Minnesota Efforts to Reduce Nutrient Enrichment

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Minnesota landscape

- 12,200 lakes greater than 10 acres
- 92,000 miles of rivers/streams
- Drains to 3 basins

Land Use:
- Agriculture 44%
- Grassland 13%
- Forest 32%
- Water 5%
- Urban 6%
• MN has assessed lakes for eutrophication since 2002 based on a numeric translator for a narrative standard.

• In 2008, lake eutrophication standards were promulgated and assessments have been completed on over 2,500 lakes.
  • 693 impairments on draft 2020 list

• In 2015, river eutrophication standards were promulgated.
  • 53 impairments on draft 2020 list
Lake & stream eutrophication impairments

- **693 lakes impaired**
- **814 river miles impaired**
Harmful algal blooms in Minnesota

- Occur statewide
- Blooms a natural part of all MN lakes
- HABs, as measured to date:
  - Occur on nutrient impaired lakes
  - Dozen or so that aren’t, would be impaired if sufficient data was collected (National Lakes Assessment lakes, for example)
Pollution sources

Point sources (regulated)

- 15%

Non-point sources (unregulated)

- 85%
Statewide sources of nitrogen & phosphorus to rivers

**Nitrogen**
- **Urban Stormwater**: 1%
- **Septic**: 2%
- **Forests**: 7%
- **Atmospheric**: 9%
- **Wastewater**: 9%
- **Cropland runoff**: 5%
- **Cropland tile drainage**: 37%
- **Cropland groundwater baseflow**: 30%
- **Feedlot runoff**: <1%

**Phosphorus**
- **Streambank erosion**: 14%
- **Septic/Feedlots**: 6%
- **Forest & grasses**: 8%
- **Urban & road runoff**: 8%
- **Atmospheric**: 10%
- **Wastewater point sources**: 17%
- **Cropland**: 37%

Source: MPCA & UMN 2013

Source: MPCA et al., 2014
Information to implementation

Monitor and Assess

Watershed Restoration and Protection Strategy

One Watershed One Plan

Implementation
BMP adoption through government programs

Cottonwood Watershed 2013-18 BMP #s

https://www.pca.state.mn.us/water/healthier-watersheds
Targeting Investments

- Development of tools/models to allow for local government units to target implementation activities on the right places on the landscape.
MN CREP will protect up to 60,000 acres of the highest priority areas across 54 counties. It will:

- Target riparian areas and marginal agricultural land
- Restore hydrology, increase infiltration and provide flood mitigation
- Provide habitat for wildlife, non-game species and pollinators
- Reduce nitrate loading in drinking supplies
MN Agricultural Water Quality Certification Program

- Voluntary program for producers to implement and maintain approved farm management practices

- Involves a whole farm assessment for water quality risks and actions to mitigate those risks

- Results in regulatory certainty for any new water quality rules/laws for 10 years

- Recognition for their work

- Priority for technical assistance and financial assistance

Darren Newville, District Manager at East Otter Tail and Wadena Soil and Water Conservation Districts; MAWQCP certified producers Andrew and Dale Schock; MAWQCP Area Certification Specialist Jim Lahn.
Municipal infrastructure

- 729 permitted wastewater treatment facilities
  - 80% Minnesotans connected
  - 321 have water quality based effluent limits of 1 mg/L per day or less

- Since 2010 funding awarded for:
  - 48 WW construction projects to reduce discharges to 1 mg/L
  - Small unsewered communities
    - 28 WW construction projects
    - 34 technical assistance projects
Septic & stormwater programs making progress

New & Replacement Septic Systems Over 17 Years

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Total number of structural Stormwater BMPs implemented (2014-2018) at 78 MS4s

- Constructed basin: 580
- Filter: 925
- Infiltrator: 176
- Swale or strip: 83

Legend: 
- New
- Replacement
Success stories

• To date, 30 lake eutrophication delistings have occurred due to corrective actions

• Primarily in the TCMA, with completely built watersheds, fully implemented stormwater management, and internal load management.

• Phosphorus concentrations are dropping on rivers around the state.
Action needed to meet nutrient reduction goals

- Million acres of cropland affected
  - Reduced tillage & soil conservation: 4.9 M
  - Crop nutrient mgmt efficiencies: 6.3 M
  - Drainage water storage/treatment: 0.6 M
  - Perennials - fuel, forage, food, buffers & set-aside: 0.5 M
  - Cover crops - relay, intercrop, winter annuals: 1.9 M

- Plus advance:
  - Urban Wastewater
  - Urban runoff
  - Septic systems
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Thank you