

THE IMPORTANCE OF CHEMISTRY

PURPOSE OF WATER MONITORING

Monitoring plays a vital role for the District. Results from the District monitoring program help us assess water quality trends in the watershed and provide information on where to target best management practices. To help track long-term changes, five stream sites have been established and the eight major lakes in the watershed are thoroughly monitored every year. In addition to major lakes the District also monitors the Hubbard, Schultz, and Wheeler chain of lakes. District staff and several volunteers conduct monitoring. To determine if the watershed is reaching water quality goals, monitoring data is evaluated on an annual basis.

The Importance of Chemistry: (P), (TSS), (Chl-a), (TKN)

Phosphorus (P) – One of the key elements necessary for growth of plants and animals. If too much phosphorus enters the waterway, algae and aquatic plants will grow excessively and choke up the waterway. As the algae and plants die, their decomposition depletes the water body's oxygen supply, leading to the loss of aquatic life. Anthropogenic sources of phosphorus include cropland (fertilizer), human waste, and stormwater runoff from impervious surfaces in urban areas.

Total Suspended Solids (TSS) – Materials suspended in the water column can decrease the diversity of aquatic organisms and increase the water temperature. Plant populations can decrease as the suspended materials block the ability of sunlight to penetrate the water. Fish populations and other aquatic organisms suffer when eggs are smothered by silt and clay. The material suspended in the water can be both organic (plankton, sewage) and inorganic (silt, clay). By measuring total suspended solids, the

effects of runoff on a water body can be determined.

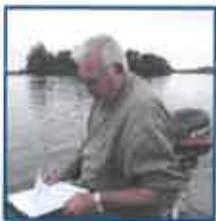
Chlorophyll-a (Chl-a) – The pigment in plants that make them look green. Measuring chlorophyll-a indicates the amount of algae in the water column.

Total Kjeldahl Nitrogen (TKN) – A form of nitrogen that is used as an indicator for the presence of organically bound nitrogen and ammonia in wastewater; manure or sewage.

Data Results and Discussion

When reviewing stream and lake data, it is useful to have a reference or average value to compare the data. Water quality values found in southern Minnesota are expected to be different than those found in northern Minnesota because of differences in precipitation patterns, land cover, soils, topography, land use practices, etc. Therefore, Ecoregional Averages are used rather than a statewide average. The Middle Fork Crow River watershed is located in the North Central Hardwood Forest ecoregion. These are developed with the use of ecoregional reference lakes and streams that have been minimally impacted by pollution. Data that represents the lower and upper boundaries of the reference water bodies are used as comparison values. Under most circumstances, water quality results in the watershed are expected to fall within the ranges of the reference water bodies. Chemistry samples with lower readings indicate better water quality, while higher Secchi disk readings represent water that is clearer.

For the full 2015 Water Quality Monitoring Report, please see www.mfcrwd.org



THANK YOU VOLUNTEERS!

Kyle & Wyane Knudsen
Bob Hodapp ◊ Ed Rhude ◊ Gordy Behm
Randy and Mary Jo Patton
Robert and Susan Dice
Ruth Schaefer and Lee Thompson
Graden West ◊ Bruce Wing

