

ZUMBRO RIVER BASIN

05372995 SOUTH FORK ZUMBRO RIVER AT ROCHESTER, MN

LOCATION.--Lat 44° 03'42", long 92° 27'58", in NW¼NE¼ sec. 23, T.107 N., R.14 W., Olmsted County, Hydrologic Unit 07040004, on left bank 50 ft downstream from 37th Street bridge, 0.2 mi upstream from sewer plant, and 2.0 mi downstream from Silver Lake Dam.

DRAINAGE AREA.--303 mi².

PERIOD OF RECORD.--March 1981 to current year.

GAGE.--Water-stage recorder. Datum of gage is 950.00 ft above mean sea level.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Slight regulation at times from Silver Lake.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 6, 1978, reached a stage of about 28.0 ft, on upstream side of bridge, discharge 30,500 ft³/s. This is the highest known stage since at least 1908.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,300 ft³/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 | 53 | 75 | 116 | 60 | 71 | 120 | 610 | 272 | 167 |
| 123 | 341 | 231 | | | | | | | |
| 2 | 45 | 69 | 107 | 65 | 71 | 115 | 582 | 267 | 163 |
| 116 | 311 | 205 | | | | | | | |
| 3 | 43 | 71 | 110 | 69 | e71 | 129 | 529 | 288 | 158 |
| 107 | 282 | 170 | | | | | | | |
| 4 | 54 | 85 | 95 | 144 | 70 | 148 | 496 | 284 | 154 |
| 105 | 259 | 154 | | | | | | | |
| 5 | 47 | 78 | 102 | 97 | 73 | 135 | 488 | 272 | 155 |
| 96 | 239 | 152 | | | | | | | |
| 6 | 45 | 76 | 100 | 87 | 73 | 124 | 565 | 254 | 152 |
| 92 | 224 | 142 | | | | | | | |
| 7 | 46 | 75 | 93 | 96 | 71 | 119 | 511 | 256 | 148 |
| 90 | 212 | 130 | | | | | | | |
| 8 | 46 | 74 | 96 | 105 | 71 | 126 | 427 | 278 | 143 |
| 118 | 197 | 127 | | | | | | | |
| 9 | 46 | 71 | 92 | 104 | e71 | 173 | 387 | 265 | 135 |

| | | | | | | | | | |
|-------|------|------|------|------|------|-------|-------|------|------|
| 89 | 186 | 156 | | | | | | | |
| 10 | 46 | 68 | 92 | 100 | 72 | 486 | 364 | 243 | 132 |
| 87 | 175 | 123 | | | | | | | |
| 11 | 45 | 61 | 92 | 89 | e72 | 1450 | 351 | 232 | 129 |
| 82 | 168 | 115 | | | | | | | |
| 12 | 43 | 52 | 92 | 86 | e71 | 1470 | 336 | 223 | 129 |
| 151 | 191 | 111 | | | | | | | |
| 13 | 43 | 60 | 89 | 78 | e71 | 753 | 320 | 214 | 122 |
| 162 | 168 | 109 | | | | | | | |
| 14 | 44 | 54 | 88 | 76 | e71 | 440 | 309 | 212 | 119 |
| 264 | 195 | 109 | | | | | | | |
| 15 | 63 | 86 | 84 | 76 | e71 | 356 | 293 | 203 | 150 |
| 251 | 183 | 105 | | | | | | | |
| 16 | 43 | 160 | 67 | 75 | e71 | 329 | 277 | 200 | 120 |
| 183 | 182 | 197 | | | | | | | |
| 17 | 60 | 206 | 79 | 69 | e71 | 356 | 267 | 193 | 114 |
| 257 | 160 | 134 | | | | | | | |
| 18 | 50 | 224 | 79 | 66 | 91 | 326 | 308 | 195 | 115 |
| 545 | 149 | 120 | | | | | | | |
| 19 | 50 | 169 | 76 | 66 | 80 | 294 | 317 | 192 | 112 |
| 499 | 155 | 120 | | | | | | | |
| 20 | 49 | 150 | 68 | 66 | 82 | 315 | 309 | 181 | 113 |
| 614 | 225 | 112 | | | | | | | |
| 21 | 47 | 125 | 68 | 71 | 88 | 512 | 295 | 175 | 136 |
| 622 | 214 | 109 | | | | | | | |
| 22 | 79 | 133 | 68 | 83 | 87 | 2540 | 283 | 170 | 115 |
| 735 | 190 | 118 | | | | | | | |
| 23 | 132 | 123 | 68 | 74 | e85 | 1980 | 265 | 168 | 116 |
| 626 | 173 | 117 | | | | | | | |
| 24 | 99 | 111 | 62 | 76 | e95 | 1220 | 252 | 208 | 117 |
| 499 | 165 | 111 | | | | | | | |
| 25 | 92 | 74 | 65 | 69 | 95 | 787 | 241 | 194 | 110 |
| 919 | 156 | 111 | | | | | | | |
| 26 | 82 | 89 | 63 | 70 | 108 | 664 | 227 | 193 | 111 |
| 1160 | 148 | 108 | | | | | | | |
| 27 | 73 | 88 | 60 | 71 | 104 | 1240 | 219 | 186 | 106 |
| 814 | 139 | 107 | | | | | | | |
| 28 | 71 | 90 | 60 | 69 | 99 | 1530 | 216 | 182 | 111 |
| 748 | 131 | 119 | | | | | | | |
| 29 | 98 | 111 | 60 | 69 | --- | 1120 | 210 | 188 | 135 |
| 571 | 126 | 101 | | | | | | | |
| 30 | 84 | 123 | 60 | 69 | --- | 837 | 261 | 182 | 128 |
| 447 | 275 | 95 | | | | | | | |
| 31 | 83 | --- | 60 | 70 | --- | 684 | --- | 173 | --- |
| 387 | 258 | --- | | | | | | | |
| TOTAL | 1901 | 3031 | 2511 | 2465 | 2226 | 20878 | 10515 | 6743 | 3915 |
| 11559 | 6177 | 3918 | | | | | | | |
| MEAN | 61.3 | 101 | 81.0 | 79.5 | 79.5 | 673 | 351 | 218 | 131 |
| 373 | 199 | 131 | | | | | | | |
| MAX | 132 | 224 | 116 | 144 | 108 | 2540 | 610 | 288 | 167 |

| | | | | | | | | | |
|-------|-------|------|------|------|------|-------|-------|-------|------|
| 1160 | 341 | 231 | | | | | | | |
| MIN | 43 | 52 | 60 | 60 | 70 | 115 | 210 | 168 | 106 |
| 82 | 126 | 95 | | | | | | | |
| AC-FT | 3770 | 6010 | 4980 | 4890 | 4420 | 41410 | 20860 | 13370 | 7770 |
| 22930 | 12250 | 7770 | | | | | | | |
| IFSM | .20 | .33 | .27 | .26 | .26 | 2.22 | 1.16 | .72 | .43 |
| 1.23 | .66 | .43 | | | | | | | |

o e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1981 - 1997, BY WATER YEAR (WY)

| | | | | | | | | | |
|------|------|------|------|------|------|------|------|------|------|
| | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN |
| JUL | AUG | SEP | | | | | | | |
| MEAN | 164 | 152 | 125 | 79.8 | 124 | 408 | 404 | 305 | 235 |
| 230 | 164 | 183 | | | | | | | |
| MAX | 824 | 338 | 358 | 167 | 454 | 760 | 1211 | 617 | 1014 |
| 663 | 501 | 1075 | | | | | | | |
| (WY) | 1987 | 1992 | 1992 | 1983 | 1984 | 1983 | 1993 | 1991 | 1993 |
| 1993 | 1990 | 1986 | | | | | | | |
| MIN | 20.0 | 24.5 | 21.0 | 22.5 | 23.8 | 165 | 106 | 88.3 | 49.0 |
| 23.2 | 24.6 | 31.5 | | | | | | | |
| (WY) | 1990 | 1990 | 1990 | 1990 | 1990 | 1987 | 1981 | 1989 | 1989 |
| 1988 | 1988 | 1988 | | | | | | | |

| | | | | | | |
|--------------------------|------------------------|--------|---------------------|--------|-------------|-----|
| SUMMARY STATISTICS | FOR 1996 CALENDAR YEAR | | FOR 1997 WATER YEAR | | WATER YEARS | |
| 1981 - 1997 | | | | | | |
| ANNUAL TOTAL | 61682 | | 75839 | | | |
| ANNUAL MEAN | 169 | | 208 | | 216 | |
| HIGHEST ANNUAL MEAN | 431 | | 1993 | | | |
| LOWEST ANNUAL MEAN | 87.3 | | 1989 | | | |
| HIGHEST DAILY MEAN | 2890 | Mar 25 | 2540 | Mar 22 | 7710 | Sep |
| 21 1986 | | | | | | |
| LOWEST DAILY MEAN | 43 | Oct 3 | 43 | Oct 3 | 12 | Sep |
| 12 1988 | | | | | | |
| ANNUAL SEVEN-DAY MINIMUM | 45 | Oct 8 | 45 | Oct 8 | 14 | |
| Sep 8 1988 | | | | | | |
| INSTANTANEOUS PEAK FLOW | | | 3000 | Mar 22 | 10000 | Sep |
| 21 1986 | | | | | | |
| INSTANTANEOUS PEAK STAGE | | | 9.25 | Mar 22 | 20.77 | Sep |
| 21 1986 | | | | | | |
| INSTANTANEOUS LOW FLOW | | | 39a | Oct 15 | 10a | Oct |
| 23 1981 | | | | | | |
| ANNUAL RUNOFF (AC-FT) | 122300 | | 150400 | | 156300 | |
| ANNUAL RUNOFF (CFSM) | .56 | | .69 | | .71 | |
| 10 PERCENT EXCEEDS | 303 | | 432 | | 478 | |
| 50 PERCENT EXCEEDS | 92 | | 120 | | 120 | |
| 90 PERCENT EXCEEDS | 49 | | 66 | | 44 | |

- a Due in part to regulation.