

Strategies for Nutrient Reduction Wastewater Sector

Wastewater Phosphorus Reduction

- Wastewater has already reduced phosphorus loading by 62% since 2000
- Additional reductions are planned as part of TMDL implementation and implementation of Phosphorus Rule
- New limits on wastewater are likely as River Eutrophication Standards are adopted (expected in 2014)
- A reduction of an additional 52.8 metric tons/year are expected
- No additional strategies are proposed

	Average Loading 2000–2002 (MT/year)	Average Loading 2010–2012 (MT/year)	Percent Reduction (%)
Industrial Wastewater	196	175	11%
Domestic Wastewater	1,903	621	67%
Total	2,099	796	62%



- The Metropolitan WWTP is the largest wastewater treatment facility in Minnesota and is an example of successful large scale nutrient reduction.
 The WWTP now consistently
- -- The WWTP now consistently achieves less than 1 mg/L total phosphorus in the effluent.



Domestic and industrial wastewater phosphorus loading trends and projections

Wastewater Nitrogen Reduction

- Wastewater nitrogen loads have increased slightly since 2000 due to population growth
- Currently, 5 facilities are required to reduce nitrogen loads through effluent limits (three WWTPs and two industrial dischargers)
- Municipal facilities account for 86% of statewide wastewater nitrogen load
- The 10 largest point sources, as measured by annual average nitrogen load, collectively amount to 67% of the load from point sources statewide
- A reduction of 2,000 metric tons/year are needed (20% reduction)
- This reduction roughly equates to half of the wastewater load being treated to a 10 mg/L effluent limit

Wastewater Nitrogen Reduction Strategies

Following the successful model used for wastewater phosphorus reductions, a five part strategy is proposed:

1 - Influent and Effluent Nitrogen Monitoring at WWTPs – Collect data to better understand nitrogen loading from WWTPs, starting with permits issued in 2014
2 - Nitrogen Management Plans for Wastewater Treatment Facilities - Require plans that include cost-effective pollutant reductions for all major facilities and those facilities above certain effluent concentrations, potential completion by 2020.

3 - Nitrogen Effluent Limits - Begin incorporation of water quality-based effluent limits based on the new nitrogen standards for protection of aquatic life, expected in 2-4 years.

4 - Add Nitrogen Removal Capacity with Facility Upgrade - Encourage early adoption of nitrogen removal for major WWTPs planning to upgrade

5 - Point Source to Nonpoint Source Trading – Explore in-state and interstate nitrogen trading network



Photos courtesy of Metropolitan Council