COLORADO RIVER MAIN STEM

09429490 COLORADO RIVER ABOVE IMPERIAL DAM, AZ-CA

LOCATION.--Lat 32°52'59", long 114°27'55", at Imperial Dam. The Arizona end of the dam is in SW1/4NW1/4 sec. 30, T.6 S., R.21 W., Gila and Salt River meridian, Yuma County, Hydrologic Unit 15030104; the California end is in NW1/4SW1/4 sec. 9, T.15 S., R.24 E., San Bernardino meridian, Imperial County, Hydrologic Unit 15030104. Imperial Dam is 5 mi upstream from Laguna Dam, 15 mi northeast of Yuma, AZ, 90 mi downstream from Palo Verde Dam, and 147 mi downstream from Parker Dam.

DRAINAGE AREA.--188,500 mi^2, approximately, including 3,959 mi^2 in Great Divide basin in southern Wyoming, which is noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--1903–34 (yearly discharge only, published in WSP 1313), July 1934 to current year (monthly discharge only Oct. 1942 to Sept. 1979). Prior to Oct. 1942 published as "near Picacho, Ca." Oct. 1942 to Sept. 1971 published as "at Imperial Dam" (monthly discharge shown as "flow reaching Imperial Dam," listed as supplement to "flow passing Imperial Dam").

GAGE.--None. This record is synthesized from records of several other stations (see REMARKS). July 13, 1934, to Sept. 30, 1942, water-stage recorder at site 14.5 mi upstream at datum 167.38 ft above sea level.

REMARKS.--Records show flow of Colorado River reaching Imperial Dam, and are based on combined daily total flow of Colorado River below Imperial Dam (sta 09429500), All-American Canal near Imperial Dam (sta 09523000), Gila Gravity Main Canal at Imperial Dam (sta 09522500), and diversions to Mittry Lake (sta 09522400). Records for 1903–34 and for Oct. 1942 to Sept. 1960 were computed as combined flow of Colorado River at Yuma (sta 09521000) and the canals diverting at Imperial and Laguna Dams, less the flow of Gila River near Dome (sta 09520500); for some of these periods drainage and waste return flows and channel losses between the gaging stations and Imperial Dam were considered, and for other periods they were neglected. Records for Oct. 1960 to Sept. 1979 are based on combined monthly total flow of same stations on which daily flows are currently based. Records for July 1934 to Sept. 1942 show daily discharge of Colorado River at gaging station near Picacho, CA, water withdrawals, and diversions for irrigation, municipal, and industrial uses, and return flows from irrigated areas. Diversions to Mittry Lake, which began June 23, 1970, are included in river records in table below. Additional regulation, beginning Jan. 31, 1966, to equalize supplies for downstream water users, is provided by pumped storage in reservoir on Senator Wash, about 2 mi upstream from Imperial Dam. Monthend contents of Senator Wash Reservoir—capacity, 13,840 acre-ft—is given in table below.

COOPERATION.--Records of Sparling meter readings of diversion to Mittry Lake furnished by Imperial Irrigation District and contents of Senator Wash Reservoir furnished by Bureau of Reclamation.

EXTREMES FOR PERIOD OF 1934-2003.--Maximum discharge, 40,800 ft^3/s Sept. 5, 1939; minimum, 538 ft^3/s Aug. 3, 1934; minimum daily since regulation of Hoover Dam began, 1,450 ft^3/s Feb. 17, 1935.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8250	6510	5510	4330	6150	5040	12800	11000	7630	10200	8890	7080
2	8120	5970	6140	4940	5540	5610	12300	10600	9190	10400	7810	7620
3	8200	5690	5610	5040	6900	7070	12400	8920	9610	10100	7240	7680
4	7800	6630	5590	4870	7240	8330	11900	9700	9670	9440	8580	7720
5	7500	6550	6050	4400	7360	8290	10700	10100	9300	8870	8620	7900
6	7060	6690	6230	5590	7240	9270	11300	10700	9820	8270	8660	7160
7	7790	7030	5420	5610	6860	9130	12200	10300	9050	9650	8840	6160
8	8130	6500	5480	5670	6210	8590	12300	10200	8030	9970	8920	7400
9	8280	6040	5440	5690	6000	8520	12400	9310	9670	10200	8070	7800
10	8370	5650	5250	5690	6870	10500	12000	7590	9990	10700	7050	7860
11	8340	6580	5240	5610	6820	10500	11700	7310	10200	10500	8700	7520
12	7390	6740	5390	5420	6310	10500	10500	9050	10200	9820	8820	7720
13	6780	7040	5520	5600	5610	10100	10100	9610	9920	9140	8960	7620
14	7650	7340	5320	5830	6140	9550	11600	9750	8690	10600	9160	7090
15	7800	7220	4930	5790	4780	9020	11900	9740	7790	10400	8580	8510
16	7920	6380	5650	5920	4770	8860	12300	9150	9060	10500	7270	8260
17	7520	5770	5910	5920	5120	10400	12300	7890	9550	9970	6550	8520
18	7480	6620	5880	6230	6320	10000	11100	7480	9800	9830	7760	8560
19	7680	6640	5810	6480	5930	9210	10400	9460	9920	8800	8960	8100
20	6860	6670	5550	6500	5850	9490	10200	9800	10000	8180	8290	7250
21	6950	6710	5510	6140	6090	9530	10800	9920	9080	9570	7820	6880
22	7190	6520	4590	6100	5680	9420	11700	10000	8350	10100	7460	8020
23	7000	6400	5190	6180	5750	8850	11400	9800	9450	10600	6780	8240
24	6820	5790	4100	5790	7510	10900	11100	8730	9610	10400	6300	8320
25	6510	6730	3320	5500	7770	11300	10500	7880	9530	10000	7260	8280
26	6010	6820	4520	4980	8230	11300	10000	9360	9880	8900	8120	8480
27	5540	6100	4650	6000	6280	11200	9780	10100	9990	8210	7720	7350
28	6660	4960	4380	6360	5060	10700	10900	10300	8980	9560	7540	7180
29	7460	5400	4470	6740	---	10800	11100	10100	8420	9450	7460	8040
30	7470	5270	5240	6970	---	11100	11100	9560	10300	9380	6510	8540
31	7330	---	4340	6780	---	12400	---	8430	---	9230	6140	---
TOTAL	229860	190960	162230	178670	176390	295480	340780	291840	280680	300940	244840	232860
MEAN	7415	6365	5233	5764	6300	9532	11360	9414	9356	9708	7898	7762
MAX	8370	7340	6230	6970	8230	12400	12800	11000	10300	10700	9160	8560
MIN	5540	4960	3320	4330	4770	5040	9780	7310	7630	8180	6140	6160
AC-FT	455900	378800	321800	354400	349900	586100	675900	578900	556700	596900	485600	461900
(*)	9042	5527	1968	5430	7674	2763	2763	7908	5268	6274	5149	5391
(**)	922	893	922	922	778	861	774	861	952	984	922	893

CAL YR 2002 TOTAL 3096000 MEAN 8482 MAX 12300 MIN 3320 AC-FT 6141000 (**) 9770
WTR YR 2003 TOTAL 2925530 MEAN 8015 MAX 12800 MIN 3320 AC-FT 5803000 (**) 10680

(*) Monthend contents, in acre-feet, for Senator Wash Reservoir.
(**) Diversion, in acre-feet, to Mittry Diversion (09522400)

09429490 COLORADO RIVER ABOVE IMPERIAL DAM, AZ-CA—CONTINUED

WATER-QUALITY RECORDS

LOCATION.--Water samples collected above trash racks at All-American Canal headworks at west end of Imperial Dam.

PERIOD OF RECORD.--Aug. 1969 to Sept. 1992, Aug. 1996 to Sept. 2000 and current water year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Oct. 1969 to Sept. 2000.

WATER TEMPERATURE: Oct. 1974 to Sept. 2000.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum observed, 1,970 microsiemens, Aug. 23, 1977; minimum observed, 866 microsiemens, Sept. 12, 1986.

WATER TEMPERATURE: Maximum observed, 33.0°C, Aug. 20, 1977, Aug. 28, 29, 1981; minimum recorded, 6.5°C Dec. 25, 26, 1990.

INSTRUMENTATION.--Streamflow not gaged by USGS.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Sample type	Instantaneous discharge, cfs (00061)	Turbidity, NTU (00076)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Noncarb hardness, wat flt field, mg/L as CaCO3 (00904)
NOV													
20...	0800	9	1100	1.8	761	8.2	82	8.2	1100	19.0	15.5	310	170
20...	0805	7	--	--	--	--	--	--	--	--	--	--	--
JAN													
28...	0715	9	5390	3.1	758	9.0	88	8.2	1090	9.0	14.5	320	180
28...	0720	7	--	3.3	--	--	--	--	--	--	--	320	--
28...	0721	7	--	--	--	--	--	--	--	--	--	--	--
MAY													
22...	0745	9	8070	2.3	756	6.4	79	8.2	1120	30.0	25.0	310	160
22...	0750	7	--	--	--	--	--	--	--	--	--	--	--
AUG													
21...	0800	9	6330	1.3	758	5.1	66	8.1	1180	32.0	29.0	330	180
21...	0810	7	--	--	--	--	--	--	--	--	--	--	--

Date	Calcium water, fltrd, mg/L (00915)	Calcium water unfltrd recoverable, mg/L (00916)	Magnesium, water, fltrd, mg/L (00925)	Magnesium, water, unfltrd recoverable, mg/L (00927)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Alkalinity, wat flt inc tit field, mg/L as CaCO3 (39086)	Bicarbonate, wat flt incrm. titr., field, mg/L (00453)	Carbonate, wat flt incrm. titr., field, mg/L (00452)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Sulfate water, fltrd, mg/L (00945)
NOV													
20...	77.0	79.0	29.0	29.0	4.50	3	110	142	170	<1	98.0	.4	270
20...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN													
28...	79.0	82.0	30.0	30.0	4.40	2	100	148	177	<1	97.0	.3	270
28...	78.0	82.0	30.0	30.0	4.40	2	100	--	--	--	97.0	.4	270
28...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY													
22...	77.0	76.0	28.0	29.0	4.60	3	110	146	175	<1	99.0	.4	260
22...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG													
21...	79.0	79.0	31.0	31.0	4.40	3	120	148	176	<1	110	.4	270
21...	--	--	--	--	--	--	--	--	--	--	--	--	--

Date	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/acre-ft (70303)	Residue on evap. at 180degC wat flt mg/L (70300)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water unfltrd mg/L (71845)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water unfltrd mg/L as N (00630)	Organic nitrogen, water, unfltrd mg/L (00605)	Phosphorus, water, unfltrd mg/L (00665)	Total nitrogen, water, unfltrd mg/L (00600)	Total nitrogen, water, unfltrd mg/L as NO3 (71887)	COD, high level, water, unfltrd mg/L (00340)
NOV													
20...	673	.97	714	3	.40	.01	.01	.220	.39	<.02	.62	2.7	8
20...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN													
28...	668	.95	701	8	.20	--	<.01	.250	--	<.02	.45	2.0	5
28...	669	.96	704	8	.20	--	<.01	.250	--	<.02	.45	2.0	9
28...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY													
22...	665	.99	726	7	.70	.01	.01	.260	.69	<.02	.96	4.2	9
22...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG													
21...	703	1.02	751	3	.20	--	<.01	.140	--	<.02	.34	1.5	12
21...	--	--	--	--	--	--	--	--	--	--	--	--	--

09429490 COLORADO RIVER ABOVE IMPERIAL DAM, AZ-CA—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	E coli, m-TEC MF, water, col/ 100 mL (31633)	Fecal coli-form, M-FC 0.7u MF col/ 100 mL (31625)	Anti-mony, water, fltrd, ug/L (01095)	Anti-mony, water, unfltrd ug/L (01097)	Arsenic water, fltrd, ug/L (01000)	Arsenic water unfltrd ug/L (01002)	Barium, water, fltrd, ug/L (01005)	Barium, water, unfltrd recover -able, ug/L (01007)	Beryll-ium, water, fltrd, ug/L (01010)	Beryll-ium, water, unfltrd recover -able, ug/L (01012)	Boron, water, fltrd, ug/L (01020)	Boron, water, unfltrd recover -able, ug/L (01022)	Cadmium water, fltrd, ug/L (01025)
NOV													
20...	E4k	E7k	<1	<1	2	2	96.0	100	<1	<1	148	150	<.5
20...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN													
28...	E3k	E10k	<1	<1	3	5	100	99.0	<1	<1	143	142	<.5
28...	--	--	<1	<1	2	5	99.0	99.0	<1	<1	145	141	<.5
28...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY													
22...	--	E7k	<1	<1	3	3	110	110	<1	<1	151	149	<.5
22...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG													
21...	E8k	--	<1	<1	3	3	110	110	<1	<1	166	163	<.5
21...	--	--	--	--	--	--	--	--	--	--	--	--	--

Date	Cadmium water, unfltrd ug/L (01027)	Chrom-ium, water, fltrd, ug/L (01030)	Chrom-ium, water, unfltrd recover -able, ug/L (01034)	Copper, water, fltrd, ug/L (01040)	Copper, water, unfltrd recover -able, ug/L (01042)	Iron, water, fltrd, ug/L (01046)	Iron, water, unfltrd recover -able, ug/L (01045)	Lead, water, fltrd, ug/L (01049)	Lead, water, unfltrd recover -able, ug/L (01051)	Mangan-ese, water, fltrd, ug/L (01056)	Mangan-ese, water, unfltrd recover -able, ug/L (01055)	Mercury water, fltrd, ug/L (71890)	Mercury water, unfltrd recover -able, ug/L (71900)
NOV													
20...	<.5	<1	<1	<2	<2	<2	99	<2	<2	2	16	<.10	<.1
20...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN													
28...	<.5	<1	<1	<2	<2	<2	204	<2	<2	3	31	<.10	<.1
28...	<.5	<1	<1	<2	<2	<2	206	<2	<2	3	31	<.10	<.1
28...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY													
22...	<.5	<1	<1	<2	<2	<2	187	<2	<2	3	27	<.10	<.1
22...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG													
21...	<.5	<1	<1	<2	<2	<2	77	<2	<2	2	15	<.1	<.1
21...	--	--	--	--	--	--	--	--	--	--	--	--	--

Date	Nickel, water, fltrd, ug/L (01065)	Nickel, water, unfltrd recover -able, ug/L (01067)	Selen-ium, water, fltrd, ug/L (01145)	Selen-ium, water, unfltrd ug/L (01147)	Silver, water, fltrd, ug/L (01075)	Silver, water, unfltrd recover -able, ug/L (01077)	Stront-ium, water, unfltrd recover -able, ug/L (01082)	Thall-ium, water, fltrd, ug/L (01057)	Thall-ium, water, unfltrd ug/L (01059)	Zinc, water, fltrd, ug/L (01090)	Zinc, water, unfltrd recover -able, ug/L (01092)	Suspnd. sedi-ment, sieve diametr percent <.063mm (70331)	Sus-pended sedi-ment concen-tration mg/L (80154)
NOV													
20...	2	2	2	2	<1	<1	1130	<2	<2	3	2	--	4
20...	--	--	--	--	--	--	--	--	--	--	--	89	4
JAN													
28...	<1	<1	2	2	<1	<1	1140	<2	<2	<2	<2	98	8
28...	<1	<1	2	2	<1	<1	1140	<2	<2	3	<2	--	--
28...	--	--	--	--	--	--	--	--	--	--	--	96	9
MAY													
22...	<1	12	2	2	<1	<1	1110	<2	<2	<2	3	80	13
22...	--	--	--	--	--	--	--	--	--	--	--	79	15
AUG													
21...	<1	4	2	2	<1	<1	1150	<2	<2	4	5	--	--
21...	--	--	--	--	--	--	--	--	--	--	--	--	--

Date	Sus-pended sedi-ment load, tons/d (80155)
NOV	
20...	12
20...	--
JAN	
28...	116
28...	--
28...	--
MAY	
22...	283
22...	--
AUG	
21...	--
21...	--

Remark codes used in this report:
< -- Less than
Value qualifier codes used in this report:
k -- Counts outside acceptable range

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Water-quality measurements in the following table were made as part of the ADEQ Fixed-Station Network Program. The following analyses are quality-assurance samples processed during the 2003 sampling period and are defined in the introductory text section titled "Water-Quality Control Data".

Date	Time	Sample type	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Sodium, water, fltrd, mg/L (00930)	Aluminum, water, fltrd, ug/L (01106)	Barium, water, fltrd, ug/L (01005)	Beryllium, water, fltrd, ug/L (01010)	Cadmium water, fltrd, ug/L (01025)	Chromium, water, fltrd, ug/L (01030)	Copper, water, fltrd, ug/L (01040)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)
NOV													
20...	0808	2	<.02	<.03	<.1	<3	<.5	<1	<.5	<1	<2	<2	<2

Date	Manganese, water, fltrd, ug/L (01056)	Nickel, water, fltrd, ug/L (01065)	Zinc, water, fltrd, ug/L (01090)
NOV			
20...	<1	2	<2

Remark codes used in this report:
< -- Less than