

# RECLAMATION

*Managing Water in the West*

## Lower Colorado River Stream Flow Records for Calendar Year 2011



U.S. Department of the Interior  
Bureau of Reclamation  
Lower Colorado Region  
Blythe Hydrographic Office

July 11, 2012

Cover:

Photograph of the stilling well at the Below Interstate Bridge gaging station on the Colorado River near Blythe, California.

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## Abbreviated Terms and Symbols

The following abbreviated terms and symbols are found in the text, map, tables, and graphs contained within this report.

ac-ft	acre-feet
cfs	cubic-feet per second
°	degrees
E	east
elev	elevation
ft	feet
gh	gage-height
gps	global positioning system
id	identification
max	maximum
mi	mile (miles)
mi <sup>2</sup>	square mile (miles)
min	minimum
'	minutes
N	north
NE	northeast
NW	northwest
R	range
S	south
SE	southeast
SW	southwest
T	township
W	west

## **Explanation of Records**

The Bureau of Reclamation, Blythe Hydrographic Office is responsible for collecting surface water records along the Lower Colorado River between Hoover Dam and the Southern International Boundary with Mexico. The data provided in this report is not inclusive to the data collection efforts of the Lower Colorado Region but indicative of the record collection responsibilities of the Operations Support Group of the Boulder Canyon Operations Office.

### **Data Collection and Computation**

The data collected consist of records of stage, velocity, and discharge values and empirical measurements of discharge of streams or canals. Records of stage, velocity-index, and/or discharge-index are obtained from digital dataloggers that measure electronic sensors at programmed time intervals, and calculate mean hourly values. The recorded values are transmitted via telemetry to the Lower Colorado River Hydrologic Database in Boulder City, Nevada and are downloaded from gaging station field locations by Reclamation Hydrologic Technicians with a laptop computer. Electronic sensor selection is dependent on the parameters required to measure a component of discharge, and vary by gaging station. Measurements of discharge are made with a mechanical current meter, an acoustic Doppler velocimeter, or an acoustic Doppler current profiler. Measurement techniques comply with standards established by the United States Geological Survey and follow guidelines set forth by the Blythe Hydrographic Office draft quality assurance and quality control plan.

For stream-gaging discharge record stations, discharge rating tables for an appropriate range of stage are prepared from stage-discharge curves. Rating curves are extended to compute discharge values outside of the minimum and maximum measured values by plotting regressions generated from linear, logarithmic, or power equations. Hourly mean discharge values are computed from hourly mean gage-heights applied to rating tables. Monthly and yearly mean discharges are computed from mean daily discharge values. Stage-shifting and velocity-shifting methods are applied to rating curves when continual or temporary physical changes impact the discharge relationship. Dynamic physical conditions may include changes in control or channel geometry caused by migrating sandbars on the channel bottom, seasonal variations in aquatic growth, lack of bank line stability, and side wash ephemeral flows. Shift adjustments may be prorated with time or stage.

At gaging stations where stage-discharge relationships are not accurate due to backwater effect caused by downstream ponding in reservoirs, variations in downstream gate configurations, or other situations where no artificial or natural controls are present, the use of velocity-index or discharge-index techniques may be used. The velocity indexing method consists of using an index velocity to calculate an average velocity for the flow in the stream. This average velocity along with a stage-area relationship is used to calculate discharge. Gaging stations that utilize pipe meter devices to measure discharge often require correction through the use of a discharge-index relationship. The discharge indexing method consists of using an index discharge to calculate stream discharge by direct correlation.

For some gaging stations, there are periods when no data are available or data are in error, and cannot be used to compute hourly discharge. This condition occurs when the datalogger or connected sensors malfunction due to failure, drift, or fouling. For such periods, discharge is computed from an estimated independent variable using various techniques including, but not limited to, interpolation, projecting from surrounding data, or a hydrologic relation developed with another stream gage.

## Data Presentation

Records published for each continuous-record station consist of three parts: (1) station manuscript; (2) hydrograph; and (3) data table of daily mean values for the current year with summary data. Times provided reference Mountain Standard Time.

### Station Manuscript

The station manuscript provides descriptive information such as station location, period of record, historical extremes, and other remarks pertinent to station operation. The following descriptions detail the type of information included in each section.

**Location**—Information on the location is obtained from Global Positioning System data referencing the World Geodetic System of 1984, including reference to physical features in the vicinity. Township, range, section, and meridian descriptions are obtained from USGS topographical maps. In a few locations, the grid system is not available on the Fort Mojave Indian Reservation. In these locations, the grid system has been projected to obtain the required information. Descriptions of distance between a gaging station, and a nearby town are provided as a linear distance, not a driving distance. Distances downstream of dams are provided in river miles between the upstream dam, and the gaging station.

**Drainage Area**—Drainage areas were cited from the Inter-agency Committee River Mile Index published in January 1976 and measured using Reclamation aerial orthophotographs and USGS topographic quadrangles. Gaging stations with drainage areas listed as “not applicable” indicate a stream or canal that is not impacted by runoff. Drainage areas listed as “undetermined” indicate a drainage area that has not been outlined and/or measured by Reclamation.

**Period of Record**—The period for which there are published records for the station or for an equivalent station. An equivalent station is one that was in operation at a time when the present station was not in operation and the location was such that records from it can reasonably be considered equivalent with records from the present station. Calendar year 2005 was the first year that a final record was published by the Blythe Hydrographic Office. In many cases, the gaging stations mentioned in this publication have been in operation for some time prior to 2005. However, the records have not been finalized or published for any gage prior to 2005.

**Gage**—A description of the gage used during the reporting year including the gage equipment and the technique used to compute the record.

**Extremes**—Extreme discharge values are listed as minimum and maximum hourly, and daily mean values for the record period listed in the period of record section.

**Remarks**—Periods of estimated hourly discharge record will be identified in this paragraph if the method used to estimate the record was non-standard. The paragraph is also used to present information relative to the record that may include details regarding special methods of computation, conditions that affect flow at the station, information on system outages, and other pertinent items.

### Hydrograph, Data Table, and Summary Data

The discharge hydrograph displays mean daily discharge in a graphical format. The data table that follows each station manuscript and discharge hydrograph provides mean daily discharge values presented in tabular format. Basic statistical information is provided near the bottom summarizing each month,

including total, mean, maximum, and minimum discharge values in cubic-feet per second for the month and total volume expressed in acre-feet. In addition, annual discharge in cubic-feet per second, and volume in acre-feet are provided for the year along with the annual mean, maximum, and minimum daily discharges. Maximum and minimum hourly discharge values located on the bottom of the table indicate the date, time, stage, and discharge that the hourly extremes occurred during the year.

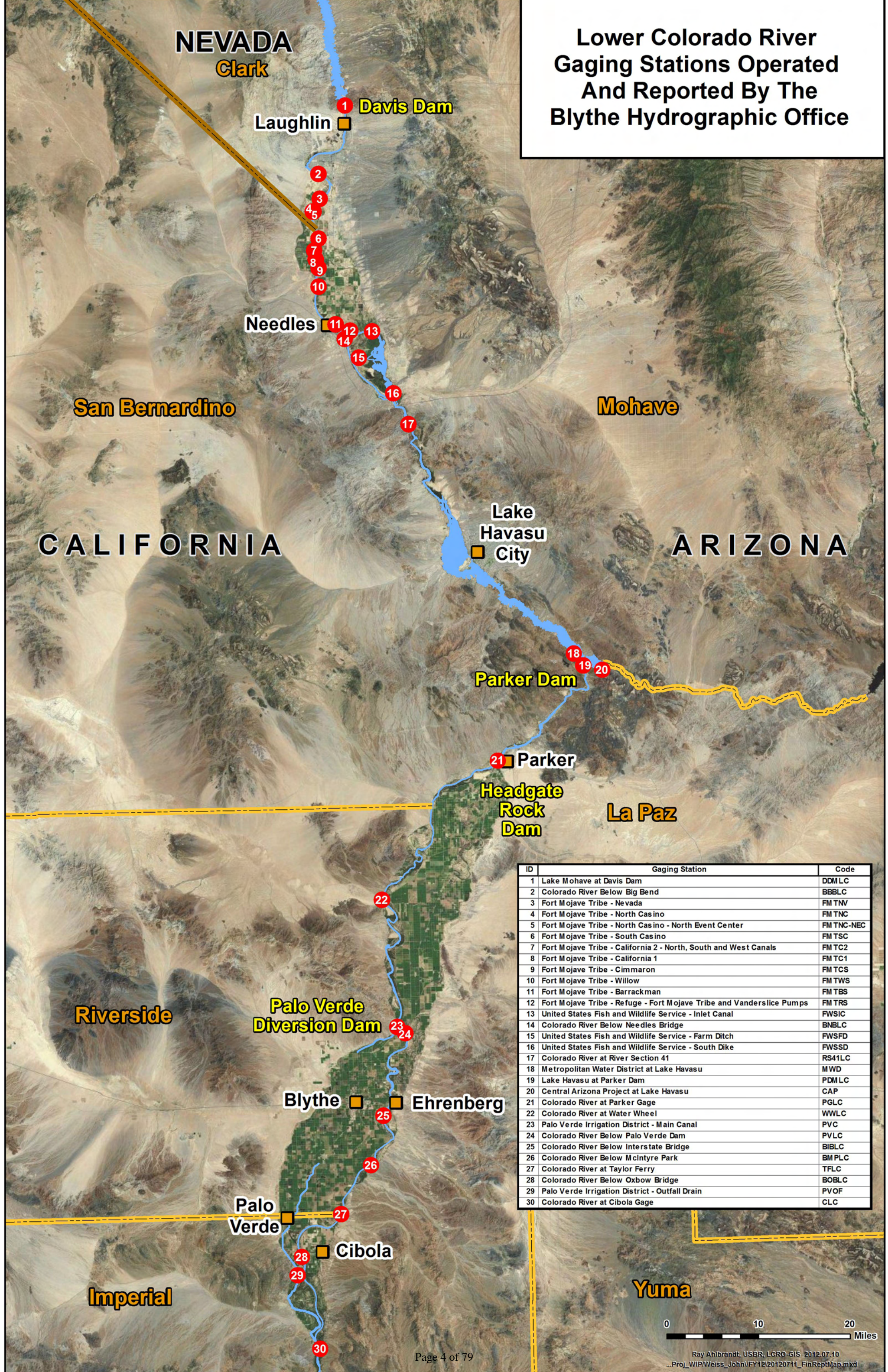
The stage hydrograph displays mean daily stage values in a graphical format. The data table that follows each manuscript and stage hydrograph provides mean daily stage values presented in tabular format. Basic statistical information is provided near the bottom summarizing each month, including mean, maximum, and minimum values for the month. In addition, annual mean, maximum, and minimum daily values are provided. Maximum and minimum stage values located on the bottom of the table indicate the date, time, and stage that the hourly extremes occurred during the year.

Stage values throughout this report will be referenced as either gage-height or stage, where no vertical datum is used, or as an elevation which references sea level using the National Geodetic Vertical Datum of 1929.

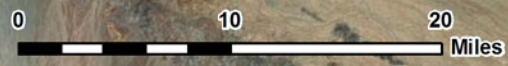
### **Document Layout**

The hydrographs and data tables are grouped by entity and gage type. The report begins with lakes, then Colorado River gaging stations, and concludes with diversions and returns from the Colorado River. Each grouping is presented geographically beginning with the northern most gage.

**Lower Colorado River  
Gaging Stations Operated  
And Reported By The  
Blythe Hydrographic Office**



ID	Gaging Station	Code
1	Lake Mohave at Davis Dam	DDMLC
2	Colorado River Below Big Bend	BBBLC
3	Fort Mojave Tribe - Nevada	FM TNV
4	Fort Mojave Tribe - North Casino	FM TNC
5	Fort Mojave Tribe - North Casino - North Event Center	FM TNC-NEC
6	Fort Mojave Tribe - South Casino	FM TSC
7	Fort Mojave Tribe - California 2 - North, South and West Canals	FM TC2
8	Fort Mojave Tribe - California 1	FM TC1
9	Fort Mojave Tribe - Cimmaron	FM TCS
10	Fort Mojave Tribe - Willow	FM TWS
11	Fort Mojave Tribe - Barrackman	FM TBS
12	Fort Mojave Tribe - Refuge - Fort Mojave Tribe and Vanderslice Pumps	FM TRS
13	United States Fish and Wildlife Service - Inlet Canal	FWSIC
14	Colorado River Below Needles Bridge	BNBLC
15	United States Fish and Wildlife Service - Farm Ditch	FWSFD
16	United States Fish and Wildlife Service - South Dike	FWSSD
17	Colorado River at River Section 41	RS41LC
18	Metropolitan Water District at Lake Havasu	MWD
19	Lake Havasu at Parker Dam	PDMLC
20	Central Arizona Project at Lake Havasu	CAP
21	Colorado River at Parker Gage	PGLC
22	Colorado River at Water Wheel	WWLC
23	Palo Verde Irrigation District - Main Canal	PVC
24	Colorado River Below Palo Verde Dam	PVLC
25	Colorado River Below Interstate Bridge	BIBLC
26	Colorado River Below McIntyre Park	BMPLC
27	Colorado River at Taylor Ferry	TFLC
28	Colorado River Below Oxbow Bridge	BOBLC
29	Palo Verde Irrigation District - Outfall Drain	PVOF
30	Colorado River at Cibola Gage	CLC





An aerial photograph of a large reservoir, likely a dammed river, set in a rugged, mountainous landscape. The water is a deep blue, contrasting with the brown and tan rocky terrain. The mountains in the background are hazy, suggesting a distance or atmospheric conditions. The overall scene is a wide, panoramic view of the water body and its surrounding environment.

## **Lake Gaging Stations**

## Lake Mohave at Davis Dam

**Location**—Latitude 35° 11.765', longitude -114° 34.189', in the NW¼ NW¼ of Section 19, T. 21 N., R. 21 W., Gila-Salt River meridian, Mohave County, Arizona, Hydrologic Unit 15030101, river mi 275.9, 55.7 mi south of Boulder City, Nevada, 2.0 mi north of Laughlin, Nevada, and 66.3 river mi downstream of Hoover Dam.

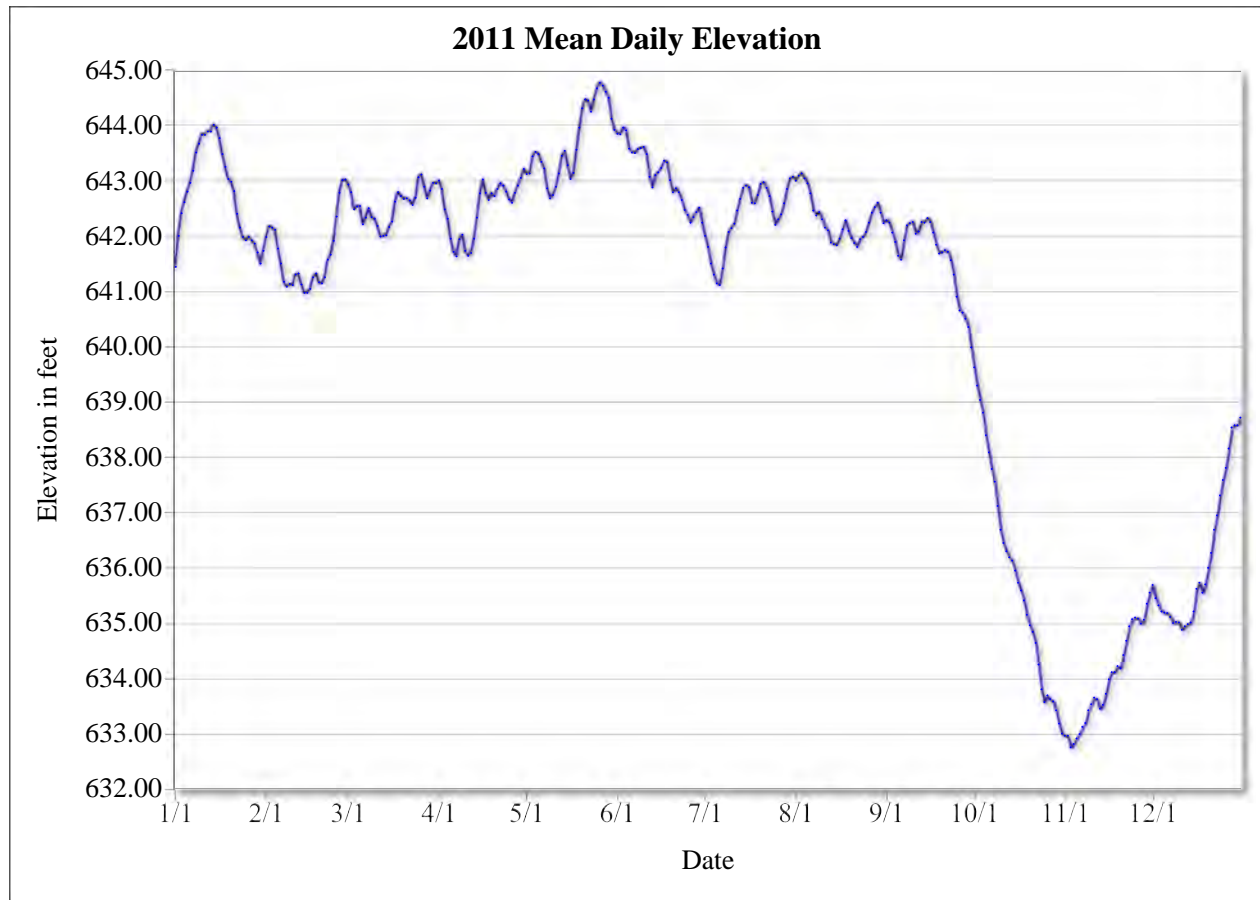
**Drainage Area**—169,300 mi<sup>2</sup>.

**Period of Record**—January 1, 2011 to current year.

**Gage**—A Sutron Xlite datalogger (Model 9210-0000-2B) records water elevation measured with a Sutron multiple interface shaft encoder (Model 56-0540-400-DTR).

**Extremes**—Maximum daily elevation, 644.78 ft, May 26, 2011; minimum daily elevation, 632.75 ft, Nov. 3, 2011; maximum hourly elevation, 644.92 ft, May 26, 2011 at 01:00; minimum hourly elevation, 632.63 ft, Nov. 3, 2011 at 16:00.

**Remarks**—None.



## Lake Mohave at Davis Dam

Elevation, in feet, Calendar Year 2011

Day	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	641.45	641.99	642.94	643.01	643.13	643.86	642.01	643.01	642.29	639.63	632.96	635.69
2	642.01	642.18	642.80	642.86	643.14	643.85	641.81	643.10	642.25	639.30	632.96	635.45
3	642.42	642.16	642.49	642.49	643.45	643.97	641.51	643.14	642.07	639.04	632.75	635.32
4	642.62	642.12	642.54	642.32	643.53	643.92	641.31	643.05	641.90	638.81	632.81	635.21
5	642.81	641.78	642.55	641.96	643.49	643.59	641.15	642.96	641.65	638.40	632.91	635.19
6	642.97	641.51	642.22	641.72	643.35	643.52	641.12	642.78	641.58	638.09	632.99	635.18
7	643.19	641.18	642.34	641.64	643.23	643.51	641.42	642.47	641.93	637.79	633.12	635.11
8	643.52	641.09	642.51	641.95	642.87	643.58	641.80	642.38	642.20	637.56	633.19	635.00
9	643.68	641.14	642.35	642.03	642.69	643.60	642.08	642.44	642.24	637.12	633.42	635.02
10	643.84	641.12	642.32	641.74	642.75	643.62	642.15	642.31	642.26	636.69	633.53	635.01
11	643.84	641.31	642.19	641.65	642.90	643.49	642.23	642.16	642.05	636.45	633.65	634.88
12	643.90	641.33	642.00	641.70	643.14	643.08	642.47	642.11	642.09	636.30	633.62	634.94
13	643.90	641.13	642.01	641.96	643.46	642.89	642.68	641.89	642.26	636.19	633.45	634.98
14	644.02	640.98	642.02	642.34	643.55	643.11	642.88	641.86	642.25	636.13	633.52	635.01
15	643.97	640.98	642.17	642.78	643.29	643.16	642.92	641.84	642.33	635.95	633.72	635.21
16	643.78	641.05	642.27	643.03	643.04	643.24	642.89	641.96	642.26	635.73	633.98	635.62
17	643.49	641.26	642.63	642.79	643.15	643.37	642.61	642.13	642.07	635.59	634.11	635.73
18	643.26	641.33	642.80	642.66	643.57	643.34	642.60	642.29	641.85	635.41	634.11	635.55
19	643.04	641.17	642.73	642.78	643.97	643.02	642.75	642.10	641.69	635.15	634.22	635.70
20	642.99	641.15	642.68	642.73	644.32	642.80	642.95	641.97	641.71	634.96	634.18	636.00
21	642.82	641.26	642.69	642.86	644.48	642.87	642.98	641.88	641.75	634.84	634.42	636.27
22	642.41	641.58	642.65	642.96	644.46	642.80	642.88	641.81	641.72	634.64	634.68	636.69
23	642.16	641.67	642.57	642.92	644.26	642.66	642.73	641.95	641.57	634.25	634.94	636.95
24	641.99	641.92	642.70	642.81	644.48	642.48	642.45	641.99	641.31	633.80	635.07	637.31
25	641.93	642.36	643.07	642.67	644.68	642.39	642.21	642.08	640.91	633.57	635.10	637.59
26	641.99	642.79	643.12	642.61	644.78	642.25	642.31	642.25	640.66	633.69	635.08	637.81
27	641.93	643.02	642.90	642.79	644.73	642.35	642.40	642.43	640.62	633.62	634.99	638.16
28	641.87	643.03	642.69	642.92	644.62	642.44	642.60	642.53	640.51	633.58	635.06	638.54
29	641.71		642.83	643.06	644.51	642.52	642.86	642.61	640.36	633.42	635.35	638.58
30	641.51		642.97	643.22	644.13	642.25	643.05	642.43	639.99	633.18	635.55	638.58
31	641.74		642.96		643.93		643.08	642.24		633.00		638.72
Mean	642.80	641.63	642.57	642.50	643.71	643.12	642.35	642.33	641.68	635.87	633.98	636.16
Max	644.02	643.03	643.12	643.22	644.78	643.97	643.08	643.14	642.33	639.63	635.55	638.72
Min	641.45	640.98	642.00	641.64	642.69	642.25	641.12	641.81	639.99	633.00	632.75	634.88

### Calendar Year Summary

Annual Mean 640.72    Daily Max 644.78    Daily Min 632.75

#### Maximum Elevation

Date	Time	Elev
May 26	01:00	644.92

#### Minimum Elevation

Date	Time	Elev
Nov. 3	16:00	632.63

## Lake Havasu at Parker Dam

**Location**—Latitude 34° 17.784', longitude -114° 08.311', in the NW¼ NW¼ of Section 3, T. 2 N., R. 27 E., San Bernardino meridian, San Bernardino County, California, Hydrologic Unit 15030101, river mi 192.0, 16.6 mi south of Lake Havasu City, Arizona, 13.3 mi north of Parker, Arizona, and 83.9 river mi downstream of Davis Dam.

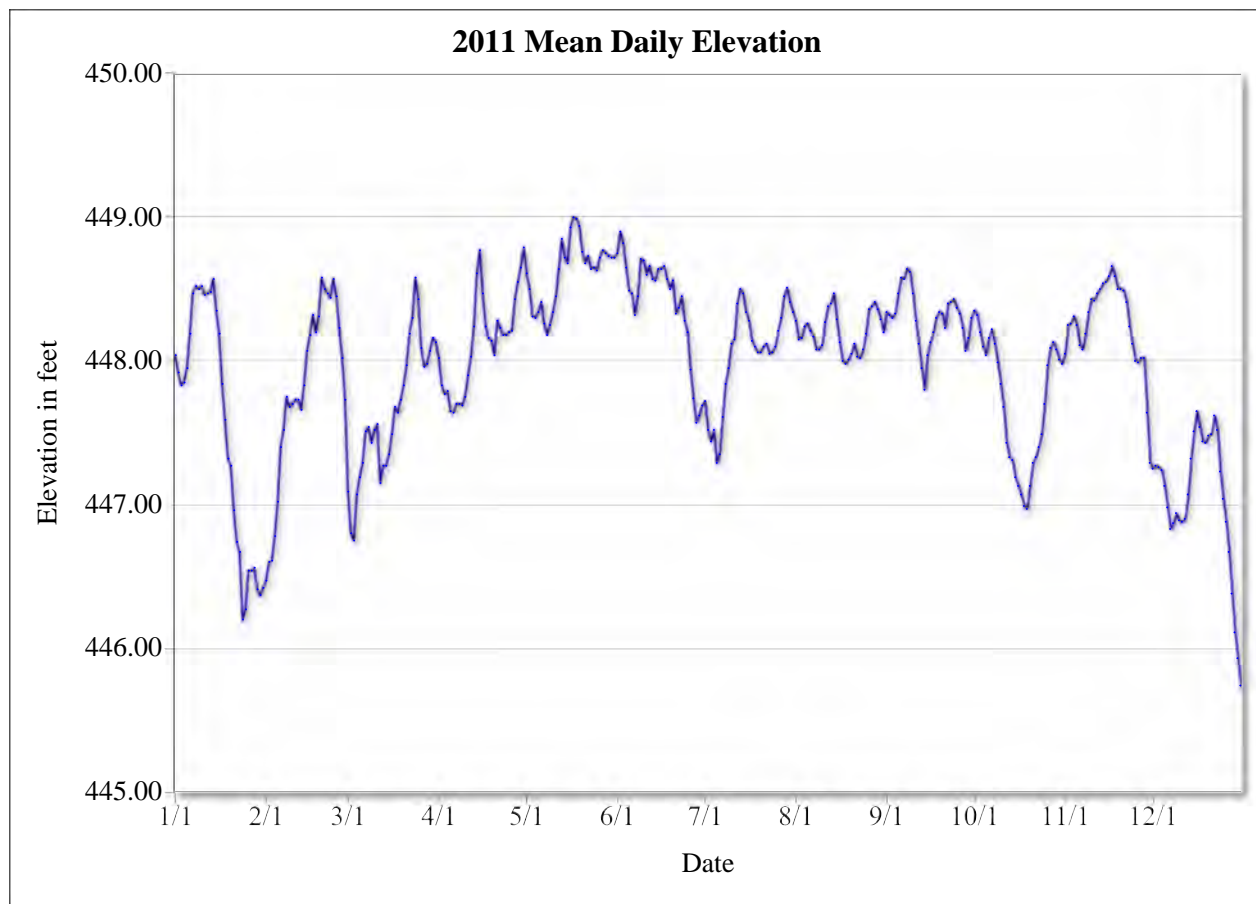
**Drainage Area**—178,800 mi<sup>2</sup>.

**Period of Record**—January 1, 2011 to current year.

**Gage**—A Sutron Xpert datalogger (Model 8080-0000-2A) records water elevation measured with a Sutron multiple interface shaft encoder (Model 56-0540-400-DTR).

**Extremes**—Maximum daily elevation, 449.00 ft, May 17, 2011; minimum daily elevation, 445.74 ft, Dec. 31, 2011; maximum hourly elevation, 449.11 ft, May 18, 2011 at 15:00; minimum hourly elevation, 445.68 ft, Dec. 31, 2011 at 17:00.

**Remarks**—None.



## Lake Havasu at Parker Dam

Elevation, in feet, Calendar Year 2011

Day	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	448.04	446.47	447.09	448.02	448.61	448.75	447.72	448.28	448.34	448.35	448.05	447.25
2	447.92	446.60	446.80	447.83	448.50	448.90	447.52	448.15	448.32	448.32	448.25	447.27
3	447.83	446.61	446.75	447.77	448.31	448.82	447.44	448.16	448.30	448.20	448.26	447.26
4	447.85	446.78	447.07	447.79	448.30	448.65	447.52	448.24	448.33	448.10	448.31	447.24
5	447.95	447.02	447.19	447.65	448.34	448.49	447.29	448.26	448.47	448.04	448.25	447.13
6	448.19	447.40	447.29	447.64	448.41	448.47	447.35	448.21	448.58	448.16	<b>448.11</b>	446.98
7	448.47	447.52	447.51	447.70	448.26	448.32	447.61	448.17	448.57	448.22	<b>448.08</b>	446.83
8	<b>448.52</b>	447.75	447.54	447.70	448.18	448.45	447.84	448.08	448.64	448.12	448.19	446.87
9	<b>448.50</b>	447.68	447.43	447.69	448.25	448.71	447.95	448.08	448.62	447.99	448.34	446.94
10	<b>448.52</b>	447.70	447.52	447.75	448.34	448.70	448.12	448.11	448.47	447.84	448.43	446.89
11	<b>448.46</b>	447.73	447.56	447.90	448.45	448.60	448.15	448.27	448.28	447.68	448.42	446.88
12	448.47	447.73	447.15	448.03	448.64	448.66	448.40	448.38	448.12	447.43	448.47	446.90
13	448.48	447.66	447.27	448.24	448.85	448.57	448.50	448.40	447.95	447.33	448.50	447.07
14	448.57	447.83	447.27	448.61	448.72	448.56	448.47	448.47	447.80	447.31	448.54	447.32
15	448.35	448.07	447.35	448.77	448.68	448.64	448.34	448.29	448.04	447.19	448.55	447.51
16	448.19	448.18	447.49	448.47	448.93	448.64	448.28	448.13	448.13	447.13	448.59	447.65
17	447.84	448.32	447.68	448.24	449.00	448.66	448.14	448.00	448.20	447.07	448.66	447.54
18	447.59	448.20	447.64	448.16	448.99	448.57	448.10	447.98	448.30	446.99	448.59	447.44
19	447.32	448.31	447.73	448.14	448.94	448.50	448.06	448.01	448.34	446.97	448.50	447.43
20	447.27	448.58	447.83	448.04	448.76	448.56	448.06	448.05	448.33	447.13	448.50	447.48
21	446.96	448.50	447.97	448.28	448.68	448.33	448.10	448.12	448.23	447.29	448.49	447.49
22	446.74	448.47	448.19	448.23	448.73	448.37	448.12	448.03	448.40	447.33	448.41	447.62
23	446.67	448.44	448.30	448.18	448.64	448.45	448.05	448.02	448.41	447.40	448.24	447.52
24	446.20	448.57	448.58	448.18	448.65	448.28	448.06	448.08	448.43	447.49	448.12	447.23
25	446.27	448.45	448.43	448.20	448.63	448.20	448.10	448.19	448.37	447.70	448.00	447.04
26	446.54	448.23	448.09	448.21	448.72	447.94	448.21	448.36	448.33	447.97	447.99	446.88
27	446.54	448.02	447.96	448.43	448.77	447.74	448.30	448.38	448.23	448.09	448.02	446.67
28	446.56	447.73	447.98	448.55	448.75	447.57	448.45	448.41	448.07	448.13	448.02	446.38
29	446.41		448.07	448.65	448.73	447.62	448.51	448.36	448.16	448.08	447.64	446.11
30	446.37		448.16	448.79	448.72	447.69	448.41	448.29	448.30	448.01	447.29	445.93
31	446.42		448.13		448.72		448.34	448.20		447.98		445.74
Mean	447.55	447.81	447.65	448.13	448.62	448.41	448.05	448.20	448.30	447.71	448.26	447.05
Max	448.57	448.58	448.58	448.79	449.00	448.90	448.51	448.47	448.64	448.35	448.66	447.65
Min	446.20	446.47	446.75	447.64	448.18	447.57	447.29	447.98	447.80	446.97	447.29	445.74

### Calendar Year Summary

Annual Mean 447.98    Daily Max 449.00    Daily Min 445.74

#### Maximum Elevation

Date    Time    Elev  
May 18    15:00    449.11

#### Minimum Elevation

Date    Time    Elev  
Dec. 31    17:00    445.68

**Bold values indicate the daily value was derived from hourly data that contained 6 or more consecutive hours of estimated record.**



**Colorado River Gaging Stations**

## Colorado River Below Big Bend

**Location**—Latitude 35° 05.303', longitude -114° 37.458', in the SW¼ NW¼ of Section 10, T. 33 S., R. 66 E., Mount Diablo meridian, Clark County, Nevada, Hydrologic Unit 15030101, river mi 264.7, 2.4 mi southwest of Bullhead City, Arizona, 17.2 mi north of Needles, California, and 11.1 river mi downstream of Davis Dam.

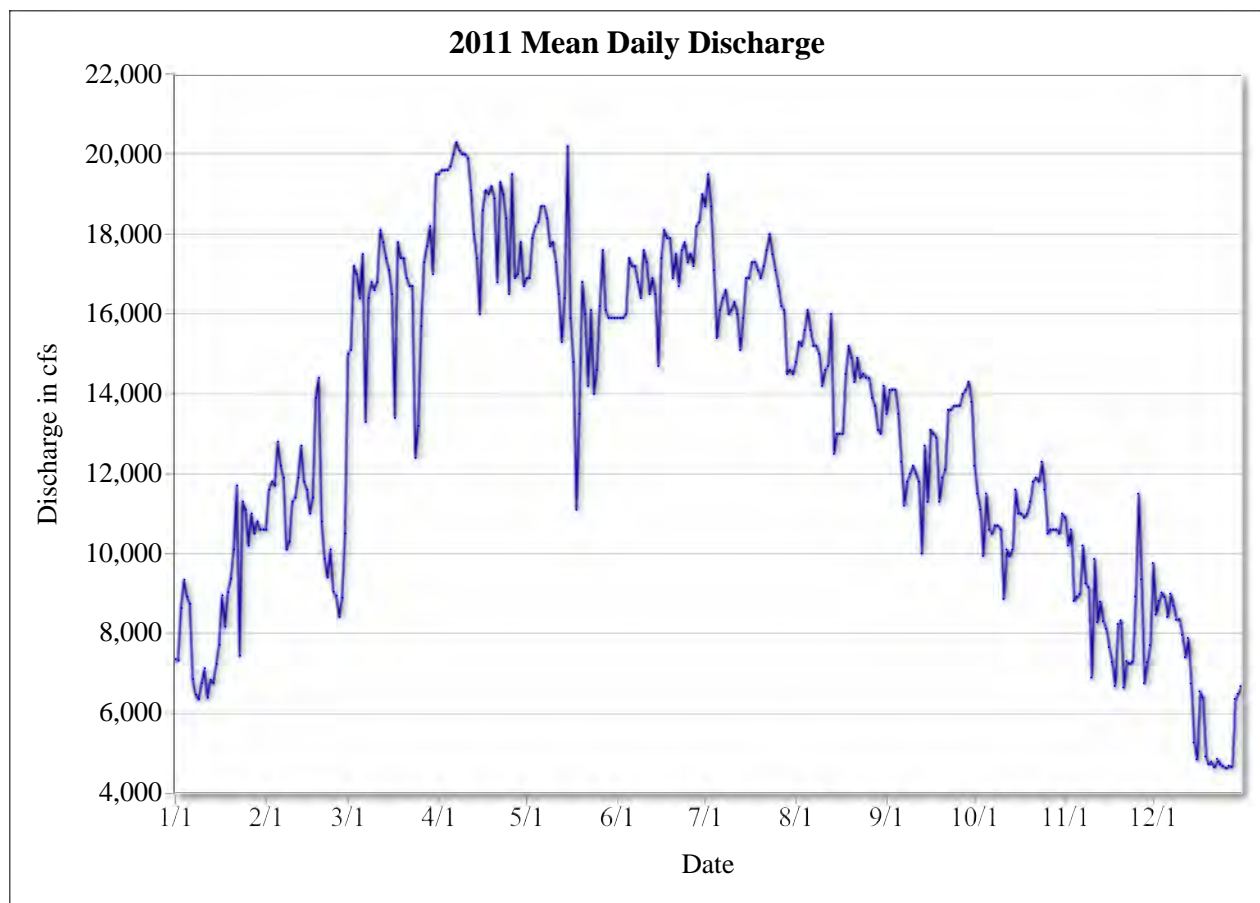
**Drainage Area**—Undetermined.

**Period of Record**—January 1, 2008 to current year.

**Gage**—A Sutron Xlite datalogger (Model 9210-0000-2B) records water elevation measured with a Sutron AccuBubble self-contained bubbler system (Model 5600-0131-4). Discharge is calculated using a stage-discharge relationship.

**Extremes**—Maximum daily discharge, 25,500 cfs, Mar. 3, 2009; minimum daily discharge, 4,540 cfs, Feb. 1, 2010; maximum hourly discharge, 27,100 cfs, Apr. 1, 2010 at 22:00; minimum hourly discharge, 2,800 cfs, Dec. 22, 2011 at 14:00.

**Remarks**—None.



## Colorado River Below Big Bend

Discharge, in cubic-feet per second, Calendar Year 2011

Day	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	7,350	10,600	15,000	19,500	16,900	15,900	18,700	14,800	13,500	12,200	10,900	9,760
2	7,320	11,600	15,100	19,600	16,900	15,900	19,500	15,300	14,100	11,500	10,200	8,470
3	8,630	11,800	17,200	19,600	17,900	15,900	18,700	15,200	14,100	11,100	10,600	8,810
4	9,340	11,700	17,000	19,600	18,200	16,000	17,100	15,600	14,100	9,940	8,810	9,020
5	8,920	12,800	16,400	19,700	18,300	17,400	15,400	16,100	13,500	11,500	8,920	8,910
6	8,740	12,200	17,500	20,000	18,700	17,200	16,100	15,600	12,300	10,600	8,980	8,410
7	6,850	11,900	13,300	20,300	18,700	17,200	16,400	15,200	11,200	10,500	10,200	8,990
8	6,460	10,100	16,400	20,100	18,400	16,800	16,600	15,200	11,800	10,700	9,250	8,690
9	6,350	10,300	16,800	20,000	17,700	16,400	16,000	15,000	12,000	10,700	9,150	8,340
10	6,750	11,300	16,600	20,000	17,800	17,600	16,100	14,200	12,200	10,600	6,890	8,350
11	7,120	11,400	16,800	19,900	17,300	17,300	16,300	14,600	12,000	8,860	9,860	7,960
12	6,390	11,900	18,100	19,100	16,500	16,500	16,000	14,700	11,800	10,100	8,280	7,400
13	6,830	12,700	17,800	18,000	15,300	16,900	15,100	16,000	10,000	9,930	8,790	7,880
14	6,760	11,800	17,400	17,400	16,400	16,500	15,900	12,500	12,700	10,100	8,300	6,740
15	7,230	11,600	17,100	16,000	20,200	14,700	16,900	13,000	11,300	11,600	8,110	5,260
16	7,710	11,000	16,500	18,600	15,900	17,400	16,900	13,000	13,100	11,000	7,650	4,840
17	8,950	11,400	13,400	19,100	14,800	18,100	17,300	13,000	13,000	11,000	7,280	6,540
18	8,170	13,900	17,800	19,000	11,100	17,900	17,300	14,500	12,900	10,900	6,680	6,390
19	9,030	14,400	17,400	19,200	13,500	17,900	17,100	15,200	11,300	11,000	8,230	4,910
20	9,370	10,800	17,400	18,900	16,800	16,900	16,900	14,900	11,900	11,300	8,320	4,720
21	10,100	9,870	16,900	16,800	16,000	17,500	17,200	14,300	12,100	11,800	6,640	4,780
22	11,700	9,400	16,700	19,300	14,200	16,700	17,600	14,900	13,600	11,900	7,300	4,640
23	7,440	10,100	16,700	19,000	16,100	17,600	18,000	14,400	13,600	11,800	7,240	4,850
24	11,300	9,040	12,400	18,400	14,000	17,800	17,500	14,500	13,700	12,300	7,290	4,710
25	11,100	8,940	13,200	16,500	14,600	17,300	17,100	14,400	13,700	11,600	8,920	4,670
26	10,200	8,410	15,700	19,500	16,200	17,500	16,700	14,400	13,700	10,500	11,500	4,620
27	11,000	8,890	17,300	16,900	17,600	17,200	16,200	13,900	14,000	10,600	9,350	4,680
28	10,500	10,500	17,700	17,000	16,100	18,200	16,100	13,700	14,100	10,600	6,750	4,650
29	10,800		18,200	17,800	15,900	18,300	14,500	13,100	14,300	10,600	7,270	6,350
30	10,600		17,000	16,700	15,900	19,000	14,600	13,000	13,800	10,500	7,700	6,480
31	10,600		19,500		15,900		14,500	14,200		11,000		6,670
Total	269,610	310,350	512,300	561,500	509,800	513,500	516,300	448,400	385,400	338,330	255,360	207,490
Mean	8,697	11,080	16,530	18,720	16,450	17,120	16,650	14,460	12,850	10,910	8,512	6,693
Max	11,700	14,400	19,500	20,300	20,200	19,000	19,500	16,100	14,300	12,300	11,500	9,760
Min	6,350	8,410	12,400	16,000	11,100	14,700	14,500	12,500	10,000	8,860	6,640	4,620
Ac-ft	534,764	615,570	1,016,13	1,113,71	1,011,17	1,018,51	1,024,06	889,388	764,430	671,068	506,499	411,550

### Calendar Year Summary

Annual Total 4,828,340    Annual Mean 13,230    Daily Max 20,300    Daily Min 4,620    Annual Ac-ft 9,576,872

#### Maximum Discharge

Date	Time	Elev	Discharge
Jul. 18	20:00	489.04	26,500

#### Minimum Discharge

Date	Time	Elev	Discharge
Dec. 22	14:00	479.21	2,800



## Colorado River Below Needles Bridge

**Location**—Latitude 34° 49.504', longitude -114° 34.870', in the SW¼ SE¼ of Section 33, T. 9 N., R. 23 E., San Bernardino meridian, San Bernardino County, California, Hydrologic Unit 15030101, river mi 243.5, 2.0 mi east of Needles, California, 20.1 mi south of Bullhead City, Arizona, and 32.4 river mi downstream of Davis Dam.

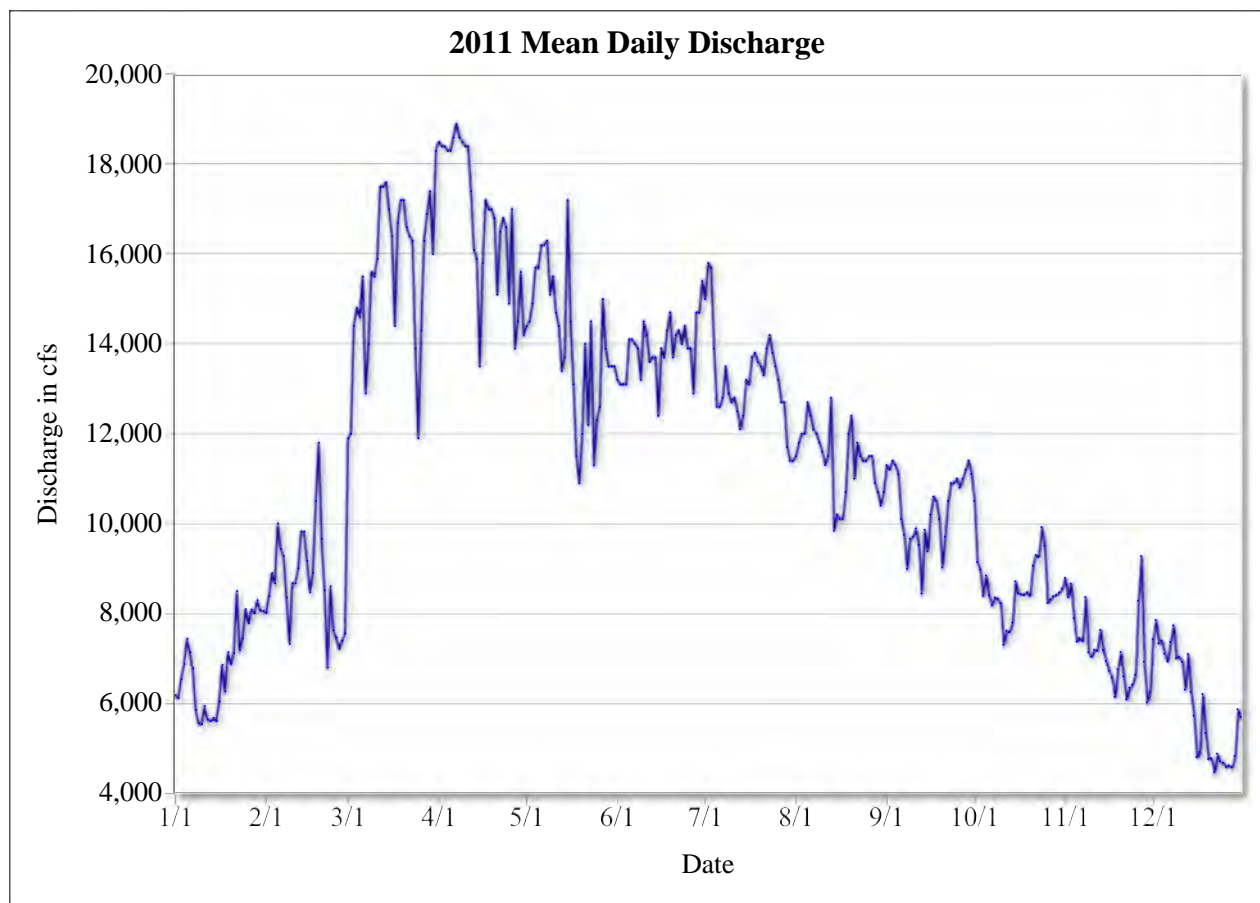
**Drainage Area**—Undetermined.

**Period of Record**—January 1, 2008 to current year.

**Gage**—A Sutron Xlite datalogger (Model 9210-0000-2B) records water elevation measured with a Sutron SDI-12 submersible pressure sensor (Model 6661-1200-5). Discharge is calculated using a stage-discharge relationship.

**Extremes**—Maximum daily discharge, 24,100 cfs, Apr. 24, 2009; minimum daily discharge, 4,460 cfs, Dec. 22, 2011; maximum hourly discharge, 24,300 cfs, Apr. 24, 2009 at 10:00; minimum hourly discharge, 4,010 cfs, Dec. 22, 2011 at 19:00.

**Remarks**—None.



## Colorado River Below Needles Bridge

Discharge, in cubic-feet per second, Calendar Year 2011

Day	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	6,180	8,010	11,900	18,500	14,400	13,200	15,000	11,500	11,300	10,500	8,790	7,420
2	6,110	8,380	12,000	18,400	14,500	13,100	15,800	11,800	11,200	9,140	8,360	7,850
3	6,530	8,890	14,400	18,400	14,900	13,100	15,700	12,000	11,400	8,970	8,660	7,330
4	6,870	8,670	14,800	18,300	15,700	13,100	13,900	12,000	11,300	8,390	7,890	7,390
5	7,430	10,000	14,600	18,300	15,700	14,100	12,600	12,700	11,100	8,840	7,370	7,100
6	7,130	9,430	15,500	18,600	16,200	14,100	12,600	12,400	10,100	8,400	7,450	6,930
7	6,770	9,280	12,900	18,900	16,200	14,000	12,800	12,100	9,750	8,180	7,380	7,360
8	5,850	8,350	14,000	18,600	16,300	13,900	13,500	12,000	8,990	8,350	8,360	7,730
9	5,550	7,320	15,600	18,500	15,100	13,200	12,900	11,800	9,660	8,320	7,130	7,000
10	5,530	8,670	15,500	18,400	15,500	14,500	12,700	11,600	9,700	8,220	7,030	7,030
11	5,930	8,670	15,900	18,400	14,700	14,200	12,800	11,300	9,890	7,300	7,190	6,920
12	5,640	9,000	17,500	17,400	14,400	13,600	12,500	11,500	9,520	7,610	7,170	6,300
13	5,600	9,820	17,500	16,100	13,400	13,700	12,100	12,800	8,440	7,580	7,630	7,090
14	5,670	9,820	17,600	15,900	13,700	13,700	12,400	9,840	9,860	7,790	7,180	6,250
15	5,600	9,170	17,000	13,500	17,200	12,400	13,200	10,200	9,380	8,710	6,940	5,720
16	6,030	8,470	16,400	15,800	14,500	13,900	13,100	10,100	10,200	8,450	6,720	4,790
17	6,850	8,900	14,400	17,200	13,100	13,700	13,700	10,100	10,600	8,420	6,570	4,910
18	6,260	10,500	16,700	17,000	11,500	14,300	13,800	10,700	10,500	8,410	6,140	6,200
19	7,130	11,800	17,200	17,000	10,900	14,700	13,600	12,000	10,100	8,470	6,750	5,330
20	6,880	9,660	17,200	16,800	12,000	13,700	13,500	12,400	9,020	8,390	7,140	4,750
21	7,110	8,510	16,600	15,100	14,000	14,200	13,300	11,000	9,710	9,060	6,590	4,770
22	8,490	6,790	16,400	16,500	12,200	14,300	13,900	11,800	10,500	9,300	6,080	4,460
23	7,180	8,600	16,300	16,800	14,500	14,000	14,200	11,500	10,900	9,260	6,340	4,870
24	7,440	7,620	13,900	16,600	11,300	14,400	13,800	11,400	10,900	9,920	6,410	4,700
25	8,090	7,460	11,900	14,900	12,300	13,900	13,500	11,400	11,000	9,500	6,630	4,670
26	7,780	7,210	14,300	17,000	12,600	13,900	13,200	11,500	10,800	8,230	8,280	4,580
27	8,080	7,390	16,300	13,900	15,000	12,900	12,700	11,500	11,000	8,310	9,270	4,610
28	8,000	7,550	16,900	14,500	13,900	14,700	12,700	10,900	11,200	8,380	6,920	4,570
29	8,290		17,400	15,600	13,500	14,700	11,700	10,700	11,400	8,410	6,020	4,820
30	8,070		16,000	14,200	13,500	15,400	11,400	10,400	11,100	8,460	6,240	5,860
31	8,050		18,300		13,500		11,400	10,700		8,550		5,690
Total	212,120	243,940	482,900	505,100	436,200	416,600	410,000	353,640	310,520	265,820	216,630	185,000
Mean	6,843	8,712	15,580	16,840	14,070	13,890	13,230	11,410	10,350	8,575	7,221	5,968
Max	8,490	11,800	18,300	18,900	17,200	15,400	15,800	12,800	11,400	10,500	9,270	7,850
Min	5,530	6,790	11,900	13,500	10,900	12,400	11,400	9,840	8,440	7,300	6,020	4,460
Ac-ft	420,734	483,848	957,818	1,001,85	865,190	826,314	813,223	701,435	615,907	527,246	429,679	366,942

### Calendar Year Summary

Annual Total 4,038,470    Annual Mean 11,060    Daily Max 18,900    Daily Min 4,460    Annual Ac-ft 8,010,187

#### Maximum Discharge

Date	Time	Elev	Discharge
Apr. 17	02:00	461.65	21,400

#### Minimum Discharge

Date	Time	Elev	Discharge
Dec. 22	19:00	451.69	4,010

## Colorado River at River Section 41

**Location**—Latitude 34° 41.255', longitude -114° 27.759', in the SW¼ NW¼ of Section 13, T. 15 N., R. 21 W., Gila-Salt River meridian, Mohave County, Arizona, Hydrologic Unit 15030101, at river mi 231.0, 13.5 mi south of Needles, California, 16.2 mi north of Lake Havasu City, Arizona, and 44.9 river mi downstream of Davis Dam.

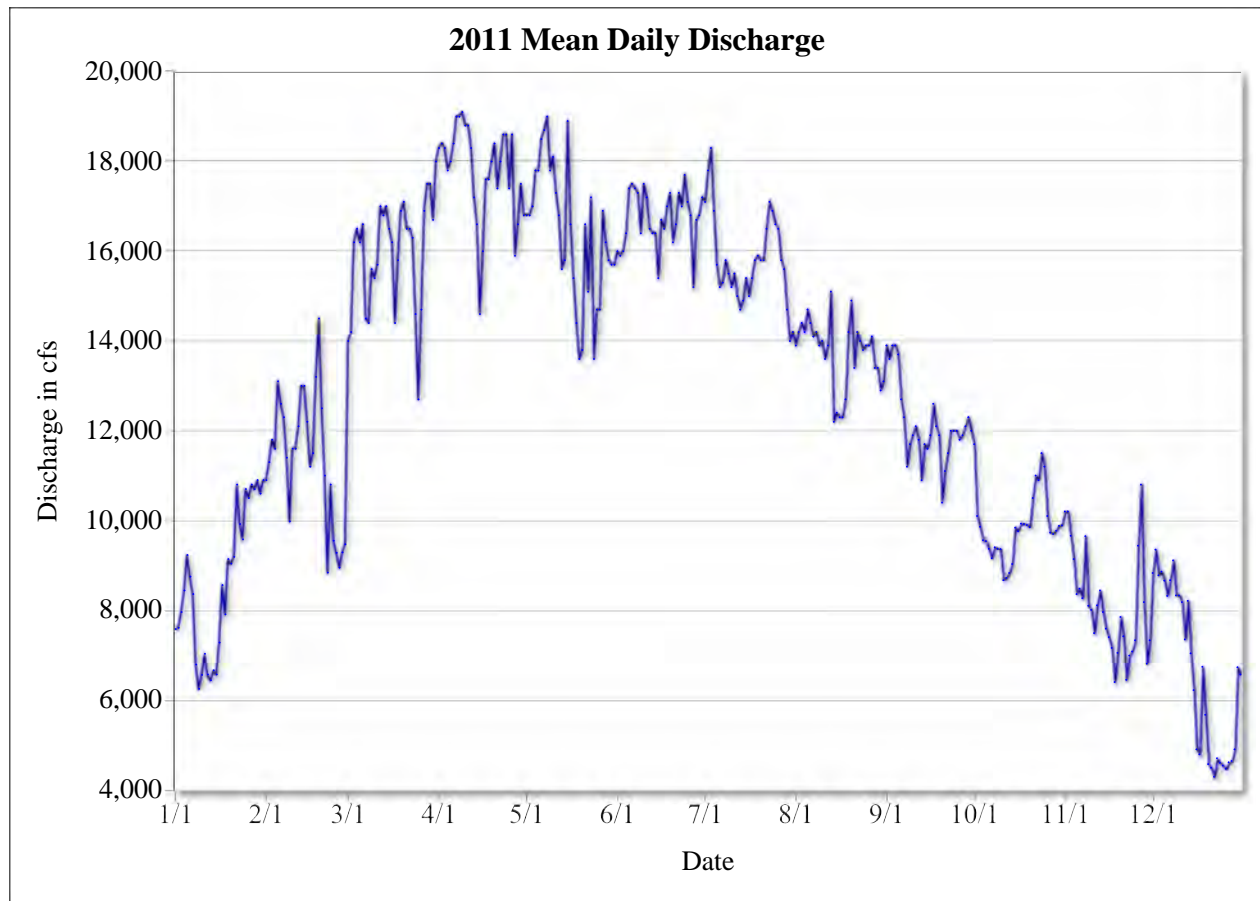
**Drainage Area**—172,300 mi<sup>2</sup>.

**Period of Record**—June 29, 2006 to current year.

**Gage**—A Sutron Xlite datalogger (Model 9210-0000-2B) records water elevation and velocity measured with a SonTek/YSI Argonaut-SL current meter. Discharge is calculated using a velocity-index relationship.

**Extremes**—Maximum daily discharge, 23,300 cfs, Apr. 24, 2009; minimum daily discharge 4,100 cfs, Dec. 8, 2007; maximum hourly discharge, 23,610 cfs, Apr. 24, 2009 at 12:00; minimum hourly discharge, 2,970 cfs, Dec. 22, 2011 at 23:00.

**Remarks**—None.



## Colorado River at River Section 41

Discharge, in cubic-feet per second, Calendar Year 2011

Day	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	7,580	10,900	14,000	18,300	16,800	16,000	17,100	13,900	13,900	11,700	10,200	8,830
2	7,610	11,300	14,200	18,400	16,800	15,900	17,800	14,200	13,600	10,100	10,200	9,350
3	7,960	11,800	16,200	18,300	17,000	16,000	18,300	14,400	13,900	9,860	9,660	8,780
4	8,440	11,600	16,500	17,800	17,800	16,400	16,900	14,200	13,900	9,560	9,140	8,860
5	9,230	13,100	16,200	18,000	17,800	17,400	15,700	14,700	13,700	9,540	8,360	8,660
6	8,750	12,600	16,600	18,400	18,500	17,500	15,200	14,400	12,700	9,370	8,480	8,320
7	8,360	12,300	14,500	19,000	18,700	17,400	15,300	14,100	12,300	9,160	8,270	8,670
8	6,790	11,400	14,400	19,000	19,000	17,300	15,800	14,200	11,200	9,400	9,650	9,110
9	6,250	9,980	15,600	19,100	17,800	16,400	15,500	13,900	11,700	9,370	8,100	8,330
10	6,560	11,600	15,400	18,800	18,100	17,500	15,200	14,000	11,900	9,360	8,010	8,330
11	7,030	11,600	15,700	18,800	17,300	17,200	15,500	13,600	12,100	8,670	7,490	8,180
12	6,570	12,100	17,000	18,300	16,800	16,500	15,000	13,900	11,800	8,720	8,110	7,350
13	6,440	13,000	16,800	17,200	15,600	16,400	14,700	15,100	10,900	8,830	8,440	8,210
14	6,660	13,000	17,000	16,600	15,800	16,400	14,900	12,200	11,700	9,030	7,960	7,040
15	6,570	12,200	16,500	14,600	18,900	15,400	15,400	12,400	11,600	9,840	7,590	6,220
16	7,280	11,200	16,200	16,000	16,600	16,700	15,000	12,300	11,900	9,760	7,400	4,900
17	8,560	11,500	14,400	17,600	15,400	16,500	15,400	12,300	12,600	9,930	7,160	4,790
18	7,910	13,200	15,800	17,600	14,400	17,000	15,800	12,700	12,100	9,920	6,400	6,740
19	9,140	14,500	16,900	18,000	13,600	17,300	15,900	14,200	11,900	9,900	7,050	5,670
20	9,040	12,500	17,100	18,400	13,800	16,200	15,800	14,900	10,400	<b>9,850</b>	7,850	4,570
21	9,190	11,000	16,500	17,400	16,600	16,600	15,800	13,400	11,100	10,500	7,420	4,490
22	10,800	8,840	16,500	18,000	15,100	17,300	16,500	14,200	11,500	11,000	6,450	4,290
23	9,920	10,800	16,300	18,600	17,200	17,000	17,100	14,000	12,000	10,900	6,990	4,700
24	9,580	9,550	14,600	18,600	13,600	17,700	16,900	13,800	12,000	11,500	7,080	4,600
25	10,700	9,280	12,700	17,400	14,700	17,100	16,600	13,900	12,000	11,200	7,330	4,540
26	10,500	8,950	14,700	18,600	14,700	16,800	16,500	13,900	11,800	10,100	9,440	4,470
27	10,800	9,290	16,900	15,900	16,900	15,200	15,800	14,100	11,900	9,730	10,800	4,610
28	10,700	9,470	17,500	16,600	16,200	16,700	15,600	13,400	12,100	9,700	8,180	4,640
29	10,900		17,500	17,500	15,800	16,800	14,700	13,400	12,300	9,770	6,810	4,900
30	10,600		16,700	16,800	15,700	17,200	14,000	12,900	12,000	9,880	7,330	6,730
31	10,900		18,000		15,700		14,200	13,100		9,890		6,570
Total	267,320	318,560	494,900	533,600	508,700	501,800	489,900	425,700	364,500	306,040	243,350	205,450
Mean	8,623	11,380	15,960	17,790	16,410	16,730	15,800	13,730	12,150	9,872	8,112	6,627
Max	10,900	14,500	18,000	19,100	19,000	17,700	18,300	15,100	13,900	11,700	10,800	9,350
Min	6,250	8,840	12,700	14,600	13,600	15,200	14,000	12,200	10,400	8,670	6,400	4,290
Ac-ft	530,221	631,855	981,620	1,058,38	1,008,99	995,306	971,702	844,364	722,975	607,021	482,678	407,504

### Calendar Year Summary

Annual Total 4,659,820    Annual Mean 12,770    Daily Max 19,100    Daily Min 4,290    Annual Ac-ft 9,242,618

#### Maximum Discharge

Date	Time	Elev	Discharge
May 8	03:00	454.02	22,100

#### Minimum Discharge

Date	Time	Elev	Discharge
Dec. 22	23:00	448.75	2,970

**Bold values indicate the daily value was derived from hourly data that contained 6 or more consecutive hours of estimated record.**

## Colorado River at Parker Gage

**Location**—Latitude 34° 08.934', longitude -114° 18.468', in the NW¼ SE¼ of Section 2, T. 9 N., R. 20 W., Gila-Salt River meridian, La Paz County, Arizona, Hydrologic Unit 15030104, river mi 175.0, 1.1 mi west of Parker, Arizona, 40.4 mi north of Blythe, California, and 17.0 river mi downstream of Parker Dam.

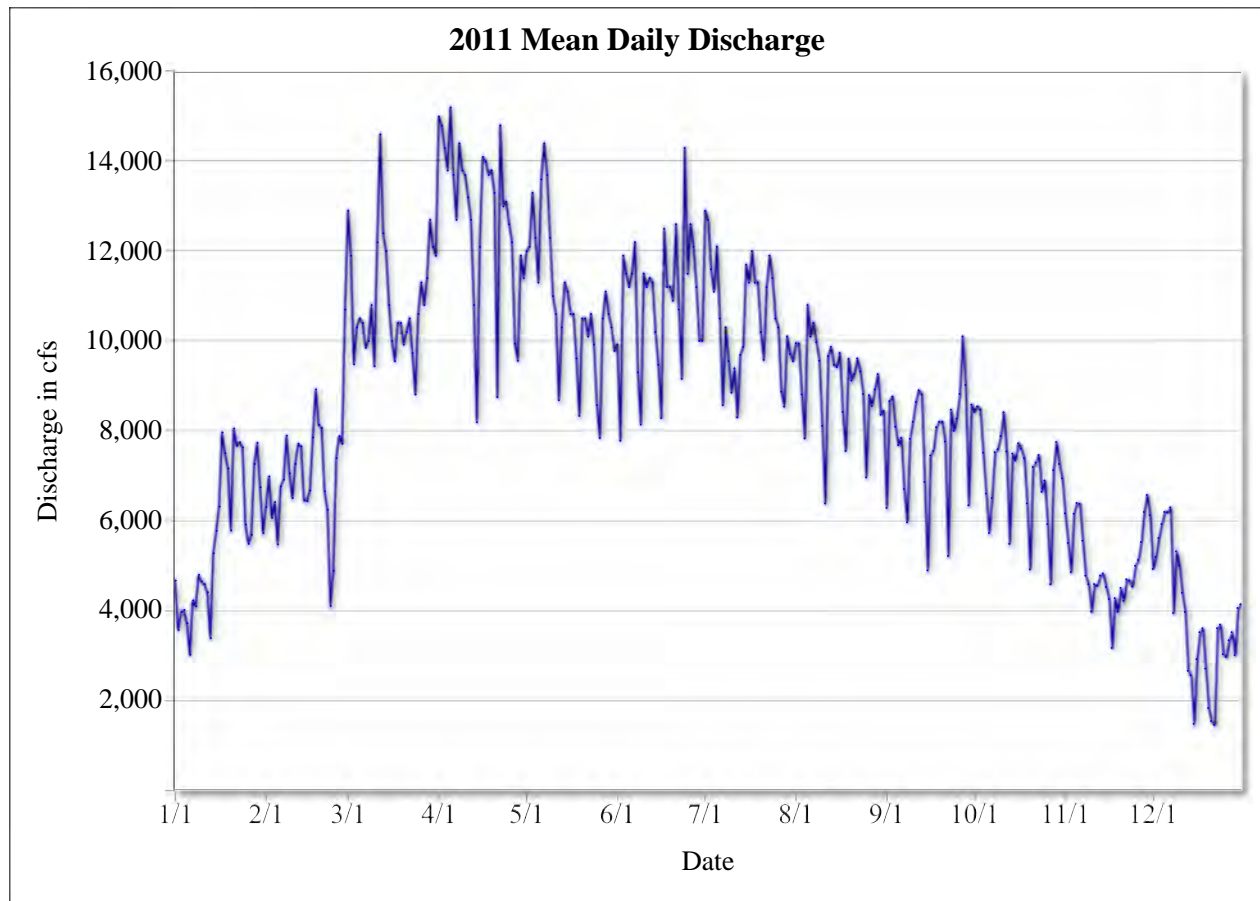
**Drainage Area**—Undetermined.

**Period of Record**—January 1, 2005 to current year.

**Gage**—A Sutron Xlite datalogger (Model 9210-0000-2B) records water elevation measured with a Sutron AccuBubble self-contained bubbler system (Model 5600-0131-4). Discharge is calculated using a stage-discharge relationship.

**Extremes**—Maximum daily discharge, 17,100 cfs, Apr. 22, 2009; minimum daily discharge, 1,450 cfs, Dec. 20, 2008; maximum hourly discharge, 21,600 cfs, Apr. 16, 2011 at 22:00; minimum hourly discharge, 487 cfs, Aug. 18, 2006 at 07:00.

**Remarks**—None.



## Colorado River at Parker Gage

Discharge, in cubic-feet per second, Calendar Year 2011

Day	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	4,660	6,300	12,900	15,000	12,000	9,920	12,900	9,950	6,280	8,420	6,160	4,920
2	3,560	6,980	11,900	14,800	12,100	7,780	12,700	9,940	8,660	8,540	5,500	5,190
3	3,960	6,060	9,480	14,300	13,300	11,900	11,600	8,810	8,760	8,470	4,850	5,610
4	4,010	6,410	10,300	13,800	12,300	11,500	11,100	7,830	8,090	7,510	6,150	5,920
5	3,710	5,470	10,500	15,200	11,300	11,200	12,100	10,800	7,680	6,600	6,390	6,190
6	3,010	6,760	10,400	13,700	13,600	11,500	10,500	10,100	7,840	5,720	6,370	6,180
7	4,220	6,910	9,850	12,700	14,400	12,200	8,570	10,400	6,700	6,500	5,550	6,290
8	4,090	7,890	10,000	14,400	13,700	9,300	10,300	9,970	5,960	7,520	4,770	3,940
9	4,790	7,050	10,800	13,800	12,300	8,140	9,550	9,560	7,820	7,590	4,580	5,310
10	4,640	6,500	9,440	13,700	11,000	11,500	8,850	8,110	8,200	7,880	3,970	5,000
11	4,580	7,260	12,200	13,200	10,600	11,200	9,390	6,380	8,640	8,410	4,580	4,390
12	4,400	7,710	14,600	12,700	8,680	11,400	8,300	9,660	8,900	7,540	4,550	3,960
13	3,380	7,650	12,400	10,800	10,300	11,300	9,690	9,870	8,810	5,480	4,770	2,650
14	5,270	6,450	12,000	8,190	11,300	10,200	9,870	9,470	6,860	7,490	4,820	2,550
15	5,770	6,430	10,800	12,100	11,100	9,470	11,700	9,420	4,890	7,340	4,520	1,470
16	6,310	6,670	10,000	14,100	10,600	8,280	11,300	9,730	7,450	7,720	4,250	2,910
17	7,960	7,850	9,550	14,000	10,600	12,500	12,000	8,420	7,550	7,600	3,160	3,510
18	7,500	8,920	10,400	13,700	9,610	11,200	11,300	7,550	8,080	7,390	4,270	3,600
19	7,160	8,130	10,400	13,800	8,330	11,200	11,300	9,600	8,200	6,380	3,970	2,700
20	5,780	8,060	9,920	13,300	10,500	10,900	10,200	9,120	8,200	4,910	4,500	1,820
21	8,050	6,650	10,200	8,750	10,500	12,600	9,580	9,260	7,760	7,190	4,210	1,530
22	7,670	6,240	10,500	14,800	10,100	10,700	11,200	9,610	5,210	7,290	4,690	1,450
23	7,740	4,100	9,730	13,000	10,600	9,160	11,900	9,320	8,470	7,460	4,660	3,600
24	7,630	4,880	8,810	13,100	9,920	14,300	11,400	8,820	8,000	6,640	4,530	3,680
25	5,910	7,390	10,600	12,600	8,570	11,500	10,500	6,960	8,270	6,890	4,990	3,020
26	5,480	7,880	11,300	12,200	7,840	12,600	10,300	8,790	8,820	5,920	5,120	2,960
27	5,680	7,710	10,800	9,940	10,500	12,100	8,870	8,550	10,100	4,580	5,520	3,330
28	7,260	10,700	11,400	9,560	11,100	11,200	8,540	8,920	9,020	7,120	6,190	3,510
29	7,730		12,700	11,900	10,600	10,000	10,100	9,260	6,340	7,750	6,570	3,000
30	6,740		12,100	11,400	10,300	10,000	9,710	8,360	8,580	7,260	6,120	4,050
31	5,720		11,900		9,780		9,550	8,440		6,940		4,130
Total	174,370	197,010	337,880	384,540	337,430	326,750	324,870	280,980	234,140	220,050	150,280	118,370
Mean	5,625	7,036	10,900	12,820	10,880	10,890	10,480	9,064	7,805	7,098	5,009	3,818
Max	8,050	10,700	14,600	15,200	14,400	14,300	12,900	10,800	10,100	8,540	6,570	6,290
Min	3,010	4,100	8,810	8,190	7,840	7,780	8,300	6,380	4,890	4,580	3,160	1,450
Ac-ft	345,858	390,764	670,175	762,724	669,283	648,099	644,370	557,316	464,410	436,463	298,076	234,783

### Calendar Year Summary

Annual Total 3,086,670    Annual Mean 8,457    Daily Max 15,200    Daily Min 1,450    Annual Ac-ft 6,122,321

#### Maximum Discharge

Date	Time	Elev	Discharge
Apr. 16	22:00	345.97	21,600

#### Minimum Discharge

Date	Time	Elev	Discharge
Dec. 29	07:00	339.73	536

## Colorado River at Water Wheel

**Location**—Latitude 33° 55.914', longitude -114° 32.108', in the NW¼ SW¼ of Section 22, T. 7 N., R. 22 W., Gila-Salt meridian, La Paz County, Arizona, Hydrologic Unit 15030104, river mi 151.6, 20.7 mi south of Parker, Arizona, 22.3 mi north of Blythe, California, and 40.4 river mi downstream of Parker Dam.

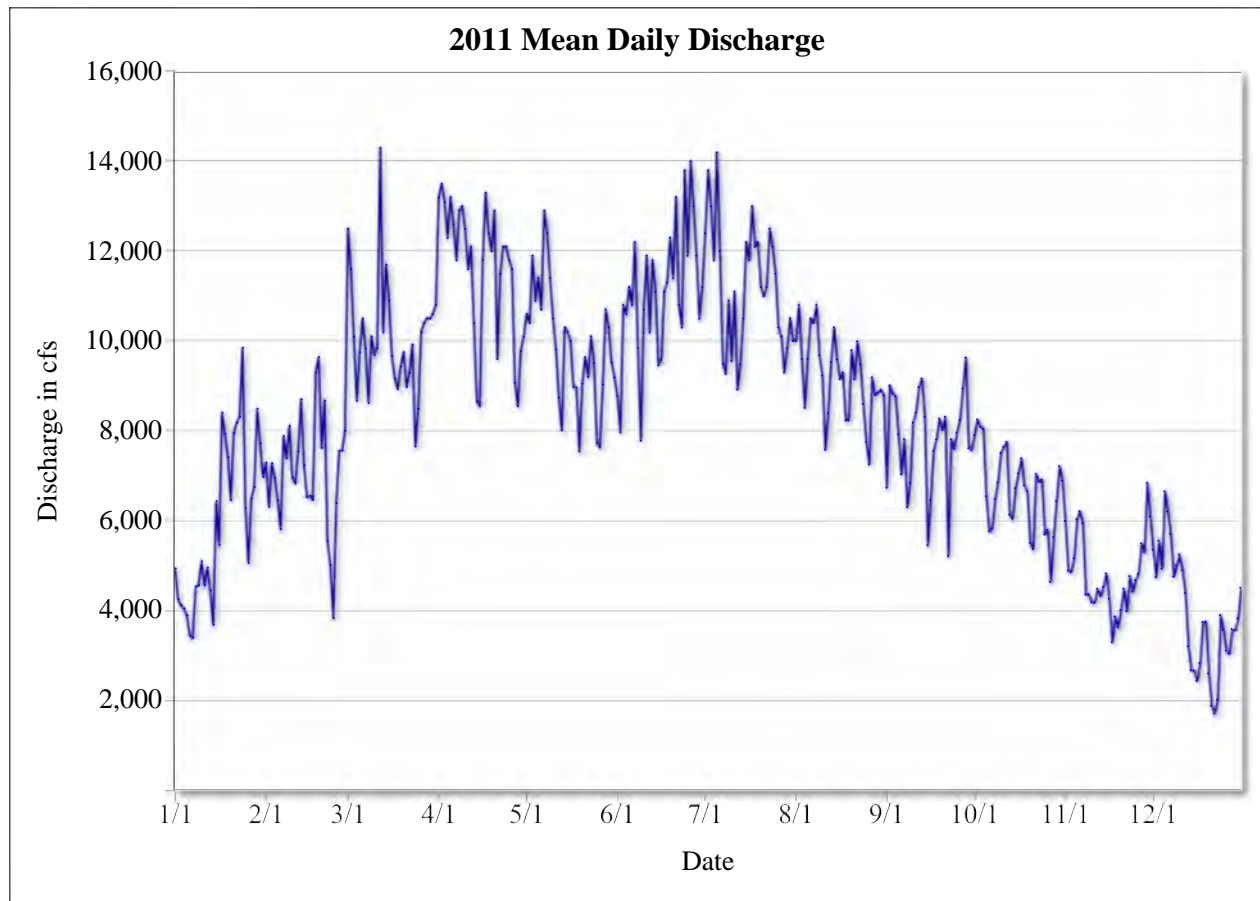
**Drainage Area**—180,700 mi<sup>2</sup>.

**Period of Record**—January 1, 2005 to current year.

**Gage**—A Sutron Xlite datalogger (Model 9210-0000-2B) records water elevation measured with a Sutron multiple interface shaft encoder (Model 56-0540-400-DTR). Discharge is calculated using a stage-discharge relationship.

**Extremes**—Maximum daily discharge, 15,700 cfs, Apr. 22, 2009; minimum daily discharge, 1,700 cfs, Dec. 22, 2011; maximum hourly discharge, 18,920 cfs, Apr. 23, 2009 at 02:00; minimum hourly discharge, 1,520 cfs, Dec. 22, 2011 at 19:00.

**Remarks**—None.



## Colorado River at Water Wheel

Discharge, in cubic-feet per second, Calendar Year 2011

Day	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	4,930	7,290	12,500	13,200	10,600	8,770	12,400	10,000	6,730	7,900	5,990	5,350
2	4,250	6,310	11,600	13,500	10,400	7,970	13,800	10,800	9,010	8,250	4,890	4,740
3	4,110	7,270	10,100	13,100	11,900	10,800	13,000	9,600	8,830	8,090	4,850	5,550
4	4,040	6,950	8,670	12,300	10,900	10,600	11,800	8,510	8,770	8,040	5,160	4,930
5	3,890	6,450	9,750	13,200	11,400	11,200	14,200	9,600	7,920	6,540	6,030	6,650
6	3,440	5,810	10,500	12,600	10,700	10,800	12,000	10,500	7,030	5,760	6,210	6,200
7	3,390	7,880	9,830	11,800	12,900	12,200	9,490	10,400	7,810	5,820	5,940	5,700
8	4,530	7,390	8,620	12,900	12,400	9,850	9,270	10,800	6,300	6,480	4,350	4,750
9	4,560	8,110	10,100	13,000	11,400	7,780	10,900	9,680	6,840	6,850	4,360	5,000
10	5,090	6,960	9,690	12,500	10,500	10,700	9,560	9,230	8,180	7,510	4,180	5,240
11	4,560	6,830	9,840	11,600	9,810	11,900	11,100	7,580	8,410	7,640	4,170	4,890
12	4,950	7,540	14,300	12,100	8,740	10,200	8,920	8,390	8,970	7,750	4,480	4,380
13	4,440	8,700	10,200	10,400	8,010	11,800	9,480	9,530	9,160	6,130	4,320	3,200
14	3,680	7,230	11,700	8,650	10,300	11,100	10,500	10,300	8,310	6,040	4,520	2,670
15	6,430	6,520	10,900	8,550	10,200	9,460	12,200	9,590	5,450	6,720	4,820	2,660
16	5,460	6,550	9,670	11,800	10,000	9,580	11,800	9,150	6,460	7,050	4,260	2,430
17	8,400	6,460	9,160	13,300	8,970	11,100	13,000	9,300	7,550	7,380	3,290	2,830
18	7,930	9,300	8,930	12,400	8,960	11,300	12,100	8,230	7,810	6,780	3,860	3,740
19	7,410	9,640	9,430	12,000	7,540	12,300	12,200	8,230	8,270	6,650	3,630	3,750
20	6,460	7,620	9,750	12,900	9,050	11,400	11,200	9,790	8,020	5,500	4,010	2,590
21	7,950	8,670	8,980	9,600	9,640	13,200	11,000	9,150	8,310	5,360	4,480	1,870
22	8,180	5,540	9,290	11,500	9,200	10,800	11,200	9,990	5,210	7,040	3,980	1,700
23	8,310	5,010	9,920	12,100	10,100	10,300	12,500	9,480	7,810	6,870	4,760	2,010
24	9,850	3,830	7,650	12,100	9,510	13,800	12,100	8,600	7,600	6,910	4,420	3,890
25	6,280	6,390	8,490	11,800	7,730	11,900	11,500	7,750	7,960	5,690	4,670	3,560
26	5,060	7,550	10,200	11,600	7,630	14,000	10,300	7,250	8,240	5,790	4,810	3,100
27	6,490	7,560	10,400	9,070	9,030	13,000	10,100	9,190	8,940	4,630	5,490	3,040
28	6,750	8,000	10,500	8,550	10,700	11,900	9,300	8,790	9,630	5,630	5,300	3,580
29	8,490		10,500	9,780	10,300	10,500	9,840	8,850	7,610	6,430	6,840	3,560
30	7,720		10,600	10,100	9,520	11,200	10,500	8,910	7,570	7,210	6,090	3,820
31	6,970		10,800		9,190		10,000	8,790		6,890		4,500
Total	184,000	199,360	312,570	348,000	307,230	331,410	347,260	285,960	234,710	207,330	144,160	121,880
Mean	5,935	7,120	10,080	11,600	9,911	11,050	11,200	9,225	7,824	6,688	4,805	3,932
Max	9,850	9,640	14,300	13,500	12,900	14,000	14,200	10,800	9,630	8,250	6,840	6,650
Min	3,390	3,830	7,650	8,550	7,540	7,780	8,920	7,250	5,210	4,630	3,290	1,700
Ac-ft	364,959	395,425	619,974	690,248	609,382	657,342	688,780	567,193	465,540	411,233	285,937	241,745

### Calendar Year Summary

Annual Total 3,023,870    Annual Mean 8,285    Daily Max 14,300    Daily Min 1,700    Annual Ac-ft 5,997,758

#### Maximum Discharge

Date	Time	Elev	Discharge
Jun. 25	01:00	304.45	17,900

#### Minimum Discharge

Date	Time	Elev	Discharge
Dec. 22	19:00	296.90	1,520



## Colorado River Below Palo Verde Dam

**Location**—Latitude 33° 43.155', longitude -114° 29.852', in the SE¼ NE¼ of Section 2, T. 4 N., R. 22 W., Gila-Salt River meridian, Riverside County, California, Hydrologic Unit 15030104, river mi 132.6, 8.9 mi north of Blythe, California, 32.1 mi south of Parker, Arizona, and 59.4 river mi downstream of Parker Dam.

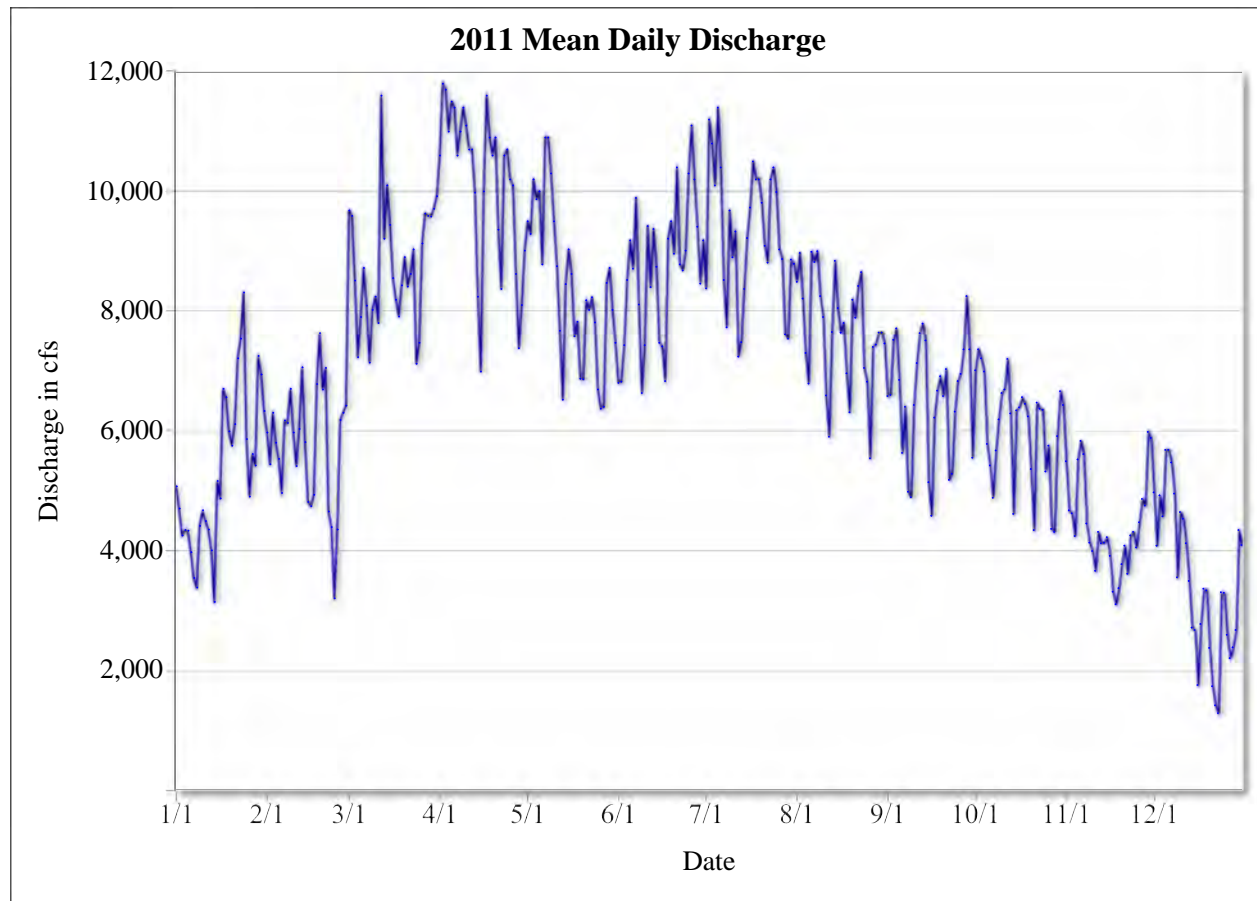
**Drainage Area**—Undetermined.

**Period of Record**—January 1, 2005 to current year.

**Gage**—A Sutron Xlite datalogger (Model 9210-0000-2B) records water elevation measured with a Sutron AccuBubble self-contained bubbler system (Model 5600-0131-4). Discharge is calculated using a stage-discharge relationship.

**Extremes**—Maximum daily discharge, 13,200 cfs, Apr. 8, 2008; minimum daily discharge, 1,270 cfs, Dec. 27, 2008; maximum hourly discharge, 14,710 cfs, Apr. 17, 2007 at 07:00; minimum hourly discharge, 309 cfs, Jan. 10, 2009 at 16:00.

**Remarks**—None.



## Colorado River Below Palo Verde Dam

Discharge, in cubic-feet per second, Calendar Year 2011

Day	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	5,070	5,970	9,680	10,600	9,500	6,800	8,380	8,490	6,580	7,010	5,490	4,970
2	4,700	5,440	9,590	11,800	9,290	6,820	11,200	8,970	6,600	7,360	4,670	4,080
3	4,250	6,300	8,510	11,700	10,200	7,430	10,800	8,210	7,520	7,210	4,620	4,920
4	4,340	5,800	7,230	11,000	9,870	8,520	10,100	7,300	7,710	6,990	4,240	4,570
5	4,330	5,530	7,900	11,500	10,000	9,180	11,400	6,790	6,850	5,780	5,520	5,680
6	3,970	4,960	8,720	11,400	8,780	8,710	10,400	8,990	5,630	5,420	5,830	5,680
7	3,540	6,170	8,090	10,600	10,900	9,890	8,520	8,820	6,400	4,880	5,610	5,470
8	3,380	6,130	7,140	11,000	10,900	8,110	7,730	9,000	4,980	5,670	4,450	4,950
9	4,410	6,700	8,020	11,400	10,300	6,630	9,680	8,250	4,890	6,190	4,130	3,550
10	4,670	5,970	8,240	11,100	9,500	7,430	8,900	7,900	6,430	6,630	3,990	4,640
11	4,490	5,410	7,800	10,700	8,750	9,420	9,330	6,590	7,130	6,690	3,660	4,530
12	4,350	6,030	11,600	10,700	7,670	8,400	7,240	5,900	7,630	7,200	4,310	4,120
13	4,000	7,060	9,210	9,980	6,520	9,370	7,480	7,650	7,790	6,290	4,120	3,490
14	3,140	5,810	10,100	8,240	8,450	8,740	8,370	8,840	7,510	4,610	4,130	2,710
15	5,160	4,810	9,440	6,990	9,030	7,470	9,220	8,050	5,140	6,340	4,220	2,670
16	4,870	4,740	8,550	10,000	8,620	7,410	9,730	7,640	4,580	6,390	3,910	1,750
17	6,700	4,930	8,190	11,600	7,580	6,830	10,500	7,800	6,220	6,560	3,310	2,770
18	6,560	6,780	7,910	10,900	7,820	9,210	10,200	6,960	6,670	6,450	3,100	3,360
19	5,990	7,630	8,430	10,600	6,870	9,500	10,200	6,310	6,910	6,240	3,370	3,330
20	5,750	6,690	8,900	10,900	6,860	8,960	9,810	8,190	6,580	5,360	3,770	2,370
21	6,110	7,050	8,410	9,360	8,180	10,400	9,090	7,890	7,030	4,340	4,080	1,730
22	7,210	4,650	8,620	8,370	8,020	8,780	8,810	8,420	5,180	6,470	3,610	1,410
23	7,540	4,390	9,030	10,600	8,230	8,680	10,200	8,650	5,280	6,370	4,250	1,280
24	8,310	3,200	7,120	10,700	7,810	9,010	10,400	7,050	6,320	6,350	4,310	3,300
25	5,860	4,350	7,470	10,200	6,690	10,300	9,990	6,820	6,830	5,320	4,050	3,290
26	4,900	6,180	9,130	10,100	6,370	11,100	9,030	5,540	6,950	5,750	4,470	2,590
27	5,610	6,300	9,630	8,620	6,400	10,200	8,870	7,400	7,360	4,360	4,860	2,200
28	5,420	6,420	9,590	7,380	8,470	9,410	7,610	7,440	8,250	4,310	4,750	2,380
29	7,250		9,580	8,100	8,720	8,460	7,540	7,640	7,360	5,910	5,980	2,670
30	6,940		9,710	9,010	8,020	9,180	8,860	7,640	5,550	6,660	5,880	4,340
31	6,330		9,920		7,470		8,790	7,460		6,430		4,090
Total	165,150	161,400	271,460	305,150	261,790	260,350	288,380	238,600	195,860	187,540	132,690	108,890
Mean	5,327	5,764	8,757	10,170	8,445	8,678	9,303	7,697	6,529	6,050	4,423	3,513
Max	8,310	7,630	11,600	11,800	10,900	11,100	11,400	9,000	8,250	7,360	5,980	5,680
Min	3,140	3,200	7,120	6,990	6,370	6,630	7,240	5,540	4,580	4,310	3,100	1,280
Ac-ft	327,570	320,132	538,433	605,256	519,253	516,397	571,993	473,256	388,483	371,980	263,187	215,980

### Calendar Year Summary

Annual Total 2,577,260    Annual Mean 7,061    Daily Max 11,800    Daily Min 1,280    Annual Ac-ft 5,111,920

#### Maximum Discharge

Date	Time	Elev	Discharge
Apr. 6	06:00	268.27	14,400

#### Minimum Discharge

Date	Time	Elev	Discharge
Dec. 23	06:00	259.54	939

## Colorado River Below Interstate Bridge

**Location**—Latitude 33° 35.362', longitude -114° 32.559', in the NW¼ lot 11 of Section 21, T. 3 N., R. 22 W., San Bernardino meridian, Riverside County, California, Hydrologic Unit 15030104, river mi 120.1, 2.8 mi southeast of Blythe, California, 61.6 mi north of Yuma, Arizona, and 91.9 river mi downstream of Parker Dam.

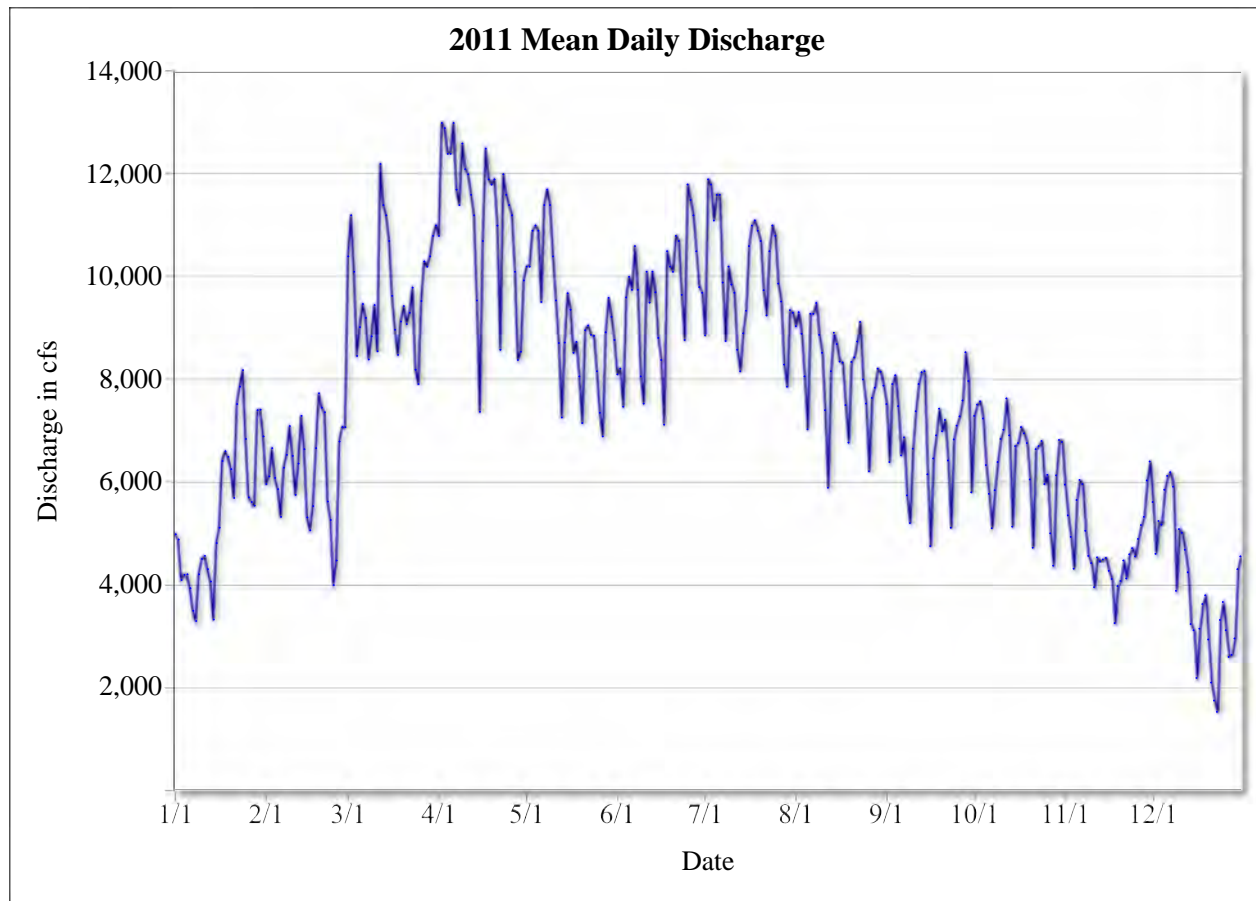
**Drainage Area**—Undetermined.

**Period of Record**—January 1, 2011 to current year.

**Gage**—A Sutron Xlite datalogger (Model 9210-0000-2B) records water elevation measured with a Sutron stage discharge recorder shaft encoder (Model SDR-0001). Discharge is calculated using a stage-discharge relationship.

**Extremes**—Maximum daily discharge, 13,000 cfs, Apr. 2, 2011; minimum daily discharge, 1,520 cfs, Dec. 23, 2011; maximum hourly discharge, 15,700 cfs, Apr. 6, 2011 at 11:00; minimum hourly discharge, 1,390 cfs, Dec. 23, 2011 at 02:00.

**Remarks**—None.



## Colorado River Below Interstate Bridge

Discharge, in cubic-feet per second, Calendar Year 2011

Day	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	4,980	5,960	10,400	10,800	10,200	8,100	8,860	9,040	7,520	7,290	5,950	5,610
2	4,880	6,110	11,200	13,000	10,200	8,210	11,900	9,310	6,390	7,510	5,350	4,600
3	4,090	6,660	10,100	12,900	10,900	7,470	11,800	8,890	7,910	7,570	4,930	5,240
4	4,190	6,080	8,460	12,400	11,000	9,600	11,100	8,060	8,080	7,240	4,310	5,170
5	4,200	5,860	9,020	12,400	10,900	10,000	11,600	7,030	7,480	6,330	5,650	5,850
6	3,930	5,320	9,470	13,000	9,510	9,750	11,600	9,280	6,520	5,770	6,040	6,120
7	3,490	6,280	9,200	11,700	11,400	10,600	9,890	9,280	6,870	5,100	5,960	6,190
8	3,290	6,530	8,390	11,400	11,700	9,750	8,750	9,490	5,740	5,840	5,050	5,910
9	4,200	7,090	8,840	12,600	11,400	8,060	10,200	8,870	5,200	6,390	4,560	3,880
10	4,500	6,510	9,450	12,100	10,400	7,530	9,850	8,520	6,650	6,840	4,420	5,080
11	4,560	5,750	8,550	12,000	9,540	10,100	9,690	7,400	7,380	7,020	3,950	5,010
12	4,300	6,360	12,200	11,600	8,710	9,500	8,580	5,890	7,910	7,630	4,530	4,680
13	4,060	7,290	11,400	11,200	7,260	10,100	8,160	8,160	8,140	6,910	4,450	4,240
14	3,320	6,640	11,200	9,540	8,720	9,700	8,900	8,910	8,160	5,130	4,490	3,230
15	4,810	5,310	10,700	7,370	9,680	8,810	9,340	8,690	6,150	6,700	4,520	3,110
16	5,110	5,060	9,630	10,700	9,360	8,380	10,600	8,350	4,750	6,760	4,270	2,180
17	6,410	5,530	8,970	12,500	8,520	7,120	11,000	8,330	6,460	7,070	4,110	3,140
18	6,600	6,660	8,480	11,900	8,730	10,500	11,100	7,500	6,910	6,950	3,250	3,620
19	6,490	7,730	9,130	11,800	8,060	10,200	10,900	6,770	7,430	6,760	3,970	3,790
20	6,250	7,450	9,430	11,900	7,150	10,100	10,700	8,340	6,990	6,050	4,070	2,930
21	5,690	7,360	9,080	11,000	8,960	10,800	9,740	8,430	7,210	4,720	4,470	2,090
22	7,520	5,620	9,300	8,580	9,050	10,700	9,250	8,740	6,420	6,640	4,120	1,740
23	7,860	5,260	9,790	12,000	8,870	9,650	10,500	9,120	5,110	6,700	4,590	1,520
24	8,180	3,990	8,190	11,600	8,850	8,770	11,000	8,000	6,830	6,800	4,710	3,310
25	6,840	4,470	7,910	11,400	8,160	11,800	10,800	7,530	7,100	5,960	4,550	3,660
26	5,700	6,790	9,530	11,200	7,350	11,500	9,870	6,210	7,280	6,140	4,890	3,110
27	5,610	7,070	10,300	10,100	6,890	11,200	9,520	7,640	7,590	5,000	5,160	2,590
28	5,540	7,070	10,200	8,380	8,920	10,500	8,290	7,840	8,530	4,370	5,320	2,630
29	7,400		10,400	8,540	9,590	9,800	7,860	8,210	7,970	6,130	6,030	2,950
30	7,410		10,800	9,930	9,220	9,690	9,350	8,150	5,800	6,820	6,400	4,300
31	6,890		11,000		8,770		9,300	7,880		6,780		4,550
Total	168,300	173,810	300,720	335,540	287,970	287,990	310,000	253,860	208,480	198,920	144,070	122,030
Mean	5,429	6,208	9,701	11,180	9,289	9,600	10,000	8,189	6,949	6,417	4,802	3,936
Max	8,180	7,730	12,200	13,000	11,700	11,800	11,900	9,490	8,530	7,630	6,400	6,190
Min	3,290	3,990	7,910	7,370	6,890	7,120	7,860	5,890	4,750	4,370	3,250	1,520
Ac-ft	333,818	344,747	596,469	665,534	571,180	571,220	614,876	503,524	413,514	394,552	285,759	242,043

### Calendar Year Summary

Annual Total 2,791,690    Annual Mean 7,648    Daily Max 13,000    Daily Min 1,520    Annual Ac-ft 5,537,236

#### Maximum Discharge

Date	Time	Elev	Discharge
Apr. 6	11:00	252.37	15,700

#### Minimum Discharge

Date	Time	Elev	Discharge
Dec. 23	02:00	244.69	1,390

## Colorado River Below McIntyre Park

**Location**—Latitude 33° 30.659', longitude -114° 34.090', in the SE¼ lot 18 of Section 18, T. 2 N., R. 22 W., San Bernardino meridian, Riverside County, California, Hydrologic Unit 15030104, river mi 113.3, 6.9 mi southeast of Blythe, California, 56.1 mi north of Yuma, Arizona, and 78.7 river mi downstream of Parker Dam.

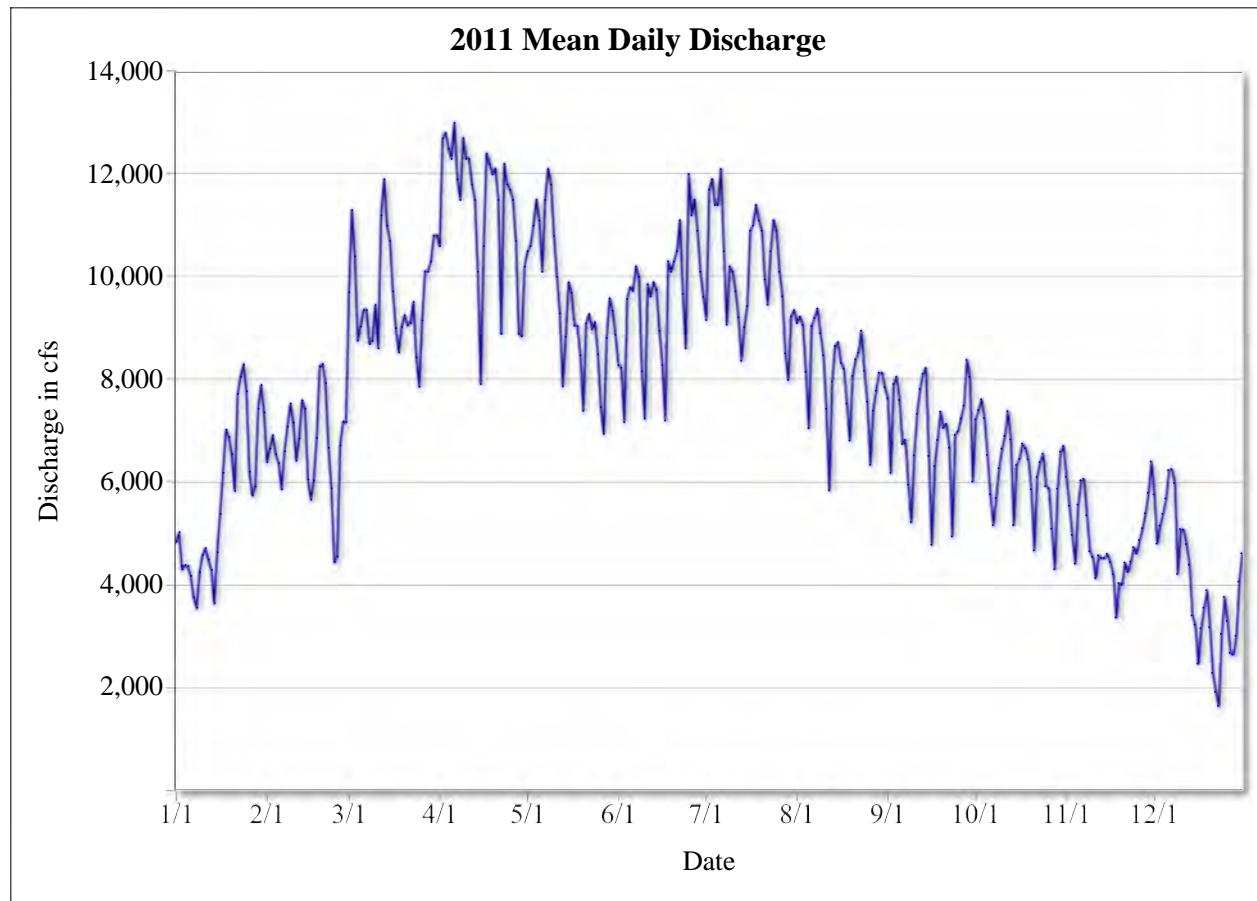
**Drainage Area**—Undetermined.

**Period of Record**—January 1, 2011 to current year.

**Gage**—A Sutron Xlite datalogger (Model 9210-0000-2B) records water elevation measured with a Sutron stage discharge recorder shaft encoder (Model SDR-0001). Discharge is calculated using a stage-discharge relationship.

**Extremes**—Maximum daily discharge, 13,000 cfs, Apr. 6, 2011; minimum daily discharge, 1,640 cfs, Dec. 23, 2011; maximum hourly discharge, 15,200 cfs, Apr. 6, 2011 at 13:00; minimum hourly discharge, 1,540 cfs, Dec. 24, 2011 at 05:00.

**Remarks**—None.



## Colorado River Below McIntyre Park

Discharge, in cubic feet per second, Calendar Year 2011

Day	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	4,840	6,390	9,700	10,600	10,500	8,280	9,160	9,100	7,630	7,220	6,100	5,760
2	5,020	6,650	11,300	12,700	10,600	8,230	11,700	9,220	6,180	7,400	5,540	4,800
3	4,300	6,910	10,400	12,800	11,000	7,170	11,900	9,060	7,910	7,610	4,970	5,150
4	4,380	6,540	8,760	12,500	11,500	9,570	11,400	8,150	8,050	7,250	4,410	5,380
5	4,360	6,370	9,030	12,300	11,100	9,790	11,400	7,050	7,600	6,530	5,560	5,680
6	4,170	5,860	9,350	13,000	10,100	9,730	12,100	9,040	6,740	5,760	6,030	6,230
7	3,750	6,600	9,350	11,900	11,500	10,200	10,500	9,200	6,820	5,160	6,060	6,250
8	3,550	7,080	8,690	11,500	12,100	10,000	9,070	9,380	5,950	5,690	5,350	5,980
9	4,240	7,530	8,750	12,700	11,800	8,160	10,200	8,900	5,220	6,270	4,650	4,210
10	<b>4,580</b>	7,160	9,450	12,300	10,800	7,240	10,100	8,470	6,520	6,650	4,540	5,080
11	<b>4,710</b>	6,420	8,610	12,300	10,000	9,850	9,720	7,430	7,330	6,900	4,130	5,070
12	4,490	6,850	11,200	11,800	9,290	9,620	9,210	5,840	7,810	7,380	4,570	4,790
13	4,290	7,590	11,900	11,500	7,870	9,890	8,370	7,960	8,110	6,830	4,520	4,390
14	3,640	7,430	11,000	10,100	8,830	9,750	9,020	8,650	8,220	5,160	4,520	3,400
15	4,630	6,050	10,700	7,910	9,890	8,950	9,430	8,720	6,510	6,330	4,600	3,220
16	5,380	5,660	9,720	10,600	9,690	8,280	10,900	8,320	4,780	6,450	4,440	2,460
17	6,180	6,030	9,000	12,400	9,050	7,200	11,000	8,210	6,310	6,750	4,200	3,150
18	7,020	6,860	8,530	12,200	9,040	10,300	11,400	7,530	6,820	6,660	3,360	3,550
19	6,880	8,250	9,020	12,000	8,470	10,100	11,100	6,810	7,370	6,440	4,030	3,890
20	6,540	8,300	9,250	12,100	7,390	10,300	10,900	8,070	7,060	5,860	4,000	3,170
21	5,830	7,930	9,060	11,500	9,090	10,500	9,950	8,390	7,130	4,670	4,430	2,280
22	7,720	6,670	9,100	8,890	9,270	11,100	9,460	8,520	6,670	6,100	4,250	1,910
23	8,050	5,880	9,510	12,200	8,980	9,670	10,500	8,950	4,940	6,390	4,450	1,640
24	8,290	4,440	8,430	11,800	9,110	8,610	11,100	8,170	6,920	6,550	4,730	3,040
25	7,770	4,550	7,860	11,700	8,490	12,000	10,900	7,570	6,990	5,920	4,610	3,760
26	6,200	6,710	9,150	11,500	7,460	11,200	10,100	6,340	7,240	5,880	4,870	3,290
27	5,740	7,180	10,100	10,700	6,940	11,500	9,620	7,390	7,490	5,090	5,100	2,670
28	5,910	7,170	10,100	8,890	8,810	10,900	8,510	7,780	8,380	4,300	5,390	2,640
29	7,430		10,300	8,840	9,580	10,100	7,990	8,130	8,050	5,870	5,790	3,000
30	7,890		10,800	10,200	9,340	9,610	9,230	8,130	6,010	6,590	6,400	4,060
31	7,360		10,800		8,870		9,350	7,850		6,700		4,610
Total	175,140	187,060	298,920	341,430	296,460	287,800	315,290	252,330	208,760	194,360	145,600	124,510
Mean	5,650	6,681	9,643	11,380	9,563	9,593	10,170	8,140	6,959	6,270	4,853	4,016
Max	8,290	8,300	11,900	13,000	12,100	12,000	12,100	9,380	8,380	7,610	6,400	6,250
Min	3,550	4,440	7,860	7,910	6,940	7,170	7,990	5,840	4,780	4,300	3,360	1,640
Ac-ft	347,385	371,028	592,899	677,217	588,020	570,843	625,369	500,489	414,069	385,507	288,793	246,962

### Calendar Year Summary

Annual Total 2,827,660    Annual Mean 7,747    Daily Max 13,000    Daily Min 1,640    Annual Ac-ft 5,608,581

#### Maximum Discharge

Date	Time	Elev	Discharge
Apr. 6	13:00	242.84	15,200

#### Minimum Discharge

Date	Time	Elev	Discharge
Dec. 24	05:00	235.02	1,540

**Bold values indicate the daily value was derived from hourly data that contained 6 or more consecutive hours of estimated record.**

## Colorado River at Taylor Ferry

**Location**—Latitude 33° 26.063', longitude -114° 37.567', in the SE¼, lot 4 of Section 10, T. 1 N., R. 23 W., Gila-Salt River meridian, La Paz County, Arizona, Hydrologic Unit 15030104, river mi 106.3, 12.4 mi south of Blythe, California, 50.8 mi north of Yuma, Arizona, and 85.7 river mi downstream of Parker Dam.

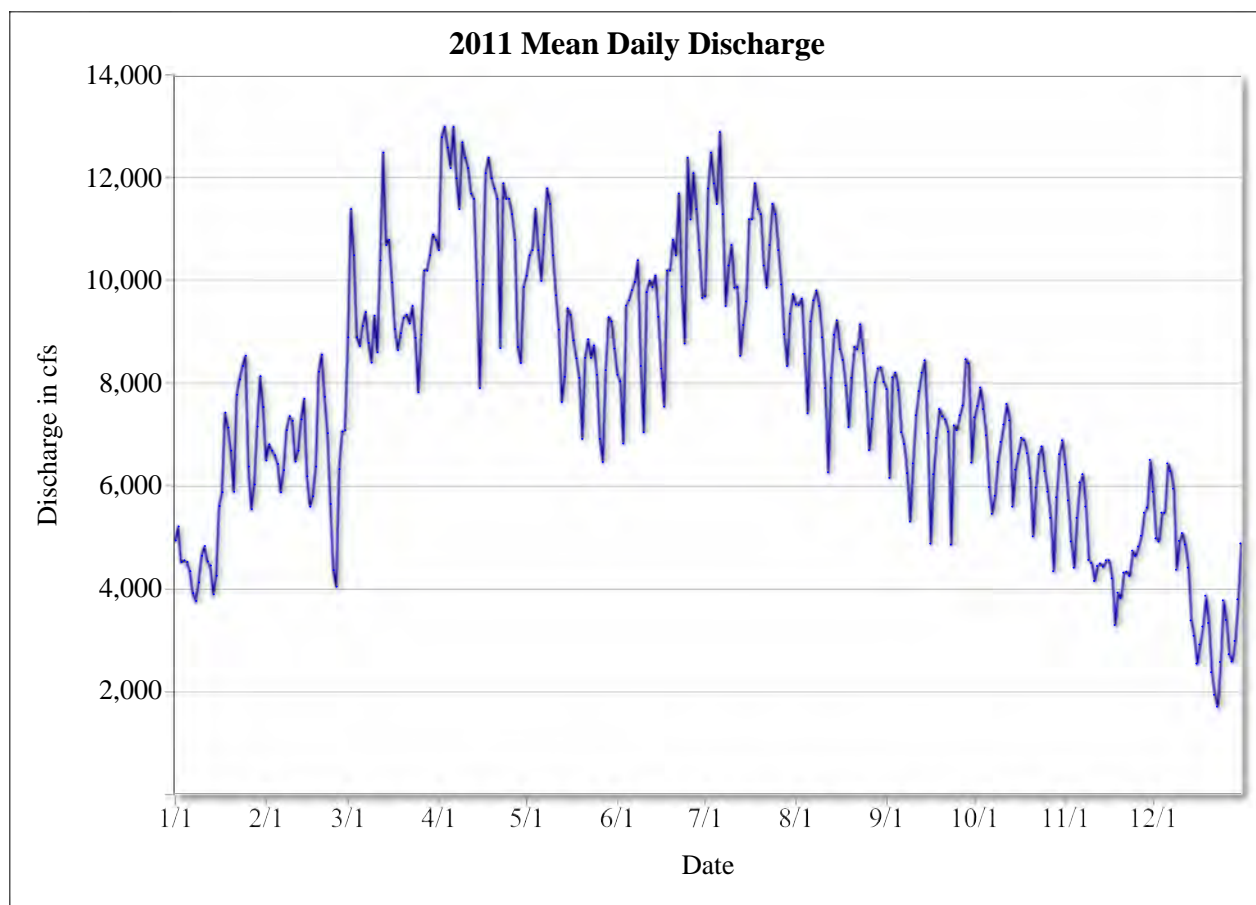
**Drainage Area**—183,700 mi<sup>2</sup>.

**Period of Record**—January 1, 2005 to current year.

**Gage**—A Sutron Xlite datalogger (Model 9210-0000-2B) records water elevation with a Sutron multiple interface shaft encoder (Model 56-0540-400-DTR). Discharge is calculated using a stage-discharge relationship.

**Extremes**—Maximum daily discharge, 13,200 cfs, Apr. 16, 2008; minimum daily discharge, 1,700 cfs, Dec. 23, 2011; maximum hourly discharge, 15,000 cfs, Apr. 6, 2011 at 16:00; minimum hourly discharge, 1,610 cfs, Dec. 23, 2011 at 08:00.

**Remarks**—None.



## Colorado River at Taylor Ferry

Discharge, in cubic-feet per second, Calendar Year 2011

Day	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	4,940	6,500	8,900	10,600	10,100	8,170	9,700	9,540	7,890	7,340	6,420	5,890
2	5,210	6,810	11,400	12,800	10,500	8,040	11,800	9,530	6,160	7,560	5,720	4,980
3	4,520	6,690	10,500	13,000	10,600	6,830	12,500	9,650	8,120	7,920	4,920	4,920
4	4,550	6,600	8,900	12,600	11,400	9,520	11,900	8,580	8,210	7,500	4,410	5,480
5	4,520	6,430	8,730	12,200	10,600	9,620	11,500	7,420	7,870	6,990	5,380	5,480
6	4,340	5,880	9,120	13,000	10,000	9,820	12,900	9,210	7,050	5,980	6,070	6,440
7	3,910	6,310	9,390	12,000	10,900	9,980	11,300	9,620	6,820	5,460	6,230	6,290
8	3,760	7,090	8,790	11,400	11,800	10,400	9,510	9,810	6,250	5,810	5,600	5,950
9	4,120	7,360	8,410	12,700	11,500	8,340	10,300	9,510	5,310	6,470	4,560	4,370
10	4,640	7,270	9,320	12,400	10,500	7,050	10,700	8,900	6,440	6,860	4,500	4,930
11	4,830	6,480	8,610	12,200	9,720	9,780	9,870	7,910	7,380	7,200	4,150	5,080
12	4,530	6,690	10,400	11,700	9,050	10,000	9,880	6,270	7,850	7,600	4,440	4,860
13	4,450	7,300	12,500	11,600	7,640	9,880	8,540	8,110	8,210	7,280	4,490	4,410
14	3,890	7,700	10,700	10,000	8,130	10,100	9,140	8,950	8,450	5,600	4,430	3,380
15	4,250	6,190	10,800	7,910	9,460	9,300	9,600	9,230	7,030	6,320	4,550	3,080
16	5,610	5,600	9,970	9,930	9,340	8,290	11,200	8,670	4,880	6,630	4,550	2,540
17	5,880	5,800	9,060	12,100	8,840	7,550	11,200	8,460	6,230	6,940	4,200	2,910
18	7,430	6,380	8,650	12,400	8,490	10,200	11,900	7,960	6,940	6,890	3,290	3,260
19	7,140	8,230	8,980	12,000	8,110	10,200	11,400	7,150	7,500	6,640	3,920	3,860
20	6,690	8,560	9,280	11,800	6,920	10,800	11,300	8,110	7,360	6,150	3,820	3,330
21	5,890	7,740	9,340	11,600	8,500	10,500	10,300	8,710	7,300	5,020	4,310	2,370
22	7,780	7,030	9,170	8,690	8,860	11,700	9,870	8,670	7,060	5,970	4,330	1,930
23	8,080	5,650	9,510	11,900	8,500	9,890	10,700	9,150	4,860	6,620	4,250	1,700
24	8,340	4,360	8,890	11,600	8,740	8,780	11,500	8,590	7,180	6,770	4,740	2,570
25	8,540	4,040	7,830	11,600	8,170	12,400	11,300	7,840	7,090	6,290	4,640	3,770
26	6,380	6,330	8,950	11,300	6,920	11,200	10,600	6,700	7,380	5,890	4,820	3,390
27	5,550	7,060	10,200	10,800	6,470	12,100	9,930	7,310	7,570	5,380	5,030	2,720
28	6,030	7,090	10,200	8,710	8,260	11,400	8,960	8,020	8,470	4,340	5,480	2,580
29	7,160		10,500	8,400	9,290	10,600	8,340	8,290	8,390	5,780	5,580	2,980
30	8,140		10,900	9,880	9,210	9,670	9,360	8,310	6,460	6,620	6,510	3,790
31	7,540		10,800		8,680		9,740	8,030		6,890		4,880
Total	178,640	185,170	298,700	338,820	285,200	292,110	326,740	262,210	213,710	200,710	145,340	124,120
Mean	5,763	6,613	9,635	11,290	9,200	9,737	10,540	8,458	7,124	6,475	4,845	4,004
Max	8,540	8,560	12,500	13,000	11,800	12,400	12,900	9,810	8,470	7,920	6,510	6,440
Min	3,760	4,040	7,830	7,910	6,470	6,830	8,340	6,270	4,860	4,340	3,290	1,700
Ac-ft	354,327	367,279	592,463	672,040	565,686	579,392	648,079	520,086	423,888	398,102	288,278	246,188

### Calendar Year Summary

Annual Total 2,851,470    Annual Mean 7,812    Daily Max 13,000    Daily Min 1,700    Annual Ac-ft 5,655,808

#### Maximum Discharge

Date	Time	Elev	Discharge
Apr. 6	16:00	234.44	15,000

#### Minimum Discharge

Date	Time	Elev	Discharge
Dec. 23	08:00	225.20	1,610



## Colorado River Below Oxbow Bridge

**Location**—Latitude 33° 22.060', longitude -114° 42.195', in the NE¼ NE¼ of Section 25, T. 9 S., R. 21 E., San Bernardino meridian, Imperial County, California, Hydrologic Unit 15030104, river mi 98.5, 18.0 mi south of Blythe, California, 46.3 mi north of Yuma, Arizona, and 93.5 river mi downstream of Parker Dam.

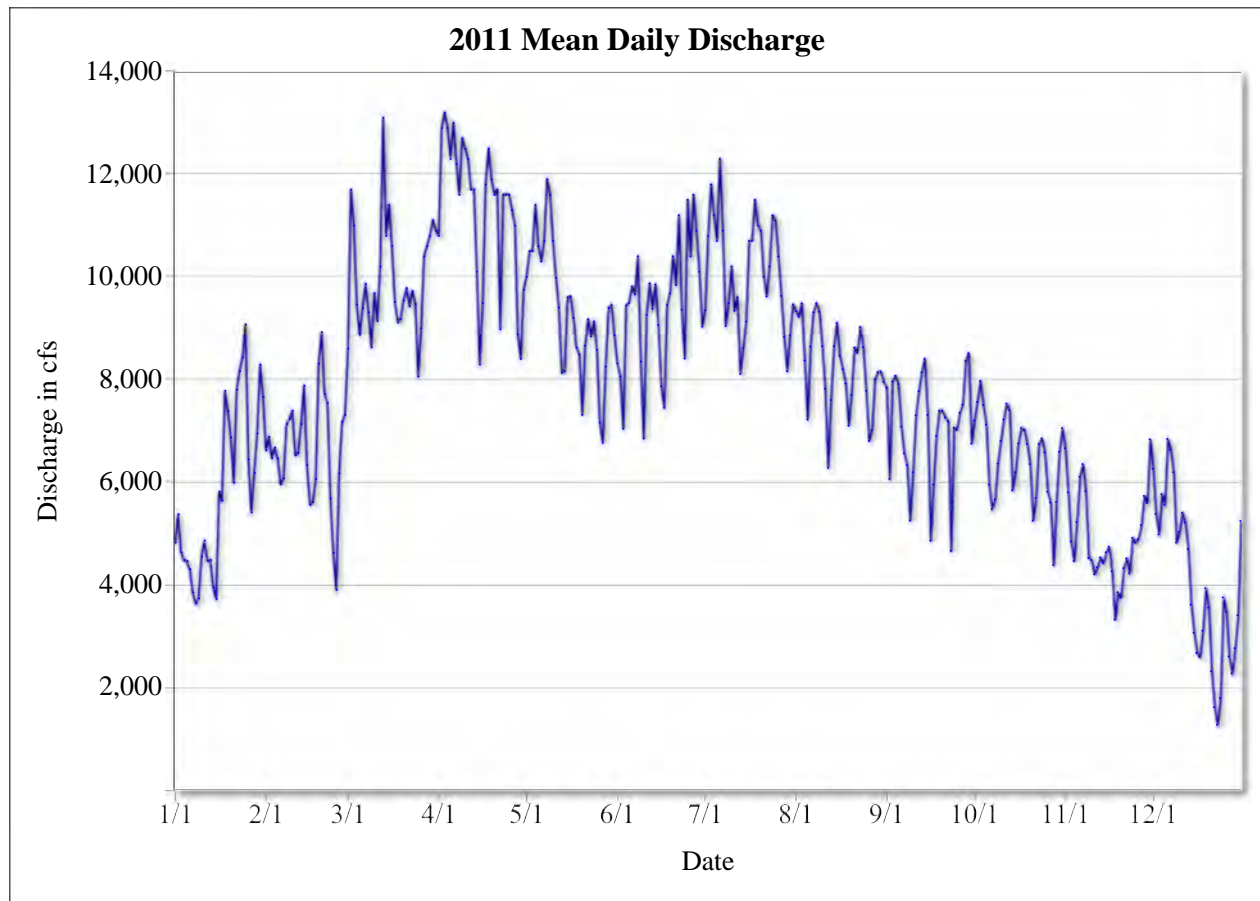
**Drainage Area**—Undetermined.

**Period of Record**—January 1, 2011 to current year.

**Gage**—A Sutron Xlite datalogger (Model 9210-0000-2B) records water elevation measured with a Sutron stage discharge recorder shaft encoder (Model SDR-0001). Discharge is calculated using a stage-discharge relationship.

**Extremes**—Maximum daily discharge, 13,200 cfs, Apr. 3, 2011; minimum daily discharge, 1,270 cfs, Dec. 23, 2011; maximum hourly discharge, 14,700 cfs, Apr. 6, 2011 at 19:00; minimum hourly discharge, 1,130 cfs, Dec. 23, 2011 at 13:00.

**Remarks**—None.



## Colorado River Below Oxbow Bridge

Discharge, in cubic-feet per second, Calendar Year 2011

Day	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	4,820	6,620	8,600	10,800	10,000	8,310	9,350	9,330	7,840	7,200	6,660	6,260
2	5,370	6,880	11,700	12,900	10,500	8,060	10,800	9,220	6,060	7,560	5,800	5,380
3	4,630	6,470	11,000	13,200	10,500	7,040	11,800	9,480	7,960	7,970	4,840	4,980
4	4,480	6,670	9,460	12,900	11,400	9,440	11,200	8,370	8,070	7,500	4,460	5,760
5	4,460	6,460	8,870	12,300	10,600	9,490	10,700	7,220	7,910	7,120	5,220	5,560
6	4,300	5,960	9,390	13,000	10,300	9,810	12,300	8,640	7,080	5,950	6,100	6,840
7	3,850	6,070	9,860	12,200	10,700	9,660	10,900	9,310	6,560	5,470	6,350	6,630
8	3,640	7,130	9,310	11,600	11,900	10,400	9,040	9,480	6,330	5,660	5,820	6,190
9	3,730	7,230	8,630	12,700	11,600	8,350	9,490	9,320	5,250	6,360	4,520	4,820
10	4,550	7,390	9,680	12,500	10,700	6,850	10,200	8,650	6,190	6,800	4,480	5,030
11	4,860	6,520	9,140	12,300	9,980	9,260	9,340	7,820	7,300	7,220	4,200	5,400
12	4,470	6,570	10,200	11,700	9,400	9,870	9,600	6,280	7,770	7,530	4,340	5,210
13	4,480	7,130	13,100	11,700	8,130	9,380	8,110	7,600	8,140	7,400	4,530	4,690
14	3,950	7,880	10,800	10,100	8,160	9,850	8,610	8,650	8,400	5,840	4,420	3,610
15	3,720	6,330	11,400	8,290	9,600	9,060	9,130	9,100	7,310	6,190	4,630	3,060
16	5,810	5,560	10,600	9,490	9,620	7,870	10,700	8,460	4,860	6,750	4,740	2,670
17	5,640	5,610	9,510	11,800	9,200	7,450	10,700	8,200	5,950	7,050	4,260	2,590
18	7,780	6,060	9,110	12,500	8,620	9,450	11,500	7,920	6,900	7,020	3,320	3,100
19	7,380	8,310	9,180	11,900	8,490	9,680	11,000	7,100	7,390	6,740	3,850	3,930
20	6,870	8,920	9,540	11,600	7,310	10,400	10,900	7,700	7,390	6,350	3,750	3,550
21	5,990	7,720	9,780	11,700	8,660	9,840	10,000	8,620	7,260	5,250	4,320	2,310
22	7,800	7,540	9,430	8,980	9,170	11,200	9,620	8,520	7,180	5,690	4,510	1,610
23	8,160	5,680	9,720	11,600	8,840	9,360	10,200	9,020	4,660	6,740	4,220	1,270
24	8,430	4,620	9,470	11,600	9,130	8,410	11,200	8,630	7,060	6,850	4,910	1,790
25	9,070	3,900	8,060	11,600	8,580	11,500	11,100	7,780	7,020	6,580	4,820	3,750
26	6,440	6,170	9,000	11,300	7,160	10,400	10,400	6,800	7,350	5,810	4,890	3,470
27	5,410	7,180	10,400	11,000	6,770	11,600	9,630	7,010	7,510	5,600	5,160	2,600
28	6,180	7,310	10,600	8,880	8,250	10,900	8,830	8,000	8,360	4,380	5,730	2,270
29	6,950		10,800	8,400	9,390	10,100	8,160	8,140	8,510	5,610	5,590	2,760
30	8,290		11,100	9,750	9,450	9,030	8,860	8,150	6,750	6,590	6,830	3,400
31	7,660		10,900		8,860		9,460	7,950		7,050		5,240
Total	179,170	185,890	308,340	340,290	290,970	282,020	312,830	256,470	212,320	201,830	147,270	125,730
Mean	5,780	6,639	9,946	11,340	9,386	9,401	10,090	8,273	7,077	6,511	4,909	4,056
Max	9,070	8,920	13,100	13,200	11,900	11,600	12,300	9,480	8,510	7,970	6,830	6,840
Min	3,640	3,900	8,060	8,290	6,770	6,850	8,110	6,280	4,660	4,380	3,320	1,270
Ac-ft	355,379	368,707	611,583	674,955	577,131	559,379	620,489	508,701	421,131	400,324	292,106	249,382

### Calendar Year Summary

Annual Total 2,843,130    Annual Mean 7,789    Daily Max 13,200    Daily Min 1,270    Annual Ac-ft 5,639,267

#### Maximum Discharge

Date	Time	Elev	Discharge
Apr. 6	19:00	223.46	14,700

#### Minimum Discharge

Date	Time	Elev	Discharge
Dec. 23	13:00	216.00	1,130

## Colorado River at Cibola Gage

**Location**—Latitude 33° 13.256', longitude -114° 40.354', in the NE¼ SW¼ of Section 30, T. 2 S., R. 23 W., Gila-Salt River meridian, La Paz County, Arizona, Hydrologic Unit 15030104, river mi 86.9, 27.4 mi south of Blythe, California, 36.2 mi north of Yuma, Arizona, and 105.1 river mi downstream of Parker Dam.

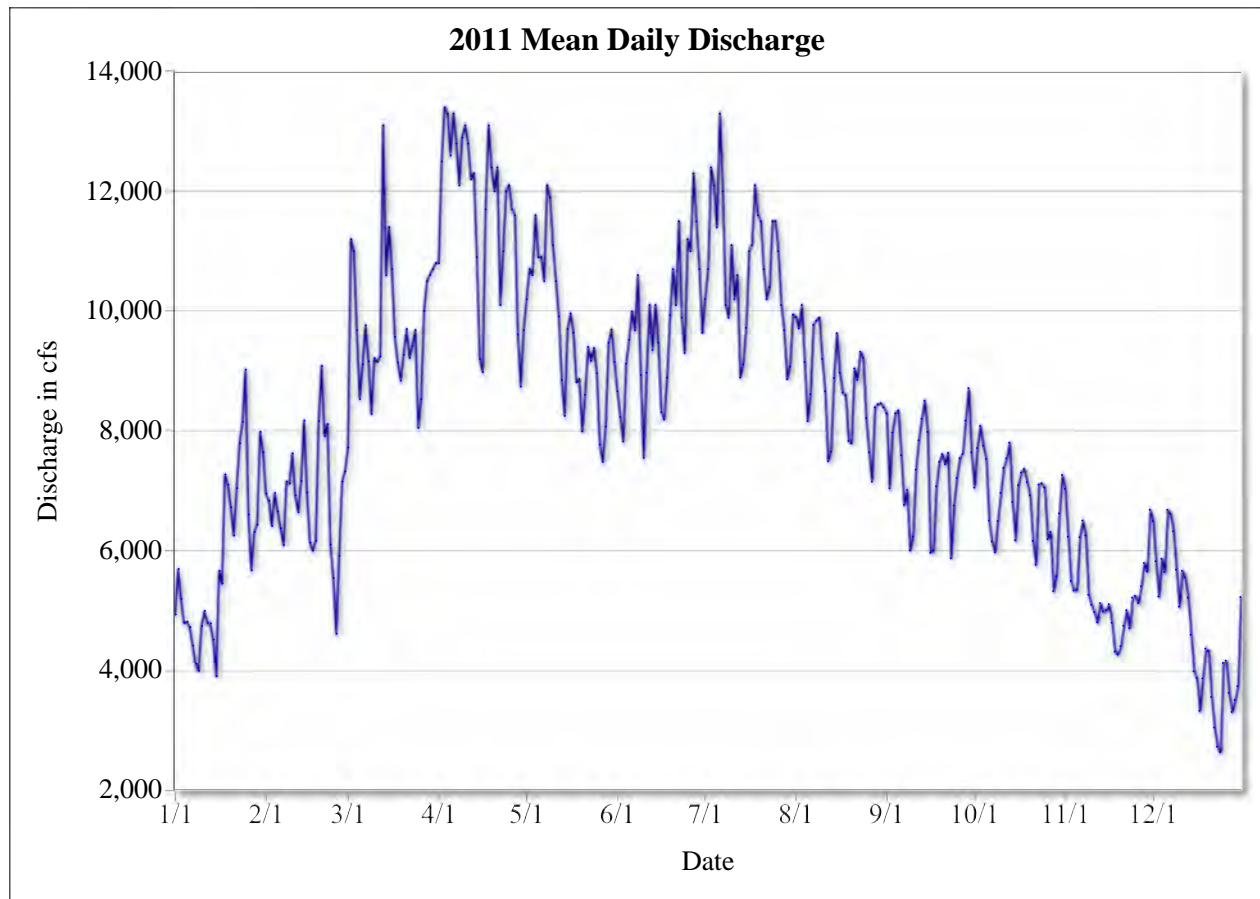
**Drainage Area**—183,800 mi<sup>2</sup>.

**Period of Record**—January 1, 2005 to current year.

**Gage**—A Sutron Xlite datalogger (Model 9210-0000-2B) records water elevation measured with a Sutron multiple interface shaft encoder (Model 56-0540-400-DTR). Discharge is calculated using a stage-discharge relationship.

**Extremes**—Maximum daily discharge, 13,700 cfs, Apr. 16, 2008; minimum daily discharge, 2,570 cfs, Dec. 28, 2008; maximum hourly discharge, 14,900 cfs, Apr. 7, 2011 at 00:00; minimum hourly discharge, 2,210 cfs, Jan. 13, 2005 at 08:00.

**Remarks**—None.



## Colorado River at Cibola Gage

Discharge, in cubic-feet per second, Calendar Year 2011

Day	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	4,930	6,950	7,720	10,800	10,200	8,660	10,200	9,900	8,290	7,050	7,030	6,490
2	5,690	6,830	11,200	12,500	10,700	8,230	10,700	9,710	7,040	7,710	6,230	5,820
3	5,190	6,410	11,000	13,400	10,600	7,820	12,400	10,100	7,970	8,080	5,490	5,230
4	4,790	6,960	9,680	13,300	11,600	9,120	12,100	9,150	8,290	7,750	5,330	5,860
5	4,810	6,650	8,530	12,600	10,900	9,520	11,400	8,160	8,340	7,530	5,340	5,640
6	4,720	6,370	9,110	13,300	10,900	9,990	13,300	8,610	7,590	6,500	6,220	6,680
7	4,410	6,090	9,760	12,800	10,500	9,680	12,000	9,770	6,760	6,150	6,500	6,610
8	4,110	7,150	9,160	12,100	12,100	10,600	10,100	9,840	7,010	5,970	6,250	6,320
9	3,990	7,120	8,280	12,900	11,900	8,930	9,890	9,890	6,000	6,490	5,260	5,680
10	4,740	7,620	9,210	13,100	11,100	7,550	11,100	9,200	6,230	6,960	5,090	5,060
11	4,990	6,920	9,150	12,800	10,500	8,970	10,200	8,660	7,350	7,380	4,970	5,660
12	4,790	6,640	9,240	12,200	9,910	10,100	10,600	7,490	7,840	7,540	4,800	5,550
13	4,780	7,160	13,100	12,300	8,850	9,350	8,890	7,650	8,200	7,800	5,120	5,210
14	4,510	8,170	10,600	10,900	8,250	10,100	9,110	8,880	8,500	6,810	4,980	4,590
15	3,900	6,970	11,400	9,200	9,700	9,470	9,720	9,630	7,980	6,170	5,000	3,980
16	5,660	6,130	10,700	8,980	9,960	8,310	11,000	8,970	5,960	7,090	5,100	3,870
17	5,450	6,000	9,570	11,700	9,640	8,190	11,100	8,640	6,000	7,300	4,790	3,320
18	7,270	6,160	9,140	13,100	8,810	8,890	12,100	8,590	7,070	7,360	4,310	3,860
19	7,100	8,160	8,840	12,400	8,860	9,930	11,600	7,830	7,480	7,140	4,260	4,360
20	6,720	9,080	9,270	12,000	7,990	10,700	11,500	7,790	7,610	6,920	4,400	4,320
21	6,250	7,910	9,700	12,400	8,600	10,100	10,700	9,040	7,440	6,160	4,740	3,550
22	7,040	8,110	9,220	10,100	9,400	11,500	10,200	8,850	7,630	5,760	5,000	3,040
23	7,790	6,100	9,420	11,000	9,170	9,890	10,400	9,320	5,870	7,100	4,700	2,720
24	8,150	5,540	9,680	12,000	9,380	9,300	11,500	9,220	6,750	7,120	5,210	2,630
25	9,020	4,610	8,050	12,100	8,960	11,200	11,500	8,210	7,210	7,050	5,240	4,120
26	6,600	5,910	8,530	11,700	7,770	11,000	11,000	7,640	7,540	6,190	5,120	4,160
27	5,670	7,150	10,000	11,600	7,480	12,300	10,100	7,150	7,610	6,310	5,400	3,620
28	6,310	7,320	10,500	9,610	8,070	11,500	9,680	8,390	8,170	5,320	5,790	3,300
29	6,430		10,600	8,740	9,470	10,700	8,860	8,440	8,710	5,570	5,650	3,500
30	7,980		10,700	9,680	9,690	9,640	9,070	8,460	7,640	6,620	6,680	3,730
31	7,640		10,800		9,150		9,940	8,390		7,260		5,220
Total	181,430	192,190	301,860	351,310	300,110	291,240	331,960	271,570	222,080	212,160	160,000	143,700
Mean	5,853	6,864	9,737	11,710	9,681	9,708	10,710	8,760	7,403	6,844	5,333	4,635
Max	9,020	9,080	13,100	13,400	12,100	12,300	13,300	10,100	8,710	8,080	7,030	6,680
Min	3,900	4,610	7,720	8,740	7,480	7,550	8,860	7,150	5,870	5,320	4,260	2,630
Ac-ft	359,861	381,203	598,731	696,813	595,260	577,666	658,433	538,651	440,489	420,813	317,355	285,025

### Calendar Year Summary

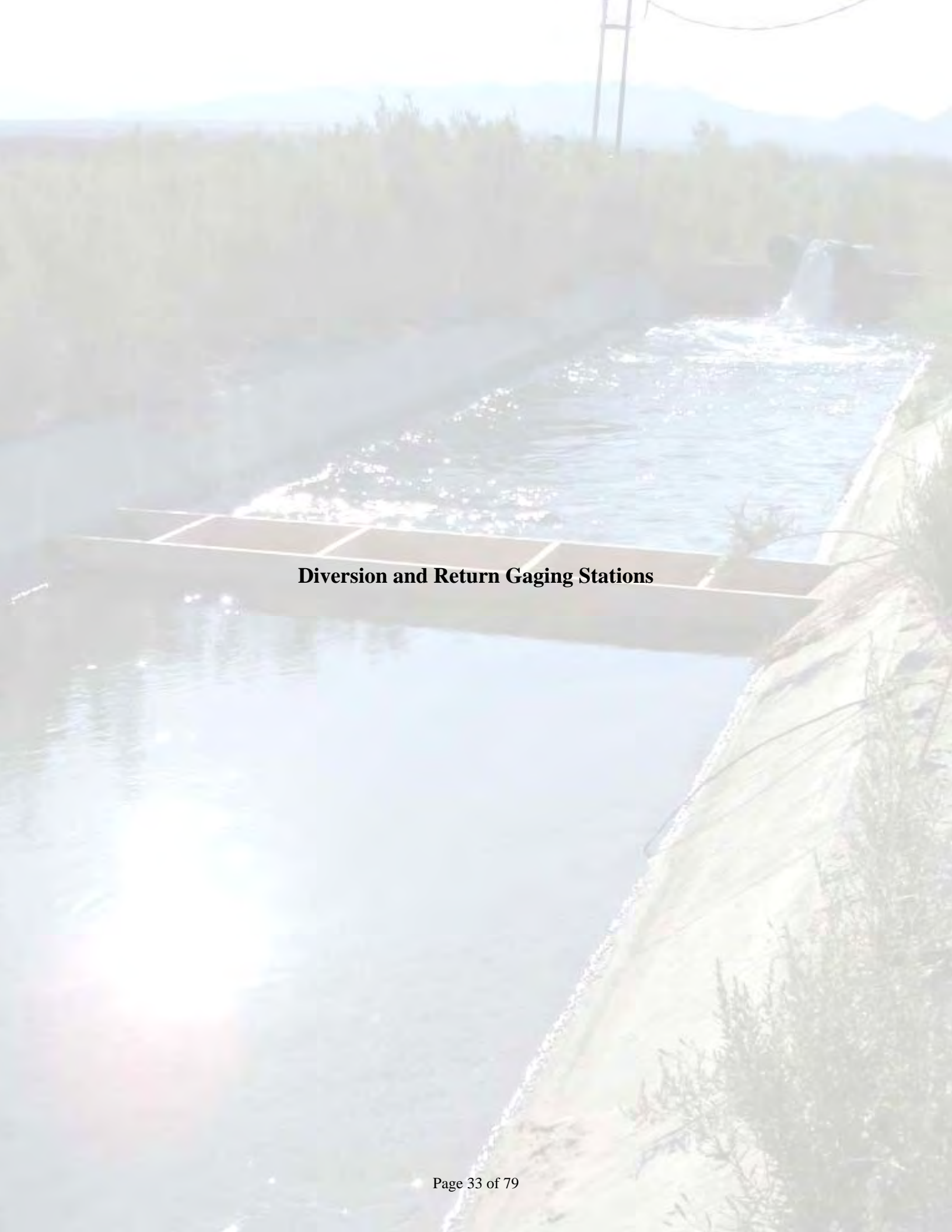
Annual Total 2,959,610    Annual Mean 8,109    Daily Max 13,400    Daily Min 2,630    Annual Ac-ft 5,870,300

#### Maximum Discharge

Date	Time	Elev	Discharge
Apr. 7	00:00	209.78	14,900

#### Minimum Discharge

Date	Time	Elev	Discharge
Dec. 23	19:00	204.86	2,570



**Diversion and Return Gaging Stations**

## Fort Mojave Tribe-Nevada

**Location**—Latitude 35° 02.940', longitude -114° 37.360', in the NW¼ NW¼ of Section 27, T. 33 S., R. 66 E., Mount Diablo meridian, Clark County, Nevada, Hydrologic Unit 15030101, river mi 261.0, 4.8 mi south of Bullhead City, Arizona, 14.5 mi north of Needles, California, and 14.9 river mi downstream of Davis Dam.

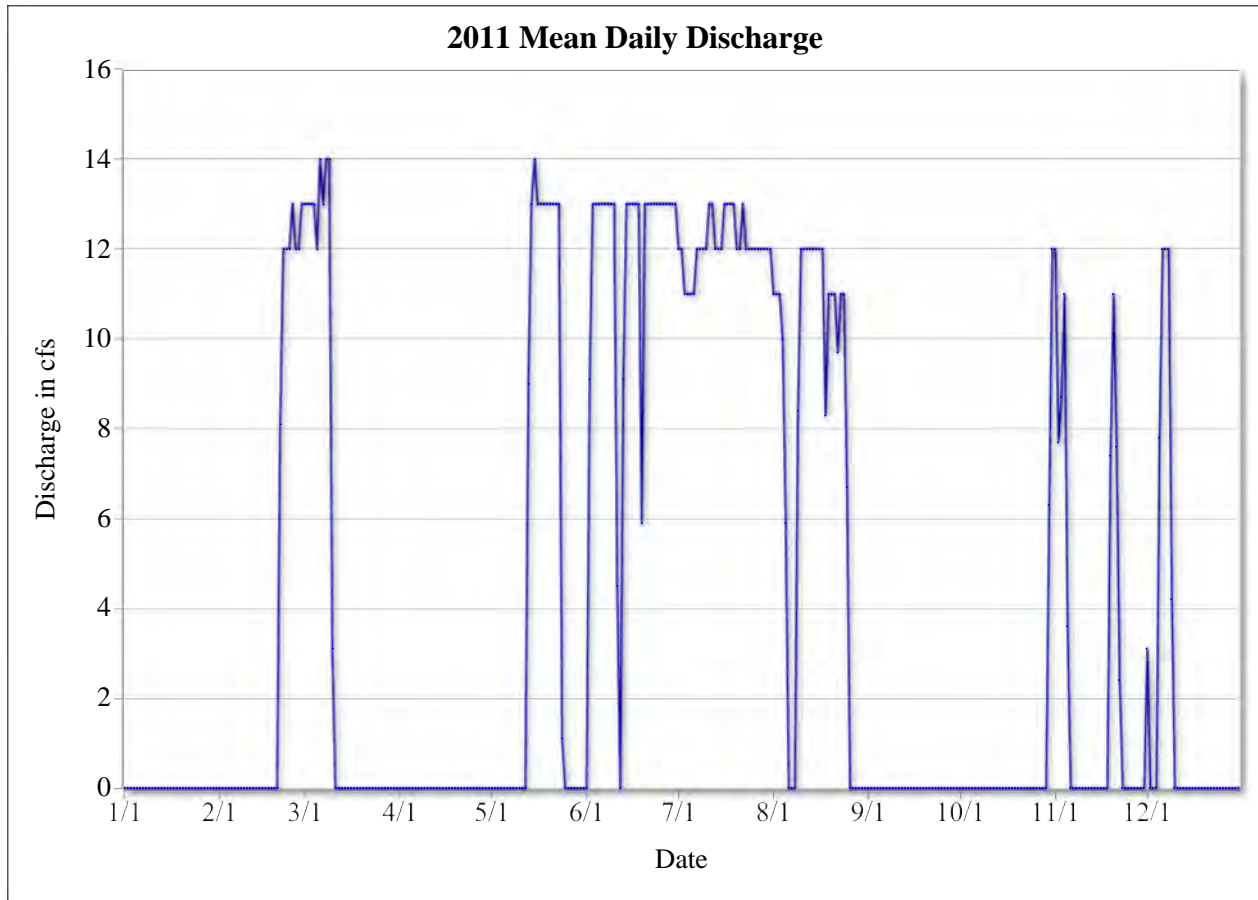
**Drainage Area**—Not applicable.

**Period of Record**—January 1, 2006 to current year.

**Gage**—A Sutron Xlite datalogger (Model 9210-0000-2B) records discharge values measured with a SeaMetrics insertion magnetic flow meter (Model EX-201-S) mounted in the discharge side of the diversion pipe. Discharge is calculated using a discharge-index relationship.

**Extremes**—Maximum daily discharge, 15 cfs, Apr. 15, 2008; minimum daily discharge, no diversion at times; maximum hourly discharge, 16 cfs, Feb. 14, 2008 at 13:00; minimum hourly discharge, no diversion at times.

**Remarks**—None.



## Fort Mojave Tribe-Nevada

Discharge, in cubic-feet per second, Calendar Year 2011

Day	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	0	0	13	0	0	0	12	11	0	0	12	3.1
2	0	0	13	0	0	9.1	12	11	0	0	7.7	0
3	0	0	13	0	0	13	11	11	0	0	8.7	0
4	0	0	13	0	0	13	11	10	0	0	11	0
5	0	0	12	0	0	13	11	5.9	0	0	3.6	7.8
6	0	0	14	0	0	13	11	0	0	0	0	12
7	0	0	13	0	0	13	12	0	0	0	0	12
8	0	0	14	0	0	13	12	0	0	0	0	12
9	0	0	14	0	0	13	12	8.4	0	0	0	4.2
10	0	0	3.1	0	0	13	12	12	0	0	0	0
11	0	0	0	0	0	4.5	13	12	0	0	0	0
12	0	0	0	0	0	0	13	12	0	0	0	0
13	0	0	0	0	9.0	9.1	12	12	0	0	0	0
14	0	0	0	0	13	13	12	12	0	0	0	0
15	0	0	0	0	14	13	12	12	0	0	0	0
16	0	0	0	0	13	13	13	12	0	0	0	0
17	0	0	0	0	13	13	13	12	0	0	0	0
18	0	0	0	0	13	13	13	8.3	0	0	0	0
19	0	0	0	0	13	5.9	13	11	0	0	7.4	0
20	0	0	0	0	13	13	12	11	0	0	11	0
21	0	8.1	0	0	13	13	12	11	0	0	7.6	0
22	0	12	0	0	13	13	13	9.7	0	0	2.4	0
23	0	12	0	0	13	13	12	11	0	0	0	0
24	0	12	0	0	1.1	13	12	11	0	0	0	0
25	0	13	0	0	0	13	12	6.7	0	0	0	0
26	0	12	0	0	0	13	12	0	0	0	0	0
27	0	12	0	0	0	13	12	0	0	0	0	0
28	0	13	0	0	0	13	12	0	0	0	0	0
29	0		0	0	0	13	12	0	0	0	0	0
30	0		0	0	0	13	12	0	0	6.3	0	0
31	0		0		0		12	0		12		0
Total	0	94.1	122.1	0	141.1	340.6	375	233.0	0	18.3	71.4	51.1
Mean	0	3.36	3.94	0	4.55	11.4	12.1	7.52	0	0.59	2.38	1.65
Max	0	13	14	0	14	13	13	12	0	12	12	12
Min	0	0	0	0	0	0	11	0	0	0	0	0
Ac-ft	0	187	242	0	280	676	744	462	0	36	142	101

### Calendar Year Summary

Annual Total 1,446.7    Annual Mean 3.96    Daily Max 14    Daily Min 0    Annual Ac-ft 2,870

#### Maximum Discharge

Date	Time	GH	Discharge
Feb. 28	22:00	N/A	14

#### Minimum Discharge

Date	Time	GH	Discharge
Jan. 1	01:00	N/A	0

## Fort Mojave Tribe-North Casino

**Location**—Latitude 35° 01.749', longitude -114° 38.101', in the SE¼ SE¼ of Section 17, T. 19 N., R. 22 W., Gila-Salt River meridian, Mohave County, Arizona, Hydrologic Unit 15030101, river mi 259.4, 6.3 mi south of Bullhead City, Arizona, 13.1 mi north of Needles, California, and 16.5 river mi downstream of Davis Dam.

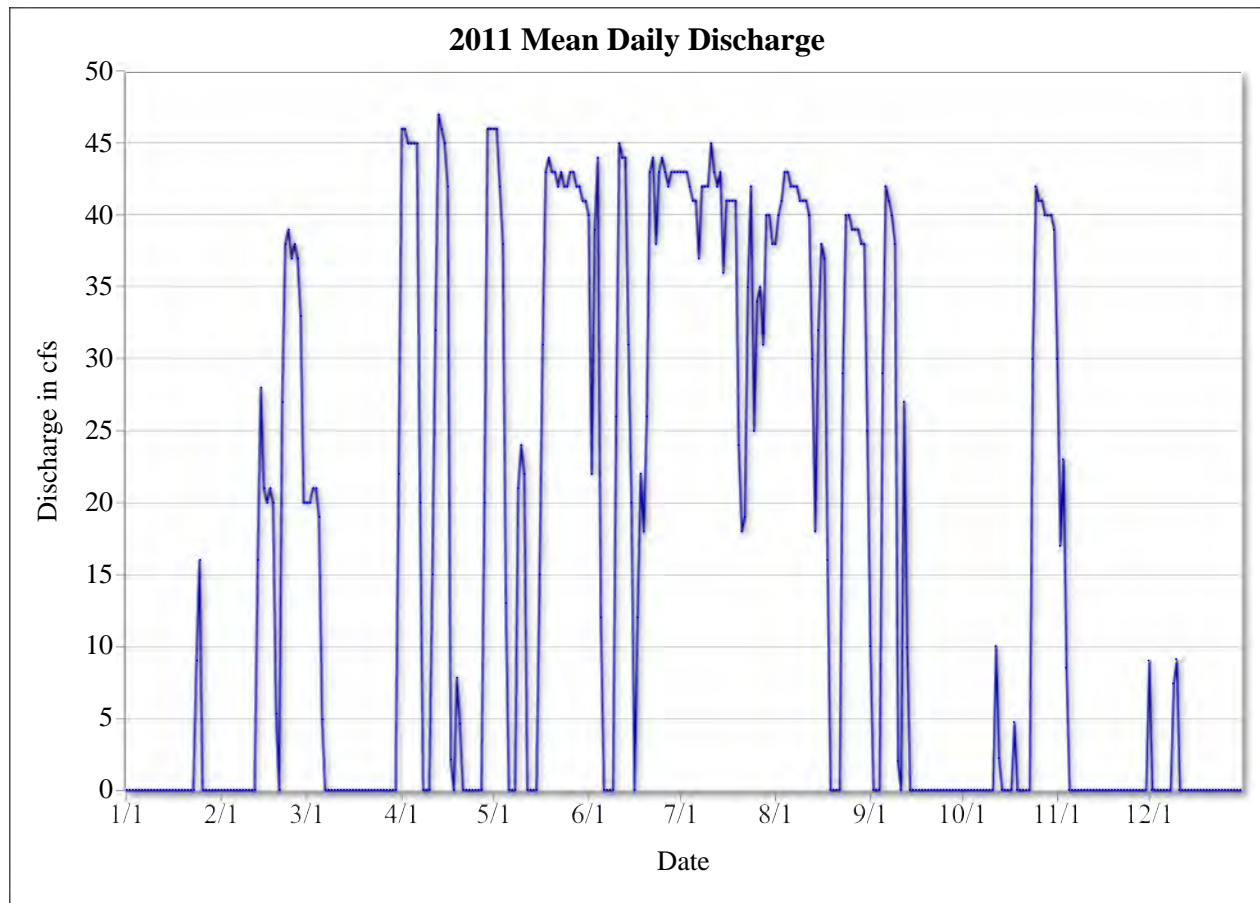
**Drainage Area**—Not applicable.

**Period of Record**—February 23, 2006 to current year.

**Gage**—A Sutron Xlite datalogger (Model 9210-0000-2B) records water stage and velocity measured with a SonTek/YSI Argonaut-SW current meter. Discharge is calculated using a velocity-index relationship.

**Extremes**—Maximum daily discharge, 47 cfs, Apr. 13, 2011; minimum daily discharge, no diversion at times; maximum hourly discharge, 48 cfs, Apr. 11, 2010 at 18:00; minimum hourly discharge, no diversion at times.

**Remarks**—None.





## Fort Mojave Tribe-North Casino

Discharge, in cubic-feet per second, Calendar Year 2011

Day	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	0	0	20	46	46	40	43	38	10	0	30	9.0
2	0	0	20	46	46	22	43	40	0	0	17	0
3	0	0	21	45	42	39	43	41	0	0	23	0
4	0	0	21	45	38	44	42	43	0	0	8.5	0
5	0	0	19	45	13	12	41	43	29	0	0	0
6	0	0	4.9	45	0	0	41	42	42	0	0	0
7	0	0	0	20	0	0	37	42	41	0	0	0
8	0	0	0	0	0	0	42	42	40	0	0	0
9	0	0	0	0	21	0	42	41	38	0	0	7.4
10	0	0	0	0	24	26	42	41	2.0	0	0	9.1
11	0	0	0	15	22	45	45	41	0	0	0	0
12	0	0	0	32	0	44	43	40	27	10	0	0
13	0	16	0	47	0	44	42	30	9.9	2.2	0	0
14	0	28	0	46	0	31	43	18	0	0	0	0
15	0	21	0	45	0	20	36	32	0	0	0	0
16	0	20	0	42	15	0	41	38	0	0	0	0
17	0	21	0	2.1	31	12	41	37	0	0	0	0
18	0	20	0	0	43	22	41	16	0	4.7	0	0
19	0	5.3	0	7.8	44	18	41	0	0	0	0	0
20	0	0	0	4.6	43	26	24	0	0	0	0	0
21	0	27	0	0	43	43	18	0	0	0	0	0
22	0	38	0	0	42	44	19	0	0	0	0	0
23	0	39	0	0	43	38	35	29	0	0	0	0
24	9.0	37	0	0	42	43	42	40	0	30	0	0
25	16	38	0	0	42	44	25	40	0	42	0	0
26	0	37	0	0	43	43	34	39	0	41	0	0
27	0	33	0	0	43	42	35	39	0	41	0	0
28	0	20	0	20	42	43	31	39	0	40	0	0
29	0		0	46	42	43	40	38	0	40	0	0
30	0		0	46	41	43	40	38	0	40	0	0
31	0		22		41		38	25		39		0
Total	25.0	400.3	127.9	645.5	892	871	1,170	992	238.9	329.9	78.5	25.5
Mean	0.81	14.3	4.13	21.5	28.8	29.0	37.7	32.0	7.96	10.6	2.62	0.82
Max	16	39	22	47	46	45	45	43	42	42	30	9.1
Min	0	0	0	0	0	0	18	0	0	0	0	0
Ac-ft	50	794	254	1,280	1,769	1,728	2,321	1,968	474	654	156	51

### Calendar Year Summary

Annual Total 5,796.5    Annual Mean 15.9    Daily Max 47    Daily Min 0    Annual Ac-ft 11,499

#### Maximum Discharge

Date	Time	GH	Discharge
Apr. 12	08:00	2.76	48

#### Minimum Discharge

Date	Time	GH	Discharge
Jan. 1	01:00	0.00	0

**Bold values indicate the daily value was derived from hourly data that contained 6 or more consecutive hours of estimated record.**

## Fort Mojave Tribe-North Casino (North Event Center)

**Location**—Latitude 35° 01.749', longitude -114° 38.101', in the SE¼ SE¼ of Section 17, T. 19 N., R. 22 W., Gila-Salt River meridian, Mohave County, Arizona, Hydrologic Unit 15030101, river mi 259.4, 6.3 mi south of Bullhead City, Arizona, 13.1 mi north of Needles, California, and 16.5 river mi downstream of Davis Dam.

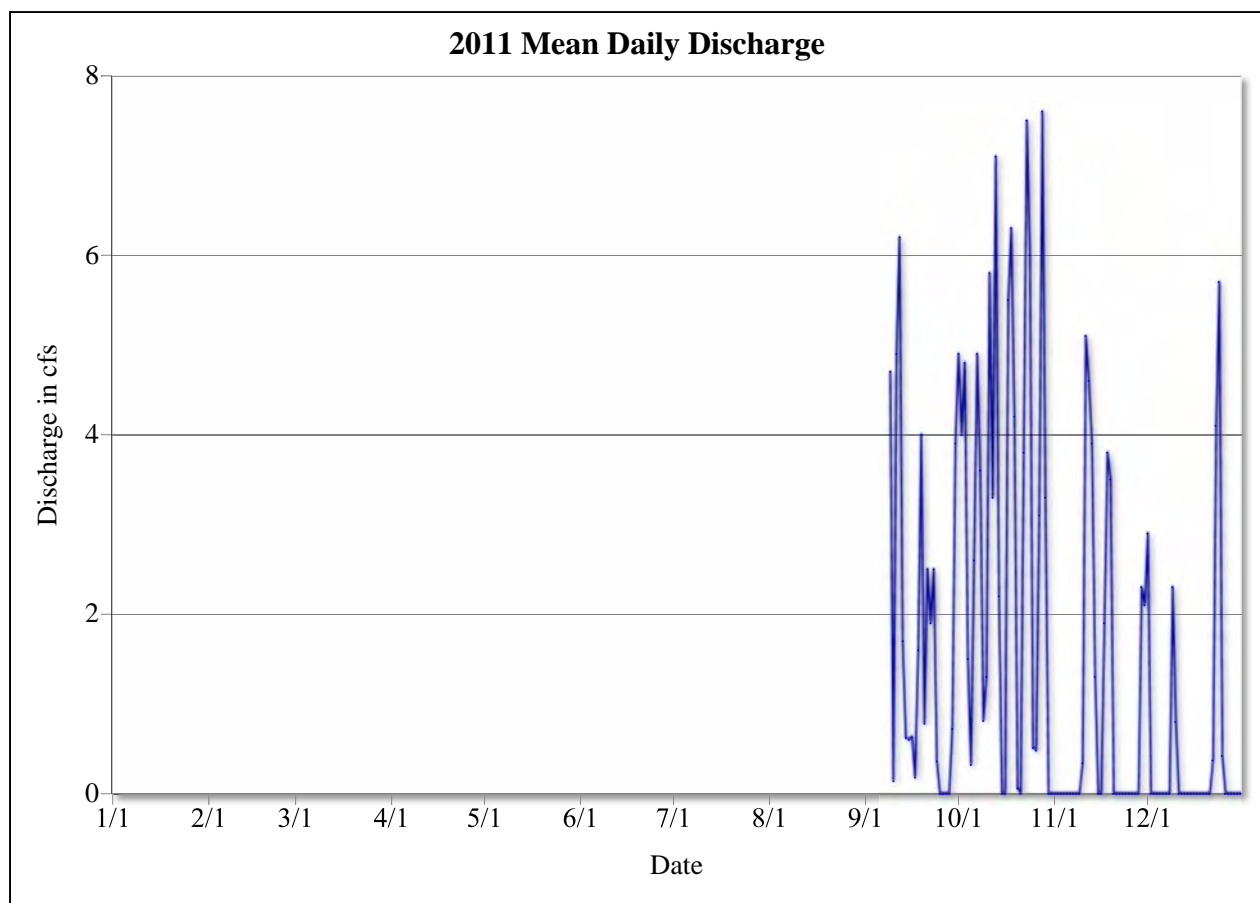
**Drainage Area**—Not applicable.

**Period of Record**—September 9, 2011 to current year.

**Gage**—A Sutron Xlite datalogger (Model 9210-0000-2B) records discharge measured with a Mace insertion acoustic flow meter mounted in the discharge side of the diversion pipe. Discharge is calculated using a discharge-index relationship.

**Extremes**—Maximum daily discharge, 7.6 cfs, Oct. 28, 2011; minimum daily discharge, no diversion at times; maximum hourly discharge, 9.8 cfs, Oct. 22, 2011 at 23:00; minimum hourly discharge, no diversion at times.

**Remarks**—None.



## Fort Mojave Tribe-North Casino (North Event Center)

Discharge, in cubic-feet per second, Calendar Year 2011

Day	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1										4.9	0	2.9
2										4.0	0	0
3										4.8	0	0
4										1.5	0	0
5										0.32	0	0
6										2.6	0	0
7										4.9	0	0
8										3.6	0	0
9									4.7	0.81	0	2.3
10									0.14	1.3	0.34	0.80
11									4.9	5.8	5.1	0
12									6.2	3.3	4.6	0
13									1.7	7.1	3.9	0
14									0.62	2.2	1.3	0
15									0.60	0	0	0
16									0.63	0	0	0
17									0.18	5.5	1.9	0
18									1.6	6.3	3.8	0
19									4.0	4.2	3.5	0
20									0.78	0.06	0	0
21									2.5	0	0	0
22									1.9	3.8	0	0.37
23									2.5	7.5	0	4.1
24									0.36	6.0	0	5.7
25									0	0.51	0	0.42
26									0	0.48	0	0
27									0	3.1	0	0
28									0	7.6	0	0
29									0.72	3.3	2.3	0
30									3.9	0	2.1	0
31										0		0
Total									37.93	95.48	28.84	16.59
Mean									1.72	3.08	0.96	0.54
Max									6.2	7.6	5.1	5.7
Min									0	0	0	0
Ac-ft									75	189	57	33

### Calendar Year Summary

Annual Total 178.84    Annual Mean 1.57    Daily Max 7.6    Daily Min 0    Annual Ac-ft 354

#### Maximum Discharge

Date	Time	GH	Discharge
Oct. 22	23:00	N/A	9.8

#### Minimum Discharge

Date	Time	GH	Discharge
Sep. 10	02:00	N/A	0

## Fort Mojave Tribe-South Casino

**Location**—Latitude 34° 59.160', longitude -114° 37.622', in the SE¼ SW¼ of Section 33, T. 19 N., R. 22 W., Gila-Salt River meridian, Mohave County, Arizona, Hydrologic Unit 15030101, river mi 256.3, 9.1 mi south of Bullhead City, Arizona, 10.1 mi north of Needles, California, and 19.6 river mi downstream of Davis Dam.

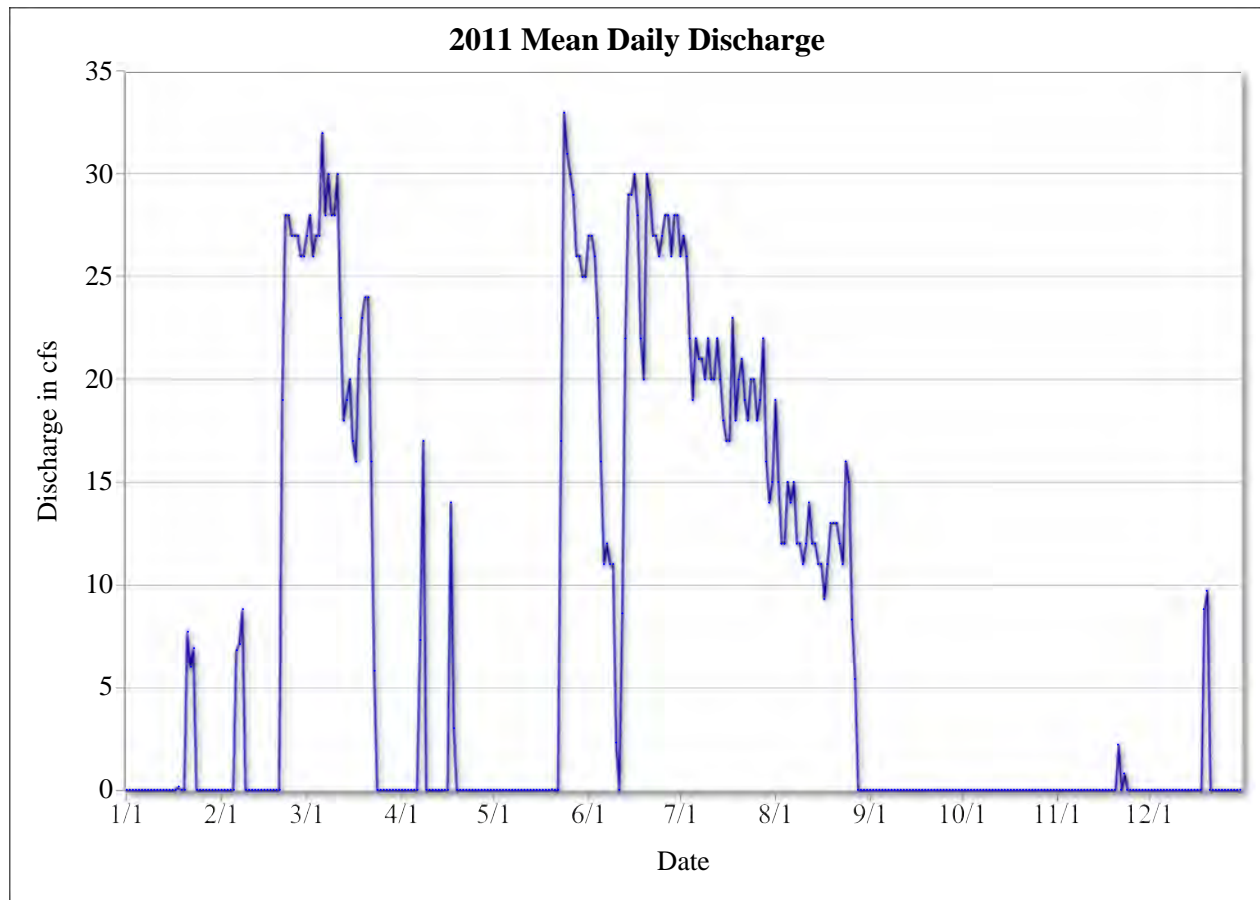
**Drainage Area**—Not applicable.

**Period of Record**—April 10, 2006 to current year.

**Gage**—Sutron Xlite datalogger (Model 9210-0000-2B) records water stage measured with a Sutron AccuBubble self-contained bubbler system (Model 5600-0131-4) upstream of a fixed abrupt-expansion type, long-throated flume. Discharge is calculated using a stage-discharge relationship.

**Extremes**—Maximum daily discharge, 39 cfs, Jul. 26, 2010; minimum daily discharge, no diversion at times; maximum hourly discharge, 41 cfs, Jul. 25, 2010 at 20:00; minimum hourly discharge, no diversion at times.

**Remarks**—None.



## Fort Mojave Tribe-South Casino

Discharge, in cubic-feet per second, Calendar Year 2011

Day	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	0	0	27	0	0	27	26	19	0	0	0	0
2	0	0	28	0	0	27	27	15	0	0	0	0
3	0	0	26	0	0	26	26	12	0	0	0	0
4	0	0	27	0	0	23	22	12	0	0	0	0
5	0	0	27	0	0	16	19	15	0	0	0	0
6	0	6.8	32	0	0	11	22	14	0	0	0	0
7	0	7.1	28	7.3	0	12	21	15	0	0	0	0
8	0	8.8	30	17	0	11	21	12	0	0	0	0
9	0	0	28	0	0	11	20	12	0	0	0	0
10	0	0	28	0	0	2.3	22	11	0	0	0	0
11	0	0	30	0	0	0	20	12	0	0	0	0
12	0	0	23	0	0	8.6	20	14	0	0	0	0
13	0	0	18	0	0	22	22	12	0	0	0	0
14	0	0	19	0	0	29	20	12	0	0	0	0
15	0	0	20	0	0	29	18	11	0	0	0	0
16	0	0	17	0	0	30	17	11	0	0	0	0
17	0	0	16	14	0	28	17	9.3	0	0	0	0
18	0.16	0	21	3.0	0	22	23	11	0	<b>0</b>	0	0
19	0	0	23	0	0	20	18	13	0	<b>0</b>	0	8.8
20	0	0	24	0	0.02	30	20	13	0	<b>0</b>	0	9.7
21	7.7	19	24	0	0	29	21	13	0	0	2.2	0
22	6.0	28	16	0	0	27	19	12	0	0	0	0
23	6.9	28	5.8	0	17	27	18	11	0	<b>0</b>	0.79	0
24	0	27	0	0	33	26	20	16	0	<b>0</b>	0	0
25	0	27	0	0	31	27	20	15	0	<b>0</b>	0	0
26	0	27	0	0	30	28	18	8.3	0	<b>0</b>	0	0
27	0	26	0	0	29	28	19	5.4	0	<b>0</b>	0	0
28	0	26	0	0	26	26	22	0	0	<b>0</b>	0	0
29	0	0	0	0	26	28	16	0	0	<b>0</b>	0	0
30	0	0	0	0	25	28	14	0	0	0	0	0
31	0	0	0	0	25	0	15	0	0	0	0	0
Total	20.76	230.7	537.8	41.3	242.02	658.9	623	336.0	0	0	2.99	18.5
Mean	0.67	8.24	17.3	1.38	7.81	22.0	20.1	10.8	0	0	0.10	0.60
Max	7.7	28	32	17	33	30	27	19	0	0	2.2	9.7
Min	0	0	0	0	0	0	14	0	0	0	0	0
Ac-ft	41	458	1,067	82	480	1,307	1,236	666	0	0	5.9	37

### Calendar Year Summary

Annual Total 2,711.97    Annual Mean 7.43    Daily Max 33    Daily Min 0    Annual Ac-ft 5,379.9

#### Maximum Discharge

Date	Time	GH	Discharge
May 24	03:00	1.43	37

#### Minimum Discharge

Date	Time	GH	Discharge
Jan. 1	01:00	0.00	0

**Bold values indicate the daily value was derived from hourly data that contained 6 or more consecutive hours of estimated record.**

## Fort Mojave Tribe-California 2 (North)

**Location**—Latitude 34° 58.022', longitude -114° 38.173', in the NE¼ NW¼ of Section 13, T. 10 N., R. 22 E., San Bernardino meridian, San Bernardino County, California, Hydrologic Unit 15030101, river mi 254.9, 10.4 mi south of Bullhead City, Arizona, 8.9 mi north of Needles, California, and 21.0 river mi downstream of Davis Dam.

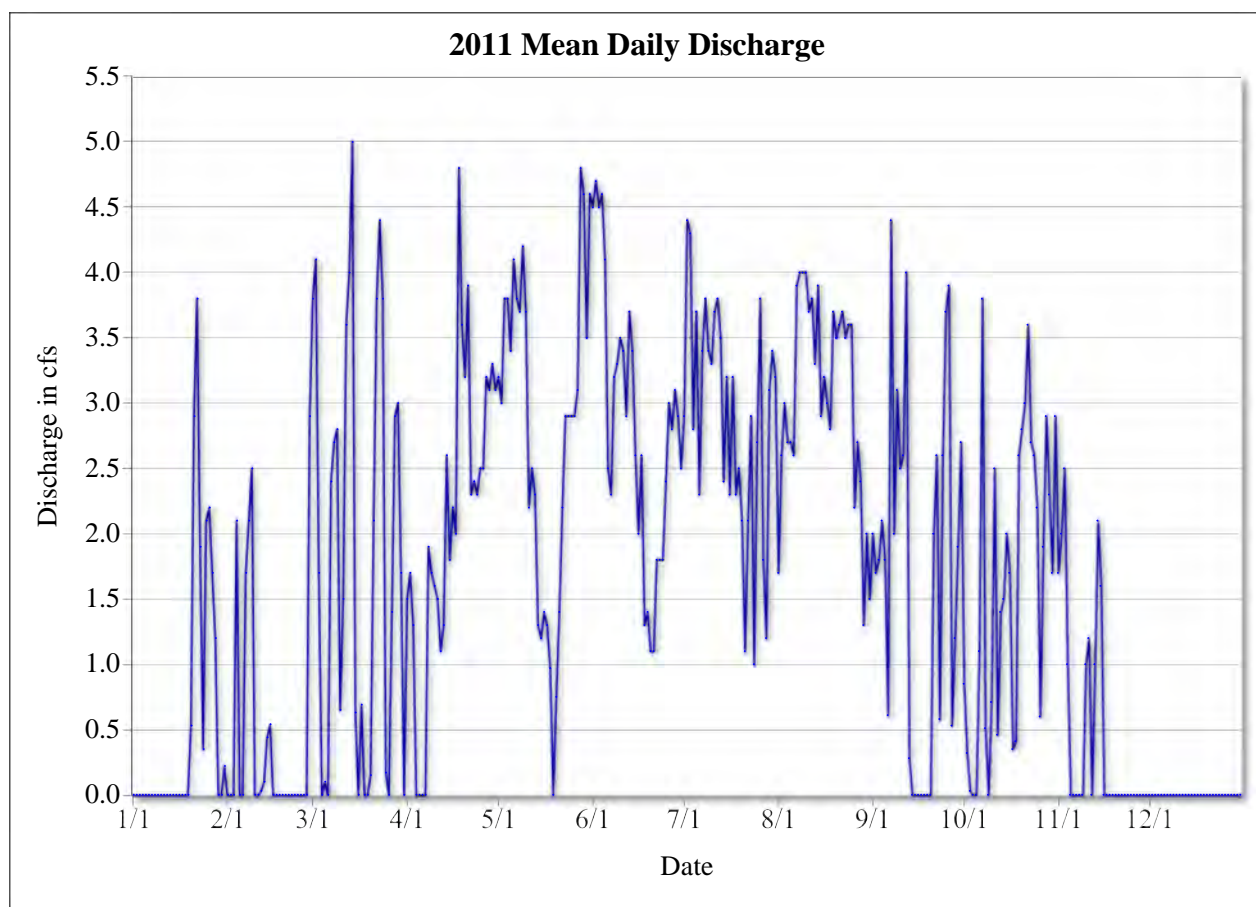
**Drainage Area**—Not applicable.

**Period of Record**—January 1, 2006 to current year.

**Gage**—Sutron Xlite datalogger (Model 9210-0000-2B) records water stage measured with a Sutron AccuBubble self-contained bubbler system (Model 5600-0131-4) upstream of a fixed abrupt-expansion type, long-throated flume. Discharge is calculated using a stage-discharge relationship.

**Extremes**—Maximum daily discharge, 14 cfs, Apr. 27, 2007; minimum daily discharge, no diversion at times; maximum hourly discharge, 26 cfs, Sep. 21, 2006 at 08:00; minimum hourly discharge, no diversion at times.

**Remarks**—None.



## Fort Mojave Tribe-California 2 (North)

Discharge, in cubic-feet per second, Calendar Year 2011

Day	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	0	0	3.8	1.5	3.2	4.5	2.9	1.7	2.0	0.85	1.7	0
2	0	0	4.1	1.7	3.0	4.7	4.4	2.6	1.7	0.32	2.0	0
3	0	0	1.7	1.3	3.8	4.5	4.3	3.0	1.8	0.03	2.5	0
4	0	2.1	0	0	3.8	4.6	2.8	2.7	2.1	0	1.0	0
5	0	0	0.10	0	3.4	4.1	3.7	2.7	1.8	0	0	0
6	0	0	0	0	4.1	2.5	2.3	2.6	0.61	1.1	0	0
7	0	1.7	2.4	0	3.8	2.3	3.4	3.9	4.4	3.8	0	0
8	0	2.1	2.7	1.9	3.7	3.2	3.8	4.0	2.0	0.51	0	0
9	0	2.5	2.8	1.7	4.2	3.3	3.4	4.0	3.1	0	0	0
10	0	0	0.65	1.6	3.7	3.5	3.3	4.0	2.5	0.71	1.0	0
11	0	0	1.5	1.5	2.2	3.4	3.7	3.7	2.6	2.5	1.2	0
12	0	0.03	3.6	1.1	2.5	2.9	3.8	3.8	4.0	<b>0.46</b>	0	0
13	0	0.10	4.0	1.3	2.3	3.7	3.5	3.3	0.28	<b>1.4</b>	1.0	0
14	0	0.44	5.0	2.6	1.3	3.4	2.4	3.9	0	1.5	2.1	0
15	0	0.54	0.63	1.8	1.2	2.6	3.2	2.9	0	2.0	1.6	0
16	0	0	0	2.2	1.4	2.0	2.3	3.2	0	1.7	0	0
17	0	0	0.69	2.0	1.3	2.6	3.2	3.0	0	0.35	0	0
18	0	0	0	4.8	0.97	1.3	2.3	2.8	0	0.41	0	0
19	0	0	0	3.6	0	1.4	2.5	3.7	0	2.6	0	0
20	0.53	0	0.15	3.2	0.75	1.1	2.1	3.5	0	2.8	0	0
21	2.9	0	2.1	3.9	1.4	1.1	1.1	3.6	2.0	3.0	0	0
22	3.8	0	3.8	2.3	2.2	1.8	2.1	3.7	2.6	3.6	0	0
23	1.9	0	4.4	2.4	2.9	1.8	2.9	3.5	0.58	2.7	0	0
24	0.35	0	3.8	2.3	2.9	1.8	1.0	3.6	2.6	2.6	0	0
25	2.1	0	0.17	2.5	2.9	2.4	2.7	3.6	3.7	2.2	0	0
26	2.2	0	0	2.5	2.9	3.0	3.8	2.2	3.9	0.60	0	0
27	1.7	0	1.4	3.2	3.1	2.8	1.8	2.7	0.53	1.9	0	0
28	1.2	2.9	2.9	3.1	4.8	3.1	1.2	2.4	1.2	2.9	0	0
29	0		3.0	3.3	4.6	2.9	3.1	1.3	1.9	2.3	0	0
30	0		1.7	3.1	3.5	2.5	3.4	2.0	2.7	1.7	0	0
31	0.22		0		4.6		3.2	1.5		2.9		0
Total	16.90	12.41	57.09	62.4	86.42	84.8	89.6	95.1	50.60	49.44	14.1	0
Mean	0.55	0.44	1.84	2.08	2.79	2.83	2.89	3.07	1.69	1.59	0.47	0
Max	3.8	2.9	5.0	4.8	4.8	4.7	4.4	4.0	4.4	3.8	2.5	0
Min	0	0	0	0	0	1.1	1.0	1.3	0	0	0	0
Ac-ft	34	25	113	124	171	168	178	189	100	98	28	0

### Calendar Year Summary

Annual Total 618.86    Annual Mean 1.70    Daily Max 5.0    Daily Min 0    Annual Ac-ft 1,228

#### Maximum Discharge

Date	Time	GH	Discharge
Oct. 13	11:00	0.79	12

#### Minimum Discharge

Date	Time	GH	Discharge
Jan. 1	01:00	0.00	0

**Bold values indicate the daily value was derived from hourly data that contained 6 or more consecutive hours of estimated record.**

## Fort Mojave Tribe-California 2 (West)

**Location**—Latitude 34° 58.022', longitude -114° 38.173', in the NE¼ NW¼ of Section 13, T. 10 N., R. 22 E., San Bernardino meridian, San Bernardino County, California, Hydrologic Unit 15030101, river mi 254.9, 10.4 mi south of Bullhead City, Arizona, 8.9 mi north of Needles, California, and 21.0 river mi downstream of Davis Dam.

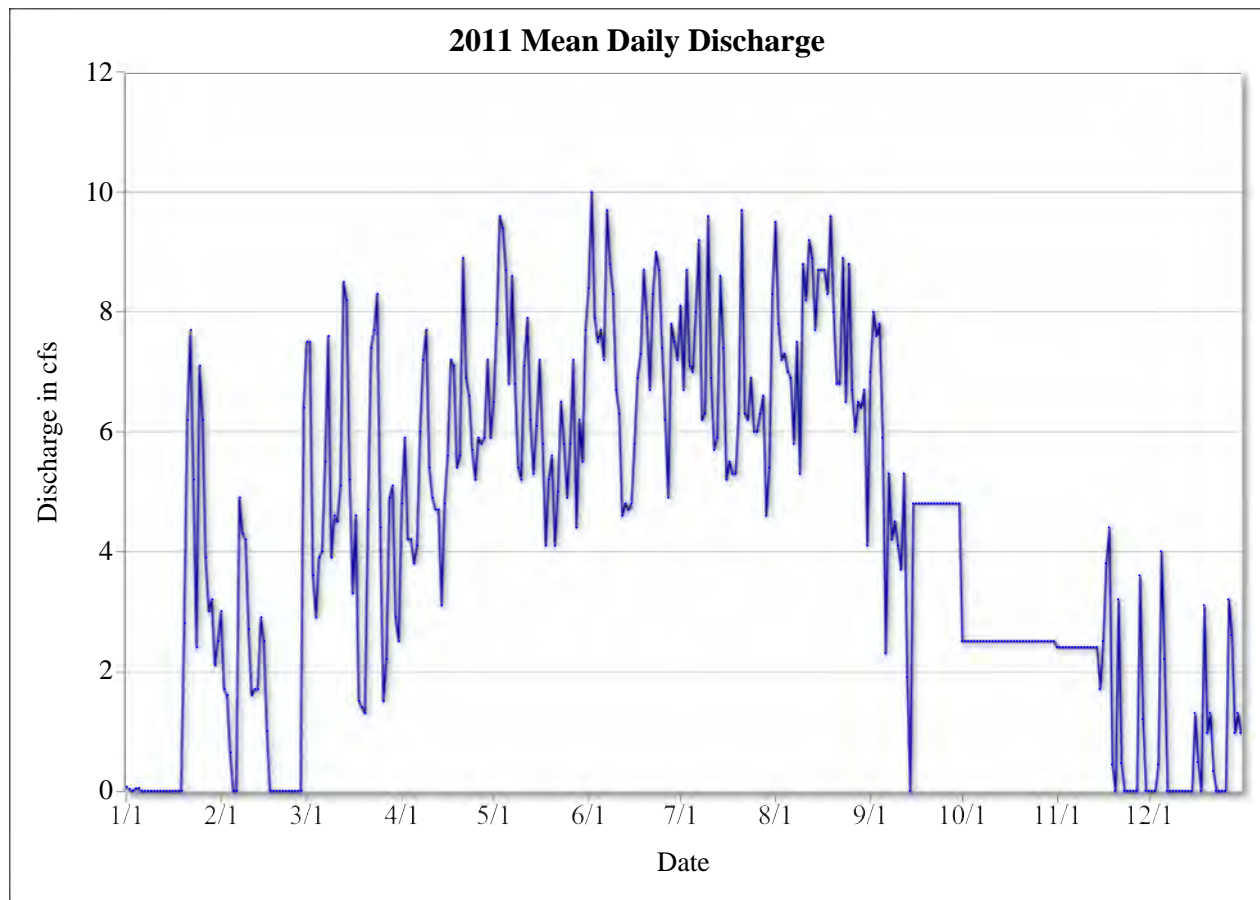
**Drainage Area**—Not applicable.

**Period of Record**—January 1, 2006 to current year.

**Gage**—A Sutron Xlite datalogger (Model 9210-0000-2B) records discharge measured with a SeaMetrics insertion magnetic flow meter (Model EX-201-S) mounted in the discharge side of the diversion pipe. Discharge is calculated using a discharge-index relationship.

**Extremes**—Maximum daily discharge, 13 cfs, Jul. 12, 2008; minimum daily discharge, no diversion at times; maximum hourly discharge, 20 cfs, Sep. 20, 2006 at 13:00; minimum hourly discharge, no diversion at times.

**Remarks**—Water user provided estimated record for the period of Sep. 13, 2011 to Nov. 15, 2011 due to gage failure.





## Fort Mojave Tribe-California 2 (West)

Discharge, in cubic-feet per second, Calendar Year 2011

Day	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	0.07	3.0	7.5	4.8	6.5	8.4	8.1	9.5	7.0	<b>2.5</b>	<b>2.4</b>	0
2	0.03	1.7	7.5	5.9	7.8	10	6.7	7.8	8.0	<b>2.5</b>	<b>2.4</b>	0
3	0	1.6	3.6	4.2	9.6	7.9	8.7	7.2	7.6	<b>2.5</b>	<b>2.4</b>	0
4	0.04	0.64	2.9	4.2	9.4	7.5	7.1	7.3	7.8	<b>2.5</b>	<b>2.4</b>	0.44
5	0.05	0	3.9	3.8	8.7	7.7	7.0	7.0	5.9	<b>2.5</b>	<b>2.4</b>	4.0
6	0	0	4.0	4.1	6.8	7.2	8.0	6.9	2.3	<b>2.5</b>	<b>2.4</b>	2.2
7	0	4.9	5.5	6.0	8.6	9.7	9.2	5.8	5.3	<b>2.5</b>	<b>2.4</b>	0
8	0	4.3	7.6	7.2	6.8	8.8	6.2	7.5	4.2	<b>2.5</b>	<b>2.4</b>	0
9	0	4.2	3.9	7.7	5.4	8.3	6.3	5.3	4.5	<b>2.5</b>	<b>2.4</b>	0
10	0	2.7	4.6	5.4	5.2	6.7	9.6	8.8	4.1	<b>2.5</b>	<b>2.4</b>	0
11	0	1.6	4.5	4.9	7.1	6.3	6.9	8.2	3.7	<b>2.5</b>	<b>2.4</b>	0
12	0	1.7	5.1	4.7	7.9	4.6	5.7	9.2	5.3	<b>2.5</b>	<b>2.4</b>	0
13	0	1.7	8.5	4.7	6.2	4.8	5.9	8.9	<b>1.9</b>	<b>2.5</b>	<b>2.4</b>	0
14	0	2.9	8.2	3.1	5.3	4.7	8.6	7.7	<b>0</b>	<b>2.5</b>	<b>2.4</b>	0
15	0	2.5	5.2	4.8	6.1	4.8	7.4	8.7	<b>4.8</b>	<b>2.5</b>	<b>1.7</b>	0
16	0	1.0	3.3	5.6	7.2	5.8	5.2	8.7	<b>4.8</b>	<b>2.5</b>	2.5	1.3
17	0	0	4.6	7.2	5.8	6.9	5.5	8.7	<b>4.8</b>	<b>2.5</b>	3.8	0.48
18	0	0	1.5	7.1	4.1	7.3	5.3	8.3	<b>4.8</b>	<b>2.5</b>	4.4	0
19	0	0	1.4	5.4	5.2	8.7	5.3	9.6	<b>4.8</b>	<b>2.5</b>	0.44	3.1
20	2.8	0	1.3	5.6	5.6	7.9	6.3	8.0	<b>4.8</b>	<b>2.5</b>	0	0.97
21	6.2	0	4.7	8.9	4.1	6.7	9.7	6.8	<b>4.8</b>	<b>2.5</b>	3.2	1.3
22	7.7	0	7.4	6.9	5.0	8.3	6.3	6.8	<b>4.8</b>	<b>2.5</b>	0.46	0.33
23	5.2	0	7.7	6.6	6.5	9.0	6.2	8.9	<b>4.8</b>	<b>2.5</b>	0	0
24	2.4	0	8.3	5.7	5.8	8.7	6.9	6.5	<b>4.8</b>	<b>2.5</b>	0	0
25	7.1	0	4.4	5.2	4.9	7.4	6.0	8.8	<b>4.8</b>	<b>2.5</b>	0	0
26	6.2	0	1.5	5.9	5.8	6.2	6.0	6.7	<b>4.8</b>	<b>2.5</b>	0	0
27	3.9	0	2.2	5.8	7.2	4.9	6.3	6.0	<b>4.8</b>	<b>2.5</b>	0	3.2
28	3.0	6.4	4.9	5.9	4.4	7.8	6.6	6.5	<b>4.8</b>	<b>2.5</b>	3.6	2.6
29	3.2		5.1	7.2	6.2	7.5	4.6	6.4	<b>4.8</b>	<b>2.5</b>	1.2	0.97
30	2.1		2.9	5.9	5.5	7.2	5.4	6.7	<b>4.8</b>	<b>2.5</b>	0	1.3
31	2.5		2.5		7.7		8.3	4.1		<b>2.5</b>		0.97
Total	52.49	40.84	146.2	170.4	198.4	217.7	211.3	233.3	144.4	77.5	54.90	23.16
Mean	1.69	1.46	4.72	5.68	6.40	7.26	6.82	7.53	4.81	2.50	1.83	0.75
Max	7.7	6.4	8.5	8.9	9.6	10	9.7	9.6	8.0	2.5	4.4	4.0
Min	0	0	1.3	3.1	4.1	4.6	4.6	4.1	0	2.5	0	0
Ac-ft	104	81	290	338	394	432	419	463	286	154	109	46

### Calendar Year Summary

Annual Total 1,570.59    Annual Mean 4.30    Daily Max 10    Daily Min 0    Annual Ac-ft 3,116

#### Maximum Discharge

Date	Time	GH	Discharge
Mar. 22	18:00	N/A	13

#### Minimum Discharge

Date	Time	GH	Discharge
Jan. 1	01:00	N/A	0

**Bold values indicate the daily value was derived from hourly data that contained 6 or more consecutive hours of estimated record.**

## Fort Mojave Tribe-California 2 (South)

**Location**— Latitude 34° 58.022', longitude -114° 38.173', in the NE¼ NW¼ of Section 13, T. 10 N., R. 22 E., San Bernardino meridian, San Bernardino County, California, Hydrologic Unit 15030101, river mi 254.9, 10.4 mi south of Bullhead City, Arizona, 8.9 mi north of Needles, California, and 21.0 river mi downstream of Davis Dam.

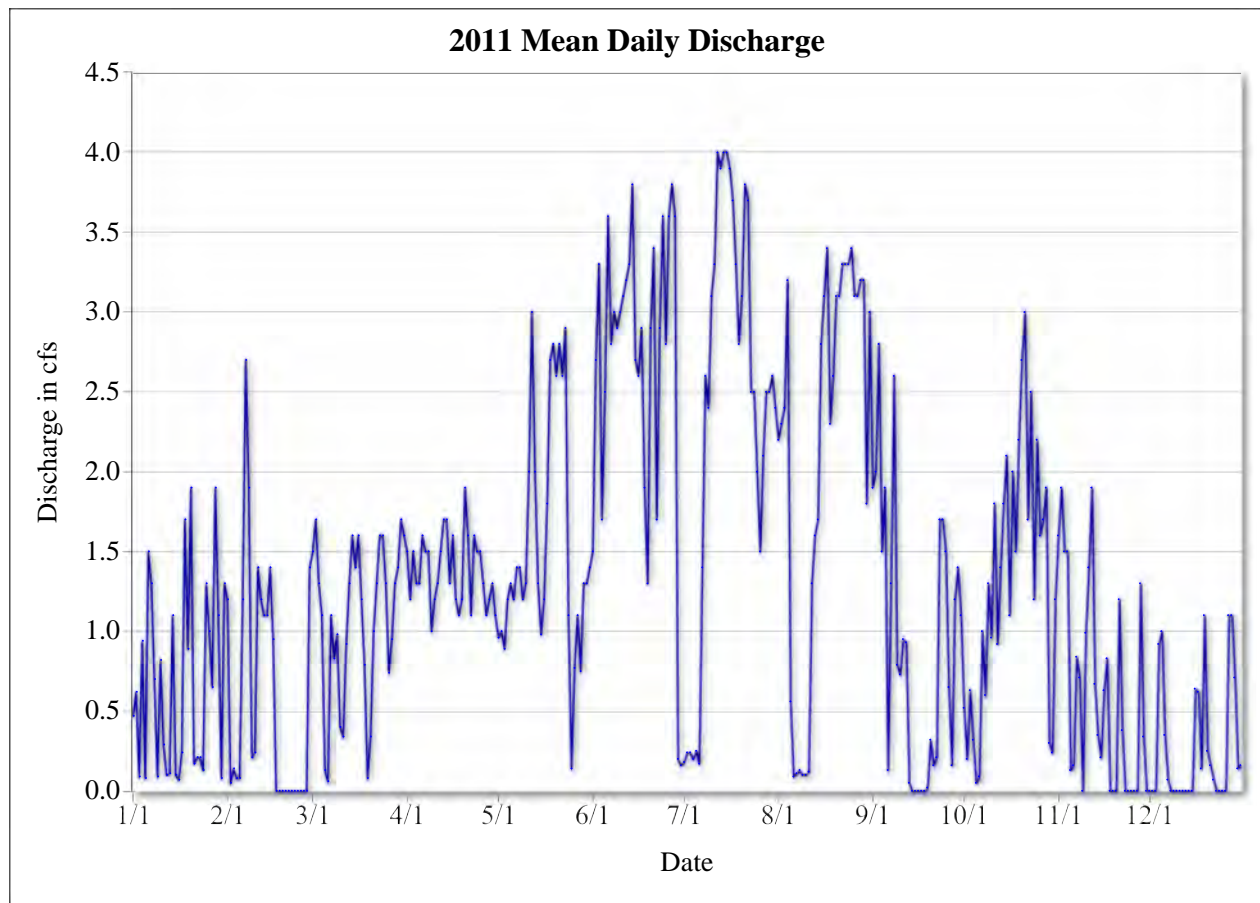
**Drainage Area**—Not applicable.

**Period of Record**—January 1, 2006 to current year.

**Gage**—Sutron Xlite datalogger (Model 9210-0000-2B) records water stage measured with a Sutron AccuBubble self-contained bubbler system (Model 5600-0131-4) upstream of a fixed abrupt-expansion type, long-throated flume. Discharge is calculated using a stage-discharge relationship.

**Extremes**—Maximum daily discharge, 5.7 cfs, May 25, 2006; minimum daily discharge, no diversion at times; maximum hourly discharge, 13 cfs, May 26, 2006 at 05:00; minimum hourly discharge, no diversion at times.

**Remarks**— None.



## Fort Mojave Tribe-California 2 (South)

Discharge, in cubic-feet per second, Calendar Year 2011

Day	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	0.47	1.2	1.5	1.5	0.96	1.5	0.18	2.2	1.9	0.52	1.6	0
2	0.62	0.05	1.7	1.2	1.0	2.7	0.24	2.3	2.0	0.20	1.9	0
3	0.09	0.14	1.3	1.5	0.89	3.3	0.24	2.4	2.8	0.63	1.5	0
4	0.94	0.08	1.1	1.3	1.2	1.7	0.20	3.2	1.5	0.32	1.5	0.92
5	0.08	0.08	0.13	1.3	1.3	2.5	0.25	0.56	1.9	0.05	0.13	1.0
6	1.5	1.2	0.06	1.6	1.2	3.6	0.17	0.09	0.13	0.09	0.16	0.35
7	1.3	2.7	1.1	1.5	1.4	2.8	1.4	0.11	1.3	1.0	0.84	0.07
8	0.70	1.9	0.83	1.5	1.4	3.0	2.6	0.13	2.6	0.60	0.71	0
9	0.09	0.21	0.98	1.0	1.2	2.9	2.4	0.10	0.79	1.3	0	0
10	0.82	0.24	0.40	1.2	1.3	3.0	3.1	0.10	0.73	0.96	0.99	0
11	0.29	1.4	0.34	1.3	2.0	3.1	3.3	0.12	0.95	1.8	1.4	0
12	0.10	1.2	0.92	1.5	3.0	3.2	4.0	1.3	0.93	0.92	<b>1.9</b>	0
13	0.11	1.1	1.3	1.7	2.0	3.3	3.9	1.6	0.05	1.4	<b>0.67</b>	0
14	1.1	1.1	1.6	1.7	1.3	3.8	4.0	1.7	0	1.8	0.35	0
15	0.10	1.4	1.4	1.3	0.98	2.7	4.0	2.8	0	2.1	0.21	0
16	0.07	0.95	1.6	1.6	1.2	2.6	3.9	3.1	0	1.1	0.63	0.64
17	0.24	0	1.2	1.2	1.8	2.9	3.7	3.4	0	2.0	0.83	0.62
18	1.7	0	0.79	1.1	2.7	1.9	3.3	2.3	0	1.5	0	0.14
19	0.89	0	0.08	1.2	2.8	1.3	2.8	2.6	0.02	2.2	0	1.1
20	1.9	0	0.34	1.9	2.6	2.9	3.1	3.1	0.32	2.7	0	0.25
21	0.17	0	1.0	1.6	2.8	3.4	3.8	3.1	0.16	3.0	1.2	0.16
22	0.21	0	1.3	1.1	2.6	1.7	3.7	3.3	0.21	1.7	0.38	0.07
23	0.21	0	1.6	1.6	2.9	2.9	2.5	3.3	1.7	2.5	0	0
24	0.13	0	1.6	1.5	1.1	3.6	2.5	3.3	1.7	1.2	0	0
25	1.3	0	1.3	1.5	0.14	2.8	2.0	3.4	1.5	2.2	0	0
26	1.0	0	0.74	1.3	0.77	3.6	1.5	3.1	0.65	1.6	0	0
27	0.65	0	0.95	1.1	1.1	3.8	2.1	3.1	0.16	1.7	0	1.1
28	1.9	1.4	1.3	1.2	0.75	3.6	2.5	3.2	1.2	1.9	1.3	1.1
29	1.1		1.4	1.3	1.3	0.20	2.5	3.2	1.4	0.30	0.34	0.71
30	0.08		1.7	1.1	1.3	0.16	2.6	1.8	1.1	0.24	0	0.14
31	1.3		1.6		1.4		2.4	3.0		1.2		0.16
Total	21.16	16.35	33.16	41.4	48.39	80.46	74.88	67.01	27.70	40.73	18.54	8.53
Mean	0.68	0.58	1.07	1.38	1.56	2.68	2.42	2.16	0.92	1.31	0.62	0.28
Max	1.9	2.7	1.7	1.9	3.0	3.8	4.0	3.4	2.8	3.0	1.9	1.1
Min	0.07	0	0.06	1.0	0.14	0.16	0.17	0.09	0	0.05	0	0
Ac-ft	42	32	66	82	96	160	149	133	55	81	37	17

### Calendar Year Summary

Annual Total 478.31    Annual Mean 1.31    Daily Max 4.0    Daily Min 0    Annual Ac-ft 950

#### Maximum Discharge

Date	Time	GH	Discharge
Jul. 11	22:00	0.56	5.5

#### Minimum Discharge

Date	Time	GH	Discharge
Jan. 1	01:00	0.00	0

**Bold values indicate the daily value was derived from hourly data that contained 6 or more consecutive hours of estimated record.**

## Fort Mojave Tribe-California 1

**Location**—Latitude 34° 57.171', longitude -114° 38.037', in the NW¼ NE¼ of Section 24, T. 10 N., R. 22 E., San Bernardino meridian, San Bernardino County, California, Hydrologic Unit 15030101, river mi 253.9, 11.4 mi south of Bullhead City, Arizona, 7.9 mi north of Needles, California, and 22.0 river mi downstream of Davis Dam.

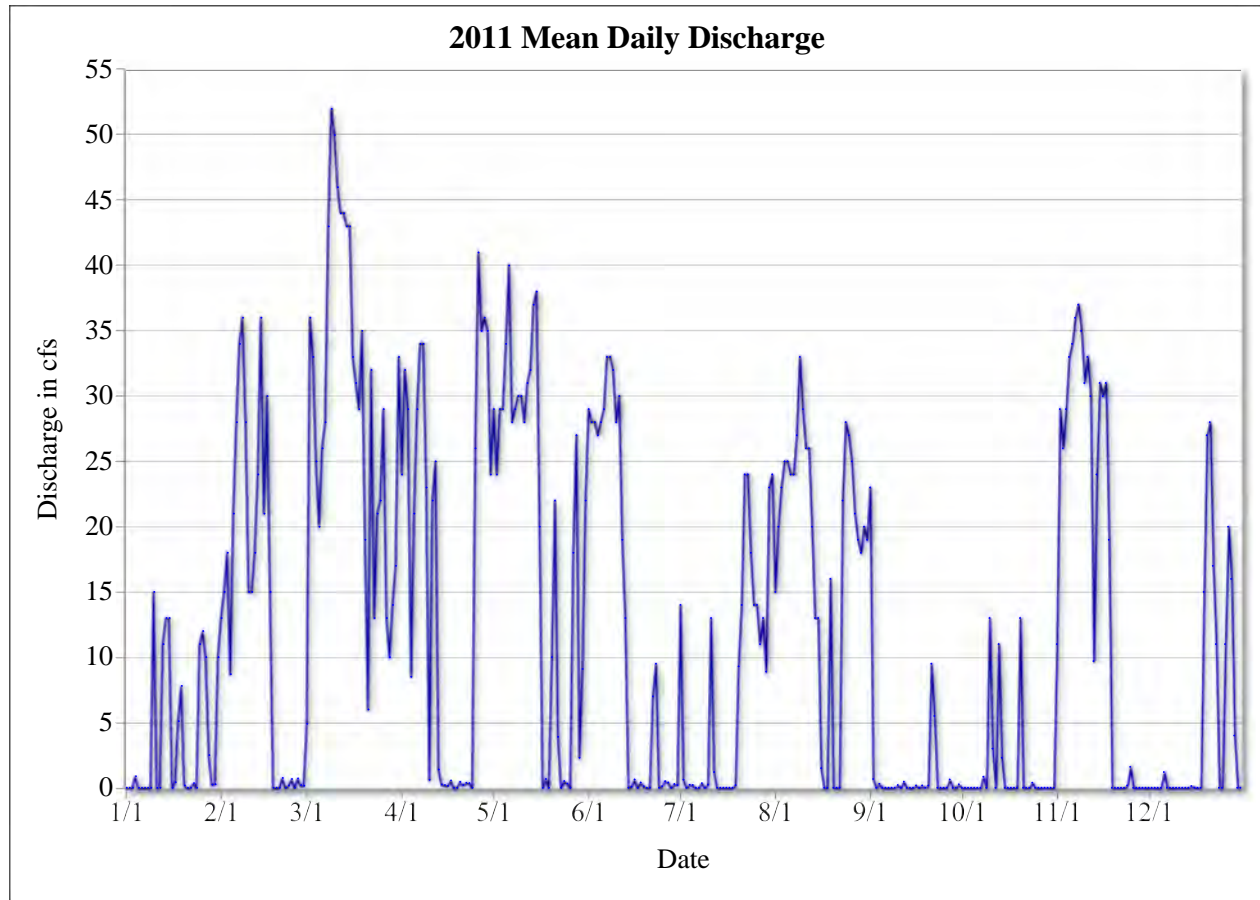
**Drainage Area**—Not applicable.

**Period of Record**—January 1, 2006 to current year.

**Gage**—A Sutron Xlite datalogger (Model 9210-0000-2B) records water stage and velocity measured with a SonTek/YSI Argonaut-SW current meter. Discharge is calculated using a velocity-index relationship.

**Extremes**—Maximum daily discharge, 58 cfs, Jun. 12, 2007; minimum daily discharge, no diversion at times; maximum hourly discharge, 64 cfs, Jun. 30, 2007 at 20:00; minimum hourly discharge, no diversion at times.

**Remarks**—None.



## Fort Mojave Tribe-California 1

Discharge, in cubic-feet per second, Calendar Year 2011

Day	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	0	13	4.9	24	29	29	14	15	23	0	11	0
2	0	15	36	32	24	28	0.62	20	0.67	0	29	0
3	0	18	33	29	29	28	0	23	0	0	26	0
4	0.88	8.7	25	8.5	29	27	0.23	25	0.30	0	29	0
5	0	21	20	21	34	28	0.21	25	0	0	33	0
6	0	28	26	29	40	29	0	24	0	0	34	1.2
7	0	34	28	34	28	33	0	24	0	0	36	0
8	0	36	43	34	29	33	0.35	27	0	0.84	37	0
9	0	28	52	23	30	32	0	33	0	0	35	0
10	15	15	50	0.61	30	28	0.24	29	0.21	13	31	0
11	0	15	46	22	28	30	13	26	0	3.0	33	0
12	0	18	44	25	31	19	1.2	26	0.46	0	30	0
13	11	24	44	1.4	32	13	0	20	0	11	9.7	0
14	13	36	43	0.25	37	0	0	13	0	2.3	24	0
15	13	21	43	0.20	38	0.08	0	13	0	0	31	0.13
16	0	30	33	0.15	20	0.63	0	1.5	0.18	0	30	0
17	0.42	15	31	0.56	0	0	0	0	0	0	31	0
18	5.1	0	29	0	0.67	0.40	0	0	0.18	0	19	0
19	7.8	0	35	0	0	0.11	0.20	16	0	0	0	15
20	0.18	0	19	0.45	10	0	9.3	0	0.18	13	0	27
21	0	0.75	6.0	0.21	22	0	14	0	9.5	0	0	28
22	0	0	32	0.38	3.9	7.0	24	0	5.5	0	0	17
23	0.35	0.17	13	0.35	0	9.5	24	22	0	0	0	11
24	0	0.67	21	0	0.51	0	18	28	0	0.39	0.18	0
25	11	0	22	26	0.32	0.12	14	27	0	0	1.6	0
26	12	0.71	29	41	0	0.50	14	25	0	0	0	11
27	10	0.20	13	35	18	0.40	11	21	0.63	0	0	20
28	2.5	0.16	10	36	27	0	13	19	0	0	0	16
29	0.24		14	35	2.3	0.28	8.9	18	0	0	0	4.0
30	0.27		17	24	9.1	0.20	23	20	0.26	0	0	0
31	10		33		22		24	19		0		0
Total	112.74	378.36	894.9	483.06	603.80	376.22	227.25	559.5	41.07	43.53	510.48	150.33
Mean	3.64	13.5	28.9	16.1	19.5	12.5	7.33	18.0	1.37	1.40	17.0	4.85
Max	15	36	52	41	40	33	24	33	23	13	37	28
Min	0	0	4.9	0	0	0	0	0	0	0	0	0
Ac-ft	224	750	1,775	958	1,198	746	451	1,110	81	86	1,013	298

### Calendar Year Summary

Annual Total 4,381.24    Annual Mean 12.0    Daily Max 52    Daily Min 0    Annual Ac-ft 8,690

#### Maximum Discharge

Date	Time	GH	Discharge
Mar. 10	17:00	3.96	57

#### Minimum Discharge

Date	Time	GH	Discharge
Jan. 1	01:00	1.39	0

## Fort Mojave Tribe-Cimmaron

**Location**—Latitude 34° 56.347', longitude -114° 37.699', in the SE¼ SW¼ of Section 16, T. 18 N., R. 22 W., Gila-Salt River meridian, Mohave County, Arizona, Hydrologic Unit 15030101, river mi 252.9, 12.3 mi south of Bullhead City, Arizona, 6.9 mi north of Needles, California, and 23.0 river mi downstream of Davis Dam.

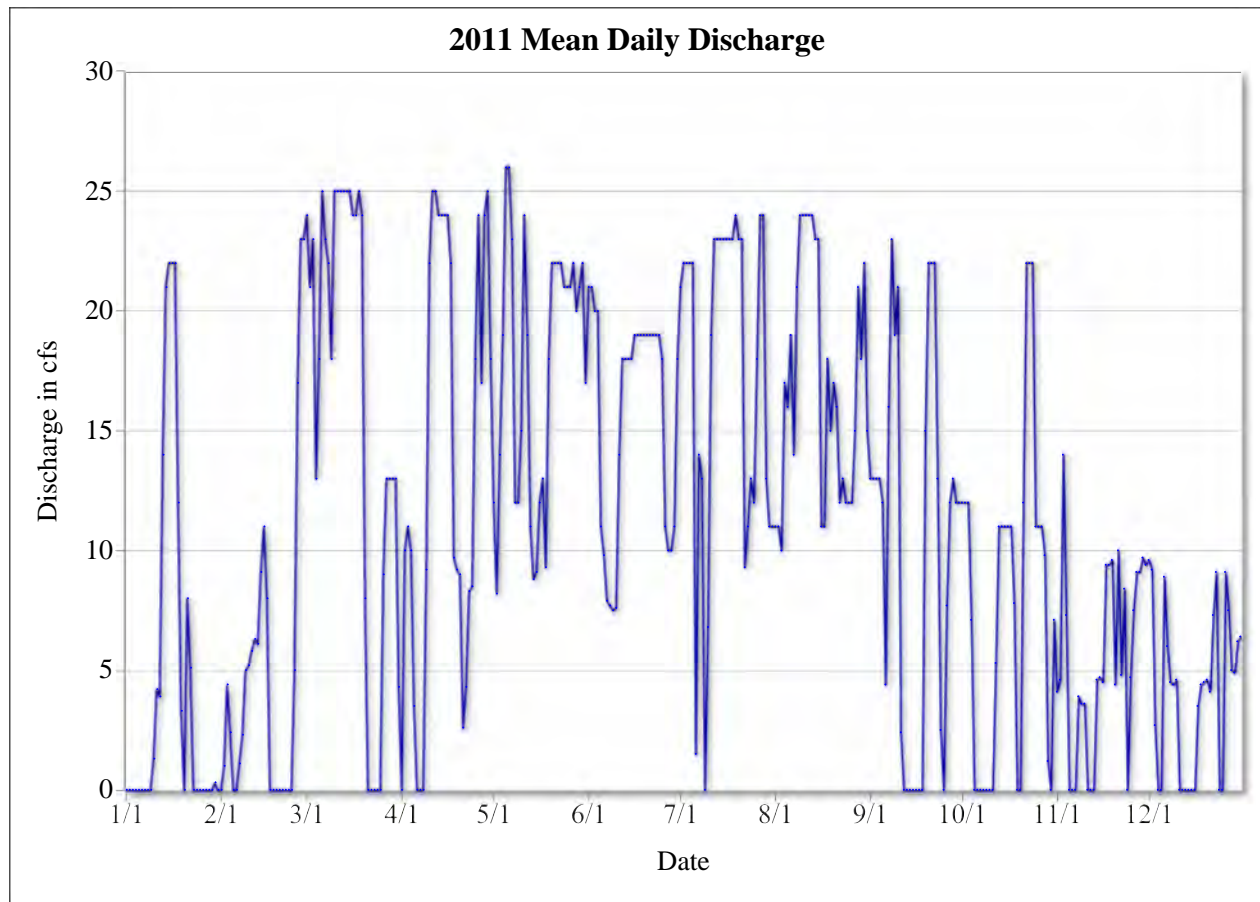
**Drainage Area**—Not applicable.

**Period of Record**—April 10, 2006 to current year.

**Gage**—A Sutron Xlite datalogger (Model 9210-0000-2B) records water stage and velocity measured with a SonTek/YSI Argonaut-SW current meter attached to a fixed abrupt-expansion type, long-throated flume. Discharge is calculated using a stage-factor velocity-index relationship.

**Extremes**—Maximum daily discharge, 41 cfs, Jun. 15, 2007; minimum daily discharge, no diversion at times; maximum hourly discharge, 52 cfs, Jun. 12, 2007 at 17:00; minimum hourly discharge, no diversion at times.

**Remarks**—None.



## Fort Mojave Tribe-Cimmaron

Discharge, in cubic-feet per second, Calendar Year 2011

Day	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	0	0	24	0	12	21	21	11	13	12	4.1	9.6
2	0	1.0	21	10	8.2	21	22	11	13	12	4.6	9.2
3	0	4.4	23	11	14	20	22	10	13	12	14	2.7
4	0	2.4	13	10	19	20	22	17	13	7.1	7.3	0
5	0	0	18	3.5	26	11	22	16	12	0	0	0
6	0	0	25	0	26	9.8	1.5	19	4.4	0	0	8.9
7	0	1.1	23	0	23	7.9	14	14	16	0	0	6.0
8	0	2.3	22	0	12	7.7	13	21	23	0	3.9	4.5
9	0	5.0	18	9.2	12	7.5	0	24	19	0	3.6	4.4
10	1.3	5.2	25	22	15	7.6	6.8	24	21	0	3.6	4.6
11	4.2	5.8	25	25	24	14	19	24	2.4	0	0	0
12	3.9	6.3	25	25	19	18	23	24	0	5.3	0	0
13	14	6.1	25	24	11	18	23	24	0	11	0	0
14	21	9.1	25	24	8.8	18	23	23	0	11	4.6	0
15	22	11	25	24	9.1	18	23	23	0	11	4.7	0
16	22	8.0	24	24	12	19	23	11	0	11	4.5	0
17	22	0	24	22	13	19	23	11	0	11	9.4	3.5
18	12	0	25	9.7	9.3	19	23	18	0	7.8	9.4	4.4
19	3.3	0	24	9.2	18	19	24	15	15	0	9.6	4.5
20	0	0	8.0	9.0	22	19	23	17	22	0	4.4	4.6
21	8.0	0	0	2.6	22	19	23	16	22	12	10	4.1
22	5.1	0	0	4.3	22	19	9.3	12	22	22	4.8	7.3
23	0	0	0	8.3	22	19	11	13	13	22	8.4	9.1
24	0	0	0	8.5	21	19	13	12	2.5	22	0	0
25	0	5.0	0	18	21	18	12	12	0	11	4.7	0
26	0	17	9.0	24	21	11	18	12	7.7	11	7.5	9.1
27	0	23	13	17	22	10	24	15	12	11	9.1	7.5
28	0	23	13	24	20	10	24	21	13	9.8	9.1	5.0
29	0		13	25	21	11	13	18	12	1.2	9.7	4.9
30	0.31		13	18	22	18	11	22	12	0	9.4	6.2
31	0		4.3		17		11	15		7.1		6.4
Total	139.11	135.7	507.3	411.3	544.4	468.5	540.6	525	303.0	240.3	160.4	126.5
Mean	4.49	4.85	16.4	13.7	17.6	15.6	17.4	16.9	10.1	7.75	5.35	4.08
Max	22	23	25	25	26	21	24	24	23	22	14	9.6
Min	0	0	0	0	8.2	7.5	0	10	0	0	0	0
Ac-ft	276	269	1,006	816	1,080	929	1,072	1,041	601	477	318	251

### Calendar Year Summary

Annual Total 4,102.11    Annual Mean 11.2    Daily Max 26    Daily Min 0    Annual Ac-ft 8,136

#### Maximum Discharge

Date	Time	GH	Discharge
May 4	20:00	3.48	27

#### Minimum Discharge

Date	Time	GH	Discharge
Jan. 1	01:00	0.00	0

## Fort Mojave Tribe-Willow

**Location**—Latitude 34° 54.572', longitude -114° 37.733', in the SW¼ SW¼ of Section 28, T. 18 N., R. 22 W., Gila-Salt River meridian, Mohave County, Arizona, Hydrologic Unit 15030101, river mi 250.8, 14.3 mi south of Bullhead City, Arizona, 4.9 mi north of Needles, California, and 25.1 mi downstream of Davis Dam.

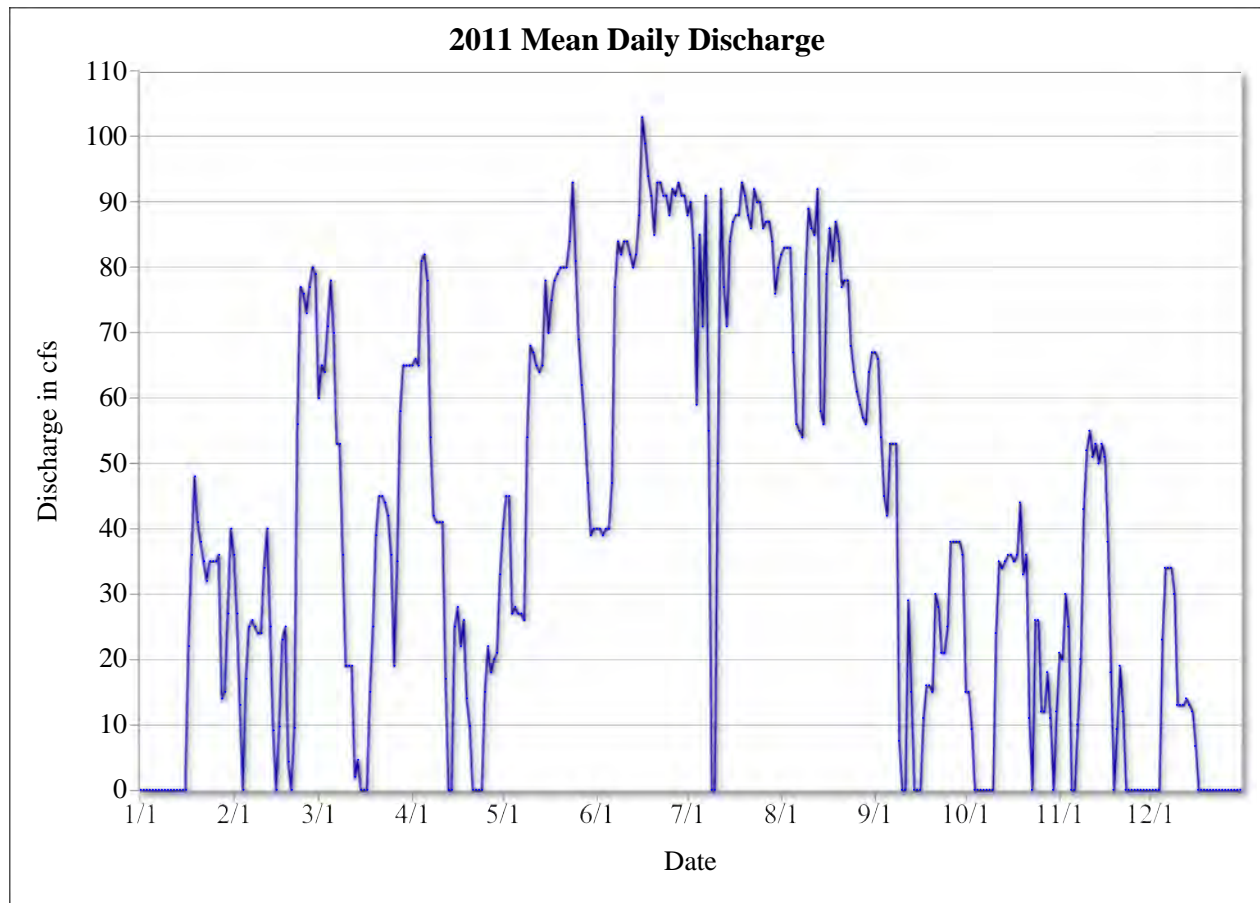
**Drainage Area**—Not applicable.

**Period of Record**—July 12, 2006 to current year.

**Gage**—A Sutron Xlite datalogger (Model 9210-0000-2B) records water stage and velocity measured by a SonTek/YSI Argonaut-SW current meter. Discharge is calculated using a velocity-index relationship.

**Extremes**—Maximum daily discharge, 103 cfs, Jun. 16, 2011; minimum daily discharge, no diversion at times; maximum hourly discharge, 108 cfs, Jul. 1, 2009 at 22:00; minimum hourly discharge, no diversion at times.

**Remarks**—None.





## Fort Mojave Tribe-Willow

Discharge, in cubic-feet per second, Calendar Year 2011

Day	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	0	36	60	65	40	40	88	82	67	15	21	0
2	0	27	65	66	45	40	90	83	66	15	20	0
3	0	13	64	65	45	39	83	83	54	9.3	30	0
4	0	0	71	81	27	40	59	83	45	0	25	0
5	0	17	78	82	28	40	85	67	42	0	0	23
6	0	25	70	78	27	47	71	56	53	0	0	34
7	0	26	53	54	27	77	91	55	53	0	10	34
8	0	25	53	42	26	84	55	54	53	0	20	34
9	0	24	36	41	54	82	0	79	7.5	0	43	30
10	0	24	19	41	68	84	0	89	0	0	52	13
11	0	34	19	41	67	84	50	86	0	24	55	13
12	0	40	19	17	65	82	92	85	29	35	51	13
13	0	25	2.0	0	64	80	77	92	15	34	53	14
14	0	9.1	4.6	0	65	82	71	58	0	35	50	13
15	0	0	0	25	78	88	84	56	0	36	53	12
16	0	9.7	0	28	70	103	87	79	0	36	51	6.7
17	22	23	0	22	75	99	88	86	11	35	38	0
18	36	25	15	26	78	94	88	81	16	36	18	0
19	48	4.3	25	14	79	91	93	87	16	44	0	0
20	41	0	39	9.8	80	85	91	84	15	33	9.3	0
21	38	9.5	45	0	80	93	88	77	30	36	19	0
22	35	56	45	0	80	93	86	78	28	11	12	0
23	32	77	44	0	84	91	92	78	21	0	0	0
24	35	76	42	0	93	91	90	68	21	26	0	0
25	35	73	36	15	81	88	90	64	25	26	0	0
26	35	77	19	22	69	92	86	61	38	12	0	0
27	36	80	35	18	62	91	87	59	38	12	0	0
28	14	79	58	20	56	93	87	57	38	18	0	0
29	15		65	21	47	91	84	56	38	11	0	0
30	27		65	33	39	91	76	64	36	0	0	0
31	40		65		40		80	67		12		0
Total	489	914.6	1,211.6	926.8	1,839	2,375	2,389	2,254	855.5	551.3	630.3	239.7
Mean	15.8	32.7	39.1	30.9	59.3	79.2	77.1	72.7	28.5	17.8	21.0	7.73
Max	48	80	78	82	93	103	93	92	67	44	55	34
Min	0	0	0	0	26	39	0	54	0	0	0	0
Ac-ft	970	1,814	2,403	1,838	3,648	4,711	4,739	4,471	1,697	1,093	1,250	475

### Calendar Year Summary

Annual Total 14,675.8    Annual Mean 40.2    Daily Max 103    Daily Min 0    Annual Ac-ft 29,109

#### Maximum Discharge

Date	Time	GH	Discharge
May 24	21:00	3.49	108

#### Minimum Discharge

Date	Time	GH	Discharge
Jan. 1	01:00	0.00	0

## Fort Mojave Tribe-Barrackman

**Location**—Latitude 34° 50.931', longitude -114° 35.892', in the NE¼ NE¼ of Section 22, T. 17 N., R. 22 W., Gila-Salt River meridian, Mohave County, Arizona, Hydrologic Unit 15030101, river mi 245.4, 1.0 mi east of Needles, California, 18.4 mi south of Bullhead City, Arizona, and 30.5 river mi downstream of Davis Dam.

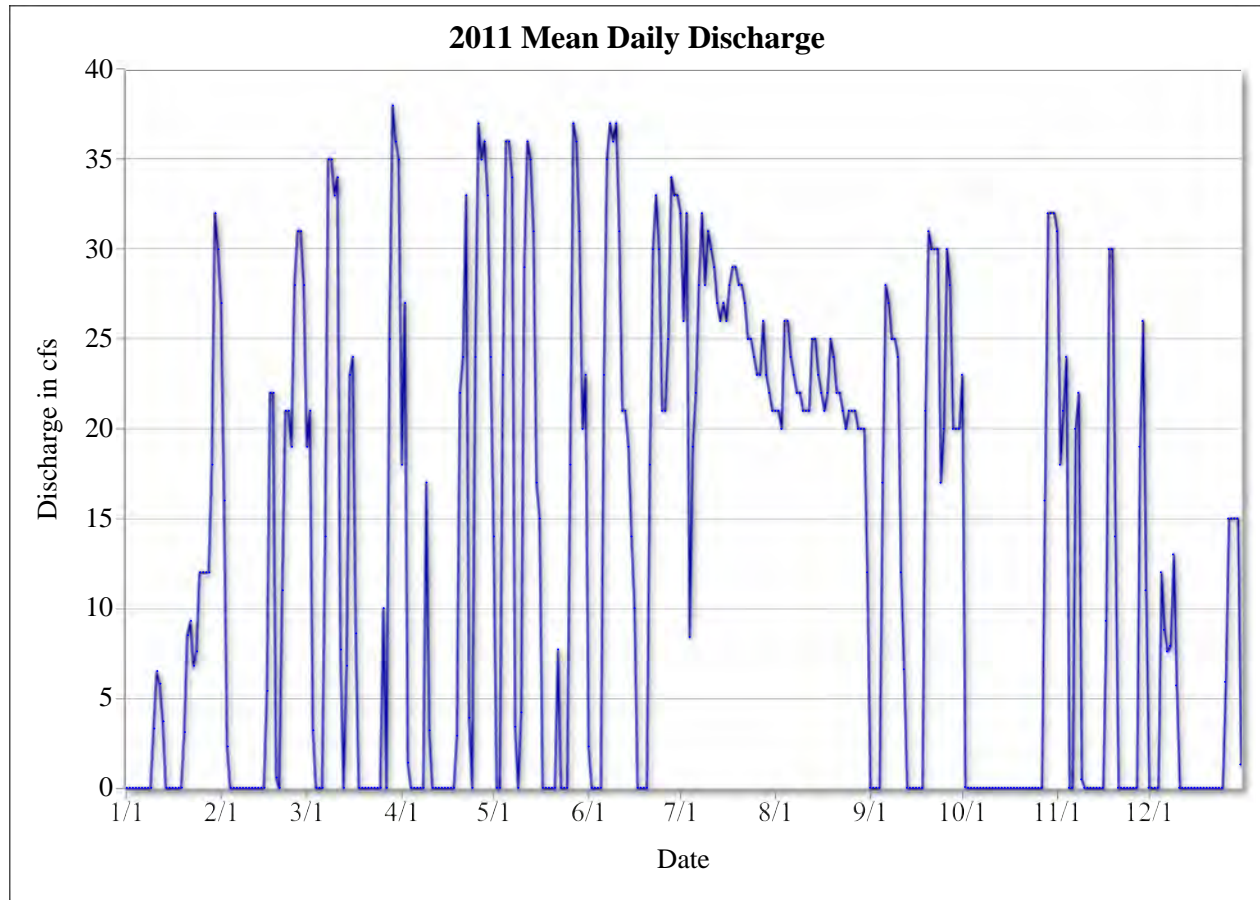
**Drainage Area**—Not applicable.

**Period of Record**—April 21, 2006 to current year.

**Gage**—A Sutron Xlite datalogger (Model 9210-0000-2B) records water stage measured with a Sutron multiple interface shaft encoder (Model 56-0540-400-DTR) upstream from a fixed abrupt-expansion type, long-throated flume. Discharge is calculated using a stage-discharge relationship.

**Extremes**—Maximum daily discharge, 38 cfs, May 12, 2006; minimum daily discharge, no diversion at times; maximum hourly discharge, 47 cfs, May 9, 2006 at 12:00; minimum hourly discharge, no diversion at times.

**Remarks**—None.



## Fort Mojave Tribe-Barrackman

Discharge, in cubic-feet per second, Calendar Year 2011

Day	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	0	27	19	18	14	2.3	32	21	0	23	31	0
2	0	16	21	27	0	0	26	21	0	0.04	18	0
3	0	2.3	3.2	1.4	0	0	32	20	0	0	21	0
4	0	0	0	0	23	0	8.4	26	0	0	24	0
5	0	0	0	0	36	0	19	26	17	0	0	12
6	0	0	0	0	36	23	22	24	28	0	0	8.8
7	0	0	14	0	34	35	28	23	27	0	20	7.6
8	0	0	35	0	3.4	37	32	22	25	0	22	7.9
9	0	0	35	17	0	36	28	22	25	0	0.47	13
10	3.3	0	33	3.2	4.2	37	31	21	24	0	0	5.7
11	6.5	0	34	0	29	31	30	21	12	0	0	0
12	5.8	0	7.7	0	36	21	29	21	6.6	0	0	0
13	3.7	0	0	0	35	21	27	25	0	0	0	0
14	0	0	6.8	0	31	19	26	25	0	0	0	0
15	0	0	23	0	17	14	27	23	0	0	0	0
16	0	5.4	24	0	15	10	26	22	0	0	0	0
17	0	22	8.6	0	0	0	28	21	0	0	9.3	0
18	0	22	0	0	0	0	29	22	0	0	30	0
19	0.01	0.57	0	2.9	0	0	29	25	21	0	30	0
20	3.1	0	0	22	0	0	28	24	31	0	14	0
21	8.5	11	0	24	0	18	28	22	30	0	0	0
22	9.3	21	0	33	7.7	30	27	22	30	0	0	0
23	6.8	21	0	3.9	0	33	25	21	30	0	0	0
24	7.6	19	0	0	0	30	25	20	17	0	0	0
25	12	28	0	24	0	21	24	21	20	0	0	0
26	12	31	10	37	18	21	23	21	30	0	0	5.9
27	12	31	0	35	37	25	23	21	28	0	0	15
28	12	28	25	36	36	34	26	20	20	16	19	15
29	18		38	33	31	33	23	20	20	32	26	15
30	32		36	24	20	33	22	20	20	32	11	15
31	30		35		23		21	12		32		1.3
Total	182.61	285.27	408.3	341.4	486.3	564.3	804.4	675	461.6	135.04	275.77	122.2
Mean	5.89	10.2	13.2	11.4	15.7	18.8	25.9	21.8	15.4	4.36	9.19	3.94
Max	32	31	38	37	37	37	32	26	31	32	31	15
Min	0	0	0	0	0	0	8.4	12	0	0	0	0
Ac-ft	362	566	810	677	965	1,119	1,596	1,339	916	268	547	242

### Calendar Year Summary

Annual Total 4,742.19    Annual Mean 13.0    Daily Max 38    Daily Min 0    Annual Ac-ft 9,407

#### Maximum Discharge

Date	Time	GH	Discharge
May 27	03:00	0.89	41

#### Minimum Discharge

Date	Time	GH	Discharge
Jan. 1	01:00	0.00	0

## Fort Mojave Tribe-Refuge (Fort Mojave Tribe)

**Location**—Latitude 34° 50.286', longitude -114° 34.237', in the SW¼ SE¼ of Section 24, T. 17 N., R. 22 W., Gila-Salt River meridian, Mohave County, Arizona, Hydrologic Unit 15030101, 19.2 mi south of Bullhead City, Arizona, 2.9 mi east of Needles, California, and 31.5 river mi downstream of Davis Dam.

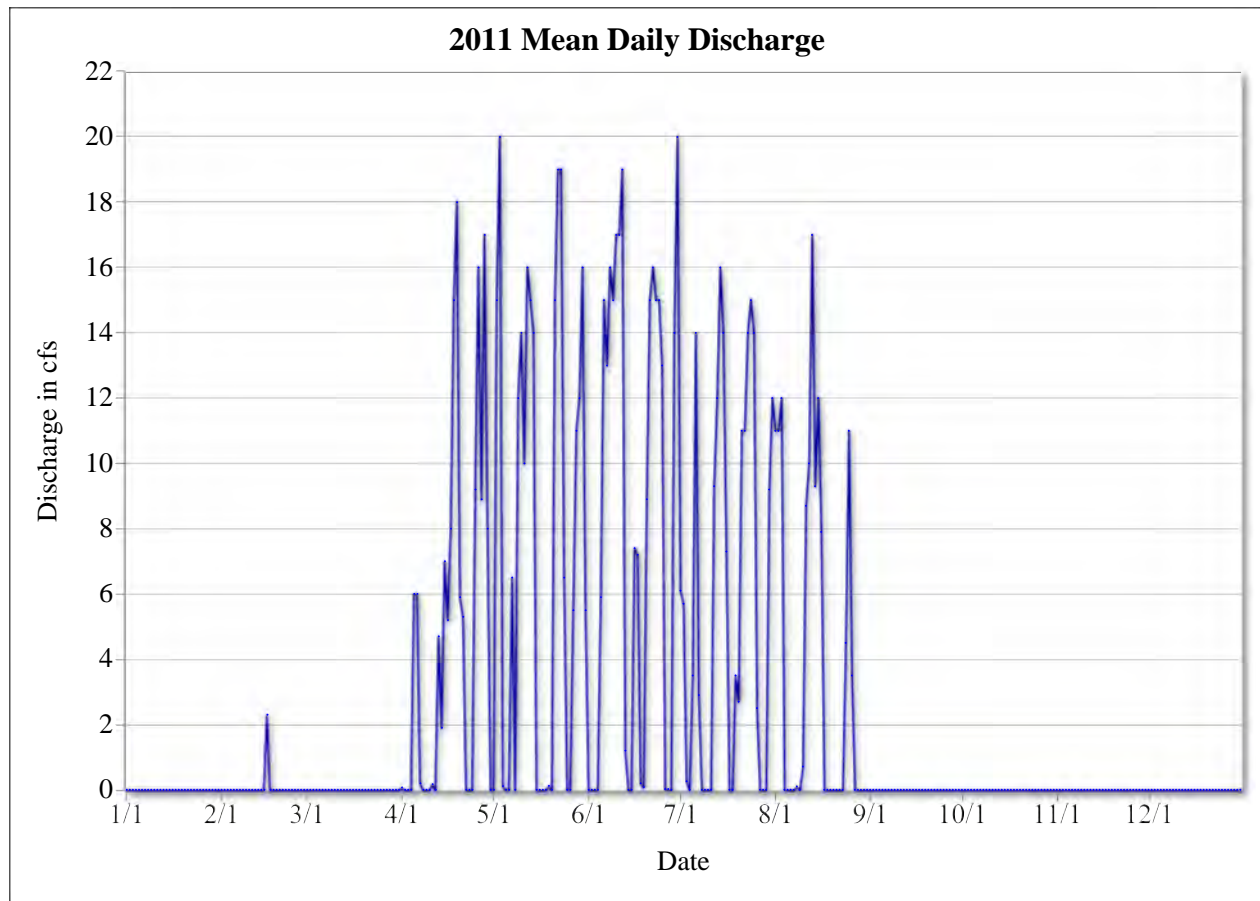
**Drainage Area**—Not applicable.

**Period of Record**—January 27, 2006 to current year.

**Gage**—A Sutron Xlite datalogger (Model 9210-0000-2B) records discharge measured with a SeaMetrics insertion magnetic flow meter (Model EX-201-S) mounted in the discharge side of the diversion pipe. Discharge is calculated using a discharge-index relationship.

**Extremes**—Maximum daily discharge, 20 cfs, Apr. 26, 2008; minimum daily discharge, no diversion at times; maximum hourly discharge, 27 cfs, Jul. 21, 2006 at 14:00; minimum hourly discharge, no diversion at times.

**Remarks**—The gage experienced numerous short duration failures that ranged from 1 to 5 hours. Discharge for these periods were assumed to be zero as no other source of diversion records were available.



## Fort Mojave Tribe-Refuge (Fort Mojave Tribe)

Discharge, in cubic-feet per second, Calendar Year 2011

Day	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	0	0	0	0.07	0	0	6.1	11	0	0	0	0
2	0	0	0	0	15	0	5.7	11	0	0	0	0
3	0	0	0	0	20	0	0.26	12	0	0	0	0
4	0	0	0	0	0.11	0	0	0	0	0	0	0
5	0	0	0	6.0	0	5.9	3.5	0	0	0	0	0
6	0	0	0	6.0	0	15	14	0	0	0	0	0
7	0	0	0	0.20	6.5	13	2.9	0	0	0	0	0
8	0	0	0	0	0	16	0	0.10	0	0	0	0
9	0	0	0	0	12	15	0	0	0	0	0	0
10	0	0	0	0	14	17	0	0.71	0	0	0	0
11	0	0	0	0.17	10	17	0	8.7	0	0	0	0
12	0	0	0	0	16	19	9.3	10	0	0	0	0
13	0	0	0	4.7	15	1.2	12	17	0	0	0	0
14	0	0	0	1.9	14	0	16	9.3	0	0	0	0
15	0	0	0	7.0	0	0	14	12	0	0	0	0
16	0	2.3	0	5.2	0	7.4	7.3	7.9	0	0	0	0
17	0	0	0	8.0	0	7.2	0	0	0	0	0	0
18	0	0	0	15	0	0.20	0	0	0	0	0	0
19	0	0	0	18	0.12	0.08	3.5	0	0	0	0	0
20	0	0	0	5.9	0	8.9	2.7	0	0	0	0	0
21	0	0	0	5.3	15	15	11	0	0	0	0	0
22	0	0	0	0	19	16	11	0	0	0	0	0
23	0	0	0	0	19	15	14	0	0	0	0	0
24	0	0	0	0	6.5	15	15	4.5	0	0	0	0
25	0	0	0	9.2	0	13	14	11	0	0	0	0
26	0	0	0	16	0	0.02	2.5	3.5	0	0	0	0
27	0	0	0	8.9	5.5	0.02	0	0	0	0	0	0
28	0	0	0	17	11	0	0	0	0	0	0	0
29	0	0	0	8.0	12	14	0	0	0	0	0	0
30	0	0	0	0	16	20	9.2	0	0	0	0	0
31	0	0	0	0	5.5	0	12	0	0	0	0	0
Total	0	2.3	0	142.54	232.23	250.92	185.96	118.71	0	0	0	0
Mean	0	0.082	0	4.75	7.49	8.36	6.00	3.83	0	0	0	0
Max	0	2.3	0	18	20	20	16	17	0	0	0	0
Min	0	0	0	0	0	0	0	0	0	0	0	0
Ac-ft	0	4.6	0	283	461	498	369	235	0	0	0	0

### Calendar Year Summary

Annual Total 932.66    Annual Mean 2.56    Daily Max 20    Daily Min 0    Annual Ac-ft 1,850.6

#### Maximum Discharge

Date	Time	GH	Discharge
May 7	13:00	N/A	23

#### Minimum Discharge

Date	Time	GH	Discharge
Jan. 1	01:00	N/A	0

## Fort Mojave Tribe-Refuge (Vanderslice Farms)

**Location**—Latitude 34° 50.286', longitude -114° 34.237', in the SW¼ SE¼ of Section 24, T. 17 N., R. 22 W., Gila-Salt River meridian, Mohave County, Arizona, Hydrologic Unit 15030101, 19.2 mi south of Bullhead City, Arizona, 2.9 mi east of Needles, California, and 31.5 river mi downstream of Davis Dam.

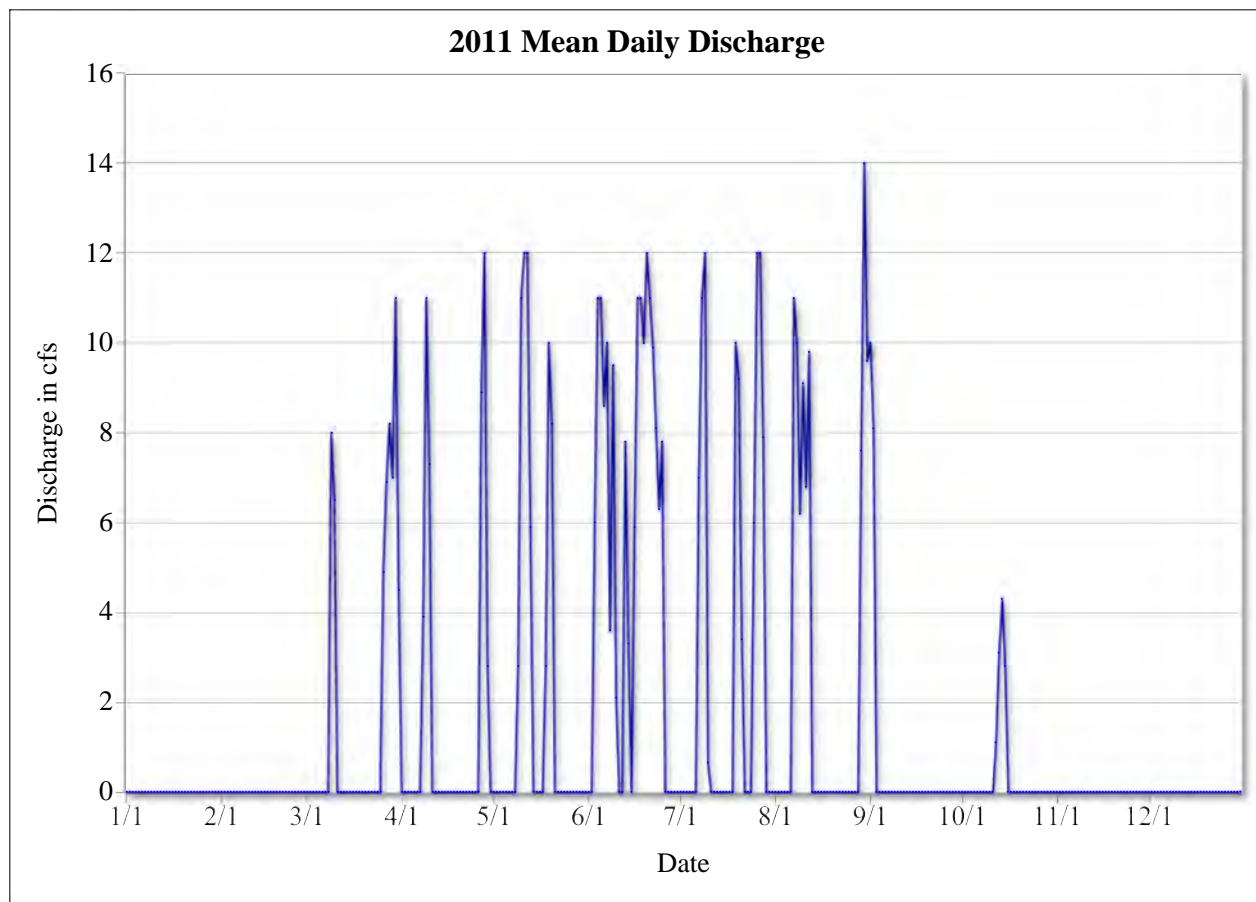
**Drainage Area**—Not applicable.

**Period of Record**—January 27, 2006 to current year.

**Gage**—Sutron Xlite datalogger (Model 9210-0000-2B) records discharge measured with a SeaMetrics insertion magnetic flow meter (Model EX-201-S) mounted in the discharge side of the diversion pipe. Discharge is calculated using a discharge-indicator relationship.

**Extremes**—Maximum daily discharge, 16 cfs, Aug. 16, 2006; minimum daily discharge, no diversion at times; maximum hourly discharge, 18 cfs, Aug. 2, 2006 at 11:00; minimum hourly discharge, no diversion at times.

**Remarks**—None.



## Fort Mojave Tribe-Refuge (Vanderslice Farms)

Discharge, in cubic-feet per second, Calendar Year 2011

Day	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	0	0	0	0	0	0	0	0	10	0	0	0
2	0	0	0	0	0	0	0	0	8.1	0	0	0
3	0	0	0	0	0	6.0	0	0	0	0	0	0
4	0	0	0	0	0	11	0	0	0	0	0	0
5	0	0	0	0	0	11	0	0	0	0	0	0
6	0	0	0	0	0	8.6	0	0	0	0	0	0
7	0	0	0	0	0	10	7.0	11	0	0	0	0
8	0	0	0	3.9	0	3.6	11	10	0	0	0	0
9	0	0	8.0	11	2.8	9.5	12	6.2	0	0	0	0
10	0	0	6.5	7.3	11	2.1	0.65	9.1	0	0	0	0
11	0	0	0	0	12	0	0	6.8	0	0	0	0
12	0	0	0	0	12	0	0	9.8	0	1.1	0	0
13	0	0	0	0	5.9	7.8	0	0	0	3.1	0	0
14	0	0	0	0	0	3.3	0	0	0	4.3	0	0
15	0	0	0	0	0	0	0	0	0	2.8	0	0
16	0	0	0	0	0	5.9	0	0	0	0	0	0
17	0	0	0	0	0	11	0	0	0	0	0	0
18	0	0	0	0	2.8	11	0	0	0	0	0	0
19	0	0	0	0	10	10	10	0	0	0	0	0
20	0	0	0	0	8.2	12	9.2	0	0	0	0	0
21	0	0	0	0	0	11	3.4	0	0	0	0	0
22	0	0	0	0	0	9.9	0	0	0	0	0	0
23	0	0	0	0	0	8.1	0	0	0	0	0	0
24	0	0	0	0	0	6.3	0	0	0	0	0	0
25	0	0	0	0	0	7.8	6.0	0	0	0	0	0
26	0	0	4.9	0	0	0	12	0	0	0	0	0
27	0	0	6.9	8.9	0	0	12	0	0	0	0	0
28	0	0	8.2	12	0	0	7.9	0	0	0	0	0
29	0	0	7.0	2.8	0	0	0	7.6	0	0	0	0
30	0	0	11	0	0	0	0	14	0	0	0	0
31	0	0	4.5	0	0	0	0	9.6	0	0	0	0
Total	0	0	57.0	45.9	64.7	165.9	91.15	84.1	18.1	11.3	0	0
Mean	0	0	1.84	1.53	2.09	5.53	2.94	2.71	0.60	0.36	0	0
Max	0	0	11	12	12	12	12	14	10	4.3	0	0
Min	0	0	0	0	0	0	0	0	0	0	0	0
Ac-ft	0	0	113	91	128	329	181	167	36	22	0	0

### Calendar Year Summary

Annual Total 538.15    Annual Mean 1.47    Daily Max 14    Daily Min 0    Annual Ac-ft 1,067

#### Maximum Discharge

Date	Time	GH	Discharge
Aug. 30	06:00	N/A	16

#### Minimum Discharge

Date	Time	GH	Discharge
Jan. 1	01:00	N/A	0

## United States Fish and Wildlife Service-Inlet Canal

**Location**—Latitude 34° 50.202', longitude -114° 31.674', in the NE¼ NE¼ of Section 29, T. 17 N., R. 21 W., Gila-Salt River meridian, Mohave County, Arizona, Hydrologic Unit 15030101, 19.6 mi south of Bullhead City, Arizona, and 4.8 mi east of Needles, California.

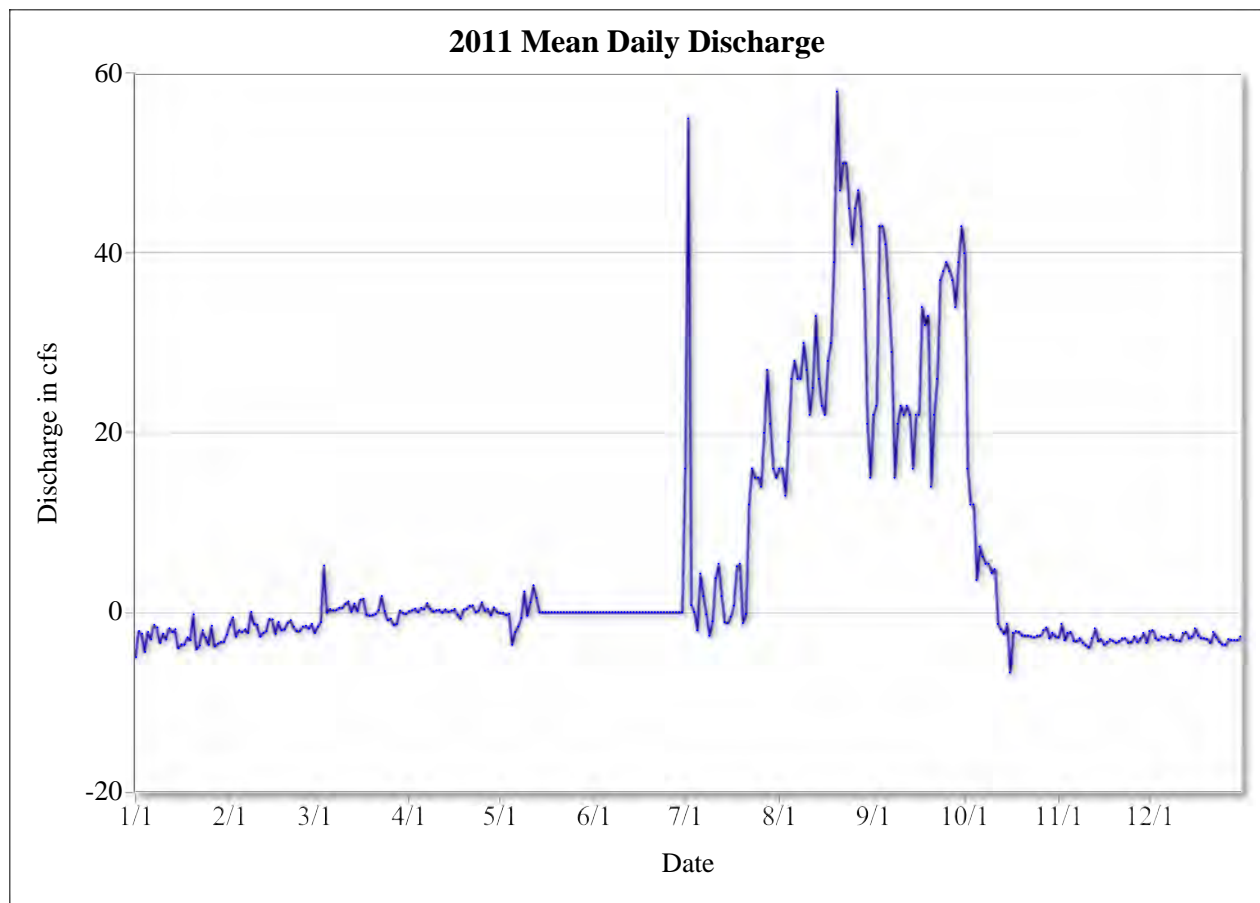
**Drainage Area**—Not applicable.

**Period of Record**—July 16, 2005 to current year.

**Gage**—A Sutron Xlite datalogger (Model 9210-0000-2B) records water elevation and velocity measured with a SonTek/YSI Argonaut-SW current meter. Discharge is computed using a velocity-index relationship.

**Extremes**—Maximum daily discharge, 150 cfs, Apr. 20, 2007; minimum daily discharge, -15 cfs, Oct. 9, 2009; maximum hourly discharge, 164 cfs, Apr. 19, 2007 at 23:00; minimum hourly discharge, -41 cfs, Aug. 4, 2006 at 04:00.

**Remarks**—None.





## United States Fish and Wildlife Service-Inlet Canal

Discharge, in cubic-feet per second, Calendar Year 2011

Day	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	-5.0	-1.4	-2.3	0.11	-0.09	0	16	16	22	40	-2.8	-2.1
2	-2.1	-0.58	-1.6	0.21	-0.04	0	55	16	23	16	-1.3	-2.0
3	-2.4	-2.7	-1.1	0.40	-0.28	0	0.79	13	43	12	-3.1	-2.9
4	-4.4	-2.0	5.2	0	-0.18	0	0.02	19	43	12	-2.3	-3.1
5	-2.2	-2.2	-0.03	0.49	-3.6	0	-2.0	26	41	3.6	-2.2	-2.7
6	-3.0	-1.9	0.35	0.35	-2.2	0	4.3	28	35	7.3	-3.2	-2.8
7	-1.4	-2.3	0.21	1.0	-1.6	0	1.8	26	29	6.2	-3.2	-3.0
8	-1.7	0.04	0.23	0.39	-0.64	0	-0.23	26	15	5.4	-2.9	-2.5
9	-3.4	-1.3	0.50	0.08	2.3	0	-2.6	30	21	5.4	-3.4	-3.1
10	-2.4	-1.4	0.49	0.22	-0.36	0	-1.0	27	23	4.4	-3.7	-3.1
11	-3.0	-2.7	0.91	0.27	1.1	0	3.8	22	22	4.8	-3.9	-3.2
12	-1.8	-2.3	1.2	-0.03	3.0	0	5.4	25	23	-1.3	-2.9	-2.3
13	-2.2	-2.1	0.06	0.31	1.6	0	1.8	33	22	-1.9	-1.8	-2.2
14	-1.9	-0.76	0.96	0.04	0	0	-1.1	26	16	-2.4	-3.2	-2.9
15	-4.0	-0.81	0.16	0.19	0	0	-1.2	23	22	-1.3	-3.0	-2.7
16	-3.6	-2.4	1.4	0.37	0	0	-0.50	22	22	-6.7	-3.6	-1.8
17	-3.6	-1.1	1.5	-0.27	0	0	0.74	28	34	-2.3	-3.3	-2.6
18	-2.8	-2.0	-0.26	-0.70	0	0	5.1	30	32	-2.1	-3.0	-2.9
19	-3.1	-1.9	-0.37	0.30	0	0	5.4	39	33	-2.2	-3.2	-2.9
20	-0.24	-1.2	-0.31	0.38	0	0	-1.2	58	14	-2.6	-3.4	-3.0
21	-4.1	-0.89	-0.19	0.72	0	0	-0.19	47	22	-2.6	-3.2	-3.4
22	-3.7	-1.6	0.25	0.76	0	0	12	50	26	-2.6	-2.9	-2.2
23	-2.0	-2.1	1.8	-0.01	0	0	16	50	37	-2.7	-2.9	-2.8
24	-2.8	-2.1	0.13	0.19	0	0	15	45	38	-2.8	-3.4	-3.3
25	-3.6	-1.6	-0.87	1.1	0	0	15	41	39	-2.6	-3.3	-3.6
26	-1.5	-1.5	-0.72	0.18	0	0	14	45	38	-2.6	-2.7	-3.6
27	-3.8	-1.8	-1.4	0.35	0	0	20	47	37	-2.0	-3.3	-3.0
28	-3.5	-1.3	-1.3	-0.32	0	0	27	43	34	-1.7	-2.9	-3.1
29	-3.3		0.19	0.54	0	0	21	36	39	-2.9	-2.3	-3.1
30	-3.3		-0.06	0.07	0	0	16	21	43	-2.3	-3.4	-3.1
31	-2.5		-0.18		0		15	15		-2.7		-2.7
Total	-88.34	-45.90	4.85	7.69	-0.99	0	261.13	973	888	66.8	-89.7	-87.7
Mean	-2.85	-1.64	0.16	0.26	-0.032	0	8.42	31.4	29.6	2.15	-2.99	-2.83
Max	-0.24	0.04	5.2	1.1	3.0	0	55	58	43	40	-1.3	-1.8
Min	-5.0	-2.7	-2.3	-0.70	-3.6	0	-2.6	13	14	-6.7	-3.9	-3.6
Ac-ft	-175	-91	9.6	15	-2.0	0	518	1,930	1,761	132	-178	-174

### Calendar Year Summary

Annual Total 1,888.84    Annual Mean 5.17    Daily Max 58    Daily Min -6.7    Annual Ac-ft 3,745.6

#### Maximum Discharge

Date	Time	Elev	Discharge
Jul. 2	07:00	456.17	101

#### Minimum Discharge

Date	Time	Elev	Discharge
Oct. 16	19:00	453.61	-17

## United States Fish and Wildlife Service-Farm Ditch

**Location**—Latitude 34° 47.711', longitude -114° 33.275', in the SE¼ SE¼ of Section 1, T. 16 N., R. 22 W., Gila-Salt River meridian, Mohave County, Arizona, Hydrologic Unit 15030101, 22.2 mi south of Bullhead City, Arizona, and 4.5 mi east of Needles, California.

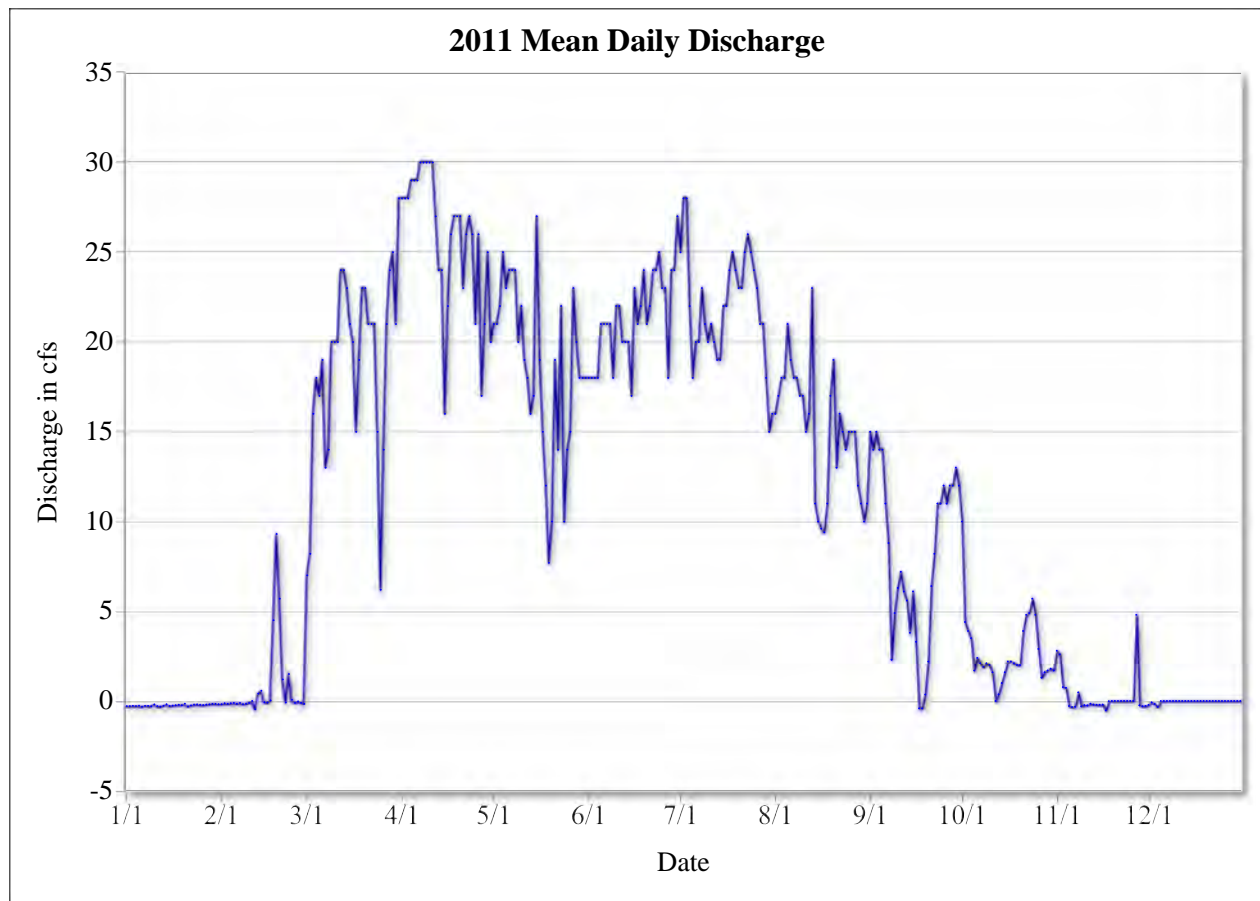
**Drainage Area**—Not applicable.

**Period of Record**—January 1, 2005 to current year.

**Gage**—A Sutron Xlite datalogger (Model 9210-0000-2B) records water velocity measured with a SonTek/YSI Argonaut-SW current meter. Discharge is calculated using a velocity-index relationship.

**Extremes**—Maximum daily discharge, 33 cfs, Apr. 20, 2007; minimum daily discharge, -1.0 cfs, Aug. 14, 2005; maximum hourly discharge, 43 cfs, Jul. 17, 2011 at 04:00; minimum hourly discharge, -8.2 cfs, May 20, 2007 at 12:00.

**Remarks**—None.



## United States Fish and Wildlife Service-Farm Ditch

Discharge, in cubic-feet per second, Calendar Year 2011

Day	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	-0.29	-0.18	7.0	28	21	18	25	16	15	10	2.8	-0.22
2	-0.29	-0.13	8.2	28	21	18	28	17	14	4.4	2.6	-0.08
3	-0.27	-0.16	16	28	22	18	28	18	15	3.9	0.77	-0.17
4	-0.29	-0.13	18	29	25	18	22	18	14	3.5	0.73	-0.33
5	-0.26	-0.11	17	29	23	21	<b>18</b>	21	14	1.7	-0.28	0
6	-0.32	-0.16	19	29	24	21	20	19	11	2.4	-0.34	0
7	-0.27	-0.11	13	30	24	21	20	18	8.8	2.1	-0.32	0
8	-0.27	-0.18	14	30	24	21	23	18	2.3	1.9	0.48	0
9	-0.30	-0.15	20	30	20	18	21	17	4.9	2.1	-0.30	0
10	-0.19	-0.11	20	30	22	22	20	17	6.3	2.0	-0.23	0
11	-0.29	0	20	30	19	22	21	15	7.2	1.6	-0.25	0
12	-0.32	-0.46	24	27	18	20	20	16	6.1	0	-0.15	0
13	-0.27	0.41	24	24	16	20	19	23	5.6	0.37	-0.20	0
14	-0.18	0.57	23	24	17	20	19	11	3.8	1.0	-0.21	0
15	-0.28	-0.07	21	16	27	17	22	10	<b>6.1</b>	1.6	-0.21	0
16	-0.26	-0.09	20	22	19	23	22	9.6	<b>3.3</b>	2.2	-0.20	0
17	-0.24	0.03	15	26	15	21	24	9.4	-0.41	2.2	-0.52	0
18	-0.21	4.5	19	27	12	22	25	11	-0.41	2.1	-0.01	0
19	-0.24	9.3	23	27	7.7	24	24	17	0.36	2.0	0	0
20	-0.15	5.7	23	27	10	21	23	19	2.2	2.0	0	0
21	-0.31	1.2	21	23	19	22	23	13	6.4	3.9	0	0
22	-0.25	-0.08	21	26	14	24	25	16	8.2	4.8	0	0
23	-0.20	1.5	21	27	22	24	26	15	11	4.9	0	0
24	-0.19	0.07	15	26	10	25	25	14	11	5.7	0	0
25	-0.21	-0.10	6.2	21	14	23	24	15	12	4.8	0	0
26	-0.23	-0.02	14	26	15	23	23	15	11	2.9	0	0
27	-0.20	-0.10	21	17	23	18	21	15	12	1.3	4.8	0
28	-0.19	-0.16	24	21	20	24	21	12	12	1.6	-0.24	0
29	-0.16		25	25	18	24	18	11	13	1.7	-0.30	0
30	-0.16		21	20	18	27	15	10	12	1.8	-0.28	0
31	-0.18		28		18		16	11		1.7		0
Total	-7.47	20.78	581.4	773	577.7	640	681	467.0	247.74	84.17	8.14	-0.80
Mean	-0.24	0.74	18.8	25.8	18.6	21.3	22.0	15.1	8.26	2.72	0.27	-0.026
Max	-0.15	9.3	28	30	27	27	28	23	15	10	4.8	0
Min	-0.32	-0.46	6.2	16	7.7	17	15	9.4	-0.41	0	-0.52	-0.33
Ac-ft	-15	41	1,153	1,533	1,146	1,269	1,351	926	491	167	16	-1.6

### Calendar Year Summary

Annual Total 4,072.66    Annual Mean 11.2    Daily Max 30    Daily Min -0.52    Annual Ac-ft 8,076.4

#### Maximum Discharge

Date    Time    GH    Discharge  
Jul. 17    04:00    N/A    43

#### Minimum Discharge

Date    Time    GH    Discharge  
Feb. 12    06:00    N/A    -5.2

**Bold values indicate the daily value was derived from hourly data that contained 6 or more consecutive hours of estimated record.**

## United States Fish and Wildlife Service-South Dike

**Location**—Latitude 34° 44.214', longitude -114° 29.407', in the SW¼ SE¼ of Section 27, T. 16 N., R. 21 W., Gila-Salt River meridian, Mohave County, Arizona, Hydrologic Unit 15030101, 26.8 mi south of Bullhead City, Arizona, and 9.9 mi southeast of Needles, California.

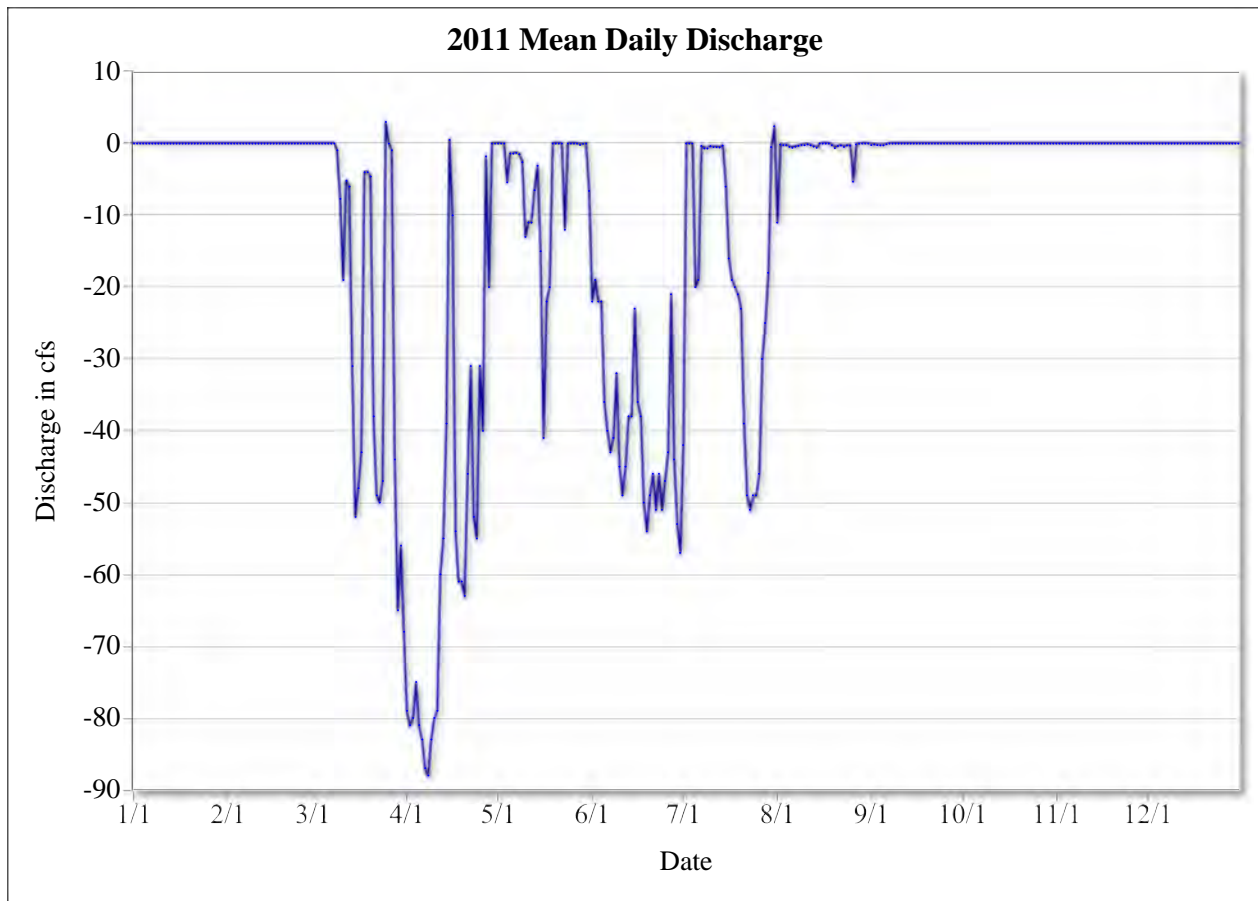
**Drainage Area**—Unknown.

**Period of Record**—June 16, 2005 to current year.

**Gage**—A Sutron Xlite datalogger (Model 9210-0000-2B) records marsh, river, and gate elevation measured with Sutron multiple interface shaft encoders (Model 56-0540-400-DTR). Discharge over the bi-fold lateral gate is computed by applying theoretical weir equations.

**Extremes**—Maximum daily discharge, 9.1 cfs on Aug. 5, 2005; minimum daily discharge, -88 cfs on Apr. 8, 2011; maximum hourly discharge, 39 cfs on Apr. 27, 2011 at 18:00; minimum hourly discharge, -92 cfs on Apr. 7, 2011 at 23:00.

**Remarks**—Refuge staff opened the gate during high river flows to allow water to flow into the marsh appearing as negative discharge.



## United States Fish and Wildlife Service-South Dike

Discharge, in cubic-feet per second, Calendar Year 2011

Day	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	0	0	0	-79	0	-22	-42	-11	-0.22	0	0	0
2	0	0	0	-81	0	-19	0	-0.14	-0.11	0	0	0
3	0	0	0	-80	0	-22	0	-0.23	-0.22	0	0	0
4	0	0	0	-75	-5.4	-22	0	-0.23	-0.25	0	0	0
5	0	0	0	-81	-1.4	-36	-20	-0.46	-0.25	0	0	0
6	0	0	0	-83	-1.4	-40	-19	-0.59	-0.09	0	0	0
7	0	0	0	-87	-1.3	-43	-0.34	-0.43	0	0	0	0
8	0	0	0	-88	-1.5	-41	-0.67	-0.32	0	0	0	0
9	0	0	-0.94	-83	-2.6	-32	-0.69	-0.20	0	0	0	0
10	0	0	-7.7	-80	-13	-45	-0.37	-0.24	0	0	0	0
11	0	0	-19	-79	-11	-49	-0.49	-0.11	0	0	0	0
12	0	0	-5.2	-60	-11	-45	-0.51	-0.25	0	0	0	0
13	0	0	-6.0	-55	-6.5	-38	-0.54	-0.42	0	0	0	0
14	0	0	-31	-39	-3.1	-38	-0.30	-0.59	0	0	0	0
15	0	0	-52	0.50	-15	-23	-6.0	0	0	0	0	0
16	0	0	-48	-10	-41	-36	-16	0	0	0	0	0
17	0	0	-43	-54	-22	-38	-19	0	0	0	0	0
18	0	0	-4.0	-61	-20	-50	-20	0	0	0	0	0
19	0	0	-4.0	-61	0	-54	-21	-0.23	0	0	0	0
20	0	0	-4.6	-63	0	-49	-23	-0.64	0	0	0	0
21	0	0	-38	-46	0	-46	-39	-0.34	0	0	0	0
22	0	0	-49	-31	0	-51	-49	-0.27	0	0	0	0
23	0	0	-50	-52	-12	-46	-51	-0.47	0	0	0	0
24	0	0	-47	-55	0	-51	-49	-0.26	0	0	0	0
25	0	0	3.0	-31	0	-47	-49	-0.28	0	0	0	0
26	0	0	0	-40	0	-43	-46	-5.3	0	0	0	0
27	0	0	-0.94	-1.8	-0.01	-21	-30	-0.13	0	0	0	0
28	0	0	-44	-20	-0.18	-44	-25	-0.02	0	0	0	0
29	0		-65	0	-0.04	-53	-18	0	0	0	0	0
30	0		-56	0	-0.01	-57	-0.50	0	0	0	0	0
31	0		-68		-6.6		2.4	0		0		0
Total	0	0	-640.38	-1,575.3	-175.04	-1,201	-544.01	-23.15	-1.14	0	0	0
Mean	0	0	-20.7	0	-5.65	-40.0	-17.5	-0.75	-0.038	0	0	0
Max	0	0	3.0	-52.5	0	-19	2.4	0	0	0	0	0
Min	0	0	-68	0.50	-41	-57	-51	-11	-0.25	0	0	0
Ac-ft	0	0	-1,270	-88	-347	-2,382	-1,079	-46	-2.3	0	0	0

### Calendar Year Summary

Annual Total -4,160.02    Annual Mean -11.4    Daily Max 3.0    Daily Min -88    Annual Ac-ft -8,251.3

#### Maximum Discharge

Date    Time    Elev    Discharge  
Apr. 27    18:00    455.05    39

#### Minimum Discharge

Date    Time    Elev    Discharge  
Apr. 7    23:00    454.42    -92

## Metropolitan Water District at Lake Havasu

**Location**—Latitude 34° 18.967', longitude -114° 09.433', in the NW¼ SW¼ of Section 28, T. 3 N., R. 27 E., San Bernardino meridian, San Bernardino County, California, Hydrologic Unit 15030101, river mi 193.8, 14.9 mi southeast of Lake Havasu City, Arizona, 13.7 mi northeast of Parker, Arizona, and 82.1 river mi downstream of Davis Dam.

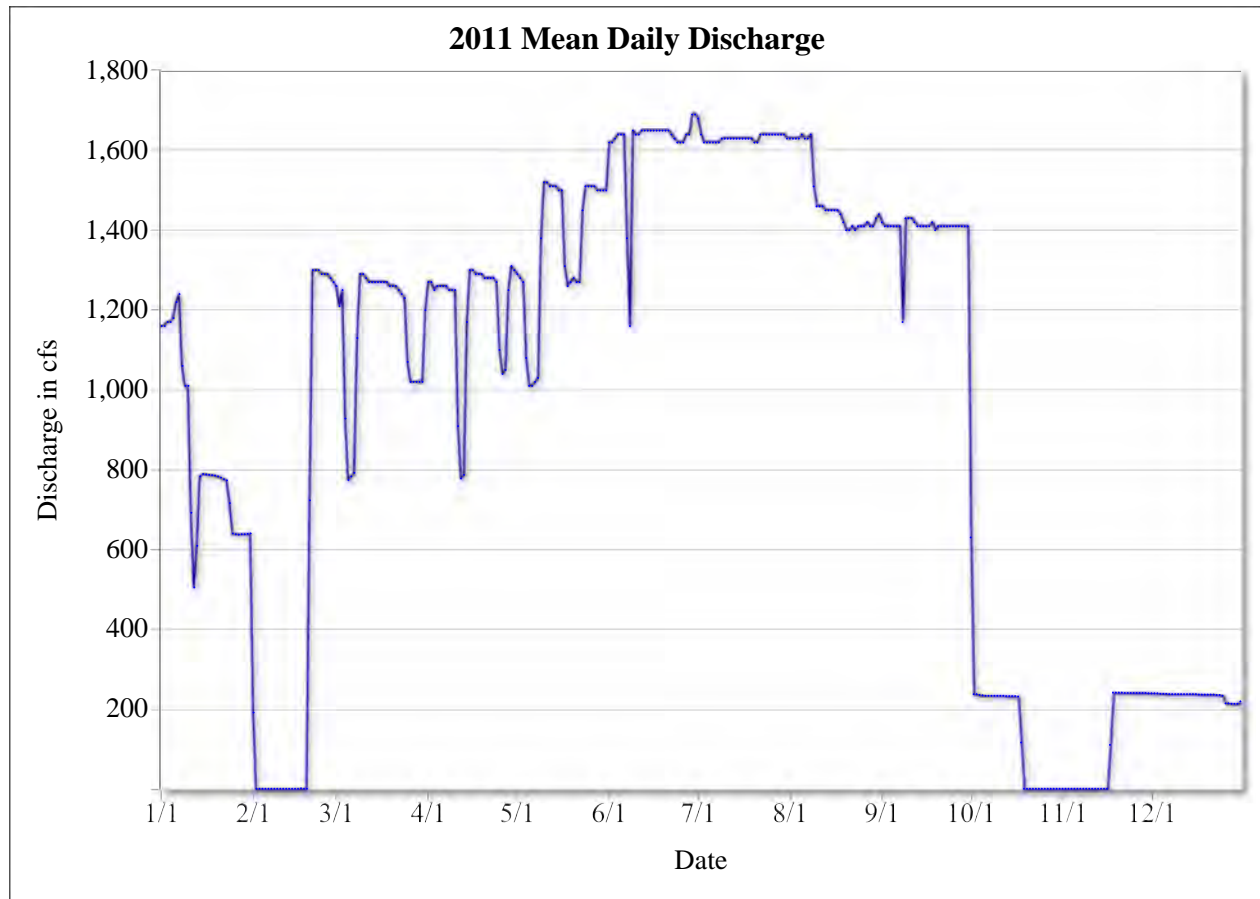
**Drainage Area**—Not applicable.

**Period of Record**—January 1, 2005 to current year.

**Gage**—A Sutron Xlite datalogger (Model 9210-0000-2B) records discharge measured with an Accusonic flow meter (Model 7500) operated by the Metropolitan Water District of Southern California. The flow meter measures discharge from nine pumps that divert Colorado River water into the Colorado River Aqueduct which conveys the water to metropolitan areas of southwestern California.

**Extremes**—Maximum daily discharge, 1,970 cfs, Nov. 11, 2005; minimum daily discharge, no diversion at times; maximum hourly discharge, 1,981 cfs, Nov. 10, 2005 at 10:00; minimum hourly discharge, no diversion at times.

**Remarks**—Maintenance and calibration of measuring equipment are performed by the Metropolitan Water District of Southern California. Reclamation does not perform measurements to verify the accuracy of the data or monitor flows that return to the Colorado River below the Gene Wash Reservoir Dam.



## Metropolitan Water District at Lake Havasu

Discharge, in cubic-feet per second, Calendar Year 2011

Day	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	1,160	191	1,260	1,270	1,290	1,620	1,680	1,630	1,420	630	0	239
2	1,160	0	1,210	1,270	1,280	1,620	1,640	1,630	1,410	237	0	239
3	1,170	0	1,250	1,250	1,270	1,630	1,620	1,630	1,410	237	0	239
4	1,170	0	928	1,260	1,080	1,640	1,620	1,630	1,410	235	0	238
5	1,180	0	774	1,260	1,010	1,640	1,620	1,640	1,410	234	0	238
6	1,220	0	783	1,260	1,010	1,640	1,620	1,630	1,410	233	0	238
7	1,240	0	792	1,260	1,020	1,380	1,620	1,630	1,410	233	0	237
8	1,060	0	1,130	1,250	1,030	1,160	1,620	1,640	1,170	233	0	237
9	1,010	0	1,290	1,250	1,380	1,650	1,630	1,510	1,430	233	0	237
10	1,010	0	1,290	1,250	1,520	1,640	1,630	1,460	1,430	233	0	237
11	692	0	1,280	909	1,520	1,640	1,630	1,460	1,430	233	0	237
12	505	0	1,270	778	1,510	1,650	1,630	1,460	1,420	233	0	237
13	609	0	1,270	787	1,510	1,650	1,630	1,450	1,410	232	0	237
14	783	0	1,270	1,170	1,510	1,650	1,630	1,450	1,410	232	0	237
15	789	0	1,270	1,300	1,500	1,650	1,630	1,450	1,410	232	0	237
16	788	0	1,270	1,300	1,500	1,650	1,630	1,450	1,410	232	0	237
17	787	1.1	1,270	1,290	1,310	1,650	1,630	1,450	1,410	231	110	236
18	786	0	1,270	1,290	1,260	1,650	1,630	1,440	1,420	116	241	236
19	785	0	1,260	1,290	1,270	1,650	1,630	1,420	1,400	0	241	236
20	783	723	1,260	1,280	1,280	1,650	1,620	1,400	1,410	0	241	236
21	780	1,300	1,260	1,280	1,270	1,650	1,620	1,400	1,410	0	241	236
22	776	1,300	1,250	1,280	1,270	1,640	1,640	1,410	1,410	0	240	236
23	773	1,300	1,240	1,280	1,450	1,630	1,640	1,400	1,410	0	240	235
24	716	1,290	1,230	1,270	1,510	1,620	1,640	1,410	1,410	0	240	235
25	640	1,290	1,070	1,100	1,510	1,620	1,640	1,410	1,410	0	240	233
26	638	1,290	1,020	1,040	1,510	1,620	1,640	1,410	1,410	0	240	214
27	637	1,280	1,020	1,050	1,510	1,640	1,640	1,420	1,410	0	240	214
28	638	1,270	1,020	1,250	1,500	1,640	1,640	1,410	1,410	0	240	213
29	638		1,020	1,310	1,500	1,690	1,640	1,410	1,410	0	240	213
30	639		1,020	1,300	1,500	1,690	1,640	1,430	1,410	0	239	213
31	640		1,200		1,500		1,630	1,440		0		219
Total	26,202	11,235.1	35,747	36,134	42,090	48,550	50,600	46,010	42,140	4,479	3,233	7,206
Mean	845	401	1,153	1,204	1,358	1,618	1,632	1,484	1,405	144	108	232
Max	1,240	1,300	1,290	1,310	1,520	1,690	1,680	1,640	1,430	630	241	239
Min	505	0	774	778	1,010	1,160	1,620	1,400	1,170	0	0	213
Ac-ft	51,971	22,284	70,903	71,671	83,484	96,298	100,364	91,260	83,583	8,884	6,413	14,293

### Calendar Year Summary

Annual Total 353,626.1    Annual Mean 969    Daily Max 1,690    Daily Min 0    Annual Ac-ft 701,408

#### Maximum Discharge

Date	Time	Elev	Discharge
Jun. 1	12:00	N/A	1,730

#### Minimum Discharge

Date	Time	Elev	Discharge
Feb. 1	09:00	N/A	0

## Central Arizona Project at Lake Havasu

**Location**—Latitude 34° 17.340', longitude -114° 06.230', in the NW¼ NE¼ of Section 23, T. 11 N., R. 18 W., Gila-Salt River meridian, La Paz County, Arizona, Hydrologic Unit 15030204, river mi 192.5, 15.3 mi southeast of Lake Havasu City, Arizona, 14.3 miles northeast of Parker, Arizona, and 83.4 river mi downstream of Davis Dam.

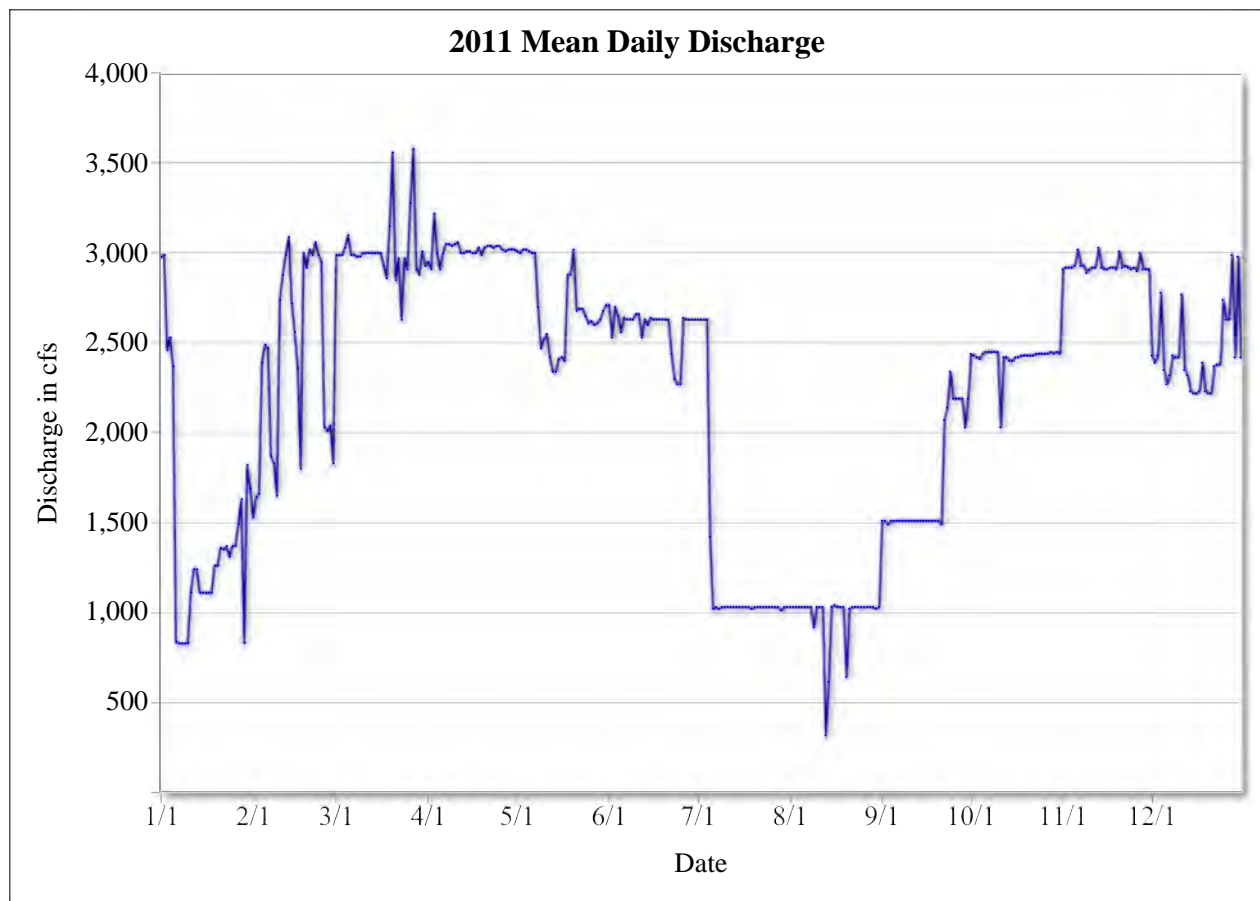
**Drainage Area**—Not applicable.

**Period of Record**—January 1, 2005 to current year.

**Gage**—A Sutron Xlite datalogger (Model 9210-0000-2B) records discharge values measured with two Accusonic flow meters (Model 7500) operated by the Central Arizona Project. The flow meters measure discharge from six pumps that divert Colorado River water into the Hayden-Rhodes Aqueduct which conveys the water to the Phoenix and Tucson metropolitan areas.

**Extremes**—Maximum daily discharge, 3,600 cfs, Jun. 6, 2010; minimum daily discharge, no diversion at times; maximum hourly discharge, 3,670 cfs, Jun. 3, 2005 at 08:00; minimum hourly discharge, no diversion at times.

**Remarks**—Maintenance and calibration of measuring equipment are performed by a private contractor hired by the Central Arizona Project. Reclamation does not perform measurements to verify the accuracy of the data.





## Central Arizona Project at Lake Havasu

Discharge, in cubic-feet per second, Calendar Year 2011

Day	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	2,980	1,530	2,990	2,950	3,010	2,710	2,630	1,030	1,510	2,440	2,910	2,430
2	2,990	1,640	2,990	2,910	3,000	2,530	2,630	1,030	1,510	2,430	2,920	2,390
3	2,460	1,660	2,990	3,220	3,020	2,700	2,630	1,030	1,490	2,420	2,920	2,430
4	2,530	2,390	3,030	3,000	3,020	2,650	2,630	1,030	1,510	2,410	2,920	2,780
5	2,370	2,490	3,100	2,910	3,010	2,560	1,420	1,030	1,510	2,440	2,930	2,350
6	837	2,470	2,990	3,000	3,000	2,640	1,020	1,030	1,510	2,450	3,020	2,270
7	828	1,870	2,990	3,050	3,000	2,630	1,030	1,030	1,510	2,450	2,930	2,320
8	828	1,830	2,980	3,050	2,700	2,630	1,020	1,030	1,510	2,450	2,930	2,430
9	828	1,650	2,980	3,040	2,470	2,630	1,030	916	1,510	2,450	2,890	2,420
10	829	2,740	3,000	3,050	2,520	2,660	1,030	1,030	1,510	2,450	2,910	2,420
11	1,110	2,880	3,000	3,060	2,550	2,660	1,030	1,030	1,510	2,030	2,920	2,770
12	1,240	2,990	3,000	3,000	2,420	2,530	1,030	1,030	1,510	2,420	2,920	2,350
13	1,240	3,090	3,000	3,000	2,340	2,630	1,030	315	1,510	2,420	3,030	2,320
14	1,110	2,720	3,000	3,010	2,340	2,600	1,030	613	1,510	2,400	2,920	2,230
15	1,110	2,560	3,000	3,010	2,410	2,640	1,030	1,030	1,510	2,400	2,910	2,220
16	1,110	2,360	3,000	3,000	2,420	2,630	1,030	1,040	1,510	2,420	2,910	2,220
17	1,110	1,800	2,930	3,000	2,400	2,630	1,030	1,030	1,510	2,420	2,920	2,230
18	1,110	3,000	2,860	3,030	2,880	2,630	1,030	1,030	1,510	2,430	2,920	2,390
19	1,260	2,920	3,150	2,990	2,880	2,630	1,020	1,030	1,510	2,430	2,910	2,230
20	1,260	3,020	3,560	3,030	3,020	2,630	1,030	641	1,510	2,430	3,010	2,220
21	1,360	2,990	2,850	3,040	2,680	2,630	1,030	1,020	1,490	2,430	2,920	2,220
22	1,350	3,060	2,970	3,040	2,690	2,440	1,030	1,030	2,070	2,430	2,930	2,370
23	1,370	2,990	2,630	3,030	2,690	2,300	1,030	1,030	2,140	2,440	2,920	2,380
24	1,310	2,950	2,970	3,040	2,650	2,270	1,030	1,030	2,340	2,440	2,910	2,380
25	1,370	2,030	2,910	3,040	2,610	2,270	1,030	1,030	2,190	2,440	2,920	2,740
26	1,370	2,010	3,280	3,020	2,620	2,640	1,030	1,030	2,190	2,440	2,900	2,630
27	1,490	2,040	3,580	3,010	2,600	2,630	1,030	1,030	2,190	2,440	3,000	2,630
28	1,630	1,830	2,910	3,020	2,610	2,630	1,030	1,030	2,190	2,450	2,910	2,990
29	830		2,880	3,020	2,630	2,630	1,010	1,030	2,030	2,440	2,910	2,420
30	1,820		3,010	3,020	2,680	2,630	1,030	1,020	2,190	2,450	2,910	2,980
31	1,690		2,930		2,710		1,030	1,030		2,440		2,420
Total	44,730	67,510	93,460	90,590	83,580	77,620	38,670	30,285	51,200	75,030	87,880	75,580
Mean	1,443	2,411	3,015	3,020	2,696	2,587	1,247	977	1,707	2,420	2,929	2,438
Max	2,990	3,090	3,580	3,220	3,020	2,710	2,630	1,040	2,340	2,450	3,030	2,990
Min	828	1,530	2,630	2,910	2,340	2,270	1,010	315	1,490	2,030	2,890	2,220
Ac-ft	88,721	133,904	185,375	179,683	165,779	153,957	76,701	60,069	101,554	148,820	174,307	149,911

### Calendar Year Summary

Annual Total 816,135    Annual Mean 2,236    Daily Max 3,580    Daily Min 315    Annual Ac-ft 1,618,781

#### Maximum Discharge

Date	Time	GH	Discharge
Jun. 2	06:00	N/A	3,610

#### Minimum Discharge

Date	Time	GH	Discharge
Jan. 1	10:00	N/A	0

## Palo Verde Irrigation District-Main Canal

**Location**—Latitude 33° 43.801', longitude 114° 30.717', in the SW¼ NE¼ of Section 19, T. 5 S., R. 24 E., San Bernardino meridian, Riverside County, California, Hydrologic Unit 15030104, river mi 133.8, 31.7 mi south of Parker, Arizona, 9.2 mi north of Blythe, California, and 58.2 river mi downstream of Parker Dam.

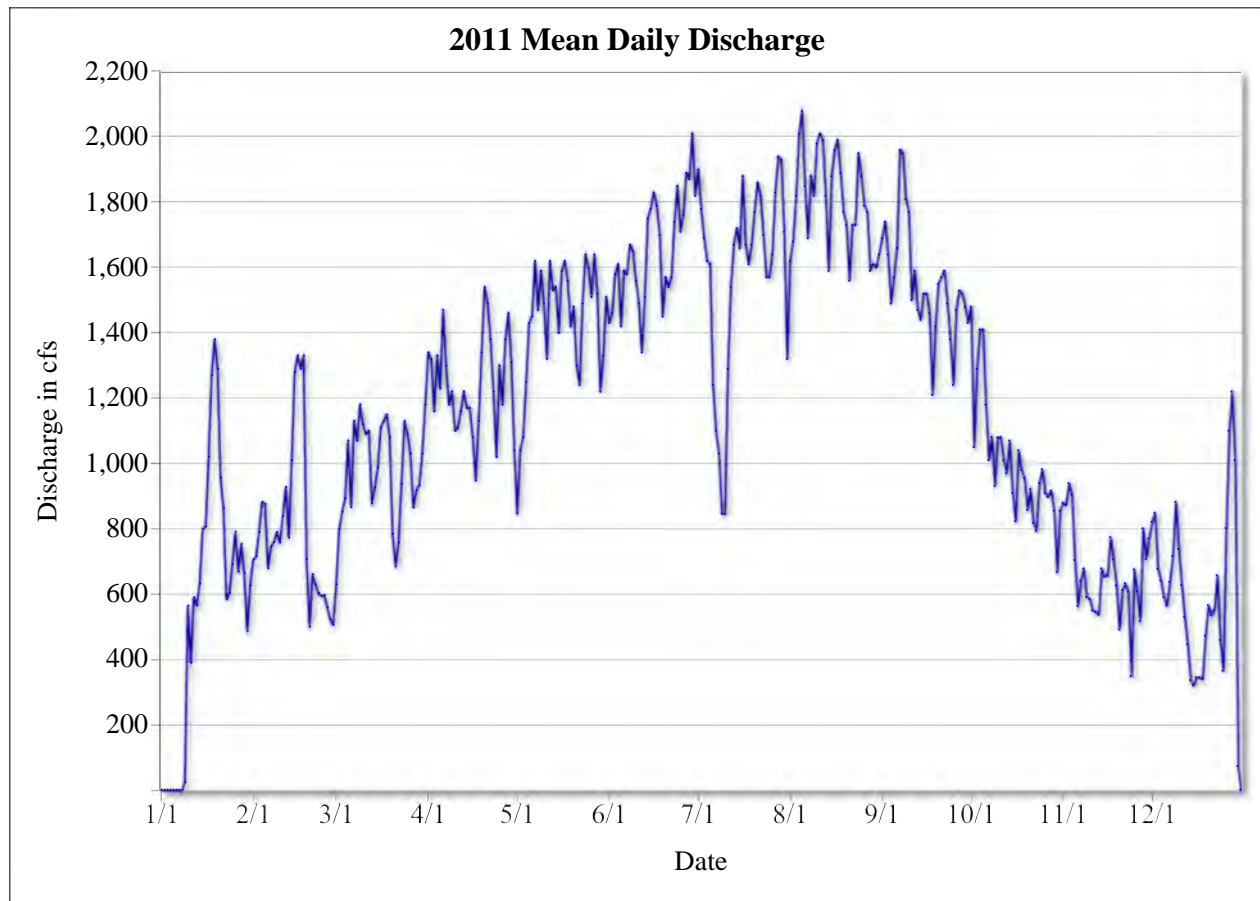
**Drainage Area**—Not applicable.

**Period of Record**—January 1, 2005 to current year.

**Gage**—A Sutron Xlite datalogger (Model 9210-0000-2B) records water elevation and velocity measured with a SonTek/YSI Argonaut-SL current meter. Discharge is calculated using a velocity-index relationship.

**Extremes**—Maximum daily discharge, 2,190 cfs, Aug. 5, 2006; minimum daily discharge, -0.01 cfs, Jan. 1, 2005; maximum hourly discharge, 2,530 cfs, Jun. 25, 2008 at 15:00; minimum hourly discharge, -174 cfs, Dec. 31, 2005 at 10:00.

**Remarks**—Due to the Palo Verde Irrigation District annual outage there were no diversions from Jan. 1, 2011 at 01:00 to Jan. 9, 2011 at 23:00 and again from Dec. 30, 2011 at 10:00 to Jan. 1, 2012 at 00:00.



## Palo Verde Irrigation District-Main Canal

Discharge, in cubic-feet per second, Calendar Year 2011

Day	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	0	705	630	1,340	847	1,430	1,900	1,620	1,690	1,480	879	821
2	0	715	799	1,320	1,040	1,460	1,780	1,680	1,740	1,050	873	848
3	0	790	852	1,160	1,080	1,580	1,690	1,820	1,640	1,290	939	677
4	0	882	893	1,330	1,250	1,610	1,620	2,010	1,490	1,410	904	641
5	0	876	1,070	1,230	1,430	1,420	1,610	2,080	1,570	1,410	704	590
6	0	679	866	1,470	1,450	1,590	1,240	1,850	1,660	1,180	563	564
7	0	745	1,130	1,300	1,620	1,580	1,100	1,690	1,960	1,010	641	637
8	0	759	1,070	1,180	1,470	1,670	1,030	1,880	1,950	1,080	678	716
9	23	790	1,180	1,220	1,590	1,650	846	1,820	1,810	931	591	882
10	564	758	1,120	1,100	1,490	1,560	845	1,980	1,770	1,080	585	738
11	389	838	1,090	1,110	1,320	1,490	1,290	2,010	1,500	1,080	549	627
12	590	928	1,100	1,160	1,620	1,340	1,540	1,990	1,590	1,010	546	529
13	565	773	878	1,220	1,530	1,510	1,670	1,820	1,470	970	537	446
14	632	1,010	926	1,170	1,540	1,750	1,720	1,590	1,440	1,070	678	336
15	799	1,280	987	1,170	1,400	1,780	1,660	1,880	1,520	909	654	320
16	807	1,330	1,110	1,080	1,590	1,830	1,880	1,960	1,520	823	657	345
17	1,020	1,290	1,130	948	1,620	1,790	1,670	1,990	1,460	1,040	774	345
18	1,270	1,330	1,150	1,130	1,560	1,700	1,610	1,890	1,210	980	706	340
19	1,380	707	1,080	1,340	1,420	1,450	1,670	1,770	1,420	955	626	472
20	1,290	500	784	1,540	1,480	1,570	1,770	1,730	1,550	858	491	566
21	957	660	685	1,490	1,300	1,540	1,860	1,560	1,570	921	612	535
22	862	629	758	1,380	1,240	1,570	1,820	1,730	1,590	818	633	550
23	584	603	938	1,220	1,490	1,740	1,700	1,730	1,490	794	607	657
24	603	594	1,130	1,020	1,640	1,850	1,570	1,950	1,380	939	348	459
25	691	597	1,090	1,300	1,600	1,710	1,570	1,880	1,240	982	675	365
26	791	559	1,030	1,180	1,510	1,760	1,640	1,790	1,470	909	608	802
27	669	522	865	1,380	1,640	1,890	1,830	1,770	1,530	898	517	1,100
28	753	506	918	1,460	1,520	1,870	1,940	1,590	1,520	917	801	1,220
29	664		933	1,310	1,220	2,010	1,930	1,610	1,480	855	707	1,010
30	487		1,030	1,040	1,330	1,820	1,710	1,600	1,430	668	770	73
31	626		1,180		1,510		1,320	1,640		855		0
Total	17,016	22,355	30,402	37,298	44,347	49,520	49,031	55,910	46,660	31,172	19,853	18,211
Mean	549	798	981	1,243	1,431	1,651	1,582	1,804	1,555	1,006	662	587
Max	1,380	1,330	1,180	1,540	1,640	2,010	1,940	2,080	1,960	1,480	939	1,220
Min	0	500	630	948	847	1,340	845	1,560	1,210	668	348	0
Ac-ft	33,751	44,340	60,301	73,980	87,961	98,221	97,252	110,896	92,549	61,829	39,378	36,121

### Calendar Year Summary

Annual Total 421,775    Annual Mean 1,156    Daily Max 2,080    Daily Min 0    Annual Ac-ft 836,579

#### Maximum Discharge

Date    Time    Elev    Discharge  
Apr. 21    17:00    281.56    2,400

#### Minimum Discharge

Date    Time    Elev    Discharge  
Jan. 1    01:00    269.02    0

## Palo Verde Irrigation District-Outfall Drain

**Location**—Latitude 33° 20.308', longitude -114° 42.734', in the SW¼ NE¼ of Section 1, T. 10 S., R. 21 E., San Bernardino meridian, Imperial County, California, Hydrologic Unit 15030104, 20.2 mi south of Blythe, California, and 44.4 mi north of Yuma, Arizona.

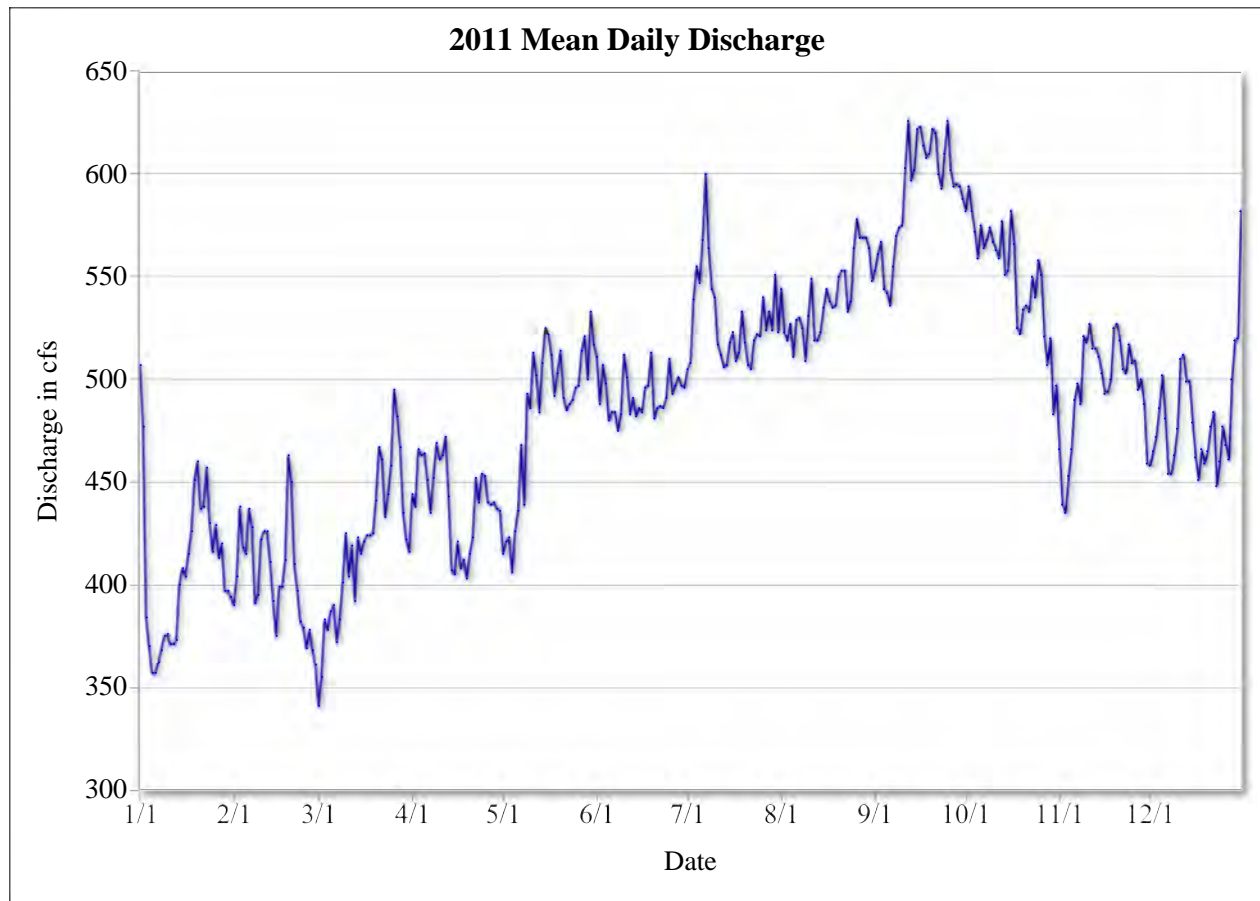
**Drainage Area**—Undetermined.

**Period of Record**—January 1, 2005 to current year.

**Gage**—A Sutron Xlite datalogger (Model 9210-0000-2B) records water elevation and velocity measured with a SonTek/YSI Argonaut-SL current meter. Discharge is calculated using a velocity-index relationship.

**Extremes**—Maximum daily discharge, 1,200 cfs, Aug. 10, 2005; minimum daily discharge, 316 cfs, Jan. 14, 2010; maximum hourly discharge, 3,230 cfs (estimated), Aug. 9, 2005 at 23:00, caused by an overbank condition created from significant side wash inflow; minimum hourly discharge, 225 cfs, Nov. 29, 2006 at 15:00.

**Remarks**—None.



## Palo Verde Irrigation District-Outfall Drain

Discharge, in cubic-feet per second, Calendar Year 2011

Day	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	507	390	341	444	415	511	505	544	553	582	466	458
2	477	404	355	438	421	488	508	523	561	594	439	465
3	384	438	383	466	423	507	539	519	567	582	435	472
4	370	418	378	463	406	498	555	527	544	572	453	486
5	357	415	387	464	426	480	547	511	542	559	466	502
6	357	437	390	451	436	484	568	529	536	575	490	481
7	362	428	372	435	468	484	600	530	555	564	498	454
8	368	391	383	452	439	475	564	525	570	568	488	454
9	375	395	401	469	493	483	544	509	574	574	521	463
10	376	422	425	461	486	512	540	531	575	567	518	476
11	371	426	404	463	513	501	517	549	603	563	527	510
12	371	426	419	472	502	483	512	519	626	559	515	512
13	373	411	392	443	484	491	506	519	597	577	515	499
14	400	392	423	407	508	482	507	523	602	551	511	499
15	408	375	415	405	525	486	518	535	622	553	503	479
16	404	399	421	421	522	484	523	544	623	582	493	462
17	415	399	424	408	512	496	509	538	614	566	494	451
18	426	412	424	412	492	497	513	535	608	525	500	466
19	451	463	425	403	503	513	533	536	610	522	525	459
20	460	450	441	415	514	481	518	550	622	534	527	465
21	437	410	467	423	491	486	507	553	620	536	519	477
22	438	397	461	452	485	487	505	553	600	533	505	484
23	457	382	433	440	488	486	519	533	593	550	503	448
24	430	379	444	454	490	491	522	538	610	540	517	460
25	416	369	458	453	496	510	521	564	626	558	508	477
26	429	378	495	440	497	493	540	578	602	551	509	468
27	413	368	482	439	514	497	524	569	594	521	495	461
28	420	361	467	440	521	501	533	569	595	507	500	500
29	397		435	437	500	497	524	569	594	520	488	519
30	397		422	436	533	496	551	564	588	483	459	520
31	394		416		517		523	548		497		582
Total	12,640	11,335	12,983	13,206	15,020	14,780	16,395	16,734	17,726	17,065	14,887	14,909
Mean	408	405	419	440	485	493	529	540	591	550	496	481
Max	507	463	495	472	533	513	600	578	626	594	527	582
Min	357	361	341	403	406	475	505	509	536	483	435	448
Ac-ft	25,071	22,483	25,751	26,194	29,792	29,316	32,519	33,191	35,159	33,848	29,528	29,572

### Calendar Year Summary

Annual Total 177,680    Annual Mean 487    Daily Max 626    Daily Min 341    Annual Ac-ft 352,424

#### Maximum Discharge

Date    Time    Elev    Discharge  
 Sep. 15    05:00    217.18    653

#### Minimum Discharge

Date    Time    Elev    Discharge  
 Apr. 17    06:00    213.15    300

## Glossary

**Acre-foot (ac-ft)**—The quantity of water required to cover one acre to a depth of one foot, the equivalent of 43,560 cubic feet or about 326,000 gallons.

**Control**—Channel features downstream of a gage which determine the stage-discharge relation at the gage. Controls can be either artificial or natural. Artificial controls consist of man-made structures like weirs and flumes, while natural controls consist of channel constrictions, outcroppings, rock or gravel beds, and uniform stretches of channel.

**Cubic Feet per Second (cfs)**—The rate of discharge representing a volume of one cubic foot passing a given point during one second, the equivalent of approximately 7.48 gallons per second or 448.8 gallons per minute.

**Data**—Characteristic observations, often represented as numbers, made over specific points in time.

**Datalogger**—An electronic device that records data in time sequence with related events. Dataloggers take measurements from sensors and/or transducers located at a gaging station.

**Datum**—Any numerical quantity that serves as a reference or base for another comparable quantity.

**Discharge**—The volume of water that passes a given point within a given period of time.

**Discharge-Index Relationship**—The relationship between an indicator discharge and a volume of water, per unit of time, flowing in a channel or pipe.

**Drainage Area**—The area of the associated drainage basin expressed in square miles.

**Elevation**—The height of water at a gage measured in reference to mean sea level.

**Estimated Data or Record**—Data that has been estimated to replace missing or erroneous gage data by a method of prediction that includes averaging, interpolation, or correlation.

**Extremes**—The maximum and minimum hourly and daily discharges recorded in the date range listed in the period of record.

**Final Data**—Provisional data that have been checked for completeness and accuracy and may have been adjusted and corrected based on observations.

**Gage**—An instrument or device used to measure a medium's magnitude or position, such as water elevation or velocity.

**Gage-Height (gh)**—The height of water at a gage with no vertical datum reference applied.

**Gaging Station**—A particular location in a stream, canal, lake, pipe, or reservoir where systematic observations of hydrologic data are obtained.

**Global Positioning System (gps)**—A system of orbiting satellites and receiving devices used to compute positions on the earth.

**Hydrologic Unit Code (huc)**—A geographic area representing part or all of a surface drainage basin or distinct hydrologic feature that is represented as an eight digit number.

**Latitude**—The angular distance north or south of the earth's equator, measured in degrees along a meridian, as on a map or globe.

**Longitude**—The angular distance on the earth's surface, measured east or west from the prime meridian at Greenwich, England, to the meridian passing through a position, measured in degrees.

**Location**—The location of the gaging station with respect to physical features in the vicinity, and with respect to the reference plane mentioned in the station name.

**Meridian**—Lines measuring the distance east and west around the earth at right angles to the equator. Meridians are great circles of the earth passing through both poles also known as lines of *Longitude*.

**Maximum Discharge**—The maximum reported hourly or daily discharge for the calendar year.

**Minimum Discharge**—The minimum reported hourly or daily discharge for the calendar year.

**Negative Discharge**—The volume of water flowing in the opposite direction of normal flow. A negative discharge is subtracted from discharge and acre-feet totals.

**Period of Record**—A period for which published records exist for a gaging station.

**Provisional Data**—Data collected in real-time that have received little or no review. Inaccuracies in data may be present because of instrument malfunctions or physical changes at the measurement location. Significant revisions to the data may result upon review and computation of final data record.

**Quarter-quarter**—A method used to subdivide *sections*; each section is divided into four quarter sections: southeast, southwest, northeast, and northwest. Each subdivided section is then divided again into four quarter sections giving a total of 16 quadrants per section.

**Real-Time Data**—Provisional data that have been computed, and made available immediately.

**River Mile**—The curvilinear distance, in miles, measured upstream from the beginning of the stream along the path of the stream.

**Section**—A unit of land area, generally equal to one square mile or 640 acres. The section is part of a description of the location of land using the Public Land Survey System (PLSS) of the United States Government.

**Sensor**—Any device that senses a change in a physical or chemical quantity, and provides an electrical output for measurement by a datalogger.

**Stage**—The height of water above stream bed or an arbitrary datum.

**Stage-Discharge Relationship**—The relationship between gage height, and the volume of water, per unit of time, flowing in a channel.

**Township**—A territorial subdivision, generally considered six miles long, six miles wide, and containing 36 *sections*. The township designation is part of a description of the location of land using the PLSS, and

includes the 40-acre subdivision within a *quarter, section*, township, and range. The PLSS is based on the concept of a township as a square parcel of land six miles on each side. Its location is established as being so many six-mile units east of a north-south line (called a meridian), and so many six-mile units north or south of an east-west line (called the baseline). The township is described by township and range (e.g., T. 4 N., R. 23 E.). Each township is further divided into 36 parts called sections, each approximately one mile square in area.

**Transducer**—Any device that converts energy from one form to another, as from acoustic energy to electric or mechanical energy.

**Velocity-Index**—Continuous velocity measurements made from an in-situ velocity sensor that measures a sample volume of a stream. Velocity-Index measurements are required when the channel has poor control or experiences backwater conditions.

**Velocity-Index Relationship**—The relationship between an index velocity and the mean stream velocity, computed from a discharge measurement, flowing in a channel.

**World Geodetic System of 1984** —The World Geodetic System of 1984 is the datum that is used by the GPS. The datum is defined and maintained by the United States National Geospatial-Intelligence Agency.



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## **Disclaimer**

The equipment manufacturer trade names mentioned in this report do not indicate endorsement by the United States Department of the Interior or the Bureau of Reclamation.

## Notes