

Annual Peak-Flow Frequency Analysis

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

Streamgauge number and name:

05140500 East Branch Warroad River near Warroad, Minn.

Peak-flow information:

Number of systematic peak flows in record	26
Systematic period begins	1946
Systematic period ends	1983
Length of systematic record	38
Years without information	12
Number of historical peak flows in record	0

Frequency analysis options:

Method	Bulletin 17B
Skew option	Weighted
Generalized skew	-0.475
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:

	Mean	Standard deviation	Skewness
	2.4946	0.3811	-0.531

Outlier criteria and number of peak flows exceeding:

Low	34.8	0
High	2807.0	0

Bulletin 17B Final analysis results:

Moments of the common logarithms of the peak flows:

	Standard	
Mean	deviation	Skewness
2.4946	0.3811	-0.499

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	21.7	9.1	38.1	--	--	--
0.9900	29.6	13.5	49.5	--	--	--
0.9500	65.8	37.2	97.4	--	--	--
0.9000	97.8	60.9	138.0	--	--	--
0.8000	154.0	105.0	207.0	--	--	--
0.6667	228.0	166.0	303.0	--	--	--
0.5000	336.0	252.0	452.0	323	240	436
0.4292	391.0	295.0	533.0	--	--	--
0.2000	662.0	490.0	976.0	653	486	877
0.1000	908.0	652.0	1,430.0	906	658	1,250
0.0400	1,240.0	856.0	2,090.0	1,250	861	1,820
0.0200	1,490.0	1,000.0	2,630.0	1,520	999	2,320
0.0100	1,740.0	1,150.0	3,200.0	1,810	1,130	2,900
0.0050	1,990.0	1,290.0	3,800.0	--	--	--
0.0020	2,320.0	1,470.0	4,610.0	2,510	1,380	4,540

Peak-flow data used in the analysis:

Explanation of symbols and codes

-- none

Water	Peak	Peak-flow
year	flow	code
1946	215	--
1947	1,340	--
1948	480	--
1949	142	--
1950	554	--
1951	476	--
1952	614	--
1953	52	--
1954	238	--

Gap in systematic record

1967	574	--
1968	430	--
1969	520	--
1970	592	--
1971	227	--
1972	288	--
1973	99	--
1974	478	--
1975	790	--
1976	180	--
1977	49	--
1978	672	--
1979	1,120	--
1980	112	--
1981	133	--
1982	546	--
1983	184	--