

U. S. GEOLOGICAL SURVEY  
 ANNUAL PEAK FLOW FREQUENCY ANALYSIS  
 Following Bulletin 17-B Guidelines  
 Program peakfq  
 (Version 4.1, February, 2002)

Station - 04067000 MENOMINEE RIVER NEAR KOSS, MI  
 2005 APR 8 12:40:11

I N P U T   D A T A   S U M M A R Y

Number of peaks in record	=	69
Peaks not used in analysis	=	0
Systematic peaks in analysis	=	68
Historic peaks in analysis	=	1
Years of historic record	=	96
Generalized skew	=	-0.180
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.		3860.7
WCF156I-17B HI-OUTLIER TEST SUPERSEDED BY MIN HIST PK	43460.9	
WCF165I-HIGH OUTLIERS AND HISTORIC PEAKS ABOVE HHBASE.	31 1	14600.0
**WCF171W-NUMBER HI-OUT/HIST PKS EXCEEDS 10PCT OF SYS PKS.	32	68
WCF002J-CALCS COMPLETED. RETURN CODE = 2		

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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	4.1124	0.1824	-0.479
BULL.17B ESTIMATE	0.0	1.0000	4.0760	0.1786	-0.273

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	3717.0	3642.0	3538.0	3006.0	4380.0
0.9900	4216.0	4220.0	4059.0	3475.0	4901.0
0.9500	5874.0	6162.0	5774.0	5074.0	6605.0
0.9000	6958.0	7436.0	6885.0	6141.0	7710.0
0.8000	8482.0	9219.0	8439.0	7648.0	9275.0
0.5000	12140.0	13390.0	12140.0	11180.0	13190.0
0.2000	16910.0	18560.0	16980.0	15460.0	18780.0
0.1000	19910.0	21610.0	20070.0	18000.0	22490.0
0.0400	23510.0	25100.0	23840.0	20960.0	27120.0
0.0200	26070.0	27450.0	26570.0	23020.0	30500.0
0.0100	28540.0	29620.0	29240.0	24970.0	33810.0
0.0050	30930.0	31640.0	31860.0	26840.0	37060.0
0.0020	33990.0	34120.0	35320.0	29210.0	41310.0
0.6667	10136.0	( 1.50-year flood )			
0.4292	13063.5	( 2.33-year flood )			

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I N P U T   D A T A   L I S T I N G

WATER YEAR	DISCHARGE	CODES	WATER YEAR	DISCHARGE	CODES
-1908	14600.0	H	1948	6720.0	
1914	20800.0		1949	8420.0	
1915	8650.0		1950	16900.0	
1916	23200.0		1951	19000.0	
1917	13800.0		1952	14700.0	
1918	15000.0		1953	19300.0	
1919	14100.0		1954	16700.0	
1920	21800.0		1955	14800.0	
1921	20300.0		1956	7360.0	
1922	20500.0		1957	8370.0	
1923	18700.0		1958	10700.0	
1924	11800.0		1959	9650.0	
1925	4310.0		1960	33000.0	
1926	10900.0		1961	11400.0	
1927	13500.0		1962	9370.0	
1928	16900.0		1963	7120.0	
1929	19700.0		1964	5640.0	
1930	9380.0		1965	26600.0	
1931	4060.0		1966	8400.0	
1932	11100.0		1967	16900.0	
1933	14700.0		1968	12600.0	
1934	13400.0		1969	14600.0	
1935	13600.0		1970	20000.0	
1936	13000.0		1971	17000.0	
1937	13800.0		1972	18700.0	
1938	20700.0		1973	17600.0	
1939	16900.0		1974	7800.0	
1940	13700.0		1975	16500.0	
1941	9180.0		1976	15800.0	
1942	10800.0		1977	7870.0	
1943	18900.0		1978	8950.0	
1944	8380.0		1979	23800.0	
1945	10800.0		1980	10700.0	
1946	10900.0		1981	16400.0	
1947	8870.0				

Explanation of peak discharge qualification codes

PEAKFQ	WATSTORE	DEFINITION
CODE	CODE	
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

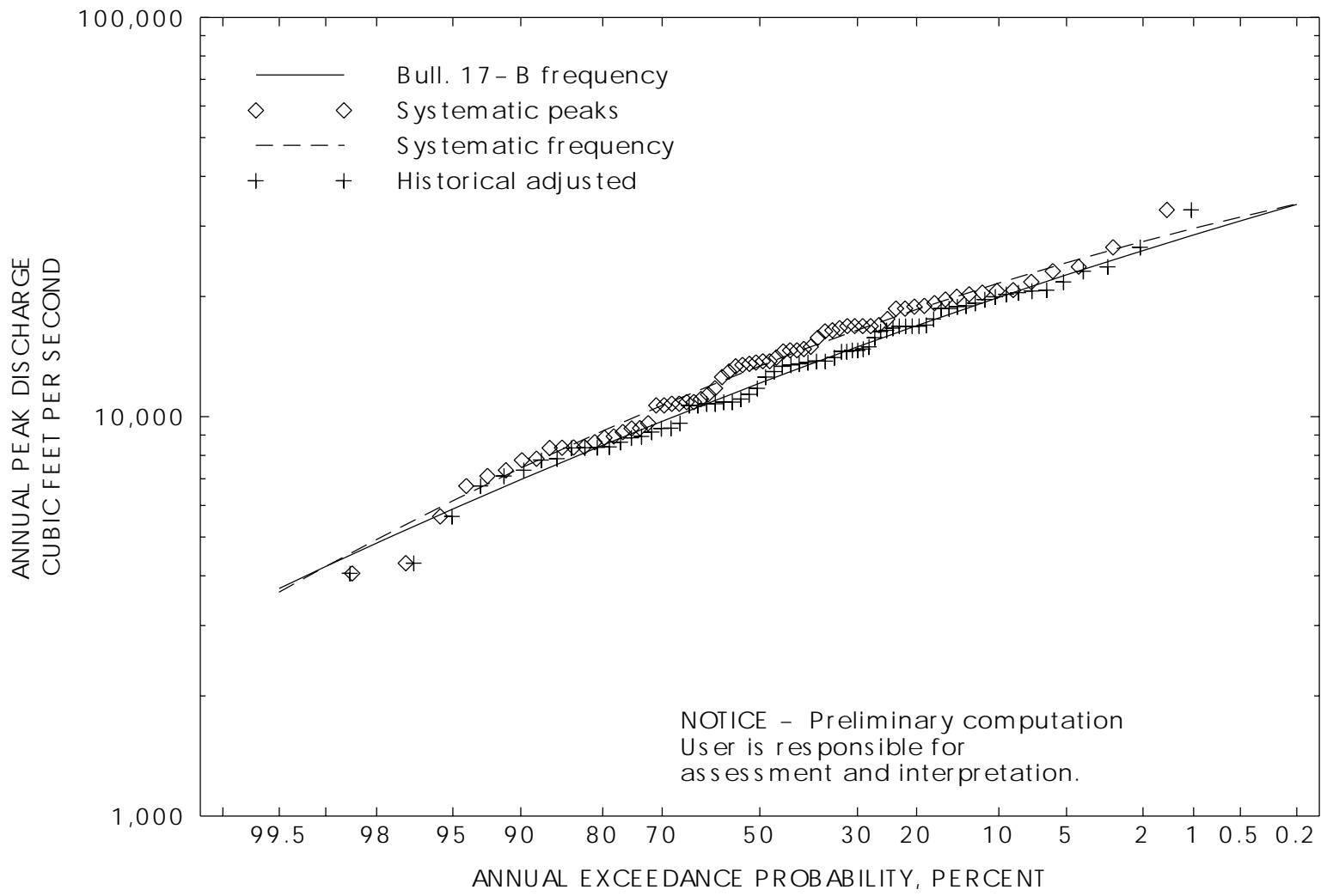


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EMPIRICAL FREQUENCY CURVES -- WEIBULL PLOTTING POSITIONS

WATER YEAR	RANKED DISCHARGE	SYSTEMATIC RECORD	BULL.17B ESTIMATE
1960	33000.0	0.0145	0.0103
1965	26600.0	0.0290	0.0206
1979	23800.0	0.0435	0.0309
1916	23200.0	0.0580	0.0412
1920	21800.0	0.0725	0.0515
1914	20800.0	0.0870	0.0619
1938	20700.0	0.1014	0.0722
1922	20500.0	0.1159	0.0825
1921	20300.0	0.1304	0.0928
1970	20000.0	0.1449	0.1031
1929	19700.0	0.1594	0.1134
1953	19300.0	0.1739	0.1237
1951	19000.0	0.1884	0.1340
1943	18900.0	0.2029	0.1443
1923	18700.0	0.2174	0.1546
1972	18700.0	0.2319	0.1649
1973	17600.0	0.2464	0.1753
1971	17000.0	0.2609	0.1856
1928	16900.0	0.2754	0.1959
1939	16900.0	0.2899	0.2062
1950	16900.0	0.3043	0.2165
1967	16900.0	0.3188	0.2268
1954	16700.0	0.3333	0.2371
1975	16500.0	0.3478	0.2474
1981	16400.0	0.3623	0.2577
1976	15800.0	0.3768	0.2680
1918	15000.0	0.3913	0.2784
1955	14800.0	0.4058	0.2887
1933	14700.0	0.4203	0.2990
1952	14700.0	0.4348	0.3093
-1908	14600.0	--	0.3196
1969	14600.0	0.4493	0.3299
1919	14100.0	0.4638	0.3440
1917	13800.0	0.4783	0.3618
1937	13800.0	0.4928	0.3796
1940	13700.0	0.5072	0.3975
1935	13600.0	0.5217	0.4153
1927	13500.0	0.5362	0.4331
1934	13400.0	0.5507	0.4510
1936	13000.0	0.5652	0.4688
1968	12600.0	0.5797	0.4866
1924	11800.0	0.5942	0.5045
1961	11400.0	0.6087	0.5223
1932	11100.0	0.6232	0.5401
1926	10900.0	0.6377	0.5580
1946	10900.0	0.6522	0.5758
1942	10800.0	0.6667	0.5936
1945	10800.0	0.6812	0.6115

1958	10700.0	0.6957	0.6293
1980	10700.0	0.7101	0.6471
1959	9650.0	0.7246	0.6649
1930	9380.0	0.7391	0.6828
1962	9370.0	0.7536	0.7006
1941	9180.0	0.7681	0.7184
1978	8950.0	0.7826	0.7363
1947	8870.0	0.7971	0.7541
1915	8650.0	0.8116	0.7719
1949	8420.0	0.8261	0.7898
1966	8400.0	0.8406	0.8076
1944	8380.0	0.8551	0.8254
1957	8370.0	0.8696	0.8433
1977	7870.0	0.8841	0.8611
1974	7800.0	0.8986	0.8789
1956	7360.0	0.9130	0.8968
1963	7120.0	0.9275	0.9146
1948	6720.0	0.9420	0.9324
1964	5640.0	0.9565	0.9503
1925	4310.0	0.9710	0.9681
1931	4060.0	0.9855	0.9859



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