Watershed Outlet Monitoring Program

Willow Creek Station

Burnsville, MN

Quarterly Report

Preliminary Data

July - September 2005

Prepared By: Dakota County Soil and Water Conservation District
Prepared For: Lower Minnesota River Watershed District
October 2005

The Willow Creek WOMP site, located in Burnsville just southeast of Menards on Hwy. 13, has been in operation since 1999. This report summarizes the results of flow, precipitation, and water quality for the 3rd quarter of 2005. This data is preliminary and is subject to change until the Metropolitan Council submits the final report for this period.

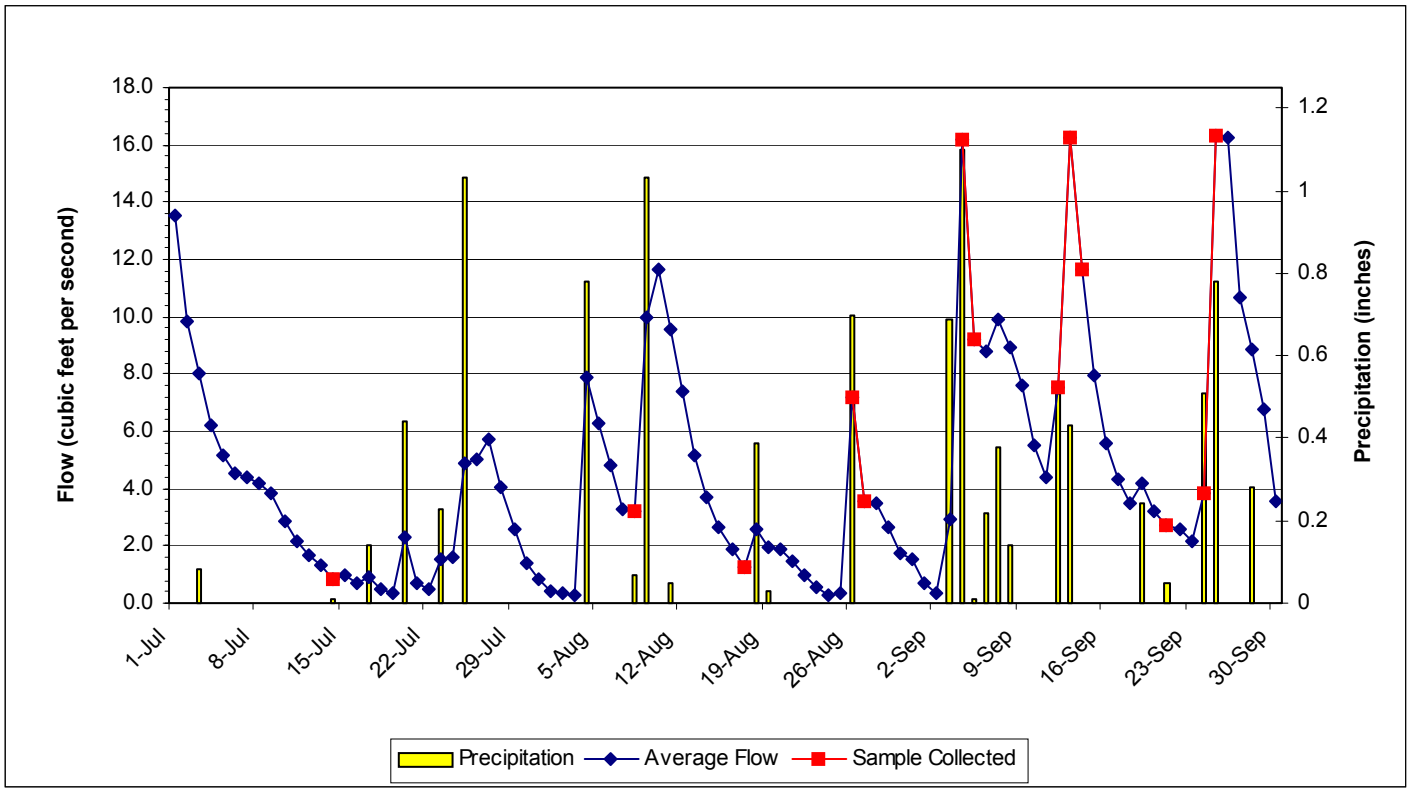
Flow and Precipitation

Average flow in Willow Creek was 4.62 cubic feet per second (cfs) or 2.98 million gallons per day (mgd). Total precipitation for the quarter was 10.32 inches, half of which fell in September (Table 1, Figure 1).

Table 1. Average flow and total precipitation at Willow Creek WOMP Station July - September 2005

Period	Average Flow (cfs/mgd)	Precipitation (inches)
JULY	3.33 / 2.15	1.93
AUGUST	3.54 / 2.29	3.05
SEPTEMBER	7.08 / 4.57	5.34
TOTAL QUARTER	4.62 / 2.98	10.32

Figure 1. Flow and precipitation at Willow WOMP Station July - September 2005



Water Quality

Five composite samples and two grab sample were taken during runoff events and three grab samples were taken during low flow at the Willow WOMP Station during the 3rd quarter 2005. Overall, the water quality was fair to good with most parameters below the state standard (in compliance with standards) or near the ecoregion mean (Table 2).

Table 2. Average concentrations at Willow Creek WOMP Station July – September 2005 plus 1st and 2nd quarters 2005 for comparison purposes.

Parameter	1st quarter Average Concentration	2nd quarter Average Concentration	3rd quarter Average Concentration	Notes – 3nd quarter results
Alkalinity	120 mg/L $CaCO_3$	76 mg/L $CaCO_3$	82 mg/L $CaCO_3$	Typical for freshwater; usually higher during low flow
Biological Oxygen Demand (BOD5)	2.92 mg/L	3.14 mg/L	1.4 mg/L	Good level; usually higher during runoff events
Cadmium	0.04 ug/L	NA	0.156 ug/L *	In compliance with state standard
Chloride	198 mg/L	121.5 mg/L	47.4 mg/L	In compliance with state standard
Chlorophyll-a	13.3 ug/L	NA	14.6 ug/L *	Fair level
Chromium	0.2 ug/L	3.2 ug/L	1.87 ug/L	In compliance with state standard
Conductivity	1623 mMHOs	805 mMHOs	685 mMHOs	Higher than average for metro streams, higher during low flow
Copper	1.8 ug/L	3.9 ug/L	3.1 ug/L	In compliance with state standard
Fecal Coliform Bacteria	63.0 CFU	31.8 CFU	35 CFU	In compliance with state standard
Hardness	147 mg/L $CaCO_3$	95 mg/L $CaCO_3$	111 mg/L	Considered moderately hard water
Lead	0.2 ug/L	2.0 ug/L	1.4 ug/L	In compliance with state standard
Nickel	7.5 ug/L	3.5 ug/L	3.7 ug/L	In compliance with state standard
Nitrogen Ammonia	32.6 ug/L	98 ug/L	64.5 ug/L	In compliance with state standard
Nitrate + Nitrite	0.455 mg/L	0.21 mg/L	.31 mg/L	Slightly above ecoregion mean
Phosphorus, Total	0.3165 mg/L	0.1004 mg/L	0.0779 mg/L	Below ecoregion mean; below EPA recommendation; higher during runoff events
Suspended Solids	54.5 mg/L	17.0 mg/L	31.4 mg/L	Above ecoregion mean; higher during runoff events
Turbidity	11.0 NTU	7.3 NTU	4.4 NTU	In compliance with state standard, higher during runoff events although barely exceeds state standard
Zinc	4.4 ug/L	14.7 ug/L	14.8 ug/L	In compliance with state standard

* Average of 2nd and 3rd quarter
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