



Drainage in Minnesota – A Brief Overview

House Water Division Hearing, 2-11-19

Al Kean, Chief Engineer, BWSR

Drainage – We Drain for Multiple Reasons

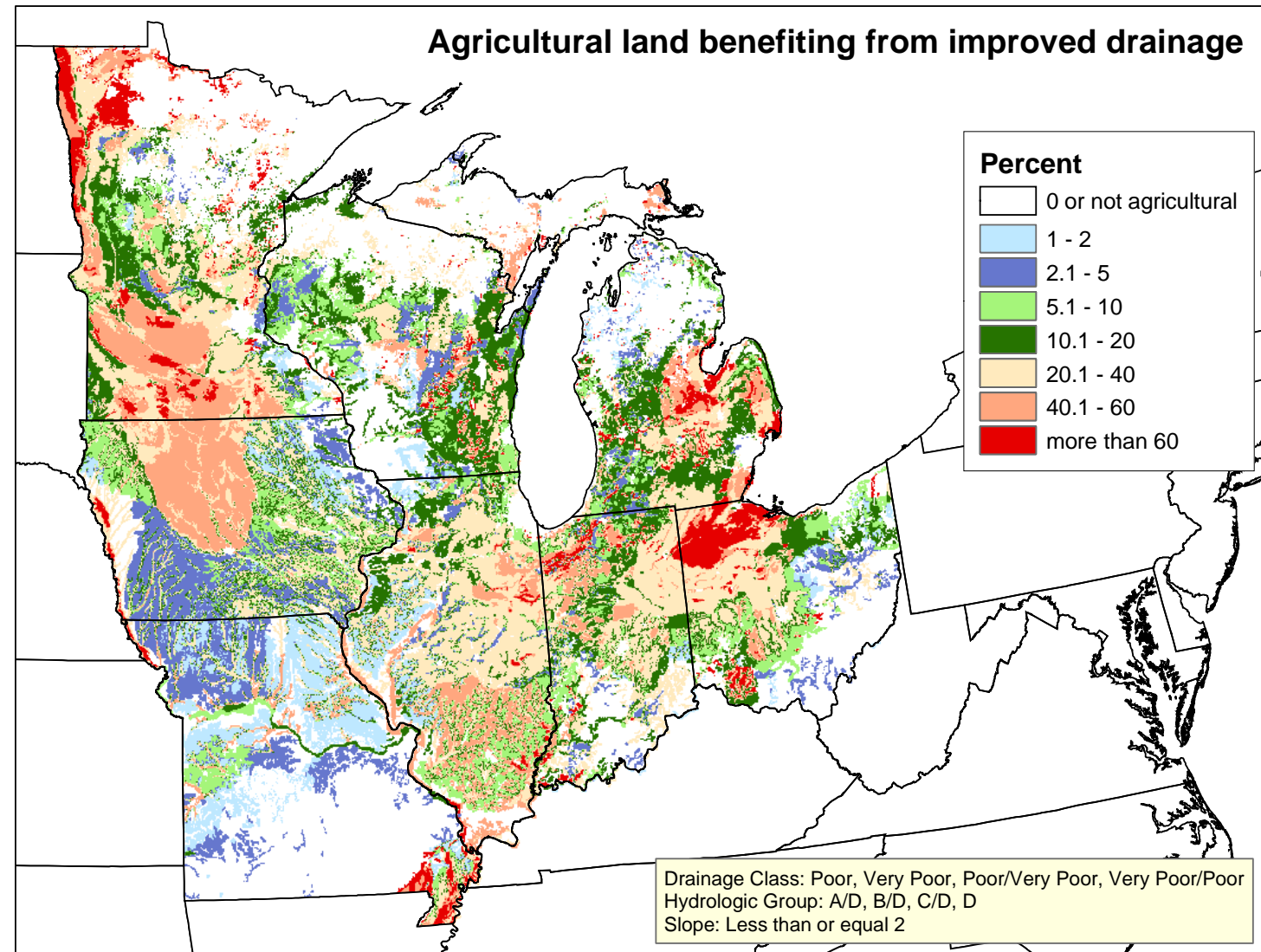
- Agricultural land use and productivity
- Roads and commerce
- Insect and disease control
- Urban land uses
- Flood control



Why Minnesota has Substantial Ag Drainage

Percent of agricultural land in the Midwest for which production can benefit from drainage, based on soil classifications.

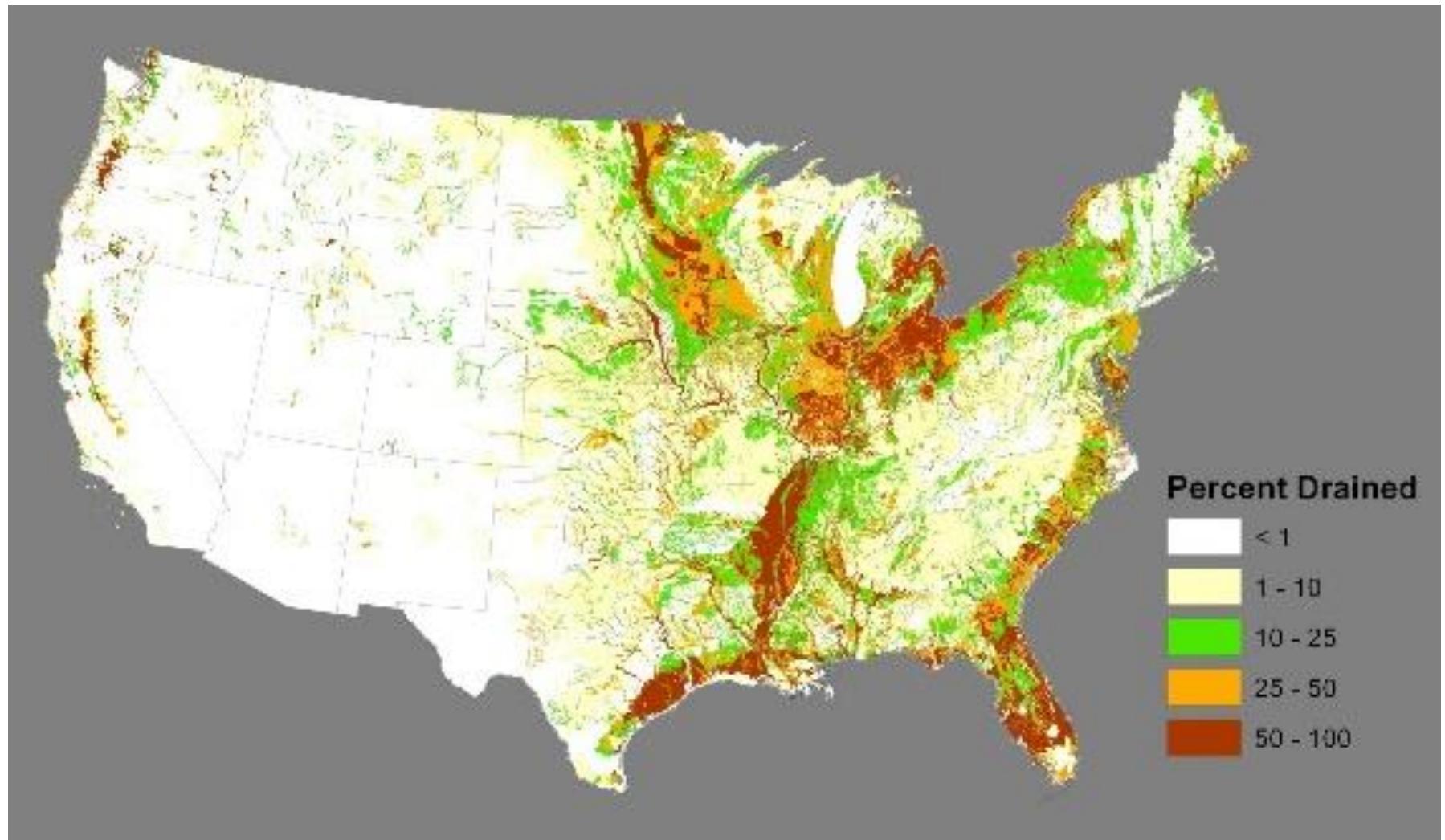
(USDA - ARS at Iowa State University, circa 2010)



Drained Land in the U.S.

Percent drained land in the U.S.

(USDA - NRCS, circa 2017)

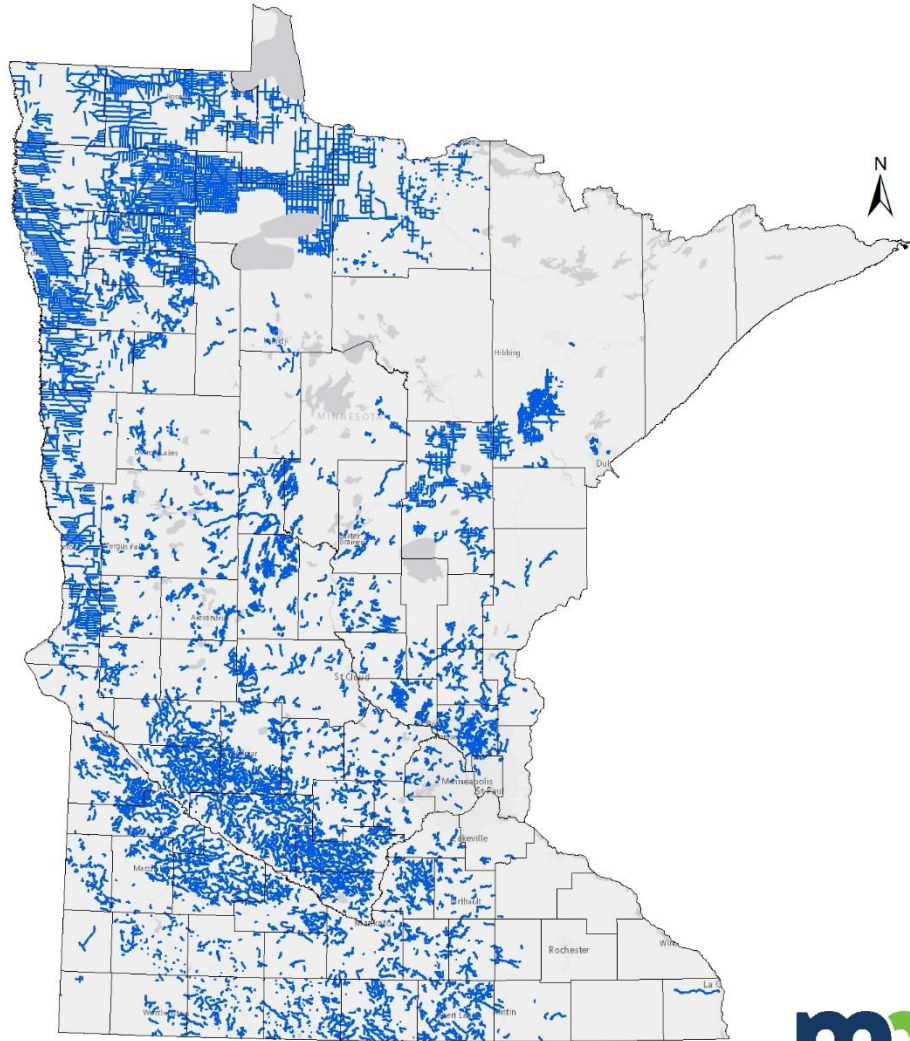


Minnesota Drainage Law – General Facts

- **1858** - Minnesota became a state and enacted its first Drainage Act
- See **Chronology of Key Statute Chapter Numbers, Titles and Major Headings**
- **Key purposes:**
 - 1) facilitate ag production via drainage involving multiple landowners and jurisdictions
 - 2) facilitate transportation and commerce
 - 3) reduce stagnant water, insects & disease to protect public health
- Current drainage law is **Minnesota Statutes, Chapter 103E Drainage**
- Chapter 103E “public” drainage systems are more accurately called “**publicly administered**” drainage systems
- Benefited property owners are co-owners and pay for the systems
- Includes both open ditches and subsurface tile mains and laterals

M.S. Chapter 103E Drainage Ditches

Chapter 103E Public Drainage Ditches



Source: Minnesota Buffer Law,
Buffer Protection Map (DNR, 2017)

19,150 miles of Chapter 103E ditches

Map does not include Chapter 103E
subsurface tile systems

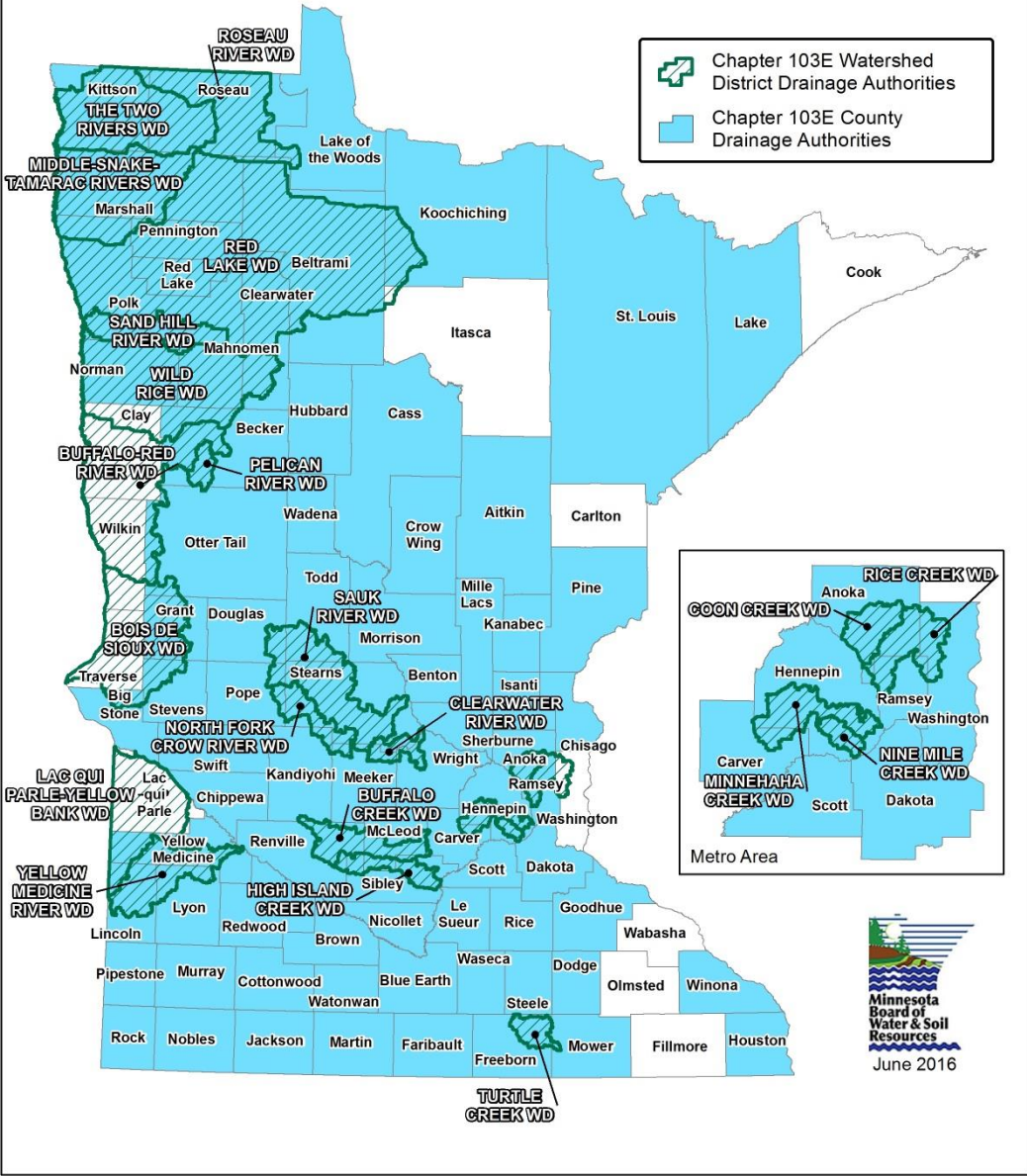
Does not include private agricultural
tile

Chapter 103E Drainage Authorities

- *Over the years included:*
 - Townships
 - Counties
 - 8-County Red River of the North Commission
 - State of Minnesota
 - District Courts
 - Watershed Districts
- **Now: County, Joint County, and Watershed District Boards**
- Drainage authorities administer “public” drainage systems in accordance with Chapter 103E Drainage Law and other applicable law
- **Drainage System Identifiers:** County Ditch, State Ditch, Judicial Ditch, Watershed District Ditch, (ditch or tile); main, lateral, branch, spur, ...

Drainage Authorities

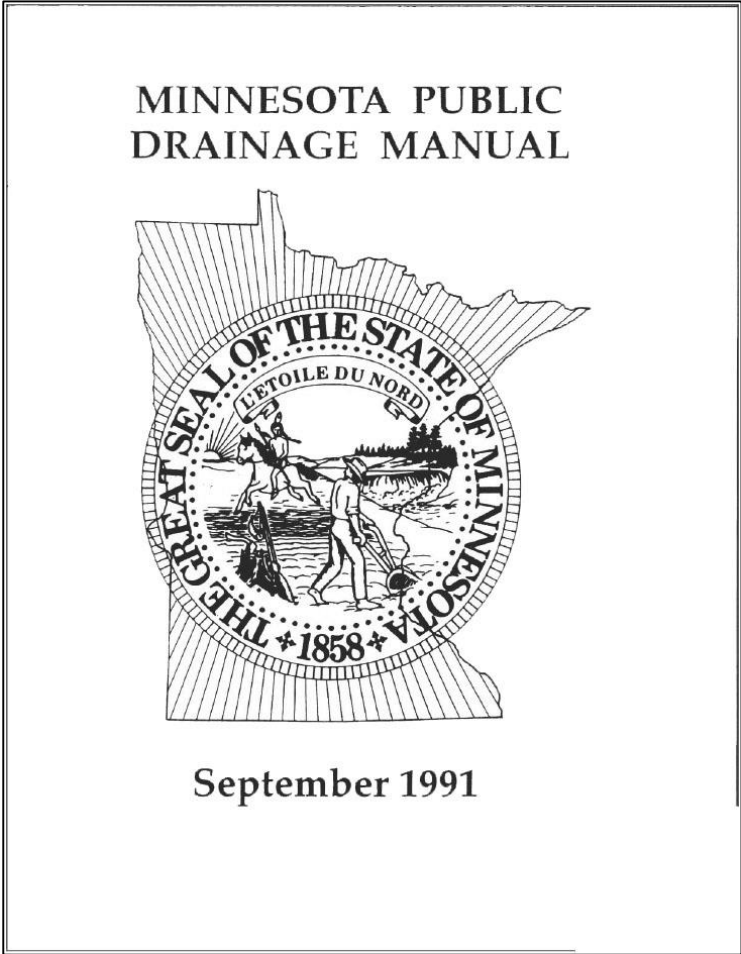
Minnesota County and Watershed District Chapter 103E Drainage Authorities



- 76 of 87 **counties** administer Chapter 103E drainage systems
- 21 of 45 **watershed districts**
- Drainage system miles per drainage authority = a few miles to many hundreds
- 6 counties have no Chapter 103E drainage systems Cook
- 5 counties have transferred all drainage systems to watershed districts Clay

Minnesota Public Drainage Manual (MPDM)

1991



2016



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Minnesota Public Drainage Manual

Main Page

Welcome to the **Minnesota Public Drainage Manual (MPDM)** website. The MPDM is designed to be user-friendly and flexible to guide users directly to the information they need, depending upon the question they need to answer or Best Management Practice (BMP) they need to design.



Enter Drainage Manual: [Table of Contents](#)

Overview



The **Minnesota Public Drainage Manual (MPDM)** is used by a variety of practitioners as a practical guide for navigating Minnesota's public drainage process. The manual was published in 1991 and has not been updated since its original publication in a three-ring binder. Since this time, there have been changes to the governing statutes, judicial decisions, and advances in technology that must be incorporated into the original guide.

In 2014, the **Minnesota Board of Water and Soil Resources (BWSR)** began the process to update the MPDM. BWSR oversaw an advisory team of diverse stakeholders and the consultant team of Houston Engineering, Inc. (HEI) and Rinke-Noonan Law Firm to author technical information and facilitate stakeholder meetings.

The project involved a series of stakeholder meetings, which involved discussions to obtain input from a variety of users to create the best possible end-product. This process helps ensure that the revised document will better serve all of those who use it daily to complete their jobs. In addition to updating the existing chapters, a new chapter **Chapter 5: Best Management Practices** provides users with a

https://drainage.pca.state.mn.us/index.php/Main_Page

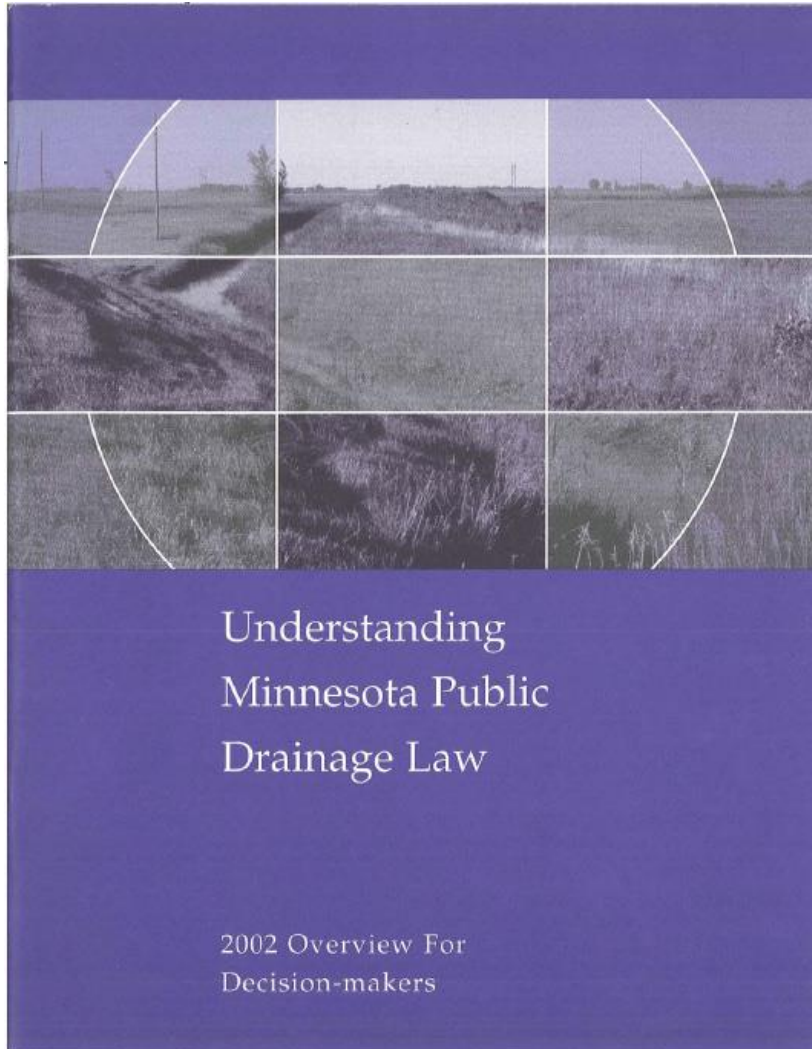
Stakeholder Drainage Work Group

Drainage Authority and Related Organizations	AMC – Association of Minnesota Counties
	MRC – Minnesota Rural Counties
	MAWD – Minnesota Association of Watershed Districts
	RRWMB – Red River Watershed Management Board
	MACATFO – Minnesota Association of County Auditors, Treasurers and Finance Officers
	MVA – Minnesota Viewers Association
	MADI – Minnesota Association of Drainage Inspectors
	MNLICA – Minnesota Land Improvement Contractors Association
	MAT – Minnesota Association of Townships
	Drainage Attorneys
	Drainage Engineers
Agricultural Organizations	MFB – Minnesota Farm Bureau
	MFU – Minnesota Farmers Union
	MAWRC – Minnesota Agricultural Water Resources Center
	MCGA – Minnesota Corn Growers Association
	MSGA – Minnesota Soybean Growers Association
Conservation and Environmental Organizations	MASWCD – Minnesota Association of Soil and Water Conservation Districts
	MCEA – Minnesota Center for Environmental Advocacy
	FWLA – Fish and Wildlife Legislative Alliance
	MCF – Minnesota Conservation Federation
	IWL – Izaak Walton League
	TNC – The Nature Conservancy
University	UMN – University of Minnesota, Water Resources Center
State Agencies	BWSR, DNR, MDA, MPCA, MnDOT
Legislature	House and Senate nonpartisan staff

- Established in 2006
- Fosters science-based mutual understanding
- Focuses on updates of Chapter 103E and related provisions
- Responds to legislative directives and other requests
- BWSR coordinates per 103B.101, Subd. 13
- 7 sets of recommendations to date, 5 adopted, 2 in process

Understanding Minnesota Public Drainage Law

2002



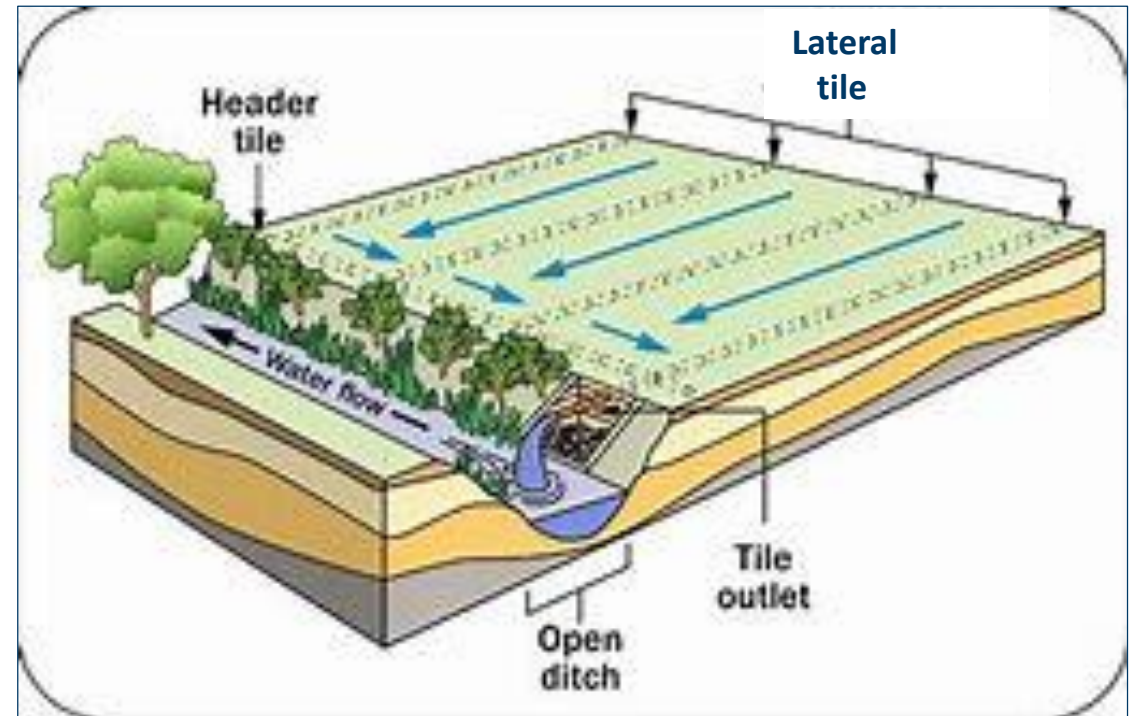
2019

Understanding Minnesota Public Drainage Law

- Updated version is a work in progress
- Provides executive summary of Chapter 103E

Private Agricultural Drainage

- Chapter 103E benefited landowners have a right to use the system as an outlet
- Landowners and municipalities not in the benefited area must petition and pay for an outlet into a Chapter 103E drainage system
- Private **pattern tile** has been implemented for many decades
- Increased production with agricultural tile has typical payback within years
- Some Watershed Districts and Water Management Organizations require permits for private drainage



Multipurpose Drainage Management (MDM)

- See BWSR MDM Fact Sheet, 9-11-18
- CWF Multipurpose Drainage Management Grant Program
- Altered hydrology
- Erosion reduction, ag drainage, water quality, flood control, habitat
- Storage – multiple scales, soil profile to impoundments

Multipurpose Drainage Management (MDM) Fact Sheet



What is Multipurpose Drainage Management?

It's the use of various practices and designs to achieve multiple water management purposes and goals, including drainage. Minnesota's comprehensive local water planning laws and programs, including *One Watershed, One Plan* (1W1P), all aim to manage water for multiple purposes. These purposes include beneficial use, flood control, water quality, drainage, and wildlife habitat (aquatic and terrestrial).

Multipurpose drainage management is vital in areas of Minnesota where there is substantial agricultural drainage, in order to achieve multipurpose water management goals, including protection and improvement of drainage systems that reduces future maintenance. Both rural and urban multipurpose water management can involve reducing runoff volume, peak flows, erosion, sedimentation, and nutrient transport, as well as increasing infiltration, evapotranspiration and wildlife habitat.

This fact sheet focuses on multipurpose agricultural drainage management.

Examples of Multipurpose Drainage Management Practices (there are more)



Side Inlet to a Ditch
(NRCS FOTG Std. 410)



Wetland Restoration (Std. 657)
or Impoundment



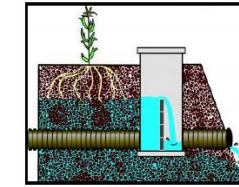
Water & Sediment Control Basin
(Std. 638)



Grassed Waterway
(Std. 412)



Saturated Buffer
(Std. 604)



Controlled Subsurface Drainage
(Std. 587 and Std. 554)

Applicable Provisions of Public Drainage Law (Minnesota Statutes Chapter 103E)

- [Sec. 103E.011, Subd. 5. Use of external sources of funding.](#)
Enables use of external funding for water quality improvements, wetland restoration, or flood control.

Drainage Management and One Watershed, One Plan

- DWG recommended revisions of Section 103E.015 **Considerations before drainage work is done.** (2014)
- Make drainage law more compatible with Local Water Planning and 1W1P – but not replace or duplicate
- Drainage authorities – administrative and fiduciary responsibility to Chapter 103E drainage system owners
- Local Water Planning Authorities – multipurpose water management responsibilities
- 1W1P – watershed based, coordinates Local Water Planning Authorities, including Drainage Authorities