

Annual Peak-Flow Frequency Analysis

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

**Streamgage number and name:**

05247500 Crow Wing River near Pillager, Minn.

**Peak-flow information:**

Number of systematic peak flows in record	42
Systematic period begins	1965
Systematic period ends	2011
Length of systematic record	47
Years without information	5
Number of historical peak flows in record	1 1965

**Frequency analysis options:**

Method	Expected moments algorithm (EMA)
Skew option	Streamgage
Low-outlier method	Multiple Grubbs-Beck test

**EMA systematic record analysis results:**

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

	Standard		
Mean	deviation	Skewness	
3.7853	0.2572	-0.371	

**Low-outlier information:**

Number of low outliers	0
Low-outlier threshold	Not determined

**Final analysis results:**

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

	Standard	
Mean	deviation	Skewness
3.7853	0.2572	-0.371

**Annual frequency curve at selected exceedance probabilities:**

Exceedance probability	Peak estimate	Lower-95 level	Upper-95 level
0.9950	1,080	249	1,700
0.9900	1,310	374	1,950
0.9500	2,170	1,100	2,870
0.9000	2,800	1,810	3,560
0.8000	3,760	2,820	4,640
0.6667	4,880	3,890	5,980
0.5000	6,330	5,180	7,760
0.4292	7,020	5,790	8,600
0.2000	10,100	8,420	12,100
0.1000	12,700	10,500	15,100
0.0400	15,900	13,100	20,200
0.0200	18,200	14,900	24,700
0.0100	20,600	16,200	29,600
0.0050	22,800	17,100	34,900
0.0020	25,800	17,900	42,800

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

Explanation of symbols and codes

H Historic, outside of systematic record

K Peak affected by regulation

Water	Peak	Peak-flow	Water	Peak	Peak-flow
year	flow	code	year	flow	code
1965	18,300	K H	1990	4,270	K
Gap in systematic record			1991	3,380	K
1969	16,600	K	1992	2,880	K
1970	6,380	K	1993	7,360	K
1971	7,500	K	1994	6,260	K
1972	11,700	K	1995	6,600	K
1973	6,140	K	1996	13,900	K
1974	12,200	K	1997	16,100	K
1975	10,800	K	1998	4,240	K
1976	4,470	K	1999	10,800	K
1977	1,520	K	2000	3,940	K
1978	4,220	K	2001	17,500	K
1979	7,970	K	2002	5,310	K
1980	2,390	K	2003	7,340	K
1981	1,420	K	2004	3,150	K
1982	5,450	K	2005	6,460	K
1983	4,310	K	2006	7,320	K
1984	3,940	K	2007	5,820	K
1985	5,650	K	2008	4,550	K
1986	10,800	K	2009	13,400	K
Gap in systematic record			2010	11,100	K
1988	2,980	K	2011	7,560	K
1989	6,370	K			