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Since 1970, pollution control in the United States has centered on national level regulatory approaches built on federal command-and-control regimes. Enacted in reaction to well-publicized "failures" of markets, common law, and state and local regulation such as the "killer smogs" of the 1950s and 1960s[1] and the "burning" of Cleveland's Cuyahoga River in 1969,[2] modern environmental statutes shifted authority away from states, local governments, and private property holders to the national government.

Nationalization has its costs, however. In particular, the top down approach risks transforming the goal of environmental regulation from the laudable one of protecting and enhancing environmental quality to the less laudable one of special interest rent-seeking. Centralized decision making lowers the cost of capturing agencies (there is only one to capture) while increasing the benefits (capturing one is capturing all). Shifting decisions to the national level, therefore, increases the incentives for capture unless institutional safeguards are added. Recent water quality regulatory initiatives by the federal Environmental Protection Agency threaten to transform water pollution control and make rent-seeking more prominent.

Air pollution controls have been especially subject to rent seeking rules that have retarded progress and increased the cost of pollution controls implemented, all to the benefit of special interests.[3] On the other hand, water quality pollution control reg-

1. *See* Andrew P. Morriss, *The Politics of the Clean Air Act, in* POLITICAL ENVIRONMENTALISM 263, 279-92 (Terry L. Anderson, ed., 2000) (describing adoption of Clean Air Act).

2. *See* Roger E. Meiners, Stacie Thomas, & Bruce Yandle, *Burning Rivers, Common Law, & Institutional Choice for Water Quality, in* THE COMMON LAW AND THE ENVIRONMENT 54, 59-63 (Roger E. Meiners & Andrew P. Morriss, eds. 2000) (describing role of the Cuyahoga fire in the adoption of the 1972 Federal Water Pollution Control Act Amendments.)

3. *See* BRUCE A. ACKERMAN AND WILLIAM T. HASSLER, CLEAN COAL/DIRTY AIR (1981) (outlining alliance of "dirty" Eastern coal producers and environmental pressure groups against Western low sulphur coal producers); ROBERT CRANDALL, ET.AL., REGULATING THE AUTOMOBILE (1986) (outlining auto manufacturers' rent-seeking); Robert Quinn & Bruce Yandle, *Expenditures on Air Pollution Control*

ulations have been relatively immune from rent-seeking because their decentralized implementation prevented polluting special interests from using national level regulations to override local interests in clean water. At the same time, competition among states and localities has limited local special interests' ability to gain concessions from state governments. Recent "reforms" of EPA's water quality program, however, threaten the delicate balance that has produced water quality improvements.[4] We argue that water quality is better improved by further decentralizing water pollution control efforts rather than by increasing centralization. Because EPA's recent regulatory changes move water pollution control in precisely the opposite direction, we contend that they should be significantly modified or abandoned.

Section I reviews the history of federal and state regulation of water quality and highlights the delicate balance of authority that has emerged between various levels of government. Section II examines why federalism is particularly important in water quality efforts. Section III summarizes the EPA's recent water quality regulatory initiatives. Section IV offers alternatives to EPA's approach, emphasizing common law and property rights solutions to continuing water quality problems.

I.
EVOLVING FEDERALISM IN WATER QUALITY REGULATION

Water pollution regulation in the United States has long been a matter for a federal-state partnership. The modern Clean Water Act largely relies on a "command-and-control" approach to limiting the discharge of effluent in waters through permits. Due to differences in implementation, the top-down command lines in water pollution control have been less clear than in other areas of pollution control.[5] These differences emerged because al-

Under Federal Regulation, 16 REV. REG. STUD. 11 (1986) (examining rent seeking under Clean Air Act).

4. *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) (to be codified at 140 C.F.R. pt. 9, 122, 129, 130) [hereinafter Final TMDL Regulations].

5. *See* Robert W. Adler, *Integrated Approaches to Water Pollution: Lessons from the Clean Air Act*, 23 HARV. ENV'TL. L. REV. 203, 206-07 (1999) (arguing that CWA and TMDL provisions "bear striking similarities" to the CAA but that "implementation of the statutes has differed significantly" with less uniformity under the CWA).

though the Clean Water Act gives the federal EPA authority over technology-based standards, it also gives the states authority over the issuance of permits.[6] The degree of federal control over state permit programs, an issue that has generated substantial litigation over the years,[7] has remained unclear.[8]

Although early federal water pollution control measures required states to take some minor specific actions, such as designating water bodies as suitable for recreation, propagation of aquatic life or other specific classifications, the first major federal legislation on the subject, the Water Quality Act of 1965, left water quality issues primarily to the states.[9] The centralizing era of federal water pollution control efforts did not begin until Congress passed the Federal Water Pollution Control Act Amendments, commonly known as Clean Water Act ("CWA"), in 1972.[10] Although the CWA required that its goal of enhancing and protecting the quality of the nation's waters be achieved while respecting the authority of the states to regulate the use of

6. As of 1996, 40 states had been authorized by EPA to issue NPDES permits. In the other 10 states, the EPA issues the permits. *See* GENERAL ACCOUNTING OFFICE, WATER POLLUTION: DIFFERENCES AMONG THE STATES IN ISSUING PERMITS LIMITING THE DISCHARGE OF POLLUTANTS RCED 96-42 (1996). Since the Clean Water Act gives the states the primary responsibility for water quality programs, what are the limits on EPA's ability to reject state plans? A large body of regulatory law has arisen around the permit process; and the EPA and the states have engaged in numerous informal and formal tussles over the years. *See, e.g.,* WILLIAM H. RODGERS, JR., ENVIRONMENTAL LAW 366-74 (2d ed. 1994) (reviewing disputes).

7. *See* RODGERS, *supra* note 6, at 366-74.

8. *See* 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, 10391 (1997) ("The central tension of the Clean Water Act ("CWA") has always been between state programs based on local water conditions and a federal program based on national standards.").

9. The Water Quality Act did direct states to develop water quality standards that set water quality goals for interstate waters. In most other areas, however, it left quality issues to the states. *See* ROBERT ADLER, ET AL. THE CLEAN WATER ACT, 20 YEARS LATER 6-7 (1993); Oliver A. Houck, *TMDLs: The Resurrection of Water Quality Standards-Based Regulation Under the Clean Water Act*, 27 ENVTL. L. REP. 10329, 10329 (1997) ("Originally predicated on state programs to achieve water quality standards, the [CWA] was overhauled in 1972 to require technology standards for point source dischargers, an approach that would go on to revolutionize environmental law.").

10. 33 U.S.C. § 1251 (2001).

their own waters,[11] the Clean Water Act brought an increased federal role to the partnership.[12]

The CWA broadened state requirements for establishing water quality standards ("WQSs") and directed the newly created federal Environmental Protection Agency ("EPA") to develop and publish, in "consultation with appropriate Federal and State agencies and other interested persons, . . . criteria for water quality accurately reflecting the latest scientific knowledge" on a wide range of subjects.[13] Based on these numerical water quality "criteria," the CWA then required states to develop WQSs that apply to interstate waters and submit them to the Administrator of the EPA.[14] The Administrator reviewed states' WQSs to ensure that the states' WQSs were not inconsistent with the requirements set by the federal statute.[15] (If states fail to submit proper standards, the Administrator may impose a WQS.)[16]

The CWA structure thus significantly increased the federal role in determining water pollution policy by providing the federal government with broad authority to require state governments to act in accordance with federally established criteria. Nonetheless, the significant discretion provided to states "indicates the Congress intended that states rather than the federal government should make most basic decisions about water policy

11. *Id.* § 1251(a) states the objective of the act to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters." 33 U.S.C. § 1251(b) further declares: "It is the policy of the Congress to recognize, preserve, and protect the primary responsibilities and rights of States to prevent, reduce, and eliminate pollution, to plan the development and use (including restoration, preservation, and enhancement) of land and water resources, and to consult with the Administrator in the exercise of his authority under this Act."

12. Some states resisted the nationalization of water pollution regulation, arguing vigorously (and successfully in the House) against a national approach. *See* Houck, *Resurrection*, *supra* note 9, at 10332-35 (summarizing governors' and others' roles in the debate over the 1972 amendments.)

13. 33 U.S.C. § 1314(a)(1). The act requires WQS to consider the impacts "(A) on the kind and extent of all identifiable effects on health and welfare including, but not limited to, plankton, fish, shellfish, wildlife, plant life, shorelines, beaches, esthetics, and recreation which may be expected from the presence of pollutants in any body of water, including ground water; (B) on the concentration and dispersal of pollutants, or their byproducts, through biological, physical, and chemical processes; and (C) on the effects of pollutants on biological community diversity, productivity, and stability, including information on the factors affecting rates of eutrophication and rates of organic and inorganic sedimentation for varying types of receiving waters." 33 U.S.C. § 1314(a)(1) (2001).

14. States are to review their water quality standards once each three-year period. *See* 33 U.S.C. § 1313(c)(1) (2001).

15. 33 U.S.C. § 1313(c).

16. 33 U.S.C. § 1313(c)(3).

and related land uses."[17] Indeed, until recently, EPA afforded "states considerable latitude . . . to set WQSs that differ from EPA's own recommendations, or from those established by other states. Thus, from a national perspective, the system of ambient standards established under the CWA is characterized by considerable variation among states, even those in the same geographic region with similar or identical environmental conditions, and even those that share a single, interstate water body."[18]

Although these WQSs constitute a major portion of the nation's water pollution control system, they have been implemented largely through a permit program, the National Pollutant Discharge Elimination System ("NPDES"). The NPDES restricts the entry of pollutants into state waters by requiring point-source polluters to obtain permits from the states.[19] The permits specify which pollutants, and how much of each pollutant, may be emitted from sewage treatment plants, factories, or other pollution sources into specific bodies of water.[20]

States have significant discretion in designing these permit programs.[21] While the federal government designs the technology standards for particular effluents, it is the states that actually issue the permits. The states thus are the decision-makers that choose the specific limits included in each permit. The permit programs are large – over 350,000 permits have been issued and the number is growing rapidly.[22] Because of this large volume, federal oversight of state decision making is necessarily limited as a matter of practice – EPA simply lacks the resources to conduct a thorough review of each permit decision.[23]

The technology-based point source regulation of the NPDES permits is supplemented by water-quality-based regulation. The CWA requires states to identify water bodies in which the NPDES permits are not sufficient to achieve water quality stan-

17. Adler, *Integrated Approaches*, *supra* note 5, at 210.

18. *Id.* at 213.

19. *See generally,* RODGERS, *supra* note 6, at 361-363 (describing NPDES system).

20. *See* 33 U.S.C. § 1342 (2001).

21. *See* 118 CONG. REC. 33,761 (1972) (State permits are issued "under State law [and] would be State, not Federal, actions . . . .") (statement of Rep. Wright).

22. There are over 65,000 CWA permits to discharge, most of which require reissuing every five years. *See* ADLER, CLEAN WATER ACT, *supra* note 9, at 137. In addition, thousands of dischargers were not brought into the permit process for decades. *See id.* at 151. Permit backlogs have been a "serious problem" for EPA. *Id.* at 158.

23. *See* ADLER, CLEAN WATER ACT, *supra* note 9, at 254-57 (detailing need for more resources for CWA implementation).

dards and to establish a priority ranking, which considers the severity of the pollution and the designated use of the water.[24] As part of this process, states must establish the "total maximum daily load," or TMDL, for specified pollutants.[25] TMDLs specify the amount of particular pollutants allowable in a particular waterbody and allocate the pollutant load to sources.[26] Until EPA's recent regulatory initiatives, the TMDL process did not have a major impact on state water quality decisions.[27] Indeed, the TMDL process and water quality sections of the CWA were "virtually ignored by the states and the federal Environmental Protection Agency."[28] Note that this does not mean that the states ignored water quality issues, merely that they did not address them through the CWA mechanism.

The states' role in the federal/state partnership yielded a form of environmental command-and-control regulation with far more flexibility than found in the comparable air pollution statutes.[29]

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24. *See* 33 U.S.C. § 1313(d)(1)(A) (2001).

25. *Id.* § 1313(d)(1)(C). Section 1313(d)(1)(C) requires each state to establish, in accordance with the priority ranking, the total maximum daily load for pollutants the EPA has identified as suitable for calculations. "Such load shall be established at a level necessary to implement the applicable water quality standards with seasonal variations and a margin of safety which takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality." *Id.*

26. Final TMDL Regulations, *supra* note 4, at 43,588.

27. *See, e.g.*, Michael P. Healy, *Still Dirty After Twenty-Five Years: Water Quality Standard Enforcement and the Availability of Citizen Suits*, 24 ECOL. L. Q. 393, 414-25 (1997) (arguing permit based enforcement of WQS failed).

28. Melissa Thorme, *Clean Water Act Section 305 (B): A Potential Vehicle for Incorporating Economics Into the "TMDL" and Water Quality Standards – Setting Process*, 13 TUL. ENVT. L.J. 71, 72 (1999); *see also* Daniel V. Hyde, *Are TMDLs the Answer for Cleaning the Nation's Waters?*, 23 L.A. LAW. 15, 16 (Mar. 2000) (describing TMDL and § 303(d) as a "previously ignored section" of the Clean Water Act); Jim Boyd, *Unleashing the Clean Water Act*, RESOURCES 7 (Spring 2000) (TMDL provision "largely dormant" before EPA proposals.); Houck, *Resurrection*, *supra* note 9, at 10329 ("Water quality standards . . . lay buried in the books, largely forgotten, taken for dead.") EPA's inattention was understandable, given the greater priority Congressional leaders put on the technology standards; Houck, *Resurrection, supra* note 9, at 10337-38 (quoting Senator Muskie that EPA should "assign secondary priority" to the TMDL provisions and a Senate staff member that "[w]e didn't take it seriously and thought it would be foolish for EPA to waste time and money to implement it.")

29. *Compare* regulatory regimes description in A. Myrick Freeman III, *Water Pollution Policy, in* PUBLIC POLICIES FOR ENVIRONMENTAL PROTECTION 169, 175 (Paul R. Portney & Robert N. Stavins eds., 1990) (1972 amendments "retain[ed] the system of state-established standards for instream water quality that was enacted in 1965"); Paul R. Portney, *Air Pollution Policy, in* PUBLIC POLICIES FOR ENVIRONMENTAL PROTECTION 77, 80-82 (Paul R. Portney & Robert N. Stavins ed., 1990) (describing federally determined ambient air quality standards to apply nationally under CAA).

Just as with air pollution control, the EPA sets effluent guidelines on a point-source basis for each major U.S. industry. And just as with air pollution, to obtain an operating permit, industrial operators must demonstrate that satisfactory pollution control machinery will be in place and operating.[30] With EPA approval, state pollution control agencies are given delegated authority to issue permits, monitor and enforce outcomes for both air and water pollution.[31]

Unlike the air pollution statute, however, the CWA does not set national ambient water quality standards to be met in each body of water across the nation.[32] States classify the streams in their jurisdictions, and neither the classification schemes nor the criteria used are uniform across states.[33] As a result, compared with the air pollution control regime, it has been costly, if not impossible, for an industry to obtain a uniform regulatory outcome by plying the halls of EPA and Congress. Uniform national command-and-control regulation of the sort employed for air quality, and until now avoided by water quality regulation, enables polluting industries to cartelize within a regulatory regime. Typically, the regulation requires a reduction in output, and so regulators limit entry by imposing regulatory barriers to entry in the form of increased costs. This effect is confirmed both by theory and empirical evidence. The possibility that national regula-

30. *See* RODGERS, *supra* note 6, at 362-63.

31. *See id.* (describing state role under CWA); *See also* Morriss, *Clean Air Act*, *supra* note 1, at 270-76 (describing state role under CAA).

32. *See* Adler, *Integrated Approaches, supra* note 5, at 251-52. Professor Adler notes that:

> A key distinction between the two types of criteria and standards, however, is the manner in which and uniformity with which they are established. By statute, WQS are adopted primarily by individual states based on EPA guidance and subject to EPA review and approval, and therefore vary widely given the significant latitude EPA has shown the sates in the approval process. Moreover, no uniform rules govern the methods and procedures by which compliance with these disparate WQS must be determined, or even the rules that dictate when a violation of the WQS is triggered. By contrast, a single set of NAAQS adopted by EPA apply uniformly throughout the country. Moreover, the NAAQS are accompanied by a uniform set of procedures for monitoring and assessment, and fixed rules for determining when the standards are met and when they are violated. While the CAA system of monitoring and attainment designation is vulnerable to considerable manipulation, it is likely that much more parity exists under the CAA than under the CWA, where the system is designed to vary greatly.

33. *See id.* at 253 ("In contrast, under the CWA system, states may choose widely divergent water quality standards based on different economic and political judgments, which results in substantial differences in control obligations that are unrelated to actual differences in water quality.").

tion could yield cartel profits was first described in theoretical terms by Nobel economics laureate James Buchanan and Prof. Gordon Tullock.[34] Empirical analysis found evidence of profitable regulatory cartels in air pollution.[35] Significantly, similar attempts to identify cartel-derived profits in water pollution control were not successful.[36]

This statute-derived location flexibility for water quality issues yielded a competitive playing field where water-using industries sought lower cost sites and states sought to employ lower cost ways to achieve environmental goals. The result was a "race to top" in water quality produced by the decentralized (at least relative to air quality regulation) competitive environment.

EPA's changes in water quality regulations eliminate important cost-reducing competitive forces present in federal water pollution control since 1972. Under the new regime, EPA is the gatekeeper for entry and expansion of industries nationwide. A sense of the scope of change can be seen in EPA's own estimate that 40,000 TMDLs will have to be set in the coming years, "each of which will result in more stringent controls on all sources of pollutants."[37] Political-favor seeking is heightened as firms seek to gain competitive advantages by means of uniform federal regulation. As a result, both water quality and economic efficiency are likely to suffer.

This is not to suggest that the prior regime was optimal. Far from it – the old rules created numerous perverse incentives for both states and EPA. For example, the pre-water-quality-reform Clean Water Act regulatory regime had not addressed the real problems that arose from the failure of the EPA and the states to address nonpoint source water pollution. Most states did not assess their watersheds because the costs are significant and, quite likely, because the consequences of an honest assessment that reveals pollution problems could have been expensive EPA mandates.[38] On the other hand, to be eligible for certain federal

34. *See* James M. Buchanan & Gordon Tullock, *Polluters' "Profit" and Political Response*, 65 AM. ECON. REV. 139 (1975).

35. *See* M.T. Maloney & Robert E. McCormick, *A Positive Theory of Environmental Quality*, 25 J.L. & ECON. 99 (1982).

36. *See* Myles Wallace, Sharon Watson, & Bruce Yandle, *Environmental Regulation: A Financial Markets Test*, 28 Q. REV. ECON. & BUS. 67 (1988).

37. Thorme, *supra* note 28, at 72.

38. *See generally* Michael P. Healy, *Still Dirty After Twenty-Five Years: Water Quality Standard Enforcement and the Availability of Citizen Suits*, 24 ECOLOGY L.Q. 393, 395 (1997).

money, the states had to declare bodies of water to be impaired. As the governor of Wyoming explained to Congress, "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."[39]

In sum, the primary means of controlling water pollution has been the combination of national technology-based standards for particular effluents and state-issued permits for release of specified pollutants. The lack of clear federal primacy in this system has provided states with significant policy space to address water quality issues themselves.[40] Most importantly, the federalist approach to water quality regulation prevented larger water users from using the regulatory process to cartelize their industries. In addition to this negative reason to prefer a federalist approach, there are also positive reasons to allow federalism in water quality regulation. We turn to these in the next section.

II.
THE NEED FOR FEDERALISM IN WATER POLLUTION CONTROL

A division of authority amongst competing jurisdictions is suggested by the nature of water quality issues. Although there are significant interconnections among waterways, many water quality issues affect only particular bodies of water or portions of bodies of water. Mandating the same solution to water quality issues for the Gallatin River in Montana and the Cuyahoga River in Ohio serves no obvious purpose. The rivers differ hydrologically and the surrounding regions differ demographically and ec-

39. Hearing on Governors' Perspectives on the Clean Water Act Before the Subcommittee on Water Resources and the Environment of the House Committee on Transportation and Infrastructure, 106 CONG. REC. 4 (1999) (statement of Gov. Geringer). The new rules compound this problem, as the states know they may face costs that cannot be predicted given the open-ended nature of the authority EPA is asserting under the rules.

40. Just as there is diversity among the states in their water needs and water problems, the science of water pollution control is still emerging, and will continue to evolve more rapidly if the states are allowed to take different approaches to water quality management. The new TMDL rules produce great uncertainty among the states and will cause them to look constantly to EPA for the agency's currently preferred water pollution control measures. States will have less incentive to find innovative solutions to water problems if they all have the same point of reference (the federal authority), especially if the EPA can reject any part of any state's proposed water plan and impose its own standards and solutions.

onomically. Since bodies of water are rarely "national" in scope, the intuition is that water quality issues are also not national in scope.

Before assessing the case for federalism in water quality regulation, we should address the arguments of the strongest proponent of a national approach. William F. Pedersen, Jr., a former EPA official in the 1970s, is a careful and thoughtful analyst of environmental statutes.[41] In a 1988 article Pedersen set out an argument for a program strikingly similar to EPA's current TMDL initiative.[42] While we have obvious differences with Petersen's analysis,[43] this is the strongest case for a national approach we have encountered. Although Pedersen is sensitive to economic efficiency arguments, and uses them to buttress his critique of the current approach to water pollution control,[44] he relies heavily on a textbook approach to the economic issues, equating economic efficiency with getting marginal costs equal across industries rather than examining dynamic issues pertaining to innovation or public choice issues concerning regulators' behavior.[45]

What is most striking about Pedersen's analysis, however, is the enormous degree of centralization it entails. For example, after making a marginal-cost-based argument for shifting away from technology-based standards to a water-quality-based approach, Pedersen argues that an advantage of giving EPA water-quality-based authority over the states is that it would allow efficiency-enhancing "bubble" trades among pollution sources.[46] Regulators should be able to "determine [water] uses freely" and then EPA would "hold" states to their choices.[47] Further, a "much more potent cure, one that past experience suggests is

41. *See, e.g.*, William F. Pedersen, Jr., *Why the Clean Air Act Works Badly*, 129 U. PA. L. REV. 1059 (1981).

42. William Pedersen, Jr., *Turning the Tide on Water Quality*, 15 ECOLOGY L.Q. 69 (1988).

43. Where we see evolved federalism that allows states room to experiment, for example, Pedersen sees congressional avoidance of politically difficult choices. *Id.* at 72-73 (describing CWA and subsequent amendments as "carefully designed" to avoid "philosophically and politically sensitive issues").

44. *See, e.g., id.* at 83-84 (describing inefficiencies that result from imposing control strategies with different marginal costs).

45. *But see id.* at 87 (acknowledging a public-choice-like issue concerning the tendency of technology-based standards to create a lobbying constituency to press for relaxation of standards).

46. *Id.* at 96.

47. *Id.*

necessary for effective results, would be to grant EPA the power to promulgate measures to cure any deficiencies in a state attainment plan."[48]

This brief review of Pederson's argument shows the consequences of an EPA-directed national water quality program. Inevitably such a program entails national control, usurping state controls – reducing the states to brokers implementing deals to save costs under EPA-mandated controls. Such a vision rests on a view of the states as incapable of advancing water quality without EPA's "big stick" pushing them forward. Such an approach is inconsistent with the CWA's mandate for federalism and with the need for water quality.

Professors Henry Butler and Jonathan Macey developed a "Matching Principle" to analyze federalism issues in environmental protection that can assist in determining if federalism promotes water quality. "The Matching Principle suggests that, in general, the size of the geographic area affected by a specific pollution source should determine the appropriate governmental level for responding to the pollution."[49] Butler and Macey's Matching Principle provides a framework for considering the need for federalism in water quality regulation.

Butler and Macey argue that jurisdictional competition is likely to generate optimal laws if four conditions are fulfilled:

> (1) the economic entities affected by the law must be able to move to alternative jurisdictions at a relatively low cost; (2) all of the consequences of one jurisdiction's laws must be felt within that jurisdiction; (3) lawmakers must be forced to respond to adverse events such as falling population, real estate prices, market share or revenue, and other manifestations of voter discontent that result from inefficient regulations; and (4) jurisdictions must be able to select any set of laws they desire.[50]

These "federalism conditions" are then combined with a set of conditions that others argue potentially cut in favor of national level regulation: limiting interstate externalities; halting a "race to the bottom;" controlling political cost externalization; captur-

48. *Id.*

49. Henry N. Butler & Jonathan R. Macey, *Externalities and the Matching Principle: The Case for Reallocating Environmental Regulatory Authority,* 14 YALE J. ON REG. 23, 25 (1996).

50. *Id.* at 31-32. As the authors note, of course, all these conditions are unlikely to be perfectly met in the real world. "[F]ailure to achieve all four conditions is not a mandate for federal government intervention, but rather merely an indication that local regulation may be imperfect." *Id.* at 32.

ing national economies of scale in administration, technical expertise, and funding; and maintaining national moral ideals.[51] Analyzing a particular pollution control problem using these two sets of conditions can thus clarify the optimal level of government to address the problem.

In the case of water quality, the federalism conditions are largely met. The first federalism condition, that economic entities have choices, is satisfied for water quality. Users of water, whether for waste discharge or as an input, have a choice among locations. While short term shifts in location are problematic for companies with large site-specific capital investments, in the long run even these users can alter their behavior in response to government activity. For example, faced with stringent water quality regulations, a firm could build a treatment plant that transforms the waste discharged into a river into solid waste for landfill disposal or airborne waste through incineration. A firm might also restructure its production processes to produce less waste. Other water users can simply relocate to jurisdictions with more favorable regulatory regimes.

The second federalism condition, which requires consequences to be felt within a jurisdiction, is also largely satisfied. Many water bodies lie entirely within one state. Even where they do not, many water quality issues are primarily local in nature, since moving water dilutes discharges. Thus downstream users in another state may be affected by discharges to rivers, but they are likely to be affected less than local users of the river, who receive a more concentrated dose of any harmful discharge. Of course exceptions to this exist. But even in the case of bodies of water that touch many states (e.g., the Mississippi River), the resulting problems are not national but regional in scope.

The third federalism condition is largely met within the United States. State legislatures and executives are politically accountable, and many water quality issues and related economic issues are high visibility political issues. Finally, the fourth federalism condition, an open set of possible laws for the various political entities, is partially met through the evolved federalism we described above. Since federalism for water quality *may* work, we must now turn to whether there are competing considerations that suggest national regulation is superior.

51. *Id.* at 42-53.

One strong argument against federalism in some instances is that states can shift costs to their neighbors. In locating a sewage treatment plant, for example, a state could build it on the river just upstream from a state boundary.[52] In such circumstances, a federal role may exist to prevent externalization of costs. Resolving such matters need not, however, be based on a regulatory solution. As Butler and Macey point out, "[t]he most effective way for the federal government to discharge its responsibility to facilitate the operation of the federal system would be to assign ownership rights in water to individual states. In this way, states through which polluted water passed could assert a cause of action against the states responsible for the pollution."[53]

The second potential counter-argument is that national action is necessary to prevent a "race to the bottom" in which states compete by lowering environmental quality (and hence costs) to lure industry to their states. There is considerable doubt that the "race to the bottom" is the correct description of competition among states – Prof. Richard Revesz has shown that a "race to the top" is more likely in many instances.[54] Even if a race to the bottom is possible, however, there are also serious questions about whether a national solution is appropriate or plausible.[55] Setting aside these doubts for the sake of argument, let us consider whether a "race to the bottom" is likely in water quality.

The "race to the bottom" depends on the existence of a political market failure at the state level: states choose individually rational courses of action (lower environmental standards) that prove to be collectively irrational. As Butler and Macey note, this depends on the assumption that all localities assess the issue in the same way, ignoring differences in preferences for environ-

52. Of course, the possibility of a federal role does not mean that the federal agency will actually act to prevent such harms. *See, e.g.,* Arkansas v. Oklahoma, 503 U.S. 91 (1992) (allowing EPA to issue NPDES permit to a sewage treatment plant in Arkansas that would emit pollutants that would travel downstream to Oklahoma.) The existence of a regulatory scheme may, therefore, help to divert the federal courts from their traditional roles in forcing states to respect each others' claims to water, substituting the agency as the ultimate decider of water quality for all states.

53. Butler & Macey, *supra* note 49, at 61.

54. *See* Richard L. Revesz, *Rehabilitating Interstate Competition: Rethinking the "Race-to-the-Bottom" Rationale for Federal Environmental Regulation*, 67 N.Y.U.L. REV. 1210 (1992). *See also* ALEXANDER VOLOKH, ET. AL., RACE TO THE TOP: THE INNOVATIVE FACE OF STATE ENVIRONMENTAL MANAGEMENT (1998).

55. *See* Butler & Macey, *supra* note 49, at 43-45 (arguing federal solution to race to the bottom is implausible).

mental quality.[56] It is possible that the variance in water quality may be higher in a federal solution than in a national one, but it is not at all clear that an overall average water quality will be lower. Moreover, because water quality issues concern specific bodies of water that affect discrete states, the race to the bottom rationale is less plausible than it might be with respect to emissions into a larger commons, such as the atmosphere.[57] At the very least, there are serious reasons to be skeptical about the existence of a race to the bottom in water quality without more evidence to support the claim.

The third factor favoring national level action is the existence of political cost externalization. California, for example, is able to shift some of the cost of its air pollution regime to out-of-state automobile manufacturers, who cannot pass all the cost on to California consumers.[58] Again, a political market failure is used to justify national action.[59] As Butler and Macey note, however, even if such behavior occurs, it is not clear that it justifies a preemptive federal solution.[60] Again, we must be skeptical that such a political market failure exists until it is supported by more than speculation.

There may also be economies of scale in administration of regulatory programs, technical expertise, or funding for pollution control.[61] If so, then national regulation should be able to accomplish a given regulatory goal at a lower cost. Yet bodies of water are unlikely to experience such economies of scale because they are not uniform across the country. Rivers in the arid west are fundamentally different from those in the more humid regions east of the Mississippi, for example. Water quality depends, to a great extent, on local knowledge about the affected body of water. Further, there are countervailing diseconomies of scale that must be considered as well.[62]

Finally, some have argued that federal regulation is justified because "the federal government is the level of government best suited to reflect the moral obligation of United States citizens to

56. *Id.* at 43-44.

57. *Id.* at 43, n.38 (noting tendency to conflate commons problems and races to the bottom by commentators.)

58. *Id.* at 46.

59. *Id.*

60. *Id.* at 46-47.

61. *Id.* at 48.

62. *Id.* at 49.

one another as well as to future generations."[63] Although there may be moral arguments with regard to some environmental objectives (species preservation), it is not clear that these arguments are only in the direction of national control.[64] Moreover, these arguments seem particularly weak with respect to water quality. It is hard to know what the moral obligation of Americans generally with respect to the Gallatin River is, given that most Americans have no idea where the Gallatin River is or what the tradeoffs are concerning water quality. It seems far more likely that levels of government closer to the body of water in question could express the moral obligations of those concerned with particular bodies of water.[65]

None of the countervailing considerations appear to be strong enough in the case of water quality to allow departure from the federalism conditions' presumption that environmental regulation should be aligned with the jurisdiction that most closely matches the relevant problem's boundaries. The Matching Principle thus suggests that local, state, or regional solutions to water quality problems are generally preferable to national solutions. The division of authority between EPA and the states prior to the recent changes was consistent with the Matching Principle. How has EPA altered this distribution of authority? We turn to this question in the next section.

III.
EPA's WATER QUALITY INITIATIVE

The relatively decentralized approach to water quality regulation did not suit some interests. Environmental pressure groups lobbied and brought suits to attempt to force EPA to take a more aggressive national approach to water quality.[66] Academic com-

63. *Id.* at 51. As Butler and Macey note, this rests on the assumption "that it is moral for the federal government to force people to pay for goods that they do not want." *Id.*

64. *See* David Schmidtz, *When Preservationism Doesn't Preserve*, 6 ENVIRONMENTAL VALUES 327 (1997) (noting that treating endangered species as private property may be the only means of preserving them).

65. *See, e.g.*, MONT. CONST. ANN. ART. II § 3 (right to "clean and healthful environment" in state constitution). The Gallatin River is in Montana.

66. *See* Houck, *Long Road, supra* note 8, at 10392-97 (describing campaign of litigation to force EPA to act on TMDL provisions); *see, e.g.*, Sierra Club v. Hankinson, 939 F. Supp. 865 (N.D. Ga. 1996); Idaho Sportmen's Coalition v. Browner, 951 F. Supp. 962 (W.D. Wash. 1996) (citizen suits seeking court orders to establish TMDL schedules); *see also* Robert D. Mowrey, *TMDL Implementation Issues and Trends*, 15 NAT. RESOURCES & ENV'T 112, 112 (2000) (citing "blizzard of litigation"

mentators criticized EPA for not doing enough to address "the broad range of chemical, physical, and biological insults to our aquatic ecosystems."[67] Both sets of interests agreed that breathing life into the TMDL provisions of the CWA provided the appropriate vehicle for doing so.

Responding to these pressures on July 13, 2000, EPA issued new regulations revising the Water Quality Planning and Management, or TMDL regulations and the NPDES and Water Quality Standards.[68] EPA claimed that the reason for the new rules was that, despite a quarter century of regulatory efforts, "many waterbodies still fail to attain or maintain water quality standards due to one or more pollutants."[69] EPA published its proposed TMDL rules on August 23, 1999[70] and took public comments for 150 days.[71] Signaling the controversial nature of EPA's proposed changes, EPA received "about 34,000" comments on the proposed rules.[72] After the comment period, EPA significantly revised the proposal before issuing the final regulations. This section briefly highlights the key aspects of those regulatory changes.

A. *The New Regulations*

The new TMDL regulations are built around the requirement that states create a list of "impaired waterbodies," sorted according to EPA's criteria into one of four categories.[73]

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and "at least thirty-nine actions" in "at least twenty-nine states" as of fall 2000); Lisa E. Roberts, *Is the Gun Loaded This Time? EPA's Proposed Revisions to the Total Maximum Daily Load Program*, 6 ENVIRONMENTAL LAWYER 635, 647-53 (2000) (describing litigation campaign)

67. Adler, *Integrated Approaches, supra* note 5, at 204.

68. Final TMDL Regulations, *supra* note 4, at 43,586. EPA's actions were controversial, with Congress attempting to block the TMDL rule through an appropriations rider. *See* Mowrey, *supra* note 6, at 113.

69. Final TMDL Regulations, *supra* note 4, at 43,587.

70. Proposed Revisions to the Water Quality and Management Regulation, 64 Fed. Reg. 46,012 (Aug. 23, 1999) (to be codified at 40 C.F.R. pt. 130) [hereinafter Proposed TMDL Regulations].

71. Final TMDL Regulations, *supra* note 4, at 43,589.

72. *Id.* at 43,589.

73. 40 C.F.R. § 130.27(a) (2001).

- Part 1 waters are impaired by pollutants[74] or which does not "attain and maintain water quality standards."[75]
- Part 2 waters are impaired by pollution[76] that is not caused by a pollutant;[77]
- Part 3 waters are those for which TMDLs have been completed, but water quality standards have not yet been attained;[78] and,
- Part 4 waters are expected to meet water quality standards by the next listing cycle as a result of the use of other enforceable pollution controls.[79]

States are required to produce a "prioritized schedule" for establishing TMDLs for the waterbodies in category one; the TMDLs for these waterways must be established within ten years.[80] Each state is required to articulate such methodologies according to the rule's specifications, elicit public comment on the methodology, and submit the methodology to EPA for review eight months before it submits its actual list to EPA for approval.[81]

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74. "Pollutants" are defined as "Dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials (except those regulated under the Atomic Energy Act of 1954, as amended at 42 U.S.C. § 2011), heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial, municipal, and agricultural waste discharged into water." 40 C.F.R. § 130.2(d). This definition largely parallels the Clean Water Act definition of "pollutant." Final TMDL Regulations, *supra* note 4, at 43,591. *See* 33 U.S.C. § 1362(6) (2001).

The distinction between pollution caused by pollutants and pollution not caused by pollutants is a critical, if confusing, one. The former requires TMDLs while the latter do not. EPA's example of the distinction is a comparison of a case where "landscape actions that result in the introduction of sediment into a water body" and the sediment "results in an alteration of the chemical, physical, or biological integrity of the waterbody" with a case where an impairment is "caused solely by channelization of a stream's bottom." The first is pollution caused by a pollutant, the second is not. Final TMDL Regulations, *supra* note 4, at 43,592. "EPA believes the vast majority of impairments are caused by the introduction of pollutants and does not anticipate large numbers of waterbodies to be identified as impaired only by pollution." *Id.*

75. 40 C.F.R. § 130.2(j) (2001); 40 C.F.R. § 130.27(a)(i) (2001).

76. "Pollution" is defined in these regulations and in the Clean Water Act as "the man-made or man-induced alteration of the chemical, physical, biological, and radiological integrity of water." *Id.* § 130.2(c).

77. *Id.* § 130.27(a)(2).

78. *Id.* § 130.27(a)(3).

79. *Id.* § 130.27(a)(4).

80. *Id.* § 130.28(b)(2). A five year extension is possible where, despite expeditious action, it is not "practicable" to establish the TMDL within ten years. *Id.* § 130.28(b)(2).

81. The rules specify detailed requirements for TMDL preparation and submission. These are:

Once identified as impaired, waters remain listed until water quality standards are achieved.[82] EPA does not require TMDLs for the Part Two waterbodies; the agency intended the listing "to ensure they remain in the public's eye and are not simply ignored."[83] Water bodies listed in Part Three but which do not make substantial progress toward attainment of the WQS must be moved to Part One and a new TMDL established.[84]

The TMDLs must contain an implementation plan[85] much like the State Implementation Plans (SIPs) in EPA's air program.[86] States establish the maximum amount of each pollutant a water body can receive while still attaining water quality standards and determine the allowable contributions of each pollutant from each contributing source in a watershed.[87] The TMDL specifies the maximum daily loads of each pollutant and the required reductions from discharging sources necessary to meet WQS. States submit these plans to EPA for approval.[88]

While EPA requires states to submit their methodology for listing impaired waterbodies and a schedule for establishing

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1. The rule also identifies the following eleven specific elements each TMDL must include before it can be approved by EPA: Name and geographic location of the impaired water body and upstream waterbodies that contribute significant amounts of the pollutant;
2. Identification of the pollutant and the applicable water safety standard;
3. Quantification of the pollutant load that may be present in the waterbody and still ensure attainment and maintenance of the WQS;
4. Quantification of the amount by which the pollutant must be reduced for the water body to meet water quality standards;
5. Identification of the source or sources of the pollutant;
6. Determination of the amount of the pollutant that may come from point sources;
7. Determination of the amount of the pollutant that may come from nonpoint sources;
8. A margin of safety to account for uncertainties in setting the TMDL;
9. Consideration of seasonal variations and other factors that affect the relationship between the relationship between pollutant loadings and water quality impacts;
10. Allowance for future growth and reasonably foreseeable increases in pollutant loads; and,
11. An implementation plan.

Id. § 130.32(b)(1)-(11).

82. *Id.* § 130.29(b).

83. Final TMDL Regulations, *supra* note 4, at 43,592.

84. 40 C.F.R. § 130.27(a)(3) (2001).

85. *Id.*

86. *See* Morriss, *The Politics of the Clean Air Act*, *supra* note 1, at 270-76 (describing SIP process).

87. 40 C.F.R. § 130.32(b)(5)-(7) (2001).

88. *Id.* § 130.32(a).

TMDLs for EPA review, it will not approve or disapprove the methodology or schedule.[89] Instead, the rule states that EPA will comment on states' methodologies and schedules, and consider them "in its review and approval or disapproval of [state] list and priority rankings."[90] The absence of an approval mechanism is illusory, however, as EPA will evaluate the states' responses to EPA's comments – and warns in the final rule preamble that "[i]n some cases the failure to address [EPA's] comments may result in a disapproval or a partial disapproval of the state's list submission."[91]

For EPA to approve the TMDL, the implementation plan must meet EPA's specific criteria, which vary depending on whether NPDES permits are required.[92] For waterbodies impaired only by point sources covered by NPDES permits, the plan must identify the facilities and the limits needed to bring those facilities into compliance with the TMDL.[93] Where the waterbody is impaired only by sources not subject to an NPDES permit, the plans must include identification of source categories, descriptions of regulatory or voluntary actions that will lead to implementation and a schedule.[94] For waterbodies impaired by a "blend" of these two categories of sources, plans must include all elements required for either.[95] All plans must also include a schedule for implementation, a modeling and/or monitoring plan, a description of interim measurable milestones and criteria used to measure progress.[96] The rule also emphasizes public participation and opportunity to comment on lists, priority rankings, schedules and TMDLs prior to submission to EPA.[97]

The new rules also give EPA additional authority over NPDES permits. For discharges to impaired water bodies in NPDES-authorized states, EPA now has the authority to object to, and ultimately reissue, expired and administratively-continued permits if necessary to ensure progress toward meeting water quality standards and implementing TMDLs.[98]

89. *Id.* § 130.24(c).
90. *Id.*
91. Final TMDL Regulations, *supra* note 4, at 43,605.
92. 40 C.F.R. § 130.32(a) (2001).
93. *Id.* § 130.32(c)(i)
94. *Id.* § 130.32(c)(2).
95. *Id.* § 130.32(c)(3).
96. *Id.* § 130.32(c).
97. *Id.* § 130.36.
98. *Id.* § 123.44(k).

B. *Implications of the New Rules*

Total Maximum Daily Loads, an important concept in assuring water quality, have not previously played a major role in water quality regulations, which have focused more on NPDES controls on point sources. The new rules make TMDLs the cornerstone of federal water controls. The key innovation in the new rules is that EPA changed what is considered to be a TMDL. Previously, TMDLs were "principally a quantitative calculation of the amount of pollution that a stream could receive and still remain in compliance with standards." Now, EPA defines a TMDL as "such a calculation plus a detailed 'implementation plan' that is designed to contain waterbody-specific strategies for reaching compliance within a specific time."[99] This shift in focus from NPDES and point source controls to TMDLs reflects the fact that most point sources were already highly regulated and that discharges that enter water from point sources are minimal due to existing regulation.[100] (Indeed, one of the major groups of point sources that have failed to control point source discharges is *public* sewage treatment plants.[101]) Further tightening of point source controls would add substantial costs while providing little improvement in water quality.[102] Thus it is generally accepted that for there to be significant improvements in water quality around the nation, it makes little sense to tighten the standards for point sources further.[103] Nonetheless, point source discharges are enough of a concern that, as an EPA official put it, "if nonpoint source tradeoffs are not available or the controls developed as a result of a 'tradeoff' fail to achieve water quality standards, the NPDES permit becomes the ultimate method of achieving standards."[104]

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99. Mowrey, *supra* note 666, at 113.

100. *See* Boyd, *supra* note 28, at 8 ("Future improvements [in water quality] must come principally from nonpoint source controls.")

101. *See* ADLER, *supra* note 22, at 14-16 (describing pollution from sewage treatment plants).

102. *See* Thorme, *supra* note 28, at 92-93 ("[I]n most cases, additional point source controls will result in only marginal water quality benefits since point sources already controlled by technology-based limits often contribute substantially less pollutants than nonpoint sources.)

103. *See* Boyd, *supra* note 28, at 8 ("Future improvements [in water quality] must come principally from nonpoint source controls.")

104. Thorme, *supra* note 28, at 74 (quoting Geoffrey Grubbs, Director, EPA Assessment and Watershed Protector Division (August 13, 1992)). *See also* Boyd, *supra* note 28, at 9, ("Absent nonpoint controls, point sources can reasonably expect to be held responsible for load reductions on TMDL-impaired waterbodies.") Nonpoint

Nonpoint sources, including agriculture, silviculture, and urban run-off, are major sources of most remaining water pollution.[105] Thus, a focus on reducing effluent from unregulated nonpoint sources is likely to be more cost-effective than further restrictions on point sources.[106] Because nonpoint sources are, by definition, hard to pinpoint, it makes little sense to talk about technological controls on nonpoint sources.[107] Improving water quality therefore requires a focus on what ends up in water that causes harm. In this sense, the basic thrust of the TMDL rule is logical. The focus should be on what is in a particular body of water that may harm humans or aquatic life, not the specifics of exactly how much is contributed from each source into each body of water.

As always, the devil lies in the details of implementation. The essential problem with the TMDL rule is that it uses this logical focus to grant the federal EPA nearly unlimited authority to address anything that affects any body of water under a multitude of standards and considerations that EPA may apply on a case-by-case basis. This sweeping federal authority is particularly inappropriate considering the lack of knowledge of the extent of

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sources are also "openly nervous about facing tangible abatement requirements." Houck, *Resurrection, supra* note 9, at 10,330.

105. *See* Environmental Protection Agency & United States Department of Agriculture, CLEAR WATER ACTION PLAN: RESTORING AND PROTECTING AMERICA'S WATERS 52 (1998) (noting that "polluted runoff is the greatest source of water quality problems in the United States today") and Houck, *Long Road, supra* note 8, at 10399 ("[n]onpoint source pollution has become the dominant water quality problem in the United States, dwarfing all other sources by volume and, in conventional contaminants, by far the leading cause of nonattainment for rivers, lakes, and estuaries alike.")

106. Nonpoint source pollution is a significant amount of water pollution and comparatively lightly regulated or not regulated at all. *See* David Zaring, Note, *Agriculture, Nonpoint Source Pollution, and Regulatory Control: The Clean Water Act's Bleak Present and Future*, 20 HARV. ENV. L. REV. 515, 517 (1996). The marginal benefits of introducing controls on nonpoint sources is thus likely to be large compared to the marginal benefits of additional controls on comparatively heavily regulated point sources.

107. *Id.* at 531. ("The EPA concluded that in the context of nonpoint source pollution, site-specific decision-making that considers the nature of the affected watershed or waterbody, point sources, and management practices to be regulated are more effective than uniform technical standards.") *See also* Daniel R. Mandelker, *Controlling Nonpoint Source Water Pollution: Can It Be Done?*, 65 CHI.-KENT L. REV. 479, 483-84 (1989) (noting that technology for nonpoint sources varies significantly from site to site); RODGERS, *supra* note 6, at 306-308 (finding "controllability" defines point sources); S. Rep. No. 370, 95th Cong. 1st sess., 37 (1977) reprinted in 1977 U.S.C.C.A.N. 4326, 4362 (identifying that "nonpoint source pollution from animal wastes, fertilizers, pesticides, and eroded soil is difficult to control because of the diffuse nature of the problem.")

the problem the rule proposes to address and the local nature of water quality issues.[108]

EPA is right, both economically and ecologically, to focus on watershed management of water quality. However, water quality is largely a local issue, as every water basin differs in its science and uses. EPA should be concerned with water quality – what is in the water that causes harm – but it should not be concerned with the details, at the federal level, of pollution control efforts for each body of water nationwide. Not only is this a virtually impossible task, but it conflicts with the intent of Congress expressed in its requirement that each state have authority over its own waterways.

We have three general concerns with EPA's rule:

1) The new rules do not respect the local nature of water bodies and conflict with the goal of Congress that states should retain primary responsibility for water quality control;
2) The rules are both prescriptive and open-ended, leaving states little flexibility, but burdening them with substantial responsibility; and
3) By creating an impossible task, the rule forces EPA to act in an arbitrary manner, creating opportunities for rent seeking and corruption.

1. Highly Specific National Controls Do Not Respect the Local Nature of Water Bodies and Conflict with the Goal of Congress

The prescriptive nature of the TMDL rule conflicts with the objective of Congress in the Clean Water Act in giving states primary responsibility for water quality control.[109] Despite this stat-

108. Indeed, the TMDL process thus far is the result of litigation by political pressure groups. As one commentator noted, the political-litigation plan, intended by at least some of the pressure groups to force EPA to adopt their position on regulating nonpoint source pollution, resulted in secret negotiations between EPA and the pressure groups without the participation of "those stakeholders who will have to build and pay for the new facilities necessary to comply with TMDL-driven permit requirements." Hyde, *supra* note 28, at 16. This issue is discussed in the context of the Tar-Pamlico example *infra* at notes 172-74 and associated text.

109. This intention is manifest throughout the CWA: "It is the policy of Congress to recognize, preserve, and protect the primary responsibilities and rights of States to prevent, reduce, and eliminate pollution . . . ." 33 U.S.C. § 1251(b) (2001). The states are "to consult" with the Administrator of the EPA, as Congress supports federal research and "technical services and financial aid to State and interstate agencies and municipalities in connection with the prevention, reduction, and elimination of pollution." *Id.* Furthermore, the Clean Water Act states "It is the policy of Congress that the authority of each state to allocate quantities of water within its

utory recognition of the importance of state level approaches, EPA's changes, define procedures and controls, and could impose federal authority and priorities directly on states, rather than allowing states to make decisions regarding local water bodies based on their own unique characteristics. The emphasis in the regulatory changes is on national consistency and uniformity, when local approaches tailored to individual water bodies and the preferences of the populations living near those water bodies are much more likely to be effective. Commentators on EPA's proposal recognized the problems created by the regulations' centralization of authority.[110]

The regulatory changes authorize EPA to determine TMDLs for all Part One waters in the nation, either through conditions it imposes for approval of state plans or by taking over a state program. In addition to asserting authority in these rules to require any WQS for any water body, EPA leaves open the possibility that in the future it might "promulgate federal water quality standards for states, pursuant to section 303(c)(2)(B), to ensure consistent, nationwide application of the new requirements in the period between listing and TMDL establishment."[111] Thus, states must submit water quality plans that meet EPA approval, for achieving standards that may be determined by EPA at a later date on a case-by-case basis.

States, in establishing TMDLs to meet water quality standards for a given water body, must include every possible source that might contribute to loadings of any pollutant. That is, the impact on water from all possible sources must be determined by the states for every body of water impaired by pollutants or unknown sources, including: point sources of pollutants (discharges from public and private sources such as water treatment plants); nonpoint sources of pollutants (runoff from land, including that from agriculture and silviculture activities, taking into account

jurisdiction shall not be superseded, abrogated or otherwise impaired by this chapter. It is the further policy of Congress that nothing in this chapter shall be construed to supersede or abrogate rights to quantities of water that have been established by any State. Federal agencies shall co-operate with State and local agencies to develop comprehensive solutions to prevent, reduce and eliminate pollution with programs for managing water resources." 33 U.S.C. § 1251(g).

110. As EPA noted in its statement justifying the final rule, "[m]any commenters also perceived EPA's proposal as an attempt to supplant State, Territorial, or authorized Tribal primacy." Final TMDL Regulations, *supra* note 4, at 43,590. EPA denied that this was its intent. *Id.* Despite the denial, EPA did not significantly alter the objectionable features of the proposed rules.

111. www.epa.gov/owow/tmdl/tmdlsfs.html.

the impact of unusually heavy rains, the impact of unusually large snow melts, and the impact of unusually dry weather); and atmospheric pollutants (the impact of airborne dust and pollutants deposited on bodies of water).[112]

While it is true that all these things affect water quality, EPA places no limits on what it may demand from the states in this regard. Documenting all that EPA is proposing for every Part One water body may well be technically impossible, as well as economically infeasible. EPA admits that it knows little about basic water quality for the majority of the nation's waters,[113] yet this rule requires states to provide detailed documentation regarding the current and potential water quality of every river, stream, estuary, reservoir, lake and pond. Under this reading of the regulation, we believe states would have to include estimates, for example of what happens in case a hurricane should hit, a drought should occur, or a large dust storm in New Mexico should drop heavier than usual particulate matter on Arkansas.

Under its existing authority, EPA already claims broad authority to force states to deal with water issues that may arise from any source.[114] In September 1999, for example, the Governor of Nebraska attacked EPA's designation of a stretch of the Middle Platte River as "impaired water" because of concerns about high water temperature.[115] He pointed out that the water was warm due to summer sun and low water levels.[116] The Governor recognized that historically when the weather is hot and rainfall scarce, the river temperature rises, just as EPA asserts. However, he wondered: "How can the state control temperature pollution coming from a natural source, like the sun?"[117] EPA will not answer that question because it asserts that it is Nebraska's re-

112. This reflects a broad, and controversial, reading of the CWA. *See* Final TMDL Regulations, *supra* note 4, at 43,594 (acknowledging that some commentators on proposed rule disagreed). EPA's insistence on including nonpoint sources, including natural sources, atmospheric deposition, and sources not regulated under the NPDES, will significantly restrict states' discretion.

113. *See* Final TMDL Regulations, *supra* note 4, at 43,587 (noting that EPA had data on less than 25% of rivers and streams, less than 33% of estuary waterbodies, and less than 50% of lakes, ponds, and reservoirs (not including the Great Lakes) when it issued the final rules).

114. *See, e.g.,* Boyd, *supra* note 28, at 9 (EPA "contends that the CWA provides it with ample authority to step in and issue nonpoint controls if there is evidence of ongoing impairments and inadequate state responses to them.").

115. Nancy Hicks, *EPA Says Platte Too Hot; Johanns Fumes Over 'Sun Pollution'* OMAHA WORLD-HERALD (Sept. 21, 1999) at 1, *available at* 1999 WL 4515605.

116. *Id.*

117. *Id.*

sponsibility to resolve the problem.[118] Nebraska denies there is a problem, other than one caused by nature. EPA demands a remedy and under the new rules may impose one.

The real issue in this example is that of water flow restrictions caused by the Kingsley Dam. Nebraska contends that the EPA does not have the authority to order the dam torn down or to require higher levels of water flow from the dam.[119] EPA does not assert it has such authority, but continues to demand that Nebraska lower the river water temperature by changing water flow. In essence, EPA is using water quality standards for temperature to force a state to change water flow practices, something it cannot directly regulate. The new rules would end any doubt about the ability of EPA to force states to impose any control on any activity that now affect or in the future could affect water quality, as defined by EPA.[120]

EPA's new rules thus create an important new monopoly in EPA on water quality. By asserting such broad authority over water quality issues, EPA has ensured that all water quality (or even all water-related issues) ultimately may be within EPA's claimed authority. No water user may be secure in its use without EPA's sanction, no state may broker a compromise among water users without involving EPA.

EPA's monopoly on final authority has significant implications. First, EPA's monopoly will lead to reduced entry into water-dependent industries, reducing competition. Second, EPA's monopoly will offer the existing water users a tempting target for rent-seeking behavior. By convincing EPA to act, existing users will

118. EPA declined to revise its proposed rule's definition of pollutant "load" to exclude "increases in temperature due to solar input. EPA does not believe that the source of a load should disqualify it from being a load. What needs to be done to mitigate heat load from solar input will be addressed by a State, Territory, or authorized Tribe when it establishes the TMDL." Final TMDL Regulations, *supra* note 4, at 43,594.

119. Indeed the Clean Water Act expressly states "It is the policy of Congress that the authority of each State to allocate quantities of water within it jurisdiction shall not be superseded, abrogated or otherwise impaired by this chapter." 33 U.S.C. § 1251(g) (2001). EPA acknowledged that low flow could not itself be considered a pollutant, and so the basis for requiring a TMDL. *See* Final TMDL Regulations, *supra* note 4, at 43,592–93. However EPA accomplished the same objective by requiring that TMDLs consider seasonal variations defined broadly so that "water quality standards are attained and maintained in all seasons and all flows." *Id.* at 43,624; *see also* 40 C.F.R. § 130.32(b)(9) (defining seasonal variations).

120. *See, e.g.*, Boyd, *supra* note 28, at 10 ("TMDL rules will highlight the artificial distinction between water quality and quantity issues. . . . TMDLs will in some cases constrain water transfers involving impaired waterbodies.").

enhance the value of their asset (the right to discharge) by making it scarcer.

This effect of centralization is worsened by the failure of EPA to base the new regulatory regime on sound science. While there are real problems with water quality in various lakes, rivers and estuaries, the EPA has little scientific evidence about the extent of the problem.

Rational policy, based on evidence of problems, would demand that the Agency collect comprehensive evidence, rather than simply assert that a massive expansion of detailed regulations are justified because, for example, to the best of the EPA's knowledge, 1.5 percent of the rivers in the nation *might* violate water quality standards in the future.[121] The fact that just over one-third of the twenty-three percent of the nation's rivers surveyed for the National Water Quality Inventory Report (or eight percent of the nation's rivers and streams) are not in full compliance with existing water quality standards is not buttressed by evidence that deviations from existing EPA regulations are, in fact, causing harm to the "chemical, physical and biological integrity of the Nation's waters," as specified by Congress in the Clean Water Act.[122]

EPA recognizes that it has little scientific evidence to support the rules. "One option EPA considered was whether it would be appropriate to revise the regulations to require that TMDLs be established only on data and analyses which met very strict quality and analytical standards. EPA concluded that this approach is

121. "Of the 23 percent of the Nation's rivers and streams that have been assessed, 35 percent of these do not fully support water quality standards or uses and an additional 10 percent of these are threatened." Final TMDL Regulations, *supra* note 4, at 43,587. That means that the water quality in only 2.3 percent of the nation's rivers and streams are known to be "threatened."

What is a "threatened waterbody"? EPA defined it in the proposed rules that currently attains water quality standards, but for which existing or readily available data and information on adverse declining trends indicate that water quality standards will likely be exceeded by the time the next list of impaired or threatened waterbodies is required to be submitted to EPA." Proposed TMDL Regulations, *supra* note 70, at 46,047. In other words, so far as EPA can determine, as of its National Water Quality Inventory Report to Congress for 1996, perhaps only 2.3 percent of the nation's rivers and streams appear to be threatened by an increase in pollution in the future. *See* Final TMDL Regulations, *supra* note 4, at 43,587. EPA is, apparently, unable to report anything on the water quality of the other 77 percent of the nation's rivers and streams (or on 68 percent of the estuary waters, or 58 percent of the lakes, ponds, and reservoirs). EPA abandoned the requirement that "threatened" waterbodies be included in the list in the final rule. *See* Final TMDL Regulations, *supra* note 4, at 43,590.

122. 33 U.S.C. § 1251(a) (2001).

impractical and would significantly decrease the number of TMDLs that could be established."[123] However, EPA does not defend why it thinks it is better to have more TMDLs than to have a few meaningful plans for truly impaired water bodies. Critical observers argue that lack of monitoring has left states unable to measure the quality of their waters or the progress made. According to analyst Dr. Richard Halpern, for example, twenty years after the Clean Water Act was passed, only "$33 million had been spent on monitoring the nation's water quality, but taxpayers and the private sector had spent more than $540 billion on technology to fix our water, broken or not."[124] As two USGS hydrologists concluded in 1993, "After all this time and money, it would be desirable to know whether the [Clean Water] act has worked. Is the water cleaner than it would otherwise have been and have the environmental benefits, however they may be counted, exceeded the costs?"[125] They concluded that decision-makers "do not now have the information they need to make wise decisions for the future."[126]

2. The Procedural Nature of the New Rule is Both Prescriptive and Open-Ended

EPA's monopolization, and the ill-effects thereof, are worsened by the prescriptive and open-ended nature of the new regulatory regime, leaving states with substantial responsibility but little flexibility. The regulations require states to develop lists of impaired water bodies, according to a specified format and using EPA's prescribed priorities. States must also solicit public input and document the methodology they use to develop the list of

123. Proposed TMDL Regulations, *supra* note 70, at 46,036.

124. Richard A. Halpern, Center for Global Food Issues, *Where Have All the Nutrients Gone? Virginia's Livestock Agriculture and the Chesapeake Bay* (1995), *available at* http://www.cgfi.com/new_detail.cfm?Art_ID=151 (last visited March 14, 2001).

125. Debra S. Knopman & Richard A. Smith, *20 Years of the Clean Water Act*, 35 ENVIRONMENT 17, 17 (1993). Knopman and Smith are hydrologists with the U.S. Geological Survey in Reston, Virginia.

126. *Id.* at 40. EPA is not entirely responsible for the paucity of scientific information; Congress has never chosen to allocate significant funds for this purpose and, similarly, most states do not consistently produce evidence about water quality. No doubt this is because most streams are generally accepted *not* to be in environmental distress. Presumably, the most attention is given to bodies of water that clearly suffer from pollution problems.

impaired water bodies and submit that to EPA eight months before the list is due.[127]

The ill-effects of the regulations can be seen in EPA's own analysis of the requirement of "reasonable assurance" that a TMDL will be effective. As EPA recognized, "many commentators [on the proposal] noted that States may have limited regulatory authority to address nonpoint sources, and perceived the definition of reasonable assurance as forcing states to adopt regulatory controls on nonpoint sources rather than rely on voluntary programs."[128] EPA's definition of "reasonable assurance" requires a TMDL for a source not covered by the NPDES permits to satisfy a four-point test, including that the state is providing adequate funding.[129] For EPA-established TMDLs, EPA may establish adequate funding by conditioning other CWA grant funds on the state providing funding.[130] EPA is thus permitted to establish "adequate" funding by threatening to withhold funds, while states must establish it by actually providing funds.

An "approvable" TMDL must include considerations of water quality, habitat, geomorphological, or other conditions that indicate adequate water quality.[131] For example, EPA described the new rules in the proposal by noting that a state may have to show, among other things, how it can improve spawning of a particular fish by twenty percent by its TMDL plan for a particular water body.[132] Whether twenty percent more successful spawning is the "correct" target is at EPA's discretion. In planning such TMDLs for various water bodies, the state must consider fine sediment from hillsides or river banks, and the variability of such sediment according to the season of the year, the amount of rainfall ("low flow during drought periods" and "high flow nonpoint source runoff"), and the temperature that "varies as a result of climate and season"[133] and that may affect the impact on water of assorted pollutants.[134] EPA recognized that such matters are

127. While EPA does not assert the authority to approve or disapprove the methodology itself, it will consider methodology in its review and approval or disapproval of state's list and priority rankings. Final TMDL Regulations, *supra* note 4, at 43,605.

128. *Id.* at 43,598.

129. 40 C.F.R. § 130.2(p)(2) (2001).

130. *Id.* § 130.2(p)(2)(i); *see also* Final TMDL Regulations, *supra* note 4, at 43,600.

131. 40 C.F.R. §130.33(a).

132. Proposed TMDL Regulations, *supra* note 70, at 46,031.

133. *Id.* at 46,031.

134. *Id.* at 46,031; *see also* 40 C.F.R. § 130.32 (2001).

"extremely difficult to solve" and may be "costly," so the Agency assures the states that it appreciates the complexities they face.[135] However, EPA opted to read Congress's silence on the elements of TMDLs to authorize it to "require such an implementation plan as an element of an approvable TMDL."[136] Moreover, EPA argues that it has the authority to establish TMDLs even when it has not disapproved a proposed TMDL and asserts that it should "take the lead" in setting TMDLs for interstate or boundary waters.[137]

While the general outlines of the new rules are based upon water quality standards and implementation plans outlined by Congress,[138] EPA has significantly stretched the words of Congress to give itself nearly unlimited control over state waters. Whereas Congress says that water quality plans will take into account "seasonable variations,"[139] EPA stretches that to be from drought to flood conditions, as noted above. In other words, states, in developing TMDLs, must consider the effect of "seasonable variations," including hundred year floods and unusual droughts.[140] Similarly, while Congress says that water controls should be "stringent enough to assure protection and propagation of a balanced indigenous population of shellfish, fish, and wildlife,"[141] EPA stretches this to include habitat plans under the Endangered Species Act[142] and asserts that it has the option of using the Safe Drinking Water Act standards or new standards that may be developed in the future.[143]

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135. Proposed TMDL Regulations, *supra* note 70, at 46,031.

136. *Id.* at 46,032. EPA declined to place time limits on itself to act or to allow states an appeal process from the disallowance of a TMDL. *See* Final TMDL Regulations, *supra* note 4, at 43,632.

137. Final TMDL Regulations, *supra* note 4, at 43,633; *see also* 40 C.F.R. §§ 130-135(b)(2) (2001).

138. *See* 33 U.S.C. § 1313 (2001).

139. *Id.* § 1313(d)(1)(C).

140. *See* 40 C.F.R. § 130.32(b)(9) (requiring consideration of seasonable variations "such that the allocations will result in attainment and maintenance of water quality standards in all seasons of the year and during all flow conditions."); *see also* Final TMDL Regulations, *supra* note 4, at 43,601 (declining to adopt definition of seasonal variation to limit reach of this provision).

141. 33 U.S.C. § 1313(d)(1)(B).

142. The TMDL provisions were objected by "some commenters" (presumably states) on the grounds that EPA was "attempting to shift the burden of compliance with the Endangered Species Act away from EPA and to States." Final TMDL Regulations, *supra* note 4, at 43,628.

143. *See id.* 43591-92 (EPA interprets CWA to include "in most cases" drinking water contaminants that are regulated under section 1412 of the Safe Drinking Water Act); *see also* 40 C.F.R. § 130.33 (requiring consideration of ESA in TMDLs);

The new rules grant EPA nearly unlimited authority to impose controls on states. Although EPA's discussion of the rules suggests that in practice the Agency does not intend to implement such sweeping powers except in rare cases, EPA does not define what these rare cases are and its powers are not limited by the rules. EPA's power grab is all the more astonishing because of the enormous costs it will impose on the states. Although EPA claimed that the TMDL rules would not impose direct costs in excess of $25 million per year, these figures are suspect.[144] A 1996 EPA report of the costs to state and local governments of developing TMDLs (based on case studies of fourteen TMDLs) provides some insights into potential costs to states, territories and authorized tribes.[145] It found that per-watershed costs ranged from under $5,000 for small watersheds with single pollutant source and no public participation to over $1,000,000 for large watersheds with various sources and more extensive public participation. The studies examined five components of costs: administration, outreach and public participation, analysis, modeling, and data collection and monitoring. If the additional requirements in the rules increase administration and public participation costs by twenty-five percent, and modeling and analysis costs by fifteen percent (we assumed no increase in mon-

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Final TMDL Regulations, *supra* note 4, at 43,628 (describing adoption of this language).

144. EPA determined that the new rules were a "significant regulatory action" under the terms of Executive Order 12866, and the preamble to the proposed rules stated that EPA prepared an "Analysis of the Incremental Costs of Proposed Revisions to the TMDL Program Regulations," which examines the direct costs to states, territories and authorized tribes of developing TMDLs. Proposed TMDL Regulations, *supra* note 70, at 46,042. However, the preamble does not report the results of that analysis (other than to suggest in a separate section that these direct costs will not exceed $25 million in any one year), nor does EPA post the analysis on its web site. Interested public must go to EPA's docket to obtain it. The preamble also promised expeditiously to gather information and provide analysis of the costs and benefits of the implementation (by private parties) of the TMDLs required by the rule and EPA hoped to make this available for public review and comment before final promulgation of the TMDL rule.

Because EPA states that it does not expect the costs to states, territories and authorized tribes to exceed $25 million in any one year, it has not conducted an analysis as required by the Unfunded Mandates Reform Act ("UMRA") for rules imposing costs on these governmental units or the private sector of $100 million or more. *Id.* at 46,043. For rules costing more than $100 million in any one year, UMRA requires agencies to consider, in a written statement, a reasonable number of regulatory alternatives and adopt the least costly, most cost-effective or least burdensome alternative that meets the rules objectives.

145. EPA, TMDL DEVELOPMENT COST ESTIMATES: CASE STUDIES OF 14 TMDLs (EPA-R-96-001) (1996).

itoring and data collection costs due to the changed rules), the average *incremental* cost of the rule would be about $115,000 per watershed. EPA suggests that over 20,000 waterbodies have been identified as impaired or threatened,[146] implying total costs of over $2 billion. Even if these costs are distributed evenly over the fifteen-year period during which states must develop TMDLs for all Part One waterbodies, it amounts to over $250 million per year in costs to states, simply for developing plans.[147] This rough estimate does not include costs to private citizens of implementing these plans. Other analyses also suggest that EPA substantially underestimated the costs.[148]

146. The Proposed Rules noted that the State of Kansas alone needs to produce "TMDLs for over 1,000 waterbodies statewide" Proposed TMDL Regulations, *supra* note 70, at 46,039.

147. The table below summarizes these rough calculations. The low and high estimates for each cost component are from EPA's fourteen case studies, Figures 8a and 8b. The annualized cost estimates are calculated using a seven percent discount rate.

Cost Component	Mean Cost/ watershed In $1000	Increment attributed to rule	Total Cost/ Watershed in $1000	Total Cost for 20,000 watersheds in $1,000,000
Administration	50	25%	$ 12.5	$ 250
Public Participation	50	25%	$ 12.5	$ 250
Modeling	400	15%	$ 60	$ 1,200
Monitoring	300	0%	$ -	$ -
Analysis	200	15%	$ 30	$ 600
	1000		$ 115	$ 2,300
Annualized cost over 15 years			**$ 253**	

148. The American Legislative Exchange Council ("ALEC") observes that states estimated they will incur average costs of $50 million from the TMDL rule as proposed. AMERICAN LEGISLATIVE EXCHANGE COUNCIL, MODEL STATE LEGISLATION, STATE IMPLEMENTATION OF CLEAN WATER ACT TMDL REQUIREMENTS (1999). This amounts to almost $275 million per year. (This assumes the $50 million figure is a present value, and that these costs are distributed evenly over 15 years, using a 7 percent discount rate.) Other studies of the costs of modeling watersheds (which is not included in the $2 billion estimate) suggest that these costs also may be significant. The General Accounting Office ("GAO") has estimated that current EPA watershed models, costing $25,000 per study, are insufficient to calculate the consequences of pollutant loadings. GAO, WATER QUALITY: FEDERAL ROLE IN ADDRESSING – AND CONTRIBUTING TO – NONPOINT SOURCE POLLUTION (GAO/RCED-99-45) 7-8, 46-49 (1999) (noting cost and that current methods have serious methodological limitations). Better, but not well-tested, watershed models by the U.S. Geological Survey are about $750,000 each, the same GAO report notes. *Id.* One commentator observed, "conservatively estimating 100 watersheds per state, the bill for their assessment alone could reach $4 billion." Oliver A. Houck, *TMDLs IV: The Final Frontier*, 29 ENVTL. L. REP. 10469, 10476 (1997).

Though based on very rough calculations, we believe the above figures suggest that EPA's estimate that the changes will cost under $25 million per year is understated. The cost of producing comprehensive TMDLs, which must potentially account for temperature swings, rainfall (and snow melt) highs and lows, habitat, sedimentation, and a wide variety of pollutants and water quality standards that EPA may rely upon in approving or setting such plans, is clearly a massive undertaking, imposing costs that could well exceed our rough $250 million estimate in any one year. The states must incur these costs and, due to the open-ended nature of the rule, are dependent on EPA's verdict as to whether a particular TDML is adequate with respect to the various elements contained in the rule.

It is not clear how states will fund this open-ended program. Indeed, the proposal noted that states "may have difficulty in completely identifying funding sources for all such measures."[149] Left unsaid is how funds are to be produced if not allocated by state legislatures. EPA is putting itself in the position of forcing the states to allocate additional funds to cover the costs of whatever water protection programs EPA asserts it has the authority to mandate on the states.[150]

EPA also asserted that the Regulatory Flexibility Act did not apply because the Proposed Rules "will not have a significant economic impact on a substantial number of small entities." Proposed TMDL Regulations, *supra* note 70, at 46,041. EPA did not claim that its rule would not involve compliance costs for small entities, but rather claimed only that *EPA* was not directly ordering any group of small entities to change their methods of operation. EPA asserted that "no impact flows directly from these proposed regulations." Proposed TMDL Regulations, *supra* note 70, at 46,042. The impacts will flow from the states when they implement TMDL plans that the states create under the Rules (or that EPA imposes if it disapproves state plans).

Similarly, EPA claimed that it did not have to comply with Executive Order 13045, which concerns health or safety risks to children, because the Proposed Rules are not "economically significant" and do not "establish an environmental standard intended to mitigate health or safety risks. Today's proposal is a procedural rule." Proposed TMDL Regulations, *supra* note 70, at 46,045. Of course, the procedures here specifically assert that the Agency may require states to incur or impose substantial economic costs. These costs will divert scarce state, territory, and tribal resources away from programs that may provide much more effective and concrete improvements in children's health and safety.

149. Proposed TMDL Regulations, *supra* note 70, at 46,034.

150. The American Legislative Exchange Council has responded with model legislation to assist states in setting priorities to meet their obligations under the CWA "in a fashion that recognizes their resource constraints and that is based on sound scientific data." AMERICAN LEGISLATIVE EXCHANGE COUNCIL, MODEL STATE LEGISLATION, TOTAL MAXIMUM DAILY LOAD IMPLEMENTATION ACT (1999).

3. Creating Incentives for Rent-Seeking and Corruption

By allocating to itself the authority to review every TMDL proposed by the states and by requiring that so many TMDLs be issued so rapidly, EPA created an impossible task. Meaningful review of the complex TMDLs cannot be achieved by EPA with its limited resources, something EPA implicitly admitted in its comments declining suggestions that proposed TMDLs pending at EPA for a period without action be automatically approved.[151] Comparison with similar tasks under the Clean Air Act (reviewing state implementation plans)[152] and Federal Insecticide, Fungicide, and Rodenticide Act (reviewing state registration decisions and reviewing pre-1972 pesticide registrations)[153] shows that EPA is unable to meaningfully review such a volume of state decisions.

How will EPA allocate its scarce review resources? EPA will face pressures from two groups to review particular decisions. First, because the TMDL process creates what is essentially a zero-sum game with respect to emissions into water, pollution sources will have great incentives to use the TMDL-NPDES process to foreclose existing and potential competitors' access to the environment's waste disposal capacity. Second, environmental pressure groups will be able to use the administrative process to pressure EPA to review specific decisions and so to pressure specific sources to agree to their demands.[154] Thus, in addition to creating a cartel manager in EPA, the new water quality regulatory scheme also creates strong incentives for regulated industries to engage in rent-seeking behavior.

151. *See* Final TMDL Regulations, *supra* note 4, at 43,631 (acknowledging "concerns" about "the timeliness of EPA's TMDL approval actions").

152. *See, e.g.,* Morriss, *Clean Air Act, supra* note 1, at 270-76 (detailing failure of review of SIPs under CAA.)

153. *See, e.g.,* Andrew P. Morriss, *Pesticides and Environmental Federalism: An Empirical and Quantitative Analysis of §24(c) Registrations, in* ENVIRONMENTAL FEDERALISM 133, 144-45 (Terry L. Anderson & Peter J. Hill, eds. 1997) (describing problems with EPA's review of pesticide registrations).

154. A similar process can be seen in the actions of pressure groups under the Community Reinvestment Act to pressure banks. *See* Jonathan R. Macey & Geoffrey P. Miller, *The Community Reinvestment Act: An Economic Analysis*, 79 VA. L. REV. 291, 347 (1993); Keith N. Hylton & Vincent D. Rougeau, *The Community Reinvestment Act: Questionable Premises and Perverse Incentives*, 18 ANN. REV. BANKING L. 163, 187-90 (1999).

IV.
PROPERTY RIGHTS AND THE RULE OF LAW: A SOLID FOUNDATION FOR WATER QUALITY MANAGEMENT

EPA could recast the TMDL rules to more effectively meet the congressional goals of significantly enhancing and protecting the quality of the nation's waters, while respecting its objective regarding "the authority of each State"[155] with respect to the use of its waters. The needs of the states with respect to the uses of their waters, and the causes of and solutions to water pollution problems differ significantly from state to state.

Refocusing water quality regulation on outcomes instead of inputs (as reflected in the emphasis on TMDLs rather than NPDES effluent limitations) is a major step in the right direction, but greater flexibility is needed if the promise of real water quality improvements and cost savings is to be realized. Given a choice between performance standards that identify and focus on outcomes and technology-based input standards, common sense suggests that environmental protection should be about the environment and how it affects people, not about engineering and permits. Performance or outcome-based water quality management changes the incentives in the right direction. With unconstrained performance standards, polluters have complete flexibility, technologically and economically, in finding effective ways to meet environmental targets. New information and discoveries can be translated quickly into enhanced environmental quality. Profit seeking moves producers in the direction of improved water quality. On the other hand, technology-based input regulation tends to freeze technology, force a single approach on polluters in the same industry, blunt the incentive to discover and implement alternate approaches, reduce competition, and to disregard outcomes. Permitted polluters who adopt approved technologies can expand operations even though environmental loadings may exceed the assimilative capacity of streams for handling discharge. The fact that numerous river segments are environmentally stressed while all dischargers meet EPA engineering standards[156] – and that this situation is destined to get worse – is powerful evidence that input management will not generate environmental protection.

155. 33 U.S.C. § 1251(g) (2001).

156. Proposed TMDL Regulations, *supra* note 70, at 46,016.

The requirement that point-source dischargers who wish to expand first obtain offsets from existing dischargers raises the admirable prospect of gains from trade in the context of a river basin management system.[157] However, for EPA to require that offsets of particular amounts and kinds be sought only after technology-based standards are met is just as clearly a step in the wrong direction.

Evidence from experiments on Wisconsin's Fox River that offered permit trading opportunities, the equivalent of market offsets, after EPA technology-based standards were met illustrates the difficulties associated with a hybrid system that attempts to install markets on top of command-and-control regulation.[158] Touted in the early 1980s as a cost-effective alternative to strict command-and-control regulation for reducing biological oxygen demand (BOD), the Fox River experiment initiated by the Wisconsin legislature in September 1981 offered the prospect of generating annual savings of $4.5 to $6.8 million.[159] But as environmental economist Thomas Tietenberg points out, the large savings were not achieved.[160] Only one trade between BOD dischargers was recorded. The requirement that technology standards had to be met prior to entering the market for offsets raised costs and practically eliminated the potential gain from trade. In addition, bureaucratic barriers were then erected by regulators who did not support the concept.[161] In a perceptive analysis of what happens when efforts are made to append markets to command-and-control regulation, two water quality management scholars pointed out early on that the Fox River experiment would suffer because the financial and bureaucratic incentives were not right.[162] Their pessimistic forecast proved to

157. *See* ENVIRONMENTAL PROTECTION AGENCY, OFFICE OF WATER, MANAGING NONPOINT SOURCE POLLUTION (EPA 506/9-90) 195-96 (1992).

158. *See* Roger E. Meiners & Bruce Yandle, *Clean Water Legislation: Reauthorize or Repeal? in* TAKING THE ENVIRONMENT SERIOUSLY 73, 97 n.13 (Roger E. Meiners & Bruce Yandle, eds. 1993).

159. M. T. Maloney & Bruce Yandle, *Building Markets for Tradable Pollution Rights, in* WATER RIGHTS 283, 312 (Terry L. Anderson, ed., 1983).

160. THOMAS TIETENBERG, ENVIRONMENTAL AND NATURAL RESOURCE ECONOMICS 456 (1999).

161. Meiners, *Reauthorize or Repeal, supra* note 158, at 97.

162. Martin H. David & Erhard F. Joeres, *Is a Viable Implementation of TDPs Transferable? in* BUYING A BETTER ENVIRONMENT 233, 234 (Erhard F. Joeres & Martin H. David, eds., 1983) (University of Wisconsin Sea Grant Technical Report No. 239, Land Economics Monograph No. 6).

be extraordinarily accurate. EPA's TMDL regulations are flawed for the same reasons.

Water quality problems are inherently local or regional, and while there is a national interest in improving environmental quality, there are no national rivers or lakes. Even if there were rivers and lakes that touched every state, or even most of them, the span of such water bodies would be so large and heterogeneous that decentralized control would naturally emerge. To achieve the largest net gains in water quality benefits, management of water quality should be decentralized. Those best equipped with specialized knowledge and with the greatest incentive to minimize cost and improve water quality should be made responsible and accountable for managing water quality. TMDL regulations should be refocused; they should be cast in terms of property rights protection and the rule of law and focused at the state level. A decentralized approach for water quality management based on the rule of law maintains state supremacy and congressional intent that EPA "consult" with the states.[163]

Instead of specifying in detailed fashion how states shall proceed in developing TMDLs for all bodies of water within their boundaries and then engaging in continuous water quality planning and monitoring, federal rules for managing water quality should simply require: 1) that each state have a plan for achieving water quality management that provides accountability and liability for damages imposed on holders of environmental rights, and 2) that real data on observed water quality conditions for all major water bodies be provided continually and consistently to the public. The data should be in a form that allows for comparisons to be made across time and space. Obviously, appropriate definitions of "major water bodies" and "real data on observed water quality conditions" would have to be specified.

The rule of law that has evolved through common law courts provides a logical framework for defining legitimate holders of environmental rights.[164] Under common law, ordinary people and communities of people hold the right not be harmed against

163. As EPA noted in the preamble to the final rule, "a common theme through many comments was that the Agency should not attempt to force-fit clean up of every impairment through the TMDL process." Final TMDL Regulations, *supra* note 4, at 43,590.

164. *See generally* Roger E. Meiners & Bruce Yandle, *Common Law and the Conceit of Modern Environmental Policy*, 7 GEORGE MASON L. REV. 923 (1999).

their will. To illustrate, if a discharger of waste imposes costs on parties downstream against their will, the holders of downstream rights have a cause of action against the polluter. If those downstream are citizens of the same state or city populations in another state, the cause of action is the same. State and federal courts provide forums for settling the related disputes. Typically, the remedies are damages and injunction.

If common law rights were enforced, any city that discharged raw sewage that imposed costs on downstream citizens would do so at its own risk. Paying a nominal fine to the EPA, which is the usual result under the current regulatory system, does not get the job done. For example, in 1997, the City of Atlanta was paying a $20,000 per day fine to the state of Georgia for discharging untreated sewage directly into rivers and creeks in the Atlanta area. The penalties were less costly than the cost of modernizing the city's main sewage treatment works.[165] Downstream communities had to wrestle with resulting drinking water contamination problems, which were partly resolved by financial transfers provided by the state. At common law, a public nuisance suit could theoretically be brought by a downstream community against the City of Atlanta, asking for payment of damages and a cease and desist order. Unlike statute-based remedies, which generate penalty revenue to environmental protection agencies or into general state coffers, common-law remedies generate payments to the damaged party and can also bring injunctive relief. Similarly, any nonpoint-source polluters who allowed runoff from a farm or collection of city parking lots to impose damages on downstream parties would be subject to suit. Any state that allowed damages to befall the citizens of another state could be sued in federal court. And any state that damaged the federal property of citizens of the United States, as in the case of the Florida Everglades[166] or Yellowstone National Park,[167] could be sued by the stewards of that property.

Common law property rights protection introduces an understandable discipline that causes ordinary people to become con-

165. *See* Charles Seabrook & Charmagne Helton, *A Fine Mess: Sewage Runoff Puts City Up the Creek, Again*, ATLANTA CONST. (Mar. 19, 1997) at 1; *See also* National Wildlife Federation, *Send a Message to Atlanta City Officials Demanding Sewers that Don't Infect Our Drinking Water, available at* http://www/nwf.org/chattahoochee/atlantasewercomments.html (last visited Mar. 14, 2001).

166. *See* CLAY LANDRY, PERC, UNPLUGGING THE EVERGLADES (2001).

167. *See* TERRY L. ANDERSON & DON LEAL, FREE MARKET ENVIRONMENTALISM 51-52 (2d ed. 2001) (describing environmental problems in Yellowstone).

scious of and accountable to their neighbors. Common law courts do not issue permits that allow polluters to harm other people. Instead of dealing with the endless technical problems of specifying TMDLs for hundreds of thousands of U.S. river segments, the common law process would protect environmental rights. The result of that protection would then yield another form of TMDLs, one based on the prevention of damages to people and the things they value.

A. *The Rule of Law Is Consistent with River Basin and Watershed Management*

From the very outset of the nation's interest in improving water quality, scholars and policy analysts have focused on river basins and watersheds as the appropriate domain for a substantial part of water quality management.[168] Water quality results from the collective action of all water quality users; it is impossible to achieve collective improvements by focusing on individual discharge points. The European experience tells us about the relative merits of river basin management.[169] Federal encouragement for building environmental protection on the basis of property rights and the rule of law would support the formation of associations or multi-state compacts for improving water quality. Building on a foundation of law and property rights leaves room for many kinds of institutional experiments.

There are obvious economies associated with defining the boundaries of a proposed solution so that they fit the boundaries of the problem. A very positive U.S. experience is found in the history of the Ohio River 10-state compact, ORSANCO, which led to dramatic improvements in water quality in that region before federal intervention.[170] A similar experience is seen now in North Carolina's Tar-Pamlico River Basin Association, which forms a cost-minimizing community of point-source and nonpoint-source dischargers who are collectively improving water quality of the Tar River and Pamlico Sound.[171]

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168. *See, e.g.*, J. H. DALES, POLLUTION, PROPERTY AND PRICES (1968); ALLEN V. KNEESE AND BLAIR T. BOWER, MANAGING WATER QUALITY: ECONOMICS, TECHNOLOGY, AND INSTITUTIONS (1968).

169. David Riggs & Bruce Yandle, *Environmental Quality, Biological Envelopes and River Basin Markets for Water Quality* in WATER MARKETING—THE NEXT GENERATION 147, 152-54 (Terry L. Anderson & Peter J. Hill, eds. 1997).

170. *See* EDWARD J. CLEARY, THE ORSANCO STORY (1967).

171. *See* Riggs, *supra*, note 169; NORTH CAROLINA DEPARTMENT OF HEALTH, ENVIRONMENT AND NATURAL RESOURCES, TAR-PAMLICO NSW IMPLEMENTATION

When ORSANCO was formed in 1948, there were no federal water pollution control statutes. ORSANCO and state and local statutes filled the need. By contrast, when Tar-Pamlico was formed in the 1980s following a massive downstream fish kill, federal statutes had failed to provide water quality protection. Every point-source discharger in the watershed was operating within permit limitations, and nonpoint source dischargers were outside the regulatory control network.

Estimates of the incremental cost of reducing a unit of biological oxygen demand (BOD) in the watershed region varied from 10 cents per kilogram to $3.15 per kilogram.[172] At one location in the Tar-Pamlico estuary, reductions of harmful nutrient discharge from an industrial point source ranged from $860 to $7,861 per pound eliminated. It was estimated that the same pollutant could be removed by farmers (nonpoint-source dischargers) at a cost of $67 to $119 per pound.[173] In short, the expected gains from trade were sizable.

Today, Tar-Pamlico collects revenues from point-source dischargers who are members of the Association. The revenues generated are used in turn to make low-cost purchases of reductions from nonpoint-source dischargers who are not association members. The incentives are right for all parties. Operators of publicly owned treatment works have coordinated capital improvements to minimize the cost of improving water quality and have avoided the installation of more costly yet still ineffective advanced control systems by paying discharge fees. Farmers in the region gain revenues by modifying their cropping operations. Meanwhile water quality has improved in the Tar River. Initial estimates of the command-and-control approach to the problem indicated the cost would be $50 to $100 million and water quality would not necessarily be improved. By comparison, Tar-Pamlico is achieving improvements at a cost of $11.7 million.[174] Tar-Pam-

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STRATEGY (February 13, 1992); U.S. ENVIRONMENTAL PROTECTION AGENCY, OFFICE OF WATER AND OFFICE OF POLICY, INCENTIVE ANALYSIS FOR CLEAN WATER ACT REAUTHORIZATION: POINT SOURCE/NONPOINT SOURCE DISCHARGE REDUCTIONS (Apr. 1992).

172. Bruce Yandle, *Community Markets to Control Agricultural Nonpoint Source Pollution* in TAKING THE ENVIRONMENT SERIOUSLY 185, 193 (Roger E. Meiners & Bruce Yandle, eds. 1993).

173. *See* Bruce Yandle, *Community Markets to Control Agricultural Nonpoint Source Pollution* in TAKING THE ENVIRONMENT SERIOUSLY 185, 193 (Roger E. Meiners & Bruce Yandle, eds. 1993).

174. David W. Riggs, *Market Incentives for Water Quality in* THE MARKET MEETS THE ENVIRONMENT 167, 189 (Bruce Yandle, ed. 1999).

lico and ORSANCO illustrate just two possibilities that states might take in efforts to improve water quality.

The Tar-Palmico approach yielded a lower cost water quality in a competitive context. Firms within the basin have a choice: they can follow EPA's command-and-control dictates or join the Association. The Association has an incentive to keep costs down, while meeting or exceeding environmental goals. If EPA were running the program, or approving the details of their operation, the competitive element would be lost.

Given a complete range of choices as to how to manage water quality, it is conceivable that a river basin association would take a TMDL approach precisely like the one outlined in EPA's rule. It is also conceivable that an association would follow the path of Tar-Pamlico, which, along with EPA approval, focuses strictly on outcomes and supports contracting for reductions between point-source and nonpoint-source dischargers. People in other states would no doubt discover and implement a range of solutions to the water quality problem that cannot be predicted before the fact. Accountability and water quality protection would be assured by a requirement of liability for damages provided by common law and with a reporting of water quality data required by regulation.

B. *EPA Should Be a Consultant to the States; Not a Manager of TMDLs*

The evolving state-centered water quality management process still leaves a key role to be played by the EPA. It is not, however, the micro-management role envisioned by the TMDL rules. Quite apart from these rules, the EPA is positioned to be a key consultant to the states in reporting water quality data, analyzing conditions, and providing technical support in the development of water quality management approaches. If water quality is to be improved, it is critical that reliable data be provided so that citizens and responsible officials can know where, when, and how much progress is being made. If nothing else, the federal government should provide accurate data on environmental quality.

EPA could play an enforcement role in common law suits that involve interstate matters and protection of federally managed assets. Obviously, the adjustment from enforcer of command-and-control, technology-based standards to the role of consultant in a common-law world will not come easily, but change is important.

V.
CONCLUSIONS AND RECOMMENDATIONS

Far more is known today about water quality management than was known in 1972 when the current Clean Water Act was passed into law. Even if the economic makeup of the country had not changed, there would be reason to reexamine and perhaps change the regulatory assumptions that supported that first major statute. But the economy has changed dramatically. The United States is no longer a smokestack economy: it is primarily a services economy. The major water pollution control challenges have also changed. Instead of industry, it is now municipalities and nonpoint sources that continue to pollute. Instead of just effluent discharge, it is also air emissions. The institutions of the past do not fit the challenges of the present and future.

EPA's changes to its water quality planning and management regulation may reflect an effort to shift from technology-based controls determined at a federal level, to controls based on the characteristics of individual watersheds. This is an important transition, and a watershed approach to meeting water quality goals is more conducive to a focus on outcomes, rather than inputs, which has dominated water quality management in the past. However, EPA's prescriptive, procedural rule is likely to undermine the benefits of a watershed approach.

Centralizing decision making with EPA for hundreds of thousands of river segments, lakes, and coastal zone regions complicates and delays decision making about matters that are inherently local. The regulatory framework proposed by EPA, with its combination of command-and-control, technology-based regulation with offsets and trading has not succeeded in meeting water quality goals in the past and is not likely to succeed now.

River basins, watersheds, and coastal regions are natural units for managing water quality. EPA's approach for TMDLs must allow for and encourage the recognition of alternate geographic governance units that minimize the environmental cost of achieving improvements in water quality.

A water quality management system based on the rule of law and protection of environmental rights can be devised so that the goals of TMDL can be achieved. The system must include accountability and responsibility for actions that affect environmental quality. The system must allow for flexibility in the development of regulatory institutions and processes so that regional differences in benefits and costs can be taken into account.