

Table 1.CN. Cannon River Monitoring Station Information



Station Address: 14951 264th Street Path, Welch, MN 55089
County: Goodhue
Major Basin: Mississippi River Basin
Watershed: Cannon River
Drainage Area: 1,340 square miles

Station Operator: Dakota County Soil and Water Conservation District

Metropolitan Council Environmental Services Contact Information:

Contact Person: Leigh Harrod, P.G.
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Watershed District or Watershed Management Organization:

North Cannon River Watershed Management Organization

Station Overview: MCES, with funding provided by the Minnesota Legislature via a grant from the Minnesota Pollution Control Agency (MPCA), has supported water quality monitoring of the Cannon River since 1999. The monitoring station is located near Welch, Minnesota, 11.9 miles upstream from the river confluence with the Mississippi River.

The Cannon River flows from headwater lakes (Tetonka and Sakatah) in LeSueur County through the following counties: LeSueur, Steele, Waseca, Rice, Dakota and Goodhue. Agriculture is the predominant land use in all of these counties. The Straight River is a major tributary of the Cannon River, with the confluence located in Rice County near Fairbault, Minnesota.

MCES partners with the USGS to maintain the rating curve at this location. USGS has been monitoring river flow at this location, station number 05355200, since 1909. USGS has also intermittently collected water quality samples at this station since 1966.

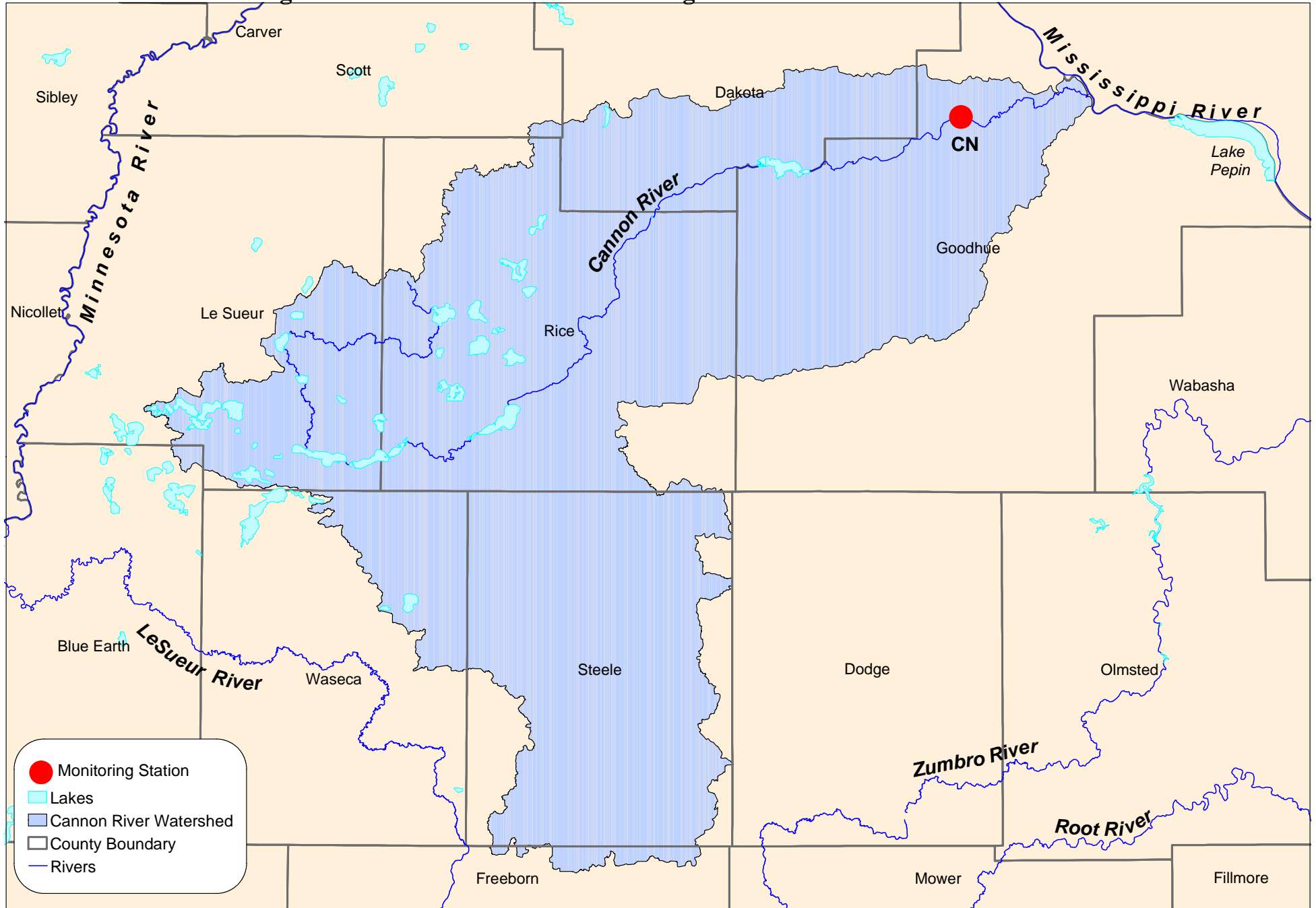
2001 Monitoring Year: Snowmelt began during the last week of March 2001. Daily average flows were estimated prior to the ice out date, which occurred on approximately March 8, 2001. The Cannon River floods over its banks at a stage of 10.5 feet, which occurred between April 7 and April 14, 2001. The peak daily average flow of 10,091 cfs, with a stage of 10.83 ft, occurred on April 8, 2001.

There was a significant storm event on April 11, 2001, when 1.59 inches of rain was recorded at this station. The river breached its banks due to the combined effects of snowmelt and heavy rainfall. Four composite samples were collected between April 3 and April 18 during this high flow event. Snowmelt in 2001 was significant due to two factors: very cold temperatures throughout the 2000-2001 winter season that prevented any gradual reduction of the snow pack; and the very late onset of typical spring temperatures, which caused the annual spring snowmelt event to intersect with spring rainfall.

Twenty-three samples were collected for water chemistry analysis during 2001, including 11 composite samples and 12 grab samples. The MCES annual water quality monitoring plan includes 12 monthly baseflow (“non-event”) grab samples and approximately 10 to 15 flow-weighted composite samples collected during all runoff events in the open-water season (March-November). The 2001 sampling scheme met the goals of the MCES monitoring work plan.

For additional stream monitoring information and monitoring methods regarding this site, see www.metrocouncil.org/environment/RiversLakes.

Figure 1.CN. Cannon River Monitoring Station Location and Watershed



- Monitoring Station
- Lakes
- Cannon River Watershed
- County Boundary
- Rivers



Figure 2.CN. Cannon River 2001 Hydrograph with Rainfall and Sampling Information

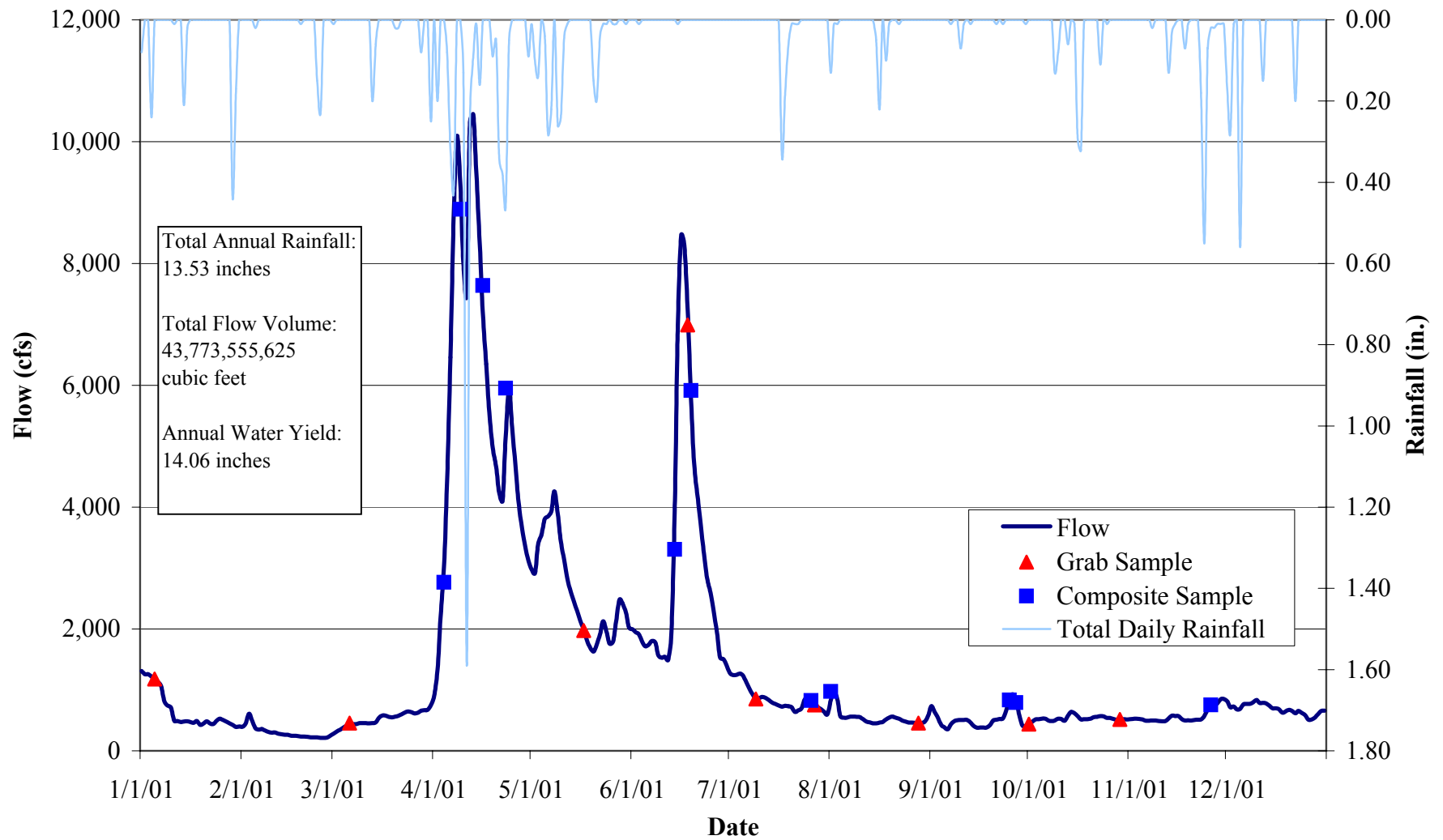


Table 2.CN. Cannon River 2001 Water Chemistry Information

Variable	N	Mean	Median	Minimum	Maximum	25%	75%	STD
Chloride, mg/L	19	26	28	11	38	18	35	9
Hardness, mg/L	21	270	280	170	348	241	310	50
Cadmium, ug/L	21	0.1	0.1	0.1	0.4	0.1	0.1	0.1
Chromium, ug/L	21	1.0	0.6	0.5	2.9	0.5	1.7	0.7
Copper, ug/L	21	4.4	3.9	2.0	11.7	2.6	5.2	2.4
Lead, ug/L	21	1.1	0.6	0.5	3.9	0.5	1.8	1.0
Nickel, ug/L	21	3.8	3.5	2.5	6.2	3.1	4.7	0.9
Zinc, ug/L	21	7.0	4.0	2.0	20.0	3.0	10.0	5.0
Nitrogen, Total Kjeldahl, mg/L	21	0.90	0.80	0.40	2.00	0.60	1.20	0.40
Nitrogen, Total Nitrate, mg/L	21	4.71	4.56	2.61	7.37	3.22	6.26	1.65
Phosphorus, Total, mg/L	21	0.23	0.22	0.11	0.47	0.14	0.28	0.10
Phosphorus, Total Dissolved, mg/L	18	0.14	0.16	0.04	0.21	0.10	0.19	0.49
Solids, Total Suspended, mg/L	21	49	24	2	235	6	85	63
Solids, Volatile Suspended, mg/L	21	8	7	1	22	3	13	6
Turbidity, NTU	11	6	3	1	28	1	8	8

Table 3.CN. Cannon River 2001 Annual Loading Information* for Suspended Solids and Nutrients

Variable	Annual Load (tons)	Annual Yield (lbs/acre)	Annual Normalized Yield (lbs/acre/in of water)	Flow Weighted Mean Concentration (mg/L)
Solids, Total Suspended	99,919	233	17	73
Phosphorus, Total	353.17	0.82	0.06	0.26
Phosphorus, Total Dissolved	219.56	0.51	0.04	0.16
Nitrogen, Total Nitrate	7,080.66	16.52	1.17	5.18

* 2001 Annual Loading Information is provisional and may be subject to minor revisions.