



Water-Data Report 2009

05319500 WATONWAN RIVER NEAR GARDEN CITY, MN

Minnesota Basin
Watowan Subbasin

LOCATION.--Lat 44°02'47", long 94°11'43" referenced to North American Datum of 1927, in SW ¼ NE ¼ sec.28, T.107 N., R.28 W., Blue Earth County, MN, Hydrologic Unit 07020010, on left bank 25 ft downstream from bridge on County Highway 13, 1.5 miles west of Garden City, 7.3 mi upstream from mouth, and 9.2 mi downstream from Perch Creek.

DRAINAGE AREA.--851 mi².

SURFACE-WATER RECORDS

PERIOD OF RECORD.--March 1940 to September 1945, September 1976 to current year. 1953, 1960, 1961, and 1969 (one or more discharge measurements each year).

REVISED RECORDS.--WDR MN-78-2: 1977. WRIR 97-4249: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 905.05 ft above sea level (NGVD of 1929). Prior to September 30, 1945, non-recording gage at site 200 ft upstream and at datum 0.17 ft higher.

REMARKS.--Records good to fair except those for estimated daily discharge, which are fair to poor.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Apr. 7, 1965, reached a stage of 18.89 ft at datum 0.17 ft higher, from floodmarks, discharge, 19,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,200 ft³/s and (or) maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar 21	2000	*1,140	*3.70

Minimum discharge, 7.2 ft³/s, Sept. 8, 9, gage height, 0.33 ft.

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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	18	36	e36	e19	e25	e175	303	280	92	181	34	9.4
2	21	36	e32	e19	e24	e185	294	266	87	161	30	10
3	21	38	e33	e18	e23	e195	278	252	82	142	33	10
4	20	34	e32	e17	e24	e220	263	233	71	129	27	9.4
5	21	33	e32	e16	e27	e225	258	225	65	124	25	10
6	20	42	e31	e16	e29	e230	262	224	66	110	22	11
7	25	48	e30	e15	e32	e240	267	224	72	102	27	9.2
8	41	50	e31	e15	e70	e265	263	222	104	108	27	7.9
9	39	47	e31	e14	e100	e270	260	247	288	111	21	7.6
10	32	45	e31	e14	e170	e240	253	298	477	125	18	9.7
11	27	44	e31	e14	e200	e220	245	310	566	135	15	9.9
12	26	46	e31	e13	e210	e215	234	306	574	166	15	12
13	28	49	e31	e12	e200	e215	225	295	544	176	14	15
14	31	54	e30	e11	e180	e240	219	288	495	160	14	11
15	29	60	e28	e10	e170	e270	213	267	449	141	14	10
16	33	e55	e28	e11	e175	e330	210	255	418	122	20	9.5
17	30	e45	e28	e11	e180	e365	205	238	412	106	18	9.9
18	29	e41	e27	e12	e190	e370	194	216	414	96	13	9.5
19	29	e41	e27	e12	e178	e400	192	204	393	82	22	9.6
20	28	e37	e27	e12	e172	e450	191	187	358	73	23	11
21	28	e33	e26	e13	e166	e470	193	171	320	66	27	10
22	31	e49	e26	e13	e162	488	183	164	291	60	26	8.0
23	40	e51	e25	e12	e158	501	172	156	273	58	21	9.3
24	54	e49	e24	e11	e155	691	162	153	271	53	19	11
25	52	e48	e23	e11	e152	782	158	143	260	46	21	15
26	51	e47	e23	e12	e149	727	165	130	248	41	18	31
27	51	e44	e23	e17	e147	573	211	123	244	35	18	47
28	48	e40	e22	e20	e165	444	260	120	229	32	16	28
29	42	e38	e22	e22	---	e384	271	112	218	31	12	21
30	41	e36	e21	e23	---	342	278	108	199	30	11	21
31	38	---	e20	e25	---	313	---	96	---	28	11	---
Total	1,024	1,316	862	460	3,633	11,035	6,882	6,513	8,580	3,030	632	402.9
Mean	33.0	43.9	27.8	14.8	130	356	229	210	286	97.7	20.4	13.4
Max	54	60	36	25	210	782	303	310	574	181	34	47
Min	18	33	20	10	23	175	158	96	65	28	11	7.6
Ac-ft	2,030	2,610	1,710	912	7,210	21,890	13,650	12,920	17,020	6,010	1,250	799
Cfs/m	0.04	0.05	0.03	0.02	0.15	0.42	0.27	0.25	0.34	0.11	0.02	0.02
In.	0.04	0.06	0.04	0.02	0.16	0.48	0.30	0.28	0.38	0.13	0.03	0.02

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 2009, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	227	218	134	74.0	110	533	933	667	837	434	220	199
Max	1,285	826	530	392	626	2,105	4,411	2,025	4,494	2,389	1,095	939
(WY)	(2006)	(1993)	(1992)	(2006)	(1983)	(1992)	(2001)	(1993)	(1993)	(1993)	(1979)	(2005)
Min	5.37	7.69	3.76	2.70	2.39	19.3	33.7	16.1	17.3	8.27	6.56	3.63
(WY)	(1990)	(1977)	(1990)	(1977)	(1977)	(1940)	(1990)	(1940)	(1989)	(1940)	(1989)	(1976)

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SUMMARY STATISTICS

	Calendar Year 2008		Water Year 2009		Water Years 1940 - 2009	
Annual total	131,465		44,369.9			
Annual mean	359		122		391	
Highest annual mean					1,330	1993
Lowest annual mean					43.7	1989
Highest daily mean	2,980	Jun 10	782	Mar 25	13,400	Jun 20, 1993
Lowest daily mean	17	Sep 28	7.6	Sep 9	^a 1.8	Dec 24, 1989
Annual seven-day minimum	18	Sep 25	9.3	Sep 4	1.9	Jan 20, 1977
Maximum peak flow			^b 791	Mar 25	13,900	Jun 20, 1993
Maximum peak stage			^c 3.70	Mar 21	15.91	Jun 20, 1993
Instantaneous low flow			7.2	Sep 8	^d 1.8	Dec 24, 1989
Annual runoff (ac-ft)	260,800		88,010		283,200	
Annual runoff (cfsm)	0.422		0.143		0.459	
Annual runoff (inches)	5.75		1.94		6.24	
10 percent exceeds	1,330		288		1,050	
50 percent exceeds	64		47		141	
90 percent exceeds	24		12		15	

^a Also occurred Dec. 25, 1989.

^b Gage height, 3.08 ft.

^c Backwater from ice.

^d Estimated daily-mean discharge, backwater from ice.

