

Annual Peak-Flow Frequency Analysis

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

Streamgauge number and name:

05300000 Lac qui Parle River near Lac qui Parle, Minn.

Peak-flow information:

Number of systematic peak flows in record	85
Systematic period begins	1911
Systematic period ends	2011
Length of systematic record	101
Years without information	16
Number of historical peak flows in record	0

Frequency analysis options:

Method	Expected moments algorithm (EMA)
Skew option	Weighted
Generalized skew	-0.25
Standard error of generalized skew	0.4266
Low-outlier method	Single Grubbs-Beck test

EMA systematic record analysis results:

Moments of the common logarithms of the peak flows:

	Standard	
Mean	deviation	Skewness
3.2113	0.4699	-0.219

Low-outlier information:

Number of low outliers	1
Low-outlier threshold	195

Final analysis results:

Moments of the common logarithms of the peak flows:

	Standard	
Mean	deviation	Skewness
3.2113	0.4699	-0.229

Annual frequency curve at selected exceedance probabilities:

[WIE, Weighted independent estimate; --, not computed]

Exceedance probability	Peak estimate	Lower-95 level	Upper 95 level	WIE estimate	Lower-95 WIE level	Upper 95 WIE level
0.9950	79.4	25.2	142	--	--	--
0.9900	110.0	41.9	182	--	--	--
0.9500	256.0	146.0	367	--	--	--
0.9000	397.0	260.0	540	--	--	--
0.8000	664.0	482.0	868	--	--	--
0.6667	1,060.0	805.0	1,360	--	--	--
0.5000	1,700.0	1,320.0	2,170	1,710	1,350	2,160
0.4292	2,050.0	1,610.0	2,620	--	--	--
0.2000	4,080.0	3,190.0	5,350	4,140	3,250	5,260
0.1000	6,320.0	4,860.0	8,780	6,440	4,930	8,410
0.0400	9,900.0	7,290.0	15,400	10,200	7,350	14,100
0.0200	13,100.0	9,220.0	22,600	13,600	9,280	19,800
0.0100	16,800.0	11,100.0	32,000	17,500	11,300	27,000
0.0050	20,900.0	13,100.0	44,400	--	--	--
0.0020	27,200.0	15,500.0	66,400	28,700	16,200	50,700

Peak-flow data used in the analysis:

Explanation of symbols and codes

-- none

* Less than low-outlier threshold

Water	Peak	Peak-flow	Water	Peak	Peak-flow
year	flow	code	year	flow	code
1911	500	--	1963	825	--
1912	1,590	--	1964	427	--
1913	732	--	1965	8,370	--
1914	714	--	1966	7,700	--
Gap in systematic record			1967	1,360	--
1931	220	--	1968	241	--
1932	830	--	1969	17,100	--
1933	360	--	1970	2,420	--
1934	0	*	1971	1,540	--
1935	250	--	1972	4,090	--
1936	293	--	1973	1,760	--
1937	2,060	--	1974	486	--
1938	1,100	--	1975	1,250	--
1939	2,240	--	1976	892	--
1940	3,230	--	1977	3,370	--
1941	458	--	1978	4,100	--
1942	2,230	--	1979	4,490	--
1943	3,510	--	1980	1,370	--
1944	1,970	--	1981	492	--
1945	820	--	1982	1,330	--
1946	3,070	--	1983	885	--
1947	3,620	--	1984	3,490	--
1948	7,490	--	1985	4,860	--
1949	1,520	--	1986	3,700	--
1950	2,800	--	1987	528	--
1951	6,500	--	1988	475	--
1952	11,100	--	1989	2,720	--
1953	2,660	--	1990	1,050	--
1954	1,890	--	1991	2,690	--
1955	1,180	--	1992	6,540	--
1956	1,120	--	1993	4,520	--
1957	1,400	--	1994	2,710	--
1958	953	--	1995	3,840	--
1959	219	--	1996	1,890	--
1960	3,110	--	1997	13,100	--
1961	413	--	1998	2,080	--
1962	3,470	--	1999	822	--

Water year	Peak flow	Peak-flow code
2000	195	--
2001	7,950	--
2002	1,160	--
2003	763	--
2004	295	--
2005	1,430	--
2006	1,690	--
2007	3,510	--
2008	1,810	--
2009	4,370	--
2010	7,500	--
2011	6,200	--