

Water-Data Report 2009

05378500 MISSISSIPPI RIVER AT WINONA, MN

Upper Mississippi Basin
Buffalo-Whitewater Subbasin

LOCATION.--Lat 44°03'20", long 91°38'15" referenced to North American Datum of 1927, in NW ¼ SW ¼ sec.23, T.107 N., R.7 W., Winona County, MN, Hydrologic Unit 07040003, on right bank at Winona pumping station in Winona, 9.5 mi upstream from Trempealeau River, and at mile 725.7 upstream from the Ohio River.

DRAINAGE AREA.--59,200 mi².

SURFACE-WATER RECORDS

PERIOD OF RECORD.--June 1928 to current year. Gage-height records collected in this vicinity since 1878 are contained in reports of Mississippi River Commission.

GAGE.--Water-stage recorder. Datum of gage is 639.64 ft above sea level (NGVD of 1929). June 10, 1928 to Apr. 15, 1931, non-recording gage at site 800 ft upstream. Prior to Oct. 1, 1929, at datum 0.20 ft higher and Oct. 1, 1929 to Apr. 15, 1931, at datum 0.12 ft lower. Apr. 16, 1931 to Nov. 12, 1934, non-recording gage at present site and datum. Since Mar. 31, 1937, auxiliary water-stage recorder 2.7 mi upstream at tailwater of navigation dam 5A.

REMARKS.--Records are good to fair except those for discharges under 10,000 cfs which are fair to poor due to inaccurate stage discharge relation, and those for estimated daily discharge, which are poor. Some regulation by reservoirs, navigation dams, and power plants at low and medium stages. Daily discharges for some days were based in part on instantaneous discharges obtained from the U.S. Army Corps of Engineers for Lock and Dam 5A.

EXTREMES FOR PERIOD OF RECORD.--Minimum gage height, -3.38 ft, Aug. 31, 1934 (prior to dam construction in 1936); minimum gage height since 1938, after completion of dam, 1.95 ft, Jan. 27, 1944.

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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	13,300	16,600	16,600	e14,800	e11,800	17,000	77,600	48,800	15,100	17,100	12,500	12,100
2	12,900	15,700	16,900	e13,900	e12,000	16,400	80,600	47,300	16,400	15,200	11,200	12,100
3	13,300	15,900	16,800	e13,500	e12,500	15,800	81,500	45,300	16,600	14,000	9,100	12,400
4	12,900	16,900	14,900	e13,200	e12,800	15,500	81,700	43,500	16,500	13,500	9,240	11,900
5	12,500	17,600	13,300	e12,900	e12,800	15,100	80,900	42,100	16,200	13,400	10,300	11,500
6	12,100	18,800	e11,800	e12,800	e12,200	15,600	78,400	40,900	15,400	13,300	11,100	11,500
7	12,600	19,700	e11,800	e12,800	e12,200	17,800	75,400	41,200	15,500	12,900	11,400	10,400
8	14,200	18,700	e11,300	e12,800	e12,100	20,700	72,900	40,300	17,200	11,300	13,600	e11,000
9	16,700	17,900	e10,700	e12,800	e12,100	21,900	71,000	39,100	19,000	10,700	18,500	e9,780
10	17,300	18,300	e10,500	e12,800	e13,500	21,300	69,200	38,600	18,000	10,300	19,800	e9,200
11	17,600	17,700	e10,400	e13,200	e17,200	20,000	67,400	37,100	18,100	11,500	17,000	e9,560
12	17,600	17,600	e10,500	e13,700	e26,600	20,500	66,100	34,300	19,200	13,000	13,700	e9,490
13	19,100	18,700	e10,900	e13,400	e28,800	19,700	64,700	33,200	20,400	11,800	11,800	e9,540
14	19,500	20,400	e11,300	e13,400	29,300	18,800	63,100	34,100	19,300	11,000	12,000	e9,620
15	17,800	21,400	e12,400	e12,900	28,100	19,700	60,900	33,800	18,300	8,480	15,400	e9,520
16	16,400	21,700	e13,400	e12,300	26,100	22,900	58,900	32,200	17,600	8,910	15,800	e9,650
17	16,200	20,800	e13,600	e12,200	23,800	25,100	54,800	31,900	18,600	10,800	14,200	e9,650
18	17,200	19,700	e13,800	e12,200	21,000	27,500	52,600	28,400	21,300	12,800	14,100	e9,650
19	17,400	17,600	e13,800	e12,200	19,400	31,300	52,100	26,900	22,300	13,000	15,200	e9,520
20	16,700	17,700	e13,600	e12,200	19,600	33,400	51,100	27,700	21,700	12,700	15,100	e9,390
21	16,500	17,800	e13,400	e12,800	19,600	34,400	49,200	27,800	21,100	11,500	18,300	e7,930
22	16,100	16,600	e13,300	e14,400	19,500	36,900	46,400	27,800	19,700	12,600	18,500	e7,630
23	15,100	15,900	e13,200	e15,400	19,200	38,100	44,100	26,900	18,700	14,000	18,600	e8,620
24	15,000	15,200	e13,200	e16,300	18,200	39,300	43,500	26,200	18,800	14,100	18,500	e8,760
25	16,200	15,100	e13,200	e15,800	16,800	44,900	45,900	25,200	19,600	13,400	18,600	e8,700
26	17,200	14,300	e13,300	e14,000	16,900	47,600	45,400	22,500	19,500	12,500	19,700	e9,080
27	17,300	13,300	e14,400	e12,400	17,100	54,500	44,000	22,100	20,000	11,100	19,400	11,000
28	16,200	13,400	e16,200	e11,600	17,400	60,600	44,800	23,300	19,700	10,400	17,600	10,400
29	13,900	14,000	e17,100	e11,500	---	63,900	46,000	23,100	19,100	10,400	15,600	10,800
30	14,800	15,200	e17,000	e11,500	---	69,300	47,000	21,300	17,900	12,300	14,400	10,300
31	16,100	---	e16,400	e11,600	---	73,600	---	17,800	---	12,300	12,500	---
Total	487,700	520,200	419,000	407,300	508,600	979,100	1,817,200	1,010,700	556,800	380,290	462,740	300,690
Mean	15,730	17,340	13,520	13,140	18,160	31,580	60,570	32,600	18,560	12,270	14,930	10,020
Max	19,500	21,700	17,100	16,300	29,300	73,600	81,700	48,800	22,300	17,100	19,800	12,400
Min	12,100	13,300	10,400	11,500	11,800	15,100	43,500	17,800	15,100	8,480	9,100	7,630
Ac-ft	967,400	1,032,000	831,100	807,900	1,009,000	1,942,000	3,604,000	2,005,000	1,104,000	754,300	917,800	596,400
Cfs/m	0.27	0.29	0.23	0.22	0.31	0.53	1.02	0.55	0.31	0.21	0.25	0.17
In.	0.31	0.33	0.26	0.26	0.32	0.62	1.14	0.64	0.35	0.24	0.29	0.19

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1928 - 2009, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	23,160	23,070	17,830	15,500	15,790	30,240	62,530	49,670	40,330	31,590	21,450	22,000
Max	85,950	50,040	40,440	30,480	35,900	86,420	152,600	119,800	100,200	118,800	67,560	69,490
(WY)	(1987)	(1972)	(1992)	(1983)	(1984)	(1983)	(1965)	(2001)	(1993)	(1993)	(1993)	(1986)
Min	6,774	7,367	6,286	6,742	7,874	9,023	12,810	11,930	8,450	7,063	5,391	6,790
(WY)	(1934)	(1934)	(1934)	(1940)	(1977)	(1934)	(1931)	(1931)	(1934)	(1934)	(1934)	(1933)

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SUMMARY STATISTICS

	Calendar Year 2008		Water Year 2009		Water Years 1928 - 2009	
Annual total	10,124,700		7,850,320			
Annual mean	27,660		21,510		29,460	
Highest annual mean					56,850	1986
Lowest annual mean					9,742	1934
Highest daily mean	99,000	May 8	81,700	Apr 4	264,000	Apr 20, 1965
Lowest daily mean	9,880	Mar 1	7,630	Sep 22	2,250	Dec 29, 1933
Annual seven-day minimum	10,000	Feb 29	8,590	Sep 20	3,210	Dec 27, 1933
Maximum peak flow			81,800	Apr 4	268,000	Apr 19, 1965
Maximum peak stage			10.08	Apr 4	^a 20.77	Apr 19, 1965
Instantaneous low flow			^b 3,780	Jul 15	^c 1,940	Dec 12, 1980
Annual runoff (ac-ft)	20,080,000		15,570,000		21,340,000	
Annual runoff (cfsm)	0.467		0.363		0.498	
Annual runoff (inches)	6.36		4.93		6.76	
10 percent exceeds	72,000		44,800		60,700	
50 percent exceeds	16,200		16,400		21,300	
90 percent exceeds	10,800		10,900		10,200	

^a From highwater mark.

^b Due in part to regulation or seiche.

^c Result of ice jam upstream.

