

## Annual Peak-Flow Frequency Analysis

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

### Streamgauge number and name:

05229450 Pine River near Pine River, Minn.

### Peak-flow information:

Number of systematic peak flows in record	26
Systematic period begins	1986
Systematic period ends	2011
Length of systematic record	26
Years without information	0
Number of historical peak flows in record	0

### Frequency analysis options:

Method	Expected moments algorithm (EMA)
Skew option	Weighted
Generalized skew	-0.1
Standard error of generalized skew	0.4266
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
2.7870	0.2160	0.114

#### 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
2.7860	0.2178	-0.015

**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	167	65.6	239	--	--	--
0.9900	189	85.7	262	--	--	--
0.9500	267	165.0	344	--	--	--
0.9000	321	223.0	403	--	--	--
0.8000	401	304.0	495	--	--	--
0.6667	493	391.0	604	--	--	--
0.5000	612	496.0	754	608	502	735
0.4292	669	544.0	830	--	--	--
0.2000	932	756.0	1,230	923	746	1,140
0.1000	1,160	926.0	1,660	1,150	899	1,470
0.0400	1,470	1,130.0	2,440	1,450	1,070	1,950
0.0200	1,700	1,280.0	3,220	1,670	1,180	2,350
0.0100	1,950	1,420.0	4,210	1,900	1,290	2,810
0.0050	2,210	1,550.0	5,460	--	--	--
0.0020	2,560	1,710.0	7,590	2,460	1,500	4,040

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

Explanation of symbols and codes

< Less than

-- none

Water year	Peak flow	Peak-flow code
1986	1,150	--
1987	770	--
1988	380	--
1989	640	--
1990	1,100	--
1991	431	--
1992	615	--
1993	595	--
1994	305	--
1995	500	--
1996	800	--
1997	1,410	--
1998	612	--
1999	1,520	--
2000	580	--
2001	1,400	--
2002	748	--
2003	313	--
2004	<300	--
2005	550	--
2006	872	--
2007	583	--
2008	<560	--
2009	590	--
2010	<576	--
2011	<593	--