# AGRICULTURAL DRAINAGE AND THE DES MOINES WATER WORKS LAWSUIT

*Nathan Vos*†

## PREFACE

Two important cases have been decided since this Note was completed. First, on January 21, 2017, the Iowa Supreme Court answered the United States Northern District of Iowa's Certified Questions in *Board of Water Works Trustees of City of Des Moines v. Sac County Board of Supervisors*.[1] As expected, the Iowa Supreme Court held the Drainage Districts of the Iowa counties, Sac, Calhoun, and Buena Vista, were not proper parties to sue under Iowa statute or common law and, therefore, could not be sued for any kind of damages under state law.[2] Second, and surprisingly, on March 17, 2017, the District Court[3] dismissed the Des Moines Water Works lawsuit in its entirety—both on the state claims and the federal Clean Water Act claims.[4] Des Moines Water Works is not expected to appeal this decision.

Importantly, none of the water municipal's federal claims were addressed substantively when the case was dismissed.[5] Instead, the federal District Court dismissed the claim on procedural standing technicalities[6] due to the limited governing nature of drainage districts.[7] Readers interested in this litigation and development of similar environmental litigation, will find this Note helpful as it

† J.D., Drake University Law School, May 2017, B.A., Political Science, Iowa State University, December 2013.

1. Bd. of Water Works Trs. of Des Moines v. Sac Cty. Bd. of Supervisors, 890 N.W.2d 50 (Iowa 2017).

2. *Id*. at 52.

3. The DMWW case was reassigned from Judge Mark W. Bennett to Judge Leonard T. Strand on February 17, 2016.

4. Bd. of Water Works Trs. of Des Moines v. Sac Cty. Bd. of Supervisors as Trs. of Drainage Dists. 32, No. C15-4020-LTS, 2017 U.S. Dist. LEXIS 39025 at *2 (N.D. Iowa 2017).

5. *See id*.

6. The court dismissed the claim based on the third standing prong of redressability. *See id*. at *13-17 ("DMWW may well have suffered an injury, but the drainage districts lack the ability to redress that injury.").

7. *Id*. Although the author believes Des Moines Water Works would have standing to sue in federal court, there is little need to discuss the procedural aspects of standing for purposes of this Note.

addresses several substantive legal issues concerning the Clean Water Act's application to drainage infrastructure and discusses the history of agriculture drainage generally and in Iowa. Due to the timing of the District Court's decision to dismiss, this Note has been left substantially the same as when it was first submitted for final publication. The author apologizes for any past and present tense verb discrepancies.



## I. INTRODUCTION

On January 9, 2014, the Des Moines Water Works ("DMWW"), a water municipal, servicing about 500,000 people[8] in the Des Moines area of Iowa,[9] sent a letter of intent to sue rural drainage districts in Sac, Calhoun, and Buena Vista counties ("Drainage Districts") in northwest Iowa.[10] Under the citizen enforcement

8. Brief of Board of Water Works Trustees of the City of Des Moines, Iowa in Resistance to Defendants' Motion for Partial Summary Judgment at 3, Bd. of Water Works Trs. of Des Moines v. Sac Cty. Bd. of Supervisors as Trs. of Drainage Dists., No. 5:15-cv-04020 (N.D. Iowa Oct. 19, 2015) [hereinafter Des Moines Water Works Brief in Resistance].

9. Des Moines Water Works is an independently operated utility, owned by water rate payers and, separate from the corporate entity, Des Moines, Iowa. *Organizational Chart*, DES MOINES WATER WORKS, www.dmww.com/about-us/organizational-chart/ (last visited April 8, 2017); *see* IOWA CONST. art. III, § 38A.

10. *See* Letter from William Stowe, Des Moines Water Works, to the Cty. Bd. of Supervisors of Sac, Calhoun, and Buena Vista Ctys. 1 (Jan. 9, 2014), http://www.dmww.com/upl/documents/about-us/announcements/notice-of-intent-to-sue.pdf [hereinafter Letter from William Stowe]; Complaint at 2, Bd. of Water Works Trs. of Des Moines v. Sac Cty. Bd. of Supervisors as Trs. of Drainage Dists., No. 5:15-cv-04020 (N.D. Iowa Mar. 16, 2015) [hereinafter Des Moines Water Works Complaint] (listing all of the drainage districts by county: Sac County Board of Supervisors as Trustees of Drainage Districts 32, 42, 65, 79, 81, 83, 86; Calhoun County Board of Supervisors and Sac County Board of Supervisors as Joint Trustees of Drainage Districts 2 and 51, Buena Vista County Board of Supervisors and Sac County Board of Supervisors as Joint Trustees of Drainage

action in 33 U.S.C. § 1365 of the Federal Water Pollution Control Act ("Clean Water Act" or "CWA") and Iowa Code section 455B.111, DMWW alleges these Drainage Districts are in violation of the Clean Water Act, 33 U.S.C. Sections 1311(a) and 1342(a), and Iowa Code section 455B.186, for failure to obtain a National Pollution Discharge Elimination System (NPDES) permit for unlawfully discharging nitrate pollution into the Raccoon River, which leads to the Des Moines area drinking water supply.[11] Des Moines Water Works contends the Drainage Districts' drainage activity has a detrimental environmental impact on the Raccoon River, which is a raw water source for DMWW.[12] This polluted water must then be cleaned by DMWW at a substantial cost to make the water safe to drink for its customers.[13] If the lawsuit is successful on its state law and federal claims, DMWW expects compensation for past and recurring damages from the cost of cleaning the nitrates out of its drinking water as well as enforcement of the CWA.[14]

Many reactions to the lawsuit have not been overly pleasant. Although it is not difficult to understand why a city municipal suing rural entities intrinsically tied to a dominate sector of Iowa's economy would be unpopular, perceptions of the lawsuit have also been negatively affected by advertisements from the newly formed political group, the Iowa Partnership for Clean Water.[15] These negative advertisements have been against the Water Works CEO Bill Stowe,[16] DMWW itself,[17] and lawyers generally.[18] Because of the general nature of the litigation and subsequent negative advertisements, Des Moines Water Works, as a Des Moines lobbyist once stated, has been considered by those involved in governmental

Districts 19, 26, 64, and 105).

11. Des Moines Water Works Complaint, *supra* note 10, at 1-2.

12. *Id*. at 2.

13. *See* Letter from William Stowe, *supra* note 10, at 2.

14. *See id*. at 9.

15. Neil Hamilton, Dir. of Agric. Law Ctr., Drake Univ. Law Sch., Presentation to the 2015 American Agricultural Law Association Annual Meeting: Ten New Things to Know about the Des Moines Waterworks Lawsuit, *in* Water Quality and Agriculture: Issues raised by the Des Moines Waterworks Litigation against Drainage Districts in Three Iowa Counties 10, 10-11 (Oct. 22, 2015).

16. *What Is Bill Hiding?*, IOWA PARTNERSHIP FOR CLEAN WATER (Dec. 3, 2015), http://iowapartnershipforcleanwater.org/2015/12/what-is-bill-hiding/.

17. Marcus McIntosh, *New TV Ad Takes Aim at Water Works Drinking Water Lawsuit*, KCCI 8 DES MOINES (May 13, 2015, 6:01 PM), http://www.kcci.com/news/new-tv-ad-takes-aim-at-water-works-drinking-water-lawsuit/33007014.

18. *Farmers – Not Lawyers – Are the Solution*, IOWA PARTNERSHIP FOR CLEAN WATER (June 16, 2015), http://iowapartnershipforcleanwater.org/2015/06/video-farmers-not-lawyers-are-the-solution/.

affairs to be "toxic waste that nobody wants to handle."[19]

This said, agricultural groups' and farmers' concerns over agricultural drainage regulation are not without merit. It has been estimated by some that the requirement of NPDES permits and implementation of nitrate reducing apparatuses and practices could cost many Iowa farmers up to $100 an acre every year over the course of fifty years.[20] However, this estimate is rather high due to being based on the Iowa Nutrient Reduction Strategy to reduce current nitrate and phosphorus levels by 45 percent.[21] This reduction would "require 60% of all corn and soybeans acres to be planted with cover crops; 27% of all agricultural land drained into wetlands, and 60% of the drained land treated with bioreactors."[22] This would require 6,000 wetlands constructed and 90,000 bioreactors attached to fields over 12 million acres of crops.[23] Such a dramatic implementation does not seem likely.

At the heart of this controversial lawsuit is the agricultural practice of land drainage. As such, this Note will concern itself mostly with agricultural drainage. The Note will be divided into three main parts: the history of agricultural drainage generally and in Iowa; the benefits and disadvantages of agricultural drainage; and discussion of the DMWW lawsuit's substantive claims.

## II. GENERAL AGRICULTURAL DRAINAGE HISTORY

Drainage is "the act, process, or method of draining" or a "system of drains, arrangement of pipes, etc. for carrying off waste matter."[24] Draining is defined as "draw[ing] off (liquid) gradually" or "to draw water or any liquid from gradually so as to dry or empty: to drain swamps."[25] In agriculture, drainage is the removal of excess water and the artificial lowering of a field's water table for agricultural use.[26] Draining water from agricultural lands is not a new concept.[27] In Western

19. Robert Palmer, Lobbyist, League of Cities, Lecture at Drake University Law School (Oct. 20 2015).

20. Mark J. Hansen, et al., *The Debate about Farm Nitrates and Drinking Water*, CHOICES, Jan. 2017, no. 1, 2016, http://www.choicesmagazine.org/Userfiles/file/cmsarticle_485.pdf.

21. *Id*.

22. *Id*.

23. *Id*.

24. *Drainage*, WEBSTER'S NEW WORLD COLL. DICTIONARY (3d ed. 1988).

25. *Drain*, WEBSTER'S NEW WORLD COLL. DICTIONARY (3d ed. 1988).

26. *Bioreactors, Water Table Management, and Water Quality*: *Drainage Tile History in the U.S.*, U. ILL. EXTENSION, http://web.extension.illinois.edu/bioreactors/history.cfm (last visited April 8, 2017).

27. *See generally* WALTER BLIGH, THE ENGLISH IMPROVER IMPROVED OR THE SURVEY OF

civilization, agricultural drainage existed before and during the early Christian Era as Cato, and later Columella, Pliny, and Palladius wrote about the drainage of Roman lands for growing crops.[28]

Two kinds of drainage system infrastructures were used during these early BC and AD centuries on agricultural lands: open and covered ditches.[29] According to Cato for the cultivation of olive trees, both open and covered ditches were to be made four feet deep, three feet wide at the top, and one foot wide at the bottom.[30] Open ditches were reserved for hard clay areas in the field, and covered ditches were reserved for areas in the field with looser soils that could be washed away with rain.[31] As opposed to open-faced ditches, the bottoms of closed ditches were filled with stone, or if none were available, willow branches or twigs were used.[32] Soil would then be placed on top to cover the ditches.[33] Cato recommended the ditches be dug in a "V" like fashion, like an upside down roof tile.[34] These covered ditches were interconnected to the open-faced ditches to discharge excess surface water away from the field.[35] This drainage did not artificially lower the field's water table.[36]

In England, where it is considerably boggier,[37] the utility of drainage was rediscovered and pursued with vigor after the publishing of Walter Bligh's, *The*

THE HUSBANDRY SURVEYED (London 1652); 1 ADAM DICKSON, THE HUSBANDRY OF THE ANCIENTS 366 (Edinburgh 1788).

28. JOHN JOHNSTONE & JOSEPH ELKINGTON, AN ACCOUNT OF THE MODE OF DRAINING LAND, ACCORDING TO THE SYSTEM PRACTISED BY MR. JOSEPH ELKINGTON 132-33 (3d ed. 1808) ("Upon strong tenacious land, where the water could only be received at the top, [Roman farmers] preferred open drains; on other soils, where the water could be drawn equally from both sides, or could rise from the bottom, they used covered ones."). For an in-depth history of Roman husbandry of the land and especially their agricultural tiling systems, *see* DICKSON, *supra* note 27, at 358.

29. DICKSON, *supra* note 27, at 366.

30. *Id*.

31. *Id*. at 367.

32. *Id*. at 366.

33. *Id*. at 367.

34. *Id*. ("[I]t is proper to make both the open and covered drains shelving, broad at the top and narrow at the bottom, like roof tiles turned upside down; for those whole sides are perpendicular are soon damaged by the water, and are filled with the falling earth from the top.").

35. *Id*. at 367-68.

36. JOHNSTONE & ELKINGTON, *supra* note 28, at 136 ("Hollow drains that come under the present description, are chiefly used to correct that wetness of soil which results from rain . . . .").

37. HENRY F. FRENCH, FARM DRAINAGE 14-15 (2d ed. 1884).

*English Improver Improved or the Survey of Husbandry Surveyed*, in 1652.[38] The drainage practices advocated by Mr. Bligh were generally the same as early Roman open and closed ditches with a focus on deeper drainage limited to boggy or swampy lands.[39] This method continued to be the predominant means of draining until the eighteenth century.[40]

Drainage by open and covered ditches required extensive maintenance and generally did not produce desired long term results.[41] Mr. Bligh's methods of drainage were largely replaced after John Johnstone, an English land surveyor, appointed by the British Board of Agriculture, published a report on a book in 1797, named the *Art of Draining Land*, that was dictated[42] by Joseph Elkington, an English farmer.[43] Mr. Elkington's drainage system focused on alleviating wetland areas where natural springs occurred by auguring into the spring and forcing the spring to drain into an adjacent ditch rather than come up through the soil.[44] This method saw much success, but by the mid-1800s, it too was gradually replaced by another method to drain croplands—tiling.[45]

38. *See generally* BLIGH, *supra* note 27 ("Discovering the Improveable of all Lands: Some to be under a double and Treble others under a Five or Six Fould. And many under a Tenn fould, yea, some under a Twenty fould Improvement.") (original spelling); FRENCH, *supra* note 37, at 24 (Judge French said THE ENGLISH IMPROVER IMPROVED was published in 1650 and this date seems to be repeated in several other works without citation since his writing, but the original copy the author of this Note found states THE ENGLISH IMPROVER IMPROVED was printed in 1652).

39. *See generally* BLIGH, *supra* note 27.

40. *See* DICKSON, *supra* note 27, at 366; *see generally* JOHNSTONE & ELKINGTON, *supra* note 28, at 132-33.

41. *See* FRENCH, *supra* note 37, at vii.

42. *Id*. at 28 (Mr. Elkington was illiterate).

43. JOHNSTONE & ELKINGTON, *supra* note 28, at vi-vii.

44. *Id*. at 11. This reprinted 1797 report to the British Board of Agriculture contains a then new detailed method of draining "boggy" lands from springs in the English countryside by a farmer named Mr. Joseph Elkington, who had been practicing this on his land thirty years before the commission of this report. The system worked well in comparison to the drainage ditches of the era. The report contains letters from farmers around the English country side to Mr. Elkington commenting on the increased "herbage" and increase in land value from using Mr. Elkington's drainage system on swampy parts of their estates. A man named John Maughan said, "[After draining] I [now] have the satisfaction of saying it is now the driest land on the estate. . . . I have seen land of little or no value, when drained on Mr. Elkington's principles, made worth forty or fifty shillings per acre and producing the richest crops, both of corn and grass." *Id*. at 126-28.

45. GEORGE E. WARING, JR., DRAINING FOR PROFIT AND DRAINING FOR HEALTH 62-63-64 (3d ed. 1902) (indicating that Mr. Elkington's system was used predominantly for partial draining where springs were forcing water up. By 1833, draining of the whole field, without reference to springs, was being advocated.).

The modern system of subsurface drainage, a series of parallel clay conduit placed about three feet below the surface of an entire field, originated from James Smith,[46] a Scottish inventor, businessman, industrialist, and engineer.[47] "Smith advocated and practiced a systematic operation over the whole field, at regular distances and shallow depths. Smith state[d], in Scotland, much more injury arises from retention of rain water, than from springs; while Elkington's attention seem[ed] to have been especially directed to springs, as the source of the evil."[48] This new method of draining by tile emerged as the best way to drain entire fields.[49] The early design of tiles then quickly evolved from clay horseshoe shaped tile to clay collared pipe by the late 1860s.[50] The placement of depth and pattern of tile systems[51] also evolved to better facilitate drainage.

Modern tiling made its way to the United States by a Scottish immigrant, John Johnston, who brought the ideas of tiling with him to America when he moved to New Jersey from Scotland in 1821.[52] He began to tile his farm land in

46. *James Smith*, (1789-1850) GRACE'S GUIDE TO BRIT. INDUS. HIST., http://www.gracesguide.co.uk/James_Smith (last modified Dec. 2, 2013, 6:14 PM); JAMES SMITH, REMARKS ON THOROUGH DRAINING & DEEP PLOUGHING 3, 5-6 (6th ed. 1843); FRENCH, *supra* note 37, at 37. There seems to be a discrepancy as to whether modern tile drainage originated from Mr. Smith. After an extensive review of agricultural articles of the era, the author of this Note is convinced Mr. Smith was the first to advocate this system of drainage—or at least the first to have his ideas published in 1832.

47. *See generally James Smith*, *supra* note 46.

48. FRENCH, *supra* note 37, at 37.

49. M. M. M., *On the Improvement of Cold Clays*, 15 FARMERS MAG. 114, 117 (1847) (stating, "[t]he *material* for forming drains seems to be generally settled to be *tiles*. Stones and thorns, and instruments and sods, and various other modes, have all given way to tile draining . . . ."); *see also* WARING, *supra* note 45, at 64 (stating "Elkington's system need have no place in our calculations." The first edition of this book was published in 1867.).

50. "[R]ound pipes, with collars, are far superior to the 'horse-shoe' tiles, and are equally easy to obtain, it is not necessary to consider the manner in which these latter should be used, —only to say that they ought not be used at all." Albeit, the note to the first edition at page three states, "[The author] has purposely taken the most radical view of the whole subject . . . ." Horseshoe shaped tiles were still in use at the time of publication. "These processes (Elkington's system, horse-shoe tiles, and traditional open and closed ditches filled with stone and brush) are all of occasional use, even at this day . . . ." WARING, *supra* note 45, at 63-64.

51. FRENCH, *supra* note 37, at 38.

52. Bill Treichler, *The Mike Weaver Drain Tile Museum in the Home of John Johnston*, CROOKED LAKE REV. (July 1994), http://www.crookedlakereview.com/articles/67_100/76july1994/76treichler.html. Comically, many American farmers were wary of an "English" practice such as tile drainage even though those farmers stood to gain tremendously by tile draining their farmland. *See* FRENCH, *supra* note 37, at 19-21. Also, the statement that modern tiling made its way to America at this time does not preclude the fact that Americans had been draining their land since colonial times,

1838.[53] By 1848, Mr. Johnston's successful use of drainage and the increase to his yields had caught the attention of fellow agriculturists.[54] John Delafield, a colleague of Mr. Johnston, imported the first tile making machine from England to the United States.[55] Early experts and advocates of drainage wrote numerous articles and treatises on agricultural drainage, bringing national attention to the process of tiling to drain land in the United States.[56] Most prominent of these men were Colonel George Waring, judge and attorney Henry F. French, and Ohio's Secretary of Agriculture, John H. Klippart, all of whom fervently advocated that most land in the United States be drained.[57] The purchasing of tiling and tiling machines grew rapidly; in 1871 there were ten tile making factories in Waterloo, New York, and by 1882, there were 1,140 tile making factories in the United States.[58]

Congress passed the Swamp Land Acts of 1849, 1850, and 1860, granting over 82 million acres of federal land to sixteen states, including Iowa (4,572,816 acres), on the condition these states drain and reclaim these swamp lands for cultivation.[59] Due to the cost of labor intensive hand installation of drainage tile at the time, drainage of these swamp land was not realized until several decades after these enactments.[60] Eventually, steam engine trenching machines in the later part of the 1800s largely eased the labor involved with larger ditch digging and channel straightening projects.[61] This, in conjunction with states establishing local drainage districts to overcome eminent domain issues, facilitated drainage of boggy lands in the late 1800s and early 1900s.[62] In 1902, Congress established a Bureau of Reclamation within the USDA and directed federal money to investigate various

they just generally did not use the tiling method like John Johnston's. *See* Keith H. Beauchamp, *A History of Drainage and Drainage Methods*, *in* FARM DRAINAGE IN THE UNITED STATES 13, 15-16 (USDA 1987).

53. Treichler, *supra* note 52.

54. FRENCH, *supra* note 37, at 46.

55. *Id*. at vii.

56. *See generally* WARING, *supra* note 45; FRENCH, *supra* note 37; JOHN H. KLIPPART, THE PRINCIPLES AND PRACTICE OF LAND DRAINAGE (Robert Clarke & Co. ed., 1861).

57. *See generally* WARING, *supra* note 45 (emphasizing the importance of thorough training); FRENCH, *supra* note 37 (describing the advances of U.S. drainage); KLIPPART, *supra* note 56 (documenting his consultation with drainage experts and his experiences in Ohio).

58. Treichler, *supra* note 52.

59. J. O. WRIGHT, USDA, SWAMP AND OVERFLOWED LANDS IN THE UNITED STATES 5-6 (1907).

60. Beauchamp, *supra* note 52, at 17.

61. George A. Pavelis, *Summary* of FARM DRAINAGE IN THE UNITED STATES, at v (USDA 1987).

62. *See* Beauchamp, *supra* note 52, at 17-18.

drainage methods.[63] In 1935, Congress authorized the Reconstruction Finance Corporation to assist cash strapped drainage districts in twenty-six states and directed the Civilian Conservation Corps to work with drainage enterprises and local governments to drain land.[64] The Flood Control Act of 1944 and the Federal Watershed Protection and Flood Prevention Act of 1954 "authorized the Corps of Engineers to construct major drainage outlets and flood control channels" and authorized the USDA "to plan and construct various watershed works of improvement, including drainage outlet channels, in cooperation with State and local governments."[65]

Just as digging ditches and channel straightening by hand gave way to horse-drawn, steam-driven trenchers in the mid-1800s, steam-powered trenchers gave way to internal combustion tractor driven trenchers in the early 1900s.[66] The labor-intensive process of digging tile by hand and plow on private land also steadily gave way in the early decades of the 1900's as farmers gained access to internal combustion tractors that could be fitted with trenching equipment.[67]

By the early 1970s, cement and clay tiling was supplanted by corrugated plastic tubing and continues to be the widely accepted means for tiling agricultural land.[68] Since corrugated plastic tubing is much lighter than clay or cement tiles, it costs substantially less to ship, handle, and install.[69] It also does not require precise alignment during installation since the tubing itself is flexible.[70] As such, private tiling has increased exponentially in recent decades[71] even though governmental assistance for tiling largely ended by the 1970s and '80s.[72]

63. *Id*. at 18.

64. *Id*.; *see also Reconstruction Finance Corporation*, ENCYCLOPEDIA BRITANNICA, https://www.britannica.com/topic/Reconstruction-Finance-Corporation (last updated June 10, 2004) (The Reconstruction Finance Corporation was a government agency established during the Great Depression to provide financial assistance to distressed railroads, financial institutions, and corporations).

65. Beauchamp, *supra* note 52, at 18.

66. *See id*. at 22-23.

67. *See id*. at 23.

68. *See* James L. Fouss & Ronald C. Reeve, *Advances in Drainage Technology: 1955-85*, *in* FARM DRAINAGE IN THE UNITED STATES 30, 33 (USDA 1987).

69. *Id*.

70. *Id*.

71. *See* Dave Orrick, *Minnesota Farm Drain Tiling: Better Crops, but at What Cost?*, TWIN CITIES PIONEER PRESS (Feb. 18, 2016, 6:19 PM), http://www.twincities.com/2012/08/31/minnesota-farm-drain-tiling-better-crops-but-at-what-cost/.

72. George A. Pavelis, *Economic Survey of Farm Drainage*, *in* FARM DRAINAGE IN THE UNITED STATES 110, 121 (USDA 1987) ("As of 1985, less than 10 percent of all existing

## III. DRAINAGE HISTORY IN IOWA

Iowa's drainage in the northwest and northcentral areas starts with tile drainage infrastructure on private land that drain into county open ditches[73] or county underground systems,[74] which then either drain into larger ditches or other water tributaries following their respective watersheds.[75] As Iowa was not admitted into the Union until a few days before 1847,[76] drainage of its agricultural lands did not begin until the later part of the nineteenth century. After Iowa was deeded approximately 4,572,816 acres of federal swampland,[77] Iowa deeded this land to its counties.[78] The counties in turn appointed commissioners to oversee swampland reclamation.[79] Many parts of Iowa were a pothole prairie, with central to northwest Iowa and the Bear Creek Watershed, in both, Hamilton and Story counties, having the wettest farmland.[80] Originally, Storm Lake, a northwest Iowa city (with a current population of 10,600 people), "stretched away in a shallow expanse much farther toward the north and west, as was historically evident by a reedy, marshy swamp, extending halfway to Alta, [Iowa]."[81] These swamps and wetlands were considered a hindrance to settlement and development.[82]

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surface or subsurface drainage improvements could be attributed to Federal financing provided under [federal programs].").

73. *Drainage Infrastructure in Iowa*, WHAT'S HAPPENIN' (Iowa Dep't Nat. Res., Des Moines, Iowa), Apr. 2006, at 1, https://programs.iowadnr.gov/nrgislibx/newsletters/2006-04_GIS_Newsletter.pdf.

74. Rameshwar S. Kanwar et al., *Drainage Needs and Returns in North-Central Iowa*, 26 TRANSACTIONS OF THE ASAE 457, 457 (1983), *reprinted in* IOWA ST. UNIV., DEPT. OF AGRIC. & BIOSYSTEMS ENGINEERING PUBLICATIONS 457 (July 20, 2014), http://lib.dr.iastate.edu/cgi/viewcontent.cgi?article=1780&context=abe_eng_pubs.

75. *See Drainage Infrastructure in Iowa*, *supra* note 73, at 1-2.

76. *Iowa*, HISTORY, http://www.history.com/topics/us-states/iowa (last visited April 8, 2017).

77. W.S. ALLEN, REPORT OF THE SECRETARY OF STATE TO THE GOVERNOR OF IOWA OF THE TRANSACTIONS OF THE LAND DEPARTMENT 32 (1914).

78. Maria Elizabeth Howe, Reclaiming the Little Sioux River Valley: A History of Drainage along the Monona-Harrison Ditch in Western Iowa 24 (2012) (unpublished graduate dissertation, Iowa State University) (on file at Iowa State University Digital Repository).

79. *Id*. at 24-25.

80. Katherine Louise Anderson, Historical Alterations of Surface Hydrology in Iowa's Small Agricultural Watersheds 18 (2000) (unpublished graduate dissertation, Iowa State University) (on file at Iowa State University Digital Repository) (circa 1865, one settler stated "We started across the county northeast from Nevada [Iowa] and everything looked like a great lake; not a house within six miles of town. Winding our way through water until we arrived at Johnson Grove.").

81. *Id*. at 15.

82. *Id*. at 25.

After flooding events in Iowa and the Midwest in 1881,[83] 1891,[84] and serious flooding in 1903,[85] Iowa Governor Albert B. Cummins stated to the 1904 Iowa General Assembly, "[o]ur experience during the past two years has shown with conclusive force that our laws relating to drainage need complete revision . . . . I earnestly recommend such adequate legislation as will enable the land owners of this State to protect themselves against rainfalls such as we have recently witnessed."[86] Later that session, the General Assembly overhauled its laws on agricultural drainage to facilitate more effective drainage of Iowa wetlands.[87] In enacting these drainage laws, the General Assembly made it clear they assumed agricultural drainage to be a benefit for the public good.[88] The law states:

> The drainage of surface waters from agricultural lands and all other lands, including state-owned lakes and wetlands, or the protection of such lands from the overflow shall be presumed to be a public benefit and conductive to the public health, convenience, and welfare.
>
> The provisions of this subchapter and all other laws for the drainage and protection from overflow of agricultural or overflow lands shall be liberally construed to promote leveeing, ditching, draining and reclamation of wet, swampy, and overflow lands.[89]

In 1908, the Iowa legislature specifically added constitutional protection for drainage and drainage districts in Article I, section 18, governing eminent domain:

> The general assembly, however, may pass laws permitting the owners of lands to construct drains, ditches, and levees for agricultural, sanitary or mining purposes across the lands of others, and provide for the organization of drainage districts, vest the proper authorities with power to construct and maintain levees, drains and ditches and to keep in repair all drains, ditches, and levees heretofore constructed under the laws of the state, by special assessments upon the property

83. Howe, *supra* note 78, at 26 (indicating newspapers in the region described the 1881 flood as comparable to the story of Noah's Ark in the Genesis flood).

84. *Id*. at 27 (stating the 1891 flood killed several people and destroyed several miles of railroad track and seventy five homes).

85. SOUVENIR OF THE CORNING FLOOD (1903); CHICAGO AND ALTON RAILWAY: THE FLOOD OF 1903 (1903).

86. H. JOURNAL, 30th Gen. Assemb., at 46 (Iowa 1904).

87. *See id*. at 104, 143, 348, 361-62, 384, 603 (An important need to facilitate drainage, as noted in these laws, was allowing drainage districts to use eminent domain to create the needed drainage infrastructure).

88. IOWA CODE § 468.2(1) (2016).

89. *Id*. § 468.2(1)-(2).

benefited thereby.[90]

This part of the Iowa Constitution has remained the same to this present day.[91]

The drainage of Iowa agricultural land continued on in the early 1900s with specific focus on the northern half of the state, which was more prone to flooding.[92] The Iowa State Drainage Waterways and Conservation Commission, appointed by Governor Beryl F. Carroll, reported "that considerable areas of over-flowed land could be reclaimed by clearing out and straightening the channels of bordering streams . . . ."[93] In the Storm Lake Watershed, three formal drainage districts were formed between 1910 and 1925 to straighten channels and drain boggy land.[94] Most of the drainage systems in the upper Des Moines River basin where Sac, Calhoun, and Buena Vista counties are located, were completed from 1900 to 1915.[95] Subsequent federal involvement in large drainage projects in Iowa was also conducted, one example being the Little Sioux Watershed Project in the 1930s and 1940s. The U.S. Army Corps of Engineers worked with state government and local drainage districts to enlarge and straighten the Little Sioux River to help with flood control.[96]

Although these early 1900 dates mention legislated drainage, there is also evidence that private tiling was done before this time, as well as private dredge ditching and stream straightening around the late 1800s.[97] Also, while the basic drainage infrastructure implemented by state and local efforts were largely completed in the early 1900s, this is not to say drainage infrastructure has not been added within private land holdings—it has.[98] In general, as in Iowa, farmland in the Midwest is being privately tile-drained at an increasing rate every year.[99]

90. IOWA CONST. art. I, § 18.

91. *Id*.

92. IOWA STATE DRAINAGE WATERWAYS & CONSERVATION COMM'N, REPORT OF THE IOWA STATE DRAINAGE WATERWAYS AND CONSERVATION COMMISSION 15-16 (1911) ("The question of drainage is of great importance to Iowa, especially to the northern part of the state, probably demanding more attention from our farmers than any other question coming under the head of conservation.").

93. *Id*. at 20.

94. Anderson, *supra* note 80, at 16.

95. Kanwar et al., *supra* note 74, at 457.

96. Howe, *supra* note 78, at 68.

97. Anderson, *supra* note 80, at 16.

98. *See generally* Kanwar et al., *supra* note 74 (explaining that study involved asking farmers about their farm grounds and if they were tiled; presumably these farmers either installed the tiling themselves or it was done to their recent memory). Also, through common experience and observation in Iowa, anyone traveling a gravel road could run across a farmer's property where tiling is being done.

99. *See* Orrick, *supra* note 71.

However, since this drainage is privately done without governmental oversight,[100] the extent of drainage statewide in Iowa, although estimated from 17 to 22[101] percent of its land having drainage infrastructure, is not known with complete accuracy. Since these records are not kept, it is not known to what extent tiling is done in new areas or to what extent more tiling is done in an already tiled area or to what extent tiling in a tiled area may be an upgrade or replacement for an older tiling system.[102] However, it is known that Iowa's tiling drainage infrastructure is predominately in the northwest to north central to central Iowa area with drainage infrastructure heavily along the Missouri River as well.[103] This is because the main drainage district and county infrastructure (generally open ditch and tile combinations or complete underground systems)[104] that the individual private tiling infrastructures drain into, have remained relatively the same.[105] The combined efforts of government and private entities to cultivate and drain Iowa lands have been dramatic: "[w]ithin the span of 150 years, Iowa plowed 99.9 percent of its prairie, drained 95 percent of its wetlands, and eliminated 70 percent of its forests."[106]

In Iowa, as in other states, "[d]rainage districts are a quasi-public association of property owners formed to facilitate cooperative drainage in a defined water shed. Drainage districts have many of the powers of municipals or counties- to tax, to bond, to construct, etc. in respect to improving, constructing, and

100. *Drainage Infrastructure in Iowa*, *supra* note 73, at 3 ("Upon realizing that the data collected from counties is the main drainage infrastructure of trunk lines for the county drainage districts, the user might pose the question: 'What about the smaller, privately owned, tile lines that make up the entire drainage system?' Members of the GIS staff have been contemplating this as well."); *see also* D. B. Jaynes & D. E. James, Presentation at the Annual Meeting of the Soil and Water Conservation Society: The Extent of Farm Drainage in the United States 1 (July 21-25, 2007), https://www.ars.usda.gov/ARSUserFiles/50301500/TheExtentofFarmDrainageintheUnitedStates.pdf (stating, "Thus, there are 4 estimates of drained cropland from the 70's, 80's, and 90's, but no estimates since.").

101. Jaynes & James, *supra* note 100, at 5.

102. Orrick, *supra* note 71 (It has been suggested this is intentional: "Is there data [on the extent of tiling]? No. . . . 'Everybody should be shocked by that. The dead ends are intentional. It's one of the best-kept secrets in the world . . . . There is very little data being gathered. It's the hidden infrastructure that the public doesn't have a clue about. No government agency wants to regulate tiling because (regulation) is politically unpopular with the ag community.'").

103. *Drainage Infrastructure in Iowa*, *supra* note 73, at 2 fig.1.

104. Kanwar et al., *supra* note 74, at 457.

105. *Id*.

106. Anderson, *supra* note 80, at 7.

maintaining drainage district projects."[107] Trustees are put in charge of these water drainage districts.[108] Drainage districts in Iowa, unlike other states, by default, have the board of supervisors from their respective counties as their trustees.[109] There are more than 3,000 drainage districts in Iowa, covering 9 million acres of land.[110] This is larger than the combined landmass of Connecticut, Rhode Island, and Massachusetts.[111]

## IV. BENEFITS OF DRAINING AGRICULTURAL LAND

The benefits of draining agricultural land are best put in the title of George Waring's work, Draining for Profit and Draining for Health.[112] With this said, the main justification for farm land drainage has always been higher crop yields, and subsequently increasing profits, as opposed to health concerns as noted presently and historically.[113] The positive effect of draining wet farm land on yields has been apparent to farmers for centuries.[114] The science behind draining is also rather straight forward.

To germinate, a corn or soybean seed needs the proper amount of sunlight,

107. *Everything You Wanted to Know about Drainage Districts in Iowa*, Boone Cty. http://www.boonecounty.iowa.gov/home/showdocument?id=186 (last visited April 8, 2017).

108. *Id*.

109. *Id*.; *see* Howe, *supra* note 78, at 37-38 (stating, in 1915, the state legislature had changed the structure of who was in charge of drainage districts from commissioners to a board of trustees which were by default the county board of supervisors).

110. *Facts about Drainage and Drainage Districts*, IOWA DRAINAGE DIST. ASS'N, http://www.iowadrainage.org (last visited April 8, 2017).

111. *Id*.

112. *See generally* WARING, *supra* note 45.

113. *Id*. at 208 (stating, "[I]t is not probable that the mere question of health would induce the undertaking of costly drainage operations . . . 'the chills' are accepted by farmers, especially at the West, as one of the slight inconveniences attending their residence on rich lands . . ." while also mentioning on page 209 that it may be for the public benefit to drain urban areas even if health is the only reason to do so); *see also* Don Hofstrand, *Economics of Tile Drainage*, IOWA ST. UNIV. EXTENSION & OUTREACH, https://www.extension.iastate.edu/agdm/articles/hof/HofJuly10.html (last visited April 8, 2017) ("The major reason for installing subsurface drainage is to improve the productivity of the farmland. Higher yields translate into more returns.").

114. DICKSON, *supra* note 27, at 358-59 ("Cato [said] . . . 'In the winter . . . it is necessary that the water be left off the fields . . . When the first of the autumn is rainy, then it is the greatest danger from water . . . Wherever the water stagnates amongst the growing corn . . . that should be removed, the ditches opened and the water let away."); JOHNSTONE & ELKINGTON, *supra* note 28, at 126 ("[T]hose drained *boggy lands* that have had the proper manure laid upon them, are not only made dry, but the herbage produced on them is [sic] become excellent . . . .").

moisture, and oxygen as well as the proper temperature.[115] If a field is saturated with water, the germinating seed may not only suffer from stunted growth but may die from suffocation due to water saturation expelling the seed's needed oxygen.[116] A full grown or growing corn or soybean plant needs oxygen to respire and carbon dioxide for photosynthesis.[117] Full grown and growing corn and soybean plant roots need oxygen because photosynthesis does not occur at the root level as their roots do not have access to sunlight.[118] Unsaturated soils with minimal moisture have air pockets from which plant roots are able to draw oxygen.[119] If a soil is saturated with water, the water replaces a plant's needed oxygen, and the plant will suffocate.[120] In addition, draining crop land encourages deeper root structure because a plant's roots will grow further down in the soil to draw water from a lowered water table, so when there is drought, the root structures will be able to reach an even lower water table.[121] Plants are also less prone to disease and rot if grown in a drier environment.[122]

Draining farm soil also provides better access to fields and reduces the labor involved with planting, taking care of, and harvesting crops.[123] Drier soil, which is not compacted or bound together by excessive moisture, reduces wear on farming equipment like tractors and combines as well as reducing the fuel needed to propel farm equipment.[124] Since tiling eases access to crops and increases farmland productivity, it increases land value.[125]

Another important reason, although not the primary reason,[126] for Midwest settlers to drain wetlands was the health concern of living on wet, swampy land.[127] To early settlers, swamps in Iowa and in general, were to be avoided because of the disease and mystery surrounding wet lands.[128] Mosquitos breed in wet areas

115. WARING, *supra* note 45, at 11.

116. *Id*. at 12.

117. *Do Plants Have to Have Oxygen to Survive? Or Can Plants (Other than the Plants in Wetlands) Live Without Oxygen?*, UCSB SCIENCELINE, http://scienceline.ucsb.edu/getkey.php?key=760 (last visited April 8, 2017).

118. *Id*.

119. *Id*.

120. *Id*.

121. W.L. POWERS & T.A.H. TEETER, LAND DRAINAGE 24 fig.7 (J.B. Davidson ed., John Wiley & Sons, Inc. 1922).

122. Hofstrand, *supra* note 113.

123. *Id*.

124. *Id*.

125. *Id*.

126. *See* WARING, *supra* note 45, at 208.

127. Anderson, *supra* note 80, at 3.

128. *Id*. at 25.

like swamps, and female mosquitos, carrying an anopheline parasite which causes malaria, can pass malaria on to humans when the mosquitos draw blood.[129] However, early settlers, doctors, and scientists, up until the 1860s and later, believed malaria was probably spread through miasmic air.[130] Interestingly enough, although unsure what caused malaria, early advocates for draining farmland inadvertently found the "effect of drainage in removing the cause of malarial diseases . . . complete and conclusive . . . ."[131] Of course, it is now known that removing water in these wet areas effectively removes the breeding ground for disease spreading mosquitoes rather than removing supposed disease causing miasmic air.

## V. NEGATIVE ASPECTS OF AGRICULTURAL DRAINAGE

Benefits to crop yields and health do not come without their costs to the environment. Approximately 92 percent of nitrate pollution in Iowa comes from agricultural sources like tiled farm fields.[132] Nitrates in Iowa streams are an environmental concern because excessive nitrates cause hypoxia in the Gulf of Mexico and are a financial cost to downstream water treatment facilities downstream when they need to be removed from drinking water.

Common fertilizers,[133] like anhydrous ammonia,[134] ammonium nitrate, and urea,[135] are used extensively to increase crop yields in crops like corn.[136] Generally,

129. *Anapheles Mosquitoes*, CTR. FOR DISEASE CONTROL & PREVENTION, http://www.cdc.gov/malaria/about/biology/mosquitoes/ (last visited April 8, 2017).

130. CARL S. STERNER, A BRIEF HISTORY ON MIASMIC THEORY 4-5 (2007), http://www.carlsterner.com/research/files/History_of_Miasmic_Theory_2007.pdf (Miasmatic Theory is a disease theory that predates the modern Germ Theory; the theory is that bad or corrupt air arising from moist, rotten and wet places causes disease).

131. WARING, *supra* note 45, at 216.

132. IOWA DEP'T OF AGRIC. & LAND STEWARDSHIP ET AL., IOWA NUTRIENT REDUCTION STRATEGY: A SCIENCE AND TECHNOLOGY-BASED FRAMEWORK TO ASSESS AND REDUCE NUTRIENTS TO IOWA WATERS AND THE GULF OF MEXICO 8 (2013) (stating however, only 5 percent of total nitrogen input in farming is lost to waterways. The rest is removed by harvesting, grazing, or lost to the atmosphere).

133. This list is not conclusive. *See generally*, JOHN WEISS ET AL., CORNELL UNIV. COOP. EXTENSION, NITROGEN FERTILIZERS FOR FIELD CROPS, FACT SHEET 44, at 1 (2009), http://nmsp.cals.cornell.edu/publications/factsheets/factsheet44.pdf (listing common nitrogen fertilizers).

134. *Id*. at 2.

135. *Id*. at 1-2 (Urea is not a recommended starter fertilizer because of its possible toxicity to germinating seeds).

136. CHARLES C. MITCHELL, ALA. COOP. EXTENSION SYS., ANR-174, NUTRIENT CONTENT OF FERTILIZER MATERIALS 1 (1999) (Anhydrous ammonia, urea, and ammonium nitrate, fertilizers are usually composed of 82, 45, and 35 percent nitrogen, respectively).

upon application of these fertilizers to soil, the nitrogen in these fertilizers converts to plant consumable nitrates.[137] Nitrates are water soluble and by their very nature move freely with water.[138] Nitrates not taken up by plants or lost through volatilization,[139] denitrification,[140] or run off, naturally leach from the ground surface to below the crop's root zone near or at the water table.[141] If there is tiling infrastructure in place, these nitrates are then flushed out with groundwater after sufficient precipitation.[142] This nitrate polluted water from private subsurface drainage infrastructure drains into county drainage infrastructure, which then carries this groundwater with its nitrates and phosphorus into main water sources.

Because nitrates are used extensively to increase corn yields, nitrates are water soluble, and corn is extensively grown in the Midwest, the Midwest is *the* major source of nitrate pollution to the Mississippi River.[143] High levels of nitrates and phosphorous traveling in water flowing into the Mississippi River has led to growing aquatic hypoxia—low levels of oxygen in aquatic areas[144]—down in the gulf coast region.[145]

Most important to the discussion here, water treatment facilities are financially harmed by nitrates in their water supply because these facilities must remove these nitrates at a substantial cost. Nitrates are removed from drinking water as they are injurious to the public health when consumed in sufficient amounts. These health risks include blue baby syndrome (Methemoglobinemia)

137. WEISS ET AL., *supra* note 133, at 1.

138. JOHN A. LAMB ET AL., UNDERSTANDING NITROGEN IN SOILS, AG-FO-3770-B, (2014), http://www.extension.umn.edu/agriculture/nutrient-management/nitrogen/understanding-nitrogen-in-soils/docs/AG-FO-3770-B.pdf.

139. *Id*. (stating, volatilization occurs when nitrogen escapes ammonium-based fertilizer to the atmosphere).

140. *Id*. (stating, denitrification occurs when nitrates are converted to nitrogen gas. This occurs when bacteria in the soil uses these nitrates for respiration.).

141. *Id*.

142. Johnathan Coppess, *Nitrogen Loss: Why Drainage Tile Matters*, AGFAX (Mar. 11, 2016), http://agfax.com/2016/03/IVnitrogen-loss-why-drainage-tile-matters/.

143. *Differences in Phosphorus and Nitrogen Delivery to the Gulf of Mexico from the Mississippi River Basin,* U.S. GEOLOGICAL SURV. (Mar. 4, 2014, 2:45:03 PM), http://water.usgs.gov/nawqa/sparrow/gulf_findings/primary_sources.html [hereinafter *Differences in Phosphorus and Nitrogen Delivery*].

144. *Bioreactors, Water Table Management, and Water Quality*: *Water Quality and Tile Drainage*, *supra* note 26.

145. *See Differences in Phosphorus and Nitrogen Delivery*, *supra* note 143. The process of hypoxia starts when algae grows excessively due to abundant nitrates in the water. When the excess algae dies, it consumes oxygen and suffocates aquatic life, creating hypoxia. Hypoxia is very damaging to the gulf coast region and its aquatic life. *See Bioreactors, Water Table Management, and Water Quality*: *Water Quality and Tile Drainage*, *supra* note 26.

and low fertility endocrine disruption impacts.[146] By Environmental Protection Agency (EPA) and Clean Water Act standards, water facilities downstream must then clean the polluted water to bring nitrates down to safe drinking levels.[147]

In the Calhoun, Buena Vista, and Sac county areas, where the defendant drainage districts are located, rain fall is greater in the spring and summer months than in the late fall and winter.[148] Land drainage in this area occurs most prominently from April to November, with October having the least subsurface drainage[149] and the least rainfall.[150] About half of the precipitation during April through November occurs in April, May, and June with 70 percent of the total drainage occurring those months.[151] The wettest month is in June, which accounts for 20 percent of the total rainfall and 31 percent of the total drainage volume for the eight months of April through November.[152] Although there is significant rainfall from September to November, little drainage occurs during this time.[153] Looking at a whole year, it has been found that approximately 40 percent of all precipitation on farmland in this area is flushed out by subsurface drainage.[154]

The flushed-out water from these areas makes its way through drainage

146. *See* IOWA ENVTL. COUNCIL, NITRATE IN DRINKING WATER: A PUBLIC HEALTH CONCERNS FOR ALL IOWANS 1 (2016), http://www.iaenvironment.org/webres/File/News%20%26%20Resources/Publications/Nitrate_in_Drinking_Water_Report_Web.pdf. (indicating, blue baby syndrome is caused when a sufficient amount of nitrites are consumed and deprive a person's blood of oxygen. This condition is especially dangerous for babies and small children. Symptoms may lead to death); *Endocrine Disruptors*, NAT'L INST. ENVTL. HEALTH SCI., http://www.niehs.nih.gov/health/topics/agents/endocrine/ (last visited Mar. 6, 2017).

147. Letter from William Stowe, *supra* note 10, at 2-3.

148. Matthew J. Helmers et al., ASAE Meeting Paper No. 052234, Presentation at the 2005 ASAE Annual International Meeting: Temporal Subsurface Flow Patterns from Fifteen Years in North-Central Iowa 7 (July 17-20, 2005). This fifteen year study was conducted in Pocahontas County, which is directly east of Buena Vista, directly north of Calhoun County, and directly northeast of Sac County. Pocahontas County has substantially similar rainfall and weather to these other counties. *See Iowa Water Science Center*, USGS, https://ia.water.usgs.gov/climate/precipitation.html. (last modified Dec. 20, 2016 10:35 AM)

149. Helmers et al., *Supra* note 148 at 7. (only 1 percent of the water volume drained from fields during the prominent drainage months occurs in October).

150. *Id*. (6 percent of the total rainfall during the prominent drainage months occurs in October).

151. *Id*. The high drainage volume in April, May, and June is likely due to little plant growth during this period and high rainfall. *See id*.

152. *Id*.

153. *Id*. (This is because this rainfall "recharge[es] the soil profile after the soil moisture [is] depleted during the growing season.").

154. *Id*. at 1.

district and county drainage infrastructure, before it drains into the North Raccoon River, a tributary of the Des Moines River.[155] The Raccoon and Des Moines River have had high nitrate loads in recent years. Between 2012 and 2013, nitrate levels achieved record highs, with the Raccoon River's level climbing to 24 milligrams of nitrates per liter, and the Des Moines River's levels climbing to 18.6 milligrams of nitrates per liter in its water.[156] The EPA's maximum nitrate allowance is only 10 milligrams of nitrates per liter of water.[157] To get the nitrates back to a safe drinking levels, nitrate removal cost the DMWW approximately $500,000 in the summer of 2013 (the equivalent of $7,000 per day).[158] In 2014, the average July nitrate load in the Raccoon River was 11.98 milligrams of nitrates per liter of water and was again above the ten milligram allowance in September, October, November, and December at 11.89, 13.23, 13.43, and 12.56 milligrams of nitrate per liter of water respectively.[159] Again, DMWW had to use its costly nitrate removal facilities to lower the high nitrate levels.[160]

## VI. DES MOINES WATER WORKS LAWSUIT

The continual pollution in DMWW's water source and the subsequent cost of cleaning the water led to the current lawsuit. In January 2014, as per requirements of the Clean Water Act, DMWW sent a letter of intent to sue to drainage districts in Sac, Calhoun, and Buena Vista counties on state and federal claims alleging these drainage districts in particular are a main source of nitrate pollution in DMWW's raw water source.[161] Although the state and federal claims will be examined in turn, more focus will be given to DMWW's federal claims as it is highly probable most of DMWW's state claims will be dismissed, and if DMWW's Iowa Code section 455B.111 claim survives, it will be substantially similar to the federal Clean Water Act claim.

### *A. State Law Claims*

Since the state law claims filed by DMWW deal with issues beyond the scope of this Note and will likely be dismissed, they will only be discussed here briefly. On September 24, 2015, the Sac, Calhoun, and Buena Vista Drainage Districts submitted a memorandum asking for partial summary judgment of

155. *Drainage Infrastructure in Iowa*, *supra* note 73, at 2 fig.1.
156. Letter from William Stowe, *supra* note 10, at 2.
157. 40 C.F.R. § 141.11(d)(2) (2016).
158. Letter from William Stowe, *supra* note 10, at 2.
159. *Id*.
160. *Id*.
161. *Id*. at 1-2.

DMWW's state law claims.[162] The Drainage Districts asserted that DMWW cannot sue the Drainage Districts under state claims, as the districts are "not proper parties to adversary litigation, are not subject to suit on tort claims, and only may be sued in mandamus to perform their statutorily delegated duties."[163] This assertion is backed by binding Iowa precedent. As forcefully stated by the Iowa Supreme Court in *Fisher v. Dallas County*, "a drainage district [can] not be subject to a money judgment in tort under any state of facts."[164] Furthermore, the only remedy against a drainage district under Iowa law is a mandamus to compel a drainage district to do its statutory duties, drain more land.[165] These basic principles have been reaffirmed by the Iowa Supreme Court in 1994, in *Gard v. Little Sioux Intercounty Drainage District of Monona and Harrison Counties*,[166] and 2012 in *Chicago Central & Pacific Railroad Company v. Calhoun County Board. of Supervisors*.[167] The Drainage Districts contends because of this precedent, the Drainage Districts cannot be sued for money damages.[168]

In rebuttal, DMWW made several arguments, many of which need not be discussed here,[169] contending their state law claims should be preserved.[170] Generally, DMWW argued Iowa law regarding drainage district tort immunity from damages is outdated.[171] However, the Iowa Supreme Court has not strayed from denying tort damages generally to this present day.[172]

The federal Northern District Court of Iowa, where DMWW filed its lawsuit, sent these state law questions on to the Iowa Supreme Court to decide. Judge Mark

162. Defendants' Memorandum in Support of Motion for Partial Summary Judgment at 3, Bd. of Water Works Trs. of the City of Des Moines v. Sac Cty. Bd. of Supervisors as Trs. of Drainage Dists., No. 5:15-cv-04020 (N.D. Iowa Sept. 24, 2015) [hereinafter Defendants' Memorandum].

163. *Id.* at 1.

164. Fisher v. Dallas Cty., 369 N.W.2d 426, 430 (Iowa 1985).

165. *Id.* at 429.

166. *See* Gard v. Little Sioux Intercounty Drainage Dist., 521 N.W.2d 696, 699 (Iowa 1994).

167. Chi. Cent. & Pac. R.R. Co. v. Cty. Bd. of Supervisors, 816 N.W.2d 367, 374 (Iowa 2012).

168. Defendants' Memorandum, *supra* note 165, at 4; *see, e.g., Fisher*, 369 N.W.2d at 429-30.

169. Most of these arguments are not particularly relevant to the broader issues discussed in this Note. The issues asserted concern the Drainage Districts immunity revolving around home rule, the Dillon Rule, distinction of past cases because DMWW's unique factual circumstances, rebutting drainage district presumption of public benefit, etc.

170. Des Moines Water Works Brief in Resistance, *supra* note 8, at 6-7.

171. *Id.* at 7.

172. *See, e.g., Chi. Cent. & Pac. R.R. Co.*, 816 N.W.2d at 378.

W. Bennett, the judge presiding over the case, stated, "I would have to reject the thoughtful, creative, novel, and well-argued position of DMWW, as unsupported by Iowa law and unlikely to be adopted by the Iowa Supreme Court . . . ."[173] Owing to the long standing principle that drainage districts in Iowa are immune from state law claims for money damages as stated by the Iowa Supreme Court in *Fisher* (1986), *Gard* (1994), and as recent as the 2012 decision in *Chicago Central & Pacific Railroad Company*, it is unlikely DMWW will recover under its state statutory and common law claims.[174]

### *B. Federal Claims*

Immunity from state law claims, however, would not necessarily immunize the drainage districts from federal claims under the Clean Water Act. Under the federal Clean Water Act, a drainage district may be regulated by the EPA if it is a point source polluter.[175] The Clean Water Act prohibits the discharge of a pollutant by any person from any point source to navigable waters except when authorized by a permit issued under the National Pollutant Discharge Elimination System ("NPDES").[176] Whether an entity is a point source polluter or a nonpoint source polluter determines if the entity is required to obtain a NPDES permit.[177] If an entity is a point source polluter, it must obtain a permit.[178] If it is a nonpoint source polluter, the entity does not need to obtain a NPDES permit.[179] Traditionally, agricultural operations are considered nonpoint sources,[180] and agricultural operators have not needed to get a NPDES permit for agricultural drainage.[181]

173. Order Certifying Questions to the Iowa Supreme Court at 25, Bd. of Water Works Trs. of Des Moines v. Sac Cty. Bd. of Supervisors as Trs. of Drainage Dists., No. C 15-4020-MWB25 (N.D. Iowa Jan. 11, 2016).

174. With this said, although it would be very unpopular and costly, making it unlikely, DMWW could amend its suit to include individual farmers or the counties to "cure" the drainage district immunity issue.

175. 33 U.S.C. § 1362(5) (2012) ("The term 'person' means an individual, corporation, partnership, association, State, municipality, commission, or political subdivision of a State, or any interstate body.").

176. 33 U.S.C. §§ 1251, 1311(a), 1342 (2012).

177. *About NPDES*, EPA, https://www.epa.gov/npdes/about-npdes (last visited April 8, 2017).

178. *Id*.

179. *Id*.

180. *But see Animal Feeding Operations (AFOs)*, EPA, https://www.epa.gov/npdes/animal-feeding-operations-afos (last visited April 8, 2017) (stating, EPA regulations considering large Concentrated Animal Feeding Operations "CAFOs" as point source polluters requiring NPDES permits).

181. *What is Nonpoint Source Pollution?*, EPA, https://www.epa.gov/nps/what-nonpoint-source (last visited April 8, 2017) (the EPA website lists land runoff and drainage as nonpoint

The Clean Water Act defines a point source as "any discernible, confined and discrete conveyance, included but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged."[182] Discharge of a pollutant under the CWA means "any addition of any pollutant to navigable waters."[183] Pollutant is defined under the CWA as "dredged spoil, solid waste, incinerator residue, sewage, garbage . . . chemical wastes, biological materials . . . rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into the water."[184] Pollution is defined as a "man-made or man-induced alteration of the chemical, physical, biological, and radiological integrity of water."[185]

Factually, it appears drainage district infrastructure, a series of "pipe[s], ditch[es], channel[s], tunnel[s], [and] conduit"[186] from which pollutants like "biological materials . . . and agricultural waste"[187] are or may be discharged[188] into navigable waters,[189] would clearly be a point source under the CWA. Indeed, DMWW's argument is the drainage districts of Sac, Calhoun, and Buena Vista County are point sources under this very definition.[190] DMWW alleges, because these districts are point source polluters, they are in violation of the Clean Water Act, 33 U.S.C. sections 1311(a) and 1342(a) for failure to obtain a NPDES permit when unlawfully discharging nitrate pollution into the Raccoon River, which leads to the Des Moines area drinking water supply.[191]

In rebuttal to this assertion, since the enactment of the Water Quality Act of 1987,[192] agricultural stormwater discharges have been exempt from NPDES permit requirements.[193] In fact, the definition of point source specifically "does not include agricultural stormwater discharges."[194] This would indicate that stormwater coming from agricultural drainage infrastructure would be exempt from NPDES permit

sources).

182. 33 U.S.C. § 1362(14) (2012).
183. *Id*. § 1362(12).
184. *Id*. § 1362(6).
185. *Id*. § 1362(19).
186. *Id*. § 1362(14).
187. *Id*. § 1362(6).
188. *Id*. § 1362(14).
189. *Id*. § 1362(12).
190. Des Moines Water Works Complaint, *supra* note 10, at 31.
191. *Id*. at 31-33.
192. Water Quality Act of 1987, Pub. L. No. 100-4, 101 Stat. 7 (1987).
193. 33 U.S.C. § 1362(14).
194. *Id*.

requirements under this provision. However, agricultural stormwater discharge is not defined by federal statute or regulation and could be construed narrowly to apply only to agricultural surface run-off and not groundwater discharged by drainage infrastructure.[195]

Since stormwater discharge is not defined, DMWW contends the stormwater discharge exemption only exempts stormwater *surface run-off* and not *groundwater discharge*.[196] As previously discussed, much of the nitrate polluted water does come from groundwater flushed out by tiling. DMWW contends that because groundwater discharge is not stormwater discharge, or surface run-off, the Drainage Districts would not be exempt from NPDES permit requirements.[197] However, it would be expected and logical for the Drainage Districts to assert that even if much of the discharged water is groundwater, the groundwater flushed out of the Drainage Districts' infrastructure predominately comes from recent stormwater and would therefore be exempt for purposes of the stormwater discharge exemption.

Few cases have explored the meaning of "agricultural stormwater discharge" but one case in particular decided by the United States Court of Appeals for the Second Circuit may shed light on the drainage districts arguments why their drainage infrastructure is exempt from regulation by the EPA. In *Waterkeeper Alliance, Inc., v. EPA*, the Second Circuit stated

> [W]e believe it reasonable to conclude that when Congress added the agricultural stormwater exemption to the Clean Water Act, it was affirming the impropriety of imposing, on 'any person,' liability for agriculture-related discharges triggered not by negligence or malfeasance, but by the weather – even when those discharges came from what would otherwise be point sources. There is no authoritative legislative history to the contrary.[198]

Congress has on occasion clarified, albeit concerning different provisions of

195. *See generally id*. § 1362 (indicating there is no definition of "agricultural stormwater discharge" under statute or in federal regulations). There is also no discussion on the specific scope of the exemption in the legislative history of the Water Quality Act of 1987. *See generally*, LEGISLATIVE HISTORY OF THE WATER QUALITY ACT OF 1987 at 351, 352, 528, 665, 672, 1053 (1988). However, it has been stated the agricultural stormwater drainage exemption was created so "local, State, and Federal officials would [not] be inundated with an enormous permitting workload even though most of the discharges would not have significant environmental impacts." *Id*. at 672.

196. Letter from William Stowe, *supra* note 10, at 7-8.

197. *Id*. at 7-8.

198. Waterkeeper All., Inc. v. EPA, 399 F.3d 486, 507 (2d Cir. 2005).

the CWA, that it has not intended to regulate minor agricultural drainage.[199] After public concerns were raised over the Army Corps of Engineers broad expansion of power to regulate dredge and fill permits following the 1975 federal court decision, *Natural Resources Defense Council, Inc., v. Callaway*,[200] Congress amended the CWA to exclude many farming activities such as drainage from requirements for dredge and fill permits.[201] Under this provision, farmers are exempt under the CWA from having to obtain a permit to discharge dredged or fill material during the normal course of their farming activities.[202] The provision specifically includes minor drainage as a normal farming activity along with plowing, seeding, cultivating, and harvesting.[203]

In the past, the EPA has also declined to promulgate regulations requiring individual farmers or agricultural entities with farming drainage infrastructure to obtain NPDES permits.[204] During promulgation of regulations affecting concentrated animal feeding operations in the 1970s, several commentators wrote to the EPA stating NPDES permit requirements did not regulate but should regulate agricultural drainage infrastructure.[205] Substantially similar to the DMWW argument, these commentators asserted "all agricultural runoff that is channeled into ditches, pipes or culverts before being discharged into navigable waters should be subject to the permit program regardless of whether or not such runoff is a result of the controlled application of water."[206] According to these commentators, entities and individual farmers with subsurface drainage infrastructure should have had to obtain NPDES permits.[207] At the time, the EPA declined to "expand the definition of point source" to require individual famers and other like agricultural entities from having to obtain NPDES permits.[208] However, the EPA left the option open

199. Presidential Statement on Signing the Clean Water Act of 1977 (Dec. 28, 1977), *reprinted in* LEGISLATIVE HISTORY OF THE CLEAN WATER ACT OF 1977 at 181 (1978) [hereinafter Presidential Statement] ("Certain farming and forestry activities that were never intended to be covered under this original act are specifically exempted from requirements to obtain permits.").

200. Nat'l Res. Def. Council, Inc. v. Callaway, 392 F. Supp. 685, 686 (D.D.C. 1975) (stating Congress intended to assert federal jurisdiction to the maximum extent constitutionally allowed over the nation's waters).

201. Presidential Statement, *supra* note 205, at 181.

202. 33 U.S.C. § 1344(f)(1)(C) (2012) (stating the maintenance of drainage ditches are not prohibited).

203. 33 U.S.C. § 1344(f)(1)(A) (2012).

204. Application of Permit Program to Agricultural Activities, 41 Fed. Reg. 28,493 (July 12, 1976).

205. *Id.*

206. *Id.*

207. *Id.*

208. *Id.*

"to re-examine, expand or contract the definition of agricultural point source" to perhaps include individual farmers and similar entities "depending on the effectiveness of the general permit program, the results of the on-going research program, and other changing factors . . . ."[209] The EPA continues to unofficially refer to agricultural drainage as a nonpoint source to this day.[210]

## VII. CONCLUSION

Congress's intentions when enacting the 1972 and 1977 CWA and the 1987 stormwater discharge exemption will be the prominent fighting federal issues in this DMWW lawsuit. As noted historically and factually, modern agricultural drainage infrastructure for the last couple hundred years has been implemented to artificially lower the water table and to also discharge excess stormwater. Lowering the water table and discharging excess stormwater are both needed to farm land in areas that were originally unfarmable due to saturated soil. DMWW contends the main purpose of drainage infrastructure is to lower a field's water table and as such would not fit under their narrowly construed definition of the stormwater discharge exemption. With this said, even if the main purpose of drainage infrastructure is to lower the water table, the question still remains whether such practice was intended to be exempted under the CWA and specifically, the 1987 CWA exemption. A wider reading of the exemption, looking to probable legislative intent of the CWA rather than a stricter reading of the exemption's language, would be required to decide that the Drainage Districts' infrastructure is exempt from NPDES permit requirements.

DMWW claims are novel in that this direct issue has never been litigated before.[211] The EPA has only touched on the issue once in the 1970s, declining to regulate agricultural drainage infrastructure. *Waterkeeper Alliance, Inc*., the previously quoted case, was a CAFO case, not directly related to agricultural drainage infrastructure.[212] Much uncertainty lies ahead in the outcome of this case due to its fact and science intensive nature, little direct legislative history, and it being the first of its kind. Whatever the outcome, this case will undoubtedly set the tone for any prospective CWA litigation in other jurisdictions between drainage infrastructure entities upstream and municipals downstream.

209. *Id*.

210. *What is Nonpoint Source Pollution?*, *supra* note 1841("Nonpoint source pollution generally results from land runoff, precipitation, atmospheric deposition, drainage, seepage or hydrologic modification.") (emphasis added).

211. Since this lawsuit is the first of its kind, it can be surmised that at least from 1987 to now, agricultural drainage was assumed to be exempted.

212. Waterkeeper All., Inc. v. EPA, 399 F.3d 486, 507 (2d Cir. 2005).