

RED RIVER OF THE NORTH BASIN

05094000 SOUTH BRANCH TWO RIVERS AT LAKE BRONSON, MN

LOCATION.--Lat 48° 43'50", long 96° 39'50", in SW¼SW¼ sec. 30, T.161 N., R.46 W., Kittson County, Hydrologic Unit 09020312, on left bank 70 ft upstream from culvert on U.S. Highway 59 at Lake Bronson and 3.4 mi downstream from dam at outlet of Bronson Lake.

DRAINAGE AREA.--444 mi².

PERIOD OF RECORD.--September 1928 to November 1936, April to September 1937, April 1941 to October 1943, April to December 1944, April 1945 to September 1947, October 1953 to September 1981, April 1985 to current year. Monthly discharge only for some periods, published in WSP 1308. October 1981 to March 1985, annual maximums only. Published as South Fork Two Rivers at Bronson prior to 1941.

REVISED RECORDS.--WSP 1308: 1929(M), 1931(M), 1936(M), 1944(M), 1947(M).

GAGE.--Water-stage recorder. Datum of gage is 928.53 ft above mean sea level (Minnesota Department of Transportation bench mark). Prior to Nov. 23, 1953, nonrecording gage at bridge 100 ft downstream at datum 2.00 ft higher. Nov 23, 1953 to Oct. 5, 1963, water-stage recorder at same site at datum 2.00 ft higher.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Flow partly regulated since 1937 at Bronson Lake; usable capacity, 3,700 acre-ft.

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	e6.0	4.1	5.1	.20	e.40	e11	e200	895	241
67	12	1.6							
2	e3.2	4.5	4.8	.20	e1.4	e12	e500	750	206
201	1.9	1.4							
3	e1.8	4.5	4.6	.20	e10	e12	191	599	182
495	.97	1.3							
4	e1.4	5.1	4.5	.20	e11	e11	76	581	190
624	.95	1.2							
5	e1.3	5.6	e6.0	.20	e11	e10	e130	487	197
615	1.2	1.2							
6	e1.4	11	e20	.18	e10	e11	e450	545	199
503	1.6	1.1							
7	e1.5	22	e30	.18	e10	e11	e350	543	197
421	2.0	1.5							

8	e1.4	24	e22	.18	e11	e12	e300	548	175
335	2.3	24							
9	e1.3	20	e10	.18	e10	e10	e290	821	157
230	2.5	14							
10	e1.2	3.5	e4.0	.18	e10	e6.0	e290	773	129
176	2.5	2.2							
11	e1.3	5.8	e2.2	.18	e9.5	e5.6	e340	689	62
175	2.7	1.1							
12	e1.4	7.3	1.8	.18	e10	e5.8	e340	542	62
139	2.5	.79							
13	e1.7	7.7	1.5	.18	e9.5	e6.0	e290	541	54
101	2.3	1.4							
14	e1.9	7.7	1.2	.18	e9.5	e5.8	e290	529	28
113	2.4	1.1							
15	e1.9	7.7	.93	.18	e9.4	e6.0	e320	494	4.7
143	3.1	.89							
16	1.8	7.6	.79	.18	e9.0	e5.8	e500	375	4.6
155	113	17							
17	1.8	8.1	.65	.18	e10	e5.6	e1000	462	5.3
152	2.7	34							
18	1.7	12	.56	.18	e11	e5.4	e1600	454	6.0
119	1.0	21							
19	1.3	11	.48	.16	e11	e5.6	3190	422	11
69	.93	22							
20	1.3	9.7	.43	.16	e12	e5.4	4100	379	23
59	.98	22							
21	1.3	8.9	.39	.16	e11	e4.9	4050	342	28
43	.82	21							
22	1.3	7.9	.35	e.21	e11	e4.3	3890	334	25
23	.79	19							
23	1.3	7.4	.31	e.23	e10	e3.5	3600	344	25
18	1.1	2.2							
24	1.3	6.7	.28	e.22	e10	e2.5	3290	350	23
17	1.2	.55							
25	1.3	6.4	.28	e.21	e9.6	e2.3	2820	347	22
18	1.7	.59							
26	1.6	6.4	.28	e.20	e10	e2.5	2320	327	21
18	1.5	1.4							
27	2.7	6.0	.24	e.18	e11	e2.7	1950	313	24
17	1.5	2.7							
28	2.7	6.0	.22	e.18	e10	e2.8	1620	271	35
15	1.7	5.6							
29	2.9	5.6	.22	e.18	---	e3.0	1280	242	39
15	1.7	5.7							
30	3.0	5.2	.21	e.22	---	e3.5	992	244	44
15	1.7	5.2							
31	4.0	---	.20	e.27	---	e4.0	---	243	---
14	1.6	---							
TOTAL	60.0	255.4	124.52	5.92	268.30	199.0	40559	14786	2419.6
5105	174.84	234.72							

MEAN	1.94	8.51	4.02	.19	9.58	6.42	1352	477	80.7
165	5.64	7.82							
MAX	6.0	24	30	.27	12	12	4100	895	241
624	113	34							
MIN	1.2	3.5	.20	.16	.40	2.3	76	242	4.6
14	.79	.55							
AC-FT	119	507	247	12	532	395	80450	29330	4800
10130	347	466							
CFSM	.00	.02	.01	.00	.02	.01	3.04	1.07	.18
.37	.01	.02							
IN.	.01	.02	.01	.00	.02	.02	3.40	1.24	.20
.43	.01	.02							

- e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 1997, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
JUL	AUG	SEP							
MEAN	19.5	13.0	4.83	2.90	3.42	69.9	428	219	161
110	48.6	44.3							
MAX	153	97.0	34.5	12.1	23.6	689	1977	1500	1336
1136	1349	525							
(WY)	1958	1995	1992	1992	1981	1995	1966	1996	1970
1956	1993	1957							
MIN	.40	.38	.13	.12	.12	.66	.54	.98	1.43
.44	.089	.000							
(WY)	1991	1990	1987	1987	1987	1934	1991	1991	1980
1988	1988	1937							

<i>SUMMARY STATISTICS</i>	<i>FOR 1996 CALENDAR YEAR</i>	<i>FOR 1997 WATER YEAR</i>	<i>WATER YEARS 1929 - 1997</i>					
ANNUAL TOTAL		106028.32			64192.30			
ANNUAL MEAN		290			176	94.3a		
HIGHEST ANNUAL MEAN								
312		1966						
LOWEST ANNUAL MEAN								
2.89		1934						
HIGHEST DAILY MEAN			4150	Apr 23	4100	Apr 20	5290	Apr
5		1966						
LOWEST DAILY MEAN			.20	Dec 31	.16	Jan 19-21	.00b	Jul
25		1937						
ANNUAL SEVEN-DAY MINIMUM			.24	Dec 25	.17	Jan 15	.00	Aug
2		1937						
INSTANTANEOUS PEAK FLOW					4260	Apr 20	5410	Apr
5		1966						
INSTANTANEOUS PEAK STAGE					14.58	Apr 20	18.23	Apr
5		1966						
ANNUAL RUNOFF (AC-FT)			210300		127300		68340	
ANNUAL RUNOFF (CFSM)			.65		.40		.21	
ANNUAL RUNOFF (INCHES)			8.88		5.38		2.89	
10 PERCENT EXCEEDS			662		457		225	
50 PERCENT EXCEEDS			15		7.4		4.8	

90 PERCENT EXCEEDS

1.7

.28

.80

a Median of annual mean discharges is 58 ft³/s.
b Many days, several years.