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# The Overlooked Farm Crisis: Our Rapidly Depleting Water Supply<sup>1</sup>

The rain is plenteous but, by God's decree,  
Only a third is meant for you and me;  
Two-thirds are taken by growing things  
Or vanish Heavenward on vapour's wings:  
Nor does it mathematically fall  
With social equity on one and all.  
The population's habit is to grow  
In every region where the water's low:  
Nature is blamed for failings that are Man's,  
And well-run rivers have to change their plans.<sup>2</sup>

Water mined<sup>3</sup> from a vast underground reserve called the Ogallala Aquifer<sup>4</sup> supports over one-fifth of the irrigated cropland in the United States.<sup>5</sup> The Ogallala Aquifer provides more than ninety percent of the water supply in the Great Plains.<sup>6</sup> The eight states overlying this aquifer produce over fifteen percent of the na-

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1 A recent Kansas State University survey indicated that "despite low farm prices and a stagnant economy, a majority of farmers on the High Plains said they felt water was their top priority." According to the survey, 85% of the 956 respondents considered ground water depletion the most significant problem, more significant than such issues as low crop prices, unemployment, and fuel and land prices. See U.P.I. wire release (July 26, 1985) (from LEXIS, Nexis library, News file).

2 C. HOWE, *INTERBASIN TRANSFERS OF WATER* v (1979) (from the poem "Water" by Sir Alan Herbert).

3 Groundwater mining occurs when withdrawals from an aquifer are made at rates greater than net recharge. See Aiken, *The National Water Policy Review and Western Water Rights Law Reform: An Overview*, 59 NEB. L. REV. 327, 334 (1980).

4 The Ogallala Aquifer, formed during the late Miocene and Pliocene eras, stores vast quantities of water in layers of sand and gravel. Believed to be the largest underground reserve of freshwater in the world, this ancient aquifer underlies portions of Wyoming, South Dakota, Nebraska, Colorado, Kansas, Oklahoma, Texas, and New Mexico. Precipitation is the aquifer's primary source of recharge. HIGH PLAINS ASSOCIATES, INC., *SIX-STATE HIGH PLAINS-OGALLALA AQUIFER REGIONAL RESOURCES STUDY: SUMMARY* (1982) (published in Austin, Texas) [hereinafter cited as *SIX-STATE HIGH PLAINS STUDY*]; D. SHERIDAN, *DESERTIFICATION OF THE UNITED STATES 94-98* (1981). See generally M. Donahue, A. Bixby & D. Siebert, *Great Lakes Diversion and Consumptive Uses: The Issue in Perspective* (1985) (manuscript prepared for "Great Lakes Legal Seminar: Diversion and Consumptive Use," sponsored by the Center for the Great Lakes, December 11-13, 1985, reprinted in 18 CASE W. RES. J. INT'L L. 19 (1986)).

5 S. POSTEL, *WATER: RETHINKING MANAGEMENT IN AN AGE OF SCARCITY* 20 (1984).

6 INTERNATIONAL JOINT COMMISSION, *GREAT LAKES DIVERSION AND CONSUMPTIVE USES: A REPORT TO THE GOVERNMENTS OF THE UNITED STATES AND CANADA UNDER THE 1977 REFERENCE 81* (1985) [hereinafter cited as *INTERNATIONAL JOINT COMMISSION*]. The Great Plains States involved include Wyoming, South Dakota, Nebraska, Colorado, Kansas, Oklahoma, Texas, and New Mexico.

tion's total value of wheat, corn, sorghum, and cotton,<sup>7</sup> and thirty-eight percent of the nation's total value of livestock.<sup>8</sup>

In the last forty years, farmers have pumped massive amounts of water from the aquifer. While the need for water continues to grow, the amount available decreases rapidly. In some areas, farmers are consuming the groundwater at more than twice the rate of natural recharge.<sup>9</sup>

Economists and government leaders are concerned about the potential collapse of this lucrative regional farming economy. One alternative is to provide farmers dependent on the diminishing Ogallala Aquifer with water through an interbasin transfer<sup>10</sup> of water from the Great Lakes. Although such a transfer is technologically feasible, no federal policy exists concerning an interstate diversion of water. In *Sporhase v. Nebraska*,<sup>11</sup> however, the Supreme Court struck down a state embargo statute, restricting the transfer of water to another state, as unconstitutional under the commerce clause.<sup>12</sup> *Sporhase* suggests that any unreasonable attempt to keep the water for the riparian landowners of the Great Lakes Basin would also violate commerce clause principles.

Part I of this note analyzes the water shortage problem of the Ogallala Aquifer.<sup>13</sup> Part II discusses the possibility of an interbasin transfer of water from the Great Lakes to remedy the Great Plains water crisis and the legal considerations involved in such a transfer. Part III outlines some state and federal legislation recently proffered to protect the Great Lakes water as well as legislation to aid the Ogallala Aquifer. Finally, Part IV concludes that state manage-

7 U.S. DEPARTMENT OF COMMERCE, A SUMMARY OF RESULTS OF THE OGALLALA AQUIFER REGIONAL STUDY, WITH RECOMMENDATIONS TO THE SECRETARY OF COMMERCE AND CONGRESS 1 (1982) [hereinafter cited as OGALLALA AQUIFER REGIONAL STUDY]. This study by the U.S. Army Corps of Engineers and the High Plains Associates documents the depletion of the the Ogallala Aquifer and its importance to United States agricultural production. See also SIX-STATE HIGH PLAINS STUDY, *supra* note 4.

8 OGALLALA AQUIFER REGIONAL STUDY, *supra* note 7, at 1.

9 D. SHERIDAN, *supra* note 4, at 94-98.

10 Interbasin transfers "carry water over one or more state lines for use in a state that either (1) lies entirely outside the basin of origin, or (2) lies partly within the basin of origin but which would import substantially more water than it contributes to the basin of origin." W. GOLDFARB, WATER LAW 35 (1984).

11 458 U.S. 941 (1982).

12 Under the commerce clause, Congress shall have the power to "regulate Commerce . . . among the several States . . ." U.S. CONST. art. I, § 8, cl. 3.

13 The Great Plains States are not the only region in the United States experiencing a water crisis. Some arid western states are suffering from groundwater overdraft while some eastern states are troubled with critically polluted water sources. This note focuses specifically on the Ogallala Aquifer problem and a diversion from the Great Lakes as a possible remedy. This focus can provide a model for understanding how to confront similar water supply problems elsewhere. See generally S. POSTEL, *supra* note 5; L. BROWN, STATE OF THE WORLD 1985 (1985); L. BROWN, BUILDING A SUSTAINABLE SOCIETY (1981).

ment policies promoting water conservation would handle the problem better than an interbasin transfer of water.

### I. The Ogallala Aquifer

The Ogallala Aquifer stretches from southern South Dakota to northwest Texas, underlying portions of eight states and spanning an area roughly three times the state of New York.<sup>14</sup> The formation varies both in thickness and in water reserves per unit of surface area.<sup>15</sup> In 1977, the total available water equalled 3.04 billion acre-feet.<sup>16</sup> Seventy-seven percent of the water was located in Nebraska; the rest was split primarily between Kansas, Colorado, New Mexico, Texas, and Oklahoma.<sup>17</sup> The depth of available water ranged from 10 to 1200 feet.<sup>18</sup>

Irrigation expanded rapidly in the land overlying the Ogallala Aquifer,<sup>19</sup> accounting for much of the growth in irrigated acreage in the United States since 1945.<sup>20</sup> Irrigators are now the primary cause of declining groundwater levels in the Ogallala Aquifer.<sup>21</sup> Increases in irrigation resulted in a corresponding increase in water use.<sup>22</sup> Due to irrigation, hydrologists<sup>23</sup> estimate that vast portions of the Ogallala are now half depleted.<sup>24</sup> Irrigators remain dependent on this water source even while the water levels continue to

14 S. POSTEL, *supra* note 5, at 20.

15 Thickness and water reserves per unit of surface area refer to how deep the water reserve is and how much water is actually available. See OGALLALA AQUIFER REGIONAL STUDY, *supra* note 7, at 3.

16 An acre-foot is the "amount covering one acre to a depth of one foot." THE AMERICAN COLLEGE DICTIONARY 11 (C. Barnhart ed. 1952).

17 OGALLALA AQUIFER REGIONAL STUDY, *supra* note 7, at 3.

18 *Id.*

19 Total irrigated acreage in the area increased from about 3.5 million acres (mostly in Texas and Nebraska) in 1950 to more than 14 million acres in 1980. OGALLALA AQUIFER REGIONAL STUDY, *supra* note 7, at 3. Today, the High Plains has approximately 14.3 million acres of irrigated land, with more than 170,000 irrigation wells using water from the Ogallala. *Id.* at 1.

20 L. BROWN, SUSTAINABLE SOCIETY, *supra* note 13, at 26.

21 Irrigators are currently withdrawing between one and three acre-feet per acre, per year. In contrast, the recharge rate from rainfall rarely exceeds one acre-inch per acre, per year. Massey & Sloggett, *Managing Groundwater in the Ogallala Aquifer for Irrigation*, 9 OKLA. CITY U.L. REV. 379, 381 (1984).

22 Before 1950, less than 7 million acre-feet of water were withdrawn each year. By 1980, more than 21 million acre-feet were pumped annually, even though improved irrigation efficiencies had reduced per acre application of water by approximately 30%. OGALLALA AQUIFER REGIONAL STUDY, *supra* note 7, at 3.

23 A hydrologist is one who deals with the science of "water on the land, its properties, laws, geographical distribution, etc." THE AMERICAN COLLEGE DICTIONARY 592 (C. Barnhart ed. 1952).

24 According to recent estimates, the Ogallala is now half depleted under 900,000 hectares (1 hectare equals 2.471 acres) of Kansas, New Mexico, and Texas. L. BROWN, STATE OF THE WORLD 1985, *supra* note 13, at 52. In 1977, the rate of decline in the area ranged from six inches to four feet annually. Massey & Sloggett, *supra* note 21, at 382.

drop. Consequently, costs of irrigation are increasing due to the greater energy required to pump the water from the ground.<sup>25</sup>

The increase in irrigated acreage has also impacted significantly on the region's agriculture. Many of the country's largest beef feedlots developed here because of the unique combination of a dry climate and ample supplies of grain sorghum, corn, and alfalfa which were grown on the irrigated land.<sup>26</sup> Essentially a dryland farming economy<sup>27</sup> in the 1940s, the Great Plains became an intensive farming economy highly dependent on water for irrigation.<sup>28</sup>

The 1982 Ogallala Aquifer Regional Study projected increases in the land under irrigation and continued depletion of the water supply.<sup>29</sup> The study also projected increases in the production of the six major Ogallala crops.<sup>30</sup> The total value of crops produced from both irrigated and dryland farming for the area is projected to rise from approximately \$4.6 billion in 1977 to \$11.5 billion in 2020.<sup>31</sup>

The states overlying the Ogallala Aquifer maintain a significant role in United States agricultural production. If the projections for both the decrease in the water supply and the increase in agricultural production are accurate, the Great Plains are potentially headed towards a collapse of their lucrative farming economy. Ac-

25 Massey & Sloggett, *supra* note 21, at 383.

26 L. BROWN, SUSTAINABLE SOCIETY, *supra* note 13, at 26.

27 Dryland farming products include wheat, feed grains, and cotton.

28 Massey & Sloggett, *supra* note 21, at 384. With additional water, yields of cotton, grain sorghum, and wheat can be increased three to four times more than the yield available from dryland farming. For example, the Ogallala area produced 150 million bushels of feed grain in 1950, which increased to 1.25 billion bushels in 1980. OGALLALA AQUIFER REGIONAL STUDY, *supra* note 7, at 3. This significantly increased the number of cattle fed. According to a 1983 study by Oklahoma State University, all growth in cattle feeding in the country from 1960 to 1980 occurred in six of the Ogallala states. In 1980, the Ogallala area claimed 55% of all the cattle and calves on feed in the country. Massey & Sloggett, *supra* note 21, at 385.

29 The amount of land under irrigation is expected to increase from 14.3 million acres in 1977 to 18 million acres in 2020. Most of this increase is expected to occur in Nebraska where the largest portion of the Aquifer rests. OGALLALA AQUIFER REGIONAL STUDY, *supra* note 7, at 13.

During this period, it is expected that farmers will have used 23% of the 3.04 billion acre-feet of water that was in the Aquifer in 1977. *Id.* at 16. In three southern states, New Mexico, Oklahoma, and Texas, more than 50% of the 1977 water storage will have been used by 2020. Projections for Texas show that two-thirds of the water supply will have been used. *Id.*

In Gaines County, Texas, farmers are using groundwater at more than twice the natural rate of recharge. In 1969, pumping underground water cost Gaines County farmers about \$1.50 per acre-foot; in 1979, it cost them \$60 per acre-foot. D. SHERIDAN, *supra* note 4, at 96. As the groundwater level continues to drop, the energy costs will continue to rise.

30 The six major Ogallala crops are wheat, corn, grain sorghum, soybeans, alfalfa, and cotton.

31 OGALLALA AQUIFER REGIONAL STUDY, *supra* note 7, at 13. Irrigated production accounts for 46% of the 1977 total and 60% of the projected total in 2020. *Id.*

ording to the Council on Environmental Quality, "[w]hen the Ogallala Aquifer water runs out, the farmers, bankers, irrigation system manufacturers, fertilizer producers, and others who have built their livelihoods on the overdraft of this resource will form a powerful lobby."<sup>32</sup> One exceptionally expensive scheme that this lobby may propose to remedy the crisis is an interbasin transfer of water from the Great Lakes.

## II. The Great Lakes as a Remedy

### A. *The Possibility of a Diversion*

Except for an occasional drought, the upper midwest has considered itself relatively immune from water shortage problems.<sup>33</sup> Concern over depletion of the region's largest freshwater source, the Great Lakes,<sup>34</sup> appeared with new force in 1981 when a coal company proposed the use of a coal slurry pipeline.<sup>35</sup> The proposed pipeline would have transported coal from Wyoming to the Great Lakes region using Lake Superior water.<sup>36</sup> While the study showed that the diversion was feasible, Congress refused to pass legislation allowing the coal company to construct the pipeline over existing railroad rights-of-way.<sup>37</sup>

In 1982, the Army Corps of Engineers and the High Plains Associates released the Ogallala Aquifer Regional Study.<sup>38</sup> A portion of the study included an analysis of adjacent water basins to determine if surplus waters existed and if the waters could be cost-effectively diverted for agricultural use in the High Plains.<sup>39</sup> The study indicated that diversions could have serious economic and environmental consequences.<sup>40</sup> The study did not consider a diversion from the Great Lakes, but the finding that the Missouri River had

32 D. SHERIDAN, *supra* note 4, at 98.

33 GREAT LAKES GOVERNORS TASK FORCE, FINAL REPORT AND RECOMMENDATIONS: GREAT LAKES GOVERNORS TASK FORCE ON WATER DIVERSION AND GREAT LAKES INSTITUTIONS 4 (1985) [hereinafter cited as WATER DIVERSIONS].

34 The Great Lakes (Lakes Erie, Huron, Michigan, Ontario, and Superior) hold 95,000 square miles of water surface and 20% of the world's fresh water. INTERNATIONAL JOINT COMMISSION, *supra* note 6, at 5, 7.

35 Slurry technology is used in many parts of the world to transport various commodities. Water, a popular slurry medium, is used to suspend the coal during transportation in the pipeline. INTERNATIONAL JOINT COMMISSION, *supra* note 6, at 82.

36 WATER DIVERSIONS, *supra* note 33, at 4. The company's study indicated that the 1,500 mile, 42-inch pipeline could move 36 million tons of coal yearly and would require the use of 11 million gallons per day (17 cubic feet per second (cfs)) of Lake Superior water. *Id.*

37 *Id.*

38 *See* notes 4 and 7 *supra*.

39 WATER TRANSFER ELEMENT OF THE SIX STATES HIGH PLAINS-OGALLALA AQUIFER REGIONAL RESOURCES STUDY: SUMMARY REPORT (1982) [hereinafter cited as WATER TRANSFER ELEMENT].

40 *Id.* at 99-100. The study estimated that to divert 10,000 cfs (6.5 billion gallons per

very little surplus water raised questions concerning the combination of Great Lakes water with Missouri River water to fulfill the need.

In March 1983, the Michigan Water Resources Task Force undertook a study to estimate the cost of diverting 10,000 cubic feet per second (cfs) of Lake Superior water to the Missouri River Basin.<sup>41</sup> While the estimated costs for such a project were extremely high, the study indicated that it is technically feasible to transport Great Lakes water over great distances.<sup>42</sup> This fact, coupled with the reality that the High Plains and many areas of the western United States are experiencing critical water shortages, illuminates the importance of re-evaluating the United States water resources system.<sup>43</sup>

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day) from the Missouri River would cost from \$350 to \$450 per acre-foot. This does not include the cost of distribution. WATER DIVERSIONS, *supra* note 33, at 4.

41 WATER DIVERSIONS, *supra* note 33, at 4. This study was undertaken for the sole purpose of discovering whether a diversion was economically feasible, not as a diversion proposal.

The estimated cost approximated \$20 billion, plus \$7 billion for seven power plants to provide the required energy, and annual operating costs of more than \$15 million. The average cost at the Missouri River would be more than \$350 per acre-foot of water; the typical cost for other irrigation water ranges from \$20-60 per acre foot. WATER DIVERSIONS, *supra* note 33, at 4. See also INTERNATIONAL JOINT COMMISSION, *supra* note 6, at 81.

42 WATER DIVERSIONS, *supra* note 33, at 4.

43 Recently, the Center for the Great Lakes detailed the important role the Great Lakes play in the regional and national economy. THE CENTER FOR THE GREAT LAKES, THE LAKE EFFECT: IMPACT OF THE GREAT LAKES ON THE REGION'S ECONOMY (1984) (a report to the Council of Great Lakes Governors). The report prepared for the Council of Great Lakes Governors noted the following important facts:

(1) One fifth of U.S. manufacturing is located along the Great Lakes shoreline, including 70% of the nation's steel production. *Id.* at 7.

(2) In 1983, the Great Lakes generated 23.7 billion kilowatt hours of hydroelectric power in the U.S. and 20 billion in Ontario. *Id.*

(3) Thirty five million people live within the Great Lakes watershed, and 26 million of them rely on the Great Lakes for their drinking water. *Id.*

(4) In 1983, shippers transported 78.6 million tons of commercial cargo through the Sault Ste. Marie locks and 49.7 million tons passed through the St. Lawrence Seaway. *Id.* at 8.

(5) Great Lakes tourism is estimated to generate between \$8 billion and \$12 billion for the region's economy (sport fishing alone produces almost \$1.5 billion). *Id.*

(6) Ninety-eight state parks, 39 provincial parks, and 12 national parks border the U.S. and Canadian shores. In 1983, approximately 63 million people visited at least one of these parks. *Id.*

Reliance on the Great Lakes is expected to continue. In a 1981 report to the International Joint Commission, the International Great Lakes Diversions and Consumptive Uses Study Board projected a five-fold increase in consumptive uses of Great Lakes water by 2035. WATER DIVERSIONS, *supra* note 33, at 6. The IJC defines consumptive uses as "that portion of water that has been withdrawn or withheld from the Great Lakes for various uses such as power generation, manufacturing and so on, and is either known or assumed to be lost due to evaporation during use, leakage, or incorporation into manufactured products, or for other reasons has not been returned." INTERNATIONAL JOINT COMMISSION, *supra* note 6, at 4.

The IJC, however, noted that projections beyond the year 2000 are unreliable and,

## B. *Legal Considerations*

### 1. The Commerce Clause

Presently, Great Lakes water is used exclusively within the Great Lakes Basin, with the exception of the Chicago Canal.<sup>44</sup> The Chicago Canal diverts water from Lake Michigan into the Mississippi watershed.<sup>45</sup> Because it connects with the Mississippi, the Chicago Canal has been considered as a possible starting point for diverting water to the High Plains States.<sup>46</sup> The Great Lakes States may not be able to restrict an interstate diversion through this passage as a result of the Supreme Court's decision in *Sporhase v. Nebraska*.<sup>47</sup>

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therefore, it has adjusted the Study Board's projections downward. INTERNATIONAL JOINT COMMISSION, *supra* note 6, at 30-37.

44 The Chicago Sanitary and Ship Canal is the only existing diversion that diverts water out of the Great Lakes. Completed in 1848, the Canal connected the Chicago River with the DesPlaines River. By dredging the Chicago River and lowering the canal bed, water began to flow out of Lake Michigan. Through a chain of tributaries, Lake Michigan water actually flows, in varying amounts, into the Mississippi River. Tubbs, *Great Lakes Water Diversion: Federal Authority Over Great Lakes Water*, 1983 DET. C.L. REV. 919, 921-22. See generally Herget, *The Chicago Sanitary and Ship Canal: A Case Study of Law as a Vehicle for Managing our Environment*, 1974 U. ILL. L.F. 285.

In 1925, the U.S. Supreme Court affirmed the legality of this diversion subject to the congressional policy of maintaining navigable lake levels. See *Sanitary Dist. v. United States*, 266 U.S. 405 (1925) (the Court enjoined the Sanitary District of Chicago from diverting water from Lake Michigan in excess of 250,000 cubic feet per minute).

The riparian states within the Great Lakes Basin disagree on the issue of diverting Great Lakes water to points outside the Great Lakes watershed. See *Wisconsin v. Illinois*, 278 U.S. 367 (1929), 281 U.S. 179 (1930), 289 U.S. 395 (1933), 388 U.S. 426 (1967), 449 U.S. 48 (1980). In *Wisconsin*, the state of Wisconsin sought to enjoin Illinois from diverting Lake Michigan water. Before 1938, the amount of water diverted was as much as 10,000 cfs annually. As a result of this intense legal dispute, the Chicago diversion is now limited to 3,200 cfs annually. *Wisconsin v. Illinois*, 388 U.S. 426 (1967), 449 U.S. 48 (1980).

Under authorization of the Water Resources Development Act of 1976, 33 U.S.C. § 426k (1982), the International Joint Commission attempted to evaluate the effects of increasing the diversion from 3,200 cfs to 10,000 cfs. INTERNATIONAL JOINT COMMISSION, *supra* note 6, at 22-23. The study portion was funded through fiscal year 1981, against the will of the Canadian Government. *Id.* at 23. The study did determine, however, that it would be possible to divert up to 8,700 cfs during periods when water supply in the Great Lakes is at above-average levels. See Wilder, *The Great Lakes as a Water Resource: Questions of Ownership and Control*, 59 IND. L.J. 463, 481 n.114 (1984).

45 See note 44 *supra*.

46 See Durenberger, *Water for a Thirsty World—Are the Great Lakes in Danger?*, 1 GREAT LAKES REPORTER 8, 9 (1984). In the article, U.S. Senator David S. Durenberger of Minnesota discusses diverting water from Lake Michigan: "Less than half of its capacity is currently being used, and with the Mississippi a potential source to recharge the Ogallala Aquifer, it would be possible to balance transfers from the Mississippi Basin by diverting water from the Great Lakes through the Illinois River." *Id.*

47 458 U.S. 941 (1982). In *Sporhase*, a farmer whose land straddled the Colorado and Nebraska border chose to irrigate some of his Colorado land with groundwater from a well on the Nebraska portion of his property. *Id.* at 944-45. Under Nebraska law, one who intends to withdraw groundwater from Nebraska for use in another state must obtain a permit from the Nebraska Department of Natural Resources. *Id.* at 945. A permit will not be granted unless the withdrawal is: (1) reasonable, (2) not contrary to the conservation of



In *Sporhase*, the central issue was whether a Nebraska statute restricting the transfer of water to another state imposed an impermissible burden on interstate commerce in violation of the commerce clause.<sup>48</sup> The Supreme Court held that groundwater was an article of interstate commerce and that the Nebraska reciprocity provision violated the commerce clause.<sup>49</sup> The Court reasoned that, because of the reciprocity requirement, which obligated the state receiving the water to grant reciprocal rights to Nebraska in the future, the statute was facially discriminatory and thus subject to the strict scrutiny test.<sup>50</sup> Under this test, the statute is constitutional if (1) it serves a legitimate local purpose, (2) it is narrowly tailored to achieve that purpose, and (3) no adequate nondiscriminatory alternative exists.<sup>51</sup>

The Court found that the purpose of the statute—to conserve and preserve diminishing groundwater resources—was important and legitimate. Furthermore, the statute applied equally to residents and out-of-state users and the criteria were related to the legitimate local purpose of conservation. The Court held, however, that the reciprocity requirement was an impermissible burden on interstate commerce because it was not narrowly tailored to conservation and preservation purposes.<sup>52</sup>

The Court ruled that Congress' long-standing deference to state water law did not demonstrate an intent to permit discrimination against interstate commerce in ground water. As the Court stated in *H.P. Hood v. Dumond*, the state has the power "to shelter its people from menaces to their health or safety," but not "to retard, burden or constrict the flow of commerce for their economic advantage."<sup>53</sup> Therefore, the state may discriminate in favor of its citizens only to the extent that water is essential to their health.<sup>54</sup>

The Court further stated that federal constitutional constraints are not suspended merely because a state claims public ownership of internal groundwaters. Such a claim may allow a limited prefer-

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groundwater, (3) not otherwise detrimental to public welfare, and (4) the state receiving the water must grant reciprocal rights to Nebraska. *Id.* See also NEB. REV. STAT. § 46-613.01 (1978).

Colorado prohibited the exportation of groundwater, thus making it impossible to comply with the reciprocity requirement. With this in mind, *Sporhase* chose to export the water without even applying for a permit. Nebraska filed suit to enjoin the pumping. *Sporhase*, 458 U.S. at 945.

48 U.S. CONST. art. I, § 8, cl. 3; see note 12 *supra*.

49 458 U.S. at 954-55.

50 *Id.* at 955, 958-59.

51 *Id.* at 955. See also *Hughes v. Oklahoma*, 441 U.S. 322, 336 (1979); *Pike v. Bruce Church, Inc.*, 397 U.S. 137, 142 (1970).

52 458 U.S. at 955-59.

53 336 U.S. 525, 533 (1949).

54 *Sporhase*, 458 U.S. at 957.

ence for its own citizens in the handling of the resource,<sup>55</sup> but a state's asserted ownership of public waters within the state is only a legal fiction.<sup>56</sup> Most importantly, the Court held that the multistate character of the water source involved, the Ogallala Aquifer, confirms the view that "there is a significant federal interest in conservation as well as in fair allocation of this diminishing resource."<sup>57</sup> The most beneficial use of water "might be in another state."<sup>58</sup>

*El Paso v. Reynolds*<sup>59</sup> followed the holding in *Sporhase*. The court in *El Paso* ruled that the relevant constitutional and statutory sections, which restricted the transfer of water out of the state, were primarily directed at future needs because New Mexico was not experiencing a water shortage.<sup>60</sup> A state may discriminate in favor of its citizens for their health and safety, but must not, as New Mexico did here, "constrict the flow of . . . commerce for their economic advantage . . . ." <sup>61</sup> While conservation and public welfare are legitimate legal purposes, the laws in question were not narrowly tailored to achieve those ends.<sup>62</sup>

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55 *Id.*

56 *Id.* at 954.

57 *Id.* *Cf.* *Arizona v. California*, 373 U.S. 546, 564-66 (1963) (holding that the federal government may allocate water to serve the national interest, and may supercede federal common law and state law to do so).

58 458 U.S. at 959.

59 563 F. Supp. 379 (D.N.M. 1983). In *El Paso*, the city of El Paso, Texas, attempted to secure the right to 296,000 acre-feet of water annually from southeastern New Mexico. *Id.* at 381. El Paso's applications for permits to appropriate the water were denied because of the New Mexico constitution and statutes which precluded "utilization of New Mexico groundwater outside the borders of the state." *Id.* See N.M. CONST. art. XVI, § 2 & 3; N.M. STAT. ANN. § 72-12-1 (1978). New Mexico law required that the use of groundwater not be contrary to conservation of water within the state nor detrimental to the public welfare of the state. 563 F. Supp. at 388-90. Under present New Mexico law, the State Engineer may grant a permit only if he finds that unappropriated waters are available and that existing water rights would be unimpaired. N.M. STAT. ANN. § 72-12-3 (1978). The State Engineer monitors withdrawals from non-rechargeable aquifers to ensure that they have a reasonable life. 563 F. Supp. at 389.

60 563 F. Supp. at 389-90. New Mexico attempted to raise water shortage as a justification for its absolute ban on groundwater exports. Because New Mexico was not then experiencing a water shortage, the New Mexico statute did not pass the strict scrutiny test. *Id.* at 389-91.

61 *Id.* See also *H.P. Hood v. Dumond*, 336 U.S. 525, 533 (1949).

62 563 F. Supp. at 391. New Mexico appealed the decision to the Tenth Circuit and it was remanded in December 1983 (unpublished opinion). See *El Paso v. Reynolds*, 597 F. Supp. 694 (D.N.M. 1984).

Prior to the appeal, the New Mexico Legislature repealed the anti-export statute and enacted new provisions establishing an application and review procedure for the withdrawal and export of groundwater. See N.M. STAT. ANN. § 72-12B-1 (Cum. Supp. 1984). The new law required consideration of six factors when ruling on permit applications: (1) the supply of groundwater available to the State of New Mexico; (2) the water demands of the state; (3) the existence of water shortages in the State; (4) the feasibility that the water, which is the subject of the application, could be transported to alleviate water shortages in the State of New Mexico; (5) the supply and sources of water available to the applicant in the state where the applicant intends to use the water; and (6) the demands

The *Sporhase* and *El Paso* decisions provide the Great Lakes States with some guidelines for building acceptable diversion legislation. To pass constitutional muster when regulating interstate transportation of water, states must be able to show that the regulations apply equally to in-state and out-of-state users,<sup>63</sup> and that the regulation is narrowly tailored to conservation and preservation purposes.<sup>64</sup>

## 2. The Boundary Waters Treaty

Any diversion that affects lake levels must be approved by the International Joint Commission (IJC).<sup>65</sup> The IJC was established by the Boundary Waters Treaty of 1909 between the United States and Canada. In a January 1985 report, the Great Lakes Governors Task Force on Water Diversion and Great Lakes Institutions discussed three problems with the effectiveness of the treaty.<sup>66</sup> First, the IJC's authority is restricted to approving or disapproving permit applications. Because not all of the Great Lakes States follow the permit process, it is uncertain whether the IJC would independently intervene to stop a diversion project that had not followed the permit procedure.<sup>67</sup> Second, the IJC's jurisdiction is limited to those diversions "affecting the natural level, or flow of boundary waters."<sup>68</sup> Arguably then, small-scale diversions that have no singular effect, but which could have a cumulative effect on lake levels, might not be covered by the agreement.<sup>69</sup> Finally, the report points out that the treaty does not include Lake Michigan or its tributaries because these waters are wholly within the United States.<sup>70</sup> Water diverted

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placed on the applicant's supply in the state where the applicant intends to use the water. See N.M. STAT. ANN. § 72-12B-1 D (Cum. Supp. 1984).

Reviewing the new statute, the district court held that consideration of these factors did not impermissibly discriminate against interstate commerce. 597 F. Supp. at 708. The statute, however, was held unconstitutional because it did not require that these criteria and factors also be applied to intrastate transfers. *Id.*

<sup>63</sup> A state may favor its own citizens in times of shortage to protect their welfare, but a state cannot favor its own citizens just to protect the economic well-being of the state. See notes 53 and 61 *supra* and accompanying text.

<sup>64</sup> WATER DIVERSIONS, *supra* note 33, at 15.

<sup>65</sup> Article III of the Boundary Waters Treaty states:

[N]o further uses . . . or diversions, whether temporary or permanent, of boundary waters on either side of the line, affecting the natural level of flow of waters on either side of the line, shall be made except by authority of the United States or the Dominion of Canada within their respective jurisdictions and with the approval . . . of . . . the International Joint Commission.

Boundary Waters Treaty, Jan. 11, 1909, United States-Great Britain (for Canada), art. III, 36 Stat. 2448.

<sup>66</sup> WATER DIVERSIONS, *supra* note 33, at 15-16.

<sup>67</sup> *Id.*

<sup>68</sup> *Id.* at 16.

<sup>69</sup> *Id.*

<sup>70</sup> *Id.*

out of Lake Michigan, however, does affect the water levels in the other lakes.<sup>71</sup> If the lowered levels affect navigation, Canada has a special right to protest any changes.<sup>72</sup> The report notes that Lake Michigan is the most significant "wild card" in the current system of water laws—the status of diversion from it remains unclear.<sup>73</sup>

### 3. Surplus Water

Surplus water has been defined as any water in a waterbody not beneficially used.<sup>74</sup> Under this definition, much of the Great Lakes water might be considered surplus.<sup>75</sup> Arguably, if a riparian state possesses unexercised usufructuary rights<sup>76</sup> to Great Lakes water for which it has no existing intrastate beneficial use, it would not be a violation of the public trust<sup>77</sup> or the police power to export the

71 The Chicago diversion decreases the water supply into Lake Michigan as well as creating a diversion out of Lake Michigan. According to the International Joint Commission, the effect of the diversion on lake levels has been to reduce the mean levels of Lakes Michigan-Huron by 6.4 cm (0.21 feet), Lake Erie by 4.3 cm (0.14 feet), and Lake Ontario by 3.0 cm (0.10 feet). INTERNATIONAL JOINT COMMISSION, *supra* note 6, at 15. See also Tubbs, *supra* note 44, at 60-61; B. Barker, Lake Diversion at Chicago (1985) (manuscript prepared for "Great Lakes Legal Seminar: Diversion and Consumptive Use," sponsored by the Center for the Great Lakes, December 11-13, 1985, reprinted in 18 CASE W. RES. J. INT'L L. 203 (1986)).

72 WATER DIVERSIONS, *supra* note 33, at 16. The navigation rights of Canada are specifically preserved by the treaty. *Id.*

73 *Id.* See also Durenberger, *supra* note 46. The Lake Michigan diversion at Chicago remains under the continuing jurisdiction of the United States Supreme Court. See note 44 *supra* and accompanying text.

74 See WIS. STAT. ANN. 30.18(2) (West 1973). See also Wilder, *supra* note 44, at 481-85.

75 Wilder, *supra* note 44, at 482. The article notes that prevailing legal assumptions which define "surplus water" and "beneficial use" reflect the ideological bias of prior appropriation concepts. *Id.* at 482 n.120. The International Joint Commission suggests extending the definition of beneficial use to require maintaining lake levels to benefit fish populations, not restricting the definition to beneficial consumptive uses of human beings. *Id.*

76 A usufructuary right is ownership of the right to use property, in contrast to ownership of the property itself. *Id.* at 468 n.22.

77 "Public trust" is a changing legal doctrine that will undoubtedly generate much water law litigation in the future. Dating back to Roman times, this doctrine asserts that governments hold certain rights in trust for the public and can act to protect the public rights from private interests. L. BROWN, STATE OF THE WORLD 1985, *supra* note 13, at 70. In the United States, this doctrine has come to mean the right of the individual state to regulate and control its navigable waters and the lands underlying them on behalf of its citizens for public uses such as navigation, commerce, and fisheries. See Note, *Water Law—Public Trust Doctrine*, 24 NAT. RESOURCES J. 809, 812 (1984). See also *Illinois Cent. R.R. v. Illinois*, 146 U.S. 387 (1892) (establishing the right of state legislatures to pass bare title to trust property while enjoining the legislature from ever relinquishing their supervisory role over navigation, commerce, and fishing in such properties); *National Audubon Society v. Superior Court of Alpine County*, 33 Cal. 3d 419, 658 P.2d 709, 189 Cal. Rptr. 346 (holding that the public trust doctrine may be relied on to maintain lake levels), *cert. denied*, 464 U.S. 977 (1983). In *Illinois Central*, the Court held that the state cannot alienate trust property unless it can "be disposed of without any substantial impairment of the public interest in the lands and waters remaining." 146 U.S. at 453.

The public trust doctrine has potentially sweeping effects since even existing water

water.<sup>78</sup> Under *Sporhase*, if a surplus amount of water exists, a statute prohibiting water export, especially for the sake of economic protection, would most likely fail strict commerce clause scrutiny.

*Sporhase*, however, did recognize the federal interest in "conservation" and "fair allocation" of diminishing water resources,<sup>79</sup> especially when the water resources have an interstate dimension. With this in mind, courts would likely realize the importance of maintaining lake levels<sup>80</sup> adequate for navigation. If ships cannot pass through the lakes, or have difficulty loading and unloading, it would significantly burden interstate commerce. In effect, it might be proper under the commerce clause to allow surplus water to maintain navigable lake levels.<sup>81</sup>

### III. Recent Legislation

#### A. *The Great Lakes*

##### 1. Federal Legislation

The mere suggestion of a large scale transfer of water out of the Great Lakes motivated Great Lakes legislators to act. Congress historically has not taken an active role in legislating water use policy, leaving water law to the states. But recently, legislators have made numerous attempts to pass federal laws which would prevent any action concerning the Great Lakes unless all the Great Lakes States, Ontario, and Quebec consented.<sup>82</sup>

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permits or rights could be revoked to protect public rights. L. BROWN, STATE OF THE WORLD 1985, *supra* note 13, at 70.

<sup>78</sup> Wilder, *supra* note 44, at 483.

<sup>79</sup> 458 U.S. at 954.

<sup>80</sup> Lake levels fluctuate significantly due to environmental factors. One type of fluctuation consists of short-term changes involving temporary displacement of water surfaces without a change in total water volume. Seasonal fluctuations constitute a second environmental determinant of lake levels. These variations are due to seasonal differences in the amount of precipitation, evaporation, watershed runoff, and groundwater flow. The final environmental determinant is the long-term random fluctuation in precipitation patterns throughout the basin. Donahue, *supra* note 4, at 6.

<sup>81</sup> It might also be important to allow surplus water to protect the aesthetic value of a minimally harmed waterbody.

<sup>82</sup> Three bills presented in the 98th Congress dealt with this topic. H.R. 4366, The Great Lakes Water Preservation Act, would prohibit diversions of Great Lakes water for use outside of a Great Lake State, except as approved by all the Great Lakes States and the International Joint Commission. The bill also prohibits federally sponsored studies on the feasibility of diverting Great Lakes water unless they are undertaken by the Corps of Engineers under the direction of the International Joint Commission, in accordance with the Boundary Waters Treaty of 1909. H.R. 4366, 98th Cong., 1st Sess., 129 CONG. REC. H9,705 (daily ed. Nov. 10, 1983).

S. 2026, the Great Lakes Water Diversion Act, is the companion bill of H.R. 4366. The text is nearly identical to that of H.R. 4366. S. 2026, 98th Cong., 1st Sess., 129 CONG. REC. S14,840 (daily ed. Oct. 28, 1983).

H.R. 4545, the Great Lakes Protection Act, would prohibit any Great Lakes State from

In the 99th Congress, two bills have been presented dealing with the Great Lakes. H.R. 6, The Water Resources Development Act of 1985,<sup>83</sup> is a \$20 billion water projects omnibus bill<sup>84</sup> that includes two sections involving Great Lakes protection and conservation.

Section 1183 of H.R. 6 would authorize the Environmental Protection Agency and other interested departments of the United States and the eight Great Lakes States<sup>85</sup> to "conduct a study of control measures which can be implemented to reduce the quantity of Great Lakes water consumed without adversely affecting projected economic growth of the Great Lakes region."<sup>86</sup> According to the Committee Report, this study proposal is included in H.R. 6 in recognition of the "[n]ational goal of providing environmental protection and [preservation] of our natural resources while, at the same time, allowing continued economic growth."<sup>87</sup>

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selling, or otherwise transferring out of such state, water which is taken from any Great Lake State or the Great Lakes drainage basin unless:

- (1) there is in effect an interstate compact among the Great Lakes States which governs such sale or transfer, or (2) each of the Great Lakes States consents to such sale or transfer.

H.R. 4545, 98th Cong., 1st Sess., 129 CONG. REC. H10,581 (daily ed. Nov. 18, 1983). None of these bills made it out of their respective committees.

83 H.R. 6, 99th Cong., 1st Sess., 131 CONG. REC. H66 (daily ed. Jan. 3, 1985). Also known as the Water Resources Conservation, Development, and Rehabilitation Act of 1985, H.R. 6 is the companion bill of S. 1567, which recently passed the Senate floor. S. 1567 does not include sections protecting the Great Lakes, but it does include a section dealing with improving groundwater management in the states overlying the Ogallala Aquifer. See notes 133-145 *infra* and accompanying text. H.R. 6 has passed all of the relevant House committees and on Nov. 13, 1985, passed the House floor.

84 Black's Law Dictionary defines omnibus bill as: "A legislative bill including in one act various separate and distinct matters, and frequently one joining a number of different subjects in one measure in such a way as to compel the executive authority to accept provisions which he does not approve or else defeat the whole enactment." BLACK'S LAW DICTIONARY 563 (5th ed. 1983). In H.R. 6, the sections dealing with the Great Lakes amount to only five pages of a 457 page bill. One of the sections is similar in textual substance to that of H.R. 4366, H.R. 4545 and S. 2026, which never made it out of committee. See note 82 *supra*. Apparently, this is a strategic attempt to make new law out of something that, standing on its own, might not otherwise pass.

85 The eight Great Lakes States are Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania, and Wisconsin.

86 H.R. 6, 99th Cong., 1st Sess. § 1183 (1985).

87 H.R. REP. NO. 99-251, 99th Cong., 1st Sess. 497 (1985). Promoters of this section are concerned with the recent projections of the IJC. See note 43 *supra* and accompanying text. IJC projects a five-fold increase in the amount of Great Lakes water consumed over the next 50 years: "In 1975, the consumptive use of the Great Lakes Water was estimated at 3.2 billion gallons per day[;] by the year 2035, consumptive use is expected to increase to over 16.4 billion gallons per day." H.R. REP. NO. 99-251, *supra*. Legislators fear that the increase in consumptive use may have serious consequences, including loss of wetlands, reduction of fish spawning and habitat areas, as well as serious economic losses to vital Great Lakes industries. *Id.* The study would include analyses of the existing state and national laws, regulations, and policy objectives on consumptive uses of Great Lakes water as well as the economic and environmental impact of other consumptive use control strate-

Section 1184 would prohibit the diversion of water from the Great Lakes or their tributaries for use outside the Great Lakes region without approval of each of the Great Lakes States.<sup>88</sup> It would also prohibit the federal government from studying the feasibility of diverting water out of the Great Lakes area.<sup>89</sup>

Section 1183 of H.R. 6, which authorizes studies to reduce consumptive uses within the Great Lakes region, is important for the Great Lakes in preventing an interbasin transfer. By having data regarding existing and projected consumptive uses of the water, as well as demonstrated efforts to conserve through state water management policies, the Great Lakes States will have more convincing evidence of why the water should not be transferred. Presently, the Great Lakes States are doing little in terms of establishing conservation policies or reducing consumptive uses.<sup>90</sup> Section 1184, which prohibits diversions or studies on the feasibility of diversions, would have problems becoming law if it was not combined with section 1183. By demonstrating the Great Lakes need for water, both now and in the future, as well as efforts to conserve on their own, the Great Lakes States have a greater justification for section 1184, at least until the research brings forth sufficient data.

H.R. 4051, introduced by Congressman Mark Siljander on January 23, 1986, would authorize the Secretary of the Army, acting through the Chief of Engineers, to permit a temporary increase in the amount of water diverted from Lake Michigan at the Chicago River during periods of abnormally high water levels in the Great Lakes to alleviate water damage to the shoreline of Lake Michigan

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gies. *Id.* The bill allocates \$4,500,000 to carry out this section. H.R. 6, 99th Cong., 1st Sess. § 1183 (1985).

88 Section 1184 is essentially the equivalent of H.R. 4366, H.R. 4545, and S. 2026. See notes 82 and 84 *supra* and accompanying text.

89 H.R. 6, 99th Cong., 1st Sess. § 1184 (1985). See also H.R. REP. No. 99-251, 99th Cong., 1st Sess. 498 (1985).

When H.R. 6 was in the House Committee on Interior and Insular Affairs, Congressman George Miller offered an amendment to authorize the study of diversions of Great Lakes Water supply to other sites. The amendment, which failed in the House Interior Committee, would have authorized the Secretaries of Army and Interior to undertake or participate in any "authorized plan, study or report" with the objective of an interbasin transfer if: "(1) the Secretaries have determined that such plan, study or report is in the national interest; and (2) the Secretaries have communicated this determination to the Congress and Governors of the affected states." News Release from the Office of U.S. Representative Peter J. Visclosky (Sept. 12, 1985). Visclosky said:

It is not for the Secretaries of Army and Interior to determine "the national interest" regarding the possible diversion of Great Lakes Water. That is the responsibility of the Congress of the United States . . . [O]ur emphasis should be directed toward a sounder policy regarding water—its use, efficient treatment and conservation.

*Id.*

90 See generally INTERNATIONAL JOINT COMMISSION, *supra* note 7, at 44-48; Irwin, *Guarding the Great Lakes: A Call to Action*, 64 MICH. B.J. 396 (1986).

and the other Great Lakes.<sup>91</sup> If passed into law,<sup>92</sup> H.R. 4051 would overturn the 1967 Supreme Court decision<sup>93</sup> that limited the flow of water out of the Chicago River to 3200 cubic feet per second.<sup>94</sup>

H.R. 4051 could have potentially devastating effects on the Great Lakes States' ability to protect the lakes. The reason for such legislation is clear: lake levels reached record highs in January 1986 and millions of dollars of property damage is expected.<sup>95</sup> The problems, however, are equally clear: (1) an increased flow out of the Chicago River could result in serious economic costs to navigation and industrial interests and could possibly cause downstream flooding;<sup>96</sup> (2) lake levels fluctuate naturally<sup>97</sup>—to divert out when the water levels are high may create the need for diversions into the Great Lakes when the levels are low; and (3) while an emergency diversion may solve the short-term problem of shoreline flooding, in the long term it might open the door to interbasin transfers for other purposes.<sup>98</sup> Given the Great Lakes States' desire to keep the water within the Great Lakes Basin, H.R. 4051 is short-sighted and may set a dangerous precedent.

## 2. State Legislation

The Governors of the Great Lakes States recently enacted the Great Lakes Charter, a non-binding, good faith agreement among all the states and the Canadian provinces which border the Great Lakes.<sup>99</sup> In sum, the agreement calls for a common data base, regional cooperation, and state-by-state legislation to establish water management programs.<sup>100</sup>

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91 H.R. 4051, 99th Cong., 2d Sess., 132 CONG. REC. H134 (daily ed. Jan. 23, 1986).

92 According to a prediction service put out by George Mason University and available on Lexis, H.R. 4051 has a 43% chance of passing the House Committee on Public Works and Transportation and a 38% chance of passing the House floor. The service has a 94% accuracy rate. See LEXIS, Reference Service library, Billcast file.

93 *Wisconsin v. Illinois*, 388 U.S. 426 (1967).

94 The Chicago River may be capable of diverting up to 10,000 cfs. See note 44 *supra* and accompanying text.

95 Telephone interview with Bruno Pigott, Legislative Assistant for Congressman Peter J. Visclosky (Feb. 7, 1986). See also N.Y. Times, March 6, 1986, at 12, col. 1; Detroit Free Press, Jan. 26, 1986, at 1, col. 3. "Rain and snowfall in the 295,000 square-mile Great Lakes Basin last year exceeded the annual average by 26 percent, raising near record levels on most lakes by nine inches." *Id.* In mid-January, 1986, Lakes Huron and Michigan were six inches higher than they had ever been in January. *Id.*

96 See Donahue, *supra* note 4, at 9.

97 See note 80 *supra*.

98 See Pigott, *supra* note 95.

99 WATER DIVERSIONS, *supra* note 33, at 37-46.

100 *Id.* The Governors and Premiers of the Great Lakes States and Provinces agreed to the following five principles:

(1) To plan for and manage water resources to protect the integrity of the natural resources and the ecosystem of the Great Lakes Basin, treating the Basin as a "single hydrologic system . . . considered as a unified whole." *Id.* at 41.



Toward this end, Illinois, Minnesota, Ohio, Indiana, Michigan, and Wisconsin have each established some type of diversion legislation. New York and Pennsylvania have passed legislation committing their states to implementing the Great Lakes Charter. Michigan and Indiana have enacted embargo statutes regarding out-of-basin transfers.<sup>101</sup>

Of all the legislation, the enactments of Michigan and Wisconsin are especially notable. Michigan's Great Lakes Preservation Act<sup>102</sup> places an embargo on any new out-of-basin diversions until one year after the Great Lakes Water Resources Planning Commission<sup>103</sup> submits a comprehensive state water plan to the governor and the Michigan Legislature. Michigan's Great Lakes Preservation Act, in essence, is similar to the combination of sections 1183 and 1184 of H.R. 6. By demonstrating a state plan and the region's water needs, the state might have evidence to justifiably restrict an interstate diversion. But, because it is an outright ban on transfers—at least until the plan is formulated—it might be struck down as an unreasonable burden on interstate commerce if challenged in the interim.

Wisconsin's water diversion legislation, the 1985 Wisconsin Act,<sup>104</sup> coordinates the recommendations of the Great Lakes Charter with existing water-use registration and permit programs administered by the state Department of Natural Resources (DNR).

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(2) To cooperate at all levels of government in the conservation of Great Lakes Basin waters. *Id.*

(3) To forbid diversions of water from the Basin if individually or cumulatively they would have significant adverse impacts on lake levels, intrabasin uses of water, or the Great Lakes ecosystem. The states and provinces agree to seek and implement legislation, where necessary, to manage and regulate diversions and consumptive uses. *Id.*

(4) To bar any major new increased diversion or consumptive use without first notifying, consulting with, and seeking the consent and concurrence of all affected Great Lakes states and provinces. *Id.*

(5) To pursue the development and maintenance of a common data base regarding the use and management of the water resources of the Basin. A Water Resources Management Committee is established to promote this end. *Id.*

101 COUNCIL OF GREAT LAKES GOVERNORS, SUMMARY OF WATER MANAGEMENT LEGISLATION IN THE GREAT LAKES STATES/PROVINCES (1985) [hereinafter cited as WATER MANAGEMENT LEGISLATION]. The publication also notes that registration is required of diversions in excess of one million gallons per day in Illinois, Indiana (for in-state diversions), and Wisconsin. Ohio requires permits for such diversions, while Minnesota requires permits for diversions over 10,000 gallons per day. Permits are required for diversions over two million gallons per day in Illinois and Wisconsin. Illinois and Indiana have enacted requirements for prior notice and consultation. Minnesota, Ohio, Pennsylvania, and New York are awaiting the recommendation of the Water Resources Management Committee concerning development of such a procedure prior to drafting legislation that specifically addresses this issue. *Id.*

102 Great Lakes Preservation Act, 1985 Mich. Pub. Acts 130.

103 The Commission was created under the Great Lakes Conservation Act, 1985 Mich. Pub. Acts 133, and has two years to complete its task.

104 1985 Wis. Act 60.

The legislation extends withdrawal standards to all state waters, both within the Upper Mississippi River Basin and within the Great Lakes Basin.<sup>105</sup> The Act anticipates that the Mississippi River might be a conduit for diversions from the Great Lakes.<sup>106</sup> Where proposed withdrawals will result in a diversion from the Great Lakes Basin, the Act requires the DNR to consider, as criteria for granting a permit, whether the state or province to which the water may be diverted has developed and is implementing a plan for the management and conservation of its own water resources, and whether further development of its water resources is impractical.<sup>107</sup> The Act also requires the state DNR to prepare and adopt a plan documenting Wisconsin's water needs and demonstrating Wisconsin's ability to manage its water resources wisely.<sup>108</sup> The Wisconsin Act is considered the leading state legislation concerned with implementing the Great Lakes Charter.<sup>109</sup>

The 1985 Wisconsin Act complies with both the Great Lakes Charter and the relevant case law.<sup>110</sup> It discourages long-range diversions and encourages improving water management within the state. The Act calls for state DNR action by 1988 to document the state's water needs and to demonstrate its ability to manage its own water resources wisely. With this plan, the state will have actual evidence for restricting interbasin diversions for the protection of its citizens and the region's natural resources. Because the regulations would apply equally to all new in-state and out-of-state users, it could not be deemed unconstitutional as an impermissible burden on interstate commerce like the revised New Mexico statute in *El Paso*.<sup>111</sup>

## B. *The Ogallala Aquifer*

### 1. Federal Legislation

In 1984, Congress passed the High Plains Groundwater Demonstration Act.<sup>112</sup> This Act called for studies and demonstration

105 The Act requires registration of new or expanded withdrawals over 100,000 gallons per day in any 30-day period, whether for diversion or consumptive uses. A permit is required when the withdrawals exceed two million gallons per day in any 30-day period. WATER MANAGEMENT LEGISLATION, *supra* note 101, at 3.

106 *Id.* at 2-3.

107 *Id.* at 3.

108 OFFICE OF WISCONSIN GOVERNOR ANTHONY S. EARL, WISCONSIN WATER DIVERSION BILL FACT SHEET 3 (1985). This plan is an important component of the state's defense strategy against potential interstate diversion attempts. *Id.*

109 *See id.*; WATER MANAGEMENT LEGISLATION, *supra* note 101.

110 *Sporhase v. Nebraska*, 458 U.S. 941 (1982); *El Paso v. Reynolds*, 563 F. Supp. 379 (D.N.M. 1983). *See also* text accompanying notes 63 and 64 *supra*.

111 *See* notes 59-64 *supra* and accompanying text.

112 High Plains Groundwater Demonstration Act of 1983, 43 U.S.C.A. § 390g (1984).

projects to explore the potential for groundwater recharge in the High Plains States. The law provided \$500,000 for a study of the problem, and another \$20 million<sup>113</sup> to demonstrate technologies<sup>114</sup> for recharging the aquifers.

Although providing federal funds for demonstration projects on new techniques to recharge the Ogallala was an important initial step, the Act overlooked some important alternatives for mitigating the long-term effects of aquifer depletion. The law focused on new water projects instead of considering options such as water-efficient irrigation practices, conversion to dryland farming, and the development of drought resistant crops.

During the 99th Congress, two bills have been presented dealing more with conservation than recharge techniques or new water projects. H.R. 2100, the Food Security Act,<sup>115</sup> became law on December 23, 1985. It contains various sections dealing with water and soil conservation.<sup>116</sup> Although the provisions do not deal specifically with the Ogallala Aquifer, they could have an impact on the region. Title XII, section 1251, provides that the Secretary of Agriculture may "formulate plans and provide technical assistance" to property owners and state and local governmental agencies, at their request, to "protect the quality and quantity of subsurface water, including water in the Nation's aquifers."<sup>117</sup> Section 1253 amends section 7(a) of the Soil Conservation and Domestic Allotment Act<sup>118</sup> by promoting energy and water conservation through dryland farming.<sup>119</sup> Dryland farming promotes tillage methods which render the soil more receptive to moisture and reduces evaporation.<sup>120</sup>

In general, Title XII disqualifies from agricultural program benefits, with specified exceptions, any person who produces during any crop year an agricultural commodity on highly erodible land. The Act directs the Secretary to carry out a conservation reserve program under which farmers agreeing to perform long-term<sup>121</sup> conservation measures on highly erodible land shall receive

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113 The \$20 million must be matched by some \$5 million in local funds, "a 20% cost-sharing figure that disarmed objections from potential critics." See Davis, *The East Lost, West Benefited: Water Project Bills Died But Smaller Ones Passed*, 42 CONG. Q. 2797, 2800 (1984).

114 High pressure injection of water from surface sources into the aquifer is an example of an advanced technology. *Id.*

115 Food Security Act, Pub. L. No. 99-198, 99 Stat. 1354 (1985). The Food Security Act is more commonly referred to as the 1985 Farm Bill.

116 *Id.* at Title XII.

117 H.R. REP. NO. 99-447, 99th Cong., 1st Sess. 171 (1985).

118 Soil Conservation & Domestic Allotment Act, 16 U.S.C. § 590g(a) (1982) (promotes soil conservation).

119 H.R. REP. NO. 99-447, 99th Cong., 1st Sess. 470 (1985).

120 THE AMERICAN COLLEGE DICTIONARY 371 (C. Barnhart ed. 1952).

121 The long term period required is between seven to fifteen years.

payments to help offset the cost of such measures.<sup>122</sup> Although Title XII deals more with soil conservation, the tendency toward conservation practices is a positive step.

S. 1567,<sup>123</sup> the companion bill to H.R. 6,<sup>124</sup> contains sections dealing specifically with the Ogallala Aquifer.<sup>125</sup> Like H.R. 6, S. 1567 is an omnibus bill.<sup>126</sup> The sections pertaining to the Ogallala Aquifer would amend the Water Resources Research Act<sup>127</sup> by establishing the High Plains Study Council to review and coordinate actions of the High Plains States.<sup>128</sup> The Act directs the Secretary of the Interior to establish a committee within each state to (1) review existing state water laws and recommend changes, (2) establish state priorities for water resources research and demonstration projects, and (3) provide information and technical assistance concerning the need for water conservation and management.<sup>129</sup>

The bill directs the Secretary to allocate funds to High Plains States for research and to farmers for demonstration projects in: (1) water-efficient irrigation technologies and practices, (2) soil and water conservation management systems, and (3) the growth and marketing of more water-efficient crops. The Act provides that the State Committee shall make such grants to farmers on the basis of merit.<sup>130</sup> The Act further directs the Secretary to divide funds among the High Plains States for research into: (1) precipitation management, (2) weather modification, (3) aquifer recharge opportunities, (4) saline water uses, (5) desalinization technologies, (6) salt-tolerant crops, and (7) local water transfer opportunities.<sup>131</sup> Significantly, the Act also authorizes the Secretary of the Army, acting through the Chief of Engineers, to study the feasibility of water

122 H.R. REP. NO. 99-447, 99th Cong., 1st Sess. 158-73, 454-72 (1985).

123 S. 1567, 99th Cong., 1st Sess., 132 CONG. REC. S2739 (daily ed. Mar. 14, 1986).

124 See notes 83-89 *supra* and accompanying text.

125 S. 1567, 99th Cong., 1st Sess. §§ 219, 220 (1985).

126 The sections of S. 1567 which deal with the Ogallala Aquifer were originally introduced on Feb. 27, 1985, as S. 532, the Ogallala Aquifer Research and Development Act of 1985. S. 532, which deals with only the Ogallala Aquifer, has not yet made it out of committee. Proponents of S. 532, aware that it would probably die in committee, introduced the exact same language as a small portion of S. 1567. Because S. 532 has only a 26% chance of passing the Senate floor while S. 1567 had a 52% chance, and in fact recently passed the Senate floor, this apparently was a good strategic move for promoters of the Ogallala Aquifer legislation. See LEXIS, Reference Service library, Billcast file, *supra* note 92.

127 Water Resources Research Act of 1984, 42 U.S.C.A. § 10301 (West Supp. 1985). The Act authorizes "an ongoing program of water resources research," enlarging upon the foundation provided by the Water Research and Development Act of 1978, 42 U.S.C. § 7801 (1982) (authorized the use of federal funds to stimulate both state and industry research on ways to solve common water problems).

128 S. 1567, *supra* note 123, § 219.

129 *Id.*

130 *Id.*

131 *Id.*

transfers into the High Plains region. The Secretary may proceed with advance engineering and design of water resources development projects, pending authorization, if the project is in the *public interest*.<sup>132</sup> The Act also authorizes the Secretary to monitor the groundwater level of the Ogallala Aquifer.<sup>133</sup>

Both the Food Security Act and S. 1567 provide some of the conservation measures that the Groundwater Demonstration Act of 1983 disregarded. The Food Security Act provides water and soil conservation incentives. The law promotes dryland farming and encourages protection of the Nation's aquifers by conservation measures as opposed to transferring water from other basins. Given the exorbitant cost of transfers and the likelihood that conservation measures will have a positive impact, the relevant sections of the Food Security Act are a step in the right direction.

S. 1567 also takes some positive steps toward conservation. By providing federal funds for research and demonstration projects involving conservation, coordinated by the High Plains Study Council, it does what the High Plains Groundwater Demonstration Act did not do—promotes new management policies, not just new water projects.

S. 1567, however, also keeps the door open for new water projects. It provides funds for research into aquifer recharge opportunities and local water transfer opportunities. Most significantly, it authorizes the Secretary of the Army, acting through the Chief of Engineers, to study the feasibility of water transfers into the High Plains region.<sup>134</sup> This last section conflicts with the prohibition in H.R. 6 against studies on diversions out of the Great Lakes.<sup>135</sup> Although S. 1567 does not explicitly authorize studies on transfers from the Great Lakes, such authority could be implied. Despite the sections of S. 1567 which promote management and conservation, the sections dealing with transfer and recharge indicate that water projects are still heavily relied upon to resolve water scarcity problems.

## 2. State Legislation

All six states in the Ogallala region have adopted some type of groundwater management legislation.<sup>136</sup> The stated purpose of

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132 *Id.* § 220. See also discussion of public trust doctrine, *supra* note 77.

133 S. 1567, *supra* note 123, § 219. On March 27, 1986, S. 1567 passed the Senate floor.

134 *Id.* § 219.

135 If both bills pass the relevant committees, sometime in the spring of 1986, H.R. 6 and S. 1567 will be combined into one bill. Combining these two bills will be difficult because portions of the House bill work directly against the Senate bill, and vice versa.

136 Massey & Sloggett, *supra* note 21, at 386. State agencies control groundwater management in New Mexico and Oklahoma. State and local agencies share groundwater management in Colorado, Kansas, and Nebraska. Local agencies manage groundwater in

nearly all state and local groundwater management agencies in the area is to promote conservation of groundwater and to prevent its waste.<sup>137</sup> The High Plains States have achieved varying degrees of success in this regard.

Out of necessity, many farmers are already converting to dryland farming.<sup>138</sup> Rising water costs have reduced the profitability of irrigated farming relative to dryland farming. Thus, while the agricultural output is lower in dryland farming, the net return is similar to irrigated farming in which higher output is offset by higher costs. But this response to necessity by some farmers does not alone correct the Ogallala Aquifer problem.

State groundwater management requiring mandatory conservation is one recent development that has the potential to attack the water problem in a unified way.<sup>139</sup> Although none of the Great Plains States have adopted this exact kind of approach,<sup>140</sup> Arizona recently enacted a statute that regulates much of the groundwater pumping in the state.<sup>141</sup>

Ideally, this approach should impose quantitative, need-based limits on all groundwater pumpers.<sup>142</sup> The Arizona statute has

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Texas; management outside of Texas' local groundwater conservation districts is virtually nonexistent. *Id.* at 408-09.

137 *Id.* at 396. According to the article, the most common regulatory activities available to state and local agencies in the Ogallala include:

- (1) permits issued by a governmental agency giving permission to drill wells or use groundwater;
- (2) well spacing requirements specifying distances among wells to prevent interference among them;
- (3) quantity restrictions limiting the amount pumped from a well; and
- (4) controls preventing the waste of groundwater during use.

*Id.*

138 Telephone interview with J. David Aiken, Water Law Specialist, University of Nebraska-Lincoln (Feb. 25, 1986).

139 See Kelly, *Management of Groundwater Through Mandatory Conservation*, 61 DEN. L.J. 1 (1983).

140 Nebraska recently enacted the Nebraska Ground Water Management Act, NEB. REV. STAT. §§ 46-656 to -674 (1978 & Supp. 1982). The statute provides that the State Director of Water Resources may designate control areas where there is "[a]n inadequate groundwater supply . . ." *Id.* at § 46-658(1)(a)(i) (Supp. 1982). Once the designation is made, the local district "shall" adopt one or more of the following controls: mandatory conservation for all current users, rotation of wells, well-spacing, installation of meters, and "such other reasonable regulations as are necessary . . ." *Id.* at § 46-666(1)(a) to (e). See also Kelly, *supra* note 139, at 14 n.83.

141 See, e.g., ARIZ. REV. STAT. ANN. §§ 45-401 to -637 (Supp. 1982-1983).

142 Kelly, *supra* note 139, at 10. Kelly's article briefly discusses using a price mechanism to encourage more efficient water use. But the article suggests that use of markets alone probably could not return seriously overdrafted aquifers to a safe condition. "The price elasticity of demand for water, that is, the responsiveness of demand to changes in price, varies according to type of use . . . . Because demand for water is relatively inelastic, only a steep hike in prices could reduce pumping significantly; however, such an increase would be politically unacceptable." *Id.* at 10 n.59. Nonetheless, Kelly notes, financial incentives could play an important part in any groundwater management scheme. *Id.* at 11 n.59.

established a safe yield<sup>143</sup> goal by January 1, 2025, for areas near Phoenix, Tucson, and Prescott.<sup>144</sup> The safe yield, balancing groundwater withdrawals with the recharge rate, is to be achieved primarily by imposing stringent quotas on all groundwater uses.<sup>145</sup> Arizona's plan will subject agricultural users to an "irrigation water duty" based on the amount of irrigated water reasonably necessary to grow specific crops. The plan presumes that agricultural users will employ various conservation methods, such as lined irrigation ditches.<sup>146</sup> The plan also forces all groundwater pumpers to achieve a certain degree of water use efficiency.<sup>147</sup> Because the plan affects all pumping, including that by existing users, it could prevent further overdraft and even correct existing overdraft problems.<sup>148</sup>

Arguably, the Arizona statute violates the fifth amendment because the statute's application constitutes a "taking"<sup>149</sup> without just compensation.<sup>150</sup> Some authorities, however, suggest that, based on two different theories, the mandatory conservation plan would not constitute a taking.<sup>151</sup> Under the public rights theory,<sup>152</sup> the government can restrict uses of property if it has mutually incompatible spillover effects. Groundwater pumping creates serious spillover effects, which suggests that mandatory limits on pumping would be constitutional.<sup>153</sup> Under the diminution in value theory,<sup>154</sup> the government must compensate only when its restrictions on property cause the owner a near or total economic loss. The use of mandatory restrictions on groundwater pumping prolongs the

143 "Safe yield" means a groundwater management goal which attempts to achieve, and thereafter maintain, "a long-term balance between the annual amount of groundwater withdrawn in an active management area and the annual amount of natural and artificial groundwater recharge . . . ." ARIZ. REV. STAT. ANN. § 45-561(6) (Supp. 1982-1983).

144 *Id.* § 45-562(A).

145 *Id.* §§ 45-563 to -568.

146 *Id.* at §§ 45-564(A)(1), 45-565(A)(1), 45-566(A)(1). *See also* Kelly, *supra* note 139, at 12-13.

147 Kelly, *supra* note 139, at 13.

148 *Id.* Prior appropriation statutes, which exist in many of the High Plains States, cannot correct pre-enactment overdraft conditions. *Id.* at 13 n.77. A prior appropriation statute is founded on the basic principle of "first in time, first in right." The person who first appropriates water and puts it to a reasonable and beneficial use has a superior right to later appropriators. *See* J. DUKEMINIER & J. KRIER, PROPERTY 71 (1981).

149 U.S. CONST. amend. V, § 1. The takings clause of the fifth amendment applies to the states through the fourteenth amendment. It provides that if the government takes private property for public use, it must justly compensate the owner. *See* Chicago, B. & Q. R.R. v. Chicago, 166 U.S. 326 (1897).

150 *See* Kelly, *supra* note 139, at 14-24 (discussing the "taking" analysis in the context of mandatory conservation).

151 *Id.* at 14.

152 For a discussion of the public rights theory, *see id.* at 17-20.

153 *Id.* at 24.

154 For a discussion of the diminution in value theory, *see id.* at 21-24.

existence of the property right, making the land useful for future farming because a water supply still exists. By preventing the costly side effects of groundwater mining, the restrictions keep the property from becoming valueless.

In sum, state management of groundwater through mandatory conservation probably does not violate the fifth amendment. The public interest would be best served by adopting management and conservation oriented plans, similar to Arizona's, in all the High Plains States.<sup>155</sup>

#### IV. Conclusion

The High Plains States dependent on the Ogallala Aquifer are crucial to our Nation's agricultural economy. Yet, the water crisis puts their future in jeopardy. Recent legislation to aid the crisis takes some important positive steps, but the legislation augments the problem in other respects.<sup>156</sup>

According to the National Conference of State Legislatures, state legislation would best solve the problems of both the High Plains and the Great Lakes States.<sup>157</sup> Federal water legislation can only alert people that a water problem exists. Because water problems are so regional and because state water laws vary, the states must act for themselves to properly correct their problems.<sup>158</sup>

Sound water management policies allow states to maintain their self-sufficiency and allow the farmer to remain the productive, "rugged individual" that he has been throughout history.<sup>159</sup> Prompted more by necessity than state legislation, many farmers are already reverting to dryland farming to make up for the lack of water.<sup>160</sup> This is economically efficient, as the amount of money lost with the conversion to dryland farming is often less than the cost of irrigation to grow water-dependent crops.<sup>161</sup>

In addition, assuming an interbasin transfer could take place, the lack of a capital base in the High Plains would prevent its occur-

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155 To pass the strict scrutiny of the commerce clause, the conservation criteria must be reasonably related to the goal of the management plan and must be applied fairly to all groundwater uses. See notes 48-64 *supra* and accompanying text.

156 See notes 82-155 *supra* and accompanying text.

157 Telephone interview with Larry Morandi, Associate Director, Energy, Science, and Natural Resources, National Conference of State Legislatures (Feb. 4, 1986).

158 *Id.*

159 See H. HOOVER, *THE CHALLENGE TO LIBERTY* 54-55 (1934).

160 Telephone interview with Joe B. Harris, Camp, Dresser & McKee, Inc., Environmental Engineers, Scientists, Planners, and Management Consultants (Jan. 31, 1986).

161 *Id.*



rence.<sup>162</sup> The transfer would require exorbitant amounts of money, and the High Plains farmers have neither the funds to make it a reality nor the means to make it cost-effective.

Even though an interbasin transfer of water is technically feasible and legally possible, it could create many problems for the Great Lakes States.<sup>163</sup> The best solution appears to be the promotion of sound management policies by legislation that treats our nation's water as the precious commodity that it is. As one author has stated:

Perhaps the real problem is one of attitudes. Children of a culture born in a water-rich environment, we have never really learned how important water is to us. . . . Water is something we take for granted, like breathing in or watching the sun come up. But we cannot afford to take it for granted much longer. For many years, knowingly or unknowingly, we have been deferring the costs of our water-use practices into the future. Now the future has arrived, and the bill is about to come due.<sup>164</sup>

We will only compound the costs if we allow one region to pay its bills by borrowing from another.

Patrick E. Corbett

### Addendum

*S. 1567 has been amended in recent months. In section 219 of the bill, which directs the Secretary of the Interior to divide funds among the High Plains States for research into the water problem, the Senate has replaced the words "local water transfer opportunities" with "ground water recovery." Furthermore, section 219 no longer authorizes the Secretary of the Army to study the feasibility of water transfers into the High Plains region. See notes 131-32 supra and accompanying text. The Senate has also added a section to S. 1567 which further protects Great Lakes water. The amendment essentially duplicates the protective provisions included in H.R. 6. See 132 CONG. REC. S2806 (daily ed. March 14, 1986) (statement of Sen. Metzenbaum); notes 85-89 supra and accompanying text.*

*On March 26, 1986, the Senate merged S. 1567 into H.R. 6. See 132 CONG. REC. S3430 (daily ed. March 26, 1986). A conference committee has been formed to work out the differences between the two bills. See 132 CONG. REC. S3452 (daily ed. March 26, 1986).*

*These amendments will make interbasin transfers of water more difficult. The changes suggest that Congress is now seeking to encourage state water conservation rather than new water projects.*

<sup>162</sup> Telephone interview with Larry Morandi, *supra* note 157. This prediction assumes that the federal government would not fund the transfer.

<sup>163</sup> See notes 33-111 *supra* and accompanying text.

<sup>164</sup> W. ASHWORTH, *NOR ANY DROP TO DRINK* 26-27 (1982).