

**RED RIVER OF THE NORTH BASIN**

**05078000 CLEARWATER RIVER AT PLUMMER, MN**

LOCATION.--Lat 47° 55'24", long 96° 02'46", in SE¼SW¼ sec. 4, T.151 N., R.42 W., Red Lake County, Hydrologic Unit 09020305, on right bank 200 ft downstream from Soo Line Railroad bridge, 300 ft downstream from bridge on U.S. Highway 59, 0.9 mi northwest of railroad depot in Plummer, and 8 mi upstream from Hill River.

DRAINAGE AREA.--512 mi<sup>2</sup>.

PERIOD OF RECORD.--April 1939 to September 1979, March 1982 to current year. Annual maximums only, October 1979 to February 1982.

GAGE.--Water-stage recorder. Datum of gage is 1,098.57 ft above sea level (levels by U.S. Army Corps of Engineers). Prior to Nov. 10, 1939, nonrecording gage at site 100 ft upstream at same datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Since 1968, undetermined amounts of water diverted for the flooding of wild rice paddies upstream.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft<sup>3</sup>/s and maximum (\*):

**DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997**

**DAILY MEAN VALUES**

| DAY  | OCT | NOV | DEC | JAN | FEB | MAR | APR   | MAY | JUN |
|------|-----|-----|-----|-----|-----|-----|-------|-----|-----|
| JUL  | AUG | SEP |     |     |     |     |       |     |     |
| 1    | 56  | 168 | e80 | e70 | e78 | e76 | e190  | 406 | 252 |
| 888  | 313 | 90  |     |     |     |     |       |     |     |
| 2    | 47  | 178 | e84 | e72 | e80 | e74 | e290  | 357 | 241 |
| 963  | 290 | 85  |     |     |     |     |       |     |     |
| 3    | 50  | 189 | e86 | e74 | e80 | e72 | e430  | 306 | 346 |
| 1120 | 249 | 83  |     |     |     |     |       |     |     |
| 4    | 52  | 163 | e84 | e74 | e78 | e72 | e660  | 290 | 300 |
| 1490 | 222 | 81  |     |     |     |     |       |     |     |
| 5    | 44  | 145 | e82 | e74 | e76 | e72 | e960  | 259 | 227 |
| 1710 | 208 | 75  |     |     |     |     |       |     |     |
| 6    | 47  | 144 | e80 | e72 | e74 | e72 | e1500 | 222 | 191 |
| 1740 | 210 | 74  |     |     |     |     |       |     |     |
| 7    | 52  | 148 | e80 | e72 | e72 | e70 | e2200 | 196 | 173 |
| 1740 | 202 | 76  |     |     |     |     |       |     |     |
| 8    | 52  | 174 | e78 | e72 | e70 | e70 | e2100 | 217 | 177 |
| 1740 | 188 | 82  |     |     |     |     |       |     |     |
| 9    | 55  | 185 | e78 | e72 | e70 | e72 | e2000 | 266 | 172 |
| 1740 | 167 | 79  |     |     |     |     |       |     |     |

|       |      |      |      |      |      |      |       |      |      |
|-------|------|------|------|------|------|------|-------|------|------|
| 10    | 47   | 148  | e76  | e72  | e68  | e72  | e2000 | 260  | 146  |
| 1670  | 150  | 80   |      |      |      |      |       |      |      |
| 11    | 46   | e130 | e74  | e70  | e68  | e74  | e2000 | 291  | 126  |
| 1510  | 140  | 76   |      |      |      |      |       |      |      |
| 12    | 52   | e110 | e74  | e70  | e66  | e76  | e2100 | 295  | 115  |
| 1310  | 133  | 74   |      |      |      |      |       |      |      |
| 13    | 45   | e100 | e76  | e70  | e66  | e76  | e2200 | 251  | 95   |
| 1190  | 126  | 64   |      |      |      |      |       |      |      |
| 14    | 47   | e96  | e78  | e70  | e66  | e74  | e2400 | 231  | 106  |
| 1530  | 116  | 61   |      |      |      |      |       |      |      |
| 15    | 44   | e90  | e76  | e70  | e66  | e74  | e2600 | 222  | 103  |
| 1470  | 115  | 68   |      |      |      |      |       |      |      |
| 16    | 44   | e86  | e76  | e70  | e66  | e74  | e2700 | 214  | 108  |
| 1250  | 122  | 78   |      |      |      |      |       |      |      |
| 17    | 52   | e96  | e76  | e70  | e66  | e74  | e2600 | 225  | 109  |
| 1190  | 127  | 90   |      |      |      |      |       |      |      |
| 18    | 54   | e96  | e78  | e72  | e68  | e78  | e2500 | 245  | 109  |
| 1130  | 122  | 109  |      |      |      |      |       |      |      |
| 19    | 71   | e90  | e78  | e74  | e70  | e82  | 2360  | 231  | 120  |
| 1060  | 121  | 91   |      |      |      |      |       |      |      |
| 20    | 71   | e86  | e78  | e78  | e74  | e84  | 2000  | 200  | 139  |
| 950   | 136  | 73   |      |      |      |      |       |      |      |
| 21    | 67   | e84  | e76  | e78  | e74  | e86  | 1630  | 192  | 187  |
| 812   | 166  | 55   |      |      |      |      |       |      |      |
| 22    | 59   | e82  | e76  | e78  | e72  | e86  | 1330  | 210  | 168  |
| 710   | 148  | 54   |      |      |      |      |       |      |      |
| 23    | 45   | e80  | e76  | e76  | e72  | e86  | 1100  | 242  | 155  |
| 668   | 133  | 62   |      |      |      |      |       |      |      |
| 24    | 47   | e78  | e74  | e74  | e70  | e84  | 939   | 356  | 504  |
| 620   | 121  | 66   |      |      |      |      |       |      |      |
| 25    | 49   | e76  | e74  | e72  | e72  | e84  | 791   | 418  | 806  |
| 553   | 122  | 55   |      |      |      |      |       |      |      |
| 26    | 52   | e76  | e72  | e70  | e74  | e82  | 651   | 408  | 901  |
| 518   | 118  | 62   |      |      |      |      |       |      |      |
| 27    | 68   | e74  | e72  | e70  | e76  | e82  | 563   | 392  | 1050 |
| 462   | 109  | 63   |      |      |      |      |       |      |      |
| 28    | 77   | e74  | e72  | e70  | e78  | e84  | 494   | 361  | 1040 |
| 391   | 106  | 69   |      |      |      |      |       |      |      |
| 29    | 71   | e72  | e72  | e70  | ---  | e90  | 445   | 336  | 822  |
| 368   | 103  | 84   |      |      |      |      |       |      |      |
| 30    | 88   | e74  | e70  | e72  | ---  | e100 | 426   | 318  | 831  |
| 366   | 100  | 92   |      |      |      |      |       |      |      |
| 31    | 94   | ---  | e70  | e76  | ---  | e130 | ---   | 293  | ---  |
| 362   | 94   | ---  |      |      |      |      |       |      |      |
| TOTAL | 1745 | 3392 | 2376 | 2244 | 2010 | 2482 | 44159 | 8710 | 9819 |
| 33221 | 4777 | 2251 |      |      |      |      |       |      |      |
| MEAN  | 56.3 | 113  | 76.6 | 72.4 | 71.8 | 80.1 | 1472  | 281  | 327  |
| 1072  | 154  | 75.0 |      |      |      |      |       |      |      |
| MAX   | 94   | 189  | 86   | 78   | 80   | 130  | 2700  | 418  | 1050 |
| 1740  | 313  | 109  |      |      |      |      |       |      |      |

|       |      |      |      |      |      |      |       |       |       |
|-------|------|------|------|------|------|------|-------|-------|-------|
| MIN   | 44   | 72   | 70   | 70   | 66   | 70   | 190   | 192   | 95    |
| 362   | 94   | 54   |      |      |      |      |       |       |       |
| AC-FT | 3460 | 6730 | 4710 | 4450 | 3990 | 4920 | 87590 | 17280 | 19480 |
| 65890 | 9480 | 4460 |      |      |      |      |       |       |       |
| CFSM  | .11  | .22  | .15  | .14  | .14  | .16  | 2.87  | .55   | .64   |
| 2.09  | .30  | .15  |      |      |      |      |       |       |       |

- a Estimated daily discharge, backwater from ice.

e Estimated

**STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939 - 1997, BY WATER YEAR (WY)**

|                           | OCT                      | NOV  | DEC                           | JAN    | FEB  | MAR                        | APR    | MAY                            | JUN    |
|---------------------------|--------------------------|------|-------------------------------|--------|------|----------------------------|--------|--------------------------------|--------|
| JUL                       | AUG                      | SEP  |                               |        |      |                            |        |                                |        |
| MEAN                      | 116                      | 92.0 | 64.0                          | 51.8   | 48.3 | 114                        | 542    | 355                            | 252    |
| 223                       | 124                      | 106  |                               |        |      |                            |        |                                |        |
| MAX                       | 483                      | 503  | 140                           | 90.1   | 98.4 | 445                        | 1472   | 1974                           | 1140   |
| 1072                      | 507                      | 666  |                               |        |      |                            |        |                                |        |
| (WY)                      | 1972                     | 1972 | 1978                          | 1952   | 1974 | 1995                       | 1997   | 1950                           | 1962   |
| 1997                      | 1985                     | 1973 |                               |        |      |                            |        |                                |        |
| MIN                       | 21.5                     | 23.8 | 24.4                          | 18.4   | 19.0 | 22.8                       | 26.8   | 7.52                           | 30.1   |
| 16.0                      | 13.3                     | 14.1 |                               |        |      |                            |        |                                |        |
| (WY)                      | 1941                     | 1991 | 1990                          | 1940   | 1940 | 1940                       | 1977   | 1977                           | 1991   |
| 1940                      | 1940                     | 1940 |                               |        |      |                            |        |                                |        |
| <i>SUMMARY STATISTICS</i> |                          |      | <i>FOR 1996 CALENDAR YEAR</i> |        |      | <i>FOR 1997 WATER YEAR</i> |        | <i>WATER YEARS 1939 - 1997</i> |        |
|                           | ANNUAL TOTAL             |      |                               | 101574 |      |                            | 117186 |                                |        |
|                           | ANNUAL MEAN              |      |                               | 278    |      |                            | 321    |                                | 175a   |
|                           | HIGHEST ANNUAL MEAN      |      |                               |        |      |                            |        |                                |        |
| 354                       | 1950                     |      |                               |        |      |                            |        |                                |        |
|                           | LOWEST ANNUAL MEAN       |      |                               |        |      |                            |        |                                |        |
| 57.0                      | 1990                     |      |                               |        |      |                            |        |                                |        |
|                           | HIGHEST DAILY MEAN       |      |                               | 3320   |      |                            | Apr 19 |                                | 2700b  |
| Apr 25                    | 1979                     |      |                               |        |      |                            |        |                                | Apr 16 |
|                           | LOWEST DAILY MEAN        |      |                               | 37     |      |                            | Sep 9  |                                | 44     |
| May 16                    | 1977                     |      |                               |        |      |                            |        |                                | Oct 5  |
|                           | ANNUAL SEVEN-DAY MINIMUM |      |                               | 39     |      |                            | Sep 9  |                                | 46     |
| May 10                    | 1977                     |      |                               |        |      |                            |        |                                | Oct 10 |
|                           | INSTANTANEOUS PEAK FLOW  |      |                               |        |      |                            |        |                                | 2700c  |
| Apr 25                    | 1979                     |      |                               |        |      |                            |        |                                | Apr 16 |
|                           | INSTANTANEOUS PEAK STAGE |      |                               |        |      |                            |        |                                | 12.74d |
| Apr 16                    | 1997                     |      |                               |        |      |                            |        |                                | Apr 16 |
|                           | INSTANTANEOUS LOW FLOW   |      |                               |        |      |                            |        |                                | 40     |
| May 16                    | 1977                     |      |                               |        |      |                            |        |                                | Oct 16 |
|                           | ANNUAL RUNOFF (CFSM)     |      |                               | .54    |      |                            | .63    |                                | .34    |
|                           | 10 PERCENT EXCEEDS       |      |                               | 495    |      |                            | 1040   |                                | 410    |
|                           | 50 PERCENT EXCEEDS       |      |                               | 86     |      |                            | 86     |                                | 76     |
|                           | 90 PERCENT EXCEEDS       |      |                               | 52     |      |                            | 66     |                                | 33     |

a Median of annual mean discharges is 166 ft<sup>3</sup>/s.

b Estimated, backwater from ice.

c Estimated daily discharge, backwater from ice.  
d Backwater from ice.