Annual Peak-Flow Frequency Analysis

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

**Streamgage number and name:**

05068000 Sand Hill River at Beltrami, Minn.

**Peak-flow information:**

| | |
|---|---|
| Number of systematic peak flows in record | 16 |
| Systematic period begins | 1943 |
| Systematic period ends | 1958 |
| Length of systematic record | 16 |
| Years without information | 0 |
| Number of historical peak flows in record | 0 |

**Frequency analysis options:**

| | |
|---|---|
| Method | Bulletin 17B |
| Skew option | STATION SKEW |
| 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 |
|---|---|---|
| 1.8527 | 0.3059 | 0.473 |

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

| | | |
|---|---|---|
| Low | 14.3 | 0 |
| High | 354.7 | 0 |

**Bulletin 17B Final analysis results:**

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

| Mean | Standard deviation | Skewness |
|------|------|------|
| 1.8527 | 0.3059 | 0.473 |

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

| Exceedance probability | Peak estimate | Lower-95 level | Upper-95 level |
|------|------|------|------|
| 0.9950 | 15.9 | 7.6 | 24.4 |
| 0.9900 | 17.7 | 8.9 | 26.8 |
| 0.9500 | 24.8 | 14.0 | 35.4 |
| 0.9000 | 30.2 | 18.3 | 42.0 |
| 0.8000 | 39.0 | 25.5 | 52.8 |
| 0.6667 | 50.4 | 35.2 | 67.4 |
| 0.5000 | 67.4 | 49.4 | 90.9 |
| 0.4292 | 76.5 | 56.8 | 104.0 |
| 0.2000 | 126.0 | 93.3 | 191.0 |
| 0.1000 | 181.0 | 129.0 | 305.0 |
| 0.0400 | 272.0 | 182.0 | 531.0 |
| 0.0200 | 359.0 | 228.0 | 780.0 |
| 0.0100 | 466.0 | 281.0 | 1,120.0 |
| 0.0050 | 596.0 | 343.0 | 1,580.0 |
| 0.0020 | 812.0 | 438.0 | 2,440.0 |

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

Explanation of symbols and codes

K    Peak affected by regulation

| Water year | Peak flow | Peak-flow code |
|---|---|---|
| 1943 | 179 | K |
| 1944 | 30 | K |
| 1945 | 53 | K |
| 1946 | 42 | K |
| 1947 | 167 | K |
| 1948 | 75 | K |
| 1949 | 163 | K |
| 1950 | 291 | K |
| 1951 | 71 | K |
| 1952 | 46 | K |
| 1953 | 62 | K |
| 1954 | 49 | K |
| 1955 | 54 | K |
| 1956 | 105 | K |
| 1957 | 50 | K |
| 1958 | 22 | K |