

Annual Peak-Flow Frequency Analysis

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

Streamgauge number and name:

05062000 Buffalo River near Dilworth, Minn.

Peak-flow information:

Number of systematic peak flows in record	81
Systematic period begins	1931
Systematic period ends	2011
Length of systematic record	81
Years without information	0
Number of historical peak flows in record	0

Frequency analysis options:

Method	Expected moments algorithm (EMA)
Skew option	Weighted
Generalized skew	-0.36
Standard error of generalized skew	0.4266
Low-outlier method	Single Grubbs-Beck test

EMA systematic record analysis results:

Moments of the common logarithms of the peak flows:

	Standard	
Mean	deviation	Skewness
3.2077	0.4530	-0.248

Low-outlier information:

Number of low outliers	1
Low-outlier threshold	163

Final analysis results:

Moments of the common logarithms of the peak flows:

	Standard	
Mean	deviation	Skewness
3.2076	0.4533	-0.285

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	83	24.2	149	--	--	--
0.9900	115	41.0	191	--	--	--
0.9500	267	147.0	383	--	--	--
0.9000	412	265.0	560	--	--	--
0.8000	682	492.0	891	--	--	--
0.6667	1,070	817.0	1,370	--	--	--
0.5000	1,690	1,320.0	2,160	1,740	1,390	2,180
0.4292	2,040	1,600.0	2,590	--	--	--
0.2000	3,930	3,090.0	5,100	3,970	3,170	4,980
0.1000	5,930	4,600.0	8,130	5,940	4,620	7,630
0.0400	9,010	6,720.0	13,800	8,910	6,560	12,100
0.0200	11,700	8,340.0	19,700	11,400	7,990	16,300
0.0100	14,700	9,910.0	27,200	14,100	9,380	21,300
0.0050	17,900	11,400.0	36,800	--	--	--
0.0020	22,700	13,300.0	53,500	21,100	12,300	36,100

Peak-flow data used in the analysis:

Explanation of symbols and codes

-- none

* Less than low-outlier threshold

Water	Peak	Peak-flow	Water	Peak	Peak-flow
year	flow	code	year	flow	code
1931	46	*	1968	406	--
1932	311	--	1969	10,400	--
1933	269	--	1970	802	--
1934	374	--	1971	493	--
1935	311	--	1972	2,590	--
1936	1,460	--	1973	205	--
1937	390	--	1974	2,130	--
1938	550	--	1975	13,600	--
1939	1,350	--	1976	1,000	--
1940	510	--	1977	163	--
1941	800	--	1978	5,420	--
1942	762	--	1979	4,380	--
1943	4,530	--	1980	1,850	--
1944	998	--	1981	1,090	--
1945	2,660	--	1982	2,210	--
1946	1,670	--	1983	1,990	--
1947	3,380	--	1984	2,940	--
1948	1,310	--	1985	1,940	--
1949	602	--	1986	3,440	--
1950	2,600	--	1987	954	--
1951	2,230	--	1988	648	--
1952	4,310	--	1989	5,380	--
1953	2,430	--	1990	600	--
1954	686	--	1991	576	--
1955	1,260	--	1992	492	--
1956	2,410	--	1993	3,450	--
1957	1,080	--	1994	3,270	--
1958	1,540	--	1995	2,110	--
1959	699	--	1996	2,720	--
1960	1,390	--	1997	8,370	--
1961	480	--	1998	4,770	--
1962	6,140	--	1999	1,640	--
1963	1,300	--	2000	3,560	--
1964	1,740	--	2001	6,590	--
1965	5,960	--	2002	1,650	--
1966	5,000	--	2003	1,350	--
1967	1,820	--	2004	1,590	--

Water year	Peak flow	Peak-flow code
2005	1,960	--
2006	9,210	--
2007	2,120	--
2008	2,150	--
2009	11,400	--
2010	6,830	--
2011	5,750	--