

Annual Peak-Flow Frequency Analysis

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

**Streamgauge number and name:**

05102500 Red River of the North at Emerson, Manitoba, Canada

**Peak-flow information:**

Number of systematic peak flows in record	98
Systematic period begins	1861
Systematic period ends	2010
Length of systematic record	150
Years without information	52
Peak flows not used in analysis	1
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:**

	Standard		
Mean	deviation	Skewness	
4.3455	0.3318	-0.274	

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

Low	2220.1	0
High	221155.8	0

**Bulletin 17B Final analysis results:**

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

	Standard	
Mean	deviation	Skewness
4.3455	0.3318	-0.274

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

Exceedance probability	Peak estimate	Lower-95 level	Upper-95 level
0.9950	2,540	1,850	3,300
0.9900	3,220	2,400	4,080
0.9500	5,960	4,780	7,160
0.9000	8,160	6,750	9,590
0.8000	11,800	10,100	13,600
0.6667	16,400	14,300	18,700
0.5000	23,000	20,200	26,100
0.4292	26,200	23,100	30,000
0.2000	42,500	36,900	49,800
0.1000	57,500	49,100	69,200
0.0400	78,400	65,400	97,200
0.0200	94,900	78,100	120,000
0.0100	112,000	91,000	145,000
0.0050	130,000	104,000	171,000
0.0020	155,000	122,000	208,000

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

Explanation of symbols and codes

-- none

NA Missing peak value

K Peak affected by regulation

Water	Peak	Peak-flow	Water	Peak	Peak-flow
year	flow	code	year	flow	code
1861	NA	--	1947	28,400	K
Gap in systematic record			1948	51,800	K
1913	25,600	--	1949	29,200	K
1914	7,260	--	1950	95,500	K
1915	20,100	--	1951	26,000	K
1916	46,200	--	1952	24,200	K
1917	25,900	--	1953	14,500	K
1918	4,990	--	1954	11,500	K
1919	13,400	--	1955	24,000	K
1920	26,700	--	1956	33,800	K
1921	12,800	--	1957	15,300	K
1922	18,900	--	1958	7,940	K
1923	26,000	--	1959	15,700	K
1924	6,320	--	1960	30,500	K
1925	17,500	--	1961	4,320	K
1926	8,000	--	1962	33,400	K
1927	20,500	--	1963	13,800	K
1928	16,800	--	1964	17,500	K
1929	19,200	--	1965	46,200	K
1930	20,800	--	1966	66,800	K
1931	7,940	--	1967	33,600	K
1932	18,900	--	1968	13,900	K
1933	11,000	--	1969	54,700	K
1934	4,800	--	1970	39,600	K
1935	5,470	--	1971	26,600	K
1936	18,000	--	1972	30,700	K
1937	5,840	--	1973	14,700	K
1938	7,530	--	1974	43,500	K
1939	6,700	--	1975	42,800	K
1940	14,600	--	1976	32,900	K
1941	27,800	K	1977	4,590	K
1942	27,900	K	1978	50,600	K
1943	29,500	K	1979	92,700	K
1944	12,300	K	1980	22,000	K
1945	29,400	K	1981	6,150	K
1946	24,100	K	1982	34,000	K

Water year	Peak flow	Peak-flow code
1983	24,600	K
1984	30,200	K
1985	16,700	K
1986	34,200	K
1987	37,400	K
1988	15,700	K
1989	42,700	K
1990	5,510	K
1991	5,690	K
1992	15,800	K
1993	31,900	K
1994	26,900	K
1995	42,400	K
1996	66,700	K
1997	133,000	K
1998	27,500	K
1999	58,600	K
2000	31,800	K
2001	58,300	K
2002	35,700	K
2003	14,200	K
2004	45,600	K
2005	38,200	K
2006	73,500	K
2007	34,600	K
2008	18,000	K
2009	87,900	K
2010	61,400	K