

Water quality monitoring procedures

Monitoring the water quality of both County Ditch 56 (CD 56) and the lakes (Crystal, Loon, and Mills) is an integral part in evaluating how 'clean' or 'dirty' the water is. To complete our monitoring, we use 'site' parameters and 'lab analysis' samples. Site parameters are data taken at the time we collect the lab analysis samples. These site parameters include dissolved oxygen concentration, specific conductivity, temperature, Secchi disk transparency, and pH. We use electronic water quality meters to collect all these data, except the Secchi disk transparency, which we use a Secchi disk.

Water quality samples are collected by taking 'grab samples.' We receive all our sample bottles from Minnesota Valley Testing Laboratories (MVTL), where we have our water actually analyzed. Bottles are inverted into the water and once fully submerged, are turned right side up to allow water into the bottles. Samples are collected this way to reduce the chance that any floating/surface debris will be collected. When taking water samples from Crystal, Loon, or Mills lakes, sample bottles are simply inverted using the samplers' hand. When taking water samples from County Ditch 56, a telescoping pole, with a clamp on the end, is used to collect a sample from the middle of the ditch. Once a sample is collected, it is tightly capped and placed into an ice-filled cooler for transportation to MVTL in New Ulm, MN. Samples are kept on ice to make sure no chemical reactions occur from the time a sample is collected until the sample is analyzed in the lab.

On Crystal Lake, we sample two points from our boat: one near the public beach (Crystal 103) and one in the middle of the lake (Crystal 3902). On Loon Lake, we also sample two points from our boat: one in the southeast corner of the lake (Loon 201) and one in the middle of the lake (Loon 3901). Since Mills Lake is much smaller than Crystal Lake and Loon Lake, and is relatively uniform in water quality, we take our samples off the end of the public dock (Mills 3902). All of the in-lake sampling points were previously set up by the Minnesota Pollution Control Agency and this is why the samples are taken from these points. Once the lake samples are at the lab, they are analyzed for total phosphorus, total suspended solids, and chlorophyll-a.

On CD 56, there is an automated data logger with a rain gauge and an ultrasonic stream height gauge where County Road 20 crosses the ditch. The height gauge records data every three minutes to see how the height of the water in the ditch rises and falls with varying rain events. This data is stored in a data logger and a person downloads the data approximately every two weeks. The water quality samples are taken where County Road 9 crosses the CD 56, just outside of town. These samples are analyzed at MVTL for nitrate-nitrite, total phosphorus, ortho-phosphorus, turbidity, total suspended solids, and total suspended volatile solids. E. coli samples are analyzed at the Minnesota State University Mankato, Certified Water Laboratory.

The reason why the automated data logger and the lab analyzed samples are taken at different places on the ditch is because construction was being completed this past spring and summer on the culvert where CD 56 crosses County Road 9.

For information on how you can help monitor water quality click on the link to Minnesota Pollution Control Agency's Citizen Stream-Monitoring Program:
<http://www.pca.state.mn.us/water/csmp.html>