

Annual Peak-Flow Frequency Analysis

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

Streamgauge number and name:

05286000 Rum River near St. Francis, Minn.

Peak-flow information:

Number of systematic peak flows in record	82
Systematic period begins	1930
Systematic period ends	2011
Length of systematic record	82
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	-0.23
Standard error of generalized skew	0.4266
Low-outlier method	Fixed Threshold

EMA systematic record analysis results:

Moments of the common logarithms of the peak flows:

	Standard	
Mean	deviation	Skewness
3.5580	0.3033	-1.158

Low-outlier information:

Number of low outliers	2
Low-outlier threshold	650

Final analysis results:

Moments of the common logarithms of the peak flows:

	Standard		
Mean	deviation	Skewness	
3.5591	0.2988	-0.718	

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	390	114	634	--	--	--
0.9900	515	186	783	--	--	--
0.9500	1,030	595	1,360	--	--	--
0.9000	1,450	985	1,820	--	--	--
0.8000	2,110	1,630	2,540	--	--	--
0.6667	2,900	2,390	3,420	--	--	--
0.5000	3,930	3,330	4,590	3,840	3,300	4,480
0.4292	4,420	3,770	5,140	--	--	--
0.2000	6,530	5,660	7,560	6,400	5,580	7,340
0.1000	8,160	7,090	9,640	8,000	6,910	9,260
0.0400	10,000	8,560	12,500	9,760	8,130	11,700
0.0200	11,300	9,360	14,700	10,900	8,710	13,600
0.0100	12,400	9,940	16,900	11,900	9,120	15,400
0.0050	13,500	10,400	19,300	--	--	--
0.0020	14,700	10,800	22,700	13,800	9,600	19,800

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
1930	3,910	--	1967	5,400	--
1931	1,140	--	1968	2,150	--
1932	1,520	--	1969	10,100	--
1933	600	*	1970	3,230	--
1934	260	*	1971	4,650	--
1935	1,760	--	1972	9,540	--
1936	3,180	--	1973	5,640	--
1937	1,200	--	1974	2,630	--
1938	5,550	--	1975	8,130	--
1939	5,000	--	1976	5,140	--
1940	2,630	--	1977	1,050	--
1941	4,530	--	1978	3,090	--
1942	3,100	--	1979	5,690	--
1943	5,100	--	1980	2,210	--
1944	6,780	--	1981	2,090	--
1945	5,800	--	1982	4,610	--
1946	4,300	--	1983	5,920	--
1947	3,010	--	1984	8,120	--
1948	4,910	--	1985	6,510	--
1949	2,520	--	1986	7,000	--
1950	7,540	--	1987	955	--
1951	5,650	--	1988	874	--
1952	9,260	--	1989	1,750	--
1953	3,760	--	1990	2,840	--
1954	8,200	--	1991	4,430	--
1955	3,500	--	1992	5,290	--
1956	7,560	--	1993	2,410	--
1957	6,580	--	1994	3,250	--
1958	1,570	--	1995	3,880	--
1959	1,000	--	1996	4,430	--
1960	2,600	--	1997	7,960	--
1961	1,270	--	1998	1,970	--
1962	4,900	--	1999	5,430	--
1963	4,160	--	2000	2,170	--
1964	4,100	--	2001	8,270	--
1965	10,100	--	2002	6,200	--
1966	5,720	--	2003	4,660	--

Water year	Peak flow	Peak-flow code
2004	2,990	--
2005	3,270	--
2006	5,810	--
2007	3,160	--
2008	3,770	--
2009	6,220	--
2010	3,500	--
2011	6,150	--