

MINNESOTA RIVER BASIN--Continued

05325000 MINNESOTA RIVER AT MANKATO, MN--Continued

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 generally from two to five three times per week by an observer from Apr. 11 to Sept. 30. 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, 31.5 C, Aug. 6, 2001; minimum observed, 0.0 C on many days most winters.

SEDIMENT CONCENTRATIONS.-- Maximum daily mean, 2,850 mg/L, Aug. 7, 1968; minimum daily mean, 9 mg/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, 30.0 C, July 7,8,16,20,31; minimum observed, 0.0 C, Dec. 14,19 (assumed to be 0.0 C, many days during winter).

SEDIMENT CONCENTRATIONS.-- Maximum daily mean, 1,040 mg/L, June 4; minimum daily mean, 31 mg/L, Sep. 24.

SEDIMENT LOADS.-- Maximum daily, 29,500 tons, June 4; minimum daily, 58 tons, Sep. 24.

 TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
 DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18.0	---	---	---	---	---	3.0	12.0	25.0	29.0	25.5	---
2	15.0	10.0	---	---	---	---	2.0	12.0	21.0	28.0	24.0	---
3	15.5	---	---	---	---	---	0.0	---	19.0	28.0	26.0	---
4	---	---	---	---	---	---	1.0	14.0	15.0	25.0	24.0	---
5	---	---	---	---	---	---	2.0	15.0	18.0	29.0	26.0	---
6	---	---	---	---	---	---	---	15.0	21.0	28.0	23.0	25.0
7	12.5	---	---	---	---	---	---	---	18.0	30.0	---	---
8	---	---	---	---	---	---	7.0	10.0	21.0	30.0	21.0	---
9	---	9.5	---	---	---	---	8.0	12.0	24.0	28.0	22.0	---
10	---	---	---	---	---	---	---	---	24.0	26.5	24.0	24.0
11	---	---	1.0	---	---	---	9.0	11.0	23.0	27.0	---	23.0
12	12.0	7.0	---	---	---	---	---	10.0	23.0	22.5	24.0	24.0
13	12.0	10.5	1.5	---	---	---	---	13.0	---	26.0	24.0	22.0
14	---	---	0.0	---	---	---	---	16.0	14.0	19.0	---	23.5
15	10.0	---	---	---	---	---	---	19.0	15.0	22.0	27.0	22.0
16	---	---	---	---	---	---	22.0	15.0	---	30.0	22.5	23.0
17	10.0	---	2.0	---	---	---	---	---	21.0	28.0	22.0	23.0
18	---	---	---	---	---	---	---	16.0	21.0	---	23.0	23.0
19	11.5	8.0	0.0	---	3.0	---	---	15.0	21.0	---	25.0	---
20	---	---	---	---	---	---	---	16.0	22.0	30.0	---	20.0
21	---	---	---	---	0.5	---	12.0	17.0	21.0	---	22.0	19.0
22	---	---	---	---	---	---	---	17.0	21.0	27.0	23.0	15.0
23	---	---	---	---	---	0.5	14.0	17.0	---	---	22.0	---
24	10.0	---	---	---	---	---	12.0	19.0	---	26.0	23.0	---
25	---	---	---	---	---	2.0	12.0	---	27.0	28.0	24.0	---
26	---	3.5	---	---	---	3.0	---	21.0	26.0	25.0	25.0	15.0
27	---	---	---	---	---	4.5	---	---	25.0	---	24.0	14.0
28	---	---	---	---	---	5.0	10.0	21.0	27.0	---	24.0	---
29	7.5	15.0	---	---	---	---	13.0	23.0	29.0	26.0	25.0	23.0
30	---	---	---	---	---	---	11.0	---	---	28.0	26.0	---
31	9.0	---	---	---	---	---	---	---	---	30.0	24.0	---
MEAN	11.9	9.1	0.9	---	1.8	2.9	9.6	15.2	22.2	27.6	23.7	21.2
MAX	18.0	15.0	2.0	---	3.0	5.0	22.0	23.0	29.0	30.0	26.0	25.0
MIN	7.5	3.5	0.0	---	0.5	0.2	0.0	10.0	15.0	22.5	21.0	14.0

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SUSPENDED--SEDIMENT, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MEAN CONCEN- TRATION (MG/L)		LOAD (TONS/ DAY)		MEAN CONCEN- TRATION (MG/L)		LOAD (TONS/ DAY)		MEAN CONCEN- TRATION (MG/L)		LOAD (TONS/ DAY)		MEAN CONCEN- TRATION (MG/L)		LOAD (TONS/ DAY)	
	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH					
1	75	148	137	261	159	906	194	770	159	494	147	615				
2	74	144	136	251	158	875	193	740	155	460	144	630				
3	74	140	136	249	158	853	191	707	152	431	143	660				
4	74	132	136	269	158	811	191	691	149	402	141	678				
5	74	130	135	276	159	803	190	667	147	389	141	697				
6	73	113	134	287	159	807	189	648	145	380	140	696				
7	73	107	133	293	165	909	189	623	144	373	137	673				
8	73	113	133	302	172	1060	188	604	144	369	133	625				
9	74	125	132	280	178	1100	188	599	143	371	126	561				
10	87	156	132	285	182	1100	187	591	143	375	116	479				
11	83	148	132	284	183	1110	187	596	143	382	108	426				
12	81	141	138	293	185	1160	187	601	143	390	97	354				
13	118	224	141	310	185	1160	187	611	144	400	86	302				
14	138	265	137	306	185	1010	186	613	144	408	79	277				
15	136	274	135	301	184	994	186	618	145	419	72	259				
16	134	288	134	297	183	1030	186	613	148	448	69	287				
17	133	283	134	291	182	1060	186	603	150	470	82	392				
18	133	293	137	294	182	1040	186	593	153	512	94	533				
19	132	293	136	297	181	997	186	588	157	564	95	616				
20	131	291	133	277	181	929	186	583	159	622	90	595				
21	131	311	133	279	180	962	186	593	160	657	85	535				
22	136	317	132	283	190	980	185	619	159	622	82	469				
23	155	370	165	376	226	1600	185	629	156	682	80	447				
24	150	357	228	683	216	997	185	649	153	690	77	420				
25	147	372	222	785	210	924	184	646	151	673	75	405				
26	144	304	201	722	207	877	181	630	150	648	74	394				
27	142	259	181	880	203	893	176	589	149	616	73	398				
28	141	257	170	950	201	874	172	557	148	559	76	462				
29	139	263	163	968	199	854	169	548	---	---	90	656				
30	138	260	160	924	197	830	165	530	---	---	124	1150				
31	137	260	---	---	196	810	162	516	---	---	160	2070				
TOTAL	---	7138	---	12553	---	30315	---	19165	---	13806	---	17761				

DAY	MEAN CONCEN- TRATION (MG/L)		LOAD (TONS/ DAY)		MEAN CONCEN- TRATION (MG/L)		LOAD (TONS/ DAY)		MEAN CONCEN- TRATION (MG/L)		LOAD (TONS/ DAY)		MEAN CONCEN- TRATION (MG/L)		LOAD (TONS/ DAY)	
	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER					
1	201	3070	136	2360	177	2910	169	3900	99	813	105	729				
2	259	4290	158	2910	165	2740	168	3320	93	713	103	645				
3	346	6080	175	3230	308	5620	170	2900	110	775	102	595				
4	343	5980	156	2910	1040	29500	172	2580	134	955	100	556				
5	270	4630	130	2330	762	25300	173	2380	108	761	99	511				
6	230	3860	113	1930	328	10500	168	2080	345	3580	95	454				
7	206	3450	105	1670	257	7360	161	1800	305	3750	88	390				
8	193	3280	101	1580	228	5630	149	1590	232	3160	83	345				
9	193	3290	105	1720	203	4350	143	1390	205	2970	81	306				
10	225	3950	178	3280	181	3470	198	1790	184	2650	78	274				
11	223	4050	242	4720	323	6210	162	1460	169	2190	73	235				
12	215	4080	233	4790	419	9440	140	1220	152	1700	69	205				
13	213	4240	225	4760	414	10400	131	1100	141	1360	69	199				
14	209	4550	222	4780	364	9220	123	1020	129	1110	80	231				
15	201	4370	216	4720	331	7800	113	888	118	969	70	187				
16	192	4290	213	4700	306	6390	107	786	110	870	64	162				
17	183	4150	210	4580	282	5230	102	719	104	792	73	175				
18	172	3850	207	4420	291	5030	95	631	100	688	77	178				
19	157	3410	198	4060	263	4690	90	554	98	632	63	148				
20	149	3100	184	3600	250	4120	84	479	97	605	51	115				
21	181	3620	175	3210	422	7780	90	486	100	675	44	95.4				
22	176	3400	167	2850	732	21100	90	496	315	3300	41	84.1				
23	163	3020	155	2530	534	17900	83	433	320	4420	37	72.1				
24	154	2790	151	2320	403	13900	132	642	275	4800	31	57.8				
25	143	2510	151	2140	321	11000	99	575	231	4180	69	143				
26	134	2280	178	2370	254	8500	78	512	200	3260	68	164				
27	127	2050	222	2830	203	6630	76	488	177	2540	49	115				
28	119	1870	276	3490	177	5350	103	651	155	1900	43	94.6				
29	119	1870	339	5310	170	4770	131	877	135	1460	41	92.9				
30	122	1970	224	3230	168	4290	118	905	122	1180	42	98.2				
31	---	---	199	2980	---	---	107	820	112	968	---	---				
TOTAL	---	107350	---	102310	---	267130	---	39472	---	59726	---	7657.1				

YEAR 684383.1