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## THE EXTENT OF GROUNDWATER JURISDICTION UNDER THE CLEAN WATER ACT AFTER *RIVERSIDE BAYVIEW HOMES*

On December 4, 1985, the United States Supreme Court issued its opinion in what has been regarded by at least one environmental law commentator<sup>1</sup> as a victory for those who wish to protect the wetlands of the nation from pollution caused by dredge and fill activities. In *United States v. Riverside Bayview Homes, Inc.*,<sup>2</sup> the Court, inter alia, addressed the meaning of "waters of the United States" under the Clean Water Act (CWA)<sup>3</sup> and the definition of "wetlands" within the Army Corps of Engineers' (Corps) regulations thereunder.<sup>4</sup> Reversing the ruling of the United States Court of Appeals for the Sixth Circuit<sup>5</sup> that the Corps' definition of wetlands must be read narrowly to avoid a fifth amendment taking issue,<sup>6</sup> the Court recognized that the Corps' broad ecological definition of wetlands fit within Congress' intent to provide protection to the nation's waters under the Act to a greater extent than in prior enabling statutes. The Corps' definition relied upon ecological and groundwater interconnecting links between the otherwise isolated wetlands and admittedly regulable navigable waters, rather than depending upon a non-scientific definition containing artificial constraints.

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1. Rosenbaum, *The Supreme Court Endorses a Broad Reading of Corps Wetland Jurisdiction Under FWPCA § 404*, [News & Analysis] 16 *Envtl. L. Rep.* (Envtl. L. Inst.) 10008, 10010, 10012 (Jan. 1986); see also Jackson and Armitage, *United States v. Riverside Bayview Homes: A Questionable Interpretation of § 404*, [News & Analysis] 14 *Envtl. L. Rep.* (Envtl. L. Inst.) 10366, 10367 (Oct. 1984) (objecting to the Sixth Circuit's decision as anomalous in light of legislative history and surprisingly consistent jurisprudence).

2. 106 S. Ct. 455 (1985).

3. Federal Water Pollution Control Act of 1968, 33 U.S.C. § 1251 (1982) (as amended by the Clean Water Act of 1977, 33 U.S.C. § 1311 (1982)). In 1972, its focus was fundamentally altered from that of encouraging state programs to that of federal leadership. R. Beck and C. Goplerud, 3 *Waters and Water Rights* § 205.2, at 22 (2d ed. 1984). Perhaps to celebrate this and to emphasize its new purpose, the name was changed in 1977 to the Clean Water Act. The acronym "CWA" appears throughout this comment to signify the FWPCA or the CWA, whichever was in effect at the time under discussion.

4. 33 C.F.R. § 323.2(c) (1986). The CWA itself does not define "wetlands," but Sections 404 and 502 charge the Secretary of the Interior, through the Army Corps of Engineers, with responsibility for approval for any discharges of dredge and fill materials into "waters of the United States." 33 U.S.C. §§ 1344, 1362 (1982 & Supp. III 1985). The dispute over the definition of "wetlands," then, is one of the extent of "waters of the United States" as defined in the Corps' regulations.

5. *United States v. Riverside Bayview Homes, Inc.*, 729 F.2d 391 (6th Cir. 1984), rev'd, 106 S. Ct. 455 (1985).

6. *Id.* at 398.

The Court effectively adopted the broad definition of wetlands originally advocated by environmentalists and later endorsed by the Corps, the Environmental Protection Agency (EPA), and the United States Courts of Appeals for the Fifth and Eleventh Circuits.<sup>7</sup>

This decision, and the Court's approach to confirming the Corps' position under the CWA, suggest several corollaries. If "waters of the United States" includes wetlands connected to navigable waters through ecological or groundwater means, conceivably this could include all wetlands in the country. From the structure of the statute, the Court's affirmation of the Corps' definition logically applies equally to the EPA's since their respective definitions are identical.<sup>8</sup> If either agency decides to expand its reach still further, *Riverside* may provide support for such an act. Conversely, if the Corps or the EPA decides its definition is too broad, the extent of waters of the United States could suddenly constrict. Presumably, the result would be a correlative expansion of state waters. Such abrupt moves by an agency could upset the balance between state and federal programs designed to regulate such waters. Finally, arguably under the Court's reasoning that all waters hydrologically connected to regulated waters may be regulated,<sup>9</sup> the groundwater itself is "water of the United States" within the coverage of the CWA. *Riverside* may thereby support the proposition that the CWA fills a perceived gap in federal regulation of the environment.

In the United States, groundwater regulation has largely been a matter of settling disputes over ownership and access rights. It became entrenched in the common law and state statutes long before Congress comprehensively addressed the country's pollution concerns with the CWA and an array of other statutes either tangentially or directly applied to groundwater pollution.<sup>10</sup> Among these statutes, the Safe Drinking Water Act<sup>11</sup> (SDWA) directly addresses groundwater, but only as a source for drinking water. This limitation omits over sixty percent of the nation's groundwater from regulation.<sup>12</sup> Federal case law, though inconsistent, has tended to indicate the CWA cannot be relied upon to

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7. Cf. Jackson and Armitage, *supra* note 1, at 10366, referring to disputes between Corps and the EPA, environmentalist groups, the Justice department, and federal courts; and Rosenbaum, *Fifth Circuit Defers to EPA's Expertise, Approves Broad § 404 Wetlands Jurisdiction*, [News & Analysis] 13 *Envtl. L. Rep. (Envtl. L. Inst.)* 10397 (December, 1983) (discussing *Avoyelles Sportsmen's League, Inc., v. Marsh*, 715 F.2d 897 (5th Cir. 1983)).

8. See *infra* note 39 and accompanying text.

9. *Riverside*, 106 S.Ct. at 462-63.

10. See *infra* notes 93-130 and accompanying text.

11. 42 U.S.C.A. §§ 300f-300j-11 (West 1982 & Supp. 1987). See *infra* notes 110-125 and accompanying text.

12. See text accompanying *infra* note 85.

provide protection to groundwater.<sup>13</sup> It seems anomalous that Congress, in its efforts to establish programs to clean up the environment, would overlook such a gaping hole in the matrix of statutes it promulgated, unless it felt the problem was already adequately addressed by state law. Yet, passage of the CWA and the SDWA indicates it did not feel this way with respect to surface or drinking water even though states had sporadically regulated both. Clearly, *Riverside* addresses the extent of waters of the United States. Whether it helps in the controversy of groundwater coverage under the CWA is far less clear.

This Comment examines the potential effects of *Riverside* upon the general extent of "waters of the United States" within the meaning of the CWA. Section I analyzes the Court's opinion in the context of historic Corps regulation and the potential expansiveness of its approach to approving the Corps' definition of wetlands. Section II then reviews the extent to which the groundwater itself, the interconnecting link, is and should be within the reach of the CWA, and examines whether *Riverside* answers this lingering question.

## I. ANALYSIS OF *Riverside*

### A. *The Opinion*

In 1976, *Riverside* began developing eighty acres of low lying, marshy lands it owned near Detroit, Michigan. When the company persisted in discharging fill materials without a permit,<sup>14</sup> the Corps issued cease and desist orders and eventually sought and received an injunction in federal court. The primary issue at trial, whether the Corps had jurisdiction, depended upon the court's interpretation of the Corps' own regulations defining wetlands.<sup>15</sup> Under the regulations, whether *Riverside's* wetlands were subject to regulation depended upon whether they were "adjacent" to certain neighboring navigable tributaries. This issue in turn depended

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13. See *infra* notes 131-147 and accompanying text.

14. In preparation for development and to comply with a local zoning ordinance, the owners began moving fill materials onto the property to raise its elevation. When confronted by the Corps, they applied for, but failed to receive, a permit from the Corps under Section 404 of the CWA. Jackson and Armitage, *supra* note 1, at 10367.

15. According to the regulations at the time, freshwater wetlands included "those areas that are periodically inundated and that are characterized by the prevalence of vegetation that requires saturated soil conditions for growth and reproduction." 33 C.F.R. § 209.120(d)(2)(h)(1975) (revoked, 42 Fed. Reg. 37, 133 (1977)). The regulations were so imprecise, however, as to require the court to supplement them by defining the term "periodically inundated." *United States v. Riverside Bayview Homes, Inc.*, [Litigation] 7 *Envtl. L. Rep. (Envtl. L. Inst.)* 20445 (E.D. Mich. 1977), remanded, 615 F.2d 1363 (6th Cir. 1980), *aff'd* on remand, Civ. No. 77-70041 (E.D. Mich. May 10, 1981), vacated, 729 F.2d 391 (6th Cir. 1984), *rev'd*, 106 S. Ct. 455 (1985).

upon whether the characteristic wetland vegetation found there relied for its sustenance upon flooding from those navigable waterways.<sup>16</sup> After supplementing the Corps' definition with an interpretation of "periodic" inundation, the district court then examined records of flooding in the area and concluded that the land had been flooded only five times in eighty years. This, however, was sufficiently frequent to meet the supplemented definition. Thus, the district court found that the Corps had jurisdiction,<sup>17</sup> and the landowner appealed.

While *Riverside* was being litigated, the Corps amended its definition of wetlands.<sup>18</sup> Upon remand for reconsideration<sup>19</sup> under the new regulations, the district court, without reviewing the facts, found the definition "broader than its predecessor"<sup>20</sup> and confirmed the injunction. On appeal from the second district court decision, the Sixth Circuit noted requirements of both indicative vegetation and frequent flooding contained in the definition. Emphasizing this, the court inferred that the flooding must come from "adjacent streams . . . subject to the jurisdiction of the Corps [or] from 'navigable waters' as defined in the [CWA],"<sup>21</sup> and that the vegetation must depend upon that inundation

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16. The property actually bordered Black Creek and Savan Drain, both tributaries of navigable-in-fact Lake St. Clair. However, it was contiguous to neither tributary nor to the lake itself, but was instead separated by strips of "landbridge" serving as barriers to flooding from the streams. *Riverside*, [Litigation] 7 *Envtl. L. Rep. (Envtl. L. Inst.)* at 20445.

Corps experts found "the land [to be] characterized by a predominance of vegetation types (such as marsh grasses, sedge, cattails, and reeds) adapted to waterlogged or highly saturated soils." Jackson and Armitage, *supra* note 1, at 10367 (citing transcript from *United States v. Riverside Bayview Homes, Inc.*, [Litigation] 7 *Envtl. L. Rep. (Envtl. L. Inst.)* 20445 (E.D. Mich. 1977)(hereinafter Transcript)).

The evidence was contradictory, however, as to whether this vegetation was supported by the water from the tributaries, even though the landbridges were also characterized by the same vegetation as found in the wetland itself. Testimony established that the property consisted of a type of soil, Lamson soil, which supported such vegetation wherever it was found, and this may explain the vegetation instead of proving periodic inundation. The question at trial, then, was whether these facts were sufficient to make the wetland "adjacent" to the navigable water tributaries and thus within the jurisdiction of the Corps. *Riverside*, [Litigation] 7 *Envtl. L. Rep. (Envtl. L. Inst.)* at 20446.

17. *Id.* at 20447.

18. All wetlands (the distinction between freshwater and saltwater was dropped) now included "those areas that are inundated or saturated by surface *or groundwater* at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas." 33 C.F.R. § 323.2(c)(1986) (emphasis added). Compare *supra* note 15.

19. *United States v. Riverside Bayview Homes, Inc.*, 615 F.2d 1363 (6th Cir. 1980), *aff'd* on rehearing, No. 77-70041 (E.D. Mich. 1981), vacated, 729 F.2d 391 (6th Cir. 1984), *rev'd*, 106 S.Ct. 455 (1985).

20. *Riverside*, 729 F.2d at 396.

21. *Id.* at 398.

for its existence.<sup>22</sup> Noting that the tract had previously been prepared for development<sup>23</sup> and had been farmed in the past,<sup>24</sup> the court decided the definition of wetlands must be construed narrowly to avoid a fifth amendment taking clause violation.<sup>25</sup> The Sixth Circuit also doubted that Congress intended "the Corps' jurisdiction [to go] beyond navigable water and perhaps the bays, swamps and marshes into which those navigable waters flow."<sup>26</sup> Therefore, since the trial court had found that the source of the vegetation was the type of soil and not the irregular floodings,<sup>27</sup> the Corps' jurisdiction could not reach Riverside's property.<sup>28</sup>

### 1. *The Holding*

The Supreme Court rather quickly disposed of the taking problem by noting that extension of Corps jurisdiction is not equivalent to denial

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22. The court examined the preamble to the new regulations, and noted that the Corps responded to a misconception by others that the word "normally" required a recorded history before the area would qualify:

The preamble notes that the term "normally" was used in the original version . . . "to respond to those situations in which an individual would attempt to eliminate the permit review requirement . . . by destroying the aquatic vegetation, and to *those areas that are not aquatic but experience an abnormal presence of aquatic vegetation.*" . . . Significantly, the preamble notes that it is still the case under the new regulation that "[t]he abnormal presence of aquatic vegetation in a non-aquatic area would not be sufficient to include that area within the Section 404 program." . . . Neither inundation nor aquatic vegetation would be sufficient, standing alone, to bring a piece of land within the definition. Both must be present, and the latter must be caused by the former.

Id. at 395-96 (emphasis by the court).

23. Sixty of the eighty acres in the tract had been platted, and fire hydrants and sewers installed, in 1916. 729 F.2d at 392. The improvements, however, would be useless and obsolete after they were covered with fill material to a depth of several feet. Jackson and Armitage, *supra* note 16, at 10367 (citing Transcript, January 15, 1977, at 134).

24. *Riverside*, 729 F.2d at 392.

25. *Id.* at 398. The court parallels the *Riverside* case with *Kaiser Aetna v. United States*, 444 U.S. 164, 100 S. Ct. 383 (1979) (The navigation servitude of the nation's navigable waters does not extend to a formerly landlocked but tidally flooded lagoon in Hawaii just because landowners had dredged a channel to the ocean to allow vessel traffic; thus, landowners could deny public access even though they must submit to Corps permit process for further improvements.) (Blackman, J., dissenting).

In *Kaiser*, the Corps had tried to assert that the extension of navigability-in-fact by the landowner to the lagoon had thereby granted public access by virtue of the navigation servitude. But the Court looked to the history of the property and concluded that it had been private property and remained so. Thus, the Corps could not insist upon the extension of the navigational servitude to the landowner's property without taking away his property right of limiting access. It was true, though, that the navigability-in-fact gave the Corps jurisdiction and required the landowner to submit to its permit process for any further improvements in its lagoon.

26. *Riverside*, 729 F.2d at 397.

27. *Id.*

28. *Id.* at 398. See also *supra* note 16.

of a permit to discharge fill materials. A taking issue might ripen upon denial, but the Sixth Circuit's narrow reading of the Corps' definition of wetlands for jurisdictional purposes was simply unnecessary and would not avoid the constitutional difficulty anyway.<sup>29</sup> Should a taking be found after denial of a permit, the landowner's remedy was for just compensation, not injunction.<sup>30</sup>

Consequently, the Court treated the problem as one of statutory interpretation, and applied the presumption that courts should defer to an agency's reasonable interpretation of its tasks under its enabling statute.<sup>31</sup> The Sixth Circuit had overlooked that, under the new regulation, groundwater could also sustain the indicative vegetation;<sup>32</sup> flooding from surface waters is only one way to provide the moisture needed to establish the wetlands. Thus, Riverside's property fit under the Corps' definition of wetlands.<sup>33</sup>

The Court then proceeded to review and approve the reasonableness of the Corps' interpretation of "waters of the United States" as used in the CWA. Inferring from legislative history that Congress intended a broad, systematic view in its attempt "to restore and maintain the chemical, physical, and biological integrity" of the nation's waters,<sup>34</sup> the Court concluded that Congress meant to repudiate limitations imposed on federal regulation by earlier water pollution statutes, and to exercise its commerce power to regulate some waters not classically considered navigable.<sup>35</sup>

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29. "[An] overbroad regulation of even completely submerged property may constitute a taking." 106 S. Ct. 455, 459 n.4 (1985).

30. *Id.* at 459-60.

31. "An agency's construction of a statute it is charged with enforcing is entitled to deference if it is reasonable and not in conflict with the expressed intent of Congress." *Id.* at 461 (citing *Chemical Mfrs. Ass'n v. NRDC*, 470 U.S. 116, 126, 105 S. Ct. 1102, 1108 (1985), and *Chevron, U.S.A., Inc. v. NRDC*, 467 U.S. 837, 842-45, 104 S. Ct. 2778, 2781-83 (1984)).

32. See *supra* note 18.

33. "Indeed, the regulation could hardly state more clearly that saturation by either surface or ground water is sufficient to bring an area within the category of wetlands, provided that the saturation is sufficient to and does support wetland vegetation." 106 S. Ct. at 460-61.

34. *Id.* at 462 (citing § 101 of the CWA, 33 U.S.C. § 1251 (1982)).

35. Other than the taking clause discussion, *supra* notes 29-30 and accompanying text, the Court did not examine the reasonableness of Congress' intent in this respect, probably because it has been discussed at length in the past. For a discussion of the constitutionality of such expansiveness, see *NRDC v. Calloway*, 392 F. Supp. 685 (D.D.C. 1975) (Section 404 reaches to the full extent of the commerce clause.); *United States v. Holland*, 373 F.Supp. 665 (M.D. Fla. 1974) ("Waters of the United States" is a term much broader than the traditional understanding of "navigable waters."); *United States v. Phelps Dodge*, 391 F. Supp. 1181 (D. Ariz. 1975) (For all practical purposes, the CWA appears to reach any waters going anywhere, including any waterways where water could

Because of the evident breadth of concern for protection exhibited by Congress, the Court felt it was reasonable for the Corps to interpret this to mean Congress wished to regulate the entirety of an aquatic ecosystem, including all waters hydrologically connected thereto, which it could reach with the commerce clause.<sup>36</sup> The Corps is not constrained by its earlier enabling statutes<sup>37</sup> to jurisdictional boundaries dependent upon a separate system of the imaginable reach of the navigable waters definition.<sup>38</sup>

## 2. Analysis

Though set within the context of dredge and fill activities as regulated by the Corps, presumably the Court's clarification applies to the EPA, too, since the same term is used throughout the CWA.<sup>39</sup> At first glance,

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end up in a public body of water, including underground water.). But see *infra* note 42 and accompanying text. See also R. Zener, *The Federal Law of Water Pollution Control in Federal Environmental Law* 687, 693 (1974); Annot., *What are "Navigable Waters" Subject to the Provisions of the Federal Water Pollution Control Act As Amended*, 52 ALR Fed. 788 (1986) (underground water not covered).

36. The Court reasoned:

We cannot say that the Corps' conclusion . . . is unreasonable. In view of the breadth of federal regulatory authority contemplated by the Act itself and the inherent difficulties of defining precise bounds to regulable waters, the Corps' ecological judgment about the relationship between waters and their adjacent wetlands provides an adequate basis for a legal judgment that adjacent wetlands may be defined as waters under the Act.

. . . For example, wetlands that are not flooded by adjacent waters may still tend to drain into those waters . . . [.] may serve to filter and purify water . . . and to slow the flow of surface runoff . . . thus prevent[ing] flooding and erosion . . . and may "serve significant natural biological functions, including food chain production, general habitat, and nesting, spawning, rearing and resting sites for aquatic . . . species." . . . In short . . . wetlands . . . may function as integral parts of the aquatic environment even when the moisture creating the wetlands does not find its source in the adjacent bodies of water.

106 S. Ct. at 463.

37. See text accompanying *infra* notes 50-54.

38. The Court went on to say:

Congress chose to define the waters covered by the Act broadly. Although the Act prohibits discharges into "navigable waters" . . . the Act's definition of "navigable waters" as "the waters of the United States" makes it clear that the term "navigable" as used in the Act is of limited import. . . . Congress evidently intended to repudiate limits that had been placed on federal regulation by earlier water pollution control statutes and to exercise its powers under the Commerce Clause to regulate at least some waters that would not be deemed "navigable" under the classical understanding of that term.

106. S. Ct. at 462. See also *infra* notes 50-54 and accompanying text.

39. In fact, the definition of "waters of the United States" is not within Section 404, 33 U.S.C. § 1344 (1982 & Supp. III 1985), at all, but appears under Section 502(7),



this suggests that, should there be any effects upon the respective jurisdictions of the EPA and the Corps, they would be offsetting, since an increase or decrease in the jurisdiction of one should result in a corresponding change in that of the other. As will be seen herein, however, this is not entirely true.<sup>40</sup> Further, expansion of the Corps' jurisdiction may affect state regulatory structures, in spite of Congress' explicit disavowal of preemption under Section 404.<sup>41</sup> This could become particularly important in the area of groundwater regulation.

One peculiar aspect of the opinion is that the Court never actually decided exactly how far Congress intended the CWA to reach, nor whether that reach was permissible under the Constitution. The Court merely noted Congress meant for the CWA to reach much further than earlier statutes; whether Congress actually meant to reach wetlands connected only hydrogeologically to navigable waters remains an open question. Since it was reasonable for the Corps to interpret Congress' signals as it did, however, the Court simply could not say the agency was wrong.<sup>42</sup>

As a result, the opinion is not as strong as it could be, and it is certainly not a resounding victory for environmental protection. It leaves open the possibility that there may be other equally reasonable interpretations of the extent of "waters of the United States" under the statute. The Corps may tell us tomorrow that it has decided the waters of the United States does not reach nearly as far;<sup>43</sup> based on the Court's opinion in *Riverside*, the waters would suddenly constrict. Likewise, the EPA and the Corps may disagree as to their definitions of wetlands, and both could theoretically have a reasonable interpretation of the same statute. Since the Court affirmed a Corps definition identical to that of the EPA, without mentioning this identity and its effect upon the EPA's definition, should the EPA wish to constrict the definition, the Corps could theoretically resist this under the authority of the Court.<sup>44</sup>

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33 U.S.C. § 1362(7) (1982), where it further defines "navigable waters" as used within the CWA. The Corps' definition of wetlands in its regulations (*supra* note 18) is identical with that promulgated by the EPA. 40 C.F.R. § 122.2 (1986). See also 43 Op. of the Atty. Gen. of the United States No. 15, at 5 (September 5, 1979).

40. See text accompanying *infra* notes 78-84.

41. 33 U.S.C. § 1344(t) (1982) (Nothing in Section 404 shall preclude a state from controlling discharges of dredge and fill materials in navigable waters within its jurisdiction, except as it might impair the Corps' authority to maintain navigation.).

42. 106 S. Ct. at 463. See also *supra* note 36.

43. In fact, the Reagan Administration is making just such noises. See Rosenbaum, *supra* note 1, at 10010 n.37, 10011.

44. In practice, however, such an official disagreement is unlikely. The Corps raised the different definitions issue in a letter to the Justice Department, and the United States Attorney General issued an opinion indicating the statute required consistency. 43 Op. of the Atty. Gen. of the United States No. 15 (September 5, 1979) (The structure of the

The greatest weakness of the decision is that it missed a chance to decide the law respecting waters of the United States. Had the Court interpreted Congress' intent as to the extent of such waters under the statute, it would never have reached the issue of reasonableness of the Corps' regulations; they would have been either too broad, or not broad enough, in light of the Congressional mandate. The Corps and the EPA would not be free to establish their own versions of the law as they see fit, and considerable controversy as to the extent of the CWA would have been resolved.

In all due respect to the Court, it can be argued that it followed its own rule that court judgment should not be substituted for that of the agency where Congress has not clearly expressed its intent to the contrary.<sup>45</sup> The justification for this rule, however, lies in the doctrine that, where Congress has clearly delegated the decision to the agency, this delegation presumably relies upon the agency's expertise and should be honored. Here, though, Congress did not express, clearly or otherwise, how "waters of the United States" shall be interpreted, much less by whom.<sup>46</sup> Further, it relied upon the term "navigable waters" at the risk of considerable confusion with earlier statutes.<sup>47</sup> Finally, the Court could have decided whether it was within Congress' power under the commerce clause to reach wetlands, and if not, then whether the Corps' regulations were too broad. Instead, it left the first question unanswered and leaped directly to the reasonableness inquiry. This seemingly unnecessary deferral to agency discretion<sup>48</sup> actually raises the much larger issue developed herein, that being whether *Riverside* can be read to affect groundwater coverage under the CWA.

Weaknesses notwithstanding, the Court confirmed the broad interpretation of "waters of the United States" as consistent with the view of the CWA held by environmentalists, the EPA, and the majority of courts.<sup>49</sup> It may turn out in the long run that the EPA's jurisdiction

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statute and the legislative history indicate Congress intended the EPA to have the final administrative responsibility for construing the term "navigable waters" under the CWA.).

45. *Chevron, U.S.A., Inc. v. NRDC*, 467 U.S. 837, 843, 104 S. Ct. 2778, 2782 (1984) (Where Congress has not clearly indicated its intent to the contrary, courts should not substitute their judgment for that of the agency empowered by the statute.).

46. But see *supra* note 44.

47. See *infra* notes 50-54 and accompanying text.

48. Indeed, the opinion seems a bit schizophrenic on the issue of whether it is deciding the Corps' authority or deferring to the agency's interpretation of Congressional intent. See *infra* note 74.

49. Cf. *Utah v. Marsh*, 740 F.2d 799 (10th Cir. 1984) (The Corps' jurisdiction extends to an intrastate lake incapable of interstate navigation but used to sustain and foster interstate commerce.); *Avoyelles Sportsmen's League, Inc., v. Marsh*, 715 F.2d 897 (5th Cir. 1983) (EPA could consider soil, hydrology, and additional species of vegetation in its wetlands determination.); *United States v. M.C.C., Inc.*, 772 F.2d 1501 (11th Cir.

emerges as the real beneficiary of *Riverside*; whether this accrues to the states is unclear. Review of Corps involvement in the CWA helps to understand the significance of this decision.

### B. *Historical Perspective of Corps Jurisdiction*

At common law, the concept of navigable waters developed as a means of settling disputes between riparian property owners over submerged and tidal lands and between these property owners and proponents of public use of such waters.<sup>50</sup> There was no prohibition against obstructing navigable rivers<sup>51</sup> until Congress borrowed the concept<sup>52</sup> to empower the Army Corps of Engineers under the Rivers and Harbors Act (RHA) of 1899<sup>53</sup> to protect the nation's waterways by controlling dredging and filling. Though this implies that the term "navigable" means "navigable in fact," it has become settled law that the Corps' reach does not depend upon a stream's navigability, but that "[its] authority is as broad as the needs of commerce."<sup>54</sup> At least in part because of this traditional responsibility, and possibly to avoid any conflict with, and to take advantage of, a system of regulation already in place, Congress provided that the EPA, whom it had empowered with an analogous discharge permit responsibility for most pollution discharges under the CWA,<sup>55</sup> would share this responsibility with the Corps when it came to dredge and fill discharges. The Corps would

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1985) (Propellers of a tugboat disturbing vegetation in a channel cut through marshland amounts to a discharge of pollution under the CWA.), petition for cert. filed, 54 U.S.L.W. 3533 (U.S. Jan. 30, 1986) (No. 85-1292); and *United States v. Huebner*, 752 F.2d 1235 (7th Cir. 1985) (Whether reservoirs were improperly converted to cranberry farms had been farmed in the past was irrelevant to whether they were wetlands when converted.). See also *supra* note 7.

50. Rosenbaum, *supra* note 7, at 10400.

51. *United States v. M.C.C. Inc.*, 772 F.2d 1501, 1506-07 (11th Cir. 1985) (citing *Willamette Iron Bridge Co. v. Hatch*, 125 U.S. 1 (1877)), petition for cert. filed, 54 U.S.L.W. 3533 (U.S. Jan. 30, 1986) (No. 85-1292).

52. Courts have ruled consistently that the term "navigable waters" in the Rivers and Harbors Act of 1899 (hereinafter RHA) is identical to the common law term and that the Corps has no authority to alter the RHA navigability reach through regulations. Rosenbaum, *supra* note 7, at 10400. See also 43 Op. of the Atty. Gen. of the United States No. 15, at 6 n.11 (September 5, 1979) (Navigable waters for purposes of the RHA are more restrictive than under the CWA.).

53. 33 U.S.C. §§ 401-466g (1982).

54. *Kaiser*, 444 U.S. at 173, 100 S. Ct. at 389 (citing *United States v. Appalachian Power Co.*, 311 U.S. 377, 426-27, 61 S. Ct. 291 (1940)).

55. 33 U.S.C. § 1342 (1982) (Section 402 of the CWA, establishing the NPDES authority for the EPA to issue permits for discharge of pollutants into the nation's waters).

issue the permits as it always had, but it would do so in light of guidelines issued by the EPA.<sup>56</sup>

Either understandably<sup>57</sup> or recalcitrantly,<sup>58</sup> the Corps initially viewed the extent of its wetlands jurisdiction as nil, confining the definition of "waters of the United States" as consistent with its need to guard against obstructions to navigability-in-fact. After considerable conflict among the Corps, the EPA, and environmentalists, one court settled the issue for its district<sup>59</sup> by forcing the Corps to include all navigable waters, adjacent wetlands, and other more isolated areas such as prairie potholes.<sup>60</sup> The Corps subsequently acquiesced to this holding throughout its jurisdiction. In 1977, Congress substantially revised the CWA,<sup>61</sup> conferring enforcement authority for the respective permit processes.<sup>62</sup> Following the 1977 revisions to the CWA, the Corps began to broaden its implementation of Section 404, declaring that the wetlands were "vital areas that constitute a productive and valuable public resource, the unnecessary alteration or destruction of which should be discouraged as contrary to the public interest."<sup>63</sup> By this statement, the Corps established a presumption against filling work in a wetland unless the applicant clearly demonstrates the water dependency of the project or that other alternatives are not practicable.<sup>64</sup> Clearly, the Corps had begun, if never

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56. The CWA defines "pollutants" as, *inter alia*, "dredged soil, . . . rock, sand, [and] cellar dirt." 33 U.S.C. § 1362(6) (1982). The Corps and EPA duties are assigned under the Act at 33 U.S.C. § 1344 (1982 & Supp. III 1985). See also 43 Op. of the Atty. Gen. of the United States No. 15, at 2 (September 5, 1979) (The Act recognized the Corps' traditional responsibility under the RHA.).

57. For a sympathetic view of the Corps' behavior in its early efforts to shoulder responsibility under the CWA, see Habicht, *Implementing Section 404: The View From the Justice Department*, [News & Analysis] 16 *Envtl. L. Rep.* (Envtl. L. Inst.) 10073, 10075 (Mar. 1986).

58. For a not-so-sympathetic view, see Lieberman, *The Role of EPA's Guidelines in the Clean Water Act § 404 Permit Program—Judicial Interpretation and Administrative Application*, [News & Analysis] 14 *Envtl. L. Rep.* (Entl. L. Inst.) 10272 (July, 1984).

59. *NRDC v. Calloway*, 392 F. Supp. 685 (D.D.C. 1975) (Section 404 of the CWA is not limited to traditional principles of navigability; the Corps' regulations are insufficient to cover the statutory intent, and must be re-issued so as to be consistent with Congress' intent to reach all waters to the maximum extent permissible under the commerce clause.).

60. A prairie pothole is a pond apparently isolated from any visible source of moisture other than rain water. Lieberman, *supra* note 58, at 10273.

61. Clean Water Act of 1977, 91 Stat. 1566 (codified as amended at 33 U.S.C. 1251 (1978)). See also *Legislative History of the Clean Water Act Amendments of 1977*, U.S. Code Cong. & Admin. News 4326 (1977).

62. See 33 U.S.C. § 1344(g)-(l) (1982) (EPA enforcement of § 404) and 33 U.S.C. § 1319 (1982) (EPA authority to order compliance with conditions and limitations of §§ 402 and 404, including civil and criminal penalties).

63. Lieberman, *supra* note 58, at 10273 (citing 33 C.F.R. § 320.4(b)(1) (1977), as revised 33 C.F.R. § 320.4(b)(2) (1982), re-enacted, 33 C.F.R. § 320.4(b)(4) (1986)).

64. *Id.*

before, to take the protection of wetlands quite seriously. It was at this juncture that the amendment to the definition of wetlands in the Corps regulations occurred.

### C. *Effect of Riverside on Waters of the United States*

The Corps' revised regulations, passed in response to *NRDC v. Calloway*,<sup>65</sup> had originally specified wetlands as those areas contiguous to navigable waters and recognizable by periodic inundation and a prevalence of certain species of vegetation that *required* saturated soil conditions for growth and reproduction.<sup>66</sup> When revised, the wetland definition contained two significant changes, only one of which was discussed by the Supreme Court in *Riverside*.

#### 1. *Expansion by ecological means*

One significant change consists of the wetlands vegetation used to indicate presence of a regulated area. The vegetation must now be that "typically adapted for life in saturated soil conditions," including plants which can exist without saturated soil (facultative hydrophytes), as well as those which require such conditions (obligate hydrophytes). The difference was ably demonstrated in *Avoyelles Sportsmen's League, Inc. v. Marsh*,<sup>67</sup> where the Fifth Circuit affirmed the Corps' broad reading of its wetlands definition in upholding denial of a permit to convert most of a 20,000 acre tract of Red River backwater wetlands in central Louisiana to soybean fields by ditching, leveling and deforestation. The comments accompanying promulgation of the new regulations noted explicitly that the change in vegetation indicators was intended to close a loophole in the old definition "excluding many forms of truly aquatic vegetation that are prevalent in an inundated or saturated area, but that do not require saturated soil from a biological standpoint for their growth and reproduction."<sup>68</sup> Relying upon these comments, the court agreed with the agency that the better reading of the definition includes those plants which, though they are tolerant of saturated soil conditions, can survive elsewhere.

The *Riverside* trial court spent some effort assuring itself that the indicative vegetation, found both on the navigable waterway shores and on *Riverside's* property, was in fact connected over the land bridge between them. Finding this, the court then determined that this flora was supported by the lake, and the land was thus within the jurisdiction

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65. 392 F. Supp. 685 (D.D.C. 1975); see *supra* note 59.

66. See text accompanying *supra* note 15.

67. 715 F.2d 897 (5th Cir. 1983).

68. *Id.* at 912 (citing 33 C.F.R. § 323 (1977)).

of the Corps.<sup>69</sup> The groundwater concept, discussed herein in Section II, suggests that the continuity of wetland flora, across the land bridge from the recognized regulable waters to the property in question, may not be necessary. A finding that such continuity exists, however, would further support a ruling that the property is in fact covered by the statute. Additionally, an intervening land bridge could be much larger if the indicative vegetation included facultative hydrophytes, instead of being limited to obligate hydrophytes.<sup>70</sup>

At least one commentator has suggested that isolated wetlands may be brought under the CWA via ecological connection through the fauna involved.<sup>71</sup> Specifically, migratory birds are key components of wetlands which are protected by the CWA. Cumulative loss of smaller, disconnected wetlands that serve as breeding grounds for such birds at other times of the year could affect the ecology of regulated waters. The Supreme Court seemed to emphasize this connection in its summary of the justification for deference to the Corps' judgment.<sup>72</sup> If such ecological interconnection comprises an acceptable test of whether wetlands are to be regulated, every wetland lying within the flyways of migratory birds would be included, which could well include every wetland in the entire continental United States.<sup>73</sup>

## 2. Expansion by means of Aquifer

The current regulations also expand the potential sources for moisture or saturated soil conditions, including groundwater which may seep hydrogeologically to the surface and drain into other navigable waters. Failure to recognize this causes one to read the words "or ground water" completely out of the regulation; it was just such a failure by the Sixth Circuit that led the Court to overrule the lower court's more restrictive reading emphasizing inundation.

Consider just how broadening this change in interpretation may turn out to be. Though the definition of "waters of the United States" may be as broad as the reach of the commerce clause, the definition of wetlands as approved by the Supreme Court in *Riverside* still requires adjacency to other bodies of water over which the Corps has juris-

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69. *Riverside*, [Litigation] 7 Env'tl. L. Rep. (Env'tl. L. Inst.) at 20445.

70. If a suspected wetland area is covered by both facultative and obligate hydrophytes, the former will extend into fringe areas where the latter will be unable to reach. If the facultative hydrophytes indicate the extent of the putative wetland, it will be larger by definition than that area in which obligate hydrophytes can survive.

71. Rosenbaum, *supra* note 1, at 10011.

72. See *supra* note 36.

73. The exact extent of this expansion factor would make an interesting study, but such lies outside the scope of this Comment. It seems obvious, though, that this should extend to the entirety of the flyways crossing the continent.

diction.<sup>74</sup> An isolated pothole which is occasionally soaked by rainwater, and thus is able to support the requisite vegetation, but is otherwise completely independent of any streams which would fall under the jurisdiction of the Corps, probably would not be included. The definition must refer, however, to areas saturated by an aquifer, or a large underground water bearing stratum which seeps to the surface to form wetlands that from the surface appear to be isolated, but which are either fed by, or which feed, a stream under the jurisdiction of the Corps. The surface territory covered by such an underground aquifer may extend many miles beyond what traditionally has been thought of as navigable waters, reaching many more of the isolated pothole swamps thought immune from the CWA.<sup>75</sup>

Carrying this reasoning a logical step further, the same justification for including wetlands fed by groundwater within "waters of the United States" suggests that the groundwater itself should be included. The Court found it reasonable to be concerned with pollution discharged into wetlands adjacent to navigable waters even though the wetlands were not flooded by such navigable waters through surface connections.<sup>76</sup> Arguably this could be limited to those wetlands which are simply above the high water mark of the nearby navigable waters, but which feed into them through surface runoff. Such drainage could, however, also occur underground through the aquifer which feeds both surface bodies of water. Dredge and fill materials discharged into isolated wetlands would not directly have to threaten navigable waters with physical erosion of sediment. Wetlands serve as floodwater reservoirs, and conceivably, interchange between isolated wetlands and navigable waters through underground strata could be as important to alleviation of flooding as surface overflow. Further, any pollutant which does intrude into the aquifer could clog the porous rock structure, thereby reducing the aquifer's benefit to the stream.

Riverside's property was not connected in any visible way to the streams feeding into Lake St. Clair. Surface flooding seldom occurred.<sup>77</sup> The landbridge between the property and the streams was as much as

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74. "We are not called upon to address the question of the authority of the Corps to regulate discharges of fill material into wetlands that are not adjacent to bodies of open water . . . and we do not express any opinion on that question." *Riverside*, 106 S. Ct. at 462 n.8.

75. Scientific research into the extent of groundwater in the New Orleans area demonstrates that mapped aquifers underlying Lake Pontchartrain and the Mississippi River reach as far as Donaldsonville, Vacherie, and Hammond, distances of as much as thirty miles. Maps examined in Louisiana Coastal Zone Management Office. See also *infra* notes 91-92 and accompanying text.

76. *Riverside*, 106 S. Ct. at 463. See also excerpt *supra* note 36.

77. *Riverside*, [Litigation] 7 *Envtl. L. Rep. (Envtl. L. Inst.)* at 20445.

200 feet wide in places. For significant interchange to occur between the property and the tributaries, an aquifer would necessarily be involved. There was, however, no indication in the reported opinions that the record established the existence of such a connecting groundwater body. Nor did the Court explicitly say that an interconnecting aquifer would fall within the definition. Further, for the Court so to declare would require a reading of the facts which it is not clear was even argued by the Corps, a step the Court was unlikely to take. This notwithstanding, while it can be argued that the *Riverside* holding does not embrace groundwater as within "waters of the United States," the facts appear to insist upon the contrary conclusion.

#### D. Program Conflicts

Absent approved state permit programs under Sections 402 and 404 of the CWA, the EPA and the Corps appear to have co-extensive jurisdiction but different responsibilities. If *Riverside* confirms that the Corps could reasonably infer Congress intended under Section 404 to use all its commerce power, then the extent of the Corps' jurisdiction is limited only by the limits of the waters of the United States, as is that of the EPA. *Riverside* reinforces this presumption by confirming the broad definition of "waters of the United States" within the context of a dredge and fill situation.

A shift in the definition of this jurisdiction may affect the agencies differently. Each has veto power over the other's permit grants, but the Corps' appears to be limited. The EPA can veto the Corps' permit no matter where the construction is proposed.<sup>78</sup> Likewise, the Corps' power to veto is implicit in the limitation upon the EPA to issue Section 402 permits.<sup>79</sup> The Corps, however, must issue its permits within the EPA/Corps developed guidelines, so that the EPA has a voice in the Corps' permit system which has no analogous Corps input into the EPA's system. States are also permitted to take over administration of both agencies' permit systems, except for the Corps' direct authority over navigable-in-fact waters. There is no such qualification for the Section 402 permit system. Additionally, the EPA approves both Section 402 and Section 404 state plans and, once a Section 404 state plan has been approved, orders the Corps to cease its permit system with regard to non-navigable-in-fact waters. Effectively, with state cooperation, the EPA can remove Corps jurisdiction to a large extent.

Only in the absence of state plans does the Corps' jurisdiction reach to the full extent of the waters of the United States. *Riverside* may well

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78. 33 U.S.C. § 1342(c) (1982).

79. 33 U.S.C. § 402(a)(1) (1982) (EPA can issue permits, except as provided in Section 404, where Corps has permit responsibility.).



extend this jurisdiction into waters the states are accustomed to regulating under state plans which are not approved by the EPA. The CWA specifically disavows preemption of state programs regulating dredge and fill activities in navigable waters within its jurisdiction.<sup>80</sup> There is no analogous disavowal within Section 402, suggesting that Congress meant to preempt states' regulation of non-dredge and fill pollutants except within an approved state Section 402 program. The statute includes, however, a general "savings clause"<sup>81</sup> designed to assure a significant state role in protection of its environment.<sup>82</sup> Further, Section 401 requires state certification that a proposed permit meets state statutory limitations allowed under the CWA if they impose greater protections for the environment than does the CWA.

Where the states do not participate in the federal permit systems under Sections 402 or 404, they can prevent either agency from issuing a permit by refusing to grant a Section 401 certification. Only in the case of state inaction can the EPA grant such certification on its own. Nothing in Sections 401 through 404 says explicitly that states give up this power by receiving approval to administer the federal permit systems. Nevertheless, there is some suggestion that the federal agencies can overrule states if the states decide, through their approved state plans, that a permit should issue. If a state objects to a permit, the agency may issue the permit anyway, over the state's objection, if the discharge source lies outside the state.<sup>83</sup> By comparison, under Section 404, the EPA may stop a state permit from issuing, but there is no obvious power to overrule a state if it says a permit should not issue. Thus, states seem to have more authority in the decision process under Section 404 than under Section 402. Nothing in the statute, however, says the states give up their Section 401 certification powers.

Consequently, should *Riverside* encourage the EPA or the Corps to further expand their jurisdiction or simply to step up activities in new areas, the states retain a strong influence over incursions into state concerns. This may become significant, even where states acquiesce to an EPA operated Section 402 program or a full Corps Section 404 program, should the agencies exert control over groundwater. Indeed, the EPA has recently begun a "Groundwater Protection Strategy" consisting of four goals: (1) fostering strong state programs; (2) focusing

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80. See *supra* note 41.

81. Section 505(e) states that nothing in the statute shall be construed as impairing any right of the states under any statute or common law to seek enforcement of any effluent standard or limitation or to seek any other relief. 33 U.S.C. § 1365(e) (1982).

82. *International Paper Co. v. Ouellette*, 107 S. Ct. 810, 812 (1987).

83. 33 U.S.C. § 1342(d)(4) (1982). See also *Ouellette*, 107 S. Ct. at 810-11 (The CWA contemplates a lesser role for affected states which share an interstate waterway with the source.).

upon inadequately addressed problems (e.g. leaking underground storage tanks, landfills, and pesticides); (3) adoption of guidelines for protection of groundwater used for drinking and other beneficial uses; and (4) strengthening its internal program organization. This strategy appears to rely upon specialized statutes addressing specific pollution product concerns.<sup>84</sup> Conspicuously absent is any CWA basis for the strategy.

## II. THE CWA AND GROUNDWATER

At the time of the CWA's passage, over sixty billion gallons of groundwater was used daily, amounting to approximately 21.5% of all water use. Of this, about half was used for agricultural and industrial purposes, and 75% of the other half served as sources for public water systems across the country. Further, groundwater use was increasing rapidly, as evidenced by the addition of a half-million new wells each year.<sup>85</sup>

Pollution of groundwater is already occurring, in concert with the pollution of surface waters addressed by the CWA. Because of the nature of groundwater, it presents unique problems distinct from those of surface water. Largely because of its slow, percolating recharge and often molasses-like movement, groundwater cannot purge itself rapidly as can surface water.<sup>86</sup> Hence, allowing pollution now becomes an irrevocable decision lasting for many years, maybe even centuries. When groundwater does purge itself by expelling the contaminated water, it usually does so by forcing it to the surface where it pollutes surface water. As a result of this alone, there is good reason to believe the CWA may cover groundwater. Whether *Riverside* amounts to authority for this proposition remains to be seen.

### A. Nature of Groundwater

Most underground rocks contain water. Even the relatively impermeable rocks which form aquifer boundaries by impeding underground water flow will have cracks containing water. It has been estimated that underground aquifers contain as much as 150 times the amount of freshwater contained in all the surface storage in the continental United States, including the Great Lakes.<sup>87</sup>

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84. R. Beck and C. Goplerud, *supra* note 3, § 212.2, at 268-69 (2d ed. Supp. 1985). See also *infra* notes 105-125 and accompanying text.

85. Wilson, *Ground Water—Are They Beneath the Reach of the Federal Water Pollution Control Act Amendments?* 5 *Envtl. Aff.* 545, 546 (1976) (citing testimony before House & Senate investigating committees).

86. Groundwater moves at a surprisingly slow pace; probably 95% moves at a rate of less than five feet per day. R. Kazman, *Modern Hydrology* 190 (1972). See also Wilson, *supra* note 85, at 546-47.

87. R. Kazman, *supra* note 86, at 195.

Underground water aquifers usually occur in alluvial deposits, relatively porous sedimentary rock strata laid down either by glacial scouring<sup>88</sup> or by ancient streams and rivers eroding sand particles from higher ground and depositing them on lower lying areas. Successive deposits of silt form clay layers which metamorphose over geologic time and under pressure to form less permeable rock layers. This same pressure warps and folds the layers, exposing them irregularly at the surface in outcrops where water can percolate into them from precipitation and surface flooding.<sup>89</sup>

Aquifers with high permeability<sup>90</sup> serve three principle functions: to filter water through sand particles, to serve as a pipeline by transmitting water from the recharge areas to discharge outcrops or withdrawal wells, and to store water. Water percolates into aquifers through soil layers or enters directly from streams and lakes which contact the outcrops themselves. Such "bank storage" frequently, if not usually, occurs on both sides of such streams, resulting in the aquifer effectively straddling the stream. Water stored in this manner readily drains back into the stream when the stream's water level drops below the underground water table. As a result, the water table in alluvial aquifers rises and falls with the flooding cycles of recharging streams and lakes associated with it.<sup>91</sup>

Water may also exit such an aquifer through other outcroppings to form familiar "springs" which feed other streams, or it may be forced to the surface by underground pressure to form artesian wells. It may also pool on the surface to create lakes or marshy wetlands where the capacity of the aquifer has been exceeded by the recharge. Thus, apparently isolated wetlands at considerable distances from a stream could be connected hydrologically to it.<sup>92</sup> It was this phenomenon which led the Corps and the EPA to include the "or groundwater" phraseology into their definitions of regulable wetlands, and which convinced the Court that the inclusion was justified.

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88. Glacial sheets waxed and waned across the North American continent in the ancient past, picking up rocks of all sizes and depositing them in thick, complex blankets above the bedrock. This glacial till provides a good potential source of groundwater wherever found. C. Fetter, *Applied Hydrology* 188 (1980).

89. R. Kazman, *supra* note 86, at 199.

90. Permeability is a measure of a rock stratum's capacity to transmit water or other fluids. This is distinct from, but related to, its porosity, which is a property reflecting the amount of open spaces occurring between the individual particles of rock. The latter may be closely spaced, resulting in a low permeability, or cavernous where erosion has formed channels in the rocks. *Id.* at 160-65.

91. Groundwater levels are extremely sensitive to minute changes in pressure which may be transmitted over considerable distances. For example, fluctuations in the Mississippi River stages at Baton Rouge, Louisiana, were reproduced in an observation well connected hydrologically with the river but over two miles away. *Id.* at 171-74.

92. *Id.*

## B. Regulation of Groundwater

Regulation of groundwater has historically been the responsibility of the states. Congress has been ambiguous in demonstrating its intent to take charge of groundwater regulation, possibly because of the depth of traditional state regulation. Likewise, federal courts have found little authority within the existing statutes with which to affirm federal jurisdiction.

### 1. Riparian Rights versus Prior Appropriation

Two widely different state approaches developed, each reaching dominant acceptance depending largely upon the scarcity of fresh water in the region. In areas where fresh water was plentiful, the common law developed the concept that the ownership of land brought with it ownership of the underlying water and minerals. A landowner was free to reduce to possession anything he found on or under his land or to sell it in place to others who could do so.<sup>93</sup> Because of the "pipeline" effect of underground fluid flow, this meant that a landowner or his assignee could extract water from beneath his land by simply drilling a well and pumping out water that migrated to it, even if the migration was from beneath neighboring land. This became known as the English rule, or the rule of capture.<sup>94</sup>

Two American modifications to the English rule, the doctrine of correlative rights and the "American rule," developed in response to a rising need for conservation and to the apparent inequity and wastefulness resulting from the rule of capture.<sup>95</sup> The doctrine of correlative

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93. See *Acton v. Blundell*, 12 Mees. & W. 324, 152 Eng. Rep. 1223 (1843) (overlying owner has absolute ownership of the right to use percolating groundwater below his property, even to the detriment of his neighbors).

Louisiana, historically better aligned with and thus reflective of the civil law traditions of continental Europe, reaches the same result. Though the landowner does not actually own uncaptured minerals under his land, he has the exclusive right to go onto his land and search for them and keep any he reduces to possession. This right can be conveyed to assignees by the use of servitudes which prescribe, or terminate for lack of use, causing the right to revert to the surface owner. La. R.S. 31:21 (1986). See also *Adams v. Grigsby*, 152 So. 2d 619 (La. App. 2d Cir. 1963), writ denied, 244 La. 662, 153 So. 2d 880 (1963) (underground water is unowned, like wild animals, *ferae naturae*, over which ownership is acquired by capturing and reducing to possession).

94. Note, *Water Law—Groundwater—A Filter for a Muddy Issue?*, *Prather v. Eisenmann*, 200 Neb. 1, 261 N.W.2d 766 (1978), 12 Creighton L. Rev. 431, 433 (1978).

95. Especially in the context of oil exploitation, landowners perceiving that their neighbors were systematically draining the resource below their own land would hasten to drill and "capture" as much as they could before the supply ran out. This often led to inefficient depletion of the reservoirs and gluts on the market for the commodity. The jurisprudence superimposed an implied duty "not to commit a surface nuisance . . . [nor] injury to the . . . reservoir." See *Summers*, *The Modern Theory and Practical Application of Statutes for the Conservation of Oil and Gas*, 13 Tul. L. Rev. 1, 6 (1938). See also Note, *supra* note 94, at 434-35.

rights recognized that all landowners have equal rights in the underlying resources, and where they are insufficient for the demand for them, each owner should get a proportionate share.<sup>96</sup> The correlative rights doctrine proved especially useful for unitizing oil and gas reservoirs once these came to be recognized as pools of trapped fluids instead of underground streams.<sup>97</sup> The American rule viewed it as unreasonable to use one's ownership in underground resources by selling the water extracted from one's property for use on some distant land or by excessively or wastefully using it near the well site. As long as the water use benefitted the land from which it was drawn, it was reasonable.<sup>98</sup>

A fundamentally distinct doctrine prevails today in the more arid western states of the United States, where an established use may be treated as having prescribed into a permanent right. Under the "prior appropriation" doctrine, the water rights holder need not be a landowner nor his assignee, and a landowner has no inherent right to the water under his land. Water rights vest in the first person to exploit a given source, and lesser rights accrue to later users; rights may be lost if such use ceases. Some states treat groundwater as public property and regulate beneficial uses according to public priorities. California incorporates the doctrine of correlative rights into prior appropriation, recognizing riparian ownership of a right to reasonable use of the groundwater, with any excess over that amount subject to prior appropriation.<sup>99</sup>

The appropriateness of these competing doctrines largely depends upon the climate. One hydrology expert mapped the states adopting each approach, thereby demonstrating graphically that the riparian doctrines dominate in the humid regions of the country, mostly in the Mississippi River watershed and Atlantic seaboard states.<sup>100</sup> Another author suggests that the appropriative doctrine will spread naturally into

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96. Note, *supra* note 94, at 434-36, 438. See also Summers, *supra* note 95, at 14.

97. Unitizing consists of the scientific determination of the limits of an underground pool of a fluid and the recognition of rights to the production therefrom by each surface owner in proportion to his land area overlying the unit. For an informative discussion of the history of the correlative rights doctrine and unitization in the oil and gas industry, see Summers, *supra* note 95, at 14.

98. Summers, *supra* note 95, at 14. See also Note, *supra* note 94, at 434-36.

99. C. Fetter, *supra* note 88, at 388. See also Note, *supra* note 94, at 438, and R. Kazman, *supra* note 86, at 239.

100. The hydrologist mapped areas of the continental United States and demonstrated thereby the following: (a) the appropriative doctrine dominates in the Rocky Mountain regions of the western states of Colorado, Idaho, New Mexico, Nevada, Utah and Wyoming; (b) riparian doctrines govern in the eastern half of the United States, roughly corresponding to the Mississippi River watershed states and the Atlantic seaboard; (c) the remaining states have adopted both types of doctrines as appropriate, demonstrating that both can co-exist within a given jurisdiction if needed. R. Kazman, *supra* note 86, at 240 (citing H. Thomas, *Water Rights in Areas of Ground-Water Mining*, 347 U.S. Geol. Surv. Circ. 3 (1955)).

more humid regions once increased utilization of groundwater creates or aggravates drought conditions.<sup>101</sup> Yet, for a variety of reasons,<sup>102</sup> arid climate solutions may not be directly applicable in humid regions. Likewise, riparian rights falter when multistate solutions are needed.<sup>103</sup> These conflicts will likely be aggravated by pollution of aquifers from contaminated surface waters or by the disposal of industrial wastes into subsurface injection wells.<sup>104</sup>

## 2. Federal Attention to the Problem

Congress has only tangentially approached the regulation of groundwater itself. In all, six statutes give the EPA authority over areas which may affect groundwater. The Resource Conservation and Recovery Act (RCRA)<sup>105</sup> and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA),<sup>106</sup> or "Superfund" Act, provide long range prevention programs and immediate emergency response to environmental threats from hazardous wastes which may, among other things, threaten groundwater. The focus of these, however, is upon handling of the pollutant, and upon mobilization of efforts to clean up spills and dumpsites once their threats become recognized. Their focus is not upon groundwater as a resource. The Toxic Substances Control Act (TSCA)<sup>107</sup> and the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)<sup>108</sup> likewise focus upon specific pollutants which may find

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101. R. Kazman, *supra* note 86, at 240.

102. There is an "enormous time lag between the start of ground-water offtake and [the first signs of deleterious effects]," making the appropriate doctrine difficult to enforce. Groundwater extraction may reduce streamflow, causing priority problems between groundwater and surface stream users where the former's resource is replenished from the streams relied upon by the latter. Whom will be empowered to decide the highest and best use of a resource historically regarded as endless? *Id.* at 240-44.

103. This is one of the factors regarded as significant in the role of the CWA in interstate disputes over waste disposal into interstate waters by residents of the upstream state. R. Beck and C. Goplerud, *supra* note 3, § 203.2, at 24-25. Under 33 U.S.C. § 1311 (1982), states are required to determine the uses to which the stream shall be put, the total maximum daily load of pollutants it can sustain consistent with this use, and then allocate this load among present and future polluters. Plans for such allocation are to be submitted to the EPA for review and approval. States could conceivably dispute each others' determinations at all three stages. For a demonstration of just how complex interstate dispute resolution of groundwater issues can be, see Comment, *Interstate Groundwater Rights: Protecting the Interests of the States*, 20 S.D. L. Rev. 641 (1975).

104. It should be readily apparent from the bank storage discussion, *supra* note 91 and accompanying text, that alluvial aquifers inherently straddle state lines, since major streams often serve as a classic boundary marker between jurisdictions. The best example of this in the United States, of course, is the Mississippi River.

105. 42 U.S.C. §§ 6901-6991i (1982 & Supp. III 1985).

106. 42 U.S.C. §§ 9601-9657 (1982 & Supp. III 1985).

107. 15 U.S.C. §§ 2601-2629 (1982 & Supp. III 1985).

108. 7 U.S.C. §§ 136a-136y (1982 & Supp. III 1985).

their way into groundwater by regulating the manufacture and distribution of such products. The primary attention to groundwater protection comes from the Safe Drinking Water Act,<sup>109</sup> and, arguably, the CWA.

*a. The Safe Drinking Water Act of 1974*

The Safe Drinking Water Act (SDWA)<sup>110</sup> covers only groundwater that may be used for drinking. Introduced contemporarily with federal assumption of the leadership role in environmental matters by the 1972 amendments to the CWA, it establishes the EPA as overseer of approved state programs. If a state fails to submit an approved program, the EPA must establish its own protection plans for the state. Through the use of primary and secondary drinking water quality regulations,<sup>111</sup> these programs control the quantity of various contaminants, organic and inorganic, which may occur in public water supply systems. Alternatively, the program may establish a technology standard by which such systems will be treated, if determination of the contaminant levels is infeasible.<sup>112</sup>

The SDWA's second feature requires states or the EPA to promulgate underground injection controls (UIC's). The SDWA authorizes the EPA to establish minimum requirements for such programs,<sup>113</sup> civil and criminal enforcement of the requirements,<sup>114</sup> and grants of 50-90% subsidies to states for development of their implementation programs.<sup>115</sup> It also grants the EPA emergency powers to deal with imminent threats to public water systems or underground sources of drinking water for such systems<sup>116</sup> when state authorities have not acted to protect the health of persons affected. The EPA's UIC regulations<sup>117</sup> group wells into five classes<sup>118</sup> and prohibit, with exceptions, any underground injections without a permit.<sup>119</sup>

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109. 42 U.S.C.A. §§ 300f-300j-11 (West 1982 & Supp. 1987).

110. 42 U.S.C.A. §§ 300f-300j-11 (West 1982 & Supp. 1987). For a general discussion of the history and purpose of the SDWA, see Douglas, *Safe Drinking Water Act of 1974—History and Critique*, 5 *Envtl. Aff.* 501 (1976).

111. 42 U.S.C. § 300f(1)-(2) (1982). See also 40 C.F.R. §§ 141, 143 (1986).

112. 42 U.S.C.A. § 300g-1(b)(7) (West Supp. 1987).

113. 42 U.S.C. § 300h (1982). See also 40 C.F.R. §§ 144, 146 (1986).

114. 42 U.S.C.A. § 300h-2 (West Supp. 1987).

115. 42 U.S.C.A. § 300h-7(k) (West Supp. 1987).

116. 42 U.S.C.A. § 300i (West Supp. 1987).

117. 40 C.F.R. §§ 144-146 (1986).

118. 40 C.F.R. § 144.6 (1986).

119. The exceptions are significant. They exclude wells outside the state's boundaries, individual waste systems (e.g., septic tanks), non-residence disposal systems serving less than twenty persons per day, wells injecting gaseous pipeline quality hydrocarbons, and any disposals whatsoever into holes which are wider than they are deep (these fall outside the definition of a well, and thus outside the statute). 40 C.F.R. § 144.1(g)(2) (1986).

The SDWA culminated a long history of concern directly with the safety of public drinking water supplies. States had already benefitted from standards established by the Community Water Supply Study (CWSS),<sup>120</sup> but compliance with these standards was slow in coming and inconsistent. The SDWA served to force states with public water systems not in compliance to take steps to bring about improvements.<sup>121</sup> Thus, the SDWA amounts to a federally mandated state regulatory scheme imposed upon those who supply drinking water for a price.<sup>122</sup> It not only does not establish "ambient" contamination levels for groundwater generally, but it only applies to the systems under which drinking water is sold. As seen earlier,<sup>123</sup> this amounts to only 75% of the one half of groundwater used for drinking, or only about 37.5% of all groundwater. The UIC program is limited to only injections into wells, and then only wells which threaten public water systems.<sup>124</sup> The SDWA does not reach all point sources as does the CWA.<sup>125</sup> There is no federal coverage of over 60% of groundwater unless such protection arises from other sources.

*b. The Clean Water Act*

Taken literally, the CWA gives the EPA authority over groundwater in several respects. Section 104 requires the EPA to maintain a surveillance system to monitor water quality of both surface and groundwater.<sup>126</sup> Section 208 provides for EPA monitoring of state area wide planning

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120. Bureau of Water Hygiene, United States Public Health Service, H.E.W., Community Water Supply Study—Analysis of National Survey Findings (1970), as cited in Douglas, *supra* note 110, at 506.

121. The CWSS assessed the status of drinking water quality and supply systems. It indicated deficiencies in the quality of water, surveillance systems, and in purification capacity nationwide. Only 59% of the almost 1000 systems studied were delivering satisfactory water. The CWSS contained recommendations for standards of water quality, training for water system personnel, and outside inspection programs. It played a key role in the deliberations before Congress on the SDWA. *Id.* at 506-08.

122. "[N]ational primary drinking water regulations . . . shall apply to each public water system in each State, except that such regulations shall not apply to a public water system . . . which does not sell water to any person . . ." 42 U.S.C. § 300g (1982).

123. See *supra* note 85 and accompanying text.

124. See *supra* note 119.

125. 33 U.S.C. §§ 1311(e) (1982). See also 33 U.S.C. 1362(14) (1982) (defining "point source" as "any discernible, discrete conveyance including but not limited to any pipe, ditch, channel, conduit, well, . . . container, . . . vessel or other floating craft, from which pollutants are or may be discharged").

126. "The Administrator shall establish national programs [which] . . . in cooperation with the States . . . establish, equip, and maintain a water quality surveillance system for the purpose of monitoring the quality of the navigable waters and ground waters . . ." 33 U.S.C. § 1254(a)(5) (1982).



programs for waste treatment facilities.<sup>127</sup> Section 303 addresses the development of water quality standards generally, requiring oversight of state implementation plans and development of federal schemes where states have none. This section expresses, inter alia, the motive of protection of public health.<sup>128</sup> Section 304 requires the EPA to develop and publish water quality criteria which reflect the latest scientific knowledge on the effects on the health and welfare which may be expected from pollutants in any body of water including groundwater.<sup>129</sup> Finally, Section 402, which creates the National Pollution Discharge Elimination System (NPDES), the primary permit authority granted the EPA, allows the agency to turn its operation over to a state once that state submits an approved implementation plan. The EPA cannot, however, approve such a plan if the state does not have authority to control disposal of pollutants into wells.<sup>130</sup>

Thus, express language in the CWA suggests that the statute assumes the same leadership role over groundwater that Congress clearly assumed for surface waters. Nowhere, however, does the CWA confirm that the EPA shall address groundwater pollution to the extent that it does surface water pollution through the NPDES programs. This conflict has not gone untested in the courts.

### 3. Federal Case Law

Despite statutory indications that Congress meant for the EPA to regulate at least the pollution of groundwater, federal case law has been at best equivocal on the subject. For example, in direct contradiction to the indication in Section 402 of the CWA just discussed, a Texas district court found in *United States v. GAF Corp.*<sup>131</sup> that Section 301 of the statute<sup>132</sup> did not cover the disposal of chemical wastes into a

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127. "Any [such] plan . . . shall include . . . a process to control the disposal of pollutants on land or in subsurface excavations within such area to protect ground and surface water quality." 33 U.S.C. § 1288(b)(2)(K) (1982).

128. "Such standards shall be such as to protect the public health or welfare, enhance the quality of water and . . . tak[e] into consideration their use[s] and value for public water supplies . . ." 33 U.S.C. § 1313(c)(2) (1982).

129. "The Administrator . . . shall develop and publish . . . criteria for water quality accurately reflecting the latest scientific knowledge on the kind and extent of all identifiable effects . . . [of] the presence of pollutants in any body of water, including ground water . . ." 33 U.S.C. § 1314(a)(1) (1982).

130. "The Administrator shall approve each such submitted program unless . . . authority does not exist [t]o issue permits which . . . control the disposal of pollutants into wells . . ." 33 U.S.C. § 1342(b)(1)(D) (1982).

131. 389 F. Supp. 1379 (S.D. Tex. 1975).

132. 33 U.S.C. § 1311 (1982). Section 301 defines the standards of technology required to be dedicated to different types of pollution sources at different dates during the phase-in of the statute's authority, and declares that no pollutants shall be discharged except in compliance therewith.

deep well.<sup>133</sup> In granting a summary judgement for want of subject matter jurisdiction and failure to state a claim upon which relief can be granted, the court relied on Congress' failure to pass a 1972 amendment to the CWA emphasizing regulation of groundwater under the statute.<sup>134</sup>

The circuit courts differ about coverage of groundwater. The United States Circuit Court of Appeals for the Fifth Circuit in *Exxon v. Train*<sup>135</sup> reviewed the legislative history of the CWA in light of the EPA's position that, since it could not approve a state plan which failed to provide such authority under state law,<sup>136</sup> the EPA itself must have jurisdiction over deep well disposals. Agreeing with the district court in *GAF Corp.*, the Fifth Circuit saw the failure of Congress to include groundwater in the 1972 amendments to the CWA as an indication that Congress did not intend the EPA to have such authority.<sup>137</sup> The court conceded, though, that Congress meant for the EPA and states to at least "begin developing the information necessary to assess and deal with groundwater pollution,"<sup>138</sup> probably to encourage the states to protect groundwater<sup>139</sup> and to benefit from the knowledge being developed by the EPA while retaining control of their groundwater pollution control programs.<sup>140</sup>

The Seventh Circuit, however, reached the opposite conclusion in *United States Steel Corp. v. Train*,<sup>141</sup> at least "where the regulation is undertaken in conjunction with limitations on . . . discharges into surface waters."<sup>142</sup> Examining the same legislative history and the Senate Report of the bill, the Seventh Circuit found Congressional intent to prevent the disposal of wastes into deep wells.<sup>143</sup> The court noted that Congress' failure in 1972 to pass the Aspin Amendments, which would have affirmatively included groundwater in the CWA, and in which failure the *GAF Corp.* and *Exxon* courts put so much store, more likely

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133. Section 301, 33 U.S.C. § 1311 (1982), is incorporated by reference into Section 402, 33 U.S.C. § 1342(a)(1) (1982).

134. 389 F. Supp. at 1383-84. The court also rejected as speculative an argument that implicit in the EPA's authority is the power to approve state programs only if they have groundwater control authority and that such is a necessary condition of the EPA's NPDES program authority. See supra note 130 and accompanying text.

135. 554 F.2d 1310 (5th Cir. 1977).

136. See supra note 130 and accompanying text.

137. 554 F.2d at 1322.

138. Id. at 1323.

139. Id.

140. Id. at 1324.

141. 556 F.2d 822 (7th Cir. 1977).

142. Id. at 852.

143. Id. at 852-83. See also S. Rep. No. 92-414, 92d Cong. 2d Sess. 2, reprinted in 1972 U.S. Code Cong. & Admin. News 3668.

amounted to a rejection of additional burdens on the oil industry than a rejection of comprehensive coverage of the act.<sup>144</sup>

More recently, in *Kelly v. United States*,<sup>145</sup> a Michigan district court found that authority over groundwater contamination lies with the states rather than with the EPA under the CWA. The state attorney general had filed a citizen action authorized by Section 505 of the CWA<sup>146</sup> against the United States Coast Guard for allegedly injecting toxic chemicals into the ground, the plume of which had spread to a nearby bay. The court agreed with the reasoning in *Exxon* that the legislative history indicated that Congress meant to leave the authority over groundwater to the states.<sup>147</sup>

### III. POLICY CONSIDERATIONS

The foregoing presents a fragmented program of groundwater regulation based partly upon two theories of common law, implemented inconsistently among the fifty states, and federal attention to diverse problems as they have arisen. There appears to be no comprehensive national program to protect the groundwater resources of this country which, like the surface environment, may become increasingly threatened by industrialization and agricultural pollution. This could develop into what will become the latest tragedy of the commons.<sup>148</sup>

Pollutants in our environment must be dealt with, and there seem to be only three general ways to do so: (1) expel them into the air, either directly or by incineration; (2) store or discharge them at the surface, either in dumpsites or into nearby streams; and (3) inject them into subsurface strata through deep injection wells. Pollution of groundwater can occur from all three of these alternatives, but from some more than others. All three are regulated by federal statutes to some degree. The first two are covered respectively by the Clean Air Act<sup>149</sup>

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144. The two-part Aspin amendments, in addition to affirming that the CWA covered groundwater, deleted as an unfair discrimination against other industries the exception of Section 502(6), 33 U.S.C. § 1362(6) (1982), for oil and gas production. Since, at the time, over 99% of all injection wells were operated by the oil and gas industry, this is a reasonable view of Congress' rejection of the amendment. *United States Steel Corp. v. Train*, 556 F.2d at 853 n.66. See also Wilson, *supra* note 85, at 555-56.

145. 618 F. Supp. 1103 (D. Mich. 1985).

146. "[A]ny citizen may commence a civil action on his own behalf against any person (including the United States . . .) who is alleged to be in violation of an effluent standard or limitation . . ." 33 U.S.C. § 1365(a)(1) (1982).

147. 618 F. Supp. at 1106-07.

148. Hardin, *The Tragedy of the Commons*, 162 *Science* 1243 (1968) (Absent intervention by common rule, as long as an individual derives greater benefit from the use of a commonly owned resource than his proportionate cost of replenishment or depletion, he will continue to exploit it, even to its destruction.).

149. 42 U.S.C.A. §§ 7401-7642 (West 1983 & Supp. 1987).

and by FIFRA, TSCA, RCRA, and CERCLA mentioned earlier;<sup>150</sup> the latter of these is covered comprehensively by the CWA. However, the last alternative seems to a large degree to have been neglected by Congress. Certainly the SDWA covers a portion of it, but unless the CWA provides the comprehensive regulation for groundwater that it does for surface water, then the majority of groundwater used in the United States comes into commerce unregulated at the federal level.

Groundwater certainly falls within the reach of the commerce clause. Groundwater used for irrigation and industry represents over half the groundwater supplies used anywhere in the country. After *Wickard v. Filburn*,<sup>151</sup> there is no reason to believe that either of these groundwater uses could be confined to a business so small that it could not be reached by the commerce clause. More often than not, groundwater aquifers bridge state lines because of bank storage along streams serving as state boundaries. Finally, the Supreme Court recently affirmed that Congress could regulate groundwater.<sup>152</sup> If in fact Congress did omit groundwater regulation when it passed the matrix of pollution control statutes in the last fifteen years, one wonders why.

Such an omission should not be lightly judged improper or inadvertent. Initially, it was commonly believed that groundwater is impregnable to pollution due to the natural filter effect of aquifers and the screening of pollutants by ground cover.<sup>153</sup> Congress may well have intended that this area of the environment be left unregulated. Alternatively, Congress may have thought groundwater is adequately regulated among the various states. Thirdly, Congress may have felt it was too early to tell how most groundwater should be regulated, and only intended for the CWA to provide helpful information to the states in the interim.

One justification for Congress' reluctance emphatically to declare groundwater within the EPA's primary responsibility may be that the activity of regulation of groundwater has become firmly entrenched as a traditional state function. State laws regulating ownership rights to groundwater were well developed long before Congress' environmental

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150. See supra notes 105-109 and accompanying text.

151. 317 U.S. 111, 63 S. Ct. 82 (1942) (The commerce clause is competent to reach the individual consumption decisions of a single farmer on the theory that others similarly situated form a class sizable enough to exert a substantial economic effect upon interstate commerce.).

152. *Sporhose v. Nebraska ex. rel. Douglas*, 458 U.S. 941, 102 S. Ct. 3456 (1981) (declared invalid a statute requiring reciprocity agreement with neighboring state before Nebraska residents could pump groundwater to their contiguous tracts in the other state, because it interfered with interstate commerce; groundwater is an area Congress could regulate if it chose).

153. R. Beck and C. Goplerud, supra note 3, at 267.

leadership matured. Further, obtaining water supplies is usually carried out at the private local or municipal level, with state assistance where necessary. Considerable amounts of money are expended by states to obtain water and to handle it in the process of delivery to consumers. It is unlikely Congress would wish to supplant these programs. It is equally unlikely, however, that states will readily tolerate the possibility that the EPA might interfere with their arrangements to supply their residents with so critical a staple of life as drinking water. Yet this is exactly what Congress found to be necessary with the SDWA.

Injecting pollution into the ground below the water table means contaminating an aquifer for many years to come. The only way such an aquifer can cleanse itself is through dispersion of the wastes resulting from flow of the groundwater into other strata. Though this may take years, it will eventually migrate to other aquifers, because water seeps through even the most impermeable rock layers through cracks. It is one thing to talk of confined aquifers separated from other porous rock strata by these "impermeable" rock layers when the leakage from one aquifer to another is insignificant compared with the flow through each due to recharge and outtake. The consequences of one aquifer leaking clean water into another are minimal at worst. However, when one of these aquifers has become contaminated by pollutants, even small leakages may become quite serious. It was exactly this thought which led the EPA absolutely to preclude injection wells discharging into aquifers underlying public water system sources.<sup>154</sup>

Even if the injection well is nowhere near a public water system source, it can still threaten human health. Aquifers which do not supply public water systems selling water are not covered by the SDWA; individual rural residential home wells for domestic use may receive no protection. Industrial water use, even if it adds no pollutants of its own, may involve dumping contaminated groundwater into surface water bodies once the water has been used in processes. This alone suggests that the CWA may cover the industry's source water, because the statute clearly covers the industry's discharges. Most alarming, and perhaps worst of all, water taken from a contaminated aquifer may be used to irrigate agricultural products which eventually pass into the food chain.

#### IV. CONCLUSION

The Supreme Court has sanctioned a broad reading of the Corps' jurisdiction under the CWA, rather than a narrow one adopted by the Sixth Circuit to avoid a taking clause violation. The effect may have been to recognize that the groundwater serving as the only hydrologic

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154. 40 C.F.R. § 144.6 (1986). See *supra* notes 117-19 and accompanying text.

link between the wetlands and the navigable waters falls within the jurisdiction of the Corps and the EPA as well. The definition of navigable waters is not confined to the permitting sections of either agency, but pervades the whole Act. Certainly the definition must apply to the EPA equally because of the structure of the statute.

Because of the Court's approach to affirming the Corps' judgment of its tasks, declining to decide once and for all what Congress intended, *Riverside* really decides nothing about how far the agencies may reach under the CWA. The opinion neither circumscribes the CWA nor affirms that it has reached to the maximum extent possible under the Constitution by virtue of the current regulations. It does, however, confirm that the CWA can reach at least as far as the Corps and the EPA have said it does. It reaches all waters hydrologically connected to traditionally regulated waters of the United States.

Arguably there is a basis to infer that the Court would approve further expansions by these agencies into traditionally state regulated areas. In fact, it may suggest that the EPA could fill the perceived void in groundwater protection by simply writing regulations which clearly, and reasonably, include groundwater. As noted earlier, however, the EPA plans to proceed at a more cautious pace with its groundwater strategy, relying upon a matrix of other statutes instead of the CWA.<sup>155</sup> The extent to which this will serve the policy concerns remains to be seen.

Because of the nature of groundwater and the strong policy reasons for comprehensive regulation of it, *Riverside* may understandably be read to suggest that the entire hydrologic system, including the groundwater, may be regulated as "waters of the United States." The opinion seems to answer part of the questions raised in *GAF Corp.*<sup>156</sup> and *Exxon*<sup>157</sup> as to alluvial groundwater subject to bank storage. Even in those cases, the respective courts admitted groundwater would be included if the agencies had alleged that it would flow into surface waters within the jurisdiction of the CWA. *Riverside* confirms that at least this is reasonable under the statute. However, for the strong policy demands to be achieved, a comprehensive program can no more be limited to regulating alluvial aquifers than it can be limited to the coverage of the SDWA. A comprehensive groundwater protection scheme must address all groundwater.

Most of the federal jurisprudence seems to be to the contrary. Of course, the ideal solution would be for Congress to recognize that its efforts at legislation to date have appeared to the courts to be ambiguous,

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155. See supra note 84 and accompanying text.

156. 389 F. Supp. 1379 (S.D. Tex. 1975).

157. 554 F.2d 1310 (5th Cir. 1977).

and to get off the fence by clarifying whether it wants the leadership role in groundwater regulation. Presently, for the Corps or the EPA to attempt to assert jurisdiction over groundwater, they would do well to rely upon more solid authority than *Riverside*. The decision does, however, strongly suggest that such a position would not be unreasonable.

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