

Annual Peak-Flow Frequency Analysis

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

**Streamgauge number and name:**

04012500 Poplar River at Lutsen, Minn.

**Peak-flow information:**

Number of systematic peak flows in record	43
Systematic period begins	1913
Systematic period ends	1987
Length of systematic record	75
Years without information	32
Number of historical peak flows in record	0

**Frequency analysis options:**

Method	Bulletin 17B
Skew option	Weighted
Generalized skew	0.5
Standard error of generalized skew	0.426
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
2.9521	0.2131	0.373

**Outlier criteria and number of peak flows exceeding:**

Low	236.9	0
High	3385.1	1

**Bulletin 17B Final analysis results:**

**Moments of the common logarithms of the peak flows:**

	Standard	
Mean	deviation	Skewness
2.9521	0.2131	0.430

**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	308	235	376	--	--	--
0.9900	334	259	404	--	--	--
0.9500	426	345	501	--	--	--
0.9000	490	406	569	--	--	--
0.8000	588	501	672	--	--	--
0.6667	706	613	800	--	--	--
0.5000	865	762	979	868	747	1,010
0.4292	944	834	1,070	--	--	--
0.2000	1,340	1,170	1,560	1,340	1,110	1,620
0.1000	1,710	1,470	2,080	1,720	1,360	2,160
0.0400	2,260	1,890	2,890	2,270	1,680	3,050
0.0200	2,740	2,230	3,620	2,730	1,920	3,890
0.0100	3,260	2,600	4,470	3,250	2,160	4,880
0.0050	3,860	3,000	5,460	--	--	--
0.0020	4,750	3,600	7,020	4,640	2,710	7,940

**Peak-flow data used in the analysis:**

Explanation of symbols and codes

-- none

Water	Peak	Peak-flow	Water	Peak	Peak-flow
year	flow	code	year	flow	code
1913	462	--	Gap in systematic record		
1914	773	--	1953	548	--
1915	412	--	1954	1,880	--
1916	1,390	--	1955	564	--
1917	756	--	1956	1,290	--
Gap in systematic record			1957	1,170	--
1930	850	--	1958	238	--
1931	760	--	1959	742	--
1932	521	--	1960	1,050	--
Gap in systematic record			1961	1,300	--
1934	914	--	Gap in systematic record		
1935	854	--	1976	1,860	--
1936	842	--	1977	4,780	--
1937	1,250	--	1978	1,220	--
1938	908	--	1979	1,160	--
1939	1,100	--	1980	648	--
1940	481	--	1981	870	--
1941	850	--	1982	1,260	--
1942	835	--	1983	692	--
1943	1,150	--	1984	1,080	--
1944	1,060	--	1985	500	--
1945	1,220	--	1986	1,030	--
1946	505	--	1987	910	--
1947	1,200	--			