Ensuring Water Quality

Goal 3 **To ensure that water is protected from contamination**

Objectives

3.1 To identify and plan for means to effectively protect and improve surface and groundwater quality

3.2 To prevent soil erosion into surface water systems

3.3 To protect and, where needed, improve the physical, chemical, biological, and aesthetic quality of the water resource consistent with the purposes of the Coon Creek Watershed District and State and National Water quality goals.

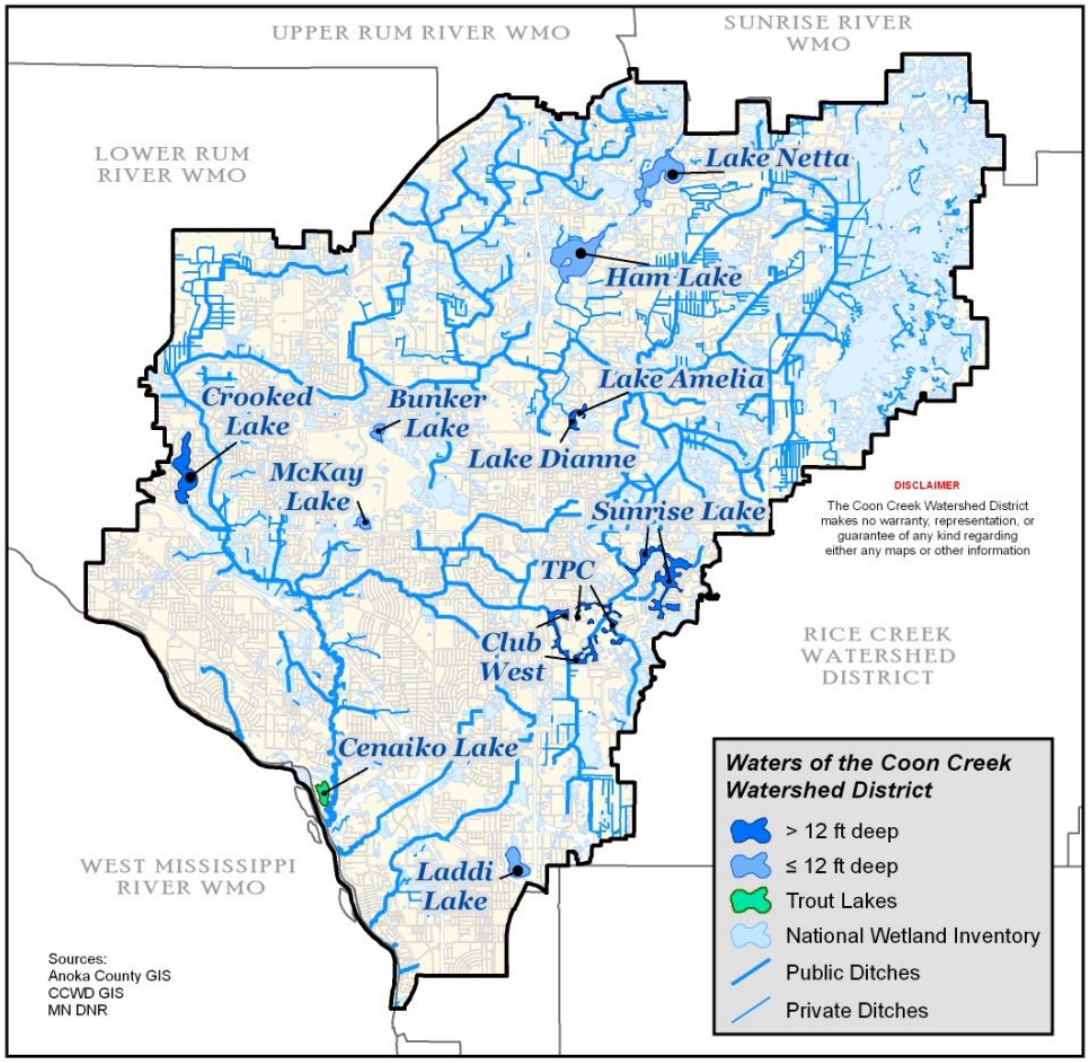
Introduction

Runoff from various land uses and construction sites can carry sediment and other pollutants to water bodies within the District. Sediment and pollution can clog sewers and ditches and pollute creeks, streams and lakes. Pollutants can limit the use of water and waterways for beneficial purposes, promote the growth of undesirable aquatic life and is difficult to remove.

Water quality goals and standards apply to a variety of water resources. Within the Coon Creek Watershed those resources and the amount within the watershed are:

Resource	Amount	Unit
Streams and Ditches	250	Miles
Deep Lakes (>12 Ft)	347	Acres
Shallow Lakes & Wetlands (<12 Ft)	15,508	Acres
Trout Lakes	29	Acres

Water Resources within the Watershed



Current Situation

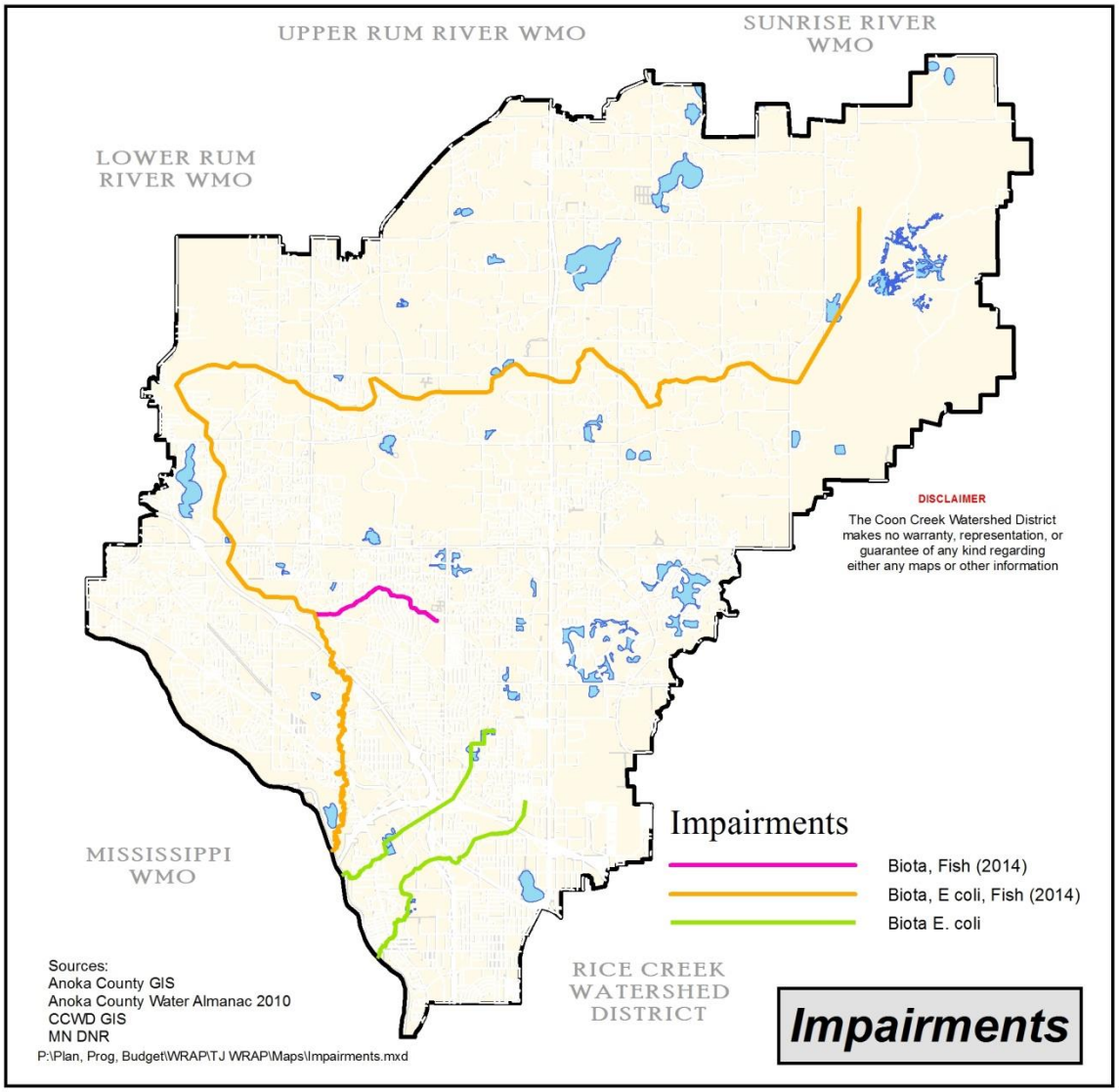
In 2006 the Minnesota Pollution Control Agency (MPCA) listed Coon Creek, Sand Creek, Pleasure Creek and Springbrook Creek as biologically impaired and listed these resources on the 303d list reported to the U.S. Environmental Protection Agency as required.

The Impairment is listed as a Category 5C, meaning the water quality standard is not attained due to "suspected" natural conditions. Further, the water is impaired for one or more designated uses by a pollutant(s) and may require development of a Total Maximum Daily Load (TMDL) to bring the pollutant under control. Water Quality Standards for these waters may be re-evaluated due to the presence of natural conditions.

In 2011 the MPCA Monitored Coon Creek at Vail Street in Coon Rapids for Bacteria. The sampling was conducted as part of the Upper Mississippi River Bacteria TMDL study.

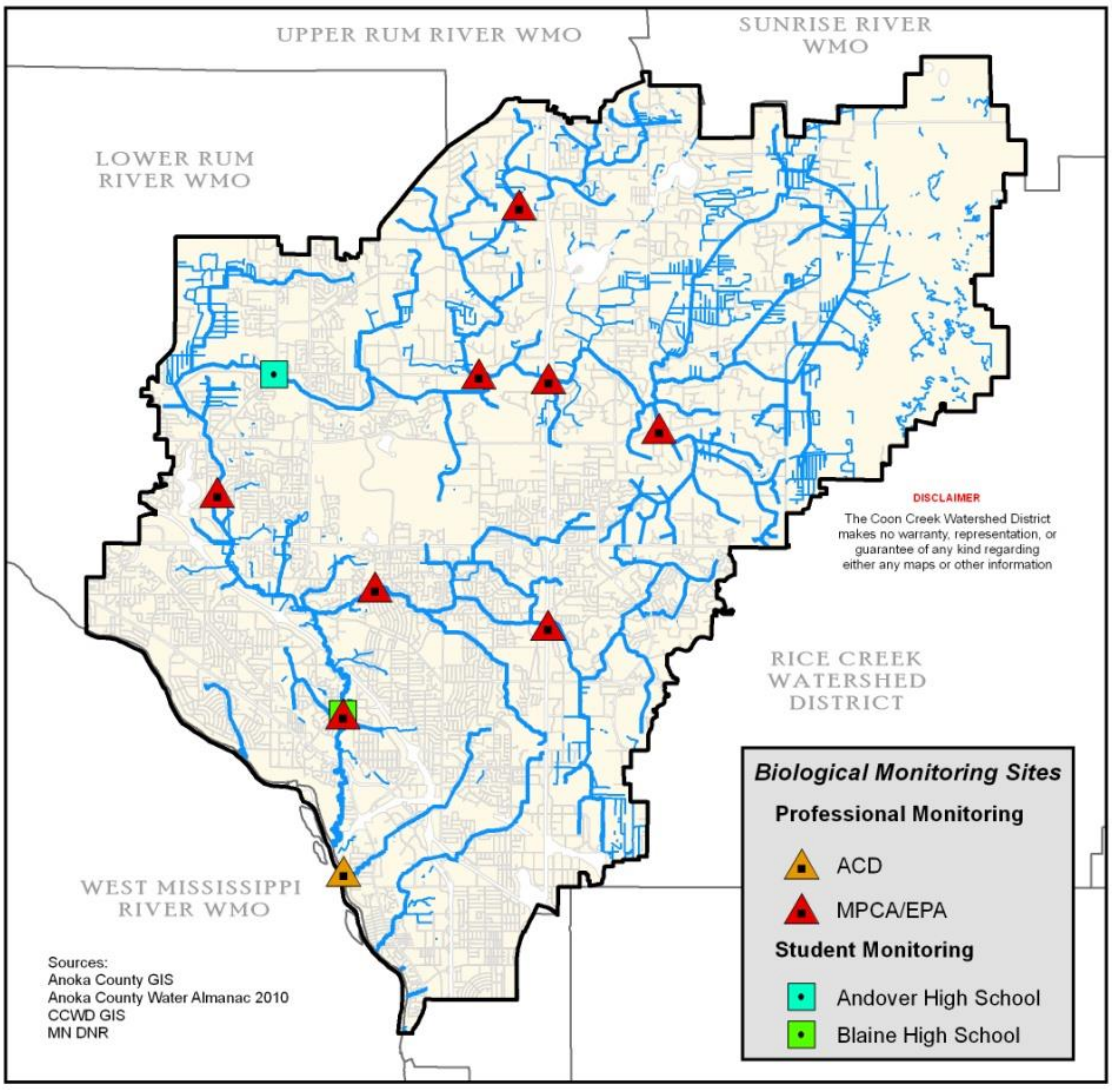
303(d) Listing Information

Reach name	Year Listed	Affected use	Pollutant or stressor
Coon Creek	2006	Aquatic life/Biota	Aquatic macroinvertebrate bioassessments
Pleasure Creek	2006	Aquatic life/Biota	Aquatic macroinvertebrate bioassessments
Sand Creek	2006	Aquatic life/Biota	Aquatic macroinvertebrate bioassessments
Spring Brook Creek (CD 17)	2006	Aquatic life/Biota	Aquatic macroinvertebrate bioassessments
Crooked Lake	2008	Aquatic Consumption	Mercury in Fish Tissue
Ham Lake	2008	Aquatic Consumption	Mercury in Fish Tissue



Biomonitoring

Portions of Coon Creek have been monitored for biota every year since 2000 (ACD Water Atlases). The invertebrate community suggests Coon Creek's health is average compared to other nearby streams. The stream's habitat is relatively sparse, due mostly to excavations performed to repair and maintain the County Ditch function of most of the drainage system within the watershed.

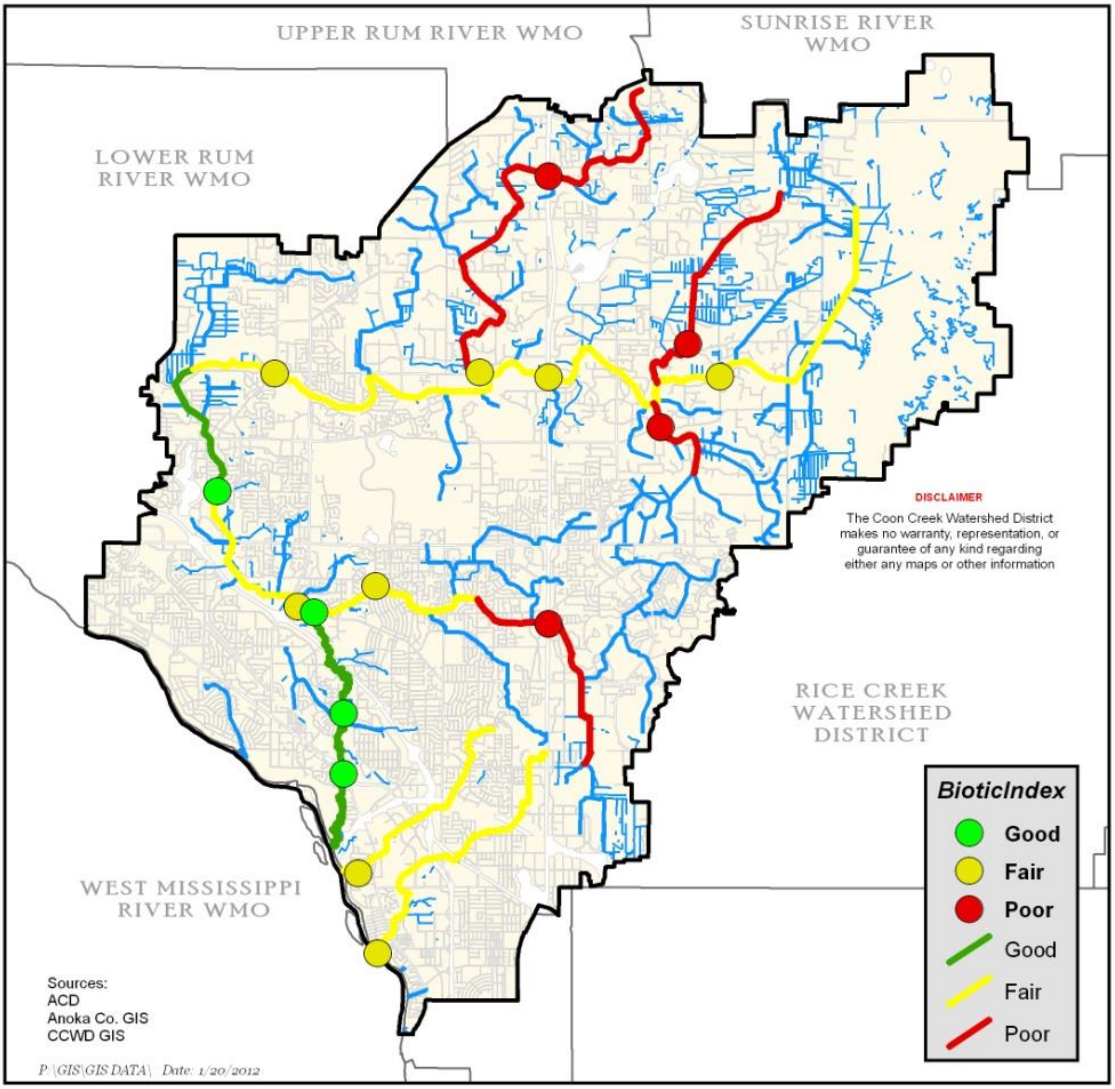


the average for Anoka County streams, despite the good quality habitat. Family Biotic Index (FBI) has been consistently higher than the county average, but the number of families and number of pollution sensitive families (EPT) has been similar to county averages.

The invertebrate community suggests Coon Creek's health is average compared to other nearby streams. This is unexpected because habitat at the Egret Street site is much better, including riffles, pools, snags, and forested areas around the stream.

At Crosstown Boulevard the creek has been ditched so there are no riffles or pools, there is no rocky habitat, few snags, and adjacent habitat is grassy. One possible explanation is that the biotic community at Egret Street is limited by poorer water quality despite the better habitat. Chemical monitoring has found that Coon Creek's water quality declines from upstream to downstream. This corresponds with an increase in urbanization. Future monitoring will provide insight.

Current Biotic Condition



Sediment & Turbidity

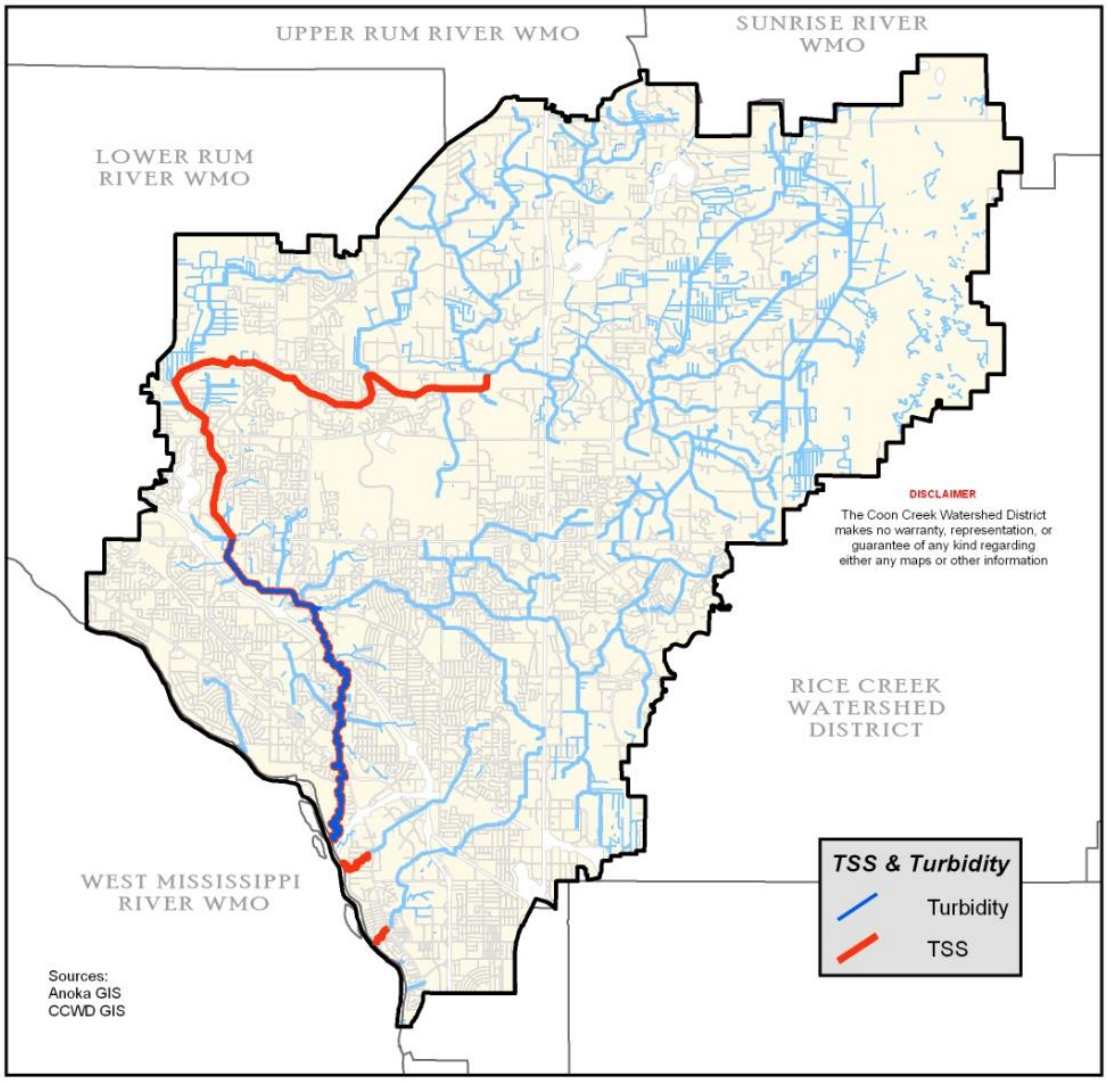
In Coon Creek and Sand Creek TSS and turbidity are low upstream and during baseflow, but increase dramatically during storms and in downstream reaches. The stream appears to exceed state water quality standards for turbidity, though it has not yet been listed as impaired by the MPCA. Suspended solids in Pleasure Creek are low, except in downstream reaches during storms.

Turbidity and TSS problems are most severe in downstream reaches.

Readings in downstream areas are typically two-times higher than those from upstream areas.

Location (Upstream to Downstream)	Median storm turbidity (NTUs)	Median storm TSS (mg/L)
Standard	**25**	**14**
Shadowbrook	13	19
Lions Park	30	20
Vale Street	39	46

Turbidity and Sediment Exceedences



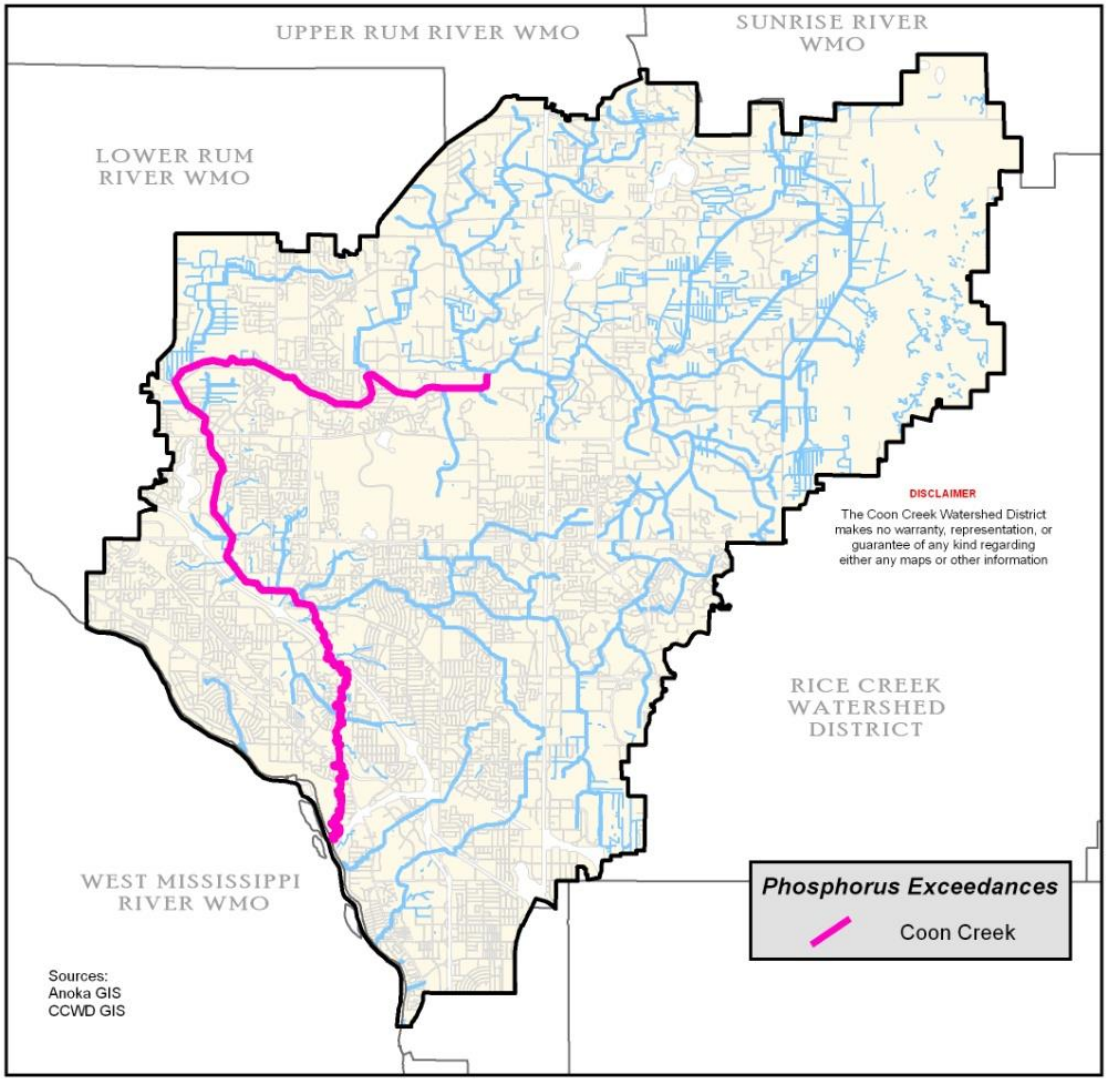
Total Phosphorus

Total phosphorus (TP) in Coon Creek was consistently low during baseflow conditions, but more than doubled during storms.

During storms TP is higher, and sometimes much higher. Median TP during storms was 2.5 times the median for baseflow at each site. Storms

also had much greater variability. The standard deviation for storm readings were 99 mg/L at Shadowbrook, 102 at Lions Park, and 159 at Vale Street. By contrast, the standard deviations during baseflow were 22, 34, and 33 mg/L, respectively. Variation in the timing, magnitude, and intensity of the storm is likely responsible for the greater variability in TP during storms compared to baseflow.

Site	County Median	Coon Ck	Sand Ck	Pleasure Ck
St Standard	**130**			
Shadowbrook	126	174		
Lions Pk		194		
Vail St		192		
Xeon St			94	
Mississippi R				69



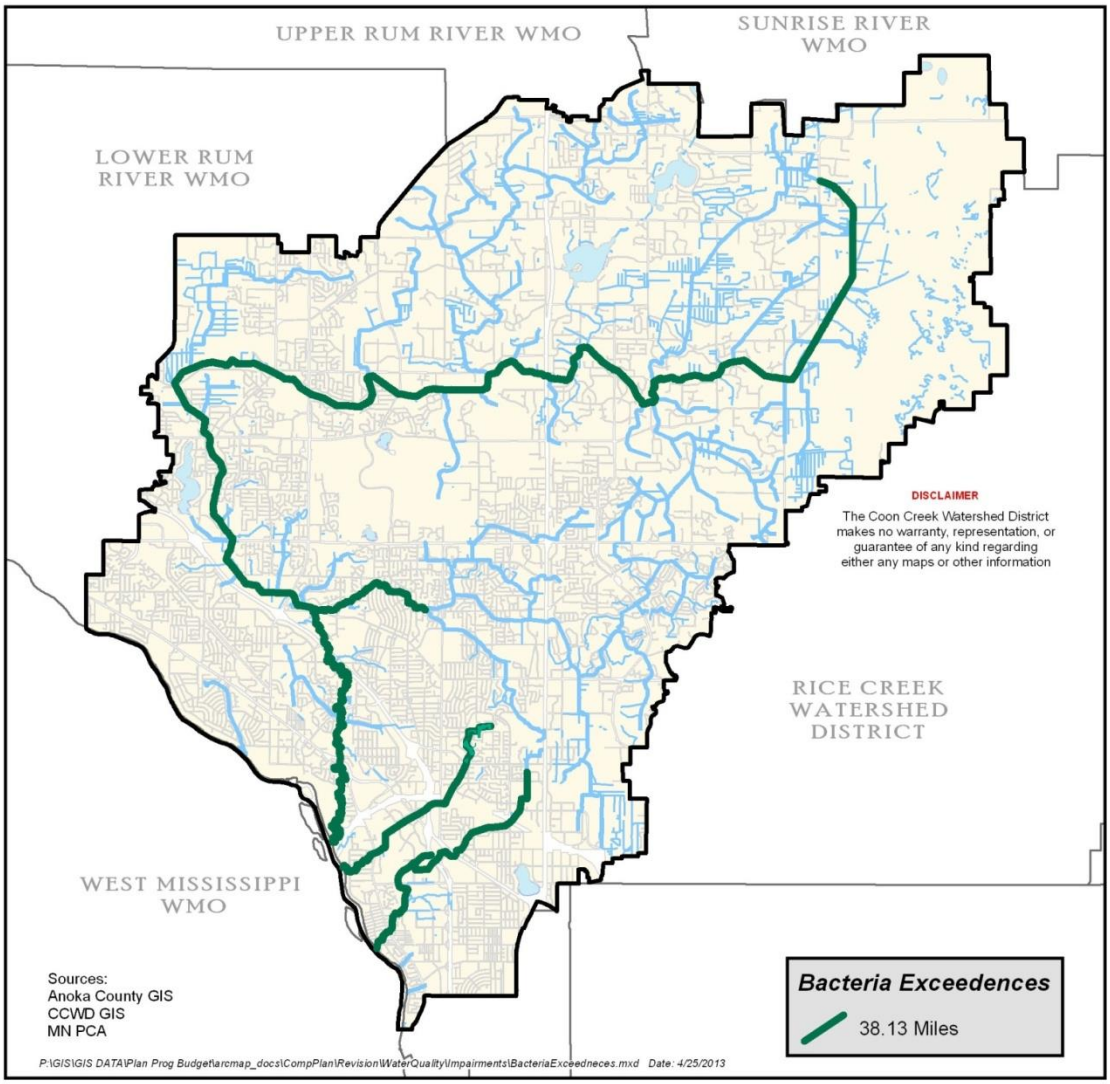
Bacteria

E. coli, a bacteria found in the feces of warm blooded animals, is unacceptably high in Pleasure Creek. E. coli is an easily testable indicator of all pathogens that are associated with fecal contamination. The Minnesota Pollution Control Agency sets E. coli standards for contact recreation (swimming, etc).

The creek has not yet been listed as "impaired" by the State because of confusion about whether the analytical methods used for testing were state-approved, but a water quality problem exists regardless.

Sources of the bacteria likely include:
1. Headwater storm water ponds
2. Storm water runoff from throughout the watershed.

There is some evidence that E. coli is not associated with nutrient-rich sources such as wastewater. Phosphorus in Pleasure Creek is low, especially for an urban stream (see 2009 ACD report). If wastewater or other nutrient rich sources were significant, phosphorus would be higher.



Volume/Rate

The District has begun to see a change in both the volume and rate of stormwater. While considerable work remains to done, the Districts drainage sensitive use, ponding and infiltration policies as well as the District's retrofit efforts remain the building blocks for holding the line and beginning to decrease volume.

Strategies to Achieve the Goal

The Coon Creek Watershed District will pursue five strategies and related actions to pursue hydrologic balance:

1. Monitoring
2. Operations and Maintenance
3. Planning
4. Public and Governmental Relations
5. Regulation: Regulation of land disturbing activities and enforcement of the district rules

Development Regulation	Promote and apply approved best management practices to all management activities as the method for control of non-point sources of water pollution, and for compliance with established state or national water quality goals.
	Include a water quality evaluation for all environmental analyses.
	Identify the water quality implications of proposed and alternative land management practices.
Environmental Review	Review and comment on plans, permits, and studies issued by Federal, state and local units of government.
Operations and Maintenance	To solve local streambank erosion problems in a manner that minimizes the effect on stream behavior and impacts on affected property owners.
	To construct, modify or retrofit stormwater treatment devices to increase their ability to treat for water quality.
	To investigate, evaluate and resolve or mediate issues.
Planning, Programming and Budgeting	Include a water quality evaluation for all environmental analyses.
	Establish objectives for managing the quality of the water resource in land and resource management plans.
Public & Governmental Relations	Consider water quality needs of local, regional, and national public interests both on and off the Watershed District in determining appropriate water quality management activities.
Erosion and Sediment Control	To support the Regulatory and Operations and Maintenance programs with appropriate communications and educational materials.
Phosphorus and sediment pollution prevention	To support the Regulatory and Operations and Maintenance programs with appropriate communications and educational materials.
Phosphorus and sediment pollution prevention at construction sites	To support the Regulatory Program with appropriate communications and educational materials.
Stormwater pollution prevention	To provide customized information & education materials on Stormwater Pollution Prevention BMPs.
Water Conservation,	To provide customized information & education materials on water conservation and Pollution Prevention BMPs.

Pollution Prevention Water Conservation	To provide customized information & education materials on water conservation BMPs.
Research and Monitoring	Monitor all water provided for public domestic purposes and primary contact water sports, to ensure public health and safety. Design monitoring systems consistent with applicable State or Federal regulations for the specific water use. Use the Minnesota Pollution Control Agency's (MPCA) STORET/Equis system as the primary depository for stream and lake water quality data. Ensure that all water quality data placed on the STORET/Equis system is: 1. Collected and analyzed by procedures recognized as standard methods or 2. Entered with descriptive qualifiers which specify the method of collection or analysis. To monitor water quality and condition of lakes within the watershed. The CCWD will review and begin the process to monitor for Chloride on the lakes within the District. To monitor water quality at the outlet to the watershed for signs of potential impairment. For potable water, all water quality testing laboratories owned or used by the Watershed District shall be certified by either the State and/or EPA. Specify the accuracy, precision and threshold limits of detection for each parameter or test conducted by water quality analytical laboratories used by the Watershed District. Conduct water quality data collection activities within the guidelines of an inventory or monitoring plan. Evaluate the data collection activities of other agencies before additional water quality inventories or monitoring efforts are undertaken.