

## Annual Peak-Flow Frequency Analysis

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

### Streamgauge number and name:

05134200 Rapid River near Baudette, Minn.

### Peak-flow information:

Number of systematic peak flows in record	33
Systematic period begins	1957
Systematic period ends	2011
Length of systematic record	55
Years without information	22
Number of historical peak flows in record	1 1950

### Frequency analysis options:

Method	Expected moments algorithm (EMA)
Skew option	Weighted
Generalized skew	-0.41
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
3.4476	0.2686	-0.547

#### Low-outlier information:

Number of low outliers	0
Low-outlier threshold	603

**Final analysis results:**

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

	Standard		
Mean	deviation	Skewness	
3.4473	0.2683	-0.477	

**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	434	88.8	724	--	--	--
0.9900	538	135.0	847	--	--	--
0.9500	939	423.0	1,300	--	--	--
0.9000	1,240	707.0	1,640	--	--	--
0.8000	1,700	1,170.0	2,170	--	--	--
0.6667	2,240	1,690.0	2,800	--	--	--
0.5000	2,940	2,320.0	3,630	2,710	2,210	3,320
0.4292	3,270	2,610.0	4,030	--	--	--
0.2000	4,750	3,850.0	5,930	4,500	3,680	5,500
0.1000	5,950	4,810.0	7,710	5,670	4,560	7,060
0.0400	7,420	5,900.0	10,400	7,110	5,480	9,230
0.0200	8,460	6,590.0	12,800	8,130	6,030	11,000
0.0100	9,470	7,160.0	15,500	9,130	6,490	12,900
0.0050	10,400	7,630.0	18,500	--	--	--
0.0020	11,700	8,110.0	23,000	11,400	7,280	17,700

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

Explanation of symbols and codes

-- none

H Historic, outside of systematic record

Water Peak Peak-flow

year flow code

1950 7,000 H

1957 4,080 --

1958 1,500 --

1959 603 --

1960 831 --

1961 1,340 --

1962 5,160 --

1963 1,740 --

1964 3,480 --

1965 4,450 --

1966 4,550 --

1967 3,320 --

1968 4,690 --

1969 5,500 --

1970 3,470 --

1971 2,280 --

1972 3,340 --

1973 1,730 --

1974 3,660 --

1975 4,090 --

1976 1,500 --

1977 1,460 --

1978 4,520 --

1979 7,550 --

1980 1,420 --

1981 2,010 --

1982 4,000 --

1983 3,430 --

1984 1,810 --

1985 7,580 --

Gap in systematic record

2008 1,330 --

2009 3,690 --

2010 2,590 --

2011 4,250 --