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GROUNDWATER LAW IN THE GREAT LAKES STATES: A LAWYER'S CATALOG FOR THE BENEFIT OF WATER PLANNERS*

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I. INTRODUCTION

Water is a precious resource. Nineteenth century cases that feature water use disputes provide a legal chronicle of America's westward expansion and the importance of water in the arid West. For example, in *Power v. People*,¹ the defendant in a murder prosecution claimed justification when the decedent had interfered with the murderer's water supply. The Colorado Supreme Court found that the key issue was whether the homicide was "justifiable or unlawful. . . ." Upholding the conviction, the court noted that, "[h]uman blood is more precious than water, even in this thirsty land."²

The Great Lakes region, of course, is not the thirsty land of the arid American West, but the reflexively intoned axiom remains the same: water is a precious resource. And while the importance of water rights to their holder has probably never been suggested as justification for homicide in the Great Lakes region, there are numerous indicia that water rights are of single importance in this region. Of primary concern are the various laws that govern the allocation and use of water. Virtually every Great Lakes state has its own rich history of judicially resolved water disputes. These disputes have occasioned the generation of a common law of waters and water rights which are often supplemented by statutes. Not only is this true for surface waters, it is also true for groundwater. It is the groundwater resource that this article addresses.

* This article is adapted from a speech delivered to the Annual Meeting of the Great Lakes Commission on May 12, 1992. The introductory section above was added for publication.

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1. 28 P. 1121 (1892).

2. *Id.* at 1124.

II. THE FRAMEWORK: THE RELATIONSHIP OF WATER LAW TO WATER USE

The common law of water rights constitutes a prescription for water use planning. The law created private entitlements regarding the use and benefit derived from water and, in conjunction with economic and developmental conditions of the time, spawned generally predictable patterns of water use. For purposes of illustration, consider the following analogy to tax law as a prescription for economic improvement: The tax code is a major instrument of fiscal policy and as such, changes in the law alter patterns of economic behavior. By the same token, any given water code, whether common law or statutory, is a major instrument of developmental policy. Here too, changes in water law effect changes in water use.

This line of analysis, whereby behavior is shaped by (or at least significantly shaped by) law, has some useful consequences. First and foremost, the law/planning linkage suggests that law can be used to improve outcomes. To whatever extent the current patterns of water use are suboptimal, changes in law should be able to induce increases in water use efficiency.³ Second, and of more immediate relevance, there is a predictive capacity to the law/behavior nexus. By analyzing the law and the expected water utilization responses, conflicts over water use can be foreseen and avoided. Alternatively, to the extent that steps are not taken to avoid predicted conflicts, the occurrence of these conflicts demonstrates the existence of an instrumental relationship.

More specifically, if the governing groundwater law relies on a rule of capture to create a legal entitlement, as did the traditional common law of most Great Lakes states,⁴ the advent of low-cost, high-capacity pump technology foreshadows an era of water supply crisis for the traditional groundwater users of the region. Both the terms and the logic of this prediction require some explication.

3. In approaching this issue, the needs and desires of the entrepreneurial class in regard to water use have been stressed as the driving force behind changes in water law. See Morton Horwitz, *The Transformation in the Conception of Property in American Law, 1780-1860*, 40 U. CHI. L. REV. 248 (1973). Courts and legislatures have recognized the social benefits of improved water utilization and have modified the law accordingly. This is sometimes termed an instrumentalist thesis: water law is deliberately modified as an instrument of economic policy. See, e.g. Robert H. Abrams, *Charting the Course of Riparianism: An Instrumentalist Theory of Change*, 35 WAYNE L. REV. 1381 (1989).

4. Today, groundwater law of the majority of the Great Lakes states is better described as based on a sharing rule. See *infra* Appendix A.

A. The Rule of Capture

First of all, a "rule of capture" describes a legal regime in which property rights are recognized only after the "fugitive" resource is captured. An obvious example of the rule of capture can be seen in regards to the hunting of wild animals. The animals become the property of the hunter only after capture. In the groundwater area, a rule of capture treats the water in the ground as unowned until someone "captures" it by pumping the water to the surface where it can be put to use.

Applying a rule of capture to groundwater has two important consequences. First, a capture rule creates incentives to pump. The benefits that accrue to the pumper from the water's use are realized only upon capture and can be lost if someone else pumps or captures the water first. Second, a capture rule insulates the pumper from potential liability for damage done to others who might have sought to make use of that same water. The rule applies even if the captured water is drained from beneath a neighbor's land. The water does not legally belong to the neighbor because he or she did not capture the water, which leaves them without a legally cognizable injury to their property.

Turning to the behavioral and predictive side, contextual facts become important. During the pre-World War II era, high capacity pumps were very expensive and beyond the economic reach of all but the most highly capitalized water-using entities. Stated affirmatively, only cities and industries were likely to have the economic ability to use high capacity wells. Moreover, given the importance of water-based transit in the patterns of regional settlement, most major cities and industries in the Great Lakes region were located adjacent to major surface waterways and, therefore, were unlikely to be dependent on groundwater.

A contrasting pattern was seen in the humid East along the Atlantic seaboard where the upstream reach of tidal saltwater rendered local surface waterways unsuitable as supply sources. Seaboard cities turned to groundwater far earlier than any of their Great Lakes counterparts. Not surprisingly, there are a number of late 19th century cases involving suits against rural well field operations of major seaboard cities brought by the local groundwater users whose wells were failing in competition with the high capacity wells of the cities. Under an unadorned rule of capture, the locals lost to the cities.

To the extent that this result was politically unpalatable, inequitable, based on the cost bear cities, courts and legislatures adopted different legal rules. Plainly, water use by the cities was more important and therefore, the adaptive pattern was, in effect, to create a liability rule. The cities were allowed the water, but they were required to compensate

for the dislocations and losses that they caused. Most often this was done by creating a legal barrier to the transportation of water away from its place of capture, while clothing the cities with the power of extra-territorial condemnation to secure a necessary water supply.

In the humid Great Lakes region, most of the dispersed low-value, high-volume water uses were primarily related to agriculture and livestock and were likely to rely on rainfall and surface water sources to meet their water needs. This resulted in very little high-volume pumping. Prior to 1950, almost all groundwater used in the Great Lakes region was for dispersed domestic use occurring beyond the service areas of the urban and suburban water supply networks. In hydrogeological terms, domestic wells seldom had a significant cone of depression.⁵ This meant that most groundwater users posed little threat of interference with neighboring wells. In that context, there was little likelihood of user conflicts, and therefore, a rule of capture carried no risk of significant adverse consequences.

Viewed prospectively, it is plausible that a relative decrease in the cost of high-volume pumping could have a disruptive effect on a state that has maintained a rule of capture as its groundwater law. The incorporation of new technology could create the potential for new high capacity wells which would cause a spate of well interference cases in areas where the cone of depression from high capacity wells would draw the water table below the bottom holes of neighboring wells, thereby causing well failures.⁶ This situation has already occurred, particularly in areas where farming entities have begun to irrigate with groundwater drawn from high capacity wells.⁷

Returning to the manager's role, the issues raised by the foregoing analysis are twofold. First, in areas of the Great Lakes region where groundwater use conflicts have become acute and the common law rule

5. A "cone of depression" describes the pattern resulting from a lowering of the water table as water is pumped from a well. The shape is generally conical, centered at the bottom hole of the well. The steepness of the sides of the depression is determined by factors that include the permeability of the aquifer and the rate at which water is withdrawn. Pamela K. Smith, *Coercion and Groundwater Management: Three Core Studies and a "Market" Approach*, 16 ENVTL. L. 797, 804 (1983).

6. Well interference is distinguishable from overdraft of the aquifer. In the former case, the problem is localized and the aggregate of the total drafts on the aquifer are not in excess of recharge. In the latter case, withdrawals aquifer-wide are in excess of recharge and the water table beneath the entire aquifer is falling, causing failures of shallow wells wherever they are located and increasing pump lifts for all users. See generally, JOSEPH L. SAX, ET AL., *LEGAL CONTROL OF WATER RESOURCES*, 392-428 (2d ed. 1991).

7. See, e.g., *Prohosky v. Prudential Ins. Co.*, 584 F. Supp. 1337 (N.D. Ind. 1984), *rev'd on other grounds*, 767 F.2d 387 (7th Cir. 1985).

of capture is no longer providing socially desirable results, changes in law must be considered and, hopefully, implemented. Second, in areas of the Great Lakes region where groundwater use conflicts have not yet been manifested, an adequate inventory of groundwater resources and demands for use must be compiled. Planning such as this would allow predictions of trouble areas and the development of proactive legal changes to preterminate unnecessary user conflict.⁸

III. A LAWYER'S VIEW OF GROUNDWATER LAW

A lawyer's description of Great Lakes region groundwater law begins with a summary of the common law rules applied in American courts. Based on the legal principle of precedent, these rules have evolved over a long period of time. Precedent develops as courts review similar cases decided in the past, discern the reasoning behind those decisions, distill the general principles, and then apply those principles to decide new cases that arise within an environment that may have changed due to social and technological advancements.

The common law governing groundwater in the United States has three basic models from which quite divergent lines of common law have grown. One line of common law cases views groundwater as a fugitive resource, similar to wild animals, that is transformed into private property by the act of capture. A second line of common law cases treats groundwater as a common pool resource, somewhat like surface water in riparian jurisdictions, where all of the overlying owners have a shared interest and user rights in the groundwater resource. The third doctrinal strand, the only one not represented in the Great Lakes region, treats water like a flow resource, analogous to the annual flow of a stream in the arid West, and assigns rights to those who capture. This model allows resolution of conflicts among competing users according to the temporal priority in the initiation of use. When a shortage occurs, the later initiated users are totally halted to allow the more "senior in time" users their full historic use of the water.

The groundwater rules that are applied in the Great Lakes basin vary from state to state, however rules of shared control are applied in a majority of the states.⁹ More specifically, a rule of sharing means that the law creates an entitlement that courts will protect in favor of allowing concurrent uses of an aquifer's water to be made by all

8. I am operating on an implicit premise that the vast majority of predicted regional groundwater problems will be of the well interference variety and not of the aquifer-wide overdraft variety. This assertion has a strong basis in fact. See Abrams, *supra* note 3, at 1423, 1427.

9. See *Infra* Appendix A.

overlying owners. If there is a conflict, such as where there is not enough water to fulfill all of the uses in question, then any or all of the uses will be adjusted in order to continue the legitimate uses of as many of the overlying owners as possible while bringing total use into line.

In marked contrast, a capture rule, rather than leading to sharing, simply inquires whether the use of the physically superior user (the stronger pump and/or deeper well) is a proper one, and, if so, leaves the injured party without a remedy. However, both of these rules are subject to change by statute.

IV. A PLANNER'S VIEW OF THE COMMON LAW OF GROUNDWATER IN GREAT LAKES STATES

Even a cursory analysis of common law doctrine indicates that the common law is unresponsive to the planner's needs. The common law is reactive, not proactive. Common law decisions, especially those that are generated by applying rules of sharing, are unpredictable and the litigation involved in obtaining a ruling is often both expensive and fraught with delay.

V. A SIMPLIFIED VIEW OF PLANNING AND THE LAW'S RESPONSIVENESS

In an effort to encapsulate a complex process, resource management can be described as having three essential stages: obtaining a catalog of the resources that are subject to management; identifying the problems that are occurring and likely to occur; and planning for future patterns of resource use that will minimize the problems and maximize the benefits obtained from the resource under review.

The Great Lakes region uses groundwater in a variety of ways. The bulk of regional uses are devoted to four major categories: domestic, irrigation, mining, and support of surface flows. The groundwater resources of the region are generally adequate to meet those and other needs. At the present time, groundwater use conflicts and problems are limited to a fairly small number of well interference disputes, acknowledged areas of subregional overdraft, and pollution.

Looking ahead at possible regional scenarios and the groundwater issues and problems that they will bring, I anticipate greater use of groundwater for irrigation, resulting in more well interference due to an increased use of high capacity wells. I anticipate that continued population growth in areas adjacent to the metropolitan regions will result in greater reliance on drinking water wells, creating increased concerns for groundwater quality in areas that are in transition from

agriculture to residential classifications. To the extent that a decline in urbanization is taking place near Chicago and Milwaukee, in the overdraft areas just west and south of Lake Michigan, the strain on aquifers will increase. Aquifer storage and recovery (ASR), will become attractive in overdraft areas, especially in light of the substantial sources of surface water available in the region which could be added to the groundwater supply by augmenting natural recharge.

VI. THE INADEQUATE RESPONSE OF CURRENT LAW TO REGIONAL GROUNDWATER PROBLEMS

The common law, especially under capture based regimes, provides virtually no protection against the identified problems of well interference, overdraft, and pollution. The law isolates the challenged uses and determines the proper use. The test of propriety is a narrow one, demanding that the use be beneficial and not merely intended to injure. More substantially, under the common law reasonable use rule,¹⁰ as opposed to the absolute ownership rule, the situs of privileged use is limited to the overlying tract.

Minimal reflection is needed to conclude that capture rules do not manage the resource in the planner's sense of that term. No account is taken of the comparative importance of the uses involved, and the outcomes follow a winner-take-all proposition that seldom will maximize total benefits.

As a matter of doctrine, sharing regimes are more conducive to comparative inquiries. The *Restatement (Second) of Torts*, for example, expressly calls upon the decision maker to consider, among other things, the nature and value of the competing uses, seeking a physical accommodation of the uses when possible, protecting established economies, and considering the respective loss bearing ability of the parties to the dispute.

Even under sharing regimes, however, decisions placing limits on destructive uses are found primarily in cases that protect established domestic users, such as irrigators or municipalities, whose wells fail in competition with a high-volume user. Reported decisions involving aquifer-wide overdraft are rare and the leading cases seem to adopt across-the-board, pro rata reductions for all users as the means of restricting usage to the amount of dependable annual recharge. In the eyes of these courts, the law is following the traditional maxim that

10. The term "reasonable use" is applied in almost all of the Great Lakes states as a part of their groundwater law, however, each state has its own jurisprudence that gives meaning to the term.

"equality is equity." In fact, the legal doctrine that is applied to such cases is capable of far more sophisticated allocations, but courts, in the absence of clear policy guidance from legislatures, have not shown themselves to be enamored with becoming de facto water allocation agencies.

As to pollution, it seems fair to analogize groundwater pollution to surface water pollution. Great strides have been made in regulating point source pollution.¹¹ In contrast, non-point source pollution, particularly the infiltration of agri-chemicals, is still virtually unregulated.

VII. CAN THE LAW BE MADE TO SERVE?

In a perfect world, the law could anticipate future problems and serve as a vehicle by which groundwater could be managed in ways that would benefit the Great Lakes region. While present groundwater laws are not extremely farsighted, they are not immutable. The common law could evolve in ways that are better adapted to resolve the identified problems. However, legislatures have largely unfettered authority to revise the common law and, therefore, can have a more immediate and direct impact on groundwater laws. Assuming that legislatures can agree to the policy, the groundwater law of the region can be rewritten to fit managerial prerogatives, rather than remaining as a continuation of inherited principles and traditions.

The manner in which the law can be made to serve the needs of regional groundwater management falls into two general categories. The first I call legal process concerns. The thrust of this proposal addresses the form of legal rules regarding matters such as the appropriate administration of the laws. Even more importantly, however, the law must also have substantive provisions that effectuate the chosen management policies. Listed below are a few brief examples of the principal areas that have been isolated as likely regional problems and suggestions as to ways in which the law can be modified.

1. Well Interference Provisions: Regulation can be targeted toward the aquifers that are the most likely candidates for conflict based on their hydrogeologic characteristics. The legal rules can be designed to minimize conflicts and allocate the costs of conflict mediation. For example, the law can choose a liability rule that requires high capacity users to pay

11. See, e.g., Resource Conservation and Recovery Act (RCRA), 42 U.S.C. §§6901 - 6991 (1988); Comprehensive Environmental Response (CERCLA), 42 U.S.C. §§9601-9657 (1988).

for the costs of improving or replacing the wells of small volume users. To create an incentive to encourage small volume users to dig adequately deep wells, the liability rule can be limited to protecting only "qualifying" wells, i.e., wells that meet state established or mandated standards for depth and construction. Indiana has already established this system of protection for qualifying wells against high capacity well users.¹²

2. Reduction of Overdraft: Rather than apply a reactive common law legal regime, utilization of a permit system linked to critical management areas would be a more effective approach. The permits could seek to reduce overdraft by requiring post-pumping technology-based water conservation requirements. If this approach fails to conserve enough water to reduce total use to safe annual yields, the system could be supplemented by withdrawal fees that could be used to fund ASR projects that increase effective supply. Not only will ASR techniques overcome the water deficit, the fee system imposed in this manner could add further conservation incentives while still protecting low volume users from excessive economic burdens.
3. Contamination: Land use controls *vis-a-vis* the citing of likely pollution sources, which are currently only intermittently applied, should become universal. Farming entities should be subjected to agricultural water conservation requirements that reduce leaching. In addition, local pesticide application regulations should be imposed to protect drinking water aquifers.¹³

VIII. CONCLUSION

Over the years, groundwater law in the Great Lakes region has received little attention. Historically, the comparatively high cost of extracting large volumes of groundwater and the relative abundance of surface water and rainfall have limited the need for more highly articulated groundwater laws. Given the diverse patterns of water use and rapidly developing technological changes, a new era has developed

12. See IND. CODE ANN. §13-7-26-6 (Burns 1992).

13. Such regulation can be undertaken at the state and local level. See, *Wisconsin Public Intervenor v. Mortier*, 111 S.Ct 2476 (1991) (ruling that the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) does not preempt local governmental regulation of pesticide use).

in which groundwater will become a key component in regional water supply. Groundwater will also be deemed a precious resource; a resource which the law must cultivate in order to support the vital needs of society.

APPENDIX A

A Brief Catalog of Great Lakes States and
their Governing Common Law Regarding Groundwater¹⁴

- | | |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Illinois | Statutory adoption of something akin to reasonable use riparianism, ¹⁵ therefore most like correlative rights. |
| 2. Indiana | Modified absolute ownership, ¹⁶ with a statutory overlay to protect qualified wells against well interference. ¹⁷ |
| 3. Michigan | Restatement of Torts reasonable use approach ¹⁸ |
| 4. Minnesota | Absolute ownership that gave way to correlative rights that was subsequently supplanted by statutory administrative permit system. ¹⁹ |
| 5. New York | At least partial adoption of correlative rights. ²⁰ |
| 6. Ohio | Restatement of Torts reasonable use approach. ²¹ |
| 7. Pennsylvania | Common law reasonable use approach. ²² |
| 8. Wisconsin | Version of the Restatement of Torts reasonable use approach that tends toward correlative rights. ²³ |

14. See generally Earl F. Murphy, *Quantitative Groundwater Law* in 3 WATERS AND WATER RIGHTS (Robert E. Beck, ed., 1991); 6 WATERS AND WATER RIGHTS (Robert E. Beck, ed., 1991).

15. See ILL. REV. STAT. ch. 5, para. 1601 (1989).

16. See *Wiggins v. Brazil Coal & Clay Corp.*, 452 N.E.2d 958 (Ind. 1983); but see, *Prohosky v. Prudential Ins. Co.*, 767 F.2d 387 (7th Cir. 1985).

17. IND. CODE § 13-2-2-5 (Burns 1990).

18. See *Maerz v. U. S. Steel Corp.*, 323 N.W.2d 524 (Mich. 1982).

19. See MINN. STAT. ANN. § 105.41 (West 1987).

20. See *Forbell v. City of New York*, 58 N.E. 644 (N.Y. 1900).

21. See OHIO REV. CODE ANN. §1521.17(B) (Pages 1991); *Cline v. American Aggregates Corp.*, 474 N.E.2d 324 (Ohio 1984).

22. See *Ratherauff v. Sinking Spring Water Co.*, 14 A.2d 87 (Pa. 1940); but, see e.g., *Burr v. Adam Eidemiller, Inc.*, 126 A.2d 403 (Pa. 1956).

23. See *State v. Michels Pipeline Const., Inc.*, 217 N.W.2d 339 (Wis. 1974).