

Annual Peak-Flow Frequency Analysis

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

Streamgauge number and name:

05069000 Sand Hill River at Climax, Minn.

Peak-flow information:

Number of systematic peak flows in record	70
Systematic period begins	1943
Systematic period ends	2011
Length of systematic record	69
Years without information	-1
Number of historical peak flows in record	0

Frequency analysis options:

Method	Bulletin 17B
Skew option	Weighted
Generalized skew	-0.437
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
	3.0657	0.4053	-0.382

Outlier criteria and number of peak flows exceeding:

Low	78.2	0
High	17308.2	0

Bulletin 17B Final analysis results:

Moments of the common logarithms of the peak flows:

	Standard	
Mean	deviation	Skewness
3.0657	0.4053	-0.401

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	74.1	45.4	108	--	--	--
0.9900	101.0	64.9	143	--	--	--
0.9500	227.0	163.0	296	--	--	--
0.9000	340.0	257.0	429	--	--	--
0.8000	543.0	431.0	663	--	--	--
0.6667	821.0	673.0	988	--	--	--
0.5000	1,240.0	1,030.0	1,490	1,220	985	1,510
0.4292	1,460.0	1,210.0	1,770	--	--	--
0.2000	2,580.0	2,110.0	3,260	2,530	2,040	3,130
0.1000	3,670.0	2,930.0	4,810	3,570	2,830	4,510
0.0400	5,200.0	4,040.0	7,120	5,020	3,780	6,650
0.0200	6,440.0	4,900.0	9,050	6,140	4,420	8,540
0.0100	7,720.0	5,780.0	11,100	7,300	4,990	10,700
0.0050	9,060.0	6,680.0	13,400	--	--	--
0.0020	10,900.0	7,880.0	16,500	10,100	6,090	16,600

Peak-flow data used in the analysis:

Explanation of symbols and codes

-- none

Water	Peak	Peak-flow	Water	Peak	Peak-flow
year	flow	code	year	flow	code
1943	941	--	1978	3,060	--
1944	226	--	1979	3,400	--
1945	767	--	1980	879	--
1946	650	--	1981	362	--
1947	1,840	--	1982	820	--
1948	1,640	--	1983	1,230	--
1949	990	--	1984	2,850	--
1950	3,040	--	1985	974	--
1951	1,250	--	1986	2,000	--
1952	544	--	1987	492	--
1953	200	--	1988	610	--
1954	489	--	1989	2,430	--
1955	842	--	1990	405	--
1956	1,370	--	1991	613	--
1957	481	--	1992	312	--
1958	168	--	1993	1,320	--
1959	310	--	1994	1,660	--
1960	460	--	1995	1,300	--
1961	140	--	1996	4,290	--
1962	1,570	--	1997	4,360	--
1963	300	--	1998	1,460	--
1964	730	--	1999	3,720	--
1965	4,560	--	2000	1,160	--
1966	4,220	--	2001	3,400	--
1967	2,060	--	2002	3,530	--
1968	1,400	--	2003	670	--
1969	4,180	--	2004	2,610	--
1970	1,980	--	2005	2,140	--
1971	1,460	--	2006	4,160	--
1972	2,160	--	2007	1,330	--
1973	897	--	2008	400	--
1974	1,890	--	2009	3,400	--
1975	2,550	--	2010	3,000	--
1976	1,390	--	2011	4,800	--
1977	194	--			