## Elm Creek Watershed-wide TMDL

At 2008 year-end discussions were ongoing with the Minnesota Pollution Control Agency, Three Rivers Park District and the Commission to develop a watershed-wide, multi-parameter Total Maximum Daily Load (TMDL) and Implementation Plan that will collectively address all water quality impairments throughout the Elm Creek watershed. (See the table below.) Given the size and complexity of the Elm Creek watershed, both ecologically and socio-politically, the TMDL work plan proposes that TMDL development be divided into five phases beginning in the spring of 2009 and ending in the fall of 2014. In general, the phases will be implemented sequentially (working downstream to upstream), and prioritized based on level of impairment. Figure 1 shows the Elm Creek sampling sites.

Phase I will characterize the dissolved oxygen impairment in lower Elm Creek and identify the relative oxygen demand (OD) loading (biological and chemical) from landscape inputs, upstream reaches and internal processes.

Phase II will be conducted in the Rush Creek subwatershed and will identify the source(s) of the Biological Impairment in Rush Creek, Nutrient Impairment in Henry Lake and the downstream contribution of DO loading to lower Elm Creek.

Phase III will be conducted in the upper Elm Creek subwatershed and will identify the source(s) of dissolved oxygen (DO) impairment in upper and lower Elm Creek and Nutrient Impairment in Rice and Fish Lakes.

Phase IV will be conducted in the Diamond Creek subwatershed and will identify the source(s) of Nutrient Impairment in Diamond and French Lakes and OD loading to lower Elm Creek.

Assessment work in each subwatershed will be completed in approximately two years. Throughout the assessments, samples will be collected and analyzed to determine the scope and magnitude of Bacteria, Chloride and Biotic Impairment based on results from the Surface Water Assessment Grant.

**Waterbodies Addressed in Watershed-wide TMDL**

| Waterbody | Impairment/Stressor | Year Listed |
|---|---|---|
| **Existing Impairments Addressed** | | |
| Elm Creek: Headwaters to Mississippi R | Low Oxygen | 2004 |
| Rush Creek Headwaters to Elm Creek | Fish IBI | 2002 |
| Fish Lake | Excess Nutrients | 2008 |
| Diamond Lake | Excess Nutrients | 2006 |
| French Lake | Excess Nutrients | 2004 |
| Henry Lake | Excess Nutrients | 2008 |
| **Potential Future Impairments Addressed** | | |
| Diamond and Elm Creeks and tributaries | E-coli | |
| Diamond, Rush and Elm Creeks and | Chloride | |
| Diamond Creek and tributaries | Fish IBI | |
| Rush and Diamond Creeks and tributaries | Low Oxygen | |
| Rice and Cowley Lakes | Excess Nutrients | |
| **Unimpaired Water Bodies Addressed** | | |
| Camelot, Cook and Edward Lakes | | |
| Goose, Grass and Hayden Lakes | | |
| Jubert, Laura and Lemans Lakes | | |
| Meadow, Medina and Morin Lakes | | |
| Mud. Scott and Sylvan Lakes | | |

Following completion of the TMDL assessment work in each subwatershed, stressor-specific TMDL targets, Wasteload Allocations (WLAs), Load Allocations (LAs) and Implementation Plans will be developed in conjunction with a concurrent stakeholder process. Results from all modeling and assessment work will be initially summarized to describe multi-stressor WLAs, LAs and load reduction goals for various stakeholder groups on a subwatershed basis and ultimately summarized into a multi-stressor, watershed-wide TMDL and Implementation Plan (Phase V).

The watershed-wide Implementation plan will be holistic in that it will address management activities for all the surface waters (both impaired and those currently meeting water quality standards) in the watershed. The goal is to allow this plan to complement the Commission's Watershed Management Plan.

**Figure 1: Elm Creek Sampling Sites**