

05378500 MISSISSIPPI RIVER AT WINONA, MN

LOCATION.--Lat 44°03'21", long 91°38'16", in sec. 23, T.107 N., R.7 W., Winona County, 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 (approximately).

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, nonrecording 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, nonrecording 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 estimated daily discharges, which are fair to 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.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|-------|---------|---------|---------|---------|---------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 1 | 10,600 | 15,100 | 12,000 | 13,200 | e11,500 | 17,800 | 71,900 | 42,600 | 59,200 | 34,200 | 16,500 | 14,100 |
| 2 | 10,000 | 14,900 | 12,800 | 13,000 | e11,500 | 24,800 | 76,500 | 37,200 | 64,000 | 31,100 | 14,800 | 13,800 |
| 3 | 9,530 | 14,800 | 13,200 | 12,400 | e11,600 | 27,800 | 75,400 | 33,500 | 69,600 | 27,500 | 24,500 | 13,500 |
| 4 | 11,200 | 14,500 | 13,600 | e12,200 | e11,700 | 26,400 | 69,700 | 31,800 | 77,600 | 28,900 | 22,600 | 14,700 |
| 5 | 11,100 | 13,900 | 14,000 | e11,700 | e11,200 | 26,500 | 65,200 | 29,400 | 84,200 | 29,200 | 17,200 | 15,400 |
| 6 | 11,600 | 13,400 | 14,500 | e11,300 | e11,300 | 27,000 | 59,700 | 27,700 | 86,900 | 27,700 | 17,100 | 14,900 |
| 7 | 11,100 | 14,100 | 14,700 | e11,000 | e12,000 | 25,000 | 57,000 | 26,100 | 85,100 | 28,200 | 19,000 | 15,400 |
| 8 | 11,000 | 14,900 | 14,100 | e10,800 | e12,400 | 22,200 | 53,900 | 26,100 | 81,600 | 28,400 | 17,900 | 17,200 |
| 9 | 11,300 | 15,200 | 14,700 | e10,800 | e12,300 | 20,700 | 48,400 | 26,000 | 82,000 | 28,700 | 17,300 | 19,200 |
| 10 | 11,100 | 13,600 | 14,800 | e10,800 | e12,300 | 21,000 | 46,200 | 26,600 | 84,500 | 28,400 | 18,300 | 19,600 |
| 11 | 11,100 | 12,000 | 13,700 | e10,800 | e12,300 | 20,100 | 43,900 | 27,500 | 86,400 | 28,200 | 19,100 | 19,300 |
| 12 | 12,700 | 11,400 | 12,800 | e10,900 | e12,300 | 21,300 | 39,800 | 26,000 | 91,200 | 29,300 | 19,000 | 19,000 |
| 13 | 14,600 | 12,300 | e10,000 | e11,000 | e12,300 | 23,300 | 38,300 | 25,000 | 97,100 | 31,700 | 18,800 | 18,200 |
| 14 | 13,600 | 13,400 | e9,300 | e11,100 | e12,300 | 24,900 | 36,200 | 26,600 | 99,100 | 33,500 | 18,500 | 17,000 |
| 15 | 12,900 | 13,900 | e10,000 | e11,300 | e12,300 | 25,200 | 33,100 | 27,500 | 96,900 | 34,200 | 18,500 | 26,100 |
| 16 | 12,500 | 14,200 | e10,500 | e11,200 | e12,100 | 23,800 | 29,900 | 27,800 | 91,100 | 33,900 | 19,200 | 30,700 |
| 17 | 12,200 | 15,600 | e12,400 | e11,300 | e12,000 | 23,200 | 29,800 | 30,200 | 88,600 | 34,000 | 20,100 | 33,200 |
| 18 | 11,200 | 15,600 | e13,400 | e11,600 | e12,000 | 23,700 | 28,900 | 32,800 | 84,400 | 34,000 | 19,900 | 38,500 |
| 19 | 11,100 | 16,000 | e14,900 | e11,100 | e12,100 | 25,000 | 28,900 | 28,600 | 80,200 | 33,900 | 18,300 | 36,900 |
| 20 | 10,900 | 15,800 | e15,600 | e11,200 | e12,400 | 27,500 | 29,800 | 29,700 | 76,000 | 32,500 | 15,700 | 34,200 |
| 21 | 11,100 | 16,000 | e15,300 | e11,300 | e13,700 | 27,300 | 31,400 | 33,600 | 72,700 | 29,500 | 15,200 | 35,400 |
| 22 | 12,100 | 16,200 | e15,200 | e10,900 | e14,100 | 26,000 | 37,000 | 34,300 | 70,000 | 27,200 | 15,300 | 35,500 |
| 23 | 13,300 | 16,000 | e15,100 | e10,800 | e13,900 | 25,600 | 40,300 | 34,800 | 67,400 | 26,700 | 15,900 | 36,200 |
| 24 | 14,400 | 15,900 | 14,800 | e10,100 | e14,000 | 25,700 | 43,700 | 36,100 | 64,100 | 25,200 | 16,100 | 37,800 |
| 25 | 13,800 | 15,200 | 14,600 | e10,100 | e14,200 | 26,100 | 46,900 | 36,100 | 59,000 | 23,900 | 16,100 | 37,900 |
| 26 | 12,400 | 14,100 | 14,600 | e10,100 | e14,200 | 30,500 | 49,500 | 40,400 | 57,000 | 21,900 | 16,400 | 37,600 |
| 27 | 11,200 | 12,700 | 14,300 | e10,200 | e14,300 | 34,800 | 49,100 | 46,700 | 51,700 | 20,300 | 16,000 | 37,600 |
| 28 | 11,400 | 12,400 | 13,200 | e11,200 | e14,200 | 39,300 | 47,000 | 50,200 | 47,700 | 17,600 | 15,700 | 37,700 |
| 29 | 11,400 | 13,200 | 12,700 | e12,100 | e14,400 | 47,600 | 46,600 | 50,400 | 41,400 | 17,100 | 15,100 | 36,100 |
| 30 | 11,700 | 12,100 | 13,000 | e12,000 | --- | 54,500 | 44,800 | 51,300 | 38,400 | 20,300 | 14,700 | 36,100 |
| 31 | 13,300 | --- | 12,500 | e11,800 | --- | 63,400 | --- | 57,900 | --- | 20,200 | 14,900 | --- |
| TOTAL | 367,430 | 428,400 | 416,300 | 349,300 | 366,900 | 878,000 | 1,398,800 | 1,060,500 | 2,235,100 | 867,400 | 543,700 | 798,800 |
| MEAN | 11,850 | 14,280 | 13,430 | 11,270 | 12,650 | 28,320 | 46,630 | 34,210 | 74,500 | 27,980 | 17,540 | 26,630 |
| MAX | 14,600 | 16,200 | 15,600 | 13,200 | 14,400 | 63,400 | 76,500 | 57,900 | 99,100 | 34,200 | 24,500 | 38,500 |
| MIN | 9,530 | 11,400 | 9,300 | 10,100 | 11,200 | 17,800 | 28,900 | 25,000 | 38,400 | 17,100 | 14,700 | 13,500 |
| AC-FT | 728,800 | 849,700 | 825,700 | 692,800 | 727,700 | 1,742,000 | 2,775,000 | 2,104,000 | 4,433,000 | 1,720,000 | 1,078,000 | 1,584,000 |
| CFSM | 0.20 | 0.24 | 0.23 | 0.19 | 0.21 | 0.48 | 0.79 | 0.58 | 1.26 | 0.47 | 0.30 | 0.45 |
| IN. | 0.23 | 0.27 | 0.26 | 0.22 | 0.23 | 0.55 | 0.88 | 0.67 | 1.40 | 0.55 | 0.34 | 0.50 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1928 - 2004, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|------|--------|--------|--------|--------|--------|--------|---------|---------|---------|---------|--------|--------|
| MEAN | 22,660 | 23,070 | 17,860 | 15,410 | 15,690 | 30,400 | 62,240 | 49,770 | 40,530 | 32,460 | 21,860 | 22,550 |
| 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) |

05378500 MISSISSIPPI RIVER AT WINONA, MN—Continued

| SUMMARY STATISTICS | FOR 2003 CALENDAR YEAR | | FOR 2004 WATER YEAR | | WATER YEARS 1928 - 2004 | |
|--------------------------|------------------------|--------|---------------------|--------|-------------------------|--------------|
| ANNUAL TOTAL | 10,136,360 | | 9,710,630 | | | |
| ANNUAL MEAN | 27,770 | | 26,530 | | 29,570 | |
| HIGHEST ANNUAL MEAN | | | | | 56,850 1986 | |
| LOWEST ANNUAL MEAN | | | | | 9,742 1934 | |
| HIGHEST DAILY MEAN | 119,000 | May 17 | 99,100 | Jun 14 | 264,000 | Apr 20, 1965 |
| LOWEST DAILY MEAN | 9,200 | Sep 5 | 9,300 | Dec 14 | 2,250 | Dec 29, 1933 |
| ANNUAL SEVEN-DAY MINIMUM | 9,900 | Sep 3 | 10,500 | Jan 22 | 3,210 | Dec 27, 1933 |
| MAXIMUM PEAK FLOW | | | 99,500 | Jun 14 | 268,000 | Apr 19, 1965 |
| MAXIMUM PEAK STAGE | | | 11.54 | Jun 14 | a20.77 | Apr 19, 1965 |
| INSTANTANEOUS LOW FLOW | | | b9,300 | Dec 14 | c1,940 | Dec 12, 1980 |
| ANNUAL RUNOFF (AC-FT) | 20,110,000 | | 19,260,000 | | 21,420,000 | |
| ANNUAL RUNOFF (CFSM) | 0.469 | | 0.448 | | 0.500 | |
| ANNUAL RUNOFF (INCHES) | 6.37 | | 6.10 | | 6.79 | |
| 10 PERCENT EXCEEDS | 62,000 | | 54,100 | | 60,700 | |
| 50 PERCENT EXCEEDS | 15,300 | | 18,200 | | 21,300 | |
| 90 PERCENT EXCEEDS | 11,400 | | 11,200 | | 10,100 | |

- a From highwater mark.
- b Due in part to freezeup.
- c Result of ice jam upstream.
- e Estimated.

