

Annual Peak-Flow Frequency Analysis

For more information on the contents of this documentation, see Kessler and others (2013).

Streamgauge number and name:

05378500 Mississippi River at Winona, Minn.

Peak-flow information:

Number of systematic peak flows in record	83
Systematic period begins	1929
Systematic period ends	2011
Length of systematic record	83
Years without information	0
Number of historical peak flows in record	0

Frequency analysis options:

Method	Bulletin 17B
Skew option	STATION SKEW
Low-outlier method	Bulletin 17B Grubbs-Beck test

Bulletin 17B systematic record analysis results:

Moments of the common logarithms of the peak flows:

	Standard		
Mean	deviation	Skewness	
4.9661	0.1946	-0.096	

Outlier criteria and number of peak flows exceeding:

Low	24626.2	0
High	347452.5	0

Bulletin 17B Final analysis results:

Moments of the common logarithms of the peak flows:

	Standard	
Mean	deviation	Skewness
4.9661	0.1946	-0.096

Annual frequency curve at selected exceedance probabilities:

Exceedance probability	Peak estimate	Lower-95 level	Upper-95 level
0.9950	28,000	23,000	32,700
0.9900	31,600	26,400	36,500
0.9500	43,700	38,000	49,000
0.9000	51,900	46,000	57,400
0.8000	63,600	57,400	69,500
0.6667	76,700	70,200	83,300
0.5000	93,200	85,900	101,000
0.4292	101,000	93,000	110,000
0.2000	135,000	124,000	150,000
0.1000	164,000	148,000	184,000
0.0400	200,000	178,000	230,000
0.0200	227,000	200,000	266,000
0.0100	254,000	221,000	302,000
0.0050	282,000	243,000	339,000
0.0020	319,000	272,000	390,000

Peak-flow data used in the analysis:

Explanation of symbols and codes

-- none

Water year	Peak flow	Peak-flow code
1929	78,300	--
1930	41,100	--
1931	31,600	--
1932	62,600	--
1933	38,600	--
1934	55,500	--
1935	76,200	--
1936	94,900	--
1937	49,200	--
1938	93,400	--
1939	93,900	--
1940	51,700	--
1941	86,700	--
1942	103,000	--
1943	135,000	--
1944	105,000	--
1945	115,000	--
1946	92,700	--
1947	79,400	--
1948	77,100	--
1949	65,200	--
1950	122,000	--
1951	178,000	--
1952	190,000	--
1953	82,800	--
1954	156,000	--
1955	64,400	--
1956	91,700	--
1957	95,800	--
1958	43,500	--
1959	41,900	--
1960	70,000	--
1961	67,600	--
1962	92,200	--
1963	51,400	--
1964	65,700	--
1965	268,000	--
1966	105,000	--

Water year	Peak flow	Peak-flow code
1967	166,000	--
1968	75,000	--
1969	218,000	--
1970	64,400	--
1971	133,000	--
1972	98,700	--
1973	136,000	--
1974	81,600	--
1975	166,000	--
1976	120,000	--
1977	37,800	--
1978	89,000	--
1979	131,000	--
1980	69,000	--
1981	69,800	--
1982	138,000	--
1983	138,000	--
1984	106,000	--
1985	101,000	--
1986	167,000	--
1987	40,900	--
1988	46,800	--
1989	79,400	--
1990	74,700	--
1991	92,900	--
1992	92,000	--
1993	168,000	--
1994	107,000	--
1995	84,100	--
1996	144,000	--
1997	194,000	--
1998	118,000	--
1999	110,000	--
2000	62,700	--
2001	237,000	--
2002	124,000	--
2003	119,000	--
2004	99,500	--

Water year	Peak flow	Peak-flow code
2005	92,400	--
2006	95,700	--
2007	86,900	--
2008	99,400	--
2009	81,800	--
2010	127,000	--
2011	170,000	--