

U. S. GEOLOGICAL SURVEY
 ANNUAL PEAK FLOW FREQUENCY ANALYSIS
 Following Bulletin 17-B Guidelines
 Program peakfq
 (Version 4.0, December, 2000)

Station - 04087120 MENOMONEE RIVER AT WAUWATOSA, WI
 2002 MAR 13 09:02:42

I N P U T D A T A S U M M A R Y

| | | |
|--------------------------------------|---|----------|
| Number of peaks in record | = | 39 |
| Peaks not used in analysis | = | 0 |
| Systematic peaks in analysis | = | 39 |
| Historic peaks in analysis | = | 0 |
| Years of historic record | = | 0 |
| Generalized skew | = | -0.398 |
| Standard error of generalized skew | = | 0.550 |
| Skew option | = | WEIGHTED |
| Gage base discharge | = | 0.0 |
| User supplied high outlier threshold | = | -- |
| User supplied low outlier criterion | = | -- |
| Plotting position parameter | = | 0.00 |

***** NOTICE -- Preliminary machine computations. *****
 ***** User responsible for assessment and interpretation. *****

| | |
|---|---------|
| WCF134I-NO SYSTEMATIC PEAKS WERE BELOW GAGE BASE. | 0.0 |
| WCF195I-NO LOW OUTLIERS WERE DETECTED BELOW CRITERION. | 708.9 |
| WCF163I-NO HIGH OUTLIERS OR HISTORIC PEAKS EXCEEDED HHBASE. | 19439.5 |

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ANNUAL FREQUENCY CURVE PARAMETERS -- LOG-PEARSON TYPE III

| | FLOOD BASE | | LOGARITHMIC | | |
|-------------------|------------|------------------------|-------------|--------------------|-------|
| | DISCHARGE | EXCEEDANCE PROBABILITY | MEAN | STANDARD DEVIATION | SKEW |
| SYSTEMATIC RECORD | 0.0 | 1.0000 | 3.5696 | 0.2692 | 0.336 |
| BULL.17B ESTIMATE | 0.0 | 1.0000 | 3.5696 | 0.2692 | 0.086 |

ANNUAL FREQUENCY CURVE -- DISCHARGES AT SELECTED EXCEEDANCE PROBABILITIES

| ANNUAL EXCEEDANCE PROBABILITY | BULL.17B ESTIMATE | SYSTEMATIC RECORD | 'EXPECTED PROBABILITY' ESTIMATE | 95-PCT CONFIDENCE LIMITS FOR BULL. 17B ESTIMATES | |
|-------------------------------|-------------------|---------------------|---------------------------------|--|---------|
| | | | | LOWER | UPPER |
| 0.9950 | 790.8 | 914.3 | 717.1 | 528.8 | 1055.0 |
| 0.9900 | 913.1 | 1024.0 | 845.2 | 629.0 | 1195.0 |
| 0.9500 | 1360.0 | 1426.0 | 1310.0 | 1013.0 | 1695.0 |
| 0.9000 | 1687.0 | 1721.0 | 1648.0 | 1306.0 | 2056.0 |
| 0.8000 | 2198.0 | 2187.0 | 2172.0 | 1773.0 | 2621.0 |
| 0.5000 | 3679.0 | 3586.0 | 3679.0 | 3115.0 | 4344.0 |
| 0.2000 | 6237.0 | 6176.0 | 6318.0 | 5232.0 | 7726.0 |
| 0.1000 | 8261.0 | 8373.0 | 8476.0 | 6771.0 | 10690.0 |
| 0.0400 | 11190.0 | 11760.0 | 11730.0 | 8875.0 | 15310.0 |
| 0.0200 | 13640.0 | 14780.0 | 14580.0 | 10560.0 | 19400.0 |
| 0.0100 | 16330.0 | 18260.0 | 17850.0 | 12350.0 | 24090.0 |
| 0.0050 | 19270.0 | 22260.0 | 21610.0 | 14250.0 | 29430.0 |
| 0.0020 | 23590.0 | 28490.0 | 27470.0 | 16960.0 | 37620.0 |
| 0.6667 | 2823.1 | (1.50-year flood) | | | |
| 0.4292 | 4107.5 | (2.33-year flood) | | | |

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 2002 MAR 13 09:02:42

I N P U T D A T A L I S T I N G

| WATER YEAR | DISCHARGE | CODES | WATER YEAR | DISCHARGE | CODES |
|------------|-----------|-------|------------|-----------|-------|
| 1962 | 1560.0 | | 1982 | 4740.0 | |
| 1963 | 900.0 | | 1983 | 7560.0 | |
| 1964 | 6010.0 | | 1984 | 2480.0 | |
| 1965 | 2190.0 | | 1985 | 3610.0 | |
| 1966 | 2520.0 | | 1986 | 10600.0 | |
| 1967 | 1700.0 | | 1987 | 2560.0 | |
| 1968 | 4660.0 | | 1988 | 3110.0 | |
| 1969 | 3050.0 | | 1989 | 2670.0 | |
| 1970 | 2050.0 | | 1990 | 3480.0 | |
| 1971 | 2180.0 | | 1991 | 2060.0 | |
| 1972 | 6610.0 | | 1992 | 1800.0 | |
| 1973 | 13500.0 | | 1993 | 4220.0 | |
| 1974 | 2160.0 | | 1994 | 4190.0 | |
| 1975 | 2480.0 | | 1995 | 3650.0 | |
| 1976 | 4590.0 | | 1996 | 5230.0 | |
| 1977 | 2470.0 | | 1997 | 13500.0 | |
| 1978 | 5070.0 | | 1998 | 12800.0 | |
| 1979 | 3200.0 | | 1999 | 6280.0 | |
| 1980 | 3150.0 | | 2000 | 5640.0 | |
| 1981 | 6120.0 | | | | |

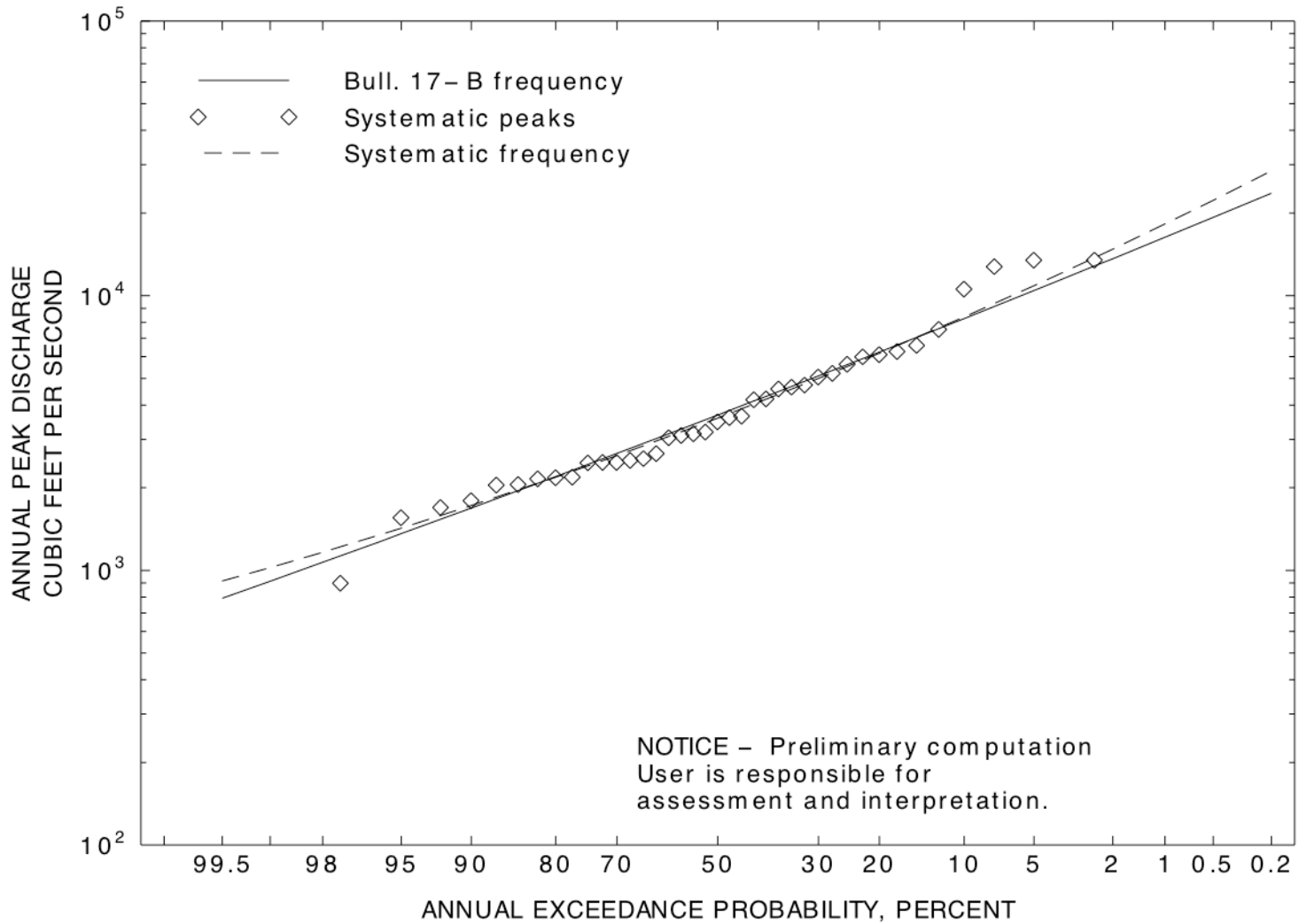
Explanation of peak discharge qualification codes

| PEAKFQ | WATSTORE | CODE | DEFINITION |
|--------|----------|--------|--|
| D | | 3 | Dam failure, non-recurrent flow anomaly |
| G | | 8 | Discharge greater than stated value |
| X | | 3+8 | Both of the above |
| L | | 4 | Discharge less than stated value |
| K | | 6 OR C | Known effect of regulation or urbanization |
| H | | 7 | Historic peak |

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EMPIRICAL FREQUENCY CURVES -- WEIBULL PLOTTING POSITIONS

| WATER YEAR | RANKED DISCHARGE | SYSTEMATIC RECORD | BULL.17B ESTIMATE |
|---------------|---------------------|----------------------|----------------------|
| 1973 | 13500.0 | 0.0250 | 0.0250 |
| 1997 | 13500.0 | 0.0500 | 0.0500 |
| 1998 | 12800.0 | 0.0750 | 0.0750 |
| 1986 | 10600.0 | 0.1000 | 0.1000 |
| 1983 | 7560.0 | 0.1250 | 0.1250 |
| 1972 | 6610.0 | 0.1500 | 0.1500 |
| 1999 | 6280.0 | 0.1750 | 0.1750 |
| 1981 | 6120.0 | 0.2000 | 0.2000 |
| 1964 | 6010.0 | 0.2250 | 0.2250 |
| 2000 | 5640.0 | 0.2500 | 0.2500 |
| 1996 | 5230.0 | 0.2750 | 0.2750 |
| 1978 | 5070.0 | 0.3000 | 0.3000 |
| 1982 | 4740.0 | 0.3250 | 0.3250 |
| 1968 | 4660.0 | 0.3500 | 0.3500 |
| 1976 | 4590.0 | 0.3750 | 0.3750 |
| 1993 | 4220.0 | 0.4000 | 0.4000 |
| 1994 | 4190.0 | 0.4250 | 0.4250 |
| 1995 | 3650.0 | 0.4500 | 0.4500 |
| 1985 | 3610.0 | 0.4750 | 0.4750 |
| 1990 | 3480.0 | 0.5000 | 0.5000 |
| 1979 | 3200.0 | 0.5250 | 0.5250 |
| 1980 | 3150.0 | 0.5500 | 0.5500 |
| 1988 | 3110.0 | 0.5750 | 0.5750 |
| 1969 | 3050.0 | 0.6000 | 0.6000 |
| 1989 | 2670.0 | 0.6250 | 0.6250 |
| 1987 | 2560.0 | 0.6500 | 0.6500 |
| 1966 | 2520.0 | 0.6750 | 0.6750 |
| 1975 | 2480.0 | 0.7000 | 0.7000 |
| 1984 | 2480.0 | 0.7250 | 0.7250 |
| 1977 | 2470.0 | 0.7500 | 0.7500 |
| 1965 | 2190.0 | 0.7750 | 0.7750 |
| 1971 | 2180.0 | 0.8000 | 0.8000 |
| 1974 | 2160.0 | 0.8250 | 0.8250 |
| 1991 | 2060.0 | 0.8500 | 0.8500 |
| 1970 | 2050.0 | 0.8750 | 0.8750 |
| 1992 | 1800.0 | 0.9000 | 0.9000 |
| 1967 | 1700.0 | 0.9250 | 0.9250 |
| 1962 | 1560.0 | 0.9500 | 0.9500 |
| 1963 | 900.0 | 0.9750 | 0.9750 |



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