 | 131 | 201 | 12,353 | 4,785 | 12,353 | 1,008 |
| Apr. | 38.03 | 40.29 | 20 | 300 | 5 | 129 | 178 | 10,602 | 5,141 | 14,489 | 1,390 |
| May | 38.23 | 40.75 | 19 | 345 | 25 | 115 | 173 | 10,618 | 4,542 | 10,618 | 629 |
| June | 39.79 | 40.64 | 1 | 206 | 21 | 115 | 146 | 8,715 | 3,945 | 9,098 | 1,087 |
| July | 40.43 | 41.00 | 5 | 149 | 29 | 99 | 120 | 7,380 | 3,721 | 8,815 | 817 |
| Aug. | 40.51 | 41.49 | 27 | 149 | 13 | 69 | 114 | 6,984 | 4,726 | 10,921 | 1,139 |
| Sept. | 40.49 | 41.61 | 4 | 151 | 1 | 62 | 112 | 6,692 | 4,986 | 11,615 | 1,795 |
| Oct. | 40.48 | 41.23 | 3 | 168 | 22 | 92 | 120 | 7,382 | 5,683 | 11,560 | 2,081 |
| Nov. | 37.28 | 41.51 | 30 | 466 | 26 | 74 | 207 | 12,323 | 5,473 | 12,323 | 2,483 |
| Dec. | 36.22 | 40.69 | 3 | 691 | 31 | 144 | 345 | 21,205 | 6,109 | 21,205 | 1,763 |
| Yearly | 34.61 | 41.61 | | 691 | | 62 | 183 | 132,179 | 59,272 | 132,179 | 24,573 |

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

# VOLCANO DRAIN TO NEW RIVER IN MEXICO

DESCRIPTION: Volcano Drain is measured at a point about 1,000 feet downstream from the 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 50 current meter measurements, 48 double and 2 single, made by wading during the year. Data obtained and furnished by the Mexican Section of the Commission. Records available: January 1957 through December 1962.

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 instantaneous discharge, 220 second-feet on January 30, 1961; minimum instantaneous discharge, 27.2 second-feet on November 26, 1962.

## Mean Daily Discharge in Second-Feet 1962 — Annual and Period Summary

| Day | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 79.1 | 135 | 135 | 148 | 132 | 122 | 76.3 | 76.6 | 107 | 86.9 | 65.3 | 52.3 |
| 2 | 77.3 | 120 | 139 | 149 | 136 | 127 | 64.6 | 78.8 | 117 | 89.0 | 63.9 | 57.6 |
| 3 | 75.9 | 104 | 143 | 137 | 140 | 132 | 69.9 | 81.2 | 126 | 91.5 | 62.5 | 62.5 |
| 4 | 74.2 | 88.6 | 147 | 125 | 144 | 137 | 75.2 | 83.3 | 126 | 93.6 | 61.1 | 65.0 |
| 5 | 83.3 | 73.1 | 150 | 114 | 148 | 133 | 80.5 | 85.8 | 126 | 95.7 | 59.7 | 67.8 |
| 6 | 92.5 | 73.8 | 142 | 102 | 152 | 130 | 85.8 | 87.9 | 127 | 97.8 | 60.4 | 70.3 |
| 7 | 102 | 74.5 | 133 | 90.1 | 156 | 126 | 91.1 | 80.5 | 127 | 100 | 61.4 | 72.7 |
| 8 | 111 | 75.2 | 125 | 78.4 | 160 | 122 | 96.4 | 72.7 | 127 | 102 | 62.2 | 75.2 |
| 9 | 109 | 75.9 | 116 | 66.7 | 164 | 118 | 102 | 65.3 | 127 | 101 | 63.2 | 78.0 |
| 10 | 107 | 76.6 | 108 | 75.9 | 159 | 114 | 99.6 | 57.6 | 128 | 99.9 | 63.9 | 80.5 |
| 11 | 105 | 77.3 | 99.2 | 85.1 | 154 | 110 | 97.1 | 50.1 | 118 | 98.5 | 65.0 | 85.8 |
| 12 | 103 | 78.0 | 90.8 | 94.3 | 150 | 108 | 95.0 | 42.4 | 107 | 97.1 | 65.7 | 90.8 |
| 13 | 101 | 85.5 | 94.3 | 103 | 145 | 107 | 92.9 | 35.0 | 96.8 | 95.7 | 66.7 | 96.1 |
| 14 | 98.5 | 92.9 | 98.2 | 112 | 140 | 105 | 90.8 | 35.3 | 86.2 | 94.6 | 67.5 | 101 |
| 15 | 96.4 | 100 | 102 | 121 | 130 | 104 | 88.3 | 35.3 | 75.9 | 93.2 | 68.5 | 107 |
| 16 | 101 | 108 | 105 | 131 | 119 | 102 | 86.2 | 35.7 | 65.3 | 91.8 | 69.2 | 112 |
| 17 | 106 | 115 | 109 | 126 | 108 | 101 | 89.0 | 35.7 | 55.1 | 90.8 | 70.3 | 117 |
| 18 | 111 | 123 | 113 | 122 | 98.2 | 98.9 | 92.2 | 36.0 | 57.9 | 89.3 | 71.0 | 121 |
| 19 | 115 | 130 | 116 | 118 | 87.6 | 106 | 95.0 | 36.0 | 61.1 | 87.9 | 72.0 | 126 |
| 20 | 120 | 129 | 120 | 114 | 77.0 | 112 | 98.2 | 36.4 | 63.9 | 86.5 | 72.7 | 131 |
| 21 | 125 | 129 | 124 | 109 | 66.4 | 119 | 101 | 39.9 | 67.1 | 85.5 | 73.8 | 135 |
| 22 | 130 | 127 | 127 | 105 | 71.3 | 126 | 104 | 43.4 | 69.9 | 84.0 | 74.5 | 139 |
| 23 | 137 | 126 | 131 | 101 | 76.3 | 132 | 107 | 47.0 | 73.1 | 81.9 | 62.9 | 144 |
| 24 | 144 | 125 | 135 | 105 | 81.2 | 139 | 102 | 50.5 | 75.9 | 79.8 | 50.9 | 149 |
| 25 | 152 | 125 | 138 | 109 | 86.5 | 146 | 97.1 | 54.0 | 77.3 | 77.7 | 38.8 | 148 |
| 26 | 160 | 124 | 142 | 113 | 91.5 | 134 | 92.2 | 57.6 | 79.1 | 75.9 | 27.2 | 147 |
| 27 | 167 | 127 | 143 | 117 | 96.4 | 123 | 86.9 | 61.1 | 80.5 | 73.8 | 32.1 | 147 |
| 28 | 174 | 131 | 144 | 120 | 101 | 111 | 81.9 | 70.3 | 82.3 | 71.7 | 37.4 | 145 |
| 29 | 182 | | 145 | 124 | 107 | 99.6 | 77.0 | 79.8 | 83.7 | 69.6 | 42.4 | 145 |
| 30 | 166 | | 146 | 128 | 112 | 87.9 | 72.0 | 89.0 | 85.5 | 68.2 | 47.3 | 144 |
| 31 | 151 | | 147 | | 117 | | 74.2 | 98.2 | | 66.7 | | 143 |
| Sum | 2,949.4 | | 3,343.5 | | 3,532.4 | | 1,838.4 | | 2,717.6 | | 3,355.6 | |
| | 3,656.2 | | 3,907.5 | | 3,706.4 | | 2,761.4 | | 2,799.6 | | 1,799.5 | |

| Month | Current Year 1962 Extreme Gage Feet | | Ø Extreme Second-Feet | | | | Average Second-Feet | Total Acre-Feet | Period 1957-1962 Acre-Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | High | | Low | | | | | | |
| | High | Low | Day | | Day | | | | Average | Maximum | Minimum |
| Jan. | | | 29 | 182 | 4 | 74.2 | 118 | 7,249 | 6,508 | 9,142 | 4,076 |
| Feb. | | | 1 | 135 | 5 | 73.1 | 106 | 5,855 | 5,945 | 8,165 | 3,536 |
| Mar. | | | 5 | 150 | 12 | 90.8 | 126 | 7,752 | 6,719 | 8,102 | 4,491 |
| Apr. | | | 2 | 149 | 9 | 66.7 | 112 | 6,632 | 7,086 | 9,767 | 4,373 |
| May | | | 9 | 164 | 21 | 66.4 | 120 | 7,352 | 6,797 | 8,542 | 4,675 |
| June | | | 25 | 146 | 30 | 87.9 | 118 | 7,007 | 6,041 | 7,454 | 3,547 |
| July | | | 23 | 107 | 2 | 64.6 | 89.0 | 5,476 | 5,772 | 7,902 | 2,809 |
| Aug. | | | 31 | 98.2 | 13 | 35.0 | 59.3 | 3,647 | 6,412 | 8,367 | 3,647 |
| Sept. | | | 10 | 128 | 17 | 55.1 | 93.2 | 5,556 | 7,065 | 9,027 | 4,912 |
| Oct. | | | 8 | 102 | 31 | 66.7 | 87.6 | 5,392 | 6,649 | 8,118 | 4,570 |
| Nov. | | | 22 | 74.5 | 26 | 27.2 | 60.0 | 3,570 | 5,741 | 7,132 | 3,570 |
| Dec. | | | 24 | 149 | 1 | 52.3 | 108 | 6,657 | 6,384 | 7,528 | 4,511 |
| Yearly | | | | 182 | | 27.2 | 99.6 | 72,145 | 77,121 | 95,812 | 50,244 |

Ø Mean daily

# SIFON WASTEWAY TO NEW RIVER IN MEXICO

DESCRIPTION: Water-stage recorder and control weir located in the wasteway from the West Main Canal to New River about 650 feet downstream from the wasteway structure, 1,300 feet upstream from the confluence with Volcano Drain, 0.5 mile downstream from the crossing of the West Main Canal and the Mexicali-San Felipe highway, 450 feet north of the crossing of the Tijuana-San Felipe highway and New River, 5.7 miles upstream from the international land boundary, and 3.7 miles south of Mexicali, Baja California. The Cipolletti-type wooden control weir has a 13.45-foot crest and is set in the left bank of the wasteway and near the right bank of Volcano Drain. The sea level elevation of the gage has not been determined.

RECORDS: Based on a continuous record of gage heights and a rating curve for the weir. Data obtained and furnished by the Mexican Section of the Commission. Records available: January 1952 through December 1962. 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.

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

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

## Mean Daily Discharge in Second-Feet 1962 — Annual and Period Summary

| Day | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0.4 | 0 | 0 | 0 | 0.4 | 0 | 0 | 0 | 0 |
| 2 | 0 | 0 | 0 | .4 | 0 | .4 | 0 | .4 | 0 | 0 | 0 | 0 |
| 3 | 0 | 0 | 0 | .4 | 0 | .7 | .4 | .4 | 0 | 0 | 0 | 0 |
| 4 | 0 | 0 | 0 | 0 | 0 | .7 | .4 | 0 | 0 | 0 | 0 | 0 |
| 5 | 0 | 0 | 0 | .4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | .4 | 0 | 0 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | .4 | 0 | .7 | 0 | 0 |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | .4 | 0 | 0 |
| 9 | 0 | .4 | 0 | 0 | 0 | 0 | .4 | 0 | 0 | 2.1 | 0 | 0 |
| 10 | 0 | 0 | 0 | 0 | .4 | .4 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11 | 0 | 0 | 0 | 0 | .7 | .4 | 0 | 0 | 0 | 1.8 | 0 | 0 |
| 12 | 0 | 0 | 0 | 0 | .4 | .4 | 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 | .4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16 | 0 | 0 | 0 | 0 | 0 | .4 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17 | 0 | 0 | 0 | 0 | 0 | .4 | .4 | 0 | 0 | 0 | 0 | 0 |
| 18 | 0 | 0 | 0 | 0 | .4 | .4 | .4 | 0 | 0 | 0 | 0 | 0 |
| 19 | 0 | 0 | 0 | 0 | .4 | .4 | .4 | 0 | 0 | .4 | 0 | 0 |
| 20 | 0 | 0 | 0 | .4 | .4 | .4 | .4 | 0 | 0 | .4 | 0 | 0 |
| 21 | 0 | 0 | 0 | 0 | .4 | .4 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22 | .4 | 0 | 0 | 0 | 0 | .4 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23 | .4 | 0 | 0 | 0 | 0 | .4 | .4 | 0 | 0 | 0 | 0 | 0 |
| 24 | 1.4 | 0 | 0 | 0 | 0 | .4 | .4 | 0 | 0 | 0 | 0 | 0 |
| 25 | 3.2 | 0 | 0 | .4 | 0 | .4 | .4 | 0 | 0 | 0 | 0 | 0 |
| 26 | .4 | 0 | 0 | 0 | 0 | .4 | .4 | 0 | 0 | 0 | 0 | 0 |
| 27 | .4 | 0 | 0 | 0 | 0 | .4 | .4 | 0 | 0 | 0 | 0 | 0 |
| 28 | .4 | 0 | 0 | .4 | 0 | 0 | .4 | 0 | 0 | 0 | 0 | 0 |
| 29 | 0 | | 0 | 0 | 0 | 0 | .4 | 0 | 0 | 0 | 0 | 0 |
| 30 | 0 | | 0 | 0 | 0 | 0 | .4 | 0 | 0 | 0 | 0 | 0 |
| 31 | 0 | | 0 | | 0 | | .4 | 0 | | 0 | | 0 |
| Sum | 7.0 | 0.4 | 0 | 2.8 | 3.1 | 7.8 | 6.4 | 1.6 | 0 | 6.2 | 0 | 0 |

| Month | Current Year 1962 | | | | | | | | Period 1952-1962 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Extreme Gage Feet | | Extreme Second-Feet | | | | Average Second-Feet | Total Acre-Feet | Acre-Feet | | |
| | | | High | | Low | | | | Average | Maximum | Minimum |
| | High | Low | Day | | Day | | | | | | |
| Jan. | | | 25 | 15.5 | † 1 | 0 | 0.4 | 13.3 | 59.2 | 293 | 1.6 |
| Feb. | | | † 8 | .4 | † 1 | 0 | 0 | .7 | 49.5 | 96.5 | .7 |
| Mar. | | | † 7 | .4 | † 1 | 0 | 0 | 0 | 190 | 597 | 0 |
| Apr. | | | † 2 | .7 | † 4 | 0 | .1 | 4.9 | 84.3 | 660 | 0 |
| May | | | 11 | 1.1 | † 1 | 0 | .1 | 5.6 | 60.8 | 141 | .8 |
| June | | | 3 | .7 | † 1 | 0 | .4 | 14.0 | 42.2 | 186 | 3.2 |
| July | | | 30 | .7 | † 1 | 0 | .4 | 11.2 | 58.4 | 164 | 8.9 |
| Aug. | | | † 7 | .7 | † 4 | 0 | .1 | 2.8 | 133 | 561 | 2.8 |
| Sept. | | | † 1 | 0 | † 1 | 0 | 0 | 0 | 76.2 | 225 | 0 |
| Oct. | | | 11 | 10.6 | † 1 | 0 | .4 | 11.9 | 131 | 524 | 2.4 |
| Nov. | | | † 1 | 0 | † 1 | 0 | 0 | 0 | 196 | 1,367 | 0 |
| Dec. | | | † 1 | 0 | † 1 | 0 | 0 | 0 | 86.7 | 233 | 0 |
| Yearly | | | | 15.5 | | 0 | 0.1 | 64.4 | 1,166 | 3,249 | 64.4 |

† And other days

# WISTERIA WASTEWAY TO NEW RIVER IN MEXICO

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

RECORDS: Based on 37 double and 1 single current meter measurements made during the year, a rating curve for the weir, and a continuous record of gage heights. Data obtained and furnished by the Mexican Section of the Commission. Records available: January 1951 through December 1962.

REMARKS: Measurements were taken at various locations downstream from the weir due to poor condition of the channel. Operation of the canal system by the Colorado River Irrigation District in Mexico modifies the flows at this station. Records reported below normally comprise the largest single portion of the waste flows from the Mexican system of canals discharging into the territory of the United States. Such wastes are limited to an average annual quantity of 35,000 acre-feet during any successive five-year period under the provisions of Minute No. 197 of the Commission.

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

## Mean Daily Discharge in Second-Feet 1962 — Annual and Period Summary

| Day | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7.8 | 38.5 | 6.4 | 4.9 | 31.1 | 8.1 | 3.9 | 2.8 | 3.9 | 4.2 | 2.1 | 318 |
| 2 | 20.5 | 35.3 | 5.7 | 4.9 | 19.1 | 4.9 | 4.2 | 2.8 | 2.8 | 4.2 | 1.8 | 315 |
| 3 | 381 | 9.5 | 5.7 | 4.9 | 4.6 | 4.9 | 3.9 | 2.8 | 2.1 | 3.5 | 1.8 | 323 |
| 4 | 452 | 7.1 | 5.7 | 4.6 | 4.2 | 4.9 | 2.8 | 2.8 | 2.1 | 2.1 | 14.1 | 245 |
| 5 | 164 | 7.1 | 5.7 | 4.6 | 4.2 | 5.7 | 2.8 | 2.8 | 2.1 | 2.1 | 101 | 147 |
| 6 | 8.5 | 6.7 | 6.0 | 4.6 | 4.2 | 6.7 | 2.8 | 2.8 | 2.1 | 1.8 | 87.2 | 192 |
| 7 | 7.1 | 5.7 | 6.4 | 4.9 | 4.6 | 4.9 | 2.8 | 2.8 | 3.2 | 1.8 | 53.0 | 131 |
| 8 | 5.7 | 4.2 | 6.7 | 4.9 | 4.6 | 3.9 | 3.2 | 2.8 | 3.2 | 1.8 | 69.9 | 83.0 |
| 9 | 5.3 | 4.2 | 6.0 | 4.9 | 4.6 | 3.9 | 3.2 | 2.8 | 2.8 | 2.1 | 78.0 | 145 |
| 10 | 5.3 | 4.2 | 5.3 | 4.9 | 4.2 | 3.9 | 3.2 | 3.2 | 2.5 | 1.8 | 84.0 | 189 |
| 11 | 7.1 | 5.3 | 4.9 | 4.9 | 3.9 | 13.1 | 3.5 | 2.8 | 2.5 | 1.8 | 149 | 136 |
| 12 | 16.6 | 4.9 | 4.9 | 4.9 | 3.9 | 12.4 | 3.2 | 2.8 | 2.5 | 1.8 | 127 | 183 |
| 13 | 4.6 | 4.2 | 6.0 | 4.9 | 3.9 | 5.7 | 3.2 | 3.5 | 2.5 | 1.4 | 88.6 | 160 |
| 14 | 4.6 | 3.9 | 36.4 | 4.9 | 3.9 | 3.9 | 2.8 | 3.9 | 2.1 | 1.4 | 72.0 | 92.5 |
| 15 | 4.2 | 4.2 | 60.0 | 4.9 | 3.9 | 3.9 | 2.8 | 3.5 | 2.8 | 1.4 | 92.9 | 101 |
| 16 | 4.2 | 3.9 | 101 | 4.9 | 3.5 | 3.9 | 2.8 | 3.5 | 2.8 | 1.4 | 146 | 14.8 |
| 17 | 4.2 | 3.5 | 24.7 | 4.6 | 3.5 | 3.9 | 2.8 | 3.5 | 2.8 | 1.4 | 9.5 | 13.4 |
| 18 | 16.2 | 4.6 | 14.1 | 7.1 | 4.2 | 3.9 | 2.8 | 4.2 | 2.8 | 1.4 | 6.0 | 285 |
| 19 | 263 | 6.4 | 43.1 | 25.1 | 221 | 3.9 | 2.8 | 3.9 | 2.8 | 1.4 | 6.0 | 264 |
| 20 | 97.8 | 7.8 | 88.6 | 24.0 | 13.1 | 3.5 | 2.8 | 3.9 | 2.8 | 1.4 | 5.7 | 19.1 |
| 21 | 161 | 4.9 | 95.3 | 8.1 | 18.7 | 3.5 | 3.2 | 3.5 | 3.5 | 1.8 | 4.9 | 29.0 |
| 22 | 410 | 4.6 | 180 | 10.9 | 30.7 | 3.5 | 2.8 | 3.5 | 2.8 | 2.5 | 3.5 | 69.2 |
| 23 | 281 | 4.6 | 218 | 17.0 | 9.9 | 3.9 | 2.8 | 3.5 | 2.8 | 2.1 | 3.5 | 86.2 |
| 24 | 319 | 4.6 | 206 | 11.7 | 4.9 | 3.5 | 2.8 | 3.5 | 2.8 | 2.8 | 3.5 | 149 |
| 25 | 403 | 6.7 | 105 | 4.9 | 4.6 | 3.5 | 2.8 | 3.5 | 3.5 | 2.1 | 3.5 | 139 |
| 26 | 337 | 184 | 20.5 | 4.6 | 7.1 | 3.5 | 2.8 | 3.2 | 3.9 | 2.1 | 3.2 | 116 |
| 27 | 445 | 79.5 | 6.0 | 4.2 | 13.1 | 3.5 | 2.8 | 3.2 | 3.5 | 2.1 | 3.2 | 142 |
| 28 | 304 | 6.7 | 5.3 | 4.2 | 11.3 | 3.9 | 3.2 | 3.2 | 3.5 | 2.1 | 199 | 149 |
| 29 | 91.8 | | 4.9 | 4.2 | 10.6 | 3.9 | 2.8 | 3.2 | 3.5 | 2.1 | 223 | 75.6 |
| 30 | 107 | | 4.9 | 4.2 | 27.9 | 3.9 | 2.8 | 3.2 | 3.5 | 2.1 | 257 | 49.1 |
| 31 | 66.0 | | 4.9 | | 22.2 | | 2.8 | 3.9 | | 2.1 | | 11.3 |
| Sum | 4,404.5 | 466.8 | 1,294.1 | 212.3 | 511.2 | 146.5 | 93.9 | 101.3 | 86.5 | 64.1 | 1,899.9 | 4,372.2 |

| Month | Current Year 1962 Extreme Gage Feet | | Extreme Second-Feet | | | | Average Second-Feet | Total Acre-Feet | Period 1951-1962 Acre-Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | High | | Low | | | | | | |
| | High | Low | Day | | Day | | | | Average | Maximum | Minimum |
| Jan. | | | 24 | 675 | †15 | 4.2 | 142 | 8,735 | 2,396 | 8,735 | 388 |
| Feb. | | | 26 | 491 | 17 | 3.5 | 16.6 | 925 | 1,138 | 1,915 | 486 |
| Mar. | | | 23 | 494 | †11 | 4.9 | 41.7 | 2,568 | 1,137 | 2,568 | 172 |
| Apr. | | | 20 | 56.5 | †27 | 4.2 | 7.1 | 422 | 1,275 | 4,433 | 150 |
| May | | | 19 | 332 | †16 | 3.5 | 16.6 | 1,014 | 883 | 1,891 | 105 |
| June | | | 12 | 33.9 | †20 | 3.5 | 4.9 | 291 | 519 | 1,448 | 81.9 |
| July | | | 3 | 4.6 | 5 | 2.5 | 3.2 | 187 | 401 | 2,039 | 59.2 |
| Aug. | | | 31 | 4.2 | 2 | 2.5 | 3.2 | 202 | 785 | 1,925 | 129 |
| Sept. | | | † 1 | 3.9 | 8 | 1.8 | 2.8 | 173 | 936 | 2,915 | 101 |
| Oct. | | | † 1 | 4.2 | †13 | 1.4 | 2.1 | 127 | 1,414 | 2,993 | 127 |
| Nov. | | | 28 | 371 | † 2 | 1.8 | 63.2 | 3,768 | 1,588 | 3,768 | 646 |
| Dec. | | | 19 | 413 | 31 | 2.1 | 141 | 8,669 | 2,065 | 8,669 | 544 |
| Yearly | | | | 675 | | 1.4 | 37.1 | 27,083 | 14,538 | 27,083 | 5,295 |

† 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 elevation, discharges are computed from horizontal pipe formula. Data obtained and furnished by the Mexican Section of the Commission. Records available: January 1957 through December 1962.

EXTREMES: Maximum mean daily discharge, 2.1 second-feet, February 6, 1961; minimum, no flow on various occasions during 1960, 1961, and 1962. Maximum monthly volume, 55.9 acre-feet, August 1959; minimum monthly volume, 6.5 acre-feet, September 1960.

## Mean Daily Discharge in Second Feet 1962 — Annual and Period Summary

| Day | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.4 | 0.4 | 0.4 | 0.7 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0 | 0.4 |
| 2 | .4 | .4 | .4 | .4 | .4 | .4 | .4 | .4 | .4 | .4 | 0 | .4 |
| 3 | .4 | .4 | .4 | .4 | .4 | .4 | .4 | .4 | .4 | .4 | 0 | .4 |
| 4 | .4 | .4 | .4 | .4 | .4 | .4 | .4 | 0 | .4 | .4 | 0 | .4 |
| 5 | .4 | .4 | .4 | .7 | .4 | .4 | .4 | 0 | .4 | .4 | 0 | .4 |
| 6 | .4 | .4 | .4 | .7 | .4 | .4 | .4 | 0 | .4 | .4 | 0 | .4 |
| 7 | .4 | .4 | .4 | .7 | .4 | .4 | 0 | .4 | .4 | .4 | 0 | .4 |
| 8 | .4 | .4 | .4 | .7 | .4 | .4 | 0 | .4 | .4 | .4 | 0 | .4 |
| 9 | .4 | .4 | .4 | .7 | .4 | .7 | 0 | .4 | .4 | .4 | .4 | .4 |
| 10 | .4 | 0 | .4 | .7 | .4 | .7 | .4 | .4 | .4 | .4 | .4 | .4 |
| 11 | .4 | 0 | .4 | 1.1 | .4 | .7 | .4 | .4 | .4 | .4 | .4 | .4 |
| 12 | .4 | 0 | .4 | 1.1 | 0 | .7 | .4 | .7 | .4 | .4 | .4 | .4 |
| 13 | .4 | 0 | .4 | 1.1 | 0 | .7 | .4 | .7 | .4 | .4 | .4 | .4 |
| 14 | .4 | 0 | .4 | 1.1 | 0 | .4 | .7 | .7 | .4 | .4 | .4 | .4 |
| 15 | .4 | .4 | .7 | 1.1 | 0 | .4 | .7 | .7 | .4 | .4 | .4 | .4 |
| 16 | .4 | .4 | .7 | 1.1 | 0 | .4 | .7 | .7 | 0 | .4 | .4 | .7 |
| 17 | .7 | .4 | 1.1 | 1.1 | 0 | .4 | .7 | .7 | 0 | .4 | .4 | .7 |
| 18 | .7 | .4 | 1.1 | 1.1 | .4 | .4 | .7 | .7 | 0 | .4 | .4 | .7 |
| 19 | .7 | .4 | 1.4 | 1.1 | .4 | .4 | .7 | .7 | 0 | 0 | .4 | .7 |
| 20 | .7 | .4 | 1.4 | .7 | .4 | .4 | .4 | .7 | .4 | 0 | .4 | .7 |
| 21 | .7 | .4 | 1.4 | .7 | .4 | .4 | .4 | .7 | .4 | 0 | .4 | .7 |
| 22 | .7 | .4 | 1.4 | .7 | .4 | .4 | .4 | .7 | .4 | 0 | .4 | .7 |
| 23 | .7 | .4 | 1.4 | .7 | .4 | .4 | .4 | .4 | .4 | 0 | .4 | 1.1 |
| 24 | .7 | .4 | 1.8 | .7 | .4 | 0 | .4 | .4 | .4 | 0 | .4 | 1.1 |
| 25 | .4 | .4 | 1.8 | .7 | .4 | 0 | .4 | .4 | .4 | 0 | .4 | 1.1 |
| 26 | .4 | .4 | 1.8 | .7 | .4 | 0 | .4 | .4 | .4 | 0 | .4 | 1.1 |
| 27 | .4 | .4 | 1.4 | .4 | .4 | .4 | .4 | .4 | .4 | 0 | .4 | 1.1 |
| 28 | .4 | .4 | 1.4 | .4 | .4 | .4 | .4 | .4 | .4 | .4 | .4 | 1.1 |
| 29 | .4 | | 1.1 | .4 | .4 | .4 | .4 | .4 | .4 | .4 | .4 | 1.4 |
| 30 | .4 | | 1.1 | .4 | .4 | .4 | .4 | .4 | .4 | .4 | .4 | 1.4 |
| 31 | .4 | | .7 | | .4 | | .4 | .4 | | .4 | | 1.4 |
| Sum | 14.8 | 9.2 | 27.3 | 22.5 | 10.0 | 12.3 | 13.0 | 14.5 | 10.4 | 8.8 | 8.8 | 21.7 |

| Month | Current Year 1962 Extreme Gage Feet High | Extreme Gage Feet Low | Ø Extreme Second Feet High Day | High | Low Day | Low | Average Second Feet | Total Acre Feet | Period 1957-1962 Acre Feet Average | Maximum | Minimum |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan. | | | †17 | 0.7 | † 1 | 0.4 | 0.4 | 27.3 | 22.7 | 43.8 | 13.0 |
| Feb. | | | † 1 | .4 | †10 | 0 | .4 | 16.1 | 18.6 | 32.4 | 12.2 |
| Mar. | | | †24 | 1.8 | † 1 | .4 | .7 | 52.5 | 21.1 | 52.5 | 8.1 |
| Apr. | | | †11 | 1.1 | † 2 | .4 | .7 | 43.5 | 29.2 | 45.4 | 13.0 |
| May | | | † 1 | .4 | †12 | 0 | .4 | 17.5 | 15.4 | 19.5 | 13.0 |
| June | | | † 9 | .7 | †24 | 0 | .4 | 22.4 | 20.3 | 27.6 | 13.0 |
| July | | | †14 | .7 | † 7 | 0 | .4 | 23.9 | 23.5 | 35.7 | 13.0 |
| Aug | | | †12 | .7 | † 4 | 0 | .4 | 27.3 | 26.8 | 55.9 | 13.0 |
| Sept. | | | † 1 | .4 | †16 | 0 | .4 | 18.2 | 16.2 | 30.8 | 6.5 |
| Oct. | | | † 1 | .4 | †19 | 0 | .4 | 15.4 | 17.8 | 26.8 | 13.0 |
| Nov. | | | † 9 | .4 | † 1 | 0 | .4 | 15.4 | 18.6 | 33.2 | 13.0 |
| Dec. | | | †29 | 1.4 | † 1 | .4 | .7 | 41.4 | 21.1 | 41.4 | 13.0 |
| Yearly | | | | 1.8 | | 0 | 0.4 | 320.9 | 254 | 320.9 | 155 |

† And other days Ø Mean daily

# RIVERA DRAIN TO NEW RIVER IN MEXICO

DESCRIPTION: Rectangular control section in the channel of the drain between "K" and "L" streets, 2.4 miles from its confluence with New River and 3.3 miles from the international boundary.

RECORDS: Data obtained and furnished by the Mexican Section of the Commission. Records available: January 1957 through December 1962.

REMARKS: Rivera Drain begins near the right bank of the West Main Canal, 0.9 mile south of the 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: Maximum monthly volume, 898 acre-feet, August 1960; minimum volume, 87.6 acre-feet, August 1959. Maximum mean daily discharge, 21.2 second-feet, September 11, 1961; minimum mean daily discharge, 0.7 second-foot, August 17, 1959.

## Mean Daily Discharge in Second-Feet 1962 — Annual and Period Summary

| Day | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 9.2 | 7.8 | 8.5 | 6.4 | 4.6 | 3.9 | 3.5 | 7.8 | 7.1 | 6.0 | 6.7 | 6.4 |
| 2 | 8.8 | 8.5 | 9.2 | 5.3 | 4.6 | 3.9 | 3.5 | 8.5 | 7.1 | 6.0 | 6.7 | 6.0 |
| 3 | 8.5 | 9.5 | 10.2 | 4.9 | 4.6 | 3.9 | 3.9 | 8.8 | 7.1 | 6.0 | 6.7 | 6.0 |
| 4 | 8.1 | 10.6 | 10.9 | 4.6 | 4.6 | 3.9 | 3.9 | 9.2 | 7.1 | 6.0 | 6.7 | 6.4 |
| 5 | 7.8 | 11.7 | 11.7 | 3.9 | 4.6 | 3.5 | 3.9 | 9.9 | 6.7 | 6.0 | 6.4 | 6.4 |
| 6 | 7.4 | 11.7 | 11.7 | 3.5 | 4.6 | 3.5 | 3.9 | 10.2 | 6.7 | 6.4 | 6.4 | 6.4 |
| 7 | 7.1 | 12.0 | 11.3 | 3.2 | 4.9 | 3.5 | 3.9 | 9.5 | 6.4 | 6.4 | 6.4 | 6.4 |
| 8 | 6.7 | 12.0 | 10.9 | 2.5 | 4.9 | 3.5 | 3.9 | 9.2 | 6.4 | 6.4 | 6.4 | 6.7 |
| 9 | 7.8 | 12.0 | 10.6 | 2.1 | 4.9 | 3.2 | 3.9 | 8.5 | 6.4 | 6.4 | 6.4 | 6.7 |
| 10 | 8.8 | 12.0 | 10.6 | 2.8 | 4.9 | 3.2 | 4.9 | 7.4 | 6.4 | 6.4 | 6.4 | 6.7 |
| 11 | 9.9 | 12.0 | 10.2 | 3.9 | 4.9 | 3.2 | 6.0 | 6.7 | 6.4 | 6.4 | 6.4 | 7.4 |
| 12 | 11.3 | 12.4 | 9.9 | 4.6 | 4.6 | 3.2 | 7.1 | 6.0 | 6.7 | 6.4 | 6.4 | 7.8 |
| 13 | 12.4 | 11.3 | 9.9 | 5.3 | 4.6 | 3.2 | 8.1 | 5.3 | 6.7 | 6.4 | 6.4 | 8.1 |
| 14 | 13.4 | 10.6 | 9.5 | 6.4 | 4.6 | 3.2 | 9.2 | 5.7 | 7.1 | 6.4 | 6.4 | 8.8 |
| 15 | 14.5 | 9.5 | 9.5 | 7.1 | 4.6 | 3.5 | 10.2 | 6.0 | 7.1 | 6.4 | 6.4 | 9.2 |
| 16 | 13.1 | 8.8 | 9.2 | 7.8 | 4.6 | 3.5 | 11.3 | 6.4 | 7.4 | 6.4 | 6.4 | 9.5 |
| 17 | 12.0 | 8.1 | 8.8 | 7.8 | 4.6 | 3.5 | 10.6 | 6.7 | 7.4 | 6.4 | 6.4 | 9.9 |
| 18 | 10.9 | 7.1 | 8.8 | 7.8 | 4.2 | 3.5 | 9.9 | 7.1 | 7.4 | 6.4 | 6.4 | 10.2 |
| 19 | 9.5 | 6.0 | 8.5 | 7.4 | 4.2 | 3.5 | 8.8 | 7.4 | 7.4 | 6.4 | 6.4 | 10.6 |
| 20 | 8.5 | 6.0 | 9.2 | 7.4 | 4.2 | 3.5 | 8.1 | 7.8 | 7.4 | 6.4 | 6.4 | 10.9 |
| 21 | 7.1 | 6.0 | 9.5 | 7.4 | 3.9 | 3.5 | 7.1 | 7.8 | 7.4 | 6.0 | 6.4 | 11.3 |
| 22 | 6.0 | 6.0 | 10.2 | 7.4 | ¤ 3.9 | 3.5 | 6.4 | 7.8 | 7.4 | 6.0 | 6.4 | 11.7 |
| 23 | 5.7 | 6.0 | 10.6 | 7.4 | ¤ 3.9 | 3.2 | 5.7 | 7.8 | 7.4 | 6.4 | 6.4 | 12.0 |
| 24 | 5.7 | 6.0 | 11.3 | 6.7 | ¤ 3.9 | 3.2 | 5.7 | 7.8 | 7.4 | 6.4 | 6.4 | 12.0 |
| 25 | 5.3 | 6.0 | 11.7 | 6.4 | ¤ 3.9 | 3.2 | 5.7 | 7.8 | 7.1 | 6.4 | 6.7 | 11.7 |
| 26 | 5.3 | 6.0 | 12.4 | 6.0 | ¤ 3.9 | 3.2 | 6.0 | 7.8 | 6.7 | 6.7 | 6.7 | 10.9 |
| 27 | 4.9 | 7.1 | 11.3 | 5.7 | ¤ 3.9 | 3.5 | 6.4 | 7.8 | 6.7 | 6.7 | 6.7 | 10.6 |
| 28 | 4.9 | 7.8 | 10.2 | 5.3 | ¤ 3.9 | 3.5 | 6.4 | 7.4 | 6.4 | 6.7 | 6.4 | 9.9 |
| 29 | 4.6 | | 9.2 | 4.9 | ¤ 3.9 | 3.5 | 6.4 | 7.4 | 6.4 | 7.1 | 6.4 | 9.2 |
| 30 | 5.7 | | 8.5 | 4.6 | ¤ 3.9 | 3.5 | 6.7 | 7.4 | 6.0 | 6.7 | 6.4 | 8.5 |
| 31 | 6.7 | | 7.4 | | ¤ 3.9 | | 7.1 | 7.4 | | 6.7 | | 8.1 |
| Sum | 257.6 | 250.5 | 311.4 | 166.5 | *135.2 | 103.6 | 198.1 | 238.3 | 207.3 | 197.8 | 194.1 | 272.4 |

**Current Year 1962** | **Period 1957-1962**

| Month | Extreme Gage Feet | | Ø Extreme Second-Feet | | | | Average Second-Feet | Total Acre-Feet | Acre-Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | High | | Low | | | | Average | Maximum | Minimum |
| | High | Low | Day | | Day | | | | | | |
| Jan. | | | 15 | 14.5 | 29 | 4.6 | 8.1 | 511 | 345 | 571 | 118 |
| Feb. | | | 12 | 12.4 | †19 | 6.0 | 8.8 | 497 | 355 | 497 | 173 |
| Mar. | | | 26 | 12.4 | 31 | 7.4 | 9.9 | 618 | 384 | 618 | 185 |
| Apr. | | | †16 | 7.8 | 9 | 2.1 | 5.7 | 330 | 442 | 833 | 132 |
| May | | | † 7 | 4.9 | †21 | 3.9 | * 4.2 | * 268 | 365 | 691 | 165 |
| June | | | † 1 | 3.9 | † 9 | 3.2 | 3.5 | 206 | 323 | 814 | 131 |
| July | | | 16 | 11.3 | † 1 | 3.5 | 6.4 | 392 | 382 | 854 | 120 |
| Aug. | | | 6 | 10.2 | 13 | 5.3 | 7.8 | 472 | 471 | 898 | 87.6 |
| Sept. | | | †16 | 7.4 | 30 | 6.0 | 7.1 | 410 | 386 | 767 | 120 |
| Oct. | | | 29 | 7.1 | † 1 | 6.0 | 6.4 | 391 | 463 | 833 | 232 |
| Nov. | | | † 1 | 6.7 | † 5 | 6.4 | 6.4 | 383 | 413 | 571 | 244 |
| Dec. | | | †23 | 12.0 | † 2 | 6.0 | 8.8 | 540 | 440 | 646 | 224 |
| Yearly | | | | 14.5 | | 2.1 | 7.1 | 5,018 | 4,770 | 7,666 | 2,225 |

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

# PUEBLO NUEVO WASTEWAY TO NEW RIVER IN MEXICO

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

RECORDS: Discharges are computed from head on the control weir based on staff gage readings. Data obtained and furnished by the Mexican Section of the Commission. Records available: January 1956 through December 1962.

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

EXTREMES: Maximum monthly volume, 136 acre-feet, January 1956; minimum monthly volume, zero during some months of each year. Estimated maximum discharge, 3.5 second-feet, June 9, 1958; minimum discharge, no flow on numerous occasions.

## Mean Daily Discharge in Second-Feet 1962 — Annual and Period Summary

| Day | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 0.4 | 0.7 | 0.7 | 0 | 0 | 0 | 0 | 0.4 | 1.4 | 0 | 1.1 |
| 2 | 0 | .7 | .7 | .7 | 0 | 0 | 0 | 0 | 0 | 1.4 | 0 | .7 |
| 3 | 0 | .7 | .4 | .7 | 0 | 0 | 0 | 0 | 0 | 1.1 | 0 | .7 |
| 4 | 0 | .7 | .4 | .4 | .4 | 0 | 0 | 0 | 0 | 1.1 | 0 | .7 |
| 5 | 0 | .7 | 0 | .4 | .4 | 0 | 0 | 0 | 0 | 1.1 | 0 | .4 |
| 6 | 0 | .7 | 0 | .4 | .4 | 0 | .4 | 0 | 0 | 1.1 | 0 | .4 |
| 7 | 0 | .7 | .4 | .4 | .4 | 0 | .4 | 0 | 0 | .7 | 0 | .4 |
| 8 | 0 | .7 | .4 | 0 | .4 | 0 | .4 | 0 | 0 | .7 | 0 | .4 |
| 9 | 0 | .4 | .7 | 0 | .4 | 0 | .4 | 0 | 0 | .7 | 0 | 0 |
| 10 | 0 | .4 | .7 | 0 | .4 | 0 | .4 | 0 | 0 | .4 | 0 | 0 |
| 11 | 0 | .4 | 1.1 | 0 | .4 | 0 | .7 | 0 | 0 | .4 | 0 | 0 |
| 12 | 0 | .4 | 1.1 | 0 | .4 | 0 | .7 | 0 | 0 | .4 | 0 | 0 |
| 13 | 0 | .4 | 1.1 | .4 | .4 | 0 | .7 | 0 | 0 | .4 | 0 | 0 |
| 14 | 0 | .7 | 1.1 | .4 | .4 | 0 | .7 | 0 | 0 | 0 | 0 | .4 |
| 15 | 0 | .7 | 1.1 | .4 | .4 | 0 | 1.1 | 0 | 0 | 0 | 0 | .4 |
| 16 | 0 | 1.1 | 1.4 | .4 | .4 | 0 | 1.1 | 0 | 0 | .4 | 0 | .4 |
| 17 | 0 | 1.1 | 1.4 | .7 | .4 | 0 | 1.1 | .4 | 0 | .7 | 0 | .4 |
| 18 | 0 | 1.4 | 1.4 | .7 | 0 | 0 | .7 | .4 | 0 | 1.1 | 0 | .4 |
| 19 | .4 | 1.4 | 1.4 | 1.1 | 0 | 0 | .7 | .4 | 0 | 1.1 | 0 | .4 |
| 20 | .4 | 1.4 | 1.1 | 1.4 | 0 | 0 | .4 | .4 | 0 | 1.4 | 0 | .4 |
| 21 | .4 | 1.4 | 1.1 | 1.8 | 0 | 0 | .4 | .4 | 0 | 1.8 | 0 | .4 |
| 22 | .4 | 1.4 | .7 | 1.8 | 0 | 0 | 0 | .4 | 0 | 2.1 | 0 | .4 |
| 23 | .4 | 1.4 | .7 | 2.1 | 0 | 0 | 0 | .4 | 0 | 1.8 | .4 | .4 |
| 24 | .4 | 1.4 | .4 | 1.8 | 0 | 0 | 0 | .7 | 0 | 1.4 | .7 | .4 |
| 25 | .4 | 1.4 | .4 | 1.4 | 0 | 0 | 0 | .7 | .4 | 1.1 | 1.1 | .4 |
| 26 | .4 | 1.4 | 0 | 1.1 | 0 | 0 | 0 | .7 | .4 | 1.1 | 1.4 | .4 |
| 27 | .4 | 1.1 | 0 | 1.1 | 0 | 0 | 0 | .7 | .7 | .7 | 1.4 | .4 |
| 28 | .4 | 1.1 | .4 | .7 | 0 | 0 | 0 | .7 | .7 | .4 | 1.1 | .4 |
| 29 | .4 | | .4 | .4 | 0 | 0 | 0 | .4 | 1.1 | 0 | 1.1 | .4 |
| 30 | .4 | | .4 | 0 | 0 | 0 | 0 | .4 | 1.1 | 0 | 1.1 | .4 |
| 31 | .4 | | .4 | | 0 | | 0 | .4 | | 0 | | .4 |
| Sum | 5.2 | 25.7 | 21.5 | 21.4 | 5.6 | 0 | 10.3 | 7.5 | 4.8 | 26.0 | 8.3 | 12.0 |

**Current Year 1962** — **Period 1956-1962**

| Month | Extreme Gage Feet | | Ø Extreme Second-Feet | | | | Average Second-Feet | Total Acre-Feet | Acre-Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | High | | Low | | | | | | |
| | High | Low | Day | | Day | | | | Average | Maximum | Minimum |
| Jan. | | | †19 | 0.4 | † 1 | 0 | 0.1 | 9.1 | 41.3 | 136 | 0 |
| Feb. | | | †18 | 1.4 | † 1 | .4 | 1.1 | 50.4 | 35.7 | 92.4 | 0 |
| Mar. | | | †16 | 1.4 | † 5 | 0 | .7 | 41.3 | 29.2 | 62.4 | 0 |
| Apr. | | | 23 | 2.1 | † 8 | 0 | .7 | 41.3 | 29.2 | 60.0 | 4.1 |
| May | | | † 4 | .4 | † 1 | 0 | .2 | 9.8 | 28.4 | 69.7 | 5.7 |
| June | | | | 0 | | 0 | 0 | 0 | 22.7 | 63.2 | 0 |
| July | | | †15 | 1.1 | † 1 | 0 | .3 | 19.6 | 21.9 | 43.8 | 6.5 |
| Aug. | | | †24 | .7 | † 1 | 0 | .4 | 14.0 | 17.0 | 48.6 | 0 |
| Sept. | | | †29 | 1.1 | † 2 | 0 | .1 | 9.1 | 15.4 | 32.4 | 1.6 |
| Oct. | | | 22 | 2.1 | †14 | 0 | .7 | 50.4 | 37.3 | 50.4 | 4.9 |
| Nov. | | | †26 | 1.4 | † 1 | 0 | .4 | 16.1 | 37.3 | 61.6 | 14.6 |
| Dec. | | | 1 | 1.1 | † 9 | 0 | .4 | 21.7 | 23.5 | 44.6 | 0 |
| Yearly | | | | 2.1 | | 0 | 0.4 | 282.8 | 329 | 645 | 142.7 |

† And other days Ø Mean daily

# 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 1962. 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 233.3 feet below mean sea level. Minimum elevation during year 234.3 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 1962

| Day | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 234.3 | 234.0 | 233.8 | 233.5 | 233.3 | 233.5 | 233.5 | 233.6 | 233.8 | 233.8 | 233.8 | 233.7 |
| 2 | 234.2 | 234.0 | 233.8 | 233.5 | 233.3 | 233.5 | 233.5 | 233.6 | 233.8 | 233.8 | 233.8 | 233.7 |
| 3 | 234.2 | 234.0 | 233.8 | 233.5 | 233.3 | 233.5 | 233.5 | 233.7 | 233.8 | 233.8 | 233.8 | 233.7 |
| 4 | 234.2 | 234.0 | 233.8 | 233.5 | 233.3 | 233.5 | 233.5 | 233.7 | 233.8 | 233.9 | 233.8 | 233.7 |
| 5 | 234.2 | 233.9 | 233.8 | 233.4 | 233.3 | 233.5 | 233.5 | 233.7 | 233.8 | 233.9 | 233.7 | 233.7 |
| 6 | 234.2 | 233.9 | 233.8 | 233.4 | 233.3 | 233.5 | 233.5 | 233.7 | 233.8 | 233.8 | 233.7 | 233.7 |
| 7 | 234.2 | 233.9 | 233.8 | 233.4 | 233.3 | 233.5 | 233.5 | 233.7 | 233.8 | 233.8 | 233.7 | 233.7 |
| 8 | 234.2 | 233.9 | 233.7 | 233.4 | 233.3 | 233.4 | 233.5 | 233.7 | 233.8 | 233.8 | 233.7 | 233.7 |
| 9 | 234.2 | 233.9 | 233.8 | 233.4 | 233.3 | 233.4 | 233.5 | 233.7 | 233.8 | 233.8 | 233.7 | 233.6 |
| 10 | 234.1 | 233.9 | 233.8 | 233.4 | 233.3 | 233.4 | 233.5 | 233.7 | 233.8 | 233.8 | 233.7 | 233.6 |
| 11 | 234.2 | 233.9 | 233.7 | 233.4 | 233.4 | 233.4 | 233.5 | 233.7 | 233.8 | 233.8 | 233.7 | 233.6 |
| 12 | 234.2 | 233.9 | 233.7 | 233.4 | 233.4 | 233.5 | 233.5 | 233.7 | 233.9 | 233.8 | 233.7 | 233.6 |
| 13 | 234.2 | 233.8 | 233.7 | 233.3 | 233.4 | 233.5 | 233.5 | 233.7 | 233.9 | 233.8 | 233.7 | 233.6 |
| 14 | 234.2 | 233.8 | 233.7 | 233.3 | 233.5 | 233.6 | 233.5 | 233.7 | 233.9 | 233.9 | 233.7 | 233.6 |
| 15 | 234.2 | 233.8 | 233.7 | 233.3 | 233.4 | 233.6 | 233.5 | 233.7 | 233.9 | 233.8 | 233.7 | 233.6 |
| 16 | 234.2 | 233.9 | 233.7 | 233.3 | 233.4 | 233.6 | 233.6 | 233.7 | 233.9 | 233.8 | 233.7 | 233.6 |
| 17 | 234.2 | 233.8 | 233.7 | 233.3 | 233.4 | 233.5 | 233.6 | 233.7 | 233.8 | 233.8 | 233.7 | 233.6 |
| 18 | 234.2 | 233.8 | 233.7 | 233.3 | 233.4 | 233.5 | 233.6 | 233.7 | 233.8 | 233.8 | 233.7 | 233.5 |
| 19 | 234.2 | 233.8 | 233.7 | 233.3 | 233.4 | 233.5 | 233.6 | 233.7 | 233.8 | 233.9 | 233.8 | 233.5 |
| 20 | 234.2 | 233.8 | 233.7 | 233.3 | 233.5 | 233.5 | 233.6 | 233.7 | 233.8 | 233.9 | 233.8 | 233.5 |
| 21 | 234.2 | 233.8 | 233.6 | 233.3 | 233.4 | 233.5 | 233.6 | 233.7 | 233.8 | 233.9 | 233.8 | 233.5 |
| 22 | 234.2 | 233.8 | 233.7 | 233.3 | 233.4 | 233.5 | 233.6 | 233.7 | 233.8 | 233.9 | 233.8 | 233.5 |
| 23 | 234.1 | 233.8 | 233.6 | 233.3 | 233.4 | 233.5 | 233.6 | 233.8 | 233.8 | 233.8 | 233.8 | 233.5 |
| 24 | 234.1 | 233.8 | 233.6 | 233.3 | 233.4 | 233.5 | 233.6 | 233.7 | 233.8 | 233.8 | 233.8 | 233.5 |
| 25 | 234.1 | 233.8 | 233.6 | 233.3 | 233.5 | 233.5 | 233.6 | 233.7 | 233.8 | 233.8 | 233.8 | 233.5 |
| 26 | 234.0 | 233.9 | 233.6 | 233.3 | 233.6 | 233.5 | 233.6 | 233.8 | 233.8 | 233.8 | 233.7 | 233.5 |
| 27 | 234.0 | 233.8 | 233.6 | 233.3 | 233.6 | 233.5 | 233.6 | 233.7 | 233.8 | 233.8 | 233.7 | 233.5 |
| 28 | 234.0 | 233.8 | 233.6 | 233.3 | 233.5 | 233.5 | 233.6 | 233.7 | 233.8 | 233.8 | 233.7 | 233.5 |
| 29 | 234.0 | | 233.6 | 233.3 | 233.5 | 233.5 | 233.6 | 233.8 | 233.8 | 233.8 | 233.7 | 233.5 |
| 30 | 234.0 | | 233.5 | 233.3 | 233.5 | 233.5 | 233.6 | 233.8 | 233.8 | 233.8 | 233.7 | 233.5 |
| 31 | 234.0 | | 233.5 | | 233.5 | | 233.6 | 233.8 | | 233.8 | | 233.5 |
| Avg. | 234.15 | 233.86 | 233.69 | 233.35 | 233.40 | 233.50 | 233.55 | 233.71 | 233.82 | 233.82 | 233.74 | 233.58 |

| Current Year 1962 | | | Period 1935-1962 | | | Area and Capacity Table | | |
|---|---|---|---|---|---|---|---|---|
| Month | Ø Extreme Elev. Feet | | Elevation Feet | | | Elevation | Area | Capacity |
| | High | Low | # Average | # Maximum | ‡ Minimum | Feet below M. S. L. | Acres | Acre-Feet |
| Jan. | 234.0 | 234.3 | 240.58 | 234.15 | 249.3 | 277.7 | 0 | 0 |
| Feb. | 233.8 | 234.0 | 240.25 | 233.86 | 248.8 | 274.0 | 20,600 | 25,700 |
| Mar. | 233.5 | 233.8 | 239.98 | 233.69 | 248.6 | 270.0 | 62,900 | 188,700 |
| Apr. | 233.3 | 233.5 | 239.77 | 233.35 | 248.7 | 266.0 | 94,600 | 510,600 |
| May | 233.3 | 233.6 | 239.76 | 233.40 | 248.5 | 260.0 | 122,600 | 1,170,000 |
| June | 233.4 | 233.6 | 239.93 | 233.50 | 248.8 | 256.0 | 134,700 | 1,684,000 |
| July | 233.5 | 233.6 | 240.10 | 233.55 | 249.1 | 252.0 | 148,800 | 2,250,000 |
| Aug. | 233.6 | 233.8 | 240.30 | 233.71 | 249.4 | 244.0 | 179,700 | 3,562,000 |
| Sept. | 233.8 | 233.9 | 240.48 | 233.82 | 249.4 | 240.0 | 196,900 | 4,315,000 |
| Oct. | 233.8 | 233.9 | 240.56 | 233.82 | 249.8 | 235.0 | 221,800 | 5,360,000 |
| Nov. | 233.7 | 233.8 | 240.56 | 233.74 | 250.0 | 230.0 | 235,800 | 6,504,000 |
| Dec. | 233.5 | 233.7 | 240.36 | 233.58 | 249.6 | 220.0 | 262,000 | 8,993,000 |
| | | | | | | 210.0 | 288,500 | 11,740,000 |
| Yearly | 233.3 | 234.3 | 240.22 | 233.68 | 250.0 | 200.0 | 315,500 | 14,760,000 |

Ø Mean daily # Mean monthly ‡ Reading near first day of month

# CHEMICAL ANALYSES AND ELECTRICAL CONDUCTIVITY
## 1962

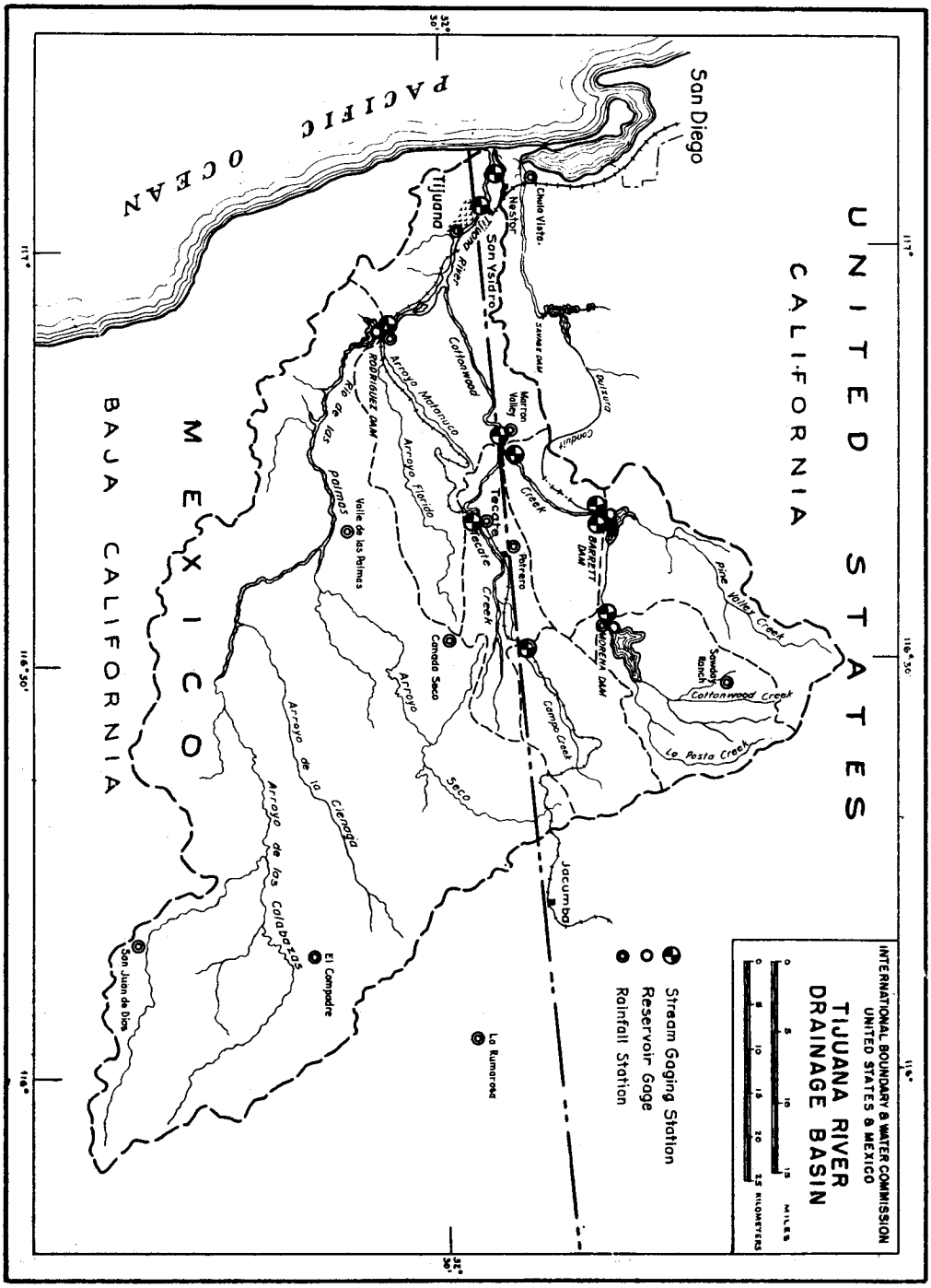
The tables below are based on bi-monthly samples from the Alamo and New Rivers taken and analyzed by the State of California Department of Water Resources.

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 150 yards north of international boundary. Records of sampling extend from April 1951 through December 1962.

To convert milligram equivalents to parts per million by weight, multiply each ion by its appropriate conversion factor. These factors are: Ca, 20; Mg, 12.16; Na, 23; ($CO_3$ plus $HCO_3$) expressed as $CO_3$, 30; $SO_4$, 48; Cl, 35.5; $NO_3$, 62. To convert tons per acre-foot to parts per million, multiply tons per acre-foot by 735.5. Electrical conductivity, reported in the tables as $EC \times 10^6$ at 25°C, is a relative measure of the total salt concentration.

| Month | No. of Samples | Dissolved Solids: Tons Per Acre-Foot | Dissolved Solids: Total Tons | $EC \times 10^6$ @25°C | Boron p.p.m. | pH | % Na ** | % Cl *** | Mean Milligram Equivalents per Liter: Ca | Mg | Na | $CO_3$ + $HCO_3$ | $SO_4$ | Cl | $NO_3$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Alamo River** | | | | | | | | | | | | | | | |
| Jan. | 1 | 4.83 | | 5,236 | 1.52 | 7.7 | 60 | 50 | 10.88 | 11.60 | 34.32 | 6.44 | 21.76 | 28.48 | 0.16 |
| Feb. | | | | | | | | | | | | | | | |
| Mar. | 1 | | | 5,345 | 1.62 | 8.2 | 64 | | | | 36.63 | 5.30 | | 29.33 | |
| Apr. | | | | | | | | | | | | | | | |
| May | 1 | 5.08 | | 5,348 | 1.60 | 7.9 | 61 | 51 | 12.08 | 10.69 | 36.54 | 5.76 | 23.65 | 30.46 | 0 |
| June | | | | | | | | | | | | | | | |
| July | 1 | 5.93 | | 6,447 | 2.00 | 7.4 | 63 | 54 | 11.48 | 14.28 | 43.85 | 5.66 | 26.01 | 37.79 | .14 |
| Aug. | | | | | | | | | | | | | | | |
| Sept. | 1 | 6.43 | | 6,702 | 2.25 | 7.5 | 60 | 57 | 12.08 | 18.19 | 45.68 | 5.48 | 26.82 | 43.43 | .08 |
| Oct. | | | | | | | | | | | | | | | |
| Nov. | 1 | | | 3,808 | 1.06 | 7.4 | 59 | | | | 23.19 | 4.76 | | 19.51 | |
| Dec. | | | | | | | | | | | | | | | |
| Total | 6 | | | | | | | | | | | | | | |
| **New River** | | | | | | | | | | | | | | | |
| Jan. | 1 | 2.63 | | 3,078 | 0.62 | 7.2 | 60 | 57 | 7.44 | 4.70 | 18.53 | 3.72 | 9.32 | 17.77 | 0.17 |
| Feb. | | | | | | | | | | | | | | | |
| Mar. | 1 | 4.82 | | 5,618 | 1.12 | 7.0 | 63 | 71 | 10.48 | 10.52 | 37.06 | 4.42 | 13.19 | 42.72 | .20 |
| Apr. | | | | | | | | | | | | | | | |
| May | 1 | 5.02 | | 5,587 | 1.12 | 7.6 | 64 | 67 | 11.23 | 9.29 | 37.41 | 4.32 | 15.08 | 39.20 | .04 |
| June | | | | | | | | | | | | | | | |
| July | 1 | | | 5,869 | 1.18 | 7.3 | 65 | | | | 37.76 | 4.04 | | 34.26 | |
| Aug. | | | | | | | | | | | | | | | |
| Sept. | 1 | 5.98 | | 6,830 | 1.68 | 7.4 | 67 | 71 | 11.23 | 11.03 | 46.81 | 3.92 | 16.24 | 49.77 | .23 |
| Oct. | | | | | | | | | | | | | | | |
| Nov. | 1 | | | 4,013 | .86 | 7.7 | 64 | | | | 25.23 | 3.44 | | 25.38 | |
| Dec. | | | | | | | | | | | | | | | |
| Total | 6 | | | | | | | | | | | | | | |

** Percent of total cations *** Percent of total anions


INTERNATIONAL BOUNDARY & WATER COMMISSION
UNITED STATES & MEXICO
TIJUANA RIVER
DRAINAGE BASIN
MILES
KILOMETERS
Stream Gaging Station
Reservoir Gage
Rainfall Station
UNITED STATES
CALIFORNIA
MEXICO
BAJA CALIFORNIA
PACIFIC OCEAN
San Diego
Tijuana
Nestor
Otay
Otay River
Chula Vista
San Ysidro
Cottonwood
Savage Dam
Marron Valley
Conduit
Pumping
Arroyo Matanuco
Rodriguez Dam
Arroyo Florido
Tecate
Tecate Creek
Potrero
Barrett Dam
Morena Dam
Pine Valley Creek
Sowdy Ranch
Cottonwood Creek
La Posta Creek
Campo Creek
Canada Seco
Arroyo Seco
Arroyo de la Cienega
Arroyo de los Coloradas
Valle de las Palmas
Rio de las Palmas
Jacumba
La Rumorosa
El Compadre
San Juan de Dios
32° 30'
117°
116° 30'
116°
115°

# 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 Water Department. Records available: April 1911 through December 1962.

REMARKS: Storage began in Morena Reservoir March 1910. Reservoir capacity and area ratings date from 1910 when Morena Dam was completed. Records for 1962 computed on basis of area-capacity curves determined from 1948 resurvey. Various changes have been made to the spillway section since construction of the dam. Elevation of 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. Reference table below for extremes since 1937.

## Monthly Discharge in Acre-Feet

| Month | Current Year 1962 | Period 1937-1962 | | |
|---|---|---|---|---|
| | | Average | Maximum | Minimum |
| January | 49.8 | 579 | 3,520 | 7 |
| February | 90.2 | 1,399 | 16,700 | 8 |
| March | 100.5 | 2,164 | 13,220 | 25.3 |
| April | 28.7 | 1,390 | 11,490 | 3.3 |
| May | 8.1 | 490 | 3,550 | 7.8 |
| June | 3.0 | 254 | 1,660 | 0 |
| July | 7.6 | 180 | 1,010 | 0 |
| August | 0 | 127 | 1,260 | 0 |
| September | 0 | 88.4 | 1,070 | 0 |
| October | .4 | 104 | 1,270 | 0 |
| November | 0 | 182 | 1,380 | 0 |
| December | 4.4 | 593 | 3,590 | 4.4 |
| Yearly | 292.7 | 7,550.4 | 39,439 | 120.7 |

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

## 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 Water Department. Records available: January 1911 through December 1962.

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. Extremes since 1937 shown in table below.

### Monthly Discharge in Acre-Feet

| Month | Current Year 1962 | Period 1937-1962 | | |
|---|---|---|---|---|
| | | Average | Maximum | Minimum |
| January | 1.7 | 166 | 1,700 | 1 |
| February | 1.5 | 454 | 4,260 | 1.5 |
| March | 1.7 | 313 | 1,490 | 1.7 |
| April | 6.6 | 1,161 | 12,950 | 1 |
| May | 2.5 | 316 | 3,040 | 1 |
| June | 3.1 | 435 | 7,360 | 0 |
| July | 1.7 | 247 | 2,340 | .8 |
| August | 1.7 | 205 | 1,550 | .6 |
| September | 1.7 | 403 | 5,880 | 0 |
| October | 1.7 | 121 | 529 | 0 |
| November | 1.7 | 161 | 1,260 | 0 |
| December | 1.7 | 449 | 5,350 | 1 |
| Yearly | 27.3 | 4,431 | 24,825 | 21.7 |

## COTTONWOOD CREEK ABOVE BARRETT DAM, CALIFORNIA

DESCRIPTION: Staff gage located immediately upstream from face of dam on west side of outlet tower. Barrett Dam is located on Cottonwood Creek 8.5 miles downstream from Morena Dam, 1 mile downstream from the 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 1962. 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 Water Department. 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. Reference table below for extremes since 1937.

### Monthly Discharge in Acre-Feet

| Month | Current Year 1962 | Period 1937-1962 | | |
|---|---|---|---|---|
| | | Average | Maximum | Minimum |
| January | 38.8 | 695 | 3,430 | 23.0 |
| February | 99.1 | 1,932 | 26,790 | 10 |
| March | 567 | 3,371 | 18,860 | 20 |
| April | 105 | 2,296 | 21,630 | 10.2 |
| May | 20.4 | 701 | 5,130 | 0 |
| June | 6.3 | 286 | 1,730 | 0 |
| July | 0 | 186 | 1,010 | 0 |
| August | 6.9 | 114 | 579 | 0 |
| September | 2.0 | 130 | 759 | 0 |
| October | .6 | 81.1 | 645 | .6 |
| November | .4 | 137 | 1,200 | 0 |
| December | 13.9 | 507 | 3,380 | 11.6 |
| Yearly | 860.4 | 10,436.1 | 59,387 | 129.2 |

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

# DULZURA CONDUIT BELOW BARRETT DAM, CALIFORNIA

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

RECORDS: Computed on basis of head on control section of flume, as measured by water-stage recorder, and rating curve determined from current meter measurements. Records obtained and furnished by the U. S. Geological Survey. Records at present location are good. Records available: January 1909 through December 1962. Records January 1909 to April 1940 from city of San Diego Water Department.

REMARKS: Barrett Dam was completed in 1921. Prior to this date the intake of Dulzura Conduit was located 1.5 miles upstream. The conduit carries diversions from Barrett Reservoir on Cottonwood Creek westerly across the divide into Otay Reservoir for municipal use by the city of San Diego. Prior to September 30, 1958, station was located 8 miles along the conduit from Barrett 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 1962 — 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 |
| 30 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 31 | 0 | | 0 | | 0 | | 0 | 0 | | 0 | | 0 |
| Sum | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| Month | Current Year 1962 | | | | | | | | Period 1937-1962 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Extreme Gage Feet | | Extreme Second-Feet | | | | Average Second-Feet | Total Acre-Feet | Acre-Feet | | |
| | | | High | | Low | | | | | | |
| | High | Low | Day | | Day | | | | Average | Maximum | Minimum |
| Jan. | | | | | | | | 0 | 498 | 2,350 | 0 |
| Feb. | | | | | | | | 0 | 502 | 2,130 | 0 |
| Mar. | | | | | | | | 0 | 669 | 2,330 | 0 |
| Apr. | | | | | | | | 0 | 1,054 | 2,860 | 0 |
| May | | | | | | | | 0 | 1,173 | 3,040 | 0 |
| June | | | | | | | | 0 | 1,129 | 2,920 | 0 |
| July | | | | | | | | 0 | 993 | 2,920 | 0 |
| Aug. | | | | | | | | 0 | 918 | 2,820 | 0 |
| Sept. | | | | | | | | 0 | 637 | 2,320 | 0 |
| Oct. | | | | | | | | 0 | 487 | 2,450 | 0 |
| Nov. | | | | | | | | 0 | 671 | 2,760 | 0 |
| Dec. | | | | | | | | 0 | 586 | 2,305 | 0 |
| Yearly | | | | | | | | 0 | 9,317 | 27,170 | 0 |

# 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: Furnished by the city of San Diego Water Department and the U. S. Geological Survey. Prior to January 1953, the records were furnished by the San Diego Water Department 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 1962. 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 1962 | Period 1937-1962 | | |
|---|---|---|---|---|
| | | Average | Maximum | Minimum |
| January | 0 | 23.2 | 590 | 0 |
| February | 0 | 39.5 | 990 | 0 |
| March | 0 | 1,064 | 13,390 | 0 |
| April | .1 | 1,563 | 33,400 | 0 |
| May | 0 | 354 | 7,520 | 0 |
| June | 0 | 49.9 | 890 | 0 |
| July | 0 | 2.8 | 21 | 0 |
| August | 0 | 2.5 | 21 | 0 |
| September | 0 | 2.0 | 21 | 0 |
| October | 0 | 1.8 | 21 | 0 |
| November | 0 | 1.3 | 15 | 0 |
| December | 0 | 2.0 | 21 | 0 |
| Yearly | 0.1 | 3,106.0 | 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 mouth of Tecate Creek, and 5.1 miles south of Dulzura, California. Low water discharge measurements are made by wading at the gage; high water measurements 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. 1962 records good. Records available: October 1936 through December 1962.

REMARKS: Flow is largely controlled by Barrett and Morena Reservoirs, 10 and 18 miles, respectively, upstream from this station. During 1962 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 1962 — Annual and Period Summary

| Day | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 0.1 | 3.9 | 1.0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | 0 | .1 | 3.2 | .9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 | 0 | 0 | 2.5 | .7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | 0 | 0 | 2.0 | .6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5 | 0 | 0 | 1.5 | .5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 0 | 0 | 2.0 | .5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7 | 0 | 0 | 2.2 | .4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8 | 0 | .1 | 1.7 | .3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9 | 0 | 0 | 1.7 | .3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | 0 | 0 | 2.3 | .2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11 | 0 | 0 | 2.0 | .2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12 | 0 | 0 | 1.7 | .1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13 | 0 | .1 | 1.6 | .1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14 | 0 | .2 | 1.3 | .1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15 | 0 | .2 | 1.2 | .1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16 | 0 | .2 | 1.1 | .1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17 | 0 | .3 | 1.0 | .1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18 | 0 | .3 | .9 | .1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 19 | 0 | .6 | 1.8 | .1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20 | 0 | 6.7 | 1.7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21 | 0 | 8.0 | 1.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22 | 0 | 5.9 | 1.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23 | .4 | 3.9 | 2.5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 24 | .3 | 3.2 | 1.9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 25 | .6 | 4.7 | 1.7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 26 | .5 | 7.0 | 1.5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 27 | .5 | 7.0 | 1.5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 28 | .4 | 5.1 | 1.3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 29 | .3 | | 1.3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30 | .2 | | 1.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 31 | .2 | | 1.1 | | 0 | | 0 | 0 | | 0 | | 0 |
| Sum | 3.4 | 53.7 | 53.7 | 6.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| Month | Current Year 1962 — Extreme Gage Feet | | Ø Extreme Second-Feet | | | | Average Second-Feet | Total Acre-Feet | Period 1937-1962 — Acre-Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | High | | Low | | | | | | |
| | High | Low | Day | | Day | | | | Average | Maximum | Minimum |
| Jan. | | | 25 | 0.6 | † 1 | 0 | 0.11 | 6.7 | 245 | 1,190 | 0 |
| Feb. | | | 21 | 8.0 | † 3 | 0 | 1.92 | 107 | 765 | 9,940 | 0 |
| Mar. | | | 1 | 3.9 | 18 | .9 | 1.73 | 107 | 2,221 | 20,880 | 0 |
| Apr. | | | 1 | 1.0 | † 20 | 0 | .21 | 13 | 2,154 | 40,240 | 0 |
| May | | | | 0 | | 0 | 0 | 0 | 502 | 10,040 | 0 |
| June | | | | 0 | | 0 | 0 | 0 | 96.5 | 1,590 | 0 |
| July | | | | 0 | | 0 | 0 | 0 | 10.8 | 206 | 0 |
| Aug. | | | | 0 | | 0 | 0 | 0 | .6 | 7.7 | 0 |
| Sept. | | | | 0 | | 0 | 0 | 0 | 2.9 | 72 | 0 |
| Oct. | | | | 0 | | 0 | 0 | 0 | 5.5 | 101 | 0 |
| Nov. | | | | 0 | | 0 | 0 | 0 | 13.5 | 203 | 0 |
| Dec. | | | | 0 | | 0 | 0 | 0 | 123 | 1,110 | 0 |
| Yearly | | | | 8.0 | | 0 | 0.32 | 233.7 | 6,139.8 | 66,700 | 0 |

† And other days Ø Mean daily

# CAMPO CREEK NEAR CAMPO, CALIFORNIA

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

RECORDS: Based on current meter measurements and observation of no flow. Records obtained and furnished by the U. S. Geological Survey. 1962 records good. Records available: October 1936 through December 1962.

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. There has been no flow since May 9, 1960.

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 of the summer months of each year.

## Mean Daily Discharge in Second-Feet 1962 — 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 |
| 30 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 31 | 0 | | 0 | | 0 | | 0 | 0 | | 0 | | 0 |
| Sum | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| Month | Current Year 1962 | | | | | | | | Period 1937-1962 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Extreme Gage Feet | | Extreme Second-Feet | | | | Average Second-Feet | Total Acre-Feet | Acre-Feet | | |
| | High | Low | High Day | High | Low Day | Low | | | Average | Maximum | Minimum |
| Jan. | | | | | | | | 0 | 180 | 906 | 0 |
| Feb. | | | | | | | | 0 | 317 | 1,730 | 0 |
| Mar. | | | | | | | | 0 | 453 | 2,360 | 0 |
| Apr. | | | | | | | | 0 | 318 | 3,250 | 0 |
| May | | | | | | | | 0 | 145 | 1,540 | 0 |
| June | | | | | | | | 0 | 56.5 | 719 | 0 |
| July | | | | | | | | 0 | 22.7 | 361 | 0 |
| Aug. | | | | | | | | 0 | 16.4 | 321 | 0 |
| Sept. | | | | | | | | 0 | 15.6 | 264 | 0 |
| Oct. | | | | | | | | 0 | 27.9 | 543 | 0 |
| Nov. | | | | | | | | 0 | 51.6 | 542 | 0 |
| Dec. | | | | | | | | 0 | 144 | 808 | 0 |
| Yearly | | | | | | | | 0 | 1,747.7 | 11,141 | 0 |

# 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. 1962 records good. Records available: October 1936 through December 1962.

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

EXTREMES: Maximum discharge, 4,700 second-feet, February 7, 1937 (gage height 8.50 feet) from rating curve extended above 300 second-feet on basis of velocity-mean depth and area computations. Minimum discharge, no flow at times during most years.

## Mean Daily Discharge in Second-Feet 1962 — Annual and Period Summary

| Day | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 0 | 5.6 | 0.6 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | 0 | 0 | 4.6 | .7 | .1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 | 0 | 0 | 3.7 | .7 | .1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | 0 | 0 | 3.0 | .9 | .1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5 | 0 | 0 | 2.4 | 1.0 | .1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 0 | 0 | 2.3 | 1.0 | .1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7 | 0 | 0 | 2.1 | 1.0 | .1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8 | 0 | 0 | 1.8 | 1.0 | .1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9 | 0 | 0 | 1.8 | .9 | .1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | 0 | 0 | 2.1 | .8 | .1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11 | 0 | 0 | 1.9 | .7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12 | 0 | 0 | 1.7 | .7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13 | 0 | 0 | 1.4 | .6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14 | 0 | 0 | 1.4 | .6 | .1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15 | 0 | 0 | 1.4 | .6 | .1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16 | 0 | 0 | 1.3 | .6 | .1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17 | 0 | 0 | 1.2 | .5 | .1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18 | 0 | 0 | 1.2 | .5 | .1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 19 | 0 | 0 | 2.0 | .4 | .1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20 | 0 | 3.3 | 2.1 | .4 | .1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21 | 0 | 8.8 | 1.6 | .3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22 | 0 | 6.3 | 1.5 | .3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23 | 0 | 4.4 | 2.0 | .3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 24 | 0 | 3.7 | 1.7 | .3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 25 | 0 | 5.6 | 1.2 | .3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 26 | 0 | 7.9 | 1.0 | .3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 27 | 0 | 7.9 | .8 | .2 | .1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 28 | 0 | 6.3 | .8 | .2 | .1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 29 | 0 | | .7 | .2 | .1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30 | 0 | | .7 | .2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 31 | 0 | | .6 | | 0 | | 0 | 0 | | 0 | | 0 |
| Sum | 0 | 54.2 | 57.6 | 16.8 | 2.0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| Month | Current Year 1962 | | | | | | | | Period 1937-1962 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Extreme Gage Feet | | ∅ Extreme Second-Feet | | | | Average Second-Feet | Total Acre-Feet | Acre-Feet | | |
| | High | Low | High Day | High | Low Day | Low | | | Average | Maximum | Minimum |
| Jan. | | | | 0 | | 0 | 0 | 0 | 527 | 2,750 | 0 |
| Feb. | | | 21 | 8.8 | † 1 | 0 | 1.94 | 107 | 1,383 | 13,680 | 0 |
| Mar. | | | 1 | 5.6 | 31 | .6 | 1.86 | 114 | 3,519 | 27,140 | .4 |
| Apr. | | | † 5 | 1.0 | †27 | .2 | .56 | 33 | 2,943 | 51,060 | 0 |
| May | | | † 1 | .1 | †11 | 0 | .06 | 4.0 | 744 | 14,110 | 0 |
| June | | | | 0 | | 0 | 0 | 0 | 151 | 2,630 | 0 |
| July | | | | 0 | | 0 | 0 | 0 | 23.6 | 312 | 0 |
| Aug. | | | | 0 | | 0 | 0 | 0 | 8.2 | 171 | 0 |
| Sept. | | | | 0 | | 0 | 0 | 0 | 11.7 | 152 | 0 |
| Oct. | | | | 0 | | 0 | 0 | 0 | 30.5 | 705 | 0 |
| Nov. | | | | 0 | | 0 | 0 | 0 | 60.0 | 839 | 0 |
| Dec. | | | | 0 | | 0 | 0 | 0 | 347 | 3,330 | 0 |
| Yearly | | | | 8.8 | | 0 | 0.36 | 258.0 | 9,748.0 | 97,900 | 0.4 |

† And other days ∅ Mean daily

# RIO DE LAS PALMAS ABOVE RODRIGUEZ DAM, BAJA CALIFORNIA

DESCRIPTION: Rodriguez Dam is located in Mexico on Río de las Palmas, the principal tributary to the Tijuana River, about 5.5 miles upstream from its confluence with Cottonwood Creek, 11 miles upstream from the point where the Tijuana River crosses the international 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 and from June 1961 by the Junta de Agua Potable y Alcantarillado del Distrito Urbano of Tijuana, Baja California, which agency took over operation of Rodriguez Dam. Records furnished by the Mexican Section of the Commission. Records available: May 1937 through December 1962. Storage began in Rodriguez Reservoir on September 22, 1936.

REMARKS: Records of runoff represent all water reaching Rodriguez Reservoir including rainfall on the reservoir water surface. Area-capacity-elevation rating for reservoir used in the computations is dated 1927 when the reservoir area was initially surveyed. Elevation of crest of spillway 380.08 feet 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 1962 | Period 1938-1962 | | |
|---|---|---|---|---|
| | | Average | Maximum | Minimum |
| January | 71.1 | 1,181 | 6,569 | 0 |
| February | 70.4 | 2,966 | 41,295 | 6 |
| March | 60.1 | 7,994 | 68,321 | 4 |
| April | 64.7 | 4,161 | 77,765 | 0 |
| May | 48.7 | 512 | 9,962 | 0 |
| June | 46.9 | 91.3 | 890 | 0 |
| July | 43.5 | 97.0 | 327 | 0 |
| August | 31.3 | 59.4 | 771 | 0 |
| September | 44.4 | 58.7 | 465 | 0 |
| October | 27.8 | 76.4 | 344 | 0 |
| November | 27.1 | 121 | 1,012 | 0 |
| December | 12.8 | 1,026 | 15,685 | 12.8 |
| Yearly | 548.8 | 18,344 | 177,642 | 542.7 |

# 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 and from June 1961, by the Junta de Agua Potable y Alcantarillado del Distrito Urbano of Tijuana, Baja California. Records furnished through the Mexican Section of the Commission. Records available: May 1937 through December 1962.

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 1962 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 1962 | Period 1938-1962 | | |
|---|---|---|---|---|
| | | Average | Maximum | Minimum |
| January | 65.9 | 297 | 781 | 25 |
| February | 63.4 | 331 | 1,131 | 23 |
| March | 63.4 | 403 | 1,222 | 0 |
| April | 60.4 | 587 | 1,602 | 0 |
| May | 51.6 | 818 | 1,675 | 15.4 |
| June | 42.3 | 955 | 1,856 | 23.8 |
| July | 35.7 | 1,000 | 1,963 | 20.3 |
| August | 29.8 | 859 | 1,859 | 0 |
| September | 34.2 | 690 | 1,421 | 34.2 |
| October | 25.2 | 595 | 1,187 | 25.2 |
| November | 2.2 | 450 | 1,037 | 2.2 |
| December | 0 | 388 | 981 | 0 |
| Yearly | 474.1 | 7,373 | 15,315 | 474.1 |

# TIJUANA RIVER AT INTERNATIONAL BOUNDARY

DESCRIPTION: Staff gage located near right bank about 550 feet downstream from the international boundary and about 0.8 mile west of the international gate at San Ysidro. Zero of gage is at mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 8 current meter measurements and mean daily gage heights obtained from hourly gage readings during periods of flow and observations of no flow. Records obtained and furnished by the United States Section of the Commission. Records available: May 1947 through December 1962. The gaging station was established on May 28, 1947, discontinued in March 1960, and re-established on November 29, 1960.

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 1962 — 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 | * .1 | 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 | 33.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20 | 0 | 13.9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21 | ᵘ 70 | 21.9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22 | ᵘ 30 | .7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23 | ᵘ 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 24 | * 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 25 | * 7 | 13.9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 26 | 0 | 20.0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 27 | 0 | 9.9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 28 | 0 | 1.0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 29 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 31 | 0 | | 0 | | 0 | | 0 | 0 | | 0 | | 0 |
| Sum | * 141 | 114.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| Month | Current Year 1962 | | | | | | | | Period 1947-1962 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Extreme Gage Feet | | Ø Extreme Second-Feet | | | | Average Second-Feet | Total Acre-Feet | Acre-Feet | | |
| | | | High | | Low | | | | | | |
| | High | Low | Day | High | Day | Low | | | Average | Maximum | Minimum |
| Jan. | | | 21 | ᵘ 70 | † 1 | 0 | * 4.5 | * 280 | 593 | 4,603 | 0 |
| Feb. | | | 19 | 33.2 | † 1 | 0 | 4.1 | 227 | 215 | 1,496 | 0 |
| Mar. | | | | 0 | | 0 | 0 | 0 | 1,185 | 13,309 | 0 |
| Apr. | | | | 0 | | 0 | 0 | 0 | 362 | 1,499 | 0 |
| May | | | | 0 | | 0 | 0 | 0 | 63.4 | 312 | 0 |
| June | | | | 0 | | 0 | 0 | 0 | 41.8 | 309 | 0 |
| July | | | | 0 | | 0 | 0 | 0 | 32.9 | 239 | 0 |
| Aug. | | | | 0 | | 0 | 0 | 0 | 28.6 | 193 | 0 |
| Sept. | | | | 0 | | 0 | 0 | 0 | 34.4 | 216 | 0 |
| Oct. | | | | 0 | | 0 | 0 | 0 | 54.9 | 305 | 0 |
| Nov. | | | | 0 | | 0 | 0 | 0 | 78.1 | 480 | 0 |
| Dec. | | | | 0 | | 0 | 0 | 0 | 167 | 1,447 | 0 |
| Yearly | | | | ᵘ 70 | | 0 | 0.7 | 507 | 2,856.1 | 19,822 | 0 |

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

# 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 1962 (October 1922 to September 1936 are from city of San Diego Water Department.)

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

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 1962 — 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 | .5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20 | 0 | 1.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21 | 14.0 | 1.7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22 | .4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23 | 8.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 24 | 1.5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 25 | 3.4 | 1.8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 26 | 0 | .8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 27 | 0 | .4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 29 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 31 | 0 | | 0 | | 0 | | 0 | 0 | | 0 | | 0 |
| Sum | 27.7 | 6.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| Month | Current Year 1962 | | | | | | | | Period 1937-1962 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Extreme Gage Feet | | Ø Extreme Second Feet | | | | Average Second Feet | Total Acre Feet | Acre Feet | | |
| | High | Low | High Day | High | Low Day | Low | | | Average | Maximum | Minimum |
| Jan. | 3.57 | | 21 | 14 | † 1 | 0 | 0.89 | 55 | 988 | 4,070 | 0 |
| Feb. | 2.84 | | 25 | 1.8 | † 1 | 0 | .23 | 13 | 5,359 | 66,920 | 0 |
| Mar. | | | | 0 | | 0 | 0 | 0 | 9,490 | 107,000 | 0 |
| Apr. | | | | 0 | | 0 | 0 | 0 | 8,155 | 181,900 | 0 |
| May | | | | 0 | | 0 | 0 | 0 | 910 | 18,340 | 0 |
| June | | | | 0 | | 0 | 0 | 0 | 154 | 3,060 | 0 |
| July | | | | 0 | | 0 | 0 | 0 | 30.5 | 523 | 0 |
| Aug | | | | 0 | | 0 | 0 | 0 | 21.7 | 242 | 0 |
| Sept. | | | | 0 | | 0 | 0 | 0 | 31.8 | 234 | 0 |
| Oct. | | | | 0 | | 0 | 0 | 0 | 109 | 1,340 | 0 |
| Nov. | | | | 0 | | 0 | 0 | 0 | 173 | 1,490 | 0 |
| Dec. | | | | 0 | | 0 | 0 | 0 | 896 | 7,930 | 0 |
| Yearly | | | | 14 | | 0 | 0.09 | 68 | 26,318.0 | 332,749 | 0 |

† And other days  Ø Mean daily

# TIJUANA INTERNATIONAL TRUNK LINE SEWER AT MANHOLE NO. 38

DESCRIPTION: Water-stage recorder and Palmer-Bowlus flume located in the Tijuana trunk line sewer at manhole No. 38, 600 feet downstream from the junction of the San Ysidro and Tijuana branches of the sewer, 0.6 mile north of the international boundary, and 0.8 mile southwest of San Ysidro, California; and water-stage recorder and weir in San Ysidro branch at the pumping plant 4,700 feet upstream from the junction. Zero of gage at manhole No. 38 is the invert of the pipe and zero flow occurs at gage height 0.25 foot, which is the crest of the flume.

RECORDS: Computed on basis of depth as recorded immediately upstream from Palmer-Bowlus flume. 1962 records good. Records available: January 29, 1948 through July 10, 1962.

REMARKS: This international sewer was constructed by the Governments of the United States and Mexico in 1938 to correct a serious international sanitation problem. The flow through the sewer includes the sewage flows from San Ysidro, California and Tijuana, Baja California and discharges into the Pacific Ocean 3.7 miles below this station and 0.7 mile north of the international boundary. On March 23, 1962, the recently constructed domestic sewage disposal system in Tijuana, Baja California, consisting of two pumping plants, dual pressure lines, and an open canal which transports sewage about 5 miles south of the international boundary where it discharges into the Pacific Ocean, was placed in operation. On July 11, 1962, sewage from San Ysidro was diverted into an oxidation pond and the international sewer westerly from Dairy Mart Road was abandoned.

| Month | Total Monthly Flows Millions of Gallons | | | Mean Daily Flows-Millions of Gallons Per Day | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Current Year 1962 | | | Period 1948-1962 | | |
| | U.S. | Mexico | Total | Maximum | Minimum | Mean | Maximum | Minimum | Mean |
| Jan. | 5.513 | 75.276 | 80.789 | 3.555 | 2.068 | 2.606 | 5.112 | 2.062 | 3.501 |
| Feb. | 5.720 | 77.848 | 83.568 | 3.813 | 2.650 | 2.985 | 5.112 | 2.462 | 3.546 |
| Mar. | 5.907 | 62.150 | 68.057 | 3.296 | .323 | 2.195 | 4.880 | .323 | 3.460 |
| Apr. | 6.056 | 0 | 6.056 | .239 | .168 | .202 | 4.731 | .168 | 3.281 |
| May | 6.153 | 0 | 6.153 | .226 | .168 | .198 | 4.802 | .168 | 3.271 |
| June | 5.965 | 0 | 5.965 | .233 | .181 | .199 | 4.660 | .181 | 3.207 |
| July | 1.874 | 0 | 1.874 | .213 | .168 | | 4.880 | .168 | |
| Aug. | | | | | | | | | |
| Sept. | | | | | | | | | |
| Oct. | | | | | | | | | |
| Nov. | | | | | | | | | |
| Dec. | | | | | | | | | |
| Yearly | | | | | | | | | |

# STORED WATER IN RESERVOIRS, TIJUANA RIVER BASIN

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

Records for Morena and Barrett Reservoirs are obtained and furnished by the city of San Diego Water Department, the U. S. Geological Survey, and the U. S. Weather Bureau; for Rodriguez Reservoir by the Ministry of Hydraulic Resources, Government of Mexico.

## In Acre-Feet

| Month | Morena Reservoir (Capacity 50,210) | | Barrett Reservoir (Capacity 44,760) | | Rodriguez Reservoir (Capacity 111,880) | | Total in Tijuana River Basin Reservoirs (Capacity 206,850) | |
|---|---|---|---|---|---|---|---|---|
| | 1962 | Average 1937-1962 | 1962 | Average 1937-1962 | 1962 | Average 1937-1962 | 1962 | Average 1937-1962 |
| Jan. | 559 | 21,216 | 1,015 | 14,601 | 46.5 | 42,854 | 1,620.5 | 78,671 |
| Feb. | 647 | 22,040 | 1,108 | 16,331 | 51.4 | 43,903 | 1,806.4 | 82,274 |
| Mar. | 734 | 23,705 | 1,659 | 18,168 | 44.4 | 48,579 | 2,437.4 | 90,451 |
| Apr. | 727 | 23,672 | 1,725 | 18,890 | 42.6 | 48,577 | 2,494.6 | 91,139 |
| May | 705 | 23,469 | 1,706 | 18,076 | 32.9 | 47,708 | 2,443.9 | 89,253 |
| June | 668 | 22,829 | 1,659 | 17,255 | 30.5 | 46,299 | 2,357.5 | 86,383 |
| July | 620 | 22,233 | 1,594 | 16,309 | 29.7 | 44,825 | 2,243.7 | 83,368 |
| Aug. | 566 | 21,682 | 1,539 | 15,362 | 23.5 | 43,486 | 2,128.5 | 80,530 |
| Sept. | 526 | 20,989 | 1,495 | 14,987 | 28.1 | 42,341 | 2,049.1 | 78,316 |
| Oct. | 495 | 20,690 | 1,460 | 14,517 | 25.8 | 41,386 | 1,980.8 | 76,594 |
| Nov. | 483 | 20,538 | 1,443 | 13,999 | 23.2 | 40,654 | 1,949.2 | 75,191 |
| Dec. | 476 | 20,563 | 1,443 | 14,283 | 20.3 | 40,930 | 1,939.3 | 75,777 |
| Avg. | 600 | 21,969 | 1,487 | 16,065 | 33.2 | 44,295 | 2,120.2 | 82,329 |
| Max. | 734 | # 61,670 | 1,725 | θ 45,920 | 51.4 | 109,610 | 2,494.6 | 213,600 |
| Min. | 476 | 10 | 1,015 | 106 | 20.3 | 20.3 | 1,620.5 | 1,542.7 |

# March 31, 1941 - Prior to removal of spillway gates
θ April 3, 1937 - Sandbags were placed on crest of spillway

# RAINFALL ON THE TIJUANA RIVER WATERSHED IN INCHES

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

## In the United States

| Month | Morena Dam, California | | Barrett Dam, California | | Marron Valley, California | | Potrero, California | |
|---|---|---|---|---|---|---|---|---|
| | 1962 | Average 1906-1962 | 1962 | Average 1907-1962 | 1962 | Average 1951-1962 | 1962 | Average 1914-1962 |
| Jan. | 4.05 | 4.03 | 3.68 | 3.52 | 3.69 | 3.19 | 4.28 | 3.60 |
| Feb. | 5.14 | 4.09 | 5.79 | 3.60 | 4.37 | 2.15 | 5.35 | 3.99 |
| Mar. | 2.52 | 3.53 | 2.02 | 3.00 | 2.22 | 2.47 | 2.32 | 3.05 |
| Apr. | 0 | 1.81 | 0 | 1.55 | .02 | 1.30 | 0 | 1.80 |
| May | 1.31 | .68 | .95 | .61 | .95 | .56 | 1.00 | .71 |
| June | .16 | .14 | .12 | .06 | .12 | .05 | .24 | .08 |
| July | 0 | .41 | 0 | .09 | 0 | .02 | 0 | .21 |
| Aug. | 0 | .51 | 0 | .20 | 0 | .19 | 0 | .19 |
| Sept. | 0 | .32 | 0 | .24 | 0 | .10 | 0 | .23 |
| Oct. | .08 | .93 | .09 | .74 | .07 | .38 | .11 | .75 |
| Nov. | 0 | 1.38 | .02 | 1.12 | 0 | .92 | 0 | 1.22 |
| Dec. | .86 | 3.32 | .91 | 2.85 | .68 | 1.63 | .74 | 3.24 |
| Yearly | 14.12 | 21.15 | 13.58 | 17.58 | 12.12 | 12.96 | 14.04 | 19.07 |

| Month | Sawday Ranch, California | | Chula Vista, California | |
|---|---|---|---|---|
| | 1962 | Average 1950-1962 | 1962 | Average 1930-1962 |
| Jan. | 3.94 | 3.56 | 2.42 | 1.98 |
| Feb. | 5.89 | 2.45 | 2.59 | 1.95 |
| Mar. | 2.51 | 2.99 | .68 | 1.54 |
| Apr. | 0 | 1.63 | 0 | .81 |
| May | .86 | .57 | .55 | .27 |
| June | .10 | .06 | .06 | .04 |
| July | 0 | .60 | .01 | .01 |
| Aug. | .15 | .60 | 0 | .09 |
| Sept. | 0 | .36 | 0 | .13 |
| Oct. | .02 | .41 | 0 | .46 |
| Nov. | 0 | 1.14 | .01 | .78 |
| Dec. | .76 | 1.81 | .40 | 1.76 |
| Yearly | 14.23 | 16.18 | 6.72 | 9.82 |

## In Mexico

| Month | La Rumorosa, Baja California | | Tecate, Baja California | | Tijuana, Baja California | | Rodriguez Dam, Baja California | |
|---|---|---|---|---|---|---|---|---|
| | 1962 | Average 1946-1962 | 1962 | Avg. 1946-59 & 1961-1962 | 1962 | Avg. 1948-59 & 1961-1962 | 1962 | Average 1938-1962 |
| Jan. | T | 0.87 | 2.83 | 2.68 | 2.96 | 2.17 | 2.99 | 1.57 |
| Feb. | .04 | .43 | 4.29 | 1.22 | 2.99 | 1.34 | 1.93 | 1.34 |
| Mar. | T | .59 | 1.77 | 1.69 | .71 | 1.02 | 1.18 | 1.46 |
| Apr. | 0 | .20 | 0 | .87 | 0 | .59 | T | .71 |
| May | 0 | .08 | .75 | .35 | .55 | .28 | .40 | .12 |
| June | 0 | .04 | .20 | .08 | 0 | .04 | T | 0 |
| July | 0 | .24 | 0 | .08 | 0 | 0 | T | 0 |
| Aug. | T | .75 | 0 | .20 | 0 | .08 | T | .08 |
| Sept. | .63 | .24 | 0 | .04 | 0 | .04 | T | .20 |
| Oct. | 0 | .35 | .08 | .31 | 0 | .31 | T | .35 |
| Nov. | T | .28 | 0 | .67 | 0 | .63 | T | .55 |
| Dec. | 0 | .67 | .71 | 1.57 | .47 | .87 | .47 | 1.65 |
| Yearly | 0.67 | 4.49 | 10.63 | 10.35 | 7.68 | 7.95 | 6.97 | 7.95 |

T Trace

# 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 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 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 1962.

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

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

## Mean Daily Discharge in Second-Feet 1962 — Annual and Period Summary

| Day | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.7 | 0.6 | 0.4 | 0.3 | 0.07 | 0 | 0 | 0.02 | 0 | 0 | 0 | 0 |
| 2 | .7 | .6 | .4 | .4 | .08 | 0 | .02 | .01 | 0 | 0 | 0 | 0 |
| 3 | .7 | .6 | .4 | .4 | .1 | 0 | .05 | .01 | 0 | 0 | 0 | 0 |
| 4 | .7 | .6 | .4 | .4 | .08 | 0 | .07 | 0 | 0 | 0 | 0 | 0 |
| 5 | .6 | .6 | .4 | .3 | .05 | 0 | .05 | 0 | 0 | 0 | 0 | 0 |
| 6 | .6 | .6 | .3 | .3 | .05 | .01 | .01 | 0 | 0 | 0 | 0 | 0 |
| 7 | .6 | .6 | .4 | .1 | .05 | .01 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8 | .7 | .6 | .6 | .1 | .05 | .01 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9 | .7 | .6 | .5 | .1 | .05 | .01 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | .7 | .6 | .5 | .1 | .04 | .01 | .01 | 0 | 0 | 0 | 0 | 0 |
| 11 | .7 | .6 | .5 | .1 | .05 | .01 | 0 | 0 | 0 | 2.7 | 0 | 0 |
| 12 | .7 | .5 | .4 | .1 | .03 | .03 | 0 | 0 | 0 | 5.0 | 0 | 0 |
| 13 | .7 | .5 | .4 | .1 | .04 | .03 | 0 | 0 | 0 | .01 | 0 | 0 |
| 14 | .7 | .6 | .4 | .1 | .04 | .02 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15 | .7 | .5 | .4 | .1 | .04 | .02 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16 | .7 | .5 | .4 | .2 | .05 | .03 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17 | .7 | .5 | .3 | .1 | .05 | .02 | 0 | 0 | 0 | 0 | 0 | .01 |
| 18 | .7 | .6 | .2 | .1 | .05 | 0 | .01 | 0 | 0 | 0 | 0 | .04 |
| 19 | .7 | .6 | .4 | .2 | .05 | 0 | .02 | 0 | 0 | 0 | 0 | .01 |
| 20 | .7 | .6 | .5 | .2 | .05 | 0 | .03 | 0 | 0 | 0 | 0 | .01 |
| 21 | .7 | .6 | .4 | .1 | .05 | 0 | .03 | 0 | 0 | 0 | 0 | .01 |
| 22 | .7 | .6 | .4 | .1 | .05 | 0 | .01 | 0 | 0 | 0 | 0 | .01 |
| 23 | .7 | .6 | .5 | .1 | .03 | 0 | .02 | 0 | 0 | 0 | 0 | .01 |
| 24 | 1.0 | .5 | .5 | .1 | .02 | 0 | .05 | 0 | 0 | 0 | 0 | .01 |
| 25 | .7 | .5 | .4 | .1 | .01 | 0 | .05 | 0 | 0 | 0 | 0 | .01 |
| 26 | .7 | .5 | .4 | .1 | 0 | 0 | .02 | 0 | 0 | 0 | 0 | .01 |
| 27 | .6 | .4 | .3 | .2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | .01 |
| 28 | .6 | .4 | .3 | .1 | 0 | 0 | .05 | 0 | 0 | 0 | 0 | .02 |
| 29 | .6 | | .3 | .07 | 0 | 0 | .2 | 0 | 0 | 0 | 0 | .02 |
| 30 | .6 | | .3 | .05 | 0 | 0 | .08 | 0 | 0 | 0 | 0 | .02 |
| 31 | .6 | | .3 | | 0 | | .03 | 0 | | 0 | | .02 |
| Sum | 21.2 | 15.6 | 12.3 | 4.82 | 1.23 | 0.21 | 0.81 | 0.04 | 0 | 7.71 | 0 | 0.22 |

| Month | Current Year 1962 | | | | | | | | Period 1949-1962 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Extreme Gage Feet | | ∅ Extreme Second-Feet | | | | Average Second-Feet | Total Acre-Feet | Acre-Feet | | |
| | | | High | | Low | | | | Average | Maximum | Minimum |
| | High | Low | Day | | Day | | | | | | |
| Jan. | | | 24 | 1.0 | † 5 | 0.6 | 0.68 | 42 | 28.6 | 70 | 3.6 |
| Feb. | | | † 1 | .6 | †27 | .4 | .56 | 31 | 22.7 | 62 | 5.0 |
| Mar. | | | 8 | .6 | 18 | .2 | .40 | 24 | 18.3 | 57 | 5.0 |
| Apr. | | | † 2 | .4 | 30 | .05 | .161 | 9.6 | 10.0 | 29 | .4 |
| May | | | 3 | .1 | †26 | 0 | .040 | 2.4 | 3.1 | 10 | 0 |
| June | | | † 12 | .03 | † 1 | 0 | .007 | .4 | .3 | 4.4 | 0 |
| July | | | 29 | .2 | † 1 | 0 | .026 | 1.6 | 682 | 4,270 | 1.6 |
| Aug. | | | 1 | .02 | † 4 | 0 | .001 | .08 | 1,186 | 10,120 | .08 |
| Sept. | | | | 0 | | 0 | 0 | 0 | 195 | 1,110 | 0 |
| Oct. | | | 12 | 5.0 | † 1 | 0 | .249 | 15 | 61.8 | 337 | 0 |
| Nov. | | | | 0 | | 0 | 0 | 0 | 27.8 | 90 | 0 |
| Dec. | | | 18 | .04 | † 1 | 0 | .007 | .4 | 27.0 | 74 | 0 |
| Yearly | | | | 5.0 | | 0 | 0.176 | 126 | 2,263 | 12,633 | 126 |

† And other days ∅ Mean daily

# RAINFALL ON THE TIJUANA RIVER WATERSHED IN INCHES

## In Mexico

| Month | Cañada Seca, Baja California | | Valle de las Palmas, Baja California | | El Compadre, Baja California | | San Juan de Dios, Baja California | |
|---|---|---|---|---|---|---|---|---|
| | 1962 | Average 1952-1962 | 1962 | Average 1948-1962 | 1962 | Average 1948-1962 | 1962 | Average 1956-1962 |
| Jan. | 2.76 | 1.34 | 1.69 | 1.89 | 2.09 | 2.36 | 2.05 | 2.76 |
| Feb. | 3.66 | 1.65 | .20 | .98 | | 1.34 | 2.60 | 2.68 |
| Mar. | 1.42 | 1.81 | 1.26 | 1.18 | 1.89 | 1.93 | 1.77 | 2.01 |
| Apr. | 0 | .79 | 0 | .55 | 0 | .91 | | 1.14 |
| May | .87 | .39 | .08 | .16 | .63 | .47 | .47 | .39 |
| June | 0 | .04 | T | 0 | .04 | .04 | 0 | .35 |
| July | 0 | .08 | 0 | .08 | 0 | .94 | 0 | 1.18 |
| Aug. | | .91 | 0 | .04 | | .71 | .08 | .71 |
| Sept. | 0 | .16 | 0 | .12 | | .79 | 0 | .39 |
| Oct. | 0 | .51 | 0 | .20 | | .47 | 0 | .67 |
| Nov. | 0 | .47 | 0 | .55 | | .79 | 0 | .75 |
| Dec. | .39 | .79 | .59 | .91 | | 1.54 | 0 | .79 |
| Yearly | | 9.84 | 3.82 | 6.97 | | 12.60 | | 16.42 |

T Trace

# LOCATION OF RAINFALL STATIONS

## In the United States

| NAME OF STATION | LATITUDE | LONGITUDE | ð ELEV. (FT.) | RECORD BEGAN | OBSERVER |
|---|---|---|---|---|---|
| Chula Vista, California | 32° 36' | 117° 06' | 9 | 1930 | Western Salt Company |
| Barrett Dam, California | 32° 41' | 116° 40' | 1,750 | 1907 | City of San Diego |
| Marron Valley, California | 32° 34' | 116° 46' | 550 | 1951 | I. B. & W. C. |
| Morena Dam, California | 32° 41' | 116° 32' | 3,010 | 1906 | City of San Diego |
| Potrero, California | 32° 37' | 116° 37' | 2,390 | 1914 | Thor Nelson |
| Sawday Ranch, California | 32° 45' | 116° 29' | 3,200 | 1950 | William Tulloch |

## In Mexico

| NAME OF STATION | LATITUDE | LONGITUDE | ð ELEV. (FT.) | RECORD BEGAN | OBSERVER |
|---|---|---|---|---|---|
| Cañada Seca, Baja California | 32° 32' | 116° 21' | 49 | 1952 | Hydraulic Resources |
| El Compadre, Baja California | 32° 20' | 116° 14' | 3,812 | 1948 | Hydraulic Resources |
| La Rumorosa, Baja California | 32° 33' | 116° 03' | 3,937 | 1946 | Hydraulic Resources |
| Rodriguez Dam, Baja California | 32° 26' | 116° 55' | 459 | 1938 | Hydraulic Resources |
| San Juan de Dios, Baja California | 32° 08' | 116° 10' | 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 |

ð Elevation above mean sea level

# 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 this 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 84 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 December 1962, square 3-foot by 3-foot by 18-inch deep land pan set 15 inches in ground.

2. Chula Vista: September 1918 through December 1962, 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 to date, same type of pan 22.5 inches in diameter.

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 December 1962, square 3-foot by 3-foot by 18-inch deep land pan set 15 inches in ground.

## In the United States

| Month | Morena Dam, California | | Barrett Dam, California | | Marron Valley, California | | Chula Vista, California | |
|---|---|---|---|---|---|---|---|---|
| | 1962 | Average 1916-1962 | 1962 | Average 1921-1962 | 1962 | Average 1951-1962 | 1962 | Average 1919-1962 |
| Jan. | 2.11 | 2.34 | 2.34 | 1.90 | 4.19 | 2.74 | 3.14 | 2.78 |
| Feb. | .16 | 2.34 | 1.30 | 2.21 | 2.30 | 3.11 | 3.17 | 3.29 |
| Mar. | 2.43 | 3.73 | 2.82 | 3.66 | 3.73 | 4.09 | 4.69 | 4.93 |
| Apr. | 5.81 | 5.04 | 6.05 | 4.99 | 4.99 | 5.50 | 5.84 | 5.82 |
| May | 5.09 | 7.02 | 6.20 | 7.17 | 6.22 | 6.97 | 7.27 | 6.88 |
| June | 7.63 | 9.06 | 8.48 | 8.81 | 7.12 | 8.57 | 6.65 | 7.05 |
| July | 10.42 | 10.55 | 10.32 | 10.42 | 9.68 | 10.05 | 7.90 | 7.63 |
| Aug. | 9.40 | 9.76 | 10.29 | 9.76 | 9.04 | 9.40 | 7.40 | 7.27 |
| Sept. | 7.11 | 7.97 | 7.81 | 8.04 | 8.88 | 8.45 | 6.04 | 6.04 |
| Oct. | 3.86 | 5.61 | 5.34 | 5.65 | 7.20 | 6.62 | 4.76 | 4.81 |
| Nov. | 2.45 | 3.83 | 3.34 | 3.67 | 4.41 | 4.80 | 3.13 | 3.65 |
| Dec. | 1.68 | 2.74 | 2.42 | 2.25 | 3.27 | 3.42 | 2.65 | 2.74 |
| Total | 58.15 | 69.99 | 66.71 | 68.53 | 71.03 | 73.72 | 62.64 | 62.89 |

## In Mexico

| Month | Tecate, Baja California | | Tijuana, Baja California | | Rodriguez Dam, Baja California | | Valle de las Palmas, Baja California | |
|---|---|---|---|---|---|---|---|---|
| | 1962 | Average 1961-1962 | 1962 | Avg. 1952-59 1961-1962 | 1962 | Avg. 1939-42 1946-1962 | 1962 | Average 1952-1962 |
| Jan. | 3.19 | 4.02 | 2.87 | 2.60 | 6.38 | 3.82 | 4.13 | 3.46 |
| Feb. | 1.77 | 3.15 | 2.40 | 3.11 | 2.32 | 3.78 | 2.17 | 3.23 |
| Mar. | 2.40 | 3.58 | 3.66 | 4.02 | 3.98 | 5.08 | 3.58 | 5.04 |
| Apr. | 6.77 | 6.46 | 5.24 | 4.80 | 6.93 | 5.83 | 7.44 | 6.89 |
| May | 5.99 | 6.18 | 5.35 | 5.67 | 7.88 | 7.44 | 7.44 | 7.87 |
| June | 7.99 | 8.15 | 5.20 | 5.43 | 8.78 | 8.27 | 9.65 | 9.72 |
| July | 9.06 | 9.02 | 7.60 | 6.26 | 10.55 | 9.17 | 12.32 | 10.87 |
| Aug. | 9.37 | 8.78 | 7.01 | 6.34 | 9.33 | 8.31 | 12.52 | 10.12 |
| Sept. | 8.54 | 7.87 | 5.39 | 5.83 | 7.44 | 7.20 | 8.66 | 8.66 |
| Oct. | 4.80 | 7.32 | 3.94 | 4.25 | 6.26 | 6.02 | 7.01 | 6.38 |
| Nov. | 3.86 | 4.09 | 2.64 | 3.54 | 4.17 | 5.59 | 4.41 | 4.76 |
| Dec. | 3.50 | 3.07 | 2.52 | 2.83 | 4.29 | 4.53 | 3.98 | 4.21 |
| Total | 67.24 | 71.85 | 53.82 | 54.21 | 78.31 | 75.63 | 83.31 | 80.28 |

# TEMPERATURE IN THE TIJUANA RIVER BASIN

The maximum, minimum, and monthly average temperature observations for United States stations are from daily readings of thermometers generally exposed in a shelter located a few feet above sod-covered ground. The maximum and minimum temperatures shown for the stations in Mexico are from daily maximum and minimum thermometer observations, with averages 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 84 in this bulletin.

## Degrees Fahrenheit

## In the United States

| Month | Barrett Dam, California | | | | * Chula Vista, California | | | |
|---|---|---|---|---|---|---|---|---|
| | 1962 | | | Average 1931-1962 | 1962 | | | Average 1931-1962 |
| | Mean | Max. | Min. | | Mean | Max. | Min. | |
| Jan. | 48.6 | 81 | 20 | 48.7 | 53.3 | 80 | 35 | 52.3 |
| Feb. | 48.8 | 79 | 26 | 50.3 | 54.4 | 74 | 36 | 53.5 |
| Mar. | 48.1 | 81 | 27 | 53.5 | 52.4 | 66 | 37 | 55.1 |
| Apr. | 60.5 | 94 | 38 | 58.5 | 57.7 | 77 | 45 | 58.1 |
| May | 59.3 | 92 | 40 | 63.0 | 58.9 | 71 | 46 | 60.7 |
| June | 66.6 | 102 | 41 | 68.4 | 61.7 | 70 | 53 | 63.0 |
| July | 73.0 | 100 | 46 | 76.3 | 65.1 | 72 | 56 | |
| Aug. | 77.3 | 106 | 46 | 76.1 | 67.1 | 79 | 58 | 68.0 |
| Sept. | 72.2 | 103 | 46 | 72.7 | # | 81 | 55 | |
| Oct. | 62.7 | 96 | 40 | 64.2 | 61.3 | 81 | 49 | 62.5 |
| Nov. | 55.8 | 92 | 29 | 56.1 | # | 72 | 40 | |
| Dec. | 51.0 | 80 | 24 | 51.0 | 53.8 | 71 | 36 | 54.4 |
| Yearly | 60.3 | 106 | 20 | 61.5 | | 81 | 35 | |

## In Mexico

| Month | La Rumorosa, Baja California | | | | Tecate, Baja California | | | | Tijuana, Baja California | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1962 | | 1946-1962 | | 1962 | | 1946-59&61-62 | | 1962 | | 1948-59&61-62 | |
| | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. |
| Jan. | 73 | 23 | 81 | 5 | 82 | 27 | 86 | 23 | 84 | 37 | 88 | 30 |
| Feb. | 73 | 18 | 82 | 10 | 79 | 25 | 90 | 21 | 77 | 36 | 91 | 32 |
| Mar. | 73 | 23 | 79 | 16 | 79 | 27 | 88 | 27 | 72 | 34 | 88 | 34 |
| Apr. | 88 | 39 | 91 | 23 | 91 | 36 | 99 | 32 | 88 | 46 | 88 | 37 |
| May | 88 | 34 | 97 | 28 | 90 | 37 | 100 | 36 | 84 | 45 | 97 | 43 |
| June | 100 | 39 | 104 | 34 | 95 | 39 | 104 | 39 | 86 | 48 | 99 | 41 |
| July | 99 | 55 | 104 | 50 | 97 | 43 | 115 | 36 | 88 | 55 | 97 | 46 |
| Aug. | 100 | 59 | 102 | 46 | 100 | 43 | 113 | 34 | 90 | 57 | 99 | 52 |
| Sept. | 90 | 41 | 104 | 34 | 102 | 43 | 115 | 37 | 90 | 54 | 104 | 46 |
| Oct. | 91 | 37 | 91 | 25 | 93 | 37 | 106 | 34 | 90 | 48 | 106 | 43 |
| Nov. | 82 | 23 | 88 | 14 | 90 | 27 | 97 | 27 | 81 | 41 | 95 | 34 |
| Dec. | 70 | 28 | 81 | 10 | 82 | 23 | 90 | 23 | 86 | 36 | 91 | 25 |
| Yearly | 100 | 18 | 104 | 5 | 102 | 23 | 115 | 21 | 90 | 34 | 106 | 25 |

| Month | Rodriguez Dam, Baja California | | | | Cañada Seca, Baja California | | | | Valle de las Palmas, Baja California | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1962 | | 1946-1962 | | 1962 | | 1951-1962 | | 1962 | | • 1948-1962 | |
| | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. |
| Jan. | 82 | 32 | 88 | 32 | 100 | 19 | 100 | 19 | 84 | 21 | 88 | 12 |
| Feb. | 73 | 34 | 90 | 34 | 90 | 21 | 100 | 19 | 81 | 32 | 99 | 23 |
| Mar. | 72 | 34 | 88 | 34 | 72 | 36 | 102 | 19 | 81 | 30 | 93 | 28 |
| Apr. | 90 | 41 | 91 | 36 | 90 | 43 | 113 | 21 | 97 | 36 | 104 | 32 |
| May | 88 | 41 | 99 | 41 | 95 | 39 | 104 | 25 | 93 | 39 | 100 | 39 |
| June | 90 | 46 | 108 | 46 | 102 | 41 | 113 | 30 | 102 | 48 | 108 | 43 |
| July | 86 | 52 | 104 | 52 | 102 | 48 | 111 | 32 | 100 | 50 | 120 | 48 |
| Aug. | 91 | 52 | 104 | 52 | | | 113 | 36 | 104 | 45 | 108 | 45 |
| Sept. | 95 | 50 | 108 | 48 | 118 | 32 | 118 | 30 | 104 | 48 | 117 | 43 |
| Oct. | 93 | 45 | 108 | 43 | 113 | 37 | 113 | 28 | 95 | 43 | 108 | 37 |
| Nov. | 81 | 36 | 99 | 36 | 88 | 34 | 108 | 19 | 91 | 32 | 95 | 19 |
| Dec. | 82 | 32 | 93 | 27 | 81 | 32 | 113 | 21 | 82 | 21 | 91 | 21 |
| Yearly | 95 | 32 | 108 | 27 | | | 118 | 19 | 104 | 21 | 120 | 12 |

* Chula Vista temperature not read on most week ends or holidays # More than 10 days missing

# TEMPERATURE IN THE TIJUANA RIVER BASIN

## Degrees Fahrenheit

## In Mexico

| Month | El Compadre, Baja California | | | | San Juan de Dios, Baja California | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1962 | | 1948-1962 | | 1962 | | 1956-1962 | | | | | |
| | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | | | | |
| Jan. | 91 | 27 | 100 | 10 | 84 | 16 | 84 | 7 | | | | |
| Feb. | 77 | 21 | 97 | 14 | 75 | 23 | 84 | 16 | | | | |
| Mar. | 79 | 23 | 93 | 23 | 82 | 18 | 84 | 18 | | | | |
| Apr. | 102 | 34 | 104 | 28 | | | 102 | 19 | | | | |
| May | 100 | 36 | 109 | 30 | 91 | 25 | 91 | 21 | | | | |
| June | 111 | 28 | 115 | 28 | 99 | 28 | 106 | 28 | | | | |
| July | 100 | 37 | 120 | 37 | 106 | 41 | 120 | 36 | | | | |
| Aug. | | | 120 | 39 | 106 | 41 | 106 | 32 | | | | |
| Sept. | | | 115 | 32 | 100 | 36 | 100 | 25 | | | | |
| Oct. | | | 118 | 32 | 95 | 27 | 99 | 19 | | | | |
| Nov. | | | 106 | 27 | 86 | 25 | 91 | 12 | | | | |
| Dec. | | | 113 | 19 | 72 | 27 | 84 | 16 | | | | |
| Yearly | | | 120 | 10 | | | 120 | 7 | | | | |

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

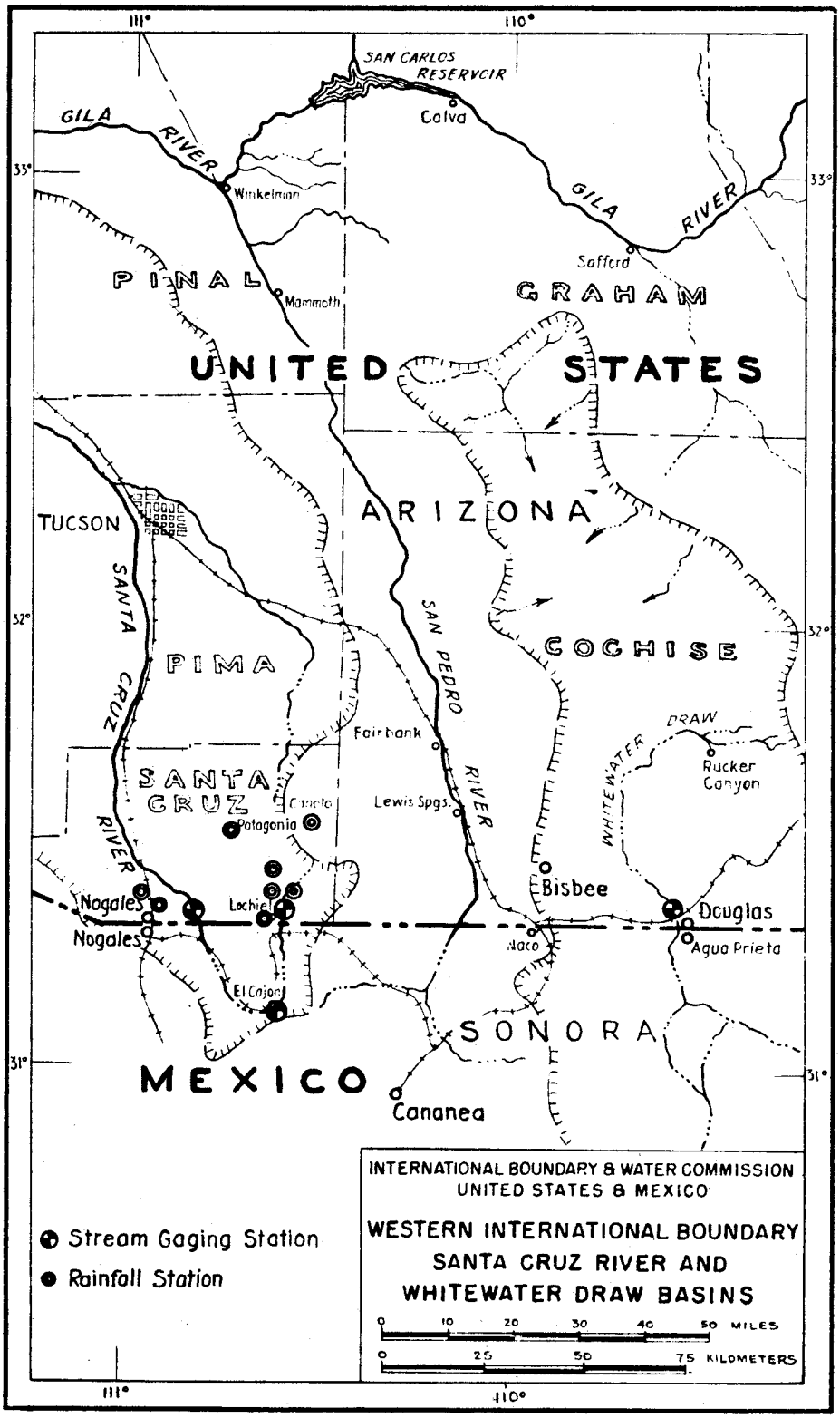
## 1962

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 1962 was by pumping from ground water.

| Designation of Areas | Drainage Basin-Square Miles | | | Irrigated Areas-Acres | | |
|---|---|---|---|---|---|---|
| | United States | Mexico | Total | United States | Mexico | Total |
| Cottonwood Creek | | | | | | |
| above Morena Dam | 114 | 0 | 114 | a) 75 | 0 | a) 75 |
| Morena Dam to Barrett Dam | 133 | 0 | 133 | 0 | 0 | 0 |
| above Barrett Dam | 247 | 0 | 247 | a) 75 | 0 | a) 75 |
| below Barrett Dam and above Tecate Creek | 65 | 0 | 65 | a) 145 | 0 | a) 145 |
| above Tecate Creek | 312 | 0 | 312 | a) 220 | 0 | a) 220 |
| Campo Creek | | | | | | |
| above International Boundary | 82 | 4 | 86 | a) 320 | 0 | a) 320 |
| Tecate Creek | | | | | | |
| above International Boundary (does not include Campo Creek) | 19 | 64 | 83 | 0 | 0 | 0 |
| Cottonwood Creek | | | | | | |
| above International Boundary Station | 413 | 68 | 481 | a) 540 | 0 | a) 540 |
| Río de las Palmas | | | | | | |
| above Rodriguez Dam | 7 | 981 | 988 | 0 | b) 0 | 0 |
| Tijuana River | | | | | | |
| above Nestor Gaging Station | 458 | 1,266 | 1,724 | | | |
| above the Mouth | 462 | 1,269 | 1,731 | 3,000 | c) 494 | 3,494 |

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 1962 in the Tijuana Irrigation District, Tijuana Valley, Baja California, Mexico, from the Rodriguez Reservoir, but an estimated area of about 494 acres was irrigated by pumping from ground water. Depending upon the availability of water this acreage varies considerably from year to year.


111°
110°
SAN CARLOS RESERVOIR
GILA RIVER
Winkelman
Calva
GILA RIVER
Safford
35°
33°
PINAL
Mammoth
GRAHAM
UNITED STATES
ARIZONA
TUCSON
SANTA CRUZ
32°
PIMA
SAN PEDRO RIVER
COCHISE
Fairbank
WHITEWATER DRAW
Rucker Canyon
SANTA CRUZ
Lewis Spgs.
Patagonia
RIVER
Nogales
Lochiel
Nogales
Bisbee
Douglas
Naco
Agua Prieta
El Cajon
SONORA
31°
MEXICO
Cananea
INTERNATIONAL BOUNDARY & WATER COMMISSION
UNITED STATES & MEXICO
WESTERN INTERNATIONAL BOUNDARY
SANTA CRUZ RIVER AND
WHITEWATER DRAW BASINS
0 10 20 30 40 50 MILES
0 25 50 75 KILOMETERS
Stream Gaging Station
Rainfall Station

# WHITEWATER DRAW NEAR DOUGLAS, ARIZONA

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

RECORDS: Based on 15 current meter measurements during the year. Computations by shifting control methods. Records obtained and furnished by the U. S. Geological Survey. Records fair except for periods of fragmentary or no gage height record, which are poor. Records available: August to October 1911 (gage heights and discharge measurements only), July to October 1912, January to June 1913, October 1913, December 1913 to June 1914, February to June 1915, October 1915 to September 1919, October 1919 to April 1922 (gage heights and discharge measurements only), June 1930 to December 1933, May 1935 to July 1947, October 1947 through December 1962 (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 1962 — Annual and Period Summary

| Day | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.09 | 0.09 | 0.06 | 0.02 | 0.01 | 0 | 0 | 0.09 | 0 | 0 | 0 | 17 |
| 2 | ᵘ .09 | .08 | .05 | .02 | .01 | 0 | 0 | .04 | 0 | ᵘ 0 | 0 | 4.9 |
| 3 | .09 | .08 | .05 | .02 | .01 | 0 | 0 | .02 | 0 | 0 | 0 | .5 |
| 4 | .1 | .06 | .04 | .02 | .01 | 0 | 0 | .01 | 0 | 0 | 0 | .09 |
| 5 | .08 | .06 | .04 | .02 | .01 | 0 | 2.8 | .01 | 0 | 0 | 0 | .02 |
| 6 | .08 | .06 | .04 | .02 | .01 | 0 | .3 | 0 | .01 | 0 | 0 | .01 |
| 7 | .09 | .05 | .04 | .01 | .01 | 0 | .05 | 0 | .03 | 0 | 0 | .01 |
| 8 | .1 | .04 | .2 | .01 | .01 | 0 | .01 | 0 | .2 | 0 | 0 | .01 |
| 9 | .1 | .04 | .1 | .01 | .01 | 0 | .01 | 0 | .08 | 0 | 0 | .01 |
| 10 | .1 | .05 | .04 | .01 | 0 | 0 | 0 | ᵘ 0 | .02 | .01 | 0 | .01 |
| 11 | .08 | .04 | .03 | .01 | 0 | 0 | 0 | 0 | .01 | .01 | 0 | .01 |
| 12 | .09 | .05 | .03 | .01 | 0 | 0 | 0 | 0 | 6.6 | 72 | 0 | .01 |
| 13 | .2 | .05 | .02 | .01 | 0 | 0 | 0 | 0 | 1.1 | 1.5 | 0 | .01 |
| 14 | .2 | .08 | .01 | .01 | 0 | 0 | 0 | 0 | 55 | .2 | 0 | .01 |
| 15 | .2 | .06 | .02 | .01 | 0 | 0 | 0 | 0 | 1.9 | .05 | 0 | .01 |
| 16 | .2 | .05 | .02 | .01 | 0 | 0 | 0 | 0 | .3 | .02 | .01 | .01 |
| 17 | .2 | .04 | .02 | .01 | 0 | 0 | 0 | 0 | .1 | .02 | .01 | .02 |
| 18 | .3 | .04 | .02 | .01 | 0 | 0 | 0 | 0 | .08 | .02 | 0 | 34 |
| 19 | .2 | .04 | .01 | .01 | 0 | 0 | 0 | 0 | .05 | .01 | 0 | 8.0 |
| 20 | .1 | .04 | .02 | .01 | 0 | 0 | 0 | 0 | .03 | .01 | 0 | 1.5 |
| 21 | .08 | .05 | .04 | 0 | 0 | 0 | 0 | 0 | .02 | 0 | 0 | .5 |
| 22 | .09 | .05 | .05 | .01 | 0 | 0 | 0 | 0 | .03 | 0 | 0 | .2 |
| 23 | .2 | .06 | .05 | 0 | 0 | 0 | 0 | 0 | .03 | 0 | 0 | .03 |
| 24 | .6 | .05 | .04 | 0 | 0 | 0 | 0 | 0 | .04 | 0 | 0 | .02 |
| 25 | 13 | .04 | .03 | 0 | 0 | 0 | 0 | 0 | ᵘ .03 | 0 | .01 | .02 |
| 26 | 1.7 | .04 | .02 | .01 | 0 | 0 | 9.6 | 0 | 1.4 | 0 | .01 | .02 |
| 27 | .3 | .05 | .03 | .01 | 0 | 0 | 4.2 | 0 | .06 | 0 | .01 | .02 |
| 28 | .1 | .08 | .03 | .01 | 0 | 0 | 206 | 0 | .02 | 0 | .01 | .02 |
| 29 | .09 | | .02 | 0 | 0 | 0 | 105 | 0 | .01 | 0 | .01 | .02 |
| 30 | .09 | | .02 | .01 | 0 | 0 | 2.1 | 0 | .01 | 0 | ᵘ .02 | .02 |
| 31 | .09 | | .02 | | 0 | | .5 | 0 | | ᵘ 0 | | .02 |
| Sum | 19.03 | 1.52 | 1.21 | 0.31 | 0.09 | 0 | 330.57 | 0.17 | 67.16 | 73.85 | 0.09 | 67.03 |

| Month | Current Year 1962 Extreme Gage Feet High | Low | Ø Extreme Second-Feet High Day | High | Low Day | Low | Average Second-Feet | Total Acre-Feet | Period 1936-1962 Acre-Feet Average | Maximum | Minimum |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan. | | | 25 | 13 | † 5 | 0.08 | 0.614 | 38 | 53.9 | 451 | 3.7 |
| Feb. | | | 1 | .09 | † 8 | .04 | .054 | 3.0 | 30.7 | 132 | 3.0 |
| Mar. | | | 8 | .2 | †14 | .01 | .039 | 2.4 | 33.4 | 130 | 2.4 |
| Apr. | | | † 1 | .02 | †21 | 0 | .010 | .6 | 30.7 | 173 | .6 |
| May | | | † 1 | .01 | †10 | 0 | .003 | .2 | 22.9 | 138 | 0 |
| June | | | | 0 | | 0 | 0 | 0 | 196 | 1,590 | 0 |
| July | | | 28 | 206 | † 1 | 0 | 10.7 | 656 | # 2,245 | 8,110 | 39 |
| Aug. | | | 1 | .09 | † 6 | 0 | .005 | .3 | # 3,554 | 14,480 | .3 |
| Sept. | | | 14 | 55 | † 1 | 0 | 2.24 | 133 | # 731 | 3,170 | .8 |
| Oct. | | | 12 | 72 | † 1 | 0 | 2.38 | 146 | 189 | 2,210 | .5 |
| Nov. | | | 30 | ᵘ .02 | † 1 | 0 | .003 | .2 | 49.5 | 352 | .2 |
| Dec. | | | 18 | 34 | † 6 | .01 | 2.16 | 133 | 97.2 | 1,050 | 2.6 |
| Yearly | | | | 206 | | 0 | 1.54 | 1,110 | | 22,321 | 900 |

ᵘ Estimated 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 1962.

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 Millions of Gallons | | | Mean Daily Flows-Millions of Gallons Per Day | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Current Year 1962 | | | Period 1952-1962 | | |
| | U.S. | Mexico | Total | Maximum | Minimum | Mean | Maximum | Minimum | Mean |
| Jan. | 25.961 | 12.344 | 38.305 | 1.338 | 1.074 | 1.236 | 1.368 | 0.619 | 0.931 |
| Feb. | 23.110 | 10.683 | 33.793 | 1.252 | 1.088 | 1.207 | 1.784 | .584 | .936 |
| Mar. | 26.271 | 11.593 | 37.864 | 1.288 | 1.121 | 1.221 | 1.288 | .590 | .930 |
| Apr. | 25.902 | 10.779 | 36.681 | 1.313 | .979 | 1.223 | 1.354 | .619 | .946 |
| May | 28.957 | 10.541 | 39.498 | 1.358 | 1.160 | 1.274 | 1.428 | .619 | .952 |
| June | 29.570 | 10.454 | 40.024 | 1.445 | 1.163 | 1.334 | 1.692 | .626 | 1.025 |
| July | 31.406 | 12.003 | 43.409 | 1.648 | 1.199 | 1.400 | 1.692 | .619 | 1.055 |
| Aug. | 33.011 | 11.793 | 44.804 | 1.511 | 1.317 | 1.445 | 1.829 | .619 | 1.089 |
| Sept. | 29.763 | 13.893 | 43.656 | 1.593 | 1.344 | 1.455 | 1.884 | .626 | 1.078 |
| Oct. | 28.455 | 13.042 | 41.497 | 1.429 | 1.175 | 1.342 | 1.667 | .626 | 1.022 |
| Nov. | 26.451 | 10.103 | 36.554 | 1.303 | 1.129 | 1.218 | 1.354 | .619 | .980 |
| Dec. | 26.921 | 11.063 | 37.984 | 1.374 | 1.120 | 1.225 | 1.582 | .619 | .987 |
| Yearly | 335.778 | 138.291 | 474.069 | 1.648 | 0.979 | 1.299 | 1.884 | 0.584 | 0.994 |

# 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 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; and January 6, 1961 through December 1962.

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 1962 — Annual and Period Summary

| Day | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 10.0 | 9.4 | 6.3 | 4.9 | 3.9 | 2.3 | 4.2 | 6.9 | 2.6 | 2.0 | 2.0 | 3.2 |
| 2 | 10.0 | 9.4 | 6.4 | 4.6 | 3.5 | 2.0 | 3.0 | 6.0 | 2.6 | 2.0 | 2.0 | 3.2 |
| 3 | 10.0 | 9.4 | 6.0 | 4.6 | 3.4 | 2.3 | 2.6 | 6.9 | 2.6 | 2.0 | 2.0 | 3.2 |
| 4 | 10.0 | 9.4 | 6.0 | 5.1 | 3.5 | 2.1 | 3.6 | 5.7 | 2.3 | 2.0 | 2.0 | 3.2 |
| 5 | 10.0 | 9.4 | 6.0 | 5.0 | 3.2 | 2.0 | 3.8 | 5.3 | 2.0 | 2.0 | 2.0 | 3.2 |
| 6 | 10.0 | 9.4 | 6.0 | 4.9 | 3.2 | 2.0 | 3.2 | 5.4 | 2.0 | 2.0 | 2.0 | 3.2 |
| 7 | 10.0 | 9.4 | 6.7 | 4.8 | 3.2 | 2.1 | 3.2 | 4.9 | 2.0 | 2.0 | 2.0 | 3.2 |
| 8 | 10.0 | 9.4 | 8.5 | 4.6 | 3.2 | 2.5 | 2.9 | 4.6 | 2.0 | 2.0 | 2.0 | 3.2 |
| 9 | 7.8 | 9.4 | 9.7 | 4.9 | 3.2 | 2.6 | 2.4 | 3.9 | 2.0 | 2.5 | 1.8 | 2.9 |
| 10 | 6.9 | 9.4 | 9.4 | 5.0 | 3.2 | 3.0 | 2.9 | 3.2 | 2.0 | 2.6 | 1.8 | 2.6 |
| 11 | 6.7 | 9.4 | 9.9 | 4.2 | 2.9 | 2.6 | 3.2 | 3.2 | 2.0 | 16.2 | 1.8 | 2.6 |
| 12 | 6.2 | 9.6 | 10.3 | 4.1 | 2.9 | 2.3 | 3.0 | 2.9 | 2.0 | 5.9 | 1.6 | 2.6 |
| 13 | 6.8 | 9.4 | 9.8 | 4.2 | 2.9 | 2.2 | 2.6 | 3.2 | 2.0 | 2.9 | 1.6 | 2.6 |
| 14 | 6.7 | 9.4 | 9.4 | 4.4 | 2.9 | 2.0 | 2.9 | 3.2 | 2.4 | 1.8 | 1.6 | 2.6 |
| 15 | 7.1 | 9.4 | 9.4 | 4.6 | 3.0 | 2.0 | 2.9 | 3.2 | 4.8 | 1.6 | 1.6 | 2.9 |
| 16 | 7.1 | 9.2 | 8.8 | 4.6 | 3.2 | 2.3 | 3.0 | 2.9 | 2.6 | 1.6 | 1.8 | 3.2 |
| 17 | 8.6 | 9.4 | 7.8 | 4.4 | 3.2 | 2.9 | 3.4 | 2.8 | 2.0 | 1.6 | 1.6 | 3.1 |
| 18 | 8.5 | 9.4 | 7.2 | 3.7 | 3.2 | 2.6 | 9.9 | 2.3 | 2.0 | 1.6 | 1.8 | 2.3 |
| 19 | 7.5 | 9.9 | 7.8 | 3.5 | 3.2 | 2.5 | 24.7 | 5.0 | 2.0 | 1.6 | 2.0 | 2.9 |
| 20 | 7.5 | 9.1 | 8.0 | 3.7 | 3.0 | 2.3 | 12.8 | 2.9 | 2.0 | 1.6 | 2.6 | 3.2 |
| 21 | 6.5 | 8.6 | 7.7 | 3.4 | 2.8 | 2.3 | 7.3 | 2.5 | 2.0 | 1.6 | 3.2 | 3.2 |
| 22 | 6.6 | 8.8 | 7.7 | 3.5 | 3.2 | 2.9 | 4.1 | 7.9 | 2.0 | 1.6 | 3.2 | 3.2 |
| 23 | 7.7 | 8.5 | 7.4 | 3.2 | 2.9 | 2.6 | 7.7 | 3.6 | 2.0 | 1.6 | 3.2 | 3.2 |
| 24 | 54.1 | 9.0 | 7.4 | 3.7 | 2.3 | 2.6 | 7.2 | 2.5 | 2.0 | 1.8 | 3.2 | 3.2 |
| 25 | 33.8 | 8.6 | 7.7 | 3.9 | 2.3 | 2.9 | 6.0 | 2.2 | 2.0 | 1.8 | 3.2 | 3.2 |
| 26 | 13.0 | 7.9 | 6.7 | 4.2 | 2.6 | 3.2 | 6.2 | 1.8 | 2.0 | 2.0 | 3.5 | 3.2 |
| 27 | 10.6 | 6.0 | 6.0 | 4.2 | 2.6 | 3.2 | 10.3 | 2.0 | 2.0 | 2.0 | 3.5 | 3.2 |
| 28 | 10.0 | 7.1 | 5.7 | 3.5 | 2.6 | 4.1 | 6.7 | 2.0 | 2.0 | 2.0 | 3.5 | 3.2 |
| 29 | 10.0 | | 4.8 | 3.8 | 2.6 | 4.6 | 6.6 | 2.0 | 2.0 | 2.0 | 3.2 | 3.2 |
| 30 | 10.0 | | 5.8 | 3.9 | 2.2 | 4.6 | 7.8 | 2.0 | 2.0 | 2.0 | 3.2 | 3.2 |
| 31 | 10.0 | | 5.2 | | 2.0 | | 12.9 | 2.3 | | 2.0 | | 3.5 |
| Sum | 339.7 | 252.7 | 231.5 | 127.1 | 92.0 | 79.6 | 183.0 | 115.2 | 65.9 | 77.9 | 70.5 | 94.6 |

| Month | Current Year 1962 | | | | | | | | Period | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Extreme Gage Feet | | Extreme Second Feet | | | | Average Second Feet | Total Acre Feet | Acre Feet | | |
| | | | High | | Low | | | | Average | Maximum | Minimum |
| | High | Low | Day | | Day | | | | | | |
| Jan. | 1.03 | 0.15 | 24 | 112 | 9 | 5.4 | 10.9 | 673 | | | |
| Feb. | .23 | .16 | †12 | 10.3 | †26 | 6.0 | 9.0 | 500 | | | |
| Mar. | .25 | .13 | † 9 | 10.3 | 29 | 4.6 | 7.5 | 459 | | | |
| Apr. | .16 | .10 | † 4 | 6.0 | †18 | 3.2 | 4.2 | 252 | | | |
| May | .11 | .07 | † 1 | 3.9 | †23 | 2.0 | 3.0 | 182 | | | |
| June | .15 | .07 | 28 | 5.3 | † 1 | 2.0 | 2.6 | 158 | | | |
| July | .74 | .05 | †18 | 67.1 | 9 | 1.6 | 5.9 | 363 | | | |
| Aug | .95 | .05 | 22 | 99.6 | 25 | 1.6 | 3.7 | 228 | | | |
| Sept. | .20 | .07 | 15 | 7.7 | † 4 | 2.0 | 2.2 | 133 | | | |
| Oct. | .92 | .05 | 11 | 94.6 | †14 | 1.6 | 2.5 | 155 | | | |
| Nov. | .11 | .05 | †26 | 3.9 | † 9 | 1.6 | 2.4 | 140 | | | |
| Dec. | .11 | .07 | 31 | 3.9 | †18 | 2.0 | 3.0 | 187 | | | |
| Yearly | 1.03 | 0.05 | | 112 | | 1.6 | 4.7 | 3,430 | | | |

† And other days

# 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 15 current meter measurements or observation of no flow during the year. Computations by shifting control methods. Records obtained and furnished by the U. S. Geological Survey. Records fair except for periods of *fragmentary or no gage height record, which are poor. Records available:* March to November 1907 and April 1909 to December 1912 (discharge measurements and fragmentary gage height record), January 1913 to June 1922 (October 1915 to September 1916, monthly discharges only), May 1930 to December 1933, July 1935 through December 1962.

REMARKS; Diversions in both countries affect the flow at this station. The major diversions occur in Mexico for domestic and irrigation uses. There are no storage dams above the station as of December 1962.

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

## Mean Daily Discharge in Second-Feet 1962 — Annual and Period Summary

| Day | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 21 | 48 | 16 | 13 | 4.7 | 0.4 | 0 | 0.4 | 0.3 | 0.2 | 0.1 | 0.9 |
| 2 | 21 | 37 | 16 | 13 | 4.7 | .4 | 0 | .4 | .3 | .2 | .1 | .7 |
| 3 | 21 | 34 | 17 | 13 | 3.4 | .4 | 0 | .3 | .3 | .2 | .1 | .5 |
| 4 | 20 | 28 | 16 | 13 | 3.1 | .4 | 0 | .3 | .3 | .2 | .1 | .4 |
| 5 | 20 | 26 | 16 | 12 | 2.7 | .4 | 0 | .3 | .3 | .2 | .1 | .4 |
| 6 | 20 | 25 | 15 | 12 | 3.1 | .4 | 0 | .3 | .3 | .3 | .1 | .4 |
| 7 | 19 | 22 | 17 | 12 | 2.3 | .3 | 0 | .3 | .3 | .3 | .1 | .4 |
| 8 | 19 | 17 | 21 | 10 | 2.0 | .3 | 0 | .3 | .3 | .2 | .1 | .4 |
| 9 | 20 | 18 | 17 | 9.2 | 2.0 | .3 | 0 | .2 | .3 | .1 | .1 | .4 |
| 10 | 19 | 18 | 16 | 7.4 | 1.7 | .3 | 0 | .1 | .2 | .1 | .1 | .3 |
| 11 | 17 | 17 | 15 | 7.4 | .9 | .3 | 0 | .2 | 25 | .1 | .1 | .3 |
| 12 | 19 | 17 | 15 | 6.8 | .9 | .3 | 0 | .1 | 2.3 | .1 | .1 | .4 |
| 13 | 20 | 17 | 15 | 6.8 | 1.4 | .3 | 0 | 0 | 8.2 | .1 | .2 | .4 |
| 14 | 23 | 18 | 15 | 6.8 | 1.4 | .3 | 0 | 0 | .5 | .1 | .2 | .4 |
| 15 | 19 | 17 | 14 | 6.8 | 1.4 | .3 | 0 | 0 | .4 | .1 | .2 | .4 |
| 16 | 18 | 17 | 14 | 6.2 | .9 | .3 | 0 | 0 | .4 | .1 | .3 | .3 |
| 17 | 20 | 16 | 14 | 5.7 | .9 | .3 | 0 | 29 | .4 | .1 | .3 | .4 |
| 18 | 21 | 17 | 12 | 5.7 | .9 | .3 | 10 | 3.1 | .4 | .1 | .3 | .7 |
| 19 | 20 | 17 | 12 | 5.7 | .9 | .3 | 1.1 | 158 | .4 | .1 | .4 | .5 |
| 20 | 17 | 17 | 14 | 5.7 | .9 | .3 | .9 | 10 | .3 | .2 | .4 | .5 |
| 21 | 14 | 16 | 17 | 4.7 | .7 | .3 | .4 | 1.0 | .3 | .2 | .3 | .5 |
| 22 | 16 | 17 | 17 | 6.2 | .7 | .3 | .1 | .5 | .3 | .1 | .3 | .5 |
| 23 | 25 | 17 | 18 | 5.7 | .7 | .3 | 0 | .5 | .3 | .1 | .2 | .3 |
| 24 | 419 | 17 | 15 | 6.2 | .7 | .1 | 3.1 | .4 | .3 | .1 | .3 | .3 |
| 25 | 994 | 17 | 14 | 6.8 | .7 | 0 | .4 | .4 | .3 | .1 | .3 | .4 |
| 26 | 342 | 17 | 14 | 7.4 | .5 | 0 | .7 | .4 | .3 | .1 | .3 | .5 |
| 27 | 196 | 17 | 14 | 6.8 | .5 | 0 | 4.7 | .3 | .3 | .1 | .3 | .5 |
| 28 | 129 | 17 | 13 | 6.8 | .7 | 0 | .4 | .3 | .2 | .1 | .3 | .5 |
| 29 | 76 | | 13 | 5.7 | .5 | 0 | .3 | .3 | .2 | .1 | .4 | .4 |
| 30 | 66 | | 13 | 5.2 | .5 | 0 | .3 | .3 | .2 | .1 | .7 | .3 |
| 31 | 55 | | 13 | | .4 | | .4 | .3 | | .1 | | .3 |
| Sum | 2,726 | 578 | 468 | 239.7 | 46.8 | 7.6 | 22.8 | 208.0 | 43.9 | 4.3 | 6.9 | 13.6 |

| Month | Current Year 1962 | | | | | | | | Period 1936-1962 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Extreme Gage Feet | | Ø Extreme Second-Feet | | | | Average Second-Feet | Total Acre-Feet | Acre-Feet | | |
| | | | High | | Low | | | | Average | Maximum | Minimum |
| | High | Low | Day | | Day | | | | | | |
| Jan. | | | 25 | 994 | 21 | 14 | 87.9 | 5,410 | 1,228 | 16,710 | 64 |
| Feb. | | | 1 | 48 | 17 | 16 | 20.6 | 1,150 | 591 | 2,710 | 59 |
| Mar. | | | 8 | 21 | † 18 | 12 | 15.1 | 928 | 448 | 1,580 | 98 |
| Apr. | | | † 1 | 13 | 21 | 4.7 | 7.99 | 475 | 177 | 475 | 19 |
| May | | | † 1 | 4.7 | 31 | .4 | 1.51 | 93 | 63.7 | 180 | 2 |
| June | | | † 1 | .4 | † 25 | 0 | .25 | 15 | 82.9 | 1,020 | 0 |
| July | | | 18 | 10 | † 1 | 0 | .74 | 45 | 2,581 | 15,610 | 45 |
| Aug. | | | 19 | 158 | † 13 | 0 | 6.71 | 413 | 5,878 | 45,790 | 91 |
| Sept. | | | 11 | 25 | † 10 | .2 | 1.46 | 87 | 1,112 | 5,540 | 17 |
| Oct. | | | † 6 | .3 | † 9 | .1 | .14 | 8.5 | 286 | 1,550 | 8.5 |
| Nov. | | | 30 | .7 | † 1 | .1 | .23 | 14 | 237 | 1,140 | 14 |
| Dec. | | | 1 | .9 | † 10 | .3 | .44 | 27 | 531 | 5,920 | 27 |
| Yearly | | | | 994 | | 0 | 12.0 | 8,670 | 13,216 | 57,671 | 3,499 |

† And other days Ø Mean daily

# 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 1962.

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 Millions of Gallons | | | Mean Daily Flows-Millions of Gallons Per Day | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Current Year 1962 | | | Period 1952-1962 | | |
| | U.S. | Mexico | Total | Maximum | Minimum | Mean | Maximum | Minimum | Mean |
| Jan. | 43.258 | 32.950 | 76.208 | 2.902 | 1.802 | 2.458 | 4.162 | 0.650 | 1.687 |
| Feb. | 39.646 | 35.150 | 74.796 | 2.934 | 2.084 | 2.671 | 3.762 | .650 | 1.800 |
| Mar. | 44.082 | 40.600 | 84.682 | 3.078 | 2.328 | 2.732 | 3.662 | .750 | 1.753 |
| Apr. | 35.504 | 37.450 | 72.954 | 2.652 | 2.002 | 2.432 | 3.962 | .700 | 1.716 |
| May | 35.119 | 35.950 | 71.069 | 2.452 | 2.002 | 2.293 | 3.634 | .550 | 1.620 |
| June | 31.804 | 35.850 | 67.654 | 2.402 | 2.002 | 2.255 | 3.317 | .700 | 1.486 |
| July | 37.036 | 34.850 | 71.886 | 2.652 | 1.902 | 2.319 | 3.502 | .700 | 1.531 |
| Aug. | 36.461 | 37.550 | 74.011 | 2.552 | 2.052 | 2.387 | 3.587 | .750 | 1.910 |
| Sept. | 31.104 | 35.750 | 66.854 | 2.952 | 1.902 | 2.228 | 4.112 | .800 | 2.187 |
| Oct. | 26.116 | 35.650 | 61.766 | 2.202 | 1.602 | 1.992 | 3.761 | .700 | 2.004 |
| Nov. | 23.054 | 33.650 | 56.704 | 2.102 | 1.452 | 1.890 | 3.510 | .800 | 1.780 |
| Dec. | 24.825 | 34.281 | 59.106 | 2.402 | 1.602 | 1.907 | 3.360 | .350 | 1.769 |
| Yearly | 408.009 | 429.681 | 837.690 | 3.078 | 1.452 | 2.295 | 4.162 | 0.350 | 1.770 |

# 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. Four stations are operated and maintained by the United States Section of this Commission and four 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 | | Green Cattle Company, Arizona | | Nogales Sanitation Plant 2N, Arizona | |
|---|---|---|---|---|---|---|---|---|
| | 1962 | Average 1952-1962 | 1962 | Average 1952-1962 | 1962 | Average 1953-1962 | 1962 | Average 1953-1962 |
| Jan. | 1.72 | 1.14 | 1.96 | | 1.55 | 1.07 | 1.60 | 1.30 |
| Feb. | T | .38 | T | | T | .47 | .45 | .47 |
| Mar. | 1.07 | 1.02 | | | .80 | .88 | .84 | .97 |
| Apr. | T | .26 | T | 0.31 | T | .09 | .02 | .08 |
| May | 0 | .05 | 0 | .04 | 0 | .07 | 0 | .07 |
| June | .14 | .62 | .15 | | T | .52 | .36 | .38 |
| July | 2.88 | 4.33 | 3.48 | 5.02 | 3.20 | 4.55 | 3.93 | 4.36 |
| Aug. | .92 | 4.34 | .45 | | .31 | 2.92 | 4.90 | 4.14 |
| Sept. | 1.59 | .93 | 3.69 | | 1.00 | .94 | 2.36 | .94 |
| Oct. | 0 | .89 | 1.30 | | .50 | .93 | T | 1.15 |
| Nov. | .36 | .40 | .35 | | .30 | .30 | .04 | .42 |
| Dec. | 1.21 | .68 | 2.20 | .82 | 1.20 | .56 | 2.25 | .83 |
| Yearly | 9.89 | 15.04 | | | 8.86 | 13.30 | 16.75 | 15.11 |

| Month | Nogales, Arizona | | San Rafael Ranch, Arizona | | Canelo, Arizona | | Patagonia, Arizona | |
|---|---|---|---|---|---|---|---|---|
| | 1962 | Average 1914-1962 | 1962 | Average 1924-1962 | 1962 | Average 1930-1962 | 1962 | Average 1930-1962 |
| Jan. | 1.55 | 1.13 | | | 2.08 | 1.26 | 2.14 | 1.33 |
| Feb. | .47 | .84 | | | .26 | 1.12 | .51 | 1.02 |
| Mar. | 1.08 | .79 | | | 1.28 | .80 | 1.14 | .86 |
| Apr. | .14 | .31 | 0.05 | 0.41 | .05 | .38 | .09 | .34 |
| May | 0 | .14 | 0 | .11 | 0 | .12 | 0 | .17 |
| June | .21 | .46 | .03 | .80 | .10 | 1.00 | .12 | .51 |
| July | 4.24 | 4.01 | 3.07 | 4.50 | 3.06 | 4.13 | 2.84 | 4.47 |
| Aug. | 2.55 | 3.94 | 1.57 | 4.08 | .34 | 4.57 | .99 | 4.23 |
| Sept. | 2.41 | 1.55 | 1.55 | 1.73 | 2.36 | 1.57 | 1.76 | 1.54 |
| Oct. | .19 | .76 | | | .70 | .90 | .43 | .84 |
| Nov. | .20 | .68 | .32 | .61 | .32 | .74 | .48 | .74 |
| Dec. | 2.12 | 1.17 | 1.21 | 1.12 | 1.65 | 1.25 | 1.71 | 1.18 |
| Yearly | 15.16 | 15.78 | | | 12.20 | 17.84 | 12.21 | 17.23 |

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' | 3,800 | 1914 | Milford L. Noon |
| 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 the monthly records of temperature, humidity, evaporation, and wind at the station two miles north of the Nogales Sanitation Plant in Arizona. The station is operated and maintained by the United States Section of this Commission. The equipment 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.

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

TEMPERATURE - DEGREES FAHRENHEIT

| Month | Nogales Sanitation Plant - 2N | | |
|---|---|---|---|
| | 1962 | | |
| | Mean | Max. | Min. |
| Jan. | Ø 45.2 | 75 | 11 |
| Feb. | Ø 49.8 | 79 | 19 |
| Mar. | 46.5 | 83 | 18 |
| Apr. | 61.1 | 93 | 31 |
| May | 63.5 | 92 | 32 |
| June | 71.2 | 104 | 38 |
| July | 77.2 | 99 | 48 |
| Aug. | Ø 78.2 | 102 | 55 |
| Sept. | Ø 73.1 | 98 | 40 |
| Oct. | 63.8 | 92 | 35 |
| Nov. | 55.5 | 86 | 22 |
| Dec. | Ø 48.6 | 75 | 24 |
| Yearly | 61.1 | 104 | 11 |

Ø One or more days missing

MEAN RELATIVE HUMIDITY - PERCENT

| Month | Nogales Sanitation Plant - 2N | |
|---|---|---|
| | 1962 | |
| | Max. | Min. |
| Jan. | 90 | 50 |
| Feb. | 90 | 40 |
| Mar. | 92 | 20 |
| Apr. | 60 | 12 |
| May | 80 | 14 |
| June | 80 | 10 |
| July | 88 | 10 |
| Aug. | 96 | 30 |
| Sept. | 96 | 24 |
| Oct. | 80 | 40 |
| Nov. | 84 | 32 |
| Dec. | 98 | 40 |
| Yearly | 98 | 10 |

EVAPORATION - INCHES

| Month | Nogales Sanitation Plant - 2N | |
|---|---|---|
| | 1962 | Average #1953-1962 |
| Jan. | 2.99 | 3.43 |
| Feb. | 4.55 | 4.51 |
| Mar. | 5.79 | 7.21 |
| Apr. | 9.51 | 9.76 |
| May | 11.88 | 12.49 |
| June | 12.13 | 13.44 |
| July | 9.14 | 9.75 |
| Aug. | 9.56 | 7.33 |
| Sept. | 6.51 | 7.56 |
| Oct. | 6.89 | 6.64 |
| Nov. | 4.61 | 4.35 |
| Dec. | 2.50 | 3.15 |
| Total | 86.06 | 89.62 |

# Some months missing

MEAN WIND SPEED - MILES PER HOUR

| Month | Nogales Sanitation Plant - 2N | |
|---|---|---|
| | 1962 | Average 1953-1962 |
| Jan. | 2.0 | 2.1 |
| Feb. | 2.2 | 2.5 |
| Mar. | 2.6 | 2.7 |
| Apr. | 2.6 | 2.5 |
| May | 2.4 | 2.6 |
| June | 1.9 | 2.3 |
| July | 1.3 | 1.6 |
| Aug. | 1.2 | .8 |
| Sept. | 1.1 | 1.1 |
| Oct. | 1.6 | 1.5 |
| Nov. | 1.3 | 1.4 |
| Dec. | 1.4 | 1.6 |
| Yearly | 1.8 | 1.9 |

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

## 1962

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 | 17,020 | 0 | 17,020 |

# CORRECTIONS TO PREVIOUS WATER BULLETINS

## DRAIN 8-B (ARAZ DRAIN)

In the 1960 and 1961 Water Bulletins, the period in the Annual and Period Summary should be May 1948-1960 and May 1948-1961, respectively, instead of 1948-1960 and 1948-1961 as shown. The yearly minimum should be 4,830 acre-feet instead of 1,872 as shown.

## TEMPERATURE IN THE COLORADO RIVER BASIN

In the 1961 Water Bulletin, the June minimum for San Luis, R. C., Baja California, for the period 1949-1961 should be 54 degrees instead of 55 as shown.

## RIVERA DRAIN TO NEW RIVER IN MEXICO

In the 1960 and 1961 Water Bulletins, the August maximum monthly discharge in the Annual and Period Summary should be 898 acre-feet instead of 899 as shown and the yearly maximum should be 7,666 acre-feet instead of 7,669 as shown.

## RIO DE LAS PALMAS ABOVE RODRIGUEZ DAM

In the 1960 and 1961 Water Bulletins, the January maximum monthly discharge in the Annual and Period Summary should be 6,569 acre-feet instead of 6,596 as shown.

## TIJUANA RIVER AT INTERNATIONAL BOUNDARY

In the 1960 and 1961 Water Bulletins, the date for the maximum instantaneous discharge in the "Extremes" paragraph should be March 15, 1952 instead of March 15, 1953 as shown.

## TEMPERATURE IN THE TIJUANA RIVER BASIN

In the 1961 Water Bulletin, the abbreviation "Avg." should be deleted from the period columns for all stations located in Mexico.

## WHITEWATER DRAW NEAR DOUGLAS, ARIZONA

In the 1960 Water Bulletin, the average for the months of July, August and September in the Annual and Period Summary should be *2,377, *3,823, and *772 acre-feet, respectively, instead of 2,282, 3,670, and 741 as shown and the yearly average of 7,436 acre-feet should be deleted.

In the 1961 Water Bulletin, the average for the months of July, August and September in the Annual and Period Summary should be *2,309, *3,696, and *755 acre-feet, respectively, instead of 2,220, 3,554, and 726 as shown and the yearly average of 7,217.5 acre-feet should be deleted.

The asterisk preceding the above-mentioned figures in both bulletins denotes that 1947 records are not available.