

Annual Peak-Flow Frequency Analysis

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

Streamgauge number and name:

05076600 Red Lake River tributary near Thief River Falls, Minn.

Peak-flow information:

| | |
|---|------|
| Number of systematic peak flows in record | 20 |
| Systematic period begins | 1962 |
| Systematic period ends | 1981 |
| Length of systematic record | 20 |
| Years without information | 0 |
| Number of historical peak flows in record | 0 |

Frequency analysis options:

| | |
|------------------------------------|-------------------------------|
| Method | Bulletin 17B |
| Skew option | Weighted |
| Generalized skew | -0.48 |
| 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:

| | Standard | |
|--------|-----------|----------|
| Mean | deviation | Skewness |
| 1.8660 | 0.2537 | 0.193 |

Outlier criteria and number of peak flows exceeding:

| | | |
|------|-------|---|
| Low | 18.2 | 0 |
| High | 295.8 | 0 |

Bulletin 17B Final analysis results:

Moments of the common logarithms of the peak flows:

| | Standard | |
|--------|-----------|----------|
| Mean | deviation | Skewness |
| 1.8660 | 0.2537 | -0.204 |

Annual frequency curve at selected exceedance probabilities:

| Exceedance probability | Peak estimate | Lower-95 level | Upper-95 level |
|---------------------------|------------------|-------------------|-------------------|
| 0.9950 | 14.6 | 7.7 | 21.6 |
| 0.9900 | 17.3 | 9.7 | 24.8 |
| 0.9500 | 27.2 | 17.5 | 36.2 |
| 0.9000 | 34.3 | 23.7 | 44.3 |
| 0.8000 | 45.2 | 33.5 | 56.7 |
| 0.6667 | 58.1 | 45.2 | 72.0 |
| 0.5000 | 74.9 | 60.0 | 93.8 |
| 0.4292 | 83.1 | 66.9 | 105.0 |
| 0.2000 | 121.0 | 96.2 | 163.0 |
| 0.1000 | 153.0 | 119.0 | 220.0 |
| 0.0400 | 196.0 | 147.0 | 302.0 |
| 0.0200 | 228.0 | 168.0 | 370.0 |
| 0.0100 | 262.0 | 188.0 | 442.0 |
| 0.0050 | 296.0 | 208.0 | 520.0 |
| 0.0020 | 342.0 | 234.0 | 630.0 |

Peak-flow data used in the analysis:

Explanation of symbols and codes

-- none

| Water | Peak | Peak-flow |
|-------|------|-----------|
| year | flow | code |
| 1962 | 36 | -- |
| 1963 | 81 | -- |
| 1964 | 77 | -- |
| 1965 | 150 | -- |
| 1966 | 39 | -- |
| 1967 | 115 | -- |
| 1968 | 30 | -- |
| 1969 | 200 | -- |
| 1970 | 111 | -- |
| 1971 | 64 | -- |
| 1972 | 45 | -- |
| 1973 | 43 | -- |
| 1974 | 117 | -- |
| 1975 | 52 | -- |
| 1976 | 52 | -- |
| 1977 | 89 | -- |
| 1978 | 130 | -- |
| 1979 | 195 | -- |
| 1980 | 67 | -- |
| 1981 | 35 | -- |