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 mi².

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.

05064000 WILD RICE RIVER AT HENDRUM, MN—Continued

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2007 TO SEPTEMBER 2008
DAILY MEAN VALUES

[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	70	241	e93	e115	e88	e70	e300	1,080	427	473	443	26
2	74	230	e120	e115	e88	e70	e367	1,280	451	443	294	51
3	74	218	e122	e115	e89	e70	e504	1,330	438	396	187	304
4	74	208	e122	e116	e89	e68	e732	1,270	469	352	132	504
5	77	202	e122	e117	e89	e69	e1,060	1,210	537	322	107	366
6	75	191	e121	e118	e88	e68	e1,460	1,160	686	296	89	224
7	78	170	e121	e118	e88	e68	e1,540	1,090	1,730	277	75	139
8	78	164	e121	e117	e88	e67	e1,290	1,010	2,130	305	65	101
9	85	170	e121	e116	e88	e67	1,120	939	1,830	290	63	80
10	98	158	e121	e113	e86	e68	1,210	908	1,580	289	67	65
11	109	150	e121	e111	e82	e70	1,540	876	1,520	313	63	874
12	123	156	e123	e111	e80	e73	1,280	841	2,310	290	67	2,730
13	124	158	e123	e110	e78	e77	1,040	806	3,020	276	288	3,330
14	120	161	e122	e111	e77	e78	1,040	772	2,840	267	591	3,140
15	110	156	e122	e111	e78	e78	1,090	722	2,320	232	406	2,490
16	107	153	e122	e110	e79	e78	1,140	703	2,000	210	344	1,760
17	116	146	e122	e109	e78	e82	1,100	663	1,750	192	328	1,210
18	128	140	e122	e107	e75	e91	1,050	620	1,460	170	178	902
19	162	130	e123	e101	e70	e100	932	577	1,210	153	102	711
20	279	e127	e123	e97	e67	e107	845	536	1,030	142	72	579
21	418	e116	e124	e94	e66	e112	792	485	913	190	55	506
22	425	e92	e123	e92	e66	e113	746	473	813	302	47	454
23	378	e95	e121	e91	e67	e118	716	474	729	248	41	416
24	340	e114	e120	e90	e69	e129	695	441	655	183	41	387
25	338	e118	e120	e89	e69	e141	697	419	601	142	37	367
26	329	e128	e120	e89	e69	e148	738	410	547	116	32	348
27	306	e127	e119	e89	e69	e158	793	399	512	102	30	333
28	283	e122	e119	e92	e69	e173	706	384	502	90	30	319
29	275	e95	e118	e92	e70	e208	712	365	494	469	28	309
30	274	e80	e117	e89	---	e236	871	347	486	1,010	28	295
31	260	---	e115	e88	---	e256	---	381	---	672	27	---
Total	5,787	4,516	3,723	3,233	2,259	3,311	28,106	22,971	35,990	9,212	4,357	23,320
Mean	187	151	120	104	77.9	107	937	741	1,200	297	141	777
Max	425	241	124	118	89	256	1,540	1,330	3,020	1,010	591	3,330
Min	70	80	93	88	66	67	300	347	427	90	27	26
Ac-ft	11,480	8,960	7,380	6,410	4,480	6,570	55,750	45,560	71,390	18,270	8,640	46,260
Cfsm	0.12	0.10	0.08	0.07	0.05	0.07	0.60	0.47	0.77	0.19	0.09	0.50
In.	0.14	0.11	0.09	0.08	0.05	0.08	0.67	0.55	0.86	0.22	0.10	0.56

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1944 - 2008, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	149	176	94.8	68.2	73.3	340	1,242	668	604	441	166	156
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

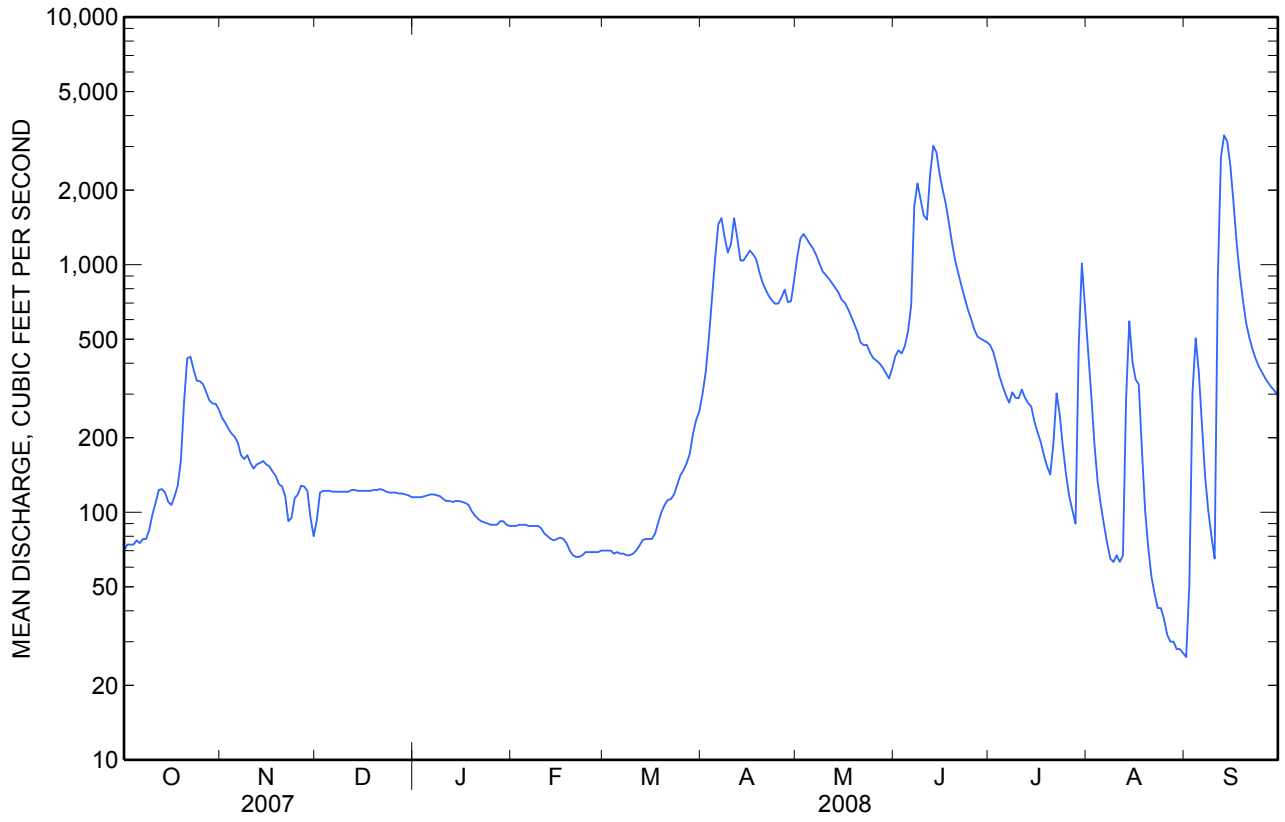
	Calendar Year 2007		Water Year 2008		Water Years 1944 - 2008	
Annual total	136,417		146,785			
Annual mean	374		401		[a]343	
Highest annual mean					936	2002
Lowest annual mean					28.9	1977
Highest daily mean	4,970	Jun 20	3,330	Sep 13	10,300	Apr 18, 1997
Lowest daily mean	26	Sep 7	26	Sep 1	[b]0.00	Sep 13, 1948
Annual seven-day minimum	27	Feb 9	29	Aug 26	0.00	Sep 27, 1948
Maximum peak flow			3,370	Sep 13	[c]10,600	Apr 18, 1997
Maximum peak stage			18.39	Sep 13	[d]33.85	Apr 18, 1997
Annual runoff (ac-ft)	270,600		291,100		248,500	
Annual runoff (cfsm)	0.240		0.257		0.220	
Annual runoff (inches)	3.25		3.50		2.99	
10 percent exceeds	719		1,070		800	
50 percent exceeds	122		152		110	
90 percent exceeds	33		70		18	

[a] Median of annual mean discharges is 310 ft³/s.

[b] Many days, September to October, 1948.

[c] From measurement of discharge.

[d] Backwater from Red River of the North.



05064000 WILD RICE RIVER AT HENDRUM, MN—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--1962 to 1963, 1965 to 1966, 1985 to 1986, 1993 to 1995, July to August 2006 to 2008.

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.

REMARKS.--This site is part of a sediment study of the Wild Rice River. The objectives of this study are to describe sediment concentration and load as a function of streamflow and season at selected sites in the Wild Rice River Basin. Also to describe the relationship between mean cross-sectional suspended sediment concentrations and point measurements of water transparency.

These sites will be operated for a period of five years to develop sediment-transport curves that can be used to determine long-term sediment transport relative to previous studies. These data also will be used to better understand how suspended sediment concentrations relate to total maximum daily loads (TMDLs) for turbidity along the Wild Rice River.

EXTREMES FOR PERIOD OF 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.

05064000 WILD RICE RIVER AT HENDRUM, MN—Continued

WATER-QUALITY DATA
WATER YEAR OCTOBER 2007 TO SEPTEMBER 2008

Part 1 of 2

Date	Time	Sample medium and type	Instantaneous discharge, cfs (00061)	Transparency wat unf transparency tube, cm (65225)	Turbdty white light, det ang 90+/-30 degrees NTU (63675)	Turbdty white light, det ang 90+/-30 corrctd NTRU (63676)	Specif-ic conduc-tance, wat unf µS/cm 25 degC (00095)	Temper-ature, air, deg C (00020)	Temper-ature, water, deg C (00010)
Oct									
15...	1135	Suspended sediment, regular	--	--	--	--	--	--	--
15...	1135	Surface water, regular	--	26	26	--	631	9.0	--
15...	1137	Surface water, regular	38	26	--	25	631	--	9.5
18...	1135	Surface water, regular	--	26	25	--	631	9.0	9.5
Mar									
04...	1530	Suspended sediment, regular	--	--	--	--	--	--	--
04...	1530	Surface water, regular	--	60	12	--	636	--	.0
May									
28...	1215	Suspended sediment, regular	--	--	--	--	--	--	--
28...	1215	Surface water, regular	--	15	--	37	501	17.4	17.4
Jun									
09...	0830	Suspended sediment, regular	--	--	--	--	--	--	--
09...	0830	Surface water, regular	--	7	140	130	539	11.5	17.0
13...	1325	Suspended sediment, regular	--	3	310	330	464	15.6	16.8
13...	1325	Surface water, regular	--	--	--	--	--	--	--
Jul									
08...	1430	Suspended sediment, regular	--	9	110	110	510	21.1	23.6
08...	1430	Surface water, regular	--	--	--	--	--	--	--
Aug									
07...	1235	Suspended sediment, regular	--	22	35	35	502	24.7	25.2
07...	1235	Surface water, regular	--	--	--	--	--	--	--
27...	1245	Suspended sediment, regular	--	33	24	22	586	19.8	21.5

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WATER-QUALITY DATA
WATER YEAR OCTOBER 2007
TO SEPTEMBER 2008

Part 2 of 2

Date	Suspnd. sedi-ment, sieve diametr percent <.063mm (70331)	Sus-pended sedi-ment concen-tration mg/L (80154)
Oct		
15...	--	--
15...	--	--
15...	--	--
18...	--	--
Mar		
04...	--	--
04...	94	29
May		
28...	--	--
28...	95	65
Jun		
09...	--	--
09...	84	127
13...	--	--
13...	90	90
Jul		
08...	--	--
08...	93	114
Aug		
07...	--	--
07...	--	56
27...	77	43