05064000 WILD RICE RIVER AT HENDRUM, MN

Upper Red Basin
Eastern Wild Rice Subbasin

LOCATION.--Lat 47°16′05″, long 96°47′50″ referenced to North American Datum of 1927, in SE ¼ SE ¼ sec.19, T.144 N., R.48 W., Norman County, MN, Hydrologic Unit 09020108, on right bank 30 ft. below bridge on County Highway 25, 0.5 mi. east of Hendrum and 4 mi. upstream from mouth.

DRAINAGE AREA.--1,560 mi^2.

SURFACE-WATER RECORDS

PERIOD OF RECORD.--March 1944 to September 1984 and May 1985 to current year. Operated as a high-flow partial-record station October 1984 to April 1985.

REVISED RECORDS.--WSP 1728: 1958.

GAGE.--Water-stage recorder. Datum of gage is 836.75 ft above sea level (NGVD of 1929, levels by U.S. Army Corps of Engineers). Prior to July 18, 1989, nonrecording gage at same site and datum.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Large part of high flow diverted into Marsh River Basin at overflow section 3.5 mi east of Ada. Another diversion into the Marsh River basin formed in 1947, 1.5 mi southeast of Ada and diverted water at all stages 1947-51, after which it was closed except for a small regulated flow diverted for abatement of contamination from Ada sewage plant effluent. Amount of diversion not known.

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DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007
DAILY MEAN VALUES
[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	29	28	e28	e64	e38	e37	1,670	625	623	682	84	39
2	28	33	e28	e63	e36	e37	2,350	619	610	724	84	36
3	55	33	e29	e63	e33	e35	2,590	616	600	856	77	32
4	58	40	e29	e63	e31	e33	2,090	605	622	600	70	29
5	43	43	e30	e63	e29	e32	1,280	605	626	506	67	28
6	31	58	e31	e64	e28	e31	993	629	e596	470	63	27
7	28	52	e31	e64	e28	e31	777	646	e589	418	63	26
8	28	44	e32	e63	e28	e32	725	644	e640	373	61	26
9	28	43	e35	e62	e27	e37	682	642	e766	334	57	31
10	27	44	e37	e60	e27	e43	664	642	e787	323	54	39
11	28	35	e40	e55	e27	e50	649	641	665	311	53	40
12	29	31	e41	e51	e27	e65	636	641	635	292	53	41
13	34	49	e44	e47	e27	e112	632	636	639	266	48	37
14	39	52	e45	e44	e27	e198	635	627	1,230	243	45	34
15	40	46	e46	e42	e27	e413	637	616	2,060	230	43	32
16	36	42	e49	e40	e27	e366	632	556	2,600	238	41	31
17	42	42	e51	e39	e27	e303	628	501	3,190	234	38	31
18	51	40	e55	e39	e27	e303	625	454	3,930	185	36	30
19	59	32	e58	e40	e29	e303	623	432	4,790	168	37	30
20	64	34	e58	e42	e31	e306	620	433	4,970	151	36	32
21	65	39	e57	e43	e33	e313	622	448	4,810	135	36	39
22	59	51	e54	e43	e35	e340	650	430	4,290	125	36	54
23	58	53	e55	e42	e36	e403	e850	396	3,530	114	36	75
24	55	47	e55	e43	e36	e501	e976	524	2,630	110	34	73
25	58	45	e56	e43	e36	e655	e1,000	614	1,820	110	34	73
26	52	26	e57	e45	e36	e722	e839	619	1,370	97	32	68
27	56	33	e58	e46	e36	e726	e695	619	1,080	96	31	65
28	47	28	e60	e45	e37	e717	645	625	900	117	38	60
29	44	e30	e63	e44	---	e713	638	630	779	136	45	64
30	43	e30	e66	e42	---	e744	631	633	708	114	49	68
31	40	---	e66	e40	---	e963	---	632	---	95	44	---
Total	1,354	1,203	1,444	1,544	866	9,564	27,684	17,980	53,085	8,853	1,525	1,290
Mean	43.7	40.1	46.6	49.8	30.9	309	923	580	1,770	286	49.2	43.0
Max	65	58	66	64	38	963	2,590	646	4,970	856	84	75
Min	27	26	28	39	27	31	620	396	589	95	31	26
Ac-ft	2,690	2,390	2,860	3,060	1,720	18,970	54,910	35,660	105,300	17,560	3,020	2,560
Cfsm	0.03	0.03	0.03	0.03	0.02	0.20	0.59	0.37	1.13	0.18	0.03	0.03
In.	0.03	0.03	0.03	0.04	0.02	0.23	0.66	0.43	1.27	0.21	0.04	0.03

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1944 - 2007, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	149	176	94.4	67.6	73.2	343	1,247	667	595	443	167	147
Max	744	1,654	390	245	767	1,485	5,115	2,137	4,228	3,323	1,833	1,329
(WY)	(1972)	(2005)	(2001)	(2001)	(1998)	(1966)	(1997)	(1998)	(2002)	(2002)	(1993)	(1999)
Min	0.44	3.32	1.08	0.09	0.22	0.46	106	56.1	9.15	8.82	1.07	0.18
(WY)	(1949)	(1949)	(1977)	(1977)	(1977)	(1949)	(1981)	(1977)	(1952)	(1951)	(1977)	(1948)

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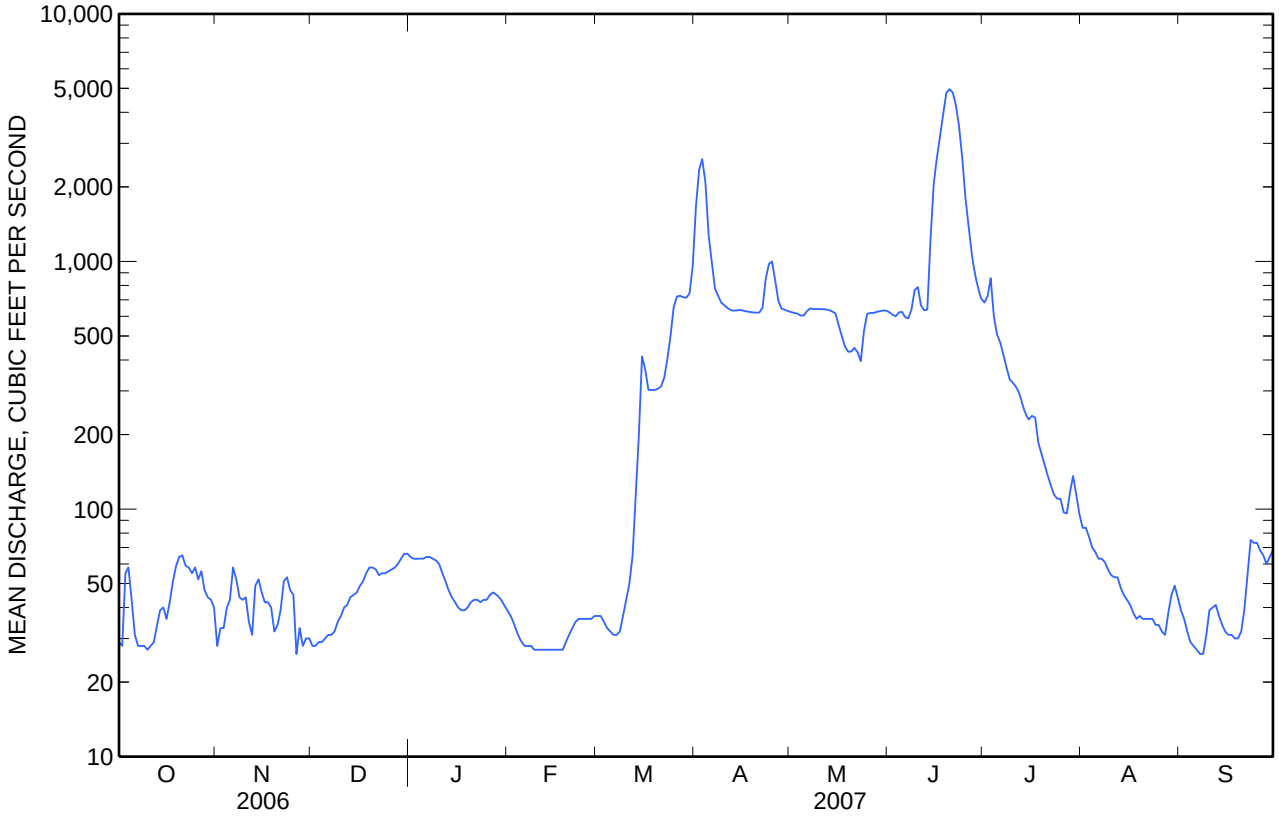
SUMMARY STATISTICS

	Calendar Year 2006		Water Year 2007		Water Years 1944 - 2007	
Annual total	156,670		126,392			
Annual mean	429		346		[a]342	
Highest annual mean					936	2002
Lowest annual mean					28.9	1977
Highest daily mean	9,570	Apr 3	4,970	Jun 20	10,300	Apr 18, 1997
Lowest daily mean	21	Sep 15	[b]26	Nov 26	[c]0.00	Sep 13, 1948
Annual seven-day minimum	24	Aug 18	27	Feb 9	0.00	Sep 27, 1948
Maximum peak flow			4,990	Jun 20	[d]10,600	Apr 18, 1997
Maximum peak stage			26.64	Jun 20	[f]33.85	Apr 18, 1997
Annual runoff (ac-ft)	310,800		250,700		247,800	
Annual runoff (cfsm)	0.275		0.222		0.219	
Annual runoff (inches)	3.74		3.01		2.98	
10 percent exceeds	1,030		719		797	
50 percent exceeds	109		58		108	
90 percent exceeds	28		30		18	

[a] Median of annual mean discharges is 300 ft³/s.
[b] Also occurred September 7, 8.
[c] Many days, September to October, 1948.
[d] From measurement of discharge.
[f] Backwater from Red River of the North.



WATER-QUALITY RECORDS

PERIOD OF RECORD.--1962-63, 65-66, 85-86, 93-95, and July to August 2006.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: July to August 2006.
SPECIFIC CONDUCTANCE: July to August 2006.
pH: July to August 2006.
DISSOLVED OXYGEN: July to August 2006.
DISSOLVED OXYGEN, % OF SATURATION: July to August 2006.

INSTRUMENTATION.--A water-quality monitor was located 300 yards downstream of bridge and on the right edge of river, to measure specific conductance, pH, temperature, and dissolved oxygen.

REMARKS.--Parameters monitored were compared independently with a calibrated meter weekly to bi-weekly. Corrections were applied based on USGS standard procedures.Specific conductance record was rated excellent for the period of record except July 28 to Aug. 1, which is rated good.pH record was rated excellent for the period of record.Temperature data was rated excellent for the period of record. Records represent water temperatures at sensors within 0.5 C.Dissolved-oxygen record was rated excellent for the period of record except July 28-29, which is rated good; July 30-31, which is rated fair; and, Aug. 1, which is rated poor.Dissolved-oxygen, % of saturation, was determined by an equation determined by Weiss (1970) which uses water temperature, specific conductance, dissolved oxygen, and barometric pressure.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum, 612 µS/cm, August 8 2006 (maximum recorded, likely higher later in the day); minimum, 544 µS/cm, Aug. 1 2006.
pH: Maximum, 8.5, July 27-30 and Aug. 1, 2006; minimum, 8.3, July 26, 27, Aug. 2, 6, 2006.
WATER TEMPERATURES: Maximum, 30.5 C, July 30 2006; minimum, 22.0 C Aug. 6, 7 2006.
DISSOLVED OXYGEN: Maximum, 9.1 mg/L, July 27 2006; minimum, 6.3 mg/L, July 26 2006.
DISSOLVED OXYGEN, % OF SATURATION: Maximum, 122, July 27, 2006; minimum, 78, July 26, 2006.

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Date	Time	Sample type	Specific conductance, wat unf µS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Suspnd. sediment, sieve diametr percent <.063mm (70331)	Suspended sediment concentration mg/L (80154)
Feb						
14...	1300	Environmental	722	0.0	93	15
Mar						
22...	0930	Environmental	354	1.0	99	15
Apr						
02...	0745	Environmental	472	2.5	90	474
12...	1220	Environmental	463	4.0	95	254
May						
08...	1040	Environmental	542	17.0	91	109
Jun						
04...	0730	Environmental	535	20.0	95	153
18...	1400	Environmental	390	23.0	--	--
Aug						
01...	1220	Environmental	526	25.0	--	--
17...	1120	Environmental	582	19.5	98	59