

Annual Peak-Flow Frequency Analysis

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

Streamgauge number and name:

05046000 Otter Tail River below Orwell Dam near Fergus Falls, 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	Bulletin 17B
Skew option	STATION SKEW
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	
2.9644	0.1886	-0.446	

Outlier criteria and number of peak flows exceeding:

Low	256.5	0
High	3308.9	0

Bulletin 17B Final analysis results:

Moments of the common logarithms of the peak flows:

	Standard	
Mean	deviation	Skewness
2.9644	0.1886	-0.446

Annual frequency curve at selected exceedance probabilities:

Exceedance probability	Peak estimate	Lower-95 level	Upper-95 level
0.9950	251	203	297
0.9900	292	241	340
0.9500	429	372	481
0.9000	519	461	574
0.8000	647	586	706
0.6667	786	721	851
0.5000	951	878	1,030
0.4292	1,030	948	1,120
0.2000	1,340	1,220	1,480
0.1000	1,570	1,420	1,760
0.0400	1,840	1,650	2,100
0.0200	2,020	1,800	2,330
0.0100	2,190	1,930	2,560
0.0050	2,350	2,060	2,770
0.0020	2,550	2,220	3,040

Peak-flow data used in the analysis:

Explanation of symbols and codes

K Peak affected by regulation

Water	Peak	Peak-flow	Water	Peak	Peak-flow
year	flow	code	year	flow	code
1931	686	K	1969	1,260	K
1932	551	K	1970	935	K
1933	577	K	1971	755	K
1934	448	K	1972	1,360	K
1935	472	K	1973	714	K
1936	468	K	1974	1,310	K
1937	518	K	1975	1,090	K
1938	544	K	1976	663	K
1939	603	K	1977	300	K
1940	600	K	1978	1,040	K
1941	611	K	1979	1,110	K
1942	747	K	1980	903	K
1943	1,150	K	1981	267	K
1944	1,200	K	1982	849	K
1945	1,120	K	1983	524	K
1946	777	K	1984	808	K
1947	1,370	K	1985	1,270	K
1948	900	K	1986	1,600	K
1949	564	K	1987	1,050	K
1950	1,100	K	1988	408	K
1951	1,160	K	1989	1,180	K
1952	1,040	K	1990	650	K
1953	1,710	K	1991	1,050	K
1954	1,210	K	1992	589	K
1955	730	K	1993	1,290	K
1956	1,080	K	1994	1,280	K
1957	794	K	1995	1,250	K
1958	534	K	1996	1,260	K
1959	612	K	1997	1,500	K
1960	810	K	1998	1,270	K
1961	664	K	1999	1,310	K
1962	1,260	K	2000	1,000	K
1963	745	K	2001	2,040	K
1964	861	K	2002	1,080	K
1965	1,330	K	2003	968	K
1966	1,490	K	2004	924	K
1967	1,130	K	2005	1,220	K
1968	714	K	2006	1,450	K

Water year	Peak flow	Peak-flow code
2007	2,000	K
2008	1,190	K
2009	2,020	K
2010	1,790	K
2011	2,010	K