

Annual Peak-Flow Frequency Analysis

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

Streamgage number and name:

05475000 Heron Lake outlet near spillway, County Highway 24, Heron Lake, Minn.

Peak-flow information:

Number of systematic peak flows in record	13
Systematic period begins	1931
Systematic period ends	1943
Length of systematic record	13
Years without information	0
Number of historical peak flows in record	0

Frequency analysis options:

Method	Expected moments algorithm (EMA)
Skew option	Streamgage
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	
2.5474	0.5641	-0.829	

Low-outlier information:

Number of low outliers	1
Low-outlier threshold	53

Final analysis results:

Moments of the common logarithms of the peak flows:

	Standard	
Mean	deviation	Skewness
2.5474	0.5641	-0.829

Annual frequency curve at selected exceedance probabilities:

Exceedance probability	Peak estimate	Lower-95 level	Upper-95 level
0.9950	4.62	0.00	25.9
0.9900	8.05	0.00	36.0
0.9500	32.10	0.21	92.5
0.9000	62.10	1.32	159.0
0.8000	129.00	8.33	317.0
0.6667	237.00	65.70	614.0
0.5000	421.00	168.00	1,090.0
0.4292	524.00	222.00	1,280.0
0.2000	1,070.00	416.00	2,180.0
0.1000	1,590.00	745.00	6,940.0
0.0400	2,280.00	1,160.00	8,270.0
0.0200	2,780.00	1,160.00	10,600.0
0.0100	3,260.00	1,160.00	15,100.0
0.0050	3,710.00	1,160.00	22,800.0
0.0020	4,250.00	1,160.00	43,500.0

Peak-flow data used in the analysis:

Explanation of symbols and codes

K Peak affected by regulation

* Less than low-outlier threshold

Water	Peak	Peak-flow
year	flow	code
1931	11	K *
1932	500	K
1933	53	K
1934	200	K
1935	226	K
1936	960	K
1937	392	K
1938	1,660	K
1939	422	K
1940	184	K
1941	471	K
1942	1,880	K
1943	1,170	K