What do Snowmobiles, Mercury Emissions, Greenhouse Gases and Runoff Have in Common?: The Controversy over "Junk Science"

Linda A. Malone

What do Snowmobiles, Mercury Emissions, Greenhouse Gases and Runoff Have in Common?: The Controversy over "Junk Science"

*Professor Linda A. Malone**

> This week, the State Board of Education in Kansas is continuing its hearings on how evolution should be taught in public schools. In other news, besides the evolution debate in Kansas, eight players from the Chicago White Sox were accused of throwing the World Series, flappers everywhere are getting their knickers off by sitting on flagpoles, and the stock market crashed. And that's this week's installment of "Things I Thought Already Happened in the 1920's."[1]

In a world in which less and less seems certain and stable, science has been viewed as an objective measure of certainty, reassuring in its impartiality and precision. The bedrock assurance of that legitimacy, however, has been now called into question. The determinations of legitimate scientists are maligned with personal attacks and assertions of an underlying political agenda. These attacks are facilitated by revelations that scientists are not immune to the pressures of celebrity status and funding demands, even to the point of falsifying results. Non-scientists are called upon to review and revise scientific evaluations. Positions with little or no underlying scientific consensus are trumpeted as the "scientific" basis for politically-driven positions. The very question of what constitutes "science" has become an issue for school boards and the courts.

Has science become so politicized that regulation is dictated by desired political outcomes and not legally mandated considerations of public health and safety? Changes in regulatory poli-

* Marshall-Wythe Foundation Professor of Law and Director, Human Rights and National Security Law Program, William and Mary Law School. B.A., Vassar College; J.D., Duke University Law School; LL.M., University of Illinois College of Law. Professor Malone is the author of Chapter 4, *Ocean and Coastal Pollution from Land-Based Sources in* Appendix 6 the U.S. COMMISSION ON OCEAN POLICY, AND OCEAN BLUEPRINT FOR THE 21ST-CENTURY: FINAL REPORT OF THE U.S. OCEAN COMMISSION ON OCEAN POLICY (2004) and co-author of Appendix 6, *Review of U.S. Ocean and Coastal Law: The Evolution of Ocean Government over Three Decades*. The views expressed are her own.

1 Dennis Miller, *2005: Laugh Lines*, N.Y. TIMES, Dec. 25, 2005, § 4, at 2.

cies and requirements between administrations are not unusual, but ordinarily these changes are differences in degree of regulation based on scientific variances within a generally accepted range of scientific conclusions. Recently, however, regulatory reversals have been just that: complete reversals based on scientific determinations that flatly contradict conclusions reached only a few years, or even months, earlier within the same agency. For example, as discussed below, one federal judge, frustrated with the yo-yoing federal policy on snowmobiles in Yellowstone National Park, chided the agency for claiming a change in scientific basis without justification.[2] Environmental advocates are challenging the EPA's relaxed position on controlling mercury air emissions for totally ignoring a Harvard study on point released just weeks after the EPA's change in regulatory approach, and provided in draft form to the agency precisely for its consideration in relation to the mercury standards.[3] The *New York Times* broke a story that a non-scientist in the Bush administration made critical revisions to an EPA document on global warming, minimizing the impacts and significance of increases in global temperatures.[4] The problem of controlling nonpoint source pollution has not escaped some of these troublesome developments, as the thirty-year lack of mandatory controls is premised on the "infeasibility" of imposing those controls on the primary source of pollution preventing nationwide attainment of water quality standards.[5]

When is science "junk science" and simply a pretext for a predetermined political agenda? How and when can courts reject "science" offered by agencies to justify their decisions, or for that matter, by school boards to revise their scientific curriculum? How can "junk science" be detected, when the very determination of what constitutes "science" is being questioned? What does this controversy over science portend for the future of controlling nonpoint source pollution?

I. THE GENESIS OF THE CONTROVERSY

The Bush Administration's specific policies in the scientific realm, though unaccepted by many, are not as controversial as the allegations of a deliberate, systematic misuse of science to serve a political agenda. "Junk science" is generally recognized as the use of purported scientific research, not conducted by sci-

2 *See* discussion *infra* Part II. A CAUTIONARY TALE OF SNOWMOBILES, MERCURY EMISSIONS, AND GREENHOUSE GASES.

3 *Id.*

4 *Id.*

5 *Id.*

entific persons or substantiated by generally accepted scientific methodologies, for political purposes; suppressing legitimate studies; changing data in scientific studies without scientific justifications; and in extreme cases, discrediting scientists who do not tote the party line.

When psychologist William R. Miller was interviewed for a position in the National Drug Abuse Advisory Panel, he was asked whether he voted for Bush.[6] Miller replied in the negative and he was later denied the appointment.[7] The White House, of course, claims there were other reasons for the denial.[8] In another case, EPA ombudsman Robert Martin resigned after his investigation of the air quality following the attacks on 9/11 revealed startling health concerns that the EPA and the administration had ignored. [9] Before Martin resigned, the ombudsman's office was closed and padlocked and all of Martin's files were confiscated.[10]

In February 2004, the Union of Concerned Scientists issued a report criticizing the Bush administration's use of science for a political agenda.[11] The report asserted that the administration's political agenda had undermined "the traditionally objective, nonpartisan mechanisms through which the government uses scientific knowledge in forming and implementing public policy."[12] A petition accompanied the report and was signed by more than sixty prominent scientists, including twenty Nobel laureates.[13] The petition as of February 2006 had gathered more than 8,000 signatures.[14] In 2004, Scientists and Engineers for Change organized lectures aimed at showing the scientific community's opposition to Bush's candidacy for a second term.[15] In June 2004, the ACLU released a report entitled "Science under Siege" exploring the restrictions put on access to equipment and free movement of foreign scientists.[16]

In June 2005, Senator Richard Durbin introduced the Restore Scientific Integrity in Federal Research and Policymaking

6 CHRIS MOONEY, THE REPUBLICAN WAR ON SCIENCE 237–38 (2005).

7 *Id.*

8 *Id.* at 238.

9 ROBERT F. KENNEDY, CRIMES AGAINST NATURE: HOW GEORGE W. BUSH AND HIS CORPORATE PALS ARE PLUNDERING THE COUNTRY AND HIJACKING OUR DEMOCRACY 79–80 (2005).

10 *Id.*

11 Daniel Smith, *Political Science*, N.Y. TIMES, Sept. 4, 2005, at 38.

12 *Id.* (internal citation omitted).

13 *Id.*

14 Karen Tumulty & Mark Thompson, *The Political Science Test*, TIME, Feb. 13, 2006, at 37.

15 Smith, *supra* note 11.

16 *Id.* at 39.

bill.[17] The bill aims to stop government censorship and alteration of scientific data, and has garnered such co-sponsors as Senator Hillary Rodham Clinton and Senator Harry Reid.[18] However, since the introduction of the bill, no further action has been taken toward its approval. Despite the minimal likelihood of the bill being passed, its proposal indicates how strong the perception has become that the Bush administration is "anti-science." No one addressing the current controversy is so naive as to assume that manipulation of scientific data has never been done to serve a political purpose—it is more the extent (or correctly or incorrectly the general perception of the extent) to which it is occurring in the current administration. To some extent, this perception may be largely the result of two areas, global warming and stem-cell research, in which a strong consensus in the scientific community has been largely rejected as unconvincing by the administration.

Personal attacks on scientists or educators for their views on either end of the political spectrum, of course, are never an acceptable or legitimate method of policymaking and public discourse. Such attacks do regrettably occur, and neo-conservative advocates are no less immune than liberal advocates. In a November 10, 2005 story on National Public Radio, science professors who accept the validity of intelligent design as a scientific theory expressed their own concerns about suffering retaliation from their scientific colleagues and institutions.[19] Dr. Richard Sternberg described how colleagues at the Smithsonian accused him of fraud and otherwise sought to discredit him personally when he merely published in a Smithsonian peer-reviewed, scientific journal an article by Stephen Meyer, a proponent of intelligent design (a theory Sternberg himself does not share).[20] Personal attacks and retaliation, however, are not at the core of the controversy or the focus of this article. Rather, the question is whether the somewhat sacred, public reverence for the impartiality of science and its determinations can no longer be maintained, because science itself has become so extensively and routinely politicized that objectivity can no longer be assumed. These questions concerning the politics of science could not come at a worse time for science itself, as it coincides with the highly publicized incident of a South Korean scientist not merely massaging the results of his cloning work, but engaging in outright

17 *Id.* at 38.

18 *Id.*

19 *All Things Considered: Profile: Intelligent design and academic freedom* (NPR radio broadcast Nov. 10, 2005).

20 *Id.*

falsification of his research results.[21]

The question remains whether the purported politicization of science is something new, or just, to co-opt the old saying, "politics (and science) as usual." In Chris Mooney's book, *The Republican War on Science*,[22] the answer is that there is indeed something different happening to the role of science and scientists in policymaking and regulation. The author takes great pains in his acknowledgments to point out that he is not a scientist, but a journalist with a background for reporting on science, who prides himself on evaluating "where scientists think the weight of evidence lies, without presuming to critically evaluate the science. . . ."[23] In his epilogue, he warns that science politicization succeeds because it confuses policymakers and the public with thinking that a scientific "controversy" exists where it does not, or that widely discredited scientific claims have more credence in the scientific community than they do.[24] According to Mooney, what makes this situation different and, thus, more alarming is a deliberate, conservative disregard for legitimate, peer-reviewed and replicated science in favor of ideologically motivated "pseudoscience" (although he still acknowledges that "science abuse" is not exclusively limited to conservative agendas). In particular, he notes that the journalistic obsession with balance lends itself to such pseudoscience, by giving credibility to any counter position rather than appear one-sided.[25] Demarcation between good and junk science may in most circumstances not be as difficult as it first appears, when it is apparent that money or religion, for example, are a stronger motivation for a position than any remotely scientific determinations.

II. A CAUTIONARY TALE OF SNOWMOBILES, MERCURY EMISSIONS, AND GREENHOUSE GASES

It is certainly not unusual for different administrations to differ as to the degree of environmental controls necessary to regulate a pollutant, and for an intervening change in administration therefore to result in a change in regulation. Between the Clinton and Bush administrations, however, there have been several high-profile regulatory reversals in which the very need for regulation or the fundamental method of regulation

21 Lawrence K. Altman & William J. Broad, *Global Trend: More Science, More Fraud*, N.Y. TIMES, Dec. 20, 2005, at F1; *see also* Nicholas Wade & Choe Sang-Hun, *Human Cloning Was All Faked, Koreans Report*, N.Y. TIMES, Jan. 10, 2006, at A1.

22 MOONEY, *supra* note 6.

23 *Id.* at vii.

24 *Id.* at 252.

25 *Id.* at 252–54.

have been subject to reversal.

The very first of these reversals took place in the heated controversy over snowmobiles in Yellowstone National Park.

A. The Snowmobile Flip-Flop

Use of snowmobiles has been permitted in Yellowstone National Park since 1963.[26] In 2001, the Clinton administration proposed a rule that would phase-out use of snowmobiles in Yellowstone.[27] By 1968, the use of snowmobiles had increased to a level that mandated the Park Service to impose a "winter-only" policy on their use.[28] Since 1971, the Park Service has been grooming trails to improve safety for the burgeoning number of snowmobiles reflective of the growth in number of winter visitors to Yellowstone to 140,000 by 1993.[29]

An environmental impact statement prepared in 2001 as part of a settlement between environmental advocates and the Park Service concluded that snowmbiles created problems of poor air quality,[30] disruption of wildlife feeding patterns,[31] and noise elevation.[32] Based on the environmental impact statement's (EIS) conclusions, the Park Service proposed a regulation adopting the EIS's environmentally preferred alternative calling for a complete phase-out of snowmobile use within two seasons in favor of multipassenger snowcoach use.[33] The regulation became final the day after George W. Bush assumed office, but was immediately stayed pending review by the Bush administration.[34] Inevitably, the International Snowmobile Manufacturers Association filed suit to challenge the 2001 EIS

26 Jason Rapp, *Snowmobiling and National Park Management: To Conserve for Future Generations or Provide for Public Enjoyment?*, 17 TUL. ENVTL L.J. 301, 305 (2004).

27 *Id.* at 317.

28 Joanna M. Hooper, *Blowing Snow: The National Park Service's Disregard for Science, Law, and Public Opinion in Regulating Snowmobiling in Yellowstone National Park*, 34 ENVTL. L. REP. 10975 (2004).

29 Rapp, *supra* note 26, at 305; *see also* Hooper, *supra* note 28, at 10975. Today, in Yellowstone, there are over 180 miles of groomed trails and on days of high use, as many as 1,700 snowmobiles enter the park. *Id.*

30 Snowmobiles produce 68% of the park's annual carbon monoxide and 90% of the park's annual hydrocarbon emissions. Carbon monoxide levels in some areas of the park are higher than the levels in Los Angeles and in 2002, the Park service actually issued workers in high snowmobile areas their own respirators. Hooper, *supra* note 28, at 10975.

31 This has specifically affected four species that are protected by the Endangered Species Act and live in Yellowstone: grizzly bears, gray wolves, bald eagles, and lynxes. *Id.* at 10976.

32 The level of noise from snowmobiles has grown so loud that during the 2003–2004 winter season park employees were fitted with special devices to protect against hearing loss. *Id.*

33 *Id.*

34 *Id.*

regulation.[35] As part of this settlement, the Park Service agreed to prepare a supplemental EIS "consider[ing] data on new snowmobile technologies." [36]

The supplemental 2003 EIS did not find any of the 2001 EIS to be erroneous and even noted that the so-called new snowmobile technology it said it would consider had in fact been evaluated when the Park Service had prepared the 2001 EIS.[37] Nevertheless, despite no apparent changes in the findings or conclusions between the 2001 and 2003 EISs, the Park Service decided to adopt a regulation "which provided for increased numbers of snowmobiles, while imposing best available technology (BAT) standards designed to reduce harmful emissions, and requiring that 80% of entering snowmobiles be accompanied by guides."[38]

Within five days of the finalization of the 2003 rule allowing snowmobiles, Judge Emmet G. Sullivan of the D.C. District Court vacated the regulation and reinstated the 2001 regulation.[39] Judge Sullivan did not simply hold that the regulatory reversal regarding the use of snowmobiles in Yellowstone was arbitrary and capricious. He reprimanded the Park Service, finding that there was no evidence in the record of a reasoned explanation for the reversal and that the supplemental environmental impact statement was "completely politically driven and result[-]oriented."[40] The judge denied motions to stay his order reinstating the 2001 rule and, in response to claims that such immediate reinstatement of the 2001 rule "would cause irreparable economic and emotional harm to the local Yellowstone communities relying on snowmobile business and to snowmobilers with already established vacation plans,"[41] the judge implied that the Park Service had deliberately waited to publish the 2003 rule until the winter season at Yellowstone opened, and "that 'any economic or emotional harm to snowmobilers with vacation plans falls squarely on the [Park Service's] shoulders.'"[42]

Discontent with the judgment of the distant D.C. District Court, the state of Wyoming asked Judge Clarence Brimmer, of the Wyoming Federal District Court, to reopen the case that originally resulted in the writing of the supplemental EIS,

35 Int'l Snowmobile Mfrs. Ass'n v. Norton, 340 F. Supp. 2d 1249 (D. Wyo. 2004).
36 Hooper, *supra* note 28, at 10977.
37 *Id.*
38 *Id*.
39 *Id.*; Fund for Animals v. Norton, 294 F. Supp. 2d 92 (D.D.C. 2003).
40 Hooper, *supra* note 28, at 10978; *Fund for Animals*, 294 F. Supp. 2d at 108 n.11.
41 Hooper, *supra* note 28, at 10978.
42 *Id.* (citing *Fund for Animals*, 294 F. Supp. 2d at 116).

International Snowmobile Manufacturers Association v. Norton.[43] Judge Brimmer enjoined enforcement of the 2001 rule which Judge Sullivan had reinstated, holding that the harm of the 2001 rule to industry and the economy outweighed the harm of the 2003 rule to the environment.[44] On February 11, 2004, confronted with conflicting district court rulings despite no change in the underlying factual record, the Park Service put in place temporary snowmobile usage rules that permitted 798 snowmobiles in the park each day and, of the 798, required that 297 of them make use of the BAT standards to reduce noise and pollution.[45] The temporary rules also required that all snowmobilers be accompanied by a guide.[46]

The battle over snowmobiles continues, with the Bush administration calling for Congressional intervention and additional studies.[47] In June 2004, the House of Representatives voted 224 to 198 to allow snowmobiles into Yellowstone,[48] and in August of that same year, the Park Service proposed temporary rules for snowmobile use in Yellowstone, which cap the number of snowmobiles permitted in the park each day at 720.[49] In addition to requiring that snowmobilers must be accompanied by a guide, all snowmobiles must make use of the BAT standards to reduce noise and pollution.[50] These temporary rules will remain in place for three years, at which time permanent rules will be put in place.[51] The Department of the Interior is considering a modification of the requirement that all snowmobilers be with a guide,[52] despite the fact that that requirement was a part of both the 2001 Rule and the 2003 Rule.

Negotiations over permanent rules have resulted in public disagreements between the National Park Service and the Bush administration. In August 2005, senior employees of the National Park Service rejected policy revisions affecting the use of snowmobiles in Yellowstone.[53] The revisions were proposed by Paul Hoffman, of the Interior Department, and would have,

43 *Id.*

44 *Id.*

45 *Id.*

46 *Id.*

47 *Snowmobile Deceit*, N.Y. TIMES, Aug. 26, 2005.

48 Juliet Eilperin, *House Votes to Allow Snowmobiles in Parks; Bush Administration Hails Decision*, WASH. POST, June 18, 2004 at A27.

49 Michael Janofsky, *U.S. would allow 720 Snowmobiles Daily at Yellowstone*, N.Y. TIMES, Aug. 20, 2004 at A14 [hereinafter *720 Snowmobiles*].

50 Felicity Barringer, *Secretary Tours Yellowstone on Snowmobile*, N.Y. TIMES, Feb. 17, 2005, at A18 [hereinafter *Secretary Tours Yellowstone on Snowmobile*].

51 *720 Snowmobiles*, *supra* note 49.

52 *Secretary Tours Yellowstone on Snowmobile*, *supra* note 50.

53 *See* Felicity Barringer, *Top Official Urged Change in How Parks Are Managed*, N.Y. TIMES, Aug. 26, 2005 at A10.

among other things, further eased the regulations regarding snowmobile usage in Yellowstone and other national parks.[54] Rather than approve these revisions, the Park Service employees decided to draft a less permissible version of the changes proposed.[55] Meanwhile, the snowmobiles have ploughed on through the National Park.

B. Changing Climate Change

From the beginning of the Bush administration, the international community has been critical of the administration's refusal to participate in the Kyoto Protocol on greenhouse gas emissions or to otherwise agree to binding reductions in greenhouse gas emissions.[56] The international debate took a decidedly domestic turn in the scientific realm when a front page article in the June 8, 2005 *New York Times* reported that a Bush official, formerly a lobbyist for the American Petroleum Institute and with no scientific training, had edited an EPA document to minimize the document's linkage between greenhouse gases and global warming.[57] Philip A. Cooney, chief of staff for the White House Council on Environmental Quality, "removed or adjusted descriptions of climate research that government scientists and their supervisors, including some senior Bush adminstration officials, had already approved."[58] The documents were obtained from the Government Accountability Project, a non-profit organization which provides legal assistance to government whistle-blowers.[59] The organization was representing a senior associate in the office that coordinates global warming climate research, Rick S. Piltz, who resigned from the office in March 2005.[60] Although it is not unusual for administration officials to "vet" government reports, critics said that scientific content should be reviewed by scientists.[61] In a memorandum written by Mr. Piltz, he stated his objections as follows:

> Each administration has a policy position on climate change . . . but I

54 *Id.*

55 *Id.*

56 *See* Andrew C. Revkin, *Bush Aide Edited Climate Reports: Ex-Lobbyist Softened Greenhouse Gas Links*, N.Y. TIMES, June 8, 2005, at A1, A15.

57 *Id.*

58 *Id.* at A1.

59 *Id.* at A15.

60 *Id.*

61 *Id.* One example is the 2003 "Strategic Plan for the United States Climate Change Science Program," requested by President Bush in 2001 and reviewed in 2003 by an expert panel established by the National Academy of Sciences. "The scientists largely endorsed the administration's research plan, but they warned that the administration's procedures for vetting reports on climate could result in excessive political interference with science." *Id.*

> have not seen a situation like the one that has developed under this administration during the past four years, in which politicization by the White House has fed back directly into the science program in such a way as to undermine the credibility and integrity of the program.[62]

Democratic Senators, on June 9 and June 29, 2005, asked James Mahoney, director of the U.S. Climate Change Science Program at the Department of Commerce's National Oceanic and Atmospheric Administration, to retract two reports on climate change altered by Cooney pending an investigation of whether Cooney had violated two laws on falsification of information.[63] On June 10, 2005, Cooney had resigned his White House position to take a position with ExxonMobil.[64] Any possibility that his resignation might bring an end to the debate over the altered reports ended in the aftermath of Hurricane Katrina, as congressional representatives debated whether global warming did or did not have anything to do with changes in the nature of and severity of storms,[65] and studies continued to suggest that global warming is already causing climate disruption with present consequences.[66]

C. Federal Regulation of Mercury Emissions from Power Plants

Mercury is a neurotoxic pollutant that contaminates the air, water, and land. When combined with water, mercury becomes methyl-mercury, a toxin that contaminates fish and makes them unsafe for consumption.[67] In 2004, the EPA and the Federal Drug Administration (FDA) issued a cautionary warning, advising women of childbearing age and young children to consume no more than six to twelve ounces of canned tuna per week, due to

62 *Id.* (internal citation omitted). "For example, a sentence in the October 2002 draft of 'Our Changing Planet' originally read, 'Many scientific observations indicate that the Earth is undergoing a period of relatively rapid change.' In a neat, compact hand, Mr. Cooney modified the sentence to read, 'Many scientific observations point to the conclusion that the Earth may be undergoing a period of relatively rapid change.'" *Id.*

63 *Senators Seek Retraction of Science Reports, Probe of Whether White House Acted Illegally*, 36 ENV'T. REP. 1393 (July 8, 2005). The focus was on two laws: 18 U.S.C. § 1505, providing that "any person who 'corruptly . . . influences, obstructs, or impedes' an agency's work that is required by Congress 'shall be fined . . . or imprisoned not more than five years, or both,'" and 18 U.S.C. § 1001, providing that "no person, in this case, in the executive branch can 'knowingly and willfully' make or use 'any false writing or document knowing the same to contain any materially false, fictitious, or fraudulent statement or entry.'" *Id.*

64 *Id.*

65 *Domenici Says Regulation a "Daunting Task," Rejects Linking Global Warming, Hurricanes*, 36 ENV'T. REP. 1947 (Sept. 23, 2005).

66 *Effect of Global Warming on Rivers Cited; Reduced Snowpacks Could Cut Water Supply*, 36 ENV'T. REP. 1949 (Sept. 23, 2005).

67 *A Hazard to Our Health*, WASH. POST, Sept. 11, 2005, at B8.

concerns regarding mercury-tainted tuna fish,[68] and by the summer of 2005, twenty-one percent of consumers said that they were "extremely concerned" about the levels of mercury found in fish.[69] Land animals have also been contaminated by mercury, according to a study in March, 2005 which documented "elevated" mercury levels in the blood of New England wildlife.[70]

"Mercury pollution from man-made sources, such as power plants, reduces the IQs of between 300,000 and 600,000 American children each year and will cost the United States an estimated $8.7 billion in lost earnings annually."[71] It also causes illness in humans, with symptoms including heart and lung disease.[72] Power plants have been identified as "the largest single source of mercury emissions in the country, accounting for more than 90,000 pounds of airborne mercury a year, about a third of the total output."[73]

In 2000, the EPA under the Clinton administration determined that regulation of mercury emissions as a hazardous air pollutant was required by the Clean Air Act, with "emissions limits based on maximum achievable control technology (MACT), defined by the Clean Air Act as the average of the best-performing 12 percent of sources."[74] This plan, with emissions limits to go into effect in 2009, would have reduced mercury emissions by ninety percent.[75] In 2001, the Bush administration rescinded the decision to regulate mercury emissions from power plants as a hazardous air pollutant in order to create separate, less demanding regulations for mercury emissions.[76] In March, 2005, the EPA released the Clean Air Mercury Rule to set caps on mercury emissions at approximately 500 power plants having a total of nearly 1,300 generating units.[77] The rule would cap the production of mercury emissions at thirty-eight tons by 2010, and at fifteen tons by 2018, amounting to an overall reduction in mercury

68 Melanie Warner, *With Sales Plummeting, Tuna Strikes Back*, N.Y. TIMES, Aug. 19, 2005, at C3.

69 *Id.*

70 *Study Finds 'Elevated' Mercury Levels in Songbirds, Other Wildlife in Northeast*, 36 ENV'T REP. 465 (Mar. 11, 2005).

71 *Mercury Pollution from Industrial Sources Costs $8.7 Billion Annually, Study Says*, 36 ENV'T REP. 416 (Mar. 4, 2005).

72 *A Hazard to Our Health*, *supra* note 67, at B8.

73 Michael Janofsky, *Some in Senate Seek to Change Mercury Rule*, N.Y. TIMES, Sept. 9, 2005, at A14 [hereinafter *Mercury Rule*].

74 *EPA Announces First-Ever Regulation to Limit Power Plant Mercury Emissions*, 36 ENV'T REP. 525 (Mar. 18, 2005).

75 *Mercury Rule*, *supra* note 73.

76 *Id.*

77 *EPA Announces First-Ever Regulation to Limit Power Plant Mercury Emissions*, *supra* note 74.

emissions of seventy percent.[78] Included in this plan is a cap and trading system that allows a plant to exceed permissible levels of mercury emissions if it buys credits from plants whose mercury emissions fall below regulatory limits.[79]

The EPA and Bush administration have highlighted that this program marks the first time that power plant mercury emissions have been regulated by the federal government,[80] although it rescinded a more demanding standard that would have otherwise been the first such time power plant mercury emissions had been regulated.[81] Opponents of the rule contend that the new EPA rule not only does not do enough to reduce mercury emissions, but is also illegal under the Clean Air Act as the Act requires that hazardous pollutants for which certain findings have been made *must* be regulated as hazardous air pollutants under the MACT standard.[82] Opponents have also voiced fears regarding the rule's cap and trading program, citing concerns that the program will allow the largest polluters to continue exceeding regulated mercury level limits, because they will be able to buy their way out of violations.[83] Inevitably, opponents of the Clean Air Mercury Rule sued the EPA to prevent the rule from taking effect.[84] At least one of these suits resulted in the D.C. Circuit's denial of a motion to stay implementation of the rule.[85] Environmental advocates have been supported in their position by two national groups of state and local air quality regulators who share their concerns that the new federal standards are insufficiently protective.[86]

78 *Id.* at 525.

79 *For the Record*, WASH. POST, September 18, 2005, at T13; *see also EPA Inspector General Outlines Achievements Over Past Six Months in Report to Congress*, 36 ENV'T REP. 1354 (July 1, 2005).

80 *EPA Announces First-Ever Regulation to Limit Power Plant Mercury Emissions*, *supra* note 74; *see also Senate Rejects Call on E.P.A. to Toughen Emission Rule*, N.Y. TIMES, Sept. 14, 2005, at A16.

81 *Mercury Rule*, *supra* note 73.

82 *See, e.g., States Ask EPA to Reconsider Mercury Rule Allowing Power Plants to Avoid Controls*, 36 ENV'T REP. 1117 (June 3, 2005); *Five Environmental Groups Sue to Halt Trading Rule for Mercury Emissions*, 36 ENV'T REP. 1446 (July 15, 2005); *Groups Seek Stay of Mercury Rule Allowing Coal-Fired Plants to Avoid Emission Controls*, 36 ENV'T REP. 1445 (July 15, 2005); *Senators Seek Floor Vote on Resolution to Overturn EPA's Power Plant Mercury Rule*, 36 ENV'T REP. 1502 (July 22, 2005); Michael Janofsky, *Senate Rejects Call on E.P.A. to Toughen Emission Rule*, N.Y. TIMES, Sept. 14, 2005, at A16; *Mercury Rule*, *supra* note 73.

83 *Five Environmental Groups Sue to Halt Trading Rule for Mercury Emissions*, *supra* note 82.

84 *See, e.g., D.C. Circuit Denies Organizations' Motion to Stay EPA Rules for Controlling Mercury*, 36 ENV'T REP. 1654 (Aug. 12, 2005); *Five Environmental Groups Sue to Halt Trading Rule for Mercury Emissions*, *supra* note 82.

85 *D.C. Circuit Denies Organizations' Motion to Stay EPA Rules for Controlling Mercury*, *supra* note 84.

86 Michael Janofsky, *Groups Propose Alternative to E.P.A. Rules on Mercury*, N.Y.

Various proponents of the rule have hailed it as the best means of regulating mercury emissions, noting that a similar program effectively reduced the occurrence of acid rain.[87] Representatives of the power plant industry have said that, because the technology needed to reduce mercury emissions to the original Clean Air Act standards is not yet widely commercially available, this rule represents the best available and most economical solution.[88]

On September 13, 2005, the Senate invoked a rarely used act, the Congressional Review Act, to call for a floor vote in an attempt to repeal the Clean Air Mercury Rule.[89] The repeal of the rule was defeated by a narrow margin, with fifty-one senators voting to maintain the rule in its current form, and forty-seven senators voting to repeal the rule and rewrite it.[90] Barring any future amendments, the rule will remain in place and will go into effect as originally written.

D. What Is Science Anyway?

Since the mid-1960's, non-scientists, lawyers, judges and policymakers have struggled to educate themselves about scientific theories and methodologies in order to better assess the legal basis of environmental decision-making.[91] Despite whatever progress has been made in this regard, none of them could have been fully prepared for the current controversy over what constitutes "science" and what is instead "religion." A federal district court judge in Pennsylvania, however, found himself with the task of doing exactly that in an adversarial court proceeding in which a group of Dover, Pennsylvania parents sued the local school board to block its decision to include intelligent design in the high school biology curriculum. Judge John E. Jones III first heard of the case on the radio driving home from the courthouse in December, 2004.[92] The next morning, he found that he had been as-

TIMES, Nov. 14, 2005, at A17.

87 *Mercury Rule*, *supra* note 73.

88 *See, e.g., Groups Propose Alternative to E.P.A. Rules on Mercury*, *supra* note 86; *Five Environmental Groups Sue to Halt Trading Rule for Mercury Emissions*, *supra* note 82; *see also EPA Inspector General Outlines Achievements Over Past Six Months in Report to Congress*, 36 ENV'T REP. 1354 (July 1, 2005); *Groups Seek Stay of Mercury Rule Allowing Coal-Fired Plants to Avoid Emission Controls*, *supra* note 82.

89 *See Mercury Rule*, *supra* note 73; *see also Senate Rejects Call on E.P.A. to Toughen Emission Rule*, *supra* note 82; *Senate Decides to Vote on Rejection of Mercury-Emission Rules*, N.Y. TIMES, Sept. 13, 2005, at A18; *For the Record. . .*, *supra* note 79.

90 *Senate Rejects Call on E.P.A. to Toughen Emission Rule*, *supra* note 82.

91 *See generally* Carol M. Rose, *Environmental Law Grows Up (More or Less), and What Science Can Do to Help*, 9 LEWIS & CLARK L. REV. 273 (2005).

92 Laurie Goodstein, *Evolution Trial in Hands of Willing Judge*, N.Y. TIMES, Dec. 18, 2005, at 41 [hereinafter Evolution Trial].

signed the case.[93]

The case was generated by the school board's decision to require the reading of a four-paragraph statement that evolutionary theory has problems and gaps in its formulation and that intelligent design is an alternative theory worthy of consideration, referring to an intelligent design textbook.[94] It was a carefully orchestrated conflict. For several years, the Thomas More Law Center, a non-profit law firm founded by two self-proclaimed conservative Catholics, had looked for a school board willing to require the teaching of intelligent design from that same textbook in anticipation of a high profile, high stakes trial.[95] The Dover school board agreed to require intelligent design, despite the advice of the board's attorney that opponents would have a strong case based on the board's public record of advocating "putting religion back in the schools."[96] The parents' attorneys presented evidence that the board's purpose was religious.[97] In his closing argument, their attorney accused the board of lying when Board members testified they had not made religious statements at board meetings and when they said they did not know fifty copies of the controversial textbook had been purchased with money from a church collection through the father of a school board member.[98]

For six weeks, the Republican Bush appointee to the bench presided over a trial in which the central question was whether the theory that living organisms are so complex that a higher intelligence designed them was an unconstitutional imposition of religious teaching or constitutionally acceptable education in science.[99] A biochemist testified as an expert witness that intelligent design was not the same as creationism, but disagreed with

93 *Id.*

94 Laurie Goodstein, *Witness Defends Broad Definition of Science*, N.Y. TIMES, Oct. 19, 2005, at A15 [hereinafter Witness Defends].

95 Laurie Goodstein, *In Intelligent Design Case, A Cause in Search of a Lawsuit*, N.Y. TIMES, Nov. 4, 2005, at A16. Thomas Monaghan, a former executive of Domino's Pizza, is one of the founders, and former baseball commissioner Bowie Kuhn is the chairman. *Id.*

96 *Id.*

97 Laurie Goodstein, *Closing Arguments Made in Trial on Intelligent Design*, N.Y. TIMES, Nov. 5, 2005, at A10 [hereinafter *Closing Arguments*].

98 *Id.*

99 Laurie Goodstein, *Issuing Rebuke, Judge Rejects Teaching of Intelligent Design*, N.Y. TIMES, Dec. 21, 2005, at A1 [hereinafter *Issuing Rebuke*]. The statement essentially said four things: 1) The Pennsylvania Academic Standards require that Darwin's theory of evolution be taught; 2) Darwin's theory is only a theory and filled with many gaps; 3) Intelligent design is another theory of the origin of life that can be learned about in a book entitled *Of Pandas and People*; 4) Students should keep an open mind and the school leaves discussions of the origins of life up to students and their families. Kitzmiller v. Dover Area Sch. Dist., 400 F. Supp. 2d 700, 708–09 (M.D. Pa. 2005); Neela Banerjee, *An Alternative to Evolution Splits a Pennsylvania Town* , N.Y. TIMES, Jan. 16, 2005, at 18.

some of the many definitions of intelligent design.[100] In the end, the strategy of the intelligent design advocates may have been poorly selected, as accumulating testimony of religious motivations caused speculation as to not how the case would be decided, but how broadly it would be written against the defendants.[101]

On December 20, 2005, the United States Court for the Middle District of Pennsylvania handed down its 139-page decision in *Kitzmiller v. Dover Area School District,* holding in the first such case that the intelligent design policy of the Dover School Board violated the Establishment Clause of the First Amendment of the United States Constitution.[102]

Plaintiffs had filed suit challenging "the ID Policy"[103] as unconstitutional under the First Amendment and the Constitution of Pennsylvania. The court applied two tests to determine constitutional validity. The first test was the endorsement test, which prohibits government from conveying a message that a particular religion or religious belief is "favored or preferred."[104] The court looked at four factors to determine whether the ID Policy constituted an endorsement of a religious belief. First, the court examined whether an objective observer would know that the intelligent design and teaching about gaps in evolutionary theory are in fact strategies to endorse a creationist religious theory of the origins of life.[105] The court found that intelligent design is essentially the creationist theory reworded, and a reasonable observer would realize that intelligent design uses the exact same arguments about the origins of life as creationism.[106] Second, the court examined whether an objective student would view the disclaimer as to evolutionary theory as an official endorsement of religion.[107] The court found that an objective student would find that the disclaimer wrongly singled out the theory of evolution, presented an alternative religious message masquerading as science, and directed students either to read the intelligent design text or seek religious instruction elsewhere.[108] The court found

100 *Witness Defends*, *supra* note 94.

101 *Closing Arguments*, *supra* note 97 *passim*.

102 Kitzmiller v. Dover Area Sch. Dist., 400 F. Supp.2d 700, 709 (M.D. Pa. Dec. 20, 2005); Laurie Goodstein, *Schools Nationwide Study Impact of Evolution Ruling*, N.Y. TIMES, Dec. 22, 2005, at A20.

103 Both the resolution of the Dover School Board and the press release sought to inform students of the gaps in Darwin's theory and required teachers to read the statement described above. The resolution and press release together became known as the ID Policy. *Kizmiller,* 400 F. Supp 2d at 709.

104 *Id.* at 714.

105 *Id.* at 714–23.

106 *Id.* at 22; *see also Issuing Rebuke*, *supra* note 99.

107 *Kitzmiller*, 400 F. Supp. 2d at 723–29.

108 *Id*.

these factors were enough to determine that an objective student would see the disclaimer as an official endorsement of religion.[109] The third factor was whether an objective citizen of Dover would think the disclaimer was an endorsement of religion.[110] Given the abundance of letters to the local newspapers and the community's collective perception that the ID policy disclaimer was religious, the court concluded that an objective citizen of Dover would find the disclaimer was an endorsement of religion.[111] Fourth, the court discussed whether intelligent design could be considered science.[112] The court found that intelligent design is not science because it is based on the non-scientific premise of supernatural causation and because intelligent design's attacks on evolution have been disproved by scientific research.[113] Intelligent design has not been accepted by the scientific community, supported by peer-reviewed research, or supported by research and testing of its own.[114]

Once the court determined that the ID Policy was an endorsement of a particular religious view, the court turned to the *Lemon* test, which tests whether a government message violates the Establishment Clause of the First Amendment.[115] The court examined three factors: 1) whether the message has a secular purpose; 2) whether the primary effect of the message is to advance religion; and 3) whether the message excessively entangles government and religion.[116] The court determined that the discussions in a series of meetings held by the school board expressed a desire to infuse religion into Dover schools and, in particular, biology classes.[117] As to a secular purpose, the Dover School Board argued that it instituted the ID Policy in order to improve scientific education; however, very few board members actually knew what intelligent design was when they voted in favor of the resolution.[118] The court found the Board's stated purpose as an unconvincing pretext for what was actually a religious message.[119] The court also reiterated that because intelligent design is not a science, its only effect is to promote an inherently re-

109 *Id.* at 724.
110 *Id.* at 729–35.
111 *Id.* at 734.
112 *Id.* at 735–46.
113 *Id.* at 735.
114 *Id.*; *see also* Laurie Goodstein, *Intelligent Design Might be Meeting its Maker*, N.Y. TIMES, Dec. 4, 2005, at 1, 4.
115 *Kitzmiller*, 400 F. Supp. 2d at 746.
116 *Id.*; *see also* Edwards v. Aguillard, 482 U.S. 578 (1987) (holding that teaching "scientific creationism" in a public school is a violation of the Establishment Clause).
117 *Kitzmiller*, 400 F. Supp. 2d at 748–760.
118 *Id.* at 758–59.
119 *Id.* at 763.

ligious message.[120]

The court issued a declaratory judgment in favor of the plaintiffs and permanently enjoined the Dover School Board from pursuing the ID policy.[121]

Legal arguments aside, Judge Jones rebuked the members of the school board for a decision of "breathtaking inanity" which "dragged" the community into "this legal maelstrom with its resulting utter waste of monetary and personal resources."[122] The voters had already said as much, voting in November to replace the eight board members supporting intelligent design with a slate of Democrats who did not and who promised to abide by whatever the judge decided.[123] Unhappy advocates of intelligent design, including the defendants' lawyers, having prompted litigation over what constitutes scientific theory, ironically proclaimed that no judge was qualified to determine what was or was not science.[124]

Judge Jones' sweeping decision, however, will not necessarily put an end to efforts to include intelligent design in some reincarnation from surfacing in school science curricula. The same day that the Dover board was reconstituted and a week after the Dover trial hearings concluded, the Kansas School Board of Education adopted new science standards for state-wide science testing for kindergarten through high school that required criticism of evolutionary theory as a controversial theory and changed the definition of science so as not to limit it to natural explanations, without mentioning "intelligent design."[125] Instead, the Kansas

120 *Id.* at 764.

121 *Id.* at 766.

122 *Id.* at 765; *see also Issuing Rebuke*, *supra* note 99.

123 *Issuing Rebuke*, *supra* note 99 at A21.

124 *Id.*

125 Jodi Wilgoren, *Kansas Board Approves Challenges to Evolution*, N.Y. TIMES, Nov. 9, 2005, at A14; KAN. STATE BD. OF EDUC., KANSAS SCIENCE EDUCATION STANDARDS, Nov. 8, 2005, at vi; s*ee also* Dennis Overbye, *Philosophers Notwithstanding, Kansas School Board Redefines Science*, N.Y. TIMES, Nov. 15, 2005, at F3 (emphasis added):

Evolution and Its Discontents

The Kansas Board of Education adopted new science standards last week that include required criticism of evolution. Some of the additions are below, paired with the mainstream understanding of evolutionary biology.

Kenneth Chang

SOME ADDITIONS TO KANSAS SCIENCE STANDARDS	RESPONSE OF MAINSTREAM SCIENTISTS
Biological evolution postulates an *unguided natural process* that has no *discernible direction or goal.*	*"Unguided" is "a very slippery word,"* said Glenn Branch, deputy director of the National Center for Science Education. Scientific explanations of all natural processes, from hurricanes to supernovas, are all "unguided."
The view that living things in all the major kingdoms are modified descendants of a common ancestor (described in the pattern of a branching tree) has been challenged in recently by such things as: *Discrepancies in the molecular evidence* (e.g., differences in relatedness inferred from sequence studies of different proteins) previously thought to support that view.	The family tree relationships of some of the early life forms remain unclear. But fossil and biological evidence argues that *all life today descends from the earliest organisms.* Not surprisingly, *new methods* like comparison of proteins or genes have generated family trees that differ somewhat from those deduced from fossils. But those differences *have not fundamentally changed scientists' view of evolution* or common descent.
Whether microevolution (change within a species) can be extrapolated to explain macroevolutionary changes (such as new complex organs or body plans and new *biochemical systems which appear irreducibly complex*) is controversial.	Most biologists do not make the distinction between microevolution and macroevolution; the larger changes are simply the accumulation of small changes. Most also say that the issue is not controversial and that there is *much experimental evidence* to indicate that such changes have occurred. The term *"irreducibly complex"* is used by Michael Behe, a professor of biology at Lehigh University who is one of the main proponents of intelligent design, but *is not used by other biologists.*
Some of the scientific criticisms include: *A lack of empirical evidence* for a "primordial soup" or a chemically hospitable pre-biotic atmosphere; The *lack of adequate natural explanations for the genetic code*, the sequences of genetic information necessary to specify life, the biochemical machinery needed to translate genetic information into functional biosystems, and the formation of protocells; and The *sudden rather than gradual emergence* of organisms near the time that the Earth first became habitable.	*The issue of how life originated is different from that of evolution.* Current ideas on the origin of life are incomplete and no consensus has yet emerged. Most scientists find that this means more research is needed, not that it is impossible for a theory to emerge.

School Board defined science as "a systematic method of continuing investigation that uses observation, hypothesis testing, measurement, experimentation, logical argument and theory building to lead to more adequate explanations of natural phenomena."[126] Before the tests were even adopted, the National Academy of Sciences and National Science Teachers Association said they would withdraw from the Board permission to use their copyrighted materials.[127]

If the core essence of science is testability, how can the supernatural or intuitive be tested and either proven or disproven? Despite the calls of the lawyers for the Dover defendants for scientists to come forward to prove intelligent design, there has apparently been little academic interest in the pursuit of such research.[128] With efforts in two dozen states to introduce such changes to the curriculum,[129] it remains to be seen which will be a greater deterrent—the broad sweep of a district court decision, the results of the Dover school board election rejecting intelligent design board advocates, or the $1 million of plaintiff's legal fees the Dover school district must pay.[130] As one commentator wryly noted, in the United States at a time when only forty percent of Americans believe in evolution, only thirteen percent know what a molecule is, twenty percent think the sun goes around the earth, and fifty percent think man lived at the same time as dinosaurs, at best what could be taught in any school is "mediocre design."[131]

III. THE POLITICAL RUNOFF FOR NONPOINT SOURCE POLLUTION

Nonpoint source pollution is an international problem that cuts across geographic and political boundaries. The lack of political leadership in the United States to address globally shared environmental problems was highlighted on February 16, 2005, when the Kyoto Protocol took effect. The United States Commission on Ocean Policy, after an exhaustive four-year review of ocean and coastal laws and policy, showed promise of a new direction with its emphasis on the need for an ecosystem-based management approach, coordinated at the national level with in-

126 Overbye, *supra* note 125. The old definition of science reads, "science is the human activity of seeking natural explanations for what we observe in the world around us." *Id.*

127 Jodi Wilgoren, *Kansas Fight On Evolution Escalates*, N.Y. TIMES, Oct. 28, 2005, at A11.

128 *See Intelligent Design Might Be Meeting Its Maker*, *supra* note 114.

129 *Schools Nationwide Study Impact of Evolution Ruling*, *supra* note 102.

130 *Id. See also Issuing Rebuke*, *supra* note 99 at A21.

131 Nicholas D. Kristof, *The Hubris of the Humanities*, N.Y. TIMES, Dec. 6, 2005, at A27.

ternational cooperation.[132] The recommendations for curbing nonpoint source pollution, however, were timid and lackluster. The President's response to the congressional report was even more disappointing: appointment of another committee to review the Ocean Commission's recommendations.[133]

Although Admiral Watkins, Chairman of the Ocean Commission, told the Senate Commerce, Science and Transportation Committee in April 2004 that climate change related to "every single topic" in the final U.S. Ocean Commission report,[134] there is no recommendation in the report to ratify the Kyoto Protocol or to even impose measures to control greenhouse gas emissions. This glaring omission in the report underscores the political difficulty that the United States is having in effectively addressing a number of environmental problems, despite being one of the most affluent and stable countries in the world.

A. Background

In response to the increasing degradation of water quality in the nation's waterways and oceans, in 2000, the United States Congress mandated the first comprehensive review of ocean policy in over thirty years. The first such review resulted in the 1969 Stratton Commission report, and led to the establishment of a legal and regulatory framework for ocean policy.[135] Since then, the growing coastal population and ad hoc governmental approach to environmental problems compelled Congress to create the United States Commission on Ocean Policy (Commission) to make recommendations for a coordinated and comprehensive national ocean policy.[136] After several delays,[137] it was released in

132 Susan Bruninga, *Broad Federal Plan Needed to Address Pollution, Overuse of Seas, Commission Says*, 35 ENV'T. REP. 887 (Apr. 23, 2004) [hereinafter *Broad Federal Plan*].

133 *See* Kenneth R. Weiss, *The Nation; Bush Establishes Committee to Set Policy on Oceans; The Cabinet-level body will deal with priorities including conservation, fishing and pollution*, L.A. TIMES, Dec. 18, 2004, at A20.

134 Susan Bruninga, *Senators Open to New Federal Policy Idea but Question Funding, Governance Structure*, 35 ENV'T. REP. 948 (Apr. 30, 2004).

135 *See Broad Federal Plan*, *supra* note 132. For the original 1969 Stratton Commission report, *Our Nation and The Sea*, see COMM'N ON MARINE SCIENCE, ENGINEERING AND RESOURCES, OUR NATION AND THE SEA: A PLAN FOR NATIONAL ACTION (1969), *available at* http://www.lib.noaa.gov/edocs/stratton/title.html.

136 *See Broad Federal Plan*, *supra* note 132; Oceans Act of 2000, Pub. L. No. 106-256, 114 Stat. 644 (2001), *amended by* Pub. L. No. 107-206, 116 Stat. 833 (2003), Pub. L. No. 107-372, 116 Stat. 3096 (2003), *available at* http://www.oceancommission.gov/documents/oceanact.pdf.

137 Because the members of the Commission were appointed in July 2001, the original statutory deadline for the final report was January 2003, and later was amended to June 2003. *See* § 3(f)(1), 114 Stat. 644, 647 (2001); § 3(f)(1), 116 Stat. 833 (2003); Oceans Act of 2000, 114 Stat. 644, 647 3(f)(1) (2001); 116 Stat. 833 § 203 (2003); S. Rep. No. 108-407, at 2 (2004).

September 2004.[138] The report is a result of multiple regional public meetings held by the Commission with input from various federal and state governments, industry, interest groups, the academic community, the international community, and interested citizens.[139] Notably, in November 2001, just as the Commission was beginning its public meetings, it unanimously passed a one-sentence resolution[140] urging the United States to accede immediately to the United Nations Convention on the Law of the Sea.[141]

The Commission's overall recommendation was to move quickly toward an ecosystem-based management approach to water quality. Achieving this goal required the creation of a National Ocean Council (NOC), composed of all cabinet secretaries and directors of federal agencies with ocean and coastal responsibilities, to advise the President regarding the national coordination of ocean policies.[142] The President must also receive advice from non-federal interest groups such as state governments, tribes, local agencies, private sector and non-governmental agencies, in the form of a Council of Advisors.[143] Naturally, an ecosystem-based approach crosses political and geographical boundaries; thus, with the assistance of the NOC, the creation of voluntary regional ocean councils to "complement and support" efforts, not supplant other agency authority, is recommended to address the unique problems associated with coastal ocean waters and the respective watershed draining into it.[144]

---

138 U.S. COMM'N ON OCEAN POLICY, AN OCEAN BLUEPRINT FOR THE 21ST CENTURY: FINAL REPORT OF THE U.S. COMMISSION ON OCEAN POLICY (2004), *available at* http://www.oceancommission.gov/documents/full_color_rpt/000_ocean_full_report.pdf [hereinafter FINAL REPORT]; MARJORIE ANN BROWNE, FOREIGN AFFAIRS, DEFENSE, AND TRADE DIVISION, CRS ISSUE BRIEF FOR CONGRESS: THE LAW OF THE SEA CONVENTION AND U.S. POLICY, Feb. 10, 2005, at CRS-1.

139 U.S. COMM'N ON OCEAN POLICY, REPORT DEVELOPMENT TIMELINE AS OF SEPTEMBER 27, 2004 (2004), *available at* http://www.oceancommission.gov/calendar/timelinea9_27_04.pdf; U.S. COMM'N ON OCEAN POLICY, Comments by Regional Meetings, *available at* http://www.oceancommission.gov/publicomment/mtgcomments.html (last visited May 3, 2006).

140 U.S. COMM'N ON OCEAN POLICY, UNITED NATIONS LAW OF THE SEA CONVENTION RESOLUTION (2001), *at* http://www.oceancommission.gov/documents/los_resolution.pdf.

141 1982 United Nations Convention on the Law of the Sea, Dec. 10, 1982, 1833 U.N.T.S. 397, *available at* http://www.un.org/Depts/los/convention_agreements/convention_overview_convention.htm.

142 FINAL REPORT, *supra* note 138, at 79.

143 *Id.* at 81. The Commission noted that its recommendations for establishing the National Ocean Council and the Presidential Council of Advisors on Ocean Policy are consistent with international trends, specifically the 2002 World Summit on Sustainable Development, which called for better coordination of environmental policy at the national level. In response, several nations have already established stronger national coordination of ocean and coastal policies. *Id.* at 79.

144 *Id.* A watershed is a geographic area where water flows on its way to a larger water body, such as a river, estuary, lake, or ocean. *See id.* at 154.

The Commission recommended three stages for calibrating federal agencies and programs to end the ad hoc approach of the last thirty years and move toward an ecosystem-based management approach.[145] First, the United States National Oceanic and Atmospheric Administration (NOAA) must be strengthened to become the lead federal agency on ocean policy.[146] Second, the half-dozen or so federal, area-based, coastal programs should be consolidated under NOAA.[147] The two main nonpoint source pollution programs under the Coastal Zone Act Reauthorization Amendments (CZARA) and section 319 of the Clean Water Act (CWA) should be strengthened based on recommendations from the NOC.[148]

B. The Scope of the Problem

The most significant threat to water quality in oceans and estuaries from land-based sources is the growing development of coastal areas and the accompanying increase in runoff, airborne pollutants, and toxic contamination. Nonpoint source pollution is addressed in a coastal setting primarily in the nonpoint source provisions of the 1972 CWA as amended and the Coastal Pollution Program[149] established by the 1990 CZARA.[150] There are also a number of state, territorial, tribal and local programs that address the problem. These include legislation surrounding agricultural waste, the proper discharge of pesticides, and toxic chemicals.

Runoff pollution remains difficult to control because it is a classic transboundary problem with pollution traveling all the way from streamheads to coastal waters. There is a growing need to address the multiple sources of land-based runoff and airborne pollutants to impose substantive, enforced controls to reduce their pollution of the marine environment. The federal emphasis in controlling nonpoint source pollution, and to a lesser extent in coastal zone management, has been on mandatory procedure and planning at the state level rather than setting or achieving substantive goals or criteria. Federal regulation of air-

145 *Id.* at 109–10. "At last count, more than 55 congressional committees and subcommittees . . . oversee some 20 federal agencies and permanent commissions in implementing at least 140 federal ocean-related statutes." *Id.* at 55.

146 *See id.* at 108–12.

147 *Id.* at 156.

148 *Id.* at 218–20. The original recommendation was for the consolidation of these two NPS pollution programs, but the Commission changed it so that consolidation would be an option considered by the National Ocean Council. *See* U.S. COMMISSION ON OCEAN POLICY, PRELIMINARY REPORT: GOVERNOR'S DRAFT (2004) at 168, *available at* http://www.oceancommission.gov/documents/prelimreport/00_complete_prelim_report.pdf.

149 FINAL REPORT, *supra* note 138, at 214.

150 *Id.*

borne pollutants has been focused on their impact on air quality with evolving consideration of their impact on water quality.[151]

Despite this multitude of programs, overall water quality appears to be deteriorating. The latest *National Water Quality Inventory* concludes that fourteen percent of ocean shoreline miles are impaired mostly from bacteria and low oxygen and seventy-eight percent of the ninety-two percent of Great Lakes shoreline assessed are impaired largely from pollutants found in fish tissue that exceed standards to protect human health.[152] Mercury contamination is the leading cause of impairment in lakes and estuaries, causing forty-nine states to issue 2,618 fish advisories in 2001.[153] States have only assessed nineteen percent of their rivers and streams, and found that thirty-nine percent violated water quality standards.[154] The states assessed forty-three percent of their lakes and thirty-six percent of their estuaries; of these, forty-five percent of lakes and fifty-one percent of estuaries did not meet their designated uses.[155] The lack of comprehensive monitoring by the states only underscores the difficulties in identifying causes and, in particular, sources of pollution in impaired waters.

In February 2004, the EPA rated the overall national coastal condition as being between "fair" and "poor."[156] Coastal water quality and the rate at which pollutants are accumulating in the tissues of marine organisms was generally considered "fair" overall.[157] Coastal habitats however were rated "poor."[158] The overall score for the benthic index and sediment quality for coastal waters was between "fair" and "poor."[159] The leading stressors on receiving waters are metals, pesticides, oxygen-depleting substances, toxic chemicals, PCBs, and dissolved solids.[160] The primary sources of these pollutants are municipal point sources, urban runoff or storm sewers, atmospheric deposition, industrial discharges, and agriculture.[161]

Coastal water quality will only degrade further with increasing development. While coastal counties comprise only seventeen

151 For a more detailed analysis of these problems, see FINAL REPORT, *supra* note 138.

152 EPA, 2000 NATIONAL WATER QUALITY INVENTORY (2000), *available at* http://www.epa.gov/305b/2000report (last visited Mar. 17, 2006).

153 *Id.*

154 *Id.*

155 *Id.*

156 EPA, DRAFT NATIONAL COASTAL CONDITION REPORT II ES-5 (2005), *available at* http://www.epa.gov/owow/oceans/nccr/2005/downloads.html (last visited Mar. 17, 2006).

157 *Id.*

158 *Id.*

159 *Id.*

160 *Id.*

161 *See generally* DRAFT NATIONAL COASTAL CONDITION REPORT II, *supra* note 156.

percent of total land area, more than half the population of the United States lives in coastal counties.[162] It is expected that the coastal population will increase from 139 million people in 1998 to 165 million people by the year 2015 (an approximate twenty percent increase in total coastal population).[163]

With respect to the Coastal Zone Management Act (CZMA), the Commission recommended the CZMA program be strengthened "developing strong, specific, measurable goals and performance standards" which reflect an ecosystem-based management approach.[164] Specifically, mechanisms to effectively manage growth should be included, and geographic boundaries expanded to include coastal watersheds (not just the coastal ocean waters).[165] Federal funding should be considerably increased and additional incentives provided for states who meet set national goals.[166] Finally, a "fallback mechanism is needed to ensure that national goals are realized when a state does not adequately participate or perform."[167]

Proposed solutions for controlling nonpoint source pollution generally were far more contentious. The United States has made tremendous advances in the past twenty-five years to clean up the aquatic environment by controlling pollution from industrial point sources and sewage treatment plants, but unfortunately less progress has been made in controlling pollution from diffuse, or nonpoint, sources. In addition to the total maximum daily load (TMDL) program, during the last ten years a number of programs are beginning to address nonpoint source pollution. At the federal level, recent nonpoint source pollution control measures include the nonpoint source provisions established by section 319 of the 1987 CWA Amendments,[168] and the Coastal Nonpoint Pollution Program established by the 1990 CZARA.[169] Other recent federal programs, as well as numerous state, territorial, tribal and local programs also tackle nonpoint source pollution problems. These programs, however, do not impose in most instances any mandatory, enforceable requirements on nonpoint sources and no mandatory controls are imposed at the

162 DANA BEACH, COASTAL SPRAWL: THE EFFECTS OF URBAN DESIGN ON AQUATIC ECOSYSTEMS IN THE UNITED STATES 1 (2002), *available at* http://www.pewtrusts.org/pdf/env_pew_oceans_sprawl.pdf (last visited Apr. 1, 2006).

163 *Id.* at 1–2.

164 FINAL REPORT, *supra* note 138, at 154.

165 *Id.*

166 *Id.* The report issued prior to the final report actually recommended federal funding be "considerably increased," but the final report deleted this language. *See* U.S. COMMISSION ON OCEAN POLICY, PRELIMINARY REPORT: GOVERNOR'S DRAFT (2004), at 111.

167 FINAL REPORT, *supra* note 138, at 154.

168 *Id.* at 214.

169 *Id.*

federal level by the CWA.

Today, nonpoint source pollution remains the nation's largest source of water quality problems. It is the main reason that approximately forty percent of our surveyed rivers, lakes, and estuaries are not clean enough to meet basic uses such as fishing and swimming.[170] The latest *National Water Quality Inventory* indicates that agriculture is the leading contributor to water quality impairments, degrading forty-eight percent of the impaired river miles and forty-one percent of the impaired lake acreage surveyed by states, territories, and tribes.[171] Although POTWs (point sources) are the leading contributor to water quality impairments in estuaries at thirty-seven percent, runoff from urban areas is close behind, accounting for thirty-two percent of water quality impairments to surveyed estuaries (areas near the coast where seawater mixes with freshwater).[172]

The most common nonpoint source pollutants are sediments and nutrients from agricultural lands, animal feeding operations, construction operations, urban runoff, and other areas of disturbance. Other common nonpoint source pollutants include pesticides, pathogens (bacteria and viruses), toxic chemicals, and heavy metals. A recent National Academy of Sciences report indicates oil runoff into coastal waters from streets, parking lots, and industrial sources should be treated on the same threat level as nutrients, pesticides, and mercury.[173] Beach closures, destroyed habitat, unsafe drinking water, fish kills, and many other severe environmental and human health problems result from nonpoint source pollutants. The pollutants also ruin the beauty of healthy, clean water habitats. Each year the United States spends millions of dollars to restore and protect the areas damaged by nonpoint source pollutants.[174]

One of the most notorious examples of impairment due to nitrogen runoff is the "dead zone" in the Gulf of Mexico, where excess nitrogen, primarily from agricultural runoff, causes extensive algal growth off the mouth of the Mississippi river, triggering a hypoxic zone of 7,000 square miles recurring every spring and summer.[175] The Gulf of Mexico Hypoxia Action Plan,

170 2000 NATIONAL WATER QUALITY INVENTORY, *supra* note 152, at ES-3.

171 *Id.* at 15, 22.

172 *Id.* at 30–31.

173 *See generally* NAT'L RESEARCH COUNCIL OF THE NAT'L ACADS., COMM. ON OIL IN THE SEA, OIL IN THE SEA III: INPUTS, FATES, AND EFFECTS *passim* (2003).

174 *Id.*

175 Donald A. Goolsby & William A. Battaglin, U.S. GEOLOGICAL SURVEY KAN. WATER SCI. CTR., *Nitrogen in the Mississippi Basin—Estimating Sources and Predicting Flux to the Gulf of Mexico* (Dec. 2000), http://ks.water.usgs.gov/Kansas/pubs/fact-sheets/fs.135-00.html; *see also* Nancy N. Rabalais et al., *Hypoxia in the Gulf of Mexico*, 30 J. ENVTL.

developed by federal and state officials, concludes that about eighty-nine percent of the nitrate load to the Gulf is from nonpoint sources.[176]

1. Nonpoint Pollution Control Programs Under CWA & CZARA

There are two main federal programs aimed at nonpoint source pollution control: section 319 of the CWA and section 6217 of the CZARA.[177] Congress enacted a watershed-based nonpoint source pollution control program under section 319 of the 1987 CWA Amendments.[178] First, states had to prepare an assessment of navigable waters where the control of nonpoint source pollution was necessary to meet water quality standards, and identify the significant sources of nonpoint pollution of these waters.[179] States also had to identify control measures.[180] Second, states prepared a management program that set out the best management practices (BMPs) necessary to remedy the problems.[181] The EPA had to approve both steps, but could only adopt a state assessment as opposed to a management report if it disapproved of a state program.[182] Significantly, section 319 did not require that states actually mandate or enforce the BMPs or any other mandatory controls in their management programs. Although there is extensive literature and experience with BMPs, there are no minimum BMP guidelines at the federal level comparable to the technology-based effluent limitations set by the EPA for point sources. Although the EPA could complete nonpoint source assessments for noncomplying states under section 319(a),[183] it lacked the authority to develop and implement adequate control plans and measures if a state fails to do so. Moreover, section 319(h)(7) required that section 319 funds not be used for assistance to persons except for demonstration projects.[184] The EPA's only recourse was to withhold grant funds, but Congress's inadequate funding for section 319 grants, and the negligible consequences to the states for failure to adhere to section 319, resulted in the failure of section 319 to significantly

QUALITY 320 (2001); NAT'L RESEARCH COUNCIL, COMM'N ON GEOSCIENCES, ENVT., AND RES., CLEAN COASTAL WATERS: UNDERSTANDING AND REDUCING THE EFFECTS OF NUTRIENT POLLUTION (2000).

176 Goolsby & Battaglin, *supra* note 175, at 4.

177 Clean Water Act § 319, 33 U.S.C. § 1329 (2000); Coastal Zone Act Reauthorization Amendments of 1990, Pub. L. No. 101-508, 104 Stat. 6201 (1990).

178 Clean Water Act § 319(b)(4), 33 U.S.C. § 1329(b)(4) (2000).

179 Clean Water Act § 319(a), 33 U.S.C. § 1329(a) (2000).

180 Clean Water Act § 319(a)(1)(D), 33 U.S.C. § 1329(a)(1)(D) (2000).

181 Clean Water Act § 319(b)(2)(A), 33 U.S.C. § 1329(b)(2)(A) (2000).

182 Clean Water Act § 319(d), 33 U.S.C. § 1329(d) (2000).

183 Clean Water Act § 319(a), 33 U.S.C. § 1329(a) (2000).

184 Clean Water Act § 319(h)(7), 33 U.S.C. § 1329(h)(7) (2000).

reduce nonpoint source pollution. In short, under section 319, the EPA lacked both the regulatory authority and the funding to impose any effective controls on nonpoint source pollution.

In 1990, Congress updated the CZMA through the CZARA in an attempt to solve the problems surrounding nonpoint source pollution programs.[185] CZARA section 6217 requires states with approved coastal zone management programs to develop management programs to curb nonpoint source pollution in coastal waters that conform to EPA guidelines, including enforceable BMPs.[186] In these programs, the coastal state identifies land uses that contribute to the degradation of coastal areas, identifies critical coastal areas, and implements BMPs.[187] A major difference between the CWA and CZARA is that under CZARA section 6217, if a state fails to submit or implement its plan, EPA and NOAA can withhold CWA and CZMA funding.[188]

The Commission made several recommendations regarding section 319 of the CWA and section 6217 of the CZARA. First, it noted that withholding funding only exacerbates nonpoint source pollution in the failing state, and instead recommended amending the CWA, CZARA, and other federal laws so the EPA and NOAA would be able to withhold "federal funds for programs that contribute to degradation of water quality, such as federal highway construction, . . . [and] agricultural subsidy programs."[189] Withholding funding should only occur when a state "chronically fails to make meaningful progress toward controlling nonpoint [source pollution]," considering the possibility that a state's failure is due to inland state pollution flowing into the coastal state.[190] In this manner the federal government continues to promote water quality standards. Second, the Commission found federal funding to the states insufficient to achieve the goals of CZARA, limiting the Act's effectiveness.[191]

The Commission recommended that the NOC should consider options to strengthen CZARA's section 6217 program and CWA's section 319 program, including possible consolidation.[192] The Commission also recommended that national nonpoint pollution reduction goals for all impaired coastal watersheds should be set by the NOC.[193]

185 FINAL REPORT, *supra* note 138, at 214.
186 *Id.*
187 *See id.*
188 *Id.* at 218.
189 *Id.* at 219.
190 *Id.*
191 *Id.* at 218.
192 *Id.*
193 *Id.*

2. TMDL Program

Section 303(d) of the CWA establishes the TMDL process to provide for more stringent water quality-based controls when technology-based controls are inadequate to achieve state water quality standards.[194] Although implementing section 303(d) has proven difficult since its enactment in 1972, the TMDL process has provided valuable monitoring information of pollution in water bodies, allowing greater public awareness and leading to technically sound and legally defensible decisions for attaining and maintaining water quality standards. The controversy stems from the fact that the TMDL process provides a mechanism for potentially regulating point *and* nonpoint pollution sources.

Section 303(d) requires states to ensure that their waters meet state water quality standards.

> A water quality standard consists of four basic elements:
>
> (1) designated uses of the water body (e.g., recreation, water supply, aquatic life, agriculture),
>
> (2) water quality criteria to protect designated uses (numeric pollutant concentrations and narrative requirements),
>
> (3) an antidegradation policy to maintain and protect existing uses and high quality waters, and
>
> (4) general policies addressing implementation issues (e.g., low flows, variances, mixing zones).[195]

A TMDL establishes the maximum allowable loadings of a pollutant, from all sources, for a water body and thereby provides the basis for states to establish water quality-based controls. These controls should provide the pollution reduction necessary for a water body to meet water quality standards, but mechanisms for establishing and enforcing TMDLs have proven ineffective so far.

Not until 1985 did an actual TMDL program exist. The EPA was busy establishing point source standards and forcing states to set standards for all state waters that adequately protected existing water qualities and uses.[196] In the struggle to achieve these goals, the EPA sidelined the TMDL program, delaying the identification of pollutants to be included in the program and try-

194 *See* OLIVER A. HOUCK, THE CLEAN WATER ACT TMDL PROGRAM: LAW, POLICY, AND IMPLEMENTATION 5, 49 (1999).

195 EPA, *Water Quality Standards: Basic Information*, http://www.epa.gov/ost/standards/about/ (last visited Apr. 9, 2006). For general information regarding state water quality standards, see EPA, *Water Quality Standards Database*, http://www.epa.gov/wqsdatabase (last visited Apr. 9, 2006).

196 HOUCK, *supra* note 194, at 49.

ing to loosely achieve its goals through a basin planning initiative.[197] Although a court order finally forced the EPA to identify the TMDL pollutants,[198] states essentially ignored their obligation to submit TMDLs.[199] Following a series of citizen suits in the 1980s, courts ruled the continued non-submission of TMDLS by a state eventually becomes the submission of no TMDLs, thus requiring EPA to step in and promulgate acceptable TMDLs on the state's behalf.[200] Further litigation made it clear that EPA approval of inadequate TMDL submissions by states was not acceptable and triggered the necessity for the EPA to either work with the state to reach a more acceptable solution or to step in with its own TMDL list.[201]

In the light of the nationwide TMDL litigation, the EPA began taking a more aggressive approach to revise the program. In November 1996, the EPA released a draft *TMDL Program Implementation Strategy*,[202] which recognized the importance of TMDL allocations in the watershed approach, extended the frequency of reporting obligations, combined report categories, and established many EPA resources for assistance in TMDL development.[203] Further review by a diverse committee established under the Federal Advisory Committee Act (FACA) achieved agreement on a number of difficult issues but failed to achieve

197 *Id*. at 50.

198 Bd. of County Comm'rs v. Costle, No. 78-0572, slip op. (D.D.C. June 20, 1978), *cited in* Total Maximum Daily Loads Under Clean Water Act, 43 Fed. Reg. 42,303 (Sept. 20, 1978).

199 HOUCK, *supra* note 194, at 51.

200 The rulings established the doctrine of "constructive submission." Scott v. City of Hammond, 530 F. Supp. 288, 290 (N.D. Ill. 1981) ("Section 303(d)(2) limits EPA's authority in this area to . . . promulgation after disapproval of such submission. . . . Clearly the Act provides no basis for a suit against EPA for its 'failure' to promulgate TMDLs in the absence of [a state proposal].") (emphasis in original), aff'd in part, rev'd in part, 741 F.2d 992, 996–97 (7th Cir. 1984) ("We disagree with the conclusion of the district court. We believe that, if a state fails over a long period of time to submit proposed TMDL's [sic], this prolonged failure may amount to the 'constructive submission' by that state of no TMDL's [sic]. . . . If the EPA disapproves, it then presumably would be under a mandatory duty to issue its own TMDL's [sic]."); *see also* Alaska Ctr. for the Env't v. Reilly, 762 F. Supp. 1422, 1429 (W.D. Wash. 1991) ("The court therefore finds that the State of Alaska has effectively created a 'constructing submission' of no TMDLs . . . ."), *injunctive relief granted,* 796 F. Supp. 1374 (W.D. Wash. 1992), *aff'd sub nom.* Alaska Ctr. for the Env't v. Browner, 20 F.3d 981 (9th Cir. 1994).

201 *See, e.g.*, Idaho Sportsmen's Coal. v. Browner, 951 F. Supp. 962 (W.D. Wash. 1996); Sierra Club v. Hankinson, 939 F. Supp. 865 (N.D. Ga. 1996); Nat'l Wildlife Fed. v. Adamkus, 1991 WL 47374 (N.D. Ill. 1991); Sierra Club v. Browner, 843 F. Supp. 1304 (D. Minn. 1993); *see also* Dianne K. Conway, *TMDL Litigation: So Now What?*, 17 VA. ENVTL. L.J. 83, 95 (1997); Michael M. Wenig, *How "Total" Are "Total Maximum Daily Loads"?—Legal Issues Regarding the Scope of Watershed-Based Pollution Control Under the Clean Water Act*, 12 TUL. ENVTL. L.J. 87, 109 n.103 (1998).

202 EPA, DRAFT TMDL PROGRAM IMPLEMENTATION STRATEGY (1996), *available at* http://www.epa.gov/owow/tmdl/strathp.pdf.

203 *Id.*

agreement on whether the TMDL process should be used to address nonpoint source pollution.[204]

At about the same time Congress involved itself in the issue, the House Transportation Committee's Subcommittee on Water Resources and the Environment held hearings on the TMDL program and the proposed regulatory changes.[205] As a result of these hearings, Congress instructed the General Accounting Office (GAO) to address certain issues, primarily "whether states had sufficient data to develop TMDLs and to estimate the economic impact of the revised regulations."[206] The GAO expressed substantial concerns on both issues, emphasizing uncertainties both in the available data and in the EPA's economic analysis of the proposed regulations.[207]

Despite this negative input from Congress, the EPA promulgated its revised TMDL rule in July 2000 and specifically included nonpoint sources of pollution.[208] States must schedule the establishment of TMDLs within 10 years of July 10, 2000, or the due date on the first list on which the water body appeared, although this schedule may be extended for five years if the original deadline cannot be met despite expeditious action.[209] Moreover, this regulation requires that all impaired water bodies, even those for which TMDLs are not yet required, be placed on a four-part list and prioritized.[210] States are further required to provide an implementation plan and a "reasonable assurance" that TMDL wasteloads and load allocations will be met.[211]

Legal and political challenges resulted from the revised TMDL regulation, especially the inclusion of nonpoint sources

204 Oliver A. Houck, *TMDLs III: A New Framework for the Clean Water Act's Ambient Standards Program*, 28 ENVTL. L. REP. 10415, 10422 (1998).

205 Barclay Rogers & Anne Hazlett, *TMDLs: Are They Dead Letters?*, AGRIC. L. UPDATE., Aug. 2001, at 4.

206 *Id*.

207 In March 2000, the GAO issued its first report highlighting a substantial lack of data available to determine which water bodies were impaired and to set appropriate TMDLs. U.S. GEN. ACCOUNTING OFFICE, GAO/RCED-00-54, WATER QUALITY: KEY EPA AND STATE DECISIONS LIMITED BY INCONSISTENT AND INCOMPLETE DATA (2000). A July 2000 letter from the GAO and its attached second report also questioned the reasonableness of EPA's economic analysis of the proposed regulations. U.S. GEN. ACCOUNTING OFFICE, REVIEW OF TWO PROPOSED REGULATIONS REGARDING WATER QUALITY MANAGEMENT (2000), *in* Letter from Peter F. Guerrero, Director, U.S. Gen. Accounting Office, Envtl. Prot. Issues, to Hon. Bud Shuster, Chairman, Comm. on Transp. and Infrastructure (June 21, 2000).

208 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, 43,588 (July 13, 2000).

209 *Id*. at 43,591.

210 *Id*. at 43,590.

211 *Id*. at 43,591.

and the revisions to the TMDL schedule.[212] The American Farm Bureau Federation, concerned about the implications of the inclusion of nonpoint sources in the TMDL program, immediately filed a petition to challenge the new regulation.[213] Other special interest groups have followed suit.[214] Interested parties have also managed to persuade Congress not only to prohibit the EPA from using any money from fiscal years 2000 or 2001 to fund the changes,[215] but also to require that the EPA hire the National Academy of Sciences (NAS) to analyze the TMDL program and the new regulation.[216] The NAS committee determined that there is enough scientific information available to begin the TMDL program because any uncertainty could easily be compensated for in the process of fulfilling the program's goals, although it emphasized that uncertainty should not be allowed to form the basis for unreasonable expectations.[217] The committee also made a number of recommendations that it felt would improve the TMDL program and expedite the achievement of its goals, such as designating appropriate uses before development of the TMDL list, more periodic assessments of TMDL plans, and inclusion of more pollutants affecting water quality.[218] It stated, somewhat wryly, that success should be strictly predicated upon whether a water body can support its designated use so as to ensure that states do not lose sight of the ultimate goal.[219]

In response to these reactions, the EPA postponed the effective date of the final TMDL regulation for 18 months, from October 1, 2001, to March 1, 2003.[220] The deadline for the submission of states' lists of impaired waters was extended from April 1, 2002, to October 1, 2002, with the extension to permit reconsideration of certain aspects of the revisions in light of the reactions to the revised rule and the NAS report.[221] In 2002, the EPA an-

212 Rogers & Hazlett, *supra* note 205, at 5.

213 Am. Farm Bureau Fed'n v. Browner, No. 00-1320 (D.C. Cir. 2000).

214 *See* Susan Bruninga, *Nine Petitions Filed in Major Fight Over Final Rule Revising TMDL Program*, 31 ENV'T REP. 2618 (Dec. 15, 2000).

215 Military Construction Appropriations Act, Pub. L. No. 106-246, 114 Stat. 511, 567 (2000).

216 Department of Veteran Affairs, Housing and Urban Development, and Independent Agencies Act, Pub. L. No. 106-377, 114 Stat. 1441, 1441A-3 (2000).

217 COMM. TO ASSESS THE SCIENTIFIC BASIS OF THE TOTAL MAXIMUM DAILY LOAD APPROACH TO WATER POLLUTION REDUCTION, ET AL., ASSESSING THE TMDL APPROACH TO WATER QUALITY MANAGEMENT 4 (2001).

218 *Id.*

219 *Id.* at 3.

220 *See* Delay of Effective Date of 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 Regulations; and Revision of the Date for State Submission of the 2002 List of Impaired Waters, 66 Fed. Reg. 41,817 (Aug. 9, 2001).

221 *See id.* at 41,818. Farm groups and industry generally supported the postpone-

nounced development of a "water pollutant trading system" (generally for phosphorous and nitrogen nutrients) to be incorporated into the TMDL program, but it has proven more difficult than air pollutant trading because water pollutant trading must occur within the same water body for the same pollutant.[222] While the pollutant trading policy is a voluntary, incentive-based approach, the EPA remains hopeful that it will, through proper alignment with the CWA and implementing regulations, enable greater efficiency in the protection and restoration of impaired water bodies.[223] The Commission encouraged use of such incentive-based approaches.[224]

Thirty years in the making, an adequate and effective TMDL program has never seemed farther from implementation. Consent decrees resulting from forty legal challenges in thirty-eight states have ordered states to finish preparing TMDLs in anywhere from one to twenty years.[225] The TMDLs that have been provided to the EPA tend to avoid controlling nonpoint source pollution, do not calculate their share of the allocation load, or both. States in some cases also failed to submit inventories of

ment, with farm groups still objecting to the regulation of nonpoint source pollution as a federal presumption of local land use policy, whereas environmental groups did not support the delay. *See* Susan Bruninga, *Environmental Advocates Oppose Delay in TMDL Rule; Industry, Ag Groups Supportive*, 32 ENV'T REP. 1829 (Sept. 21, 2001). The Federal Water Quality Coalition filed one of about a dozen petitions for review of the July 2000 rule. Am. Farm Bureau Fed'n v. Browner, No. 00-1320, (D.C. Cir. 2000). The EPA subsequently circulated a draft report on the total estimated costs of the TMDL program, which reported that the costs to industry to implement the TMDL program could range from under $1 billion to $4.3 billion annually. EPA, EPA 841-D-01-003, THE NATIONAL COSTS OF THE TOTAL MAXIMUM DAILY LOAD PROGRAM (Draft Report 2001), *available at* http://www.epa.gov/owow/tmdl/coststudy/coststudy.pdf (last visited Mar. 5, 2006).

222 33 ENV'T REP. S-19 (Jan. 25, 2002). *But see* Sonya Dewan, Note, *Emissions Trading: A Cost-Effective Approach to Reducing Nonpoint Source Pollution*, 15 FORDHAM ENVT'L L. J. 233 (2004). On May 15, 2002, EPA proposed the water quality trading policy for comment. Water Quality Trading Policy; Proposed Policy, 67 Fed. Reg. 34,709 (May 15, 2002). Various federal agencies, including the EPA, the U.S. Department of the Interior, the U.S. Department of Agriculture, and the U.S. Department of Commerce have agreed upon a final comprehensive science-based approach to watershed delineation and assessment on federal lands. *See* Unified Federal Policy for a Watershed Approach to Federal Land and Resource Management, 65 Fed. Reg. 62,566 (Oct. 18, 2000). Factors affecting wetlands will be considered when determining the best management practices and priorities for both land and water uses. The agencies' watershed goals will involve minimizing adverse water quality impacts from management programs, minimizing the impairment of current and future uses, and restoring watersheds that do not reach water quality standards. *Id.*

223 For the proposed rule, see Water Quality Trading Policy; Proposed Policy, 67 Fed. Reg. 34,709 (May 15, 2002). The EPA issued its final notice on January 13, 2003. Water Quality Trading Policy; Issuance of Final Policy, 68 Fed. Reg. 1608 (Jan. 13, 2003). A water pollutant trading system has been in place since the 1990s for primarily POTWs (i.e., point source to point source), but also in the Great Lakes and Long Island Sound areas.

224 FINAL REPORT, *supra* note 138, at 210.

225 *After Years of Slow Progress, TMDL Program Picks Up Speed as Result of Consent Decrees*, 33 ENV'T REP. 2423 (Nov. 18, 2002).

impaired waters, rank them, promulgate TMDLs, and incorporate them into controls.[226] On March 19, 2003, the EPA formally withdrew the July 2000 Total Maximum Daily Load rule.[227] Until a revised TMDL program is put into effect, the current TMDL program, promulgated in 1985 and amended last in 1992, remains in effect.[228]

The issue of the EPA's authority to regulate nonpoint source pollution through TMDLs and section 303(d) was litigated in court. The Ninth Circuit recently affirmed the EPA's authority to establish TMDLs even for water bodies impaired *solely* by nonpoint source pollution.[229] A California state agency issued a permit for timber harvesting to plaintiff-landowners with serious restrictions designed to reduce soil erosion into a nearby river. The EPA stated the river was in violation of state water quality standards and imposed TMDLs when the state missed the deadline to establish its own TMDLs. Plaintiffs argued the permit restrictions were due to EPA's TMDL standard because the state feared losing federal funding, and brought suit under the Administrative Procedure Act challenging the EPA's interpretation that the CWA allowed the EPA to establish TMDLs on rivers polluted solely by nonpoint source pollution.[230]

The Ninth Circuit noted that section 303 requires states to create EPA-approved water quality standards or to have the EPA impose standards upon them and did not draw any distinction among navigable waters or their pollutants.[231] Furthermore, the mandatory planning process of section 303 required the EPA to address nonpoint as well as point sources in approving or deter-

226 Linda A. Malone, *The Myths and Truths that Threaten the TMDL Program*, 32 ENVTL. L. REP. 11133, 11135 (2002).

227 Withdrawal of 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, 68 Fed. Reg. 13,608 (Mar. 19, 2003) (*to be codified at* 40 C.F.R. pts. 9, 122–24, 130); *see also* Press Release, EPA, Final Withdrawal of 2000 TMDL Rule Takes Effect; Existing Rules Make Progress Cleaning Up Impaired Waters (Mar. 13, 2003), *available at* http://yosemite1.epa.gov/opa/admpress.nsf/0/601385d1f25da12485256ce800824d38?OpenDocument (last visited June 26, 2006).

228 Withdrawal of 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, *supra* note 227.

229 Pronsolino v. Nastri, 291 F.3d 1123 (9th Cir. 2000), *cert. denied*, 539 U.S. 926 (2003); Pronsolino v. Marcus, 91 F. Supp. 2d 1337, 1356 (N.D. Cal. 2000); David K. Bowles, *EPA May Impose TMDLs for Substandard Rivers Impaired Solely by Nonpoint Sources*, ABA SPECIAL COMM'N ON AGRIC. MGMT. NEWSL. 15 (June 2000); Susan Bruninga, *Court Rules TMDL Program Can Apply to River Polluted by Nonpoint Sources*, 31 ENV'T REP. 639 (Apr. 7, 2000).

230 *Marcus*, 91 F. Supp. 2d. at 1338–39.

231 *Nastri*, 291 F.3d at 1127.

mining TMDLs, in order to ensure the adequate implementation of water quality standards for all navigable waters.[232] The court deferred to the EPA's interpretation of the 1985 regulations without relying on the provisions of the delayed final rule.[233]

Every environmental initiative of the past thirty years has had to grapple with scientific uncertainty, allocation of enforcement authority, inconsistencies in monitoring, and variances in state and federal approaches. The ultimate goal of the 1972 CWA remains the achievement of fishable and swimmable waters, yet there are no mandatory controls imposed at the federal level on nonpoint source pollution or sanctions for states who fail to meet their own water quality standards. Critics contend that nonpoint source pollution is not more varied, site-specific, or more technologically difficult to control than point source pollution.[234]

The controversy over the TMDL program has to be viewed against the backdrop of the problem of nonpoint source pollution, particularly from large-scale agriculture, and the history at the federal level of funding state and local programs which ordinarily do not impose mandatory requirements. As the GAO report concluded, many of the states' criticisms of the TMDL program stem not from scientific uncertainty but from the lack of states' consistency in defining designated uses and various data utilized to evaluate impairment.[235] EPA guidelines can partially remedy the lack of consensus among states, but some states have vehemently objected to the possibility of EPA requiring TMDLs with respect to a water body not within the states' designated use. Section 303(d) is regrettably silent on precisely how and when TMDL implementation should occur. The rather scant 1972 legislative history of state support of water quality standards is sufficient to demonstrate that the states feared the prospect of "federal land use" and fought to retain control by maintaining supervision of nonpoint source pollution.[236] Land use is, how-

232 *Id.* at 1132.

233 *Id.* at 1131 n.8.

234 HOUCK, *supra* note 194, at 87. For an ambitious article demonstrating how the TMDL program could remedy nonpoint source pollution, see Paula J. Lebowitz, *Land Use, Land Abuse, and Land Re-Use: A Framework for the Implementation of TMDL's for Nonpoint Source Polluted Water Bodies*, 19 PACE ENVTL. L. REV. 97 (2001); *see also* Oliver A. Houck, *The Clean Water Act TMDL Program V: Aftershock and Prelude*, 32 ENVTL. L. REP. 10385 (Apr. 2002).

235 *See supra* note 207.

236 *See generally* Senate Public Works Subcommittee Hearings on Water Pollution Control Legislation (1971) (testimony of EPA); Senate Public Works Subcommittee Hearings on Water Pollution Control Legslation (1971) (testimony of CEQ, Army and EPA); House Public Works Committee Hearings on Water Pollution Control Legislation (1971) (testimony of EPA, Treasury, CEQ, HEW, HUD, FmHA and Coast Guard); House Public Works Committee Hearings on Water Pollution Control Legislation (1971) (testimony of

ever, determined at the federal level, in a number of ways through a variety of federal programs, most notably the CZMA.[237] Imposing some degree of mandatory controls, by assessing nonpoint sources' share of the load allocation and requiring some minimal level of control on those sources *only for impaired waters*, is one reasonable, moderate option in water quality improvement.

The focus now is clearly on regulation of nonpoint source pollution, but significantly the Commission failed to recommend further enforcement of the TMDL program. The Commission concluded "improv[ing] coastal water quality will require significant reductions in nonpoint sources" of pollution,[238] the "majority" of which comes from agricultural and stormwater runoff.[239] EPA has issued guidelines from a "watershed perspective" for managing agricultural nonpoint source pollution.[240] The voluntary guidelines cover all phases of runoff management from planning and development to program evaluation, and include both structural and nonstructural management practices that local and state agencies, landowners, developers, conservation groups, and other interested parties can use. Nonstructural practices include urban planning and zoning, minimizing paved surfaces, pollution reduction and recycling technique and preservation of wetlands and other natural drainage systems. Guidance on structural practices pertains to storm water and wastewater treatment systems and run off controls, such as silt fencing, retention ponds, and creased vegetation. The Commission recommendations echo the efforts of EPA, but fail to mention the TMDL program in its proposals. However, the Commission did call for the NOC to establish national nonpoint pollution reduction "goals" for all impaired waters.[241]

C. The Politics of Reform

There is wide agreement that the last thirty years of environmental regulation have been successful in implementing technology-based controls on point source pollution, but the need now is for enforceable water quality standards regulating both point and nonpoint source pollution. The lack of enforcement

CEQ, CEA and EPA).

237 *See generally* LINDA A. MALONE, ENVIRONMENTAL REGULATION OF LAND USE (2002).

238 FINAL REPORT, *supra* note 138, at 212.

239 *Id.* at 215.

240 *See* Nonpoint Source Program and Grants Guidelines for States and Territories, 68 Fed. Reg. 60,653 (Oct. 23, 2003), *available at* http://www.epa.gov/owow/nps (last visited Apr. 9, 2006).

241 FINAL REPORT, *supra* note 138, at 79–80.

mechanisms and water quality monitoring information, as well as a lack of political will and federal funding, has hampered efforts. A recent report by the Pew Ocean Commission presaged many of the Commission's findings as to the need for stronger controls. Specific to nonpoint source pollution, the Pew Ocean Commission recommended effective implementation of the TMDL program: "States should determine the total maximum daily load (TMDL) of pollutants that a water body can accept and still attain water quality standards. The states should then implement meaningful plans for achieving the point and nonpoint source pollution reductions indicated by TMDLs."[242]

Congress established the Ocean Commission because of major changes since the 1969 Stratton Commission Report: the large migration of people to coastal areas; the increase of federal and state regulations which often duplicated efforts and produced confusing and sometimes contradictory results; the increased use of the marine environment leading to depletion of resources and degradation of habitats; the increased complexity of environmental threats; and the potential for economic and scientific opportunities using modern technology.[243] Congress mandated the Commission to review these issues and specify policy recommendations.[244]

After two initial public meetings in September and November of 2001, where congressional members and various administrators testified, the Commission unanimously passed a resolution[245] urging the United States to immediately accede to the United Nations Convention on the Law of the Sea.[246] The Commission then held nine regional meetings across the country from January through September 2002, hearing testimony from various federal and state governments, industry representatives, interest groups, the academic community, the international community, and interested citizens.[247] On September 24, 2002, the Commission released its Mid-Term Report, summarizing the in-

242 PEW OCEANS COMM'N, AMERICA'S LIVING OCEANS: CHARTING A COURSE FOR SEA CHANGE 57–58 (2004), *available at* http://www.pewtrusts.com/pdf/env_pew_oceans_final_report.pdf.

243 S. REP. NO. 106-301, at 2–5 (2000) (Comm. on Commerce, Science, and Transportation), *available at* http://www.oceancommission.gov/commission/Senate_Report.pdf.

244 *Id.* at 5.

245 U.S. COMM'N ON OCEAN POLICY RESOLUTION, UNITED NATIONS LAW OF THE SEA CONVENTION RESOLUTION (2001), *available at* http://www.oceancommission.gov/documents/los_resolution.pdf.

246 United Nations Convention on the Law of the Sea (UNCLOS), Dec. 10, 1982, 1833 U.N.T.S. 397 (entered into force Nov. 16, 1994), *available at* http://www.un.org/Depts/los/convention_agreements/convention_overview_convention.htm.

247 U.S. COMM'N ON OCEAN POLICY, REPORT DEVELOPMENT TIMELINE AS OF APRIL 5, 2004 (2004), *available at* http://www.oceancommission.gov/calendar/timeline4_5_04.pdf.

formation gathered.[248] Four public deliberation meetings were held in Washington, D.C., from October 2002 to April 2003 to further discuss possible policy recommendations.[249] It was also during this time that the date to submit the Commission's final report to Congress and the President was extended from the spring of 2003[250] to June 2003[251] to early fall of 2003.[252] Over the course of the Commission's fifteen public meetings, 440 individuals testified, including ocean scientists and researchers, environmental organizations, industry officials, citizens, and government officials.[253] The Commission also received nearly 200 public comments from a similar cross-section of interests.[254] In June 2003, the Commission released a draft Table of Contents for the forthcoming final report.[255] During the second half of 2003 and beginning of 2004, the Commission drafted its report, releasing the Preliminary Report in April 2004 for public comment,[256] particularly from governors of coastal states, whose comments must be included in the final report to Congress and the President.[257] As a result, the public comment period deadline was extended from May 21, 2004 to June 4, 2004.[258]

Although the Commission's delayed, final findings on the need to control nonpoint source pollution are very forceful, the recommendations are much less so. The recommendations merely direct the yet to be established NOC to set a national goal of reducing nonpoint pollution in impaired coastal watersheds,

248 U.S. COMM'N ON OCEAN POLICY, DEVELOPING A NATIONAL OCEAN POLICY: MID-TERM REPORT (2002), *available at* http://www.oceancommission.gov/documents/midterm_report/ReportCovREV10_01_02.pdf.

249 U.S. COMM'N ON OCEAN POLICY, *supra* note 247.

250 Press Release, U.S. Comm'n on Ocean Policy, Final Report to Congress and President Due in Spring 2003 (Jan. 10, 2002), *available at* http://www.oceancommission.gov/newsnotices/jan10_chasmtg.html.

251 *See* U.S. COMM'N ON OCEAN POLICY, *supra* note 247, at 1.

252 Press Release, U.S. Comm'n on Ocean Policy, U.S. Commission on Ocean Policy Sets Framework for New National Ocean Policy: Table of Contents Document Outlines Major Areas of Interest (June 2, 2003), http://oceancommission.gov/newsnotices/jun2_03.html.

253 *Id.*

254 U.S. COMM'N ON OCEAN POLICY, PUBLIC COMMENT ARCHIVE (public comments received through March 2004), *available at* http://oceancommission.gov/publicomment/welcome.html (last visited Apr. 9, 2006).

255 U.S COMM'N ON OCEAN POLICY, WORKING TABLE OF CONTENTS—DRAFT FINAL REPORT (2003), *available at* http://oceancommission.gov/documents/working_toc6_26_03.pdf.

256 Press Release, U.S. Comm'n on Ocean Policy, U.S. Commission on Ocean Policy To Release *Preliminary Report* April 20—Historic Report to be Reviewed By Governors and Stakeholders (Mar. 10, 2004), http://oceancommission.gov/newsnotices/mar10_04.html.

257 Oceans Act of 2000, Pub. L. No. 106-256, § 3(g)(2), 114 Stat. 644, 648 (2001), *amended by* Pub. L. No. 107-206, 116 Stat. 833 (2003), Pub. L. No. 107-372, 116 Stat. 3096 (2003).

258 Press Release, U.S. Comm'n on Ocean Policy, U.S. Commission on Ocean Policy Extends Comment Deadline to June 4, 2004 (May 14, 2004), http://oceancommission.gov/newsnotices/may14_04.html.

and to set specific, measurable objectives to meet water quality standards.[259] Its only directive to Congress is Recommendation 14-10, which states that Congress should authorize "federal agencies to establish enforceable management measures for nonpoint sources of pollution and impose financial disincentives related to programs that result in water quality degradation if a state persistently fails to make meaningful progress toward meeting water quality standards on its own."[260] Significantly, this recommendation does not direct Congress or the EPA to *set* mandatory management measures, but only to authorize federal action if a state does not "make meaningful progress" toward meeting water quality standards.[261] This standard for federal intervention is essentially meaningless, given the vagueness of "meaningful progress" and that it need only be "progress" toward meeting general water quality standards rather than any required best management practices.[262]

What then does the Report say as to setting some actual management measures for nonpoint pollution and who is to set them? On both levels, the Report's recommendation is phrased in such a way as to ensure ineffectiveness. Recommendation 14-11 directs states and local governments to revise their codes and ordinances "to require land use planning and decision making to carefully consider" the impacts of development on water quality.[263] In other words, after finding that nonpoint pollution from land-based activities is the most serious threat to coastal and ocean water quality, what does the Report recommend? That a yet-to-be established Council with no enforcement authority set objectives for meeting state water quality standards, whatever they might be, and that state and local governments make sure they "consider" the impacts of development on water quality, consideration they are already required to give under the Clean Water Act.[264] What if development continues to be authorized despite clearly detrimental impacts on water quality? Unlike the Pew Report, the preliminary Ocean Commission Report only calls for federal intervention if a state is not making "meaningful progress" toward meeting water quality standards, an ambiguous term which could allow for decades of unrestrained water quality impairment before federal intervention would be necessary.[265]

This discrepancy between the forcefulness of the findings

259 FINAL REPORT, *supra* note 138, at 218.
260 *Id.* at 220.
261 *Id.*
262 *See id.*
263 *Id.* at 221.
264 *See id.*
265 *See id.* at 220.

and the tentativeness of the recommendations did not go unnoticed in the initial reactions of U.S. Senators from two Senate Committees, the Senate Commerce, Science, and Transportation Committee and the Senate Appropriations Committee, when presented with the preliminary Report.[266] Senator Fritz Hollings of South Carolina was the most outspoken in this regard.[267] He questioned the efficacy of an ocean council as opposed to a department that would have more direct access to the President.[268] He told James Watkins, who presented the Report, that he agreed with just about everything in the report, but added, "[y]ou're passionate in your answers but tentative and almost a sissy in your recommendations."[269] Watkins agreed with Senator Hollings that the goals would not be met without a strong commitment to them by the President.[270]

Watkins also told the Senate Commerce Committee that climate change relates to "every single topic in the report" and that the "climate change issue alone is powerful enough to drive the recommendations all by itself."[271] The recommendations for international policy, however, say nothing about the U.S.'s failure to ratify the Kyoto Protocol or any other measures to control greenhouse gases. Chapter 29, "Advancing International Ocean Science and Policy," contains a chart which indicates that the United States has not ratified the Kyoto Protocol, the Protocol to the London Convention, Annexes IV (sewage) or VI (air emissions) to the International Convention for the Prevention of Pollution from Ships, the Convention on Biological Diversity, the Convention on Migratory Species of Wild Animals, or the Cartagena Protocol on Biosafety.[272] Yet the only recommendation with respect to any of these treaties is Recommendation 29-2, which states that "The National Ocean Council should coordinate an expedited review and analysis of the ocean-related components of the United Nations Convention on Biological Diversity and recommend to the U.S. Department of State whether, from an ocean perspective, ratification of this treaty would be beneficial to U.S. interests."[273] With respect to international efforts to control nonpoint source pollution, favorable mention is made of the U.S.'s involvement in UNEP's fourteen regional seas pro-

266 *See* Susan Bruninga, *Senators Open to New Federal Policy Idea But Question Funding, Governance Structure*, 35 ENV'T REP. 948–49 (Apr. 30, 2004).

267 *See id.* at 948.

268 *See id.*

269 *Id.*

270 *Id.*

271 *Id.* at 949.

272 FINAL REPORT, *supra* note 138, at 446–48.

273 *Id.* at 448.

grams as part of the 1995 Global Program of Action for the Protection of the Marine Environment from Land-Based Sources (GPA)[274] and UNEP's 2002 Hilltop to Oceans Initiative,[275] and the June 3, 2003 G-8 statement declaring their intention to implement a global action plan for sustainable ocean development.[276] The only recommendation, however, which relates to these deficiencies and potential corrective actions is Recommendation 29-8: "The United States should increase its efforts to enhance long-term ocean science and management capacity in other nations through funding, education and training, technical assistance, and sharing best practices, management techniques, and lessons learned."[277]

The prospects for meaningful implementation of even the relatively timid recommendations of the Ocean Commission are bleak. Generally, the Report lays the most important burdens of implementation on the yet to be created Ocean Council for improvement at the federal level, and on the reluctant and financially strapped state and local governments for the remainder. With respect to control of nonpoint source pollution specifically, states and local governments are given a vague, unenforceable recommendation to make progress toward undefined goals, instead of recommending that Congress require compliance with TMDLs or mandate use of BMPs with sanctions (or withdrawal of funding) for failure to comply, or recommending withdrawal of federal subsidies that directly encourage coastal development. As of mid-2004, only one-fifth of concentrated animal feedlots (CAFOs) were in compliance with the 2003 requirements, yet the Report says nothing about how to ensure that CAFOs comply with the regulatory limitations.[278]

The very creation of the Ocean Council has already prompted divergent criticism. In a public hearing on the preliminary Report on July 28, 2004, the last hearing before issuance of the Final Report, one of the most contentious issues was this creation of another level of bureaucracy, with some environmental NGOs, like Senator Hollings in the hearings, saying that the Council was too weak an instrument for change at the federal level, and state representatives insisting on more state influence and that regional ocean councils be established. What timid control measures that were recommended by the Report to control nonpoint pollution were questioned by the very state representatives

274 *Id.* at 455.
275 *Id.*
276 *Id.* at 443.
277 *Id.* at 455.
278 *See generally* FINAL REPORT, *supra* note 138.

charged with their oversight and implementation. Most states opposed the establishment of any form of disincentive or penalty as a mechanism for ensuring implementation of and compliance with federal program requirements. As a public summary of the state comments noted:

> Most recognize nonpoint source pollution as a major problem facing the nation; however, there is not a consensus regarding the recommendation to merge the Coastal Zone Management Act Section 6217 program into the Clean Water Act Section 319 nonpoint program. In addition, most strongly disagree with the use of disincentives or penalties to facilitate the implementation of nonpoint programs.[279]

This longstanding unwillingness on the part of states to require and enforce BMPs in land use is precisely why the most serious deficiency of the Report in this regard is its failure to mandate imposition of such requirements at the federal level.[280]

At the international level, even the state representatives indicated that too little attention was given in the Report to climate change and its effect on coastal resources and communities.

No mention is made of the U.S.'s failure to ratify the Kyoto Protocol other than its inclusion in a chart. The Report's recommendations that the U. S. ratify the Law of the Sea Convention and Annex VI merely reflect ongoing processes already headed in that direction. The clear need for the U.S. to ratify the Biodiversity Convention to preserve marine resources results only in another directive to the Ocean Council to review the need for its ratification.

At the Senate hearings, James Watkins agreed with Senator Hollings that what was most necessary to national and international ocean policy was a commitment by the President to see that reform is effectuated.[281] The President was given ninety days to respond to the Final Ocean Report, which expired on December 20, 2004.[282] Instead of recommending action, on December 17, 2004, the President appointed yet another committee to review the recommendations of the U.S. Ocean Commission.[283] On the forefront of issues to be addressed was expanding the use of fishing quotas and seeking ratification of the United Nations

279 U.S. COMM'N ON OCEAN POLICY, SUMMARY OF GOVERNOR AND TRIBAL LEADER COMMENTS ON THE U.S. COMMISSION ON OCEAN POLICY'S PRELIMINARY REPORT (July 22, 2004), *available at* http://www.oceancommission.gov/newsnotices/summary_govcomments.pdf.

280 *See generally* MALONE, *supra* note 237.

281 *See* Testimony of Adm. James Watkins, USN (Ret.) before the Senate Committee on Commerce, Science, and Transportation, Sept. 21, 2004, http://commerce.senate.gov/hearings/testimony.cfm?id=1316&wit_id=3292.

282 *See* Oceans Act of 2000 § 3(i), Pub. L. No. 106-256 (2000).

283 Exec. Order No. 13366, 69 Fed. Reg. 76,591 (Dec. 17, 2004), *available at* http://edocket.access.gpo.gov/2004/pdf/04-28079.pdf.

Convention on the Law of the Sea. Conspicuously absent from the plan was any evaluation or decisions for control of nonpoint source pollution.

D. Conclusion

The environmental naiveté of the 1970's when civil society expected that all waters in the United States would be fishable and swimmable by 1985—is long past. As a society we have recognized that environmental problems are complex and challenging whether we have perfect information, imperfect information, or no information at all. When legislating or regulating to address these problems, there are essentially two steps. First, there must be an assessment of the environmental problem and of what is necessary to remedy it. However difficult this first determination might be, the next determination is even more so: what is the balance to be struck between the environmental values to be served by the proposed remedy, and all the other conflicting social values which will be compromised by the remedy? The second step is a policy matter, but the first, fundamental step is essentially a scientific determination. The second determination will be flawed at its core if the first assessment is not done with the best available, reliable, unfettered scientific information which can be obtained.

Nowhere is this need for unpoliticized, scientifically verified information more apparent than with nonpoint source pollution. For over thirty-five years, reduction of nonpoint source pollution has been unachievable. Is it the fault of politics, or the failure of current controls to achieve the anticipated reductions, or the infeasibility of controls on such pollution? Science should be able to tell us if it is the second or third of these reasons. If it is not either, then the answer is politics, and the question is starkly posed. As a society are we willing to do what it takes to reduce nonpoint source pollution, or are we willing to accept lesser water quality as the trade-off for not imposing the necessary measures?

That question is a nationally significant discourse that needs to take place at every level of government and society. To date, it has not because opponents of nonpoint source pollution controls for economic reasons couch their arguments in political reasons, in the guise of infeasibility or ineffectiveness of control methods. Perhaps they are right, but we do not know. We cannot know because the science we need so badly to tell us what can be done and how is simply not available, and the prospects for it becoming available are not bright.

As this article was being finalized, the highest ranking cli-

mate scientist at NASA charged the Bush administration with trying to stop him from calling for prompt reductions in greenhouse gases to curb global warming.[284] A week later, NASA's administrator issued a strongly worded statement to the agency's employees asserting that "[i]t is not the job of public-affairs officers to alter, filter or adjust engineering or scientific material produced by NASA's technical staff."[285]

On February 3, 2006, the chair of the U.S. Commission on Ocean Policy and the chair of the PEW Oceans Commissions joined forces to criticize the Bush administration and Congress for inadequate funding and action on the recommendations made by the presidential panel which formulated the U.S. Ocean Action Plan to implement the Commissions' recommendations a year ago.[286] The joint commission's "report card" on implementation gave a "D-plus" for ocean policy reform, and an "F" for failure to ratify the U.N. Convention on the Law of the Sea.[287] Any suggestion of favoritism to certain outcomes in scientific research in the executive branch is more of a threat to the legitimacy of science when funding for scientific research is dwindling as it has been. When funding is scarce, and politically driven outcomes preferred, the danger of junk science being not only overly recognized but overly funded is increased as scientists compete for scarce governmental grants or turn to private grants from organizations with purely political agendas. Coupled with the current administration's acceptance of the all-powerful, unitary executive theory of governance, the chilling effect is magnified on scientific study which does not serve the political purposes of the administration.

Whatever reforms may be necessary for the validation of scientific studies, science is valuable and respected precisely because it answers the questions of "how" with a modicum of political objectivity, before we must ask ourselves the political question of "whether or not." Respect and support for science in environmental determinations is not a new form of naiveté—

284 Andrew C. Revkin, *Climate Expert Says NASA Tried to Silence Him*, N.Y. TIMES, Jan. 29, 2006, at A1.

285 Andrew C. Revkin, *NASA Chief Backs Agency Openness*, N.Y. TIMES, Feb. 4, 2006, at A1. On January 27, 2006, the Center for Health and the Global Environment of Harvard University sponsored a briefing for Congress on "how science works." As Republican Sherwood Boehlert, head of the House Science Committee, remarked, "everyone boasts that they are for science-based policy until the scientific consensus leads to an unwelcome conclusion, and then they plan to go to Plan B." Cornelia Dean, *Where Science and Public Policy Intersect, Researchers Offer a Short Lesson on Basics*, N.Y. TIMES, Jan. 31, 2006, at F3.

286 Amena H. Sard & Patricia Ware, *White House, Congress Get Mixed Marks for Ocean Policy from Joint Commission*, 37 ENV'T REP. 303 (Feb. 10, 2006).

287 *Id.*

scientists are subject to the same pressures to achieve and produce as any professional. The difference is that their field is defined by its very objectivity and susceptibility to methods of objective verification which do not depend on leaps of faith, or predesired, politically motivated outcomes. Is it possible to reduce nonpoint source pollution with land use controls? If so, which controls would provide the most reduction for the least economic cost? If those two questions were posed to a scientist, a lawyer, an entrepreneur, an environmental advocate, and a politician, whose opinion would you trust to be the most honest, objective assessment?

Our society and others desperately need the answers to these two questions, and we need them answered with science. Delegitimization of science undermines not only science, but the legitimacy of the administrative, legal and policy processes as well.