**A. Overview**

The development of the *Minnesota Public Drainage Manual*, establishment of the Drainage Work Group and technological advances in computer models and design software have provided progress towards the uniformity of engineering practice. However, communication regarding regulatory expectations is still a work in progress and the need still exists to further improve the standardization of drainage engineering practice and the agency review of public drainage proceedings. Drainage engineers’ analysis and reporting content remains non-uniform throughout the state. Development of engineering and environmental data to support a drainage project can be complex and require significant financial resources. As discussed in [**Chapter 2**](http://drainage.pca.state.mn.us/index.php/Chapter_2), drainage projects are financed by the benefitted landowners and it is in the financial interest of the project proposers to ensure that the engineering services performed are what is required to properly evaluate the project and complete the required regulatory and drainage authority process. Further, where project proposers are initiating proceedings and posting bonds, it is important for the engineer and proposers to manage financial risk exposure in expending their engineering budget. This is especially critical given that there is no guarantee that their project will be deemed feasible or permissible.

Regulatory agencies, on the other hand, have a valid need for certain types of information to enable adequate review of a drainage proposal while fulfilling their statutory duties. Regulatory agencies may play multiple roles in their review of a project and there may be information needed by the agencies when exercising their regulatory authority that is not required in an engineer’s report for their role in reviewing the project under [**Minn. Stat. § 103E**](https://www.revisor.mn.gov/statutes/?id=103E) and other statutory authorities.

Likewise, drainage authorities may also have multiple roles to play in relation to a drainage project (e.g. Drainage authority, WCA LGU, road authority, environmental review RGU). Drainage authorities use engineering and environmental data provided in engineer's reports to make decisions on whether to order various actions related to the development of the project (e.g. survey, viewers, establishment, etc.). When engineer's reports on proposed drainage projects lack the required information, this affects the drainage authority’s decisions-making process.

The drainage engineer often does not know all the types of information each reviewer needs. Because there is not a standard approach to requesting information, incomplete agency advisory reports to the drainage authorities and subsequently to other interested agencies/reviewers can result.

The objective of this chapter is to provide drainage authorities, engineers, agency reviewers, and other interested parties a better understanding and guidance on engineering and environmental analyses and review requirements of the drainage code along with other applicable regulations related to public drainage projects. This chapter will give local water managers a framework for making decisions about public drainage projects.

**Specific goals of this chapter are as follows:**

* Establish a framework for surveys and engineering and environmental investigations of proposed projects on § 103E drainage systems so that information developed and reported is consistent and sufficient for review purposes;
* Standardize the agency review of engineering documents pertaining to the establishment, improvement or petitioned repair of public drainage systems in Minnesota; and
* Emphasize the critical role of the review of environmental issues in public drainage proceedings;
* Provide a framework for enhanced communication among the public and all professional disciplines associated with public drainage in Minnesota.

**1. Roles and Responsibilities of the Engineer**

The primary role of the engineer for public drainage system projects is to be the key technical advisor for the drainage authority (and by extension, the benefited landowners). This role contains many facets, requiring a wide-variety of technical expertise that is specific to the nature of the individual project, and may include:

* Technical application of drainage law;
* Surveying;
* Hydrology and hydraulics;
* Culvert, roadway, and structural design;
* Construction plan development;
* Construction management and observation;
* Erosion and sediment control design;
* Wetland delineation;
* Water quality analysis;
* Communication/liaison between drainage authority and other decision-makers and/or reviewers;
* Environmental review and permitting; and
* Soil and water conservation.



The engineer-of-record must have a basic working knowledge of each technical specialization used to create and supplement the engineer's report and have a thorough understanding of drainage law.

Few individuals have extensive expertise in all of these categories. For this reason, the engineer-of-record may be required to utilize the services of multiple individuals and/or organizations to assist him/her in preparing content within the engineer’s report including engineers, legal counsel and environmental consultants. However, the engineer-of-record must have a basic working knowledge of each technical specialization used to create and supplement the engineer’s report and have a thorough understanding of drainage law, particularly as it pertains to development of engineer’s reports.

[**Minn. Stat. § 103E**](https://www.revisor.leg.state.mn.us/statutes/?id=103E) defines specific content that is to be provided by the engineer within the engineer’s reports. Ideally, the engineer’s reports should address **all** of the deliberations and decisions required of the drainage authority under [**Minn. Stat. § 103E**](https://www.revisor.leg.state.mn.us/statutes/?id=103E). But since the engineer’s reports form the basis for many of the subsequent environmental or regulatory decisions, it is prudent to include this additional content within the engineer’s report. To enable the drainage authority to make responsible decisions on behalf of the benefitting landowners, both the drainage authority and the engineer need to have a mutual understanding of the expected duties of the engineer and the content of the engineer’s report prior to appointing the engineer.

The scope of the engineer’s analysis required of the drainage project includes environmental regulation and environmental considerations. The engineer should understand the environmental regulations pertinent to the project and should inform the drainage authority of its responsibilities in complying with these regulations. Additionally, the engineer should provide technical guidance regarding the environmental aspects required for consideration by the drainage authority under [**Minn. Stat. § 103E.015**](https://www.revisor.mn.gov/statutes/?id=103E.015). Given the nonregulatory nature of nonpoint sources of pollution in an agricultural setting, watershed plans such as Watershed Restoration and Protection Strategies (WRAPS) and Total Maximum Daily Load (TMDL) plans may incorporate conditions for the project watershed that apply to agricultural drainage. The level of detail needed by the drainage authority will vary based on the type of project, magnitude of the proposed actions, jurisdiction of regulatory programs, and geographic setting.

**2. Chapter 103E and Chapter 103D Engineer's Report Requirements**

Public drainage systems that are located totally within one county (and not within an established watershed district) are administered by the county board of commissioners. Joint county ditches are systems located in two or more counties. Judicial ditches are public drainage systems established through court order, and may be administered either by a single county or multiple counties. Administration of county, joint county, and judicial systems are regulated under [**Minn. Stat. § 103E**](https://www.revisor.leg.state.mn.us/statutes/?id=103E) (commonly referred to as the drainage code).



The contents of the engineer’s preliminary report and engineer’s final report are not substantially different.

Watershed districts are established in many areas of Minnesota and subject to [**Minn. Stat. § 103D**](https://www.revisor.mn.gov/statutes/?id=103D). Watershed districts become the drainage authority for drainage systems within their boundaries for new drainage systems when an improvement proceeding is initiated or when the current drainage authority (county board or joint county ditch authority) voluntarily transfers an existing system to the watershed district. [**Chapter 2**](http://drainage.pca.state.mn.us/index.php/B._New_Drainage_System_Projects) of this manual provides additional detail regarding determining the drainage authority.

For watershed districts that are acting as the drainage authority, [**Minn. Stat. § 103D**](https://www.revisor.leg.state.mn.us/statutes/?id=103D) directs the watershed district to follow the procedures for drainage proceedings found within [**Minn. Stat. § 103E**](https://www.revisor.leg.state.mn.us/statutes/?id=103E). Therefore, the function of the appointed drainage engineer, with the exception listed below, is identical for projects related to public drainage systems under the authority of a county or a watershed district. Consequentially, the material in this chapter is focused on the language found in [**Minn. Stat. § 103E**](https://www.revisor.leg.state.mn.us/statutes/?id=103E).

# There is one procedural difference in the administration of drainage law by watershed districts in comparison to other drainage authorities. Per [**Minn. Stat. § 103D.711**](https://www.revisor.mn.gov/statutes/?id=103D.711) and [**Minn. Stat. § 103D.745**](https://www.revisor.mn.gov/statutes/?id=103D.745), watershed districts technically only require submittal of one engineer's report and hold one hearing on the matter. By contrast, [**Minn. Stat. § 103E.245**](https://www.revisor.mn.gov/statutes/?id=103E.245) and [**Minn. Stat. § 103E.271**](https://www.revisor.mn.gov/statutes/?id=103E.271) call for an engineer's preliminary survey report (hereinafter referred to as the **"engineer's preliminary report"**) and an engineer's final detailed survey report (hereinafter referred to as the **"engineer's final report"**). The contents of the engineer’s preliminary report and engineer’s final report are not substantially different. The required information within the two reports under [**Minn. Stat. 103E**](https://www.revisor.leg.state.mn.us/statutes/?id=103E) is also consistent with the requirements of watershed law for the single engineer's report. For Chapter 3, no further distinction will be made between the two types of drainage authorities. However, to avoid confusion between the requirements of either type of drainage authority, it is recommended that [**Minn. Stat. § 103E**](https://www.revisor.leg.state.mn.us/statutes/?id=103E) be followed with regard to the content and administration of engineer's reports for any drainage project as it provides compliance with watershed law and additional clarity. Introduction to Public Drainage

## Chapter 1

Minnesota has long been recognized for its abundant and important water resources— A state that is home to more than 10,000 lakes, the headwaters of three major river basins (Mississippi River, Red River of the North, and the Great Lakes), world class fisheries, and a sizable portion of the prairie pothole region of the Midwest. Minnesotans value these water resources. Over the years, Minnesota has reinforced these values through development of public waters and wetland conservation laws, conservation programs, and comprehensive water planning and implementation at the local and state levels, in coordination with federal laws and programs.



Over the years, Minnesota has reinforced natural resources values through development of public waters and wetland conservation laws, conservation programs, and comprehensive water planning and implementation at the local and state levels.

Water has also provided challenges from the early days of statehood. Much of the glaciated prairie areas of Minnesota, as well as the areas transitional to forest lands, included wetlands and other poorly drained lands interspersed with drier uplands. The first state drainage act was passed in 1858, the same year that Minnesota became a state. The primary purposes of the act and subsequent state drainage law were to enable joint, private drainage projects across private ownership and governmental boundaries to make land more productive for agriculture, to enable and protect roadways, to protect public health from stagnant waters, and to promote commerce (King, 1980). Over the years, Minnesota drainage law has retained these purposes, while adding provisions with regard to protection of public waters and, more recently, wetlands, as well as consideration criteria for environmental and natural resource protection. Minnesota drainage law (aka “drainage code”) is currently contained in Minnesota Statutes, Chapter 103E Drainage.

State drainage law initially authorized drainage corporations of multiple landowners, with drainage plans filed at the registrar of the applicable county(ies). Townships could serve as public drainage authorities at one time. County boards of commissioners and joint county boards have served as drainage authorities since the 1870s. Over the years, drainage authorities have also included an 8-county commission in the Red River Basin, a State Drainage Commission, district courts, drainage and conservancy districts, a State Drainage Commissioner, the Division of Drainage and Waters in the Department of Conservation (precursor of the Minnesota Department of Natural Resources) and, since 1959, watershed district boards of managers (King, 1980). Current Chapter 103E drainage authorities in Minnesota are county, joint county or watershed district boards. These public drainage authorities are responsible for administering Chapter 103E drainage systems under their jurisdiction in accordance with all applicable current law. Minnesota’s various Chapter 103E drainage system identifiers reflect the different entities that have had drainage authority over the years, including: town ditches, county ditches, state ditches, judicial ditches and watershed district project ditches, all of which can involve open ditches and/or subsurface tile systems. Drainage system identifiers also include laterals or branches of drainage systems.

Minnesota drainage law is substantially prescriptive and does not include associated rules. State courts have found that drainage authorities must follow drainage law carefully. [**Chapter 2**](http://drainage.pca.state.mn.us/index.php/Chapter_2) of this manual includes numerous references to pertinent case law that helps clarify interpretation, limits, and some potential unsettled aspects of the drainage code. Drainage authorities and their key advisors (public and private attorneys, county and private engineers, county auditors, viewers and inspectors) are responsible to administer Chapter 103E drainage systems in accordance with all applicable law. This manual cannot change the law. Chapter 103E drainage law has been updated several times in recent years by the Legislature and Governor-based on consensus recommendations of the stakeholder Drainage Work Group facilitated by BWSR in accordance with [**Minnesota Statutes Section 103B.101, Subdivision 13**](https://www.revisor.mn.gov/statutes/?id=103B.101).

The Minnesota Public Drainage Manual (MPDM) was first published in September 1991, with financial assistance through an Environmental Protection Agency (EPA) Section 319 grant and had not been updated until the 2016 version. The 1991 MPDM was prepared with limited graphics for use in a hard copy 3-ring binder and was substantial in size. In 1998, the Minnesota Association of Counties published a condensed stand-alone document that summarized key information for drainage authority decision makers entitled “Understanding Minnesota Public Drainage Law” that was subsequently updated in 2002. These two documents had been key resources about Minnesota drainage law since publication.

**The following sections highlight summaries of content that is contained within the MPDM.**

## Chapter 2

### [I. Considerations Before Initiating A Project or Repair](http://drainage.pca.state.mn.us/index.php/I._Considerations_Before_Initiating_A_Project_or_Repair)

#### Summary

Project planning with particular emphasis on environmental resources considerations is necessary in order to shepherd a drainage project or repair to final success. Early assessment and forethought to wetland and natural resources, regulations and coordination with applicable units of government direct the drainage project development or repair process. Several environmental laws, rules, regulations, and ordinances impact the drainage project or repair planning process, including:

* Food Security Act of 1985 and Amendments (“Swampbuster”);
* Clean Water Act;
* Minnesota Environmental Policy Act;
* Minnesota Public Waters and Public Waters Wetlands;
* Minnesota Wetland Conservation Act;
* Shoreland Management and Floodplain Management Standards;
* 2015 Buffer Law;
* State-Approved and Locally Adopted Water Management Plans; and
* Watershed Restoration and Protection Strategies (WRAPS). ([**Chapter 2, Section I, B**](http://drainage.pca.state.mn.us/index.php/B._Other_Environmental_Laws%2C_Rules%2C_Regulations%2C_and_Ordinances_Affecting_Drainage))

Prior to establishing a drainage project or repair, the drainage authority must consider environmental, land use, and multipurpose water management criteria (as directed by [**Minn. Stat. 103E.015**](https://www.revisor.mn.gov/statutes/?id=103E.015)). This requires the drainage authority to investigate whether external sources of funding are available for purposes of including wetland preservation or restoration, creation of water quality improvements, flood control, and alternative measures identified in applicable state-approved and locally adopted water management plans. ([**Chapter 2, Section I, C**](http://drainage.pca.state.mn.us/index.php/C._Consideration_of_Income_Generating_Alternatives))

In planning a drainage project or repair, the drainage authority may encounter land owned in fee or subject to a variety of conservation easements managed by the U.S. Fish and Wildlife Service. If the United States acquires property through which a public drainage system exists, the United States acquires that property subject to the drainage system operation in the same manner as the original owner. However, new drainage projects proposing to cross property owned in fee by the United States or subject to a U.S. Fish and Wildlife Service conservation easement may not proceed without consent from the United States. ([**Chapter 2, Section I, D**](http://drainage.pca.state.mn.us/index.php/D._Other_Laws_Impacting_Drainage_Projects_and_Repair))

### [II. General Petition Requirements](http://drainage.pca.state.mn.us/index.php/II._General_Petition_Requirements)

#### Summary

Drainage projects represent the combined use of governmental police power authorized by the legislature: taxation (special assessments) and the power of eminent domain either to protect public health, promote the public welfare, or to reclaim waste lands and make them suitable for agricultural uses. Therefore, the proceedings authorized by the legislature in statute must be strictly complied with in order for the drainage authority to establish and maintain jurisdiction over the proceedings. ([**Chapter 2, Section II, A**](http://drainage.pca.state.mn.us/index.php/A._Jurisdiction))

The legal concept of jurisdiction is built on having the statutorily authorized body conduct the proceedings and ultimately, make the decision using the process required by the legislature in [**Minn. Stat. 103E**](https://www.revisor.mn.gov/statutes/?id=103E). It is necessary to determine the type of drainage authority that has jurisdiction to receive a petition for a project, repair, or other proceeding. The type of petition being filed and location of the public drainage system identified in the petition will determine the proper drainage authority, which may be one of several different governing entities:

* County Drainage Authority ([**Chapter 2, Section II, C.1**](http://drainage.pca.state.mn.us/index.php/C._Determining_the_Correct_Drainage_Authority));
* Joint County Drainage Authority ([**Chapter 2, Section II, C.2**](http://drainage.pca.state.mn.us/index.php/C._Determining_the_Correct_Drainage_Authority));
* Watershed District Drainage Authority ([**Chapter 2, Section II, C.3**](http://drainage.pca.state.mn.us/index.php/C._Determining_the_Correct_Drainage_Authority)); or
* Water Management Authority ([**Chapter 2, Section II, B.3.(iii)**](http://drainage.pca.state.mn.us/index.php/B._General_%28Chapter_2.II%29)).

Drainage projects, repairs, and other types of procedures related to management of drainage systems are typically initiated by a petition or by action of the responsible governing drainage authority. [**Minn. Stat. 103E**](https://www.revisor.mn.gov/statutes/?id=103E) defines “proceeding” to mean a procedure under Chapter 103E for or related to drainage that begins with filing a petition and ends by dismissal or establishment of a drainage project. The term “drainage project” means a new drainage system, an improvement of a drainage system, an improvement of an outlet, or a lateral. For this reason, drainage projects are initiated by a petition. Repairs may also be initiated by a petition, but are technically not drainage proceedings because repair procedures do not end by establishing a drainage project.

Preparation of a petition for filing with the drainage authority requires careful consideration of the following concepts:

* Determining which governing entity is the correct drainage authority to receive the petition ([**Chapter 2, Section II, C**](http://drainage.pca.state.mn.us/index.php/C._Determining_the_Correct_Drainage_Authority));
* Adequately describing the land crossed or affected by the proposed drainage project ([**Chapter 2, Section II, D.2**](http://drainage.pca.state.mn.us/index.php/D._Requirements_of_a_Petition_Adequate_to_Confer_Jurisdiction));
* Correctly counting signatures to determine if the statutorily mandated number of petitioners have signed the petition ([**Chapter 2, Section II, D.3**](http://drainage.pca.state.mn.us/index.php/D._Requirements_of_a_Petition_Adequate_to_Confer_Jurisdiction))
* Public benefit, use, utility, and promotion of public health ([**Chapter 2, Section II, D.4**](http://drainage.pca.state.mn.us/index.php/D._Requirements_of_a_Petition_Adequate_to_Confer_Jurisdiction));
* Acknowledgement of petitioners obligation to pay costs of dismissed proceedings ([**Chapter 2, Section II, D.5**](http://drainage.pca.state.mn.us/index.php/D._Requirements_of_a_Petition_Adequate_to_Confer_Jurisdiction))
* Duration of jurisdiction held by the drainage authority over a drainage system after project is established ([**Chapter 2, Section II, F**](http://drainage.pca.state.mn.us/index.php/F._Duration_of_Jurisdiction));
* How to construct outlets out of state and to authorize outlets from out of state into Minnesota ([**Chapter 2, Section II, G**](http://drainage.pca.state.mn.us/index.php/G._Outlets_Out-of-State_and_Outlets_into_Minnesota));
* Proper filling of a petition ([**Chapter 2, Section II, H**](http://drainage.pca.state.mn.us/index.php/H._Proper_Filing_of_a_Petition)); and
* Bond requirements ([**Chapter 2, Section II, I**](http://drainage.pca.state.mn.us/index.php/I._Bond_Must_Accompany_the_Petition)).

Petitions must be signed by a requisite number of owners or the requisite percent of property area the drainage project passes over or affects. Therefore, petitions must adequately describe the 40-acre tracts or governmental lots that the drainage passes over, or by property owners that equate a requisite percentage of the total property area affected by the petition ([**Minn. Stat. § 103E.202, subd. 2 (2015)**](https://www.revisor.mn.gov/statutes/?id=103E.202)) so that the signatures can be properly counted. ([**Chapter 2, Section II, D. 2**](http://drainage.pca.state.mn.us/index.php/D._Requirements_of_a_Petition_Adequate_to_Confer_Jurisdiction)) The number of signatures required on a petition depends on the type of drainage project or proceeding petitioned ([**Chapter 2, Section II, D.3**](http://drainage.pca.state.mn.us/index.php/D._Requirements_of_a_Petition_Adequate_to_Confer_Jurisdiction)).

Petitions for drainage projects must always state that the proposed project will benefit the public, will be useful to the public, or be of public utility, and will promote the public health. See [**Chapter 2, Section II, D.4**](http://drainage.pca.state.mn.us/index.php/D._Requirements_of_a_Petition_Adequate_to_Confer_Jurisdiction) for statutory references and extended discussion.

In addition, the petitioners must acknowledge their obligation to pay all costs of dismissed proceedings by affirmatively and expressly stating the obligation in the petition. ([**Chapter 2, Section II, D.5**](http://drainage.pca.state.mn.us/index.php/D._Requirements_of_a_Petition_Adequate_to_Confer_Jurisdiction))

By signing a petition for a drainage project or proceeding, a petitioner becomes liable for all costs incurred if the drainage project is not established or the proceeding is dismissed (e.g., engineering fees, attorney’s fees, county auditor’s fees). Once a petition has been filed, no petitioner may withdraw from it unless written consent of all other petitioners is filed with the auditor. ([**Chapter 2, Section II, E**](http://drainage.pca.state.mn.us/index.php/E._Petitioner_Liability))

The drainage authority’s jurisdiction over a project is valid only to the extent of the work that is called for in the petition. Once a drainage system is established, the drainage authority does not retain jurisdiction over the system in perpetuity except for those proceedings specifically authorized in [**Minn. Stat. 103E**](https://www.revisor.mn.gov/statutes/?id=103E). ([**Chapter 2, Section II, F**](http://drainage.pca.state.mn.us/index.php/F._Duration_of_Jurisdiction))

Limited authority is granted to the drainage authority to join with the board or tribunal of an adjoining state or Canada that has jurisdiction to plan and construct drainage systems when such cooperation is needed to establish a project within the boundaries of Minnesota. Similarly, other states desiring to outlet drainage into a Minnesota public drainage system must seek express authority from the appropriate drainage authority. ([**Chapter 2, Section II, G**](http://drainage.pca.state.mn.us/index.php/G._Outlets_Out-of-State_and_Outlets_into_Minnesota))

Once a petition is prepared, the petition must be filed with the proper drainage authority in order to establish jurisdiction over the proceedings. The appropriate drainage authority to receive a petition depends on whether the proposed or existing drainage system is within a watershed district, one county, or in two or more counties. ([**Chapter 2, Section II, H**](http://drainage.pca.state.mn.us/index.php/H._Proper_Filing_of_a_Petition))

Some projects require one or more of the petitioners to file a bond payable to the drainage authority where the petition is filed in order to assure the drainage authority that petitioners will pay the costs incurred for a proposed project that is either dismissed or is not constructed. The bond must have adequate surety and be approved by the drainage authority attorney. As the proposed drainage project proceeds, the costs incurred in furtherance of the project may not exceed the amount of the petitioners’ bond and the drainage authority may not pay a claim for expenses greater than the amount of the bond unless an additional bond is filed. The types of projects that require a bond are summarized in [**Appendix 2A**](http://drainage.pca.state.mn.us/index.php/Appendix_2A%3A_Legal_Requirements_for_Each_Type_of_Petition) and are further described in [**Chapter 2, Section III, I**](http://drainage.pca.state.mn.us/index.php/I._Bond_Must_Accompany_the_Petition).

### [III. Types of Proceedings](http://drainage.pca.state.mn.us/index.php/III._Types_of_Proceedings)

#### Summary

Drainage proceedings authorized by [**Minn. Stat. ch. 103E**](https://www.revisor.mn.gov/statutes/?id=103E) include a variety of procedures for or related to drainage. Certain project proceedings begin with filing a petition and end with dismissal or establishment of a drainage project. Drainage repairs, on the other hand, may begin with a petition or may be initiated by the drainage authority obligated to maintain and repair that drainage system without a petition. Other proceedings relate to management of the drainage system records or the drainage system itself after it is established. Each proceeding requires the drainage authority to strictly comply with the process authorized in [**Minn. Stat. ch. 103E**](https://www.revisor.mn.gov/statutes/?id=103E). Drainage projects require varying elements to be part of the petition, petition signature requirements, filing processes, public hearing processes, and essential findings to be made by the drainage authority before the project may be established. Repairs initiated by the drainage authority and other proceedings related to the management of drainage systems must also follow the processes laid out in [**Minn. Stat. ch. 103E**](https://www.revisor.mn.gov/statutes/?id=103E). All of the proceedings authorized by Minn. Stat. ch. 103E are discussed in detail in [**(Chapter 2, Section III)**:](http://drainage.pca.state.mn.us/index.php/III._Types_of_Proceedings)

• New Drainage System Projects [**(Chapter 2, Section III, B)**](http://drainage.pca.state.mn.us/index.php/B._New_Drainage_System_Projects);
• Improvement of Drainage System [**(Chapter 2, Section III, C)**](http://drainage.pca.state.mn.us/index.php/C._Improvement_of_Drainage_System);
• Improvement of Outlets [**(Chapter 2, Section III, D)**](http://drainage.pca.state.mn.us/index.php/D._Improvement_of_Outlets);
• Laterals [**(Chapter 2, Section III, E)**](http://drainage.pca.state.mn.us/index.php/E._Laterals);
• Impounding, Rerouting, and Diverting Drainage System Waters [**(Chapter 2, Section III, F)**](http://drainage.pca.state.mn.us/index.php/F._Impounding%2C_Rerouting%2C_and_Diverting_Drainage_System_Waters);
• Drainage System Repairs [**(Chapter 2, Section III, G)**](http://drainage.pca.state.mn.us/index.php/G._Drainage_System_Repairs);
• Reestablishment of Drainage System Records [**(Chapter 2, Section III, H)**](http://drainage.pca.state.mn.us/index.php/H._Reestablishment_of_Drainage_System_Records);
• Redetermination of Benefits and Damages [**(Chapter 2, Section III, I)**](http://drainage.pca.state.mn.us/index.php/I._Redetermination_of_Benefits_and_Damages);
• Use of the Drainage System as Outlet [**(Chapter 2, Section III, J)**](http://drainage.pca.state.mn.us/index.php/J._Use_of_the_Drainage_System_as_Outlet);
• Consolidation or Division of Drainage Systems [**(Chapter 2, Section III, K)**](http://drainage.pca.state.mn.us/index.php/K._Consolidation_or_Division_of_Drainage_Systems);
• Removal of Property from a Drainage System [**(Chapter 2, Section III, L)**](http://drainage.pca.state.mn.us/index.php/L._Removal_of_Property_from_a_Drainage_System);
• Partial Abandonment of Drainage System [**(Chapter 2, Section III, M)**](http://drainage.pca.state.mn.us/index.php/M._Partial_Abandonment_of_Drainage_System); and
• Abandonment of Drainage System [**(Chapter 2, Section III, N)**](http://drainage.pca.state.mn.us/index.php/N._Abandonment_of_Drainage_System).

### [IV. The Preliminary Hearing](http://drainage.pca.state.mn.us/index.php/IV._The_Preliminary_Hearing)

#### Summary

Preliminary hearings are required for new drainage systems projects; improvements of a drainage system; improvements of an outlet; laterals; and impounding, rerouting, and diverting drainage system waters. The preliminary hearing takes place after the preliminary survey report has been filed and the drainage authority has noticed the hearing. This process tests the project’s feasibility, specifically in regards to jurisdictional defects, project expense, potential for significant environmental impacts, and compatibility with procedural or statutory requirements. Informal meetings prior to the preliminary hearing may be held to discuss potential controversial issues, provide engineer guidance, further discuss potential use of external funding for wetland preservation or restoration, creation of water quality improvements, flood control and alternative measures identified in applicable state-approved and locally adopted water management plans. ([**Chapter 2, Section IV**](http://drainage.pca.state.mn.us/index.php/IV._The_Preliminary_Hearing))

After a petition and bond are filed, the drainage authority’s attorney has 30 days to review the petition and bond to determine if it meets the requirements of the proceedings in which it is intended or if it needs to be referred back to the petitioners for correction. ([**Chapter 2, Section IV, B**](http://drainage.pca.state.mn.us/index.php/B._Review_and_Approval_of_Petition_by_the_County_Attorney)).

After the drainage authority’s attorney has determined the petition and bond are valid, the drainage authority has 30 days to appoint a project engineer to conduct a preliminary survey. The engineer must file an oath to faithfully perform the required duties to the best possible manner and a bond with the auditor. The engineer is required to track expenses by filing an expense report every two weeks until the construction contract is awarded. ([**Chapter 2, Section IV, C.3**](http://drainage.pca.state.mn.us/index.php/C._Appointment_of_the_Engineer))

[**Minn. Stat. § 103E.245**](https://www.revisor.mn.gov/statutes/?id=103E.245) obligates the engineer to conduct five main tasks in preparing the preliminary survey which are outlined in [**Chapter 2, Section IV, C.2**](http://drainage.pca.state.mn.us/index.php/C._Appointment_of_the_Engineer). The scope of these tasks is further detailed in [**Chapter 3**](http://drainage.pca.state.mn.us/index.php/Chapter_3). The preliminary survey and report will be considered at the preliminary hearing to determine whether there is sufficient basis to proceed with more elaborate construction plans. One of the most critical components of the preliminary survey is to assess the environmental impacts of the project; thus, the engineer will typically make early contact with regulatory officials who likely have an interest in the project. The engineer’s preliminary survey report must provide sufficient detail to inform the drainage authority and the public on issues related to feasibility and on whether the proposed project complies with the environmental, land use, and multipurpose water management criteria in [**Minn. Stat. § 103E.015, subd. 1 (2015)**](https://www.revisor.mn.gov/statutes/?id=103E.015). Further elements required of the engineer’s preliminary survey report are outlined and discussed in [**Chapter 2, Section IV, D**](http://drainage.pca.state.mn.us/index.php/D._Engineer%27s_Preliminary_Survey_and_Preliminary_Survey_Report).

After the engineer files the preliminary survey report, the auditor or watershed district secretary must send a copy to the Director of Ecological and Water Resources at the Minnesota Department of Natural Resources (DNR). Within statutory time constraints, the DNR is required to review the engineer’s preliminary survey report and prepare a preliminary advisory report to the drainage authority stating whether any additional investigation and evaluation should be done relating to public waters that may be affected or the environmental, land use, and multipurpose water management criteria in [**Minn. Stat. § 103E.015, subd. 1**](https://www.revisor.mn.gov/statutes/?id=103E.015) and citing specific portions of the preliminary survey report the Commissioner deems inadequate. The report becomes part of the record created during the preliminary hearing. ([**Chapter 2, Section IV, E**](http://drainage.pca.state.mn.us/index.php/E._Commissioner%27s_Preliminary_Advisory_Report))

When the engineer files the engineer’s preliminary survey report, the auditor or watershed district secretary notifies the drainage authority and obtains an “order” for hearing that sets the hearing no later than 30 days after the date of the order. Preliminary hearing procedures are discussed in detail in [**Chapter 2, Section IV, F**](http://drainage.pca.state.mn.us/index.php/F._The_Preliminary_Hearing) through [**Chapter 2, Section IV, H**](http://drainage.pca.state.mn.us/index.php/H._Adoption_of_Findings_and_Order).

The preliminary hearing’s purpose is to ascertain the presence of jurisdiction and viability of the project before large costs and expenses have been incurred. It may redefine the location and scope of the proposed project, thus potentially changing the cost, benefits, and environmental impacts. It also offers a convenient stopping point where a doomed project must be terminated before costs get out of hand. After the preliminary hearing, the drainage authority must dismiss a petition if it finds any of the following:

1. The proposed project is not feasible;
2. The adverse environmental impact is greater than the public benefit and utility;
3. The proposed project is not of public benefit or utility; or
4. The outlet is not adequate. ([**Chapter 2, Section IV, G**](http://drainage.pca.state.mn.us/index.php/G._Reasons_for_Dismissal)).

To approve the engineer’s preliminary survey and authorize the engineer to prepare with a detailed survey report, the drainage authority must adopt four essential findings:

1. The proposed drainage project outlined in the petition, or modified and recommended by the engineer, is feasible;
2. There is necessity for the proposed drainage project;
3. The proposed drainage project will be of public benefit and promote the public health, after considering the environmental, land use, and multipurpose water management criteria ([**Minn. Stat. § 103E.015, subd. 1**](https://www.revisor.mn.gov/statutes/?id=103E.015)); and
4. The outlet is adequate.

In addition to directing the engineer to proceed with conducting a detailed survey report, the preliminary order also appoints three disinterested persons as viewers for the purposes of determining benefits and damages of the proposed project. ([**Chapter 2, Section IV, H**](http://drainage.pca.state.mn.us/index.php/H._Adoption_of_Findings_and_Order))

The preliminary order may not be appealed. ([**Chapter 2, Section IV, I**](http://drainage.pca.state.mn.us/index.php/I._Appeals_of_the_Preliminary_Order))

### [V. The Final Hearing](http://drainage.pca.state.mn.us/index.php/V._The_Final_Hearing)

#### Summary

An engineer’s detailed survey report ([**Chapter 2, Section V, B**](http://drainage.pca.state.mn.us/index.php/B._Engineer%27s_Detailed_Survey_Report)), the viewers’ report ([**Chapter 4**](http://drainage.pca.state.mn.us/index.php/Chapter_4)) and DNR Commissioner’s final advisory report ([**Chapter 2, Section V, C**](http://drainage.pca.state.mn.us/index.php/C._Commissioner%27s_Final_Advisory_Report)) follow the drainage authority’s order calling for a detailed survey with appointed viewers. These reports become the focus of the final hearing.

The engineer must survey the lines of the proposed drainage project, as described in the preliminary hearing order, and survey and examine the affected property. From the survey, the drainage authority will determine which property must be taken and regulators may determine what proposed waters and wetlands will be impacted. The content of the engineer’s report is specified in some detail in [**Minn. Stat. § 103E.285**](https://www.revisor.mn.gov/statutes/?id=103E.285) and discussed further in [**Chapter 2, Section V, B**](http://drainage.pca.state.mn.us/index.php/B._Engineer%27s_Detailed_Survey_Report).

Once the viewers’ and engineer’s reports are completed, a final hearing must be scheduled promptly for the board to weigh the benefits and costs of the proposed system. The actual hearing must take place not before 25 and not later than 50 days from the date of notice. The final hearing notice ([**Chapter 2, Section V, D.1**](http://drainage.pca.state.mn.us/index.php/D._The_Final_Hearing)) and final hearing procedures ([**Chapter 2, Section V, D.2**](http://drainage.pca.state.mn.us/index.php/D._The_Final_Hearing)) are discussed in more detail in referenced sections.

At the hearing, the board will consider the petition for the drainage system, the engineer’s report, the viewers’ report, the DNR Commissioner’s final advisory report, and any testimony presented on behalf of interested parties. Changes to improve the engineer’s detailed survey report and to make the viewers’ report more equitable may be ordered. The final hearing may be recessed as many times as necessary to arrive at reports that are deemed complete and correct, and with benefits and damages properly determined. ([**Chapter 2, Section V, E**](http://drainage.pca.state.mn.us/index.php/E._Making_Changes%3A_Engineer%27s_Detailed_Survey_Report_and_Viewer%27s_Report))

The drainage authority must dismiss the proceedings if it finds any of the following:

1. The benefits or the proposed project are less than the total cost including damages awarded;
2. The proposed drainage project will not be of public benefit and utility; or
3. The proposed drainage project is not practicable after considering the environmental, land use, and multipurpose water management criteria in [**Minn. Stat. § 103E.015, subd. 1**](https://www.revisor.mn.gov/statutes/?id=103E.015).

([**Chapter 2, Section V, F.1**](http://drainage.pca.state.mn.us/index.php/F._Adoption_of_Final_Order))

To establish the drainage project, the drainage authority must adopt six essential findings:

1. That the detailed survey report and viewers’ report have been made and other proceedings have been completed under [**Minn. Stat. 103E**](https://www.revisor.mn.gov/statutes/?id=103E);
2. That the reports made or amended are complete and correct;
3. That the damages and benefits have been properly determined;
4. That the estimated benefits are greater than the total estimated costs, including damages;
5. That the proposed drainage project will be of public utility and benefit, and will promote the public health; and
6. That the proposed drainage project is practicable.

([**Chapter 2, Section V., F.2**](http://drainage.pca.state.mn.us/index.php/F._Adoption_of_Final_Order))

The final order should include detailed findings as set forth in the facts elicited at the final hearing. Other features to be included in the final order are further discussed in [**Chapter 2, Section VIII**](http://drainage.pca.state.mn.us/index.php/VIII._Funding%2C_Collection%2C_and_Payment_of_Drainage_System_Costs), under “Funding, Collection, and Payment of Drainage System Costs.” See [**Section V, F.1**](http://drainage.pca.state.mn.us/index.php/F._Adoption_of_Final_Order) and [**Section V, F.2**](http://drainage.pca.state.mn.us/index.php/F._Adoption_of_Final_Order), respectively for more information on dismissal of proceedings and establishment of the proposed drainage project.

### [VI. Construction of Drainage Project](http://drainage.pca.state.mn.us/index.php/VI._Construction_of_Drainage_Project)

#### Summary

After a drainage project has been ordered, the petitioner’s representative should ensure the order is date-stamped as received and filed with the county auditor or secretary of the watershed district. This starts the 30-day appeal period that must take place prior to a contract for the drainage project to be let. Appeals are discussed in [**Section VI, A**](http://drainage.pca.state.mn.us/index.php/A._General_%28Section_2._VI%29).

Awarding the construction contract is different depending on whether the construction is for establishment of a new drainage project or for repair of an existing drainage system. Whether competitive bidding must be used depends upon the estimated cost of the contract. Other procedures for awarding the construction contract, including how the contract may be awarded (“bidding”) and the procedure for rectifying bidding if a contract is not awarded due to bids or costs, are provided in [**Section VI, B**](http://drainage.pca.state.mn.us/index.php/B._Procedure_for_Awarding_the_Construction_Contract).

The construction contract specifications are typically drafted by the project engineer, but prudence suggests that before the contracts are approved, the project attorney and the engineer discuss the objectives of the construction contract and how those objectives will be implemented. Both the contract and bond must include the required provisions from Minn. Stat. 103E and [**Minn. Stat. § 574.26**](https://www.revisor.mn.gov/statutes/?id=574.26) (bonding for public works). The contract adopts the plans and specifications as prepared by the engineer. During and after the construction of the project, the project engineer is to inspect the work being completed and demand it be done according with the plan, specifications, and contract for construction. Contract terms and contract changes during construction, the guaranty of tile work, contractor’s default, inspection of drainage construction and partial payments, and extension of time on the contract are further described in [**Section VI, C**](http://drainage.pca.state.mn.us/index.php/C._The_Construction_Contract_and_Bond).

When the contract is complete, the engineer makes a report to the drainage authority showing the contract price, amount paid on partial payment certificates, unpaid balance, and a summary of the work completed under the contract. Upon receipt of the engineer’s report, the auditor or secretary of the watershed district is required to set a time and place for hearing on the report. The hearing gives all affected parties an opportunity to state their objections or complaints to any portion of the construction process, such as damages to their land by the contractor not compensated for in the final order, failure to install culverts or inlet tile, etc. The final hearing proceedings are followed by a final acceptance order ([**Section VI, D**](http://drainage.pca.state.mn.us/index.php/D._Hearing_for_Final_Acceptance_of_Project)), which is concluded by the engineer’s final, as-constructed survey that shows the drainage project as actually constructed on the original detailed survey ([**Section VI. E**](http://drainage.pca.state.mn.us/index.php/E._Engineer%27s_As-Constructed_Survey_and_Discharge_of_Duties)).

### [VII. Appeals and Other Litigation](http://drainage.pca.state.mn.us/index.php/VII._Appeals_and_Other_Litigation)

#### Summary

A drainage authority’s actions under the drainage code are administrative. A drainage authority processing a petition for a proposed drainage project or repair acts in a quasi-judicial manner – the drainage authority receives evidence, draws conclusions, and makes orders. Typically, judicial review of quasi-judicial decisions made by an administrative body, like drainage authorities, is invoked by writ of certiorari to the court of appeals. However, the legislature provided for appeals to the district court from a final order of the drainage authority for any party adversely affected by the establishment of a drainage ditch or assessment relating to a drainage proceeding.

The drainage code bifurcates the appeal process by separating appeals relating to the establishment of a project and appeals relating to the benefits and damages resulting from the project. Establishment appeals are tried before the court, while benefits and damages appeals are tried to a jury. The filing of an establishment appeal stays any proceedings in a benefits and damages appeal until the initial establishment question is resolved.

The following types of appeals for judicial review are outlined within [**Section VII**](http://drainage.pca.state.mn.us/index.php/VII._Appeals_and_Other_Litigation):

* Appeals of orders establishing a drainage system ([**Section VII, A.1**](http://drainage.pca.state.mn.us/index.php/A._Drainage_Code_Appeals));
* Appeals of the benefits assessed and damages awarded ([**Section VII, A.2**](http://drainage.pca.state.mn.us/index.php/A._Drainage_Code_Appeals));
* Tax assessment appeals ([**Section VII, B**](http://drainage.pca.state.mn.us/index.php/B._Tax_Assessment_Appeals));
* Extraordinary remedies such as injunctions, mandamus, and writs of certiorari ([**Section VII, C**](http://drainage.pca.state.mn.us/index.php/C._Extraordinary_Remedies)); and
* Crimes related to drainage systems and penalties ([**Section VII, D**](http://drainage.pca.state.mn.us/index.php/D._Crimes_Related_to_Drainage_Systems_and_Penalties)).

### [VIII. Funding, Collection, and Payment of Drainage System Costs](http://drainage.pca.state.mn.us/index.php/VIII._Funding%2C_Collection%2C_and_Payment_of_Drainage_System_Costs)

#### Summary

The drainage authority is responsible for establishing a drainage system fund from which the payment of all costs and expenses in connection with a drainage system are made. Funding, collection, and payment for the construction of a public drainage project begins with the final order. A properly drafted final order is crucial as it not only concludes project findings, but defines and directs actions into the future after the project has been constructed.

A statement showing the total cost of the drainage project with the estimated cost of all items required to complete work must be issued by the auditor or watershed district secretary after the construction contract has been awarded. The cost is then prorated to each tract of property affected in direct proportion to the benefits awarded. The cost to each property is the amount of liability for the property for the drainage project. The auditor uses this information to create the tabular lien statement, the purpose of which is to reflect the cost of the drainage system that each tract will bear. ([**Section VIII, A.1**](http://drainage.pca.state.mn.us/index.php/A._Drainage_Liens)) More information on drainage liens is provided in [**Section VIII, A**](http://drainage.pca.state.mn.us/index.php/A._Drainage_Liens).

In order to defray the cost of establishing and constructing a drainage system and to generate capital for disbursement from a drainage system fund until monies from liens and assessments are received, the county board may authorize the issuance of county bonds. There are four different kinds of bonds or debt instruments mentioned in [**Minn. Stat. 103E**](https://www.revisor.mn.gov/statutes/?id=103E) that may be issued by the county to pay for the cost of establishment and construction of a project: temporary drainage bonds, definitive drainage bonds, drainage funding bonds, and drainage bonds. Not all projects may require a bond as the drainage system may have enough funds to pay for a project, if not, the drainage system account may borrow funds. More information on drainage bonds is provided in [**Section VIII, B**](http://drainage.pca.state.mn.us/index.php/B._Drainage_Bond_Issues).

Accounting for each drainage system is the responsibility of the county auditor or watershed district secretary. Each drainage system is considered as a separate entity for accounting purposes, with a full set of financial accounts. Each drainage system has a drainage system repair fund ([**Section VIII, C.2**](http://drainage.pca.state.mn.us/index.php/C._Accounting)) and has the means of investment for excess funds ([**Section VIII, C.3**](http://drainage.pca.state.mn.us/index.php/C._Accounting)). The drainage system accounts may lend money with interest to other drainage system accounts and may borrow money at the cost of interest from other drainage system accounts. ([**Section VIII, C.4**](http://drainage.pca.state.mn.us/index.php/C._Accounting))

Watershed districts have no power to tax and all funds available to them are levied and collected by the respective county boards. The board of managers of a watershed district is required to maintain several separate funds for district proposes which are outlined in [**Section VIII, D**](http://drainage.pca.state.mn.us/index.php/D._Funding_of_Watershed_Districts_and_Projects).

## Chapter 3

### [I. Introduction](http://drainage.pca.state.mn.us/index.php/I._Introduction)

#### Summary

Engineering practices for public drainage projects continue to evolve with the advent of new technology, changes to regulatory requirements, and a better understanding of environmental considerations. Development of engineering and environmental data to support a drainage project can be very complex and require significant amounts of effort to establish communication with drainage authorities, agency reviewers, and landowners. The purpose of this chapter is to provide drainage authorities, engineers, agency reviewers, and other interested parties a better understanding and guidance on engineering and environmental analyses and review requirements of the drainage code with other applicable regulations related to public drainage projects. This chapter will give local water managers a framework for making decisions about public drainage projects. ([**Chapter 3, Section I, A**](http://drainage.pca.state.mn.us/index.php/A._Overview))

The roles and responsibilities of the engineer for public drainage system projects are debriefed and outlined in [**Chapter 3, Section I, A.1**](http://drainage.pca.state.mn.us/index.php/A._Overview). with engineer’s report requirements as prescribed in Minn. Stat. Chapter [**103E**](https://www.revisor.leg.state.mn.us/statutes/?id=103E) and [**103D**](https://www.revisor.leg.state.mn.us/statutes/?id=103D) briefed in [**Chapter 3, Section I, A.2**](http://drainage.pca.state.mn.us/index.php/A._Overview).

There are two (2) key topic areas to assess when considering proposing a drainage project: (1) environmental, land use, and multipurpose water management criteria ([**Chapter 3, Section I, B.1**](http://drainage.pca.state.mn.us/index.php/B._Considerations_Before_Drainage_Work_is_Done)); and (2) investigating external sources of funding and technical assistance ([**Chapter 3, Section I, B.2**](http://drainage.pca.state.mn.us/index.php/B._Considerations_Before_Drainage_Work_is_Done)).

[**Minn. Stat. 103E.015, subd 1**](https://www.revisor.mn.gov/statutes/?id=103E.015) sets the requirement that a drainage authority must consider at least nine (9) criteria related to land use and the environment for a 103E drainage project. These must be addressed regardless of whether a drainage project requires a permit or not; the project engineer should be requested by the drainage authority to summarize these considerations within the engineer’s reports:

1. Private and public benefits and costs of the proposed drainage project;
2. Alternative measures, including measures identified in applicable state-approved and locally adopted water management plans;
3. The present and anticipated land use within the drainage project or system, including compatibility of the project with local land use plans;
4. Current and potential flooding characteristics of property in the drainage project or system and downstream for 5-, 10-, 25-, and 50-year flood events, including adequacy of the outlet for the drainage project;
5. The effects of the proposed drainage project on wetlands;
6. The effects of the proposed drainage project on water quality;
7. The effects of the proposed drainage project on fish and wildlife resources;
8. The effects of the proposed drainage project on shallow groundwater availability, distribution, and use; and
9. The overall environmental impact of all the above criteria.
10. These criteria are discussed in detail in [**Chapter 3, Section I, A.1**](http://drainage.pca.state.mn.us/index.php/A._Overview).

[**Minn. Stat. 103E.015, subd. 1a**](https://www.revisor.mn.gov/statutes/?id=103E.015) requires the project engineer to investigate the potential use of external funding sources to facilitate the purposes of wetland preservation or restoration, creation of water quality improvements, or flood control. There is a broad range of funding sources including local, state, federal, or private funding. Early coordination with the local Soil and Water Conservation District may aid to identify funding sources. (See [**Chapter 3, Section I, B.2**](http://drainage.pca.state.mn.us/index.php/B._Considerations_Before_Drainage_Work_is_Done) for additional detail)

### [II. Specific Environmental Considerations](http://drainage.pca.state.mn.us/index.php/II._Specific_Environmental_Considerations)

#### Summary

Drainage projects may be subject to additional local, state, or federal environmental regulations, which are not addressed specifically within [**Minn. Stat. 103E**](https://www.revisor.leg.state.mn.us/statutes/?id=103E). Since these regulations can have substantial bearing on the overall design of the project, it is critical that regulatory criteria are reviewed and addressed early in the project process.. It is important to incorporate such regulatory considerations into early project planning as they can have significant bearing on the overall design, timeline, budget and success of a project. The roles of the engineer and regulating agency staff and a list of some pertinent regulations are provided in [**Chapter 3, Section II, A**](http://drainage.pca.state.mn.us/index.php/A._General_%28Section_3._II%29).

**Wetlands**
Wetlands impacts are commonly associated with drainage projects due to the location and purpose of drainage systems. Impacts are regulated by various agencies depending on the proposed activity. Determining the activities that will impact wetlands, which activities may require wetland replacement/mitigation and which agency(s) regulate those impacts is dependent upon thorough communication between the drainage authority and the agencies that regulate wetlands in Minnesota. Wetland regulation in Minnesota occurs through state law (Wetland Conservation Act and Public Waters), federal law (Clean Water Act and Food Security Act), and sometimes local ordinances. [**Chapter 3, Section II, B**](http://drainage.pca.state.mn.us/index.php/B._Wetlands) provides detailed discussion regarding the relationship of public drainage system projects and activities with these regulations, including:

* Wetland Conservation Act ([**Chapter 3, Section II, B.1**](http://drainage.pca.state.mn.us/index.php/B._Wetlands));
* Clean Water Act ([**Chapter 3, Section II, B.2**](http://drainage.pca.state.mn.us/index.php/B._Wetlands));
* Food Security Act of 1985 (“Swampbuster”) ([**Chapter 3, Section II, B.3**](http://drainage.pca.state.mn.us/index.php/B._Wetlands));

Wetland impacts may result from several different activities involved with a proposed drainage system project (e.g., placement of spoil/fill, excavation, whole/partial drainage). Determination of wetland impacts is discussed in more detail under [**Chapter 3, Section II, B.4**](http://drainage.pca.state.mn.us/index.php/B._Wetlands).

**Public Waters**
Public waters are defined within [**Minn. Stat. 103G.005, subd. 15**](https://www.revisor.mn.gov/statutes/?id=103G.005) and include natural and altered watercourses, lakes, and some wetlands. County public waters inventory (PWI) maps and lists are available on the DNR website. Public waters are delineated by the Ordinary High Water Level (OHWL). Proposed project activities within public waters (below the OHWL) may require a permit or permissions from the DNR and potentially mitigation. Applications for a public waters work permit are completed using the DNR, online Permitting and Report System (MPARS). Engineer responsibilities and statutory requirements as they pertain to drainage system projects within public waters are discussed within [**Chapter 3, Section II, C**](http://drainage.pca.state.mn.us/index.php/C._Public_Waters).

**Environmental Review**
Environmental review in Minnesota is managed by the Environmental Quality Board (EQB) under authority through [**Minn. Stat. 116C**](https://www.revisor.mn.gov/statutes/?id=116C) and [**Minn. Rule 4410**](https://www.revisor.mn.gov/rules/?id=4410). Some public drainage system projects may trigger formal environmental review requiring an Environmental Assessment Worksheet (EAW) or Environmental Impact Statement (EIS). Mandatory EAW categories can be found in [**Minn. Rule 4410.4300**](https://www.revisor.mn.gov/rules/?id=4410.4300) and mandatory EIS categories in [**Minn. Rule 4410.4400**](https://www.revisor.mn.gov/rules/?id=4410.4400). Detail regarding environmental reviews can be found in ([**Chapter 3, Section II, D**](http://drainage.pca.state.mn.us/index.php/D._Environmental_Review)).

**Threatened and Endangered Species**
Minnesota’s Endangered Species Statute ([**Minn. Stat. 84.0895**](https://www.revisor.mn.gov/statutes/?id=84.0895)) and associated rules may apply to proposed public drainage system activities. The endangered species program regulates activities that take, import, transport, or sell any portion of an endangered or threatened species where these acts may be allowed by permit issued by the DNR. The statutes exempt activities on certain agricultural lands, ditches, and roadways; plants destroyed in consequence of certain agricultural practices; and accidental, unknowing destruction of designated plants. DNRAdditional detail regarding the due diligence in avoiding impacts is provided in [**Chapter 3, Section II, E**](http://drainage.pca.state.mn.us/index.php/E._Threatened_and_Endangered_Species).

**Water Quality** Water quality is defined by the [**Clean Water Act**](https://www.epa.gov/laws-regulations/summary-clean-water-act) to include the chemical, physical and biological components of a surface water. Water quality impacts resulting from a public drainage project may be positive or negative and may extend downstream of the project. [**Minn Stat. 103E.015, subd.1**](https://www.revisor.mn.gov/statutes/?id=103E.015) requires the drainage authority to consider water quality before a drainage project (a drainage system improvement, improvement of an outlet, or a lateral).is established.

* There are several statewide and regional standards and goals that may be applicable to public drainage system projects. These standards and goads are described within [**Chapter 3, Section II, F**](http://drainage.pca.state.mn.us/index.php/F._Water_Quality).

### [III. Preliminary Survey and Engineer's Preliminary Report](http://drainage.pca.state.mn.us/index.php/III._Preliminary_Survey_and_Engineer%27s_Preliminary_Report)

#### Summary

Proposed drainage projects require a preliminary survey and investigation of site conditions and study of historical data to determine project feasibility and practicality ([**Minn. Stat. § 103E.245**](https://www.revisor.mn.gov/statutes/?id=103E.245)). The project engineer is responsible for selecting the appropriate level of detail at the preliminary survey stage to provide accurate estimates of the proposed project’s cost, to meet the needs of the reviewing agencies, and also minimize surveying costs of the project. It is recommended that the preliminary survey be made as complete as possible and the work completed is close to the standards demanded during the final survey. [**Chapter 3, Section III**](http://drainage.pca.state.mn.us/index.php/III._Preliminary_Survey_and_Engineer%27s_Preliminary_Report) provides detail regarding the purpose and content of the preliminary survey as specified in Minnesota Statutes. Specific topics include:

* Objectives and limitations ([**Chapter 3, Section III, B**](http://drainage.pca.state.mn.us/index.php/B._Preliminary_Survey%3A_Objectives_and_Limitations));
* Procedures ([**Chapter 3, Section III, C**](http://drainage.pca.state.mn.us/index.php/C._Preliminary_Survey%3A_Recommended_Procedure));
* Preliminary survey report content ([**Chapter 3, Section III, D**](http://drainage.pca.state.mn.us/index.php/D._Engineer%27s_Preliminary_Survey_Report)); and
* Engineering Costs ([**Chapter 3, Section III E**](http://drainage.pca.state.mn.us/index.php/E._Engineering_Costs_for_Preliminary_Survey_and_Report)).

The DNR must review and file a preliminary advisory report with the county or joint board drainage authority before the date set for the preliminary hearing. The preliminary advisory report must specify any additional investigations that should be completed and documented in the engineer’s final report related to public waters that may be affected and the environmental, land use, and multipurpose water management criteria in section [**Minn. Stat. § 103E.015**](https://www.revisor.mn.gov/statutes/?id=103E.015), and cite the specific sections of the report that are inadequate. (See [**Chapter 3, Section III, F**](http://drainage.pca.state.mn.us/index.php/F._Advisory_Reviews))

### [IV. Detailed Survey and Engineer's Final Report](http://drainage.pca.state.mn.us/index.php/IV._Detailed_Survey_and_Engineer%27s_Final_Report)

#### Summary

After the DNR issue a commissioner’s preliminary advisory report, the drainage authority will conduct a hearing on the engineer’s preliminary report and review the commissioner’s preliminary advisory report. If the project is not dismissed, the county or joint board drainage authority will order the engineer to make a detailed survey with plans and specifications for the proposed drainage project. ([**See Chapter 3, Section IV, A**](http://drainage.pca.state.mn.us/index.php/A._General_%28Section_3_IV%29)).

There are two basic purposes of a detailed survey:

* To collect such additional information as is needed to address problems raised during the preliminary hearing, to modify the preliminary plan as directed by the drainage authority, or to evaluate and address concerns raised by the commissioner's preliminary advisory report, and
* To obtain additional detailed information necessary for the staking and construction of the project;

The required elements of a detailed survey are described in [**Chapter 3, Section IV, B**](http://drainage.pca.state.mn.us/index.php/B._Detailed_Survey).

The engineer's final report should essentially include all the information incorporated in the engineer's preliminary report, any additional information obtained during the detailed survey, and the extra items require in [**Minn. Stat. § 103E.285**](https://www.revisor.mn.gov/statutes/?id=103E.285). Details for engineer’s final report are provided in [**Chapter 3, Section IV, C**](http://drainage.pca.state.mn.us/index.php/C._Engineer%27s_Final_Report).

Following the engineer’s final report, the DNR Commissioner is required to issue a final advisory report which makes findings as to whether the engineer’s final report is adequate and whether the proposed drainage project is of public benefit or utility under the environmental and land use criteria. (See [**Chapter 3, Section IV, D**](http://drainage.pca.state.mn.us/index.php/D._Advisory_Review_of_Detailed_Survey_Report))

### [V. Adequacy of Outlet](http://drainage.pca.state.mn.us/index.php/V._Adequacy_of_Outlet)

#### Summary

Drainage law requires the drainage authority to make a determination that “the outlet is adequate” for all drainage projects as defined in [**103E.005**](https://www.revisor.mn.gov/statutes/?id=103E.005). An evaluation of the adequacy of the outlet is conducted by the project engineer during the preliminary survey and reported by the engineer to the drainage authority in the preliminary survey report. (See [**Chapter 3, Section V, A**](http://drainage.pca.state.mn.us/index.php/A._General_%28Section_3V%29)).

There is no statutory definition of an adequate outlet provided, as such, it is recommended that the engineer include a description of what was considered and how the adequacy was determined. [**Chapter 3, Section V, B**](http://drainage.pca.state.mn.us/index.php/B._Definition_of_an_Adequate_Outlet) describes how an adequate outlet can be defined within the engineer’s reports.

Basic requirements of an adequate outlet are provided in [**Chapter 3, Section V, C**](http://drainage.pca.state.mn.us/index.php/C._Basic_Requirements_of_an_Adequate_Outlet).

Depending upon the magnitude of the proposed drainage project, there are several hydrologic and hydraulic methods of analysis available to the engineer for developing the assessment of outlet adequacy. [**Chapter 3, Section V, D**](http://drainage.pca.state.mn.us/index.php/D._Methods_of_Outlet_Analysis) describes various methodology that are utilized in deteriming an adequate outlet, including field survey data, outlet hydrology, and outlet hydraulic analysis.

The engineer must make a determination of outlet adequacy in the engineer's preliminary report. This determination must be supported by an acceptable engineering analysis of pre-project and post-project outlet conditions. A special section of the engineer's preliminary report must be provided to include a complete discussion of the analysis, results, assessment of potential damages, and recommendations concerning outlet adequacy. (See [**Chapter 3, Section V, E**](http://drainage.pca.state.mn.us/index.php/E._Documentation_of_Outlet_Adequacy)).

### [VI. New Drainage Systems, Improvements, Laterals and Other Modifications of Drainage System](http://drainage.pca.state.mn.us/index.php/VI._New_Drainage_Systems%2C_Improvements%2C_Laterals_and_Other_Modifications_of_Drainage_System)

#### Summary

There are four (4) types of proceedings that constitute a drainage project in [**Minn. Stat. Chapter 103E**](https://www.revisor.mn.gov/statutes/?id=103E): Establishments, Improvements, Improvements of an Outlet, and Laterals. These and other types of drainage activities that require the appointment of an engineer are provided with their respective reference sections:

1. Establishment ([**Minn. Stat. § 103E.212**](https://www.revisor.mn.gov/statutes/?id=103E.212)) ([**Chapter 3, Section VI. 1**](http://drainage.pca.state.mn.us/index.php/A._General_%28Section_3VI%29));
2. Improvement ([**Minn. Stat. § 103E.215**](https://www.revisor.mn.gov/statutes/?id=103E.215)) ([**Chapter 3, Section VI, 2**](http://drainage.pca.state.mn.us/index.php/A._General_%28Section_3VI%29));
3. Improvement of Outlet ([**Minn. Stat. § 103E.221**](https://www.revisor.mn.gov/statutes/?id=103E.221)) ([**Chapter 3, Section VI, 3**](http://drainage.pca.state.mn.us/index.php/A._General_%28Section_3VI%29));
4. Laterals ([**Minn. Stat. § 103E.225**](https://www.revisor.mn.gov/statutes/?id=103E.225)) ([**Chapter 3, Section VI, 4**](http://drainage.pca.state.mn.us/index.php/A._General_%28Section_3VI%29));

**Other:**

* Impounding, Rerouting and Diverting of Drainage System Waters ([**Minn. Stat. § 103E.227**](https://www.revisor.mn.gov/statutes/?id=103E.227)) ([**Chapter 3, Section VI 5**](http://drainage.pca.state.mn.us/index.php/A._General_%28Section_3VI%29));

In response to a drainage project petition, the project engineer is responsible for recommending a practical drainage project design, to inform the drainage authority in the preliminary report on issues related to feasibility, and present a fully defined and constructible drainage project in the detailed survey report. Additional detailed recommendations related to engineering tasks for specific project types include:

* Hydrologic and hydraulic analysis ([**Chapter 3, Section VI, B.1**](http://drainage.pca.state.mn.us/index.php/B._Engineering_Requirements));
* Ditch/Channel Hydraulic Design ([**Chapter 3, Section VI, B.2**](http://drainage.pca.state.mn.us/index.php/B._Engineering_Requirements));
* Bridge/Culvert Hydraulic Analysis and Design ([**Chapter 3, Section VI, B.3**](http://drainage.pca.state.mn.us/index.php/B._Engineering_Requirements));
* Erosion Control for Drainage Water Entry to a Public Ditch ([**Chapter 3, Section VI, B.4**](http://drainage.pca.state.mn.us/index.php/B._Engineering_Requirements));
* Miscellaneous Structures ([**Chapter 3, Section VI, B.5**](http://drainage.pca.state.mn.us/index.php/B._Engineering_Requirements));
* Channel Geometry ([**Chapter 3, Section VI, B.6**](http://drainage.pca.state.mn.us/index.php/B._Engineering_Requirements)); and
* Vegetated Ditch Buffer Strips ([**Chapter 3, Section VI, B.7**](http://drainage.pca.state.mn.us/index.php/B._Engineering_Requirements)).

### [VII. Repair/Maintenance of Drainage Systems](http://drainage.pca.state.mn.us/index.php/VII._Repair/Maintenance_of_Drainage_Systems)

#### Summary

Deterioration of drainage systems over time is inevitable, requiring regular maintenance. If a drainage system is not sufficiently maintained, a minor or major repair of the system may be required. The term “repair” . The is defined within [**Minn. Stat. 103E.701, subd. 1**](https://www.revisor.mn.gov/statutes/?id=103E.701) and has a bearing how some drainage activates can be executed and regulated (see [**Chapter 3, Section VII, A**](http://drainage.pca.state.mn.us/index.php/A._General_%28Section_3VII%29)).

The “As Constructed and Subsequently Improved Condition” (ACSIC) of a public drainage system must be determined to understand if proposed work may be consider “repair” and what regulations are applicable . Determination of the ACSIC is discussed in more detail within [**Chapter 3, Section VII, B**](http://drainage.pca.state.mn.us/index.php/B._Determination_of_As-Built_Condition_%28Original_Grade%29).

Additionally, drainage law requires regular inspection of drainage system ([**Minn. Stat. 103E.705**](https://www.revisor.mn.gov/statutes/?id=103E.705)) to ascertain the need for repair and/or maintenance. ([**Chapter 3, Section VII, C**](http://drainage.pca.state.mn.us/index.php/C._Inspection_of_Drainage_Systems)).

Drainage law does not require the appointment of an engineer for non-petitioned repair of drainage systems. This type of repair project is brought to the attention of the drainage authority by the inspection and written report. Non-petitioned repair includes (1) routine maintenance, and (2) less frequent and more extensive repair. See [**Chapter 3, Section VII, D**](http://drainage.pca.state.mn.us/index.php/D._Non-Petitioned_Repair_of_Drainage_Systems) for more description.

Petitioned Repair may include “resloping ditches, incorporating multistage ditch cross-section, leveling spoil banks, installing erosion control, or removing trees” along with other activities. For petitioned repair projects, the drainage authority must appoint an engineer to be responsible for examining the drainage system to determine the extent of the repair. See [**Chapter 3, Section VII, E**](http://drainage.pca.state.mn.us/index.php/E._Petitioned_Repair_of_Drainage_Systems) for more information on this process.

Contracting and levying for maintenance and repair ([**Chapter 3, Section VII, F**](http://drainage.pca.state.mn.us/index.php/F._Contracting_and_Levying_for_Maintenance_and_Repair)) and drainage code provisions for private bridges and culverts ([**Chapter 3, Section VII, G**](http://drainage.pca.state.mn.us/index.php/G._Bridges_and_Culverts)) are also further discussed in referenced sections.

### [VIII. Redetermination of Benefits](http://drainage.pca.state.mn.us/index.php/VIII._Redetermination_of_Benefits)

#### Summary

The process for reevaluating benefits and damages to reflect present day land values or add or remove benefitted or damaged lands may be conducted under the Redetermination of Benefits provisions of the drainage law. Although the redetermination of benefits are conducted by appointed viewers (see [**Chapter 2**](http://drainage.pca.state.mn.us/index.php/Chapter_2)) the engineer may be required or appointed to complete some tasks in conjunction with these proceedings. [**Chapter 3, Section VIII**](http://drainage.pca.state.mn.us/index.php/VIII._Redetermination_of_Benefits) provides additional detail regarding the engineer’s role within a redetermination of benefits proceeding.

### [IX. Consolidation of Drainage Systems](http://drainage.pca.state.mn.us/index.php/IX._Consolidation_of_Drainage_Systems)

#### Summary

Drainage systems may be combined or divided (consolidated) for more efficient administration ([**Chapter 3, Section IX**](http://drainage.pca.state.mn.us/index.php/IX._Consolidation_of_Drainage_Systems)).

### [X. Construction Plans and Specifications](http://drainage.pca.state.mn.us/index.php/X._Construction_Plans_and_Specifications)

#### Summary

Complete (signed) construction plans and specifications are typically ordered by the drainage authority after the hearings are completed and an order and finding of fact to establish a project has been issued ([**Chapter 3, Section X**](http://drainage.pca.state.mn.us/index.php/X._Construction_Plans_and_Specifications)).

### [XI. Construction](http://drainage.pca.state.mn.us/index.php/XI._Construction)

#### Summary

The contractor responsible for construction is responsible to implement the project as designated on project construction plans and specifications. The project engineer may be required by the drainage authority to supervise, inspect, and/or observe construction to ensure compliance ([**Chapter 3, Section XI**](http://drainage.pca.state.mn.us/index.php/XI._Construction)).

### [XII. Public Drainage System Records](http://drainage.pca.state.mn.us/index.php/XII._Public_Drainage_System_Records)

#### Summary

Records regarding public drainage system projects and proceeding must be readily available to the public [**Chapter 3, Section XII, A**](http://drainage.pca.state.mn.us/index.php/A._Record_Drawings) provides recommendations and requirements for the establishment of record drawings.

If historic records are have been lost, destroyed, or incomplete, the drainage authority may complete proceedings to re-establish the public drainage system record. This process is outlined in [**Chapter 3, Section XII, B**](http://drainage.pca.state.mn.us/index.php/B._Re-Establishment_of_Public_Drainage_Records).

## Chapter 4

### [I. Introduction to Chapter 4](http://drainage.pca.state.mn.us/index.php/I._Introduction_to_Chapter_4)

#### Summary

Drainage projects must be financially feasible to be constructed. Projects also require money to cover the cost of design, property acquisition, construction, and future maintenance of the system. A process for determining the benefits and damages that a drainage system generates is called "viewing". Viewing, not only determines if a drainage project is financially feasible, but also provides a formula for distributing construction costs as well as future maintenance costs of a drainage project. The assignment of benefits and damages is probably the most controversial part of drainage proceedings.

### [II. Procedures Requiring Viewing](http://drainage.pca.state.mn.us/index.php/II._Procedures_Requiring_Viewing)

#### Summary

There are ten (10) types of drainage proceedings that require the appointment of viewers to determine benefits or award damages. Viewers are also used to recommend an outlet fee when a person petitions to use the drainage system as an outlet ([**Minn. Stat. § 103E.401**](https://www.revisor.mn.gov/statutes/?id=103E.401)). Reference to the procedures for viewers based on these different types of proceedings is provided below:

**Drainage Projects**
1. New Drainage System Projects ([**Chapter 4, Section II, 1.**](http://drainage.pca.state.mn.us/index.php/II._Procedures_Requiring_Viewing));
2. Improvement of Drainage System ([**Chapter 4, Section II, 2.**](http://drainage.pca.state.mn.us/index.php/II._Procedures_Requiring_Viewing));
3 Improvement of Outlets ([**Chapter 4, Section II, 3.**](http://drainage.pca.state.mn.us/index.php/II._Procedures_Requiring_Viewing)); and
4. Laterals ([**Chapter 4, Section II, 4.**](http://drainage.pca.state.mn.us/index.php/II._Procedures_Requiring_Viewing)).

**Drainage Proceedings**
5. Redetermination of Benefits and Damages ([**Chapter 4, Section II, 5.**](http://drainage.pca.state.mn.us/index.php/II._Procedures_Requiring_Viewing));
6. Repair by Resloping Ditches, Incorporating Multistage Ditch Cross-Sections, Leveling Spoil Banks, Installing Erosion Control, or Removing Trees ([**Chapter 4, Section II, 6.**](http://drainage.pca.state.mn.us/index.php/II._Procedures_Requiring_Viewing));
7. Inclusion of Property That Has Not Been Assessed Benefits ([**Chapter 4, Section II, 7.**](http://drainage.pca.state.mn.us/index.php/II._Procedures_Requiring_Viewing));
8. Abandonment of Drainage System ([**Chapter 4, Section II, 8.**](http://drainage.pca.state.mn.us/index.php/II._Procedures_Requiring_Viewing));
9. Incremental Acquisition of Grass Strips ([**Chapter 4, Section II, 9.**](http://drainage.pca.state.mn.us/index.php/II._Procedures_Requiring_Viewing)); and
10. Drainage System Transfer ([**Chapter 4, Section II, 10.**](http://drainage.pca.state.mn.us/index.php/II._Procedures_Requiring_Viewing))

### [III. Appointment of Viewers](http://drainage.pca.state.mn.us/index.php/III._Appointment_of_Viewers)

#### Summary

Viewers play a crucial role in the public drainage system project, as such, drainage authorities should exercise care in appointing qualified and articulate viewers. The outcome of a proceeding will be affected by the quality of the viewers’ work and their ability to communicate the basis of benefits and damages, in addition to viewing methodology, to the public. A viewer is to be capable of providing testimony to a jury expressing an opinion on benefits and damages. ([**Chapter 4, Section III**](http://drainage.pca.state.mn.us/index.php/III._Appointment_of_Viewers))

It is at the conclusion of the preliminary hearing, when the detailed survey report is order, that viewers are appointed by order of the drainage authority. [**Minn. Stat. § 103E.305, subd 1**](https://www.revisor.mn.gov/statutes/?id=103E.305) (2015) reads, “[T]he drainage authority shall, by order, appoint viewers consisting of three (3) disinterested residents of the state qualified to assess benefits and damages. The drainage authority may establish qualifications for viewers.” The process of when the viewers commence their duties and the timing of their observations is discussed in [**Chapter 4, Section III, A**](http://drainage.pca.state.mn.us/index.php/A._Procedures_for_Appointing_Viewers).

Viewers are required to be residents of Minnesota and must be disinterested from the proceedings. A list of general qualities that may aid the drainage authority in selecting a “qualified” viewer (Chapter 4, Section III, B.) and what it means to be a disinterested resident ([**Chapter 4, Section III, B.1**](http://drainage.pca.state.mn.us/index.php/B._Description_of_Viewer_Qualifications)) is provided in referenced sections. One source of viewers is the [**Minnesota Viewers Association**](http://www.mndrainageviewers.org/), which is an educational organization that provides training and guidance to persons interested in becoming viewers or currently serving as viewers.

### [IV. Assessment of Drainage Benefits](http://drainage.pca.state.mn.us/index.php/IV._Assessment_of_Drainage_Benefits)

#### Summary

Viewers are equipped with the engineer’s preliminary report which identifies the watershed by a legal description and provides a rough estimate of the size of the area affected by the proposed drainage system. Topographical maps are frequently used, and are helpful. Information regarding existing private tile systems, open ditches or other ditches should be included in the preliminary report. In addition to the details provided in the engineer’s report, viewers should meet with each landowner in the area to discuss the potential effect of drainage systems on their land. Methodologies that may be applied by viewers when determining benefit values include:

• Market-Value Based Benefits ([**Chapter 4, Section IV, B.**](http://drainage.pca.state.mn.us/index.php/B._Market-Value_Based_Benefits));

• Charge-Based Benefits ([**Chapter 4, Section IV, C.**](http://drainage.pca.state.mn.us/index.php/C._Charge-Based_Benefits));

• Protection Benefits ([**Chapter 4, Section IV, D.**](http://drainage.pca.state.mn.us/index.php/D._Protection_Benefits)); and

• Improvement to an Outlet Benefits ([**Chapter 4, Section IV, E.1.**](http://drainage.pca.state.mn.us/index.php/E._Benefit_Considerations_for_Certain_Projects_and_Proceedings)).

Special types of properties that viewers may encounter when performing their duties and with which further information is provided include that for:

• Federal or Tribal Lands ([**Chapter 4, Section IV, A.1.**](http://drainage.pca.state.mn.us/index.php/A._Determining_Benefits_for_Tribal%2C_Government%2C_or_Public_Lands));

• State Lands or Water Areas Used for Conservation ([**Chapter 4, Section IV, A.2.**](http://drainage.pca.state.mn.us/index.php/A._Determining_Benefits_for_Tribal%2C_Government%2C_or_Public_Lands));

• Other State Lands ([**Chapter 4, Section IV, A.3.**](http://drainage.pca.state.mn.us/index.php/A._Determining_Benefits_for_Tribal%2C_Government%2C_or_Public_Lands));

• Consolidated Conservation Lands ([**Chapter 4, Section IV, A.4.**](http://drainage.pca.state.mn.us/index.php/A._Determining_Benefits_for_Tribal%2C_Government%2C_or_Public_Lands));

• Municipalities ([**Chapter 4, Section IV, A.5.**](http://drainage.pca.state.mn.us/index.php/A._Determining_Benefits_for_Tribal%2C_Government%2C_or_Public_Lands));

• Water Management Authority ([**Chapter 4, Section IV, A.6.**](http://drainage.pca.state.mn.us/index.php/A._Determining_Benefits_for_Tribal%2C_Government%2C_or_Public_Lands));

• Public Roads ([**Chapter 4, Section IV, A.7.**](http://drainage.pca.state.mn.us/index.php/A._Determining_Benefits_for_Tribal%2C_Government%2C_or_Public_Lands));

• Railways and Other Utilities ([**Chapter 4, Section IV, A.8.**](http://drainage.pca.state.mn.us/index.php/A._Determining_Benefits_for_Tribal%2C_Government%2C_or_Public_Lands));

Viewers are encouraged to discuss potential assessments against these types of properties with the proper authority administering the lands prior to the filing of the viewers’ report ([**Chapter 4, Section IV, A.**](http://drainage.pca.state.mn.us/index.php/A._Determining_Benefits_for_Tribal%2C_Government%2C_or_Public_Lands)).

Market-Value Based methods justify the imposition of an assessment based on the increase in the market value of the property driven by the drainage project. The increase in market value may derive from an increase in the current market value of the property as a result of constructing the project, an increase in the potential for agricultural production as a result of constructing the project, or an increase value of property as a result of a potential different lands use. See [**Chapter 4, Section IV, B.**](http://drainage.pca.state.mn.us/index.php/B._Market-Value_Based_Benefits) for more information.

Charge-Based Benefits are based on a theory authorized by the legislature that is different from the Market-Based Benefits; this basis for assessing benefits is found in [**Minn. Stat § 103E.315, subds. 6 and 7**](https://www.revisor.mn.gov/statutes/?id=103E.315). Charge-Based benefits determined in accordance with [**Minn. Stat. § 103E.315, subd. 6(a) and (b)**](https://www.revisor.mn.gov/statutes/?id=103E.315) are assigned to the existing upstream drainage system based on the increased burden that the upstream system places on the downstream drainage project or system. [**Minn. Stat. § 103E.315, subd. 7**](https://www.revisor.mn.gov/statutes/?id=103E.315) provides additional authority to the viewers for the situation where part of a drainage project increases drainage system capacity that is necessary due to increased drainage in the project watershed, but not in a specific area. These methodologies are described further in [**Chapter 4, Section IV, C.**](http://drainage.pca.state.mn.us/index.php/C._Charge-Based_Benefits)

Protection benefits, such as the diversion of flood waters away from property can be deemed as “benefit” of a drainage system project under [**Minn. Stat. 103E**](https://www.revisor.mn.gov/statutes/?id=103E). Minnesota Courts recognize the imposition of “protection benefits” on three justifications: (1) property protected from flood risk is valued higher in the market place; (2) the drainage authority has the power and corresponding responsibility to control flood waters; and (3) the diversion of flood waters is within the plain meaning of the word “benefit.” ([**Chapter 4, Section IV, D.**](http://drainage.pca.state.mn.us/index.php/D._Protection_Benefits)).

Where an existing drainage system, watercourse, or body of water does not have the capacity to channelize upland drainage waters for a public or private proposed drainage project, or even an existing drainage system, improvement of outlet proceedings may be used. In such proceedings, benefits are allocated to all lands on the system contributing water. Benefit considerations for improvements to an outlet are discussed in further detail in [**Chapter 4, Section IV, E.1.**](http://drainage.pca.state.mn.us/index.php/E._Benefit_Considerations_for_Certain_Projects_and_Proceedings)

### [V. Extent of Damages](http://drainage.pca.state.mn.us/index.php/V._Extent_of_Damages)

#### Summary

“Damages” is the term used for just compensation for drainage system projects. Damages may be awarded for:

1. The fair market value of the property required for the channel of an open ditch and the permanent grass strip under [**Minn. Stat. § 103E.021**](https://www.revisor.mn.gov/statutes/?id=103E.021);

2. The diminished value of a farm due to severing a field by an open ditch;

3. Loss of crop production during drainage project construction; and

4. The diminished productivity or land value from increased overflow. ([**Chapter 4, Section V**](http://drainage.pca.state.mn.us/index.php/V._Extent_of_Damages))

Damages awarded for the following are discussed in more detail in the reference sections provided:

• Easements and Rights-of-Way ([**Chapter 4, Section V, A.**](http://drainage.pca.state.mn.us/index.php/A._Easements_and_Rights-of-Way));

• Temporary Construction Easements ([**Chapter 4, Section V, B.**](http://drainage.pca.state.mn.us/index.php/B._Temporary_Construction_Easements)); and

• Damages for Repairs by Resloping, Incorporating a Multi-Stage Cross-Section, Leveling Spoil Banks, Installing Erosion Control, or Removing Trees ([**Chapter 4, Section V, C.**](http://drainage.pca.state.mn.us/index.php/C._Damages_for_Repairs_by_Resloping%2C_Incorporating_a_Multi-Stage_Cross-Section%2C_Leveling_Spoil_Banks%2C_Installing_Erosion_Control%2C_or_Removing_Trees)).

### [VI. Viewers' Report/Property Owners' Report](http://drainage.pca.state.mn.us/index.php/VI._Viewers%27_Report/Property_Owners%27_Report)

#### Summary

Viewers issue a report as described in [**Minn. Stat. § 103E.321**](https://www.revisor.mn.gov/statutes/?id=103E.321), which is filed with the auditor or watershed district secretary. The viewers’ report lists facts and findings of the team of viewers and provides elements necessary for the drafting of the property owners’ report. An outline of requirements for the viewers’ report is provided within [**Chapter 4, Section VI, A.**](http://drainage.pca.state.mn.us/index.php/A._Preparation_of_Viewers%E2%80%99_Report)

In the case of disagreements between viewers, each viewer shall file a separate report stating their findings for the unresolved issues ([**Chapter 4, Section VI, B.**](http://drainage.pca.state.mn.us/index.php/B._Disagreement_of_Viewers)).

Upon the viewers completing their duties, they shall file the viewers’ report with the auditor of each county affected by the proposed project or the secretary of the watershed district. Along with the viewers’ report, viewers must file a detailed statement showing actual time of the viewer’s engagement in the effort and costs incurred. See [**Chapter 4, Section VI, C.**](http://drainage.pca.state.mn.us/index.php/C._Filing_Viewers%E2%80%99_Report) for more information.

A property owners’ report must be made by the auditor/watershed district secretary within 30 days after the viewers’ report has been filed. Viewers often assist the auditor or secretary in completing this report. The property owners’ report requires different information than that contained within the viewers’ report; property owners’ report contents are outlined within [**Chapter 4, Section VI, D.**](http://drainage.pca.state.mn.us/index.php/D._Property_Owners%E2%80%99_Report)

### [VII. Maintaining Benefits Records](http://drainage.pca.state.mn.us/index.php/VII._Maintaining_Benefits_Records)

#### Summary

When a contract to construct the drainage system is awarded, the auditor or watershed district secretary makes a statement showing the total cost of the project prorated to each tract of property affecting in direct proportion to the benefits. Damages awarded to a tract are subtracted from the costs. The liability (cost less damages) for each tract of property must be documented in tabular form in a drainage lien statement. Recording of benefits and drainage lien statements are further discussed in [**Chapter 4, Section VII, A**](http://drainage.pca.state.mn.us/index.php/A._Recording_of_Benefits).

After the drainage system is ordered, the lands affected by the drainage system have a new legal status. The benefit provided by the drainage system becomes a property right that runs with and is binding upon the land, even when ownership of the land transfers. The drainage authorities may consider recording of drainage system easements. This process is discussed in detail within [**Chapter 4, Section VII, B**](http://drainage.pca.state.mn.us/index.php/B._Recording_of_Drainage_System_Order_and_the_Marketable_Title_Act).

Occasionally, a person may want to apportion a lien recorded against property for the purposed of splitting the parcel and transferred it to another owner. Or, if an owner of property subject to a drainage lien wants to plat the property, the apportionment of the drainage lien proceedings must be complete before the plat can be legally recorded. More information on allocation of benefits for parcel splits and transfers is provided in [**Chapter 4, Section VII, C**](http://drainage.pca.state.mn.us/index.php/C._Allocation_of_Benefits_for_Parcel_Splits_and_Transfers).

## Chapter 5

### [I. Introduction to Section 5](http://drainage.pca.state.mn.us/index.php/I._Introduction_to_Section_5)

#### Summary

Chapter 5 presents a compilation of Best Management Practices (BMPs) that are specifically applicable to public drainage systems in Minnesota. The chapter and its contents support the work of ditch authorities, their staff and engineers by providing guidance and tools to address design, maintenance, repair, and water quality and quantity issues on and in the watershed of [**Minn. Stat. 103E**](https://www.revisor.mn.gov/statutes/?id=103E) drainage systems.

Chapter 5 provides a resource for users with varied levels of experience using BMPs on Minn. Stat. Chapter 103E systems. Reference to relevant statutes, a [**BMP Table**](http://drainage.pca.state.mn.us/index.php/BMP_Table), and BMP definitions are provided.

The BMPs provided support Minn. Stat. Chapter 103E Drainage Law in two (2) primary ways:

**1. BMPs that provide information and support for drainage authorities work through the drainage system design and construction considerations required by:**

• i. [**Minn. Stat. 103E.015**](https://www.revisor.mn.gov/statutes/?id=103E.015), Considerations Before Drainage Work is Done, subd. 1, 1(a), and 2

**2. BMPs that supplement and enhance drainage system repair, maintenance, and management activities addressed by:**

• i. [**Minn. Stat. 103E.021**](https://www.revisor.mn.gov/statutes/?id=103E.021), Ditches Must Be Planted With Perennial Vegetation, subds. 1, 2, and 6;

• ii. [**Minn. Stat. 103E.227**](https://www.revisor.mn.gov/statutes/?id=103E.227), Impounding, Rerouting, and Diverting Drainage System Waters, subd. 1(a);

• iii. [**Minn. Stat. 103E.701**](https://www.revisor.mn.gov/statutes/?id=103E.701), Repairs, subd. 1 and 6;

• iv. [**Minn. Stat. 103E.705**](https://www.revisor.mn.gov/statutes/?id=103E.705), Repair Procedure, subds. 1 and 3; and

• v. [**Minn. Stat. 103E.715**](https://www.revisor.mn.gov/statutes/?id=103E.715), Procedure for Repair by Petition, subd. 6.

For the purposes of this manual, a BMP is a structural or non-structural practice that minimizes water quality and/or quantity (peak flow or volume reduction) impacts within a public drainage system or its watershed.

**There are two (2) types of BMPs:**
**1. On-System**
On-system BMPs are used within a Chapter 103E drainage system and include any statute-allowed, or required practice (i.e., vegetated buffer strips, grade control structures, side inlets, erosion control, multi-stage ditch, water storage, restored wetland, culvert sizing, resloping, tile repair, etc.). Many of such practices do not have a design standard.

**2. Off-System**
BMPs implemented off the Chapter 103E drainage system are not within the traditional purview of the drainage authority. Practices applied on fields and farms in the watershed of system can provide significant benefits downslope to the drainage system. Drainage inspectors and drainage system engineers should be aware of the potential for off-system BMPs to solve on-system problems.

• **Typical structural off-system BMPs:** Water and sediment control basins, grass waterways, Drainage Water Management (DWM); and

• **Typical non-structural off-system BMPs:** nutrient management, cover crops, conservation tillage, etc.

Other resources from which the BMPs provided within this chapter are also cited include ([**Chapter 5, Section I, E**](http://drainage.pca.state.mn.us/index.php/E._Other_Resources)):

• Minnesota Stormwater Manual;

• USDA’s Field Office Technical Guide (FOTG)/The Ag BMP Handbook for Minnesota;

• NRCS Engineering Field Handbook; and

• Red River Basin TSAC, Technical Paper No. 15.

The suggested method for navigating through the BMP identification process and how to use Chapter 5 includes three (3) steps ([**Chapter 5, Section I, F**](http://drainage.pca.state.mn.us/index.php/F._How_to_Use_This_Chapter)):

• **Step 1:** Observe and identify potential problems and opportunities;

• **Step 2:** Determine the cause of the problem; and

• **Step 3:** Select an appropriate BMP solution to address the problem/symptom or cause (Use of the [**BMP Table**](http://drainage.pca.state.mn.us/index.php/BMP_Table)).

The [**Best Management Practices (BMPs) Table**](http://drainage.pca.state.mn.us/index.php/BMP_Table) sorted by issue/cause and on-system and off-system BMP solutions, along with BMP definitions are provided within [**Chapter 5, Section II**](http://drainage.pca.state.mn.us/index.php/II._Best_Management_Practices).

### [II. Best Management Practices](http://drainage.pca.state.mn.us/index.php/II._Best_Management_Practices)

#### Summary

This section gives a comprehensive [**BMP Table**](http://drainage.pca.state.mn.us/index.php/BMP_Table) and [**List of BMPs**](http://drainage.pca.state.mn.us/index.php/List_of_BMPs) to help users address issues within their ditch system and find the best solution.