



Water-Data Report 2009

05355200 CANNON RIVER AT WELCH, MN

Upper Mississippi Basin
Cannon Subbasin

LOCATION.--Lat 44°33'50", long 92°43'55" referenced to North American Datum of 1927, in NW ¼ SW ¼ sec.27, T.113 N., R.16 W., Goodhue County, MN, Hydrologic Unit 07040002, on right bank 0.3 mile downstream from highway bridge at Welch and 1.8 miles upstream from Belle Creek.

DRAINAGE AREA.--1,340 mi².

SURFACE-WATER RECORDS

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.

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

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.

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DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2008 TO SEPTEMBER 2009
DAILY MEAN VALUES

[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	225	256	263	e190	e159	e231	746	705	236	334	189	222
2	224	252	244	e190	e157	e236	721	701	226	325	189	215
3	231	253	231	e190	e155	e262	661	609	221	304	188	220
4	236	254	e215	e190	e153	303	615	529	218	304	183	226
5	240	257	e216	e190	e153	309	592	522	211	292	178	223
6	245	277	e205	e190	e153	642	539	482	221	264	177	211
7	276	305	e201	e189	e148	1,120	503	482	242	252	195	201
8	316	392	e204	e189	e155	904	504	556	288	254	522	196
9	313	354	e204	e188	e250	770	503	677	302	243	423	189
10	308	313	e198	e185	e928	715	456	673	305	259	252	188
11	306	368	e195	e181	1,180	624	430	628	317	254	223	189
12	304	315	e192	e176	1,050	620	386	593	335	222	202	188
13	300	342	e194	e172	826	588	315	549	320	189	194	190
14	288	345	e201	e166	717	591	341	577	315	202	239	191
15	286	338	e189	e161	646	609	353	505	307	231	262	189
16	285	328	e187	e160	e537	598	369	342	304	211	253	187
17	285	319	e188	e160	e487	613	377	301	328	193	275	186
18	284	281	e187	e160	e439	729	368	308	462	181	291	186
19	284	286	e188	e161	e327	750	363	311	1,100	181	265	185
20	280	294	e189	e164	e213	739	362	309	1,010	180	407	183
21	277	281	e187	e168	e238	727	375	311	927	269	545	174
22	274	273	e185	e169	e226	726	386	306	978	405	437	169
23	274	274	e186	e168	e216	661	366	306	842	321	371	165
24	276	293	e189	e165	e223	684	343	295	660	230	318	165
25	275	303	e194	e160	e256	766	351	283	535	200	325	170
26	273	267	e201	e158	e290	772	376	266	453	190	462	175
27	269	259	e202	e158	e243	788	482	270	428	186	394	181
28	269	262	e202	e157	e218	788	595	274	435	184	299	198
29	267	270	e199	e157	---	772	679	265	399	181	281	181
30	263	272	e197	e158	---	753	717	238	353	183	253	168
31	261	---	e192	e158	---	717	---	243	---	183	237	---
Total	8,494	8,883	6,225	5,328	10,743	20,107	14,174	13,416	13,278	7,407	9,029	5,711
Mean	274	296	201	172	384	649	472	433	443	239	291	190
Max	316	392	263	190	1,180	1,120	746	705	1,100	405	545	226
Min	224	252	185	157	148	231	315	238	211	180	177	165
Ac-ft	16,850	17,620	12,350	10,570	21,310	39,880	28,110	26,610	26,340	14,690	17,910	11,330
Cfs/m	0.20	0.22	0.15	0.13	0.29	0.48	0.35	0.32	0.33	0.18	0.22	0.14
In.	0.24	0.25	0.17	0.15	0.30	0.56	0.39	0.37	0.37	0.21	0.25	0.16

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1909 - 2009, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	446	390	304	254	319	978	1,433	854	924	602	461	416
Max	2,798	1,708	1,105	662	1,141	2,627	8,240	2,966	4,144	3,343	2,951	1,823
(WY)	(2008)	(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

	Calendar Year 2008		Water Year 2009		Water Years 1909 - 2009	
Annual total	259,014		122,795			
Annual mean	708		336		636	
Highest annual mean					2,132	1993
Lowest annual mean					137	1934
Highest daily mean	4,790	Jun 14	1,180	Feb 11	28,700	Apr 8, 1965
Lowest daily mean	185	Dec 22	148	Feb 7	^a 19	Jan 2, 1950
Annual seven-day minimum	187	Dec 17	153	Feb 2	42	Aug 12, 1936
Maximum peak flow			^b 1,460	Feb 11	36,100	Apr 8, 1965
Maximum peak stage			^c 7.50	Feb 10	15.05	Jun 27, 1998
Instantaneous low flow			^d 131	Dec 15	^a 2.5	Jan 3, 1950
Annual runoff (ac-ft)	513,800		243,600		461,000	
Annual runoff (cfsm)	0.528		0.251		0.475	
Annual runoff (inches)	7.19		3.41		6.45	
10 percent exceeds	1,990		661		1,420	
50 percent exceeds	306		269		320	
90 percent exceeds	215		178		110	

^a Result of ice jam upstream.

^b Gage height, 4.88 ft. Also occurred Mar. 6 at 4.89 ft.

^c Backwater from ice.

^d Minimum recorded, result of freezeup.

