

Annual Peak-Flow Frequency Analysis

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

**Streamgauge number and name:**

05378300 Straight Valley Creek near Rollingstone, Minn.

**Peak-flow information:**

|   |      |
|---|------|
| Number of systematic peak flows in record | 27   |
| Systematic period begins                  | 1959 |
| Systematic period ends                    | 1985 |
| 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                   | -0.198                        |
| 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 |
| 2.3982 | 0.5035    | -0.577   |

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

|      |        |   |
|------|--------|---|
| Low  | 13.5   | 0 |
| High | 4639.6 | 0 |

**Bulletin 17B Final analysis results:**

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

|        | Standard  |          |
|--------|-----------|----------|
| Mean   | deviation | Skewness |
| 2.3982 | 0.5035    | -0.362   |

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

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

| Exceedance probability | Peak estimate | Lower-95 level | Upper 95 level | WIE estimate | Lower-95 WIE level | Upper 95 WIE level |
|------------------------|---------------|----------------|----------------|--------------|--------------------|--------------------|
| 0.9950                 | 8.5           | 2.9            | 17.4           | --           | --                 | --                 |
| 0.9900                 | 12.4          | 4.7            | 23.8           | --           | --                 | --                 |
| 0.9500                 | 33.2          | 16.1           | 55.0           | --           | --                 | --                 |
| 0.9000                 | 54.5          | 29.6           | 84.8           | --           | --                 | --                 |
| 0.8000                 | 96.8          | 59.1           | 143.0          | --           | --                 | --                 |
| 0.6667                 | 161.0         | 106.0          | 233.0          | --           | --                 | --                 |
| 0.5000                 | 268.0         | 185.0          | 393.0          | 282          | 192                | 414                |
| 0.4292                 | 329.0         | 228.0          | 489.0          | --           | --                 | --                 |
| 0.2000                 | 674.0         | 455.0          | 1,110.0        | 711          | 502                | 1,010              |
| 0.1000                 | 1,050.0       | 681.0          | 1,890.0        | 1,120        | 789                | 1,590              |
| 0.0400                 | 1,640.0       | 1,010.0        | 3,270.0        | 1,790        | 1,240              | 2,590              |
| 0.0200                 | 2,150.0       | 1,270.0        | 4,590.0        | 2,390        | 1,610              | 3,570              |
| 0.0100                 | 2,720.0       | 1,560.0        | 6,160.0        | 3,090        | 1,970              | 4,830              |
| 0.0050                 | 3,340.0       | 1,860.0        | 7,990.0        | --           | --                 | --                 |
| 0.0020                 | 4,250.0       | 2,280.0        | 10,800.0       | 5,090        | 2,890              | 8,960              |

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

Explanation of symbols and codes

-- none

| Water<br>year | Peak<br>flow | Peak-flow<br>code |
|---------------|--------------|-------------------|
| 1959          | 1,200        | --                |
| 1960          | 255          | --                |
| 1961          | 635          | --                |
| 1962          | 625          | --                |
| 1963          | 149          | --                |
| 1964          | 60           | --                |
| 1965          | 495          | --                |
| 1966          | 233          | --                |
| 1967          | 460          | --                |
| 1968          | 402          | --                |
| 1969          | 85           | --                |
| 1970          | 104          | --                |
| 1971          | 29           | --                |
| 1972          | 224          | --                |
| 1973          | 470          | --                |
| 1974          | 364          | --                |
| 1975          | 188          | --                |
| 1976          | 496          | --                |
| 1977          | 827          | --                |
| 1978          | 1,500        | --                |
| 1979          | 272          | --                |
| 1980          | 1,330        | --                |
| 1981          | 470          | --                |
| 1982          | 22           | --                |
| 1983          | 74           | --                |
| 1984          | 30           | --                |
| 1985          | 258          | --                |