



Water-Data Report 2009

05372995 SOUTH FORK ZUMBRO RIVER AT ROCHESTER, MN

Upper Mississippi Basin
Zumbro Subbasin

LOCATION.--Lat 44°03'42", long 92°27'58" referenced to North American Datum of 1927, Olmsted County, MN, Hydrologic Unit 07040004, on left bank 50 ft downstream from 37th Street bridge, 0.2 mi upstream from wastewater treatment plant, and 2.0 mi downstream from Silver Lake Dam.

DRAINAGE AREA.--303 mi².

SURFACE-WATER RECORDS

PERIOD OF RECORD.--March 1981 to current year.

GAGE.--Water-stage recorder. Datum of gage is 950.00 ft above sea level (NGVD of 1929). Prior to Mar. 1981, recording gage at site 0.6 miles downstream. Record published as "near Rochester, MN" and under downstream order number 05373000. Peak flow record is considered equivalent at both sites but daily-mean streamflows are not.

REMARKS.--Record good except those for estimated daily-mean discharge, which are fair. Some regulation at times from Silver Lake.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 6, 1978, reached a stage of about 28.0 ft, on upstream side of bridge at present gage location, discharge 30,500 ft³/s. This is the highest known stage since at least 1908. Peakflows at this current site (05372995) and previous site (05373000) located about 1/3 mile downstream are considered equivalent. Peakflow database for 05372995 contains peaks for 05373000 as well.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,300 ft³/s and (or) maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb 11	0000	*1,070	*5.84

Minimum discharge, 22 ft³/s, Sept. 16, gage height, 1.79 ft, due in part to regulation.

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DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2008 TO SEPTEMBER 2009
DAILY MEAN VALUES

[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	58	61	67	57	42	92	112	166	128	113	62	43
2	57	60	57	56	41	90	107	150	117	107	55	42
3	55	60	71	54	36	84	101	138	109	101	61	39
4	54	60	55	54	37	94	98	129	102	103	53	38
5	60	80	62	53	36	119	94	152	97	94	51	38
6	60	117	64	49	38	336	91	161	129	87	48	36
7	197	96	e61	49	47	417	84	176	114	133	79	35
8	153	98	59	46	45	276	85	195	252	123	193	35
9	110	88	59	46	75	200	84	190	245	107	118	34
10	93	83	56	46	575	247	81	180	250	98	78	33
11	82	91	59	46	969	293	78	169	217	90	73	33
12	75	104	55	46	458	209	71	154	194	80	66	34
13	74	132	58	43	258	199	74	155	184	77	66	33
14	71	120	68	e39	211	183	54	146	166	73	56	32
15	80	113	53	e38	170	209	66	138	153	68	53	33
16	71	103	e48	e36	162	257	65	132	190	63	112	31
17	71	92	e47	e38	158	284	63	122	256	60	64	30
18	69	85	47	e38	145	247	66	113	444	59	55	31
19	69	86	48	38	134	204	76	106	524	57	124	30
20	67	82	50	34	103	168	74	99	367	55	91	31
21	62	64	46	46	107	166	68	92	308	117	92	28
22	67	79	e42	45	89	164	65	89	266	105	73	42
23	64	77	e43	44	86	164	63	88	229	70	66	39
24	68	76	e44	e39	91	184	77	86	202	155	60	33
25	66	70	e43	e39	117	180	113	81	188	108	52	72
26	64	65	58	e39	136	170	147	92	169	84	54	47
27	60	69	78	e39	111	142	236	212	166	71	51	42
28	60	73	61	e39	101	135	254	183	143	64	49	43
29	60	65	62	e40	---	127	203	167	130	58	47	38
30	60	77	64	e38	---	118	182	151	122	80	44	36
31	61	---	e58	40	---	119	---	136	---	60	44	---
Total	2,318	2,526	1,743	1,354	4,578	5,877	3,032	4,348	6,161	2,720	2,190	1,111
Mean	74.8	84.2	56.2	43.7	164	190	101	140	205	87.7	70.6	37.0
Max	197	132	78	57	969	417	254	212	524	155	193	72
Min	54	60	42	34	36	84	54	81	97	55	44	28
Ac-ft	4,600	5,010	3,460	2,690	9,080	11,660	6,010	8,620	12,220	5,400	4,340	2,200
Cfs/m	0.25	0.28	0.19	0.14	0.54	0.63	0.33	0.46	0.68	0.29	0.23	0.12

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1981 - 2009, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	162	136	113	78.6	125	339	412	315	316	218	184	180
Max	824	338	358	190	454	760	1,310	735	1,014	663	965	1,075
(WY)	(1987)	(1992)	(1992)	(2007)	(1984)	(1983)	(2001)	(2001)	(1993)	(1993)	(2007)	(1986)
Min	20.0	24.5	21.0	22.5	23.8	109	79.4	88.3	49.0	23.2	24.6	31.5
(WY)	(1990)	(1990)	(1990)	(1990)	(1990)	(2001)	(2000)	(1989)	(1989)	(1988)	(1988)	(1988)

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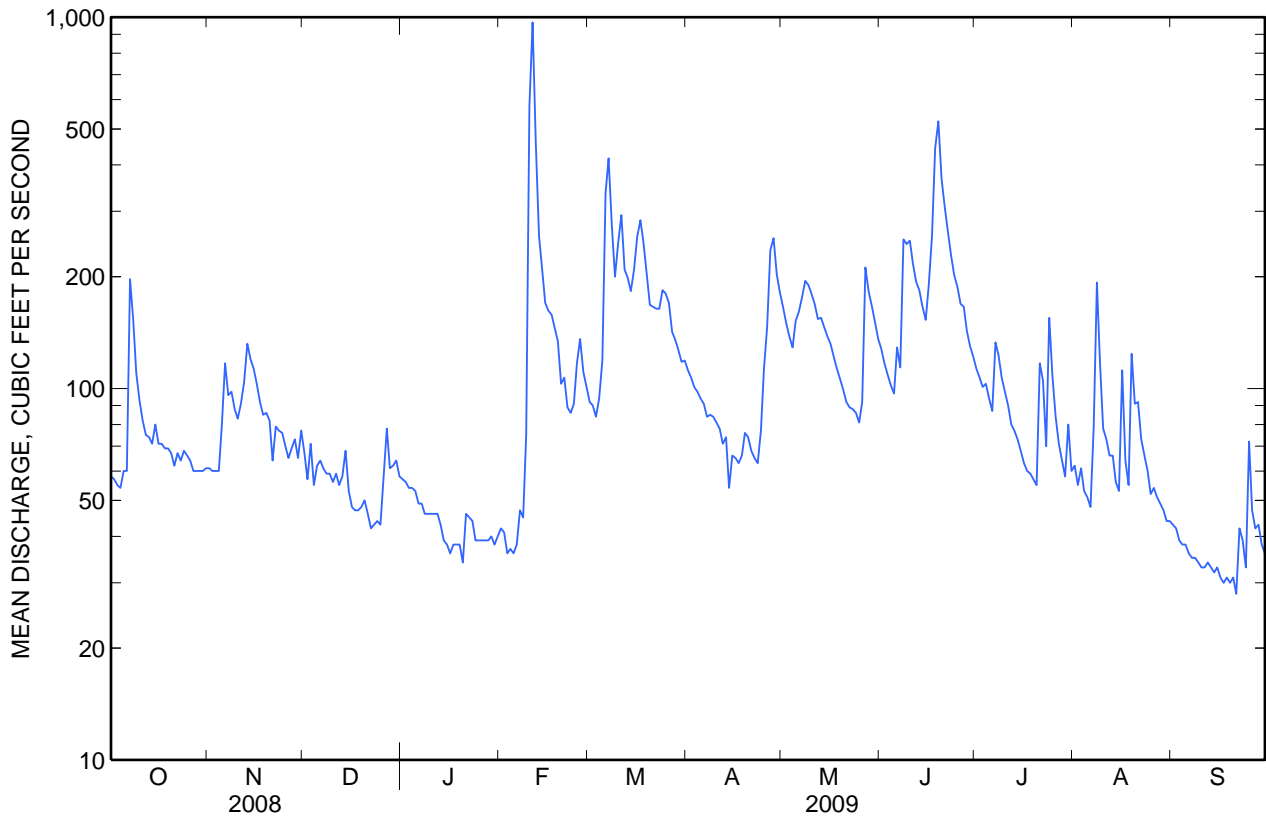
SUMMARY STATISTICS

	Calendar Year 2008		Water Year 2009		Water Years 1981 - 2009	
Annual total	90,155		37,958			
Annual mean	246		104		216	
Highest annual mean					431	1993
Lowest annual mean					87.3	1989
Highest daily mean	4,030	Jun 13	969	Feb 11	9,830	Aug 19, 2007
Lowest daily mean	42	Dec 22	28	Sep 21	12	Sep 12, 1988
Annual seven-day minimum	45	Dec 19	31	Sep 15	14	Sep 8, 1988
Maximum peak flow			1,070	Feb 11	^a 11,500	Aug 19, 2007
Maximum peak stage			5.84	Feb 11	^b 20.77	Sep 21, 1986
Instantaneous low flow			^c 22	Sep 16	^c 10	Oct 23, 1981
Annual runoff (ac-ft)	178,800		75,290		156,400	
Annual runoff (cfsm)	0.813		0.343		0.713	
10 percent exceeds	574		194		458	
50 percent exceeds	102		76		123	
90 percent exceeds	60		39		48	

^a Flood of July 1978 reached a peak discharge of 30,500 ft³/s. Gage then located 1/3 mile downstream (see EXTREMES OUTSIDE PERIOD OF RECORD section, page 1).

^b Prior to levee work done from 1988 to 1990.

^c Due in part to regulation.



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WATER-QUALITY RECORDS

REMARKS.--The U.S. Geological Survey and Minnesota Pollution Control Agency in collaboration with St. Cloud State University and University of St. Thomas collaborated on this study to measure the concentrations of endocrine active chemicals and pharmaceuticals in water samples collected from the effluents from wastewater treatment plants and at sites upstream and downstream of effluent discharge in Minnesota during 2009-2011.

COOPERATION.--Minnesota Pollution Control Agency, St. Cloud State University and University of St. Thomas.

WATER-QUALITY DATA
WATER YEAR OCTOBER 2008 TO SEPTEMBER 2009

Part 1 of 4

[Remark codes: <, less than; E, estimated.]

Date	Time	Medium name	Baro- metric pres- sure, mm Hg (00025)	Dis- solved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conduc- tance, wat unf lab, µS/cm @ 25 degC (90095)	Specif- ic conduc- tance, wat unf µS/cm @ 25 degC (00095)	Temper- ature, deg C (00010)	Turbdty white light, 90+/-30 corrctd NTRU (63676)	Carba- maze- pine- -d10, surrog, wat flt % recvy (90797)
Sep 22...	1119	Surface water	737	5.9	7.7	498	670	19.8	15	29.0

WATER-QUALITY DATA
WATER YEAR OCTOBER 2008 TO SEPTEMBER 2009

Part 2 of 4

[Remark codes: <, less than; E, estimated.]

Date	Ethyl nico- tinate- d4, surrog, wat flt % recvy (99571)	Number of sam- pling points, count (00063)	Sampler type, code (84164)	Chlor- ide, water, fltrd, mg/L (00940)	Sulfate water, fltrd, mg/L (00945)	Amm- onia + org-N, water, fltrd, mg/L as N (00623)	Amm- onia + org-N, water, unfltrd mg/L as N (00625)	Amm- onia + water, fltrd, mg/L as N (00608)	Nitrate + nitrite water, fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Ortho- phos- phate, water, fltrd, mg/L as P (00671)
Sep 22...	50.2	10	Grab sample	51.5	32.9	.44	.75	<.020	.86	.030	E.005

WATER-QUALITY DATA
WATER YEAR OCTOBER 2008 TO SEPTEMBER 2009

Part 3 of 4

[Remark codes: <, less than; E, estimated.]

Date	Phos- phorus, water, fltrd, mg/L as P (00666)	Phos- phorus, water, unfltrd mg/L as P (00665)	Thiaben dazole, water, fltrd, µg/L (62801)	1,7-Di- methyl- Xan- thine, water, fltrd, µg/L (62030)	Acet- amino- phen, water, fltrd, µg/L (62000)	Albut- erol, water, fltrd, µg/L (62020)	Caf- feine, water, fltrd, µg/L (50305)	Carbam- azepine water, fltrd, µg/L (62793)	Codeine water, fltrd, µg/L (62003)	Cot- inine, water, fltrd, µg/L (62005)	De- hydro- nife- dipine, water, fltrd, µg/L (62004)	Diltia- zem, water, fltrd, µg/L (62008)	Diphen- hydra- mine, water, fltrd, µg/L (62796)
Sep 22...	.029	.104	<.060	<.120	<.080	<.060	E.125	<.040	<.040	E.019	<.080	<.080	<.040

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WATER-QUALITY DATA
WATER YEAR OCTOBER 2008 TO SEPTEMBER 2009

Part 4 of 4

[Remark codes: <, less than; E, estimated.]

Date	Sulfa- methox- azole, water, fltrd, µg/L (62021)	Tri- meth- oprim, water, fltrd, µg/L (62023)	Warfar- in, water, fltrd, µg/L (62024)	Sus- pended sedi- ment concen- tration mg/L (80154)
Sep 22...	<.160	<.020	<.100	106