

## Annual Peak-Flow Frequency Analysis

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

### Streamgauge number and name:

05049000 Mustinka River above Wheaton, Minn.

### Peak-flow information:

Number of systematic peak flows in record	63
Systematic period begins	1916
Systematic period ends	2011
Length of systematic record	96
Years without information	33
Number of historical peak flows in record	0

### Frequency analysis options:

Method	Expected moments algorithm (EMA)
Skew option	Weighted
Generalized skew	-0.276
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
3.0095	0.6258	-0.788

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

Low	16.7	1
High	47228.6	0

**Expected moments algorithm (EMA) Final analysis results:**

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

	Standard	
Mean	deviation	Skewness
3.0148	0.6097	-0.492

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

Exceedance probability	Peak estimate	Lower-95 level	Upper-95 level
0.9950	NA	NA	NA
0.9900	NA	NA	NA
0.9500	86	28.6	154
0.9000	162	73.3	264
0.8000	332	191.0	505
0.6667	625	403.0	914
0.5000	1,160	791.0	1,660
0.4292	1,480	1,020.0	2,120
0.2000	3,440	2,430.0	5,000
0.1000	5,720	4,000.0	8,890
0.0400	9,380	6,280.0	16,800
0.0200	12,600	7,950.0	25,500
0.0100	16,200	9,470.0	37,200
0.0050	20,200	10,800.0	52,600
0.0020	25,800	12,300.0	80,700

**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
1916	2,980.0	--	1954	393.0	--
1917	2,250.0	--	1955	484.0	--
Gap in systematic record			1956	655.0	--
1919	559.0	--	1957	1,610.0	--
1920	970.0	--	1958	690.0	--
1921	287.0	--	Gap in systematic record		
1922	1,290.0	--	1985	1,190.0	--
1923	746.0	--	1986	5,500.0	--
1924	45.0	--	1987	275.0	--
Gap in systematic record			1988	250.0	--
1931	41.0	--	1989	5,400.0	--
1932	300.0	--	1990	130.0	--
1933	78.0	--	1991	1,420.0	--
1934	9.1	*	1992	220.0	--
1935	120.0	--	1993	4,400.0	--
1936	354.0	--	1994	4,310.0	--
1937	400.0	--	1995	5,100.0	--
1938	267.0	--	1996	2,100.0	--
1939	1,420.0	--	1997	8,800.0	--
1940	349.0	--	1998	586.0	--
1941	240.0	--	1999	787.0	--
1942	1,480.0	--	2000	609.0	--
1943	1,940.0	--	2001	11,000.0	--
1944	1,520.0	--	2002	1,450.0	--
1945	892.0	--	2003	2,040.0	--
1946	2,460.0	--	2004	1,300.0	--
1947	2,710.0	--	2005	2,380.0	--
1948	2,080.0	--	2006	4,320.0	--
1949	1,770.0	--	2007	3,700.0	--
1950	1,690.0	--	2008	1,950.0	--
1951	3,180.0	--	2009	7,260.0	--
1952	7,320.0	--	2010	7,150.0	--
1953	572.0	--	2011	7,730.0	--