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MINNESOTA'S GROUNDWATER PROTECTION ACT: A RESPONSE TO FEDERAL INACTION

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INTRODUCTION

In May of 1989 the Minnesota Legislature enacted the Minnesota Groundwater Protection Act,[1] which was intended to establish a framework for the protection of Minnesota's groundwater. The legislation was the culmination of two key strategies — the *Minnesota Groundwater Protection Strategy*[2] and *A Strategy for the Wise Use of Pesticides and Nutrients*[3] — developed by the Minnesota agencies responsible for groundwater protection. The Senate Ad Hoc Water Committee, the House and Senate authors of the Groundwater Act, and a coalition of state agencies and environmental and farm organizations all worked together to augment these strategies. The resulting legislation passed both the House and the Senate with only three opposing votes.

This article reviews the growing problems of groundwater extraction and contamination and presents an overview of federal and state regulation of groundwater. It then examines a

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1. 1989 Minn. Laws 326 (principally codified as MINN. STAT. §§ 103H.001–103H.280 (1989)).

2. MINNESOTA POLLUTION CONTROL AGENCY, MINNESOTA GROUNDWATER PROTECTION STRATEGY (1988) (available in the William Mitchell Law Review office) [hereinafter MINNESOTA GROUNDWATER STRATEGY].

3. WATER RESOURCES COMMITTEE, MINNESOTA ENVIRONMENTAL QUALITY BOARD, PROTECTING MINNESOTA'S WATERS, A STRATEGY FOR THE WISE USE OF PESTICIDES AND NUTRIENTS (Dec. 1988) (available in the William Mitchell Law Review office) [hereinafter PROTECTING MINNESOTA'S WATERS].

number of topics covered by the new Minnesota Groundwater Protection Act of 1989 (hereinafter the Act), and discusses some features of the Act which may pose implementation problems in the future.

I. A Primer on Groundwater

A. What is Groundwater?

For the purposes of the Act, groundwater is defined as "water contained below the surface of the earth in the saturated zone including, without limitation, all waters whether under confined, unconfined, or perched conditions, in near-surface unconsolidated sediment or regolith, or in rock formations deeper underground."[4] Stated more succinctly, groundwater includes all water found beneath the surface of the earth.[5] The term "surface water" typically connotes the converse of groundwater — all waters existing on the surface of the earth.[6]

To understand the groundwater system, one must understand the surrounding geological structures. The materials surrounding groundwater collect and channel it, and modify its chemistry.[7] Hydrogeologists have classified these subsurface materials into four categories.[8] Materials in the first category, which permit water to pass through at a rate enabling economic extraction through wells, are labeled aquifers. Materials in the second category, which absorb water but do not allow it to pass through in significant amounts, are called aquicludes. Materials in the third category permit no passage of water and do not absorb water; these are called aquifuges.

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4. Minn. Stat. § 115.01, subd. 21 (1988) (incorporated by reference in Minn. Stat. § 103H.005, subd. 8 (1989)).

5. *See, e.g.*, R. Kazmann, Modern Hydrology (3d ed. 1988).

6. At common law, the question of what is surface water arises when unwanted surface water is diverted by one landowner onto the land of another. Surface water is defined as "waters from rain, springs or melting snow which lie or flow on the surface of the earth, but which do not form a part of a well-defined body of water or natural watercourse." *See, e.g.*, Enderson v. Kelehan, 226 Minn. 163, 167, 32 N.W.2d 286, 288–89 (1948) (citing Hartle v. Neighbauer, 142 Minn. 438, 172 N.W. 498 (1919)). Generally speaking, however, and as used in most water protection laws and regulations, surface waters include lakes, rivers and other bodies of water and watercourses which lie on the earth's surface.

7. R. Kazmann, *supra* note 5, at 179.

8. *See* H. Raghunath, Hydrology Principles, Analysis and Design 204 (1985).

Materials in the final category permit water to pass through, but at a rate slower than for aquifers; these are known as aquitards.

These diverse geologic formations create an interconnected system — like a system of pipes and tanks — in which groundwater moves and is stored. They also serve as a filtration system that removes impurities from groundwater as it passes through.[9]

Groundwater moves through this hydrologic system[10] in a continuous cycle. Water enters the groundwater system when precipitation or some body of water, such as a lake or a river, comes into contact with an aquifer, an aquiclude or an unsaturated aquitard. The entry of surface water into the groundwater system is known as recharge. After entry, water is moved through the system by a combination of molecular attraction, capillary action, and the force of gravity.

The groundwater system discharges itself in the form of springs and natural wells. Groundwater plays a vital role in the hydrologic cycle, replenishing wetlands, streams and lakes — so important to our society as wildlife habitats, spawning grounds, fisheries and recreational areas. The groundwater system can also be discharged artificially through pumped wells. In the late 20th century, Americans have been artificially discharging the groundwater system at a rate well in excess of the natural rate of recharge.

B. Where is Groundwater?

Groundwater is everywhere. American groundwater reserves equal approximately fifty times all the water that flows in American rivers and streams during a year.[11] It has been estimated that the volume of groundwater found within one-half mile of the surface of the United States is more than four

9. R. KAZMANN, *supra* note 5, at 189.

10. A more detailed description of the hydrologic system described in this and the following paragraph can be found in R. KAZMANN, *supra* note 5, at 184–95.

11. Keynote Address by Senator David Durenberger (R. Minn.), at the ALI-ABA Environmental Law Conference (Feb. 19, 1987), *reprinted in* 3 J. LAND USE & ENVTL. L. 161, 162 (1987) [hereinafter Durenberger Address]; *see also* ENVIRONMENTAL PROTECTION AGENCY, A GROUNDWATER PROTECTION STRATEGY 10 (Aug. 1984) [hereinafter cited as EPA GROUNDWATER STRATEGY] (factors which determine the degree to which people use groundwater are: (1) whether good quality surface water is available, and (2) the relative cost involved in providing ground water to individual users). *Id.* at 10.

times the volume of the Great Lakes.[12] The Ogallala Aquifer, an underground body of water lying below eight states ranging from South Dakota to Texas, is the largest body of fresh water in the world.[13]

Beneath Minnesota's surface is enough groundwater to fill a lake the size of the state up to a depth of eighteen feet.[14] Minnesota lies over fourteen principal aquifers.[15] Groundwater, however, is not spread evenly throughout the state. The plentiful aquifers are located in areas of surficial and buried sands, especially in central and north central Minnesota, and in the bedrock formations of southeastern Minnesota.[16]

There are three aquifers underlying the Twin Cities that are used for municipal drinking water.[17] In the northern suburbs, where there are thin or no bedrock aquifers, buried and surficial gravel aquifers provide much of the drinking water. The most heavily pumped Twin Cities' aquifer is the Prairie du Chien-Jordan. Suspended in Jordan sandstone, it provides 80% of the groundwater used in the Twin Cities annually. Wells drawing on the Prairie du Chien-Jordan yield as much as 2,400 gallons per minute. Another aquifer, the Mount Simon-Hinckley-Fond du Lac, provides water north of the Twin Cities. Yields of 2,000 gallons per minute are possible from it.

C. Groundwater Extraction

Both as a nation and as a state, we are very dependent on groundwater, although the extent to which groundwater is used depends on the cost of extraction and its purity, as well as the availability of alternate sources of surface water. Between 1950 and 1980, groundwater withdrawals nationally grew from

12. EPA GROUNDWATER STRATEGY, *supra* note 11, at 10.

13. Durenberger Address, *supra* note 11, at 162.

14. Minneapolis Star and Tribune, Apr. 11, 1989, at 14A, col. 1 (examines DFL Senator Steve Morse's groundwater bill which calls for a comprehensive program to preserve Minnesota's groundwater).

15. D. ADOLPHSON, J. RUHL & R. WOLF, DESIGNATION OF PRINCIPAL WATER-SUPPLY AQUIFERS IN MINNESOTA: U.S. GEOLOGICAL SURVEY WATER RESOURCES INVESTIGATIONS 81-51, 10-17 (1981) (prepared in cooperation with the EPA) [hereinafter ADOLPHSON, RUHL & WOLF].

16. MINNESOTA GROUNDWATER STRATEGY, *supra* note 2, at 2.

17. All of the statistics in the paragraph accompanying this footnote are contained in MINNESOTA DEPARTMENT OF NATURAL RESOURCES, DIVISION OF WATERS, STATE OF MINNESOTA CONSUMPTIVE WATER USE STUDY 36 (1990) (prepared pursuant to 1989 Minn. Laws 326, art. 4, § 8) (citing ADOLPHSON, RUHL & WOLF, *supra* note 15) [hereinafter CONSUMPTIVE WATER USE STUDY].

34 to 89 billion gallons per day, an increase of 162%.[18] The principal uses of groundwater in 1980 were for irrigation and public drinking water.[19]

In 1988, Minnesotans used an estimated 1.21 trillion gallons of water. Of this, 267.6 billion gallons were groundwater and 942.9 billion gallons were surface water.[20] Approximately three quarters of all Minnesotans receive their drinking water from the ground.[21] Water works withdrawals, including water for drinking, watering lawns and washing cars, accounted for 40.2% of the groundwater used.[22] It is estimated that 60% to 80% of the irrigation water used in Minnesota is groundwater,[23] accounting for 40.8% of groundwater used.[24] Industrial processing was responsible for 9.2% of the groundwater used in 1988.[25] Space heating and cooling of buildings totalled 4.1% of the groundwater used.[26]

Our relentless mining of groundwater is rapidly depleting the resource. Scientists estimate that at the end of World War II, the portion of the Ogallala Aquifer underlying the State of Texas contained 500 million acre feet of water.[27] By 1987, that portion of the aquifer had been diminished to approximately 360 million acre feet. As of 1987, Americans were withdraw-

18. EPA GROUNDWATER STRATEGY, *supra* note 11, at 10. Moreover, twenty-four percent of our nation's domestic agricultural, and industrial water is provided by groundwater. *Id.*

19. *Id.* Additional amounts, although smaller, are applied to industrial and rural household uses. *Id.*

20. CONSUMPTIVE WATER USE STUDY, *supra* note 17, at 7.

21. MINNESOTA GROUNDWATER STRATEGY, *supra* note 2, at 2. This article recommends major legislative initiatives to protect drinking water which include, in part, development of a wellhead protection program, promotion of better contingency plans and conservation measures, registration of wells on property deeds and testing at the time of transfer, development of a priority scheme and incentive fund in regard to abandoned wells, and enforcement of the Water Well Construction Code. *Id.* at v.

22. CONSUMPTIVE WATER USE STUDY, *supra* note 17, at 7.

23. MINNESOTA GROUNDWATER STRATEGY, *supra* note 2, at 2.

24. CONSUMPTIVE WATER USE STUDY, *supra* note 17, at 7.

25. *Id.*

26. *Id.* These systems are sometimes referred to as "once through" systems. They are among the most wasteful of ground water extractions, using the water once and then discharging it, typically into the sewer system. Most of the once through systems in Minnesota (106 out of 127) are located in downtown Minneapolis or St. Paul. These systems use and then discharge, either directly or indirectly, into the Mississippi River more than 9 billion gallons of groundwater each year. *See Wasting Water*, Minn. Real Est. J., Mar. 19, 1990, at 4.

27. The statistics in the paragraph accompanying this footnote appear in the Durenberger Address, *supra* note 11, at 162.

ing an estimated 6 million acre feet of water from the Ogallala Aquifer annually. The natural recharge rate of that aquifer — the rate at which it is replenished by the seepage of precipitation and surface water — is only 3% of that amount. It would take about 1,000 years for rainfall alone to replace the water mined from the Ogallala Aquifer just since the end of World War II.[28]

In Minnesota, the Department of Natural Resources maintains 650 observation wells to monitor groundwater reserves and the impact of development on them.[29] Water measurements are taken in these wells throughout the year.[30] These measurements show a net decrease of 110 feet in the static water level in the Mt. Simon-Hinckley aquifer between 1963 and 1989[31] — truly a cause for concern.

D. Groundwater Contamination

Contamination constitutes an equally great threat to America's groundwater resources. Over 200 chemicals and biological contaminants have been detected in drinking water wells, and scientists believe that the amount of contamination is increasing.[32] Moreover, groundwater contamination is believed to be the cause of 28% of all reported water-borne diseases.[33]

Groundwater contamination comes from several sources, but it results primarily from the use of pesticides, leaking underground storage tanks, spills of hazardous materials and the leaching of hazardous waste from landfills. While waste leaching from landfills has received the most publicity, officials of the Environmental Protection Agency (EPA) estimate that as

28. *Id.*

29. Department of Natural Resources Groundwater Management Initiatives 3 (Mar. 21, 1990) (unpublished manuscript). Additionally, for the spring of 1990, drilling of 10–15 new wells is planned for key areas. *Id.* One hundred and eight observation wells are maintained within the Twin Cities area. CONSUMPTIVE WATER USE STUDY, *supra* note 17, at 50.

30. CONSUMPTIVE WATER USE STUDY, *supra* note 17, at 50.

31. *Id.* at 53.

32. *See* Durenberger Address, *supra* note 11, at 164. Durenberger suggests three elements which in his view are necessary to a comprehensive prevention program for groundwater contamination: aquifer classification, water quality standards, and control requirements for sources of contamination. *Id.* at 165.

33. *Senate Panel Tries its Best to Diagnose Nation's Groundwater Health*, U.S. Water News, Sept. 1989, at 11, col. 3 (taken from EPA studies of drinking water with a groundwater source).

much as two-thirds of groundwater contamination results from pesticide application and leaking underground storage tanks.[34]

An EPA survey has helped to quantify the problem. That survey estimates that up to 35% of the approximately 1,400,000 underground petroleum storage tanks scattered throughout the country may be leaking.[35] The federal government, along with many states, has slowly begun to address the contamination threat posed by underground storage tanks.[36]

Nationally, we are just beginning to appreciate the problem of groundwater contamination by pesticides.[37] The EPA has detected these chemicals in the groundwater of thirty-eight states.[38] In 1985, American farmers applied over 500 million pounds of pesticides to crops.[39] More disturbing is that 40% of the pesticide products on the market in the United States today are sold for home use.[40] Suburban home owners apply pesticides to their lawns at a rate exceeding the rate of application for almost any other type of land in the United States.[41]

Until about a decade ago, it was generally believed that groundwater was immune to pesticide contamination. By

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34. *Id.* at cols. 3–4.

35. 52 Fed. Reg. 12,662, 12,664–65 (1987) (codified at 40 C.F.R. § 280) (proposed Apr. 17, 1987). Although the survey reports that 35% of the non-farm underground storage tank (UST) systems would prove non-tight under the test, it also acknowledges that failing the tank tightness test does not necessarily mean that the UST system is leaking under non-test conditions. *Id.* at 12,665.

36. In September 1988, the Environmental Protection Agency (EPA) promulgated regulations which set forth specifications for new underground petroleum storage tanks. *See* 40 C.F.R. § 280 (1989). The regulations also require a phased in upgrading of existing tanks to meet requirements for leak detection and corrosion protection depending on the age of the tank. Tanks which do not meet the standards must be removed from service as well as tanks which have been out of service for more than one year. *See* 40 C.F.R. § 280.40 (1989).

The Minnesota Pollution Control Agency is in the process of adopting regulations at least as stringent as the federal regulations. In addition, Minnesota adopted the Minnesota Petroleum Tank Release Cleanup Act in 1987. 1987 Minn. Laws 389 (codified at MINN. STAT. §§ 115C.01–115C.10 (1988 & Supp. 1989)). This act provides for partial reimbursement of the costs of cleaning up releases of petroleum products from tanks in Minnesota, thus assisting private groundwater cleanup actions. MINN. STAT. § 115C.04 (1988).

37. In this article, we will use the term "pesticide" generically to encompass all chemicals used to control vermin, insects, fungus, and weed growth.

38. Dumanoski, *State Pesticide Reform Sought*, Boston Globe, Mar. 22, 1989, Metro/Region section, at 1.

39. *Senate Subcommittee Considers Need for Groundwater Protection in Farm Bill*, 5 Groundwater Monitor No. 23 (Nov. 7, 1989).

40. Dumanoski, *supra* note 38.

41. *Id.*

1986, however, the EPA had detected 19 different pesticides in the groundwater underlying 24 states — including Minnesota, Iowa and Wisconsin — with the contamination most probably resulting from agricultural application rather than from spills or other handling problems.[42]

Some areas are more susceptible to groundwater contamination than others. Naturally occurring sandy soils and geologic formations such as fractured bedrock allow contaminants to move easily into groundwater supplies. The areas of highest susceptibility to groundwater contamination in Minnesota are in the southeast and central parts of the state[43] — also the location of Minnesota's most plentiful aquifers.

One Minnesota study tested over 700 wells and found:

> [P]esticides were detected in 39 percent of all wells and 28.5 percent of the public drinking water wells tested, generally at levels below current guidelines for drinking water. . . . Sixteen drinking water wells . . . [had] pesticide levels higher than the limits currently recommended by the [Minnesota] Department of Health.
>
> Pesticides were most commonly found in wells in parts of the state considered to be hydrogeologically vulnerable to contamination.[44]

The Minnesota study also found that 42% of the drinking water wells and 7.1% of the public water supply wells had nitrate concentrations in excess of the current Minnesota drinking water limits.[45]

Groundwater contamination is much more difficult and expensive to detect and clean up than surface water contamination. Generally, groundwater moves in confined spaces. There is relatively little mixing or dispersion of contaminants so concentrations of contaminants, can remain high for many years. Plumes may be extensive but narrowly tapered, making it necessary to drill multiple wells to detect contamination. And, restoration of aquifers is extremely expensive[46] and often

42. PROTECTING MINNESOTA'S WATERS, *supra* note 3, at 6–7.

43. MINNESOTA STATE PLANNING AGENCY, MINNESOTA GROUNDWATER PROTECTION ACT OF 1989—A SUMMARY 4 (Aug. 1989) (citing LAND MANAGEMENT INFORMATION CENTER, MINNESOTA POLLUTION CONTROL AGENCY, *Groundwater Contamination Susceptibility in Minnesota*) (available in the William Mitchell Law Review office) [hereinafter MINNESOTA GROUNDWATER PROTECTION ACT OF 1989].

44. PROTECTING MINNESOTA'S WATERS, *supra* note 3, at 7.

45. *Id.* at 7–8.

46. One estimate placed the cost of cleaning up the groundwater underlying the

not effective.

II. REGULATION OF GROUNDWATER

A. Federal

1. Current Statutory Framework

Until recently, groundwater contamination was not recognized as a significant problem and there is no comprehensive federal regulatory scheme for its management. The flurry of federal environmental statutes passed in the early 1970s focused on ambient air quality,[47] surface water protection (Clean Water Act),[48] drinking water quality (Safe Drinking Water Act),[49] and the use of agricultural chemicals (FIFRA).[50] In 1976, the Resource Conservation and Recovery Act (RCRA)[51] was passed to regulate disposal of solid waste, and the Toxic Substances Control Act (TSCA)[52] was passed to limit releases of toxic chemicals and other materials. Finally, in 1980 the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)[53] was passed to encourage the clean up of abandoned disposal sites. The result of this fragmented legislative process is a patchwork regulatory scheme in which no one program is designed to provide comprehensive groundwater management.

Twin City Army Ammunition Plant, located in New Brighton, Minnesota, at over $80,000,000. *See* MINNESOTA GROUNDWATER PROTECTION ACT OF 1989, *supra* note 43, at 2.

47. Clean Air Act Amendments of 1970, Pub. L. No. 91-604, 84 Stat. 1676 (codified as amended Titles 42, 49 and 50 of the U.S. CODE).

48. Federal Water Pollution Control Act Amendments of 1972 (Clean Water Act), Pub. L. No. 92-500, 86 Stat. 816 (codified as 12 U.S.C. § 24 (1988), 15 U.S.C. §§ 633, 636 (1988) and 33 U.S.C. §§ 1251–1265, 1281–1292, 1311–1328, 1341–1345 and 1361–1376 (1988)).

49. Safe Drinking Water Act of 1974, Pub. L. No. 93-523, 88 Stat. 1660 (codified as 21 U.S.C. § 349 (1988); 42 U.S.C. §§ 201, 300f to 300j-9 (1982 & Supp. V 1987)).

50. Amendments to the Federal Insecticide, Fungicide, and Rodenticide Act of 1975, Pub. L. No. 94-51, 89 Stat. 257 (codified as 7 U.S.C. § 136y (1988)).

51. Pub. L. No. 94-580, 90 Stat. 2795 (1976) (codified as amended at 42 U.S.C. §§ 6901–6911i (1982 & Supp. V 1987)).

52. Pub. L. No. 94-469, 90 Stat. 2003 (1976) (codified as 15 U.S.C. §§ 2601–2629 (1988)), *supplemented by* Pub. L. No. 99-519, §§ 2, 3(b), & 3(c), 100 Stat. 2970 (1986) (codified as 15 U.S.C. §§ 2614, 2619, 2641–2654 (1988)); and Pub. L. No. 100-551, § 1, 102 Stat. 2755 (1988) (codified as 15 U.S.C. §§ 2661–2671 (1988)).

53. Pub. L. No. 96-510, 94 Stat. 2767 (1980) (codified as 26 U.S.C. §§ 4611–4612, 4661–4662, 4681–4682 (1988)); 33 U.S.C. § 1364 (1988)); 42 U.S.C. §§ 6911, 6911a, 9601–9615, 9631–9633, 9641, 9651, 9657 (1982 & Supp. V 1987); 49 U.S.C. app. § 1671, 2001 (1982)).

The thrust of the Clean Water Act is the protection of surface water. A number of sections of the Clean Water Act appear to give the federal government authority over groundwater.[54] Courts, however, have interpreted the Clean Water Act as not pertaining to groundwater unless it has been mixed with surface water.[55]

The Safe Drinking Water Act gives the federal government the power to compel a state to implement protection plans for public drinking water supplies.[56] It also provides for the establishment of a program to protect public water supply wellheads,[57] and establishes authority for the federal government and the states to control injections into groundwater.[58] Finally, the Act allows the classification of aquifers which can be used for public water supplies; contamination of certain aquifers is permitted up to minimum contaminant levels, while no contamination is permitted for other classes.[59]

The EPA implements the various statutory programs pertaining to groundwater. In doing so, it faces two challenges: to harmonize these disparate programs and to form a partnership with the state governments to enhance groundwater protec-

54. Section 208 provides for the monitoring of state area-wide planning programs for treatment facilities. 33 U.S.C. § 1288 (1988). Section 303 addresses development of water quality standards generally. 33 U.S.C. § 1313 (1988). Section 304 requires the Environmental Protection Agency to develop and publish water quality criteria which reflect the weight of scientific knowledge of effects on health and welfare which may be expected from pollutants from any body of water including groundwater. 33 U.S.C. § 1314 (1988). Section 402 creates the National Pollution Discharge Elimination System (NPDES) permit authority. 33 U.S.C. § 1342 (1988). *See also* Comment, *The Extent of Groundwater Jurisdiction Under the Clean Water Act After* Riverside Bayview Homes, 47 LA. L. REV. 859, 881–82 (1987).

55. *See* United States Steel Corp. v. Train, 556 F.2d 822, 822 (7th Cir. 1977) (steel company's complaint seeking review of a National Pollutant Discharge Elimination System permit dismissed); Exxon Corp. v. Train, 554 F.2d 1310, 1317–31 (5th Cir. 1977) (EPA does not have authority to control disposal of wastes into deep wells under certain circumstances); McClellan Ecological Seepage v. Weinberger, 707 F. Supp. 1182, 1193–97 (E.D. Cal. 1988) (Congress did not intend to require National Pollutant Discharge Elimination System permits for discharges of pollutants to isolated groundwater); Kelley v. United States, 618 F. Supp. 1103, 1104–07 (D.C. Mich. 1985) (enforcement authority under the Clean Water Act did not include groundwater contamination); United States v. GAF Corp., 389 F. Supp. 1379, 1383 (S.D. Tex. 1975) (disposal of chemical wastes into isolated groundwater does not constitute "discharge of a pollutant" within the Federal Water Pollution Control Act).

56. 42 U.S.C. § 300g-3 (1982 & Supp. V 1987).

57. 42 U.S.C. § 300h-7 (1982 & Supp. V 1987).

58. 42 U.S.C. § 300h-3 (1982 & Supp. V 1987).

59. 42 U.S.C. § 300h-3(e) (1982). *See also* 42 U.S.C. § 300h-6 (Supp. V 1987).

tion.[60] To further the first goal, the EPA prepared a Groundwater Protection Strategy in 1984.[61] One of the aims of this strategy is to protect, to the maximum extent possible, particularly sensitive and valuable groundwater.[62]

The Groundwater Protection Strategy classifies groundwater into categories, prescribing different levels of protection for each category. The categories reflect the value of the groundwater and its vulnerability to contamination. For instance, Class I groundwaters are those which are vulnerable to contamination and either irreplaceable sources of drinking water or vital to maintaining a unique habitat for flora, fauna or an endangered species.[63] Through its jurisdiction under RCRA, the EPA discourages development of new hazardous waste disposal facilities in an area of Class I groundwaters.[64] Moreover, if a spill of hazardous substances takes place in an area of Class I groundwaters, and it becomes a Superfund site under CERCLA, the EPA may require clean up to drinking water standards.[65]

By way of contrast, Class III groundwaters are those which are not potential sources of drinking water and are of limited beneficial use. Prevention standards are the same in both Class I and Class III areas, but if there were contamination which posed no risk to human health and the environment, clean up requirements would be minimal or eliminated in areas of Class III groundwaters.[66]

From 1984 to 1989, the EPA's groundwater activities were pursued in the context of specific regulatory programs. In 1989, the EPA Groundwater Task Force was formed to develop a new agency wide strategy for EPA actions in groundwater protection and clean up. The task force has developed two papers, a Statement of Groundwater Principles,[67] and an Options Paper,[68] which have recently been sent to the states

60. EPA GROUNDWATER STRATEGY, *supra* note 11, at 33.

61. *See id.*

62. *Id.* at 42.

63. *Id.* at 43–44.

64. *Id.*

65. *Id.*

66. *Id.* at 47.

67. GROUNDWATER TASK FORCE, U.S. ENVIRONMENTAL PROTECTION AGENCY, EPA STATEMENT OF GROUNDWATER PRINCIPLES (Jan. 13, 1990).

68. GROUNDWATER TASK FORCE, U.S. ENVIRONMENTAL PROTECTION AGENCY,

for comment.[69] The Options Paper raises basic issues regarding future regulation of groundwater at the federal and state level.[70]

In addition to the Options Paper, the EPA is developing a strategy calling for the use of EPA pesticide registration authority under FIFRA "to prevent groundwater contamination that poses an unreasonable risk to human health or the environment."[71] Under this strategy, if the EPA decides to regulate a pesticide, the pesticide may continue to be used only in states having a pesticide management plan which addresses its use in areas of high groundwater vulnerability.[72]

2. *Proposed Legislation*

Although Congress has considered comprehensive groundwater legislation in the past, it shows little inclination to enact such legislation at present. The opposition of strong, well-funded interest groups, primarily from the agricultural and the petrochemical industries, has proved too formidable.[73]

During its 1988 congressional session, Congress considered

STATE/FEDERAL RELATIONSHIP OPTIONS PAPER (Jan. 25, 1990) [hereinafter STATE/FEDERAL RELATIONSHIP OPTIONS PAPER].

69. *See* Letter to the Honorable Rudy G. Perpich from F. Henry Habicht II, Deputy Administrator, EPA (Jan. 26, 1990).

70. Stated more completely, the primary options considered in the paper include the following: (a) Should the maximum contaminant levels (MCLs) set for public drinking water at the federal level be used as reference points to gauge the severity of groundwater contamination with achievement of an MCL being seen as a failure of prevention and inconsistent with protecting the groundwater? Or should pollution be allowed up to the MCL, using the MCL as a floor for prevention activities? STATE/FEDERAL RELATIONSHIP OPTIONS PAPER, *supra* note 68, at 4. (b) How much federal oversight should there be over groundwater contaminants? Moderate as in the Federal Underground Storage Tank Program or substantial as in the RCRA Hazardous Waste Program? *Id.* at 5. (c) Should the federal government defer to state use designations in enforcing federally mandated cleanups where the state use designation would mean less cleanup or corrective action? In other words, should states be able to "write-off" waters not used for drinking water when federal programs would require cleanup? *Id.* at 8.

71. Statement of William K. Reilly, Administrator, U.S. Environmental Protection Agency, Before the Committee on Agriculture, Nutrition, and Forestry, United States Senate 16 (Jan. 25, 1990).

72. *Id.* at 17.

73. Congress appears to lack the consensus needed to pass a comprehensive groundwater act for the present. Agricultural and pesticide industry proponents are opposed to permitting the Senate's Environment and Public Works Committee to draft comprehensive groundwater legislation, fearing that committee would not be responsive to their interests. Conversely, environmental activists oppose giving drafting responsibilities to the Senate's Agriculture Committee out of a fear that nec-

the Groundwater Protection Act,[74] and the companion National Groundwater Contamination Research Act,[75] which together would have constituted a comprehensive federal groundwater act. These acts would have established groundwater nondegradation as a federal goal, established research and survey programs to identify the scope of the groundwater problem, regulated discharges into the groundwater system, and created programs to replace contaminated drinking supplies. As proposed, the acts would also have:

- required the United States Geological Survey to conduct an ongoing survey of groundwater throughout the United States;[76]
- established permitting requirements for potential groundwater contamination sources;[77]
- given state governments the power to designate sensitive areas;[78] and
- established a Groundwater Protection Standards Board to set standards for groundwater contaminants at a level designed to protect human health and the environment.[79]

Congress has also considered but failed to act on the Groundwater Research Act,[80] which promoted groundwater mapping and groundwater quality activities, and the Groundwater Safety Act,[81] designed to minimize contamination caused by pesticides leaching into groundwater.

A few provisions designed to protect the nation's groundwater may make their way into the 1990 Farm Bill[82] currently being considered by Congress. The Bush Administration's

essary pesticide and fertilizer regulations would be omitted by that committee. Interview with Ed Garvey, aide to Sen. David Durenberger (Jan. 31, 1990).

74. S. 20, 100th Cong., 1st Sess., 133 CONG. REC. S149 (1987).

75. H.R. 791, 100th Cong., 1st Sess., 133 CONG. REC. E290 (1987).

76. *Id.*

77. S. 20, 100th Cong., 1st Sess., § 9(3), 133 CONG. REC. S643 (1987). The permitting system would cover such potential contamination sources as sewage systems, landfills, oil and gas drilling operations, underground storage tanks, pesticide and fertilizer applications and feed lots.

78. *Id.* at § 5(b), 133 CONG. REC. S642.

79. *Id.* at § 4(e), 133 CONG. REC. S642.

80. S. 1105, 100th Cong., 1st Sess., 133 CONG. REC. S5617 (1987).

81. S. 1419, 100th Cong., 1st Sess., 133 CONG. REC. S8596 (1987).

82. *See* 1990 Farm Bill, Proposal of the Administration (Feb. 1990).

proposed Farm Bill contains food safety regulations limiting application of pesticides,[83] as well as land set aside[84] and sustainable agriculture programs that will indirectly reduce use of pesticides and fertilizers.[85]

B. Neighboring States

1. Wisconsin

Wisconsin enacted comprehensive groundwater legislation in 1983.[86] Under this legislation, the Wisconsin Department of Natural Resources is required to identify and classify groundwater contaminants[87] and work with the United States Geological Survey in surveying groundwater supplies within the state.[88] The Department of Natural Resources is also directed to work with the Wisconsin Department of Health to create enforcement standards for groundwater contaminants that threaten public health.[89] Finally, the legislation requires the Department of Natural Resources to collect information regarding groundwater contaminants (so that it can design effective and efficient mitigation programs)[90] and monitor groundwater to check compliance with its regulations.[91]

Wisconsin's administrative rules contain a chapter on groundwater quality,[92] which discusses "enforcement" and "preventative action" standards. The hazardous waste management[93] and landfill monitoring[94] rules call for groundwater monitoring and corrective action when concentrations of contaminants become too great. Finally, the administrative rules also impose an antidegradation standard,[95] but the standard appears to apply only to surface waters.

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83. *Id.* at 106.
84. *Id.* at 40–41.
85. *Id.* at 47.
86. 1983 Wis. Laws 410 (codified as WIS. STAT. ch. 160 (1988)).
87. WIS. STAT. ANN. § 160.05 (West 1989).
88. *Id.* § 144.02.
89. *Id.* § 160.07 (the resulting standards are published in WIS. ADMIN. CODE § NR140 (1988)).
90. WIS. STAT. ANN. § 160.17 (West 1989).
91. *Id.* § 160.27.
92. WIS. ADMIN. CODE § NR140 (1988).
93. WIS. ADMIN. CODE § NR181 (1988).
94. WIS. ADMIN. CODE § NR508 (1988).
95. WIS. ADMIN. CODE § NR207 (1989), implementing policy in WIS. ADMIN. CODE § NR102.05 (1989). These rules permit degradation of water where justified for "necessary economic and social development." *Id.* § NR102.05(1).

Wisconsin groundwater legislation addresses the issues of groundwater conservation and the replacement of already-contaminated drinking water sources.[96] Moreover, Wisconsin also has statutory schemes which address abandoned underground storage tanks and the remediation of oil spills,[97] and the storage and use of pesticides and fertilizers.[98]

2. *Illinois*

The Illinois Groundwater Protection Act[99] became effective in September of 1987. Its primary feature is a prohibition on the construction of (i) new community water wells near potential contamination "routes" and "sources," and (ii) new contamination routes or sources near existing or permitted community water wells.[100] The prohibition is effected by the designation of minimum setback area around such sites.[101] The Act also empowers the Illinois Environmental Protection Agency to appoint regional groundwater planning committees which may recommend designation of "regulated recharge ar-

96. For example, Wisconsin groundwater legislation restricts the use of groundwater resources in order to conserve such resources. WIS. STAT. ANN. § 144.026 (West 1989). The legislation establishes a fund to compensate victims of contaminated wells, and also a grant program for cities to enable them to replace contaminated water supplies. *Id.* §§ 144.027–144.028. *See also* WIS. ADMIN. CODE § NR123 (1986).

97. WIS. STAT. ANN. §§ 101.142–101.143 (West 1988 & Supp. 1989).

98. WIS. STAT. ANN. § 94.645, §§ 94.67–94.71 (West 1972 & Supp. 1989) and WIS. STAT. ANN. § 140.77 (West 1989). Administrative rules regarding pesticides and fertilizers can be found at WIS. ADMIN. CODE § Ag 161 (1985), §§ Ag 162–163 (1988).

99. 1985 Ill. Laws, P.A. 85-863 (1985) (codified in scattered sections of ILL. ANN. STAT. ch. 111½ (Smith-Hurd 1987)).

100. The Illinois Act designates three types of locations in which pollutants that enter the soil are likely to contaminate useable groundwater: around (a) wells; (b) potential routes of contamination; and (c) potential sources of contamination. *See* ILL. ANN. STAT. ch. 111½, ¶ 1003.57–.60 (Smith-Hurd 1988). Examples of potential routes of contamination are improperly plugged, abandoned wells, drainage wells and excavations for sand, stone, and gravel. Potential sources of contamination include gas stations, waste treatment facilities and landfills. *Using The New Illinois Groundwater Protection Act To Prevent Contamination Of Local Drinking Water Supplies* 5 (Oct. 25, 1989) (unpublished paper prepared by Howard A. Learner and Anne Nicholson Weber of Business and Professional People for the Public Interest, Chicago, Ill. for McHenry County Defenders) (available in the William Mitchell Law Review office) [hereinafter *Using The Illinois Act*].

101. The setback zones are spelled out in ILL. ANN. STAT. ch. 111½, ¶ 1014.1 (location of wells) and ¶ 1014.2 (location of potential sources and routes of contamination) (Smith-Hurd 1988). *See also* ILL. ANN. STAT. ch. 24, ¶ 11-125-4 (Smith-Hurd Supp. 1989) and ch. 34, ¶ 3116.1 (Smith-Hurd 1960 & Supp. 1989).

eas."[102] If an area has been designated a regulated recharge area, the safeguards of the Illinois Act extend beyond the statutory setback. The Act exempts activity conducted within a setback zone or regulated recharge area if the promoter of the activity shows that the threat to groundwater is minimal.[103]

Under the Act, the Illinois Pollution Control Board is required to promulgate regulations to control and phase out existing sources of groundwater contamination.[104] In addition, the Act requires the Illinois Department of Energy and Natural Resources to assemble and automate groundwater data and to establish a statewide groundwater monitoring program.[105] Finally, it provides that counties and municipalities may independently conduct groundwater needs assessments.[106]

Another Illinois Act — the Water Use Act of 1983[107] — gives local soil and water conservation districts and the Illinois Department of Agriculture the authority to restrict groundwater withdrawals in excess of 100,000 gallons per day.

3. Iowa

The Iowa Groundwater Protection Act,[108] also adopted in 1987, has the goal of protecting Iowa's groundwater resources "to the maximum extent practical."[109] Not surprisingly, though, it exempts agricultural producers who have applied nitrates and pesticides in compliance with label instructions.[110] The Act designates the Iowa Department of Natural Resources as the agency responsible for groundwater protection pro-

102. A regulated recharge area is a porous land surface through which water filters underground to replenish groundwater reserves. It is a compact geographic area in which geologic conditions make it likely that drinkable groundwater could be contaminated by activities located outside the statutory setback zone. *Using The Illinois Act, supra* note 100, at 6. ILL. ANN. STAT. ch. 111½, ¶ 1017.3–.4 (Smith-Hurd 1988).

103. To make such a showing, the promoter must provide a certificate of minimal hazard, which can be obtained only if seven conditions, all of which tend to diminish the likelihood of contamination, have been met. *Id.* at ¶ 1014.5(b) (Smith-Hurd 1988).

104. *Id.* at ¶ 1014.4(b), 7458 (Smith-Hurd 1988).

105. *Id.* at ¶ 7457 (Smith-Hurd 1988).

106. *Id.* at ¶ 1017.1 (Smith-Hurd 1988).

107. 1983 Ill. Laws, P.A. 83-700 (1983) (codified at ILL. ANN. STAT. ch. 5, ¶ 1601–07 (Smith-Hurd Supp. 1989)).

108. IOWA CODE ANN. § 455E (West Supp. 1990).

109. *Id.* § 455E.4.

110. *Id.* § 455E.6.

grams.[111] Under the Act, the Department of Natural Resources must study and map groundwater resources, develop programs and promulgate rules in pursuit of the statutory clean water goal.[112] Finally, the Iowa Groundwater Act requires registration and reporting of all underground storage tanks.[113]

The Iowa Act establishes a groundwater protection fund.[114] Fees and charges earmarked for purposes related to groundwater monitoring and quality standards must be deposited in the fund; examples include sanitary landfill tonnage charges[115] and license fees for fertilizer distributors.[116] Some novel aspects of the Act are that it imposes an additional fee for landfill disposal of solid waste, to be used to promote alternative disposal methods, and establishes education, clean up and recycling programs relating to household hazardous wastes.[117]

A number of Iowa's regulatory schemes address groundwater issues. Its interim drinking water regulations[118] set maximum contaminant levels for public drinking water supply systems. The regulations also set clean up rules for point source, hazardous substance contamination of groundwater and surface waters which might affect groundwater.[119] Finally, the regulations address the installation of underground storage tanks, and related monitoring and remediation requirements.[120]

C. Minnesota

Regulation and protection of groundwater in Minnesota is within the jurisdiction of several state agencies. The Minnesota Pollution Control Agency (MPCA) protects the quality of groundwater through its statutory authority to control or abate "water pollution," which includes pollution of groundwater.[121]

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111. *Id.* § 455E.7.
112. *Id.* § 455E.8.
113. IOWA CODE ANN. §§ 455B.471–455B.479 (West Supp. 1990). *See also* IOWA ADMIN. CODE r. 135.1–135.8 (1989).
114. IOWA CODE ANN. § 455E.11 (West Supp. 1990).
115. *Id.*
116. *Id.*
117. IOWA CODE ANN. §§ 455F.1–455F.12 (West Supp. 1990).
118. IOWA ADMIN. CODE r. 41.2 (1987).
119. IOWA ADMIN. CODE r. 133.1 (1989).
120. IOWA ADMIN. CODE ch. 135 (1989).
121. MINN. STAT. § 115.01, subds. 5, 9, 21 (1988); *id.* § 115.03, subd. 1(e).

Prior to enactment of the Minnesota Groundwater Protection Act, the MPCA protected groundwater principally through a combination of water classifications, a regulatory nondegradation standard, and permit and program specific requirements. State law requires the MPCA to classify the waters of the state (including groundwater) and to adopt standards of water purity.[122] This was accomplished through the regulations, first by establishing general classifications for the waters of the state and then by specifying standards of purity for each class.[123] Each classification corresponds to a form of water use; examples are domestic consumption, fisheries and recreation. All surface water in the state is regulated by such use classifications.[124] Groundwater was not actually placed in any specific classification in the regulations, but the narrative describing the classification for domestic consumption refers to groundwater.[125] Thus, the general protection of groundwater was accomplished derivatively as part of a surface water protection scheme.

In addition to its regulation of groundwater by classification, the MPCA has authority over sources of pollution of groundwater and is empowered to clean up groundwater contamination.[126] In an effort to prevent groundwater contamination, the MPCA has used its authority to regulate solid and hazardous wastes, sewage sludge, septic tanks, feed lots and specific waste sources such as waste tires, used oil, discarded batteries, and abandoned automobiles.[127]

Moreover, under the Minnesota Environmental Response and Liability Act (MERLA),[128] the MPCA has cleanup authority with respect to hazardous substances, pollutants and contaminants in groundwater. MERLA does not cover contamination

122. MINN. STAT. § 115.44, subd. 2 (1988).

123. *See* MINN. R. § 7050.0220 (1989).

124. MINN. R. § 7050.0470 (1989).

125. *See* MINN. R. § 7050.0220, subp. 2 (1989) (classes A and B refer to "underground waters," classes C and D refer to "groundwaters in aquifers").

126. MINN. STAT. § 115.03 (1988 & Supp. 1989).

127. For an excellent discussion of the MPCA's authority generally, *see* Memorandum by Barbara Freese, Special Assistant Attorney General, to Environmental Quality Board (EQB) Citizen's Advisory Committee on Ground Water 10 (Mar. 31, 1988) (available in the William Mitchell Law Review Office) [hereinafter Freese Memo].

128. MINN. STAT. §§ 115B.01–115B.37 (1988 & Supp. 1989). Remedial action under MERLA is defined as action taken "to protect the public health or welfare or the environment." MINN. STAT. § 115B.02, subd. 16 (1988).

from normal application of pesticides or fertilizers;[129] these are regulated by the Minnesota Department of Agriculture (MDA).

Prior to the passage of the new Groundwater Protection Act, there were no official standards for groundwater cleanup except those which could be drawn from the water classification regulations. In other words, there was no rule which stated that the presence of a specific amount of a certain chemical constituted groundwater contamination. Therefore, groundwater was cleaned up to a variety of standards, depending on the use to which the groundwater was put, the level of contamination and the technology available. In practice, though, the goal of most contaminant cleanups was the Department of Health's Recommended Allowable Limits (RALs) for Drinking Water Contaminants.[130]

A number of other Minnesota agencies have authority over groundwater. The Department of Natural Resources (DNR) requires a permit for appropriations of groundwater except when the appropriation is for domestic purposes and will serve fewer than twenty-five persons.[131] In the past, the DNR has ranked the uses of the water of the state, with first priority being given to domestic water supply, second to consumptive uses of less than 10,000 gallons a day, third to agricultural uses, fourth to power production and fifth to other uses.[132] The DNR may charge a fee for the use of groundwater.[133]

The MDA has authority over agricultural chemical contaminants which affect groundwater. It may take action to prevent contamination of groundwater from leaching of pesticides through soil, backsiphoning of pesticides through water wells or from direct flowage of pesticides to groundwater.[134]

The Minnesota Department of Health's (MDH) authority

129. *Id.* § 115B.02, subd. 15(d) (1988).

130. RALs and the MDH's role are discussed *infra* note 153 and accompanying text.

131. MINN. STAT. § 105.41, subd. 1 (1988 & Supp. 1989).

132. This priority scheme was changed by the new Groundwater Protection Act to place power production that meets contingency planning requirements in the first priority category. MINN. STAT. § 105.41, subd. 1a (Supp. 1989).

133. *Id.* at subd. 5a.

134. MINN. STAT. § 18B.10 (1988). *See* Memorandum to Environmental Quality Board Citizen's Advisory Committee on Groundwater, from Lee Paddock, Assistant Attorney General, March 31, 1988, regarding Statutory Authority Related to Groundwater Other than MPCA Authority [hereinafter Paddock Memo]. State law requires pesticides to be used in accordance with the label and "in a manner that will

over groundwater focuses on drinking water. The MDH can issue notices of violation where maximum contaminant levels have been violated in public water supplies.[135] The MDH also regulates the construction of wells,[136] and can issue emergency orders when water quality problems present an imminent health risk.[137]

Finally, local governments in Minnesota are becoming increasingly active in protecting and managing groundwater supplies.[138] Comprehensive local water planning has been initiated in the majority of the greater Minnesota counties and at least one municipality has initiated a groundwater plan.[139]

III. The Minnesota Groundwater Protection Act of 1989

In 1989, amid growing public concern over the quality of groundwater in Minnesota and nationwide, the Minnesota Legislature enacted the Minnesota Groundwater Protection Act,[140] funding it with an appropriation of $13,000,000. Passage of the Act followed years of research on groundwater contamination and the appointment of an Advisory Committee on Groundwater Protection which reviewed groundwater protection policies and agricultural chemical strategies. The Advisory Committee unanimously recommended a comprehensive program designed to prevent any further degradation of groundwater, utilizing a combination of educational programs,

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not cause unreasonable adverse effects on the environment." Minn. Stat. § 18B.07, subds. 1, 2 (1988 & Supp. 1989).

Prior to 1989, the MDA had authority over pesticide cleanups and responsible parties were required to report pesticide incidents to the MDA and to take all action necessary to abate releases. Minn. Stat. § 18B.15, subd. 1 (1988) (repealed Supp. 1989). If a responsible party failed to do so, the MDA could clean up the pesticide release and recover its costs from the responsible party. Minn. Stat. § 18B.15, subd. 2 (1988) (repealed Supp. 1989); *see also* Paddock Memo, *supra* at 9.

135. Minn. Stat. § 144.384 (1988).

136. Minn. Stat. § 1031.205 (Supp. 1989). The well code also provides the owner of a well a private cause of action for damages against any third party causing contamination of the well. *Id.* § 1031.241.

137. Minn. Stat. § 144.383(d) (1988).

138. This regulation is accomplished pursuant to Minn. Stat. § 110B (Supp. 1989) for counties outside the metropolitan area, and Minn. Stat. § 473.8785, subd. 1 (1988) for metropolitan counties.

139. Unpublished memorandum from Marilyn Lundberg, State Planning Agency employee, dated April 5, 1990.

140. Minn. Stat. §§ 103H.001–103H.280 (Supp. 1989).

research, financial incentives, and regulation.[141]

The Act is lengthy and covers a variety of topics. We have selected six to discuss in detail, focusing on the state of the law prior to the Act, the applicable provisions of the Act, and the gaps in regulation that remain.

A. Nondegradation Goal

The preamble to the Act states: "It is the goal of the state that groundwater be maintained in its natural condition, *free from any degradation* caused by human activities. . . . Where it is not currently practicable, the development of methods and technology that will make prevention practicable is encouraged."[142] In light of the enormous expense, or the impossibility, of restoring contaminated groundwater to a pristine condition, the legislature had as its goal the prevention (and reversal) of all groundwater contamination. The legislature realized, however, that this goal might not be attainable with respect to groundwater already badly contaminated. In the Act, it therefore provided for funding and research programs that may one day make the goal of nondegradation a possibility.[143] How does this new, nondegradation goal differ from that existing before the Act?

1. Background

At the time the Act was passed, existing Minnesota rules unambiguously set nondegradation as a goal for "underground waters."[144] The actual nondegradation policy con-

141. MINNESOTA GROUNDWATER PROTECTION ACT OF 1989, *supra* note 43, at 3.

142. MINN. STAT. § 103H.001 (Supp. 1989) (emphasis added).

143. The Act contains several programs designed to gather more information regarding groundwater and its contamination, as well as, general provisions designed to protect groundwater quality. The Minnesota Environmental Quality Board (EQB) is required to report on necessary research that should be done and to recommend research priorities. MINN. STAT. § 103A.43, subd. (a) (Supp. 1989). In addition, in order to protect groundwater, the EQB must conduct a biennial assessment of groundwater resources and contamination. *Id.* at subd. (b). The Act also establishes a Legislative Water Commission to oversee implementation of the Act and to provide the legislature with research information. MINN. STAT. § 3.887, subds. 1, 5–7 (Supp. 1989).

144. It is the policy of the agency [MPCA] to consider the actual or potential use of the underground waters for potable water supply as constituting the highest priority use and as such to provide maximum protection to all underground waters. The ready availability nearly statewide of underground water constitutes a natural resource of immeasurable value which must be protected as nearly as possible in its natural condition. For the conservation

tained in the regulations, however, is somewhat equivocal:

> It is the policy of the agency [MPCA] that the disposal of sewage, industrial waste, and other wastes shall be controlled as may be necessary to ensure that to the maximum practicable extent the underground waters of the state are maintained at their natural quality *unless a determination is made by the agency that a change is justifiable by reason of necessary economic or social development* and will not preclude appropriate beneficial present and future uses of the waters.[145]

Thus, prior to the Act, Minnesota's regulatory nondegradation policy was qualified in two ways. First, the control of sewage, industrial wastes and other wastes to prevent degradation of groundwater was required only "to the maximum practicable extent." Second, the MPCA could determine that, for economic or social development reasons, degradation was permitted so long as "beneficial" present and future uses of the water were not precluded.[146] What is meant by "beneficial use" was an open question.

How was this nondegradation policy reconciled with the classification system[147] for the waters of the state? Under the classification system, numerical standards are assigned to each class of water. These standards determine the maximum amount of contamination allowed in that class of water. The old nondegradation policy would have allowed the degradation of water within a class down to the applicable contamination limits so long as the water could still be used for the classified purpose — such as a fishery — and the degradation could be justified by "necessary" economic or social development that would not preclude "beneficial uses" of the water.[148]

Historically, the MPCA's enforcement of the nondegrada-

> of underground water supplies for present and future generations and prevention of possible health hazards, it is necessary and proper that the agency employ a nondegradation policy to prevent pollution of the underground waters of the state.

MINN. R. § 7060.0200 (1989).

145. MINN. R. § 7060.0500 (emphasis added). Note that other sections of the regulations apply to both ground and surface water. *See, e.g.*, MINN. R. § 7050.0185 (1989) (nondegradation for all waters). Where regulations outside § 7050 apply to groundwater and are less stringent, "the more stringent conditions shall be construed to apply." MINN. R. § 7060.0200 (1989). For an excellent discussion of nondegradation, see Freese Memo, *supra* note 127.

146. *See* Wisconsin's policy *supra* note 95 and accompanying text and Iowa's policy *supra* note 109 and accompanying text.

147. *See supra* notes 122–26 and accompanying text.

148. *See* MINN. R. § 7060.0500 (1989).

tion policy has occurred within the context of individual agency programs. For instance, in the field of hazardous waste regulation, contaminant concentration limits set for hazardous waste facilities may not exceed background contaminant levels.[149] These limits are consistent with the overall nondegradation policy. However, if the substance falls within a specific list of contaminants, the MPCA may set more lenient limits if it considers the condition, vulnerability, and uses of groundwater in the area,[150] and finds that the alternative limit will not "pose a substantial present or potential hazard to human health or the environment . . . ."[151]

When cleaning up contaminants, the MPCA has not been bound by a set of comprehensive cleanup standards. In practice, the adequacy of groundwater cleanup has sometimes been measured by reference to the maximum contaminant levels (MCLs) developed by the EPA for use in measuring contamination in public drinking water. These standards apply to treated public drinking water systems and are set at levels to prevent occurrence of any known or anticipated adverse effects allowing an "adequate margin of safety."[152]

When there is no established MCL for a contaminant, the MPCA has often required clean up to the recommended water quality standards for private drinking water supplies established by the MDH. These are known as recommended allowable limits (RALs).[153] Currently, there are RALs for 143 substances. Groundwater cleanup is more often tied to RALs than to MCLs when the two limits differ. Even the use of MCLs and RALs, however, has been inconsistent. Cleanup standards have been set on a site-by-site basis, taking into account the feasibility of cleanup, the present and future use of the groundwater, and the marginal cost of remediation.

149. MINN. R. § 7045.0484, subp. 6(A) (1989).

150. *Id.* at subp. 8(A), (B).

151. *Id.* at subp. 8.

152. *See* Safe Drinking Water Act, 93 Pub. L. No. 523, 88 Stat. 1660, 1663 (1974) (codified at 42 U.S.C. §§ 300f–300j, 300q-1(b)(1)(B) (1982)).

153. SECTION OF HEALTH AND RISK ASSESSMENT, MINN. DEP'T OF HEALTH, RELEASE NO. 2, RECOMMENDED ALLOWABLE LIMITS FOR DRINKING WATER CONTAMINANTS 1 (Nov. 1988) (available in the William Mitchell Law Review office) [hereinafter ALLOWABLE LIMITS FOR DRINKING WATER CONTAMINANTS].

2. *Nondegradation Under the Act*

The Groundwater Protection Act of 1989 sets degradation prevention as a statutory goal:

> It is the goal of the state that groundwater be maintained in its natural condition, free from any degradation caused by human activities. It is recognized that for some human activities this degradation prevention goal can not be practically achieved. However, where prevention is practicable, it is intended that it be achieved. Where it is not currently practicable, the development of methods of technology that will make prevention practicable is encouraged.[154]

Degradation is defined in the Act as "changing groundwater from its natural condition by human activities."[155] The statutory degradation prevention goal differs from that contained in earlier MPCA regulations in several ways. First, because it is statutory rather than regulatory, the degradation prevention goal will now apply not only to MPCA programs, but to other state agency programs as well.

Second, the goal of the Act is to permit degradation only when prevention is not "practicable" — a term not defined in the Act.[156] In prior MPCA regulations, degradation was permitted if necessary for economic or social development.[157] It is not clear whether the concept of practicable prevention under the new Act was intended to embrace the old concept of permitting degradation for "necessary" social or economic development — certainly a case can be made that the new Act sets a tougher standard. Other agencies, not bound by the MPCA regulations, would be free to interpret this term as they see fit, subject only to review by the Legislative Commission on Water established in the Act.[158]

Finally, it is ambiguous whether the degradation prevention goal in the Act, like the nondegradation policies in older regulations, applies to cleanups of contaminated water.

Implementation of the Act's degradation prevention policy will be through the development of best management practices, protection of sensitive areas, adoption of water resource

154. MINN. STAT. § 103H.001 (Supp. 1989).
155. MINN. STAT. § 103H.005, subd. 6 (Supp. 1989).
156. "Practicable" is defined as "that which may be . . . accomplished; that which is performable, feasible, possible." BLACK'S LAW DICTIONARY (5th ed. 1979).
157. MINN. R. § 7060.0500 (1989).
158. MINN. STAT. § 3.887, subds. 1, 5 (Supp. 1989).

protection requirements, education, monitoring and wellhead protection.[159] These programs, discussed below, will be in addition to those already existing at the agencies with water-related responsibilities, and represent the biggest boost to the degradation prevention goal.

The degradation prevention goal is the cornerstone of the Act. While the goal is not absolute (neither was its predecessor regulatory policy) it is certainly worth having. Without such a statutory goal, there is a virtual license to pollute groundwater until the cleanup standards — presumably the RALs or the health risk limits to be established by the MDH — are reached.

B. Health Risk Limits

Under the Act, if groundwater monitoring shows that degradation is occurring, the Commissioner of Health may promulgate health risk limits (HRLs) for the substances degrading the groundwater.[160] This is an explicit recognition that in some situations the degradation prevention goal cannot or will not be achieved. Limitations on the degree of groundwater contamination will be implemented in these instances.

Except in emergency situations, HRLs will be adopted by rule.[161] For the existing RALs, conversion to HRLs will occur after public notice and comment, though there is no provision for a public hearing.[162] The Act does provide that "[a]fter July

159. MINN. STAT. § 103H.001–103H.280 (Supp. 1989).

160. MINN. STAT. § 103H.201, subd. 1(a) (Supp. 1989). The Act seems to provide for the setting of HRLs for any degrading substances discovered in groundwater monitoring, whether from point or non-point sources. There are, however, conflicting interpretations on this point between state agencies. If the RALs are limited to point contaminants, as proposed by the MDH, their use will be severely limited.

161. *Id.* at subd. 2. The MDA is considering how to implement this rulemaking directive. One approach would be to establish the criteria for developing HRLs for carcinogenic and non-carcinogenic substances by rulemaking but leave the implementation of those criteria for various substances to a less formal proceeding. This procedure, which was contained in the House proposal would limit public input in the setting of each HRL.

162. HRLs will be established by two methods: For systemic toxicants that are not carcinogens, EPA's published risk assessment methodology will be used to calculate a level of exposure "unlikely to result in deleterious effects during long-term exposure." *Id.* at subd. 1(c). And for known or probable carcinogens, HRLs will be derived from "a quantitative estimate of the chemical's carcinogenic potency." *Id.* at subd. 1(d). These methods are the same as those currently used by the MDH in setting RALs.

There are additional factors not specified in the Act, however, that will affect the

1, 1991, and before September 1, 1991, 25 or more persons may submit a written request for a public hearing" for any HRL adopted by the MDH.[163]

Nothing in the Act requires that HRLs be set lower to protect aquatic life when there is groundwater interaction with surface water. Groundwater is the source of most of the flowage in the trout streams of southeastern Minnesota. The RAL for cyanide in drinking water — protected groundwater — is 154 micrograms/liter.[164] But cyanide is toxic to aquatic life at much lower concentrations. The water quality standard for cyanide in water classified as a "fishery" is 20 micrograms/liter.[165] In situations such as the southeastern Minnesota trout fisheries, aquatic life could go unprotected unless surface water contamination limits are applied to groundwater.[166]

How will HRLs be used? The MDH anticipates using HRLs for the same purpose and in the same manner as RALs: (1) primarily as a basis for advising well owners/users on the suitability of using contaminated non-public water supplies; and (2) as a point of reference to initiate action on public water supplies contaminated with substances for which there are no MCLs.

HRLs will also be used as a basis for determining when a secondary phase regulation — water resource protection requirements (WRPRs) — will be imposed to protect a degrad-

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establishment of HRLs. An example is the absence of a mandated tolerable lifetime risk level to be used in deriving limits for carcinogens. Although, the MDH has used a lifetime risk level of 1 in 100,000 for deriving RAL's for a number of years, the controversy engendered in selecting a tolerable lifetime risk level will undoubtedly result in a re-examination of this issue during the rulemaking process. Other examples of factors not addressed in the Act include procedures for handling: (1) exposure to multiple contaminants; (2) multiple routes of exposure; and (3) exposure duration adjustments for less-than-lifetime exposures to carcinogens. These and other issues will also need to be considered and resolved during the rulemaking process.

163. *Id.* at subd. 4(c).

164. ALLOWABLE LIMITS FOR DRINKING WATER CONTAMINANTS, *supra* note 153, at 5.

165. MINN. R. § 7050.0220, subp. 3 (1989).

166. *See* MPCA, *In The Matter Of Proposed Revisions Of Minnesota Rules Chapter 7050, Relating To The Classification And Standards For Waters Of The State*, which would allow the MPCA to establish site specific requirements limiting contaminated groundwater entering surface water to protect aquatic life. These revisions do not, however, address the problem of generalized release of groundwater to surface water (unpublished proposal) (available in the William Mitchell Law Review office).

ing groundwater resource.[167] Under the Act, WRPRs are to be adopted by the MDA for agricultural chemicals and practices, and by the MPCA for other contaminants, when implementation of best management practices (BMPs) has failed to prevent or minimize contamination.[168] WRPRs will be established by rule and are to be consistent with the nondegradation goal to "prevent and minimize the pollution to the extent practicable."[169] This has two implications. First, it is a statutory expansion of the MDH's water quality standards from drinking water regulation to the regulation of all groundwater. Second, it again begs the question whether HRLs will become a permitted pollution ceiling — meaning that in certain situations further groundwater degradation will be allowed up to these limits.

How will HRLs be used in cleanup situations? HRLs are to be adopted by the MDH, but the MPCA and the MDA are also charged with the responsibility for groundwater. Nothing in the Act requires that the MPCA or the MDA apply either HRLs or WRPRs to cleanup situations. An argument could be made that both HRLs and WRPRs are aimed only at the prevention

167. MINN. STAT. § 103H.275, subd. 1(c)(2) (Supp. 1989).

168. *Id.* at subd. 2(a).

169. *Id.* WRPRs may not be adopted before January 1, 1991, and must be submitted to the Legislative Water Commission for review before adoption. The rules are to be based on "the use and effectiveness of best management practices, the product use and practices contributed to the pollution detected, economic factors, availability, technical feasibility, implementation and effectiveness." *Id.* at subd. 1(c).

The authority given the MPCA and the MDA to adopt WRPRs is supplementary and does not restrict their other authority to promulgate groundwater requirements. *Id.* § 103H.280. The legislature, however, has made it difficult for the agencies to implement their WRPR authority. Prior to adopting WRPRs, the agencies must notify affected persons and businesses for comment and input in developing the WRPRs. The WRPRs will only be effective in the areas designated by the agencies by order, and that order must be part of the WRPR rulemaking unless the WRPRs are to cover the entire state. There is a provision in the Act requiring that procedures for notification of those persons affected by the WRPRs be implemented. Further, any person who is subject to a WRPR may apply to the appropriate agency and suggest an alternative practice requirement. The agency has sixty days to approve or deny the request. If the request is approved, the agency must issue an order approving alternative protection requirements.

Violation of WRPRs will be subject to penalties for violating a rule adopted under MINN. STAT. §§ 18D.01–18D.331 (Supp. 1989) for agricultural chemicals. WRPRs are promulgated by the MPCA. The question is whether WRPRs will be adopted at any time in the near future given the regulatory hurdles created by the legislature.

of groundwater contamination, not the remediation of already contaminated groundwater.

Under the Minnesota Environmental Response and Liability Act (MERLA),[170] cleanups must assure protection of the "public health or welfare or the environment."[171] As previously indicated, cleanup standards historically have been set on an ad hoc basis, though often keyed to RALs. If HRLs will take the place of RALs, it is an open question whether cleanups will be aimed at achieving the applicable HRLs or whether the MPCA (or the MDA for agricultural chemicals) will adopt alternative standards.

C. *Limitations on Liability*

The Act contains several provisions limiting the liability of parties who might otherwise be responsible for groundwater contamination. With respect to "special sensitive areas,"[172] the Act establishes a complete defense to liability for groundwater contamination caused by surface water's recharging of a groundwater system, if the affected landowner's use of her property conforms to an acceptable sensitive areas plan adopted for the area by the local soil and water conservation district.[173] In addition, the Act provides that an owner of property containing a sealed well for which the owner has filed a sealed well certificate may not be held liable for contamination of groundwater occurring after the well has been sealed, provided the owner has not disturbed or disrupted the seal.[174] Finally, the Act exempts from liability for groundwater contamination any party who has applied agricultural chemicals according to state law, applicable handling requirements, and the standing orders of the Agriculture Commissioner.[175] If a pesticide is applied according to the label directions, the landowner is exempt from liability even if the soil is especially sensitive to leaching — making groundwater contamination a

170. MINN. STAT. §§ 115B.01–115B.37 (1988 & Supp. 1989).

171. MINN. STAT. § 115B.17, subd. 1 (1988).

172. *See infra* notes 180–91 and accompanying text.

173. MINN. STAT. § 103H.111 (Supp. 1989).

174. MINN. STAT. § 103I.325, subd. 2 (Supp. 1989). The text of this provision was amended in 1990 Minn. Laws, ch. 597, sec. 38 to provide that sealing must be accomplished by a licensed contractor. The amendment also deleted the requirement that a sealed well certificate be filed in county real estate records; it need only be filed with the MDH.

175. MINN. STAT. § 18D.101 (Supp. 1989).

virtual certainty.[176]

The Act does not address what remedies are available to the user of groundwater contaminated by an approved use of agricultural chemicals. If a landowner cannot collect damages from the manufacturer or supplier of the chemicals used by her neighbor, the legislature will either have to create a statutory right of action for affected landowners or make sure that the victim's compensation fund can handle such claims. The provisions of the Act seem to preclude private rights of action — at least for damages — against polluting neighbors, whether the claim is based on a statute[177] or a common law theory.

In 1985, the Minnesota Legislature established the Hazardous Substance Injury Compensation Fund to compensate victims of hazardous substance exposure.[178] Persons suffering personal injury or property damage are eligible for compensation from the fund.[179] A person who suffers a decline in property value because contaminated groundwater infiltrates her well can also make a claim against the fund. The fund will probably have to be greatly enlarged, however, to cover all claims that might arise because of agricultural chemical contamination.

The liability limits in the Act create fairly impressive gaps in the Act's scheme to impose liability for groundwater contamination on responsible parties. While the liability limits may have made the Act palatable to powerful agricultural chemical interest groups, they leave innocent victims exposed to liability for cleanup costs and defer the day of reckoning for one of the

176. The drafters of the Act appear to have assumed that liability for contamination resulting from an "approved use" will simply disappear. This may be a valid assumption with regard to properly sealed wells, and even with regard to the application of agricultural chemicals in sensitive areas, if sensitive areas plans are carefully made. But, if a neighbor's well is contaminated by an agricultural chemical, the cost of replacing or treating the water remains even though the agricultural chemical was applied at labelled rates. The cost will have to be paid by the well owner, the state, or the manufacturer or supplier of the agricultural chemical. Memorandum by Leroy Paddock, Minnesota Assistant Attorney General to State Planning Groundwater Legislative Committee (Mar. 7, 1989) (unpublished memorandum) (available in the William Mitchell Law Review office).

177. There is some irony in the fact that another section of the Act gives well owners a private right of action against a person whose "action or inaction" caused contamination of the well. MINN. STAT. § 103I.241 (Supp. 1989).

178. *See* MINN. STAT. §§ 115B.25–115B.37 (1988 & Supp. 1989).

179. MINN. STAT. § 115B.30, subds. 1–2 (1988 & Supp. 1989).

major sources of groundwater contamination: intensive agricultural chemical application.

D. Sensitive Areas

The Act singles out sensitive areas for special protection. A sensitive area is "a geographic area defined by natural features where there is a significant risk of groundwater degradation from activities conducted at or near the land surface."[180] The rationale for according special protection to sensitive areas is that prevention is less expensive than cleanup, and that without extra vigilance groundwater contamination can occur easily in these areas.

The Act requires the Commissioner of Natural Resources (in consultation with the Minnesota Geological Survey, Soil and Water Conservation Districts and local water planning authorities) to identify the location of sensitive areas by mapping or other appropriate methods.[181] No time frame is established for this activity.[182]

Once sensitive areas have been mapped, the Commissioner of Natural Resources must notify political subdivisions which have planning or zoning authority of the location of the sensitive areas and the different risks of groundwater degradation that may occur from activities at or near the surface.[183] The Act further requires the Commissioner of Natural Resources to notify the public of the location of sensitive areas by publishing a notice in a newspaper in each county containing a sensitive area.[184]

Once a sensitive area has been designated, the Commissioner of Agriculture and the MPCA (in consultation with local water planning authorities) must consider why the area was designated as sensitive — to determine an identified risk — and then adopt best management practices (BMPs) to prevent

180. MINN. STAT. § 103H.005, subd. 13 (Supp. 1989).

181. MINN. STAT. § 103H.101, subds. 1-2 (Supp. 1989).

182. At present, officials estimate that mapping for the entire state will not be complete for at least ten years. In the meantime, the DNR is establishing criteria for designating sensitive areas which will be used in pilot areas. Telephone interview with Jan Falteisek, Project Manager, Minnesota Department of Natural Resources, May 15, 1990.

183. MINN. STAT. § 103H.101, subd. 3(1) (Supp. 1989).

184. *Id.* at subd. 3(2).

and minimize groundwater degradation.[185] The Commissioner of Agriculture must develop BMPs for agricultural chemicals and practices, while the Commissioner of the MPCA must do so for all other activities that create a risk of groundwater contamination. In other words, the designation of an area as sensitive will require a state agency to take action to implement the Act's degradation prevention goal.[186]

The Act does provide that BMPs for non-state regulated activities "shall be promoted through education support programs, incentives, and other mechanisms."[187] Presumably this will be left to individual state agencies to implement. There will be a significant need for coordination and for monitoring, perhaps through the Legislative Water Commission, to make sure that this advocacy of BMPs actually occurs.

If a BMP program is not successfully implemented before contamination occurs, a sensitive area could become an area of "common detection"[188] — and the basic statutory scheme of designating HRLs, continued monitoring, and adoption of WRPRs would have to be implemented.[189] This head start given to sensitive areas — protecting them before contamination occurs and costly cleanup measures required — is an important one.

It appears that, in sensitive areas, the Act's degradation prevention goal could be thwarted if plans adopted by soil and water conservation districts are not stringent enough. If groundwater contamination in a sensitive area is caused by a land use that is in accord with the soil and water conservation district plan, the landowner will not be required to clean up the groundwater.[190] Absent a cleanup by the state or the soil and water conservation district, the groundwater would remain

185. MINN. STAT. § 103H.151, subds. 1–2 (Supp. 1989).

186. MINN. STAT. 103H.101, subd. 5 (Supp. 1989). Designation as a sensitive area further requires state agencies which have programs affecting activities that may contribute to groundwater contamination in any sensitive area to develop BMPs consistent with the nondegradation goal. *Id.* at subd. 7.

187. *Id.* at subd. 7.

188. "Common detection" is defined in the Act as "detection of a pollutant that is not due to misuse or unusual or unique circumstances, but is likely to be the result of normal use of a product or a practice." *Id.* at subd. 5.

189. For a more detailed explanation of WRPRs—water resource protection requirements—and the obstacles to their enactment, see *supra* notes 167–69 and accompanying text.

190. MINN. STAT. § 103H.111(a) (Supp. 1989).

contaminated — and may be allowed to degrade further. The Act's scheme regarding sensitive areas is designed simply to prevent degradation in the first instance. It is toothless in the face of degradation occurring because of an approved use of agricultural chemicals.[191] This could become a major problem with the Act, particularly if the plans adopted by the soil and water conservation districts are not protective enough.

E. Wells

The Act contains many provisions designed to protect groundwater from contamination through new, existing, or unsealed abandoned wells and borings.[192]

We simply do not know the location of many wells. To address this problem prospectively, the Act forbids construction of any new well until the Commissioner of Health has been notified and issues a permit.[193] Once constructed, a well must be clearly labelled and a report describing the well must be filed with the Commissioner of Health so that the state can keep an accurate inventory of existing wells.[194]

To aid in the identification of existing wells, the Act requires a landowner to identify in writing, the condition and location of all known wells on the owner's property before she enters into an agreement to convey the property.[195] At closing, the same information must be presented to the purchaser. After October 1, 1990, deeds and other conveyancing instruments may not be recorded unless they contain a statement that there are no known wells on the property or a notation by the county recorder or registrar that a well certificate was received at the time the deed was presented for recording.[196]

The Act also mandates that existing wells must be sealed if

191. As noted earlier, "[a] landowner within a sensitive area, identified under section 103H.101, has a *complete* defense to liability for degradation of groundwater caused by surface water from the sensitive area recharging [the] groundwater" in certain instances. MINN. STAT. § 103H.111(a) (Supp. 1989) (emphasis added). Until sensitive areas are designated, which will probably have to wait until groundwater mapping is completed, or criteria are adopted, responsible parties may not be entitled to this exemption.

192. *See generally* MINN. STAT. §§ 103I.001–103I.715 (Supp. 1989).

193. MINN. STAT. § 103I.205, subd. 1 (Supp. 1989).

194. *Id.* at subds. 7, 9.

195. MINN. STAT. § 103I.235, subd. 1(a) (Supp. 1989).

196. *Id.* at subd. 1(d). This reflects the 1990 amendments to the Act. *See* 1990 Minn. Laws, ch. 597, sec. 35.

they are contaminated, sealed improperly, or otherwise located, constructed, or maintained in a manner that creates a risk of contamination.[197] The Act establishes limited financial assistance programs to help property owners seal existing wells.[198]

The well provisions of the Act present a unique set of challenges. It is estimated that there are between 300,000 and 2,000,000 unsealed, abandoned wells in Minnesota.[199] Obviously not all of them can be sealed, nor would it be cost effective to do so. An inter-agency committee is needed to undertake the daunting task of ranking the wells in the state so that wells which pose the greatest threat to groundwater contamination are sealed. More importantly, will adequate funding be available over the next five to ten years to support this program?

Wells which supply "once through" cooling systems[200] were addressed in the 1990 amendments to the Act. Unless there are no feasible and prudent alternatives and a water conservation permit is incorporated, the DNR may not issue any new permits to use water from the Mt. Simon-Hinckley aquifer for such systems, and it must terminate all once through cooling system permits from this aquifer in the seven county metropolitan areas by December 31, 1992.[201] In any event, all once through cooling systems permits allowing withdrawals in excess of 5 million gallons annually must be terminated by the year 2010, and all systems must convert to water-efficient alternatives during the life of the system.[202]

One of the most important features of the Act is the provision that a person may not place or install a potential source of contamination any closer to a well than the distance prescribed by rule by the Commissioner of Health unless a variance has been granted.[203] Prior to this provision, the MDH could only

197. MINN. STAT. § 103I.301, subd. 1 (Supp. 1989).
198. *Id.* § 103I.331, subd. 1 (Supp. 1989).
199. MINNESOTA GROUNDWATER STRATEGY, *supra* note 2, at 17.
200. *See supra* note 26.
201. 1990 Minn. Laws, ch. 597, sec. 63.
202. 1990 Minn. Laws, ch. 597, sec. 64.
203. MINN. STAT. § 103I.205, subd. 6 (Supp. 1989). The United States has been slow to understand the connection between land use in aquifer recharge areas and contamination in wells. For instance, in St. Louis Park, a suburb of Minneapolis, a company was allowed to conduct pole treating operations using creosote, a highly toxic chemical, within one-quarter to one-half mile of the city well. As a result of this

regulate the location of wells.

The challenge in implementing the new authority will be to define the types of protection necessary in different geologic wellhead settings. Control of contamination sources must reflect aquifer vulnerability. In sensitive areas, sources of contamination should be significantly restricted if not forbidden; in non-sensitive areas, contamination sources may be subject to less restrictive wellhead protection controls. Apparently, the hope is that the MDH and local governments will work together to set up this program in a few model areas surrounding public water supply sources. At present, the MDH intends to implement statewide wellhead protection rules in 1992.

F. Agricultural Features

The agricultural sections of the Act address significant and difficult point and nonpoint source pollution issues. Nonpoint issues such as pesticides that leach into groundwater (and runoff that leaches into surface water) are addressed by the Act's requirement that the MDA develop a pesticide management plan. The plan should incorporate the BMP, monitoring and common detection components previously discussed (and possibly WRPRs and additional regulatory controls).[204]

The inclusion of fertilizer in the agricultural chemical definition[205] requires that the state implement a similar strategy for nitrogen fertilizer which, among other sources, contributes to nitrate contamination of groundwater. Because of the complexity of this problem, the Act created a Nitrogen Fertilizer Task Force to report to the Commissioner of Agriculture on nitrogen fertilizer BMPs, nitrogen fertilizer management plans, and regulations.[206] The Commissioner will report on the Task Force's recommendations to the Environmental Quality Board by July 1, 1990.[207]

A variety of information and education programs are also established to promote implementation of measures that protect

proximity and well construction methods, the city water supply was severely contaminated and alternative sources of water had to be found. The Illinois Groundwater Protection Act, however, does contain wellhead protection provisions. *See supra* notes 100–01 and accompanying text.

204. MINN. STAT. § 18B.045 (Supp. 1989).

205. MINN. STAT. § 103H.005, subd. 2 (Supp. 1989).

206. 1989 Minn. Laws, ch. 326, art. 6, sec. 33, subd. 2(a).

207. *Id.* at subd. 2(c).

water resources. The Act requires that the Commissioner of Agriculture develop new and innovative training programs to augment those currently in place.[208] It also requires that the MDA develop information and demonstration programs to promote "sustainable agriculture."[209]

Another agricultural problem area addressed by the Act is waste pesticides and containers. The Act establishes a Waste Pesticide Cleanup program at the MDA to collect and remove this material from the waste stream.[210] In addition, a pesticide container collection pilot project is to be conducted by the MDA to evaluate the feasibility of removing used pesticide containers from the waste stream.[211]

The Act also creates an Agricultural Chemical Response and Reimbursement Account (ACRRA) to reimburse private parties for the cost of cleaning up agricultural chemical incidents.[212] To maintain the fund, the Act imposes surcharges on pesticide registrants, fertilizer tonnage and certain MDA licenses.[213]

Finally, the 1990 amendments to the Act give the Commissioner of Agriculture equal access to the state Superfund for releases of pesticides and fertilizers.[214] This means that if there is a release of an agricultural chemical, the MDA has additional authority — like that of the MPCA's — to order the responsible party to remediate the contamination. If the spill was properly reported, the responsible party may be able to recover against the ACCRA fund. If the responsible party refuses to cooperate and clean up the spill, the MDA may order cleanup or perform the cleanup itself using state Superfund or ACRRA monies, as appropriate.

208. MINN. STAT. § 17.114, subd. 3 (Supp. 1989); *see* MINN. STAT. § 103H.101, subd. 7 (Supp. 1989).

209. MINN. STAT. § 17.114, subd. 2(a) (Supp. 1989). "Sustainable agriculture" is defined as "integrated, self-reliant, resource conserving practices that enhance the enrichment of the environment and provide short- and long-term productive and economical agriculture." *Id.*

210. MINN. STAT. § 18B.065, subds. 1, 4 (Supp. 1989).

211. MINN. STAT. § 18B.065 (Supp. 1989).

212. MINN. STAT. § 18E.03, subds. 1–2 (Supp. 1989). The fund will reimburse a land owner for 90% of cleanup costs in excess of $1,000, but less than $100,000, and 100% of cleanup costs in excess of $100,000, but less than $200,000. *Id.* at subd. 4(1)–(2).

213. *Id.* § 18E.04, subd. 1(2).

214. MINN. STAT. § 115B.20, subd. 1(b) (Supp. 1989).

Although there is a salutary tenor to the various agricultural features in the Act and the 1990 amendments, the Act still does not face head on the issue of whether intensive pesticide use should simply be curtailed, at least in sensitive areas.

CONCLUSION

In the late 1980s, administrators at all levels of government have come to realize the critical nature of groundwater reserves, and the harm caused by their uncontrolled contamination and depletion. Some states, including a number of Minnesota's neighbors, have passed acts which aim, in the first instance, at the study and quantification of groundwater contamination problems. Typically, these acts also call for varying degrees of prophylactic measures, though treading lightly on contamination caused by the application of pesticides and fertilizers. The disparate focus of the various state groundwater protection acts points up the need for comprehensive federal legislation, which ideally would standardize the more essential aspects of groundwater regulation. But, for now, powerful interest groups have been able to stall the passage of significant new federal legislation.

It is against this backdrop that one must view the Minnesota Groundwater Protection Act of 1989 and its 1990 amendments. Because of the economic and technical problems associated with groundwater cleanup, the Act is prevention oriented. While the Act's goal is to prevent any further degradation of groundwater, it may be that, in practice, it will virtually legitimize further degradation up to an objective standard of contamination, such as the "health risk limits" to be devised by the Commissioner of Health. In addition, the limitations of liability contained in the Act may actually encourage further groundwater degradation, even in identified "sensitive areas." Finally, while the Act's treatment of agriculturally caused groundwater contamination is a laudable first effort, it only begins to address the root issue whether intensive pesticide and fertilizer use is, in the long run, a socially beneficial agricultural strategy.

The Minnesota legislature and the various state agencies contributing to the Act are to be commended. This first effort at groundwater protection is as comprehensive and forward looking as legislation in any other state. The Act also covers

much of the ground that the languishing federal proposals would have covered. But, the Act can be improved over the upcoming decade and, frankly, it must be if the federal proposals remain mired in legislative sinkholes.