

## 2012 Elm Creek Watershed Stream Monitoring

### Stream Monitoring

The Elm Creek watershed contains several large depressions and drainageways. Water is generally directed from the south and west to the northeast via four main drainageways – Rush Creek, North Fork Rush Creek, Diamond Creek, and Elm Creek. These drainageways converge in the Elm Creek Park Reserve and enter Hayden Lake. Water is eventually discharged to the Mississippi River near the Mill Pond in Champlin.

The monitoring station in Champlin, located at the Elm Creek Road crossing in the Elm Creek Park Reserve, is operated in cooperation with the United States Geological Survey (USGS). The exact location is: latitude 45°09'48", longitude 93°26'11" referenced to North American Datum of 1927, in NE ¼ NW ¼ Sec.35, T.120 N., R.22 W., Hennepin County, MN, Hydrologic Unit 07010206, on left bank, 33 feet downstream from bridge on Elm Creek Road, 2.5 mi southwest of Champlin. The Commission shares the costs of operating the station, which collects continuous flow data and periodic event and base water quality data. The watershed area above the gauging station is 86 square miles, or 81% of the hydrologic watershed.

Both grab samples and storm runoff samples are collected and analyzed for various parameters. Analyses of the streamflow and water quality monitoring data for Elm Creek and its tributaries are summarized below. Real time data from the monitoring station in Champlin may be viewed on the Internet at [http://waterdata.usgs.gov/mn/nwis/uv/?site\\_no=05287890&PARAMeter\\_cd=00065,00060](http://waterdata.usgs.gov/mn/nwis/uv/?site_no=05287890&PARAMeter_cd=00065,00060).

### Flow Monitoring

Storm event samples are collected using an automatic sampler. Routine manual sampling occurs approximately monthly. The average daily discharge for the 2012 water year (WY), October 1, 2011 through September 30, 2012, was 37.3 cubic feet per second (cfs) or 5.91 inches. During the same period, the minimum and maximum observed average daily discharge values were 0.80 cfs and 534 cfs, respectively. The long-term average daily discharge at the station is 39.1 cfs or 6.18 inches (years 1979-2012). A spreadsheet of the data received in 2012 WY, including daily discharge and summary information, long-term flow volumes (calendar and water years), the flow hydrograph and the annual instantaneous peak discharge values at the gauging station for the period of record are also found in this appendix.

Elm Creek Annual Instantaneous Peak Discharge Rates							
Date	Peak Flow (cfs)	Date	Peak Flow (cfs)	Date	Peak Flow (cfs)	Date	Peak Flow (cfs)
4/4/79	307	8/1/87	185	4/1/97	511*	3/17/07	223
3/25/80	199	3/27/88	39	4/5/98	306	5/4/08	205
6/15/81	44	3/31/89	159	5/15/99	538*	3/27/09	119
4/3/82	471*	8/1/90	225	7/13/00	112	3/17/10	369
3/9/83	408	6/1/91	371	4/25/01	875**	3/24/11	803
2/25/84	341	3/8/92	380	5/11/02	554	5/29/12	568
3/18/85	579*	6/22/93	315	6/28/03	695		
3/27/86	812*	4/30/94	669*	6/03/04	350		
8/1/87	185	3/17/95	237	10/30/04	118		
3/27/86	812*	3/19/96	407	10/09/05	295		

\*These values have been revised based on the 2001 rating curve.

\*\*All-time instantaneous peak discharge. The estimated 100-year flood discharge at this site is 2,290 cfs.

## Elm Creek Near Champlin (USGS Station 05287890)

### Manual Water Quality Samples for Water Year 2012

(Selected Parameters)

USGS Parameter #	P00010	P00020	P00025	P00061	P00095	P00300	P00301	P00340	P00400	
DATE	Sample Start Time	Water Temp. °C	Air Temp. °C	Barom Press mm Hg	Disch Inst cfs	Sp cond mS/cm	DO mg/L	DO % Satur	COD mg/L	pH
13-Oct-11	12:00	12.5		730	1.2	671	4.1	40	30	7.5
14-Nov-11	12:30	5.5	6.7	724	1.9	705	10.3	86	20	7.6
8-Dec-11	14:00	0.4	-5	740	2.5	777	< 10.9	< 78	10	7.7
10-Jan-12	11:30	1.4	0	734	2.1	707	11.8	88	10	7.6
17-Feb-12	9:30	1.7	4	737	1.7	730	10.1	75	< 10	7.6
21-Mar-12	12:00	11.6	15	738	46	511	8.5	80	40	7.3
17-Apr-12	9:30	7.1	10	746	27	622	9	76	40	7.3
17-May-12	10:30	16.9	19.4	738	78	530	6.8	72	30	7.4
11-Jun-12	10:00	21.4		735	107	407	4.9	57	50	7.1
2-Aug-12	10:00	23.5		736	12	484	5.1	63	50	7.4
15-Aug-12	12:00	18.0		734	4.9	560	6.9	75	30	7.3
26-Sep-12	12:00	9.1		744	0.9	703	8.5	75	< 10	7.4
15-Oct-12	13:30	8.0		737	0.48	707	6.4	56	10	7.4
6-Dec-12	13:30							83		

USGS Parameter #	P00530	P00535	P00608	P00613	P00625	P00631	P00665	P00666	P00940	
DATE	Sample Start Time	TSS mg/L	Volatile Residue mg/L	Ammonia mg/L	Nitrite mg/L	Total Nitrogen mg/L	Dissolved NO2+NO3 mg/L	Total P mg/L	Dissolved P mg/L	Dissolved Chloride mg/L
13-Oct-11	12:00	21	< 10	0.033	0.004	0.83	0.030	0.24	0.13	24.8
14-Nov-11	12:30	< 15	< 10	0.014	0.003	0.47	< 0.040	0.08	0.03	23.3
8-Dec-11	14:00	< 15	< 10	0.110	0.005	0.49	0.196	0.06	< 0.02	36.1
10-Jan-12	11:30	< 15	< 10	0.157	0.005	0.52	0.197	0.07	0.02	30.1
17-Feb-12	9:30	< 15	< 10	0.089	0.003	0.38	0.110	0.04	0.03	24.8
21-Mar-12	12:00	22	11	0.339	0.036	1.70	0.341	0.18	0.10	63.0
17-Apr-12	9:30	< 15	< 10	0.053	0.006	1.10	0.137	0.12	0.07	90.9
17-May-12	10:30	< 15	< 10	0.041	0.002	1.20	0.062	0.19	0.14	59.0
11-Jun-12	10:00	34	18	0.146	0.012	1.60	0.079	0.45	0.27	32.0
2-Aug-12	10:00	< 15	< 10	0.116	0.028	1.50	0.171	0.37	0.26	42.4
15-Aug-12	12:00	< 15	< 10	0.098	0.037	0.91	0.246	0.20	0.12	33.9
26-Sep-12	12:00	< 15	< 10	0.016	0.002	0.26	0.052	0.07	0.05	12.6
15-Oct-12	13:30	< 15	< 10	< 0.010	< 0.001	0.22	< 0.040	0.10	0.09	13.2
6-Dec-12	13:30			0.096	0.006	0.35	0.053	0.07	0.02	

Data are provisional and are subject to change

E = Estimated

## Automatic Event Samples for Water Year 2012

(Selected parameters)

USGS Parameter #			P00095	P00340	P00400	P00530	P00608	P00613	P00625	P00631	P00665	P00666	P00940
DATE & TIME			Sp Cond μS/cm	COD mg/L	pH	TSS mg/L	Ammonia mg/L	Nitrite mg/L	Total N mg/L	Dissolved NO2+NO3 mg/L	Total P mg/L	Dissolved P mg/L	Dissolved Chloride mg/L
12-Mar-12	08:36	to		60		31	0.526	0.014	2.1	0.336	0.43	0.27	67.1
13-Mar-12	08:36												
15-Apr-12	04:29	to	591	40	7.3	18	0.081	0.011	1.1	0.153	0.12	0.07	74.5
17-Apr-12	07:30												
1-May-12	23:59	to		40		36	0.049	0.015	1.2	0.231	0.21	0.10	79.3
4-May-12	03:00												
4-May-12	10:38	to		40		30	0.041	0.013	1.2	0.266	0.21	0.12	73.3
7-May-12	07:58												
23-May-12	23:16	to	380	40	7.9	30	0.021	0.051	1.1	1.070	0.25	0.18	40.2
26-May-12	11:17												
18-Jun-12	13:30	to		40		< 30	0.062	0.014	1.2	0.123	0.31	0.20	36.3
20-Jun-12	22:31												

### USGS Parameters

- # P00010 - Temperature, water, degrees Celsius
- # P00020 - Temperature, air, degrees Celsius
- # P00025 - Barometric pressure, millimeters of mercury
- # P00061 - Discharge, instantaneous, cubic feet per second
- # P00095 - Specific conductance, water, unfiltered, microsiemens per centimeter at 25 degrees Celsius
- # P00300 - Dissolved oxygen, water, unfiltered, milligrams per liter
- # P00301 - Dissolved oxygen, water, unfiltered, percent of saturation
- # P00340 - Chemical oxygen demand, high level, water, unfiltered, milligrams per liter
- # P00400 - pH, water, unfiltered, field, standard units
- # P00530 - Residue, total nonfilterable, milligrams per liter
- # P00535 - Loss on ignition, from nonfilterable residue, milligrams per liter
- # P00608 - Ammonia, water, filtered, milligrams per liter as nitrogen
- # P00613 - Nitrite, water, filtered, milligrams per liter as nitrogen
- # P00625 - Ammonia plus organic nitrogen, water, unfiltered, milligrams per liter as nitrogen
- # P00631 - Nitrate plus nitrite, water, filtered, milligrams per liter as nitrogen
- # P00665 - Phosphorus, water, unfiltered, milligrams per liter
- # P00666 - Phosphorus, water, filtered, milligrams per liter
- # P00940 - Chloride, water, filtered, milligrams per liter

U.S. DEPARTMENT OF THE INTERIOR - U.S. GEOLOGICAL SURVEY - WATER RESOURCES  
 Station No 05287890 Elm Creek Nr Champlin, MN SourceAgencyUSGSState 27 County 053  
 WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012

Daily Mean Values Discharge, cubic feet per second[e, estimated]

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.9	e2.1	e1.9	2.3	1.5	1.8	19	24	430	61	19	e2.1
2	2.7	e2.1	e2.0	2.2	1.5	1.9	17	48	389	54	17	e2.0
3	2.7	e2.1	e2.0	2.3	1.5	1.9	15	77	345	56	14	e2.0
4	2.7	e2.1	e2.0	2.2	1.5	2.2	13	110	297	52	17	e1.9
5	2.7	e2.1	e1.9	2.2	1.5	2.2	13	122	245	46	16	e1.9
6	2.8	e2.0	e1.9	2.1	1.6	2.2	12	173	196	41	13	e1.9
7	e2.8	e2.0	e1.9	2.2	1.6	3.7	11	239	162	41	11	e1.8
8	e2.8	e2.0	e1.9	2.1	1.6	5.3	11	249	137	36	9.2	e1.8
9	e2.9	e2.0	e1.8	2.1	1.5	5.6	10	250	114	31	8.2	e1.7
10	e2.9	e2.0	e1.9	2.2	1.6	6.6	8.8	239	96	27	7.2	e1.7
11	e2.9	e2.0	e2.0	2.1	1.6	19	7.6	214	107	22	6.2	e1.6
12	e3.2	e2.0	e2.1	2.1	1.7	35	6.8	185	102	18	5.8	e1.5
13	e3.9	e1.9	e2.2	e2.0	1.6	46	7.0	159	95	16	5.6	e1.5
14	e3.3	e1.9	e2.4	e1.9	1.6	57	7.4	134	95	17	4.9	e1.5
15	e3.1	e1.9	e2.6	e1.9	1.6	61	11	112	98	16	4.8	e1.4
16	e3.0	e1.9	e2.5	e1.9	1.6	60	26	92	98	13	4.7	e1.4
17	e2.9	e1.9	2.4	e1.9	1.6	59	30	78	99	11	4.3	e1.6
18	e2.9	e1.9	2.4	e1.7	1.6	56	36	65	110	13	4.0	e2.6
19	e2.8	e2.0	2.4	e1.7	1.6	51	38	54	124	23	3.9	e2.5
20	e2.7	e2.0	2.3	e1.6	1.6	52	37	51	143	21	3.7	e1.7
21	e2.6	e2.0	2.4	e1.5	1.7	48	36	46	154	21	3.5	e1.5
22	e2.5	e2.0	2.3	e1.5	1.6	45	38	41	164	21	3.4	e1.3
23	e2.4	e2.0	2.3	e1.5	1.6	43	37	38	165	19	e3.0	e1.2
24	e2.3	e1.9	2.2	e1.5	1.6	39	36	134	154	21	e2.8	e1.0
25	e2.3	e1.9	2.3	e1.5	1.6	34	34	278	135	25	e2.7	e1.0
26	e2.2	e2.0	2.2	e1.5	1.7	30	31	342	117	25	e2.5	e0.90
27	e2.2	e1.9	2.3	1.5	1.6	27	28	406	101	24	e2.5	e0.90
28	e2.2	e1.9	2.3	1.5	1.6	25	26	511	89	24	e2.4	e0.80
29	e2.1	e1.9	2.3	1.5	e2.2	21	26	534	78	25	e2.3	e0.80
30	e2.1	e1.9	2.3	1.5	---	23	25	509	68	25	e2.2	e0.80
31	e2.1	---	2.4	1.5	---	22	---	471	---	22	e2.2	---

**Statistics for Water Year October 2011 to September 2012**

<b>Total</b>	83.6	59.3	67.8	57.2	46.7	886.4	653.6	5,985	4,707	867	209.0	46.30
<b>Mean</b>	2.70	1.98	2.19	1.85	1.61	28.6	21.8	193	157	28.0	6.74	1.54
<b>Max</b>	3.9	2.1	2.6	2.3	2.2	61	38	534	430	61	19	2.6
<b>Min</b>	2.1	1.9	1.8	1.5	1.5	1.8	6.8	24	68	11	2.2	0.80
<b>Ac-ft</b>	166	118	134	113	93	1,760	1,300	11,870	9,340	1,720	415	92
<b>Cfsm</b>	0.03	0.02	0.03	0.02	0.02	0.33	0.25	2.24	1.82	0.33	0.08	0.02
<b>Inches</b>	0.04	0.03	0.03	0.02	0.02	0.38	0.28	2.59	2.04	0.38	0.09	0.02

**Statistics of monthly mean data for 1979-2012, by Water Year (WY)**

<b>Mean</b>	32.7	20.7	10.2	5.58	9.25	64.1	101	78.0	54.8	39.2	27.5	25.9
<b>Max</b>	240	67.4	41.3	22.0	99.1	189	414	255	196	157	151	170
<b>(WY)</b>	(1986)	(1994)	(1992)	(1992)	(1984)	(2011)	(2001)	(2011)	(2004)	(1993)	(2002)	(1991)
<b>Min</b>	1.13	1.03	0.92	0.74	0.91	3.86	5.31	3.54	1.34	0.76	1.37	1.08
<b>(WY)</b>	(1990)	(1990)	(1990)	(1991)	(1990)	(2001)	(1987)	(2000)	(1988)	(1988)	(2008)	(1988)

<u>Summary Statistics</u>	<u>Calendar Year 2011</u>	<u>Water Year 2012</u>	<u>Water Years 1979 - 2012</u>
<b>Annual total</b>	28,870.9	13,668.90	
<b>Annual mean</b>	79.1	37.3	39.1
<b>Highest annual mean</b>			86.4 2011
<b>Lowest annual mean</b>			4.54 1988
<b>Highest daily mean</b>	723 May 24	534 May 29	815 Apr 25, 2001
<b>Lowest daily mean</b>	1.8 Dec 9	<sup>a</sup> 0.80 Sep 28	0.31 Jun 30, 1988
<b>Annual seven-day minimum</b>	1.9 Dec 4	0.89 Sep 24	0.35 Jun 26, 1988
<b>Maximum peak flow</b>		568 May 29	875 Apr 25, 2001
<b>Maximum peak stage</b>		9.43 May 29	10.02 Apr 25, 2001
<b>Instantaneous low flow</b>		<sup>b</sup> 0.80 Sep 28	0.29 Jul 9, 1989
<b>Annual runoff (ac-ft)</b>	57,270	27,110	28,350
<b>Annual runoff (cfs)</b>	0.920	0.434	0.455
<b>Annual runoff (inches)</b>	12.49	5.91	6.18
<b>10 percent exceeds</b>	221	111	110
<b>50 percent exceeds</b>	30	2.8	11
<b>90 percent exceeds</b>	2.1	1.6	1.6

<sup>a</sup>Estimated, backwater from beaver dam, also occurred Sept. 29, 30.

<sup>b</sup>Estimated daily-mean discharge, backwater from beaver dam, falling discharge.

U.S. Geological Survey  
 Elm Creek Near Champlin, Station Number 5287890  
 Selected Water-Quality Data for Water Year 2012

agency cd	site no	sample dt	sample tm	sample end dt	sample end tm	sample start time datum cd	tm datum rlbty cd	coll ent cd	medium cd	tu id	body part id	p00004	p00010	p00020	p00025	p00061	p00063
5s	15s	10d	4d	10d	4d	1s	1s	8s	1s	11s	11s	12s	12s	12s	12s	12s	12s
USGS	5287890	13-Oct-11	12:00			CDT	K	USGSMNWC	WS			16	12.5		730	1.2	3
USGS	5287890	14-Nov-11	12:30			CST	K	USGSMNWC	WS			26	5.5	6.7	724	1.9	5
USGS	5287890	8-Dec-11	14:00			CST	K	USGSMNWC	WS				0.4	-5	740	2.5	
USGS	5287890	10-Jan-12	11:30			CST	K	USGSMNWC	WS			20	1.4	0	734	2.1	5
USGS	5287890	17-Feb-12	09:30			CST	K	USGSMNWC	WS			22	1.7	4	737	1.7	5
USGS	5287890	12-Mar-12	08:36	13-Mar-12	08:36	CDT	K	USGSMNWC	WS								
USGS	5287890	21-Mar-12	12:00			CDT	K	USGSMNWC	WS			30	11.6	15	738	46	10
USGS	5287890	15-Apr-12	04:29	17-Apr-12	07:30	CDT	K	USGSMNWC	WS								
USGS	5287890	17-Apr-12	09:30			CDT	K	USGSMNWC	WS			30	7.1	10	746	27	10
USGS	5287890	1-May-12	23:59	4-May-12	03:00	CDT	K	USGSMNWC	WS								
USGS	5287890	4-May-12	10:38	7-May-12	07:58	CDT	K	USGSMNWC	WS								
USGS	5287890	17-May-12	10:30			CDT	K	USGSMNWC	WS			32	16.9	19.4	738	78	10
USGS	5287890	23-May-12	23:16	26-May-12	11:17	CDT	K	USGSMNWC	WS								
USGS	5287890	11-Jun-12	10:00			CDT	K	USGSMNWC	WS			34	21.4		735	107	10
USGS	5287890	18-Jun-12	13:30	20-Jun-12	22:31	CDT	K	USGSMNWC	WS								
USGS	5287890	2-Aug-12	10:00			CDT	K	USGSMNWC	WS			30	23.5		736	12	10
USGS	5287890	15-Aug-12	12:00			CDT	K	USGSMNWC	WS				18		734	4.9	5
USGS	5287890	26-Sep-12	12:00			CDT	K	USGSMNWC	WS			30	9.1		744	0.9	5
USGS	5287890	15-Oct-12	13:30			CDT	K	USGSMNWC	WS			28	8		737	0.48	3
USGS	5287890	6-Dec-12	13:30			CST	K	USGSMNWC	WS								

U.S. Geological Survey  
 Elm Creek Near Champlin, Station Number 5287890  
 Selected Water-Quality Data for Water Year 2012

sample dt	sample tm	sample end dt	sample end tm	p00065	p00095	p00191	p00300	p00301	p00340	p00400	p00530	p00535	p00540	p00600	p00605	p00608	p00610
10d	4d	10d	4d	12s	12s	12s	12s	12s	12s	12s	12s	12s	12s	12s	12s	12s	12s
13-Oct-11	12:00			3.49	671	0.00004	4.1	40	30	7.5	21	< 10	< 21	0.87	0.79	0.033	0.04
14-Nov-11	12:30			3.5	705	0.00003	10.3	86	20	7.6	< 15	< 10	< 15	< 0.51	0.45	0.014	< 0.02
8-Dec-11	14:00			3.43	777	0.00002	< 10.9	< 78	10	7.7	< 15	< 10	< 15	0.68	0.37	0.11	0.12
10-Jan-12	11:30			3.28	707	0.00002	11.8	88	10	7.6	< 15	< 10	< 15	0.72	0.35	0.157	0.17
17-Feb-12	09:30			3.22	730	0.00003	10.1	75	< 10	7.6	< 15	< 10	< 15	0.49	0.27	0.089	0.1
12-Mar-12	08:36	13-Mar-12	08:36						60		31			2.5	1.5	0.526	0.58
21-Mar-12	12:00			4.85	511	0.00005	8.5	80	40	7.3	22	11	11	2	1.3	0.339	0.38
15-Apr-12	04:29	17-Apr-12	07:30		591	0.00005			40	7.3	18			1.2	1	0.081	0.08
17-Apr-12	09:30			4.33	622	0.00005	9	76	40	7.3	< 15	< 10	< 15	1.2	1	0.053	0.05
1-May-12	23:59	4-May-12	03:00						40		36			1.4	1.1	0.049	0.05
4-May-12	10:38	7-May-12	07:58						40		30			1.5	1.2	0.041	0.06
17-May-12	10:30			5.37	530	0.00005	6.8	72	30	7.4	< 15	< 10	< 15	1.2	1.1	0.041	0.04
23-May-12	23:16	26-May-12	11:17		380	0.00001			40	7.9	30			2.2	1.1	0.021	0.08
11-Jun-12	10:00			5.94	407	0.00008	4.9	57	50	7.1	34	18	16	1.6	1.4	0.146	0.17
18-Jun-12	13:30	20-Jun-12	22:31						40		< 30			1.4	1.1	0.062	0.09
2-Aug-12	10:00			3.82	484	0.00004	5.1	63	50	7.4	< 15	< 10	< 15	1.7	1.3	0.116	0.18
15-Aug-12	12:00			3.3	560	0.00006	6.9	75	30	7.3	< 15	< 10	< 15	1.2	0.78	0.098	0.13
26-Sep-12	12:00			3.37	703	0.00004	8.5	75	< 10	7.4	< 15	< 10	< 15	0.31	0.23	0.016	0.03
15-Oct-12	13:30			3.54	707	0.00004	6.4	56	10	7.4	< 15	< 10	< 15	< 0.26	< 0.22	< 0.010	< 0.02
6-Dec-12	13:30					0.00002		83						0.41	0.24	0.096	0.11

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sample dt	sample tm	sample end dt	sample end tm	p00613	p00618	p00625	p00631	p00665	p00666	p00940	p30207	p30209	p50015	p50280	p71845	p71846
10d	4d	10d	4d	12s	12s	12s	12s	12s	12s	12s	12s	12s	12s	12s	12s	12s
13-Oct-11	12:00			0.004	0.029	0.83	0.03	0.24	0.13	24.8	1.06	0.03		1099	0.055	0.043
14-Nov-11	12:30			0.003	< 0.037	0.47	< 0.040	0.08	0.03	23.3	1.07	0.05		1099	< 0.026	0.018
8-Dec-11	14:00			0.005	0.191	0.49	0.196	0.06	< 0.02	36.1	1.05	0.07		1099	0.157	0.142
10-Jan-12	11:30			0.005	0.192	0.52	0.197	0.07	0.02	30.1	1	0.06		1099	0.216	0.203
17-Feb-12	09:30			0.003	0.107	0.38	0.11	0.04	0.03	24.8	0.98	0.05		1099	0.134	0.114
12-Mar-12	08:36	13-Mar-12	08:36	0.014	0.322	2.1	0.336	0.43	0.27	67.1				1099	0.752	0.677
21-Mar-12	12:00			0.036	0.305	1.7	0.341	0.18	0.1	63	1.48	1.3	0.1	1099	0.483	0.437
15-Apr-12	04:29	17-Apr-12	07:30	0.011	0.143	1.1	0.153	0.12	0.07	74.5				1099	0.106	0.104
17-Apr-12	09:30			0.006	0.131	1.1	0.137	0.12	0.07	90.9	1.32	0.76	0.3	1099	0.058	0.068
1-May-12	23:59	4-May-12	03:00	0.015	0.216	1.2	0.231	0.21	0.1	79.3				1099	0.068	0.063
4-May-12	10:38	7-May-12	07:58	0.013	0.254	1.2	0.266	0.21	0.12	73.3				2001	0.075	0.053
17-May-12	10:30			0.002	0.059	1.2	0.062	0.19	0.14	59	1.64	2.2		1099	0.053	0.053
23-May-12	23:16	26-May-12	11:17	0.051	1.02	1.1	1.07	0.25	0.18	40.2				1099	0.099	0.027
11-Jun-12	10:00			0.012	0.066	1.6	0.079	0.45	0.27	32	1.81	3		1099	0.22	0.189
18-Jun-12	13:30	20-Jun-12	22:31	0.014	0.109	1.2	0.123	0.31	0.2	36.3				1099	0.116	0.08
2-Aug-12	10:00			0.028	0.143	1.5	0.171	0.37	0.26	42.4	1.16	0.34		1001	0.233	0.15
15-Aug-12	12:00			0.037	0.209	0.91	0.246	0.2	0.12	33.9	1.01	0.14		1001	0.171	0.127
26-Sep-12	12:00			0.002	0.05	0.26	0.052	0.07	0.05	12.6	1.03	0.03		1001	0.033	0.021
15-Oct-12	13:30			< 0.001	< 0.040	0.22	< 0.040	0.1	0.09	13.2	1.08	0.01		1001	< 0.026	< 0.013
6-Dec-12	13:30			0.006	0.047	0.35	0.053	0.07	0.02		0.95	0.04			0.142	0.123

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sample dt	sample tm	sample end dt	sample end tm	p71851	p71856	p71999	p72104	p72105	p81904	p82398	p84164	p84171
10d	4d	10d	4d	12s	12s	12s	12s	12s	12s	12s	12s	12s
13-Oct-11	12:00			0.128	0.013	10	150		< 0.10	70	3070	
14-Nov-11	12:30			< 0.164	0.01	10	400		0.14	70	3070	10
8-Dec-11	14:00			0.845	0.017	10	20			70	3070	10
10-Jan-12	11:30			0.851	0.017	10	250		0.2	70	3070	10
17-Feb-12	09:30			0.472	0.011	10	200		E 0.10	70	3070	10
12-Mar-12	08:36	13-Mar-12	08:36	1.43	0.045	10				25	4115	10
21-Mar-12	12:00			1.35	0.118	10	2		0.92	15	3060	10
15-Apr-12	04:29	17-Apr-12	07:30	0.631	0.035	10				25	4115	10
17-Apr-12	09:30			0.58	0.02	10		10	E 0.80	15	3060	10
1-May-12	23:59	4-May-12	03:00	0.955	0.049	10				25	4115	10
4-May-12	10:38	7-May-12	07:58	1.12	0.042	10				25	4115	10
17-May-12	10:30			0.261	0.008	10		20	E 0.70	15	3060	10
23-May-12	23:16	26-May-12	11:17	4.5	0.168	10				25	4115	10
11-Jun-12	10:00			0.294	0.04	10		20	E 1.00	20	3060	10
18-Jun-12	13:30	20-Jun-12	22:31	0.483	0.046	10				25	4115	10
2-Aug-12	10:00			0.633	0.092	10		20		40	3070	10
15-Aug-12	12:00			0.927	0.121	10		20		40	3070	10
26-Sep-12	12:00			0.222	0.007	10		20	0.04	40	3070	10
15-Oct-12	13:30			< 0.177	< 0.003	10		30		40	3070	10
6-Dec-12	13:30			0.208	0.021							



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This file contains selected water-quality data for stations in the National Water Information System Water-quality database. Explanations of codes found in this file are followed by the retrieved data.

The data you have secured from the USGS NWISWeb database may include data that have not received Director's approval and as such are provisional and subject to revision. The data are released on the condition that neither the USGS nor the United States Government may be held liable for any damages resulting from its authorized or unauthorized use.

To view additional data-quality attributes output the results using these options:  
 one result per row, expanded attributes. Additional precautions are at:  
[http://waterdata.usgs.gov/nwis/qwdata?help#Data\\_retrievals\\_precautions](http://waterdata.usgs.gov/nwis/qwdata?help#Data_retrievals_precautions).

agency\_cd..... - Agency Code P00625  
 site\_no..... - Station number  
 sample\_dt..... - Begin date  
 sample\_tm..... - Begin time  
 sample\_end\_dt..... - End date  
 sample\_end\_tm..... - End time  
 sample\_start\_time\_datum\_cd.... - Time datum  
 tm\_datum\_rlby\_cd..... - Time datum reliability code  
 coll\_ent\_cd..... - Agency Collecting Sample Code  
 medium\_cd..... - Medium code  
 tu\_id ..... - Taxonomic unit code  
 body\_part\_id ..... - Body part code  
 P00004..... - Stream width, feet  
 P00010..... - Temperature, water, degrees Celsius  
 P00020..... - Temperature, air, degrees Celsius  
 P00025..... - Barometric pressure, millimeters of mercury  
 P00061..... - Discharge, instantaneous, cubic feet per second  
 P00063..... - Number of sampling points, count  
 P00065..... - Gage height, feet  
 P00095..... - Specific conductance, water, unfiltered,  
 microsiemens per centimeter at 25 degrees Celsius  
 P00191..... - Hydrogen ion, water, unfiltered, calculated, milligrams per liter  
 P00300..... - Dissolved oxygen, water, unfiltered, milligrams per liter  
 P00301..... - Dissolved oxygen, water, unfiltered, percent of saturation  
 P00340..... - Chemical oxygen demand, high level, water, unfiltered,  
 milligrams per liter  
 P00400..... - pH, water, unfiltered, field, standard units  
 P00530..... - Suspended solids, water, unfiltered, milligrams per liter  
 P00535..... - Loss on ignition of suspended solids, water, unfiltered,  
 milligrams per liter  
 P00540..... - Suspended solids remaining after ignition, water, unfiltered,  
 milligrams per liter  
 P00600..... - Total nitrogen, water, unfiltered, milligrams per liter  
 P00605..... - Organic nitrogen, water, unfiltered, milligrams per liter  
 P00608..... - Ammonia, water, filtered, milligrams per liter as nitrogen  
 P00610..... - Ammonia, water, unfiltered, milligrams per liter as nitrogen  
 P00613..... - Nitrite, water, filtered, milligrams per liter as nitrogen  
 P00618..... - Nitrate, water, filtered, milligrams per liter as nitrogen

- Ammonia plus organic nitrogen, water, unfiltered,  
 milligrams per liter as nitrogen  
 P00631 ..... - Nitrate plus nitrite, water, filtered, milligrams per liter as nitrogen  
 P00665 ..... - Phosphorus, water, unfiltered, milligrams per liter as phosphorus  
 P00666 ..... - Phosphorus, water, filtered, milligrams per liter as phosphorus  
 P00940 ..... - Chloride, water, filtered, milligrams per liter  
 P30207 ..... - Gage height, above datum, meters  
 P30209 ..... - Discharge, instantaneous, cubic meters per second  
 P50015 ..... - Transit rate, sampler, feet per second  
 P50280 ..... - Site visit purpose, code  
 P71845 ..... - Ammonia, water, unfiltered, milligrams per liter as NH4  
 P71846 ..... - Ammonia, water, filtered, milligrams per liter as NH4  
 P71851 ..... - Nitrate, water, filtered, milligrams per liter  
 P71856 ..... - Nitrite, water, filtered, milligrams per liter  
 P71999 ..... - Sample purpose, code  
 P72104 ..... - Sample location, distance downstream, feet  
 P72105 ..... - Sample location, distance upstream, feet  
 P81904 ..... - Velocity at point in stream, feet per second  
 P82398 ..... - Sampling method, code  
 P84164 ..... - Sampler type, code  
 P84171 ..... - Sample splitter type, field, code

Description of sample\_start\_time\_datum\_cd:  
 CST - Central Standard Time  
 CDT - Central Daylight Time

Description of tm\_datum\_rlby\_cd:K - Known

Description of coll\_ent\_cd:USGSMNWC - USGS - Minnesota Water Science Center

Description of medium\_cd:WS - Surface water

Description of tu\_id: <http://www.itis.gov/>

Description of body\_part\_id:

Description of remark\_cd:

< - less than  
 E - estimated

Data for the following sites are included: USGS 05287890 ELM CREEK NR CHAMPLIN, MN

# Elm Creek near Champlin Average Daily Discharges

