PERIOD OF RECORD.-- Water years 1963-66, 1968 to current year.
PERIOD OF DAILY RECORD:
WATER TEMPERATURES.-- October 1967 to September 30, 1981, October 1982 to current year (fragmentary records).
SUSPENDED-SEDIMENT DISCHARGE.-- October 1967 to current year.
REMARKS.--Sediment samples were collected daily by an observer Oct. 3-18 and Mar. 24 to May 3 . In general, daily concentrations and loads for the open-water period are considered fair to poor. During the winter period, and for periods of no observer samples, daily sediment concentrations and loads are based primarily on concentrations of sediment in samples that were collected monthly, and on daily water-discharge records. Sediment records for the winter period are considered poor. Water temperatures were obtained by the observer at the time of sediment sampling, and monthly by U.S. Geological Survey personnel.

EXTREMES FOR PERIOD OF DAILY RECORD:
WATER TEMPERATURES.-- Maximum observed, 31.0 C, July 4-9, 1989; minimum observed, 0.0 C on many days most winters.
SEDIMENT CONCENTRATIONS.-- Maximum daily mean, $2,850 \mathrm{mg} / \mathrm{L}$, Aug. 7,1968 ; minimum daily mean, $9 \mathrm{mg} / \mathrm{L}$, Jan. $15-19$, 1991.
SEDIMENT LOADS.-- Maximum daily, 414,000 tons, June 21, 1993; minimum daily, 5.2 tons, Nov. 6, 1976.
EXTREMES FOR CURRENT YEAR:
WATER TEMPERATURES.-- Maximum observed, 28.0 C , Aug. 1; minimum observed, 2.0 C , Jan. 4, Feb. 3 (assumed to be 0.0 C, many days during winter).

SEDMENT CONCENTRATIONS.-- Maximum daily mean, $1,550 \mathrm{mg} / \mathrm{L}$, May 20 ; minimum daily mean, $60 \mathrm{mg} / \mathrm{L}, \mathrm{Oct} .20-29$.
SEDIMENT LOADS.-- Maximum daily, 62,000 tons, June 4; minimum daily, 62 tons, Sep. 18.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000 DAILY INSTANTANEOUS VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | -- | -- | -- | --- | --- | --- | 12 | --- | --- | --- | 28 | --- |
| 2 | --- | --- | --- | --- | --- | --- | --- | --- | -- | -- | --- | --- |
| 3 | 11 | - | --- | --- | 2.0 | --- | 12 | 20 | - | --- | --- | - |
| 4 | 11 | - | --- | 2.0 | --- | --- | 12 | 20 | --- | --- | --- | --- |
| 5 | - | --- | --- | --- | --- | --- | 12 | --- | --- | --- | --- | --- |
| 6 | 12 | -- | -- | -- | --- | --- | 12 | - | --- | - | --- | --- |
| 7 | 12 | --- | --- | --- | --- | --- | 11 | --- | --- | - | --- | - |
| 8 | 13 | --- | --- | --- | --- | --- | 12 | --- | --- | --- | --- | - |
| 9 | --- | --- | --- | --- | --- | --- | 12 | --- | -- | --- | --- | --- |
| 10 | --- | --- | --- | --- | --- | --- | 12 | -- | --- | --- | -- | --- |
| 11 | 12 | --- | - | - | -- | --- | 12 | - | --- | --- | - | - |
| 12 | 11 | -- | - | --- | - | -- | 11 | --- | --- | --- | --- | --- |
| 13 | 11 | --- | --- | --- | --- | --- | 12 | --- | --- | --- | --- | --- |
| 14 | 11 | -- | --- | --- | --- | --- | 12 | 14 | --- | --- | --- | --- |
| 15 | 10 | -- | --- | --- | --- | --- | 12 | --- | --- | --- | --- | -- |
| 16 | --- | --- | --- | --- | --- | - |  | --- | --- | --- | --- | --- |
| 17 | - | --- | --- | -- | --- | -- | 13 | -- | --- | --- | - | -- |
| 18 | --- | --- | --- | --- | --- | --- | 12 | --- | --- | --- | --- | - |
| 19 | --- | --- | --- | --- | --- | --- | 11 | --- | --- | --- | --- | 19 |
| 20 | -- | --- | --- | --- | --- | --- | 11 | --- | --- | --- | --- | --- |
| 21 | --- | --- | --- | --- | -- | --- | 12 | --- | --- | --- | --- | -- |
| 22 | --- | --- | - | - | --- | --- | --- | -- | --- | -- | --- | --- |
| 23 | --- | --- | --- | --- | --- | --- | - | --- | --- | --- | --- | --- |
| 24 | --- | --- | --- | --- | --- | 12 | 13 | 20 | --- | --- | --- | -- |
| 25 | --- | --- | --- | --- | --- | 13 |  | --- | --- | --- | --- | --- |
| 26 | --- | --- | -- | -- | --- | 11 | 13 | --- | --- | - | --- | - |
| 27 | --- | --- | --- | --- | --- | 11 | -- | --- | --- | --- | --- | - |
| 28 | --- | --- | --- | --- | --- | 10 | 14 | --- | 21 | --- | --- | 17 |
| 29 | --- | --- | --- | --- | --- | 10 | --- | - | --- | --- | --- | -- |
| 30 | --- | --- | --- | --- | --- | 10 | --- | --- | --- | --- | --- | --- |
| 31 | -- | --- | - | --- | --- | 12 | --- | --- | --- | --- | --- | --- |

05325000 MINNESOTA RIVER AT MANKATO, MN--Continued
SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

| DAY | $\begin{aligned} & \text { MEAN } \\ & \text { CONCEN- } \\ & \text { TRATION } \\ & (M G / L) \end{aligned}$ | $\begin{aligned} & \text { LOAD } \\ & \text { (TONS/ } \\ & \text { DAY) } \end{aligned}$ | $\begin{aligned} & \text { MEAN } \\ & \text { CONCEN- } \\ & \text { TRATION } \\ & \text { (MG/L) } \end{aligned}$ | $\begin{aligned} & \text { LOAD } \\ & \text { (TONS/ } \\ & \text { DAY) } \end{aligned}$ | $\begin{aligned} & \text { MEAN } \\ & \text { CONCEN- } \\ & \text { TRATION } \\ & (M G / L) \end{aligned}$ | $\begin{aligned} & \text { LOAD } \\ & \text { (TONS/ } \\ & \text { DAY) } \end{aligned}$ | $\begin{aligned} & \text { MEAN } \\ & \text { CONCEN- } \\ & \text { TRATION } \\ & (M G / L) \end{aligned}$ | $\begin{aligned} & \text { LOAD } \\ & \text { (TONS/ } \\ & \text { DAY) } \end{aligned}$ | $\begin{aligned} & \text { MEAN } \\ & \text { CONCEN- } \\ & \text { TRATION } \\ & \text { (MG/L) } \end{aligned}$ | $\begin{aligned} & \text { LOAD } \\ & \text { (TONS/ } \\ & \text { DAY) } \end{aligned}$ | $\begin{aligned} & \text { MEAN } \\ & \text { CONCEN- } \\ & \text { TRATION } \\ & \text { (MG/L) } \end{aligned}$ | $\begin{aligned} & \text { LOAD } \\ & \text { (TONS/ } \\ & \text { DAY) } \end{aligned}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | OCTOBER |  | NOVEMBER |  | DECEMBER |  | JANUARY |  | FEBRUARY |  | MARCH |  |
| 1 | 95 | 264 | 90 | 228 | 141 | 307 | 135 | 197 | 93 | 105 | 280 | 2220 |
| 2 | 95 | 250 | 110 | 258 | 141 | 319 | 135 | 197 | 93 | 105 | 265 | 1870 |
| 3 | 108 | 273 | 128 | 275 | 140 | 319 | 135 | 197 | 93 | 105 | 245 | 1610 |
| 4 | 118 | 292 | 145 | 293 | 140 | 316 | 135 | 197 | 92 | 107 | 233 | 1580 |
| 5 | 122 | 329 | 156 | 310 | 140 | 312 | 134 | 199 | 92 | 109 | 223 | 1640 |
| 6 | 120 | 392 | 160 | 311 | 140 | 300 | 130 | 193 | 91 | 108 | 223 | 1600 |
| 7 | 114 | 400 | 162 | 319 | 140 | 293 | 128 | 190 | 91 | 108 | 230 | 1510 |
| 8 | 105 | 357 | 160 | 320 | 140 | 298 | 125 | 182 | 91 | 111 | 230 | 1470 |
| 9 | 98 | 286 | 155 | 309 | 140 | 305 | 122 | 178 | 91 | 111 | 230 | 1550 |
| 10 | 90 | 241 | 152 | 307 | 140 | 307 | 120 | 172 | 91 | 113 | 227 | 1560 |
| 11 | 83 | 210 | 151 | 311 | 139 | 303 | 118 | 166 | 91 | 113 | 220 | 1510 |
| 12 | 75 | 178 | 151 | 322 | 139 | 286 | 116 | 163 | 92 | 114 | 210 | 1420 |
| 13 | 71 | 161 | 150 | 322 | 139 | 284 | 114 | 157 | 92 | 117 | 205 | 1380 |
| 14 | 69 | 156 | 150 | 320 | 139 | 290 | 112 | 154 | 93 | 118 | 200 | 1320 |
| 15 | 67 | 152 | 150 | 322 | 139 | 303 | 111 | 150 | 94 | 122 | 195 | 1250 |
| 16 | 65 | 149 | 150 | 328 | 138 | 270 | 110 | 148 | 95 | 126 | 190 | 1170 |
| 17 | 63 | 141 | 150 | 326 | 138 | 250 | 109 | 147 | 96 | 130 | 181 | 1070 |
| 18 | 62 | 141 | 149 | 325 | 138 | 246 | 108 | 146 | 97 | 134 | 176 | 1020 |
| 19 | 61 | 150 | 149 | 334 | 138 | 253 | 106 | 140 | 98 | 135 | 170 | 973 |
| 20 | 60 | 153 | 149 | 327 | 138 | 261 | 104 | 135 | 99 | 136 | 163 | 911 |
| 21 | 60 | 158 | 148 | 325 | 137 | 248 | 102 | 127 | 100 | 140 | 160 | 873 |
| 22 | 60 | 162 | 148 | 330 | 137 | 240 | 101 | 120 | 100 | 140 | 154 | 827 |
| 23 | 60 | 156 | 148 | 348 | 137 | 215 | 100 | 116 | 100 | 151 | 149 | 793 |
| 24 | 60 | 153 | 147 | 339 | 137 | 196 | 100 | 116 | 100 | 159 | 142 | 759 |
| 25 | 60 | 154 | 146 | 332 | 137 | 192 | 99 | 115 | 109 | 230 | 138 | 712 |
| 26 | 60 | 149 | 145 | 331 | 136 | 191 | 98 | 114 | 145 | 470 | 131 | 651 |
| 27 | 60 | 144 | 144 | 328 | 136 | 191 | 97 | 110 | 200 | 1080 | 130 | 646 |
| 28 | 60 | 143 | 143 | 321 | 136 | 191 | 96 | 109 | 250 | 1690 | 130 | 635 |
| 29 | 60 | 146 | 142 | 317 | 136 | 191 | 95 | 108 | 265 | 2450 | 130 | 597 |
| 30 | 66 | 167 | 142 | 307 | 136 | 191 | 94 | 107 | --- | --- | 137 | 614 |
| 31 | 78 | 197 | --- |  | 136 | 195 | 94 | 107 | --- | --- | 135 | 612 |
| TOTAL |  | 6404 | --- | 9445 | --- | 8063 | --- | 4657 | --- | 8837 | --- | 36353 |
| DAY | MEAN <br> CONCEN- <br> TRATION <br> (MG/L) | $\begin{aligned} & \text { LOAD } \\ & \text { (TONS/ } \\ & \text { DAY) } \end{aligned}$ | MEAN <br> CONCEN- <br> TRATION <br> (MG/L) | $\begin{aligned} & \text { LOAD } \\ & \text { (TONS/ } \\ & \text { DAY) } \end{aligned}$ | MEAN CONCENTRATION (MG/L) | $\begin{aligned} & \text { LOAD } \\ & \text { (TONS/ } \\ & \text { DAY) } \end{aligned}$ | $\begin{aligned} & \text { MEAN } \\ & \text { CONCEN- } \\ & \text { TRATION } \\ & \text { (MG/L) } \end{aligned}$ | $\begin{aligned} & \text { LOAD } \\ & \text { (TONS/ } \\ & \text { DAY) } \end{aligned}$ | $\begin{aligned} & \text { MEAN } \\ & \text { CONCEN- } \\ & \text { TRATION } \\ & \text { (MG/L) } \end{aligned}$ | $\begin{aligned} & \text { LOAD } \\ & \text { (TONS/ } \\ & \text { DAY) } \end{aligned}$ | MEAN <br> CONCEN- <br> TRATION <br> (MG/L) | $\begin{aligned} & \text { LOAD } \\ & \text { (TONS/ } \\ & \text { DAY) } \end{aligned}$ |
|  | APRIL |  | MAY |  | JUNE |  | JULY |  | AUGUST |  | SEPTEMBER |  |
| 1 | 132 | 638 | 75 | 286 | 350 | 10300 | 212 | 2520 | 157 | 1110 | 84 | 168 |
| 2 | 130 | 656 | 74 | 266 | 1050 | 40300 | 230 | 2810 | 153 | 1030 | 82 | 165 |
| 3 | 125 | 638 | 74 | 266 | 1450 | 57600 | 275 | 3370 | 146 | 926 | 80 | 159 |
| 4 | 120 | 583 | 73 | 266 | 1400 | 62000 | 310 | 3770 | 140 | 828 | 79 | 155 |
| 5 | 115 | 546 | 73 | 260 | 1350 | 60500 | 318 | 4060 | 135 | 722 | 78 | 144 |
| 6 | 110 | 517 | 72 | 249 | 1280 | 51500 | 320 | 4670 | 130 | 632 | 76 | 117 |
| 7 | 107 | 485 | 72 | 243 | 1180 | 44900 | 310 | 5130 | 130 | 593 | 75 | 117 |
| 8 | 104 | 446 | 85 | 326 | 1100 | 40400 | 295 | 4690 | 138 | 745 | 73 | 112 |
| 9 | 102 | 410 | 130 | 463 | 940 | 28900 | 285 | 4470 | 146 | 788 | 72 | 98 |
| 10 | 100 | 370 | 340 | 1210 | 780 | 20500 | 295 | 5060 | 150 | 830 | 71 | 97 |
| 11 | 98 | 349 | 360 | 1790 | 650 | 15000 | 380 | 9510 | 150 | 964 | 70 | 93 |
| 12 | 96 | 319 | 350 | 2130 | 580 | 11600 | 700 | 22900 | 145 | 900 | 69 | 85 |
| 13 | 93 | 299 | 330 | 1870 | 520 | 9650 | 790 | 29600 | 140 | 794 | 68 | 80 |
| 14 | 91 | 295 | 325 | 1660 | 470 | 8320 | 800 | 31500 | 135 | 693 | 68 | 78 |
| 15 | 89 | 286 | 322 | 1610 | 430 | 7850 | 730 | 26600 | 130 | 621 | 67 | 75 |
| 16 | 87 | 280 | 320 | 1710 | 400 | 8270 | 650 | 20500 | 125 | 503 | 67 | 67 |
| 17 | 86 | 281 | 320 | 1810 | 370 | 7940 | 590 | 15600 | 120 | 476 | 66 | 65 |
| 18 | 85 | 289 | 370 | 4560 | 345 | 7240 | 520 | 11800 | 116 | 442 | 65 | 62 |
| 19 | 84 | 304 | 1500 | 39500 | 330 | 6790 | 475 | 9480 | 112 | 390 | 64 | 67 |
| 20 | 83 | 318 | 1550 | 54000 | 310 | 6470 | 430 | 7600 | 108 | 376 | 63 | 67 |
| 21 | 82 | 325 | 1100 | 41300 | 290 | 5730 | 395 | 6220 | 106 | 346 | 64 | 65 |
| 22 | 81 | 341 | 700 | 26600 | 280 | 4960 | 355 | 4850 | 104 | 317 | 65 | 65 |
| 23 | 80 | 337 | 520 | 17800 | 270 | 4940 | 330 | 4060 | 102 | 303 | 67 | 67 |
| 24 | 80 | 328 | 450 | 12600 | 260 | 4650 | 300 | 3360 | 99 | 291 | 76 | 73 |
| 25 | 79 | 316 | 410 | 9560 | 250 | 4390 | 275 | 2900 | 97 | 272 | 76 | 73 |
| 26 | 78 | 305 | 380 | 7380 | 243 | 3940 | 250 | 2480 | 95 | 259 | 76 | 72 |
| 27 | 77 | 304 | 340 | 5960 | 235 | 3350 | 230 | 2170 | 93 | 244 | 76 | 71 |
| 28 | 76 | 291 | 310 | 4960 | 230 | 3630 | 215 | 1880 | 91 | 215 | 76 | 70 |
| 29 | 76 | 285 | 290 | 4690 | 225 | 3300 | 200 | 1540 | 89 | 198 | 76 | 67 |
| 30 | 75 | 279 | 270 | 4800 | 220 | 2840 | 185 | 1360 | 87 | 185 | 76 | 68 |
| 31 |  |  | 255 | 4710 | 220 |  | 170 | 1210 | 85 | 178 | --- |  |
| TOTAL | --- | 11420 | --- | 254835 | --- | 547760 | --- | 257670 | --- | 17171 | --- | 2762 |

YEAR 1165377

