

Annual Peak-Flow Frequency Analysis

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

Streamgauge number and name:

05318890 South Fork Watonwan River near Odin, Minn.

Peak-flow information:

| | |
|---|------|
| Number of systematic peak flows in record | 18 |
| Systematic period begins | 1979 |
| Systematic period ends | 1997 |
| Length of systematic record | 19 |
| Years without information | 1 |
| Number of historical peak flows in record | 0 |

Frequency analysis options:

| | |
|------------------------------------|-------------------------------|
| Method | Bulletin 17B |
| Skew option | Weighted |
| Generalized skew | -0.142 |
| 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 |
| 2.6379 | 0.4376 | -0.628 |

Outlier criteria and number of peak flows exceeding:

| | | |
|------|--------|---|
| Low | 41.3 | 0 |
| High | 4569.3 | 0 |

Bulletin 17B Final analysis results:

Moments of the common logarithms of the peak flows:

| | Standard | |
|--------|-----------|----------|
| Mean | deviation | Skewness |
| 2.6379 | 0.4376 | -0.314 |

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 | 24.1 | 7.1 | 49.8 | -- | -- | -- |
| 0.9900 | 33.1 | 10.9 | 64.4 | -- | -- | -- |
| 0.9500 | 76.1 | 33.4 | 128.0 | -- | -- | -- |
| 0.9000 | 116.0 | 58.3 | 184.0 | -- | -- | -- |
| 0.8000 | 190.0 | 109.0 | 285.0 | -- | -- | -- |
| 0.6667 | 294.0 | 186.0 | 435.0 | -- | -- | -- |
| 0.5000 | 458.0 | 306.0 | 692.0 | 471 | 308 | 720 |
| 0.4292 | 547.0 | 369.0 | 843.0 | -- | -- | -- |
| 0.2000 | 1,030.0 | 681.0 | 1,800.0 | 1,040 | 679 | 1,580 |
| 0.1000 | 1,520.0 | 968.0 | 2,970.0 | 1,520 | 967 | 2,400 |
| 0.0400 | 2,260.0 | 1,360.0 | 5,000.0 | 2,250 | 1,350 | 3,760 |
| 0.0200 | 2,900.0 | 1,680.0 | 6,940.0 | 2,870 | 1,630 | 5,060 |
| 0.0100 | 3,580.0 | 2,000.0 | 9,240.0 | 3,570 | 1,920 | 6,620 |
| 0.0050 | 4,330.0 | 2,340.0 | 11,900.0 | -- | -- | -- |
| 0.0020 | 5,400.0 | 2,800.0 | 16,100.0 | 5,410 | 2,550 | 11,500 |

Peak-flow data used in the analysis:

Explanation of symbols and codes

-- none

| Water | Peak | Peak-flow |
|--------------------------|-------|-----------|
| year | flow | code |
| 1979 | 836 | -- |
| 1980 | 1,920 | -- |
| 1981 | 117 | -- |
| 1982 | 360 | -- |
| Gap in systematic record | | |
| 1984 | 550 | -- |
| 1985 | 980 | -- |
| 1986 | 670 | -- |
| 1987 | 258 | -- |
| 1988 | 60 | -- |
| 1989 | 111 | -- |
| 1990 | 84 | -- |
| 1991 | 700 | -- |
| 1992 | 880 | -- |
| 1993 | 1,500 | -- |
| 1994 | 405 | -- |
| 1995 | 510 | -- |
| 1996 | 1,130 | -- |
| 1997 | 400 | -- |