

Annual Peak-Flow Frequency Analysis

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

Streamgauge number and name:

05372800 South Fork Zumbro River on belt line at Rochester, Minn.

Peak-flow information:

Number of systematic peak flows in record	15	
Systematic period begins	1969	
Systematic period ends	1983	
Length of systematic record	15	
Years without information	0	
Number of historical peak flows in record	0	
Length of historical period	61	
Historical period begins	1951	
Historical period ends	2011	
Historical period based on		Correlation with streamgauge 05372995

Frequency analysis options:

Method	Bulletin 17B
Skew option	Weighted
Generalized skew	-0.243
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	
3.3791	0.3878	0.705	

Outlier criteria and number of peak flows exceeding:

Low	268.6	0
High	17803.7	1

Bulletin 17B Final analysis results:

Moments of the common logarithms of the peak flows:

	Standard	
Mean	deviation	Skewness
3.3288	0.3166	0.051

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	338	136	566	--	--	--
0.9900	402	174	651	--	--	--
0.9500	650	339	965	--	--	--
0.9000	841	482	1,200	--	--	--
0.8000	1,150	732	1,590	--	--	--
0.6667	1,550	1,060	2,110	--	--	--
0.5000	2,120	1,530	2,930	2,200	1,570	3,080
0.4292	2,410	1,760	3,400	--	--	--
0.2000	3,930	2,850	6,180	4,200	2,990	5,890
0.1000	5,450	3,810	9,530	5,870	4,140	8,340
0.0400	7,740	5,120	15,400	8,290	5,710	12,000
0.0200	9,720	6,180	21,200	10,200	6,820	15,300
0.0100	11,900	7,300	28,200	12,300	7,820	19,300
0.0050	14,400	8,500	36,900	--	--	--
0.0020	18,200	10,200	51,200	17,700	10,000	31,100

Peak-flow data used in the analysis:

Explanation of symbols and codes

-- none

Water	Peak	Peak-flow
year	flow	code
1969	2,500	--
1970	2,520	--
1971	2,200	--
1972	645	--
1973	6,020	--
1974	3,160	--
1975	1,680	--
1976	2,570	--
1977	640	--
1978	20,500	--
1979	1,450	--
1980	1,100	--
1981	3,920	--
1982	1,470	--
1983	5,480	--