Water-Data Report 2012

09448500 GILA RIVER AT HEAD OF SAFFORD VALLEY, NEAR SOLOMON, AZ

Upper Gila Basin
Upper Gila-San Carlos Reservoir Subbasin

LOCATION.--Lat 32°52′06″, long 109°30′38″ referenced to North American Datum of 1927, in SE ¼ NE ¼ sec.31, T.6 S., R.28 E., Graham County, AZ, Hydrologic Unit 15040005, on left bank 0.6 mi downstream from intake of Brown Canal, 8 mi northeast of Solomon, and 17 mi downstream from San Francisco River. Records include flow of Brown Canal, which is measured 2,000 ft downstream from intake.

DRAINAGE AREA.--7,896 mi^2.

SURFACE-WATER RECORDS

PERIOD OF RECORD.--Apr. 1914 to current year. Monthly discharge only for some periods, published in WSP 1313. Prior to Oct. 1932 and Oct. 1940 to Sept. 1949 published as "near Solomonsville" and Oct. 1932 to Oct. 1933 and May 1935 to Sept. 1940 as "below Bonita Creek near Solomonsville."

REVISED RECORDS.--WSP 1059: 1914, 1916-17, 1923(M), 1924-25, 1927, 1929-31(M). WSP 1179: 1915, 1918-19(M). WSP 1313: 1934. WSP 1733: 1923.

GAGE.--Water-stage recorder. Datum of gage is 3,059.92 ft above sea level. Prior to July 8, 1980, at datum 4.96 ft higher. See WSP 1733 for history of changes prior to Jan. 1, 1941. Supplementary water-stage recorder and Parshall flume on Brown Canal.

COOPERATION.--Record for Brown Canal furnished by Gila Water Commissioner.

REMARKS.--Records good, no estimated daily discharges. Records show water reaching head of Safford Valley and include water diverted to Brown Canal. Diversions above station for mining, municipal use, and for irrigation of about 17,500 acres, much of it by pumping from ground water.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 132,000 ft^3/s Oct. 2, 1983, gage height, 20.8 ft, from rating curve extended above 52,000 ft^3/s on basis of slope-area measurements at 14.40 ft and 20.8 ft; minimum, 11 ft^3/s June 25, 1956.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,890 ft^3/s Sept. 7, at 1230, gage height, 9.59 ft; minimum daily discharge, 24 ft^3/s June 19 and 20.

09448500 GILA RIVER AT HEAD OF SAFFORD VALLEY, NEAR SOLOMON, AZ—Continued

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012
DAILY MEAN VALUES

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	64	78	147	232	249	220	181	63	41	25	150	122
2	73	72	148	229	246	218	173	61	41	26	138	105
3	468	72	153	234	244	216	176	61	39	29	113	95
4	156	74	158	238	239	220	178	59	39	32	114	113
5	173	77	158	242	237	222	170	57	39	197	92	83
6	194	83	160	242	233	225	168	55	38	110	86	165
7	137	91	158	237	228	222	165	55	38	89	96	911
8	144	97	163	236	223	215	160	56	37	102	99	435
9	144	102	164	235	213	210	160	61	36	121	86	295
10	140	102	160	234	207	214	150	122	33	116	85	230
11	132	104	156	233	204	218	140	74	32	93	85	239
12	118	106	156	232	201	224	134	67	32	85	81	180
13	112	107	217	228	197	223	130	67	31	70	74	200
14	103	109	409	228	195	213	131	66	30	63	67	213
15	96	112	312	225	197	202	132	59	30	57	68	191
16	90	115	337	221	203	195	139	54	30	54	80	181
17	83	114	325	246	215	190	138	53	30	56	92	160
18	81	109	298	255	221	185	137	48	28	160	120	144
19	79	113	283	259	219	189	132	46	26	98	641	127
20	77	115	308	285	223	201	118	46	25	94	674	111
21	77	114	291	290	228	205	107	47	26	94	306	99
22	77	118	281	283	225	201	98	44	26	181	199	91
23	74	126	276	273	222	196	90	44	28	142	206	85
24	72	131	273	268	221	189	83	43	28	190	374	78
25	71	137	268	268	217	185	77	43	26	128	365	73
26	71	142	259	262	216	186	72	40	25	137	311	70
27	70	159	254	261	214	190	70	39	25	117	392	68
28	73	158	252	261	214	198	70	40	26	237	271	67
29	74	154	247	256	214	199	70	39	26	259	215	71
30	75	149	242	253	---	189	66	39	25	240	176	71
31	77	---	234	255	---	184	---	41	---	225	142	---
Total	3,475	3,340	7,247	7,701	6,365	6,344	3,815	1,689	936	3,627	5,998	5,073
Mean	112	111	234	248	219	205	127	54.5	31.2	117	193	169
Max	468	159	409	290	249	225	181	122	41	259	674	911
Min	64	72	147	221	195	184	66	39	25	25	67	67
Med	81	110	247	242	219	202	133	54	30	102	120	118
Ac-ft	6,890	6,620	14,370	15,270	12,620	12,580	7,570	3,350	1,860	7,190	11,900	10,060
Cfsm	0.01	0.01	0.03	0.03	0.03	0.03	0.02	0.01	0.00	0.01	0.02	0.02

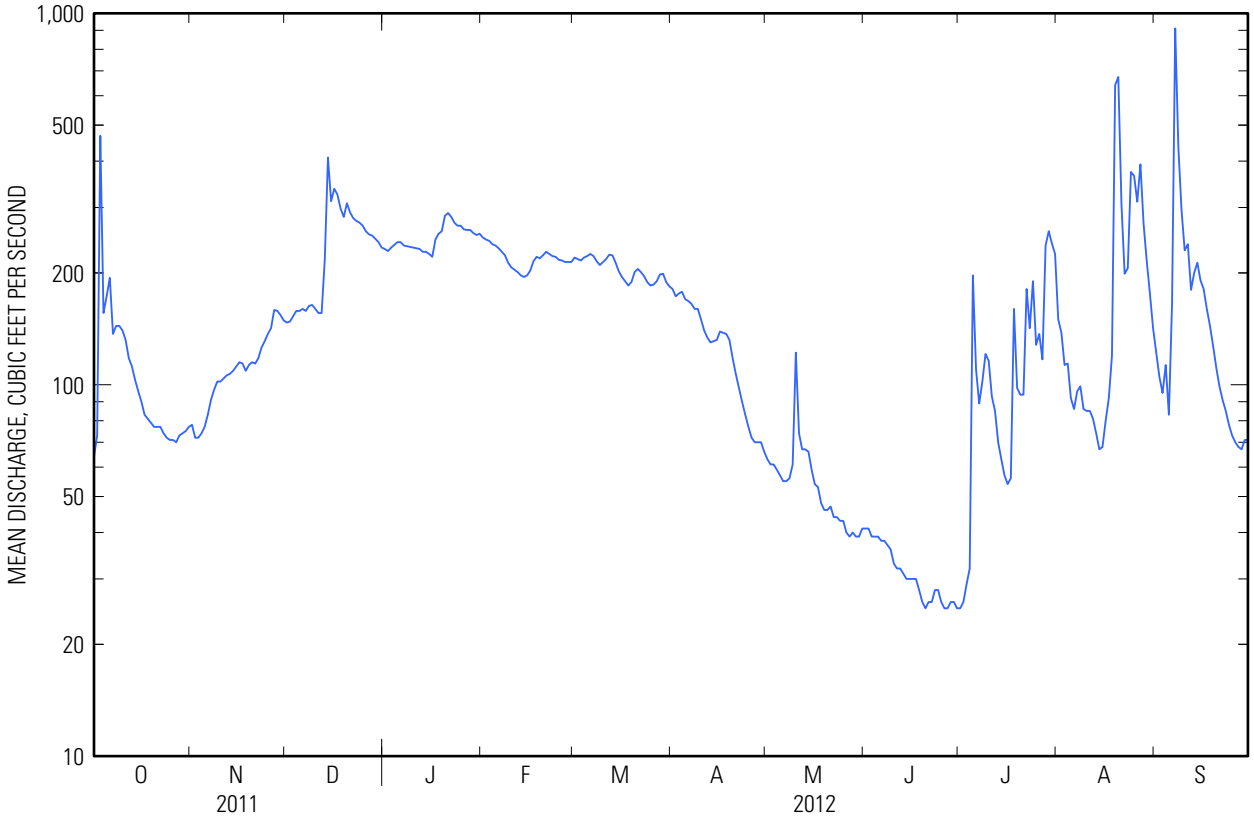
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1921 - 2012, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	363	265	492	690	773	832	564	287	103	199	504	382
Max	7,447	2,230	5,798	13,990	5,679	3,629	2,775	2,038	716	736	2,762	2,081
(WY)	(1984)	(1979)	(1979)	(1993)	(2005)	(1991)	(1973)	(1973)	(1992)	(1921)	(2006)	(1975)
Min	39.9	48.6	60.1	92.8	102	82.3	63.8	37.8	19.7	43.2	55.8	35.9
(WY)	(1957)	(1957)	(1957)	(1954)	(1954)	(1971)	(1971)	(1956)	(1956)	(2003)	(2009)	(1956)

09448500 GILA RIVER AT HEAD OF SAFFORD VALLEY, NEAR SOLOMON, AZ—Continued

SUMMARY STATISTICS

	Calendar Year 2011		Water Year 2012		Water Years 1921 - 2012	
Annual total	48,319		55,610			
Annual mean	132		152		454	
Highest annual mean					2,229	1993
Lowest annual mean					101	1951
Highest daily mean	608	Aug 16	911	Sep 7	90,000	Oct 2, 1983
Lowest daily mean	27	Jun 28	25	Jun 20	13	Jun 25, 1956
Annual seven-day minimum	28	Jun 28	25	Jun 25	15	Jun 22, 1956
Annual runoff (ac-ft)	95,840		110,300		328,800	
Annual runoff (cfsm)	0.017		0.019		0.057	
10 percent exceeds	234		257		960	
50 percent exceeds	114		138		175	
90 percent exceeds	48		40		63	



09448500 GILA RIVER AT HEAD OF SAFFORD VALLEY, NEAR SOLOMON, AZ—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Jan. 1976 to Oct. 1981, Oct. 1988 to current year.

WATER-QUALITY DATA
WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012

Part 1 of 7

[%, percent; $CaCO_3$, calcium carbonate; MF, membrane filter; N, nitrogen; NTRU, nephelometric turbidity ratio unit; P, phosphorus; col/100 mL, colonies per 100 milliliters; ft^3/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; nm, nanometers; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; <, less than; A, average; E, estimated; k, counts outside acceptable range; p, value reported is preferred; r, value verified by rerun, same method]

Sample date-time	Medium name	Sample type	Barometric pressure, mm Hg (00025)	Temperature, air, °C (00020)	Discharge, instantaneous, ft^3/s (00061)	Dissolved oxygen, water, unfiltered, mg/L (00300)	Dissolved oxygen, water, unfiltered, % saturation (00301)	pH, water, unfiltered, field, standard units (00400)	Specific conductance, water, unfiltered, µS/cm at 25°C (00095)
12-14-2011 1005	Surface water	Regular	690	10.5	438	10.2	98	8.1	604
03-21-2012 1200	Surface water	Regular	687	19.0	201	10.1	105	8.4	848
06-13-2012 1005	Surface water	Regular	683	32.5	29	7.8	102	8.2	1,580
08-22-2012 0955	Surface water	Regular	686	29.0	188	6.5	88	7.8	632

WATER-QUALITY DATA
WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012

Part 2 of 7

[%, percent; $CaCO_3$, calcium carbonate; MF, membrane filter; N, nitrogen; NTRU, nephelometric turbidity ratio unit; P, phosphorus; col/100 mL, colonies per 100 milliliters; ft^3/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; nm, nanometers; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; <, less than; A, average; E, estimated; k, counts outside acceptable range; p, value reported is preferred; r, value verified by rerun, same method]

Sample date-time	Temperature, water, °C (00010)	Turbidity, water, unfiltered, broad band light source (400-680 nm), detectors at multiple angles including 90 +/- 30 degrees, ratiometric correction, NTRU (63676)	Dissolved solids dried at 180°C, water, filtered, mg/L (70300)	Dissolved solids, water, filtered, sum of constituents, mg/L (70301)	Dissolved solids, water, filtered, tons per acre-foot (70303)	Hardness, water, mg/L as $CaCO_3$ (00900)	Noncarbonate hardness, water, filtered, field, mg/L as $CaCO_3$ (00904)	Suspended solids, water, unfiltered, mg/L (00530)	Calcium, water, filtered, mg/L (00915)
12-14-2011 1005	9.0	1,100	362	321	0.49	142	12	1,470	41.2
03-21-2012 1200	12.5	37	495	454	.67	197	33	71	58.5
06-13-2012 1005	23.3	E 6.8	900	822	1.22	278	144	< 15	79.9
08-22-2012 0955	25.5	13,700	403	470	.55	155	A 39	10,200	48.0

09448500 GILA RIVER AT HEAD OF SAFFORD VALLEY, NEAR SOLOMON, AZ—Continued

WATER-QUALITY DATA
WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012

Part 3 of 7

[%, percent; $CaCO_3$, calcium carbonate; MF, membrane filter; N, nitrogen; NTRU, nephelometric turbidity ratio unit; P, phosphorus; col/100 mL, colonies per 100 milliliters; ft^3/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; nm, nanometers; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; <, less than; A, average; E, estimated; k, counts outside acceptable range; p, value reported is preferred; r, value verified by rerun, same method]

Sample date-time	Calcium, water, unfiltered, recoverable, mg/L (00916)	Magnesium, water, filtered, mg/L (00925)	Magnesium, water, unfiltered, recoverable, mg/L (00927)	Potassium, water, filtered, mg/L (00935)	Sodium adsorption ratio, water, number (00931)	Sodium, water, filtered, mg/L (00930)	Alkalinity, water, filtered, inflection-point, incremental titration method, field, mg/L as $CaCO_3$ (39086)	Bicarbonate, water, filtered, inflection-point, incremental titration method, field, mg/L (00453)	Carbonate, water, filtered, inflection-point incremental titration method, field, mg/L (00452)
12-14-2011 1005	90.8	9.44	27.0	4.13	2.28	62.4	129	158	< .1
03-21-2012 1200	61.4	12.3	13.5	5.28	2.79	89.7	163	187	6.1
06-13-2012 1005	78.3	19.0	19.2	10.4	4.98	191	133	160	1.5
08-22-2012 0955	194	8.58	42.8	9.84	2.23	63.9	A 116	A 142	< .1

WATER-QUALITY DATA
WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012

Part 4 of 7

[%, percent; $CaCO_3$, calcium carbonate; MF, membrane filter; N, nitrogen; NTRU, nephelometric turbidity ratio unit; P, phosphorus; col/100 mL, colonies per 100 milliliters; ft^3/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; nm, nanometers; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; <, less than; A, average; E, estimated; k, counts outside acceptable range; p, value reported is preferred; r, value verified by rerun, same method]

Sample date-time	Chloride, water, filtered, mg/L (00940)	Fluoride, water, filtered, mg/L (00950)	Sulfate, water, filtered, mg/L (00945)	Ammonia plus organic nitrogen, water, unfiltered, mg/L as N (00625)	Ammonia, water, filtered, mg/L as N (00608)	Nitrate plus nitrite, water, filtered, mg/L as N (00631)	Organic nitrogen, water, unfiltered, mg/L (00605)	Phosphorus, water, unfiltered, mg/L as P (00665)	Total nitrogen, water, unfiltered, mg/L (00600)
12-14-2011 1005	85.7	1.06	37.7	3.7	< .010	0.415	< 3.7	2.18	4.1
03-21-2012 1200	138	1.29	49.9	.29	< .010	.147	< .29	.13	.44
06-13-2012 1005	317	1.47	123	.15	< .010	< .040	< .15	.05	< .19
08-22-2012 0955	92.5	.70	37.7	32	.013	1.37	32	7.12	33

09448500 GILA RIVER AT HEAD OF SAFFORD VALLEY, NEAR SOLOMON, AZ—Continued

WATER-QUALITY DATA
WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012

Part 5 of 7

[%, percent; $CaCO_3$, calcium carbonate; MF, membrane filter; N, nitrogen; NTRU, nephelometric turbidity ratio unit; P, phosphorus; col/100 mL, colonies per 100 milliliters; ft^3/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; nm, nanometers; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; <, less than; A, average; E, estimated; k, counts outside acceptable range; p, value reported is preferred; r, value verified by rerun, same method]

Sample date-time	Escherichia coli, modified m-TEC MF method, water, col/100 mL (90902)	Barium, water, unfiltered, recoverable, µg/L (01007)	Beryllium, water, filtered, µg/L (01010)	Beryllium, water, unfiltered, recoverable, µg/L (01012)	Cadmium, water, filtered, µg/L (01025)	Cadmium, water, unfiltered, µg/L (01027)	Chromium, water, unfiltered, recoverable, µg/L (01034)	Copper, water, filtered, µg/L (01040)	Copper, water, unfiltered, recoverable, µg/L (01042)
12-14-2011 1005	770	470	< .006	1.90	< .016	0.721	23.1	2.0	104
03-21-2012 1200	E 3 k	62.4	.014	.09	< .016	.043	1.5	1.2	5.3
06-13-2012 1005	E 8 k	86.3	< .006	.03	.023	< .016	< .30	1.4	2.3
08-22-2012 0955	5,400	1,860	.016	8.71	.022	4.99	51.6	4.2	294

WATER-QUALITY DATA
WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012

Part 6 of 7

[%, percent; $CaCO_3$, calcium carbonate; MF, membrane filter; N, nitrogen; NTRU, nephelometric turbidity ratio unit; P, phosphorus; col/100 mL, colonies per 100 milliliters; ft^3/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; nm, nanometers; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; <, less than; A, average; E, estimated; k, counts outside acceptable range; p, value reported is preferred; r, value verified by rerun, same method]

Sample date-time	Lead, water, filtered, µg/L (01049)	Lead, water, unfiltered, recoverable, µg/L (01051)	Manganese, water, unfiltered, recoverable, µg/L (01055)	Mercury, water, filtered, µg/L (71890)	Mercury, water, unfiltered, recoverable, µg/L (71900)	Zinc, water, filtered, µg/L (01090)	Zinc, water, unfiltered, recoverable, µg/L (01092)	Antimony, water, filtered, µg/L (01095)	Antimony, water, unfiltered, µg/L (01097)
12-14-2011 1005	0.059	32.2	1,590	< .005	0.051	< 1.4	85.9	0.130	< .18
03-21-2012 1200	.157	1.48	71.7	< .005	< .005	< 1.4	4.9	.145	< .18
06-13-2012 1005	.028	.32	50.4	< .005	< .005	< 1.4	< 3.0	.154	.41
08-22-2012 0955	.072	288 p	12,600 r	< .005	.223	1.4	389	.516 r	.35 r

09448500 GILA RIVER AT HEAD OF SAFFORD VALLEY, NEAR SOLOMON, AZ—Continued

WATER-QUALITY DATA
WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012

Part 7 of 7

[%, percent; $CaCO_3$, calcium carbonate; MF, membrane filter; N, nitrogen; NTRU, nephelometric turbidity ratio unit; P, phosphorus; col/100 mL, colonies per 100 milliliters; ft^3/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; nm, nanometers; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; <, less than; A, average; E, estimated; k, counts outside acceptable range; p, value reported is preferred; r, value verified by rerun, same method]

Sample date-time	Arsenic, water, filtered, µg/L (01000)	Arsenic, water, unfiltered, µg/L (01002)	Boron, water, unfiltered, recoverable, micrograms per liter (01022)	Selenium, water, unfiltered, µg/L (01147)	Suspended sediment concen-tration, mg/L (80154)	Suspended sediment discharge, tons per day (80155)
12-14-2011 1005	2.7	5.8	79	0.491	1,890	2,240
03-21-2012 1200	2.7	3.0	76	.272	101	55
06-13-2012 1005	4.3	4.2	150	.199	13	1.0
08-22-2012 0955	5.1 p	20.3	76	1.15	8,490	4,310