

RED RIVER OF THE NORTH BASIN--Continued

05051300 BOIS DE SIOUX RIVER NEAR DORAN, MN

LOCATION.--Lat 46°09'08", long 96°34'44", in NE¹/₄ NE¹/₄ sec. 21, T.131 N., R.47 W., Wilken County, MN, Hydrologic Unit 09020101, on right bank, 10 ft downstream from bridge on County Highway 6, 3 miles downstream from Rabbit River, 4.3 mi southwest of Doran.

DRAINAGE AREA.--1,880 mi² (approximately).

PERIOD OF RECORD.--October 12, 1989 to current year.

GAGE.--Water-stage recorder. Datum of gage is 943.90 ft above mean sea level (elevation data obtained from Wilkin County Highway Engineer).

REMARKS.--Records fair except for estimated daily discharges, which are poor. Flow regulated by Lake Traverse-Boise de Sioux Flood Control and Water Conservation project near White Rock, S.D.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.6	61	257	e6.1	e5.2	e19	151	141	295	180	19	304
2	1.4	64	336	e6.0	e5.2	e23	121	123	289	203	10	199
3	1.3	64	451	e6.0	e5.2	e215	119	122	268	247	8.8	172
4	1.5	67	526	e5.9	e5.2	e215	257	125	228	205	11	194
5	2.0	68	534	e5.8	e5.2	e430	403	129	677	178	15	270
6	1.9	69	542	e5.8	e5.2	e430	274	129	1860	168	19	296
7	2.1	70	534	e5.8	e5.3	e520	195	136	2520	162	28	253
8	3.1	73	529	e5.7	e5.3	e530	163	151	1850	127	33	307
9	3.5	76	594	e5.6	e5.4	e540	129	163	874	152	153	335
10	3.8	81	622	e5.6	e5.5	e540	104	180	624	204	208	330
11	4.9	74	506	e5.5	e5.6	e540	87	241	855	140	95	330
12	10	80	353	e5.5	e5.7	e540	86	398	879	80	468	340
13	17	76	306	e5.4	e5.7	e540	212	394	836	103	1910	340
14	26	73	295	e5.4	e5.8	e540	292	363	804	230	1960	335
15	37	79	219	e5.4	e6.0	e540	290	485	778	272	1400	330
16	50	82	138	e5.3	e6.1	e540	282	517	743	264	802	320
17	72	81	e13	e5.3	e6.3	e820	227	506	542	264	591	311
18	270	82	e12	e5.3	e6.5	e890	190	496	453	273	666	303
19	302	79	e11	e5.2	e6.6	e700	184	490	436	273	651	286
20	177	85	e10	e5.2	e6.8	e550	181	423	435	268	627	276
21	100	101	e9.5	e5.2	e7.0	e410	177	373	456	166	607	197
22	69	89	e9.0	e5.2	e7.1	e380	175	224	639	59	578	157
23	52	83	e8.5	e5.2	e7.4	e320	170	155	742	20	566	120
24	33	82	e8.0	e5.1	e7.7	262	170	150	706	13	479	93
25	22	85	e7.6	e5.1	e8.1	234	171	144	493	11	447	67
26	24	91	e7.2	e5.1	e8.8	180	169	137	287	11	426	35
27	38	103	e6.9	e5.1	e11	146	169	128	213	83	348	30
28	50	113	e6.7	e5.1	e16	211	168	71	192	141	222	34
29	54	125	e6.5	e5.2	---	747	164	25	185	108	174	40
30	54	139	e6.3	e5.2	---	563	161	17	186	105	177	44
31	56	---	e6.2	e5.2	---	245	---	109	---	63	266	---
TOTAL	1540.1	2495	6870.4	168.5	186.9	13360	5641	7245	20345	4773	13964.8	6648
MEAN	49.7	83.2	222	5.44	6.67	431	188	234	678	154	450	222
MAX	302	139	622	6.1	16	890	403	517	2520	273	1960	340
MIN	1.3	61	6.2	5.1	5.2	19	86	17	185	11	8.8	30
AC-FT	3050	4950	13630	334	371	26500	11190	14370	40350	9470	27700	13190
CFSM	.03	.04	.12	.00	.00	.23	.10	.12	.36	.08	.24	.12
IN.	.03	.05	.14	.00	.00	.26	.11	.14	.40	.09	.28	.13

e Estimated

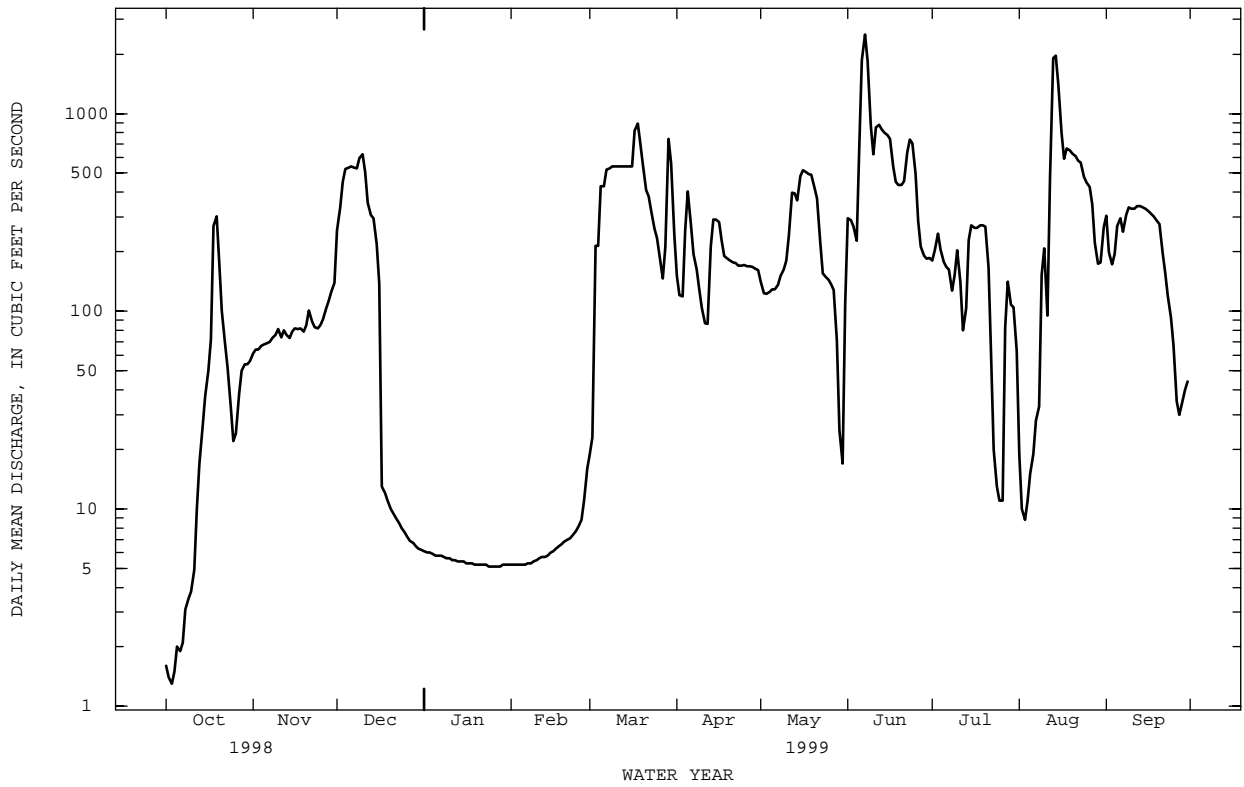
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STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1990 - 1999, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	114	60.5	29.5	7.91	35.0	493	1251	694	425	429	235	191
MAX	592	465	222	43.9	155	1757	5936	1893	749	1477	1486	1244
(WY)	1994	1996	1999	1997	1998	1995	1997	1997	1995	1993	1993	1993
MIN	.026	1.97	.65	.077	.000	25.5	12.6	11.8	12.6	4.37	.000	.000
(WY)	1991	1991	1991	1991	1990	1990	1990	1990	1990	1990	1990	1990

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1990 - 1999
ANNUAL TOTAL	84829.25	83237.7	
ANNUAL MEAN	232	228	331
HIGHEST ANNUAL MEAN			754
LOWEST ANNUAL MEAN			8.77
HIGHEST DAILY MEAN	2540	2520	11500
LOWEST DAILY MEAN	.01	1.3	.00a
ANNUAL SEVEN-DAY MINIMUM	.01	1.7	.00
INSTANTANEOUS PEAK FLOW		2580	12300
INSTANTANEOUS PEAK STAGE		18.05	24.42
INSTANTANEOUS LOW FLOW		1.2	.00
ANNUAL RUNOFF (AC-FT)	168300	165100	239800
ANNUAL RUNOFF (CFSM)	.12	.12	.18
ANNUAL RUNOFF (INCHES)	1.68	1.65	2.39
10 PERCENT EXCEEDS	622	541	1150
50 PERCENT EXCEEDS	74	140	14
90 PERCENT EXCEEDS	.28	5.4	.38

a Many days, several years; result of regulation.



RED RIVER OF THE NORTH BASIN--Continued

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WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1994-95, 1997 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	TIME	DIS-CHARGE, IN CUBIC FEET PER SECOND (00060)	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (MG/L) (00301)	OXYGEN, DIS-SOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	PH WATER WHOLE LAB (STAND-ARD UNITS) (00403)	SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)
OCT 27...	0900	38	--	--	--	8.4	7.8	8.1	1120	1110	8.00
DEC 15...	0830	219	--	740	102	14.0	8.4	8.4	1320	1280	-2.00
MAR 30...	0830	--	607	730	86	10.5	7.8	7.2	801	813	11.0
APR 27...	0845	169	--	740	84	8.6	8.3	8.1	1160	1160	13.0
JUN 02...	0845	289	--	740	71	7.1	7.7	7.1	733	737	13.5
JUN 29...	0815	185	--	734	80	7.1	8.3	8.3	1120	1127	19.0
JUL 21...	0915	166	--	729	55	4.2	7.9	7.6	1220	1216	25.5
AUG 24...	0800	479	--	736	59	5.0	7.7	8.0	1040	1024	19.5
SEP 22...	0840	157	--	736	105	10.4	8.0	--	--	1240	17.0

DATE	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM PERCENT (00932)	SODIUM (MG/L AS NA) (00930)	ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)
OCT 27...	10.8	550	110	67	12	.7	13	39	250	15	370
DEC 15...	.9	610	120	76	10	.8	14	48	250	20	480
MAR 30...	4.8	390	85	44	8	.6	13	27	140	3.8	260
APR 27...	12.3	550	110	70	9	.7	13	39	220	18	430
JUN 02...	13.8	350	74	41	7	.6	14	27	120	6.4	260
JUN 29...	19.2	570	110	69	9	.7	12	36	230	15	380
JUL 21...	26.1	600	120	75	11	.8	13	42	240	17	430
AUG 24...	21.8	520	100	64	11	.7	12	34	200	15	350
SEP 22...	14.1	--	--	--	--	--	--	--	--	--	--

DATE	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO-GEN, TOTAL (MG/L AS N) (00600)	PHOS-PHORUS DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	COLI-FORM, FECAL, UM-MF (COLS./100 ML) (31625)	STREP-TOCOCCI, FECAL, KF AGAR (COLS. PER 100 ML) (31673)
OCT 27...	.87	.14	.40	.73	1.3	.19	.31	78.0	760	4100	4300
DEC 15...	.94	.01	.18	.93	1.1	.28	.30	532	900	K13	91
MAR 30...	1.3	.21	4.6	1.1	5.9	.34	.36	839	512	K40	2800
APR 27...	.89	.01	.02	.88	.91	.02	.06	366	803	K18	K13
JUN 02...	.97	.16	1.4	.81	2.3	.20	.43	382	489	210	210
JUN 29...	.97	<.01	.08	--	1.0	.23	.33	381	762	115	177
JUL 21...	1.6	.56	.30	1.1	1.9	.29	.38	376	840	32	--
AUG 24...	1.1	.20	.06	.94	1.2	.31	.39	904	699	55	K108
SEP 22...	.51	<.01	.06	--	.57	.11	.14	--	--	--	--

RED RIVER OF THE NORTH BASIN--Continued

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WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70954)	ALUMI- NUM, TOTAL RECOVER -ABLE (UG/L) (01104)	ANTI- MONY, TOTAL (UG/L) AS SB) (01097)	ARSENIC TOTAL (UG/L) AS AS) (01002)	BARIUM, TOTAL RECOVER -ABLE (UG/L) (01009)	BERYL- LIUM TOTAL RECOVER -ABLE (UG/L) (00998)	BORON, TOTAL RECOVER -ABLE (UG/L) (00999)	CADMIUM TOTAL RECOVER -ABLE (UG/L) (01113)	CHRO- MIUM, TOTAL RECOVER -ABLE (UG/L) (01118)	COPPER, TOTAL RECOVER -ABLE (UG/L) (01119)
OCT 27...	<3.0	<1.0	560	<1	6	74	<1	140	<1	<1	2
DEC 15...	<3.0	<1.0	260	<1	7	68	<1	220	<1	<1	1
MAR 30...	<3.0	<1.0	1600	<1	5	70	<1	93	<1	2	4
APR 27...	<3.0	<1.0	320	<1	3	64	<1	190	<1	<1	2
JUN 02...	<3.0	--	6000	<1	6	95	<1	160	<1	8	6
JUN 29...	57	<1.0	2200	<1	7	92	<1	180	<1	3	6
JUL 21...	16	6.0	1600	<1	11	94	<1	240	<1	2	3
AUG 24...	65	<10	1400	<1	11	95	<1	200	<1	2	2
SEP 22...	24	<4.0	1600	<1	9	100	3	110	1	3	3

DATE	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)	LEAD, TOTAL RECOVER -ABLE (UG/L) (01114)	MANGAN- ESE TOTAL RECOVER -ABLE (UG/L) (01123)	NICKEL, TOTAL RECOVER -ABLE (UG/L) (01074)	SELE- NIUM, TOTAL (UG/L AS SE) (01147)	SILVER, TOTAL RECOVER -ABLE (UG/L) (01079)	THAL- LIUM, TOTAL RECOV- ERABLE (UG/L AS TL) (01128)	ZINC, TOTAL RECOVER -ABLE (UG/L) (01094)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 27...	760	<1	130	6	<1	<1	<1	4	68	7.0	97
DEC 15...	360	<1	35	5	1	<1	<1	4	15	8.9	97
MAR 30...	2200	<1	160	6	<1	<1	<1	16	65	107	99
APR 27...	340	<1	100	6	<1	<1	<1	12	15	6.8	97
JUN 02...	7000	3	280	11	<1	<1	<1	23	227	177	99
JUN 29...	3000	2	330	10	<1	<1	<1	14	132	66	98
JUL 21...	2100	1	240	8	1	<1	<1	15	86	39	98
AUG 24...	2000	<1	240	7	1	<1	<1	12	100	129	98
SEP 22...	2300	1	130	8	--	1	<1	12	--	--	--