

## 04015330 KNIFE RIVER NEAR TWO HARBORS, MN

LOCATION.--Lat 46°56'49", long 91°47'32", in SW<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub> sec. 31, T.52 N., R.11 W., Lake County, Hydrologic Unit 04010102, on right bank 600 ft downstream from bridge on U.S. Highway 61, 0.5 mi upstream from bridge on County Highway 102, in town of Knife River, 0.8 mi upstream from Lake Superior, and 7.8 mi southwest of Two Harbors.

DRAINAGE AREA.--83.6 mi<sup>2</sup>.

PERIOD OF RECORD.--July 1974 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 640 ft above sea level (from topographic map).

REMARKS.--Records good except those for estimated daily discharges, which are poor. Flow regulated intermittently by fish ladder operation just upstream of gage.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,800 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
May 31	0900	*1,790	*6.29				
						No peak greater than base discharge.	

Minimum discharge, 3.0 ft<sup>3</sup>/s, Jan 17 (estimated daily).

DISCHARGE, CUBIC FEET PER SECOND  
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.4	47	e9.0	e3.8	e3.2	e9.4	e66	80	669	9.8	9.1	6.8
2	8.8	37	e8.4	e3.7	e3.2	e9.4	e62	71	356	8.9	7.2	7.2
3	8.4	29	e8.0	e3.6	e3.2	e9.4	e80	62	202	8.4	5.8	6.4
4	8.3	26	e7.6	e3.5	e3.2	e9.4	e120	58	136	9.8	5.2	5.9
5	8.3	25	e7.3	e3.4	e3.2	e9.4	e220	54	117	30	4.6	8.6
6	8.2	e22	e7.0	e3.3	e3.2	e9.5	526	50	137	27	4.5	117
7	8.3	e19	e6.9	e3.2	e3.2	e9.6	691	45	100	19	4.4	76
8	8.3	e17	e6.7	e3.2	e3.2	e9.6	890	42	298	15	5.5	42
9	7.9	e14	e6.6	e3.2	e3.3	e9.6	644	40	175	12	13	26
10	8.0	e18	e6.5	e3.2	e3.3	e9.6	440	52	109	10	13	18
11	9.4	e22	e6.3	e3.2	e3.3	e9.6	287	50	79	37	20	14
12	18	e28	e6.3	e3.1	e3.4	e9.6	207	47	158	61	30	11
13	21	e21	e6.0	e3.1	e3.5	e9.7	174	49	112	34	16	9.8
14	16	e16	e5.5	e3.1	e3.6	e9.8	201	54	79	20	10	9.9
15	13	e20	e5.3	e3.1	e3.8	e9.9	192	48	56	13	8.2	24
16	11	e26	e5.2	e3.1	e4.0	e10	221	42	46	11	7.1	128
17	11	e32	e5.2	e3.0	e4.2	e10	240	316	38	9.6	6.5	68
18	10	e52	e5.2	e3.0	e4.5	e10	486	306	31	8.2	6.2	47
19	9.9	e56	e5.2	e3.0	e4.9	e10	824	174	25	7.6	5.4	32
20	9.7	e49	e5.2	e3.1	e5.4	e11	498	262	21	7.3	5.0	22
21	9.6	e40	e5.1	e3.1	e6.2	e11	331	171	18	7.1	4.6	38
22	9.3	e32	e5.0	e3.1	e6.8	e11	243	125	17	6.3	5.2	96
23	9.1	e26	e4.9	e3.1	e7.5	e11	177	125	15	5.6	6.0	68
24	9.5	e21	e4.8	e3.1	e8.2	e12	140	105	16	5.2	5.9	92
25	9.8	e18	e4.6	e3.1	e8.7	e13	163	121	15	4.9	5.5	76
26	9.6	e15	e4.4	e3.1	e9.1	e16	190	123	14	4.8	11	51
27	9.7	e13	e4.3	e3.1	e9.3	e27	144	96	13	4.6	15	46
28	13	e12	e4.2	e3.1	e9.4	e50	122	80	12	6.9	10	49
29	17	e11	e4.1	e3.1	e9.4	e100	106	68	11	9.6	7.9	35
30	24	e10	e4.0	e3.1	---	e86	92	511	11	11	7.0	27
31	48	---	e3.9	e3.2	---	e75	---	1,450	---	10	6.6	---
TOTAL	381.5	774	178.7	99.1	147.4	606.5	8,777	4,877	3,086	434.6	271.4	1,257.6
MEAN	12.3	25.8	5.76	3.20	5.08	19.6	293	157	103	14.0	8.75	41.9
MAX	48	56	9.0	3.8	9.4	100	890	1,450	669	61	30	128
MIN	7.9	10	3.9	3.0	3.2	9.4	62	40	11	4.6	4.4	5.9
AC-FT	757	1,540	354	197	292	1,200	17,410	9,670	6,120	862	538	2,490
CFSM	0.15	0.31	0.07	0.04	0.06	0.23	3.50	1.88	1.23	0.17	0.10	0.50
IN.	0.17	0.34	0.08	0.04	0.07	0.27	3.91	2.17	1.37	0.19	0.12	0.56

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1974 - 2004, BY WATER YEAR (WY)

MEAN	87.2	79.1	23.4	10.8	12.6	58.9	375	155	87.9	86.4	35.0	76.4
MAX	267	238	75.1	31.4	79.2	204	889	427	240	402	163	314
(WY)	(1996)	(1999)	(1999)	(1975)	(1998)	(1998)	(2001)	(1979)	(1984)	(1999)	(1988)	(1977)
MIN	3.06	1.58	0.00	0.00	0.00	6.30	73.6	16.0	13.0	4.87	2.95	1.43
(WY)	(1977)	(1977)	(1977)	(1977)	(1977)	(2002)	(1977)	(1976)	(1995)	(1988)	(1976)	(1976)

04015330 KNIFE RIVER NEAR TWO HARBORS, MN—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1974 - 2004	
ANNUAL TOTAL	20,924.86		20,890.8		91.0	
ANNUAL MEAN	57.3		57.1		164	
HIGHEST ANNUAL MEAN					44.2	
LOWEST ANNUAL MEAN					1977	
HIGHEST DAILY MEAN	1,280	Apr 10	1,450	May 31	4,840	Jul 5, 1999
LOWEST DAILY MEAN	0.00	Jan 17	3.0	Jan 17-19	a0.00	Dec 2, 1976
ANNUAL SEVEN-DAY MINIMUM	0.00	Jan 22	3.1	Jan 13	0.00	Dec 2, 1976
MAXIMUM PEAK FLOW			1,790	May 31	9,100	Jul 5, 1999
MAXIMUM PEAK STAGE			6.29	May 31	12.14	Jul 5, 1999
INSTANTANEOUS LOW FLOW			b3.0	Jan 17	a0.00	Dec 2, 1976
ANNUAL RUNOFF (AC-FT)	41,500		41,440		65,920	
ANNUAL RUNOFF (CFSM)	0.686		0.683		1.09	
ANNUAL RUNOFF (INCHES)	9.31		9.30		14.79	
10 PERCENT EXCEEDS	120		138		220	
50 PERCENT EXCEEDS	12		11		22	
90 PERCENT EXCEEDS	0.00		3.3		4.8	

a Many days in 1977 and 2003.  
 b Estimated, daily minimum.  
 c Estimated.

