

Annual Peak-Flow Frequency Analysis

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

**Streamgauge number and name:**

05216860 Swan River near Calumet, Minn.

**Peak-flow information:**

|   |      |
|---|------|
| Number of systematic peak flows in record | 27   |
| Systematic period begins                  | 1964 |
| Systematic period ends                    | 1990 |
| Length of systematic record               | 27   |
| Years without information                 | 0    |
| Number of historical peak flows in record | 0    |

**Frequency analysis options:**

|                                    |                               |
|------------------------------------|-------------------------------|
| Method                             | Bulletin 17B                  |
| Skew option                        | Weighted                      |
| Generalized skew                   | -0.119                        |
| 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 |
| 2.5054 | 0.2419    | 0.005    |

**Outlier criteria and number of peak flows exceeding:**

|      |        |   |
|------|--------|---|
| Low  | 78.7   | 0 |
| High | 1302.4 | 0 |

**Bulletin 17B Final analysis results:**

**Moments of the common logarithms of the peak flows:**

|        | Standard  |          |
|--------|-----------|----------|
| Mean   | deviation | Skewness |
| 2.5054 | 0.2419    | -0.057   |

**Annual frequency curve at selected exceedance probabilities:**

[WIE, Weighted independent estimate; --, not computed]

| Exceedance<br>probability | Peak<br>estimate | Lower-95<br>level | Upper 95<br>level | WIE<br>estimate | Lower-95<br>WIE level | Upper 95<br>WIE level |
|---------------------------|------------------|-------------------|-------------------|-----------------|-----------------------|-----------------------|
| 0.9950                    | 74.0             | 45.9              | 102               | --              | --                    | --                    |
| 0.9900                    | 85.6             | 55.2              | 115               | --              | --                    | --                    |
| 0.9500                    | 127.0            | 90.5              | 161               | --              | --                    | --                    |
| 0.9000                    | 156.0            | 117.0             | 193               | --              | --                    | --                    |
| 0.8000                    | 201.0            | 158.0             | 242               | --              | --                    | --                    |
| 0.6667                    | 253.0            | 206.0             | 302               | --              | --                    | --                    |
| 0.5000                    | 322.0            | 269.0             | 386               | 323             | 263                   | 397                   |
| 0.4292                    | 355.0            | 298.0             | 429               | --              | --                    | --                    |
| 0.2000                    | 512.0            | 425.0             | 651               | 509             | 405                   | 639                   |
| 0.1000                    | 651.0            | 528.0             | 869               | 644             | 496                   | 837                   |
| 0.0400                    | 840.0            | 660.0             | 1,190             | 822             | 599                   | 1,130                 |
| 0.0200                    | 988.0            | 758.0             | 1,460             | 954             | 665                   | 1,370                 |
| 0.0100                    | 1,140.0          | 858.0             | 1,750             | 1,090           | 726                   | 1,640                 |
| 0.0050                    | 1,300.0          | 960.0             | 2,070             | --              | --                    | --                    |
| 0.0020                    | 1,530.0          | 1,100.0           | 2,530             | 1,420           | 843                   | 2,380                 |

**Peak-flow data used in the analysis:**

Explanation of symbols and codes

-- none

| Water | Peak | Peak-flow |
|-------|------|-----------|
| year  | flow | code      |
| 1964  | 423  | --        |
| 1965  | 534  | --        |
| 1966  | 540  | --        |
| 1967  | 187  | --        |
| 1968  | 193  | --        |
| 1969  | 773  | --        |
| 1970  | 510  | --        |
| 1971  | 710  | --        |
| 1972  | 456  | --        |
| 1973  | 146  | --        |
| 1974  | 650  | --        |
| 1975  | 631  | --        |
| 1976  | 200  | --        |
| 1977  | 189  | --        |
| 1978  | 210  | --        |
| 1979  | 680  | --        |
| 1980  | 117  | --        |
| 1981  | 174  | --        |
| 1982  | 358  | --        |
| 1983  | 178  | --        |
| 1984  | 300  | --        |
| 1985  | 430  | --        |
| 1986  | 382  | --        |
| 1987  | 253  | --        |
| 1988  | 195  | --        |
| 1989  | 357  | --        |
| 1990  | 216  | --        |