

Annual Peak-Flow Frequency Analysis

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

Streamgauge number and name:

04024000 St. Louis River at Scanlon, Minn.

Peak-flow information:

Number of systematic peak flows in record	104
Systematic period begins	1908
Systematic period ends	2011
Length of systematic record	104
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	-0.02
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
4.1673	0.2248	-0.989

Low-outlier information:

Number of low outliers	1
Low-outlier threshold	3,460

Final analysis results:

Moments of the common logarithms of the peak flows:

	Standard	
Mean	deviation	Skewness
4.1676	0.2237	-0.623

Annual frequency curve at selected exceedance probabilities:

Exceedance probability	Peak estimate	Lower-95 level	Upper-95 level
0.9950	2,900	1,450	3,990
0.9900	3,530	2,000	4,650
0.9500	5,810	4,240	6,980
0.9000	7,420	5,920	8,610
0.8000	9,760	8,340	11,000
0.6667	12,400	10,900	13,800
0.5000	15,500	13,900	17,200
0.4292	16,900	15,300	18,800
0.2000	22,900	20,800	25,300
0.1000	27,200	24,700	30,500
0.0400	32,200	28,700	37,300
0.0200	35,400	30,900	42,400
0.0100	38,400	32,600	47,500
0.0050	41,100	33,900	52,700
0.0020	44,400	35,200	59,800

Peak-flow data used in the analysis:

Explanation of symbols and codes

* Less than low-outlier threshold

Water	Peak	Peak-flow	Water	Peak	Peak-flow
year	flow	code	year	flow	code
1908	27,000	--	1946	23,200	--
1909	17,200	--	1947	12,900	--
1910	4,790	--	1948	25,400	--
1911	9,250	--	1949	14,300	--
1912	13,200	--	1950	37,900	--
1913	10,200	--	1951	18,200	--
1914	14,000	--	1952	12,500	--
1915	9,660	--	1953	22,100	--
1916	26,700	--	1954	25,100	--
1917	4,390	--	1955	18,500	--
1918	7,360	--	1956	21,400	--
1919	9,970	--	1957	18,100	--
1920	20,600	--	1958	16,300	--
1921	22,600	--	1959	14,600	--
1922	14,900	--	1960	16,500	--
1923	10,900	--	1961	19,300	--
1924	3,460	--	1962	14,000	--
1925	3,090	*	1963	8,710	--
1926	4,690	--	1964	18,000	--
1927	20,300	--	1965	24,300	--
1928	13,900	--	1966	17,700	--
1929	11,100	--	1967	14,600	--
1930	16,200	--	1968	11,500	--
1931	12,900	--	1969	28,300	--
1932	12,400	--	1970	15,500	--
1933	7,020	--	1971	26,200	--
1934	10,700	--	1972	25,900	--
1935	11,200	--	1973	10,300	--
1936	21,700	--	1974	28,900	--
1937	15,400	--	1975	26,300	--
1938	26,000	--	1976	15,100	--
1939	11,000	--	1977	9,970	--
1940	9,770	--	1978	21,500	--
1941	22,300	--	1979	34,200	--
1942	18,800	--	1980	6,860	--
1943	14,500	--	1981	14,300	--
1944	25,500	--	1982	26,700	--
1945	14,200	--	1983	14,500	--

Water year	Peak flow	Peak-flow code
1984	15,600	--
1985	16,300	--
1986	22,200	--
1987	17,700	--
1988	8,780	--
1989	19,300	--
1990	19,500	--
1991	11,500	--
1992	12,400	--
1993	21,900	--
1994	21,700	--
1995	9,970	--
1996	27,600	--
1997	22,600	--
1998	9,570	--
1999	28,500	--
2000	10,500	--
2001	27,300	--
2002	25,900	--
2003	5,970	--
2004	13,600	--
2005	17,200	--
2006	15,800	--
2007	5,620	--
2008	19,600	--
2009	11,000	--
2010	4,130	--
2011	13,600	--