Watershed Outlet Monitoring Program

Willow Creek Station

Burnsville, MN

Quarterly Report

Preliminary Data

July – September 2009

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

The Willow Creek Watershed Outlet Monitoring Program (WOMP) site, located in Burnsville behind the Menards on Highway 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 3rd quarter of 2009. 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 3.35 cubic feet per second (cfs) or 2.17 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 July-September 2009

Period	Average Flow (cfs/mgd)	Precipitation (inches)	*Average Monthly Precipitation, 1999-2008 (inches)
JULY	0.72/0.47	1.65	3.30
AUGUST	7.53/4.87	5.44	4.35
SEPTEMBER	0.70/0.45	0.50	3.33
TOTAL QUARTER	3.35/2.17	7.59	10.98

*Average monthly precipitation data obtained from the National Weather Service station located near the Willow WOMP site.

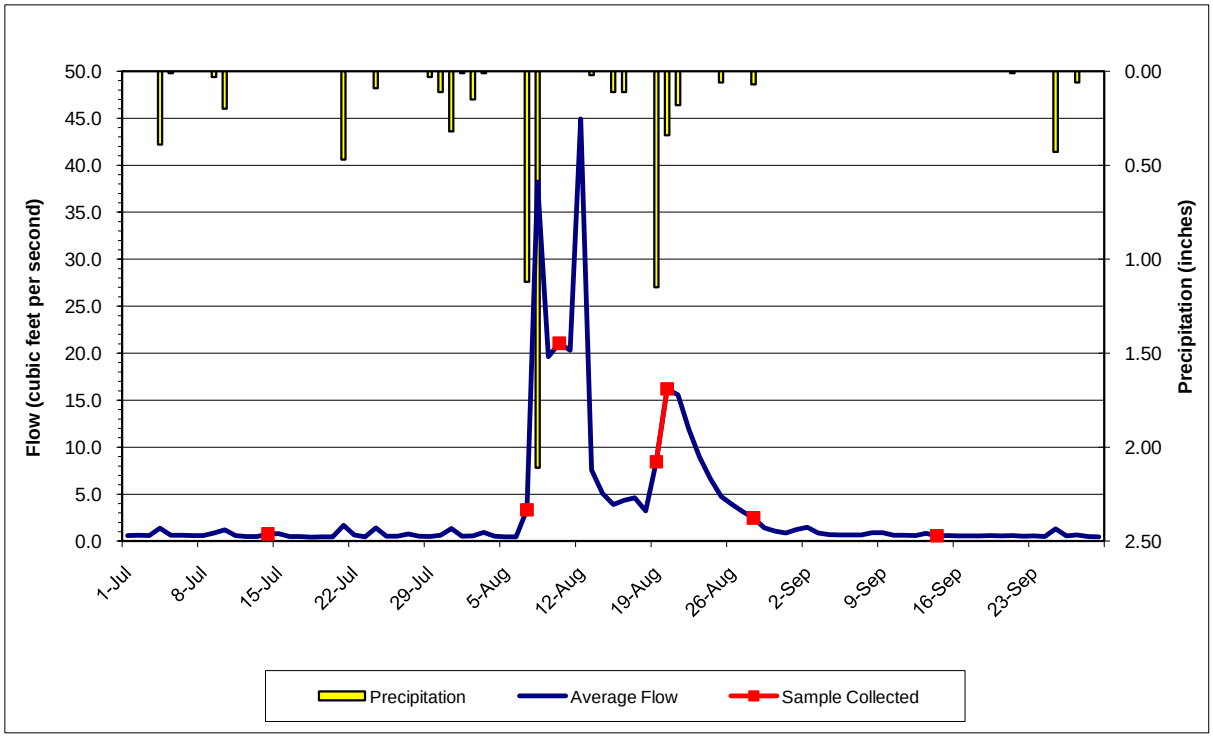


Figure 1. Flow and precipitation data from the Willow WOMP Station July-September 2009

Water Quality

Two event flow composite samples (8/7/09, 8/19/09), and three base flow grab samples (7/14/09, 8/28/09, 9/14/09) were collected from the Willow WOMP Station during the 3rd quarter of 2009.

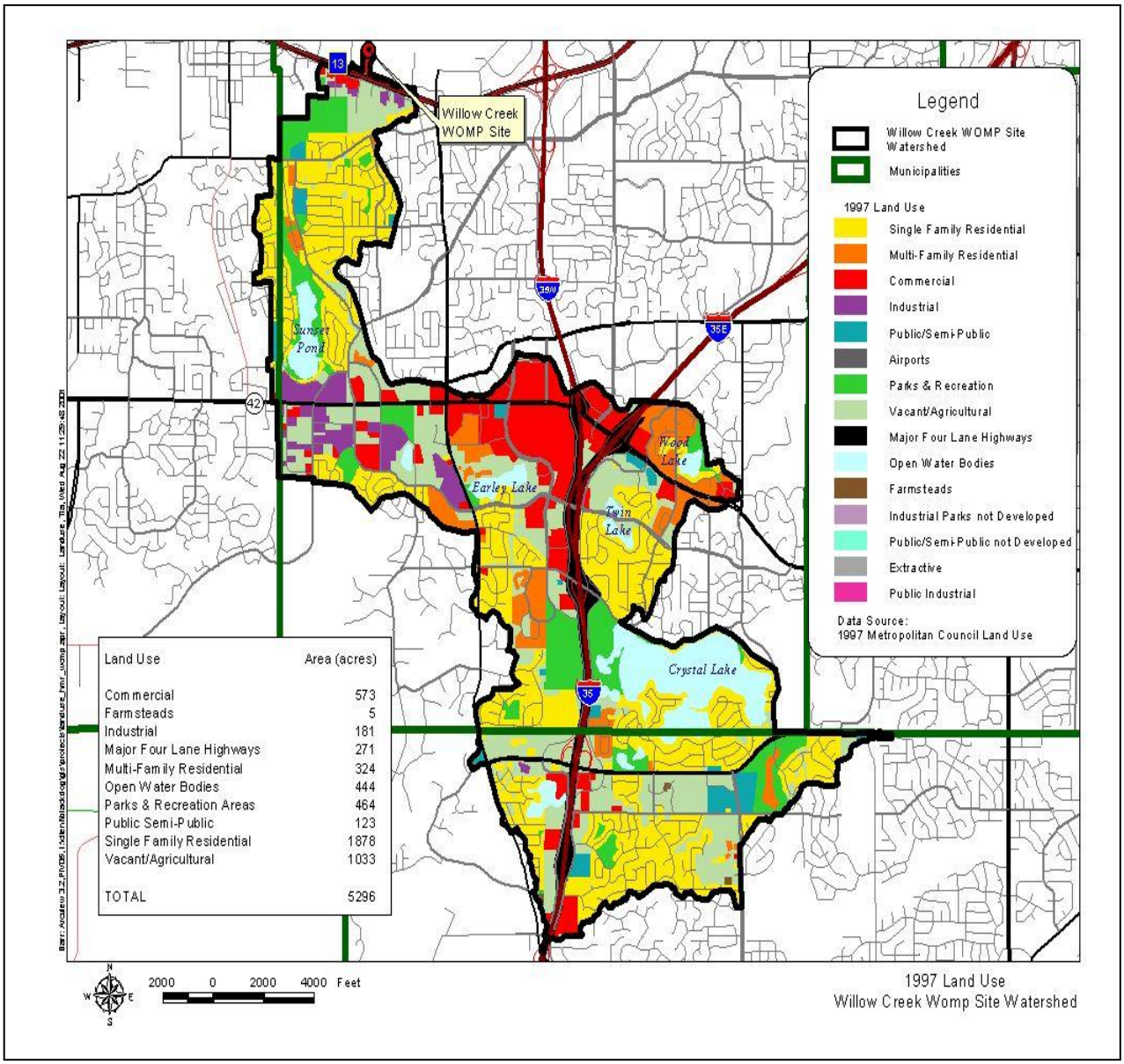
Overall, water quality during the third quarter was good with most parameters below the state standard (in compliance with standards) or near ecoregion means (Table 2). However, conductivity and *E. coli* results continue to exceed ecoregion means or state standards (highlighted red). These exceedances are likely an artifact of soil types and the highly urbanized nature of the Willow Creek watershed.

Table 2. Average concentrations at Willow Creek WOMP Station April-June 2009 (for comparison purposes) and July-September 2009.

Parameter	2nd Quarter 2009 Mean Concentration	3rd Quarter 2009 Mean Concentration	Notes – 3rd quarter results
Alkalinity	220.8 mg/L $CaCO_3$	174.9 mg/L $CaCO_3$	Typical for freshwater; higher during low flow
Biological Oxygen Demand (2.7 mg/L)	1.6 mg/L	1.6 mg/L	Below ecoregion mean
Cadmium	0.50 ug/L	0.50 ug/L	In compliance with state standard
Chloride (230 mg/L)	145 mg/L	92 mg/L	In compliance with state standard
Chlorophyll-a	2.8 ug/L	6.5 ug/L	Low level
Chromium	5.7 ug/L	4.2 ug/L	In compliance with state standard
Conductivity (297.7 umMHOs)	1164 mMHOs	665 mMHOs	Above ecoregion mean, higher during low flow
Copper	2.03 ug/L	1.67 ug/L	In compliance with state standard
E. coli (126 MPN/100mL)	320 MPN/100mL	384 MPN/100mL	Exceeds state standard
Hardness	331 mg/L $CaCO_3$	210 mg/L $CaCO_3$	Considered hard water; very hard during low flow
Lead	0.10 ug/L	0.14 ug/L	In compliance with state standard
Nickel	5.6 ug/L	4.72 ug/L	In compliance with state standard
Nitrogen Ammonia (200 ug/L)	58 ug/L	57 ug/L	Below ecoregion mean
Nitrate + Nitrite (0.16 mg/L)	0.21 mg/L	0.16 mg/L	At ecoregion mean
Phosphorus, Total (0.13 mg/L)	0.048 mg/L	0.086 mg/L	Below ecoregion mean
Suspended Solids (13.7 mg/L)	3.6 mg/L	24.1 mg/L	Above ecoregion mean, due to elevated storm samples
Turbidity (25 NTU)	3.6 NTU	4.3 NTU	In compliance with state standard
Zinc	4.3 ug/L	6.4 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.