

Annual Peak-Flow Frequency Analysis

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

Streamgauge number and name:

05374900 Zumbro River at Kellogg, Minn.

Peak-flow information:

Number of systematic peak flows in record	15
Systematic period begins	1976
Systematic period ends	1990
Length of systematic record	15
Years without information	0
Number of historical peak flows in record	0

Frequency analysis options:

Method	Bulletin 17B
Skew option	Weighted
Generalized skew	-0.204
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
3.9551	0.2191	-0.407

Outlier criteria and number of peak flows exceeding:

Low	2903.0	0
High	28013.5	0

Bulletin 17B Final analysis results:

Moments of the common logarithms of the peak flows:

	Standard	
Mean	deviation	Skewness
3.9551	0.2191	-0.272

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	2,160	1,080	3,190	--	--	--
0.9900	2,520	1,350	3,610	--	--	--
0.9500	3,790	2,380	5,020	--	--	--
0.9000	4,660	3,160	5,980	--	--	--
0.8000	5,950	4,350	7,430	--	--	--
0.6667	7,400	5,720	9,170	--	--	--
0.5000	9,230	7,380	11,600	9,310	7,280	11,900
0.4292	10,100	8,120	12,800	--	--	--
0.2000	13,900	11,100	19,000	14,600	11,400	18,700
0.1000	16,900	13,200	24,800	18,700	14,400	24,300
0.0400	20,800	15,800	32,700	24,600	18,400	32,800
0.0200	23,600	17,500	39,000	29,100	21,200	39,900
0.0100	26,300	19,200	45,500	33,300	23,300	47,500
0.0050	29,100	20,800	52,300	--	--	--
0.0020	32,600	22,800	61,600	43,600	27,800	68,300

Peak-flow data used in the analysis:

Explanation of symbols and codes

-- none

Water	Peak	Peak-flow
year	flow	code
1976	9,360	--
1977	2,920	--
1978	16,800	--
1979	9,500	--
1980	14,400	--
1981	7,170	--
1982	5,370	--
1983	10,700	--
1984	6,550	--
1985	8,420	--
1986	22,300	--
1987	9,170	--
1988	5,360	--
1989	12,000	--
1990	11,300	--