

Watershed Outlet Monitoring Program

East Chaska Creek Station - EC 1 site
Chaska, MN

Summary Report March – October 2012



Prepared By: Carver County Land and Water Services
Prepared For: Lower Minnesota River Watershed District
February, 2013

Introduction

The East Chaska Creek EC 1 site, located in Chaska near the Stoughton Avenue bridge as it crosses the Army Core of Engineers water diversion channel, has been monitored since 2003. The East Chaska Creek watershed drains 9,868 acres of various types of land uses including residential, agricultural, undeveloped, and park/recreation areas (Appendix A). This report summarizes the results of flow, precipitation, and water quality for the 2012 sampling season. 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 East Chaska Creek was 5.19 cubic feet per second (cfs) or 3.36 million gallons per day (mgd) (Table 1). This was an order of magnitude lower than the average flow in 2011 (22.02 cfs). This can be attributed to two things: significantly less snow over the winter of 2011-2012 compared to 2010-2011, and; noticeably less precipitation in July and August in 2012. The 2012 sampling season was characterized by a little spring runoff and an extremely dry late summer and fall. A graph describing flow and precipitation results is provided (Figure 1).

Table 1. Average flow and total precipitation at East Chaska Creek EC 1 Station April – October 2012

Period	Average Flow (cfs/mgd)	Precipitation (inches)	*Average Monthly Precipitation, 2000-2012 (inches)
APRIL	4.72/3.05	2.59	3.23
MAY	13.51/8.73	10.69	4.44
JUNE	13.88/8.97	5.2	4.27
JULY	3.30/2.13	3.32	2.94
AUGUST	0.37/0.24	2.51	4.29
SEPTEMBER	0.29/0.19	0.44	3.30
OCTOBER	0.29/0.19	1.48	2.36
TOTAL	5.19/3.36	26.23	24.83

*Average monthly precipitation data obtained from the National Weather Service site #211465.

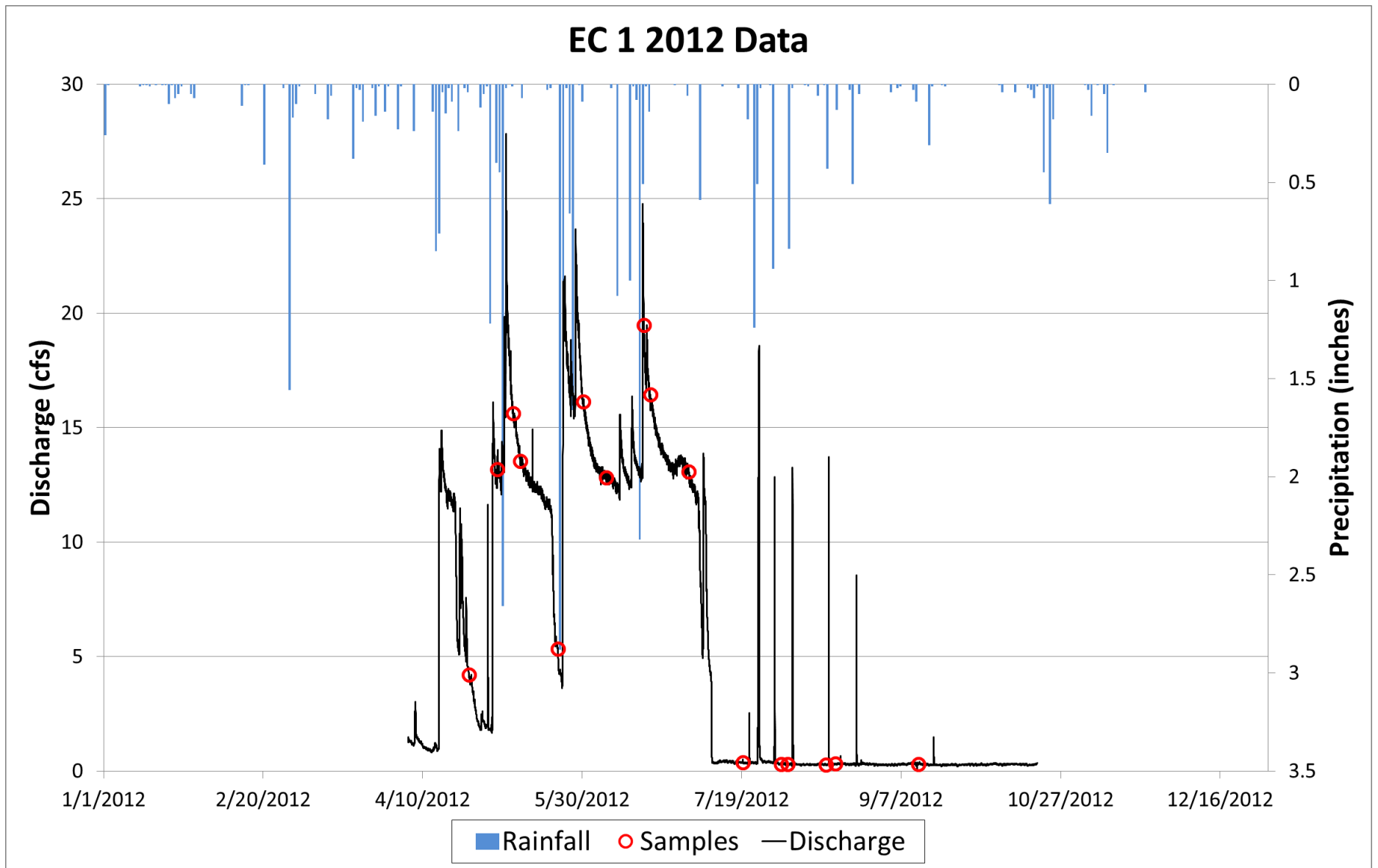


Figure 1. Flow and precipitation at EC 1 Station April - October 2012

Water Quality

Eight nutrient samples and eleven Escherichia Coli (E.coli) samples were collected at the EC 1 station during the 2012 season. When looking at the chemical/biological results at EC 1, alkalinity, ammonia, nitrate+nitrite, solids, and turbidity all increased in 2012. Parameters lower in 2012 than in 2011 were chemical oxygen demand, E. coli, and total phosphorus. Nitrate+nitrite increased from 450 µg/L in 2011, to 716.67 µg/L in 2012, an increase of nearly 40%. There was also a significant increase in suspended solids.

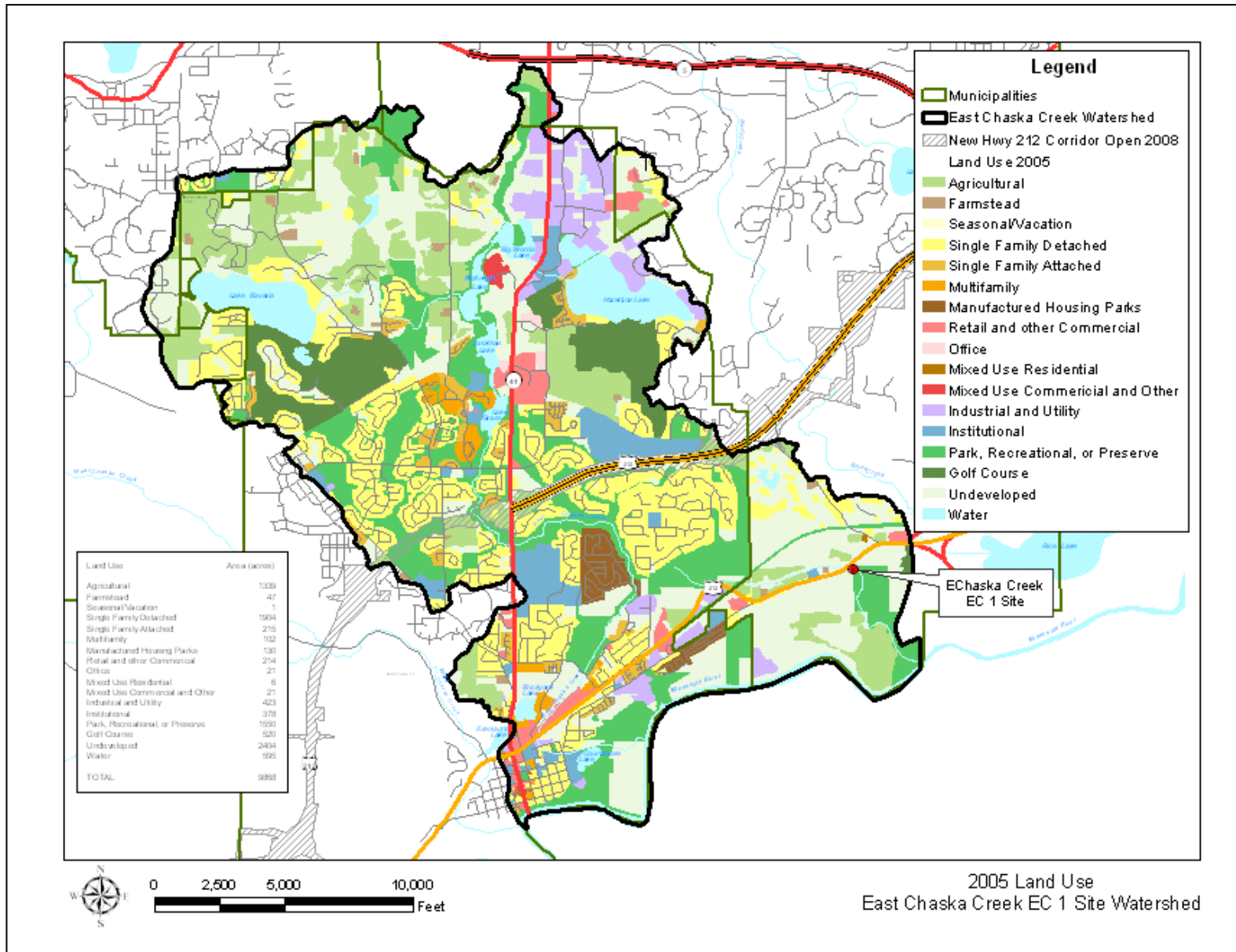
When compared to typical water quality values in the North Central Hardwood Forest ecoregion, the total phosphorus concentration was below the range for the ecoregion in 2012, and also decreased from 2011. The geometric mean for E. coli in 2012 (59 MPN per 100 mL), decreasing from 2011, is well below the state standard. Average values for turbidity and total suspended solids for EC 1 in 2012 exceeded the ecoregion range. At 716.67 µg/L, average nitrate+nitrite concentration approached twice upper range value for the ecoregion. This information, along with graphs showing long term trends can be found in the 2012 Carver County Water Quality Report that can be downloaded or accessed through an interactive GIS water quality mapping program (<http://www.co.carver.mh.us/departments/LWS/wqmp.asp>).

Table 2. Average concentrations at East Chaska Creek EC 1 Station April – October 2012.

Parameter	2012 Ave. Concentration	Notes
Alkalinity	249.6 mg/L CaCO ₃	
Chemical Oxygen Demand	21.90 mg/L	
E. Coli (mean/ geomean)	83/59 MPN per 100 mL	Standard is 126/ 1260*
Nitrogen Ammonia	192.22 µg/L	
Nitrate + Nitrite	716.67 µg/L	Ecoregion mean (40-260 µg/L)
Phosphorus, Total	36.33 µg/L	Ecoregion mean (60-160 µg/L)
Suspended Solids	18.44 mg/L	Ecoregion mean (4.8-16 mg/L)
Turbidity	10.67 NTRU	Ecoregion mean (3-8.5 NTRU)
Volatile Solids	3.78 mg/L	

*As stated in MN Rules Chapter 7050.0222, E. coli shall not exceed 126 organisms per 100 mL as a geometric mean of not less than five samples, nor shall more than ten percent of all samples taken during any calendar month individually exceed 1,260 organisms per 100 mL.

Appendix A



2005 Land Use data source provided by Metropolitan Council Environmental Services