

Annual Peak-Flow Frequency Analysis

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

Streamgauge number and name:

05291000 Whetstone River near Big Stone City, S. Dak.

Peak-flow information:

Number of systematic peak flows in record	84
Systematic period begins	1910
Systematic period ends	2011
Length of systematic record	102
Years without information	18
Peak flows not used in analysis	1
Number of historical peak flows in record	0

Frequency analysis options:

Method	Bulletin 17B
Skew option	Weighted
Generalized skew	-0.312
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
	3.0785	0.5758	-0.664

Outlier criteria and number of peak flows exceeding:

Low	23.8	0
High	60425.6	0

Bulletin 17B Final analysis results:

Moments of the common logarithms of the peak flows:

	Standard	
Mean	deviation	Skewness
3.0785	0.5758	-0.537

Annual frequency curve at selected exceedance probabilities:

Exceedance probability	Peak estimate	Lower-95 level	Upper-95 level
0.9950	20.3	10.6	34.0
0.9900	32.9	18.3	52.4
0.9500	113.0	73.4	160.0
0.9000	207.0	144.0	280.0
0.8000	412.0	307.0	534.0
0.6667	751.0	582.0	954.0
0.5000	1,350.0	1,060.0	1,720.0
0.4292	1,700.0	1,340.0	2,180.0
0.2000	3,730.0	2,870.0	5,040.0
0.1000	5,960.0	4,460.0	8,420.0
0.0400	9,400.0	6,790.0	13,900.0
0.0200	12,300.0	8,690.0	18,800.0
0.0100	15,400.0	10,700.0	24,200.0
0.0050	18,800.0	12,800.0	30,200.0
0.0020	23,400.0	15,600.0	38,700.0

Peak-flow data used in the analysis:

Explanation of symbols and codes

-- none

H Historic, outside of systematic record

D Peak result of dam break

Water	Peak	Peak-flow	Water	Peak	Peak-flow
year	flow	code	year	flow	code
1910	2,070	--	1961	300	--
1911	52	--	1962	2,900	--
1912	507	--	1963	1,600	--
Gap in systematic record			1964	701	--
1919	29,000	D H	1965	1,740	--
Gap in systematic record			1966	2,600	--
1931	1,320	--	1967	475	--
1932	244	--	1968	153	--
1933	45	--	1969	6,870	--
1934	90	--	1970	1,500	--
1935	391	--	1971	2,540	--
1936	422	--	1972	2,930	--
1937	2,900	--	1973	2,470	--
1938	234	--	1974	373	--
1939	1,500	--	1975	1,000	--
1940	1,040	--	1976	675	--
1941	244	--	1977	717	--
1942	3,740	--	1978	3,850	--
1943	5,140	--	1979	4,210	--
1944	1,010	--	1980	774	--
1945	2,770	--	1981	425	--
1946	1,160	--	1982	3,450	--
1947	5,500	--	1983	1,400	--
1948	3,370	--	1984	4,850	--
1949	344	--	1985	3,900	--
1950	1,260	--	1986	4,730	--
1951	1,100	--	1987	294	--
1952	5,710	--	1988	249	--
1953	1,110	--	1989	3,490	--
1954	3,330	--	1990	286	--
1955	570	--	1991	3,270	--
1956	429	--	1992	1,680	--
1957	3,680	--	1993	3,890	--
1958	998	--	1994	3,980	--
1959	70	--	1995	4,140	--
1960	1,560	--	1996	1,490	--

Water year	Peak flow	Peak-flow code
1997	7,930	--
1998	1,230	--
1999	325	--
2000	62	--
2001	9,930	--
2002	1,690	--
2003	325	--
2004	58	--
2005	3,430	--
2006	950	--
2007	9,060	--
2008	6,720	--
2009	4,540	--
2010	6,480	--
2011	3,250	--