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# WATER RIGHTS LEGISLATION IN THE EAST: A PROGRAM FOR REFORM

RICHARD AUSNESS\*

## INTRODUCTION

Expanding municipal and industrial demand, along with increasing use of supplemental irrigation,<sup>1</sup> have escalated consumptive water use dramatically in the Eastern United States since World War II.<sup>2</sup> This escalated use already has caused water shortages in some parts of the East, and experts predict more widespread water supply problems in the future.<sup>3</sup>

As the inadequacies of the common law water rights system in a water-scarce environment have become evident, many eastern states have supplemented or replaced common law rules with some form of statutory water allocation system. Typically, these statutes establish a permit system administered by a state water resources agency. These permit systems generally have worked well, but many of them have serious weaknesses. For example, water resources planning frequently is not coordinated with administration of the permit system. Additionally, most individual permits are of relatively short duration, have no renewal guarantee, and leave permit holders' rights uncertain during periods of water shortage. Uncertainty for long-term planning and for water shortage periods

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1. Irrigation is a highly consumptive use; more than two-thirds of the water applied to crops generally is lost through evaporation or transpiration. In contrast, about 90% of the water diverted for industrial or municipal purposes ultimately returns to the watercourse. Marquis, Freeman & Heath, *The Movement for New Water Rights Law in the Tennessee Valley States*, 23 TENN. L. REV. 797, 800 (1955).

2. See generally F. MOSS, *THE WATER CRISIS* (1967); J. WRIGHT, *THE COMING WATER FAMINE* (1966); Maloney & Ausness, *Administering State Water Resources: The Need for Long-Range Planning*, 73 W. VA. L. REV. 209, 209-11 (1971).

3. According to one estimate, by the end of this century, only three of the 18 federally designated water regions in the continental United States will be able to live comfortably with their water supplies. *Is U.S. Running Out of Water?*, U.S. NEWS & WORLD REP., July 18, 1977, at 33.

undermines confidence in the statutory allocation system, thereby discouraging capital investment. Finally, most statutes have no explicit mechanism for reallocating water from less productive to more productive uses.

This Article will examine permit systems in the East and propose a number of improvements. Following a brief analysis of the common law doctrines that govern surface water and ground water allocation in the East, the Article describes the salient features of the permit systems that exist in fourteen eastern states. Finally, the Article discusses the principal deficiencies of these permit systems and suggests a number of legislative responses.

## COMMON LAW WATER RIGHTS

### *Surface Water*

In America, one of two major allocation systems—riparianism or prior appropriation—governs rights to surface waters. The riparian system generally is found in the East, while the prior appropriation system prevails in the West.<sup>4</sup>

Under the riparian system, rights to use water arise from ownership of land bordering natural watercourses such as lakes or streams.<sup>5</sup> Two doctrines govern consumptive rights to water under

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4. Under the "Colorado doctrine" riparian rights are not recognized in the western states, including Alaska, Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming. WATERS AND WATER RIGHTS § 401.1 (R. Clark ed. 1972). Under the "California doctrine," riparian rights may co-exist with appropriative water rights. States following this doctrine include California, Kansas, Nebraska, North Dakota, Oklahoma, Oregon, South Dakota, Texas, and Washington. *Id.* Because riparian and appropriative systems are not particularly compatible, most "California doctrine" states place limitations on the exercise of riparian rights. Trelease, *Coordination of Riparian and Appropriative Rights to the Use of Water*, 33 TEX. L. REV. 24, 24-25 (1954).

5. Because surface water may be used only on riparian land, the courts have developed several tests to determine whether a particular tract is riparian. Perhaps the most restrictive test is the "source of title" test under which riparian rights are limited to the smallest parcel held under one title in a chain of title leading to the present owner. *Rancho Santa Margarita v. Vail*, 11 Cal. 2d 501, 529, 81 P.2d 533, 547 (1938); L. KINNEY, *THE LAW OF IRRIGATION AND WATER RIGHTS* 789 (2d ed. 1912). The size of a riparian tract cannot be increased by the purchase of contiguous nonriparian land. *Title Ins. & Trust Co. v. Miller & Lux, Inc.* 183 Cal. 71, 82, 190 P. 433, 437 (1920); 5 R. POWELL, *THE LAW OF REAL PROPERTY* ¶ 714 (1981). If the back portion of a riparian tract is sold, it loses its riparian character. *Anaheim Union Water Co. v. Fuller*, 150 Cal. 327, 331, 88 P. 978, 980 (1907). Moreover, the subsequent reuniting of a severed tract with the abutting tract will not reestablish its riparian status.

the riparian system: the natural flow doctrine and the reasonable use rule. The natural flow doctrine entitles each proprietor on a watercourse to have the stream flow through his land in its natural condition, not perceptibly retarded, diminished or polluted by others.<sup>6</sup>

The reasonable use rule is the majority rule and allows each riparian landowner to use water for any beneficial purpose if the use is reasonable with respect to other riparians' needs and does not interfere unreasonably with their legitimate water uses.<sup>7</sup> Reasonableness is a question of fact to be resolved on a case-by-case basis.

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Yearsley v. Cater, 270 P. 804, 805 (Wash. 1928). Thus, the "source of title" rule provides that a riparian tract may be decreased, but never increased. Waite, *Beneficial Use of Water in a Riparian Jurisdiction*, 1969 Wis. L. Rev. 864, 872.

The more inclusive "unity of title" rule provides that any tracts contiguous to the abutting tract are riparian if held in common ownership, regardless of when acquired. Levi & Schneeberger, *The Chain and Unity of Title Theories for Delineating Riparian Land: Economic Analysis as an Alternative to Case Precedent*, 21 BUFFALO L. REV. 439, 442 (1972). This approach permits a landowner to increase the size of a riparian parcel by purchasing contiguous land even though the added land previously has been nonriparian. Given the trend toward larger farms and landholdings in America, application of the "unity of title" theory will result in a continually expanding quantity of riparian land.

The concept of riparian land is further restricted in some states by the watershed limitation. That limitation provides that any part of a tract of land that lies outside the watershed of a body of water is not riparian to it even though the tract itself borders on a natural watercourse and is otherwise riparian. Johnson & Knippa, *Transbasin Diversion of Water*, 43 TEX. L. REV. 1035, 1036 (1965). The watershed limitation is based on the theory that land beyond the watershed is outside the boundaries established by nature for riparian ownership, whereas water used on land within the watershed eventually will return to the parent body of water. Note, *Limitation on Diversion From the Watershed: Riparian Roadblock to Beneficial Use*, 23 S.C.L. REV. 43 (1971).

6. Hanks, *The Law of Water in New Jersey*, 22 RUTGERS L. REV. 621, 628-29 (1968). The natural flow doctrine, however, allows a riparian proprietor to use as much water as he needs for domestic or natural uses even though he depletes the entire streamflow. Spence v. McDonough, 77 Iowa 460, 42 N.W. 371 (1889); City of Canton v. Shock, 66 Ohio St. 19, 63 N.E. 600 (1902); Beuscher, *Appropriation Water Law Elements in Riparian Doctrine States*, 10 BUFFALO L. REV. 448, 452 (1961). Riparian landowners also may divert water for other uses if no material interference with the natural flow of the watercourse results. A nondomestic use which noticeably affects the natural condition of the stream, however, may be enjoined by a downstream owner even though he is not using the stream and suffers no actual damages. Harvey Realty Co. v. Borough of Wallingford, 111 Conn. 352, 150 A. 60 (1930); Robertson v. Arnold, 182 Ga. 664, 186 S.E. 806 (1936); Roberts v. Martin, 72 W. Va. 92, 77 S.E. 535 (1913). See also Comment, *The Development of Riparian Law in Alabama*, 12 ALA. L. REV. 155, 158 (1959).

7. Ausness, *Water Use Permits in a Riparian State: Problems and Proposals*, 66 Ky. L.J. 191, 199-200 (1977).

Various factors determine reasonableness, including climate, customs and usages, velocity and capacity of the watercourse, nature and extent of improvements on the watercourse, amount of water taken, previous uses, social importance of the use, and rights and reasonable needs of other riparians.<sup>8</sup>

The reasonableness of a particular use also must be determined by present conditions and not by speculation concerning future circumstances.<sup>9</sup> Hence, in the absence of activity by other riparians, a single riparian owner may use all of the water in a stream.<sup>10</sup> He does not, however, thereby gain a continuing right to the full flow of the stream, because upstream owners may commence reasonable uses in the future.<sup>11</sup> Thus, a use which is reasonable under existing circumstances may subsequently become unreasonable when others begin to use the watercourse.<sup>12</sup>

### *Ground Water*

The common law classifies subsurface waters as either underground streams or percolating waters, and different rules apply to each category.<sup>13</sup> Underground streams flow in well-defined channels below the earth's surface, generally have ascertainable banks and courses,<sup>14</sup> and are subject to the same rules that govern surface watercourses.<sup>15</sup> Percolating waters seep or filter through the soil

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8. *E.g.*, *Gehlen Bros. v. Knorr*, 101 Iowa 700, 705, 70 N.W. 757, 758-59 (1897); *Stratton v. Mt. Hermon Boys' School*, 216 Mass. 152, 154, 103 N.E. 87, 88 (1913).

9. *Prather v. Hoberg*, 27 Cal. 208, 150 P.2d 405 (1944).

10. *Rancho Santa Margarita v. Vail*, 11 Cal. 2d 501, 555, 81 P.2d 533, 560 (1938).

11. *Harnsberger, Prescriptive Water Rights in Wisconsin*, 1961 Wis. L. Rev. 47, 60.

12. *Lauer, Reflections on Riparianism*, 35 Mo. L. Rev. 1, 10 (1970). Both the reasonable use rule and the natural flow doctrine also govern private rights and duties among riparian owners with respect to water quality. See F. MALONEY, S. PLAGER & F. BALDWIN, *WATER LAW AND ADMINISTRATION—THE FLORIDA EXPERIENCE* § 112.1 (1968).

13. *Bull v. Siegrist*, 169 Or. 180, 126 P.2d 832 (1942).

14. *Olson v. City of Wahoo*, 124 Neb. 802, 810, 248 N.W. 304, 307 (1933); 2 S. WEIL, *WATER RIGHTS IN THE WESTERN STATES* § 1077 (3d ed. 1911).

15. *Gagnon v. French Lick Springs Hotel Co.*, 163 Ind. 687, 696, 72 N.E. 849, 851-52 (1904); Note, *Water Law—Ground Water Rights in Missouri—A Need for Clarification*, 37 Mo. L. Rev. 357, 358 (1972); Comment, *The Law of Underground Water: A Half-Century of Huber v. Merkel*, 1953 Wis. L. Rev. 491, 499. Underground streams, however, are relatively uncommon, and one who alleges the existence of an underground stream usually has the burden of proof on that issue. *Ryan v. Quimlan*, 45 Mont. 521, 124, P. 512 (1912). Furthermore, the existence and location of the underground stream must be reasonably ascertainable from the surface without excavation. *Hayes v. Adams*, 109 Or. 51, 218 P. 933 (1923). See

beneath the surface and have no defined channel.<sup>16</sup> Although the use rules of percolating ground water are fragmented and confused, three major approaches in the East are discernable: (1) the English, or absolute ownership doctrine; (2) the American, or reasonable use rule; and (3) the correlative rights doctrine.

According to the English, or absolute ownership rule, a landowner may extract an unlimited quantity of percolating ground water from his land and use it on either overlying or distant lands regardless of injury to adjacent landowners.<sup>17</sup> The rule imposes liability only for waste or malicious injury to another.<sup>18</sup>

The American, or reasonable use rule, allows a landowner to use as much percolating ground water as he needs, regardless of adverse effects on other landowners, if the use is reasonably related to the natural uses of the overlying land.<sup>19</sup> The water use must be beneficial; malicious or wasteful use is considered unreasonable per se and may be enjoined even though the plaintiff has suffered no actual damage.<sup>20</sup> Generally, reasonable uses include most agricultural, domestic, mining, and manufacturing uses.<sup>21</sup>

The absolute ownership doctrine and the reasonable use rule are identical with respect to the landowner's right to use percolating ground water on overlying land, but the rules differ significantly in

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also *Collins v. Chartiers Valley Gas Co.*, 131 Pa. 143, 18 A. 1012 (1890); *Crescent Mining Co. v. Silver King Mining Co.*, 17 Utah 444, 54 P. 244 (1898).

16. *Clinchfield Coal Corp. v. Compton*, 148 Va. 437, 446, 139 S.E. 308, 311 (1927). Percolating waters also include waters with unknown courses that, absent excavation, are not discoverable from surface indications. *Id.*

17. *Stone v. Patten*, 132 Ga. 178, 63 S.E. 897 (1909); *Edwards v. Haeger*, 180 Ill. 99, 54 N.E. 176 (1899).

18. *Roath v. Driscoll*, 20 Conn. 533 (1850); *St. Amand v. Lehman*, 120 Ga. 253, 47 S.E. 949 (1904); *Gagnon v. French Lick Springs Hotel Co.*, 163 Ind. 687, 72 N.E. 849 (1904); *Greenleaf v. Francis*, 35 Mass. (18 Pick.) 117 (1836); *Wheatley v. Baugh*, 25 Pa. 528 (1855); *Rose v. Socony-Vacuum Corp.*, 54 R.I. 411, 173 A. 627 (1934).

19. Harnsberger, Oeltjen & Fischer, *Ground Water: From Windmills to Comprehensive Public Management*, 52 NEB. L. REV. 179, 205 (1973). But see RESTATEMENT (SECOND) OF TORTS § 858 (1979). The differences between the traditional American rule and the Restatement's approach are discussed in Lowe, Ruedisili & Graham, *Beyond Section 858: A Proposed Groundwater Liability and Management System for the Eastern United States*, 8 ECOL. L.Q. 131, 138-47 (1979).

20. 5 R. POWELL, *supra* note 5, ¶ 726; Hanks, *supra* note 6, at 636.

21. *Board of Supervisors v. Mississippi Lumber Co.*, 80 Miss. 535, 31 So. 905 (1902); *Drummond v. White Oak Fuel Co.*, 104 W. Va. 368, 140 S.E. 57 (1927). See also Lugar, *Water Law in West Virginia*, 66 W. VA. L. REV. 191, 214 (1964).

their approach to the extraction and transportation of ground water for use in distant areas. The absolute ownership doctrine permits the owner to transport ground water to distant land without liability, even though the action injures neighboring landowners. According to the reasonable use rule, however, sale or use of water on distant lands is unreasonable and actionable if it impairs the ground water supply of another landowner, even though the water use is beneficial.<sup>22</sup>

The correlative rights doctrine provides that each individual owning land over a common ground water pool has an equal and correlative right to use the water to benefit his overlying land. The doctrine provides that ground water be apportioned equitably among overlying owners in times of shortage and that each owner is entitled to no more than a fair and just proportion of the water.<sup>23</sup> Some writers justifiably view the correlative rights doctrine as an attempt to analogize the law of percolating ground water to the law of surface streams,<sup>24</sup> because both approaches emphasize common rights to water.

### *Inadequacy of Common Law Water Rights*

Ideally, water rights should define clearly the amount of water that may be withdrawn and the relative rights of all users. Unfortunately, riparian rights are vague and uncertain.<sup>25</sup> Under the reasonable use rule, for example, one cannot be certain who may use the available water or how much and for what purpose it may be used.<sup>26</sup> This uncertainty exists because water use must be reasonable relative to uses of other riparian owners, and these other uses constantly change.<sup>27</sup> Additionally, place-of-use restrictions on both

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22. *Schenk v. City of Ann Arbor*, 196 Mich. 75, 163 N.W. 109 (1917); *Erickson v. Crookston Waterworks, Power & Light Co.*, 100 Minn. 481, 111 N.E. 391 (1907); *Rouse v. City of Kinston*, 188 N.C. 1, 123 S.E. 482 (1924); *Canada v. City of Shawnee*, 179 Okla. 53, 64 P.2d 694 (1937).

23. Hanks, *supra* note 6, at 638-39.

24. Kirkwood, *Appropriation of Percolating Water*, 1 STAN. L. REV. 1, 6 (1948); McHendrie, *The Law of Underground Water*, 13 ROCKY MT. L. REV. 1, 6 (1940). But see F. MALONEY, S. PLAGER & F. BALDWIN, *supra* note 12, § 54.2(b)(3).

25. Teass, *Water and Water Courses—Riparian Rights—Diversion of Storm or Flood Waters for Use on Nonriparian Lands*, 18 VA. L. REV. 223, 237-38 (1932).

26. Lauer, *supra* note 12, at 13.

27. Davis, *Australian and American Water Allocation Systems Compared*, 9 B.C. INDUS.

ground water and surface water excessively inhibit water use by nonriparian landowners.<sup>28</sup> Because many beneficial uses consume water some distance from the point of diversion, locational restrictions probably cause inefficient water use.<sup>29</sup>

The common law water rights system has two additional shortcomings. First, it fails to recognize the relationship between surface water and ground water.<sup>30</sup> This relationship makes a uniform allocation rule for all forms of water desirable.<sup>31</sup> The second weakness of the common law system is the absence of an efficient mechanism for resolving disputes among competing water users. Generally, water users must resort to litigation to resolve disputes. Not only are lawsuits time-consuming, expensive, and uncertain in outcome, but the results even of successful litigation often are narrow and limited.<sup>32</sup>

Ground water doctrines have specific inadequacies. Neither the absolute ownership doctrine nor the reasonable use rule protect small users. Moreover, neither doctrine requires water shortages to be borne fairly by all. The correlative rights doctrine is more equitable, but suffers from many of the same weaknesses as the surface water reasonable use rule. The correlative rights doctrine is so indefinite that it is exceedingly difficult to apply to varying conditions.<sup>33</sup> It offers no security to early developers because it does not protect the water supply on which they have relied. Finally, the correlative rights doctrine does not provide for landowners to obtain additional water supplies by purchase or contract.<sup>34</sup>

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& COM. L. REV. 647, 676 (1968).

28. *Id.* at 680-88. See also Farnham, *The Improvement and Modernization of New York Water Law Within the Framework of the Riparian System*, 3 LAND & WATER L. REV. 377, 413 (1968); Marquis, Freeman & Heath, *supra* note 1, at 832.

29. Levi & Schneeberger, *supra* note 5, at 443-47.

30. F. MALONEY, S. PLAGER & F. BALDWIN, *supra* note 12, § 53.1; Piper & Thomas, *Hydrology and Water: What is Their Future Common Ground*, in WATER RESOURCES AND THE LAW 8-14 (1958).

31. Kirkwood, *supra* note 24, at 22.

32. Lauer, *supra* note 12, at 13-14.

33. McHendrie, *supra* note 24, at 6.

34. Note, *Percolating Water Law—Theories of Ownership and Problems of Distribution in the Western United States*, 30 N.Y.U. L. REV. 1419, 1425 (1955).



## WATER RIGHTS LEGISLATION IN THE EAST

*Prior Appropriation Elements*

Dissatisfaction with common law water allocation doctrines led a number of eastern states to consider adopting a statutory system of water rights.<sup>35</sup> Many commentators advocated adopting the prior appropriation system prevalent in the West, and at least nine states gave serious thought to this alternative.<sup>36</sup> Ultimately only Mississippi enacted a prior appropriation statute,<sup>37</sup> but virtually all the permit systems in the East incorporate some features of the prior appropriation system.

For example, under a prior appropriation system, a western water user need not own land along a watercourse to obtain the right to use water. Instead, he acquires a water right by withdrawing water from a watercourse and putting it to a beneficial use.<sup>38</sup> Beneficial use has been defined as "the use of the amount of water which is economically necessary for a [lawful] purpose . . . when reasonable intelligence and reasonable diligence are used in applying the water to that purpose."<sup>39</sup> Virtually all permit systems in the East allow nonriparian landowners to perfect a water right by obtaining a water permit. Some of the eastern states expressly incorporate the beneficial use standard in their water rights legislation,<sup>40</sup> while others do so implicitly.<sup>41</sup>

Appropriations in the West define the quantity of water to be used and often limit diversions to specific times of the day or week.

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35. For a discussion of these proposals, see Ellis, *Some Current and Proposed Water-Rights Legislation in the Eastern States*, 41 IOWA L. REV. 237 (1956); Marquis, Freeman & Heath, *supra* note 1; Martz, *Water for Mushrooming Populations*, 62 W. VA. L. REV. 1 (1959).

36. Arkansas, Florida, Georgia, Michigan, Mississippi, North Carolina, South Carolina, Wisconsin, and West Virginia. See F. MALONEY, R. AUSNESS & J. MORRIS, *A MODEL WATER CODE* 75-76 (1972).

37. MISS. CODE ANN. §§ 51-3-1 to 51-3-53 (1972 & Supp. 1980). The Mississippi statute is discussed *infra* notes 152-67 and accompanying text.

38. 1A G. THOMPSON, *COMMENTARIES ON THE MODERN LAW OF REAL PROPERTY* § 263 (1980).

39. TEX. WATER CODE ANN. § 11.002(5) (Vernon Supp. 1982).

40. *E.g.*, FLA. STAT. ANN. § 373.223(1) (West 1974); IOWA CODE ANN. § 455A.21 (West Supp. 1982); VA. CODE §§ 62.1-44.100(e) (1982).

41. *E.g.*, KY. REV. STAT. ANN. § 151.170(2) (Bobbs-Merrill Supp. 1982) (useful purpose); MD. NAT. RES. CODE ANN. § 8-807(a) (1974) (greatest feasible utilization).

Moreover, administrative procedures for appropriating water invariably require the applicant to specify the proposed place of use.<sup>42</sup> Water use permits in the East also are specific as to quantity as well as to time and place of use.<sup>43</sup>

Finally, in the West a state agency usually administers the appropriative water rights program within a comprehensive regulatory structure. Only obtaining a use permit from the agency in accordance with a specific statutory procedure will perfect water rights. As a general rule the agency may deny or modify a permit application to protect other water users or promote some public interest.<sup>44</sup> The same practice prevails in the East.

Despite the similarities, a number of significant differences exist between the prior appropriation system in the West and most permit systems in the East. In the West, water rights continue perpetually and may be lost only by abandonment or nonuse.<sup>45</sup> Permits in the East either are terminable at the discretion of the regulatory agency or are issued for periods of limited duration.<sup>46</sup> Additionally, unlike the practice in the West, permits in the East usually are appurtenant to the land and cannot be transferred.<sup>47</sup>

Finally, the principle of priority, a critical element of western water law, is not recognized fully in the East. In the West the appropriator who is first in time is first in right. Consequently, more recent water rights are subordinated to older rights. When available water cannot satisfy the needs of all users, the senior appropriator may withdraw his full portion before a junior appropriator withdraws any water at all. In other words, the risk of insufficient water falls on the most recent water users.<sup>48</sup> In the East, existing

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42. 1 W. HUTCHINS, *WATER RIGHTS LAWS IN THE NINETEEN WESTERN STATES* 517 (1971).

43. *E.g.*, FLA. STAT. ANN. § 373.229(1) (West 1974); GA. CODE ANN. § 12-5-31(d) (Supp. 1982); IOWA CODE ANN. § 455A.19 (1) (West 1971); N.J. STAT. ANN. § 58:1A-8 (West 1982).

44. DAVIS, *Australian and American Water Allocation Systems Compared*, 9 B.C. INDUS. & COM. L. REV. 647, 688-89 (1968).

45. *Arizona v. California*, 283 U.S. 423, 459 (1931). For a discussion of abandonment and statutory forfeiture for nonuse, see *State ex rel. Reynolds v. South Springs Co.*, 80 N.M. 149, 452 P.2d 478 (1969). See also Johnson, *The Challenge to Prescriptive Water Rights*, 30 TEX. L. REV. 669, 673 (1952).

46. *E.g.*, FLA. STAT. ANN. § 373.236(1) (West 1974) (20 years); GA. CODE ANN. § 12-5-31(h) (Supp. 1982) (10 to 20 years); IOWA CODE ANN. § 455A.20 (West Supp. 1982) (10 years).

47. *E.g.*, IOWA CODE ANN. § 455A.30 (West 1971). See also Note, *A Proposal for a Regulated Market of Water Rights in Iowa*, 65 IOWA L. REV. 979, 1030 (1980).

48. *City of Pasadena v. City of Alhambra*, 33 Cal. 2d 908, 207 P.2d 17, 29 (1949).

users receive some protection because the agency usually is prohibited from issuing a new permit that impairs the rights of existing water users.<sup>49</sup> Unlike the practice in the West, however, senior water users receive no special treatment during periods of water shortage.<sup>50</sup>

### *Water Rights Statutes: A State-by-State Description*

Fourteen eastern states currently have modified or supplemented their common law water rights doctrines with statutory allocation systems. As the previous discussion indicates, these statutes often incorporate prior appropriation elements and, therefore, have a number of common features. Nevertheless, dissimilarities exist. This section describes briefly each of the fourteen water permit statutes to illustrate some of the diversity in eastern water rights legislation.

#### *Delaware*

In Delaware, the Division of Environmental Control, through its Secretary, administers the permit system. The agency is empowered to adopt rules and regulations,<sup>51</sup> formulate a comprehensive water management plan,<sup>52</sup> and enforce the permit program with civil and criminal sanctions.<sup>53</sup>

A user must obtain a permit before undertaking any activity which may cause or contribute to the withdrawal of ground water or surface water.<sup>54</sup> No class of water use is exempted expressly, but the Secretary has authority to publish a list of activities not requiring a permit.<sup>55</sup> Pursuant to this authority, "reasonable-benefi-

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49. *E.g.*, FLA. STAT. ANN. § 373.223(1) (West 1974); IND. CODE ANN. § 13-2-2-5 (Burns 1981); KY. REV. STAT. ANN. § 151.170(2) (Bobbs-Merrill Supp. 1982); WIS. STAT. ANN. § 30.18(5) (West 1973).

50. *E.g.*, FLA. STAT. ANN. §§ 373.175, .246 (West 1974 & Supp. 1982); GA. CODE ANN. § 12-5-31(e) (Supp. 1982); IOWA CODE ANN. § 455A.28(3) (West 1971); KY. REV. STAT. ANN. § 151.200(1) (Bobbs-Merrill 1980); N.J. STAT. ANN. § 58:1A-4 (West 1982).

51. DEL. CODE ANN. tit. 7, § 6010(a) (1974).

52. *Id.* § 6010(b).

53. *Id.* §§ 6005(b)(1), 6013 (Supp. 1982).

54. *Id.* §§ 6003(a)(3), (b)(4) (1974). The permit statute covers a number of activities besides water withdrawal. Permits also are required for activities that cause air or water pollution, as well as activities that require solid waste disposal. *See generally id.* § 6003.

55. *Id.* § 6003(e). To request a permit, the water user must submit an application to the

cial" uses in existence prior to the adoption of the permit system are exempted, as are wells constructed for ordinary domestic or agricultural purposes.<sup>56</sup>

The Delaware statute does not specify a duration period for water permits, nor does it establish a mechanism for suspension, revocation, renewal, or transfer of permit rights. The statute, however, provides that the agency must approve water allocation and use in the state on the basis of equitable apportionment.<sup>57</sup>

### *Florida*

Florida's permit system is based on the Model Water Code<sup>58</sup> and is the most comprehensive in the Eastern United States. Under the Florida Water Resources Act of 1972,<sup>59</sup> a central state agency and the local water management districts share responsibility for implementing Florida's water allocation policy.<sup>60</sup>

The Water Resources Act empowers the state agency, which since the 1975 Environmental Reorganization Act<sup>61</sup> was passed has been the Department of Environmental Regulation, to "accomplish the conservation, protection, management, and control of the waters of the state."<sup>62</sup> The Department has supervisory authority over the water management districts<sup>63</sup> and may review any policy,

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Secretary. Upon receiving the application, the Secretary publishes a notice in the appropriate newspapers. The Secretary must hold a public hearing on the application if he receives a meritorious request or if he deems it to be in the state's best interest. *Id.* § 6004(b) (Supp. 1982). The Secretary's action may be challenged by an appeal to the Environmental Appeals Board. *Id.* § 6008 (1974 & Supp. 1982). Additionally, the Board's decision is subject to judicial review. *Id.* § 6009.

56. ACQUIRING WATER FOR ENERGY: INSTITUTIONAL ASPECTS 191-92 (G. Weatherford ed. 1982).

57. DEL. CODE ANN. tit. 7, § 6010(f)(1) (1974).

58. A MODEL WATER CODE, *supra* note 36. The authors of the Code also drafted the Florida Water Resources Act of 1972, which replaced that state's earlier water permit system.

59. 1972 Fla. Laws ch. 72-299 (codified, as amended, at FLA. STAT. ANN. § 373 (West 1974 & Supp. 1983)).

60. For a detailed discussion of the Florida permit system and the state and local agencies that administer it, see F. MALONEY, S. PLAGER, R. AUSNESS & B. CANTER, FLORIDA WATER LAW—1980, at 191-329 (1980).

61. 1975 Fla. Laws ch. 75-22.

62. FLA. STAT. ANN. § 373.016(3) (West Supp. 1983).

63. *Id.* § 373.026(7). The legislature repeatedly expressed its clear intention that the water management districts should have the power to conserve, protect, manage, and control state waters. *Id.* § 373.103 (West 1974 & Supp. 1983).

rule, regulation, or order of a district other than internal management policies and rules.<sup>64</sup>

The five regional water management districts administer the permit system. These regional agencies provide the regulatory diversity necessary in different areas of the state.<sup>65</sup> A separate board composed of nine members appointed by the Governor and subject to senate confirmation governs each water management district.<sup>66</sup> The general powers of the water management district governing boards include the power to contract, to sue and be sued, to hire and fire employees, to issue orders enforcing or implementing the Water Resources Act,<sup>67</sup> and to survey the water supplies and resources of the district.<sup>68</sup> The governing boards also have broad powers to carry out public works projects within their districts.<sup>69</sup>

Generally, all users except domestic users must obtain a permit.<sup>70</sup> Only one of the districts, however, regulates water uses of less than 100,000 gallons per day.<sup>71</sup> To obtain a permit, an applicant must establish that the proposed use is a reasonable beneficial use, that it will not interfere with any presently existing legal

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64. *Id.* § 373.026(7) (West Supp. 1983).

65. *Id.* § 373.069 (West Supp. 1982). The five districts are: (1) the South Florida Water Management District (formerly known as the Central and Southern Florida Flood Control District); (2) the Southwest Florida Water Management District; (3) the St. John's River Water Management District; (4) the Suwannee River Water Management District; (5) the Northwest Florida Water Management District. *Id.* The South Florida Water Management District and the Southwest Florida Water Management District established permit systems shortly after the Act was passed in 1972. The St. John's River Water Management District currently is implementing a permit program, while the Northwest Florida Water Management District and the Suwannee Water Management District continue generally to operate under common law riparian principles. F. MALONEY, S. PLAGER, R. AUSNESS & B. CANTER, *supra* note 60, at 223-24.

66. FLA. STAT. ANN. § 373.073 (West Supp. 1983).

67. *See supra* note 59.

68. FLA. STAT. ANN. § 373.083 (West 1974).

69. *Id.* § 373.086(1). In addition to managing surface waters, the water management districts have broad authority over ground water supply in the district. The districts have power to "do any act necessary to replenish the ground water of said district," including buying, exchanging, storing, transporting, recapturing, purifying, or otherwise managing and controlling water for the beneficial use of persons or property within the district. *Id.* §§ 373.106(2), .103 (West 1974 & Supp. 1983).

70. *Id.* § 373.219 (West 1974).

71. FLA. ADMIN. CODE 40e-20.302 (South Florida Water Management District) (regulates use of less than 100,000 gallons per day); *Id.* 40d-2.031(a) (Southwest Florida Water Management District); *Id.* 40c-2.04(1)(a) (St. John's River Water Management District).

water use, and that it is consistent with the public interest.<sup>72</sup>

"Reasonable beneficial use" is "the use of water in such quantity as is necessary for economic and efficient utilization for a purpose and in a manner which is both reasonable and consistent with the public interest."<sup>73</sup> According to the authors of *A Model Water Code*, the "reasonable beneficial" standard was intended to incorporate the best features of both reasonable use and beneficial use.<sup>74</sup> In determining what is a reasonable beneficial use, the decision-maker should balance the value of the use to society against any harm caused by the use. Techniques currently available to reduce or eliminate the harm are factored into the decisionmaking process.<sup>75</sup>

The Florida Water Resources Act<sup>76</sup> allows permits to be granted for a period of up to twenty years,<sup>77</sup> although the water management districts so far have issued only short-term permits.<sup>78</sup> Permits may be renewed upon expiration.<sup>79</sup> Renewal, however, is not guaranteed, and the agency may allocate the water to a more productive use.<sup>80</sup> The permit may be revoked for violation of its conditions or for nonuse.<sup>81</sup>

### Georgia

#### A 1977 amendment to the Georgia Water Quality Control Act

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72. FLA. STAT. ANN. § 373.223(1) (West 1974).

73. *Id.* § 373.019(4) (West Supp. 1983).

74. A MODEL WATER CODE, *supra* note 36, at 171. For a discussion of the common law concept of reasonable use, see *supra* notes 7-12 and accompanying text. For a definition of beneficial use, see *supra* note 39 and accompanying text.

75. Maloney, Capehart & Hoofman, *Florida's "Reasonable Beneficial" Use Standard: Have East and West Met?*, 31 U. FLA. L. REV. 253, 274 (1979).

76. See *supra* note 59.

77. FLA. STAT. ANN. § 363.236(1) (West 1974). The statute also allows a 50-year permit to be issued to governmental bodies and public utilities if required for the retirement of bonds. *Id.* § 373.236(2).

78. For example, South Florida Water Management District usually limits permits to 10 years. Frequently, the district will issue permits of only two or three years when environmental impacts to the area of consumption use are not fully determined. SOUTH FLORIDA WATER MANAGEMENT DISTRICT, II PERMIT INFORMATION MANUAL 2 (Jan. 1979).

79. FLA. STAT. ANN. § 373.239(3) (West 1974).

80. Certain provisions in the Act address competing applications. *Id.* §§ 373.233(1), (2). These provisions cover conflicts between a renewable applicant and a new applicant, as well as conflicts between competing initial applicants. *Id.*

81. *Id.* § 373.243 (West Supp. 1983) (revocation).

requires a water user to obtain a permit from the Director of the Environmental Protection Division of the Department of Natural Resources to withdraw, divert, or impound surface water in excess of 100,000 gallons per day.<sup>82</sup> No permit, however, is required for farm uses, including irrigation.<sup>83</sup> The Water Quality Control Act allows interbasin transfers of surface water, but imposes special requirements and conditions.<sup>84</sup>

The Director may grant permits for not less than ten years or more than twenty years, the duration to be based on any reasonable system of classification that includes such factors as source of supply and type of use.<sup>85</sup> A permit holder may request that the Director modify the terms of an unexpired permit. To obtain a modification, the holder must establish that an existing or proposed change in conditions necessitates additional water or that the proposed modification will allocate water more efficiently than the existing permit.<sup>86</sup> The Director also may revoke, suspend, or modify a permit for nonuse or violation of the conditions of the permit.<sup>87</sup>

The Act distinguishes persons who were withdrawing, diverting, or impounding surface waters prior to July 1, 1977, the effective date of the Act, from other permit applicants. It provides that the

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82. GA. CODE ANN. § 12-5-31(a)(1) (Supp. 1982). Surface waters include all rivers, streams, creeks, branches, lakes, reservoirs, ponds, drainage systems, springs producing in excess of 100,000 gallons per day, and all other bodies of surface water, natural or artificial, lying within or forming a part of the boundaries of the state which are not entirely confined and retained completely upon the property of a single individual, partnership, or corporation.

*Id.* § 12-5-31(b)(4).

83. *Id.* § 12-5-31(a)(2). Farm uses include "irrigation of farmland, provision of water supply for farm animals, poultry farming, or any other activity conducted in the course of farming operations." *Id.* § 12-5-31(b)(2).

84. The statute requires that the director give due consideration to competing applications for permits that would not involve interbasin transfers of surface water and endeavor to allocate a reasonable supply of water to these applicants. Furthermore, the director must provide timely notice to the public that an interbasin transfer has been requested and, where necessary, hold a public hearing before granting the permit application. *Id.* § 12-5-31(n).

85. *Id.* § 12-5-31(h). Additionally, the director may authorize a 50-year permit to municipalities or other governmental bodies if such a period is required for the retirement of bonds. *Id.*

86. *Id.* § 12-5-31(i).

87. *Id.* § 12-5-31(k).

Director shall consider the extent to which prior withdrawal, diversion, or impoundment was reasonably necessary to meet the water user's needs. The Director must grant a permit which meets these reasonable needs if other water users in the area, both existing and potential, will not be adversely affected to an unreasonable extent.<sup>88</sup>

The Act also allows Georgia's Board of Natural Resources to establish a reasonable system of classification for use when applicants compete for a permit to use the same water. The Act, however, limits the Board's discretion by enumerating some factors that must be included in the classification system. Among the enumerated factors are the number of persons using the water source and the object, extent, and necessity of their uses, the nature and size of the water source, and the nature and duration of any adverse effect on the water source.<sup>89</sup> The Board also must consider the economic consequences of the water uses, the extent of any injury that may be caused by the water uses, and the effect of any diversion from or reduction of flows in other watercourses.<sup>90</sup> Finally, the Board also must consider prior investments in and plans for water use on affected lands.<sup>91</sup> If two or more competing applicants qualify equally under the statutory criteria, the Director may grant permits on a prorated basis where feasible.<sup>92</sup> Finally, the Act requires that the Director give preference to a renewal application over an initial application.<sup>93</sup>

A separate statute regulates ground water.<sup>94</sup> This statute authorizes the Board of Natural Resources to regulate timing of withdrawals, well depth and spacing, and pumping levels and rates.<sup>95</sup> The Board also may regulate to protect fresh water against salt water encroachment, and to prevent withdrawals from adversely affecting other water users within the area.<sup>96</sup> As with surface water,

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88. *Id.* § 12-5-31(g).

89. *Id.* § 12-5-31(e).

90. *Id.*

91. *Id.*

92. *Id.* § 12-5-31(f).

93. *Id.*

94. *Id.* § 12-5-95.

95. *Id.*

96. *Id.*



the ground water legislation provides that no one except agricultural users<sup>97</sup> may withdraw more than 100,000 gallons of ground water per day without obtaining a permit.<sup>98</sup>

The Environmental Protection Division of the Department of Natural Resources administers the ground water permit system.<sup>99</sup> Permits may be issued for ten years or for the period the Division finds necessary for reasonable amortization of the applicant's water withdrawal and water using facilities.<sup>100</sup> If the permit applicant was withdrawing water prior to July 1, 1973, the effective date of the statute, the Division must take into consideration the extent to which the prior use was reasonably necessary to meet the user's needs and must grant a permit which meets these reasonable needs if other water users in the area will not be adversely affected to an unreasonable extent.<sup>101</sup> The Division may renew permits upon expiration and may approve permit transfers between users.<sup>102</sup>

### *Indiana*

Indiana, like Georgia, has separate legislation addressing surface water and ground water. The legislation declares that surface water resources should be put to beneficial uses to the fullest extent and prohibits water use for nonbeneficial purposes.<sup>103</sup> The primary purpose of the surface water legislation, then, is not to regulate riparian users, but to maximize resources, perhaps by allowing

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97. *Id.* § 12-5-105.

98. *Id.* § 12-5-96(a). In considering permit applications, the agency must take into account: (1) the number of persons using an aquifer and the object, extent, and necessity of their respective withdrawals or uses; (2) the nature and size of the aquifer; (3) the physical and chemical nature of any impairment of the aquifer adversely affecting its availability or fitness for other water uses; (4) the probable severity and duration of this impairment under foreseeable conditions; (5) the injury to public health, safety, or welfare which would result if this impairment were not prevented; (6) the kinds of businesses or activities to which the various uses are related; (7) the importance and necessity of the uses claimed by permit applicants or of the water uses of the area, and the extent of any injury or detriment caused to other water users; (8) diversion from or reduction of flows in other watercourses or aquifers; (9) any other relevant factors. *Id.* § 12-5-96(d). Furthermore, a permit may be denied if the effect of the proposed use is contrary to the public interest. *Id.* § 12-5-96(c)(4).

99. *Id.* § 12-5-96.

100. *Id.* § 12-5-97(a).

101. *Id.* § 12-5-97(f).

102. *Id.* § 12-5-97(b), (c).

103. IND. CODE ANN. § 13-2-1-1 (Burns 1981).

access to water by nonriparian owners.<sup>104</sup> The legislation also declares water in any natural stream, lake, or other water body that may be applied to a useful and beneficial purpose to be a natural resource. This water is public water of the state and therefore subject to control or regulation for the public welfare.<sup>105</sup>

Domestic water users have preferred status.<sup>106</sup> Riparian owners may impound water behind dams or in reservoirs when the stream flow or lake level exceeds existing reasonable uses.<sup>107</sup> Any person, however, with the permission of the Flood Control and Water Resources Commission, may divert flood waters<sup>108</sup> of any watercourse for any lawful purpose, including storage. The diversion, however, must not injure riparian landowners or water users in the watershed from which the water is taken.<sup>109</sup>

The Indiana Ground Water Conservation Act of 1951<sup>110</sup> regulates ground water by allowing the Department of Conservation to designate certain areas of the state where the ground water withdrawal exceeds or threatens to exceed natural replenishment as restricted use areas.<sup>111</sup> Water users in restricted use areas must obtain a permit from the Department if they increase their ground water withdrawals by more than 100,000 gallons per day.<sup>112</sup> In granting or refusing a permit request, the Department must consider the effect additional ground water withdrawal will have on future supplies, the proposed use of the water, the effect on present users and on the public, the likelihood and extent of future

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104. *See id.* §§ 13-2-1-2, 13-2-1-3.

105. *Id.* § 13-2-1-2. Diffused surface water flowing vagrantly over the surface of the ground, however, is not regarded as public water. *Id. See also id.* § 13-2-1-4(3).

106. *Id.* § 13-2-1-3(1) (Burns 1976). Domestic purposes include water for household purposes and for livestock, including poultry and domestic animals. *Id.*

107. *Id.* § 13-2-1-3(2) (Burns 1981).

108. Flood water is defined as water that is flowing or standing above the top level outside of the banks of a watercourse. *Id.* § 13-2-1-4(7).

109. *Id.* § 13-2-1-6(1). Prior to the passage of the 1972 Water Resources Act, Florida, under legislation enacted in 1957, also utilized the flood-water concept to evade the place-of-use restrictions of the common law riparian system. *See* F MALONEY, S. PLAGER & F BALDWIN, *supra* note 12, § 62.3(b). *See also* Maloney, *Florida's New Water Resources Law*, 10 U. FLA. L. REV. 119, 138, 141 (1957).

110. 1951 Ind. Acts ch. 29 (codified as IND. CODE ANN. §§ 13-2-2-1 to 13-2-2-13 (Burns 1981). *See also* Note, *Water Rights in Indiana*, 32 IND. L.J. 39, 51-52 (1956).

111. IND. CODE ANN. § 13-2-2-3 (Burns 1981).

112. *Id.* § 13-2-5. Public utilities are exempt from the permit requirements. *Id.*

natural replenishment, and the anticipated demands of future water users. In granting a permit, the Department may impose any conditions necessary to conserve available ground water and to prevent its waste, exhaustion, or impairment.<sup>113</sup> The statute contains no provisions for modification, renewal, or transfer of permit rights. Evidently, once a user acquires a permit, it will be effective as long as the restricted use area exists.

### *Iowa*

The Iowa statute, enacted in 1957,<sup>114</sup> established a comprehensive permit system under the control of the Natural Resources Council.<sup>115</sup> The permit program, administered by a water commissioner,<sup>116</sup> regulates both surface water and ground water.<sup>117</sup> Although the law purports to leave unimpaired all "vested rights,"<sup>118</sup> it regulates riparian rights existing at the time the statute became effective, as well as rights not existing at that time.

The Act prohibits diversion, storage, or withdrawal of water from any natural watercourse or underground basin or watercourse without a permit.<sup>119</sup> "Nonregulated uses," however, require no permit. "Nonregulated uses" include use of water for ordinary household purposes, use of water for poultry, livestock, and domestic animals, and other beneficial uses not exceeding 5,000 gallons per day.<sup>120</sup> A beneficial use is one that applies water to a useful purpose inuring to the benefit of the water user and subject to his dominion and control.<sup>121</sup> All regulated uses of water must be beneficial.<sup>122</sup>

The statute gives priority to applicants in the order their applications are received, but users who diverted or withdrew water before the effective date of the Act are given priority according to

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113. *Id.* § 13-2-2-5.

114. 1957 Iowa Acts ch. 229.

115. IOWA CODE ANN. § 455A.3 (West 1971).

116. *Id.* § 455A.9(2).

117. *Id.* § 455A.2. See generally Hines, *A Decade of Experience Under the Iowa Water Permit System* (pts 1 & 2), 7 NAT. RESOURCES J. 499 (1967), 8 NAT. RESOURCES J. 23 (1968).

118. IOWA CODE ANN. § 455A.21 (West Supp. 1982).

119. *Id.* § 455A.25 (West 1971).

120. *Id.* § 455A.1.

121. *Id.*

122. *Id.* § 455A.21 (West Supp. 1982).

the date of their initial diversion or withdrawal.<sup>123</sup> Additionally, the Act specifies that any person with an existing irrigation system in use prior to the effective date of the Act shall be issued a permit to continue irrigating unless to do so would damage some other riparian user.<sup>124</sup> Thus, the Act affords previously existing water users a large measure of protection.

Permits generally are issued for a ten-year period and may be renewed for additional ten-year periods.<sup>125</sup> The water commissioner may modify or cancel a permit for breach of its terms or violation of the statute.<sup>126</sup>

### *Kentucky*

The Department for Natural Resources and Environmental Protection administers Kentucky's permit program pursuant to a statute enacted in 1966.<sup>127</sup> The statute covers water impoundments and dam construction as well as water usage.<sup>128</sup> Additionally, the legislation provides for water resources planning<sup>129</sup> and authorizes construction of projects to promote flood control and water resources development.<sup>130</sup>

The statute declares water in any stream, lake or other water body, and ground water or subterranean water, any of which may be applied to any useful and beneficial purpose, to be "public water," and therefore subject to state control and regulation.<sup>131</sup>

The statute provides that no private individual, corporation, or local governmental entity may withdraw, divert, or transfer public water from a stream, lake, aquifer, or other source without first

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123. *Id.*

124. *Id.*

125. *Id.* § 455A.20. An amendment, however, provides that new irrigation permits and renewals issued after 1977 must be limited to one year until the Natural Resources Council adopts a statewide water plan. *Id.*

126. *Id.* § 455A.28(2) (West 1971).

127. 1966 Ky. Acts ch. 23 (codified, as amended, at KY. REV. STAT. ANN. § 151.125 (Bobbs-Merrill 1980 & Supp. 1982)). For a detailed discussion of the Kentucky statute, see Ausness, *supra* note 7, at 224-32.

128. KY. REV. STAT. ANN. §§ 151.250 to .320 (Bobbs-Merrill 1980 & Supp. 1982).

129. *Id.* § 151.220 (Bobbs-Merrill 1980).

130. *Id.* §§ 151.330 to .600.

131. *Id.* § 151.120(1). Diffused surface water which flows vagrantly over the surface of the ground and water left standing in pools in a stream when the natural flow of the stream has ceased are not classified as public water. *Id.* § 151.120(2).

obtaining a permit from the Department for Natural Resources and Environmental Protection.<sup>132</sup> The Department must issue a permit if the proposed use will not be detrimental to public interests or to rights of other water users.<sup>133</sup> No "responsible applicant" who establishes a need for water for a useful purpose may be denied a permit if the water is available.<sup>134</sup> Additionally, permits are not required for agricultural purposes, domestic uses, steam-generating plants, and underground injections for oil and gas drilling.<sup>135</sup> Permits also are not required for companies whose water use activities are regulated by another state agency.<sup>136</sup>

The Kentucky statute requires that permits be specific as to quantity, time, place, and withdrawal rate.<sup>137</sup> Although nonriparian landowners have the same opportunity as riparian owners to acquire permit rights, the state Water Resources Authority must approve water transfers from one stream or watershed area to another.<sup>138</sup>

The statute does not specify permit duration, but declares that a permit represents merely a limited right of use and does not vest ownership or confer an absolute right to withdraw or use water.<sup>139</sup>

### *Maryland*

Maryland's Department of Natural Resources administers its permit system.<sup>140</sup> The statute requires that a permit be obtained to use any waters of the state, whether surface or underground.<sup>141</sup> Do-

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132. *Id.* § 151.140.

133. *Id.* § 151.170(2). The department may issue a permit for a lesser quantity if it determines that this action would be in the best interests of the public or other water users. *Id.* § 151.170(3).

134. *Id.* § 151.170(2).

135. *Id.*

136. Steam-generating plants, for example, are regulated by the state energy regulatory commission. *Id.*

137. *Id.* § 151.170(1) (Bobbs-Merrill Supp. 1982).

138. *Id.* § 151.200(2). The Water Resources Authority is composed of the governor, 10 members of the cabinet, and two members of the Flood Control Advisory Commission. The Authority engages in water development planning and plays a significant role in financing state and local water resource development projects. *See generally id.* §§ 151.330, .550.

139. *Id.* § 151.170(1).

140. MD. NAT. RES. CODE ANN. § 8-203(b) (1974).

141. MD. NAT. RES. CODE ANN. § 8-802(a) (Supp. 1982). "Waters of the State" include both surface and underground waters within the boundaries of the state, including all

mestic, farming, and municipal water uses are exempted from regulation, as are water uses in existence before 1934.<sup>142</sup> The Department may grant a permit if the proposed use provides for the greatest practicable use of the state's waters and will promote the general welfare. Conversely, the Department may deny a permit if the proposed use is "inadequate, wasteful, dangerous, impracticable or detrimental to the best public interest."<sup>143</sup>

The permit may specify the amount of water to be used, as well as the nature and location of the proposed diversion but evidently is not required to do so.<sup>144</sup> The statute does not limit permit duration, but requires the Department to review each permit every three years to assure compliance with its terms. Additionally, the Department may reduce the quantity of water allowed under the permit if the holder is not using the full amount authorized.<sup>145</sup>

### *Minnesota*

In Minnesota, the Department of Natural Resources supervises use and allocation of surface and ground water.<sup>146</sup> Under Minnesota's regulatory scheme, any person, corporation, or local governmental entity must obtain a permit from the Commissioner of the Department of Natural Resources to appropriate or use any waters of the state.<sup>147</sup> Only domestic uses serving less than twenty-five persons are exempted.<sup>148</sup>

The state also has a statutory system of water use priorities. The Commissioner must submit to the legislature for approval proposed rules to govern water allocation among potential water users

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ponds, lakes, rivers, streams, public ditches, and public drainage systems. *Id.* § 8-101(k).

142. *Id.* § 8-802(b) (1974).

143. *Id.* § 8-807(a).

144. *Id.* § 8-807(b).

145. *Id.* § 8-811.

146. MINN. STAT. ANN. § 105.391 (West 1977). The statute's declaration of policy provides that "[t]he state, to the extent provided by law from time to time, shall control the appropriation and use of surface and underground waters of the state." *Id.* § 105.38(2) (West Supp. 1982).

147. *Id.* § 105.41(1) (West Supp. 1982). "Waters of the state" include "any waters, surface or underground, except those surface waters which are not confined but are spread and diffused over the land." *Id.* § 105.37(7) (West 1977).

148. *Id.* § 105.41(1) (West Supp. 1982).

based on priorities.<sup>149</sup> Domestic water supply has first priority. Any water use consuming less than 10,000 gallons per day has second priority. Agricultural irrigation consuming more than 10,000 gallons per day and the processing of agricultural products have third priority. Power production consuming more than 10,000 gallons per day has fourth priority. All other uses involving consumption of more than 10,000 gallons per day have fifth and lowest priority.<sup>150</sup>

The statute encourages appropriation and use of surface water from streams during periods of flood and high water, subject to considerations of purpose, quantity, and number of persons appropriating water. The statute discourages appropriation and use of surface water from lakes smaller than 500 acres. The statute also discourages, but does not prohibit, diversions of water from the state for use in other states or Canada. Finally, the Commissioner may not issue a permit unless it is consistent with state, regional, and local water and land resources management plans.<sup>151</sup>

The statute does not limit permit duration. In granting a permit, however, the Commissioner may impose conditions on the amount and manner of appropriation if necessary to protect public safety or welfare.<sup>152</sup> The Commissioner also may impose a diligence requirement to ensure construction of diversion facilities within a reasonable time after a water use permit is granted.<sup>153</sup> Finally, surface water permit applicants must submit a contingency plan with

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149. *Id.* § 105.41(1a).

150. *Id.*

151. *Id.* The Minnesota statute contains a number of planning provisions. For example, the Commissioner is directed to "develop a general water resources conservation program for the state. The program shall contemplate the conservation, allocation, and development of all the waters of the state for the best interests of the people. The Commissioners shall be guided by [this] program in issuing water-use permits." *Id.* § 105.39(1) (West 1977). Additionally, the statute created a Water Planning Board composed of the Commissioner of Natural Resources, the Commissioner of Health, the Director of the Pollution Control Agency, the Commissioner of Agriculture, the Chairman of the State Soil and Water Conservation Board, and three citizen members. *Id.* § 105.401(1) (West Supp. 1982). The Board has authority to direct the preparation of a water and water-related land resources plan to submit to the legislature. The Board also is required to coordinate and develop comprehensive, long-range water resources planning, including the development of comprehensive water-related goals and policies. Additionally, the Board coordinates public water resource management and regulation activities among state agencies. *Id.* § 105.401(2).

152. *Id.* § 105.45.

153. *Id.* § 105.46 (West 1977).

their application describing the alternative they will use if water use is restricted.<sup>154</sup>

### *Mississippi*

The Mississippi Legislature in 1956 enacted a statute based on the doctrine of prior appropriation.<sup>155</sup> The act applies only to surface waters<sup>156</sup> and exempts domestic uses<sup>157</sup> and "dredging or washing of sand and gravel."<sup>158</sup> It protects riparian rights exercised prior to its passage by giving prior users the first opportunity to perfect their rights.<sup>159</sup> The permit system resembles the prior appropriation system of the West because it is based on the beneficial use concept<sup>160</sup> and because water rights are granted for an unlimited duration and may be lost only through prescription, abandonment, or forfeiture.<sup>161</sup> The Board of Water Commissioners allocates water,<sup>162</sup> and grants only water which is in excess of an established average minimum stream flow or lake level.<sup>163</sup>

Ground water use in Mississippi also is subject to regulation, but under the provisions of a 1976 statute.<sup>164</sup> That act authorizes the Board of Water Commissioners to delineate capacity use areas after an investigation by the state water engineer and a public hearing.<sup>165</sup> A capacity use area is one in which the aggregate uses of ground water have developed to a degree which requires coordination and regulation, or where the uses exceed or threaten to impair

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154. *Id.* § 105.417(5) (West Supp. 1982). The Commissioner may order public water supply authorities to restrict lawn sprinkling, car washing, golf course and park irrigation, and other non-essential uses during periods of critical water deficiency. *Id.* § 105.418.

155. See generally Champion, *Prior Appropriation in Mississippi: A Statutory Analysis*, 39 Miss. L.J. 1 (1967).

156. Miss. CODE ANN. §§ 51-3-1, 51-3-5 (1972).

157. *Id.* § 51-3-7(1) (Supp. 1980).

158. *Id.* § 51-3-5 (1973).

159. *Id.* § 51-3-3(g)(2) (1972). See also *id.* § 51-3-7(1) (Supp. 1980).

160. *Id.* § 51-3-13 (1972). "Beneficial use" is defined as "[t]he application of water to a useful purpose that inures to the benefit of the water user and subject to his dominion and control, but does not include the waste of water." *Id.* § 51-3-3(e).

161. See *id.* §§ 51-3-9, 51-3-11.

162. *Id.* §§ 51-3-13, 51-3-31.

163. *Id.* § 51-3-7(3), (4) (Supp. 1980).

164. 1976 Miss. Laws ch. 474. "Ground water" is defined as water occurring beneath the ground. Miss. CODE ANN. § 51-4-3(e).

165. Miss. CODE ANN. § 51-4-5(3) (Supp. 1980).



replenishment of the aquifer.<sup>166</sup> After the Board designates an area as a capacity use area, a user must acquire a permit for any withdrawals of ground water exceeding 50,000 gallons per day.<sup>167</sup> Oil and gas production, and agricultural and domestic uses require no permit.<sup>168</sup> Applicants who were using ground water prior to the capacity use designation are granted permits automatically if their uses do not adversely affect other users.<sup>169</sup> Unlike surface water, ground water permits are limited either to ten years, the duration of the capacity use area designation, or the period necessary for reasonable amortization of the facilities, whichever is longest.<sup>170</sup>

The Board of Water Commissioners has the power to enact regulations to control the timing of withdrawals, to protect against salt water encroachment, and to control unreasonable adverse effects on other water users within the area. The Board also may regulate well depth and spacing and may prescribe a range of pumping levels or maximum pumping rates.<sup>171</sup> These regulations may be enforced by imposing them as conditions in water use permits.<sup>172</sup>

### *New Jersey*

In 1981 the New Jersey Legislature replaced its existing surface water and ground water legislation with a unified and comprehensive water regulation statute.<sup>173</sup> The new statute declares the water resources of the state to be public assets held in trust by the state for its citizens. As such, water must be managed as a common resource for the benefit of the entire state.<sup>174</sup> The statute authorized the Department of Environmental Protection to manage the water

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166. *Id.* § 51-4-5(2).

167. *Id.* § 51-4-9(1).

168. *Id.* § 51-4-1(2).

169. *Id.* § 51-4-11(5).

170. *Id.* § 51-4-11(1).

171. *Id.* § 51-4-7(1), (b), (c).

172. *Id.* § 51-4-9(3)(a).

173. 1981 N.J. Laws ch. 262. Under the previous statutory framework, the Water Policy and Supply Council regulated water users in areas of the state where it determined that surface or ground water resources needed protection. A permit was required for diversions of surface water exceeding 70 gallons per minute and extraction of ground water exceeding 100,000 gallons per day. *See generally* ACQUIRING WATER FOR ENERGY: INSTITUTIONAL ASPECTS 193, 226 (G. Weatherford, ed. 1982).

174. N.J. Stat. Ann. § 58:1A-2 (West 1982).

supply by adopting a uniform water diversion permit system.<sup>175</sup>

According to the 1981 statute, no person may divert more than 100,000 gallons of water per day<sup>176</sup> or construct any building or structure which may require a diversion of water without obtaining a permit.<sup>177</sup> All permits issued prior to the 1981 statute by the Department's predecessor, the Water Policy and Supply Council, are to remain in effect until modified by the Department.<sup>178</sup> Permits specify duration, quantity of water, and nature of permitted use.<sup>179</sup> They may be renewed upon expiration<sup>180</sup> and may be transferred with the Department's consent, but only for an identical water use.<sup>181</sup> Additionally, the Department may modify, suspend, or terminate the permit for violations of permit conditions or agency regulations or orders.<sup>182</sup>

### *North Carolina*

The North Carolina Water Use Act of 1967<sup>183</sup> allows the Environmental Management Commission to establish "capacity use areas" in parts of the state where it finds ground water or surface water use requires coordination and regulation to protect the interests and rights of the public or area residents.<sup>184</sup>

Once the Environmental Management Commission declares an area to be a capacity use area, the Commission, after notice and a public hearing, may promulgate regulations requiring water users in the area to submit withdrawal reports.<sup>185</sup> The Commission also

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175. *Id.* Additionally, the Commissioner of the Department of Environmental Protection is given the power to adopt and enforce regulations to control, conserve, and manage the state water supply. *Id.* § 58:1A-5.

176. *Id.* § 58:1A-7. "Waters of the State" means "all surface waters and ground waters in the State." *Id.* § 58:1A-3(g).

177. *Id.* § 58:1A-7.

178. *Id.* § 58:1A-6(a)(1).

179. *Id.* § 58:1A-8(a), (b), (c).

180. *Id.* § 58:1A-7(b).

181. *Id.* § 58:1A-8(g).

182. *Id.* § 58:1A-8(i).

183. 1967 N.C. Sess. Laws ch. 933.

184. N.C. GEN. STAT. § 143-215.13(a) (Supp. 1981). A capacity use area is one where the Commission determines that the aggregate uses of ground water or surface water require coordination and regulation. *Id.* § 143-215.13(b).

185. *Id.* § 143-215.14. The statute provides for an investigation and a written report by the Department of Natural Resources and Community Development before establishing a

may regulate the timing of withdrawals, and impose measures to protect against salt water encroachment and unreasonable adverse effects on other water users. Additionally, the Commission may control well spacing and establish ground water pumping levels and maximum pumping rates.<sup>186</sup>

The statute also authorizes the Commission to administer a permit system in capacity use areas. A user must obtain a permit to withdraw more than 100,000 gallons per day of surface water or ground water.<sup>187</sup> If it grants a permit, the Commission may impose conditions implementing withdrawal report regulations.<sup>188</sup> The Commission may deny a permit if it finds the proposed water use to be contrary to the public interest.<sup>189</sup> If the applicant proves that he was using water prior to the date that the capacity use area was declared, the Commission must grant the permit if it finds the quantity of water being withdrawn is reasonably necessary to meet the applicant's needs and that continued water use will not adversely affect existing or potential public and private uses in the area.<sup>190</sup>

The Commission may revoke or modify a permit.<sup>191</sup> In considering permit applications, revocations, or modifications, the Commission may consider the number of persons already using the aquifer or stream and the object, extent, and necessity of their uses. It may consider the nature and size of the stream or aquifer and the nature and severity of any harm to the aquifer or stream to be caused by the new user. The Commission also may consider the kinds of businesses and activities affected, the importance and necessity of the uses for which the permit is sought, and the extent of injury

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capacity use area. If the Commission, on the basis of this report, wishes to declare the area a capacity use area, the Commission must give notice of its proposed action and conduct a public hearing. The declaration creating a capacity use area must delineate the area's boundaries. *Id.* § 143-215.13(c). *See also id.* § 143-215.18 (1978).

186. *Id.* § 143-215.14(a) (Supp. 1981).

187. *Id.* § 143-215.15(a).

188. *Id.* § 143-215.15(c).

189. Nonconsumptive use permits contain fewer restrictions. *Id.* § 143-215.15(b). A non-consumptive use is the use of water withdrawn from a source in such a manner that the water returns to the source without substantial diminution at or near the point from which it was taken. *Id.* § 143-215.21(5) (1978).

190. *Id.* § 143-215.16(e).

191. *Id.* § 143-215.15(c)(iii).

the new use is expected to cause existing businesses and activities.<sup>192</sup> In granting an initial permit, the Commission must consider the prior investment of the applicant in the land or plans made for using water in connection with the land.<sup>193</sup>

Permits may be granted either for ten years, the duration of the capacity use area designation, or a sufficient time to allow for amortization of the applicant's water withdrawal or water use facilities, whichever is longest.<sup>194</sup> Permits may be renewed at expiration<sup>195</sup> and, with the Commission's consent, may be transferred.<sup>196</sup>

### *South Carolina*

The South Carolina Groundwater Use Act of 1969<sup>197</sup> closely resembles the North Carolina statute. Under the South Carolina legislation, the Water Resources Planning and Coordinating Commission may designate capacity use areas where it finds that ground water use requires coordination and regulation to protect the interests and rights of the public.<sup>198</sup> Once a capacity use area has been created,<sup>199</sup> the Commission may regulate timing of withdrawals, enact measures to protect against salt water encroachment, and regulate against unreasonable adverse effects on other water users within the area. The Commission also may establish well depth and spacing controls and prescribe pumping levels and maximum pumping rates.<sup>200</sup>

The Commission may require water users in capacity use areas to obtain a permit to withdraw more than 100,000 gallons of ground water per day and may impose any conditions on the permit necessary to implement regulations in the capacity use area.<sup>201</sup> The Commission may deny a permit if the proposed water use is

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192. *Id.* § 143-215.15(h) (Supp. 1981).

193. *Id.* § 143-215.16(f) (1978).

194. *Id.* § 143-215.16(a).

195. *Id.*

196. *Id.* § 143-215.16(b).

197. 1967 S.C. Acts (56) 72.

198. S.C. CODE ANN. § 49-5-40(a) (1976). A capacity use area is one in which the Commission finds that the aggregate uses of ground water in or affecting the area require coordination and regulation. *Id.* § 49-5-40(b).

199. *Id.* § 49-5-40(c) (setting forth procedures for establishing a capacity use area).

200. *Id.* § 49-5-50(a).

201. *Id.* § 49-5-60(a), (c).

found to be contrary to the public interest and may modify or revoke a permit sixty days after written notice.<sup>202</sup>

In adopting regulations or in considering permit applications, revocations, or modifications, the Commission must consider a number of factors. These factors include the number of persons using the aquifer and the object, extent, and necessity of their respective uses, the nature and size of the aquifer, the nature of any impairment of the aquifer, the nature and importance of activities to which the various uses are related, the extent of any injury expected to be caused to the public, and the diversion from or reduction of flows in other watercourses or aquifers.<sup>203</sup>

Permits may be granted for either ten years, the duration of the existence of the capacity use area, or a sufficient time to allow the applicant to amortize his water withdrawal or water use facilities, whichever is longest.<sup>204</sup> Permits may be renewed at expiration<sup>205</sup> and may be transferred with the consent of the Commission.<sup>206</sup>

### *Virginia*

Virginia's Groundwater Act of 1973 declares that control of ground water resources is necessary to conserve, protect, and beneficially use the ground water of the state and to ensure preservation of the public welfare, safety, and health.<sup>207</sup> The statute provides that the State Water Control Board, after holding a public hearing, may establish a ground water management area and delineate its boundaries.<sup>208</sup> After an area has been designated a ground

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202. *Id.* § 49-5-60(c).

203. *Id.* § 49-5-60(h). If the applicant proves he was using water before the capacity use area was established, the Commission shall grant a permit to the extent that the water being withdrawn is reasonably necessary to meet the applicant's needs and that its use will not adversely affect existing or future uses in the area. *Id.* § 49-5-70(e). Additionally, the Commission must consider the prior investment of the applicant in his land and plans made for water use in connection with this land. *Id.* § 49-5-70(f).

204. *Id.* § 49-5-70(a).

205. *Id.*

206. *Id.* § 49-5-70(b) (Law. Co-op. 1976).

207. 1973 Va. Acts ch. 443 (codified, as amended, at VA. CODE § 62.1-44.84 (1982)).

208. VA. CODE § 62.1-44.96 (1982). A ground water management area may be declared if the Board determines that (1) ground water levels are declining excessively; (2) the wells of two or more ground water users within the area interfere substantially with one another; (3) the ground water in the area is being or is about to be overdrawn; or (4) the ground water in the area has been or reasonably may be expected to become polluted. *Id.* § 62.1-44.95.

water management area, a water user must obtain a permit to construct a well or withdraw ground water.<sup>209</sup> No permit is required, however, for agricultural or livestock watering or for withdrawing less than 50,000 gallons per day.<sup>210</sup> Beneficial uses in existence at the time that a ground water management area is created also require no permit.<sup>211</sup> Existing users, however, must file a registration statement with the Board to preserve their rights.<sup>212</sup>

To obtain a permit, the applicant's use must be beneficial.<sup>213</sup> If the application discloses a probability of undue interference with existing wells or substantial interference with existing users, the Board may impose conditions or limitations in the permit to prevent such consequences.<sup>214</sup> The Board may approve no application that will prevent those having prior rights from using the amount of ground water to which they lawfully are entitled.<sup>215</sup>

### *Wisconsin*

A Wisconsin statute declares that the Department of Natural Resources shall supervise and control the state's waters and administer the planning, management, and regulatory programs necessary to implement the statute's policies and objectives.<sup>216</sup> The statute provides that no user shall operate a well to withdraw more than 100,000 gallons of water per day from underground sources without first obtaining the Department's approval.<sup>217</sup> If the Department finds the proposed withdrawal will adversely affect water availability of any public utility, it must either withhold approval or grant limited approval, imposing conditions to ensure that the public utility's water supply remains unimpaired. The conditions may limit location, depth, pumping capacity, rate of

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209. *Id.* § 62.1-44.97. See also *id.* at § 62.1-44.100.

210. *Id.* § 62.1-44.87.

211. *Id.* § 62.1-44.93(a). Existing uses may be regulated in the future, however, if the legislature determines that the continued, unrestricted uses of ground water contribute to pollution or shortage of ground water, thereby jeopardizing the public health, safety, or welfare. *Id.* § 62.1-44.93(c).

212. *Id.* § 62.1-44.99(a).

213. See *id.* §§ 62.1-44.100(e), -44.85(10).

214. *Id.* § 62.1-44.100(d).

215. *Id.* § 62.1-44.100(e).

216. WIS. STAT. ANN. § 144.025(1) (1974 & Supp. 1982).

217. *Id.* § 144.025(2)(e) (1974).

flow, and ultimate use.<sup>218</sup>

Wisconsin also has a permit system regulating certain classes of surface water users. Under this system, the Department may grant permission to divert surplus water from any stream to maintain the normal level of any navigable lake or to maintain the normal flow in any navigable stream. The recipient lake or stream need not be in the watershed of the source stream.<sup>219</sup> Water other than surplus water may be diverted for agricultural or irrigation purposes, but no water may be diverted if the diversion injures public rights in the source stream or if it injures any riparian owner's rights unless the riparian owner consents.<sup>220</sup>

A permit application must state times, amounts, and location of diversion.<sup>221</sup> The Department must review annually all permits issued since 1957 and may revoke a permit if the permitted use is found to be detrimental to other riparians.<sup>222</sup>

#### A CRITIQUE OF EASTERN WATER PERMIT LEGISLATION

An important objective of any system of water rights is to encourage optimal use of the resource. Accomplishing this objective requires that water rights be both specific and secure.<sup>223</sup> The right must be specific so that the water user knows what he has, and it must be secure so that he knows where he stands in relation to other users. At the same time, however, the allocation system must be flexible enough to allow transfer of water from less productive to more productive uses. A second essential objective is fairness. Fairness means equal access to the resource, freedom from arbitrary treatment, and assurances that reasonable expectations will not be frustrated by a regulatory agency.

Unfortunately, many water statutes in the East are not responsive to either the utilitarian or the fairness objective. This unre-

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218. *Id.*

219. *Id.* § 30.18(1)(a) (1973). Surplus water means "any water of a stream which is not being beneficially used. The Department may determine how much of the flowing water any point in the stream is surplus water." *Id.* § 30.18(2).

220. *Id.* § 30.18(1)(b).

221. *Id.* § 30.18(3).

222. *Id.* § 30.18(5).

223. Ciriacy-Wantrup, *Concepts Used as Economic Criteria for a System of Water Rights*, 32 LAND ECON. 295 (1956).

sponsiveness is largely due to legislative decisionmakers' refusal to address explicitly the difficult issues inherent when the state allocates scarce resources. In this section, this Article examines some of the deficiencies common in water rights legislation in the East. These deficiencies include exemption of too many water users from regulation, lack of coordination between water resources planning and administration of the water permit system, failure to plan for temporary water shortages, and inadequate mechanisms to reallocate water to more productive uses.

### *Exempted Users*

Scientists realize that water resources are interrelated and normally pass through various stages in a hydrologic cycle.<sup>224</sup> Thus, water in the atmosphere falls to earth as rain and flows over the land as diffused surface water. At this point, the water then runs into surface watercourses or percolates into ground water aquifers. Eventually, the water returns to the atmosphere through evaporation and transpiration. The cycle then begins again.<sup>225</sup>

This interrelationship among various water forms requires planning and regulation to be comprehensive so that every significant phase of the hydrologic cycle is regulated.<sup>226</sup> Some states, however, regulate only one phase of the water cycle or regulate surface water and ground water separately.<sup>227</sup> Other states regulate only "capacity use areas" or other limited geographical areas.<sup>228</sup>

Additionally, a number of states completely exempt some classes of water users from regulation. For example, domestic users almost universally are exempt from permit requirements.<sup>229</sup> Those states not explicitly exempting domestic users often accomplish the same

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224. Foley, *Water and the Laws of Nature*, 5 U. KAN. L. REV. 492, 496-97 (1957).

225. F. MALONEY, S. PLAGER & F. BALDWIN, *supra* note 12, § 10.

226. Trelease, *New Water Legislation: Drafting for Development, Efficient Allocation and Environmental Protection*, 12 LAND & WATER L. REV. 385, 396 (1977).

227. *E.g.*, Georgia, Indiana, Mississippi, and Wisconsin.

228. *E.g.*, Indiana (ground water); Mississippi (ground water); North Carolina (surface water and ground water); South Carolina (ground water); Virginia (ground water). In Florida, permit systems operate only in those water management districts that have elected to implement them. *See supra* note 71 and accompanying text.

229. *E.g.*, FLA. STAT. ANN. § 373.219 (1974); IOWA CODE ANN. § 455A.1 (West 1971); KY. REV. STAT. ANN. § 151.140 (Bobbs-Merrill 1980); MD. NAT. RES. CODE ANN. § 8-802(b) (Supp. 1982); MINN. STAT. ANN. § 105.41(1) (West Supp. 1982).



objective by exempting small users.<sup>230</sup> The rationale behind these exemptions is that the cumulative impact of these users on the state's water resources is not sufficient to justify the administrative cost of regulation.<sup>231</sup> Furthermore, states generally allow those who were using water at the time the regulatory system was established to continue their water uses without obtaining a permit.<sup>232</sup> This policy probably reflects concern about the constitutionality of impairing the property rights of these users.<sup>233</sup>

Many states exempt classes of large-scale water users such as irrigators or industrial users.<sup>234</sup> Exempting these classes of users creates an inequitable two-tiered system in which exempted water users receive preferential treatment. Such a two-tiered system is unfair and seriously undermines public and user confidence in the permit system, particularly if exempted users may continue or increase water withdrawals during temporary water shortages while permit holders must reduce their usage. Permit holders may be left without protection at the very time they need it most.<sup>235</sup>

Accordingly, water legislation should create no exempted use categories. Instead, the state regulatory agency should be empow-

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230. *E.g.*, FLA. ADMIN. CODE 40D-2.031 (Southwest Florida Water Management District) (100,000 gal./day); FLA. ADMIN. CODE 40C-2.04(1)(a) (St. John's River Water Management District) (100,000 gal./day); GA. CODE ANN. § 12-5-31(a)(1) (Supp. 1982) (100,000 gal./day surface water); *Id.* § 12-5-96(a) (100,000 gal./day ground water); IND. CODE ANN. § 13-2-2-5 (Burns 1981) (100,000 gal./day); IOWA CODE ANN. § 455A.1 (West 1971) (5,000 gal./day); KY. REV. STAT. ANN. § 151.140 (Bobbs-Merrill 1980) (minimum exemption to be set by administrative regulation); MISS. CODE ANN. § 51-4-9(1) (Supp. 1980) (50,000 gal./day); N.J. STAT. ANN. § 58:1A-7 (West 1982) (100,000 gal./day); N.C. GEN. STAT. § 143-215.15(a) (Supp. 1981) (100,000 gal./day); S.C. CODE ANN. § 49-5-60(a) (Law. Co-op. 1976) (100,000 gal./day); VA. CODE § 62.1-44.87 (1982) (50,000 gal./day); WIS. STAT. ANN. § 144.025(e) (West 1974) (100,000 gal./day).

231. Note, *supra* note 47, at 1002.

232. *E.g.*, IND. CODE ANN. § 13-2-2-5 (Burns 1981); MD. NAT. RES. CODE ANN. § 8-802(b) (West Supp. 1982).

233. For a discussion of the taking issue and the regulation of riparian rights, see Ausness, *supra* note 7, at 240-56; Scurlock, *Constitutionality of Water Regulation*, 1 U. KAN. L. REV. 125 (1953).

234. GA. CODE ANN. §§ 12-5-31(2), -105(a) (Supp. 1982) (agricultural uses); IND. CODE ANN. § 13-2-2-5 (Burns 1981) (public utilities); KY. REV. STAT. ANN. § 151.140 (Bobbs-Merrill 1980) (agricultural uses, steam-generating plants, oil and gas production); MD. NAT. RES. CODE ANN. § 8-802(b) (Supp. 1982) (agricultural and municipal uses in effect prior to July 1, 1969); MISS. CODE ANN. § 51-4-1(2) (Supp. 1980) (agricultural uses, oil and gas production); VA. CODE § 62.1-44.87 (1982) (agricultural).

235. Ausness, *supra* note 7, at 232.

ered to establish criteria for exempting users from permit requirements. The criteria should refer to water quantity rather than class of use. The agency should be free to revise the criteria for the exemptions as conditions warrant. Finally, the agency should be expressly authorized to regulate all water users during water emergencies.

### *Water Resources Planning*

Water resources planning is another weak area in the water rights legislation of many eastern states. Ideally, planning responsibility should be vested in a single agency. Planning authority, however, often is fragmented among several agencies. This lack of coordination often results in state programs that emphasize one aspect of a water problem but neglect its impact on other phases of the hydrologic cycle. For example, ground water regulation frequently ignores the interrelationship between ground water and surface water.<sup>236</sup>

A system of water use permits coordinated with a comprehensive planning program is the most effective means of implementing planning objectives and directing resources development.<sup>237</sup> Unfortunately, many states have little formal coordination between planning activities and administering the water permit system. Consequently, the agencies should prepare a state water plan which contains a detailed and comprehensive blueprint for water resources management within the state.

A number of western states authorize this type of comprehensive long-range planning.<sup>238</sup> In the East, Florida has the most elaborate planning provisions.<sup>239</sup> Among its more innovative features is a provision authorizing the regulatory agency to prohibit or restrict future uses on designated watercourses if the use might impair

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236. Some states, for example, regulate ground water and surface water separately. See *supra* notes 226-28 and accompanying text. See also, Maloney & Ausness, *Administering State Water Resources: The Need for Long-Range Planning*, 73 W. VA. L. REV. 209, 213-14 (1971).

237. A MODEL WATER CODE, *supra* note 36, at 74-75.

238. E.g., CAL. WATER CODE § 10000 (West 1971); TEX. WATER CODE ANN. § 11.102 (Vernon 1972).

239. See FLA. STAT. ANN. § 373.036 (West 1974 & Supp. 1983). See A MODEL WATER CODE, *supra* note 36, § 1.07.

public recreation or harm fish and wildlife.<sup>240</sup> Another provision allows the state regulatory agency to designate certain uses as undesirable for a particular watercourse due to the nature of the activity or the amount of water required. This designation provides a basis for denying permits.<sup>241</sup> Additionally, the agency may designate certain uses as preferred uses if they enhance or improve water resources in a specified area.<sup>242</sup>

State water plans also may protect instream uses by specifying or allowing the agency to specify minimum stream flows and lake levels.<sup>243</sup> Presently in the West, minimum stream flows and lake levels may be established through a variety of mechanisms.<sup>244</sup> For example, some states impose a "public interest" qualification on water permit applications.<sup>245</sup> Other states invoke a "public trust" concept to achieve the same objective.<sup>246</sup> Finally, a few western states allow the state to appropriate water directly to maintain stream flow and lake levels.<sup>247</sup>

In the East, Florida and Iowa have specific procedures to determine minimum stream flows and lake levels.<sup>248</sup> Although calculating minimum stream flows and lake levels is complex and time-consuming,<sup>249</sup> these calculations are essential to protect instream

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240. FLA. STAT. ANN. § 373.036(7) (West 1974); See A MODEL WATER CODE, *supra* note 36, § 1.07(7).

241. FLA. STAT. ANN. § 373.036(8) (West 1974); See A MODEL WATER CODE, *supra* note 36, § 1.07(8).

242. FLA. STAT. ANN. § 373.036(9) (West 1974); See A MODEL WATER CODE, *supra* note 36, § 1.07(9).

243. NATIONAL WATER COMMISSION, WATER POLICIES FOR THE FUTURE 273 (1973).

244. See generally R. DEWSNUP & D. JENSEN, PROMISING STRATEGIES FOR RESERVING INSTREAM FLOWS (1977); R. DEWSNUP & D. JENSEN, STATE LAW AND INSTREAM FLOWS (1977); Tarlock, *Recent Developments in the Recognition of Instream Uses in Western Water Law*, 1975 UTAH L. REV. 871.

245. E.g., CAL. WATER CODE §§ 1243-1243.5 (West 1971); UTAH CODE ANN. § 73-3-8 (1980); WASH. REV. CODE ANN. § 90.22.010 (Supp. 1982).

246. See *United Plainsmen Assoc. v. North Dakota State Water Conservation Comm'n*, 247 N.W.2d 457 (N.D. 1976); Johnson, *Public Trust Protection for Stream Flows and Lake Levels*, 14 U.C.D. L. REV. 233 (1980).

247. E.g., COLO. REV. STAT. § 37-92-102(3) (Supp. 1982); MONT. CODE ANN. § 85-2-316 (1981).

248. FLA. STAT. ANN. § 373.042 (West 1974); IOWA CODE ANN. §§ 455A.1, .22 (West 1971). See A MODEL WATER CODE, *supra* note 36, § 1.07(4).

249. Tarlock, *Appropriation for Instream Flow Maintenance: A Progress Report on "New" Public Western Water Rights*, 1978 UTAH L. REV. 211, 217-20.

uses and should be made by other eastern states. A similar mechanism would protect ground water levels.<sup>250</sup> In fact, many states already have established "maximum safe yields" restricting the "mining" of ground water aquifers.<sup>251</sup>

### *Temporary Water Shortages*

Any water allocation system functions smoothly when supplies are plentiful, but only a well-designed permit system will be effective when water is scarce. If rights are not secure during periods of temporary shortage, the effectiveness of and public confidence in the entire regulatory system is jeopardized. A serious weakness in most eastern water rights statutes is the failure to provide an allocation scheme for periods of water shortage.

Georgia, Iowa, and Kentucky have procedures for restricting withdrawals by permit holders during droughts and other water emergencies. The Georgia procedure allows the Director of the Board of Natural Resources to restrict water use to protect the public and the water resources if he believes that a water shortage exists that threatens public health or safety or that may cause serious harm to the water resources of an area. These restrictions may be based upon any reasonable system of classification established by the Board of Natural Resources.<sup>252</sup>

Similarly, in Iowa, after notifying permit holders, the Water Commissioner may suspend water use during an emergency to protect public health or safety, to protect the public interest in land or water, or to prevent substantial injury to persons or property.<sup>253</sup> Finally, in Kentucky, the Division of Water Resources, with the approval of the Water Resources Authority, may temporarily allocate available water among water users and restrict water with-

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250. See FLA. STAT. ANN. § 373.042(2) (West 1974); A MODEL WATER CODE, *supra* note 36, § 1.07(4)(c).

251. *E.g.* Ind. Code Ann. § 13-2-2-3 (Burns 1981); Miss. Code Ann. § 51-4-5(2) (Supp. 1980); N.C. Gen. Stat. § 143-215.13(a) (Supp. 1981); S.C. Code Ann. § 49-5-40(a) (1976). See also ACQUIRING WATER FOR ENERGY: INSTITUTIONAL ASPECTS 103-09 (G. Weatherford, ed. 1982).

252. GA. CODE ANN. § 12-5-31(e) (Supp. 1982). The system of classification shall be based upon, but not limited to, the factors set forth *supra* note 93 and accompanying text.

253. IOWA CODE ANN. § 455A.28(3) (West 1971).

drawal by permit holders during times of drought or emergency.<sup>254</sup> None of these states, however, requires advance formulation of emergency allocation plans.

Water rights legislation should direct the regulatory agency to formulate a plan for allocating water during water shortages among the permit holders in the affected area. Although advance planning commits the agency to a specific course of action at a time when it might prefer exercising discretion, the advantages of certainty outweigh the advantages of flexibility.<sup>255</sup> Advance planning gives the agency ample time to obtain public comment on its proposal, and avoids the need to make decisions in a crisis environment. Moreover, by notifying water users in advance how they will be treated during a water shortage, the agency encourages low-priority users to mitigate the damages of a water reduction by constructing storage facilities or making other arrangements for obtaining water during emergencies.<sup>256</sup>

At present, only Florida and New Jersey require advance formulation of emergency plans. The Florida Water Resources Act<sup>257</sup> requires the governing board of the Department of Natural Resources or of the individual water management district to formulate a plan for periods of water shortage. As part of this plan, the state agency or district governing board must adopt a reasonable system of permit classification. Factors it must consider include source of supply, method of extraction or diversion, and use of water.<sup>258</sup>

The New Jersey water regulation statute directed the Department of Environmental Protection to adopt an emergency water supply allocation plan within 180 days after the statute became effective. The Department may impose water usage restrictions pursuant to this plan when the governor declares that a state of water emergency exists. The Department's emergency allocation plan may include a priority system designating the order in which

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254. KY. REV. STAT. ANN. § 151.200(1) (Bobbs-Merrill 1980).

255. Ausness, *supra* note 7, at 237.

256. *Id.*

257. *See supra* note 58.

258. FLA. STAT. ANN. § 373.246(1) (West Supp. 1983). For a discussion of water shortage plans in the various water management districts, see F. MALONEY, S. PLAGER, R. AUSNESS & B. CANTER, *supra* note 60, at 250-57.

restrictions are to be imposed on the various categories of water usage.<sup>259</sup>

Because the standard for granting an initial permit right usually is noncomparative, such as the "beneficial use" standard, water allocation during periods of shortage must be based on some other criterion. Three promising approaches are allocating according to preferential use categories, allocating by straight rationing, and allocating according to temporal priority.

Under the preferential use approach, water users in a lower preference category would be required to restrict their withdrawals before those in a higher preference category. Preference categories might be based on a "public welfare" concept, with municipal users and public utilities placed in the highest priority category. Another alternative is for the agency to classify those who would be most severely affected by a sudden cut-off of water supply as high preference users. In a preference system based on effects, industrial and municipal users able to construct reservoirs may be assigned to a low preference category while irrigators and small users may be assigned to a higher preference category.

A second approach is to ration available water among all users in the affected area. Forcing all water users to share equally the consequences of a drought seems equitable. Across-the-board reductions in water withdrawals, however, do not necessarily affect all users equally. If, for example, an industrial user requires a certain quantity of water to keep the plant running, a twenty percent reduction might force him to close the plant entirely. Another industrial user might suffer only slight inconvenience from a twenty percent reduction. Of course, such inequity might be avoided by allowing permit holders to purchase additional water from other users during water shortages.<sup>260</sup>

Finally, the regulatory agency may allocate water during times of shortage on the basis of temporal priority. Those with the most recent water right would be cut off first during a water shortage. The traditional prior appropriation doctrine in the West allocates water this way during times of shortage. The principle of "first in

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259. N.J. STAT. ANN. § 58:1A-4(a), (b), (c) (West 1982).

260. See Trelease, *Alternatives to Appropriation Law*, 6 DEN. J. INT'L L. & POL'Y 283, 294-95 (1976).

time, first in right" has strong appeal. Like straight rationing, however, this technique may create illusory fairness at the expense of economic efficiency.

Probably no single approach will apportion water fairly among competing users during temporary shortages. An allocation program incorporating aspects of each of the three approaches may be the fairest means of reconciling competing goals.

### *Reallocation Mechanisms*

Because most permit schemes generally allocate water on a first-come, first-served basis, the initial water use pattern seldom will be optimal in the long run.<sup>261</sup> Consequently, once all of the available water is allocated, the regulatory agency must ensure that water may be transferred from less productive to more productive uses.<sup>262</sup>

#### *Short-term Permits*

Many water rights statutes in the East provide for limited term permits, often of relatively short duration. Iowa, for example, places a ten-year limit on its permits,<sup>263</sup> while in Florida the statutory limit for most water permits is twenty years.<sup>264</sup> When the permit expires, the regulatory agency may either renew it or allot the water to another applicant. A reallocation provision reflects a philosophy that water is a public resource that should not be allocated permanently to private parties.<sup>265</sup> Reallocation provisions also im-

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261. Most states either explicitly or implicitly apply a threshold criterion such as "beneficial use" to initial permit applications. Under this approach, permit applications generally will be approved if water is available. *E.g.*, IOWA CODE ANN. § 455A.22 (West 1971); KY. REV. STAT. ANN. § 151.170 (Bobbs-Merrill Supp. 1982). A few states have established a system of preference categories for initial permit applications. *E.g.*, MINN. STAT. ANN. § 105.41(1) (West Supp. 1983). Preferences only work well when applications compete, however, and competition is rare. Trelease, *New Water Legislation: Drafting for Development, Efficient Allocation and Environmental Protection*, 12 LAND & WATER L. REV. 385, 400 (1977). State agencies generally will not deny a permit application for a beneficial use if water is available for that use.

262. Another solution to this problem is to increase water supply through water resources development activities.

263. IOWA CODE ANN. § 45A.20 (West Supp. 1982).

264. FLA. STAT. ANN. § 373.236(1) (West 1974).

265. See J. HIRSHLEIFER, J. DEHAVEN & J. MILLIMAN, *WATER SUPPLY—ECONOMICS, TECH-*

PLICITLY assume that an administrative agency can allocate water more appropriately than market forces.<sup>266</sup>

Arguably, use of short-term permits allows the state regulatory agency to correct past mistakes, take account of new information, and respond effectively to changing societal needs and values. Additionally, short-term permit schemes coordinated with state land use controls facilitate long-range planning and allow the government to ensure that growth is rational and directed.<sup>267</sup>

Theoretically, neither the regulatory agency nor the new water user should have to compensate the original permit holder if a renewal application is denied, because an expired water right has no value. If the original permit holder has not fully amortized his capital investment, however, he may suffer a substantial loss if his permit is not renewed. In addition to being economically inefficient, this prospect of loss raises questions of fairness. Denying water to an existing enterprise without compensation is difficult to justify and may engender disrespect for the regulatory process.

Short-term permits also have economic drawbacks. Water legislation must provide a system conducive to investment in water-using enterprises.<sup>268</sup> Short-term permits create uncertainty about the long-term availability of water, and thereby discourage capital investment because permits seldom last long enough to allow entrepreneurs to amortize their investment. If the agency refuses to renew the permit at expiration, the permit holder may lose part of his investment.<sup>269</sup> Additionally, long-term financing may be difficult to obtain or expensive if repayment depends upon the productivity of land or activities which in turn depend upon renewal of short-term water use permits.<sup>270</sup>

The risk of nonrenewal creates problems near the end of the permit term as well as at the outset.<sup>271</sup> For example, if an irrigation

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NOLOGY, AND POLICY 246-47 (1970).

266. NATIONAL WATER COMMISSION, *WATER POLICIES FOR THE FUTURE* 286-87 (1973).

267. See generally Moses, *Water as a Tool for Recreational Land Use Planning*, 24 SYRACUSE L. REV. 1047 (1973); White, *Water as a Tool in Land Use Control, Legal Considerations: An Exploratory Essay*, 20 ROCKY MTN. MIN. L. INST. 671 (1975).

268. Trelease, *supra* note 256, at 404.

269. Ausness, *supra* note 7, at 257.

270. Adams, *Updating Ground Water Law: New Wine in Old Bottles*, 39 OHIO ST. L.J. 520, 529 (1978).

271. Andersen & Rogers, *Time-Limited Water Permits: Legal and Economic Considerations*, 39 OHIO ST. L.J. 530, 531 (1978).



system that initially costs \$40,000 breaks down irreparably in the fifteenth year of a twenty-year permit, the water user will not know whether to replace it.<sup>272</sup> Longer-term permits avoid some problems, but toward the end of their duration produce similar economic distortions.<sup>273</sup>

One solution to the nonrenewal problem is to require the new water user to compensate the permit holder for the value of his water right when renewal is denied. Compensation would protect the permit holder's investment while enabling the agency to reallocate the water to a more productive use.

Another problem with short-term permits is that renewal standards often are unclear. Assuming that the state regulatory agency should reallocate water resources through the permit renewal process, then the legislature must provide the regulatory agency with specific criteria for deciding among competing users. A few states apply the same criteria to renewal applications as they do to initial applications.<sup>274</sup> Some states give renewal applications preference over otherwise equivalent applications.<sup>275</sup> Most statutes, however, provide no criteria for evaluating renewal applications. Again, a compensation requirement would alleviate greatly the problem of vague reallocation standards. The new water user would be willing to purchase the existing permit holder's rights only when economical to do so.

### *Variable-term Permits*

Another solution to the security problem is to grant a water right lasting for the duration of the user's plant or enterprise.<sup>276</sup> North Carolina and South Carolina generally follow this approach. These states issue permits for ten years, the duration of the capac-

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tions, 12 GONZ. L. REV. 193, 226 (1977).

272. This example is taken from F. TRELEASE, *WATER LAW: RESOURCE USE AND ENVIRONMENTAL PROTECTION* 434 n.3 (2d ed. 1974).

273. Adams, *supra* note 265, at 529-30.

274. *E.g.*, N.C. GEN. STAT. § 143-215.16(a) (1978); S.C. CODE ANN. § 49-5-70(a) (Law. Co-op. 1976).

275. *E.g.*, FLA. STAT. § 373.233(2) (West 1974); GA. CODE ANN. § 12-5-31(f) (Supp. 1982).

276. Trelease, *Alternatives to Appropriation Law*, DEN. J. INT'L L. & POL'Y 283, 288 (1976).

ity use area designation,<sup>277</sup> or a period sufficient to amortize the applicant's water withdrawal or water use facilities, whichever is longest.<sup>278</sup> The National Water Commission also has suggested a variable-term water use permit approach.<sup>279</sup> Under the Commission's proposal, permits would last for a period sufficient for the water user to amortize his investment. Depending on the nature of the enterprise, permits might last for up to sixty years.<sup>280</sup> After amortization, the regulatory agency may reallocate the water without compensating the prior user if the agency determines that the water is needed for a public purpose with a high priority, such as municipal water supply, recreation, or environmental protection. In the absence of such a public need, the permit is renewed automatically.

### *Water Rights Transfers*

If the legislature adopts a policy of issuing long-term or perpetual permits, reallocation must be achieved largely by means of transfers, with compensation, during the term of the permit. These transfers may occur on either a voluntary or an involuntary basis.

Involuntary transfers may be accomplished through a preference system. This technique, found in some prior appropriation jurisdictions, uses a system of preference categories, allowing a water user in a higher preference category to condemn the water rights of a user in a lower preference category.<sup>281</sup> For example, if industrial uses were in a higher category than agricultural uses, an industrial user could acquire a farmer's water right in a condemnation proceeding. The industrial user would have to pay the farmer the fair market value of his water right and also would have to indemnify

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277. N.C. GEN. STAT. § 143-215.16(a) (1978); S.C. CODE ANN. § 49-5-70(a) (Law. Co-op. 1976).

278. See *supra* notes 189 & 199 and accompanying text.

279. NATIONAL WATER COMMISSION, WATER POLICIES FOR THE FUTURE 286-87 (1973).

280. The normal period for depreciation of a manufacturing plant is 40 years. Some plants, however, have useful lives in excess of 60 years. Trelease, *The Model Water Code, the Wise Administrator and the Goddam Bureaucrat*, 14 NAT. RESOURCES J. 207, 219 (1974).

281. Fisher, *Western Experience and Eastern Appropriation Proposals*, in THE LAW OF WATER ALLOCATION IN THE EASTERN UNITED STATES 75, 123-27 (D. Haber & S. Bergen eds. 1958); Thomas, *Appropriations of Water for a Preferred Purpose*, 22 ROCKY MTN. L. REV. 422 (1950).

third parties for any losses sustained as the result of the change. The compensation requirement not only satisfies due process concerns, but also ensures that transfers among private users will occur only when the new user's activity is more productive.

Reallocation may also be accomplished through voluntary transfers of water rights. Place-of-use and other restrictions, however, make such transfers very difficult in jurisdictions where the common law governs. Unfortunately, the situation is not much better in states having statutory permit systems, because most of the statutes do not expressly provide for voluntary transfers during the life of the permit. Some states allow transfers, but do not permit severance of the water right from the land.<sup>282</sup> This appurtenancy rule requires a large investment for the acquisition of water rights because the buyer must purchase the land described in the permit. The large investment required discourages voluntary transfers.<sup>283</sup>

A better statutory system would allow voluntary transfers to occur subject to state regulatory agency approval. North Carolina<sup>284</sup> and South Carolina<sup>285</sup> follow this approach. New Jersey also allows transfers with the consent of the state agency, but restricts transfers to identical water uses.<sup>286</sup> Some administrative supervision of transfers is necessary to prevent spillover effects.<sup>287</sup> Spillover effects include alterations in return flow,<sup>288</sup> water pollution,<sup>289</sup> waste, and diminution of supply that occurs when rights are sold to users who transfer water great distances.<sup>290</sup> The state agency, however,

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282. *E.g.*, IOWA CODE ANN. §§ 455A.20, .30 (West 1971 & Supp. 1982).

283. Note, *supra* note 47, at 1030.

284. N.C. GEN. STAT. § 143-215.16(b) (1978).

285. S.C. CODE ANN. § 49-5-70(b) (Law. Co-op. 1976).

286. N.J. STAT. ANN. § 58:1A-8(g) (West 1982).

287. Spillover costs occur when an action by one person imposes costs on others, thus reducing the capacity of the market to achieve an efficient allocation of resources. L. HARTMAN & D. SEASTONE, *WATER TRANSFERS: ECONOMIC EFFICIENCY AND ALTERNATIVE INSTITUTIONS* 2 (1970).

288. Trelease, *Policies for Water Law: Property Rights, Economic Forces, and Public Regulation*, 5 NAT. RESOURCES J. 1, 46 (1965). Most water uses do not consume the water. A significant portion of it returns to the watercourse from which it was taken as return flow. When a transfer or change in use occurs, the amount of water returned to the stream may decrease, thereby harming downstream users. *Id.*

289. J. HIRSHLEIFER, J. DEHAVEN & J. MILLIMAN, *supra* note 260, at 70-71.

290. Note, *Towards an Economic Distribution of Water Rights*, 1970 UTAH L. REV. 442, 446-48.

may adopt a number of measures to reduce the spillover effects. One solution simply is to prohibit transfers that have significant spillover effects.<sup>291</sup>

### CONCLUSION

Water rights legislation in the East represents a significant improvement over common law ground water and surface water allocation doctrines. The statutes make water available for more productive uses, establish an orderly system of water rights, and provide some protection for the public welfare.

Nevertheless, many of these water rights statutes remain primitive and incomplete. This Article has identified and discussed a number of common weaknesses in water rights legislation in the East. The first problem is the common practice of exempting certain kinds of large-scale water users. Another deficiency is the lack of coordination between water resources planning and water permit administration. A third area of concern is inadequate planning for temporary water shortages. Finally, almost all water rights statutes in the East fail to provide a fair and effective mechanism for reallocating water to more productive uses. These deficiencies must be corrected if the East is to achieve optimal use of water resources.

The water use regulatory scheme should be comprehensive; therefore, most exempted use categories should be abolished. Additionally, water resources planning must be broadened and should be closely tied to the regulatory process. Furthermore, water regulatory agencies must be required to prepare specific plans for responding to temporary water shortages so that water users know in advance what their position will be during emergency situations. Finally, reallocation must receive more attention. Although a number of alternatives exist, approaches that terminate presently exercised water rights without compensation are undesirable. Voluntary transfers should be encouraged as long as the rights of affected third parties are protected. By implementing these reforms, water regulatory agencies in the East should be able to en-

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291. J. HIRSHLEIFER, J. DEHAVEN & J. MILLIMAN, *supra* note 260, at 235; Milliman, *Water Law and Private Decision-Making: A Critique*, 2 J. LAW & ECON. 41, 46 (1959).

sure that adequate water resources exist to meet the economic and environmental needs of the region for many decades to come.