

## 05355200 CANNON RIVER AT WELCH, MN

LOCATION.--Lat 44°33'50", long 92°43'55", in NW<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub> sec. 27, T. 113 N., R. 16 W., Goodhue County, on right bank 0.3 mile downstream from highway bridge at Welch and 1.8 miles upstream from Belle Creek.

DRAINAGE AREA.--1,340 mi<sup>2</sup>.

PERIOD OF RECORD.--June 1909 to January 1914 (no winter records 1909-11), November 1930 to September 1971, October 1972 to September 1987 (annual maximum only), October 1991 to current year.

REVISED RECORDS.--WSP 1308: 1912(M). WSP 1508: 1933. WSP 1914: 1960. WRD MN-98: 1986 (M), 1997.

GAGE.--Water-stage recorder. Datum of gage is 699.16 ft above sea level (NGVD of 1929). Prior to Nov. 11, 1930, nonrecording gage on highway bridge at site 0.3 mile upstream at datum 3.00 ft lower. Nov. 11, 1930 to Oct. 11, 1938, water-stage recorder at site 0.3 mile upstream at present datum.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known, 17.1 ft, present datum, in April 1888, from floodmark at mill about 2,400 ft upstream.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Flow affected at lower stages by regulation from hydropower plant upstream.

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	222	279	223	e218	e204	651	846	406	2,760	896	1,010	602
2	223	277	215	e218	e202	1,040	796	390	2,520	882	1,030	542
3	226	275	201	e215	e202	1,000	770	369	2,240	849	951	416
4	226	270	219	e210	e202	928	758	357	1,840	938	817	366
5	227	278	229	e203	e202	861	756	347	1,600	977	816	375
6	232	286	241	e197	e203	781	753	318	1,470	1,150	804	578
7	239	294	238	e193	e204	761	722	292	1,250	1,700	922	461
8	241	284	237	e188	e205	755	625	261	1,080	2,050	971	476
9	240	265	252	e188	e206	745	538	280	1,760	2,000	879	511
10	240	257	251	e192	e208	749	482	440	5,340	1,670	730	512
11	251	271	226	e200	e209	785	459	537	9,130	1,660	603	508
12	254	285	196	e202	e209	932	447	507	9,940	3,090	554	491
13	273	299	212	e203	e208	914	431	562	9,480	4,170	542	406
14	273	299	214	e203	e205	930	401	745	8,200	3,500	512	407
15	281	300	226	e201	e200	918	355	829	6,680	2,650	484	974
16	270	299	231	e200	e199	817	362	869	5,190	2,090	619	2,610
17	241	302	230	e196	e200	851	366	775	4,180	1,800	765	3,820
18	234	305	234	e194	e200	1,090	375	617	3,800	1,660	1,020	4,510
19	239	304	243	e190	e210	1,080	444	500	3,170	1,520	1,180	4,560
20	259	301	e235	e183	e218	1,100	502	732	2,600	1,170	1,130	3,850
21	273	282	227	e182	e219	924	448	891	2,350	1,010	1,050	3,300
22	271	246	226	e186	e220	816	484	891	2,040	1,140	864	2,770
23	272	244	218	e190	e218	785	518	1,130	1,690	1,190	746	2,270
24	274	241	e205	e198	e215	787	508	2,190	1,480	1,340	647	1,800
25	273	e242	e203	e205	e212	795	486	2,280	1,540	1,100	543	1,670
26	263	242	e200	e217	212	822	527	2,190	1,400	1,020	532	1,540
27	251	241	216	e216	224	811	484	2,060	1,150	928	512	1,320
28	256	238	249	e213	243	810	491	1,730	1,200	833	451	1,010
29	262	218	258	e210	284	855	489	1,560	1,070	793	436	879
30	270	217	247	e208	---	951	448	2,120	933	823	441	849
31	273	---	217	e205	---	915	---	2,830	---	922	516	---
TOTAL	7,829	8,141	7,019	6,224	6,143	26,959	16,071	30,005	99,083	47,521	23,077	44,383
MEAN	253	271	226	201	212	870	536	968	3,303	1,533	744	1,479
MAX	281	305	258	218	284	1,100	846	2,830	9,940	4,170	1,180	4,560
MIN	222	217	196	182	199	651	355	261	933	793	436	366
AC-FT	15,530	16,150	13,920	12,350	12,180	53,470	31,880	59,510	196,500	94,260	45,770	88,030
CFSM	0.19	0.20	0.17	0.15	0.16	0.65	0.40	0.72	2.46	1.14	0.56	1.10
IN.	0.22	0.23	0.19	0.17	0.17	0.75	0.45	0.83	2.75	1.32	0.64	1.23

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1909 - 2004, BY WATER YEAR (WY)

MEAN	396	378	296	244	307	969	1,404	832	918	623	459	411
MAX	1,806	1,708	1,105	662	1,141	2,627	8,240	2,966	4,144	3,343	2,951	1,823
(WY)	(1969)	(1971)	(1992)	(1992)	(1966)	(1992)	(1965)	(1944)	(1993)	(1993)	(1993)	(1993)
MIN	65.5	78.8	75.0	76.9	110	149	145	84.9	80.0	71.2	78.1	72.8
(WY)	(1934)	(1934)	(1938)	(1938)	(1913)	(1911)	(1911)	(1934)	(1934)	(1934)	(1936)	(1933)

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SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1909 - 2004	
ANNUAL TOTAL	195,315		322,455		626	
ANNUAL MEAN	535		881		137	
HIGHEST ANNUAL MEAN					2,132	1993
LOWEST ANNUAL MEAN					137	1934
HIGHEST DAILY MEAN	5,230	May 13	9,940	Jun 12	28,700	Apr 8, 1965
LOWEST DAILY MEAN	172	Sep 11	182	Jan 21	a19	Jan 2, 1950
ANNUAL SEVEN-DAY MINIMUM	183	Sep 6	189	Jan 17	42	Aug 12, 1936
MAXIMUM PEAK FLOW			10,100	Jun 12	36,100	Apr 8, 1965
MAXIMUM PEAK STAGE			10.72	Jun 12	15.05	Jun 27, 1998
INSTANTANEOUS LOW FLOW			b154	Dec 12	a2.5	Jan 3, 1950
ANNUAL RUNOFF (AC-FT)	387,400		639,600		453,300	
ANNUAL RUNOFF (CFSM)	0.399		0.657		0.467	
ANNUAL RUNOFF (INCHES)	5.42		8.95		6.34	
10 PERCENT EXCEEDS	968		2,010		1,390	
50 PERCENT EXCEEDS	299		479		310	
90 PERCENT EXCEEDS	214		205		106	

- a Result of ice jam upstream.
- b Result of freezeup.
- e Estimated.

