Watershed Outlet Monitoring Program

Willow Creek Station

Burnsville, MN

Quarterly Report

Preliminary Data

January – March 2008

Prepared By: Dakota County Soil and Water Conservation District
Prepared For: Lower Minnesota River Watershed District
May 2008

Introduction

The Willow Creek WOMP site, located in Burnsville behind the Menards on Hwy. 13, has been in operation since 1999. The Willow Creek watershed drains more than 5,000 acres of various types of land uses including residential, vacant/agricultural, and commercial properties (Appendix A). This report summarizes the results of flow, precipitation, and water quality for the 1st quarter of 2008. This data is preliminary and is subject to change until the Metropolitan Council submits the final report for this period.

Flow and Precipitation

Average flow in Willow Creek was 1.21 cubic feet per second (cfs) or 0.78 million gallons per day (mgd) (Table 1). A graph describing quarterly flow and precipitation results is also provided (Figure 1).

Table 1. Average flow and total precipitation at Willow Creek WOMP Station January – March 2008

Period	Average Flow (cfs/mgd)	Precipitation (inches)	*Average Monthly Precipitation, 1998-2007 (inches)
JANUARY	0.46/0.30	na**	0.96
FEBRUARY	0.44/0.28	na**	0.83
MARCH	2.68/1.73	1.29**	2.06
TOTAL QUARTER	1.21/0.78	1.29**	3.85

*Average monthly precipitation data obtained from the National Weather Service station located near the Willow WOMP site.
**Rain gauge was not activated until 3/14/08.

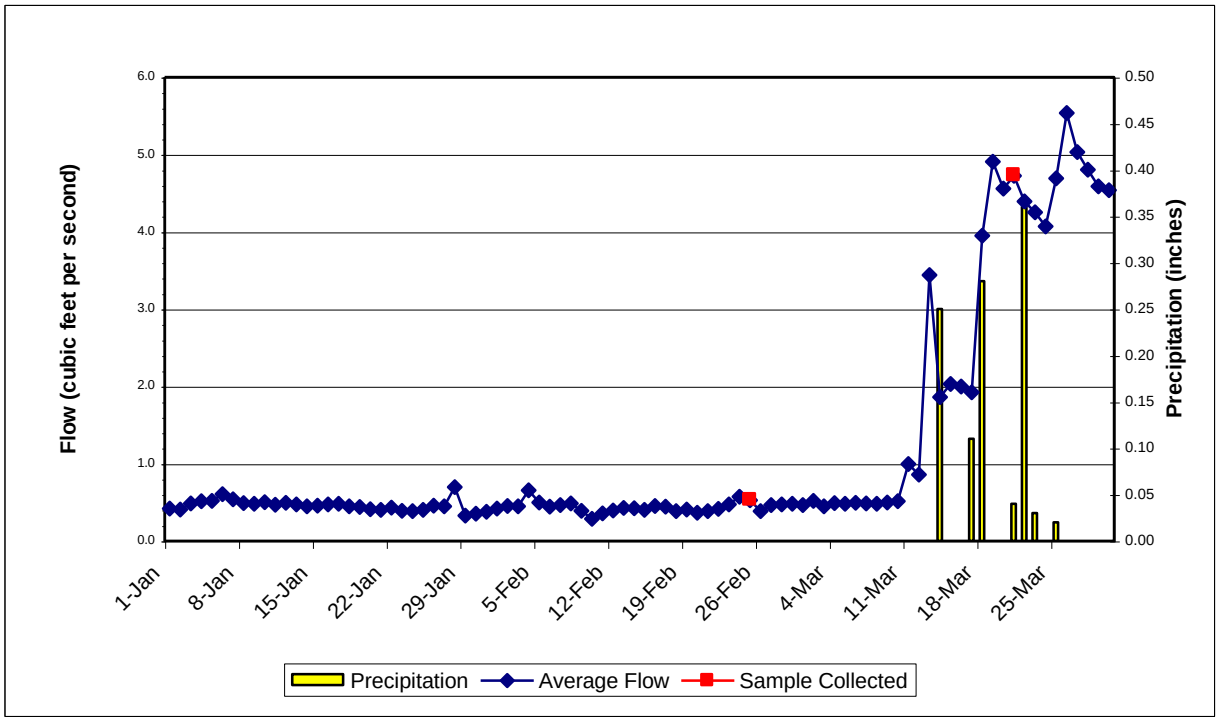


Figure 1. Flow and precipitation at Willow WOMP Station January-March 2008

Water Quality

One event flow grab sample (3/21/08) and one base flow grab sample (2/26/08) were collected from the Willow WOMP Station during the 1st quarter of 2008. Weather conditions over this period were especially harsh, preventing samples from being taken (manhole cover frozen).

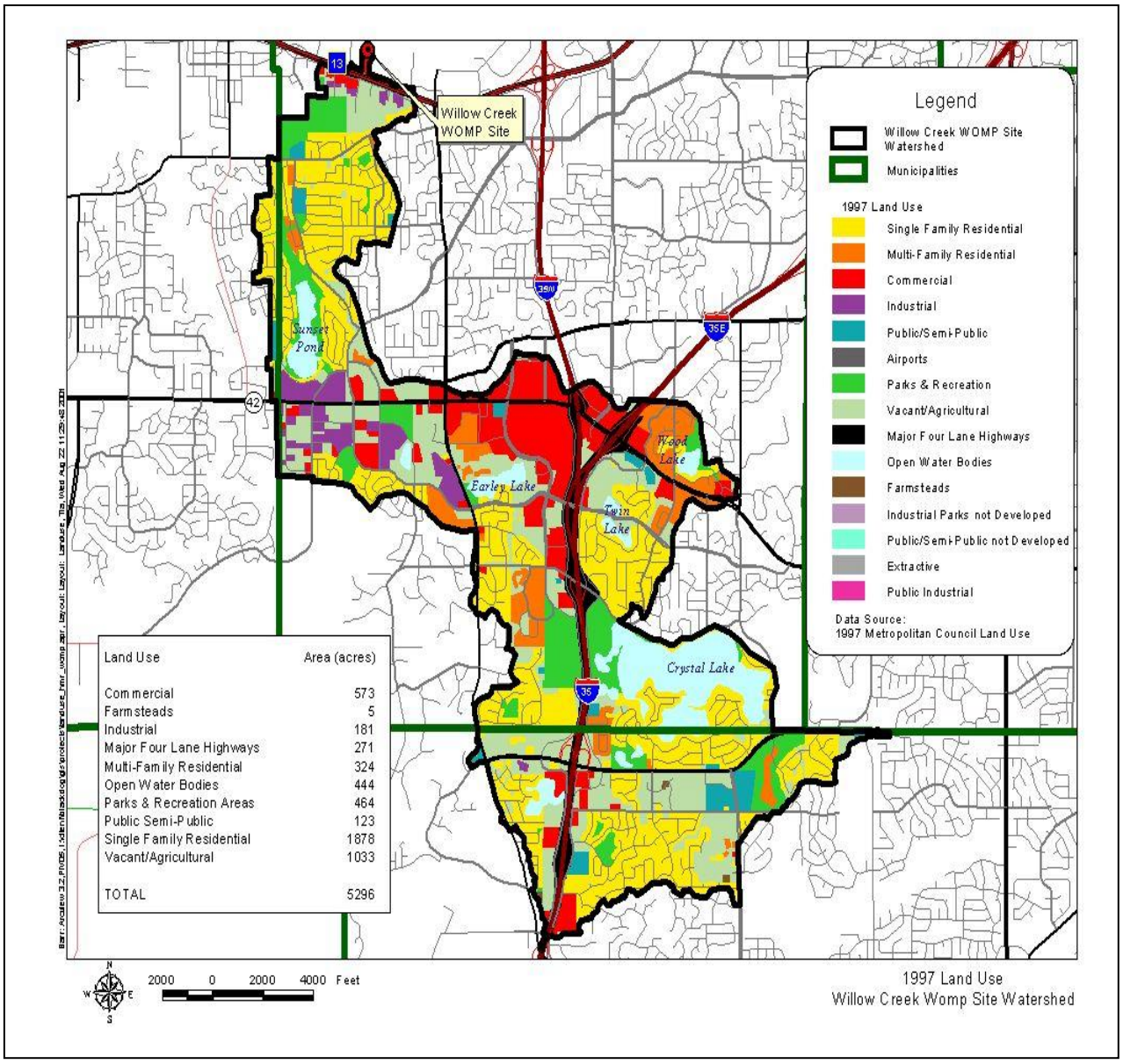
Overall, water quality was good with most parameters below the state standard (in compliance with standards) or near the ecoregion mean (Table 2). However, several endpoints exceeded standards or ecoregion means (highlighted red). These results are primarily due to elevated sample concentrations detected in a single sample, which was collected during a large spring snowmelt event (3/21/08).

Table 2. Average concentrations at Willow Creek WOMP Station October 2007-December 2007 (for comparison purposes) and January-March 2008.

Parameter	4th Quarter 2007 Mean Concentration	1st Quarter 2008 Mean Concentration	Notes – 1st quarter results
Alkalinity	274 mg/L $CaCO_3$	228 mg/L $CaCO_3$	Typical for freshwater; higher during low flow
Biological Oxygen Demand	1.13 mg/L	3.50	Above ecoregion mean
Cadmium	0.50 ug/L	0.50 ug/L	In compliance with state standard
Chloride	95 mg/L	235 mg/L	Slightly exceeding state standard due to single elevated sample
Chlorophyll-a	5.3 ug/L	11.9 ug/L	Fair level
Chromium	0.5 ug/L	1.2 ug/L	In compliance with state standard
Conductivity	1015 mMHOs	1315 mMHOs	Above ecoregion mean, higher during low flow
Copper	1.6 ug/L	4.8 ug/L	In compliance with state standard
E. coli	na	53.5 CFU/100 ML	In compliance with state standard
Hardness	416 mg/L $CaCO_3$	307 mg/L $CaCO_3$	Considered hard water; sometimes very hard during low flow
Lead	0.1 ug/L	3.65 ug/L	In compliance with state standard
Nickel	9.3 ug/L	5.9 ug/L	In compliance with state standard
Nitrogen Ammonia	33.3 ug/L	345 ug/L	Exceeds state standard due to single elevated sample
Nitrate + Nitrite	0.39 mg/L	0.42 mg/L	Above ecoregion mean
Phosphorus, Total	0.103 mg/L	0.146 mg/L	Below ecoregion mean
Suspended Solids	2.0 mg/L	7.0 mg/L	Below ecoregion mean
Turbidity	2.0 NTU	9.5 NTU	In compliance with state standard
Zinc	2.0 ug/L	7.5 ug/L	In compliance with state standard

mg/L = milligrams per liter or parts per million (ppm)
ug/L = micrograms per liter or parts per billion (ppb)
mMHO = micromhos or micorseimens
CFU = colony forming units
NTU = nephelometric turbidity units

Appendix A



Watershed and land use information provided by Metropolitan Council Environmental Services.