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Damming Agricultural Drainage: The Effect of Wetland Preservation and Federal Regulation on Agricultural Drainage in Minnesota

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Agricultural drainage developed in Minnesota before the turn of the century and has become necessary in many areas for crop production. Landowners have acquired property rights in drainage systems that drain almost one-third of Minnesota's agricultural production area. Drainage systems have been traditionally operated and constructed by county authorities under the state drainage code. Today, a tangled web of state and Federal jurisdiction over agricultural drainage threaten drainage rights and has left drainage authorities and practitioners confused about the proper procedures to be followed to construct drainage projects. In his article, Mr. Hanson sorts out the many jurisdictional questions and suggests some options for state policymakers to consider in the future.
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INTRODUCTION

Laws that allow and restrict agricultural drainage have fo-
cused on the property rights of individuals desiring to drain land and the property rights of individuals and the public affected by the drainage. Drainage under the common law is based upon allowing a reasonable discharge of water that does not damage a nonconsenting landowner's property. Large-scale drainage projects, by their nature, can only be established under statutory drainage provisions. These provisions provide financing and construction over lands to adequate outlets. Property owners are assessed the costs of construction based on benefits of drainage to their property. Property owners have acquired drainage rights in drainage systems that presently drain about fourteen million acres of land. 

Although, in many cases, drainage is necessary for agricultural production, public and private views toward wetland conservation have resulted in regulation and restriction of agricultural drainage. State regulation affecting drainage restricts wetland drainage and regulates drainage in protected public waters and wetlands. These regulations generally allow drainage maintenance and repair and provide compensation to private owners of drainable wetlands. Federal regulation gives jurisdiction over navigable waters and wetlands, defined by their relation to interstate commerce, and waters of the United States, which have been defined to include soil saturated or inundated with surface or ground water. Federal regulations require permits for drainage activities affecting regulated wetlands and wet soils. These regulations do not distinguish drainage activities that are necessary for agricultural production from drainage of wetlands to obtain new crop land. Most drainage repairs in Minnesota will require federal permits because wetlands and wet soils may be

1. See infra note 76 and accompanying text.
2. United States Dep't of Agric. Soil Cons. Serv., Drainage of Agric. Land (from an untitled report to the Minnesota Pollution Control Agency relating to soil erosion in drainage ditches). This report was based on an inventory of drainage ditches conducted by the United States Geological Survey.
3. Pursuant to Minnesota Statutes, section 105.391, subdivision 1 (1984), the Department of Natural Resources has inventoried 11,842 protected water basins and 10,029 protected wetlands. The protected water basins contain 4,705,801 acres, including 1,416,000 acres of Lake Superior, and 261,709 acres of protected wetlands. Minn. Dep't of Natural Resources, Division of Waters, "Public Waters & Wetland Inventory Status", Internal Memorandum (1985).
5. Id. §§ 323.2(a)-(c).
6. Id. § 323.3(a).
affected, and exemptions for minor drainage and maintenance are narrowly defined.\textsuperscript{7}

The federal permit requirements are more extensive and stringent than any other prior regulation of drainage. The Army Corps of Engineers may initiate criminal actions for unauthorized activities and issue orders for restoration and modification of land if any damage has been done.\textsuperscript{8} The effect of these stringent requirements has been to stop drainage in some areas of the state.\textsuperscript{9} The possibility of permit denial jeopardizes the existing drainage rights of thousands of agricultural property owners.

This Article reviews the history of Minnesota drainage development that has made agricultural drainage necessary for almost one-third of the agricultural production areas and has vested drainage rights in property owners of almost fourteen million acres of land.\textsuperscript{10} The jurisdiction of the Rivers and Harbors Act\textsuperscript{11} and Clean Water Act\textsuperscript{12} and the jurisdiction of state wetland preservation regulations are discussed as they relate to agricultural drainage.\textsuperscript{13} The regulations, especially the recently expanded Corps of Engineers jurisdiction, are analyzed in terms of their effects on agricultural drainage projects and private drainage rights.\textsuperscript{14} Finally, state options that alleviate some of the problems resulting from increased regulation of agricultural drainage are presented.\textsuperscript{15}

I. DEVELOPMENT OF AGRICULTURAL DRAINAGE IN MINNESOTA

A. State Acquisition of Swamplands

Drainage of wet soil for agricultural production has continually developed since Minnesota became a state.\textsuperscript{16} The state has

\textsuperscript{7} See id. § 323.4(a).
\textsuperscript{8} Id. § 326.4.
\textsuperscript{9} At a Minnesota Association of Townships seminar in Deerwood, Minnesota, on June 13, 1986, attorneys reported that drainage work in some counties had virtually ceased due to the federal permit requirements.
\textsuperscript{10} See infra notes 16-72 and accompanying text.
\textsuperscript{11} 33 U.S.C. §§ 401-13 (1982).
\textsuperscript{12} Id. §§ 1251-1376 (1982). See infra note 152.
\textsuperscript{13} See infra notes 73-220 and accompanying text.
\textsuperscript{14} See infra notes 221-91 and accompanying text.
\textsuperscript{15} See infra notes 292-321 and accompanying text.
\textsuperscript{16} See generally Hanson, Development of Agricultural Drainage and Drainage Law in Minnesota, 4 WM. MITCHELL ENV'T'L. L. REV. — (In Press); King, A History of Drainage Law in Minnesota With Special Emphasis on the Legal Status of Wetlands, U. of Minn. Water
fostered initiatives to promote agricultural drainage and has constructed a substantial number of drainage systems that have been turned over to the county drainage authorities.\textsuperscript{17} The state has aided drainage development by providing comprehensive financing, construction, and maintenance procedures that allow property owners to construct and maintain drainage systems through drainage authorities.\textsuperscript{18} A century of drainage development has vested drainage rights in the property owners of the fourteen million acres of land in drainage systems.\textsuperscript{19}

Surveys of Minnesota before statehood reported more than ten million acres of federally-owned wet soils, commonly

\begin{itemize}
  \item Resources Research Center Bull. No. 106 (U. of Minn. Graduate School, Nov. 1980);
  \item Palmer, \textit{Swampland Drainage With Special Reference to Minnesota}, \textit{Bulletin of U. of Minn.} (March 1915).
\end{itemize}

Wet areas are drained to increase production of agricultural crops by allowing earlier planting and better growth during the production season, increase the value of land because it can produce more crops, and facilitate large scale farming by eliminating nuisance wet areas. In the early 1900's, wet soils were considered detrimental to a progressive society. See \textit{State Drainage Commission, Report to the Governor and State Legislature on the Condition of the State Ditches in the Red River Valley}, at 5 (Feb. 1, 1899) [hereinafter 1899 Report] ("Drainage projects, in general, are but attempts to correct the seeming blunders of nature . . ."). At that time, some of the perceived advantages of artificial drainage were improvement of agricultural production and land values, improvement of transportation facilities, increase in business in towns and on transportation facilities, and improvement of public health through elimination of fever and disease-breeding wetlands. Palmer, \textit{supra} note 16, at 1-2.

Soils that are saturated with water will not grow agricultural crops and are difficult to till. Wetter soils are usually limited to production of forage crops and pasture that have a low economic value. Wet soil has a lower temperature that delays planting and reduces the ventilation and abundance of oxygen needed by plants. Root systems tend to be shallower in wet soils and may prevent plants from adapting to conditions of temporary drought. See Leitch & Kerestes, \textit{Agricultural Land Drainage Costs and Returns in Minnesota}, \textit{Dep't of Agric. and Applied Economics, Staff Paper No. P81-15}, at 45 (U. of Minn. Institute of Agriculture, Forestry and Home Economics Sept. 1981); Manson, \textit{Water and Agricultural Land}, U. of Minn. Agric. Experiment Station, Misc. J. Series Paper No. 947, at 6 (Aug. 1957).

Soils that have a low crop producing potential will usually have a small increase in productivity after drainage. However, naturally productive soils that are not utilized because of their wetness may benefit significantly by drainage. In general, the poorly drained soils, if properly drained, are some of Minnesota's most productive soils. See U.S. Dep't of Agric. Soil Cons. Serv., at 19; Anthony, \textit{Basic Economics of Farm Drainage}, No. 568, \textit{Minn. Agric. Economist}, \textit{Minn. Agric. Ext. Serv.}, at 5 (June 1975).

17. See infra notes 21, 22, 24, 27, & 50.
18. See infra notes 27 & 77.
19. See infra notes 260-70 and accompanying text.
known as swamplands, within its boundaries. The federal government granted the swamplands within Minnesota to the state upon admission to the United States. Although the grant was conditioned on the proceeds from the swamplands being used to drain the land, the condition was ignored.

B. Organization of Large Public Drainage Systems

Agricultural settlement in Minnesota began in the 1850’s in the southeastern area of the state where settlers first arrived by river. Railroad construction from 1860 to 1890 stimulated further settlement and the establishment of towns. Between 1890 and 1900 cultivation advanced rapidly westward and northward to western Minnesota and the Red River Valley. The Red River lands had fertile soil and were well suited for wheat production but a flat area inhibited drainage to the Red River. A plan was developed to construct and finance large-

21. Act of March 12, 1860, ch. 5, 12 Stat. 3; Act of September 28, 1850, ch. 84, 9 Stat. 519 (the state received “the whole of these swamp and overflowed lands, made unfit thereby for cultivation . . . .”). See Shaw & Fredine, Wetlands of the United States, Their Extent and Their Value to Waterfowl and Other Wildlife, U.S. DEPT. OF INTERIOR, FISH AND WILDLIFE SERVICES CIRCULAR No. 39, at 5 (1956) (4,706,503 acres were patented to Minnesota).
22. Over 2,800,000 acres were granted to aid railroads, state institutions, a slack water navigation company, a seminary, and education and charitable institutions. Very little of the swamplands that were granted or retained were drained until large drainage projects were organized. In 1881, a constitutional amendment was adopted that prevented swampland grants to aid railroads. Act of March 3, 1881, ch. 4, 1881 Minn. Laws 23; see Palmer, supra note 16, at 89-94 (a discussion of the various legislative acts that granted the swamplands to private entities and the reactions of different governors); see also Willard, Northern Minnesota Drainage, TEXT OF PAPER PRESENTED AT THE 33RD ANNUAL CONVENTION OF MINN. SURVEYORS & ENGINEERS SOC., MINNEAPOLIS, MINN., at 8-10 (Feb. 16-17, 1928) (a discussion of state actions regarding the swamplands suit brought by the United States in 1922 and later dismissed to recover the swamplands granted by the federal government because proceeds of the swamplands were not used for their drainage).
24. The rapid advance of cultivation into areas of poorly drained soils intensified the demand for drainage of large areas. Early drainage was limited to a few efforts by private parties and railroad bed drainage to carry off water in the spring. See 1899 REPORT, supra note 16, at 10-11; Palmer, supra note 16, at 64. Townships were the only government entity authorized to construct drainage projects for highways and agricultural purposes. Act of March 3, 1877, ch. 91, 1877 Minn. Laws 181; Act of March 2, 1874, ch. 57, 1874 Minn. Laws 200.
25. Water remained in depressions in the spring and very little drainage occurred during the rest of the year. The western side of the Red River was roughly
scale drainage in the Red River Valley by assessing the lands benefited. The resulting drainage legislation, which has been emulated for over one hundred years, required a petition of landowners for initiation, and financed the drainage project by selling bonds, and assessing the costs to benefited landowners.

The state began an active drainage role in 1897 when it designated a three-member board of commissioners to oversee drainage. A topographical and drainage survey was ordered, which concluded that about 2,500,000 acres of state land was excessively wet and should be drained. The state drainage commission began constructing drainage systems that were close to railroad terminals and trade centers to directly benefit agriculture. An additional benefit of drainage paralleled by the ancient shoreline of Lake Agassiz. Adequate slopes existed from the shoreline to a flat area about ten miles wide and 225 miles long and there was adequate slope from the flat area to the river. The flat area prevented drainage from the east. The early Red River area drainage was termed "rivermaking" and consisted of channels through the flat area. See 1899 Report, supra note 16, at 8-9.

26. Id. at 10-11. Main ditches of about 275 miles were recommended at a cost of $750,000. Id. The plan was developed by James J. Hill and C.C. Elliott. James J. Hill, owner of the St. Paul, Minneapolis and Manitoba Railroad, the predecessor of the Great Northern Railroad, owned over a million acres in the Red River Valley. Mr. Elliot was a drainage engineer from Illinois and former chief of drainage investigations for the U.S. Department of Agriculture. Id.

27. Id. at 11; Palmer, supra note 16, at 65. Drainage laws were enacted that allowed county supervision of drainage projects and appropriations were made for the Red River Valley drainage projects and, in 1893, the Red River Drainage Commission was formed. Act of April 17, 1893, ch. 221, 1893 Minn. Laws 371. The commission initiated nineteen state ditches that provided main channels for drainage to the Red River. Local drainage was necessary to make most areas suitable for cultivation. See Act of March 7, 1887, ch. 98, 1887 Minn. Laws 692; Act of March 1, 1883, ch. 108, 1883 Minn. Laws 141; Act of March 10, 1879, ch. 38, 1879 Minn. Laws 46 (authorizing counties to engage in intertownship drainage and intercounty drainage, and establishing county drainage districts).

28. Act of March 27, 1901, ch. 90, 1901 Minn. Laws 93; Act of April 23, 1897, ch. 90, 1897 Minn. Laws 584. The state drainage commission became the Department of Drainage and Waters in 1919 and, in 1931, the Division of Drainage and Waters in the Department of Conservation. In 1941, the Division of Waters and Engineering assumed remaining drainage responsibilities.


ditches was construction of roadways on the fill excavated from drainage ditches.32 By 1915, seventy-six state ditches had been built33 and the state had appropriated over one million dollars to drain state lands.34

C. The Drainage Boom 1900-1915: Drainage of Nine Million Acres

Most of the farmable land in Minnesota had been settled by the late nineteenth century, and additional land for the state’s growing population was available only by draining marshes and poorly drained soils. Most counties had established some county drainage systems by 1897.35 State officials encouraged drainage of lands too wet to farm without drainage.36 Surveys

32. Id. at 8-9; State Drainage Commission, Report of the State Drainage Commission on Drainage Work in Minnesota 8-9 (Jan. 1, 1913) [hereinafter 1913 Report]. About 575 miles of roadway were constructed in conjunction with state ditches initiated by 1913. The state drainage commission usually constructed drainage ditches as main outlet channels through land that should receive additional drainage. However, in Roseau and Kittson Counties local drainage systems were constructed by the state to drain state land to be sold to the public. Palmer, supra note 16, at 99. In 1912, the state investment of $30,000 to drain 18,000 acres was expected to return $450,000 to the state by selling the drained land. In most areas it was anticipated that counties would construct drainage systems to make the land suitable for cultivation. 1899 Report, supra note 16, at 15-16. The state drainage commission made regular inspections of the drainage systems, but the counties had the duty to maintain and repair them. The state paid for drainage construction and assessed the costs to the benefited property. The public supported state drainage system construction and the state commission received few, if any, complaints, even concerning the assessments. 1913 Report, supra at 8.


34. Id. at 97; see Bureau of the Census, U.S. Dep’t of Commerce, Drainage of Agricultural Lands, Fifteenth Census of the United States: 1930 Minnesota Statistics for States and Counties (1932) [hereinafter 1930 Census]. By 1930, the state had made capital expenditures for state drainage of $1,339,180 that drained about 606,000 acres. Id. at 5.


36. Letter of Transmittal from Governor John A. Johnson, State Auditor Samuel Iverson, and Secretary of State Peter E. Hanson to the Minnesota Legislature (Jan. 1, 1907) (transmitting Report on Topographical and Drainage Survey of Swamp and Marshy Lands Owned by the State of Minnesota, supra note 30). “We are convinced that the time has arrived when it is imperatively necessary for the state to pursue a vigorous policy in dealing with this question [drainage of swamplands]. We respectfully recommend that the reclamation of the state swamp lands be continued on a more extensive scale and that a liberal annual appropriation be made for carrying on this work.” 1911 Report, supra note 31, at 11 (“Drainage work should be continued with increased energy both on the part of the state and under county management . . . . The wetland areas of the state should all be transformed to production lands as rapidly as possible.”).
AGRICULTURAL DRAINAGE

and drainage plans of the entire state were ordered and were to be filed with county auditors. \(^{37}\)

The drainage laws enabled drainage with as few as one person petitioning the district court. \(^{38}\) All land, except state-owned land, could be assessed for the costs of constructing a drainage system, whether settled or not. \(^{39}\) State law allowed the formation of state, judicial, county, and township drainage systems, \(^{40}\) with the cost of the drainage work assessed against the benefited property. Favorable drainage laws and a demand for farmland resulted in nine million acres of land being drained from 1900 to 1915. \(^{41}\)

\section*{D. Decline of Drainage}

Although the first fifteen years of this century resulted in unprecedented drainage, events after 1915 brought drainage to a dramatic halt. Floods from 1916 to 1919 and tile failures raised questions about drainage benefits, \(^{42}\) and, in 1921, the

\begin{itemize}
  \item \textit{37.} 1911 \textit{REPORT}, \textit{supra} note 31, at 5.
  \item \textit{38.} Act of April 25, 1907, ch. 448, § 3, 1907 Minn. Laws 639, 643, allowed petitioners to transfer their petition to a district court if the county board obstructed or delayed proceedings or refused to establish a drainage system.
  \item \textit{39.} See 1911 \textit{REPORT}, \textit{supra} note 31, at 11 (federal land that was benefited could be assessed under the Volstead Act and land held by railroad companies was assessed in the same manner as private land).
  \item \textit{40.} See Minn. Rev. Laws, ch. 44, 677 (Supp. 1909) (the statute provided for state ditches, §§ 1-43; judicial and county ditches, §§ 44-125; and town ditches, §§ 126-63). The resulting drainage activity in 1910 is indicated by over 60 ditching machines, most of which were floating dredges, operating in the state and 15 clay tile factories and other concrete tile factories, which could hardly keep up with the tile demand. See Ralph, \textit{supra} note 30, at 11; \textit{see also} \textit{First Biennial Report of the Commissioner of Drainage and Waters to His Excellency the Governor and the Legislature 22} (1921) [hereinafter \textit{First Biennial Report}] (in southern Minnesota, about two-thirds of the drainage constructed was by tiling).
  \item \textit{42.} Manson, \textit{Water and Agriculture Land, Conservation Volunteer} 34, 40-41, table 1 (July 1957); \textit{see} Sardeson, \textit{The Drainage Question}, 10 \textit{W. Mag.} 45, 46-48 (1917) (the floods of 1916 raised the issues of whether open ditches should be used in drainage and whether drainage caused floods); \textit{First Biennial Report, supra} note 40, at 25-30 (open ditches accelerated water flow and contributed to erosion). The floods of 1918 and 1919 severely damaged agricultural lands. Large tracts of land in the watersheds of the Minnesota and Red River Valleys, Red Lake and Roseau Rivers, were severely damaged. An investigation of the flood was ordered by the legislature, Act of April 25, 1919, ch. 471, § 2, 1919 Minn. Laws 607, 610, although most drainage systems, covering about 24 percent of the land area, were constructed to prevent land from being overflowed by stream floods. 1920 Census, \textit{supra} note 41, at 4.
annual amount of rainfall dropped below normal and remained below normal almost continuously until 1938.\textsuperscript{43}

Drainage construction and proceedings practically stopped during World War I due to a shortage of labor, supplies, and financing problems.\textsuperscript{44} Rising postwar farm values and farm commodity prices and declining drainage construction costs resulted in new drainage proceedings and an anticipation of drainage being resumed at pre-war levels. By 1923, however, farm commodity prices had dropped sharply. The economical large-scale drainage had been completed and the agricultural depression eliminated the need for new agricultural land to be reclaimed by drainage.\textsuperscript{45} As a result, drainage work was directed towards improving existing farmland.\textsuperscript{46}

As the drought developed and the agricultural and national economic depression resulted in farm products priced below the cost of production, drainage work ceased.\textsuperscript{47} Drainage systems fell into disrepair, filling up with sediment, brush, and trees.\textsuperscript{48} At the time when drainage systems were being neglected, $64,139,641 had been spent to construct 2,884 drain-

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\textsuperscript{43} Manson, supra note 42, at 40-41.

\textsuperscript{44} First Biennial Report, supra note 40, at 15-16 (few, if any, drainage bonds could be sold, except at high rates of interest).

\textsuperscript{45} See Department of Drainage and Waters, Second Biennial Report of the Commissioner of Drainage and Waters 12-13 (1923).

\textsuperscript{46} Id. See generally Roe, Benefits of Drainage, U. of Minn. Agric. Extension Div. Special Bull. No. 67 (Div. of Farm Eng’g Jan. 1923); Roe, Farm Drainage Methods, U. of Minn. Agric. Extension Station Bull. No. 216 (Div. of Agric. Eng’g June 1924) (benefits and methods for on-farm drainage are described).

\textsuperscript{47} See Minn. Dep’t of Conservation Div. of Drainage & Waters, First Biennial Report 1 (Nov. 25, 1932); Minn. Dep’t of Conservation, Second Biennial Report 38 (Dec. 1934); Minn. Dep’t of Conservation, Third Biennial Report 70 (Dec. 1936).

age systems in Minnesota consisting of 14,478 miles of open ditch and 9,451 miles of tile. The outstanding indebtedness of these systems was $15,600,000 in the southern counties and $7,500,000 in the northern counties.

E. Resumption of Drainage with Conservation and Wetland Protection

The drought that continued into the 1930's made drainage unnecessary and conservation became the most important water policy. By 1938, normal rainfall occurred and, from 1942 to 1945, the Minnesota Valley had the highest four-year drainage repair in southern Minnesota. See Minn. Dep't of Conservation, Annual Report, 1938 and Fourth Biennial Report 155 (Jan. 1, 1939).

49. 1930 Census, supra note 34, at 5.

50. Minn. Dept. of Conservation Div. of Drainage & Waters, First Biennial Report, supra note 47, at table 3. Northern Minnesota drainage had a separate path in drainage development during the early part of the century. Land was originally drained to promote settlement, agricultural production, and prosperity. Excesses in drainage brought a number of counties to the brink of financial ruin. See generally Act of April 12, 1949, ch. 498, § 6, subd. 12, 1949 Minn. Laws 832, 836 (providing for nonrepair of ditches within game preserves); Act of April 22, 1933, ch. 402, 1933 Minn. Laws 671; Act of April 19, 1929, ch. 258, 1929 Minn. Laws 298 (estabishing game reserves on ditch lien forfeited lands); Hanson, supra note 16; Willard, supra note 22; Roseau County Conservation League, Brief on Delinquent Ditch Tax Problems and Proposed Addition to the Red Lake Game Preserve in Roseau County 5-6 (1931); Brief of Amici Curiae, Lyman v. Chase, 178 Minn. 244, 226 N.W. 633 (1929); Brief on Delinquent Tax and Ditch Assessments in Marshall County, Minnesota 11-12 (1931) (each brief examines the governmental excesses which lead to tax forfeitures in specific cases); Minn. Comm'n of Conservation, First Biennial Report of the Commission of Conservation, 43 (1933) (a legislative remedy vested the title of certain tax forfeited lands absolutely in the state and the state paid delinquent drainage bonds).

51. Minn. Dep't of Conservation, Second Biennial Report 11-14 (Dec. 1934). Drainage of meandered lakes was prohibited except when no longer capable of public use. Sixty percent of the landowners within four miles of the lake were required for a petition to drain. Act of April 25, 1931, ch. 350, 1931 Minn. Laws 445. All waters that were navigable in fact were declared to be state waters. Act of April 26, 1937, ch. 468, 1937 Minn. Laws 794. Permission of the commissioner of conservation was required to drain public waters. Act of March 25, 1947, ch. 142, § 5, 1947 Minn. Laws 218, 221-22. Over 300 control structures were built in Minnesota by 1936 and an additional 400 were being operated by the state in the following ten years. Minn. Dep't of Conservation, Third Biennial Report 10 (Dec. 1936); Minn. Dep't of Conservation, Seventh Biennial Report 53 (Jan. 1945). Dams were built in some drainage ditches to aid in the prevention of forest fires. Minn. Comm'n of Conservation, First Biennial Report of the Commission of Conservation 11 (1933). Other structures were built to divert water from drainage systems to areas where the water was needed. Minn. Dep't of Conservation, Seventh Biennial Report 53 (Jan. 1945).
precipitation on record.\textsuperscript{52} The heavy precipitation and the demand for and realization of higher prices of agricultural products during and after World War II resulted in widespread renewed desire for drainage projects.\textsuperscript{53} Pressure increased to drain lowlands that were farmed during the drought but were too wet after normal rainfall returned.

Long term neglect and the design of many earlier systems to drain blocks of land and not to accept additional water from other drainage systems caused the legislature to enact a drainage system repair and improvement procedure.\textsuperscript{54} Because drainage law covered many chapters of legislative enactments, a legislative interim commission was formed to make recommendations on the drainage law.\textsuperscript{55} The recommendation resulted in legislation that authorized only district courts and county boards to establish drainage systems and eliminated state and township drainage.\textsuperscript{56}

The post-war agricultural prosperity continued through the 1950's. Drainage projects were constructed, improved, and repaired in the agricultural areas that were formerly drained. Federal programs aided drainage financially and technically and extensive field drainage was accomplished by farm tile systems.\textsuperscript{57}

\begin{footnotes}
\item[52.] MINN. DEP'T OF CONSERVATION, EIGHTH BIENNIAL REPORT 26 (Jan. 1947).
\item[53.] Id. at 64.
\item[54.] Act of March 8, 1945, ch. 71, 1945 Minn. Laws 100; Act of March 9, 1945, ch. 82, 1945 Minn. Laws 124.
\item[57.] DIVISION OF WATERS, MINN. DEPT. OF CONSERVATION, REPORT OF THE DIVISION OF WATERS FOR THE 13TH BIENNIAL 2 (Oct. 1956). About 15,000 miles of farm tile were installed from 1954 to 1956. About 85 percent of the tile was concrete and manufactured at one of 50 Minnesota tile plants. Almost 500 miles of open ditch were constructed or improved during the same period. See W. NORD, C. EVANS & G. MANN, DUCKS OR DRAINAGE: A STUDY OF THE PRAIRIE POTHOLE REGION OF MINNESOTA AND THE DAKOTAS 72 (1952) [hereinafter DUCKS OR DRAINAGE] (U.S. Dep't of Interior, office of River Basin Studies Publication); R. TINER, JR., WETLANDS OF THE UNITED STATES: CURRENT STATUS AND RECENT TRENDS 42 (Mar. 1984) (U.S. Dep't of Interior Fish & Wildlife Service) (188,000 acres were drained in the Dakotas and Minnesota during 1949 and 1950 with federal assistance). Mechanized farming made wet areas an increased nuisance and small, irregular wet areas, if drained, represented income to farmers. Manson, supra note 16, at 4-5.

A farm tile system generally consists of one or more subsurface tile lines. Clay and concrete tile have been the most popular material for drain tile used in Minne—
The loss of "potholes," which was responsible for sixty-percent of the waterfowl reproduction, alarmed sportsmen and conservationists.\textsuperscript{58} In the late 1950's, a number of measures were taken to preserve wetlands, which also affected drainage.\textsuperscript{59} State offices and agencies were required to conserve rainfall where it fell, if practical.\textsuperscript{60}

In the 1960's, land values began increasing, making drainage a desirable method of obtaining additional agricultural production land. In the late 1960's and early 1970's, conservationists began to question whether drainage was in the public interest.\textsuperscript{61} Judicial authority to establish drainage systems was eliminated\textsuperscript{62} and the legislature required the Commissioner of Natural Resources and drainage authorities to examine environmental and conservation criteria before establishing drainage projects.\textsuperscript{63} Public wetlands that were to be preserved were inventoried, and a state water bank program was created that authorized payments to prevent drainage of private wetlands.\textsuperscript{64}

\textsuperscript{58.} Ducks OR Drainage, \textit{supra} note 57, at 30-31 (total drainage in Minnesota in 1949 and 1950 averaged 19,412 potholes per year). \textit{See} Act of April 23, 1953, ch. 688, 1953 Minn. Laws 869 (legislature responding to the loss of wetlands by allowing a tax reduction for wetlands that were preserved as wildlife areas).

\textsuperscript{59.} Act of April 22, 1953, ch. 643, 1953 Minn. Laws 785 (interim commission to study conservation, drainage, and flood control); Act of April 25, 1955, ch. 664, 1955 Minn. Laws 1002 (state water resources board established); Act of April 23, 1955, ch. 799, 1955 Minn. Laws 1292 (watershed districts authorized, which could assume drainage functions); Act of April 22, 1955, ch. 681, 1955 Minn. Laws 1030 (drainage authorities were required to consider conservation of soil, water, forests, wild animals, and other natural resources when considering the public utility or benefit of a proposed drainage system); Act of April 24, 1957, ch. 638, 1957 Minn. Laws 860 (increased number of petitions for a new project from 50 to 60 percent); Office of River Basin Studies, U.S. Dep't of Interior, Wetland Inventory of Minnesota (Apr. 1955) (inventory of Minnesota wetlands stressing the need for conservation); Dorer, \textit{Wetlands Must Be Preserved}, MINN. VOLUNTEER 23 (Jan.-Feb. 1957) (the "save Minnesota's Wetland's" program); Hennings, \textit{Goal: One Million Acres For Wildlife}, MINN. VOLUNTEER 11 (Jan.-Feb. 1983)(money appropriated to purchase wetlands).

\textsuperscript{60.} Act of April 20, 1961, ch. 754, 1961 Minn. Laws 1413.

\textsuperscript{61.} \textit{See} Peterson, \textit{Agricultural Drainage and the Public Interest}, MINN. VOLUNTEER 37-39 (Jan.-Feb. 1972).

\textsuperscript{62.} 1971 Minn. Laws 485.


\textsuperscript{64.} Act of March 25, 1976, ch. 83, §§ 7-9, 1976 Minn. Laws 211-17; \textit{see} King, \textit{supra} note 16 (describing the evolution of wetland protection and preservation); \textit{see}
These programs were of limited effectiveness. Almost seventeen percent of the wetlands inventoried in 1974 were drained by 1980.65

F. Present Drainage Activity

Since 1981, land values and agricultural commodity prices have fallen. New drainage activity has declined in recent years and almost all farm land that required drainage for agricultural purposes through large scale efforts has been drained or partially drained.66

The technology of on-farm drainage has improved, allowing surface and subsurface drainage to be constructed more efficiently.67 More farmers can install their own systems using plastic drain tile, trenching machinery, and technical services of the Soil Conservation Service and other public agencies. There has been a reversal of the policy of the federal and state governments from encouraging drainage projects through financial and technical assistance to the present policy of advo-

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also Note, Preserving Minnesota Wetlands: Plugging the Leaks in Minnesota Water Management Law, 6 WM. MITCHELL L. REV. 137 (1980) (discussion of wetland preservation under Minnesota law).


67. Surface drainage drains surface water by collecting and removing excess water from the ground surface within the area affected, or by diverting water away from the area to be drained. Surface water can be drained by surface ditches and land smoothing. This method is commonly used in the Red River Valley. Open ditches vary in depth and width depending on rainfall patterns, the size of the drainage area, soil type, types of crop grown, the desired protection, the potential for flooding from natural watercourses, and the topographical setting of the area to be drained.

Ditches can be constructed with equipment as simple as a mold board plow or heavy equipment such as scrapers and drag lines. The required equipment depends on slope and design of the channel, existing moisture conditions, soil type, volume of work, accuracy required, and financial considerations. While surface ditches are usually much less expensive to construct than subsurface drainage systems, they result in a loss of crop land.

Subsurface drains are used to drain small wet areas or entire fields in a systematic pattern. To drain a field, lateral tile lines are placed throughout the field and connected to a main drainage line. Drainage of small wet areas with subsurface tile often requires a surface inlet at the wet area to be drained. Subsurface drains eventually lead to a surface outlet that empties into a natural waterway or an open ditch. See LEITCH & KERESTES, supra note 16, at 7-10; U.S. DEP’T OF SOIL CONS. SERV., supra note 16, at 19.
cating wetland protection and preservation. 68 Most of the new drainage will be confined to on-farm practices to improve existing crop land.

A survey of county auditors indicated that over 1,400 drainage systems are in need of repair or have not been repaired for over fifteen years. 69 For a six-year period from 1978 to 1984 the Commissioner of Natural Resources has made required reports on seventy-six drainage systems improvements and forty-two new drainage systems. 70 Future drainage projects are expected to be primarily maintenance and renovation of existing systems.

Although the economic incentives to drain wet areas for agricultural production are not as great, farmers who need drainage to raise crops and who have paid for drainage rights are increasingly regulated by state and federal laws that attempt to preserve the public right to the benefits of wetlands. 71 The regulations encroach on and, in some instances, prohibit drainage rights that have been part of farming for almost a century. 72

II. STATE WETLAND PRESERVATION AND REGULATION OF ACTIVITIES AFFECTING AGRICULTURAL DRAINAGE

A. Scope of State Regulation

State wetland preservation and regulation of agricultural

68. But see Bremicker, supra note 65, at 28. Federal farm policies have failed to preserve marginal lands from production.

69. A survey was taken in the spring of 1985 by the Minnesota Senate Office of Senate Counsel to determine the need for future drainage projects. The county auditors reported that, in Minnesota, there are approximately: (1) 3,178 drainage systems entirely within one county; (2) 536 joint county drainage systems; (3) 3,887 drainage systems that were repaired from 1980-84; (4) 648 repair petitions that were received from 1980-84; (5) 100 new drainage system petitions; and (6) 1,431 drainage systems in need of repair or unrepaired since 1969. The county auditors also reported that the total value of repairs, improvements, and new systems from 1980-84 was at least $51,766,000.

70. Office Memorandum from Ronald D. Harnack, Administrator of Flood Plain/Shoreland Mgt. Section, to Mark Hanson, the office of Senate Counsel (Dec. 12, 1984). The Commissioner of Natural Resources is required to submit a final advisory report by Minnesota Statute § 106.131.

71. For examples of controversial drainage that continues in spite of regulations, see, e.g., Schara, A Hunter's Battle to Save a Slough, Minneapolis Star & Tribune, Oct. 21, 1984, at 15C, col. 1; Moos, Jury Finds Contractor Guilty In Lost Marsh Drainage Case, Mankato Free Press, Mar. 23, 1984, at 13, col. 1.

72. See infra notes 257-90 and accompanying text.
drainage has focused on restricting drainage of state-designated public wetlands. In general, drainage rights have been allowed or compensated for under state law, which has resulted in maintenance of agricultural drainage. Non-protected wetlands, however, may be drained as part of public or private drainage projects.

Under the common law, persons may drain water from their land to the extent that the discharge of water is reasonable and does not damage a nonconsenting landowner’s property.

Large scale drainage projects, by their nature, require statutory procedures to organize, engineer, and finance drainage work. Statutory drainage law in Minnesota facilitates construction and maintenance of public drainage systems and allows private drainage to interact with other drainage systems.

73. Wetlands are designated under a classification and inventory system. Minn. Stat. § 105.391 (1984) (about 261,709 acres of wetland have been inventoried).

74. See id. § 105.391, subd. 3.

75. Private wetlands that are not designated under the classification and inventory system may be drained under state law. Since the inventory and classification system has designated only 261,709 acres of wetland compared to the 8,700,000 acres of wetlands and wet soil in Minnesota, many wetlands and wet soils are not regulated by state law because they are less than the 10 acre requirement for public waters designation. See id. § 105.37, subd. 15, 105.392, subd. 2 (1984) (public waters are 10 or more acres in unincorporated areas and two and one-half or more acres in incorporated areas). It has been estimated that there are 15,000 to 20,000 basins less than ten acres that may be drained. Minnesota Legislative Auditor, Drainage: Law, Policy, and Programs (October 1978).

76. The drainage must be necessary for a reasonable use of the land. See Kallevig v. Holmgren, 293 Minn. 193, 197-98, 197 N.W.2d 714, 718 (1972); Johnson v. Agerbeck, 247 Minn. 432, 437-38, 77 N.W.2d 539, 543 (1956); Enderson v. Kelehan, 226 Minn. 163, 167-68, 32 N.W.2d 286, 289 (1948); Terfehr v. Kleinfehn, 352 N.W.2d 470, 473 (Minn. Ct. App. 1984). But see Pell v. Nelson, 294 Minn. 563, 366, 201 N.W.2d 136, 137-39 (1972) (use of a sump pump to discharge 1,200 gallons of water a minute was an unreasonable use of farm land). The drainage discharge may not unreasonably damage another person’s land. See Kallevig, 293 Minn. at 197-98, 197 N.W.2d at 718; Boeck v. Yellow Medicine County (In re Hoepner), 241 Minn. 6, 9, 62 N.W.2d 80, 83 (1954). For a discussion of permissible drainage under common law see Hanson, supra note 16.

77. See Minn. Stat. §§ 40.07, 40.072 (1984 & Supp. 1985) (allows soil and water conservation districts to act as an agent of the county and federal government to construct public drainage projects and under certain conditions to aid private drainage); id. § 106A.005 to .811 (Supp. 1985) (establishes procedures to initiate, establish, construct, and maintain drainage systems under county and joint county jurisdiction) Drainage and Conservancy Act of Minnesota, id. §§ 111.01 to 111.421 (1984) (regulates drainage under the supervision of drainage and conservancy districts); id. § 112.34 to .65 (1984 & Supp. 1985) (establishes procedures for watershed districts to construct and finance drainage projects).

Minnesota Statutes, chapter 106A, provides the comprehensive procedures to initiate, establish, construct, and finance drainage projects. Drainage under chapter 106A is modified by the public waters and wetland protection provisions of Minnesota Statutes, chapter 105. Drainage projects must meet a two-step test before being established under state law. First, the project must be exempt or permitted under public waters and wetland criteria. Second, the project must meet the economic, public purpose, and practicality standards under the public drainage law.

B. Restriction on Drainage Affecting Public Waters and Wetlands

A drainage authority may construct and maintain drainage systems including deepening, widening, straightening, or changing the channel or bed of a natural waterway. A drainage authority may not drain a waterbody or begin drainage work in a watercourse that requires a permit under Minnesota Statutes, section 105.42, until the commissioner determines that the waterbody or watercourse is not a public water. Activities that require a permit include changing the course or road and natural drainage runs toward the road, the person may connect a private drainage system to the road ditch after obtaining a permit from the road authority. MINN. STAT. § 160.20 (1984). A person owning land adjacent to a railway may construct a drain under and across the railway at their own expense after consulting the railway. Id. § 219.35 (Supp. 1985). The railroad must maintain ditches that drain railways. Id.; Peterson v. Northern Pac. Ry. Co., 132 Minn. 265, 271, 156 N.W. 121, 124 (1916). Private drainage systems are also restricted in connecting to public drainage systems. See MINN. STAT. § 106A.081, subs. 1 & 4 (Supp. 1985) (it is a misdemeanor to construct a drain that outlets into another drainage system without complying with the statutory procedure). For a discussion of road and railway statutes affecting drainage, see Hanson, supra note 16, at —.

79. Other statutory procedures (supra note 74) refer to and utilize most of the procedures in Minnesota Statutes chapter 106A (Supp. 1985) to establish and construct drainage systems.


81. "Established" means the drainage authority has held the final hearing and made the final order to construct, finance, and make assessments for the drainage project. MINN. STAT. § 106A.005, subd. 13 (Supp. 1985).


83. See infra notes 129-47.

84. See MINN. STAT. § 106A.011, subd. 1 (Supp. 1985).

85. Id. subd. 2. Public waters and wetlands have been designated under Minnesota Statutes section 105.391, subdivision 1. The language in section 106A.011, subdivision 2, was intended to accommodate the interim designation process. See MINN. STAT. § 105.37, subd. 14 (statutory definition of public waters); see generally Gerval & Larson, Drainage Law in Minnesota, Public Waters ch. 13 (Minn. Continuing Legal Ed-
cross section of any public waters by filling, excavating, or placing material on the bed of the public waters.86 The permit requirement does not apply to a lawfully established public drainage system if the drainage work does not substantially affect public waters.87

Public waters include wetlands.88 Wetlands are likely to be affected by drainage and most susceptible to being converted to cropland. The definition of wetlands is important to drainage authorities until a final list of all public waters and wetlands in the affected county is published.89 Wetlands are defined for public waters90 and state waterbank91 purposes as being types 3, 4, and 5 wetlands, as defined in U.S. Fish and Wildlife Circular No. 39.92 The wetlands must be ten or more

ucation 1984) (discussion of public waters determination and how it affects drainage proceedings).

86. See Minn. Stat. § 105.42, subd. 1.
87. Id. A repair of a drainage system restores it to original construction. See Minn. Stat. § 106A.701, subd. 1 (Supp. 1985). A repair should not substantially affect public waters and, therefore, would not be subject to the permit requirements as provided in Minn. Stat. § 105.42, subd. 1 (1984). In the "Interim Criteria for Commissioner's Permits For Public Drainage Projects," new projects may be limited by the commissioner's authority "only if the waters to be affected are determined to be public waters... and then only if the project will substantially affect such waters. 'Substantially affect' means partly or wholly drain a water basin; channelize a natural watercourse." Under subpart 2, "[n]ormal repairs and improvements in existing legal drainage systems... should not involve any requirements for regulation by the commissioner except substantial effects" to public waters. Minn. R. 6115.110, subp. 1 (1985).

88. See Minn. Stat. § 105.37, subd. 14 ("For the purposes of statutes other than sections 105.37, 105.38, and 105.391, the term 'public waters' shall include 'wetlands' unless the statute expressly states otherwise.").
89. See Minn. Stat. § 105.391, subd. 1.
90. Id. § 105.37, subd. 15.
91. Id. § 105.392, subd. 2.
92. A type 3 wetland is described as an "inland shallow fresh marsh" where: [the soil is usually waterlogged during the growing season; often it is covered with as much as 6 inches or more of water. Vegetation includes grasses, bulrushes, spikerushes, and various other marsh plants such as cattails, arrowheads, pickerelweed, and smartweeds. Common representatives in the North are reed, whitetop, rice, cutgrass, carex, and giant burreed... These marshes may nearly fill shallow lake basins or sloughs, or they may border deep marshes on the landward side. They are also common as seep areas on irrigated lands.

Marshes of this type are used extensively as nesting and feeding habitat in the pothole country of the North Central States and elsewhere. In combination with deep fresh marshes (Type 4), they constitute the principal production areas for waterfowl.

U.S. Fish and Wildlife Circular No. 39, at 21 (1971 ed.) [hereinafter F&W Cir. No. 39]. The Minnesota Department of Natural Resources has interpreted this definition as:
acres in unincorporated areas or two and one-half or more acres in incorporated areas. The type 3, 4, and 5 definitions were developed in 1956 based on wetland values to waterfowl and wildlife.

Type III Wetland

These marshes are usually flooded by six inches or more of water and typically are covered with cattails and bulrushes throughout the basin. A number of other marsh plants may be present in conjunction with cattails. Some Type III marshes grow marsh grasses which are often used for hay. Type III wetlands often dry up late in the growing season facilitating haying and limited grazing.

Type IV Wetland

Type IV marshes are often covered with up to three feet or more of water. Cattail and bulrushes usually dominate the borders of Type IV wetlands. They are also found in clumps throughout the basin leaving a patchwork effect of open water and vegetation clumps. Type IV marshes go dry in very dry years but are seldom tilled, grazed or hayed except in extreme drought.

A type 5 wetland is described as “inland open fresh water” and:

- Shallow ponds and reservoirs are included in this type. Water is usually less than 10 feet deep and is fringed by a border of emergent vegetation.
- Vegetation (mainly at water depths of less than 6 feet) includes pondweeds, naiads, wild celery, coontail, watermilfoils, muskgrasses, waterlilies, spatterdocks . . . .

In the pothole country of the North Central States, Type 5 areas are used extensively as brood areas when, in midsummer and late summer, the less permanent marshes begin to dry out. The borders of such areas are used for nesting throughout the Northern States. Where vegetation is plentiful, they are used in all sections of the country as feeding and resting areas by ducks, geese, and coots, especially during the migration period.
Based on these definitions, public waters and wetlands are being inventoried and designated under a mapping and local review process.\textsuperscript{95} As the process is completed in each county, a list of public waters and wetlands is published. If a waterbody or watercourse is determined to be public waters or wetlands, the drainage proceedings under Minnesota Statutes, chapter 106A, are subject to Minnesota Statutes, section 105.391, subdivision 3.\textsuperscript{96} Wetlands that are eligible for the state waterbank program\textsuperscript{97} may be drained without a permit and without replacement of the wetlands if the commissioner does not elect, within sixty days of an application for a permit to drain the wetlands, to place the wetlands in a waterbank program agreement with the landowner, acquire the wetlands, or indemnify the landowner.\textsuperscript{98}

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95. \textit{Minn. Stat.} § 105.391, subd. 1.
96. \textit{Id.} § 106A.011, subd. 2.
97. \textit{See id.} § 105.392, subsd. 1 & 2. The state waterbank program authorizes the commissioner of natural resources to enter ten-year agreements with landowners to preserve wetlands, which are renewable for ten years. Eligible wetlands include types 3, 4, or 5 wetlands as defined in F&W Cir. No. 39 that can be feasibly and lawfully drained and, if drained, would provide high quality cropland. At the discretion of the commissioner, wetlands less than ten acres in unincorporated areas or less than two and one-half acres in incorporated areas may be eligible for the waterbank program. \textit{Minn. Stat.} § 105.392, subd. 2. The procedures and eligibility requirements for a waterbank agreement are provided in Minn. R. 6115.1220 to 1280 (1985).
98. \textit{Minn. Stat.} § 105.391, subd. 3. Under Minnesota Rule 6115.1220, subpart 2:
If the state owns wetlands on or adjacent to an existing public drainage system, the state must give consideration to the utilization of the wetlands as part of the drainage system. If the wetlands interfere with or prevent authorized functioning of the public drainage system, the state must provide for any necessary work to allow the proper use and maintenance of the drainage system while preserving the wetlands.

Other public waters and wetlands may not be drained without a permit. Permits to drain public waters or wetlands may not be issued unless the public waters or wetlands to be drained are replaced by waters or wetlands that have equal or greater value. The owner of private lands underlying wetlands may not apply for a permit to drain the wetland until ten years after the original designation of the wetlands as public wetlands. The commissioner must issue a permit to drain if the public water basin is eligible for compensation the commissioner shall mail to the applicant, within 60 days of receipt of an application for a permit to drain, the various choices of indemnification, to include:

A. An offer:
   (1) to place the basin in the state water bank program, together with a sample water bank agreement;
   (2) to acquire the basin and such interest as is necessary to make entry upon the acquired area available to the public;
   (3) to acquire an easement in the nature of a conservation restriction as described by Minnesota Statutes, section 84.64 and 84.65, together with a sample of such an easement; or
   (4) to acquire a lease on the basin, together with a sample lease agreement.

MINN. R. 6115.1220, subp.2

99. See MINN. STAT. § 105.391, subd. 11.
100. Id.
101. See subd. 3.
102. Id. But see Fisher, Minnesota Water Management Law and Section 404 Permits: A Practitioner’s Perspective, 7 HAMLINE L. REV. 249, 268 (1984). The replacement criteria is stated to apply only during the pre-designation period because after designation there is the ten-year moratorium on applications.

103. See MINN. STAT. § 105.391, subd. 3. But see infra note 112 (permit may only be issued to a governmental agency implementing the project unless Minnesota Statutes § 105.391, subdivision 3, is to control). The commissioner has authority to set permit criteria. MINN. STAT. § 105.415.

It is not clear when “original designation” occurs. Minnesota Statutes section 105.391, subdivision 1, refers to the commissioner of natural resources preparing a “preliminary designation” for review by the county boards. Id. After their review and the commissioner’s revision a map and list of public waters is published in the county. This is the first opportunity for the landowner to be apprised of the designation. The Minnesota Department of Natural Resources has interpreted “original designation” to mean the final list of public waters and wetlands published for each county. Letter from Ron Harnack, Administrator, Flood Plains/Shoreland Management Section, Minn. Dept. of Natural Resources, Div. of Waters, to Scott Reinhard, office of Senate Counsel (July 14, 1986).
the wetlands if it appears likely that the economic and other benefits to the owner after drainage exceed the public benefits of maintaining the wetlands.\textsuperscript{104} If the permit is denied, another application may not be made for ten years.\textsuperscript{105}

Drainage work affecting public waters and wetlands potentially requires three types of permits: (1) drainage of public waters and wetlands;\textsuperscript{106} (2) excavation of public waters and wetlands;\textsuperscript{107} and (3) filling into public waters and wetlands.\textsuperscript{108} Receiving a permit of one type does not necessarily exclude obtaining one of the other types.\textsuperscript{109} The total or permanent drainage of public waters and wetlands is not allowed by permit.\textsuperscript{110}

Permits may be issued for the partial drainage of public waters and wetlands to alleviate flooding of agricultural lands caused by artificial obstruction of downstream drainage or increased upstream discharge.\textsuperscript{111} For the partial drainage of a public water or wetland, the applicant\textsuperscript{112} must: (1) provide written consent for the partial drainage from all riparian owners; (2) establish the public need for the partial drainage by specifying the public interests to be enhanced; (3) show that agricultural lands have been flooded; (4) show that any proposed temporary drawdown will not exceed two years in duration under normal climatic conditions; (5) that there are no feasible and practical means to attain the intended purpose without drainage; and (6) demonstrate that the project will ad-

\textsuperscript{104}. See Minn. Stat. § 105.391, subd. 3. But see Minn. R. 6115.0270, subp. 3 (permit will not be issued to totally drain public waters or wetlands).

\textsuperscript{105}. See Minn. Stat. § 105.391, subd. 3.

\textsuperscript{106}. See Minn. R. 6115.0270, subp. 4.

\textsuperscript{107}. See id. 6115.0200.

\textsuperscript{108}. See id. 6115.0192, 6115.0202, 6115.0272. In addition to these three types of permits, drainage work in public waters may require permits for: (1) structures in public waters or wetlands, id. 6115.0220 to .0221; and (2) bridges, culverts, intakes and outfalls, id. 6115.0230-to .0231.

\textsuperscript{109}. See id. 6115.0192, 6115.0202, 6115.0272.

\textsuperscript{110}. See id. 6115.0270, subp. 3.

\textsuperscript{111}. Id. 6115.0270, subp. 4(A)(4).

\textsuperscript{112}. A permit may only be issued to a governmental agency having authority to undertake the drainage project, id. 6115.0271(C)(1), however, the petitioners for a proposed drainage system or the drainage authority may apply for the permit. Minn. Stat. § 106.011, subd. 3(b). But see Minn. R. 6115.0240, subp. 2 (riparian owners may apply); Minn. R. 6115.0240, subp. 2(B) (a holder of a lease or easement may apply if application is countersigned by the landowner).
equately protect public safety and promote public welfare.\textsuperscript{113}

If drainage work requires excavation\textsuperscript{114} in a public water or wetland, a permit to excavate materials from the bed may be necessary.\textsuperscript{115} Excavation is not allowed if significant fish and wildlife habitat would be damaged and the effects cannot be mitigated, the excavation does not provide an effective solution because of recurrent sedimentation, or the excavated materials cannot be properly disposed.\textsuperscript{116} Permits for excavations are generally not required if the excavation is: (1) from a watercourse having a drainage area of less than five square miles; (2) to remove debris without changing cross-section or alignment; or (3) for a repair of a public drainage system as

\begin{itemize}
  \item \textsuperscript{113} MINN. R. 6115.0271(C). In addition, Minnesota Rules 6115.0270, subpart 4, requires the following conditions must be met:
    \begin{itemize}
      \item A. The proposed project is intended to achieve one or more of the following purposes:
        \begin{itemize}
          \item (1) improve navigational or recreational uses;
          \item (2) improve or restore fish or wildlife habitat;
          \item (3) expose sediment in order to remove or eliminate nutrients or contaminants;
          \item (4) alleviate flooding of agricultural lands caused by artificial obstruction of downstream drainage or increased upstream drainage;
          \item (5) allow the mining of iron ore, taconite, copper, copper-nickel, or nickel under the provisions of Minnesota Statutes, section 105.64.
        \end{itemize}
      \item B. The project will involve a minimum of encroachment, change, or damage to the environment including but not limited to fish and wildlife habitat, navigation, water supply, water quality, and storm water retention.
      \item C. Adverse effects on the physical or biological character of the waters shall be subject to feasible and practical measures to mitigate the effects.
      \item D. The proposed project shall be consistent with applicable floodplain, shoreland, and wild and scenic rivers management standards and ordinances for the waters involved.
      \item E. The proposed project shall be consistent with water and related land management plans and programs of local and regional governments provided such plans and programs are consistent with state plans and programs.
    \end{itemize}

  \item \textsuperscript{114} Excavation includes any activity which results in the displacement or removal of bottom materials or widens, deepens, realigns, or extends public waters or wetlands. MINN. R. 6115.0270, subp. 4.

  \item \textsuperscript{115} MINN. STAT. § 105.42, subd. 1 (Supp. 1985). Permits are required, unless specifically exempted, for any activity affecting, changing, or diminishing the course, current, or cross section of public waters or wetlands. MINN. R. 6115.0170 & 6115.0170, subp. 2. It is the goal of the Department of Natural Resources to limit excavations to minimize change to the environment and ecosystem, allow the waters to assimilate the excavation, and control the disposition of the materials excavated. Id. 6115.0200, subp. 1.

  \item \textsuperscript{116} MINN. R. 6115.0200, subp. 3 (other permit criteria are given in subpart 5, including detailed disposal requirements in subpart 5(B)).
\end{itemize}
allowed by Minnesota Statutes, chapters 106 and 112.\textsuperscript{117}

A fill permit may be necessary if drainage outside of a public water or wetland disposes of material into the public water or wetland, e.g., disposal of excavated material on the outside of a berm in a public water or wetland.\textsuperscript{118} Disposal of material from activities above the high watermark into the public water or wetland is not allowed.\textsuperscript{119} In general, permits are not required to place fill in a protected watercourse having a total drainage area of five square miles or less.\textsuperscript{120}

Review of a permit to drain or alter public waters or wetlands is subject to the provisions of Minnesota Statutes, chapter 105\textsuperscript{121} and its implementing rules,\textsuperscript{122} the Minnesota Environmental Policy Act,\textsuperscript{123} and the Minnesota Environmental Rights Act.\textsuperscript{124} General criteria provide that the proposed activity must conform to state, regional, and local water and related land resources management plans\textsuperscript{125} and that it may only minimally encroach, change, or damage the environment.\textsuperscript{126} The project proponents must demonstrate that the project is reasonable and practical, and will promote the public welfare.\textsuperscript{127} A permit, if issued, must provide mitigation for damaging effects.\textsuperscript{128}

C. Requirements for Authorizing Drainage System Construction Projects

A drainage construction project\textsuperscript{129} may not be established\textsuperscript{130}

\textsuperscript{117} Id. 6115.0200, subp. 4.
\textsuperscript{118} "Fill" means any material placed or intended to be placed on the bed or bank of a public water or wetland. Id. 6115.0170, subp. 11.
\textsuperscript{119} Id. 6115.0190, subp. 3(E).
\textsuperscript{120} Id. 6115.0190, subp. 4(D)(other requirements for fill permits are given in subpart 5 and 6115.0191).
\textsuperscript{121} See Minn. Stat. §§ 105.38, 105.42, 105.45.
\textsuperscript{122} Minn. R. 6115.0150 to .0272.
\textsuperscript{123} Minn. Stat. §§ 116D.01 to .07 (1984).
\textsuperscript{124} Id. §§ 116B.01 to .13 (1984). For a detailed discussion of permit review criteria and permit processing procedures from a practitioner's perspective see Fisher, supra note 102, at 268-81.
\textsuperscript{125} See Minn. Stat. § 110B.01 to .30 (Supp. 1985) (Comprehensive Local Water Management Act).
\textsuperscript{126} Minn. Stat. § 105.42, subd. 1a.
\textsuperscript{127} Id. § 105.45.
\textsuperscript{128} See id. § 105.42, subd. 1a.
\textsuperscript{129} A drainage construction project is distinguished from a repair or maintenance project. Drainage construction projects are authorized under four general procedures: (1) new drainage systems, Minn. Stat. § 106A.201 (Supp. 1985); (2) im-
if: (1) the benefits of the proposed drainage system are less than the total cost; (2) the proposed drainage system will not be of public benefit and utility;\textsuperscript{131} or (3) the proposed drainage system is not practical after considering environmental and land use criteria.\textsuperscript{132} Any one of these factors prevents the es-

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\textsuperscript{130} Established" means the drainage authority has approved the drainage project and will sell bonds or otherwise finance the construction. See Minn. Stat. § 106A.005, subd. 13.

\textsuperscript{131} In determining public utility, benefit, or welfare, a drainage authority must follow Minnesota Statutes section 106A.015, subdivision 2, which provides:

In any proceeding to establish a drainage system, or in the construction of or other work affecting a public drainage system under any law, the drainage authority or other authority having jurisdiction of the proceeding must give proper consideration to conservation of soil, water, forests, wild animals, and related natural resources, and to other public interests affected, together with other material matters as provided by law in determining whether the project will be of public utility, benefit, or welfare.

Minn. Stat. § 106A.015, subd.2.

\textsuperscript{132} "Public benefit" is defined under Minnesota Statutes section 106A.005, subdivision 24, as including

an act or thing that tends to improve or benefit the general public, either as a whole or as to any particular community or part, including works contemplated by this chapter [106A], that drain or protect roads from overflow, protect property from overflow, or reclaim and render property suitable for cultivation that is normally wet and needing drainage or subject to overflow.

Minn. Stat. § 106A.005, subd.24

\textsuperscript{132} Under Minnesota Statutes section 106A.015, subdivision 1, environmental and land use criteria are described as:

Before establishing a drainage system the drainage authority must consider:

(1) private and public benefits and costs of the proposed drainage system;
(2) the present and anticipated agricultural land acreage availability and use in the drainage system;
(3) the present and anticipated land use within the drainage system;
(4) flooding characteristics of property in the drainage system;
(5) the waters to be drained and alternative measures to conserve, allocate, and develop the waters;
(6) the effect on water quality of constructing the proposed drainage system;
(7) fish and wildlife resources affected by the proposed drainage system;
(8) shallow groundwater availability, distribution, and use in the drainage system; and
(9) the overall environmental impact of all the above criteria.
establishment of the drainage project and causes it to be dismissed.\textsuperscript{133} If a proposed drainage project meets the above criteria, the drainage authority must determine whether: (1) the proper procedures have been followed;\textsuperscript{134} (2) the estimated benefits are greater than the total estimated cost;\textsuperscript{135} (3) the proposed drainage system is of public utility and benefit\textsuperscript{136} and will promote public health;\textsuperscript{137} and (4) the proposed drainage system is practicable.\textsuperscript{138} If the drainage project meets these criteria, the drainage authority must establish the drainage project and proceed with construction.\textsuperscript{139}

\textbf{D. Requirements for Authorizing Drainage System Repair}

The primary restriction on a drainage repair project is the definition of repair. A drainage system repair means restoration of the drainage system to its original or subsequently improved condition and routine maintenance.\textsuperscript{140} A repair may only be made to the depth of original construction.\textsuperscript{141} If a drainage system is maintained on a regular basis, a repair

\begin{footnotesize}
\begin{enumerate}
\item MINN. STAT. § 106A.015, subd. 1.
\item Id. § 106A.341, subd. 1 (Supp. 1985).
\item Id. § 106A.341, subd. 1 (Supp. 1985).
\item The detailed survey report and viewers' report are required and must be complete and correct, and other proceedings must be completed under chapter 106A. Id. § 106A.341, subd. 2 (1) & (2) (Supp. 1985).
\item Damages and benefits must be properly determined and the estimated benefits must be greater than the total estimated cost, which includes damages. Id. § 106A.341, subd. 2(3) & (4).
\item See \textit{supra} note 131 and accompanying text.
\item "Public health" is defined in Minnesota Statutes section 106A.005, subdivision 22 (Supp. 1985), as including "an act or thing that tends to improve the general sanitary condition of the community by drainage, relieving low wetland, or stagnant and unhealthful conditions, or preventing overflow of any property that produces or tends to produce unhealthful conditions." MINN. STAT. § 106A.005, subd.22.
\item Id. § 106A.341, subd. 2(6). A practicable drainage system is not defined. See id. § 106A.015, subd. 1 (Supp. 1985). Thus, it would seem to allow drainage authorities discretion to not establish a project on a hydrological or environmental basis, if necessary.
\item See \textit{supra} note 129 and accompanying text.
\item The term "repair" is statutorily defined as restoring all or a part of a drainage system as nearly as practicable to the same condition as when originally constructed or subsequently improved, including resloping of ditches and leveling of waste banks if necessary to prevent further deterioration, and routine operations that may be required to remove obstructions and maintain the efficiency of the drainage system.
\item MINN. STAT. § 106A.701, subd. 1 (Supp. 1985).
\item See Zimmer v. Kandiyohi County (\textit{In re Zimmer}), 359 N.W.2d 266, 270 (Minn. 1984).
\end{enumerate}
\end{footnotesize}
would not affect public waters or wetlands.\textsuperscript{142} In some cases, however, a drainage system is repaired only once every twenty, thirty, or more years. A repair on these drainage systems may affect public waters and wetlands that have developed since the drainage system was constructed. A permit is not required for drainage repair work in altered natural water courses, or for drainage work that does not substantially affect public waters or wetlands.\textsuperscript{143}

The drainage repair statutes\textsuperscript{144} primarily control the financing of drainage repairs. Drainage authorities are directed to annually inspect drainage systems and provide repairs to make the drainage system efficient.\textsuperscript{145} The drainage authority may contract repair work with costs less than $20,000, but may not levy an assessment for repairs on a drainage system for more than twenty percent of the amount of established benefits or $20,000, whichever is greater.\textsuperscript{146} Costlier and other necessary drainage repairs may be initiated by petition.\textsuperscript{147}

III. FEDERAL JURISDICTION AND REGULATION OF DRAINAGE ACTIVITIES

A. Scope of Federal Jurisdiction

Federal regulation of agricultural drainage has been virtually nonexistent until the last few years.\textsuperscript{148} Many drainage authorities constructing drainage projects under state regulation were not aware of the broad jurisdiction of the federal regulations. As the federal regulations become enforced, most drainage projects will require a permit because exemptions for minor drainage activities are quite narrow.\textsuperscript{149} The federal regulations

\textsuperscript{142} After the drainage system is constructed, regular maintenance to remove accumulated sediment would provide the same drainage as originally constructed. Additional wetlands should not form due to sediment building up in the ditch nor should any wetlands be drained due to a repair to the original construction.

\textsuperscript{143} MINN. STAT. § 105.42, subd. 1 (1984). "Altered natural watercourse" is defined as a former natural watercourse that has been affected by man made changes.

\textsuperscript{144} Id. § 105.37, subd. 11 (1984).

\textsuperscript{145} Id. § 106A.701-.745 (Supp. 1985).

\textsuperscript{146} Id. § 106A.705, subd. 1 (Supp. 1985).

\textsuperscript{147} Id. § 106A.715 (Supp. 1985).

\textsuperscript{148} Federal jurisdiction over wet soils did not occur until July 1975. 40 Fed. Reg. 31,320 (1975). After that time, nationwide permits were issued that exempted headwater areas and waters. See infra notes 203-06.

\textsuperscript{149} The Corps' district office has a limited staff for enforcement. As of July 1986,
give broader jurisdiction over drainage work requiring permits than state law. The federal regulations give less deference to maintenance of existing drainage systems if wet soils or wetlands are affected.150

The federal regulation of agricultural drainage is primarily controlled by the Rivers and Harbor Appropriation Act of 1899 (RHA)151 and the Clean Water Act (CWA).152 The authority given to the Secretary of the Army under these statutes has been assigned to the Corps of Engineers (Corps).153 The RHA regulates navigable waters and dredging. Dredging is the most important activity covered by the RHA affecting drainage. The RHA makes it unlawful "to excavate or fill, or in any manner to alter or modify the course . . . or capacity" of any navigable waterbody without a permit.154 The CWA is limited to controlling point sources or discharges into waters of the United States. However, the CWA has broad jurisdiction that extends to saturated and inundated soils.155

B. Jurisdiction of Rivers and Harbors Act

The RHA consolidated various rivers and harbors acts enacted during the 1890's and established the first Corps permit program.156 The intent was to free navigable waters of the United States of obstructions and improve navigation.157 Jurisdiction was restricted to navigable waters, as defined by the

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150. See infra notes 199-201.
151. 33 U.S.C. §§ 401-13 (1982). The RHA consolidated various rivers and harbors acts of the 1890's and established a permit program. The act was primarily to ensure navigation.
153. 33 C.F.R. § 322.3(c)(2) (1985).
156. The permit program was established under section 10 of the RHA and is now codified under 33 U.S.C. § 403 (1982).

http://open.mitchellhamline.edu/wmlr/vol13/iss1/3
The Supreme Court in the 1870 case of *The Daniel Ball*. The Court concluded that Congress's power over waterways, which was derived from the interstate commerce clause of the Constitution, was limited to waters that might carry foreign or interstate commerce. While the definition of navigable waters of the United States or navigability will ultimately be determined by judicial interpretation, the Corps has adopted regulations that conform with the tests used by federal courts.

For purposes of agricultural drainage, navigable waters of the United States are defined as "those waters that... are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce." The past or potential use for interstate commerce may be shown by the historical use of canoes or other frontier craft or the presence of recreational craft. An artificial channel or drainage ditch may constitute a navigable water of the United States even though it is privately developed and maintained. The general test of navigability applies if the waterbody is capable of use to transport interstate commerce. The federal regulatory jurisdiction extends laterally over the entire water surface and the bed of a navigable waterbody and includes all the land and waters below the ordinary high watermark.

158. 77 U.S. (10 Wall.) 557, 563 (1870) (the court applied a test different from the common law test used in England; that test utilizes the ebb and flow of the tide).
161. 33 C.F.R. § 329.3.
162. Id. § 329.
165. 33 C.F.R. § 329.6(a).
166. Id. § 329.8(a). *But see Minnehaha Creek Watershed Dist. v. Hoffman*, 597 F.2d 617, 622-24 (8th Cir. 1979) (inland waters that connect two bodies of navigable waters must be navigable over their course to be under jurisdiction of RHA).
167. 33 C.F.R. § 329.8(a).
168. Id. § 329.11(a). The "ordinary high watermark" for fresh waters is defined as "a line on the shore established by fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank; shelving; changes...
With jurisdiction limited to areas below the ordinary high water
mark, the Corps' regulation of drainage activities under
the RHA will probably not extend to most wetlands in agricul-
tural areas but will be restricted to wetlands near or adjacent to
navigable waters, e.g., areas near the Minnesota River, the Red
River, and navigable lakes. The Corps' jurisdiction under the
RHA over navigable waters extends beyond the effects of a
drainage activity on navigation and includes the effects on fish
and wildlife from the drainage project. The Corps' jurisdic-
tion under the RHA becomes important when: (1) drainage
work is exempted from jurisdiction under the CWA; (2) drain-
age "activities" are covered by the RHA, but point source dis-
charges are not subject to the CWA; or (3) work was done
before the more expansive jurisdiction of the CWA became
effective.

C. Jurisdiction Under the Clean Water Act

1. CWA Jurisdiction Over "Waters of the United States"

The Corps dredge and fill permit program was enacted by
Congress in the Federal Water Pollution Control Act Amend-
ments of 1972. The Act prohibited discharging pollutants
into navigable waters without a permit. The term "naviga-
ble waters" was defined as "waters of the United States." In
the conference report, congressional intent was to construe
navigable waters to the "broadest possible constitutional inter-
pretation." The Corps revised its regulations implementing
the permit program in 1974 but did not extend the jurisdiction
of the permit program beyond prior definitions of navigabil-
ity. The regulations were challenged in Natural Resources De-
fense Council, Inc. v. Callaway\textsuperscript{175} where the court held that the term “navigable waters” extends beyond the traditional tests of navigability for purposes of the CWA.\textsuperscript{176}

The Callaway court ordered the Corps to revise the regulations. The Corps issued interim final regulations on July 25, 1975,\textsuperscript{177} that expanded navigable waters to include “other waters” such as intermittent rivers, streams, tributaries, and perched wetlands that are not contiguous or adjacent to traditional navigable waters. Wetlands were defined to mean areas that are “periodically inundated and . . . normally characterized by the prevalence of vegetation that requires saturated soil conditions for growth and reproduction.”\textsuperscript{178} Final regulations were adopted on July 19, 1977\textsuperscript{179} that phased in the expanded permit jurisdiction and replaced the term “navigable waters” with “waters of the United States.”\textsuperscript{180} In response to recommendations of the Presidential Task Force on Regulatory Relief\textsuperscript{181} to clarify the issue of the permit program’s geographical jurisdiction, the Corps redefined the term “waters of the United States” to be identical to the definition in the sec-

\textsuperscript{177} 40 Fed. Reg. 31,320 (1975).
\textsuperscript{180} Id. 37,144.
tion 404(b)(1) of the guidelines.182

"Waters of the United States" is defined under the Corps' regulations to include waters that are traditionally navigable, interstate waters and wetlands, or "other waters" such as intrastate lakes, rivers, streams, mudflats, wetlands, sloughs, prairie potholds, wet meadows, or natural ponds.183 The term "wetlands" includes swamps, marshes, bogs, and almost any other type of wetlands "that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions."184

2. Drainage Activities Requiring Permits

A proposed drainage activity that has a point source discharge into waters of the United States requires a permit under the CWA.185 A discharge is the addition of material to the waters186 and a point source is a discernible source including a ditch, channel, or vessel.187 The term "dredged material" means material that is excavated or dredged from waters of the United States188 and the term "fill material" means any material used for the primary purpose of replacing an aquatic area with dry land or changing the bottom elevation of a

184. Id. § 323.2(c). Wetlands and "other waters" that are "waters of the United States" must be susceptible to use, degradation, or destruction that would affect interstate or foreign commerce including travel for recreation or other purposes, fish or shellfish that could be taken and sold in interstate commerce, or industrial use by industries in interstate commerce. Id. § 323.2(a). In Avoyelles Sportsmen's League, Inc. v. Alexander, 511 F. Supp. 278 (W.D. La. 1981), the court ruled that wetland vegetation "typically adapted for life in saturated soil conditions" includes all vegetation except those species that are intolerant of the conditions. Id. at 290. This interpretation was modified to mean the dominant vegetation must be "tolerant or aquatic species to the virtual exclusion of purely upland, intolerant or nonaquatic species." Id. at 291.

"Waters of the United States" also includes wetlands adjacent, bordering, neighboring, or separated by a berm or dike from "waters of the United States". 33 C.F.R. § 323.2(a)(7)(d). This definition has been broadly construed. In United States v. Lee Wood Contracting, Inc., 529 F. Supp. 119, 121 (E.D. Mich. 1981), there were several large parcels of land and farms between the wetlands and the river in question.

186. Id. § 1362(12); 33 C.F.R. § 232.2(1).
188. 33 C.F.R. § 232.2(j).
waterbody. Therefore, a permit is not required if soil from a dredging operation is deposited upland and the activity does not spill pollutants into the water. Similarly, if a wetland is drained without the deposit of fill material or if upland drainage patterns are altered to impede runoff to wetlands, there is not a discharge of dredged or fill material.

3. Exceptions to Permit Requirement

A number of exceptions to the permit requirement are provided that relate to drainage. For example, discharge of dredged or fill material from normal farming operations and maintenance of farm ponds and drainage ditches is excepted from the permit requirement. An activity, however, identified in one of the exceptions is required to have a permit if it is a part of an activity whose purpose is to convert an area of the waters of the United States into a different use or if the flow or circulation of waters of the United States may be impaired or the reach of the waters reduced.

If waters of the United States are not being converted to other uses, normal farming activities such as plowing, seeding, cultivating, and minor drainage are not subject to regulation. Minor drainage does not include the construction of any canal, ditch, dike, or other waterway or structure which drains or otherwise significantly modifies a stream, lake, swamp, bog, or any other wetland area or aquatic area constituting waters of the United States. The term minor drainage is narrowly defined as "[t]he discharge of dredged or fill material incidental to connecting upland drainage facilities to waters of the United States, adequate to effect the removal of excess soil moisture from upland crop lands." Minor drainage is not associated with the immediate or gradual conversion of a wetland to a non-wetland, conversion of wetland species to upland species not typically adapted to life in saturated soil.

189. Id. § 232.2(k).
190. Fisher, supra note 102, at 301.
192. Id. § 1344(f)(2); 33 C.F.R. § 223.4(c).
194. Id. § 232.4(a)(1)(ii)(C)(2).
195. Id. § 232.4(a)(1)(iii)(C)(1)(i). Construction and maintenance of upland (dryland) ditching and tiling incidental to growing or protecting crops does not involve a discharge of dredge or fill material into waters of the United States. Id.
conditions, or conversion from one wetland use to another, for example, silviculture to farming. 196

Minor drainage in waters of the United States is limited to drainage within areas that are part of an established farming operation. Activities on areas lying fallow as part of a conventional rotational cycle are part of an established operation. 197 Activities that bring an area into silviculture or farming use, however, are not part of an established farming operation. 198

Drainage maintenance activities that do not convert waters of the United States, impair the flow of circulation, or impair the reach of waters do not require a permit. 199 In addition, emergency removal of sandbars and similar blockages formed during floods or other events is allowed as minor drainage if the removal is done within one year of discovery. 200 Maintenance and drainage activities related to cranberries, rice, and other wetland crops are exempt from permits if carried out within existing production areas. 201

D. Permits and Issuance Criteria

General or individual permits may be issued under the CWA. General permits may be issued on a nationwide, regional, or statewide basis for activities that have minimal environmental impact. 202 Before the Corps jurisdiction was expanded, na-

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196. Id. § 323.4(a)(1)(iii)(C)(2).
197. Id. § 323.4(a)(1)(ii). That section provides:
An operation ceases to be established when the area on which it was conducted has been converted to another use or has lain idle so long that modifications to the hydrological regime are necessary to resume operations. If an activity takes place outside the waters of the United States, or if it does not involve a discharge, it does not need a section 404 permit, whether or not it is part of an established farming, silviculture, or ranching operation.

Id. (emphasis added).

198. Id.
199. Construction or maintenance of farm ponds and maintenance (but not construction) of drainage ditches are exempt from permit requirements. Id. § 323.4(a)(2), (3). But such activities are subject to the restrictions affecting waters of the United States under section 323.4(c).

200. Id. § 323.4(a)(1)(iii)(C)(1)(iv). This provision is part of the minor drainage exemption. The blockage must close or constrict existing drainage and, if not removed, result in crop production losses. The removal may not change the dimensions of the drainage way. Id.

201. Id. § 323.4(a)(1)(iii)(C)(1)(ii) and (iii); see, e.g., United States v. Huebner, 752 F.2d 1235, 1243 (7th Cir. 1985) (expansion of cranberry beds required permit because it brings adjacent wetlands under a new use).

202. 33 U.S.C. § 1344 (c)(1); see 33 C.F.R. §§ 320.2(f), 323.2(n)(1), 325.2(e)(2), 325.5(c)(1) & (2), 330.1 to .9.
Nationwide permits were issued for discharges of dredged or fill material into waters of the United States that were outside the limits of navigable waters.\textsuperscript{203} The pre-jurisdiction discharges do not require any further permits.\textsuperscript{204} Nationwide permits were issued for discharges of dredged and fill material relating to specified activities and for discharges into certain areas.\textsuperscript{205} Discharges into non-tidal rivers, streams, accompanying lakes, and impoundments, including adjacent wetlands located above the head waters, are allowed if the discharge involves best management practices and the district engineer is notified of the discharge.\textsuperscript{206} The district engineer must review the notification and determine if the discharge affects waters identified for review by the regional Environmental Protection Agency administrator, regional directors of the U.S. Fish and Wildlife Service, or the National Marine Fisheries Service or the Minnesota Commissioner of Natural Resources.\textsuperscript{207} The agencies must be allowed to comment on the effects of the proposed activity\textsuperscript{208} and refer the notification to the division engineer for

\textsuperscript{203} The following activities received nationwide permits on July 19, 1977 and do not need further permits:

\begin{itemize}
  \item discharges of dredged or fill material . . . that occurred before the phase-in dates which began July 25, 1975, and extended section 404 jurisdiction to all waters of the United States. These phase-in dates are: after July 25, 1975, discharges into navigable waters of the United States and adjacent wetlands; after September 1, 1976, discharges into navigable waters of the United States and their primary tributaries, including adjacent wetlands, and into natural lakes, greater than 5 acres in surface area; and after July 1, 1977, discharges into all waters of the United States.
\end{itemize}

\textsuperscript{33} C.F.R. § 330.3(a) (emphasis added).

In addition, "[s]tructures or work completed before [December 18], 1968 or in waterbodies over which the District Engineer was not asserting jurisdiction at the time the activity occurred provided, in both instances, there is no interference with navigation." \textit{Id.} § 330.3(b).

\textsuperscript{204} \textit{Id.} § 330.3.

\textsuperscript{205} \textit{Id.} § 330.5(a). The district engineer, however, has authority to require individual permits. \textsuperscript{33} C.F.R. §§ 330.5(c)(ii)(B)(5) & 330.7.

\textsuperscript{206} \textit{Id.} § 330.6(a) (1985). The original regulations, 47 Fed. Reg. 31,831, July 22, 1982, were amended by 49 Fed. Reg. 39,483, Oct. 5, 1984, and 49 Fed. Reg. 39,843, Oct. 11, 1984, as part of a settlement agreement under National Wildlife Federation v. Marsh, 19 ERC 1465 (D.D.C. 1983). Discharges that were started or under contract when the new regulations became effective were allowed to be grandfathered in. \textsuperscript{33} C.F.R. § 330.5(c).

The term "headwaters" means the area of a stream where the average annual flow is less than five cubic feet per second. \textit{Id.} § 323.2(h).

Discharges of up to ten cubic yards are allowed into waters of the United States if it is part of a single project and is not discharged into a wetland. \textit{Id.} § 330.5 (a)(18).

\textsuperscript{207} \textsuperscript{33} C.F.R. § 330.7(c)(1)(i).

\textsuperscript{208} \textit{Id.}
The Corps is given authority to issue permits after notice and opportunity for a public hearing on the proposed discharge of dredged or fill material. The Corps must apply the guidelines developed in conjunction with the Environmental Protection Agency. Permits are subject to the Environmental Protection Agency's veto authority.

In addition to applying the guidelines, the Corps has adopted policies relating to public interest review and the proposed activities' effect on wetlands, water quality, recreational values, water conservation, and other factors. A permit will not be granted for an activity that alters wetlands considered to perform important public interest functions. Nor will a permit be granted for an activity that may alter the wetland after considering numerous minor changes and their cumulative effects. The district engineer must give full consideration to fish and wildlife "with a view to the conservation of wildlife resources by prevention of their direct and indirect loss and

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209. Id. § 330.7(d).
211. The guidelines for considering dredged and fill discharge permits are provided in 40 C.F.R. § 230.f (1985).
212. 33 U.S.C. § 1344(c).
213. 33 C.F.R. § 320.4.
214. Id. § 320.4(b). Permits altering important wetlands will not be granted. Under section 320.4(b)(2):

Wetlands considered to perform functions important to the public interest include:

(i) Wetlands which serve significant natural biological functions, including food chain production, general habitat, and nesting, spawning, rearing and resting sites for aquatic or land species;
(ii) Wetlands set aside for study of the aquatic environment or as sanctuaries or refuges;
(iii) Wetlands the destruction or alteration of which would affect detrimentally natural drainage characteristics, sedimentation patterns, salinity distribution, flushing characteristics, current patterns, or other environmental characteristics;
(iv) Wetlands which are significant in shielding other areas from wave action, erosion, or storm damage. Such wetlands are often associated with barrier beaches, islands, reefs and bars;
(v) Wetlands which serve as valuable storage areas for storm and flood waters;
(vi) Wetlands which are prime natural recharge areas. Prime recharge areas are locations where surface and groundwater are directly interconnected; and
(vii) Wetlands which through natural water filtration processes serve significant and necessary water purification functions.

Id.

215. Id. § 320.4(b)(3) & (4).
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damage due to the activity proposed in a permit application.”
Activities that may adversely affect the quality of waters must be “evaluated for compliance with applicable effluent limitations and water quality standards . . . .”
The Corps will normally process an application concurrently with other federal, state, and local authorizations. A permit will not be delayed due to pending action by other agencies, but if another agency authorization is desired before a Corps permit is issued, the Corps permits will be denied without prejudice to reinstatement of the application if the other agency authorization is acquired. In absence of overriding national public interest concerns, a Corps permit will generally be issued following the receipt of a favorable state determination of applicable statutes and policies.

IV. EFFECT OF REGULATION AND WETLAND PRESERVATION ON DRAINAGE SYSTEMS IN MINNESOTA

A. Nature of Present Drainage Subject to Regulation

The significance of state regulation and the expanded federal regulations is directly related to the types of drainage projects that will be affected and the frequency with which the projects occur. Drainage projects will involve either new construction or maintenance. The state and federal regulations, which have different jurisdictions, permit requirements, and exemptions, must be applied to the different types of drainage projects. Federal regulations will affect more projects because of their extensive jurisdiction, and denial of some project permits will deny property owners their drainage rights.

Minnesota has had a long history of agricultural drainage with more than nine million acres of land being drained for

216. Id. § 320.4(c). The review must be conducted in accordance with the Fish and Wildlife Coordination Act, 16 U.S.C. §§ 661-67(e) (1982); see also Shipley, The Fish and Wildlife Coordination Act's Application to Wetlands, in A. REITZE, ENVIRONMENTAL PLANNING: LAW OF LAND AND NATURAL RESOURCES 2-49 to 2-59 (1974).
218. 33 C.F.R. § 320.4(j)(1). For a discussion of permit processing procedures see Fisher, supra note 102, at 318-22.
219. 33 C.F.R. § 320.4(j)(1). The Corps must give consideration to comments of other agencies even if an authorization is not required.
220. Id. § 320.4(j)(4).
221. See infra notes 257-70 and accompanying text.
over sixty years.\textsuperscript{222} The drainage systems have over 21,000 miles of open ditches and currently about thirteen to fourteen million acres are being drained.\textsuperscript{223} The ditches were originally constructed as outlets for local drainage and subsequently required improvement to handle the additional drainage.\textsuperscript{224} Since the 1960’s, on-farm drainage methods have been improved and used extensively, placing greater demands on existing drainage systems.\textsuperscript{225}

The accelerated flow from improved on-farm drainage requires improvements in existing drainage systems and new ditches or laterals in natural drainageways to prevent flooding. Existing drainage systems are also being repaired to restore the drainage system’s original capacity and efficiency. Although some drainage work is directed at converting land into cropland, which includes draining potholes and wetlands, much drainage work is conducted to retain and improve cultivated land.\textsuperscript{226} Many drainage systems were constructed in and through areas now defined by state and federal law as wetlands. If these drainage systems are not allowed to be repaired or improved, the landowners near the drainage system may lose crops and suffer decreased yields due to flooding.

Drainage authorities have traditionally been given considerable discretion in conducting drainage work. State permits are rarely required unless public waters are being drained. The recently expanded federal jurisdiction subjects the county-based drainage authorities to a new level of government with more stringent permit criteria than previously experienced. This will require additional time to complete the permit pro-

\begin{itemize}
\item \textsuperscript{222} See 1920 Census, supra note 41, at 8 (table 10); See also Hanson, supra note 16 (Table 2 lists areas of Minnesota benefited by drainage systems in each decade).
\item \textsuperscript{223} U.S. DEP’T OF AGRICULTURE, SOIL CONSERVATION SERVICE (Untitled report to the Minn. Pollution Control Agency relating to soil erosion in drainage ditches. The report was based on an inventory of drainage ditches conducted by the U.S. Geological Survey in the late 1960’s and early 1970’s.).
\item \textsuperscript{224} See supra note 54 and accompanying text.
\item \textsuperscript{225} See supra note 57 and accompanying text. Improved on-farm drainage diverts water to drainage system outlets more rapidly. In areas where there has been extensive on-farm drainage, existing drainage systems will not have the capacity to handle the accelerated flow.
\item \textsuperscript{226} Many of the potholes and small wetlands being drained are drained by on-farm drainage systems to remove wetlands that are a nuisance to farming operations. See generally Allred and Geiser, A Survey of Irrigation and Drainage Practices in Minnesota, Dept’ of Agric. Eng., Univ. of Minn. 10 (March 15, 1978); Leitch and Kerestes, supra note 16, at 26.
\end{itemize}
cess and will probably result in changes due to mitigation requirements.

B. New Drainage Construction

1. Considerations in Contemplating Drainage Construction

New drainage construction is undertaken by private parties constructing on-farm drainage ditches and tiles, and by drainage authorities constructing new drainage systems, improving existing systems, improving outlets, and constructing laterals.\textsuperscript{227} Because of these regulations, private parties, petitioners, and drainage authorities contemplating new drainage construction must consider: (1) whether the drainage work will affect public waters (including navigable waters), wetlands, or wet soils (included in waters of the United States); (2) what type of public waters, wetlands, or wet soil will be affected; (3) who owns the wetlands or wet soils and if the owners are private parties whether they have consented to the project; (4) what kind of work must be conducted in the public waters, wetlands, or wet soils, and its effects; and (5) whether any wetlands or wet soils are being converted to another use (e.g., cropland) in connection with the projects.\textsuperscript{228}

2. Upland Cropland Drainage

New drainage construction to improve drainage of upland cropland is generally not subject to regulation if an adequate outlet is available or obtained,\textsuperscript{229} and the construction does not affect public waters or wetlands, or soils saturated or inundated with surface or groundwater (wet soils). Upland cropland drainage that is incidental to connecting upland drainage to an outlet and does not discharge, dredge, or fill material into waters of the United States\textsuperscript{230} is not subject to regulation under the CWA.\textsuperscript{231} However, upland drainage activities that affect state-designated public waters or wetlands are subject to state permit requirements,\textsuperscript{232} and upland drain-

\textsuperscript{227} See supra note 129.
\textsuperscript{228} The CWA regulates discharges into waters of the United States, which include soil saturated and inundated by surface or groundwater. 33 C.F.R. § 323.2(c); see supra text accompanying note 184.
\textsuperscript{229} See MINN. STAT. § 106A.401, subd. 2 (Supp. 1985).
\textsuperscript{230} Hereinafter referred to as "waters, including wet soils."
\textsuperscript{231} 33 C.F.R. § 323.4(a)(1)(iii)(C)(1)(i).
\textsuperscript{232} MINN. STAT. § 105.42, subd. 1 (permit is required for a person or entity "in
age activites affecting navigable waters or wetlands would re-
require a permit under the RHA.\textsuperscript{233}

3. Drainage of Wetlands

The CWA has the broadest jurisdiction over waters affected
by drainage activities, including wet soils, but unless there is a
discharge of dredged or fill material into the waters, including
wet soils, the waters or wet soils may be completely drained,
e.g., if a ditch is dug adjacent to a water or wet soil area suffi-
ciently deep to lower the water table and convert the area to
upland, it may be drained.\textsuperscript{234} The policy of the CWA, however,
requires permits for activities that convert waters, including
wet soils, into a use not previously existing, so it is likely that a
discharge of dredged or fill material will be broadly construed
to be within the jurisdiction of the CWA.\textsuperscript{235} For a navigable
water or wetland under the jurisdiction of the RHA, a permit is
required for work in or affecting the navigable waters or wet-
lands, precluding drainage without a permit.\textsuperscript{236}

Drainage work that drains a public water or wetland is sub-
ject to state regulation.\textsuperscript{237} Total drainage of public waters or
wetlands is prohibited\textsuperscript{238} unless the wetlands are eligible for
the waterbank program and the commissioner of natural re-
sources denies compensation.\textsuperscript{239} Permits may be given for
partial drainage of public waters and wetlands to a private
owner of a wetland, but not before ten years after original
designation and only with replacement of wetlands of equal or
greater value.\textsuperscript{240}

In summary, wetlands and wet soils that are not navigable
waters, do not receive discharges of dredged or fill material,

\textsuperscript{233.} See 33 C.F.R. § 322.3(a).
\textsuperscript{234.} See Blumm, supra note 175, at 418; Fisher, supra note 102, at 301.
\textsuperscript{235.} 33 C.F.R. § 323.4(c); see, e.g., Avoyelles Sportsmen’s League, Inc. v. Marsh,
715 F.2d 897, 927 (5th Cir. 1983) (bulldozing and scraping filled holes in land clear-
ing and leveling was a discharge of fill material requiring a permit).
\textsuperscript{236.} 33 C.F.R. § 322.3(a). “The term ‘work’ shall include, without limitation, any
dredging or disposal of dredged material, excavation, filling, or other modification of
a navigable water . . .” Id. § 322.2(c).
\textsuperscript{237.} See supra note 232.
\textsuperscript{238.} MINN. R. 6115.0270, subp. 3.
\textsuperscript{239.} See supra notes 97-98 and accompanying text.
\textsuperscript{240.} MINN. STAT. § 105.391, subd. 3. Permits for total drainage of public wetlands
is not allowed. MINN. R. 6115.0270, subp. 3.
and are less than ten acres in size in unincorporated areas, or less than two and one-half acres in incorporated areas, may be drained without permits. Although drainage of state-designated public waters and wetlands is essentially prohibited, a drainage authority that desires to drain a state-designated public wetland under private ownership, could have the private party apply for a permit or waterbank agreement. The wetland could be drained if the permit is approved or the owner could receive compensation for not draining the wetland if the permit is denied. Drainage of navigable waters and wetlands and drainage of waters, including wet soils, that receive discharges of dredged or fill material generally will require Corps permits.

4. Drainage Work in Wetlands

The Corps has jurisdiction, under the CWA, over all public and private drainage work in waters, including wet soils, that receive a discharge of dredged or fill material. The drainage work will require a permit unless exempted by regulation. A permit is required under the RHA for excavation and other drainage work in navigable waters and wetlands whether or not there is a discharge into the waters or wetlands. A drainage authority may not conduct work in state-designated public waters or wetlands without a state permit, except for work in an altered natural watercourse that is part of the drainage system and in a public drainage system if the work does not substantially affect public waters or wetlands.

C. Drainage Repair and Maintenance Work

Drainage inspection and repair is an ongoing function of county drainage authorities. Repairs on one drainage system costing less than $20,000 per year may be done by order

241. The drainage authority has jurisdiction over the property after the final order is given, Minn. Stat. § 106A.331, but drainage of waterbodies is subject to Minnesota Statute section 105.391, subdivision 3, which only allows a private party to apply for drainage in limited circumstances.
242. 33 C.F.R. § 323.3(a).
243. See supra notes 191-201 and accompanying text.
244. 33 C.F.R. § 322.3(a).
245. See supra text accompanying notes 114-20.
of the drainage authority. Other repairs must be initiated by petition.

Although repairs restore a ditch to its original condition, repair work that drains public wetlands and waters, including wet soils, is subject to the same restrictions as new drainage construction. Repair and maintenance work in and affecting navigable waters and wetlands requires a permit under the RHA. If drainage repair or maintenance work discharges dredged or fill material into waters, including wet soils, a permit is required unless the work is considered minor drainage. Minor drainage does not include drainage associated with the gradual or immediate conversion of wetlands to non-wetland or another use, or work that significantly changes the flow, reach, or circulation of waters, including wet soils. Repair and maintenance that requires a permit will be subject to mitigation of environmental damage and other criteria.

Drainage repair and maintenance in public waters and wetlands does not require a state permit unless the waters or wetlands are substantially affected. If state-owned wetlands interfere with the maintenance of a drainage system, the state must provide the necessary work to accommodate the drainage and preserve the wetlands. Ironically, drainage authorities conducting repairs affecting public wetlands will have fewer difficulties if the wetlands are state owned rather than privately owned. Not only is a state permit not required, but the state must provide the necessary work to maintain the drainage.

247. See id. § 106A.705, subd. 4.
249. See id. § 105.42, subd. 1.
250. 33 C.F.R. § 322.3(a).
251. Id. § 323.4(a).
252. Id. § 323.4(a)(1)(iii)(C)(2).
253. Id. § 323.4(c).
254. See id. § 320.4.
255. See MINN. STAT. § 105.42, subd. 1; MINN. R. 6115.0200, subp. 4 (exempts repairs from excavation permit); Id. 6115.1100, subp. 2 (interim criteria before public waters classification system is completed exempts normal repairs and improvements from permits).
256. MINN. STAT. § 105.391, subd. 11; see id. § 97A.145, subd. 3 (if a drainage outlet is petitioned for a wetland acquired for wildlife, hunting, or recreation, the commissioner of natural resources should not interfere with or unnecessarily delay the proceedings).
D. Private Rights of Drainage System Maintenance

The state has recognized private rights of drainage system maintenance for over sixty years. State wetland preservation and regulation statutes have also recognized drainage rights. The more recent federal regulations do not recognize the private drainage rights and may result in litigation if a repair or maintenance permit is denied. If a drainage right is denied, it may be challenged as an unconstitutional taking of property without just compensation.

1. Drainage Rights

When a public drainage system is established, property owners are assessed for costs of the system based on drainage benefits, whether the property is benefited immediately or the system could be used for an outlet. Although the amount of the benefits may be appealed, the property owner must pay benefits that are properly determined. "Once a ditch system is established, the order creating it constitutes a judgment in rem." Landowners that have paid assessments have a property right in the drainage system. "The landowner is, therefore, entitled to have all of the conditions upon which a system is based, as well as the ditch or tiles themselves, maintained so that the system will function substantially as established." The property right in maintaining the ditch may not be

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257. See infra notes 263-73.
258. See infra notes 274-79.
259. See infra notes 280-300.
260. Viewers determine how much each tract of property affected by a proposed drainage project is benefited or damaged. The costs of the project are allocated according to the amount of benefits.
261. MINN. STAT. § 106A.315, subd. 5.
262. See id. § 106A.091, subd. 5.
263. In re Jacobson, 234 Minn. 296, 299, 48 N.W.2d 441, 444 (1951) (the res or subject matter of the order is the watercourse and all lands determined to be damaged or benefited by it).
264. See In re Lake Elysian High-Water Level, 208 Minn. 158, 164, 293 N.W. 140, 143 (1940). The court stated:
   Now such an imposition [ditch assessment] cannot be made under our Constitution, except upon the theory that B has been given, and by the construction of the ditch is assured, the benefit for which he is compelled to pay. If it were otherwise, our method of collecting the cost of ditch construction would not stand for a moment the constitutional due process test.
   Id. at 164, 293 N.W. at 143 (quoting Lupkes v. Town of Clifton, 157 Minn. 493, 488-89, 196 N.W. 666, 668 (1924)).
divested without due process of law. \(^{266}\) "That being the case, it would be a shocking result indeed if in any manner, however subtle, a way could be found to take away from the landowner the distinct and affirmative benefit forced upon him by his government, and for which his government has compelled him to pay, without making the adequate compensation required by the Constitution when private property is taken for public use." \(^{267}\)

Minnesota statutory and regulatory laws have respected or compensated the denial of private drainage rights. Drainage authorities are directed to maintain drainage systems within their jurisdiction and provide repairs to make the drainage system efficient. \(^{268}\) Annual drainage inspections are required and the drainage authority may levy regular assessments for repairs and maintenance. \(^{269}\) An individual may petition to make repairs and the drainage authority must order the repair to be made if it is in the best interest of the affected property owners or twenty-six percent of the property owners sign the petition. \(^{270}\)

If a private party owns public wetlands that are lawful, feasible, and practical to drain for high quality cropland, the private party may drain the wetland unless the commissioner places the wetlands in the state waterbank program, agrees to acquire the wetland, or indemnifies the owner. \(^{271}\) In addition, where state-owned wetlands affect drainage systems, the state must provide the necessary work to allow the proper use and maintenance of the drainage system. \(^{272}\)

2. The Taking of Drainage Rights

The denial of an RHA or CWA permit to work in or drain navigable waters or waters, including wet soils, may raise a claim that the property owner has been unconstitutionally de-

\(^{266}\) Id. at 156, 104 N.W.2d at 34; Jacobson, 234 Minn. at 299, 48 N.W.2d at 44.
\(^{267}\) Lupkes, 157 Minn. at 499, 196 N.W. at 668-69; see Zimmer, 359 N.W.2d at 276 (Todd, J., dissenting) (“We have previously recognized that once a drainage ditch has been established and owners of the affected properties have been assessed for its construction, their rights in the ditch are vested constitutional rights”).
\(^{268}\) MINN. STAT. § 106A.705, subd. 1.
\(^{269}\) Id. § 106A.705, subds. 1 & 5.
\(^{270}\) Id. § 106A.715, subds. 1 & 4.
\(^{271}\) Id. § 105.391, subd. 3; see id. § 105.392.
\(^{272}\) Id. § 105.391, subd. 11; see id. § 97A.145, subd. 3 (1984) (commissioner of natural resources may not interfere with drainage outlets into wildlife wetlands).
prived of property without just compensation.  

The taking issue relating to drainage has two types of claims. The first type of taking claim is based on the claimant not being able to drain their land and put it into an intended use because of regulation and permit denial. This type of claim has been litigated under the CWA and the RHA. The state regulation and preservation of private wetlands provides compensation if a permit is denied. The second type of claim may arise where a property owner has been assessed, has paid for drainage rights and permits are denied making the drainage rights valueless. This type of claim has not been litigated but may arise if property owners are denied federal permits to maintain drainage or to drain areas for which they have been assessed.

The taking issue relating to RHA and CWA permit denials for wetland use has received recent legal commentary and discussion by the Supreme Court. Regulation under the RHA is conducted under a commerce clause power of a navigable servitude that supercedes the rights of property owners. The navigable servitude power was applied by the Fifth Circuit Court of Appeals in Zabel v. Tabb to uphold the Corps’ expanded wetland jurisdiction under the RHA. The taking claim was rejected in Zabel by the court stating its “discussion of this contention begins and ends with the idea that there is no taking. The waters and underlying land are subject to the paramount servitude in the Federal government . . . .”

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273. U.S. CONST. amend. V (“[n]or shall private property be taken for public use, without just compensation”).

274. A property owner must be allowed to drain a private wetland if the commissioner does not compensate the property owner. MINN. STAT. § 105.391, subd. 3.

275. Some drainage assessments are made based on the drainage system being an outlet for future drainage of wet soils. The property owner may be assessed to pay for that drainage right in that the landowner has benefited by being able to drain the wet soil. Id. § 106A.315, subds. 5 & 6. If the wet soil cannot be drained, the property owner has been assessed for a drainage right that is valueless.

276. If a property owner has paid for a drainage system and the system is denied a permit to be maintained, the property owner loses the drainage that was paid for when the system was constructed.


278. U.S. CONST. art. I, § 8, cl. 3.

279. 430 F.2d 199, 215 (5th Cir. 1970).

In cases involving CWA regulation, courts have applied the taking criteria of (1) whether the regulation substantially advances legitimate state interests, and (2) whether the property owner is denied economically viable use of the land.\textsuperscript{281} In \textit{United States v. Riverside Bayview Homes, Inc.},\textsuperscript{282} the Supreme Court reaffirmed these taking criteria. The Court stated the existence of a permit requirement does not, in and of itself, give rise to a taking question. "Only when a permit is denied and the effect of the denial is to prevent 'economically viable' use of the land in question can it be said that a taking has occurred."\textsuperscript{283}

The above analysis of the taking issue would apply to the drainage of wetlands subject to the jurisdiction of the RHA or CWA. However, the analysis of the rights and remedies of property owners is more complex if the property owner has been assessed for drainage construction based on the benefits to be realized from draining a federally-regulated wet soil or wetlands.\textsuperscript{284} If the cost was assessed before the Corps' jurisdiction was expanded, the drainage authority would have legally assessed the drainage benefit, and denial of a permit to drain would make the drainage benefit valueless. If a drainage authority has assessed a drainage benefit after expanded federal jurisdiction and the benefit is valueless due to permit denial, the benefit was improperly determined and the property owner has an appeal right that expires thirty days after the drainage authority orders the drainage project.\textsuperscript{285} After that time, the property owner may petition for a redetermination of benefits.\textsuperscript{286}

If a permit for a repair is denied and property owners have

\textsuperscript{282} 106 S. Ct. 455 (1985).
\textsuperscript{284} See MINN. STAT. § 106A.315, subd. 5 (Supp. 1985).
\textsuperscript{285} Id. § 106A.091, subd. 2.
\textsuperscript{286} Id. § 106A.351.
paid assessments, the paid for property right of drainage system maintenance\textsuperscript{287} has been taken, and the drainage itself will eventually diminish resulting in land flooding.\textsuperscript{288} The drainage right has essentially been transferred to the public because it can no longer be used by the property owner. In \textit{Lupkes v. Town of Clifton},\textsuperscript{289} the Minnesota Supreme Court stated this property right may not be taken without due process of law or compensation.\textsuperscript{290} The drainage right, which is appurtenant to the property, arises when the benefited property is charged with the drainage assessment.\textsuperscript{291} Most of the drainage maintenance rights have existed since before enactment of the Federal Water Pollution Control Act of 1972 and its implementing regulations.\textsuperscript{292} Because property owners are assessed for the drainage right by a government entity, the preclusion from realizing the paid for property right may seem particularly onerous.\textsuperscript{293}

Viewers and drainage authorities should be sensitive to making a determination and assessment of benefits on private property that may not realize the drainage benefits due to a permit denial. Property owners that are assessed benefits for wetlands or wet soils subject to federal regulation may successfully argue that the permit requirement makes the benefit speculative, and, therefore, cannot be a basis for assessment.\textsuperscript{294}

V. **STATE OPTIONS FOR POLICYMAKERS**

Recent wetland preservation and regulation of drainage activities has increased the complexity and uncertainty of agricultural drainage. Virtually all drainage projects will require a review of waters, wetlands, and wet soils that may be affected by the drainage project. Federal law regulates and classifies

\begin{footnotesize}
\textsuperscript{287} See Fischer, 258 Minn. at 158, 104 N.W.2d at 35.
\textsuperscript{288} See Leitch & Kerestes, supra note 16, at 37 (the useful life of an open ditch can be extended from 15 to 25 years by providing annual maintenance).
\textsuperscript{289} 157 Minn. 493, 196 N.W. 666 (1924).
\textsuperscript{290} See \textit{id.} at 499, 196 N.W. at 669.
\textsuperscript{291} See \textit{id.}.
\textsuperscript{292} By 1920, over nine million acres had been drained. See 1920 Census, supra note 42.
\textsuperscript{293} See Zimmer, 359 N.W.2d at 276 (Todd J., dissenting); \textit{Lupkes}, 157 Minn. at 499, 196 N.W. at 669.
\textsuperscript{294} See Hoepner v. Yellow Medicine County (\textit{In re Hoepner}), 241 Minn. 6, 62 N.W.2d 80 (1954) (property must actually receive benefits to be assessed, and speculative benefits cannot be a basis for assessment).
\end{footnotesize}
wetlands that are part of navigable waters differently than wetlands, including wet soils, that are waters of the United States.295 State law regulates wetlands according to a 1950's definition based on waterfowl production.296 A list of state public waters and wetlands is published for each county to give notice of state-protected waters and wetlands.297

After making a determination of a project affecting regulated wetlands and wet soils, the drainage authority will need to obtain federal and possibly state permits. In addition, federal permits will probably be required for many repair projects, making prevention of the need for repairs desirable.

A. State Administration of CWA Dredge and Fill Permit Program

The state may administer the CWA individual and general permit program for the discharge of dredged or fill materials into waters, including wet soils.298 The program would not include jurisdiction over navigable waters.299 The governor must initiate the transfer by submitting the dredge and fill permit program to be established and administered under state law with a statement from the attorney general to the Environmental Protection Agency administrator that the state laws are adequate to carry out the program.300 The program must transmit each permit application to the administrator and provide notice of action to be taken on a permit.301 The Corps district engineer will assist the state in any way practicable to effect the transfer.302

State administration of the CWA dredge and fill permit program would allow the state to coordinate permit activities related to agricultural drainage. The program would be administered in a manner similar to the National Pollution Discharge Elimination System (NPDES) permit program administered by the Minnesota Pollution Control Agency (MPCA).303

295. This is due to the different jurisdictional requirements of the RHA and CWA. Compare 33 U.S.C. §§ 401-13 with id. §§ 1251-1376.
296. See supra note 94.
297. Minn. Stat. § 105.391, subd. 1.
298. 33 U.S.C. § 1344(g).
299. Id. § 323.5.
300. 40 C.F.R. § 123.21. The proposed program must meet the criteria of 33 U.S.C. § 1344(h).
302. 33 C.F.R. § 323.5.
303. The National Pollution Discharge Elimination System (NPDES) was estab-
Minnesota would need new legislation for authority to regulate the waters, wetlands, and wet soils under federal jurisdiction. It is congressional intent that the states implement the dredge and fill permit program and funding has been made available to carry out the state programs. 304

In Minnesota, there are three agencies that would be likely candidates to assume administration of the dredge and fill permit programs. The MPCA is already administering the NPDES permit programs and could probably assume the dredge and fill permit program by amending the enabling statute. 305 The Department of Natural Resources, Division of Waters and its predecessors, have been the state agency involved with drainage since the beginning of the century. 306 In addition, the division administers state permits for works in public waters. Finally, the Minnesota Department of Agriculture, Soil and Water Conservation Board has administered drainage, flood control, erosion, and conservation projects in the state. The soil and water conservation board has local offices and staff in each county that are coordinated with the U.S. Department of Agriculture Soil Conservation Service staff.

B. State Facilitation of Corps Permits

Drainage projects require a technical analysis to determine if a permit is required. In a public drainage system, the project engineer is probably the person most likely to make the determination based on the preliminary survey. 307 Determination of the necessity and application for permits could be required as part of the project engineer’s duties. Proceedings would probably be stayed until the permit was approved.

Benefits are currently determined and assessed on the basis of the drainage project providing an outlet. 308 These benefits are not likely to be realized if the drainage work to obtain the

304. 33 U.S.C. §§ 1251(b), 1256.
305. See MINN. STAT. § 115.03.
306. See supra note 28.
307. See MINN. STAT. § 106A.241 (Supp. 1985) (within 30 days after a drainage project petition and land are filed, the drainage authority must appoint an engineer to make a preliminary survey and report of the project).
308. MINN. STAT. § 106A.315, subd. 5 (Supp. 1985).
outlet affects regulated wetlands or wet soils. To prevent appeals and litigation, viewers could be instructed to determine benefits based on immediate benefits from the drainage project and based on the drainage project providing an outlet for upland cropland drainage. Other drainage that would be likely to require a permit would be charged an outlet fee upon connecting to the system.

Although an extensive project, the state's wetland classification and inventory program could be expanded to include wetlands and wet soils regulated by the CWA and navigable waters and wetlands regulated by the RHA.\textsuperscript{309} It would be advisable to have the classification and inventory approved by the district engineer in a memorandum of understanding. If a classification and inventory is not possible, a detailed description of regulated wetlands and wet soils would add certainty in determining where they exist.

Existing state programs should be reviewed for compliance with Corps regulations. For example, the state waterbank program eligibility requirements provide that a type 3, 4, or 5 wetland must be able to be legally drained.\textsuperscript{310} Corps permit requirements probably preclude drainage of many of these wetlands but it would not be certain until the Corps permit was approved or denied. State permits to work in public waters and wetlands have different definitions and procedures. It would be helpful if the state permit program could be coordinated with the Corps program and use the same application.

\textbf{C. Increased Drainage Ditch Maintenance}

Drainage ditches that are maintained on a regular basis, such as every two to five years, will be more likely to be exempt from Corps permit requirements under the minor drainage and maintenance exceptions\textsuperscript{311} and less likely to affect wetlands, and wet soils. Drainage systems most susceptible to drainage litigation and permit denial are those that have not been repaired or maintained for over twenty years. These systems are partially filled in by sediment or debris and allow higher water

\textsuperscript{309} It has taken almost seven years to classify and inventory type 3, 4, & 5 wetlands. Wet soils, which are less recognizable and probably more extensive, would require a substantially greater effort.

\textsuperscript{310} Minn. Stat. § 105.392, subd. 2.

\textsuperscript{311} 33 C.F.R. § 323.4(a)(1)(iii)(C).
Interviews and expanded wetlands and wet soils to develop. As more property owners are affected by the inefficient operation of the drainage system, the pressures increase for a repair or "clean out." By this time, however, the likelihood of a permit denial is increased because of wetlands or wet soils that have developed since construction or the last repair.

Drainage authorities could be required to certify inspection and maintenance every two to five years on drainage systems within their jurisdiction.12 The certification would have to demonstrate that the system is working substantially as constructed. For repairs that would require a petition, the property owners would be notified that the repair is necessary. In addition, property owners could be given a right to demand a repair within a certain period of time or the right to maintenance would be lost in a manner that would satisfy due process requirements. Property owners would be able to retain and realize their drainage maintenance rights.

D. Reducing the Need for Ditch Repairs

Properly constructed drainage ditches primarily become inefficient due to eroded sediment deposited in the ditch and trees and brush growing in and falling into the ditch. Trees and brush should be trimmed back through regular maintenance. Sedimentation can be reduced through soil and water conservation management practices. Increased funding of soil and water conservation cost sharing313 and enforcement of soil loss limits314 with damages being paid to drainage authorities responsible for drainage repair would encourage upland property owners to be more responsible for soil losses that result in damage to downstream property owners.

One of the most effective areas to prevent soil erosion from entering a ditch is at the ditch bank.315 The drainage law has

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312. Drainage systems are required to be inspected annually. MINN. STAT. § 106A.705, subd. 1 (Supp. 1985). The drainage authority is directed to make allowed repairs if necessary. These repairs may not cost more than $20,000 or 20 percent of the drainage system benefits, whichever is greater. Id. § 106A.705, subds. 3 & 5. Costlier repairs may only be initiated by petition. Id. §§ 106A.705, subd. 5 & 106A.715.


315. Open ditches are usually located in the lowest part of a drainage area. Surface water carrying eroded soil flows directly into the ditch from surrounding land.
allowed, since 1959, and required since 1977, the acquisition and planting of a permanent grass strip one rod (16 1/2 feet) in width to the crown of the spoil bank.\textsuperscript{316} The grass strip may not be used for agricultural practices.\textsuperscript{317} Conservation officers have the duty of enforcing this provision.\textsuperscript{318} The provision, however, has not been enforced even though some property owners have been paid for acquisition of the grass strip.

Soil erosion prevention measures could be adopted similar to ones considered by the Minnesota Senate in 1986 in Senate File No. 2104.\textsuperscript{319} Senate File No. 2104 allowed a drainage authority to assess up to twenty percent of a repair cost against property owners who had violated provisions related to maintaining the permanent grass strip.\textsuperscript{320} The bill also required counties to enforce soil loss ordinances\textsuperscript{321} and allowed drainage authorities to install erosion control measures as part of a repair to aid the long term efficiency of drainage systems.\textsuperscript{322}

\textbf{E. Watershed Water Management}

The need for new drainage systems and improvements of existing drainage systems is frequently due to the inadequate capacity of existing drainage to carry away water. Drainage systems, primarily due to their financing mechanisms, have been organized and built on a localized basis to handle existing

\begin{itemize}
\item \textsuperscript{316} Act of May 19, 1977, ch. 135, § 9, 1977 Minn. Laws 228, 231-32; Act of April 24, 1959, ch. 508, 1959 Minn. Laws 802, 803 (codified at MINN. STAT. § 106A.021 (Supp. 1985)). The material that is excavated in the construction of the ditch is usually deposited adjacent to the constructed ditch. After the material is spread out and leveled, the peak of the excavated material is called the "crown of the spoil bank."
\item \textsuperscript{317} MINN. STAT. § 106A.021, subd. 3.
\item \textsuperscript{318} Id. § 106A.085, subd. 1 (Supp. 1985).
\item \textsuperscript{319} S.F. 2104, 74th Leg., printed page 1222 (Minn. 1986).
\item \textsuperscript{320} Id. at § 123, subd. 2 (original bill). The bill had hearings at the same time the conference committee on the Reinvest in Minnesota (conservation reserve) was held. Testimony was presented by Senator Gary DeCramer that this provision would enforce grass strip maintenance on the 21,000 miles of open ditch in the state and protect almost 84,000 acres. If the area were acquired under the conservation reserve proposal, the cost would be almost $40 million. Ironically, the Reinvest in Minnesota legislation, which appropriated $10 million to set aside erodible land, was enacted, see Reinvest in Minnesota Resources Act of 1986, ch. 383, 1986 Minn. Laws 208, and termed "Historic Legislation" but S.F. No. 2104 did not receive a full hearing in the House Environment and Natural Resources Committee.
\item \textsuperscript{321} S.F. 2104, 74th Leg., printed page 1222, § 123, subd. 3.
\item \textsuperscript{322} Id. at § 124.
\end{itemize}
needs. As increasing numbers of property owners increase farm drainage, flow is accelerated to the drainage ditch, resulting in flooding. The property owners near the ditch or drainageway are frequently damaged from the cumulative effects of upstream discharges and must seek relief through expanding existing drainage. Expanded upstream drainage systems affect downstream drainage systems. Yet the law does not provide for assessing the costs of downstream improvements to upstream discharges that do not outlet directly into the drainage system. If permits are denied for continued expansion of downstream systems, the downstream property owners will be subject to more flooding with little or no recourse.

323. Viewers are directed to “determine the amount of benefits to all property benefited, whether the property is benefited immediately by the construction of the proposed drainage system or the proposed drainage system can become an outlet for drainage, makes an outlet more accessible, or otherwise directly benefits the property.” Minn. Stat. § 106A.315, subd. 5. Subdivision six provides:

If the proposed drainage system furnishes an outlet to an existing drainage system and benefits the property drained by the existing system, the viewers shall equitably determine and assess: (1) the benefits of the proposed drainage system to each tract or lot drained by the existing drainage system; (2) a single amount as an outlet benefit to the existing drainage system; or (3) benefits on a watershed acre basis.

Id. at subd. 6.

However, before there can be an assessment of benefits, there must be some benefit to the land involved or the assessment is an unconstitutional taking of property without due process of law. Seidlitz v. County of Faribault, 237 Minn. 358, 361, 55 N.W.2d 308, 311 (1952). The court stated:

It is obvious that before there can be an assessment against land from which water drains into the ditch there must be a beneficial drainage. All surface water sooner or later finds its way into some outlet. One of the main objects of artificial drainage systems is to draw the water off fast enough so that the land may be gainfully put to use. It is entirely possible that some tract or tracts of land within the drainage basin of a ditch are so much higher than other lands that it needs no aid from any artificial drain. In such case, it may not be assessed for benefits accruing to lower land merely because it is in the general drainage basin of the ditch and its water ultimately finds its way into the drainage system.

Id. at 364, 55 N.W.2d at 312.

And even where an outlet needs to be improved, possibly due to increased drainage in upstream areas;

[c]osts for improving an outlet, the same as costs for improving a ditch, must be assessed against the land benefited based upon an independent determination of such benefits. It is entirely conceivable that the lands lying in the upper reaches of the drainage systems will not benefit from an improvement of an outlet in the same proportion as they benefited from the construction of the ditch. The law contemplates and requires an independent and original assessment of benefits based on the actual benefit of the contemplated improvement to the land to be assessed.

Oelke v. County of Faribault, 244 Minn. 543, 557, 70 N.W.2d 853, 862-63 (1955).
Watershed water plans, plans similar to those required under Minnesota Statutes, chapter 110B, could include the drainage area of drainage systems and, if possible, make projections on the maximum flows that can be anticipated from upstream discharges. If upstream dischargers accelerate the flow and contribute to the downstream flooding, a procedure could be developed that would equitably assess upstream dischargers for the amount of accelerated flow (common law allows property owners to drain water from their property to the extent it does not damage others). The need for continual expansion of downstream drainage would be reduced if upstream dischargers found it more economical to construct flood retention basins, wetlands, and other facilities to reduce the accelerated flow.

F. Recognizing Values of Wetlands

Wetlands are a valuable natural resource and yield many benefits to the public. Major wetland values include fish and wildlife habitat, maintenance and improvement of environmental quality, and recreational and natural resource utilization. Wetland preservation in Minnesota is accomplished by regulation, acquisition, and economic incentives to prevent drainage. When the state places a value on a wetland for acquisition or lease, it is based on the crop producing potential of the wetland. For example, in the state water bank program during 1984-85, the average cost of acquisition was

324. See supra note 76.
325. Tiner, supra note 57, at 13. Major wetland values include: providing a habitat for fish and shellfish, waterfowl, other birds, furbearers and other wildlife; providing water quality maintenance by filtering pollution, removing sediment-producing oxygen, recycling nutrients, and absorbing chemicals and nutrients; site for aquatic productivity and microclimate regulation and socioeconomic values of flood control, wave damage protection, erosion control, groundwater recharge and water supply, energy source, livestock grazing, fishing and shellfishing, hunting and trapping, recreation, and education and scientific research. See also American Water Resources A. Wetland Functions and Values: The State of Our Understanding, (Greeson, S. Clark & J. Clark editors), Proceedings of the Nat’l Symp. on Wetlands, Nov. 7-10, 1978 (1979).
327. Id. §§ 97.481 (wetland for wildlife and hunting), 105.392 (water bank acquisition).
328. Id. §§ 105.392 (water bank program), 272.02, subd. 1(10) (exemption from tax) & 273.115 (1984) (state paid credit).
The average value of farmland in Minnesota was $927 per acre. To enter into a waterbank agreement, the applicant must demonstrate that an outlet is available, that the planned drainage project is a profitable investment, and that the drained wetland will be high quality cropland.

Naturally productive soils that are not utilized can benefit significantly by drainage and, in general, poorly drained soils, if drained, are some of Minnesota’s most productive soils. Wetland drainage to acquire new production land and the monetary returns from increased production are usually the most important incentives to drain wetlands. Other incentives include “squaring up” fields and removing wetlands which are a nuisance to a farming operation. A 1981 study showed that an open ditch to drain small wetlands had construction costs of $103 to $183 per acre drained and average net returns after drainage of about $128 per acre.

Wetland preservation programs that are based on crop and farmland values will be successful based on agricultural economics. The value of a wetland to the state should be based on all of its uses, e.g., a wetland in a groundwater recharge zone or upstream from a surface water supply should have more public value than an isolated, similar, clay-bottomed wetland. An inventory could be made of all wetlands in the


330. STATISTICAL REPORTING SERVICE, UNITED STATES DEP’T OF AGRIC., MINNESOTA AGRICULTURAL STATISTICS 1985 I (July 1985).

331. MINN. R. 6115.1220, subp. 1 (setting out procedure for applying for a water bank agreement).

332. See Anthony, supra note 16, at 3, 6.

333. Farming operations are most efficient where fields require as few turning points as possible. A wetland in the middle of the field requires twice as many turning points when field work is conducted. “Squaring up” fields is the practice of removing a wetland so the entire field can be farmed. In addition, the wetland areas are frequently areas where farming equipment will get stuck or mired down. The nuisance or delay that a wetland causes to farming operations increases the incentive to drain it in spite of economics. Leitch & Kerestes, supra note 16, at 37.

334. Id. at 38.

335. A wetland in a groundwater recharge zone would filter some of the chemicals from the water before the water enters the aquifer. The wetland can also serve as a temporary holding area if there is a chemical spill or discharge. In a similar manner, wetlands upstream from surface water supplies can improve the quality and protect the water supplies. In addition, where the surface water supplies are lakes, the wetlands act as nutrient filters and can be used to improve lake water quality. For example, the city of Fairmont, Minnesota, has recently diverted a major storm tile from discharge into the city’s water supply lake to discharge into a wetland area upstream.
state. They could then be classified according to all of their public values. Wetland preservation programs could be designed to compensate private owners for not draining wetlands based on those public values.\(^{336}\) In an area where wetlands have a high degree of public value, some landowners may decide to create wetlands and have the state acquire those benefits.

The cost of the public benefits could be allotted to the values realized. For example, instead of fish and wildlife funds paying the entire cost of acquiring a wetland, the hunting and wildlife habitat value could be paid by fish and wildlife funds; the floodwater retention value could be assessed to benefited property owners; water supply users could contribute a portion based on the filtering ability of the wetland. There may be a day in the not too distant future when the state may want to empower "wetland authorities" to establish wetlands in needed areas and model the establishment, financing, construction, and assessment of benefit procedures on those successfully used for drainage systems.

**Conclusion**

The long history of drainage development in Minnesota has vested drainage rights in property owners who have paid drainage assessments. Extensive federal regulation threatens those rights and subjects drainage proceedings to another level of government agency involvement. The burden of increased regulation will rest first on county drainage authorities who will need to see that the regulations are complied with before a project is established. Ultimately, however, the burden will rest on the property owners who must pay for drainage that is established, and suffer the damages from drainage projects that are denied.

The state has a number of options to facilitate the regulation of the water supply lake; the city of Waseca, Minnesota, has established a wetland area to filter nutrients from the city's primary recreational lake. Considering the high cost of cleaning contaminated water supplies, many wetlands have high public values that exceed their agricultural production value.

336. If the drainage of public and private wetlands is restricted by regulation because there are public values that exceed the private gain realized from draining wetlands and placing the area into agricultural production, it seems that the public would be better off to recognize the public value and purchase the private drainage right where it exists.
of drainage and allow maintenance of drainage systems. Long term solutions include reevaluation of wetland values and incorporation of agricultural drainage into large scale water management.