

1.1.1 TMDL/WRAPS Implementation

The TMDL report and WRAPS study identified very significant TP, TSS, and *E. coli* annual load reductions from watershed runoff that are summarized in Section 4.1.2 above. Implementation in the coming years will rely on three key strategies: regulation, targeted load reductions, and agricultural outreach.

Regulation. A key TMDL/WRAPS implementation strategy to reduce nutrient and sediment loading to the lakes and streams in the watershed is to maximize load and volume reductions at the time of land use change. City Comprehensive Plans indicate that about 40 percent of the area of the Elm Creek hydrologic watershed is expected to change land use by 2030. In the Crow River hydrologic watershed, 60 percent of the Cowley Lake drainage area and 79 percent of the Sylvan Lake drainage area is expected to be converted.

An assessment of the impact of potential rule changes such as an infiltration requirement was completed as part of the development of this Plan (Wenck 2013). This assessment started with estimating the change in runoff volume and nutrient loads when agricultural or undeveloped lands are converted to various types of developed uses. The change in volume and loading was then estimated assuming 1.1 inches of infiltration based on the MPCA's Minimal Impact Design Standards (MIDS). This analysis found that when hayland, cropland, pasture, and grassland land covers are converted to various types of developed land uses, infiltrating or filtering the first 1.1" of runoff on average results in a net *reduction* of unit area TP load. Only when converting woodland would the area loading rate be expected to increase (Wenck 2013).

Implementing more rigorous development and redevelopment standards, including an infiltration requirement, should over time reduce watershed loads, improving water quality in impaired waters and preventing degradation in waters that currently meet water quality standards. Recognizing the value of this regulatory tool, the Commission elected to adopt these more stringent standards in advance of the Plan and the TMDL/WRAPS, effective January 1, 2015.

Targeted Load Reductions. The Commission will partner with member cities and to undertake subwatershed assessments to identify potential retrofit BMPs. The watershed modeling completed for the TMDL/WRAPS identified subwatersheds where nutrient and sediment loading potentially occurs at higher rates than average. Detailed, subwatershed assessments and modeling will systematically focus load reduction efforts to areas where even small actions such as retrofitting existing ponds with iron-enhanced filter benches, mitigating stream erosion, enhancing stream buffers, improving individual site manure management, or adding new bioinfiltration basins are most cost-effective.

Figure 4.1 shows the estimated TP loading rate (left figure) and annual load (right figure) as modeled for the Elm Creek TMDL/WRAPS. The subwatersheds in darker blues and reds, which are generally the headwaters of Rush Creek and North Fork Rush Creek have the potential to contribute higher amounts of TP to those impaired waters, and monitoring data confirms that exceedances of the state water quality standards are most severe in the upper watershed. The Commission will prioritize those areas for subwatershed assessment in the first five years of Plan implementation.

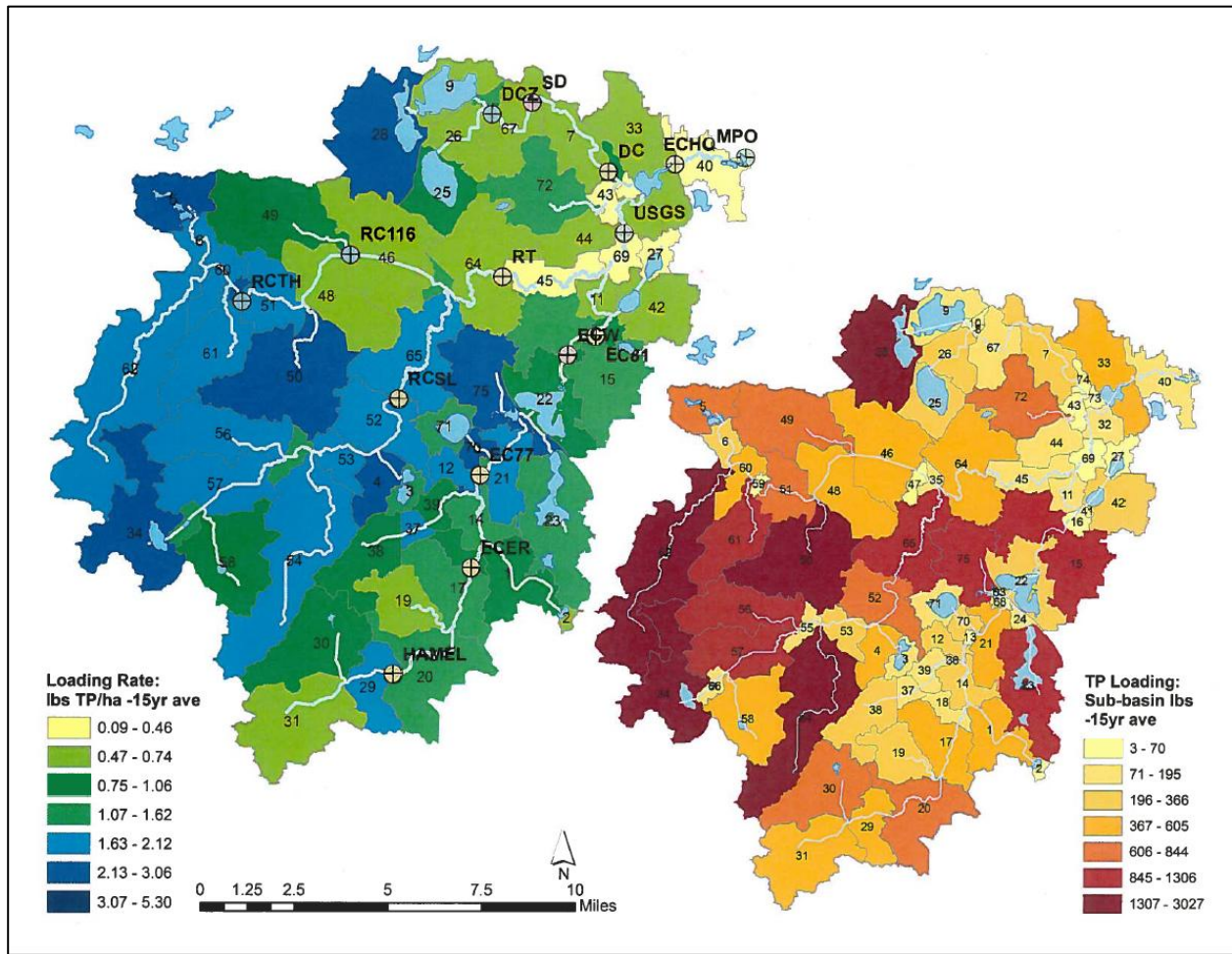


Figure Error! No text of specified style in document..1. Modeled TP loading by subwatershed.
 Source: Elm Creek TMDL.

Agricultural Outreach. There are significant agricultural operations in the watershed, ranging from row crop production to horse hobby farms. The TMDL/WRAPS identified sources of agricultural loading, not only nutrients and sediment but also sources of bacteria. The Commission will periodically convene an agricultural TAC comprised of federal, state, and local specialists from U of M Extension, Minnesota Department of Agriculture, BWSR, Hennepin County, and other interested parties to craft partnerships in specialized education and other programs and BMPs such as targeted fertilizer application, erosion and sediment control, and manure management. This TAC will also advise the Commission as it completes subwatershed assessments in the agricultural parts of the watershed. The TAC will help identify appropriate implementation actions, and focus their technical expertise and resources on high-loading locations in subwatersheds of focus.

The TMDL identifies eight general strategies for the achievement of the TMDL load reduction goals. Table Error! No text of specified style in document..1 shows how those strategies have been incorporated into this Plan.

Table Error! No text of specified style in document..1. Actions in this Plan addressing Elm Creek Watershed TMDL implementation strategies.

Strategy	Actions in 3 rd Generation Plan
Maintain stringent stormwater mitigation standards to	More stringent standards, including a new infiltration

Strategy	Actions in 3rd Generation Plan
maximize load reductions during development and redevelopment.	requirement, were adopted effective January 1, 2015, and are included in Appendix C.
Adopt new standards governing siting and management of new non-production livestock operations.	This Plan requires member cities to develop and enforce such an ordinance, using the City of Medina's ordinance as a guide.
Increase outreach to existing agricultural operations to identify and implement projects and target existing and new agricultural management resources.	The general operating budget includes funding to enhance education and outreach programs. The Commission will prioritize areas of the watershed and will partner with other agencies and organizations to target outreach.
Prioritize areas for the completion of subwatershed assessments to systematically identify and prioritize loading and volume management BMPs and other management practices.	The general operating budget includes funding to cost-share completion of subwatershed assessments. The Commission will use the monitoring and modeling completed for the TMDL to prioritize areas for assessments, and will convene a TAC of agency representatives specializing in ag BMPs and other interested parties to focus outreach and resources in agricultural areas.
Incorporate BMPs into road and highway projects, and other public projects as opportunities arise.	The Plan requires member cities to demonstrate how they will meet the load reductions in the TMDL, including identifying known upcoming projects such as street or highway reconstruction projects that will provide opportunities to include load and volume reduction BMPs.
Identify areas where increased infiltration would most beneficially enhance stream baseflow, and implement projects.	The Commission will use the monitoring and modeling completed for the TMDL and partner with the DNR, USGS, and other agencies to identify priority infiltration areas.
Incorporate habitat enhancements into stream stabilization and other projects.	The Commission will provide review and guidance to member cities to incorporate habitat enhancements on all projects impacting the streams in the watershed, and other projects that will protect and improve biotic integrity in the watershed's natural resources.