An Agricultural Law Research Article

# When Voluntary, Incentive-Based Controls Fail: Structuring a Regulatory Response to Agricultural Nonpoint Source Water Pollution

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Originally Published in WASHINGTON UNIVERSITY JOURNAL OF LAW & POLICY
9 WASH. U. J. L. & POL'Y 21 (2002)

# When Voluntary, Incentive-Based Controls Fail: Structuring a Regulatory Response to Agricultural Nonpoint Source Water Pollution

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For most of its thirty-year life-span, the Clean Water Act's (CWA) program for controlling pollution from industrial facilities and municipal water treatment plants has been the primary focus of federal water pollution control law and policy. While the wisdom of this program for controlling "point sources" through technology-based effluent limitations has been roundly debated, there is little question that it has yielded sizeable gains in water quality. It is now clear, however, that the CWA's emphasis on controlling discharges from point sources has not achieved the level of cleanup at which the CWA aims.[1] Moreover, further water quality gains from the control of point sources, while certainly not exhausted, are likely to be too limited, too costly, or both, to achieve water quality objectives.[2]

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* Professor of Law, Saint Louis University School of Law. Thanks to my colleagues at Saint Louis University who participated in a workshop presentation of this Article. Special thanks to Constance Wagner, Melissa Cole, and Dan Hulseboch for their helpful comments. Thanks also to NAELS for the invitation to participate in this exceptionally well-run conference. This Article was prepared for the 2002 National Association of Environmental Law Societies' (NAELS) Conference: "Sustainable Agriculture: Food for the Future" held at Washington University School of Law in St. Louis on March 15-17, 2002.

1. On the extent of current water quality problems, see U.S. ENVIRONMENTAL PROTECTION AGENCY, NATIONAL WATER QUALITY INVENTORY: 1998 REPORT TO CONGRESS (2000), *at* http://www.epa.gov/305b/98report/ (last visited Mar. 30, 2002) [hereinafter 1998 WATER QUALITY REPORT]; U.S. ENVIRONMENTAL PROTECTION AGENCY & U.S. DEPARTMENT OF AGRICULTURE, CLEAN WATER ACTION PLAN: RESTORING AND PROTECTING AMERICA'S WATERS 9 (1998), *at* http://www.cleanwater.gov/action/cwap.pdf (last visited Mar. 30, 2002) [hereinafter CLEAN WATER ACTION PLAN].

2. The EPA and USDA have concluded that implementation of the existing programs will not stop serious new threats to public health, living resources, and the nation's waterways, particularly from polluted run off. These programs lack the strength, resources, and framework to finish the job of restoring rivers, lakes, and coastal areas. To fulfill the original goal of the Clean Water Act—"fishable and swimmable" water for every American—the nation must chart a new course to address the pollution problems of the next generation. 1998 WATER QUALITY

The gist of the nation's current water quality problems is the absence of effective measures to control nonpoint source pollution—the diffuse and pervasive streams of pollutants that enter our waters over broad expanses of land and through the air, rather than from a discrete and identifiable "point," such as a pipe or ditch.[3] Agricultural activities are deeply implicated in this problem. "Farmers and ranchers control how most of our land is used and managed .... They are, literally, the most important soil, water, fish, wildlife, and recreational managers in the U.S."[4] They have not, however, been particularly good stewards of our water resources: excessive or inappropriate use of fertilizers and pesticides, soil erosion, habitat alteration, soil salinization, animal wastes, and rates of water usage are causing serious water quality problems throughout the country.[5] Indeed, agricultural nonpoint source pollution is now considered the nation's most persistent and most difficult water quality problem.[6]

Farms occupy a special place in the imagination of most Americans, evoking ideas about closeness to land and water resources, fierce independence, and a strong stewardship ethic.[7] Across the country, states and local governments are concerned with losses of prime agricultural land, giving rise to "right-to-farm" legislation and other measures to protect farmland from encroaching

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REPORT, *supra* note 1, at i; *see also* Richard B. Stewart, *A New Generation of Environmental Regulation?*, 29 CAP. U. L. REV. 21, 28 (2001); Robert W. Adler, *Integrated Approaches to Water Pollution: Lessons from the Clean Air Act*, 23 HARV. ENVTL. L. REV. 203, 203-04 (1999) [hereinafter Alder, *Integrated Approaches*]; Drew Caputo, *A Job Half Finished: The Clean Water Act After 25 Years*, 27 Envtl. L. Rep. 10574 (Nov. 1997); William F. Pedersen, Jr., *Turning the Tide on Water Quality*, 15 ECOLOGY L.Q. 69 (1988).

3. *See* 1998 WATER QUALITY REPORT, *supra* note 1, at ES-3 (identifying nonpoint source pollution as the leading cause of water quality impairments).

4. Craig A. Cox, *What Should be the Role of Resource Stewardship in Future Farm Policy?*, presentation at the USDA Agricultural Outlook Forum 2001 (Feb. 22, 2001), *at* http://www.swcs.org/t_advocacy_cox_speech.htm.

5. C. Ford Runge, *Environmental Protection From Farm to Market*, in THINKING ECOLOGICALLY: THE NEXT GENERATION OF ENVIRONMENTAL POLICY 200, 204 (Marian R. Chertow & Danial C. Esty eds., 1997); J.B. Ruhl, *Farms, Their Environmental Harms, and Environmental Law*, 27 ECOLOGY L.Q. 263, 274-91 (2000).

6. OFFICE OF TECHNOLOGY ASSESSMENT, TARGETING ENVIRONMENTAL PRIORITIES IN AGRICULTURE: REFORMING PROGRAM STRATEGIES 11 (1995) [hereinafter TARGETING ENVIRONMENTAL PRIORITIES].

7. For a critical view of these myths, see Jim Chen, *Get Green or Get Out: Decoupling Environmental from Economic Objectives in Agricultural Regulation*, 48 OKLA. L. REV. 333 (1995).

urban development.[8] It is against these waves of solicitude, admiration, and concern for the well-being of farmers and their farms, and the political muscle of the agricultural industry, that environmental law must navigate. As the EPA recently observed:

> Agriculture is recognized in watersheds across the country as a source of nonpoint source pollution. On the other hand, agricultural land is recognized in many areas as a "preferred" use for environment, social, and economic purposes. Addressing problems caused by various agricultural activities while maintaining the overall, long-term sustainability of the environment and the industry presents special challenges.[9]

To date, farms have largely escaped direct regulation under federal and state environmental law.[10] Instead, a patchwork of voluntary incentive programs implemented by myriad federal and state agencies, such as the provision of "green payments" in the billions of dollars to subsidize the costs of implementing pollution-reducing practices or to retire environmentally valuable resources from agricultural use, has been the primary method of inducing more water-protective behavior from farmers.[11] This limited offering of incentives is, quite simply, not enough; if the United States is to make significant further progress toward attaining water quality objectives,

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8. *See* Ruhl, *supra* note 5, at 315-16.

9. 1998 WATER QUALITY REPORT, *supra* note 1, at 68.

10. For a detailed discussion of the "safe harbors" agriculture has enjoyed under federal environmental law, see Ruhl, *supra* note 5, at 293-316. *See also* Runge, *supra* note 5; Chen, *supra* note 7, at 350-51; Margaret Rosso Grossman, *Agriculture and the Environment in the United States*, 42 AM. J. COMP. L. 291 (1994 Supp.).

11. *See* Robin Kundis Craig, *Local or National? The Increasing Federalization of Nonpoint Source Pollution Regulation*, 15 J. ENVTL. L. & LITIG. 179, 190-91 (2000) (quoting OFFICE OF WATER, U.S. ENVTL. PROTECTION AGENCY, SECTION 319 SUCCESS STORIES 1 (Nov. 1994) ("'[U]nder the Clean Water Act, nonpoint source control is largely voluntary, not regulatory as is point source control.'"); James Boyd, *The New Face of the Clean Water Act: A Critical Review of the EPA's New TMDL Rules*, 11 DUKE ENVTL. L. & POL'Y F. 39, 66 (2000) ("To date, state initiatives [to control nonpoint source pollution] have relied heavily on voluntary, unenforceable measures, particularly with regard to agricultural runoff."); Debra L. Donahue, *The Untapped Power of Clean Water Act Section 401*, 23 ECOLOGY L.Q. 201, 283 (1996) ("Nonpoint source pollution control . . . consists largely of vague plans and voluntary programs."); David Zaring, *Agriculture, Nonpoint Source Pollution, and Regulatory Control: The Clean Water Act's Bleak Present and Future*, 20 HARV. ENVTL. L. REV. 515, 528 (1996) ("[T]he programs in place to reduce nonpoint source pollution remain completely voluntary.").

efforts to control nonpoint source pollution must be expanded.

To be sure, there have been significant federal and state efforts to work just such an expansion of existing control measures, to reach beyond point sources, and to adopt a much more aggressive stance toward control of nonpoint source pollution. Congress has amended the CWA to include programs that target nonpoint sources.[12] More recently, the Clinton Administration placed control of nonpoint source pollution at the center of its 1998 *Clean Water Action Plan,* emphasizing the need for watershed planning and holistic approaches to water quality improvements.[13] The Bush Administration has recently pledged new initiatives to improve water quality, echoing the *Clean Water Action Plan's* emphasis on watershed-based controls, but the details of this initiative have yet to be worked out.[14] The EPA has launched new initiatives to capture more animal feeding operations within the CWA's regulatory orbit,[15] and the agency's controversial "TMDL" rules have generated a new round of debate about how, and to what extent, the EPA can cajole the states into bringing agricultural and other nonpoint sources within the CWA's regulatory web.[16] The states, too, have begun to address nonpoint source pollution in a more aggressive way, suggesting that the longstanding "carrot, not stick" approach to dealing with this major

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12. *See* text accompanying *infra* notes 251-90.

13. CLEAN WATER ACTION PLAN, *supra* note 1, at iii.

14. *See* Cat Lazaroff, *$21 Million Pledged for Watershed Protection,* Envtl. News Serv. (Jan. 28, 2002), *at* http://ens-news.com/ens/jan2002/2002L-01-28-06.html.

15. National Pollutant Discharge Elimination System Permit Regulation and Effluent Limitations Guidelines and Standards for Concentrated Animal Feeding Operations, 66 Fed. Reg. 2960, 3005 (Jan. 12, 2001) [hereinafter *National Pollutant Discharge Elimination System*].

16. *See* Revisions to the Water Quality Planning and Management Regulation and Revisions to the National Pollutant Discharge Elimination System Program in Support of Revisions to the Water Quality Planning and Management Regulation, 65 Fed. Reg. 43,586 (July 13, 2000) [hereinafter *TMDL Rule*]; NATIONAL RESEARCH COUNCIL, ASSESSING THE TMDL APPROACH TO WATER QUALITY MANAGEMENT 1, *available at* http://www.cpa.gov/owo/tmdl/NRC (June 15, 2001) [hereinafter ASSESSING THE TMDL APPROACH] (noting that "EPA is obligated to implement the Total Maximum Daily Load (TMDL) program, the objective of which is attainment of ambient water quality standards through the control of both point and nonpoint sources of pollution."). The literature on the TMDL program is quickly becoming enormous. *See, e.g.,* OLIVER A. HOUCK, THE CLEAN WATER ACT TMDL PROGRAM: LAW, POLICY, AND IMPLEMENTATION (1999) [hereinafter HOUCK, TMDL PROGRAM]; WESLEY M. JARRELL, GETTING STARTED WITH TMDLS (1999), *at* http://216.68.81.171/852568CB0010F86A/web+by+document+type/624A8A3F0E40805F85256A21007A0572?Open (last visited Mar. 30, 2002) [hereinafter GETTING STARTED].

pollution problem may be wearing a bit thin.[17]

The increased attention given to controlling nonpoint source pollution has not yet, however, translated into either widespread demonstrable results or clearly defined, coherent regulatory programs. A large and looming question concerns the extent to which a shift from voluntary, incentive-based policies to direct regulation is necessary to achieve needed water quality improvements, and whether existing statutory authorities are sufficient to work such a transition.

This Article considers the extent to which more direct federal regulation of agricultural nonpoint source pollution is warranted. My first conclusion is that an increased federal presence is necessary. Many states have been reluctant to impose direct controls on agricultural nonpoint source pollution for a variety of reasons, including the relative political power of agricultural interests at the local and state level.[18] In addition, nonpoint source pollution often implicates interstate waters or contributes to downstream water quality deterioration; in such circumstances, coordination among states is difficult and incentives to regulate often are lacking.[19] Minimum enforceable federal requirements would obviate these difficulties.

My second conclusion is that the costs of implementing such plans and practices should be distributed in a pragmatic way that recognizes the extraordinary organizational presence and political clout of the agricultural industry. In this vein, it is unrealistic to expect that an unflinching application of the "polluter pays" principle will yield effective programs. Accordingly, existing federal and state cost-sharing and land acquisition programs should be retained and, in some cases, expanded. Taxes on polluting inputs such as fertilizer

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17. *See* ENVTL. LAW INST., PUTTING THE PIECES TOGETHER: STATE NONPOINT SOURCE ENFORCEABLE MECHANISMS IN CONTEXT 1, *available at* http://www.eli.org/pdf/nonpointstateenfmech.PDF (June 2000) (concluding that "relying on voluntary . . . [programs] has proven to be an incomplete strategy in many cases [to control nonpoint source pollution]") [hereinafter PUTTING THE PIECES TOGETHER].

18. *See* MARC O. RIBAUDO ET AL., ECONOMICS OF WATER QUALITY PROTECTION FROM NONPOINT SOURCES: THEORY AND PRACTICE, USDA AGRICULTURAL ECONOMIC REP. NO. 782, at 29 (Nov. 1999), *available at* http://www.ers.usda.gov/epubs/pdf/aer782/aer782.pdf [hereinafter RIBANDO, ECONOMICS OF WATER QUALITY PROTECTION].

19. *See id.* at 30-31.

and feed products that contribute to nonpoint source pollution could supplement these programs.

Third, measures that promise water quality improvements beyond baseline regulatory requirements should be encouraged. Innovative programs such as point-nonpoint source pollution trading programs may yield sizeable environmental benefits at reduced costs, and states should be free to experiment with this sort of alternative.

Part I of this Article describes existing water quality impairments and the part agricultural nonpoint source pollution has played in causing such impairments. Part II describes existing federal efforts to control agricultural nonpoint source pollution. Part III proposes a new regulatory structure that builds upon the basic elements of the current TMDL program.

The approach recommended here is not, however, simply a traditional "command and control" program based on uniform standards, although important elements of the proposal bear these features. The traditional criticisms of command and control regulation are now familiar: its relative insensitivity to small (or large) variations from one geographic area to another and from one regulated activity to another, resulting in inefficient use of resources; its relative lack of "flexibility"; its generally "top-down" approach, creating barriers to meaningful citizen participation and stifling state authority and the possibility of innovative state programs.[20] Undoubtedly, from an idealist perspective, prescriptive regulation is oftentimes clumsy, can be authoritarian, and may impose mandates that do not always fit well with the problem they address (even in some cases putting in place mechanisms that have unintended consequences that exacerbate, rather than diminish, environmental and health problems).[21] Direct regulation may also generate

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20. *See, e.g.*, Bruce A. Ackerman & Richard B. Stewart, *Reforming Environmental Law: The Democratic Case for Market Incentives*, 13 COLUM. J. ENVTL. L. 171 (1988); Bruce A. Ackerman & Richard B. Stewart, *Reforming Environmental Law*, 37 STAN. L. REV. 1333 (1985).

21. This is not to say, however, that alternative approaches would perform any better or more efficiently. For a defense of "command and control" regulatory programs to address water pollution, see Caputo, *supra* note 2, at 10578-80; Wendy E. Wagner, *The Triumph of Technology-Based Standards*, 2000 U. ILL. L. REV. 83 (2000); and Sidney A. Shapiro & Thomas O. McGarity, *Not So Paradoxical: The Rationale for Technology-Based Regulation*, 1991 DUKE L.J. 729.

significant resistance and resentment on the part of the regulated community, which in many cases may rightly (but sometimes wrongly) take issue with the idea that appropriate solutions can be better devised by "government bureaucrats" than by those who know and work the land. These features of direct regulation also tend to make implementation both costly and difficult; confrontation and litigation characteristically burden the progress of such prescriptive programs.

Moreover, the traditional criticisms of direct federal regulation have resonated strongly in the nonpoint source pollution context. The variety of practices that contribute to nonpoint source pollution are ubiquitous and diverse. Even within the agricultural component of this problem, the sheer number of farms, their very different practices and locations in the landscape, and their varying potential for water quality impacts make a technology-based approach with uniform effluent limitations appear quite fantastical. The practices that contribute most to nonpoint source pollution are patterns of land use, the control of which has been guarded jealously by local government authorities, making direct federal control at best a touchy political proposition.[22] Current federal programs to control nonpoint source pollution are the product of judgments that controls of this sort should remain with state and local authorities, as has been the traditional practice. Much of the federal effort has been to induce the states to implement such controls by offering cost-sharing arrangements and technical assistance.

On the other side, the current approach to agricultural nonpoint source pollution depends much too heavily on voluntary participation and has not induced adequate changes in agricultural practices to yield acceptable outcomes. These shortcomings may be due to the inadequacies of the incentives offered: the unsubsidized costs of implementing control measures may remain too high, in reality or in perception, to induce the desired change in behavior. Billions of dollars have been poured into incentive-based programs, and the results have not been encouraging. It is not realistic to expect

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22. Daniel R. Mandelker, *Controlling Nonpoint Source Water Pollution: Can it Be Done?*, 65 CHI.-KENT L. REV. 479, 482 (1989) ("any control applied to nonpoint sources is a land use control because it reduces nonpoint pollution through measures that modify land use").

taxpayers to approve the massive increase in spending that is likely to be required to improve the rates at which farmers and others are willing to participate in conservation practices. Moreover, the notion that farmers must be "bribed" to engage in sound, conservation-minded practices has had the subtle effect of promoting the idea that farmers have a "right" to engage in environmentally destructive practices and must be paid to change those practices. A "baseline" shift to regulatory programs that implicitly assign entitlements to cleaner water to citizens may, of course, face obstacles that generally accompany such alterations of the *status quo ante.* In its extreme form, such a baseline shift might be characterized as a bureaucratic effort to "take" farmers' rights to the use of their property.[23]

Voluntary incentives may also fail because farmers may resist changing longstanding practices or perceive such programs as the product of intrusive intermeddlers. In these circumstances, targeted populations may even reject "win-win" strategies that deliver environmental improvements while bolstering the bottom line. Whatever the reason, existing voluntary programs have too few "volunteers" to advance the program's primary objectives in any significant way. Perhaps most troublesome, the "take it or leave it" incentives relied on by current programs have tended to minimize the harmful character of the practices against which the incentives are designed to operate, suggesting implicitly that program objectives are, in the end, not so important after all. The cumulative effect of this message may be to "lock-in" practices, making them highly resilient against efforts at change.[24]

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23. *See* United States v. Larkins, 852 F.2d 189, 194 (6th Cir. 1988) (Merritt, J., concurring).

> The framers of the Constitution were solicitous of the rights of landowners—especially small farmers struggling for survival—not to have land appropriated by the government. They therefore adopted the provision of the Fifth Amendment of the Constitution prohibiting the taking of private property for public use without just compensation.

On the notion that "takings" claims should be based on regulatory disruptions of "normal" uses of property, see Carol M. Rose, *Takings, Federalism, Norms,* 105 YALE L.J. 1121 (1996) (reviewing WILLIAM A. FISCHEL, REGULATORY TAKINGS: LAW, ECONOMICS, AND POLITICS (1995)).

24. *See* Clayton P. Gillette, *Lock-In Effects In Law and Norms,* 78 B.U. L. Rev. 813, 813 (1998) ("If institutions become too routinized . . . they may be unable to adapt to changes in the

The difficulties with both regulatory and voluntary approaches make conclusions about an optimal mix of control strategies difficult. In my view, Robert Percival has it just about right when he says that "the best approach to regulation is to employ a mix of regulatory strategies that varies depending upon the problem being addressed and the relative importance of the various values served by each approach."[25] The reforms I suggest here attempt to build on that insight, permitting a great deal of flexibility in the design of programs to control agricultural nonpoint source pollution, while insisting on several core minimum regulatory requirements. Ultimately, in my view, we should worry less about whether programs are "regulatory" or "voluntary" and more about whether the programs are environmentally sound, fair, and cost-effective. Once minimally acceptable allocations of "rights" are established, there is considerable room for a variety of regulatory, incentive-based, and private contractual mechanisms to be used.[26]

Finally, romantic notions of farms and farmers may contribute to the difficulty in effecting a baseline shift. We must recognize that, to a significant degree, the reigning idyllism of farms and farmers is based on a lost history. It is also time to recognize that existing programs have given farms and farmers ample opportunities to reform unsustainable practices, often through generous taxpayer subsidies. However, agriculture's response has been less one of seeking effective solutions than of resisting efforts at change. As Linda Malone has noted:

> There is still a place in American culture to revere and honor the American farmer. Yet whatever favored position remains for the farmer in our society, it is rooted in the Jeffersonian ideal of agriculture as the friend, not foe, of nature. As agriculture has distanced itself from the land - with corporate,

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underlying conditions they seek to organize or accommodate. When an institution fails to adjust, we can say . . . that it has become 'locked-in.'").

25. Robert V. Percival, *Regulatory Evolution and the Future of Environmental Policy*, 1997 U. CHI. LEGAL F. 159, 190 (1997).

26. *See* Bonnie G. Colby & Tamra Pearson d'Estrée, *Evaluating Market Transactions, Litigation, and Regulation as Tools for Implementing Environmental Restoration*, 42 ARIZ. L. REV. 381, 382-86 (2000). *See generally* ROBERT C. ELLICKSON, ORDER WITHOUT LAW: HOW NEIGHBORS SETTLE DISPUTES (1991).

absentee, non-organic farm management - the reverence for agriculture in American society has diminished. It is not the American public which has forgotten Jefferson's vision, but agriculture itself.[27]

## I. WATER QUALITY AND AGRICULTURAL NONPOINT SOURCE POLLUTION

The Clean Water Act's direct regulation of industrial and municipal sewage discharges and its emphasis on technology-based standards have undoubtedly produced large water quality benefits. Discharges of toxic materials into surface waters reportedly have been reduced substantially.[28] Impressive reductions in fecal bacteria, phosphorus, ammonia, and other conventional pollutants have also been reported.[29] The number of persons served by wastewater treatment plans, which reduce the burden on water quality associated with pollutants in human waste streams, has more than doubled.[30]

Similarly, the Clean Water Act's section 404 Dredged and Fill Material Permit Program,[31] which is the nation's primary means of protecting wetlands, has importantly affected the rate of wetland degradation and destruction. These efforts to achieve a "no net loss" of wetland functions and values[32] may have incidentally prevented significant water quality decrements due to nonpoint source pollution.[33] While there is no shortage of strong criticism for the

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27. Linda A. Malone, *Reflections on the Jeffersonian Ideal of an Agrarian Democracy and the Emergence of an Agricultural and Environmental Ethic in the 1990 Farm Bill*, 12 STAN. ENVTL. L.J. 3, 49 (1993). *See generally* Chen, *supra* note 7.

28. RIBAUDO, *supra* note 18, at 3; *see also* CLEAN WATER ACTION PLAN, *supra* note 1, at 4 (toxic pollutants reduced by 24 million tons annually).

29. *Id.*; *see* RIBAUDO, *supra* note 18, at 3-4.

30. EPA, *The Clean Water Act: A Brief History* (2000), *available at* http://www.epa.gov/owow/cwa/history.htm (last visited Mar. 30, 2002).

31. 33 U.S.C. § 1344 (1994).

32. *See* Memorandum of Agreement Between the Environmental Protection Agency and the Department of the Army Concerning the Determination of Mitigation Under the Clean Water Act Section 404(b)(1) Guidelines, *available at* http://www.usace.army.mil/inet/functions/cw/cecwo/reg/moafe90.htm (Feb. 6, 1990) (describing goal of the section 404 program as "no overall net loss of the nation's remaining wetlands base").

33. On the water quality benefits associated with wetlands' functional capacity to control nonpoint source pollution, see generally EPA, NATIONAL MANAGEMENT MEASURES TO

manner in which this program has been implemented, the program undoubtedly has placed some obstacles in the path of the otherwise relentless urge to drain and fill precious ecological resources.[34] Annual rates of wetlands losses are now twenty-five percent of what they were prior to the passage of the CWA.[35]

But the objective of the CWA is not only to reduce, or even to eliminate, point source discharges, nor to put some brakes on the destruction of wetlands. The objective is to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters."[36] Stated in more concrete terms, the minimally acceptable outcome to be achieved by the CWA is "water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water"[37]—in short, waters that are "fishable" and "swimmable."[38] Sadly, we are nowhere near attaining that objective.

### *A. The Limits of Current Information*

There is a consensus that a significant number of the nation's waters are currently not meeting water quality standards. Before discussing what we know about the state of the nation's waters, it is useful to consider just how much we do not know. In fact, our knowledge of existing water quality conditions is alarmingly thin, making quantitative measures of progress and deterioration, to some extent, speculative. Indeed, the lack of adequate monitoring and water quality assessment data are substantial obstacles to an effective

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PROTECT AND RESTORE WETLANDS AND RIPARIAN AREAS FOR THE ABATEMENT OF NONPOINT SOURCE POLLUTION, *available at* http://www.epa.gov/owow/nps/wetmeasures/ (Draft, June 21, 2001); EPA, NATIONAL GUIDANCE WETLANDS AND NONPOINT SOURCE CONTROL PROGRAMS, *available at* http://www.epa.gov/owow/wetlands/wlnps.html (June 1990).

34. On the status and trends of wetland losses, see US FISH AND WILDLIFE SERVICE, 2001 REPORT TO CONGRESS ON THE STATUS AND TRENDS OF WETLANDS IN THE CONTERMINOUS UNITED STATES 1986 TO 1997 (2001), *available at* http://wetlands.fws.gov/bha/SandT/SandTReport.html (last visited Sept. 1, 2002).

35. CLEAN WATER ACTION PLAN, *supra* note 1, at 1.

36. 33 U.S.C. § 1251(a) (1994).

37. *Id.* § 1251(a)(2).

38. *See* 1998 WATER QUALITY REPORT, *supra* note 1, at 10. The stated objectives apply to surface waters. Groundwater quality is another matter—and a very large one (*see id.* at 157-98) that I do not expressly address in this Article.

program to improve water quality[39] and, as I shall argue below, bear importantly on the question of what types of water quality policies are likely to operate most effectively and fairly.

The lack of adequate water quality assessment data is largely due to limited resources; state and federal agencies simply do not have the staff or funding to support comprehensive water quality assessments. Also, many problems with water quality data are the product of the current regulatory structure.

In its latest report to Congress, the EPA reported that states had assessed only twenty-three percent of river miles, forty-two percent of lake acres, thirty-two percent of estuary square miles, and five percent of ocean shoreline miles to determine whether water quality standards were being met.[40] Even this distressingly meager data set overstates the extent of our knowledge about existing water quality. Water quality assessments[41] are not always the product of actual monitoring, and are not performed in a consistent manner from one state to the next.[42] Sampling from different water bodies, differences in data gathering protocols, and other less defensible factors also contribute to differences in reported water quality over time.[43] The

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39. For an extensive discussion of the inadequacy of existing water quality monitoring programs, see Adler, *supra* note 2, at 257-63.

40. 1998 WATER QUALITY REPORT, *supra* note 1, at 14. A useful, and more manageable, source of information, based on the 1998 Water Quality Report, is EPA, THE QUALITY OF OUR NATION'S WATERS (2000), *at* http://www.epa.gov/305b/98report/98brochure.pdf (last visited Mar. 31, 2002).

41. Section 305(b)(E) of the CWA requires each state to submit biennial reports to EPA. The reports must include information on water quality within the state, an analysis of whether water quality objectives will be achieved by the CWA's requirements, and any recommendations for additional action where necessary to achieve those objectives; estimates of the costs of achieving CWA objectives; and "a description of the nature and extent of nonpoint sources of pollutants, and recommendations as to the programs which must be undertaken to control each category of such sources, including an estimate of the costs of implementing such programs." 33 U.S.C. § 1315(b)(E) (1994).

42. *See* Adler, *supra* note 2, at 253-54 (noting the "absence of a consistent set of rules and procedures by which states monitor ambient [water] quality and reach judgments about whether or not the standard is met").

43. RIBAUDO, ECONOMICS OF WATER QUALITY PROTECTION, *supra* note 18, at 5; *see also* 1998 WATER QUALITY REPORT, *supra* note 1, at 4; Adler, *supra* note 2, at 254 ("[E]ven if two states have identical was [water quality standards] for a given pollutant, water bodies might be listed [as impaired] in one state but not the other, based only on differences in the methods, frequency, and location of monitoring or on different criteria for deciding what constitutes a violation.").

current system for monitoring state waters has been described as "highly variable in both water bodies assessed and methods of assessment." Furthermore, it is "virtually unsupervised by EPA, and a 'game' of 'politics, bureaucratic inertia and bad science' leading to 'erroneous and manipulated sets of water quality data.'"[44] According to a recent report by the General Accounting Office, "[w]hat is uncertain . . . is the precise extent of water quality problems, where and what the most severe problems are, and the location of high-quality waters that need to be protected."[45] If we are to establish programs for improving water quality that "are applied evenhandedly both in terms of those who must do the hard work of pollution control and those who bear the brunt of the remaining pollution," comprehensive and consistent water quality monitoring and assessment are the first order of business.[46]

Our understanding of existing water quality is hampered by the absence of consistent benchmarks against which determinations of impairment are made. Under the current regulatory framework, judgments about water quality are based on water quality standards, which may vary significantly from state to state. While some minimum federal standards apply, they are inadequate to ensure consistent judgments about water quality.

Water quality standards consist of three elements: use designations, water quality criteria, and an antidegradation policy.[47] Use designations under the CWA essentially amount to "state-by-

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44. HOUCK, TMDL PROGRAM, *supra* note 16, at 138 (quoting PUBLIC EMPLOYEES FOR ENVIRONMENTAL RESPONSIBILITY, MURKY WATERS, OFFICIAL WATER QUALITY REPORTS ARE ALL WET: AN INSIDE LOOK AT EPA'S IMPLEMENTATION OF THE CLEAN WATER ACT 2, 3 (1999)).

45. GENERAL ACCOUNTING OFFICE, WATER QUALITY: KEY EPA AND STATE DECISIONS LIMITED BY INCONSISTENT AND INCOMPLETE DATA, GAO/RCED-00-54, at 6 (2000). For related views concerning the quality of existing state-generated data on water quality, see NATIONAL RESEARCH COUNCIL, *supra* note 16, at 16 (noting limits on state data). For a description of various programs to monitor water quality, see CLEAN WATER ACTION PLAN, *supra* note 1, at 8-9.

46. Adler, *supra* note 2, at 263.

47. 40 C.F.R. § 131.6 (2001). For a good, concise discussion of these elements of water quality standards, see Karen M. Wardzinski et al., *Water Pollution Control Under the National Pollutant Discharge Elimination System, in* THE CLEAN WATER ACT HANDBOOK 8, 26-33 (Parthenia B. Evans ed., 1994). *See also* Adler, *supra* note 2, at 210-13.

state 'zoning' of the Nation's surface waters."[48] Unlike the Clean Air Act, which mandates that air quality be assessed against federally-promulgated ambient standards,[49] the CWA reflects the judgment that the appropriate level of water quality may be based on the normative choices each state makes for the uses of waters within its jurisdiction.[50] At a minimum, however, states "must take into consideration the use and value of water for public water supplies, protection and propagation of fish, shellfish and wildlife, recreation in and on the water, agricultural, industrial, and other purposes including navigation." Additionally, states may not "adopt waste transport or waste assimilation as a designated use."[51] Designated uses are, as part of a state's water quality standards, subject to approval by EPA, which enjoys "the final voice on the standard's adequacy."[52]

Examples of use designations include aquatic life support, drinking water supply, fish consumption, shellfish harvesting, primary contact recreation (e.g., swimming), secondary contact recreation (e.g., boating), agriculture, groundwater recharge, and wildlife habitat.[53] In addition to the prohibition on designating waters as waste disposal sites, states may not select designated uses that are inconsistent with the "fishable/swimmable" objectives of the CWA. This limitation is avoided, however, if the state demonstrates that such minimally acceptable uses are not feasibly attainable due to one of six specific conditions.[54]

The wide range of choices available to the states in designating uses of water bodies makes statements about how many waters are "impaired" a radically incomplete picture of the overall state of the nation's water resources. A state that has chosen a less protective use

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48. Adler, *supra* note 2, at 209 (quoting Mississippi v. Costle, 625 F.2d 1269, 1275 (5th Cir. 1980)).

49. *See generally* Douglas R. Williams, *Cooperative Federalism and the Clean Air Act: A Defense of Minimum Federal Standards*, 20 ST. LOUIS U. PUB. L. REV. 67 (2001); Adler, *supra* note 2, at 251-53.

50. *See* 33 U.S.C. § 1313(c) (2001).

51. 40 C.F.R. § 131.10(a).

52. Mississippi v. Costle, 625 F.2d at 1275; *see* 33 U.S.C. § 1313(c)(2).

53. 1998 WATER QUALITY REPORT, *supra* note 1, at 12.

54. 40 C.F.R. § 131.10(g); *see* David S. Baron, *Water Quality Standards for Rivers and Lakes: Emerging Issues*, 27 ARIZ. ST. L.J. 559, 567-71 (1995).

designation may conclude that a waterbody is meeting water quality standards, while a downstream state, looking at a different segment of the same water body may conclude that the water is impaired. While it may certainly be appropriate to permit variation from state to state on the preferred uses for waters, such variation may raise an issue as to the equitable distribution of cleanup responsibilities between upstream and downstream water users.[55]

The second element of water quality standards, water quality criteria (WQC), is central to water quality assessment and water quality-based control strategies. WQC are an expression of the minimally adequate ambient water conditions deemed necessary to support designated uses; the WQC criteria thus represent the ambient benchmarks at which pollution controls are aimed.[56] These criteria can be expressed in a variety of ways: numerically, as pollutant-specific ambient concentrations and toxicity levels, or in narrative form, such as "no toxic pollutants in toxic amounts."[57]

Uncertainty pervades efforts to link narrative and quantitative criteria to designated uses.[58] The current regulatory structure tolerates wildly inconsistent judgments about these linkages. Consider, on this point, the Fourth Circuit's decision in *Natural Resources Defense*

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55. *See* Adler, *supra* note 2, at 253. *Cf.* Arkansas v. Oklahoma, 503 U.S. 91, 111 (1992) (noting that "[i]f every discharge that had some theoretical impact on a downstream State were interpreted as 'degrading' the downstream waters, downstream States might wield an effective veto over upstream discharges").

56. *See* 33 U.S.C. § 1313(c)(2)(A); American Paper Inst., Inc. v. EPA, 996 F.2d 346, 349 (D.C. Cir. 1993).

57. *See* 33 U.S.C. § 1313(c)(2)(A); American Paper Inst., Inc. v. EPA, 996 F.2d 346, 349 (D.C. Cir. 1993). EPA has been experimenting with new approaches to developing water criteria, including sediment criteria and "biological water . . . criteria." *See* Adler, *supra* note 2, at 212. For toxic pollutants, the CWA mandates the use of biological criteria if numeric criteria are unavailable. *See* 33 U.S.C. § 1313(c)(2)(B). EPA has also recently developed guidelines for water quality standards for wetlands. *See* EPA, NATIONAL GUIDANCE: WATER QUALITY STANDARDS FOR WETLANDS (June 1990), *at* http://www.epa.gov/owow/wetlands/regs/quality.html (last visited Apr. 21, 2002) [hereinafter NATIONAL GUIDANCE].

58. *American Paper Inst.*, 996 F.2d at 351 (narrative criteria). *See generally* ROBERT PERCIVAL ET AL., ENVIRONMENTAL REGULATION: LAW, SCIENCE, AND POLICY 704-05 (3d ed. 2000); OFFICE OF TECHNOLOGY ASSESSMENT, AGRICULTURE, TRADE, AND ENVIRONMENT: ACHIEVING COMPLEMENTARY POLICIES 74 (1995) [hereinafter AGRICULTURE, TRADE, AND ENVIRONMENT]; HOUCK, TMDL PROGRAM, *supra* note 16, at 136-42; Wendy E. Wagner, *Restoring Polluted Waters with Public Values*, 25 WM. & MARY ENVTL. L. & POL'Y REV. 429, 438 (2000); Oliver A. Houck, *TMDLs IV: The Final Frontier*, 29 Envtl. L. Rep. 10469 (Aug. 1999).

*Council v. EPA*,[59] in which the court rejected challenges to the EPA's approval of Maryland's and Virginia's water quality criteria for dioxin. The states concluded that designated uses could be supported at ambient dioxin concentrations that were one thousand times higher than the concentrations established in prior EPA guidance.[60] Quite obviously, such a marked disparity in judgments about water quality criteria casts substantial doubt on conclusions regarding water segment impairment based upon ambient concentrations of one or more pollutants, even when good ambient data are available.[61]

The problem is exacerbated with narrative criteria, which necessarily call for judgments about the amount of a pollutant that is tolerable under standards that do not themselves articulate clear levels. Experience with narrative criteria in the related context of establishing permit conditions on point source discharges show that such judgments may be wildly inconsistent from one regulator to the

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59. 16 F.3d 1395 (4th Cir. 1993)

60. EPA guidance specified an ambient concentration of .0013 parts per quadrillion (ppq); Maryland and Virginia adopted a 1.2 ppq criterion. *See id.* at 1398-99. As the court explained:

> numeric water criteria, such as the 1.2 ppq and .0013 ppq standards, are based on an assessment of the dose of dioxin that may cause harm and the dose to humans that can be expected as a result of dioxin present in water. Six factors are considered in determining the numeric dioxin criteria: (1) cancer potency; (2) risk level; (3) fish consumption; (4) bioconcentration; (5) water intake; and (6) body weight. . . .
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> The .0013 ppq figure is taken from EPA's dioxin criteria guidance document, Ambient Water Quality Criteria for 2,3,7,8-Tetrachlorodibenzo-p-dioxin, published in 1984 ("1984 dioxin criteria document"). In this document, EPA summarized the scientific information available in 1984 regarding dioxin toxicity and provided useful information for the states to use in adopting their own water quality standards. EPA recommended that where bodies of water are used as a source for both drinking water and edible fish, a dioxin concentration of .0013 ppq is desirable. This .0013 ppq figure means, approximately speaking, that one out of every ten million individuals faces an excess risk of cancer exposure as a result of the water's dioxin content. Thus, a 1.2 ppq standard would mean that, according to EPA's assessment, roughly one out of every ten thousand individuals would face such exposure.

*Id.* at 1398 n.3.

61. Professor Adler also demonstrates that water criteria fail to address some sources of impairment. He notes, for example, that water quality criteria have historically focused on pollutant concentrations in water columns, ignoring the manner in which pollutants become embedded in sediment, posing risks to bottom-dwelling organisms, or pass through the food chain through processes of bioconcentration, biomagnification, and bioaccumulation. *See* Adler, *supra* note 2, at 212.

next.[62] In some cases, "the complexity of these decisions and judgments led many a permit writer, and perhaps a water quality analyst, to avoid making them altogether."[63] These problems have been limited to some extent by EPA regulations requiring permit writers to use specific methods to translate narrative criteria into enforceable effluent limitations;[64] however, similar constraints do not apply to water quality monitoring.

The problems associated with the absence of quantitative criteria are likely to be serious in the case of nutrients (principally nitrogen and phosphorous) and pathogens, which are principal pollutants associated with agricultural nonpoint source water quality impairments.[65] Until very recently, the EPA had issued no guidelines on water criteria for nutrients.[66] Currently though, it is expanding guidance on criteria for pathogens to include more contaminants.[67]

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62. On the variability of outcomes based on best professional judgment, see Stewart, *supra* note 2, at 56 (best professional judgment "allowed EPA and state regulators to exercise great flexibility and ease the phase-in of more stringent controls, contrary to the statutory scheme"). Similarly, Professor Latin has concluded:

> Congress wanted technology-based standards to apply uniformly to similar sources across the nation, but the permits were negotiated on an individualized basis incorporating whichever control measures and compliance schedules dischargers would accept. EPA characterized these permits as grounded on "best professional judgment;" but they often reflected simply the "best deal" the Agency could obtain in light of manpower and time constraints and its desire to demonstrate progress. These "best professional judgments" were usually made by EPA regional personnel with water quality, not technology-based orientations.

Howard Latin, *Regulatory Failure, Administrative Incentives, and the New Clean Air Act*, 21 ENVTL. L. 1647, 1672 (1991).

63. Natural Res. Def. Council v. EPA, 915 F.2d 1314, 1317 (9th Cir. 1990) (citing WILLIAM RODGERS, 2 ENVIRONMENTAL LAW, 283-84 (1986)); *see* Am. Paper Inst., Inc. v. EPA, 996 F.2d 346, 350 (D.C. Cir. 1993) ("Faced with th[e] conundrum [of translating narrative criteria into permit limitations], some permit writers threw up their hands and, contrary to the Act, simply ignored water quality standards including narrative criteria altogether when deciding upon permit limitations.").

64. *See* 40 C.F.R. § 122.44(d)(1)(vi) (2001); *American Paper Inst., supra* note 56 (upholding regulations).

65. *See* Memorandum from Geoffrey Grubbs to Regional Water Directors, *Development and Adoption of Nutrient Criteria into Water Quality Standards*, at 2 (Nov. 14, 2001), *available at* http://www.epa.gov/ost/standards/nutrient.html (nutrients); EPA, *Developing Strategy for Microbial Waterborne Disease*, at 3 (Discussion Draft, Aug. 29, 2001), *at* http://www.epa.gov/ost/humanhealth/microbial/microbial.html [hereinafter *Discussion Draft*].

66. *See* Nutrient Criteria Development; Notice of Ecoregional Nutrient Criteria, 66 Fed. Reg. 1671 (Jan. 9, 2001).

67. *See Discussion Draft, supra* note 65.

Few states have developed water quality criteria for nutrients, and those that have rely on narrative standards.[68]

Problems of the same sort apply to assessments of wetlands. The EPA proposed guidelines for water quality standards for wetlands in 1990,[69] but only eleven states have designated uses for wetlands in their water quality standards and only three states used monitoring data to determine whether uses were being supported.[70]

It is not simply weak scientific understanding that leads to inconsistent judgments. *Natural Resources Defense Council* also illustrates that there is room for considerable disagreement between EPA and the states, and among the states, on judgments about the acceptable level of risk to those who wish to engage in designated uses of waters. In *Natural Resources Defense Council*, the inconsistency between the EPA's guidelines and the states' criteria was not attributable simply to differences in views about how much dioxin can be tolerated to keep risks within an agreed-upon range. The EPA's guidance for dioxin was based on a judgment that an acceptable individual risk of contracting cancer from waterborne dioxin is 1 in 10 million. By contrast, the states deemed a much higher individual risk of 1 in 10,000 to be sufficient to protect human health.[71] Disparities in judgments of this sort make it difficult to make reasonable conclusions about whether a particular water body is or is not "impaired," or whether the water body is safe for its designated uses. These disparities are also likely to make it politically and legally difficult to defend regulatory controls designed to meet water quality criteria, particularly when the costs of such controls become very high and the benefits are often difficult to establish in concrete terms.[72]

While the dioxin criteria in *Natural Resources Defense Council* may be a rather extreme illustration of disparities in scientific and

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68. EPA, NATIONAL STRATEGY FOR THE DEVELOPMENT OF REGIONAL NUTRIENT CRITERIA 2 (June 1998), *at* http://www.epa.gov/ost/standards/nutrient.html (last visited Apr. 21, 2002).

69. NATIONAL GUIDANCE, *supra* note 57.

70. 1998 WATER QUALITY REPORT, *supra* note 1, at 147.

71. *See supra* note 70.

72. *See* HOUCK, TMDL PROGRAM, *supra* note 16, at 137 (noting that scientific uncertainty supports resistance on part of regulated community).

policy judgments about appropriate regulatory targets, it is by no means an isolated example.[73] These inconsistencies can lead to serious problems in assessing water quality conditions, and more severe problems where consistency across states is important—for example, in interstate waters or interconnected aquatic ecosystems. Variable standards may lead to the conclusion by one state that further regulation is necessary and required under the CWA to achieve water quality goals in a particular river segment, while another state, across the river, may conclude that the same segment is currently supporting designated uses. Wendy Wagner nicely summarizes these difficulties:

> [W]e know so little about aquatic ecology and the effects of the hundreds of manmade pollutants on our rivers and streams [that] setting water quality standards ... involves making unverifiable approximations. These scientific uncertainties, in fact, result in state-specific standards and goals that are quite variable and hence particularly misguided with respect to interstate waters.[74]

The final element of water quality standards, an antidegradation policy, also raises particular difficulties for nonpoint source pollution and determinations about whether water quality is impaired.[75] The antidegradation policy adopts a three-tier approach.[76] In the first tier, existing uses and water quality to support them must be maintained.[77] In the second tier, waters of higher quality than the minimum "fishable/swimmable" standards may not be allowed to degrade to the fishable/swimmable level absent a showing that such degradation is necessary for important social or economic reasons or cannot be avoided even with the most stringent legal requirements on point sources and best management practices on nonpoint sources.[78] Tier

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73. *See* Adler, *supra* note 2, at 251.

74. Wagner, *supra* note 58, at 438-39.

75. *See generally* John Harleston, *What is Antidegradation Policy: Does Anyone Know?*, 5 S.C. ENVTL. L.J. 33 (1996); Adler, *supra* note 2, at 213-15, 223-25.

76. 40 C.F.R. § 131.12(a) (2001). *See generally* David S. Baron, *Water Quality Standards for Rivers and Lakes: Emerging Issues*, 27 ARIZ. ST. L.J. 559, 576-77 (1995).

77. 40 C.F.R. § 131.12(a)(1).

78. *Id.* § 131.12(a)(2).

three requires that certain designated waters of high quality—"outstanding national resource waters"—be protected and maintained.[79] Many states have not applied the antidegradation policy to nonpoint source pollution.[80] For these states, increases in nonpoint source pollution that impair existing uses would not be considered to violate state water quality standards or the antidegradation policy, so long as designated uses are fully supported. By contrast, if existing uses were impaired by increased point source pollution, the antidegradation policy would be violated and the waterbody would be deemed to be impaired.[81]

Establishing workable water quality standards and criteria, while critical, is but one step in the process of developing an effective pollution control policy. Effective monitoring should also provide information about the sources of water quality problems. The techniques to make such determinations are fraught with uncertainty, particularly with respect to nonpoint sources. "Monitoring to support nonpoint-source-pollution control requires a more comprehensive understanding of natural systems and the impacts of human activities, such as agriculture or urban land uses, on natural systems"[82]—an understanding that we currently lack. While there are several possible models employed for these purposes, basic understanding of the fate and transport in waters of particular pollutants is often quite thin.[83] Accordingly, a pressing need exists in water quality management programs for techniques to bridge the gaps in the knowledge base so that appropriate judgments about the design of control programs can be made.[84]

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79. *Id.* § 131.12(a)(3).

80. *See, e.g.*, Am. Wildlands v. Browner, 260 F.3d 1192 (10th Cir. 2001) (upholding EPA's approval of Montana's water quality standards, which exempt nonpoint sources from review under antidegradation policy).

81. *See TMDL Rule*, *supra* note 16, at 43607.

82. FINAL REPORT OF THE INTERGOVERNMENTAL TASK FORCE ON MONITORING WATER QUALITY, THE STRATEGY FOR IMPROVING WATER-QUALITY MONITORING IN THE UNITED STATES (1995), *at* http://water.usgs.gov/wicp/Summary.html (last visited Apr. 21, 2002).

83. *See* ASSESSING THE TMDL APPROACH, *supra* note 16, at 29; Adler, *supra* note 2, at 222 & n.119; Boyd, *supra* note 11, at 72-73.

84. *See* Wagner, *supra* note 58, at 433-42. Professor Wagner concludes that "the ultimate enforceable requirements of the TMDL program are built on a house of cards: a series of difficult and often impossible calculations that make the final requirement—additional quantitative limits on specific problematic dischargers—scientifically indefensible." *Id.* at 440.

A final problem in water quality assessment is again related to the current regulatory structure. That structure has created mixed incentives for the states in reporting on the quality of their waters. Until very recently, states often had strong incentives in the face of uncertainty to conclude that certain waters were "impaired" by nonpoint source pollution. The section 319 program, discussed in detail below, offers federal funding for states to devise and implement nonpoint source pollution control programs for certain impaired waters. Enticed by federal funding, many state agencies may have been tempted to list waters as impaired in order to enhance their budgets. The Governor of Wyoming noted these incentives in testimony to Congress:

> A few years ago, the authority for states to receive federal money for watershed work required that we declare that a waterbody was functionally impaired—regardless of its actual condition. That misunderstood incentive caused many streams to be mislabeled as impaired. As a result Wyoming was able to draw down section 319 money.[85]

Recently, however, the resurrection of the TMDL program, also discussed below, may have reversed those incentives, for listing waters as impaired for this program gives rise to significant regulatory responsibilities. The state of Wyoming reduced the number of its waters considered "impaired" from over 400 to 61, with 315 viewed as incapable of being characterized due to the absence of sufficient data.[86]

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More optimistically, The National Research Council recently concluded:

> [T]he data and science have progressed sufficiently over the past 35 years to support the nation's return to ambient-based water quality management. Given reasonable expectations for data availability and the inevitable limits on our conceptual understanding of complex systems, statements about the science behind water quality management must be made with acknowledgment of uncertainties. The committee has concluded that there are creative ways to accommodate this uncertainty while moving forward in addressing the nation's water quality challenges.

ASSESSING THE TMDL APPROACH, *supra* note 16, at 3.

85. *Hearing on Governors' Perspectives on the Clean Water Act Before the Subcomm. On Water Resources and Env't of the House Comm. On Transportation and Infrastructure*, 106 Cong. 4 (1999), *quoted in* HOUCK, TMDL PROGRAM, *supra* note 16, at 139.

86. HOUCK, TMDL PROGRAM, *supra* note 16, at 138.

### *B. A Water Quality Snapshot*

Within the limits of existing data, and with the foregoing caveats, a troubling picture emerges of the extent of water quality impairments throughout the nation and the sources that are contributing to those impairments. Of the waters assessed for 1998, thirty-five percent of river, forty-five percent of lake, and forty-four percent of estuarine waters are considered impaired because the waters do not fully support one or more of the uses protected by applicable water quality standards.[87] An additional, significant percentage of waters is considered "threatened," a term that state officials use to express concern that a given water segment is in jeopardy of not supporting designated uses because of trends in pollution or land uses that threaten water quality.[88] In nine states all of the rivers and streams would be considered impaired, if statewide fish consumption advisories for mercury contamination are included.[89]

The costs of these impairments are undoubtedly very large, but nearly unknown.[90] While the Cayuhoga River is no longer burning,[91] it has been estimated that nine hundred thousand people are getting sick from the water they drink.[92] Over seven thousand beach closings were reported in 1998, and a third of shellfish beds are closed to

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87. 1998 WATER QUALITY REPORT, *supra* note 1, at ES-3.

88. *Id.* at 53. Figures on the percentage of rivers considered threatened are set forth at *id.* at 58 (10%); for lakes, see *id.* at 84 (9%); and for estuaries, see *id.* at 104 (9%).

89. *Id.* at 58. The states are Connecticut, Indiana, Maine, Massachusetts, New Hampshire, New Jersey, North Carolina, and Vermont.

90. In quantified terms, it has been estimated that the annual costs imposed by sediment from agricultural erosion may be as high as $8 billion, and include costs to navigation, recreational activities, water treatment, and water use systems. *See* RIBAUDO, ECONOMICS OF WATER QUALITY PROTECTION, *supra* note 18, at 7. EPA has estimated that the annual costs to treat drinking water due to nitrate contamination is $200 million. *See id.* at 11. Damages to agriculture, households, utilities, and industry caused by salinity in the Colorado River alone may exceed $800 million. *Id.* at 15. Health costs due to waterborne pathogens are also significant. *Id.* For a summary of the costs associated with water pollution and the benefits of water pollution control, see *id.* at 16.

91. *See* Caputo, *supra* note 2.

92. NATIONAL WILDLIFE FEDERATION, POLLUTION PARALYSIS II: CODE RED FOR WATERSHEDS 4 (2000), *at* http://www.nwf.org/watershed/paralysis/pp2_report.pdf (last visited Apr. 21, 2002) [hereinafter POLLUTION PARALYSIS].

harvesting.[93] States issue thousands of fish consumption advisories annually, affecting almost every state.[94] Problems of various kinds have also plagued virtually all parts of the country: in the South, a "dead zone" in the Gulf of Mexico, caused in part from pollutants originating as far away as the upper Midwest, is now the size of New Jersey;[95] along the Eastern Seaboard, a "cell from hell" contaminated rivers linked to the Chesapeake Bay, causing massive fish kills in 1997;[96] in the West, fish and wildlife habitats are disappearing due to water diversion and uses;[97] ninety-seven percent of the Great Lakes' shoreline miles were subject to fish consumption advisories;[98] in Milwaukee, cryptosporidium contamination made 370,000 people sick and may have killed 100;[99] and both on the Atlantic seaboard and in the Midwest, water contaminated by animal waste has killed thousands of fish.[100] There is also growing concern that some pesticides—so-called persistent organic pollutants or "POPs"—are disrupting the endocrine systems of aquatic species, wildlife, and humans, causing among other things significant threats to reproductive health.[101] Clearly, improvements in water quality are, or should be, a significant national priority.

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93. *Id.*

94. CLEAN WATER ACTION PLAN, *supra* note 1, at 10.

95. POLLUTION PARALYSIS, *supra* note 92, at 4.

96. Rena I. Steinzor, *Devolution and the Public Health*, 24 HARV. ENVTL. L. REV. 351, 396-99 (2000); William J. Broad, *Battling the cell from Hell; research on Pfiesteria piscida*, 35 NAT'L WILDLIFE 10 (Aug. 18, 1997); Elaine Bueschen, *Pfiesteria Piscicida: A Regional Symptom of a National Problem*, 28 Envtl. L. Rep. 10317 (June 1998).

97. *See* Baron, *supra* note 54, at 588.

98. POLLUTION PARALYSIS, *supra* note 92, at 3-4.

99. *See* Baron, *supra* note 54, at 560.

100. *See* NATURAL RESOURCES DEFENSE COUNCIL, CESSPOOLS OF SHAME: HOW FACTORY FARM LAGOONS AND SPRAYFIELDS THREATEN ENVIRONMENTAL AND PUBLIC HEALTH 36 (2001), *at* http://www.nrdc.org/water/pollution/cesspools/cesspools.pdf (last visited Apr. 21, 2002) [hereinafter CESSPOOLS OF SHAME].

101. *See* THEO COLBORN, DIANNE DUMANOSKI, AND JOHN PETERSON MYERS, OUR STOLEN FUTURE: ARE WE THREATENING OUR FERTILITY, INTELLIGENCE, AND SURVIVAL?—A SCIENTIFIC DETECTIVE STORY (1996); NATIONAL RESEARCH COUNCIL, HORMONALLY ACTIVE AGENTS IN THE ENVIRONMENT (1999), *available at* http://www.nap.edu/books/0309064198/html (last visited Apr. 21, 2002); Noah Sachs, *Blocked Pathways: Potential Legal Responses to Endocrine Disrupting Chemicals*, 24 COLUM. J. ENVTL. L. 289 (1999).

### *C. The Link Between Impaired Water Quality and Agriculture*

The impairments discussed above are associated with a number of pollution problems caused by a variety of sources. Significantly, nonpoint source pollution is the culprit in most cases.[102] Agriculture's role in nonpoint source pollution is, in turn, also quite large.[103] The states reported that in 1998 agricultural pollution was considered primarily responsible for fifty-nine percent of impaired river miles,[104] thirty-one percent of impaired lakes,[105] and fifteen percent of impaired estuarine waters.[106] Anecdotal evidence confirms a strong relation between agriculture and water quality. A 1995 report by the now-defunct Office of Technology Assessment noted that "71 percent of U.S. cropland remains in watersheds where at least one agricultural pollutant exceeds standards for recreation or ecological health."[107] The extent of agriculture's contribution to extant water quality problems should not be surprising. There are over 1.9 million farms in the American landscape covering 930 million acres[108]—nearly half of all the land in the nation.[109]

Agricultural nonpoint pollution can contaminate surface waters as pollutants are carried in runoff and through the air and ultimately settle in surface waters and groundwater.[110] In addition, some sources of water pollution are treated as "nonpoint" sources simply because they are excluded from the CWA's definition of a "point source," not because the "point" at which the pollutants are discharged is unidentifiable.[111] An example is certain irrigation return flows from

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102. *See* text accompanying *supra* note 3.

103. *See* Ruhl, *supra* note 5, at 287-91; PAUL FAETH, FERTILE GROUND: NUTRIENT TRADING'S POTENTIAL TO COST-EFFECTIVELY IMPROVE WATER QUALITY 5 (2000), *available at* http://www.wri.org/water/nutrient.html (last visited Apr. 21, 2002) ("The principal cause of surface water impairment is agriculture . . . .") [hereinafter FERTILE GROUND].

104. 1998 WATER QUALITY REPORT, *supra* note 1, at 62.

105. *Id.* at 88.

106. *Id.* at 108.

107. TARGETING ENVIRONMENTAL PRIORITIES, *supra* note 6, at 11.

108. Ruhl, *supra* note 5, at 272.

109. *See* AGRICULTURE, TRADE, AND ENVIRONMENT, *supra* note 58, at 69.

110. *See generally* PERCIVAL ET AL., *supra* note 58, at 752.

111. *See* Nat'l Wildlife Fed'n v. Gorsuch, 693 F.2d 156, 166 (D.C. Cir. 1982) (The nonpoint source "category is defined by exclusion and includes all water quality problems not" regulated as point sources under the CWA.). EPA defines nonpoint source water pollution as "water pollution caused by rainfall or snowmelt moving over and through the ground and

agricultural operations.[112]

The varieties of pollutants associated with, and agricultural practices implicated in, nonpoint source pollution are numerous, and pose very different kinds of threats to water quality, and as a consequence, to aquatic life, wildlife, and human health. The leading categories of agricultural activities that impair water quality are non-irrigated crop production, irrigated crop production, and concentrated animal feeding operations.[113] The most widespread agricultural pollutants are sediment, nutrients, bacteria, and toxic organic chemicals.[114]

Tilling and cultivating soil increases soil erosion. Wind and runoff

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carrying natural and human-made pollutants into lakes, rivers, streams, wetlands, estuaries, coastal waters, and ground water." Environmental Protection Agency, Section 319 Consistency Guidance, 63 Fed. Reg. 45,504 (1998). Elsewhere, EPA has emphasized that many nonpoint source water pollutants enter water bodies through atmospheric deposition. 1998 WATER QUALITY REPORT, *supra* note 1, at 248. The CWA, while not defining nonpoint source water pollution directly, does provide what may be regarded as an illustrative list of nonpoint sources in 33 U.S.C. § 1314(f), which provides:

> [EPA], after consultation with appropriate Federal and State agencies and other interested persons, shall issue to [various agencies], within one year after [Oct. 18, 1972] (and from time to time thereafter) information including (1) guidelines for identifying and evaluating the nature and extent of nonpoint sources of pollutants, and (2) processes, procedures, and methods to control pollution resulting from—
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> (A) agricultural and silvicultural activities, including runoff from fields and crop and forest lands;
>
> (B) mining activities, including runoff and siltation from new, currently operating, and abandoned surface and underground mines;
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> (C) all construction activity, including runoff from the facilities resulting from such construction;
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> (D) the disposal of pollutants in wells or in subsurface excavations;
>
> (E) salt water intrusion resulting from reductions of fresh water flow from any cause, including extraction of ground water, irrigation, obstruction, and diversion; and
>
> (F) changes in the movement, flow, or circulation of any navigable waters or ground waters, including changes caused by the construction of dams, levees, channels, causeways, or flow diversion facilities.

33 U.S.C. § 1314(f)(2) (2001).

112. *See* 33 U.S.C. § 1362(14) (excluding these sources from the definition of a point source).

113. Claudia Copeland, *Water Quality Initiatives and Agriculture*, Cong. Research Rep. No. RL30437, at 5 (Feb. 16, 2000), *available at* http://www.cnie.org/NLE/CRSreports/water/h2p-38.cfm (last visited Mar. 22, 2002).

114. 1998 WATER QUALITY REPORT, *supra* note 1, at ES-3, 18-21.

carry soil particles, often contaminated with pesticides and other pollutants, to surface waters (sheet and rill erosion). The effects from these sediments, or siltation, include blockage of streams, destruction of wetlands and habitat for aquatic life, disruption of water treatment facilities, and increased frequency and severity of floods. While rates of erosion have decreased significantly over the years, in 1997, soil loss from water erosion was still very high in absolute terms: 1.14 billion tons, or a rate of 6.4 tons per acre.[115] Sediments from soil erosion are estimated to impose costs as high as eight billion dollars annually.[116] In a 1997 report to Congress, EPA concluded that:

> (1) Sediment contamination affects every region and state of the country; overall 96 watersheds are a source of "probable concern" and two-thirds of these watersheds have fish consumption advisories in place;
>
> (2) Streams, lakes, harbors, nearshore areas, and oceans are all affected by sediment contaminated with PCBs, mercury, organochlorine pesticides, and polyaromatic hydrocarbons; and
>
> (3) As much as 10% of the sediment underlying U.S. surface waters is contaminated with toxic pollutants that pose potential risks to fish and to humans and wildlife who eat fish.

Polluted agriculture runoff continues to release other chemicals to surface waters which then accumulate to harmful levels in sediment. Many of the contaminants can persist for many years in the sediment, raising continuing concerns for the environment.[117]

Vast quantities of nutrients from excess fertilizers and animal wastes, particularly phosphorous and nitrogen, are deposited into waters, some in sediment loads. These pollutants accelerate the process of eutrophication, which in turn causes several problems,

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115. USDA, Natural Resources Conservation Service, *Cropland Acreage, Soil Erosion, and Installation of Conservation Buffer Strips: Preliminary Estimates of the 1997 National Resources Inventory, at* http://www.nhq.nrcs.usda.gov/land/pubs/buffer1.html (last visited Mar. 22, 2002). For maps estimating the amount of sediment delivered to streams and rivers from agricultural operations, see http://www.nhq.nrcs.usda.gov/land/meta/m2087.html (last visited Mar. 22, 2002).

116. RIBAUDO, ECONOMICS OF WATER QUALITY PROTECTION, *supra* note 18, at 7.

117. *See* EPA, *Contaminated Sediment: EPA's Report to Congress, at* http://www.epa.gov/waterscience/cs/consed.html (last visited Oct. 27, 1998).

including: increased algal growth; decreased water clarity and transparency; foul taste and odor; increased water treatment costs; depletion of dissolved oxygen; fish kills; and loss of desirable fish species.[118] Nitrate contamination in water supplies may also cause "blue-baby syndrome," a disease that can be fatal to infants.[119] In addition, excess nutrients may contribute to toxic algal blooms that can cause massive fish kills, threaten commercial fisheries, and harm other aquatic life forms. "Red tides," as well as *Pfiesteria*, which killed as many as a billion fish in 1991 and ten million menhaden fish in the Neuse River in 1995,[120] "pose an increasingly frequent recurring problem for U.S. coastal communities."[121] Over zealous farmers through excess fertilization cause as much as thirty-nine percent of all nitrogen loads and thirty percent of phosphorous loads in surface waters.[122]

Similarly, animal manure contributes significant quantities of nutrients and bacteria to rivers, lakes, and streams.[123] This is a problem of increasing concern, because animal feeding operations are becoming larger and more concentrated, placing considerable stress on nearby water resources.[124] The General Accounting Office reported that "[n]ationwide, about 130 times more animal waste is produced than human waste—roughly 5 tons for every U.S. citizen—and some operations with hundreds of thousands of animals produce as much waste as a town or a city."[125] Inadequate waste management—such as applying manure as "fertilizer" on frozen winter fields or in quantities far in excess of actual need; and use of

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118. *See* FERTILE GROUND, *supra* note 103, at 6.

119. *See* Donald L. Hey, *Nitrogen Farming: Harvesting a Different Crop*, 4 WETLAND MATTERS (Nov. 1999), *at* http://www.wetlands-initiative.org/pages/page80.html.

120. *See* POLLUTION PARALYSIS, *supra* note 92, at 5; *see also* EPA and USDA, *Unified National Strategy for Animal Feeding Operations*, at § 2.2 (Mar. 9, 1999), *at* http://www.epa.gov/npdes/pubs/finafost.htm [hereinafter *Unified National Strategy*].

121. 1998 WATER QUALITY REPORT, *supra* note 1, at 130.

122. *See* FERTILE GROUND, *supra* note 108, at 7.

123. *Id.* at 9.

124. *See Unified National Strategy*, at § 2.1 ; RIBAUDO, ECONOMICS OF WATER QUALITY PROTECTION, *supra* note 18, at 10; *see also* Ken Silverstein, *Meat Factories*, SIERRA (Jan. 1999), *at* http://www.sierraclub.org/sieria/199901/cafo.asp.

125. General Accounting Office, *Animal Agriculture: Waste Management Practices*, GAO/RCED 99-205, at 1 (July 1999), *available at* http://www.gao.gov/archive/ 1999/rc99205.pdf.

poorly constructed or poorly maintained waste containment facilities—result in spills, leaks, and runoff of these wastes—often in very large quantities.[126]

These and other pollutants, their associated agricultural activities, and their impacts on water quality are summarized in the following table:

Agricultural impacts on water quality[127]

| Agricultural Activity | Impacts on Surface Water Quality |
|---|---|
| Tillage/ ploughing | Sediment/turbidity: Sediments carry phosphorus and pesticides adsorbed to sediment particles; siltation of river beds and loss of habitat, spawning ground, etc. |
| Fertilizing | Runoff of nutrients, especially phosphorus, leading to eutrophication causing taste and odor in public water supply, excess algae growth leading to deoxygenation of water and fish kills. |
| Manure Spreading | Carried out as a fertilizer activity; spreading on frozen ground results in high levels of contamination of receiving waters by pathogens, metals, phosphorus and nitrogen leading to eutrophication and potential contamination. |
| Pesticides | Runoff of pesticides leads to contamination of surface water and biota; dysfunction of ecological system in surface waters by loss of top predators due to growth inhibition and reproductive failure; public health impacts from eating contaminated fish. Pesticides are carried as dust by wind over very long distances and contaminate aquatic systems 1000s of miles away (e.g. tropical/subtropical pesticides found in Arctic mammals). |

126. *Id.*; CESSPOOLS OF SHAME, *supra* note 100, at 3-4.

127. Table adapted from FOOD AND AGRICULTURAL ORGANIZATION, CONTROL OF WATER POLLUTION FROM AGRICULTURE, Table 5 (1996), *at* http://www.fao.org/docrep/W2598E/w2598e04.htm#agricultural_impacts_on_water_quality (last visited Mar. 22, 2002).

| Agricultural Activity | Impacts on Surface Water Quality |
|---|---|
| Feedlots/ animal corrals | Contamination of surface water with many pathogens (bacteria, viruses, etc.) leading to chronic public health problems. Also contamination by metals contained in urine and feces. |
| Irrigation | Runoff of salts leading to salinization of surface waters; runoff of fertilizers and pesticides to surface waters with ecological damage, bioaccumulation in edible fish species, etc. High levels of trace elements such as selenium can occur with serious ecological damage and potential human health impacts. |

## II. THE CURRENT FEDERAL FRAMEWORK FOR AGRICULTURAL NONPOINT SOURCE POLLUTION

People have been cognizant for some time of the large impact that agriculture has on water resources. A glut of federal programs address, directly or indirectly, agricultural water pollution.[128] Nonetheless, the aggressiveness with which federal agencies may pursue efforts to control agricultural nonpoint source pollution is significantly constrained by existing statutory authorities. Agriculture, in a very real sense, has enjoyed a free ride in existing water quality programs: there is virtually no direct regulatory controls on agricultural practices that contribute to nonpoint source pollution and the costs of those in place are largely underwritten by public subsidies. This section provides an overview of existing federal programs under the Clean Water Act. Programs administered by

128. A 1999 report by the General Accounting Office identified thirty-five federal programs representing a "broad array of activities, reflecting diversity in both the nature of nonpoint source pollution and the remedies needed to address it." General Accounting Office, *Water Quality: Federal Role in Addressing—and Contributing to—Nonpoint Source Pollution*, Report No. GAO/RCED 99-45, at 25 (Feb. 1999) [hereinafter *GAO Report 99-45*]. Some of the more prominent federal programs not discussed in this Article include the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA); the Endangered Species Act (ESA); the Safe Drinking Water Act (SDWA); and the Clean Air Act. For discussion of how these programs may affect agricultural water pollution, see Ruhl, *supra* note 5, at 305-09 (Clean Air Act), 309-12 (FIFRA), 321-23 (ESA); *GAO Report 99-45*, *supra*, at 30-31 (SDWA).

other federal agencies, most prominently the U.S. Department of Agriculture (USDA), are described in a more summary manner.

*A. Clean Water Act Regulatory Programs for "Point Sources"*

The Clean Water Act authorizes a number of programs that address or have effects on agricultural water pollution. These programs include: the section 402 National Pollutant Discharge Elimination System (NPDES);[129] the section 404 Dredged and Fill Material Permit Program (section 404 program);[130] a number of planning requirements and grant programs, including the section 303 TMDL program and the section 319 Nonpoint Source Control Program;[131] and a few regional programs.[132]

The first two programs, the NPDES and section 404 permitting programs, are the major regulatory programs in the CWA, and both are limited to controlling discharges from point sources. The remaining programs do not authorize direct federal regulation of nonpoint sources, but rely instead on incentives to induce the states to implement programs designed to control nonpoint source pollution.

The absence of direct federal controls on nonpoint source pollution in the CWA has, until very recently, had the effect of deemphasizing the water quality objectives of the CWA in favor of the relatively less complex and administratively more feasible objective of implementing technology-based standards for point sources.[133] To be sure, the CWA includes provisions for imposing more stringent, enforceable limitations on point sources if the technology-based standards prove insufficient to meet water quality

129. 33 U.S.C. § 1342 (2001).

130. *Id.* § 1344.

131. *Id.* §§ 1313(d), 1329.

132. The regional programs address the Chesapeake Bay, the Great Lakes, Long Island Sound, and Lake Champlain. For a good overview of these programs, see Robert Adler, *Addressing Barriers to Watershed Protection*, 25 ENVTL. L. 973, 1070-77 (1995) [hereinafter Alder, *Watershed Protection*]. Professor Adler also discusses several other CWA programs, including the Clean Lakes and Estuary programs. *Id.* at 1077-79.

133. *See generally* WILLIAM H. RODGERS, ENVIRONMENTAL LAW (1986); Adler, *Watershed Protection*, *supra* note 132, at 1038 (1995); James Boyd, *The New Face of the Clean Water Act: A Critical Review of the EPA's New TMDL Rules*, 11 DUKE ENVTL. L. & POL'Y F. 39 (2000); Caputo, *supra* note 2.

standards.[134] But the larger task of ensuring an ambient water quality that minimally satisfies the CWA's ambition for "fishable and swimmable" waters is relegated to a complex and confusing array of planning requirements that have yielded few enforceable controls.[135]

1. The NPDES Program and Agricultural Pollution

Section 402 of the CWA establishes the NPDES, a nationwide permitting program applicable to all point sources of water pollution.[136] The CWA defines a point source as "any discernible, confined and discrete conveyance . . . from which pollutants are or may be discharged."[137] While this language may be interpreted to include agricultural practices that are sometimes viewed as contributors to nonpoint source pollution,[138] most agricultural practices have escaped the NPDES program's regulatory net. In part, this is due to the nature of much agricultural pollution—it is difficult to characterize as discharges from a "discernible, confined and discrete conveyance"—and, more expansively, to the express exclusion of "agricultural stormwater discharges and return flows from irrigated agriculture" from the CWA's definition of a point source.[139]

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134. *See* 33 U.S.C. §§ 1311(b)(1)(C); 1312(b)(2)(A); 1313(d); 1314(l).

135. *See* Adler, *Integrated Approaches*, *supra* note 2, at 215-16 (describing water quality provisions of the CWA as "a series of somewhat confusing, overlapping planning and implementation requirements spread throughout various sections and subsections of the Act").

136. 33 U.S.C. § 1342(a).

137. 33 U.S.C. § 1362(14).

138. *See* Concerned Area Residents for the Env't v. Southview Farm, 34 F.3d 114 (2d Cir. 1994) (holding that manure spreading operations of a dairy farm constitute a point source for purposes of CWA). The decision in this case caused an outcry from the agricultural community, who regarded the activities as nonpoint source pollution immune from CWA regulation. The House of Representatives passed legislation to overrule the decision, but the provision was never enacted as law. *See* Ruth A. Moore, *Controlling Agricultural Nonpoint Source Pollution: The New York Experience*, 45 DRAKE L. REV. 103, 115-18 (1997).

139. 33 U.S.C. § 1362(14). These exclusions from the definition of a point source were added by Congress in 1977, effectively overruling the decision in *NRDC v. Costle*, 568 F.2d 1369 (D.C. Cir. 1977), in which the court rejected EPA's attempt to exempt discharges of these sorts from the CWA's permit requirements. Congress also inserted the exclusion for irrigation return flows in section 402—the NPDES provisions—providing: "[EPA] shall not require a permit under this section for discharges composed entirely of return flows from irrigated agriculture, nor shall [EPA] directly or indirectly, require any State to require such a permit." 33 U.S.C. § 1342(*l*). On these exclusions, see Ruhl, *supra* note 5, at 294-96.

Permits for discharges from point sources must include categorical, technology-based effluent limitations established by the EPA[140] or, where the EPA has not promulgated such limitations, control requirements based on the permit writer's "best professional judgment" about what cleanup technologies individual sources can implement.[141] In addition, point sources may be subject to more stringent control requirements if necessary to meet ambient water quality standards.[142]

States may administer an EPA-approved permit program within their respective jurisdictions in place of the EPA-administered NPDES program. These programs are often described as State Pollutant Discharge Elimination Systems (SPDES).[143]

A major category of agricultural sources that has a significant impact on water quality is animal feeding operations (AFOs). The industry is very large, accounting for half of all sales in U.S. agriculture.[144] The variety of facilities that can properly be considered AFOs is quite diverse, including livestock farms, feedlots, pens, corrals, roundup areas, wintering operations, dairies, stockyards, auctions houses, poultry operations, stables, racetracks, fairs, and rodeos.[145] Some very large AFOs are subject to direct regulation

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140. 33 U.S.C. § 1311(b); *see* E.I. du Pont de Nemours & Co. v. Train, 430 U.S. 112 (1977).

141. Mark C. Van Putten & Bradley D. Jackson, *The Dilution of the Clean Water Act*, 19 U. MICH. J.L. REFORM 863, 882 (1986); *see* 33 U.S.C. § 1342(a)(1) (permits issued "prior to the taking of necessary implementing actions" must include "such conditions as [EPA] determines are necessary to carry out the provisions of [the CWA]").

142. 33 U.S.C. § 1311(b)(1)(C).

143. *See id.* § 1342(b)-(c), (n) (full and partial state programs). EPA retains important oversight functions. *See id.* § 1342(c)-(d). For a list of states with approved NPDES programs, see http://cfpub.epa.gov/npdes/statestats.cfm?program_id=12 (last modified Mar. 20, 2001).

144. EPA & USDA, Unified National Strategy for Animal Feeding Operations, 63 Fed. Reg. 50192, 50193 n.1 (Sept. 21, 1998) [hereinafter *Unified National Strategy*]. This document is a draft version of the *Unified National Strategy*, *supra* note 120, that the agencies submitted for public comment.

145. *See* National Pollutant Discharge Elimination System, *supra* note 15, at 2960, 3005. An AFO is a facility where animals are "stabled or confined and fed or maintained for a total of 45 days or more in any 12-month period"; (ii) "Crops, vegetation forage growth, or post-harvest residues are not sustained in the normal growing season over any portion of the lot or facility." 40 C.F.R. § 122.23(b)(1)(ii) (2001). Cases have addressed this definition and concluded that the second criterion—that crops are not sustained over any portion of the facility—does not exclude from the definition of an AFO farms where crops are grown on fields adjacent to feedlots; thus, "[t]he vegetation criterion applies to the lot or facility in which the animals are confined."

under the CWA's NPDES program as "concentrated animal feeding operations" (CAFOs).[146] Technically, CAFOs are not nonpoint sources because they are expressly included in the CWA's definition of point sources.[147]

Until recently, CAFOs have received little federal or state regulatory attention.[148] Under current regulations, AFOs are not considered CAFOs—and thus point sources subject to NPDES permits and effluent limitations—unless they meet restrictive regulatory criteria based on a three-tier approach. Subject to important exceptions, facilities that confine more than 1000 "animal units," facilities that confine between 300 and 1000 animal units and meet certain additional criteria, and facilities determined on a case-by-case basis to contribute significantly to water pollution, are CAFOs.[149] The technology-based effluent limitation for CAFOs

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Concerned Area Residents for the Env't v. Southview Farm, 34 F.3d 114, 123 (2d Cir. 1994). EPA has proposed to clarify the definition of an AFO in new CAFO regulations. The proposal provides:

> An animal feeding operation or AFO is a facility where animals (other than aquatic animals) have been, are, or will be stabled or confined and fed or maintained for a total of 45 days or more in any 12-month period. Animals are not considered to be stabled or confined when they are in areas such as pastures or rangeland that sustain crops or forage growth during the entire time that animals are present. Animal feeding operations include both the production area and land application area . . . .

*Id.*

146. *See* Copeland, *supra* note 113. According to EPA and USDA:

> Approximately 450,000 agricultural operations nationwide confine animals. (2) USDA data indicate that the vast majority of farms with livestock are small. About 85% of these farms have fewer than 250 animal units (AUs).(3) This data comes from an analysis of the 1992 Agricultural Census. An AU is equal to roughly one beef cow, therefore 1,000 AUs is equal to 1,000 beef cows or equivalent number of other animals. Of these, in 1992 about 6,600 had more than 1,000 AUs and are considered to be large operations.

*Unified National Strategy*, *supra* note 120, at § 2.1.

147. 33 U.S.C. § 1362(14).

148. *See generally* LOCATING LIVESTOCK, *infra* note 152, at 6-7.

149. An animal feeding operation may be a point source if it meets the definition of a "concentrated animal feeding operation." 40 C.F.R. § 122.23(a). That definition lists the following criteria: (1) the facility confines more than 1000 "animal units," or (2) the facility confines more than 300 animal units and either "pollutants are discharged into navigable waters through a manmade ditch, flushing system or other similar man-made device; or pollutants are discharged directly into waters of the United States which originate outside of and pass over, across, or through the facility or otherwise come into direct contact with the animals confined in the operation." 40 C.F.R. § 122.23, Appendix B. An "animal unit" is a benchmark used to

mandates that permits specify a "no discharge" to surface waters limitation, with an exception for discharges during extreme storm events.[150]

A large number of AFOs falling within the criteria for CAFOs have nonetheless escaped regulation. A Congressional Research Service Report states that less than thirty percent of AFOs meeting the size requirements in the EPA's definition of a CAFO—or roughly 2,000 out of 6,000—had permits as of February, 2000.[151] Another report provides a much higher estimate—as many as 18,000—of the number of CAFOs that should have permits, but do not.[152] The report also notes that "in roughly half the states, no CAFOs have NPDES permits."[153] Moreover, the EPA reported that of the permits that had been issued, only 760 were current at the end of 1995.[154]

The low rates at which AFOs are included in the NPDES program is, in part, due to EPA's definition of a CAFO, which excludes any AFO that does not discharge pollutants except in the event of a "25-year, 24-hour storm event."[155] Additional reasons for the relatively low rate of coverage by the NPDES program include: an historical tendency of regulators to focus on urban rather than rural water quality, ignoring AFOs in favor of large municipal and industrial

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equalize the waste characteristics of various kinds of animals. Excluded from CAFO status are animal feeding operations that "discharge[] only in the event of a 25 year, 24-hour storm event." *Id.* Animal feeding operations that do not meet the CAFO criteria may nonetheless be treated as a CAFO subject to the NPDES program if, on a case-by-case basis, it is determined that the facility is "a significant contributor of pollution to the waters of the United States." 40 C.F.R. § 122.23(c).

150. Feedlots Point Source Category, 40 C.F.R. § 412 (1999) (effluent limitations on feedlots).

151. Copeland, *supra* note 113, at 8.

152. ENVIRONMENTAL LAW INSTITUTE, LOCATING LIVESTOCK: HOW WATER POLLUTION CONTROL EFFORTS CAN USE INFORMATION FROM STATE REGULATORY PROGRAMS 6 (June 1999), *available at* http://www.eli-org/pdf/rreafo99.pdf [hereinafter LOCATING LIVESTOCK].

153. *Id.*

154. *See* Copeland, *supra* note 113, at 8 (citing Roberta Parry, *Agricultural Phosphorous and Water Quality: A U.S. Environmental Protection Agency Perspective*, 27 J. ENVTL. QUALITY 258 (1998)).

155. *See supra* note 149; Copeland, *supra* note 113, at 8 (noting that "disputes between regulators and agricultural operators over whether particular facilities meet the regulatory threshold, such as whether the regulations apply to feedlots that claim to have no discharge" is a factor explaining low level of permitting); Water Keeper Alliance, Inc. v. Smithfield Foods, Inc., 2001 U.S. Dist. LEXIS 21314, at 7-8 (E.D.N.C. 2001) (defendant unsuccessfully moved to dismiss CWA citizen suit on grounds that it was not CAFO due to the 25-year storm exclusion).

point sources; changes in waste management technology that have rendered EPA's rules largely irrelevant; state programs that address CAFOs outside the NPDES program; and difficulties in identifying and locating these facilities.[156] Even those CAFOs that operate under NPDES permits traditionally have not been subject to restrictions on practices that may have significant impacts on water quality—such as land application of manure and wastewater—and are inspected for compliance only after citizen complaints or accidental releases.[157] Moreover, the NPDES program for CAFOs has largely proceeded on the basis of general permits,[158] which may be difficult to enforce and which tend to make effective public participation difficult.[159]

In recent years, CAFOs have come under intense scrutiny, and with good reason.[160] Releases of wastes from these facilities in North Carolina and Missouri have caused large fish kills.[161] Manure generated by these large animal factories is often spread over land and may contribute substantial amounts of nutrients, sediment, pathogens, heavy metals, hormones, antibiotics, and ammonia to surface waters. Nutrient loadings of nitrogen and phosphorous from AFOs are a major cause of water quality impairments.[162] Animal

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156. Copeland, *supra* note 113, at 8; LOCATING LIVESTOCK, *supra* note 152, at 6-7; ANIMAL AGRICULTURE, *supra* note 125, at 61.

157. *Id.*; *see* RIBAUDO, ECONOMICS OF WATER QUALITY PROTECTION, *supra* note 18, at 11 (noting survey that in ten Midwest states "few States actively inspect ... [CAFOs] for problems, including the integrity of storage structures" and that "wastes were leaking from half of North Carolina's lagoons built before 1993").

158. In 2001, EPA estimated that seventy percent of permitted CAFOs were operating under general permits. *National Pollutant Discharge Elimination System*, *supra* note 15, at 3042.

159. For a sample general permit for CAFOs, see National Pollutant Discharge Elimination System General Permit and Reporting Requirements for Discharges From Concentrated Animal Feeding Operations, 58 Fed. Reg. 7610 (Feb. 8, 1993). On the potential problems of enforcement of general permit terms, see Staci J. Pratt et al., *A Comparison of US and UK Law Regarding Pollution from Agricultural Runoff*, 45 DRAKE L. REV. 159, 171-73 (1997). Many states have also issued general permits for CAFOs under EPA's delegated authority to administer the NPDES program within the state. For an example, and a general discussion of general permits, see John H. Davidson, *South Dakota Groundwater Protection Law*, 40 S.D. L. REV. 1, 60-61 (1995).

160. For a review of the water pollution contribution for which AFOs are responsible, see ANIMAL AGRICULTURE, *supra* note 125, at 8-27.

161. *See* Bob Schildgen, *Murphy's Laws: 1. Hogs Rule 2. You Pay; Environmental Hazards of Hog Farms*, 81 SIERRA 29 (May 1996), *available at* http://www.sierraclub.org/sierra/199605/priorities.asp.

162. *See* ANIMAL AGRICULTURE, *supra* note 125, at 10; Danielle Nierenberg, *Toxic*

manure is also suspected to have contributed to outbreaks of *Pfiesteria* along the Mid-Atlantic seaboard and the tragic *cryptosporidium* contamination in Milwaukee.[163] The amount of manure that may be generated and stored by these operations is enormous. For example, in *Concerned Area Residents for the Environment v. Southview Farms*,[164] the court noted that the defendant's dairy farm had five lagoons for storing manure, one of which had a capacity of six to eight million gallons of liquid cow manure.[165] Even this pales in comparison to a waste lagoon in North Carolina which, when breached in 1995, released twenty-five million gallons of hog waste, killing nearly all aquatic life in a seventeen-mile stretch of the New River.[166] Citizens have become more aggressive in their opposition to CAFOs. In fact, a number of citizen suits have been initiated under the CWA in recent years, sometimes meeting with success.[167] One important strategy for bringing about greater control of water pollution from these facilities is to promote opportunities for greater citizen involvement and enforcement.[168]

As part of the Clinton Administration's *Clean Water Action Plan*, the EPA and the USDA have jointly issued a *Unified National Strategy for Animal Feeding Operations* (*Unified National Strategy*).[169] A major component of this initiative is an overhaul, and strengthening, of the EPA's CAFO rules. The EPA concluded that

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*Fertility*, 14:2 WORLD WATCH 30 (Mar. 1, 2001).

163. *Unified National Strategy, supra* note 120, at § 2.2.

164. 34 F.3d 114 (2d Cir. 1994).

165. *Id.* at 116.

166. *See* Anita K. Chancey, *"Clean Water Act Compliance Audit Program for Pork Producers": How was such an Agreement Reached Between EPA and the National Pork Producers?*, 7 MO. ENVTL. L. & POL'Y REV. 62, 64 (2000).

167. *See* Concerned Area Residents for the Env't v. Southview Farm, 34 F.3d 114 (2d Cir. 1994); Carr v. Alta Verde Indus., Inc., 931 F.2d 1055 (5th Cir. 1991); Water Keeper Alliance, Inc. v. Smithfield Foods, Inc., 2001 U.S. Dist. Lexis 21314, at 7-8 (E.D.N.C. 2000); Idaho Rural Council v. Bosma, 143 F. Supp. 2d 1169 (D. Idaho 2001); Cmty. Ass'n for Restoration of the Env't v. Henry Bosma Dairy, 65 F. Supp. 2d 1129 (E.D. Wash. 1999); American Canoe Ass'n v. Murphy Farms, Inc., 1998 U.S. Dist. LEXIS 21402 (E.D. N.C. 1998); Weber v. Trinity Meadows Raceway, 1996 U.S. Dist. LEXIS 15302 (N.D. Tex. 1996).

168. A significant issue concerns the tendency of new CAFOs to locate in areas where the population is generally poor or of an overwhelmingly minority racial composition, raising "environmental justice" issues. *See* Becky Gillette, *Makin' Bacon*, E MAGAZINE, (June 1, 2000), *at* http://www.alternet.org/story.html?StoryID=9263.

169. *Unified National Strategy, supra* note 120.

"CAFO programs var[y] from state-to-state, as does the implementation of NPDES programs for CAFOs," and that "[a]s animal production continues to become more industrialized nationwide, a coherent and systematic approach to implementing minimum standards is needed to ensure consistent protection of water quality."[170] EPA proposed new CAFO regulations on January 12, 2001.[171]

The EPA's proposed rule attempts to ensure greater protection of water quality from animal feeding operations in two basic ways. First, the rule expands the number of AFOs that are subject to the NPDES program. Second, the rule addresses the most significant threats that AFOs pose to water quality—discharges of manure and wastewater from both poorly designed waste storage facilities and from runoff from fields on which excessive amounts of these wastes have been placed.

To expand the coverage of the NPDES to more AFOs, the EPA proposed two alternatives to determine which AFOs are CAFOs, and thus subject to regulation under the NPDES permitting program. The first is a two-tier structure under which AFOs would be considered CAFOs if they contain a threshold number of animal units (reduced from the current threshold of 1,000 to 500) or are designated as CAFOs on a case-by-case basis.[172] The second alternative would retain the existing three-tier approach, but include more stringent conditions applicable to AFOs in the middle, 300-1000 animal unit tier.[173] In addition, the EPA proposed to eliminate the 25-year, 24-hour storm exception, expressing concern that many AFOs claiming the exception are "improperly interpreting which discharges are the result of 25-year 24-hour storms and chronic rainfall which may result in breaches and overflows of storage systems," or ignoring "discharges from improper land application of manure and wastewater."[174] The EPA estimated that the number of AFOs required

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170. *National Pollutant Discharge Elimination System*, *supra* note 15, at 2970.

171. *Id. at* 2960. EPA's action was in part taken in response to a lawsuit, *Natural Resources Defense Council v. Reilly*, No. 89-2980 (D.D.C.), which was settled by a consent decree. *See National Pollutant Discharge Elimination Systems*, *supra* note 15, at 2962.

172. *National Pollutant Discharge Elimination Systems*, *supra* note 15, at 2996-98.

173. *Id.* at 2999-3003.

174. *Id.* at 3006.

to obtain permits would rise from 12,660 under the current regulations to 25,540 under the two-tier proposal or 31,930 under the revised three-tier proposal.[175] The amount of all AFO-generated manure that would be covered by these options was estimated by EPA at sixty-four percent for the two-tier approach and seventy-two percent for the three-tier approach.[176]

The rule strengthens effluent limitations governing CAFOs. Among other things, certain CAFOs must assess whether there is a hydrologic connection to surface waters from groundwater beneath feedlots and manure storage areas. In addition, a zero discharge limitation is imposed on certain CAFOs. Routine inspections of production areas, requirements for handling dead animals, and better monitoring and reporting requirements are also mandated.[177]

To address additional threats to water quality posed by discharges of manure and AFO wastewater, the EPA expanded the definition of AFOs and CAFOs to include not only the animal production area but also "land application areas," meaning "any land to which a CAFO's manure and wastewater is applied (e.g., crop fields, fields, pasture) that is under the control of the CAFO owner or operator, whether through ownership or a lease or contract."[178] The proposed rule also clarifies that discharges of pollutants due to land application of manure may be considered point source discharges subject to NPDES regulation. The CWA's exclusion of "agricultural stormwater discharges"[179] will apply to discharges associated with land application of manure only if "proper agricultural practices" are observed.[180] "Proper agricultural practices" governing land application of manure or wastewater must be based on the nutrient needs of crops as determined through periodic soil sampling. Discharges from land where manure or wastewater are applied at rates that exceed those calculated under prescribed methods would

175. *Id.* at 3003, tbls. 7-8.

176. *Id.* at 2987.

177. *See* EPA, *Proposed Regulations to Address Water Pollution from Concentrated Animal Feeding Operations* 3 (Mar. 2001) [hereinafter *CAFO Factsheet*], *available at* http://cfpub.epa.gov/npdes/afo/caforule.cfm?program_id=7.

178. *National Pollutant Discharge Elimination System*, *supra* note 15, at 3010.

179. 33 U.S.C. § 1362(14) (2001).

180. *See National Pollutant Discharge Elimination System*, *supra* note 15, at 3029-32.

fall outside the agricultural stormwater exemption.[181]

Land application restrictions would extend beyond CAFOs to those who apply CAFO-generated manure and wastewaters to land, as well as to AFOs that engage in such practices. Unless these facilities observe proper agricultural practices, resulting discharges would be considered point source discharges subject to NPDES permits.[182] For CAFOs, land application of manure and wastewater is controlled by permit conditions requiring approved "permit nutrient plans," which prohibit manure or wastewater applications within one hundred feet of surface waters and restrict applications to frozen, snow-covered, or saturated grounds.[183]

EPA's proposal also attempts to account for changes in the structure of the animal feeding operations industry, which have tended to blur lines of responsibility for animal waste management. Currently, many feedlot owners do not own the animals they raise. Rather, they contract with meat processors who retain ownership of the animals and often prescribe exacting conditions on how the animals are to be raised and housed.[184]

As farmers become increasingly integrated into the agribusiness food chain, they lose control over the totality of the production process, therefore shifting more and more to the role of "technology applicators," as opposed to managers making informed and independent decisions. Recent USDA surveys of contract poultry farmers in the United States found that, in seeking outside advice on their operations, these farmers now turn first to bankers and then to the corporations that hold their contracts. If the contracting corporation is also the same company that is selling the farm its seed and fertilizer, as is often the case, there is a strong likelihood that the company's procedures will be followed. That corporation, as a global enterprise with no compelling local ties, is also less likely to be concerned about the pollution and resource degradation created by those procedures, at least compared with a farmer who is rooted in that community. Grower contracts generally disavow any

181. *Id.* at 3030.
182. *Id.* at 3032.
183. *Id.* at 3030.
184. *Id.* at 3023; *see also* LOCATING LIVESTOCK, *supra* note 152, at 39.

environmental liability.[185]

In recognition of these increasingly common practices, the EPA proposed to require that all entities that exert substantial operational control over a CAFO be considered "operators" and co-permitted under the NPDES program. Co-permittees would be held jointly responsible for the management of the animal wastes, particularly for manure generated in excess of what can be managed properly on-site.[186]

EPA's proposed rule continues to endorse the use of general permits for most CAFOs.[187] Under this approach, a CAFO would be considered to have obtained a permit upon filing a Notice of Intent (NOI) with the permitting authority. The NOI must include certain information and, once filed, signifies the intention of the permittee to comply with the conditions and requirements of the general permit.[188] The most serious drawback with this approach is the absence of opportunity for public involvement in permitting decisions and difficulty in enforcing specific permit conditions. The EPA proposed to address these concerns by suggesting criteria for when general permits may not be appropriate for CAFOs. Under the proposal, the permitting authority may require individual permits for CAFOs where: (1) the CAFO is located in an environmentally sensitive area; (2) the CAFO has a history of compliance or operational problems; (3) the CAFO is considered an "exceptionally large" operation; and (4) CAFOs that are significantly expanding their existing operations.[189] These criteria are to be established by the permitting authority through a public process. In addition, any member of the public may petition the permitting authority to require an individual permit for a CAFO covered by a general permit.[190]

EPA's rules are not due to be finalized until the end of 2002. Permit requirements will not go into effect for many CAFOs until

185. Brian Halweil, *Where Have All the Farmers Gone?*, 13:5 WORLD WATCH 12 (Sept. 1, 2000).

186. *National Pollutant Discharge Elimination System*, *supra* note 15, at 3025-27.

187. *Id.* at 3042.

188. *Id.*

189. *Id.* at 3043.

190. *Id.*

2006.[191]

The proposed rules are a substantial step in the right direction, but there is considerable room for improvement. First, EPA opted for general permits, based on the supposition that individual permits for all CAFOs would be too burdensome for permitting authorities.[192] As a practical matter, some resort to general permits may be needed. But a more satisfactory approach would be to start with the assumption that all CAFOs, like all other point sources, must obtain individual permits, and then carve out some categories of CAFOs for treatment under general permits. In this way, meaningful public participation could be extended to a larger number of permit decisions, enhancing the possibility of appropriate and enforceable permit conditions. Requiring individual, pre-construction permits for new or expanding CAFOs may be particularly important. Through a public process, greater scrutiny can be given to critical decisions before they become *a fait accompli*, such as the location of the CAFO itself or of waste containment structures.

Second, the proposed rule, even in its most expansive iterations, leaves large numbers of AFOs outside the reach of the NPDES. While estimates of the total number of AFOs vary, it appears that EPA's rules may exempt anywhere from roughly 185,000 to 340,000 AFOs as "nonpoint sources" not subject to the CWA's regulatory program.[193] Put in different terms, the proposed rule may exempt at least twenty-eight percent of total AFO manure production from the NPDES program, leaving control of these facilities to nonpoint source programs.[194]

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191. *CAFO Factsheet, supra* note 177, at 3.

192. *See National Pollutant Discharge Elimination System, supra* note 15, at 3043.

193. In a supplemental notice, EPA provided data showing that the total number of AFOs may be somewhere between 375,700 (EPA's estimate at the time the rules were proposed) and 218,320 (a USDA estimate). Notice of Data Availability; National Pollutant Discharge Elimination System Permit Regulation and Effluent Limitations Guidelines and Standards for Concentrated Animal Feeding Operations, 66 Fed. Reg. 58555, 58568 (Nov. 21, 2001). As noted above, EPA proposed rule would capture, at most, about 31,000 AFO's within the NPDES program.

194. The *Unified National Strategy* calls for all AFOs to implement Comprehensive Nutrient Management Plans (CNMPs), which "should address, as necessary, feed management, manure handling and storage, land application of manure, land management, record keeping, and other utilization options." *Unified National Strategy, supra* note 120, at §§ 3.1, 3.2. But, as the *Unified National Strategy* emphasized:

2. The Section 404 Permit Program

Apart from the NPDES program, the CWA also includes a permit program governing discharges of "dredged and fill material" into navigable waters.[195] This program, referred to as the section 404 program, is administered jointly by the EPA and the Army Corps of Engineers with the Corps responsible for issuing permits.[196]

The protection of wetlands on agricultural lands received a serious blow recently by the Supreme Court's decision in *Solid Waste Agency of N. Cook County v. U.S. Army Corps of Engineers*.[197] The Court rejected a twenty-five-year-old standing interpretation of section 404, and concluded that the Corps' jurisdiction does not reach to the extent of Congress's powers to regulate wetlands under the Commerce Clause of the Constitution. The Court held that, under section 404, the Corps may not regulate "isolated waters" and wetlands but rather is limited to regulation of "wetlands adjacent to 'navigable waters.'"[198] It is estimated that the Court's ruling will remove eight million acres of agricultural wetlands from the protection of the section 404 program.[199] The impact of the Court's decision may pose a significant threat of increased agricultural nonpoint source pollution.

While the precise jurisdictional reach of this program remains

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> For the vast majority of AFOs, voluntary efforts will be the principal approach to assist owners and operators in developing and implementing site-specific CNMPs, and in reducing water pollution and public health risks associated with AFOs. While CNMPs are not required for AFOs participating only in voluntary programs, they are strongly encouraged as the best possible means of managing potential water quality and public health impacts from these operations.

*Id.* § 4.1.

195. 33 U.S.C. § 1344 (1994).

196. *Id.*

197. 531 U.S. 159 (2001).

198. *Id.* at 171.

199. Congressional Research Service, Issue Brief for Congress, *Soil and Water Conservation Issues*, at 6 (Jan. 29, 2002), *at* http://www.cnie.org/NLE/CRS/abstract.cfm?NLEid=17007 [hereinafter *Soil and Conservation Issues*]. According to another report, the Court's decision will remove 30-60% of the nation's wetlands from the section 404 program, including 79% of wetlands in Wisconsin, 40% in Nebraska, 74% in Indiana, and 33% in Delaware. Jon Kusler, *The SWANCC Decision and State Regulation of Wetlands*, 1, *at* http://aswm.org/swancc/aswm-int.pdf (last visited Mar. 20, 2002). The cited Web page is an excellent source of information on the implications of the Supreme Court's decision.

controversial,[200] the program applies to various agricultural activities that destroy or degrade wetlands. Protection of wetlands can mitigate some of the effects of agricultural practices that contribute to nonpoint source pollution.[201] The positioning in the landscape of some wetlands in the transitional zone between uplands and water resources, such as lakes and rivers, makes these wetlands natural and highly effective pollution controls. Unique assemblages of wetland vegetation are effective in processing, removing, and storing a variety of pollutants, including sediment, nutrients, and some heavy metals.[202] The EPA recently advocated the protection and restoration of wetlands as a significant measure to reduce the adverse effects of nonpoint source pollution.[203] Accordingly, the degree to which the section 404 program protects wetlands significantly the amount of nonpoint source pollution that enters surface waters, as well as the costs of reducing nonpoint source pollution.[204]

As an historical matter, agriculture is the single most destructive force on wetlands. Agriculture accounts for eighty percent of wetland conversions in the period 1954-74, with the annual rate of wetland losses of 593,000 acres.[205] However, the rate of wetland loss to agriculture decreased after the passage of the section 404 program, but it still remains significant. From 1986 to 1997, twenty-six percent of wetlands losses were attributable to agriculture.[206] The relationship

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200. *See id.* at 4-5; Pat Parenteau, *Position Paper on Clean Water Act Jurisdiction Determinations Pursuant to the Supreme Court's January 9, 2001 Decision,* Solid Waste of Northern Cook County v. United States Army Corps of Engineers (SWANCC), presented to Administrator Whitman, United States Environmental Protection Agency by the Association of State Wetland Managers and the Association of State Floodplain Managers (Dec. 2001), *at* http://aswm.org/Swance/position.pdf.

201. *See generally* EPA, NATIONAL MANAGEMENT MEASURES TO PROTECT AND RESTORE WETLANDS AND RIPARIAN AREAS FOR THE ABATEMENT OF NONPOINT SOURCE POLLUTION (Draft, June 21, 2001), *available at* http://www.epa.gov/owow/nps/wetmeasures/.

202. *Id.* at 13.

203. *Id.* at 14.

204. This is also one of the key conclusions of the Clinton Administration's Clean Water Action Plan. *See* CLEAN WATER ACTION PLAN, *supra* note 1, at 38.

205. RALPH E. HEIMLICH ET AL., WETLANDS AND AGRICULTURE: PRIVATE INTERESTS AND PUBLIC BENEFITS, U.S.D.A. Agricultural Economic Report No. 765, at 20 (1998), *available at* http://www.ers.usda.gov/publications/der7651 (last visited Apr. 22, 2002).

206. U.S. FISH AND WILDLIFE SERVICE, STATUS AND TRENDS OF WETLANDS IN THE CONTERMINOUS UNITED STATES 1986-1997, at 11 (2000), *available at* http://wetlands.fws.gov/status-trends/SandT2000Report.pdf (last visited Apr. 22, 2002).

between the section 404 program and agriculture has been, and continues to be, an uneasy and controversial one.[207]

Many activities that involve mechanical destruction of wetlands and wetland functions will require a permit from the Corps of Engineers, but significant exceptions exist. The limited types of regulated activities, exemptions from the requirements of section 404 for a number of agricultural activities, and actual program implementation may permit a significant amount of wetland conversion for agricultural use.

The section 404 program exempts "normal farming, silviculture, and ranching activities such as plowing, seeding, cultivating, minor drainage, harvesting for the production of food, fiber, and forest products, or upland soil and water conservation practices from the permit requirement."[208] This exemption is, however, not as broad as it first appears. The CWA also includes a "recapture clause" under which the listed activities are subject to permits if they involve "[a]ny discharge of dredged or fill material into the navigable waters" and have as their "purpose bringing an area of the navigable waters into a use to which it was not previously subject, where the flow or circulation of navigable waters may be impaired or the reach of such waters be reduced . . . ."[209]

Because of this recapture clause, the courts construe the exemption for "normal farming activities" quite narrowly.[210] For example, in *Borden Ranch Partnership v. United States Army Corps of Engineers*,[211] the court held that "deep-ripping" in wetlands—a process in which wetlands are disturbed by a tractor or bulldozer

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207. *See generally* Joseph G. *Theis, Wetlands Loss and Agriculture: The Failed Federal Regulation of Farming Activities Under Section 404 of the Clean Water Act*, 9 PACE ENVTL. L. REV. 1 (1991); GENERAL ACCOUNTING OFFICE, WETLANDS: THE CORPS OF ENGINEERS' ADMINISTRATION OF THE SECTION 404 PROGRAM, Report No. GAO/RCED-88-110 (1988).

208. 33 U.S.C. § 1344(f)(1)(A) (1994). Exemptions are also provided for "construction or maintenance of farm or stock ponds or irrigation ditches, or the maintenance of drainage ditches," and "construction or maintenance of farm roads." *Id.* § 1344(f)(1)(C), (E). Like the exemption for "normal farming activities," these exemptions are subject to section 404(f)(2)'s "recapture" clause.

209. *Id.* § 1342(f)(2).

210. *See* United States v. Bruce, 41 F.3d 117, 124 (3d Cir. 1994); United States v. Akers, 785 F.2d 814, 819 (9th Cir. 1986); Avoyelles Sportsmen's League v. Marsh, 715 F.2d 897, 926 (5th Cir. 1983).

211. 261 F.3d 810 (9th Cir. 2001).

dragging long metal prongs up to seven feet in length through the wetland[212]—is not exempt from section 404's permit requirements as a "normal farming" activity.[213] The court held:

> although the Corps cannot regulate a farmer who desires "merely to change from one wetland crop to another," activities that require "substantial hydrological alterations" require a permit .... "[T]he intent of Congress in enacting the Act was to prevent conversion of wetlands to dry lands," and we have classified "as non-exempt those activities which change a wetland's hydrological regime."[214]

Nonetheless, some question exists about whether the recapture clause applies to farming in wetlands previously converted through means not regulated under section 404, i.e., by means other than a "discharge of dredged or fill material."[215] In addition, "prior converted cropland"—wetlands converted to agricultural use prior to December, 1985—is exempt from the section 404 program, even if it currently provides some measure of wetlands functions and values.[216]

Because permits are required only for "discharges of dredged and fill material," farmers may convert wetlands to agricultural uses without permits by resorting to unregulated techniques, such a draining or dredging operations that involve only limited "incidental fallback" into wetlands.[217] A significant number of activities that

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212. *Id.* at 812.

213. *Id.* at 819.

214. *Id.* at 815-16 (citing United States v. Akers, 785 F.2d 814, 820, 822 (9th Cir. 1986); *see also* United States v. Brace, 41 F.3d 117, 123-29 (3d Cir. 1994)).

215. *See generally* Memorandum from Lance Wood to All Division and District Counsels, "Evading 404 Jurisdiction by Pumping Water from Wetlands" (Apr. 10, 1990), *reproduced in* MARGARET N. STRAND, WETLANDS DESKBOOK 688 (2d ed. 1997). For a general discussion of the section 404 program and agricultural activities, see Memorandum from Lajuara S. Wilcher & Robert W. Page to the Field, "Clean Water Act Section 404 Regulatory Program and Agricultural Activities" (May 3, 1990), *reproduced in* MARGARET N. STRAND, *supra,* at 682.

216. *See* 33 C.F.R. § 328.3(a)(8) (2001).

217. *See* Nat'l Mining Assoc. v. U.S. Army Corps of Eng'rs, 145 F.3d 1399 (D.C. Cir. 1998). The types of activities regulated under section 404 as "discharges of dredged and fill material" has been most controversial in circumstances where the alleged "discharge" involves "redepositing" of disturbed soils and vegetation in wetlands. The courts tend to apply a generous construction to the term "discharge." *See, e.g.*, Borden Ranch P'ship, 261 F.3d at 810 (9th Cir. 2001); United States v. Deaton, 209 F.3d 331 (4th Cir. 2000); Avoyelles Sportsmen's League, Inc. v. Marsh, 715 F.2d 897 (5th Cir. 1983).

convert wetlands for agricultural purposes may thus escape scrutiny under section 404. For example, in *Orleans Audubon Society v. Lee*, the Fifth Circuit upheld the Corps of Engineers' conclusion that it lacked jurisdiction over the installation of a drainage system in wetlands, because no jurisdictional "discharges" existed.[218]

Even for activities clearly regulated under section 404, applicable regulations do not categorically preclude conversion of wetlands for agricultural purposes. Instead, restraints on regulated activities in wetlands are structured by a complex balancing of economic, environmental, and other factors, and on conclusions about whether alternative locations for the activity in question are practicable.[219] Permit applicants have had remarkable success in convincing the Corps that their proposed activities satisfy these applicable criteria.[220]

Generally, compensatory mitigation is required to offset losses of wetland functions and values in pursuit of a "no net loss" policy, but these mitigation requirements have been notoriously under-enforced, leading to significant losses of wetland functions and values.[221] In addition, the Corps of Engineers' "nationwide permit" program authorizes agricultural activities that degrade or destroy wetlands with little or no scrutiny by the Corps.[222]

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218. 742 F.2d 901, 910-11 (5th Cir. 1984); *see also* Save Our Cmty. v. EPA, 971 F.2d 1155, 1163-64 (5th Cir. 1992); United States v. Wilson, 133 F.3d 251, 258 (4th Cir. 1997) (Section 404 "does not prohibit a non-polluting method of draining a wetland.").

219. *See generally* WETLANDS DESKBOOK, *supra* note 215, at 41-45.

220. Statement of Michael Davis, Deputy Assistant Secretary of the Army for Civil Works, Before the Committee on Environment and Public Works, Subcommittee on Clean Air, Wetlands, Private Property and Nuclear Safety, United States Senate (Mar. 28, 2000), *at* http://www.senate.gov/~epw/dav_0328.htm. Recently, the Corps reported:

> [T]he Corps received an average of 74,500 Section 404 permit requests per year from FY 1996 to FY 1999. Of those requests, 84.4 percent were authorized through a general permit. Only 6.7 percent of all permit applications were subject to the more detailed individual permit evaluation, through which impacts are avoided and compensated. . . .[O]nly 3 tenths of a percent of all Section 404 requests were denied.

*Id.*

221. *See generally* NATIONAL RESEARCH COUNCIL, COMPENSATING FOR WETLAND LOSSES UNDER THE CLEAN WATER ACT 94-122 (2001), *at* http://books.nap.edu/books/0309074320/html/index.html (last visited Apr. 17, 2002). Recent changes to the Corps mitigation practices may exacerbate the problem. *See* Cat Lazaroff, *Army Corps Redefines Wetlands Mitigation*, Envtl. News Serv., Nov. 13, 2001, *at* http://ens.lycos.com/ens/nov2001/2001L-11-13-06.html (last visited Apr. 17, 2002).

222. The Corps recently reissued its nationwide permits. *See* Issuance of Nationwide

### *B. Nonpoint Source Programs Under the Clean Water Act*

Apart from the NPDES and section 404 programs, no provision exists for direct federal regulation of agricultural nonpoint source pollution that may contribute to water quality impairments. The Act's "national policy that programs for the control of nonpoint sources of pollution be developed and implemented in an expeditious manner,"[223] is pursued through several programs that provide opportunities and funding to develop and implement control measures for nonpoint sources, but the primary responsibility in each of these programs lies with the states. Little or no authority exists for federal involvement in the event states choose not to tackle nonpoint source pollution in an effective way. Moreover, consistent with the Tenth Amendment to the Constitution, nothing in the CWA compels the states to adopt nonpoint source control programs.[224]

#### 1. Comprehensive Planning and Section 208

With the 1972 amendments to the CWA, Congress included comprehensive planning provisions to ensure that "[t]o the extent practicable, waste treatment management shall be on an areawide basis and provide control or treatment of all point and nonpoint sources of pollution, including in place or accumulated pollution sources."[225] Section 208 required the states to "identify each area within the State, which, as a result of urban-industrial concentrations or other factors, has substantial water quality control problems" and to "designate (A) the boundaries of each such area, and (B) a single representative organization ... capable of developing effective

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Permits; Notice, 67 Fed. Reg. 2020 (Jan. 15, 2002). Newly issued nationwide permit 40 authorizes "discharges into non-tidal wetlands to improve agricultural production" provided certain conditions are met. *See id.* at 2086-87.

223. 33 U.S.C. § 1251(a)(7) (1994).

224. *See* Natural Res. Def. Council, Inc. v. Costle, 564 F.2d 573, 580 (D.C. Cir. 1977); *see also* Am. Wildlands v. Browner, 260 F.3d 1192, 1197 (10th Cir. 2001) ("'[N]othing in the CWA demands that a state adopt a regulatory system for nonpoint sources.'"). *Compare* New York v. United States, 505 U.S. 144, 161 (1992) (quoting Hodel v. Virginia Surface Mining & Reclamation Ass'n, Inc., 452 U.S. 264, 288 (1981) (holding that Congress cannot "commandeer the legislative processes of the States by directly compelling them to enact and enforce a federal regulatory program")).

225. 33 U.S.C. § 1281(c).

areawide waste treatment plans for such area."[226] Areawide plans were to be "in operation" within one year of the organization's designation[227] and were to include "a process to (i) identify, if appropriate, agriculturally and silviculturally related nonpoint sources of pollution . . . and (ii) set forth procedures and methods (including land use requirements) to control to the extent feasible such sources."[228]

In addition, for areas of a state not designated under the process described above, "[t]he State shall act as a planning agency."[229] In *Natural Resources Defense Council v. Costle,* the court relied on this latter provision to conclude that the section 208 planning program applied to all parts of a state, not just those designated as having substantial water quality problems.[230] Section 208 thus provides for comprehensive, state-wide programs to address water quality problems, including nonpoint source pollution.

Section 208 provides three basic incentives for states to develop areawide plans. First, the costs of developing and implementing the plans are supposed to be shared by the federal government through EPA grants.[231] Second, once a plan is approved, the state may participate in a program administered by the Department of Agriculture through which the Soil Conservation Service (now the Natural Resource Conservation Service) enters into cost-sharing contracts with property owners "for the purpose of installing and maintaining measures incorporating best management practices to control nonpoint source pollution for improved water quality . . ."[232] Finally, comprehensive plans of the sort authorized in section 208 may enable the states to make judgments about how best to allocate cleanup responsibilities.

The statute does not, however, provide clear criteria under which

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226. *Id.* § 1288(a)(2).
227. *Id.* § 1288(b)(1)(A).
228. *Id.* § 1288(b)(2)(F).
229. *Id.* § 1288(a)(6).
230. 564 F.2d 573, 577-79 (D.C. Cir. 1977).
231. 33 U.S.C. § 1288(f). EPA also provides technical assistance "without reimbursement" to the states in developing plans. *Id.* § 1288(g).
232. *33 U.S.C.* § 1288(j). This program was limited to contracts ending no later than September 31, 1988. *Id.* It was added to the CWA by amendments in 1977. *See* Federal Water Pollution Control Act Amendments, Pub. L. No. 95-217, § 35, 91 Stat. 1579 (1977).

EPA may determine whether a plan's provisions are adequate. As a consequence, the content of these plans is largely discretionary with the states, creating a program that Professor Adler describes as "mandatory-voluntary."[233] Moreover, in the event that a plan is disapproved, there is nothing in the CWA comparable to the Clean Air Act's mandate for federal implementation plans to substitute for such state failings.[234] The EPA lacks authority to take up the slack of under-performing states by implementing its own enforceable areawide management plan. Other avenues of recourse open to the EPA, such as withholding grants or conditioning grants on a state's adoption of control measures,[235] are limited and have not been pursued to any significant extent.[236] While a number of plans were written and approved, the consensus is that the plans did little to improve water quality or to create effective state programs aimed at nonpoint source pollution.[237] As if to punctuate the ineffectiveness of the section 208 planning provisions, Congress ceased funding the grants program in 1981.[238] In effect, many of the section 208 plans

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233. Adler, *Watershed Protection, supra* note 132, at 1042.

234. *See* 42 U.S.C. § 7410(c) (2001) (requiring the EPA to promulgate a federal implementation plan if a state fails to develop state ambient air pollution control plans).

235. *See* Shanty Town Assocs. Ltd. P'ship v. EPA, 843 F.2d 782, 791 (4th Cir. 1988) (concluding that while section 208 "provides no *direct* mechanism by which EPA can force the states to adopt adequate nonpoint source pollution control programs . . . Congress anticipated that EPA would use the threat and promise of federal financial assistance to accomplish this task").

236. *Id.*

237. *See* Adler, *Watershed Protection, supra* note 132, 1043. Professor Adler notes several reasons for the failure of comprehensive planning under section 208, including a lack of enthusiasm for the program on EPA's part, the absence of any "link between planning and implementation," inadequate funding, and resistance from local officials fearful of federal planning mandates. *See id.* at 1044 (citing S. REP. NO. 257, at 46 (1994). David Zaring sums up the effectiveness of the section 208 program:

> Section 208 planning agencies promote voluntary compliance rather than mandatory controls of nonpoint source pollution; the latter were too 'controversial' and 'politically sensitive' for agricultural interests who opposed what they envisioned could amount to command and control regulation. States were unwilling to provoke powerful agricultural constituencies with strict regulation when the Federal Government did not obligate them to do so. The resulting nonpoint source pollution control plans were totally voluntary in 41 states. An additional eight states included many voluntary provisions.

Zaring, *supra* note 11, at 523-24 (references omitted).

238. *Id.*

were simply shelved.[239]

Aside from its structural shortcomings, several additional problems severely handicapped the section 208 program. The program lacked administrative support in its formative stages. The Nixon administration "basically was trying to close the program out . . . [T]here was a very definite attitude . . . that it was not a good program, and . . . should not be given any encouragement."[240] As a consequence, EPA was slow to issue regulations and guidance. Appropriated funds were not obligated and, therefore, fifteen percent of all monies authorized for the section 208 program as of 1980 simply lapsed.[241] EPA's efforts, as well as those of the states, were directed primarily at funding and building municipal waste treatment plants and advancing the NPDES point source control program; the section 208 program was treated, in effect, as a disfavored "stepchild" and subordinated to efforts that produced more immediate, visible results.[242] EPA's lack of commitment and uneven funding led many to conclude that the section 208 program simply was not credible.[243]

State agencies repeatedly attributed the poor performance of section 208 plans to a lack of data to establish cause-and-effect relations between practices and nonpoint source pollution and, hence, between practices and water quality impacts. These same data shortcomings hampered state efforts to determine the efficacy and cost-effectiveness of various "best management practices" (BMPs) that might decrease runoff.[244] As a consequence, no clear linkages between section 208 planning and the attainment of water quality standards exist.[245]

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239. ROBERT W. ADLER ET AL., THE CLEAN WATER ACT 20 YEARS LATER 184 (1993) [hereinafter 20 YEARS LATER].

240. CONGRESSIONAL RESEARCH SERVICE, NONPOINT POLLUTION AND THE AREAWIDE WASTE TREATMENT PROGRAM UNDER THE FEDERAL WATER POLLUTION CONTROL ACT: SUMMARY OF HEARINGS BEFORE THE SUBCOMMITTEE ON OVERSIGHT AND REVIEW, JULY 11, 12, 17, AND 18, 1979, 96th Cong., 2d Sess., Committee Print 96-67, at 16 n.2 (1980) (quoting EPA Administrator) [hereinafter SUMMARY OF HEARINGS].

241. *Id.* at 16.

242. *Id.* at 22.

243. *Id.* at 18.

244. *Id.* at 19.

245. 20 YEARS LATER, *supra* note 239, at 184.

The lack of adequate data also had other significant effects on the nonpoint source elements of the section 208 program. The need for data prompted a significant shift in the focus of the section 208 program once the EPA became somewhat more sympathetic with its objectives. EPA began to emphasize and fund prototype demonstration projects as a means to fill data gaps and to determine the sorts of management practices that would most cost-effectively reduce nonpoint source pollution.[246] While EPA could boast of the success of many of these projects, the shift led one observer to describe the program as "a giant research project."[247]

The absence of clear linkages between BMPs and improvements in water quality made it difficult to develop regulatory programs, leaving most states to rely on voluntary cooperation rather than enforceable measures. The consensus view was that "regulators [were] not at the point where, under a burden of proof test, they could conclusively link a particular management practice to a desired result."[248] As a consequence, BMPs tended to be implemented only when they served coincidental objectives, such as soil conservation or more cost-effective agricultural production.[249]

Other factors that hampered the section 208 program include conflicts between local, state, and federal officials over lines of responsibility for program implementation; uncertainty over whether state programs should rely on voluntary cooperation or on more regulatory approaches; and the lack of public education, and, hence, support, for nonpoint source control programs.[250]

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246. SUMMARY OF HEARINGS, *supra* note 240, at 23.

247. *Id.* at 25.

248. *Id.* at 33; *see also id.* at 29 ("It is not sufficient merely to conjecture that BMPs will be good; it must be proven . . . .").

249. *Id.* at 33.

250. *See* 20 YEARS LATER, *supra* note 239, at 184; SUMMARY OF HEARINGS, *supra* note 240, at 27-34. Professor Michael Vandenbergh concludes that a major obstacle to effective control of nonpoint source pollution—which he describes as a "second generation" source problem—is the social meaning of the "command and control system." Michael P. Vandenbergh, *The Social Meaning of Environmental Command and Control*, 20 VA. ENVTL. L.J. 191, 191-93, 196 (2001). He posits that the command and control regulation of large industrial sources facilitated the conveyance of an "us-them" sort of mentality on the part of individual citizens: "The command and control system . . . allowed individuals to support environmental protection by focusing both economic costs and moral opprobrium on industrial polluters." *Id.* at 208. Presumably, this focus makes it more difficult to regulate farmers because

2. The Section 319 Nonpoint Source Management Program

Prior to 1987, section 208 was the only CWA program to control nonpoint source pollution.[251] With its relative demise and the active opposition of the Reagan Administration to any new federal programs to address nonpoint source pollution control, there was a gaping hole in federal efforts to address water quality problems throughout the early- and mid-1980s.

In 1987, Congress responded to this lacuna by amending the CWA to address nonpoint source pollution. It subjected urban and industrial stormwater discharges to the requirements of the NPDES program.[252] For agriculture, Congress took a different approach, creating a new, but essentially unenforceable, nonpoint source management program.[253] Section 319 provides that each state must prepare and submit for EPA approval a report that: identifies waters within the state which, without control of nonpoint source pollution, are not reasonably expected to attain or maintain water quality standards; identifies categories of or particular nonpoint sources which contribute significantly to water quality problems in such waters; describes how best management practices for such sources will be identified; and describes applicable state and local nonpoint source pollution control programs.[254] In addition, each state must prepare and submit for EPA approval "a management program" for controlling the nonpoint source pollution that contributes significantly to water quality impairments and must implement that

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they have not traditionally been viewed as an "industry," and thus do not fall within the cognitively available category of "polluters." Interestingly, many environmental groups have worked hard to overcome this cognitive resistance, carefully characterizing some farming operations as being in the "corporate" and "factory" categories. *See, e.g.*, CESSPOOLS OF SHAME, *supra* note 100, at 1 ("Multi-million dollar corporations control many factory farms.").

251. SUMMARY OF HEARINGS, *supra* note 240, at 14 (noting that "[t]he only Federal program which directly addresses nonpoint source pollution is found in section 208 of the Clean Water Act").

252. 33 U.S.C. § 1342(p) (2001).

253. *Id.* § 1329. In describing the 1987 amendments, Professor Houck noted that Congress "in effect split the nonpoint world into urban and agricultural sources." Oliver A. Houck, *Ending the War: A Strategy to Save America's Coastal Zone*, 47 MD. L. REV. 358, 376 (1988) [hereinafter Houck, *Ending the War*].

254. 33 U.S.C. § 1329(a).

plan within four fiscal years of the date the plan is submitted to EPA.[255]

Section 319 management plans must include certain elements: BMPs; a program to implement the BMPs, including "a schedule containing annual milestones" and "provid[ing] for utilization of the best management practices at the earliest practicable date;" and sources of funding.[256]

The primary incentive for states to comply with section 319's reporting and programmatic requirements, like the incentives in the section 208 program, is a cost-sharing grant program.[257] In addition, continued participation in the grant program is conditioned on a performance standard, albeit a very weak one: states must make "satisfactory progress" in meeting their respective programs' milestones.[258] States must also "maintain its aggregate expenditures from all other sources ... at or above the average level of such expenditures in its two fiscal years preceding" the date of the 1987 amendments to remain eligible for 319 grants.[259] In many cases, however, this "maintenance of effort" requirement is, in fact, no requirement at all. For example, Missouri's Nonpoint Source Management Plan notes that in the relevant period, the state expended no funds on nonpoint source pollution control; its maintenance of effort requirement was, therefore, zero.[260] Finally, states may be induced to participate in the section 319 program in order to benefit from the program's "consistency" provision,[261] which

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255. *Id.* § 1329(b)(1).

256. *Id.* § 1329(b)(2). The report of waters and the management program were to be submitted to EPA before August 4, 1988. *See id.* § 1329(c)(2).

257. *Id.* § 1329(h).

258. *Id.* § 1329(h)(8).

259. *Id.* § 1329(h)(9).

260. STATE OF MISSOURI, NONPOINT SOURCE MANAGEMENT PLAN 108 (revised 2001), *at* http://www.dnr.state.mo.us/deq/wpcp/wpcnpsmp.htm (last visited Apr. 17, 2002).

261. Section 319 provides, in part:

> [E]ach Federal department and agency shall modify existing regulations to allow States to review individual development projects and assistance applications under ... Federal assistance programs [identified by each State] and shall accommodate, according to the requirements and definitions of Executive Order 12372 ... the concerns of the State regarding the consistency of such applications or projects with the State nonpoint source pollution management program.

33 U.S.C. § 1329(k). EPA did not propose to published guidance on the consistency provision

"is a form of 'reverse federal preemption' ... [that] [s]tates can invoke ... to block federal and federally-funded projects that interfere with state nonpoint pollution controls."[262]

EPA has oversight responsibility for ensuring that states submit the required section 319 reports and management plans. The program, like the section 208 planning provisions, remains largely optional for the states.[263] If a state fails to submit a report listing waters affected by nonpoint source pollution, or if EPA disapproves such a report, then EPA is to promulgate one.[264] By contrast, the EPA lacks authority to prepare and implement a management plan for states who choose not to do so, although provisions are made for local agencies to assume the state's role in such circumstances.[265] For waters affected by out-of-state nonpoint source pollution, the EPA may "convene ... a management conference of all States which contribute significant pollution resulting from nonpoint sources,"[266] but again, the EPA has no authority to develop or implement a plan to correct such interstate pollution problems if the management conference fails to yield an agreement among the states.[267]

Moreover, even if states do produce management plans, section 319 does not require that the plans contain enforceable measures. Indeed, the statute rather explicitly suggests that BMPs or other controls need not be enforceable.[268] As Professor Craig has noted,

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until 1998. *See* Section 319 Federal Consistency Guidance, 63 Fed. Reg. 45504 (Aug. 26, 1998).

262. Mandelker, *supra* note 22, at 499-500.

263. Oliver A. Houck, *TMDLs, Are We There Yet?: The Long Road Toward Water Quality-Based Regulation Under the Clean Water Act*, 27 Envtl. L. Rep. 10391, 10400 (Aug. 1997) (concluding that "[section] 319's provisions are voluntary. States may choose to participate or not; participating states may choose regulatory approaches or not") [hereinafter Houck, *Are We There Yet*].

264. 33 U.S.C. § 1329(d)(3).

265. *Id.* § 1329(e).

266. *Id.* § 1329(g).

267. *Id.* § 1329(e).

268. *See id.* § 1329(b)(2)(B) (requiring management plans to include "programs (including, as appropriate, nonregulatory or regulatory programs ...) to achieve implementation of the [BMPs]"). John Davidson also observed:

> [T]he management programs ... may be less than meets the eye. Although the language of ... [§ 319] directs the state to develop plans that contain specific control measures, it is likely that the plans must state merely what would be done *if* a state has the money it needs. In their plans the states will say, "Here is what we will do if we get

"'Section 319 does not require states to penalize nonpoint source polluters who fail to adopt best management practices; rather it provides for grants to encourage the adoption of such practices.'"[269] This continued reliance on a voluntary approach to agricultural nonpoint source pollution has led one commentator to conclude that, "[i]n 1987 Congress looked agricultural pollution in the eye and fainted."[270]

Congress underfunded the section 319 program for the first several years, providing little support even to states that were making serious efforts to address nonpoint source pollution.[271] The Clinton Administration increased funding to some degree,[272] but inadequate funding remains the biggest obstacle to improvements under section 319.[273] Without assurances that the costs of attacking agricultural nonpoint source pollution will be underwritten by the federal government, most states are unwilling, or unable, to attack agricultural nonpoint source pollution aggressively.[274] Because the EPA lacks any authority to threaten regulatory action to correct state program deficiencies, the only effective way to achieve greater gains through section 319 is to increase funding for the program substantially.

Even with increased funding, however, the absence of clear performance standards for state management plans makes it difficult to ensure that section 319 funds are used effectively. The statutory

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the money.... If funds are inadequate we won't do it, ... and if implementing the plans in our state will be politically unpopular, we won't even apply for the grant."

John H. Davidson, *Thinking About Nonpoint Sources of Water Pollution and South Dakota Agriculture*, 34 S.D. L. REV. 20, 45 (1989) (emphasis in original) (footnotes omitted).

269. Craig, *supra* note 11, at 190 (quoting Natural Res. Def. Council v. EPA, 915 F.2d 1314, 1318 (9th Cir. 1990)).

270. Houck, *Ending the War*, *supra* note 253, at 377.

271. *See* 20 YEARS LATER, *supra* note 239, at 189.

272. *See* GAO REPORT 99-45, *supra* note 128, at 28.

273. *See* National Association of Conservation Districts, *Funding for Clean Water Act Section 319* (Mar. 2001), *at* http://www.nacdnet.org/govtaff/issuepapers/2001/Funding319in02.htm (last visited Apr. 22, 2002).

274. Aside from funding deficiencies, Professor Adler argues that the EPA hampers section 319's potential as an aggressive measure to control nonpoint source pollution by refusing to "play hardball" with the states. Adler, *Watershed Protection*, *supra* note 132, at 1045 n.427. He points out that the EPA could insist on the states adopting mandatory or stricter BMPs as a condition of program approval. *See id.*

"satisfactory progress" condition for a state's continuing participation in the program is an extraordinarily vague benchmark.[275] EPA regulations do not strengthen or clarify this requirement,[276] although the agency has recently issued guidance to provide greater specificity in the expected outcomes to be achieved by funded projects.[277]

Successful implementation of nonpoint source controls under section 319 is likely to be hampered by inadequate monitoring and assessment data as well as the absence of any requirement that states enact enforceable controls. The CWA includes a broad reporting obligation which requires the states to submit "a description of the water quality of all navigable waters in such State," as well as "a description of the nature and extent of nonpoint sources of pollutants."[278] The states, as noted above, have not collected suitable data of this sort. Without the data, it may be hard to establish the linkages section 319 apparently demands between impaired waters and nonpoint sources. Thus, the same difficulties that hampered areawide planning and nonpoint source controls under section 208 limit the willingness or ability of the states to take effective action under section 319.

To its credit, the EPA has recognized that "[w]ithout a clear understanding of how to minimize pollution from ... nonpoint sources, state and local organizations will be unable to develop strategies to protect their water resources."[279] To bridge this gap, the EPA established a "Section 319 Nonpoint Source National

275. 33 U.S.C. § 1329(h)(8) (1994).

276. *See* 40 C.F.R. § 35.268(d)(3) (2001).

277. The guidance modifies the states' reporting requirements under the section 319 grants program. *See* Memorandum from Robert Wayland, to EPA Regional Water Division Directors, "Modifications to Nonpoint Source Reporting Requirements for Section 319 Grants" (Sept. 27, 2001), *available at* http://www.epa.gov/owow/nps/Section319/grts.html. The memorandum notes that the increased funding for the grants program was "giving rise to more specific questions from Congress, the Office of Management and Budget, and the public as to how and where this money is being spent, and what water quality improvements are being achieved as the result of these Federal expenditures." *Id.* The states are obligated to report on their funded activities under 33 U.S.C. § 1329(h)(11). Many states have revised their nonpoint source management programs in response to this guidance.

278. 33 U.S.C. § 1315(b)(1).

279. LAURA A. LOMBARDO ET AL., SECTION 319 NONPOINT SOURCE NATIONAL MONITORING PROGRAM: SUCCESSES AND RECOMMENDATIONS 9 (2000), *available at* http://www5.bae.ncsu.edu/programs/extension/wqg/section319/frontcover.html (last visited Apr. 22, 2002) [hereinafter NATIONAL MONITORING PROGRAM].

Monitoring Program." The purpose of the program is to evaluate the effectiveness of nonpoint source pollution management measures and to gain a better understanding of nonpoint source pollution generally.[280] The program provides enhanced funding and technical assistance for a limited number of pilot projects to "facilitate[] the understanding of processes that govern the transport and control of nonpoint source pollution, which can then be transferred to state and local organizations for use in addressing water quality problems."[281] The parallels to the section 208 program implementation as a "research project" are somewhat striking, though the section 319 program is not limited to projects funded under the Nonpoint Source National Monitoring Program.

Section 319 made some significant differences in a limited number of watersheds.[282] In 1995, the General Accounting Office reported on the 618 watershed projects to reduce agricultural nonpoint source pollution that were planned or carried out.[283] The report selected nine projects for evaluation, and the results were generally regarded as successful.[284] Similarly, the Nonpoint Source National Monitoring Program yielded some significant improvements in water quality in the projects sponsored under the program.[285] In addition, the EPA is considering ways in which section 319 might be more effective.[286] Nonetheless the scope of these successes is quite limited, primarily because most states have very weak programs,[287]

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280. *See id.* at 3.

281. *Id.*

282. The EPA's nonpoint source pollution Web site has links to section 319 "success stories," *available at* http://www.epa.gov/owow/nps/cwact.html (last visited Apr. 22, 2002).

283. GENERAL ACCOUNTING OFFICE, AGRICULTURE AND THE ENVIRONMENT: INFORMATION ON AND CHARCTERISTICS OF SELECTED WATERSHED PROJECTS, Report No. GAO/RCED-95-218, at 1 (1995).

284. *See id.* at 10.

285. NATIONAL MONITORING PROGRAM, *supra* note 280, at 3-9.

286. *See, e.g.*, EPA, *Nonpoint Sources: Picking up the Pace, EPA's Draft Proposed Strategy for Strengthening Nonpoint Source Management*, presentation prepared for Meeting of Stakeholders in the National Nonpoint Source Program at the Wye River Conference Center on October 14, 1997, *available at* http://www.epa.gov/owow/nps/nsfsnsm/ (last visited Mar. 13, 2002). Many of the suggestions in this presentation were subsequently incorporated into the Clinton administration's *Clean Water Action Plan.*

287. *See generally* ENVIRONMENTAL LAW INST., ENFORCEABLE STATE MECHANISMS FOR CONTROL OF NONPOINT SOURCE WATER POLLUTION iii (1997) ("Agriculture is the most problematic area for enforceable mechanisms. Many laws of general applicability, . . . have

and the possibilities for significant increases in funding are small, at least in the short-term.[288] The net effect of the section 319 program is, as John Davidson has noted, "largely redundant" of the section 208 planning requirements,[289] "leav[ing] any resulting improvements in water quality largely to the political will of individual states."[290]

### 3. The TMDL Program—A Framework for a Regulatory Approach to Nonpoint Source Pollution?

The absence of authority in either section 208 or section 309 for the EPA to step in when state efforts are inadequate severely constrains any incentives the states may have to control agricultural nonpoint source pollution. Indeed, Professor Houck has described these programs as "essentially ineffectual planning exercises."[291] This general deficiency in the CWA's programs for controlling nonpoint source pollution may be offset by a recent resurrection of a long-neglected program referred to as section 303(d)'s TMDL program.

Like the section 309 program, the TMDL program requires states to identify waterbodies that are currently failing to meet water quality standards. The requirement in section 303(d) is not limited to waters where attainment of the standards is due solely to nonpoint source pollution.[292] For these impaired waters, states must "establish . . . the

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exceptions for agriculture. Where state laws exist, they often defer to incentives, cost-sharing, and voluntary programs.").

288. The Bush Administration's proposed budget includes $20 million for "pilot projects" in a new "watershed initiative." *See* BUDGET OF THE UNITED STATES, FISCAL YEAR 2003, at 308, *available at* http://www.whitehouse.gov/omb/budget/fy2003/budget.html (last visited Mar. 13, 2002). Overall, the EPA's discretionary budget will, under the Bush proposal, be decreased by $300 million. *See id.* at 401, Table S-7.

289. Davidson, *supra* note 267, at 44.

290. *Id.* at 43.

291. HOUCK, TMDL PROGRAM, *supra* note 16, at 135-36.

292. 33 U.S.C. §1313(d)(1)(A) (2001) provides:

> Each State shall identify those waters within its boundaries for which the [point source] effluent limitations required by [the NPDES program] are not stringent enough to implement any water quality standard applicable to such waters. The State shall establish a priority ranking for such waters, taking into account the severity of the pollution and the uses to be made of such waters.

*Id.* Strictly speaking, the § 1313(d) requirements are not limited to impaired waters. Section 1313(d)(3) provides:

total maximum daily load, for those pollutants [identified by EPA] as suitable for such calculation."[293] The total maximum daily loads (TMDLs) are to be "established at a level necessary to implement the applicable water quality standards with seasonal variations."[294] Recognizing that linkages between discharges and ambient water quality are subject to large measures of uncertainty, Congress directed that TMDLs include "a margin of safety which takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality."[295] Although the statute does not clearly require it, the EPA concluded that a TMDL must "allocate[] . . . pollutant loads among sources, and provide[] the basis for attaining or maintaining water quality standards."[296]

The statute requires that lists of impaired waterbodies and TMDLs be submitted to the EPA, but the statute is fairly casual about setting a timetable for such submissions.[297] The "first such submission" are to be made within six months of the EPA action identifying the pollutants for which TMDLs are appropriate.[298] This EPA action was to take place no later than October 18, 1973.[299] After the "first such submission"—the content of which is not specified—the statute requires states to submit lists and TMDLs "from time to time."[300]

Should EPA disapprove either the lists or the corresponding TMDLs, the statute requires the agency to correct the deficiencies

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> For the specific purpose of developing information, each State shall identify all waters within its boundaries which it has not identified [as being impaired under § 1313(d)(1)(A)] and estimate for such waters the total maximum daily load . . . at a level that would assure protection and propagation of a balanced indigenous population of fish, shellfish and wildlife.

*Id.* § 1313(d)(3). These "informational TMDLs" are not, however, required to be submitted to the EPA and the EPA, has no express authority to approve or disapprove of them. *See Pronsolino v. Marcus*, 91 F. Supp. 2d 1337, 1344 (N.D. Cal. 2000).

293. 33 U.S.C. § 1313(d)(1)(C).

294. *Id.*

295. *Id.* On the "margin of safety" requirement's ability to bridge gaps in knowledge, particularly for nonpoint source pollution. *See* Adler, *supra* note 2, at 272-73.

296. *TMDL Rule*, *supra* note 16, at 43588.

297. 33 U.S.C. § 1313(d)(2).

298. *Id.*

299. *Id.* § 1314(a)(2).

300. *Id.* § 1313(d)(2).

with its own lists and/or TMDLs.[301] Curiously, however, the statute remains silent concerning EPA's duties in the event that a state simply submits nothing at all. Approved or EPA-promulgated TMDLs must be incorporated by each state into a "continuing planning process" that "will result in plans for all navigable waters within" the state.[302] The statute does not, however, clearly require that states actually implement TMDLs, nor does it provide a clear mechanism for doing so.[303]

For many years, the TMDL provisions were ignored, largely because EPA and states preferred to focus on controlling point sources, and perhaps, because they held a faint hope that resorting to the "safety net" of TMDLS to attain water quality standards would never be necessary.[304] Critical ambiguities or omissions in the statute and the EPA's lack of enthusiasm for the program contributed to this relative neglect.[305]

The EPA first proposed regulations identifying pollutants appropriate for TMDLs in 1973, but did not issue final rules until much later, in 1978.[306] Without the regulations in place, the states were under no obligation to submit the section 303(d) lists and

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301. *Id.*

302. *Id.* § 1313(e).

303. Section 303(e)(2) can plausibly be read to suggest that Congress meant to require TMDL implementation, but it does not state so in direct terms. That section requires EPA to review each state's continuous planning process and provides that EPA "shall not approve any State permit program under [the NPDES program] for any State which does not have an approved continuing planning process . . . ." 33 U.S.C. § 1313(e)(2). The same inference of congressional intent requiring TMDL implementation may be gleaned from section 303(d)(4), which provides that effluent limitations based on TMDLs may be revised only in certain, limited circumstances where attainment of water quality standards will not be compromised. *See* 33 U.S.C. § 1313(d)(4). In addition, as Professor Houck argued, EPA can demand that TMDL allocations to point sources be implemented through its authority under 33 U.S.C. § 1342(d) to review permit decisions by the states. HOUCK, TMDL PROGRAM, *supra* note 16, at 60. Nonetheless, Professor Houck notes that, "[o]nce [the lists of impaired waterbodies] and TMDLs are prepared, the language of § 303(d) ends." *Id.*

304. *See* Pronsolino v. Marcus, 91 F. Supp. 2d 1337, 1354-55 (N.D. Cal. 2000); HOUCK, TMDL PROGRAM, *supra* note 16, at 49.

305. *See* HOUCK, TMDL PROGRAM, *supra* note 16, at 49-51.

306. EPA proposed such regulations in 1973, Water Quality Criteria, 38 Fed. Reg. 29646 (Oct. 26, 1973), but final regulations were not promulgated until 1978, under compulsion of a court order. *See Total Maximum Daily Loads Under Clean Water Act*, 43 Fed. Reg. 42303 (Sept. 14, 1978) (citing Board of County Comm'rs of Calvert County v. Costle, No. 78-0572, slip op. (D.D.C. June 20, 1978)).

TMDLs.[307] When the rules were promulgated, the agency downplayed the significance of the program to a considerable extent. The EPA suggested that states satisfied their statutory obligation to make their "first" submission by simply identifying "one or more" impaired waterbodies and TMDLs.[308] The states took the cue and submitted only a few TMDLs, but many simply did not submit anything.[309] State inaction, EPA concluded, simply had to be tolerated. In EPA's view, the absence of express authority to act in response to a state's inaction meant that EPA could not use the threat of federal TMDLs to force state action. Thus, yielding "the anomalous conclusion that EPA intervention is called for in response to *inadequate* state performance, but not in response to *no* state performance."[310]

After a series of lawsuits culminating in court orders requiring EPA to promulgate TMDLs for states that failed to submit TMDLs or for states that submitted inadequate ones,[311] EPA began to take the initiative in fashioning a credible TMDL program. It completed rulemaking to revise the TMDL program in July, 2000.[312] Due to congressional action, the rules will not go into effect until April 30, 2003. There is, also, a strong possibility that the rules may be substantially revised in the interim period.[313]

EPA's rules address and resolve several critical issues. First, the rules make clear that states must include in their lists, and prepare TMDLs for, waterbodies that are impaired exclusively or in part by nonpoint source pollution.[314] As might be expected, agribusiness and

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307. *See* Envtl. Def. Fund v. Costle, 657 F.2d 275 (D.C. Cir. 1981); Homestake Mining Co. v. EPA, 477 F. Supp. 1279 (D. S.D. 1979); *see* Houck, TMDL PROGRAM, *supra* note 16, at 49-50.

308. *See* HOUCK, TMDL PROGRAM, *supra* note 16, at 51.

309. *Id.* at 51.

310. HOUCK, TMDL PROGRAM, *supra* note 16, at 66-67 n.32.

311. *See* HOUCK, TMDL PROGRAM, *supra* note 16, at 51-56. For a summary of TMDL litigation as of 2001, see MID-ATLANTIC ENVIRONMENTAL LAW CENTER, TOTAL MAXIMUM DAILY LOAD (TMDL) LITIGATION SUMMARY (June 2001), *available at* http://www.cwn.org/docs/programs/tmdl/policy/tmdlpolicy.htm#litigation.pdf (last visited Mar. 12, 2002).

312. *See TMDL Rule, supra* note 16, at 43586.

313. *See* Effective Date Revisions to the Water Quality Planning and Management Regulation, 66 Fed. Reg. 53,044 (Oct. 18, 2001).

314. *TDML Rule, supra* note 16, at 43,588, 43,606, 43,609-10.

forestry interests vehemently oppose this conclusion.[315] Second, the rules require that TMDLs include eleven specific elements, including: "wasteload allocations"; "load allocations"; "[a] margin of safety"; "[a]llowance for reasonably foreseeable increases in pollutant loads including future growth"; and, importantly, "[a]n implementation plan."[316] Third, states must submit TMDLS "as expeditiously as practicable" but no later than specified deadlines.[317]

The EPA's rules also provide that states must allocate the necessary reductions in pollutant loadings between "wasteload allocations" and "load allocations." The former pertains to reductions from point sources to be made through NPDES permits.[318] The latter includes "[t]he portion of a TMDL's pollutant load allocated to a nonpoint source, storm water source for which a [NPDES] permit is not required, atmospheric deposition, ground water, or background source of pollutants."[319] EPA made clear that in establishing TMDLs, states were free to make reduction trade-offs between nonpoint and point sources. For example, "A TMDL provides the opportunity to compare relative contributions of pollutants from all sources and consider technical and economic trade-offs between point and nonpoint sources."[320]

The rules plainly require the states to include plans demonstrating how TMDLS will be implemented.[321] For waste load allocations to

315. HOUCK, TMDL PROGRAM, *supra* note 16, at 61.

316. 40 C.F.R. § 130.2(h) (2001).

317. *Id.* § 130.28(b). The deadlines are: "no later than 10 years from July 10, 2000, if the waterbody and pollutant was listed . . . before that date"; or "10 years from the due date of the first subsequent list after July 10, 2000, on which the waterbody and pollutant is initially included." *Id.* Extensions of up to five years are available. *Id.* Lists of impaired waters must be submitted every four years, beginning in 2002. *Id.* § 130.30(a).

318. *Id.* § 130.2(g).

319. *Id.* § 130.2(f).

320. *Id.* § 130.32(a); *see also id.* § 130.2(g) ("For waterbodies impaired by both point and nonpoint sources, wasteload allocations may reflect anticipated or expected reductions of pollutants from other sources if those anticipated or expected reductions are supported by reasonable assurance that they will occur.").

321. 40 C.F.R. § 130.32(b)(11) & § 130.32(c). EPA also stated in the preamble:

> EPA believes that implementation of TMDLs is the most important aspect of today's rule. Without implementation, TMDLs are merely paper plans to attain water quality standards. The implementation plan requirement assures that the Nation's remaining water quality problems will actually be addressed by appropriate actions identified in the implementation plans submitted as part of the TMDLs.

point sources, the NPDES program reasonably assures implementation.[322] For load allocations to nonpoint sources, assurances that TMDLs will be actually implemented may be more difficult. The rule does not require that load allocations to nonpoint sources be based on enforceable state requirements; instead, states are merely required to provide "[a] description of specific regulatory *or voluntary actions*, including management measures or other controls, by Federal, State or local governments . . . that provide reasonable assurance . . . that load allocations will be implemented and achieve the assigned load reductions."[323] "Reasonable assurance," as to nonpoint sources, requires a showing that the measures on which a state proposes to rely are directed at the pollutant and waterbody of concern, will be implemented as expeditiously as practicable, are reliable and effectively delivered, and are adequately funded.[324] EPA indicated that reliance on existing programs may "provide the suite of control actions and management measures for States to rely on when meeting the reasonable assurance test."[325] As James Boyd noted, "state law will ultimately determine the effectiveness of the TMDL program's long-run implementation."[326]

One of the more prominent shortcomings of this approach is that the load allocations are not likely to be viewed as "effluent limitations" that can be directly enforced against sources under the CWA's citizen suit provision.[327] Accordingly, aside from the states

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*See TDML Rule*, *supra* note 16, at 43,625.

322. *See* Boyd, *supra* note 11, at 67. EPA could effectively oversee implementation of waste load allocations through its authority to review, object to, and revise, state-issued NPDES permits, see 33 U.S.C. § 402(d), or through its authority to withdraw approval of state NPDES programs. *See id.* § 402(c) (1994).

323. 40 C.F.R. § 130.32(c)(2)(ii) (emphasis added).

324. *Id.* § 130.2(p)(2).

325. *See TDML Rule*, *supra* note 16, at 43600.

326. Boyd, *supra* note 11, at 66.

327. *See* Or. Natural Desert Ass'n v. Dombeck, 172 F.3d 1092 (9th Cir. 1998); Or. Natural Res. Council v. United States Forest Serv., 834 F.2d 842 (9th Cir. 1987). In *Or. Natural Desert*, the court noted:

> Nonpoint source pollution is not regulated directly by the Act, but rather through federal grants for state wastewater treatment plans. Section 208 of the Act requires each such plan to contain procedures for the identification and control of nonpoint source pollution. 33 U.S.C. § 1288(b)(2). If the EPA approves a state's plan, it may make grants to the state to defray the costs of administering the plan, see 33 U.S.C. § 1288(f), or to construct facilities, see 33 U.S.C. § 1288(g). Thus, the Act provides no

themselves—which historically have not aggressively addressed nonpoint source pollution—effective implementation of TMDLs relying on nonpoint source controls will depend upon EPA's willingness to use its carrots and sticks to induce appropriate state action.

The rules also provide that EPA must promulgate a list of impaired waters and corresponding TMDLs if a state fails to submit lists and/or TMDLs or makes a submission that EPA disapproves.[328] The rules also require EPA, like the states, to provide "reasonable assurance" that its TMDLs will be implemented.[329] These assurances, however, take the form of using the EPA's funding and regulatory authority to induce states to implement the TMDLs. The agency, however, did not assert authority to enforce TMDL load allocations to nonpoint sources directly against those sources.[330] Indeed, EPA explicitly noted:

> The CWA preserves the rights of States to experiment with alternative regulatory (and non-regulatory) approaches to control nonpoint sources of pollution. The CWA does not provide specific legal authority for EPA to regulate nonpoint sources in a way that would assure the attainment of water quality standards. Such authority is reserved for the States.[331]

In another important phrasing, EPA made clear its view that affected citizens could not force the EPA or the states to implement load allocations to nonpoint sources through citizen suits. The agency stated that "[n]othing in this rule . . . creates in EPA[,] or the States[,] new legal authority beyond that provided by existing . . . law to

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> direct mechanism to control nonpoint source pollution but rather uses the "threat and promise" of federal grants to the states to accomplish this task .... Section 1329, added to the Act in 1987, requires states to adopt nonpoint source management programs and similarly provides for grants to encourage a reduction in nonpoint source pollution.

172 F.3d at 1096-97.

328. 40 C.F.R. § 130.30(b), 130.34(a)(1), 130.35.

329. *Id.* § 130.34(b).

330. *Id.* § 130.34(b) & (c) ("conditioning Clean Water Act grants to the fullest extent practicable" and "use ... of [EPA's] statutory or regulatory authorities and voluntary, incentive-based programs ... to supplement conditioning Clean Water Act grants").

331. *See TDML Rule*, *supra* note 16, at 43,650.

implement load allocations for nonpoint sources or creates for EPA [or] States . . . a mandatory duty to do so."[332]

Professor Houck noted that the re-emergence of the TMDL program is "forcing a showdown on the last water quality frontier, nonpoint source pollution."[333] Yet, a major controversy in the TMDL program is the extent to which the program may authorize or even require states to adopt controls on nonpoint sources and, if states fail to do so, whether EPA may step in and take appropriate action to cure state deficiencies.[334] EPA's rules suggest that EPA is ready and willing to take aggressive action to ensure that TMDLs are adopted and implemented. Yet, the extent of its legal authority to do so is severely constrained.

The first showdown on the TMDL program reached a mixed result. In *Pronsolino v. Marcus*, the court considered "whether listing and TMDLs are required for rivers and waters polluted only by logging and agricultural runoff and/or other nonpoint sources . . . ."[335] The court concluded that TMDLS must be promulgated for waters impaired by nonpoint source pollution, but also held that EPA has no authority to enforce load allocations on nonpoiont sources.

In *Pronsolino*, plaintiffs challenged TMDLs promulgated by the EPA for the Garcia River in northern California.[336] The Garcia River suffered from excessive sediment loading, almost exclusively from nonpoint sources, which degraded fish spawning habitat and caused a severe decline in Coho salmon and steelhead trout populations.[337] EPA's TMDL called for a sixty percent reduction in sediment loading and allocated cleanup responsibilities among nonpoint sources in the Garcia River watershed.[338] When the Pronsolinos applied for a permit

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332. *Id.* at 43,600-01. Citizen may bring suits against EPA only "where there is alleged a failure of [EPA] to perform any act or duty under [the CWA] which is not discretionary with [EPA]." 33 U.S.C. § 1365(a)(2) (2001). *See* Nat'l Wildlife Fed. v. Browner, 127 F.3d 1126 (D.C. Cir. 1997) (citizen suit allowable only to enforce "mandatory duties").

333. Oliver A. Houck, *TMDLs IV: The Final Frontier*, 29 Envtl. L. Rep. 10469, 10471 (Aug. 1999).

334. *See* HOUCK, TMDL PROGRAM, *supra* note 16, at 84; *Boyd*, *supra* note 11, at 48.

335. Pronsolino v. Marcus, 91 F. Supp. 2d 1337, 1340 (N.D. Cal. 2000).

336. EPA promulgated the TMDLs when the state of California failed to meet a deadline for submitting the TMDLs that EPA had established in response to litigation and a consent decree. *See id.* at 1340.

337. *Id.* at 1339.

338. *Id.* at 1340.

from the California Department of Forestry (CDF) to harvest timber on their property, the agency imposed a variety of restrictions to prevent soil erosion, which the agency determined were necessary to implement the EPA's TMDL. The CDF reluctantly applied the EPA's TMDLs, concluding that to ignore them risked a loss of federal funding.[339]

The court rejected the Pronsolinos' argument that the TMDL program did not apply to waters impaired solely by nonpoint source pollution. The court noted the requirement of section 303(e)(3)(c), which provides that TMDLs must be incorporated into a state's "continuing planning process,"[340] and concluded that TMDLs were intended to promote a "comprehensive approach" to state water quality management. The court noted that excluding waterbodies impaired by nonpoint sources from the TMDL program would frustrate that intention.[341] Similarly, the court concluded that the language of section 303(d)(1)(A) expressly excluded from the required list of impaired waterbodies only those that could be "redeem[ed] through the imposition of state-of-the-art technology on point sources . . . ."[342] In the court's view, "[t]o have excluded the large number of rivers and waters polluted solely by agricultural and logging runoff would have left a chasm in the otherwise 'comprehensive' statutory scheme."[343]

The court made clear, however, that the TMDL program's potential to control nonpoint source pollution depends largely on the states. Plaintiffs argued strenuously that EPA lacked authority to

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339. *Id.*

340. 33 U.S.C. § 1313(e)(3)(C) (2001).

341. *Pronsolino*, 91 F. Supp. 2d at 1347. (quoting Natural Res. Def. Council, Inc., v. Fox, 909 F. Supp. 153, 156 (S.D.N.Y. 1995)). The court noted that, "[i]f the TMDL . . . were to be used only to adjust NPDES effluent limitations for point sources, then plaintiffs' argument might have force," but concluded that a broader use for TMDLs was contemplated by requiring their inclusion in the continuing planning process. *Id.* at 1346.

342. *Id.* at 1347.

343. *Id.* The court also relied on dicta in other cases indicating that TMDLs were to be fashioned for waters plagued by nonpoint source pollution, or that nonpoint sources were subject to regulation by the states under the comprehensive planning provisions of the CWA. *See id.* at 1347-49 (citing Trs. for Ala. v. EPA, 749 F.2d 549 (9th Cir. 1984); Or. Natural Res. Council v. United States Forest Serv., 834 F.2d 842 (9th Cir. 1987); Ala. Ctr. for the Env't v. Browner, 20 F.3d 981 (9th Cir. 1994); Dioxin/Organochlorine Ctr. v. Clarke, 57 F.3d 1517 (9th Cir. 1995)).

promulgate TMDLs because to do so was tantamount to authorizing EPA to "regulate state land-use practices"[344]—a function not expressly authorized in the CWA and one that has traditionally been exercised by state and local governments. The court agreed that EPA lacked authority to regulate nonpoint sources directly by imposing BMPs or other land use restrictions or indirectly by overriding state choices about the extent to which nonpoint sources are to be controlled.[345] The court concluded, however, that the EPA's TMDLs did not themselves impose such controls nor dictate a course that the state inevitably must follow. While the state must incorporate an EPA-promulgated TMDL into its planning processes,[346] "[n]othing . . . requires that the TMDL be uncritically and mechanically passed through to every relevant parcel of land . . . . California is also free to moderate or to modify the TMDL reductions, or even refuse to implement them, in light of countervailing state interests."[347]

EPA may properly threaten to withhold grant money to induce a state to enforce TMDL load allocations, but the states are "free to run the risk" and ignore these allocations.[348] Moreover, if a state does "knuckle under to coercive threats by EPA" and implement the load allocations, the result is not "direct federal regulation. The regulation is by [the state]—though influenced by incentives established by Congress and the agency charged with protecting the environment."[349]

In short, while EPA may promulgate TMDLs for waters that suffer from nonpoint source pollution, and may allocate cleanup responsibilities to nonpoint sources, that action has no direct regulatory effect and cannot be enforced. A state may choose to adopt the allocations and enforce them under state law, but EPA cannot

344. *Pronsolino*, 91 F. Supp. 2d at 1355.

345. *Id.*

346. *See* 33 U.S.C. § 1313(d)(2). Even this conclusion is shaky since nothing in the statute authorizes EPA to revise state plans. If a state simply refused to incorporate an EPA-promulgated TMDL into its continuing planning process, EPA could take a number of actions, such as withdrawing federal funding to state programs or de-certifying an approved state section 402 permit program, see 33 U.S.C. § 1313(e)(2), but EPA is not authorized to promulgate a federal plan to cure deficiencies in the state's plan.

347. *Pronsolino*, 91 F. Supp. 2d at 1355.

348. *Id.*

349. *Id.*

compel that result, nor may it enforce the allocations once they have been made by a state. *Pronsolino* confirms Professor Houck's view that, "at bottom, the courts can only go so far. Indeed, under section 303(d), EPA can only go so far. At some point, through leverage, funding and hard negotiation, the states are going to have to buy into the program."[350] To a considerable extent, then, the TMDL program—as a regulatory program for controlling nonpoint sources—like section 208 and section 319—"leads, ultimately, to a state prerogative."[351]

There are, however, considerable means available to EPA to induce effective state control of nonpoint sources through the TMDL program. Aside from withholding funding, as suggested in *Pronsolino*, the agency may be able to use its regulatory authority to "coerce" states into action. First, EPA may withdraw approval of state authority to administer the NPDES program.[352] Second, EPA may designate certain sources that are currently unregulated under the NPDES as "point sources," subjecting them to the NPDES regime. These sources may include unregulated AFOs, aquatic animal production facilities, and silvicultural operations.[353] As EPA explained in its TMDL rule:

> EPA could invoke this authority when necessary to provide reasonable assurance that an EPA approved or established TMDL would be implemented with respect to the particular source to be designated. Moreover, EPA . . . could invoke this authority when necessary to provide reasonable assurance that

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350. HOUCK, TMDL PROGRAM, *supra* note 16, at 64.

351. *Id.* at 60.

352. *See* 33 U.S.C. § 1342(c)(3) (1994) (authorizing withdrawal of state programs "[w]henever [EPA] determines . . . that a State is not administering a program approved under this section in accordance with the requirements of this section").

353. *See TDML Rule*, *supra* note 16, at 43646. AFOs and aquatic animal production facilities (AAPFs) are regarded as point sources only if they are considered "concentrated." AFOs and AAPFs are deemed concentrated when they meet certain threshold requirements or when so designated ona case-by-case basis. *See* 40 C.F.R. §§ 122.23(c), 122.24(c) (2001). The potentially affected silviculture operations relate to storm water discharges that are currently treated as "nonpoint" sources, but "may physically resemble point source discharges." *TDML Rule*, *supra* note 16, at 43650. EPA decided not to take action on silviculture operations. *See id.* at 43652.

> the designated source would achieve its allocated load reductions under the TMDL.[354]

In other words, if particular "nonpoint" sources are allocated load reductions in a TMDL, EPA could redesignate such sources as point sources and enforce the load allocation through the NPDES program.[355]

Moreover, EPA could, under its antidegradation rules, condition NPDES permits to new or expanding point sources on those sources obtaining "offsets"—reductions from existing sources (both point and nonpoint)—to ensure that existing levels of water quality are not further degraded or to provide for reasonable progress toward attaining water quality standards.[356] This would essentially follow the nonattainment program for "new" major sources under the Clean Air Act.[357] EPA proposed such changes to its NPDES rules,[358] but declined to finalize this proposal, concluding that an offset requirement would be difficult to apply in the CWA context and that the environmental benefits of such a requirement would likely be minimal.[359]

Finally, EPA may also assert its authority to review state-issued permits for consistency with EPA-approved TMDLs, or to ensure water-quality-based effluent limitations are imposed when there is not an approved TMDL in place.[360]

The extent to which these authorities will be exercised is, of course, an open question. By comparison, statutes that provide EPA

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354. *Id.*

355. *Cf.* Ruhl, *supra* note 5, at 303 (noting that EPA has suggested that "states simply declare, presumably as a matter of state law, that offending nonpoint sources are actually point sources and require state-issued NPDES permits and full TMDL compliance") (citing Office of Water, E.P.A., *Ensuring That TMDLs Are Implemented—Reasonable Assurance, available at* http://www.epa.gov/OWOW/tmdl/ensure.html (last visited Mar. 16, 2002).

356. *See* Revisions to the National Pollutant Discharge Elimination System Program and Federal Antidegradation Policy in Support of Revisions to the Water Quality Planning and Management Regulation, 64 Fed. Reg. 46058 (Aug. 23, 1999) (to be codified at 40 D.F.R. pts. 122, 123, 124 and 131) (proposing offset requirement for new and expanded sources).

357. *See* 42 U.S.C. § 7503(a)(1)(A) (2001). For suggestions of using a similar program in the CWA, see Adler, *Watershed Protection, supra* note 132, at 281-84.

358. *See supra* note 356.

359. *TDML Rule, supra* note 16, at 43640-41.

360. *See* 40 C.F.R. § 123.44(k) (2001); *see also TDML Rule, supra* note 16, at 43644-46, 43652-53.

with similar tools to induce state action, such as the Coastal Zone Act Reauthorization Amendments' nonpoint source control program, discussed *infra*, and the Clean Air Act,[361] do not show promising results. Moreover, the coercive tactics that the EPA can use against reluctant states are all discretionary sanctions. As a result, citizens cannot compel EPA to apply such sanctions through citizen suit litigation.[362]

But even assuming EPA can successfully "encourage" the states to implement TMDLs, the program suffers from a fatal flaw: there is no explicit performance standard by which to assess state TMDL programs. To be sure, section 303(e) contemplates an iterative, continuous planning process, under which TMDLs may be re-evaluated and fine-tuned to account for shortcomings as the plans are implemented and water quality improvements are assessed. Yet, the states are not subject to clear deadlines or clear consequences if TMDL implementation does not yield the desired outcomes.

Given the vast uncertainties in linking specific pollutant loadings to actual water quality impacts, the opportunities for "gaming" the system through inadequate TMDLs are very large.[363] But when the effects of this gaming become clear and water quality improvements do not materialize, all the states are required to do, and all EPA can demand for them to do, is to "try, try again." There are simply no meaningful incentives for states, when developing and implementing TMDL plans, to err on the side of caution. Indeed, to the extent that imposing enforceable control measures on farms is politically difficult, the incentives run in precisely the opposite direction.

This overview of CWA programs confirms the view that, taken in its entirety, the CWA—the nation's primary legislative vehicle for cleaning up our waters—lacks any mandates against agricultural nonpoint source pollution that are directly enforceable either by

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361. *See* Williams, *supra* note 49, at 83-96.

362. Citizen suits against EPA under the CWA are limited to those seeking to compel EPA "to perform any act or duty . . . which is not discretionary . . . ." 33 U.S.C. § 1365(a)(2) (2001); *see also* Nat'l Wildlife Fed'n v. Browner, 127 F.3d 1126 (D.C. Cir. 1997).

363. For an example of the extraordinary "flexibility" that the EPA is granting to the states in fashioning TMDLs, see Natural Res. Def. Council v. Muszynski, 268 F.3d 91 (2d Cir. 2001) (upholding EPA's approval of New York's TMDLs which were expressed in terms of maximum annual loads of pollutants).

federal authorities or affected citizens. Despite several amendments and the renaissance of provisions once thought to be merely hortatory, Congress has failed to adequately confront agricultural nonpoint source pollution, continuing a longstanding solicitude to this industry. The TMDL program presents some opportunities to close this regulatory loophole, but it is hardly a direct approach, and there are significant barriers to its successful implementation.

### *B. Other Federal Programs to Control Nonpoint Source Pollution*

In addition to the CWA, several other federal programs are aimed, directly and indirectly, at nonpoint source pollution. However, none of these programs directly regulate agricultural practices that contribute to nonpoint source pollution. Instead, these programs rely on "green payments" or the threat of withholding federal benefits to alter behavior that contributes to nonpoint source pollution. In this section, I briefly discuss the Coastal Zone Management Act and several programs administered by USDA to provide examples of alternative ways to control nonpoint source pollution.

#### 1. The Coastal Zone Management Act.

The Coastal Zone Management Act (CZMA)[364] bears a close resemblance to the CWA planning programs discussed above, particularly the section 319 nonpoint source program, with some important exceptions. Much like section 319, the CZMA seeks to enlist the states' help in creating coastal zone management programs. This is done by offering two basic incentives: federal financial assistance for approved management plans[365] and a federal "consistency" requirement.[366] Coastal zone management programs

364. 16 U.S.C. §§ 1451-1465 (2001).

365. *Id.* § 1455(a)-(c). In addition, states with approved coastal zone management plans are eligible for federal technical assistance. *See id.* § 1455a(f).

366. *Id.* § 1456(C). Under the federal consistency requirement, subject to some important exceptions, no "[f]ederal license or permit to conduct an activity, in or outside of the coastal zone, affecting any land or water use or natural resource of the coastal zone" of a state with an approved management plan may be issued if a state concludes that the action authorized by a federal agency is inconsistent with the "enforceable policies" of the state's approved plan. *Id.* § 1456(c)(1)(3)(A). A similar consistency requirement applies to "any plan for the exploration

must include a number of required elements, but in general the program must be a "comprehensive statement . . . setting forth the objectives, policies, and standards to guide public and private uses of lands and waters in the coastal zone."[367] The management programs are voluntary; states may freely choose not to participate in the program. The CZMA is administered by the National Oceanic and Atmospheric Agency (NOAA).[368]

In 1990, with enactment of the Coastal Zone Act Reauthorization Amendments (CZARA), Congress created a new program (section 6217 program) "to develop and implement management measures for nonpoint source pollution to restore and protect coastal waters."[369] The section 6217 program requires all states with approved coastal zone management plans to submit to NOAA and EPA a Coastal Nonpoint Pollution Control Program (CNPCP).[370] The CNPCP must identify, and provide a "continuing process for identifying, land uses which, individually or cumulatively, may cause or contribute to a degradation of" coastal waters that either are failing to attain state water quality standards or are "threatened by reasonably foreseeable increases in pollution loadings from new or expanding sources."[371] In addition, the CNPCP must provide for implementation of management measures conforming to guidelines issued jointly by the EPA and NOAA.[372] States were to submit their programs to NOAA

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or development of, or production from, any area which has been leased under the Outer Continental Shelf Lands Act (43 U.S.C. 1331 et seq.) . . . with respect to any exploration, development, or production described in such plan and affecting any land or water use or natural resource of the coastal zone" of a state. *Id.* § 1456(c)(3)(B); *see also* Exxon Corp. v. Fischer, 807 F.2d 842, 844 (9th Cir. 1987). A weaker consistency requirement applies to other "[f]ederal agency activity" and "[f]ederal agency which shall undertake any development project." These federal actions must be taken in ways that are "consistent to the maximum extent practicable with the enforceable policies of approved State management programs." *Id.* §§ 1456(c)(1)-(2). The term "enforceable policy" is defined as "[s]tate policies which are legally binding through constitutional provisions, laws, regulations, land use plans, ordinances, or judicial or administrative decisions, by which a [s]tate exerts control over private and public land and water uses and natural resources in the coastal zone." *Id.* § 1453(6a). The term "coastal zone" is defined at 16 U.S.C. § 1453(1).

367. 16 U.S.C. § 1453(12).

368. *See* http://www.ocrm.nos.noaa.gov/czm/ (last visited Mar. 16, 2002).

369. 16 U.S.C. § 1455b(a)(1).

370. *Id.*

371. *Id.* § 1455b(b)(1).

372. *Id.* § 1455b(b). Requirements governing the guidance are set forth at § 1455b(g).

and EPA no later than thirty months after the EPA promulgates the management measures guidance.[373] Because these programs are mandatory only for states who have approved coastal zone management programs, any state may opt out of the requirements of the section 6217 program simply by withdrawing from participation in a cost-sharing coastal zone management program

Each state's CNPCP is to be implemented through changes to the state's CWA section 319 plan and coastal zone management program.[374] Unlike section 319, CZARA mandates that each state's coastal zone management program "contain[ ] enforceable policies and mechanisms to implement the applicable requirements of" the state's CNPCP.[375] If a state fails to submit an approvable program, NOAA and EPA are directed to withhold funding to the state under the CZMA and section 319 of the CWA.[376] As in section 319, no provision is made for federal management programs in those states that elect not to participate. Citizen suits are also not available to enforce state-adopted management measures or to force EPA or NOAA to perform nondiscretionary duties.

EPA issued guidance on management measures in 1993.[377] The guidance included management measures for agriculture, forestry, urban areas, marinas and recreational boating, hydromodification, and wetlands and riparian areas.[378] The agricultural portion of the guidance included measures for erosion and sediment control, wastewater and runoff from AFOs, nutrients, pesticides, grazing, and

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"Management measures" are defined as

> economically achievable measures for the control of the addition of pollutants from existing and new categories of nonpoint sources of pollution, which reflect the greatest degree of pollutant reduction achievable through the application of the best available nonpoint pollution control practices, technologies, processes, operating methods, or other alternatives.

*Id.* § 1455b(g)(5).

373. *Id.* § 1455b(a)(1).

374. *Id.* §1455b(c)(2).

375. *Id.* § 1455(d)(16).

376. *Id.* § 1455b(c)(3).

377. EPA, *Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters* (1993), *available at* http://www.epa.gov/owow/nps/MMGI/ (last visited May 29, 2002).

378. *Id.*

irrigation.[379] These agencies also issued program guidance the same year.[380]

Despite some high hopes from various quarters, the section 6217 program failed to live up to its potential. The states resisted the section 6217 program with a vengeance.[381] As Professor Houck explained:

> Whatever else went wrong, EPA and NOAA ran into more than they could handle from the coastal states and their nonpoint source constituencies.... As the state pressure mounted, the federal agencies issued program clarification in 1995. Entitled *Flexibility for Sate Coastal Nonpoint Programs*, it extended the time frames for state submission, presented a "range of enforceable policies and mechanisms that could be used by states to implement their programs," and announced [a] policy of conditional approvals ....[382]

In its final program guidance, and notwithstanding the statutory requirement that management measures be "enforceable," the agencies concluded that states may rely on "voluntary or incentive-based programs, backed by existing state enforcement authorities," if the states satisfied certain minimal conditions.[383] To date, only eight

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379. *Id.*

380. Coastal Nonpoint Pollution State Program Guidance Documents, 58 Fed. Reg. 5182 (Jan. 19, 1993).

381. *See* Andrew Solomon, *Section 6217 of the Coastal Zone Act Reauthorization Amendments of 1990: Is There any Point?*, 31 ENVTL. L. 151, 162 (2001).

382. HOUCK, TMDL PROGRAM, *supra* note 16, at 102 (quoting Availability of Proposed Administrative Changes to Coastal Nonpoint Pollution Programs Guidance, 63 Fed. Reg. 12078 (Mar. 12, 1998)).

383. Final Administrative Changes to the Coastal Nonpoint Pollution Control Program Guidance, at 4 (1998), *available at* http://www.ocrm.nos.noaa.gov/czm/6217/ (last visited May 29, 2002). The conditions require the states to provide:

> 1. a legal opinion from the attorney general or an attorney representing the agency with jurisdiction for enforcement that such authorities can be used to prevent nonpoint pollution and require management measures implementation, as necessary;
>
> 2. a description of the voluntary or incentive-based programs, including the methods for tracking and evaluating those programs, the states will use to encourage implementation of the management measures; and
>
> 3. a description of the mechanism or process that links the implementing agency with the enforcement agency and a commitment to use the existing enforcement authorities where necessary.

of the twenty-nine coastal states maintain fully approved programs, even under the weaker requirements of the agencies' final guidance.[384] Yet, states continue to receive funding for CZMA or CWA section 319 programs despite the states' failures to submit approvable plans. The lesson here is that, "[w]hen push comes to shove, the federal environmental agencies will not be able to hold their own without the offsetting influence of direct citizen involvement and at least the possibility of litigation."[385]

2. USDA Programs

For many years, the federal government's agricultural policy was to shore up agricultural commodity prices to ensure a productive national agricultural base. The government provided direct payments, in the form of crop subsidies and land retirement programs, with these basic policy priorities in mind. With the passage of the 1985 Farm Bill, however, the traditional emphasis on supporting commodity prices shifted in recognition that many practices encouraged by these policies contributed to significant environmental degradation.[386] The 1985 Farm Bill and subsequent legislation created several new programs to promote more environmentally-friendly agricultural practices.[387]

The programs fall into four basic categories: (1) compliance requirements, which condition a farmer's continuing eligibility for traditional agricultural subsidies on the implementation of

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*Id.*

384. *See id.*

385. HOUCK, TMDL PROGRAM, *supra* note 16, at 104.

386. *See* Malone, *supra* note 27, at 9-12. Professor Malone attributes the shift in policy emphasis to four factors:

> the first opportunity since 1981 for a comprehensive revamping of agricultural policy; the spiraling cost of government subsidy programs aimed at the reduction of farm output; the growing recognition of the environmental destruction inflicted by past agricultural policies; and, perhaps most important, the recognition by urban and suburban interests, as well as by environmental groups, of their stake in the Farm Bill debate.

*Id.* at 11.

387. *See* Michael R. Taylor, *The Emerging Merger of Agricultural Land and Environmental Policy: Building a Vision for the Future of American Agriculture*, 20 VA. ENVTL. L.J. 169, 179-81 (2001).

conservation plans and practices or the avoidance of land use changes that contribute to environmental degradation; (2) technical assistance and education programs; (3) cost-sharing programs for implementing practice and structural changes that protect environmental values; and (4) contract and easement programs to retire environmentally sensitive land from agricultural production.[388] While these programs aim to alleviate a variety of environmental problems, all may address practices that contribute to nonpoint source water pollution.

a. Compliance Programs: Sodbuster, Conservation Compliance, and Swampbuster

Three programs, administered by USDA agencies, restrain practices that contribute to water quality degradation and other environmental problems. To do so, the programs condition eligibility for traditional USDA farm subsidies on a farmer's observance of certain conservation measures. The first two programs, "Sodbuster" and the conservation compliance program, discourage agricultural production on highly erodible lands. The third program, "Swampbuster," provides incentives to farmers to refrain from converting wetlands to agricultural production. In general, these programs rest on the principle that farmers who receive federal subsidies should be required to observe practices that reduce the adverse environmental effects of their activities, including water quality degradation.[389] A brief outline shows a limited ability for these programs to induce lasting changes in agricultural practices that contribute to nonpoint source pollution.

Under the Sodbuster program, the government pronounces as ineligible for USDA benefits any farmer who produces agricultural commodities on highly erodible land that was not in agricultural production, or set aside from production under a USDA program, between 1981 and 1985, unless the farmer implements a conservation

388. *See* U.S.D.A., ECONOMIC RESEARCH SERVICE, AGRICULTURAL RESOURCES AND ENVIRONMENTAL INDICATORS, 1996-7, at 255 (1977).

389. Congressional Research Service, Conservation Compliance for Agriculture: Status and Policy Issues, Report No. 96-648 ENR (Apr. 10. 1998), *available at* http://www.cnie.org/NLE/CRSreports/Agriculture/ag-45.cfm (last visited Apr. 22, 2002) [hereinafter *Conservation Compliance*].

plan.[390] For highly erodible land that was in agricultural production between 1981 and 1985, or that was set aside under a USDA program, the conservation compliance program also denies benefits unless the farmer implements a conservation plan.[391] There is a subtle difference between the treatment of Sodbuster farmers and conservation compliance farmers. Conservation plans for farmers subject to Sodbuster tend to be more stringent than those developed under the conservation compliance program. The reason for this difference in treatment rests primarily on the different economic positions of affected farmers:

> persons who break out [highly erodible] lands are in a different position with regard to the economic consequences of implementing the conservation requirements than are those who have been using their land for commodity production, since crop bases or commodity price support eligibility are not yet established for the broken-out fields. Requiring the conservation systems on these lands to be more stringent than those applicable to existing cropland fields does not unfairly or unreasonably impose an economic hardship on producers who want to bring new land into production.[392]

Conservation plans are subject to approval by local conservation officers. The relative lack of determinate criteria[393] governing these

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390. *See* 16 U.S.C. §§ 3811-12 (2001); *see also* Malone, *supra* note 27, at 13-14.

391. Malone, *supra* note 27, at 13-14.

392. Malone, *supra* note 27, at 17 (quoting Highly Erodible Land and Wetland Conservation: Correction, 53 Fed. Reg. 3998-3999 (1988)). In addition, farmers subject to the conservation compliance program were given a longer, phase-in period in which to fully implement their conservation plans. *See id.* at 18.

393. USDA regulations define a "conservation plan" as

> "the document that ... [a]pplies to highly erodible cropland; ....[d]escribes the conservation system applicable to the highly erodible cropland and describes the decisions of the person with respect to location, land use, tillage systems, and conservation treatment measures and schedules; and [i]s approved by the local soil conservation district in consultation with the [designated] local committees ...."

7 C.F.R. § 12.2 (2001). The USDA regulations define a "conservation system" as

> a combination of one or more conservation measures or management practices that are ... [b]ased on local resource conditions, available conservation technology, and the standards and guidelines contained in the NRCS field office technical guides ... and ... [d]esigned ... to achieve, in a cost-effective and technically practicable manner, a

approvals allows local conservation officers to exercise considerable discretion about the contents and practice requirements to which a framer must conform. As Professor Malone observed, this discretion allows agency representatives "to succumb to pressure from farmers to weaken conservation requirements."[394]

Further, significant concerns arise concerning under-enforcement of the conservation compliance program. "Cultural issues" may contribute to this problem, as the USDA agencies charged with enforcing the programs traditionally view their job as assisting farmers, not as "regulating" their activities.[395] As of 1996, 3,875 farmers neglected to comply with the conservation compliance and Sodbuster programs, resulting in a loss of benefits of $15.5 million.[396] Compared to the billions of dollars in USDA benefits disbursed in the same period,[397] this sum appears rather paltry.

In addition, these statistics fail to reflect changes made in these programs by the Federal Agricultural Improvement and Reform Act of 1996 (FAIR), which introduced a considerable amount of "flexibility" into these programs. Some examples of this flexibility include: allowing violators up to one year to meet compliance requirements before benefits are withheld; expediting "variances" for weather, pest, or disease problems; permitting farmers to "self-certify" compliance when applying for benefits; allowing farmers to modify their conservation plans; allowing county committees to grant relief to farmers suffering "undue economic hardship"; and deleting crop insurance from the list of program benefits that can be denied.[398]

The Swampbuster program is similar to the Sodbuster program,

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substantial reduction in soil erosion or a substantial improvement in soil conditions on a field or group of fields containing highly erodible cropland when compared to the level of erosion or soil conditions that existed before the application of the conservation measures and management practices.

*Id.*

394. Malone, *supra* note 27, at 18.

395. *See Conservation Compliance*, *supra* note 389; *see also* General Accounting Office, *Soil and Wetlands Conservation: Soil Conservation Service Making Good Progress but Cultural Issues Need Attention*, *available at* http://frwebgate.access.gpo.gov/cgi-bin/useftp.cgi?IPaddress=162.140.64.21&filename=rc94241.txt&directory=/diskb/wais/data/gao (last visited Sept. 6, 2002) [hereinafter *Soil and Wetlands Conservation*].

396. *Conservation Compliance*, *supra* note 389.

397. *Id.*

398. *Id.*

but specifically targets conversions of wetlands to agricultural production. In the 1985 Farm Bill, Swampbuster denied USDA benefits to "any person who in any crop year produces an agricultural commodity on converted wetland."[399] Ineligibility for such benefits was limited to the crop year in which converted wetlands yielded agricultural commodities.[400] In 1990, Congress concluded that this limited basis for denying USDA benefits did not adequately discourage inappropriate agricultural uses of valuable wetlands.[401] Accordingly, Congress extended ineligibility to "any person who in any crop year beginning after [November 28, 1990], converts a wetland by draining, dredging, filling, leveling, or any other means for the purpose, or to have the effect, of making the production of an agricultural commodity possible on such converted wetland."[402] Further, Congress extended the period of ineligibility for persons engaging in such activities to include "all subsequent crop years."[403]

FAIR introduced a number of measures designed to introduce greater flexibility into the Swampbuster programs. Farmers who converted wetlands for agricultural production are no longer classified as automatically ineligible for USDA program benefits. Instead, FAIR created a provision for graduated sanctions and good faith exceptions. Upon a finding that a farmer engaged in practices that render the farmer ineligible for benefits, the graduated sanctions approach permits the USDA to reduce benefits in "an amount

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399. Food Security Act of 1985, Pub. L. No. 99-198, Title XII, Subtitle C, § 1221, 99 Stat. 1507.

400. *Id.*

401. S. REP. NO. 101-357, at 236 (1990), The legislative history of the 1990 amendments identified the deficiencies of the 1985 Act:

> [Under the 1985 Act ] a person may drain a wetland and not be in violation of swampbuster until the person produces an agricultural commodity on that land. Therefore, a person can produce on the converted wetland during a time of high commodity prices and stay out of the production adjustment programs. During a year of low commodity prices, the person can simply not produce on the converted wetland and regain eligibility for farm program benefits. The functional value of the wetland, however, is lost as long as it is converted.

*Id., reprinted in* 1990 U.S.C.C.A.N. 4656, 4890.

402. Food, Agriculture, Conservation, and Trade Act of 1990, Pub. L. No. 101-624, Title XIV, Subtitle B, § 1421(b), 104 Stat. 3572.

403. *Id.*

determined . . . to be proportionate to the severity of the violation."[404] The good faith exemption waives ineligibility if "the person acted in good faith and without intent to violate" the conditions governing eligibility and agrees to implement a mitigation plan.[405] FAIR also enabled ineligible farmers to regain eligibility for program benefits by implementing approved mitigation projects.[406] Because these avenues of escape from program ineligibility lie largely within the discretion of USDA agencies, they will most likely be interpreted to favor farmers. As noted above with the Sodbuster program, these agencies traditionally act with reluctance as "regulators" towards their constituent farmers.[407]

The methods used by compliance programs, such as Sodbuster and Swampbuster present serious drawbacks in addition to those previously identified. First, if the cost of compliance is high, the threat of losing some USDA benefits may not provide sufficient incentives to induce compliance. Consequently, farmers may opt out of the USDA farm program as conservation measures become stricter or more costly.[408] Second, as commodity price supports are phased out in upcoming years, the incentives for conservation practices will

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404. 16 U.S.C. § 3821(a)(2) (2001). Additionally, the 1996 amendments permit the Secretary of Agriculture to determine which, if any, of the various benefits may be withheld in response to restricted activities. *See* 16 U.S.C. § 3821(b). Prior to the 1996 amendments, graduated sanctions based on the severity of the violation were available only if the violation was found to have been committed inadvertently by a person acting in good faith and only if that person was actively restoring the wetland functions and values that were lost as a result of the violation. *See* Act of Nov. 28, 1990, P.L. 101-624, Title XIV, Subtitle B, § 1422, 104 Stat. 3573.

405. 7 C.F.R. § 12.5(b)(5)(i) (2001).

406. *Id.* § 12.5(b)(4); *see also* 16 U.S.C. § 3822(i):

> Any person who is determined to be ineligible for program benefits . . . for any crop year shall not be ineligible for such program benefits . . . for any subsequent crop year if, prior to the beginning of such subsequent crop year, the person has fully restored the characteristics of the converted wetland to its prior wetland state or has otherwise adequately mitigated for the loss of wetland values . . . .

407. *Soil and Wetland Conservation, supra* note 396, at 7 (noting underreporting of violations to avoid citing farmers for violations.).

408. *See* J. Walker et al., *The Efficiency and Effectiveness of Conservation Compliance under 1996 Farm Commodity Policy Reforms*, 55 J. SOIL & WATER CONSERVATION 447 (2000).

simply erode.[409] Finally, controlling erosion and wetland conversions is only a small part of the totality of agricultural practices that contribute to nonpoint source pollution. Moreover, many of the most damaging practices—such as animal waste management—take place on farms that do not participate in USDA benefit programs; "[t]he programs have no hold over landholders who do not grow program crops or are prepared to forego program benefits."[410] Thus, even if these compliance programs worked effectively—and there is considerable evidence that they do not[411]—they would be much less than what is needed to make an effective response to agricultural nonpoint source pollution.[412]

b. Land Retirement and Cost-Sharing Programs

In addition to Swampbuster and Sodbuster, USDA administers a variety of programs that offer technical and financial assistance to farmers. Many of these address practices that contribute to nonpoint source pollution. The three major programs are the Wetland Reserve Program, the Conservation Reserve Program, and the Environmental Quality Incentives Program. These programs fall under an umbrella statutory program enacted in 1990 and reauthorized by the 1996 Farm Bill entitled, the Environmental Conservation Acreage Program (ECARP).[413]

Congress instructed USDA to establish and maintain ECARP for calendar years 1996 through 2002. A significant split of opinion exists within Congress regarding reauthorization of these plans both on the need for change and the appropriate level of funding for existing programs.[414] The general ECARP program authorizes USDA

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409. *See* Bradley C. Karkkainen, *Biodiversity and Land*, 83 CORNELL L. REV. 1, 67-68 (1997); CLAASSEN ET AL., AGRI-ENVIRONMENTAL POLICY AT THE CROSSROADS: GUIDEPOSTS ON A CHANGING LANDSCAPE, U.S.D.A. Agricultural Economic Rep. No. 794, at 12 (2001), *available at* http://www.ers.usda.gov/publications/aer794/ (last visited Jan. 21, 2002).

410. David Farrier, *Conserving Biodiversity on Private Land: Incentives for Management or Compensation for Lost Expectations*, 19 HARV. ENVTL. L. REV. 303, 341 (1995); *see* CLAASSEN ET AL., *supra* note 409, at 12.

411. *See* General Accounting Office, *Soil and Wetland Conservation*, *supra* note 199, at 7; Farrier, *supra* note 410, at 341.

412. Farrier, *supra* note 410, at 341.

413. 16 U.S.C. § 3830(a)(3) (2001): *see* Malone, *supra* note 27, at 19 (1993).

414. *See* Congressional Research Service, Report No. RL31185, *The 2002 Farm Bill:*

to employ a variety of financial incentives to the agricultural community to promote conservation practices. In particular, Congress directed USDA to implement ECARP "through contracts and the acquisition of easements to assist owners and operators of farms and ranches to conserve and enhance soil, water, and related natural resources, including grazing land, wetland, and wildlife habitat."[415] The general provisions of ECARP authorize USDA to designate "conservation priority areas" in which agricultural producers are eligible for "enhanced assistance" to comply with federal and State environmental law.[416] Such enhanced assistance is to be based on (1) "the significance of the soil, water, wildlife habitat, and related natural resource problems in a watershed, multistate area, or region"; or (2) "the structural practices or land management practices that best address the problems, and that maximize environmental benefits for each dollar expended[.]"[417]

i. Wetland Reserve Program

The Wetland Reserve Program (WRP) authorizes USDA to purchase conservation easements from and enter into cost-sharing agreements with farmers to restore and protect wetlands.[418] The WRP primarily targets farmed wetlands that can likely be restored in a

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*Overview and Status*, at 31 (Feb. 4, 2002), *available at* http://www.cnie.org/NLE/CRS/abstract.cfm?NLEid=21987.

415. 16 U.S.C. § 3830(a)(1).

416. 16 U.S.C. § 3830(c)(1)-(2).

417. 16 U.S.C. § 3830(c)(3).

418. *See* 16 U.S.C. §§ 3837-3837f. USDA regulations provide this brief description of the WRP:

> Under the WRP, [USDA] will purchase conservation easements from, or enter into restoration cost-share agreements with, eligible landowners who voluntarily cooperate in the restoration and protection of wetlands and associated lands. To particpate in WRP, a landowner will agree to the implementation of a Wetlands Reserve Plan of Operations (WRPO), the effect of which is to restore, protect, enhance, maintain, and manage the hydrologic conditions of inundation or saturation of the soil, native vegetation, and natural topography of eligible lands. [USDA] may provide cost-share assistance for the activities that promote the restoration, protection, enhancement, maintenance, and management of wetland functions and values. Specific restoration, protection, enhancement, maintenance, and management functions may be undertaken by the landowner or other [USDA] designee.

7 C.F.R. § 1467.4(a) (2001).

cost-effective manner, are capable of providing wildlife benefits and wetland values and functions, and would otherwise continue to be devoted to agricultural production.[419] The WRP is administered by NRCS.

The owner's granting of an easement to the United States enrolls land into the WRP. The easements are permanent or for a term of thirty years[420] and must provide for the implementation of a Wetland Reserve Plan of Operations (WRPO).[421] The WRPO specifies the actions required to restore and protect wetlands within the easement area. Landowners develop these WRPOs through the NRCS in consultation with other agencies.[422] Landowners receive compensation for the easements and may receive cost-sharing assistance in implementing the WRPO "to the extent that [such] cost sharing is appropriate and in the public interest[.]"[423] The statue also authorizes USDA to enroll land into the WRP without obtaining an easement through cost-share agreements with landowners who agree

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419. *See* 16 U.S.C. § 3837(c); 7 C.F.R. § 1467.4(d). Eligible lands include: wetlands farmed under natural conditions; farmed wetlands; prior converted cropland; farmed wetland pasture; farmland that has become a wetland as a result of flooding; rangeland, pasture, or production forestland where the hydrology has been significantly degraded and can be restored; riparian areas which link protected wetlands; lands adjacent to protected wetlands that contribute significantly to wetland functions and values; and previously restored wetlands. *See* USDA, Natural Resources Conservation Service, *Fact Sheet, Wetlands Reserve Program, available at* http://www.nhq.nrcs.usda.gov/CCS/FB96OPA/WRPfact.html last visited (Mar. 15, 2002). Ineligible lands include: wetlands converted after December 23, 1985 (and thus subject to Swampbuster); lands containing timber or trees under a Conservation Reserve Program contract (discussed below); lands owned by an agency of the United States; lands subject to an easement or deed restriction prohibiting agricultural production for a duration of thirty or more years; and lands where restoration activities would be futile. *Id.*

420. 16 U.S.C. § 3837a(e)(2). The WRP is subject to a total acreage cap of 975,000 acres. *Id.* § 3837(b)(1). Additionally, beginning as of October 1, 1996, the Act requires USDA, "to the maximum extent practicable," to enroll lands in the following ways: (1) one-third of the acres through use of permanent easements; (2) one-third of the acres through use of thirty-year (non-permanent) easements; and (3) one-third of the acres through use of restoration cost-share agreements. *Id.* § 3837(b)(2)(A).

421. 7 C.F.R § 1467.10(a); *see* 16 U.S.C. § 3837a(b).

422. 7 C.F.R. § 1467.11.

423. 16 U.S.C. § 3837c(a)(1). For permanent easements, cost-share payments may not be less than seventy-five nor more than one hundred percent of the costs; for non-permanent easements, such payments may not be less than fifty nor more than seventy-four percent of implementation costs. 7 C.F.R. § 1467.9. USDA also directs "necessary technical assistance to assist owners in complying with the terms and conditions of the easement and the [WRPO]." 16 U.S.C. § 3837c(a)(2).

to restore wetlands on their land.[424] A landowner who violates the terms of an easement or contract with USDA is liable for any costs incurred by the NRCS in remedying the violation, including all administrative and legal costs.[425]

ii. Conservation Reserve Program

The Conservation Reserve Program (CRP) seeks to "cost-effectively assist owners and operators in conserving and improving soil, water, and wildlife resources by converting highly erodible and other environmentally sensitive acreage normally devoted to the production of agricultural commodities to a long-term, resource-conserving cover."[426] Acting through the Commodity Credit Corporation (CCC) and the Farm Service Agency (FSA), USDA enters into agreements with persons to retire eligible land from production and convert the land to a conserving use under the terms of an approved conservation plan.[427] The agreements must be for a period of not less than ten nor more than fifteen years.[428] The total acreage that may be enrolled in the CRP is capped at 36.4 million acres.

The CRP primarily applies to agricultural lands that pose on-site or off-site environmental problems. Participants enroll in the CRP by entering into a contract with CCC that includes the terms and conditions for participation, a conservation plan, and any other materials or agreements CCC determines to be necessary.[429] A conservation plan is "a record of the participant's decisions, and supporting information, for treatment of a unit of land or water, and includes a schedule of operations, activities, and estimated expenditures needed to solve identified natural resource problems by devoting eligible land to permanent vegetative cover, trees, water, or

424. 16 U.S.C. § 3837a(h).
425. 7 C.F.R. § 1467.14.
426. Conservation Reserve Program—Long-Term Policy, 62 Fed. Reg. 7602, 7604 (Feb. 19, 1997); *see* 7 C.F.R. § 1410.3(c).
427. 7 C.F.R. § 1410.3.
428. *Id.*
429. *Id.* § 1410.32.

other comparable measures."[430] The participant is required to implement the conservation plan and forego using the land for grazing, harvesting, or other commercial use of crops, unless approved by CCC.[431] In return, CRP participants receive annual rental payments, not to exceed $50,000 per year. Participants may also receive cost-share assistance to establish the practices in the conservation plan, subject to a limitation of fifty percent of the actual or average costs.[432]

The initial administration of the CRP was criticized, in part, because the acreage enrolled did not represent a broad range of environmentally sensitive land, but tended to be the product of the lowest bids offered by farmers, screened only by minimal acceptance criteria.[433] In addition, the CRP represented to many farmers an opportunity to retire unprofitable acreage, regardless whether such retirement promised significant environmental benefits. In many cases, farmers treated the program as essentially a continuation of prior policies that aimed to limit production rather than preserve environmentally sensitive land. As Professor Malone notes, "implementation of the new program [was hampered] due to administrative attempts to serve the conflicting objectives of supply control and conservation."[434] In addition, many policy makers saw programs like the CRP as a way to offset losses in farm support occasioned by reduced funding for traditional crop subsidy programs and "preferred to provide conservation funds and programs more evenly to crop producers across the country[,]" rather than target conservation funding at practices and lands with the greatest potential for water quality or other environmental improvements.[435]

USDA regulations provide that contract offers will be evaluated by employing "different factors, as determined by CCC [that] may be

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430. *Id.* § 1410.2

431. *Id.* § 1410. 20.

432. *Id.* §§ 1410.21, 1410.41(a), 1410.42(c).

433. *See* General Accounting Office, *Conservation Reserve Program: Alternatives Are Available for Managing Environmentally Sensitive Cropland*, Report No GAO/RCED-95-42, at 13 (Feb. 1995) [hereinafter *Conservation Reserve Program*].

434. Malone, *supra* note 27, at 12.

435. Congressional Research Service, *Environmental Quality Incentives Program (EQIP): Status and Issues*, Report No. 96-881 ENR (Nov. 1, 1996), *available at* http://www.cnie.org/NLE/CRSreports/Agriculture/ag-74.cfm [hereinafter *EQIP Report*].

considered from time to time for priority purposes to accomplish the goals of the program."[436] After the CRP was reauthorized and amended to include a focus on water quality issues, FSA began in 1991 to use an Environmental Benefits Index (EBI) to evaluate, score, and rank contract proposals.[437] The EBI assigns points to the practices included in a contract proposal based on a number of factors, including wildlife benefits, water quality benefits, erosion benefits, enduring benefits, air quality benefits, benefits to conservation priority areas, and cost.[438] A 1995 report by the General Accounting Office nonetheless concluded that, "the CRP could have provided more environmental benefits for the same amount of federal expenditure if USDA had emphasized the program's water quality goals . . . [The] USDA focused primarily on meeting mandated acreage goals that were established for each signup, to the detriment of the program's environmental goals."[439]

As part of the Clinton Administration's *Clean Water Action Plan*, USDA pursued a number of new initiatives under the CRP.[440] One is

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436. 7 C.F.R. § 1410.31(b). The regulations list the following factors that may be considered: soil erosion; water quality; wildlife benefits; conservation priority area designations; likelihood that enrolled land will remain in conserving uses; air quality; and cost of enrolling acreage in the CRP. *Id.*

437. Congressional Research Service, Report No. 97-673, *Conservation Reserve Program: Status and Current Issues*, at 2 (May 8, 2001) [hereinafter Status and Current Issues]. USDA amended its regulations governing the manner in which lands would be prioritized in 1997, but still employs EBI rankings. *See* Conservation Reserve Program—Long-Term Policy, 62 Fed. Reg. 7602 (Feb. 19, 1997); Status and Current Issues, *supra*, at 3. For a detailed history of the CRP and the effects of amendments, see Malone, *supra* note 27, at 24-33.

438. General Accounting Office, *Conservation Reserve Program*, *supra* note 433, at 14. A description of the EBI is contained in Farm Service Agency, *Fact Sheet, Conservation Reserve Program Sign-Up 20, Environmental Benefits Index* (Sept. 1999), *available at* http://www.fsa.usda.gov/pas/publications/facts/ebiold.pdf (last visited Mar. 16, 2002).

439. General Accounting Office, *Conservation Reserve Program, supra* note 433, at 18.

440. The CWAP set forth these "key actions" for USDA in its administration of the CRP: (1) "establish two million miles of conservation buffers on agricultural lands to prevent pollution and help meet water quality goals"; (2) "reserve four million acres from the Conservation Reserve Program for the establishment of conservation buffers";(3) "pursue partnerships with the private sector, farm and conservation organizations, and states, tribes, and federal agencies to develop a coordinated campaign to encourage landowners to put conservation buffers on their farms and ranches"; (4) "issue a Federal Register notice by early 1998 announcing the availability of the Conservation Reserve Enhancement Program (CREP) and providing programmatic and administrative guidance to states for submitting proposals for CREP agreements"; and (5) "work with states to help develop proposals leading to as many CREP agreements as practicable to address critical water quality, soil erosion, and fish and

known as the Conservation Reserve Enhancement Program (CREP). This is a joint federal-state program that uses CRP and state funding to develop and implement comprehensive plans that address significant environmental problems.[441] The program is voluntary for farmers. To date, twenty-one state proposals have been accepted, while eight more state proposals are pending review.[442] From 1998 to 2002, over 17,300 contracts covering nearly 290,000 acres have been enrolled in this program at a cost of over $55,000,000.[443]

An example of a CREP program is Maryland's program to provide greater protection for the Chesapeake Bay watershed, which was the first program to be approved.[444] The program calls for enrolling 100,000 acres in the CRP to provide stream buffers, restore wetlands, and reduce sediment from highly erodible land.[445] The cost of Maryland's program is $195 million, of which $170 million is provided by CRP federal funds.[446] In explaining how the Maryland CREP program differs from more routine CRP matters, USDA noted that the program: (1) coordinates CRP with goals and funding established by the state; (2) applies only to land in Maryland; (3) restricts eligibility to riparian buffers, highly erodible land, and wetland restoration; (4) provides a higher incentive rate to enroll lands to protect the Chesapeake Bay; and (5) provides supplemental state funding for conservation practices and easements.[447]

A second initiative involves the National Conservation Buffer Initiative, which has a stated goal of installing two million miles of

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wildlife habitat needs, including those for threatened and endangered species." CLEAN WATER ACTION PLAN, *supra* note 1, at 48-49.

441. *See* Solicitation of Proposals for the Conservation Reserve Enhancement Program, 63 Fed. Reg. 28965 (May 27, 1998); Environmental Defense Fund, *Suggestions to States Interested in Developing Conservation Reserve Enhancement Programs* (Mar. 1998), *available at* http://www.fb-net.org/CREP-EDF.htm (last visited Mar. 15, 2002).

442. *See* http://www.fsa.usda.gov/dafp/cepd/stateupdates.htm (last visited Mar. 13, 2002).

443. *See* http://www.fsa.usda.gov/crpstorpt/12approved/r7crepyr/us.htm (last visited Mar. 13, 2002).

444. *Soil and Conservation Issues*, *supra* note 199, at 4; *see also* USDA, *Questions & Answers: Conservation Reserve Program—Maryland State Enhancement Program*, at 1 (Oct. 1997), *available at* http://www.fsa.usda.gov/pas/publications/facts/html/mderep.htm. [hereinafter *"Maryland Program"*].

445. *See Soil and Conservation Issues*, *supra* note 199, at 4.

446. *Id.*

447. *Maryland Program*, *supra* note 444, at 2.

conservation buffers by 2002.[448] Conservation buffers are small strips of land that are strategically placed in the landscape to intercept pollutant runoff and mitigate sediment, nutrient, and pesticide movements from farm fields to waterbodies.[449] Included are riparian buffers, filter strips, grassed waterways, shelterbelts, windbreaks, living snow fences, contour grass strips, cross-wind trap strips, shallow water areas for wildlife, field borders, alley cropping, herbaceous wind barriers, and vegetative barriers.[450] The program offers financial incentives, in the form of cost-sharing arrangements, to farmers who agree to install conservation buffers.[451]

The program was initiated in 1997, but in April 2000, USDA began offering more incentives to attract greater participation, including signing bonuses, increased cost-share payments for cover crops and buffer maintenance, and increased payments for pastures.[452] The buffer initiative is funded through a variety of USDA programs, including the Wetlands Reserve Program and the Environmental Quality Incentives Program (discussed *infra*), but the vast majority of funds are provided by the CRP.[453] To date, 1,200,000 miles of buffer strips have been installed under the initiative.[454]

The CRP has undoubtedly yielded significant environmental benefits, but its current annual costs of $1.7 billion represent nearly half of all federal conservation spending.[455] At the end of fiscal year 2000, the program supported active contracts on 31.5 million acres.[456] While farmers' interest in the program currently remains very high, it

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448. Natural Resources Conservation Service, *Buffer Strips: Common Sense Conservation*, *available at* http://www.nhq.nrcs.usda.gov/CCS/bufgoal.html (last visited Mar. 13, 2002) [hereinafter "*Buffer Strips*"].

449. *Id.*

450. *Id.*; *see also* SOIL AND WATER CONSERVATION SOCIETY, REALIZING THE PROMISE OF CONSERVATION BUFFER TECHNOLOGY 9 (2001), *available at* http://www.swcs.org/docs/proto.pdf (last visited Mar. 13, 2002).

451. *Buffer Strips*, *supra* note 448.

452. *See* National Association of Conservation Districts, USDA Announces New Buffer Incentives, BUFFER NOTES (Apr. 2000), *available at* http://www.nacdnet.org/buffers/00Apr/ccrp.htm (last visited Mar. 13, 2002); *Soil and Conservation Issues*, *supra* note 199, at 4.

453. *See* National Association of Conservation Districts, *Progress Toward the Two Million Mile Goal*, BUFFER NOTES (Jan. 2002), *available at* http://www.nacdnet.org/buffers/index.html (last visited Mar. 13, 2002).

454. *Id.*

455. *Status and Current Issues*, *supra* note 437, at 5.

456. *Id.* at 4.

is widely feared that when the current contracts expire—and a large number will expire in 2002—farmers will not maintain the conservation practices without further subsidies.[457] "After a CRP contract expires, federal payments cease, and producers are under no obligation to maintain the conservation values established under the contract"; accordingly, the benefits of the program can properly only be regarded as temporary.[458]

Additionally, when cropland is taken out of production under the CRP, farmers face incentives to open previously untilled land to agricultural production. It is has been estimated that for every one hundred acres of cropland taken out of production in the central United States under the CRP, twenty acres of previously uncropped land has been placed into crop production.[459] While the character of the lands involved or the environmental effects of placing them in production are not known, it is highly likely that this increased production will have discernible, negative impacts on water quality. To some extent, this problem, and the problem raised by expiring contract terms, is obviated by the conservation compliance program and Sodbuster, which place farmers who open highly erodible land to production at risk of becoming ineligible for USDA program benefits.[460]

iii. The Environmental Quality Incentives Program

The last program included within the Environmental Conservation Acreage Reserve Program is the Environmental Quality Incentives Program (EQIP). EQIP consolidates into a single program the functions of a number of conservation programs that were repealed in 1996.[461] The purposes of EQIP are to provide, in a cost-effective way, technical, financial, and educational assistance to farmers and ranchers (1) "who face the most serious threats to soil, water, and related natural resources, including grazing lands, wetlands, and

457. *Id.*
458. *Id.* at 5.
459. JunJie Wu et al., *Targeting Resource Conservation Expenditures*, 15 CHOICES: THE MAG. OF FOOD, FARM AND RES. ISSUES 33 (June 22, 2000).
460. *Id.*; *see Conservation Reserve Program*, *supra* note 433, at 38.
461. *See* 16 U.S.C. § 3839aa(1) (2001).

wildlife habitats"; (2) to comply with federal and state environmental laws; and (3) "in making beneficial, cost-effective changes . . . or other measures needed to conserve and improve soil, water, and related natural resources."[462] EQIP is jointly administered by NRCS, FSA, and CCC, with NRCS designated as the lead agency.[463]

EQIP authorizes USDA to enter into contracts with eligible persons to provide cost-share assistance and incentive payments to farmers and ranchers who agree to implement "land management practices" and "structural practices."[464] Land management practices are defined as "site specific nutrient or manure management, integrated pest management, irrigation management, tillage or residue management, grazing management, or other land management practice carried out on eligible land that [USDA] determines is needed to protect, in the most cost-effective manner, water, soil, or related resources from degradation."[465] A structural practice means:

> the establishment on eligible land of a site-specific animal waste management facility, terrace, grassed waterway, contour grass strip, filterstrip, tailwater pit, permanent wildlife habitat, or other structural practice that [USDA] determines is needed to protect, in the most cost-effective manner, water, soil, or related natural resources from degradation; and . . . the capping of abandoned wells on eligible land."[466]

These practices are to be included in a conservation plan that is acceptable to NRCS and approved by a local conservation district.[467]

Applications for participation in EQIP are scored according to ranking system developed by NRCS. This system considers the environmental benefits per dollar expended, a reasonable estimate of the cost of the conservation practices, payments to the applicant, and other factors for determining which applications will impose the least

462. *Id.* § 3839aa(2). Half of the funding for EQIP is targeted to persons who experience livestock-related environmental problems, such as waste management. 7 C.F.R. § 1466.4(e).
463. 7 C.F.R. § 1466.2 (2001).
464. 16 U.S.C. § 3839aa.
465. *Id.* § 3839aa-1(2).
466. 16 U.S.C. § 3839aa-1(5).
467. 7 C.F.R. § 1466.6(a).

costs on the program; the environmental benefits resulting from implementation of the conservation plan; the extent to which the contract will assist the applicant in complying with applicable environmental laws; and whether the land is in a priority area and the extent to which the contract will further priority area goals and objectives.[468] "Priority areas" are determined through a process that begins with local work groups composed of USDA representatives and state and local officials.[469]

EQIP contracts must be for a duration of not less five nor more than ten years. The contract incorporates a conservation plan that details the specific management practice(s) that the participant will implement.[470] Participants receive cost-share assistance and incentive payments "in an amount and at a rate necessary to encourage a participant to perform the land management practice that would not otherwise be initiated without government assistance."[471]

All of the USDA programs discussed can, and undoubtedly have, produced some reductions in agricultural nonpoint source pollution. However, even when combined, these "voluntary" programs have failed to make significant progress in controlling such pollution. Some of the reasons for this failure have been discussed, but there are two overarching shortcomings with these programs. First, the incentives these programs offer to farmers are largely at the mercy of commodity prices. If farmers can increase profits by expanding production rather than maintaining conservation practices, they will do so. As a consequence, there remains a great deal of confusion about whether these programs are conservation programs or just an additional effort to shore up commodity prices. As Professor Ruhl has noted, "[e]vidence suggests that farmer participation in the green payments programs is highly sensitive to market commodity prices and does not reflect any newly found farm stewardship ethic.

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468. *Id.* § 1466.20(f).

469. *See* Environmental Quality Incentives Program, 62 Fed. Reg. 28258, 28266-71 (May 22, 1997); *EQIP Report*, *supra* note 435.

470. 7 C.F.R. § 1466.21(b).

471. *Id.* §§ 1466.23(a)(1),(2). Cost-share assistance may not exceed seventy-five percent of the projected cost of establishing a structural practice. Participants may receive both cost-share assistance and incentive payments, subject to a total limitation of $10,000 for any fiscal year and $50,000 for any multi-year contract. *Id.* §§ 1466.23(a)(4), (b)(1)(2).

Farmers, like most of us, follow the money."[472]

Second, the expenditures necessary to induce sufficient participation in these programs in order to have a significant impact on water quality nationally are quite large. Not only must initial funding be extensive enough to enroll a critical mass of "volunteer" farmers, but this large level of funding must be sustained over time. This will ensure that once conservation practices are implemented they will remain in place. Funding for these programs is derived from annual appropriations process, and accordingly, will be subject to ordinary fiscal pressures. It would be naive to believe that continuous and generous funding of these programs will be sustained.

## III. RESTRUCTURING FEDERAL LAW TO ADDRESS AGRICULTURAL NONPOINT SOURCE POLLUTION

From the foregoing review of existing federal programs, it is apparent that an effective response to agricultural nonpoint source pollution requires a significant restructuring of existing federal authority. The major shortcomings of the existing amalgam of programs are: (1) the absence of an effective institutional structure to ensure consistent and defensible monitoring and assessment of water quality; (2) an over-reliance on "voluntary," incentive-based programs to achieve needed pollution reductions; and relatedly (3) the absence of control measures on farms that can be enforced by federal authorities or by affected citizens. Some of these problems could be cured in part through significant, but not far-reaching, policy amendments. An effective overall policy for controlling agricultural nonpoint pollution will, however, require more sweeping reforms. In this section, I propose both.

### *A. Minimum National Water Quality and Monitoring Standards*

The present system of water quality standards and monitoring and assessment of water bodies creates a number of problems. Inconsistencies from state to state can create confusion among

472. Ruhl, *supra* note 5, at 326 (citing Tina Adler, *Prairie Tales*, 149 SCI. NEWS 44, 45 (1996)).

affected populations and, in some cases, particularly in interstate waters, lead to serious inequities in the allocation of cleanup responsibilities. In addition, the absence of effective monitoring and assessment permits farmers and others to point fingers of blame at others for perceived water quality problems. A fairly straightforward remedy for these problems would be the enactment of pre-emptive, minimum federal water quality standards with monitoring and modeling protocols.[473]

For conventional water pollutants, the EPA could promulgate a menu of water quality criteria corresponding to various acceptable designated uses in various regions and in various types of water bodies. To some extent, the EPA's existing criteria guidelines already provide a menu of this type.[474] States would retain authority to designate uses, but would be required to adopt the EPA's criteria. Similarly, the EPA could establish monitoring and assessment protocols that the states would be required to follow. States that fail to adopt appropriate water quality standards and monitoring and assessment protocols would face loss of federal funds. The EPA would be required to fill the gap with federal standards.

Minimum federal standards would ensure greater consistency among states, which is a pressing need, particularly in interstate waters.[475] The need for consistency will likely increase as implementation of the TMDL program accelerates. Minimum federal standards would prevent the states from yielding to the temptation of adopt the least protective standards in an effort to avoid the regulatory and economic impacts of the TMDL program requirements. As Professor Adler argues, with federal standards, "all waters in the country would be measured against a uniform benchmark, and TMDLs would be required wherever statutory and regulatory minima were exceeded."[476]

In addition, binding national standards would yield significant

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473. *See* Wagner, *supra* note 21, at 463 ("EPA could establish mandatory minimum national water quality standards or at least standard methods for determining degradation for the most serious pollutants.").

474. *See, e.g.*, Nutrient Criteria Development; Notice of Ecoregional Nutrient Criteria, 66 Fed. Reg. 1671 (Jan. 9, 2001).

475. Wagner, *supra* note 21, at 463-64.

476. Adler, *supra* note 2, at 256.

savings in administrative costs due to economies of scale.[477] Under the current statutory program, states are required to revise water quality standards every three years, and the EPA must oversee these revisions.[478] While the task of promulgating the variety of standards necessary to make a system of minimum national standards workable is daunting, it pales in comparison to the current workload the EPA faces.

Minimum national standards may, somewhat paradoxically, also enhance citizen participation. Professor Wagner notes "the obvious handicap that the diffused citizenry encounters in participating in state-wide issues that appear largely technical in nature,"—a handicap made even more serious when state processes are dominated by "'[s]pecial interest groups representing industry, water suppliers, and agriculture.'"[479] In addition, the process of establishing designated uses, or water quality goals, could, with national water quality standards, proceed in a fashion that more clearly informs interested citizens of the economic and social implications of the choices they face. Water quality criteria and monitoring and assessment protocols would be promulgated and binding prior to and independent of the selection of use designations. As a consequence, the opportunities to "game" the system by selecting weak criteria or lax monitoring and assessment techniques would be reduced, if not eliminated.[480] Citizens could, as a consequence, have greater assurance that the control measures they are willing to accept will likely yield the desired levels of water quality. This will lead to more informed and more widely endorsed choices. As a result, national standards will tend to promote the legitimacy of water quality programs as a whole.

A final advantage to nationally uniform standards and assessment protocols is that they will help develop consistent and defensible

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477. *See generally* Daniel C. Esty, *Revitalizing Environmental Federalism*, 95 MICH. L. REV. 570, 614-15 (1996).

478. *See* 33 U.S.C. § 1313(c) (2001).

479. Wagner, *supra* note 21, at 463-64 & n.120 (quoting NATIONAL WILDLIFE FEDERATION, SAVING OUR WATERSHEDS: A FIELD GUIDE TO WATERSHED RESTORATION USING TMDLS 24 (1998)).

480. On the ways in which the current program permits "gaming," see Adler, *supra* note 2, at 293.

techniques for identifying the sources responsible for water quality impairments, including agricultural nonpoint sources. In the current framework, it is simply too easy to manipulate assessment and monitoring techniques to reach conclusions that are politically, if not environmentally, acceptable. Farmers can rest confident in maintaining unsustainable practices by the sheer lack of evidence linking their practices with resulting water quality impairments. There is some evidence, however, that if farmers are convinced that their practices are responsible for water pollution both on and off the farm, they are much more willing to adopt conservation practices.[481] Consistent approaches to establishing the connection between farm practices and resulting water quality impairments may thus provide avenues for breaking down farmers' resistance to implementing new management practices.

### *B. Strengthening the Institutional Structure of the TMDL Program*

Within the CWA's TMDL program lies the seeds of an institutional structure for reforming federal and state programs for controlling agricultural nonpoint source pollution. The principal shortcoming of the current program is the absence of enforceable controls on nonpoint sources. The strength of the program is its emphasis on developing watershed-based approaches to improving water quality by allocating cleanup responsibilities among point and nonpoint sources.

In addition to Professor Adler's pioneering ideas,[482] there are important lessons from the Clean Air Act that can be applied to the TMDL program to create a more effective response to agricultural nonpoint source pollution. First, explicit authority should be conferred on the EPA to designate watershed planning areas that would geographically define the appropriate unit for water quality plan development and implementation. Such watershed planning areas would be functionally analogous to the Clean Air Act's "air

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481. *See* Laura M. J. McCann & K. William Easter, *Differences Between Farmer and Agency Attitudes Regarding Policies to Reduce Phosphorus Pollution in the Minnesota River Basin*, 21 REV. AGRICULTURAL ECON. 189 (1999).

482. *See* Adler, *supra* note 2.

quality control regions."[483] Based on the TMDL reporting requirements concerning listings of impaired waters, the watershed planning areas could be designated as "attainment" or "nonattainment" areas.

To avoid the notorious problems associated with the Clean Air Act's "state implementation plan" development and approval process,[484] the state level development of SIPs to meet water quality standards should simply be bypassed in favor of a single, broadly participatory process resulting in an enforceable federal water quality plan. Plan implementation could be delegated to state agencies, but the plan itself must include control measures that are enforceable by federal authorities and affected citizens through citizen suits.

Plan development and implementation would not, however, simply replicate the federal implementation plan process under the Clean Air Act. Under the Clean Air Act, the EPA is responsible for both plan development and implementation. Such a "top-down" approach is not likely to yield an effective regulatory structure to improve water quality. Indeed, there is considerable evidence suggesting that water quality planning is most successful when a broad-based participatory process including all stakeholders is employed.[485] "[W]ithout the support or involvement of the public, particularly at the state level . . ., water protection programs are bound to drift aimlessly and ultimately fail."[486] As Wesley Jarrell has noted:

> To be most effective, the citizens should be involved at all levels in the devlopment, implementation, monitoring, and evaluation of TMDLs. Though an expensive and time-consuming way to start discussions over TMDLs, getting landowners and land users involved is the critical component in making the watershed approach successful. The political battles and finger pointing that mark many water quality discussions can be harnessed into productive dialogue if

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483. *See* 42 U.S.C. § 7407 (2001).

484. *See generally* William F. Pedersen, *Why the Clean Air Act Works Badly*, 129 U. PA. L. REV. 1059 (1981).

485. *See* JARRELL, GETTING STARTED, *supra* note 16, at 9.

486. Wagner, *supra* note 21, at 432.

skillfully facilitated and initiated at the beginning of the TMDL process.[487]

Plan development would roughly resemble a negotiated rulemaking culminating in an EPA-proposed rule subject to notice and comment procedures. Several models are available for organizing effective institutions for rule development and implementation. For example, the USDA's Natural Resource Conservation Service (NRCS) has initiated a Coordinated Resource Management and Planning (CRMP) training program that has spawned watershed planning groups in various parts of the country. These groups operate under "Four Cardinal Rules": (1) broad community involvement; (2) a commitment to finding solutions; (3) consensus-based decisionmaking; and (4) "[e]xpressing needs, not positions."[488]

In the Tualatin River Watershed, the TMDL planning process involved "designated management agencies" for each of the three categories of land users that contributed to phosphorous loading in the river: agriculture, forestry, and urban systems. A Technical Advisory committee was established to assist with agricultural issues, but membership in the committee "rapidly grew to include representatives of urban systems and forestry, as well as Oregon [Department of Environmental Quality]."[489] In addition, a Tualatin River Research Advisory Committee was established. This Committee facilitated rapid and effective implementation of decisions concerning monitoring and best management practices.[490]

Plans would have to satisfy certain minimum criteria. First and foremost, the plan would have to be promulgated by a certain date and demonstrate attainment of water quality standards by a certain date. The duty to promulgate the plan would be subject to citizen suit enforcement against the EPA. With deadlines and the threat of citizen-initiated litigation, stakeholders would be highly motivated to reach agreement.

Plan requirements could be based on a classification system tied to the extent of the pollution problems faced in the respective

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487. JARRELL, GETTING STARTED, *supra* note 16, at 10.
488. *See id.* at 11.
489. *Id.* at 7.
490. *Id.*

watersheds. This approach follows the lead of the Clean Air Act's program for ozone nonattainment areas.[491] A key element of plans for impaired waters would include "reasonable further progress" milestones, requiring step-wise, specific levels of incremental reductions in key pollutant loadings within particular time frames. For example, water bodies suffering from excess nutrient loadings would be required to demonstrate specific percentage reductions in total loadings of nitrogen and phosphorous by particular dates.[492] If the implemented plan proves inadequate to attain water quality standards, additional mandatory requirements would apply.[493]

The EPA would defer to choices made by watershed planning institutions that establish appropriate mixes of controls to meet basic plan requirements, so long as the controls can be demonstrated to achieve water quality objectives and so long as certain "baseline" levels of controls are imposed on certain categories of sources. Where appropriate, pollutant trading systems, including point-nonpoint and nonpoint-nonpoint trading programs, could be employed to achieve load reductions at least cost.[494] Once adopted, however, the choice of control measures would be subject to direct federal and citizen enforcement.

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491. *See* 42 U.S.C. §§ 7511-7511a (2001).

492. *Cf.* 42 U.S.C. § 7511a(c)(1)(B) (imposing "reasonable further progress" requirement of annual reductions in volatile organic compound emissions of three percent, averaged over each consecutive three-year period until air quality standard is attained).

493. *See id.* §§ 7511(b)(2), 7511a(i) (areas failing to attain are reclassified and subject to new classification's control requirements).

494. For examples of trading programs involving agricultural pollutants and a framework for developing effective trading programs, see FAETH, FERTILE GROUND, *supra* note 103; Susan A. Austin, *Designing a Nonpoint Source Selenium Load Trading Program*, 25 HARV. ENVTL. L. REV. 337 (2001). A variety of trading programs have been suggested including a fertilizer "cap and trade" program, *see* Ruhl, *supra* note 5, at 345-46; and a "tradeable coupon system" under which each coupon would entitle a farmer to one ton of soil erosion. D. L. Hoag & H. A. Holloway, *Farm Production Decisions Under Cross and Conservation Compliance*, 27 AM. J. OF AGRI. ECON., 184 (1991). However, opportunities for effective point-nonpoint trading programs appear to be quite limited. A USDA report notes that less than ten percent of impaired water bodies are affected by both point and nonpoint sources. Peter M. Feather & Joseph Cooper, *Voluntary Incentives for Reducing Agricultural Nonpoint Source Water Pollution*, USDA Agriculture Information Bulletin No. 716, at 3 (May 1995), *available at* http://www.ers.usda.gov/publications/aib716/ (last visited Mar. 13, 2002).

### *C. Eliminating The CWA's Regulatory Exemptions for Agriculture*

Controls developed through the watershed planning process described above would be incorporated into the overall NPDES program, with the allocation of cleanup responsibilities set forth in individual or general permits issued either by state or federal permitting authorities. A number of agricultural sources currently regarded as "nonpoint" sources should, however, be recharacterized as "point" sources. These sources should, regardless of specific choices made in a watershed plan, be subject to conventional regulation under the technology-based, NPDES permit system. Chief among these sources are certain "irrigation return flows," some agricultural stormwater discharges, and AFOs. The environmental "safe harbors" that these sources currently enjoy—expressed as exemptions from NPDES program—should simply be eliminated.[495]

With regard to these sources, the EPA's proposed CAFO regulations, as noted above, are a substantial step in the right direction, but still exempt a large number of sources from the NPDES program. Appropriate reforms should, as Professor Adler has suggested, draw upon analogous policies implemented in the Clean Air Act.[496] For example, drawing upon the Clean Air Act's Title V permit program, individual permits could be required for all "major" CAFOs,[497] with the remaining CAFOs subject to general permit conditions.[498] The definition of a "major" CAFO may vary depending on whether and the extent to which potentially affected water bodies currently are deemed to be "impaired."[499] For example, in areas where waters are fully supporting designated uses, the EPA's proposed thresholds for CAFO status might be treated as the appropriate criteria for a "major" CAFO. Tighter thresholds for "major" status, perhaps as low as one hundred animal units for "major" status, could be applied in areas where waters are deemed to

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495. *See* Ruhl, *supra* note 5, at 335-37 (suggesting a sector-based integrated permitting program for CAFOs and "large-scale crop operations").

496. *See generally* Adler, *supra* note 2.

497. *See* 42 U.S.C. § 7661a(a) (requiring permits for, inter alia, "major sources").

498. *See id.* § 7661c(d) (authorizing general permits for "numerous similar sources").

499. *Cf.* 42 U.S.C. §§ 7511a(c), (d), and (e) (varying definition of "major source" depending on severity of ozone air pollution problem).

be impaired.

A similar approach could be used for crop farming that involves discharges of polluted irrigation return flows or collected agricultural stormwater.[500] "Major" sources requiring individual permits could be based on water quality conditions and the amount of acreage placed into production. Default effluent limitations would likely take the form of design standards based on best management practices. Permit writers could draw upon the EPA's guidance developed for the Coastal Zone Act Reauthorization Act Amendments' nonpoint source control program to assign specific permit conditions.[501]

The advantages to this approach are chiefly that these sources would become subject to enforceable permit conditions and enforcement actions initiated by state or federal authorities or by affected citizens utilizing the CWA's citizen suit provision. This enhanced enforcement threat would provide powerful incentives for these sources to abide by the terms and conditions of their individual or general NPDES permits.

### *D. Cost-Sharing Programs*

Existing programs provide opportunities to distribute the costs of implementing best management practices and other forms of controls in ways that may make the transition to a regulatory program for agriculture more politically acceptable. Cost-sharing and land retirement programs should be retained and funding of these programs should be substantially increased in the short-term. In

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500. It is important to note that only irrigation return flows and stormwater discharges that can properly be described as "point source" discharges would be subject to the NPDES. For example, "[c]ourts have held that rainwater runoff from the surface is not pollution from a point source, but rainwater collected by ditches, gullies, or other conveyances that result from [a person's] activities is pollution from a point source." Karen M. McGaffey et al., *Enforcement in* THE CLEAN WATER ACT HANDBOOK 198-99 (Parthenia B. Evans ed., 1994) (citing Sierra Club v. Abston Constr. Co., 620 F.2d 41, 45 (5th Cir. 1980); United States v. Earth Sciences, Inc., 599 F.2d 368, 374 (10th Cir. 1979); *Friends of Sakonnet v. Dutra*, 738 F. Supp. 623, 630 (D.R.I. 1990)).

501. *See* U.S. Environmental Protection Agency, *Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters*, ch. 2, "Management Measures for Agricultural Sources," *available at* http://www.epa.gov/owow/nps/MMGI/Chapter2/index.html (last visited Mar. 13, 2002).

addition, it would be useful to establish a general revolving low-cost loan fund, offering farmers opportunities to finance water pollution control measures. The fund could be established and enlarged through a reasonable tax on the agricultural inputs that are most prone to abuse and contribute to water quality impairments. For example, a reasonable tax on fertilizers, pesticides, and high-nutrient feed for confined animal operations would both help to defray the costs of implementing pollution control measures and provide incentives for wiser use of these inputs.

## CONCLUSION

For the past several decades, the nation's reliance on voluntary, incentive-based programs for controlling agricultural nonpoint source water pollution has not yielded satisfactory improvements in water quality. We should begin to effect a baseline shift that removes the implicit and explicit entitlements that currently permit those in agriculture to pollute. The resulting regulatory program should encourage broad-based participatory planning at the watershed level, minimize institutional impediments to effective regulatory programs, and most importantly yield control measures that can be enforced by state and federal authorities, as well as by affected citizens through the CWA's citizen suit provision. We should try to ease the transition costs of the shift by generously funding existing land retirement and cost-share programs, as well as creating a revolving loan fund that farmers can tap into to finance the implementation of sustainable management practices. In the end, however, we must be prepared to use the force of law to clean up our nation's waters. We can tolerate nothing less than fishable, swimmable waters, and our children deserve at least the assurance that we have committed ourselves to creating a pathway toward sustainable agricultural practices.