Annual Peak-Flow Frequency Analysis

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

Streamgage number and name:
05076500 Red Lake River at Thief River Falls, Minn.

Peak-flow information:
Number of systematic peak flows in record	21
Systematic period begins	1910
Systematic period ends	1930
Length of systematic record	21
Years without information	0
Number of historical peak flows in record	0

Frequency analysis options:
Method	Bulletin 17B
Skew option	Weighted
Generalized skew	-0.481
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:

Mean	Standard deviation	Skewness
3.4871	0.2749	-0.655

Outlier criteria and number of peak flows exceeding:

Low	668.7	0
High	14092.8	0

Bulletin 17B Final analysis results:

Moments of the common logarithms of the peak flows:

Mean	Standard deviation	Skewness
3.4871	0.2749	-0.547

Annual frequency curve at selected exceedance probabilities:

Exceedance probability	Peak estimate	Lower-95 level	Upper-95 level
0.9950	436	209	685
0.9900	549	284	828
0.9500	992	617	1,350
0.9000	1,330	896	1,740
0.8000	1,840	1,350	2,340
0.6667	2,460	1,900	3,090
0.5000	3,250	2,580	4,130
0.4292	3,630	2,890	4,670
0.2000	5,280	4,150	7,260
0.1000	6,600	5,080	9,580
0.0400	8,180	6,120	12,600
0.0200	9,300	6,830	14,900
0.0100	10,400	7,480	17,100
0.0050	11,300	8,080	19,200
0.0020	12,600	8,810	22,100

Peak-flow data used in the analysis:

Explanation of symbols and codes

−−   none

Water year	Peak flow	Peak-flow code
1910	3,220	−−
1911	4,550	−−
1912	1,080	−−
1913	3,820	−−
1914	1,230	−−
1915	2,880	−−
1916	8,000	−−
1917	5,270	−−
1918	995	−−
1919	7,600	−−
1920	3,700	−−
1921	3,300	−−
1922	4,200	−−
1923	4,300	−−
1924	895	−−
1925	3,500	−−
1926	2,640	−−
1927	6,080	−−
1928	2,640	−−
1929	4,200	−−
1930	2,020	−−