

HOLDING NATURE RESPONSIBLE: THE NATURAL
CONDITIONS EXCEPTION TO WATER QUALITY STANDARDS
OF THE CLEAN WATER ACT

SHIMSHON BALANSON*

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*J.D. expected, May 2009, Cleveland State University, Cleveland-Marshall College of Law; M.S.E.S. Cleveland State University; B.A. Cleveland State University. The author would like to thank his family for their support throughout the drafting process, especially his wife, Rachael. The author would also like to acknowledge Professor Heidi Robertson for her input and guidance in refining this Note.

I. INTRODUCTION

On June 8, 2007, the Eleventh Circuit Court of Appeals, in *Sierra Club v. Leavitt*, rendered a decision that placed its judicial imprimatur on U.S. Environmental Protection Agency (“EPA”) policies providing states with the ability to exclude water bodies from their impaired waters list when their condition fails to meet water quality standards due solely to naturally occurring conditions.¹ For example, in 2002 the Florida Department of Environmental Protection (“FDEP”) claimed that several streams had low dissolved oxygen² levels due to “a natural condition,”³ likely stemming from hypoxic waters draining into the streams from surrounding wetland and swamps.⁴ While a natural conditions exception has existed for at least a decade, prior to the Eleventh Circuit’s decision, it had been confined to EPA guidance.⁵ Guidance presents the position of an agency on a given issue, often for which regulations are ambiguous or imprecise, and may provide a means for distinguishing permissible from impermissible activity under regulatory law.⁶ Guidance, however, does not have the same legal authority as court decisions, statutes, or regulations.⁷ Consequently, guidance is useful in determining how an agency will respond in a given situation or what conclusion an administrative court may reach, but does not

¹*Sierra Club, Inc. v. Leavitt*, 488 F.3d 904, 920-21 (11th Cir. 2007).

²Dissolved oxygen is vital to sustaining life in aquatic ecosystems. Hypoxia (low dissolved oxygen levels) can lead to a significant decrease in fish and invertebrate diversity. Extreme examples of the effect of low dissolved oxygen include the “dead zones” in Lake Erie, off the coast of Cape Perpetua, Oregon and the Gulf of Mexico, as well as fish die-offs in ponds and lakes during summer months. See NATIONAL OCEANIC & ATMOSPHERIC ASSOCIATION, NATIONAL CENTERS FOR COASTAL OCEAN SCIENCE, HYPOXIA IN THE GULF OF MEXICO: PROGRESS TOWARDS THE COMPLETION OF AN INTEGRATED ASSESSMENT (2003), available at http://oceanservice.noaa.gov/products/pubs_hypox.html.

³FLA. DEP’T OF ENVTL. PROT., GROUP 1 DELIST LIST 4-5, available at <http://www.dep.state.fl.us/water/tmdl/docs/303d/group1/adopted/cycle1/amended/G1DelistList.pdf>.

⁴FLA. DEP’T OF ENVTL. PROT., 2002 UPDATE TO FLORIDA’S 303(D) LIST OF IMPAIRED SURFACE WATERS ATTACHMENT 10: SUMMARY OF PUBLIC COMMENTS AND THE DEPARTMENT’S RESPONSES ON FLORIDA’S 2002 VERIFIED LIST OF IMPAIRED SURFACE WATERS 34 (2002), available at <http://www.dep.state.fl.us/water/tmdl/docs/2002Update/ResponsetoPublicCommentsFinal.pdf>.

⁵See U.S. ENVTL. PROT. AGENCY, OFFICE OF SCI. AND TECH., ESTABLISHING SITE SPECIFIC AQUATIC LIFE CRITERIA EQUAL TO NATURAL BACKGROUND 2 (1997); see also U.S. ENVTL. PROT. AGENCY, OFFICE OF WETLANDS, OCEANS AND WATERSHEDS, GUIDANCE FOR 2006 ASSESSMENT, LISTING, AND REPORTING REQUIREMENTS PURSUANT TO SECTIONS 303(D), 305(B) AND 314 OF THE CLEAN WATER ACT 62 (2005); see generally U.S. ENVTL. PROT. AGENCY, EPA REGION 10, OFFICE OF WATER AND WATERSHEDS, EPA REGION 10 NATURAL CONDITIONS WORKGROUP REPORT ON PRINCIPLES TO CONSIDER WHEN REVIEWING AND USING NATURAL CONDITIONS PROVISIONS (2005).

⁶U.S. OFFICE OF MGMT. & BUDGET, STIMULATING SMARTER REGULATIONS: 2002 REPORT TO CONGRESS ON THE COSTS AND BENEFITS OF REGULATIONS AND UNFUNDED MANDATES ON STATE, LOCAL AND TRIBAL ENTITIES 72 (2002).

⁷H.R. REP. NO. 106-1009, at 2 (2000) (stating that “agency guidance documents have no binding legal effect on the public”); see also *Appalachian Power Co. v. U.S. Env’tl. Prot. Agency*, 208 F.3d 1015 (D.C. Cir. 2000).

indicate how a federal or state court will adjudicate a dispute. Thus, in the absence of any newly promulgated regulation, the natural conditions exception has only now garnered formal legal approval.

The natural conditions exception raises numerous questions. (1) How does the exception fit within the structure of state water quality standards? States may incorporate a natural conditions exception directly into their water quality standards or, alternatively, bypass certain regulatory procedures and retain the exception as a reporting technique for assessing water quality.⁸ (2) How do states evaluate whether the natural conditions exception is implicated? “Natural conditions” are difficult to pin down in anthropogenically-impacted landscapes.⁹ Discriminating violations of water quality standards based solely on natural conditions from water quality excursions where natural conditions are a contributing factor presents a major methodological hurdle for state agencies.¹⁰ (3) Perhaps most importantly, how does the EPA evaluate the state’s use of the exception? This Note explores the evolution of the natural conditions exception, identifies the problems raised by its current formulation and recommends a solution that balances the states’ need to invoke a natural conditions exception against the vital societal interest in ensuring that water quality continues to improve within the United States.

Part I provides a background to the Clean Water Act (“CWA”), including a brief review of its history, structure, and the development of water quality standards. The analysis in Part II.A explores the states’ responsibilities in compiling a list of impaired water under CWA § 303(d), while Part II.B reviews the evolution of the “natural conditions” exception in case law, state regulation, and EPA policy and guidance. Part II.C evaluates the validity of the “natural conditions” exception from three frameworks—scientific, public policy, and legal—and raises serious questions as to whether deviatory water quality standards cohere with the principles and purposes of the CWA. Finally, Part III offers solutions to the scientific, policy and legal problems inhered in a “natural conditions” exception and recommends the EPA promulgate policies that demand more extensive documentation from authorized state agencies and more intensive review by the EPA where stream segments have been removed from the impaired waters list because their condition was solely based on natural conditions.

II. BACKGROUND OF THE CLEAN WATER ACT

A. *History of the Clean Water Act*

The current incarnation of federal law governing surface water pollution in the United States grew out of the federal government’s response to pervasive pollution and devastation of once abundant natural resources.¹¹ Numerous events highlighting

⁸See *infra* Part II.B.2 for an explication of the competing exceptions.

⁹Richard A. Smith et al., *Natural Background Concentrations of Nutrients in Streams and Rivers of the Coterminous United States*, 37 ENVTL. SCI. & TECH. 3039, 3039 (2003).

¹⁰*Id.* at 3039-40.

¹¹Robert Jerome Glennon & John E. Thorson, *Federal Environmental Restoration Initiatives: An Analysis of Agency Performance and the Capacity for Change*, 42 ARIZ. L. REV. 483, 498 (2000) (“In 1972, cities regularly dumped raw sewage into harbors and rivers. Industrial pollution seriously degraded many rivers.”).

the degradation of surface waters in the United States occurred throughout the twentieth century, most notably the Cuyahoga River fire in 1969, provoking the federal government to take rapid and comprehensive action to protect waters of the United States.¹²

Serious federal interest in protection of surface waters extends back as far as 1948 when Congress passed the Federal Water Pollution Control Act (“FWPCA”).¹³ This program extended limited advisory and technical assistance roles to the federal government, yet reflected an increased consciousness at the federal level that pollution control required federal intervention.¹⁴ Over the next twenty years, the federal government assumed more direct responsibility and oversight of interstate and intrastate navigable waters. In 1965, amendments to the FWPCA, known as the Water Quality Act of 1965, first introduced mandatory water quality standards for interstate waters.¹⁵ Nevertheless, over the next seven years serious concerns arose over enforcement of water quality standards and attendant implementation of pollution control technology.¹⁶

Subsequently, in 1972, Congress overhauled water pollution law in the United States and put in place the basic framework that exists to this day.¹⁷ The 1972 amendments, for the first time, required the treatment of all industrial wastes prior to discharge and developed an ambitiously comprehensive plan to secure clean and pollutant-free surface water in the United States.¹⁸ The 1972 amendments emphasized partnership between the federal and state governments. Rather than require direct implementation by the federal government, which would have created a massive and onerous bureaucratic hierarchy, Congress delegated day-to-day operations to state agencies, providing states with flexibility in developing individualized programming to meet water quality standards.¹⁹ States were granted discretion to develop water quality standards, though these were strictly limited not

¹²See *Solid Waste Agency of N. Cook County v. U.S. Army Corps of Eng’rs*, 531 U.S. 159, 174-75 (2001) (Stevens, J., dissenting) (“In 1969, the Cuyahoga River in Cleveland, Ohio, coated with a slick of industrial waste, caught fire. Congress responded to that dramatic event, and to others like it, by enacting the Federal Water Pollution Control Act (FWPCA) Amendments of 1972.”). For examples of other events prompting environmental regulation in the United States, see Richard J. Lazarus, *The Greening of America and the Graying of United States Environmental Law: Reflections on Environmental Law’s First Three Decades in the United States*, 20 VA. ENVTL. L.J. 75, 79-82 (2001).

¹³Pub. L. No. 80-845, 62 Stat. 1155 (codified as amended at 33 U.S.C. § 1251 *et seq.* (2006)).

¹⁴CONG. RESEARCH SERV. & THE LIBRARY OF CONG., CLEAN WATER ACT: A SUMMARY OF THE LAW 2 (2008).

¹⁵Pub. L. No. 89-234, 79 Stat. 903 (codified as amended at 33 U.S.C. § 1251 *et seq.* (2006)); see also CONG. RESEARCH SERV. & THE LIBRARY OF CONG., *supra* note 14, at 2.

¹⁶CONG. RESEARCH SERV. & THE LIBRARY OF CONG., *supra* note 14, at 2.

¹⁷Federal Water Pollution Control Act Amendments, Pub. L. No. 92-500, 86 Stat. 816 (codified as amended at 33 U.S.C. § 1251 *et seq.* (2006)).

¹⁸CONG. RESEARCH SERV. & THE LIBRARY OF CONG., *supra* note 14, at 2.

¹⁹*Id.* at 5.

to fall below those standards set forth by the EPA.²⁰ Perhaps most innovative was the asserted purpose of the CWA set forth in section 101, which declared that the objective of the CWA was to “restore and maintain the chemical, physical and biological integrity of the Nation’s waters.”²¹ Thus, the CWA attempts to strike a balance between two interests: the maintenance of current levels of surface water quality²² and a highly optimistic, if virtually impossible to meet, goal of restoration of surface waters to pre-development conditions.²³ Since its inception, the CWA has undergone seventeen revisions and will likely continue to be adapted as ecological and political exigency require.²⁴

B. Basic Structure of the Clean Water Act

Importantly, the CWA applies only to “waters of the United States.”²⁵ The EPA recently advocated for a broad conception of “waters of the United States” so as to cover isolated wetlands and other non-navigable bodies of water that provide essential ecological services in often pervasively-degraded landscapes.²⁶ However, the U.S. Supreme Court rejected such an expansive definition and limited the application of the CWA to navigable bodies of water and those waterways with a “significant nexus” or permanent surface connection to navigable bodies of water.²⁷

The CWA has two primary foci: (1) the construction and maintenance of municipal waste water treatment plants and (2) the development, implementation and enforcement of water quality standards for the improvement of surface water quality.²⁸ The basic structure of CWA programming is indicated in the diagram below.²⁹

²⁰*Id.* at 3-4.

²¹CWA § 101(a), 33 U.S.C. § 1251(a) (2006).

²²*See id.* § 1313(c) (2006). In CWA parlance, it is referred to as the “antidegradation policy.”

²³The CWA’s declaration of goals and policy, 33 U.S.C. § 1251, included as one of its goals the elimination of all pollutant discharge by 1985.

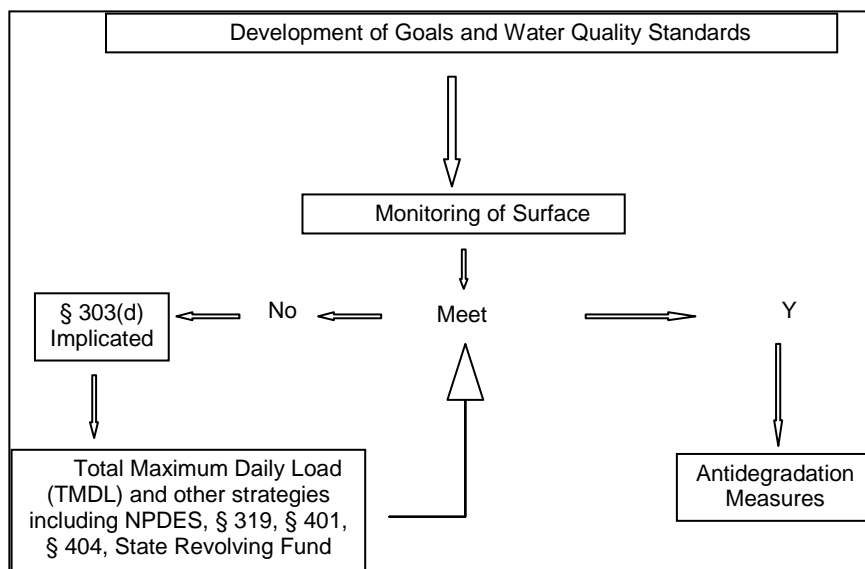
²⁴U.S. ENVTL. PROT. AGENCY, CLEAN WATER ACT, CLEAN WATER ACT HISTORY (2007), <http://www.epa.gov/region5/water/cwa.htm>.

²⁵CWA § 502(7), 33 U.S.C. § 1362(7) (2006) (defining “navigable waters” as “waters of the United States including the territorial seas”).

²⁶*See, e.g.*, Brief of Respondent-Appellee at 3-7, *Rapanos v. United States*, 126 S. Ct. 2208 (2006).

²⁷*Rapanos v. United States*, 126 S. Ct. 2208, 2248 (2006) (Kennedy, J., concurring). Justice Scalia’s plurality opinion is narrower and would define “waters of the United States” as “relatively permanent, standing or flowing bodies of water.” *Id.* at 2221. The EPA and Army Corps of Engineers have recently released a memorandum advancing their interpretation of the Supreme Court’s decision in *Rapanos* in which they decided to apply both the plurality’s and Kennedy’s definition. *See* U.S. ENVTL. PROT. AGENCY & U.S. ARMY CORPS OF ENG’RS, CLEAN WATER ACT JURISDICTION FOLLOWING THE U.S. SUPREME COURT’S DECISION IN *RAPANOS V. UNITED STATES & CARABELL V. UNITED STATES* 1 (2007).

²⁸The construction and maintenance of water treatment facilities are set forth in Title II, 33 U.S.C. §§ 1281–1301 (2006) and Title IV, 33 U.S.C. §§ 1341–46 (2006) of the CWA. The remaining Titles of the CWA set forth research and grant opportunities relating to water



One primary prohibition inhered in the CWA is that no person may discharge a pollutant³⁰ into any water covered by the act without first complying with statutory requirements,³¹ most importantly the National Pollution Discharge Elimination System (“NPDES”), enshrined in section 402 of the CWA.³² NPDES permits limit the quantity of specific pollutants a municipal or industrial facility may discharge and specify the particular control technology the facility must install to meet numerical limitations.³³ For most conventional pollutants, facilities should implement Best Practicable Technologies (“BPT”).³⁴ Conversely, for particularly recalcitrant, toxic pollutants, the CWA requires the installation of Best Available Technologies (“BAT”).³⁵ In instances where technology-based limitations are insufficient to meet water quality standards, dischargers face water quality-based

quality (Title I, 33 U.S.C. §§ 1251–74 (2006)), water quality standards and enforcement (Title III, 33 U.S.C. §§ 1311–30 (2006)), general procedural provisions (Title V, 33 U.S.C. §§ 1361–77 (2006)), and funding for state programming (Title VI, 33 U.S.C. §§ 1381–87 (2006)).

²⁹Inspired by U.S. Env’tl. Prot. Agency, CWA Big Picture, <http://www.epa.gov/watertrain/cwa/slide.htm> (last visited Oct. 10, 2008).

³⁰CWA § 502(6), 33 U.S.C. § 1362(6) (2006) (defining “pollutant” as “dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial, municipal and agricultural waste discharged into water”).

³¹See CWA § 301(a), 33 U.S.C. § 1311(a) (2006).

³²*Id.* § 1342 (2006).

³³*Id.* § 1311(b)(1)(A).

³⁴*Id.*; see also CONGRESSIONAL RESEARCH SERVICE & THE LIBRARY OF CONGRESS, *supra* note 14, at 6.

³⁵CWA § 301(b)(2)(A), 33 U.S.C. § 1311(b)(2)(A).

effluent limits, which more severely restrict the quantity of pollutants that may be discharged from the facility.³⁶

As a general rule, states must develop water quality standards for covered waters within state boundaries.³⁷ Subsequently, the state monitors surface water bodies to gauge compliance with the aforementioned standards.³⁸ States must report surface water segments that do not comply with water quality standards to the EPA as part of reporting practices required under CWA sections 303(d) and 305(b).³⁹ For the first twenty years of its existence, the CWA mandated a Total Maximum Daily Load (“TMDL”) strategy that a state had to undertake to propel impaired surface water into compliance with the ambient water quality standards of section 303(d).⁴⁰ In practice, however, the use of technology-based standards of the NPDES dominated ambient water quality standards.⁴¹ Consequently, the EPA implemented very few TMDL control measures for impaired water bodies.⁴² Numerous successful citizen suits finally compelled the EPA to develop new regulations for TMDLs in 1985 and 1992.⁴³ Most significant are the 1992 regulations which set forth the sweeping scope of the new TMDL program.⁴⁴ The program attempts to capture an increasing number of impaired water bodies and requires states to implement segment-specific or water body-specific TMDLs to account for derogation of water quality standards that could not be solved by technology-based limitations, water quality-based effluent limitations, or other pollution control programming.⁴⁵

After a state identifies a water body segment as water-quality limited and, therefore, requiring a TMDL, the EPA advises the following procedure:⁴⁶

³⁶*Id.* § 1311(b)(1)(C).

³⁷*See generally* CWA § 303, 33 U.S.C. § 1313. *See* Part I.C for a more detailed discussion.

³⁸40 C.F.R. § 130.4 (2007).

³⁹33 U.S.C. §§ 1313(d), 1315(b) (2006).

⁴⁰U.S. Env'tl. Prot. Agency, Overview of Current Total Maximum Daily Load – TMDL – Program and Regulations, <http://www.epa.gov/owow/tmdl/overviewfs.html> (last visited Oct. 10, 2008).

⁴¹*See* Oliver A. Houck, *TMDLs, Are We There Yet?: The Long Road Toward Water Quality-Based Regulation Under the Clean Water Act*, 27 ENVTL. L. REP. 10,391, 10,392-93 (1997).

⁴²*Id.*

⁴³*See* CONG. RESEARCH SERV. & THE LIBRARY OF CONG., CLEAN WATER ACT AND TOTAL MAXIMUM DAILY LOADS (TMDLs) OF POLLUTANTS 2 (2005).

⁴⁴*See generally* 40 C.F.R. § 130.7 (2007). More recent proposed revisions to the TMDL program were withdrawn after vigorous condemnation from industry groups and scientists. *See* Notice of Withdrawal, 68 Fed. Reg. 13,608 (March 19, 2003).

⁴⁵40 C.F.R. § 130.7(b)(1)(i)-(iii) (2007).

⁴⁶U.S. ENVTL. PROT. AGENCY, OFFICE OF WATER, EPA 841-B-99-007, PROTOCOL FOR DEVELOPING NUTRIENT TMDLS (1999), *available at* <http://www.epa.gov/owow/tmdl/nutrient/pdf/nutrient.pdf>.

1. Problem identification in which the pollutant, land use and other contributing factors leading to impairment are characterized.⁴⁷
2. Identification of numeric water quality targets or water quality indicators that would allow the impaired water body to achieve water quality standards.⁴⁸
3. Source assessment in which the sources of pollution in the landscape are characterized based on the type, magnitude and location within the catchment area.⁴⁹
4. Establishing linkages between the water quality target and the sources of pollution to calculate the total loading capacity or the greatest loading the water body can receive without violating water quality standards.⁵⁰
5. Allocating loadings among sources in terms of wasteload allocations (point sources) and loading allocations (natural background conditions and non-point sources).⁵¹
6. Development and implementation of a monitoring plan to verify that the TMDL has successfully attained water quality standards.⁵²

States should implement TMDLs eight to thirteen years after identification of impairment.⁵³ Since the inception of the new TMDL program, the EPA has approved over 25,000 TMDLs.⁵⁴ The achievements of the TMDL program, however, cannot be measured solely by the number of impaired segments identified or targets reached. The quality of the TMDL program is contingent on the reliability of the water quality standards targeted and accurate reporting of impaired water bodies.

C. Water Quality Standards

Under CWA section 303, states must develop water quality standards for surface water bodies located within state boundaries.⁵⁵ Before water quality standards can

⁴⁷*Id.* at 1-1.

⁴⁸*Id.*

⁴⁹*Id.*

⁵⁰*Id.*

⁵¹*Id.* The allocation of loading capacity is defined by the following equation:

$\text{Loading Capacity} = \sum \text{wasteload allocations} + \sum \text{loading allocations} + \text{Margin of Safety.}$ *The Margin of Safety term accounts for any "uncertainty about the relationship between pollutant loads and receiving water quality."* *Id.*

⁵²*Id.*

⁵³U.S. ENVTL. PROT. AGENCY, OFFICE OF WETLANDS, OCEANS AND WATERSHEDS, *supra* note 5, at 63.

⁵⁴U.S. Env'tl. Prot. Agency, National Section 303(d) Fact Sheet, http://iaspub.epa.gov/waters/national_rept.control (last visited Oct. 17, 2008). Information on successfully implemented TMDLs, in which water quality standards have been attained, is virtually impossible to find. A few reports are available at <http://www.tmdls.net/>, from Virginia and Texas, which seem to indicate that at least within those states no successful TMDLs have yet been fully implemented.

⁵⁵33 U.S.C. § 1313 (2006).

come into effect, they must be approved by the EPA to ensure that they accord with guidelines expressly set forth at 40 C.F.R. § 131.1, *et seq.*⁵⁶ Moreover, states must review their water quality standards every three years and submit a report to the EPA providing rationale for altering standards or maintaining the program in its current formulation.⁵⁷ Numeric water quality standards are preferred, but, in situations where a quantitative standard is unavailable, surrogate qualitative and narrative standards may suffice.⁵⁸

Water quality standards are divided into three chief components: (1) designated uses, (2) water quality criteria, and (3) antidegradation policy.⁵⁹ Designated uses are uses that society determines should be attained by a particular water body segment.⁶⁰ Designated uses represent an anthropocentric and utilitarian model of water quality standards and ensure that recreational and economic activities can continue within navigable waters and their tributaries.⁶¹ In determining the designated uses for a specific water body segment, the EPA has promulgated the following rules: (1) the segment must be designated for all “existing uses” that its uses attained since Nov. 28, 1975;⁶² (2) in all but the most extraordinary cases, swimmability and fishability of a segment must be a desired use;⁶³ (3) waste transport is not a legitimate designated use;⁶⁴ (4) while multiple designated uses are permitted, the highest water quality criteria associated with one of the uses governs;⁶⁵ (5) social and economic criteria and factors may be considered when fashioning designated uses for a segment.⁶⁶

Over time, designated uses for a body of water may be reclassified, reflecting a use that requires better water quality, or in the converse, a use that allows increased pollution.⁶⁷ However, such downgrading reclassification is subject to extensive analysis, exploring whether the prior use is unattainable.⁶⁸ Both the public and EPA must review the proposed change and the EPA must provide final approval.⁶⁹

⁵⁶See generally 40 C.F.R. § 131.5 (2007).

⁵⁷33 U.S.C. §§ 1313(c)(1), (c)(2)(A).

⁵⁸40 C.F.R. § 131.11(b)(2) (2007).

⁵⁹CWA § 303(b)(2)(A), 33 U.S.C. § 1313(b)(2)(A); 40 C.F.R. §§ 131.10-12 (2007).

⁶⁰40 C.F.R. § 131.10(a).

⁶¹*Id.*

⁶²40 C.F.R. § 131.3(e) (2007).

⁶³40 C.F.R. § 131.10(j) (requiring, minimally, coherence with the goals proffered in CWA § 101(a)(2) of “protection and propagation of fish, shellfish, and wildlife, and provid[ing] for recreation in and on the water”).

⁶⁴*Id.* § 131.10(a).

⁶⁵40 C.F.R. § 131.11(a)(1) (2007); *see also* U.S. Env'tl. Prot. Agency, Clean Water Act Module (Sept. 25, 2008), *available at* <http://www.epa.gov/watertrain/cwa/cwa8.htm> (last visited Oct. 17, 2008).

⁶⁶40 C.F.R. § 131.10(g)(6).

⁶⁷*Id.* § 131.10(g).

⁶⁸*Id.*

⁶⁹*Id.* § 131.10(e).

Common use designations include: drinking water (treated/untreated); water-based recreation such as swimming, boating, and water skiing; fishing and catch consumption; aquatic life (warm water habitat and cold water habitat); agricultural water supply; and industrial water supply.⁷⁰

Water quality criteria, in turn, embody the conditions necessary to achieve and maintain a designated use.⁷¹ Importantly, water quality criteria must be scientifically based and thus, unlike designated uses, may not take into account social and economic factors.⁷² Water quality criteria are often expressed in quantitative values, most notably concentration of pollutants.⁷³ The EPA recommends that states develop a tiered approach, relying on core water quality indicators, such as numeric pollutant concentrations and other physical conditions of the segment and surrounding landscape, along with supplemental indicators for assessing whether specific pollutants are detrimentally affecting attainment of a designated use.⁷⁴ Where the designated uses in question are aquatic life designations, biological water quality indicators are often employed.⁷⁵ Biological water quality indicators represent a single metric or suite of metrics used to characterize a representative biological assemblage within the aquatic ecosystem.⁷⁶ Qualitative narrative accounts may also be permitted and are often required to account for some component of water quality criteria, most notably subjective assessments of the aesthetic appearance of water bodies.⁷⁷

Finally, antidegradation policies are procedures and rules that address situations in which a proposed activity may compromise the designated use of a particular water body.⁷⁸ In this manner, the CWA emphasizes maintenance of designated uses in conjunction with improvement of water quality. Antidegradation policies are multi-tiered. The first tier involves protection of existing designated uses.⁷⁹ This means that, at the very least, states must ensure that water quality standards for a

⁷⁰U.S. Env'tl. Prot. Agency, *supra* note 65.

⁷¹40 C.F.R. § 131.11(a)(1).

⁷²*Id.*

⁷³*Id.* § 131.11(b)(1). Other units are available including pH, toxicity units, temperature, conductivity units.

⁷⁴U.S. ENVTL. PROT. AGENCY, OFFICE OF WETLANDS, OCEANS AND WATERSHEDS, ELEMENTS OF A STATE WATER MONITORING AND ASSESSMENT PROGRAM 7 (2003).

⁷⁵*Id.* at 8 tbl.1.

⁷⁶*See, e.g.*, OHIO ENVTL. PROT. AGENCY, THE ROLE OF BIOLOGICAL DATA IN WATER QUALITY ASSESSMENT, BIOLOGICAL CRITERIA ASSESSMENT 1 (1988) (describing the Index of Biotic Integrity and Invertebrate Community Index, both developed and adopted by the Ohio EPA as biological water quality indicators), *available at* http://www.epa.state.oh.us/dsw/documents/BioCrit88_Vol1PartC.pdf.

⁷⁷Water Quality Standards for the Colville Indian Reservation in the State of Washington, 54 Fed. Reg. 28,622, 28,627 (July 6, 1989).

⁷⁸U.S. Env'tl. Prot. Agency, Antidegradation Policy (Dec. 5, 2006), *available at* <http://www.epa.gov/waterscience/standards/about/adeq.htm> (last visited Oct. 17, 2008).

⁷⁹40 C.F.R. § 131.12(a)(1) (2007).

given water body segment do not fall below thresholds for a particular designated use.⁸⁰ The second tier requires the protection of high quality waters.⁸¹ Thus, water bodies that attain a designated use by a significant margin should continue to retain high standards rather than allowing the water quality to deteriorate to the designated use threshold.⁸² Finally, tier three antidegradation policies demand that water bodies specially designated as outstanding national resource waters maintain their high levels of water quality such that virtually no degradation is tolerable.⁸³

The CWA has introduced a broad statutory framework for improving water quality within the United States. The coupled force of water quality standards and TMDL development ensures, at least in theory, that states actively participate in the gradual enhancement and restoration of streams and rivers. The potential for achieving the underlying goal of complete restoration is contingent on states accurately identifying and prioritizing impaired water bodies, so that the regulatory mechanisms may be applied where they are needed most.

III. SECTION 303(d) REPORTING AND THE NATURAL CONDITIONS EXCEPTION TO LISTING

The development and revision of water quality standards place a significant burden on states. The statute includes a three-year review cycle that requires states to reevaluate the standards.⁸⁴ This forces states to stay informed as to the latest scientific findings and technological advancements.⁸⁵ The demands of water quality standard regulations, however, are compounded by the extensive state reporting requirements. During even numbered years, states must submit a number of reports or a single integrated report to the EPA.⁸⁶ CWA section 305(b) and the regulations promulgated at 40 C.F.R. section 130.8 outline the reporting requirements for reviewing state water quality programs.⁸⁷ Section 305(b) reports must include a description of the water quality for all waters covered by the CWA within the state as well as the extent to which designated uses have been attained.⁸⁸ In the most rudimentary sense, this component of the report indicates what percentage of water bodies within a state attain water quality standards.⁸⁹ Moreover, the report requires

⁸⁰*Id.* (“Existing instream water uses and the level of water quality necessary to protect the existing uses *shall be maintained and protected.*”) (emphasis added).

⁸¹*Id.* § 131.12(a)(2).

⁸²*Id.* The regulations do permit reducing water quality standards in high quality waters in the rare circumstance that “lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located.” *Id.*

⁸³*Id.* § 131.12(a)(3).

⁸⁴ 33 U.S.C. § 1313(a) (2006).

⁸⁵ Water Quality Standard Regulations, 48 Fed. Reg. 51,400, 51,403 (Nov. 8, 1983).

⁸⁶ See 40 C.F.R. §§ 130.7(d)(1), 130.8(a) (2007).

⁸⁷ 33 U.S.C. § 1315(b) (2006).

⁸⁸ 40 C.F.R. § 130.8(b)(1) (2007).

⁸⁹ For example, in 2002, Florida Department of Environmental Protection reported that twenty-nine percent of assessed river miles “clearly” attained their designated use. See FLA.

extensive characterization of the successes of the CWA control programs and the social and economic costs necessary to achieve the goals of the CWA.⁹⁰ More recently, regulations have been promulgated requiring detailed description of nonpoint source pollution and what steps have and will be taken to counteract its effect.⁹¹

While the 305(b) report is expansive in character, perhaps the most important reporting activity undertaken by the states is that required under CWA section 303(d)⁹² and 40 C.F.R. § 130.7(d). Whereas the 305(b) report broadly describes the successes and failures of state programming, the 303(d) report enumerates at a fine scale how water bodies within the state are performing.⁹³ In the following section, this Note explores the reporting process, emphasizing the mechanisms for “delisting” water body segments and the proliferation of “natural conditions” exceptions to meeting water quality standards.

A. Section 303(d) Report Components

The CWA requires a state to produce a reviewable list of “waters within its boundaries for which effluent limitations . . . are not stringent enough to implement any water quality standard applicable to such waters.”⁹⁴ The waters contained within this list sets in motion the TMDL process discussed in Part I.B. The EPA has promulgated a suite of regulations detailing what must be submitted by state agencies to the EPA during even numbered years.⁹⁵ These include, but are not limited to the following seven requirements:

1. A list of water quality-limited waters requiring TDMLs,⁹⁶
2. A list of pollutants causing the impairment,⁹⁷
3. A priority ranking for TMDL development and implementation,⁹⁸

DEP'T OF ENVTL. PROT., FLORIDA WATER QUALITY ASSESSMENT 2002 305(B) REPORT 3, available at http://www.dep.state.fl.us/water/docs/2002_305b.pdf.

⁹⁰40 C.F.R. § 130.8(b)(2) (2007). In 2006, the FDEP highlighted two water quality control programs as having successfully decreased phosphorus levels in water bodies, while estimating that it would cost more than \$22 billion to fund projects necessary to address water quality and public health issues within the state. See FLA. DEP'T OF ENVTL. PROT., INTEGRATED WATER QUALITY ASSESSMENT FOR FLORIDA: 2006 305(B) REPORT AND 303(D) LIST UPDATE 33, 35, available at http://www.dep.state.fl.us/water/tmdl/docs/2006_Integrated_Report.pdf.

⁹¹40 C.F.R. § 130.8(b)(4). Nonpoint source pollution refers to all pollution that cannot be traced to a single, identifiable source such as an industry or municipal wastewater treatment plant. Nonpoint source pollution is often termed “runoff,” referring to the process by which precipitation or other water traveling over the landscape or through stormwater systems sequesters pollutants and deposits them in water bodies. The EPA has a website dedicated to nonpoint source pollution. See <http://www.epa.gov/OWOW/NPS/>.

⁹²33 U.S.C. § 1313(d).

⁹³40 C.F.R. § 130.7(d)(1) (2007).

⁹⁴CWA § 303(d)(1)(A), 33 U.S.C. § 1313(d)(1)(A).

⁹⁵40 C.F.R. § 130.7 (2007).

⁹⁶*Id.* § 130.7(b)(1).

⁹⁷*Id.* § 130.7(b)(4).

4. A description of the methodology employed to produce the list,⁹⁹
5. A description of the “existing and readily available data” relied on to produce the list,¹⁰⁰
6. Rationale for excluding particular “existing and readily available data” in producing the list,¹⁰¹ and
7. If requested by the EPA, legitimate rationale for excluding or delisting a water from the list.¹⁰²

There are two important pieces of information in the regulation to note from the onset. First, the list is composed of those segments not meeting water quality standards as a result of a “pollutant.”¹⁰³ A pollutant is not the same as pollution and is, generally speaking, limited to chemical impairment.¹⁰⁴ The CWA defines pollution more broadly as “the man-made or man-induced alteration of the chemical, physical, biological, and radiological integrity of water” and includes all pollutants as well as non-pollutant pollution such as altered flow regimes or channel modification.¹⁰⁵ Second, “existing and available data” is subject to a variety of definitions under EPA guidance. It can include information ranging from quantitative evidence of exceedance of water quality criteria to evidence from narrative statements of use designation impairment to computer modeling that demonstrates the attainment or non-attainment of water quality standards.¹⁰⁶ Because of the wide range of available options, states have a fair amount of discretion in determining whether water bodies satisfy water quality standards.

Moreover, due to practical limitations of time and money, the EPA does not explicitly require states to physically monitor every surface water segment during each three-year reporting cycle.¹⁰⁷ Rather, the state agency may sample a particular region or a representative sample of water bodies during each monitoring cycle so as to not overly burden the financial and manpower resources of a state¹⁰⁸ and, in many cases, states will draw inferences from the limited dataset in determining whether

⁹⁸*Id.*

⁹⁹*Id.* § 130.7(b)(6)(1).

¹⁰⁰*Id.* § 130.7(b)(5).

¹⁰¹*Id.* § 130.7(b)(6)(3).

¹⁰²*Id.* § 130.7(b)(6)(4).

¹⁰³*See id.* § 130.7(d)(1).

¹⁰⁴*See* CWA § 502(6), 33 U.S.C. § 1362(6) (2006) (defining “pollutant” as “dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water”).

¹⁰⁵CWA § 502(19), 33 U.S.C. § 1362(19) (2006).

¹⁰⁶U.S. ENVTL. PROT. AGENCY, OFFICE OF WETLANDS, OCEANS AND WATERSHEDS, *supra* note 5, at 30-32.

¹⁰⁷*Id.* at 19. States may rely on probability-based surveys where site-specific monitoring of surface waters is infeasible.

¹⁰⁸*See, e.g.,* Sierra Club, Inc. v. Leavitt, 488 F.3d 904, 909 n.3 (11th Cir. 2007) (describing how Florida examined data for only twenty percent of the state’s waters for its 2002 report).

water quality standards are being met for a particular segment or collection of segments.¹⁰⁹

States have a fair amount of latitude in complying with the reporting requirements and may use an array of different approaches. The EPA, however, has attempted to simplify the reporting process, combining the 305(b) and 303(d) reports into a single “Integrated Report.”¹¹⁰ The Integrated Report represents an effort by the EPA to streamline the reporting process, which not only benefits state agencies, but also reduces the effort expended by the EPA in review and facilitates public scrutiny of the state water quality assessment process.¹¹¹

One of the most important components towards realizing these benefits is a five-part categorization system applied to all water bodies within a state.¹¹² The five-part categorization of water is predicated on the systematic breakdown of streams into manageable parts in a process known as segmentation.¹¹³ Segmentation generally follows some homogenous unit in the physical, biological, or chemical features of water bodies.¹¹⁴ Thus, a state may simply partition water bodies into 500-meter reaches or, to more accurately reflect ecological principles, divide water bodies based on uniform areas of flow, morphology, substrate, abutting land uses, pollution sources, or unique habitat and biological community distributions.¹¹⁵ Consequently, segmentation demands a fair amount of previously available data and information.¹¹⁶

Once segmentation is completed, water body segments are allocated into one of five recommended categories:

1. All designated uses are supported and none are threatened.¹¹⁷
2. Available data indicates that some, but not all designated uses are supported.¹¹⁸ (segments included in Category 2 will necessarily be

¹⁰⁹U.S. ENVTL. PROT. AGENCY, OFFICE OF WETLANDS, OCEANS AND WATERSHEDS, *supra* note 5, at 33.

¹¹⁰*Id.* at 6.

¹¹¹U.S. ENVTL. PROT. AGENCY, OFFICE OF WETLANDS, OCEANS AND WATERSHEDS, INTEGRATED WATER QUALITY MONITORING AND ASSESSMENT REPORT GUIDANCE 3 (2001).

¹¹²*See generally*, U.S. ENVTL. PROT. AGENCY, OFFICE OF WETLANDS, OCEANS AND WATERSHEDS, *supra* note 5, at 46-64.

¹¹³*Id.* at 46.

¹¹⁴*Id.*

¹¹⁵*Id.*

¹¹⁶In many states, data and segmentation may have been compiled by the U.S. Geologic Services as part of their Valley Segment Type dataset, thus alleviating the need to repeat the process. *See, e.g.*, U.S. GEOLOGIC SURVEY, OFR2003-194, FISH DISTRIBUTION AND VALLEY SEGMENT TYPE DATA FROM OHIO AQUATIC GAP ANALYSIS PROJECT (GAP) (United States Geologic Survey CD-ROM, 2003). The EPA recommends that states follow the National Hydrography Dataset (NHD) coding method where available, which provides georeferencing (that is an established spatial relationship between real-world coordinates and map coordinates) for segments. U.S. ENVTL. PROT. AGENCY, OFFICE OF WETLANDS, OCEANS, AND WATERSHEDS, *supra* note 5, at 46.

¹¹⁷U.S. ENVTL. PROT. AGENCY, OFFICE OF WETLANDS, OCEANS, AND WATERSHEDS, *supra* note 5, at 47.

included in other categories, depending on the number of categories utilized by a state).

3. There is insufficient data to make a use support determination.¹¹⁹
4. Available data indicate that at least one designated use is not being supported or is threatened, but a TMDL is not needed.¹²⁰
 - Subcategory A: A TMDL has been approved or established by the EPA.¹²¹
 - Subcategory B: Pollution control measures other than a TMDL (such as best management practices) are expected to result in attainment of water quality standards in a reasonable period of time.¹²²
 - Subcategory C: Non-attainment is the result of pollution rather than a pollutant.¹²³
5. Available data indicate that at least one designated use is not being supported or is threatened and a TMDL is needed.¹²⁴

Those segments included in Category 5 correspond with the section 303(d) list reviewed by the EPA for approval.¹²⁵ The impaired waters list should reflect the current status of segments not attaining water quality standards within a state.¹²⁶ However, there are various mechanisms for removing segments from the impaired segment list and additional exemptions, most tendentiously the “natural conditions” exception upheld in *Leavitt*.¹²⁷

*B. Delisting of Impaired Water Bodies and the Natural Conditions Exception*¹²⁸

There are a number of mechanisms available for delisting segments from a 303(d) report of impaired bodies of water. Most commonly, a TMDL has been developed and approved by the EPA and, consequently, it is unnecessary to include

¹¹⁸*Id.*

¹¹⁹*Id.*

¹²⁰*Id.*

¹²¹*Id.*

¹²²*Id.*

¹²³*Id.*

¹²⁴*Id.*

¹²⁵*Id.* at 57.

¹²⁶U.S. Env'tl. Prot. Agency, *supra* note 54 (indicating that as of December 2, 2007, 38,734 impaired waters were listed representing 63,635 causes of impairment).

¹²⁷*See* *Sierra Club, Inc. v. Leavitt*, 488 F.3d 904, 920-21 (11th Cir. 2007).

¹²⁸EPA has defined a natural background condition as “background concentrations due only to non-anthropogenic sources.” *See* Press Release, U.S. Env'tl. Prot. Agency, Rational for Disapproving Delisting of Waters from the 1996 Missouri Section 303(d) List: Little Osage River and Marmaton River for Naturally Occurring Low Levels of Dissolved Oxygen (January 1999) [hereinafter Press Release, Missouri], http://www.epa.gov/region7/news_events/news_releases/archive/publicno/natback.htm (last visited Oct. 17, 2008).

in the 303(d) report.¹²⁹ In certain situations, where the conditions of a water body change dramatically or new data suggests that water quality standards are attained, the segment may be removed.¹³⁰ It is also possible that the state agency determines that an alternative control measure will attain water quality standards and that a TMDL is unnecessary (e.g. effluent limitations more stringent than technology-based limitations that will achieve water quality standards).¹³¹ Alternatively, the state may discover that non-attainment is the result of pollution rather than a pollutant.¹³² Finally, the state may conclude that the previous listings had been inconsistent with assessment methodology developed by the state and approved by the EPA.¹³³

1. *Sierra Club v. Leavitt* and the Florida Exception

The natural conditions exception falls squarely within this final delisting instrument. In essence, listing for excursions based on natural conditions is inconsistent with either the listing procedure or water quality assessment methodology of the state.¹³⁴ The exception is not necessarily a new development, but the formal imprimatur of the Eleventh Circuit should raise its prominence in the environmental arena.

The dispute in *Sierra Club v. Leavitt* emerged from Florida's 2002 impaired waters list.¹³⁵ For its 2002 update, the Florida Department of Environmental Protection ("FDEP") examined a single basin group, representing approximately twenty percent or 1600 of Florida's water bodies.¹³⁶ Upon review, the EPA approved a majority of the 303(d) list, but disapproved of the FDEP's failure to diagnose and include certain water bodies as impaired and its further delisting of water bodies that were on the 1998 list.¹³⁷ By the time it had approved the final list, the EPA had added an additional eighty water bodies to the list.¹³⁸

Sierra Club brought suit against the EPA, claiming that its approval of the 2002 list was "arbitrary, capricious and not in accordance with the law."¹³⁹ *Sierra Club* challenged the EPA's approval of delisted water bodies where the data indicated at

¹²⁹See U.S. ENVTL. PROT. AGENCY, OFFICE OF WETLANDS, OCEANS, AND WATERSHEDS, *supra* note 5, at 47. Those segments in which a state has implemented a TMDL fall within Category 4 of the EPA's integrated framework and thus fall outside of 303(d) listing.

¹³⁰See 40 C.F.R. § 130.7(b)(6)(iv) (2007).

¹³¹*Id.* § 130.7(b)(1)(ii).

¹³²See *id.* § 130.7(c)(1)(ii) (limiting listing and subsequent TMDL development to "all pollutants preventing or expected to prevent attainment of water quality standards") (emphasis added).

¹³³*Id.* § 130.7(b)(6)(iv).

¹³⁴See *infra* Part II.B.2.

¹³⁵*Sierra Club, Inc. v. Leavitt*, 488 F.3d 904, 908 (11th Cir. 2007).

¹³⁶*Id.* at 909.

¹³⁷*Id.*

¹³⁸*Id.*

¹³⁹*Id.*

least a single infraction of water quality standards within the past seven and a half years or where water quality violations were due to natural conditions.¹⁴⁰ In the district court, the EPA moved for summary judgment and the court granted summary judgment as to each claim.¹⁴¹ On appeal, the Eleventh Circuit first confronted the issue of whether a single exceedence within the past seven and a half years was sufficient to render the EPA's approval "arbitrary, capricious and not in accordance with the law."¹⁴² The court held that the EPA's approach of considering a multitude of factors in reviewing the non-listing of segments cohered with regulatory guidance and, therefore, the EPA did not act arbitrarily or capriciously in approving of the water bodies.¹⁴³

The court then moved on to the issue of the "natural conditions" exception, which allowed seven water bodies not attaining water quality standards to be delisted.¹⁴⁴ Sierra Club challenged the EPA's decision on two grounds: (1) a natural conditions exception does not correspond with regulatory or guidance requirements and (2) the applicable Florida administrative regulations constituted a change in the water quality standards for the state without garnering approval from the EPA.¹⁴⁵ In confronting the Sierra Club's first assertion, the court turned to CWA section 101 for guidance.¹⁴⁶ While the CWA does not specifically provide for a natural condition exception, the explicit purpose of the CWA is "to restore and maintain the chemical, physical and biological integrity of the Nation's waters."¹⁴⁷ Restoration, in the court's reading, meant the "return [of] water bodies to their natural conditions."¹⁴⁸ In fact, legislative history indicates that the word "integrity" was meant to express the concept of naturally-structured and functioning ecosystems.¹⁴⁹ Consequently, where

¹⁴⁰*Id.* at 909. Sierra Club's other claims included that the EPA should not have approved Florida's nonlisting of water bodies which had been allegedly impaired by a fish consumption advisory for mercury or based on data greater than seven and a half years old and that the EPA should not have approved of Florida's priority ranking for TMDLs because of the FDEP's failure to follow statutory standards.

¹⁴¹*Id.*

¹⁴²*Id.* at 919. Initially on appeal, the Eleventh Circuit made short work of the first two claims, remanding the first to determine whether the FDEP had evaluated the older data and whether it had failed to take into account water body-specific fish consumption advisories, which inform the inclusion of such water bodies into the 303(d) list. *Id.* at 913-14. As to the second claim, the court again remanded on grounds that although the US EPA is not required to approve or disapprove priority rankings, it must review the ranking process to "ensure that the state is taking into account the statutory factors." *Id.* at 918.

¹⁴³*Id.* at 920.

¹⁴⁴*Id.*

¹⁴⁵Brief of Petitioner-Appellant at 54-55, *Sierra Club, Inc. v. Leavitt*, 488 F.3d 904, No. 05-13959 (11th Cir. 2007).

¹⁴⁶*Leavitt*, 488 F.3d at 920-21.

¹⁴⁷*Id.*

¹⁴⁸*Id.*

¹⁴⁹*Id.* at 921 (citing H.R. REP. NO. 92-911, at 76 (1972)).

natural conditions are the direct cause of violations of water quality standards, the goals and aspirations of the CWA are not contravened.¹⁵⁰

The court then turned to the second issue and, in the process, examined Florida's statutory and regulatory embodiment of the natural conditions exception.¹⁵¹ Florida obliquely referenced a natural conditions exception for water body impairment for the purpose of its 303(d) list in a statute describing the state's broad pollution control goals in stating that the FDEP "shall not consider deviations from water quality standards to be violations when the discharger can demonstrate that the deviations would occur in the absence of any human-induced discharges or alterations to the water body."¹⁵² This notion was further incorporated into Florida administrative regulations, which expressly permit a natural conditions exception as follows, in pertinent part:

Subsection 303(d) of the CWA and Section 403.067, F.S., describe impaired waters as those not meeting applicable water quality standards, which is a broad term that includes designated uses, water quality criteria, the Florida antidegradation policy, and moderating provisions. However, as recognized when the water quality standards were adopted, many water bodies naturally do not meet one or more established water quality criteria at all times, even though they meet their designated use. It is not the intent of this chapter to include waters that do not meet otherwise applicable water quality criteria solely due to natural conditions or physical alterations of the water body not related to pollutants. Waters that do not meet otherwise applicable water quality standards due to natural conditions or to pollution not related to pollutants shall be noted in the state's water quality assessment prepared under subsection 305(b) of the CWA [305(b) Report].¹⁵³

It is interesting to note that the policy statement could be read as only applying a natural conditions exception to those water bodies for which water quality criteria are violated, but "meet their designated use."¹⁵⁴ However, when this rule is read in conjunction with another administrative code section, which states that "[w]aters having water quality below the criteria established for them shall be protected and enhanced [, though] the [FDEP] shall not strive to abate natural conditions," it

¹⁵⁰*Id.*

¹⁵¹The court's decision as to the second issue is never really expressed. Rather, the court's discussion of FDEP regulations acknowledges the validity of applying the natural conditions exception, given its express provisions in Florida administrative law. The court ostensibly dismissed Sierra Club's claim out of hand given the Northern District of Florida's prior decision in Florida Public Interest Research Group Citizen Lobby v. United States EPA, No. 4:02cv408-WS, 2007 U.S. Dist. LEXIS 84039, *32 (N.D. Fla. Feb. 15, 2007), in which it affirmed the EPA's finding "that no change was effected to the State's underlying water quality standards" by the natural conditions rules but rather merely provided a methodology for identifying bodies of water its impaired waters list.

¹⁵²FLA STAT. § 403.021(11) (2007).

¹⁵³FLA. ADMIN. CODE ANN. r. 62-303.100 (2007).

¹⁵⁴*Id.*

appears that the maintenance of the designated use was unlikely considered a prerequisite for a natural conditions exception.¹⁵⁵ Moreover, the occurrence of a water quality criteria violation and the attainment of a designated use are logically inconsistent. Water quality criteria are quantitative, qualitative, or narrative representations of a particular designated use.¹⁵⁶ Once water quality criteria have been derogated from, the designated use is necessarily contravened as well.¹⁵⁷

2. Other State Approaches to the Natural Conditions Exception

Florida is not the only state that has enshrined a “natural conditions” exception into its administrative code. Rather, at least thirteen other states provide for a natural condition exception. The natural conditions exceptions can be divided into two distinct groupings: (1) narrative natural conditions exceptions, that is where the administrative body has promulgated a generic provision for a natural conditions exception to violations of water quality¹⁵⁸ and (2) site-specific natural conditions

¹⁵⁵FLA. ADMIN. CODE ANN r. 62-302.300(15) (2007).

¹⁵⁶See 40 C.F.R. § 131.11(a)(1) (2007).

¹⁵⁷*Cf.* U.S. ENVTL. PROT. AGENCY, EPA REGION 10, OFFICE OF WATER AND WATERSHEDS, *supra* note 5, at 10 (“In those cases the natural condition criteria may not be protective of the designated use . . . [and] the state . . . would need to re-evaluate the designated use and perhaps revised it in order to accurately reflect the attainable and existing ‘natural’ use.”).

¹⁵⁸A narrative natural conditions exception might read as follows: “When the natural background conditions exceed the applicable water quality criteria for specific waters, the natural conditions shall become the applicable criteria.” See U.S. ENVTL. PROT. AGENCY, EPA REGION 10, OFFICE OF WATER AND WATERSHEDS, *supra* note 5, at 6. For specific state administrative code provisions see for example, GA COMP. R. & REGS. 391-3-6-03(3)(h) (2007) (“‘Natural conditions’ are the collection of conditions for a particular water body used to develop numeric criteria for water quality standards which are based on natural conditions.”); MINN. R. 7050.0170 (2007) (“Where [natural] background levels exceed applicable standards, the background levels may be used as the standards for controlling the addition of the same pollutants from point or nonpoint source discharges in place of the standards.”); WASH. ADMIN. CODE 173-201A-310 (2007) (“Whenever the natural conditions of a water body are of a lower quality than the assigned criteria, the natural conditions constitute the water quality criteria.”); W. VA. CODE § 47-2-7 (2007) (“Where a natural condition of a waterbody is demonstrated to be of lower quality than a water quality criterion, . . . the Secretary, in his or her discretion, may establish a site-specific water quality criterion for aquatic life.”); N.J. ADMIN. CODE § 7:9B-1.5(d)(6)(iii) (2007) (“Water quality characteristics that are generally worse than the water quality criteria, except as due to natural conditions, shall be improved to maintain or provide for the designated uses where this can be accomplished without adverse impacts on organisms, communities or ecosystems of concern.”); 15A N.C. ADMIN. CODE 02B.0205 (2007) (“Water quality standards will not be considered violated when values outside the normal range are caused by natural conditions.”); S.C. ADMIN. CODE REGS. 61-68(C)(c)(9) (2007) (“Because of natural conditions some surface . . . waters may have characteristics outside the standards established by this regulation. Such natural conditions do not constitute a violation of the water quality standards[.] . . .”); IDAHO ADMIN. CODE r. 58.01.02.200.09 (2007) (“When natural background conditions exceed any applicable water quality criteria set forth in Sections 210, 250, 251, 252, or 253, the applicable water quality criteria shall not apply; instead, there shall be no lowering of water quality from natural background conditions.”); OR. ADMIN. R. 340-041-0007(2) (2007) (“Where a less stringent natural condition of a water of the State exceeds the numeric criteria set out in this Division, the natural condition supersedes the numeric criteria and becomes the standard for

exceptions requiring formal changes to water quality standards based on background natural conditions.¹⁵⁹ Distinguishing between the two classes of exception is not merely a matter of semantics; there is a distinctive gulf in the quality of the burden placed on the state agency between the two approaches. In the case of the narrative exception, the exception does not constitute a modification of the state's water quality standards.¹⁶⁰ The exception is thus simply a methodology for selecting segments for the section 303(d) impaired waters list.¹⁶¹ The level of scrutiny directed by the EPA at the provision is attenuated and the EPA's review is solely targeted at the section 303(d) list.¹⁶² Conversely, because it constitutes a modification of water quality standards, a site-specific natural conditions provision itself must be reviewed and approved by the EPA.¹⁶³ Thus, although in practice, under both types of provisions, waters not attaining "normal" water quality standards will be excluded from the 303(d) list, those states that have promulgated site-specific provisions face heightened scrutiny.¹⁶⁴

that water body."); ALASKA ADMIN. CODE tit. 18, § 70.010 (2007) ("Where the department determines that the natural condition of a water of the state is of lower quality than the water quality criteria set out in 18 AAC 70.020(b), the natural condition supersedes the criteria and becomes the standard for that water.").

¹⁵⁹In 2006, Alaska abrogated its site-specific natural conditions exception and adopted a narrative exception as its exclusive natural conditions criteria. The EPA maintains, however, that the "[d]evelopment of a numeric site-specific criterion through a formal change in the WQS (via ruling-making) is EPA's nationally recommended approach." See U.S. ENVTL. PROT. AGENCY, EPA REGION 10, OFFICE OF WATER AND WATERSHEDS, *supra* note 5, at 4.

¹⁶⁰See Fla. Pub. Interest Research Group Citizen Lobby v. United States Env'tl. Prot. Agency, No. 4:02cv408-WS, 2007 U.S. Dist. LEXIS 84039, *32 (N.D. Fla. Feb. 15, 2007); U.S. ENVTL. PROT. AGENCY, EPA REGION 10, OFFICE OF WATER AND WATERSHEDS, *supra* note 5, at 6-7. See also, 9 VA. ADMIN. CODE § 25-260-250(A) (2007) ("[W]ater quality may from time to time vary from established limits as a result of natural conditions."); MD. CODE REGS. 26.08.02.03 (2) ("If the natural water quality of a stream segment is not consistent with the criteria established for the stream then: (a) The natural conditions do not constitute a violation of the water quality standards.").

¹⁶¹U.S. ENVTL. PROT. AGENCY, DETERMINATION ON REFERRAL REGARDING FLORIDA ADMINISTRATIVE CODE CHAPTER 62-303 IDENTIFICATION OF IMPAIRED SURFACE WATERS 9-11 (2005), available at http://epa.gov/region4/water/wqs/documents/IWR_decision_doc_std_schanges_final.pdf (asserting that Florida's express natural conditions exception was merely a methodological tool for screening unimpaired from impaired water bodies); U.S. ENVTL. PROT. AGENCY, EPA REGION 10, OFFICE OF WATER AND WATERSHEDS, *supra* note 5, at 6-7.

¹⁶²40 C.F.R. § 130.7(d)(2) (2007). More tententiously, three Region 10 states permit, with the EPA's ostensive approval, a natural conditions exception for dissolved oxygen and/or temperature even with minor anthropogenic contribution. See, e.g., OR. ADMIN. R. 340-041-0004(9)(a)(D)(iii) (2007); WASH. ADMIN. CODE 173-201A-200(c)(i).

¹⁶³40 C.F.R. § 131.20(c) (2007) (requiring EPA review and approval whenever a state makes changes to its state water quality standards).

¹⁶⁴*Id.*

3. An Alternative Approach: No Natural Conditions Exception

Juxtaposed with the natural conditions exception embodied in the majority of states that expressly confront the issue of naturally-produced aberrations in water quality, are two states that acknowledge the potential for natural conditions falling below generally acceptable levels, but nonetheless require improvement of water quality irrespective of whether natural conditions cause nonattainment of water quality standards.

Colorado directly concedes that its water quality standards may create a perplexing situation in which water bodies fail to attain water quality standards as a result of natural conditions, yet the regulations require their improvement.¹⁶⁵ Wisconsin makes a similar compromise by requiring the upgrading of water quality to attain a designated use, even where natural conditions are a barrier to supporting aquatic life for that designated use.¹⁶⁶

Both of the aforementioned approaches represent conceptions of water quality standards as peremptory in nature. A peremptory conception views water quality standards as non-derogable objectives. The logical extension of such an approach is that endeavoring to meet water quality standards must be undertaken at all costs, even where attempts will be futile. A facile analysis of the Colorado and Wisconsin regulations would deem them paradoxical and inexplicable.¹⁶⁷ However, there is a sense of caution in peremptory water quality standards that is both pragmatic and coherent. First, the peremptory approach may be fundamentally skeptical of the scientific possibility of quantifying natural conditions in anthropogenically-altered landscaped.¹⁶⁸ Second, there is no practical detriment of taking such an approach for Colorado and Wisconsin. Even though more segments may be added to their section 303(d) lists, the allowance of priority ranking for TMDLs permits the states to avoid developing TMDLs when it suspects that the segments are impaired as a result of natural conditions.¹⁶⁹

4. Evolution of the Exception in EPA Policy and Guidance

Although at least two states preserve water quality standards in the face of natural conditions, the exception is, nevertheless, dominant. The evolution of the exception, in many ways, mirrors the split in states that affirmatively provide for an exception of some sort. Thus, the natural conditions exception emerged in the guise of site-

¹⁶⁵COLO. CODE REGS. § 1002-38.20(8) (2007) (“Water quality standards originally established and amended by these rules might necessitate, and result in, an improvement in water quality notwithstanding the fact that such improvement would not enhance the maintenance or attainment of existing and designated uses due to physical habitat and natural conditions.”).

¹⁶⁶WIS. ADMIN. CODE NR § 104.01 (2007) (“Surface waters which because of natural conditions are not conducive to the establishment and support of the complete hierarchy of aquatic organisms shall not be degraded below present levels, but shall be upgraded as necessary to support assigned uses.”).

¹⁶⁷This seems especially unreasonable in light of the allowance for site-specific water quality criteria. 40 C.F.R. § 131.11(b)(1)(ii) (2007).

¹⁶⁸See Smith et al., *supra* note 9, at 3039-40.

¹⁶⁹See 40 C.F.R. § 130.7(b)(4) (2007).

specific water quality standards and was later enshrined, within the EPA guidance and many state administrative codes, as a narrative exception to violations of existing water quality standards such that it need not be included on the 303(d) impaired waters list.

The EPA's disapproval of Missouri's plan to delist waters that had been previously listed in its 1996 and 1998 lists highlights the initial formulation of the exception.¹⁷⁰ In a news release dated January 1999, the EPA Region 7 explicitly stated that it rejected Missouri's use of natural background conditions as a rationale for delisting two river systems.¹⁷¹ The news release reiterated the EPA's prior comments to Missouri in which it stated that "waters must be listed in those instances where the source of the impairment is a 'natural condition of that water body'" and that "ambient concentrations or conditions in excess of adopted criteria are violations of state water quality standards"¹⁷² Consequently, a state could not merely claim a natural conditions exception when selecting segments for its section 303(d) list. Nonetheless, the EPA offered an alternative method for confronting violations of water quality standards due to natural conditions by asserting that in such cases "the appropriate action is the development of site-specific criteria . . . equal to natural background."¹⁷³ Because Missouri's water quality standards failed to adequately discuss how the Missouri Department of Natural Resources would establish site-specific criteria, the EPA disapproved of the delisting of the two river systems.¹⁷⁴ Importantly, the EPA emphasized that once a state establishes methodology it must submit to it to the EPA for approval.¹⁷⁵ Furthermore, whenever a state action implicates the methodology, the state must provide public notice and comment on its application to the specific water body.¹⁷⁶

¹⁷⁰During this same period, the EPA extended qualified approval to Washington's 1998 impaired waters list, withholding full approval until Washington added an additional seven proposed water bodies. See Press Release, U.S. Env'tl. Prot. Agency, Washington's List of Impaired Waters Earns Partial Approval from EPA (Sept. 9, 1999), available at 1999 WL 33882159 [hereinafter Press Release, Washington]. Some of the proposed additions were required because the EPA did not believe Washington's proffered reason for exclusion that "natural conditions were the only cause of [] water quality excursions." *Id.* Washington based its exception on its narrative natural condition exception, codified at WASH. ADMIN. CODE § 173-201A-310 (2007).

¹⁷¹Press Release, Missouri, *supra* note 128.

¹⁷²*Id.*

¹⁷³*Id.*; see also U.S. ENVTL. PROT. AGENCY, OFFICE OF SCI. & TECH., *supra* note 5, at 2.

¹⁷⁴Press Release, Missouri, *supra* note 128. The EPA proffered three elements that must minimally be included in any site-specific criteria methodology: (1) a definition of natural background consistent with the EPA's; (2) a provision that site-specific criteria may be set in accordance with natural background; and (3) a procedure for determining natural background. *Id.*

¹⁷⁵*Id.*; accord 40 C.F.R. § 130.2(k) (2007).

¹⁷⁶Press Release, Missouri, *supra* note 128. Any site-specific criteria must either be adopted into or appended to the state's water quality standards. Either way, the state must cohere with the notice and review processes set forth at 40 C.F.R. § 130.2.

The EPA did not expressly provide information on the use of site-specific criteria exceptions in any of its post-1992 guidance documents for preparing 303(d) lists.¹⁷⁷ The 1994¹⁷⁸ and 1998¹⁷⁹ guidance documents do not mention natural or background conditions. They merely mention the necessity of consistency with approved state water quality standards, thus accommodating site-specific water quality exceptions.¹⁸⁰ In 2002, the EPA began emphasizing integrated reporting in which the 305(b) and 303(d) reports are combined into a succinct package. Just as it had done in previous guidance documents, the 2002¹⁸¹ and 2004¹⁸² integrated report guidance provided no specific guidance on natural condition exceedances of water quality standards. Consequently, there is no suggestion in these guidance documents that the EPA had altered its site-specific approach.¹⁸³

However, the EPA's defensive posture in *Florida Public Interest Research Group Citizen Lobby, Inc. v. United States Environmental Protection Agency*, highlights a noticeable shift in EPA policy relative to the natural conditions exception.¹⁸⁴ The EPA defended its failure to review and approve Florida's Impaired Waters Rule ("IWR") on grounds that the IWR did not represent a de jure or de facto revision or modification of Florida's water quality standards.¹⁸⁵ Thus, for the first time, the EPA approved a narrative natural conditions exception that did not need to undergo the rigors of public and EPA approval prior to implementation.¹⁸⁶ This new

¹⁷⁷The EPA did, however, acknowledge the possibility of setting water quality standards equal to natural conditions. See U.S. ENVTL. PROT. AGENCY, OFFICE OF SCI. AND TECH, *supra* note 5, at 2.

¹⁷⁸U.S. ENVTL. PROT. AGENCY, ASSESSMENT AND WATERSHED PROT. DIV., GUIDANCE FOR 1994 SECTION 303(D) LISTS, *available at* <http://www.epa.gov/owow/tmdl/1994guid.html>.

¹⁷⁹U.S. ENVTL. PROT. AGENCY, OFFICE OF WETLANDS, OCEANS, AND WATERSHEDS, NATIONAL CLARIFYING GUIDANCE FOR 1998 STATE AND TERRITORY CLEAN WATER ACT SECTION 303(D) LISTING DECISION, *available at* <http://www.epa.gov/owow/tmdl/lisgid.html>. In 2000, the EPA provided a brief respite from the reporting process and did not require submission for the 2000 period. 40 C.F.R. § 130.7(d)(1) (2007).

¹⁸⁰See U.S. ENVTL. PROT. AGENCY, OFFICE OF SCIENCE AND TECH, *supra* note 5, at 2.

¹⁸¹U.S. ENVTL. PROT. AGENCY, OFFICE OF WETLANDS, OCEANS, AND WATERSHEDS, *supra* note 111.

¹⁸²U.S. ENVTL. PROT. AGENCY, OFFICE OF WETLANDS, OCEANS, AND WATERSHEDS, GUIDANCE FOR 2004 ASSESSMENT, LISTING AND REPORTING REQUIREMENTS PURSUANT TO SECTIONS 303(D) AND 305(B) OF THE CLEAN WATER ACT (2003), *available at* http://www.epa.gov/nhrslsup1/arm/documents/epa2003_1466.pdf.

¹⁸³In fact, Region 10 continues to describe the site-specific exception as the US EPA's nationally recommended approach. See U.S. ENVTL. PROT. AGENCY, EPA REGION 10, OFFICE OF WATER AND WATERSHEDS, *supra* note 5, at 4.

¹⁸⁴Fla. Pub. Interest Research Group Citizen Lobby v. United States Env'tl. Prot. Agency, No. 4:02cv408-WS, 2003 U.S. Dist. LEXIS 25948 (N.D. Fla. May. 29, 2003).

¹⁸⁵*Id.* at *13.

¹⁸⁶While the EPA ultimately determined that changes in water quality criteria in the Florida IWR constituted a revision, it maintained throughout court proceedings that the natural conditions exception was a mere methodological tool for selecting impaired water bodies. See U.S. ENVTL. PROT. AGENCY, *supra* note 161, at 9-11.

policy was further preserved in the EPA's 2006 Integrated Report Guidance, which explicitly provides that where a "state's water quality standards include a specific exception for exceedances caused by 'natural conditions,' these segments would not be considered impaired"¹⁸⁷ It is worth noting that this policy continues to demand that states incorporate a "specific exception" into its water quality programming.¹⁸⁸ Consequently, it would be disingenuous to contend that the EPA is allowing a blanket exception without any formal impediments or limitations. Nevertheless, the Northern District of Florida and the EPA legally and officially opened the door to a new mechanism for excluding water bodies violative of water quality standards based exclusively on natural conditions.

C. Evaluation of the Natural Conditions Exception

In evaluating the natural conditions exception, it is prudent to explore the exception from a number of different dimensions and frameworks. Three particular frameworks are germane in the context of a regulatory rule: scientific, public policy, and legal. Certainly, there is overlap among the three dimensions, but each brings with it unique qualities that illuminate different facets of the natural conditions exception. Further, in analyzing the exception a distinction should be made between the site-specific and narrative exceptions.¹⁸⁹ Moreover, one must be careful not to allow political or ideological considerations to color one's analysis.

1. Scientific Framework

The first framework, scientific, provides the foundation for assessing any regulation aimed at improving environmental quality. Water quality standards, particularly water quality criteria, are predicated on verifiable scientific data.¹⁹⁰ Sound science is an integral component of sustainable and legitimate environmental programming.¹⁹¹ Thus, if there is no reasonable scientific basis for the natural conditions exception, it is difficult to imagine it thriving as a continuing standard of practice for state agencies.

The major obstacle confronting the natural conditions exception from a scientific perspective is the difficulty of disentangling natural from anthropogenically-driven impairments. There is no doubt that all science involves a certain amount of sampling error and uncertainty, but such ambiguity is magnified when dealing with:

¹⁸⁷U.S. ENVTL. PROT. AGENCY, OFFICE OF WETLANDS, OCEANS AND WATERSHEDS, *supra* note 5, at 62.

¹⁸⁸*Id.*

¹⁸⁹*See supra* Part II.B.2.

¹⁹⁰40 C.F.R. § 131.11(a)(1) (2007).

¹⁹¹*See generally* E. Donald Elliott et al., *Science, Agencies, and the Courts: Is There a Crowd?*, 31 ENVTL. L. REP. 10,125 (2001) (addressing the importance of science in environmental policymaking and decrying the lack of inclusion of science in policymaking at the EPA). For possible solutions to the paucity of science in policymaking, see E. Donald Elliott, *Strengthening Science's Voice at EPA*, 66 LAW & CONTEMP. PROBS. 45, 53-62 (2003).

(1) the limited historical data available to assess natural conditions,¹⁹² (2) the spatial and temporal variability of aquatic ecosystems¹⁹³ and (3) the reliance on imperfect predictive models and reference sites.¹⁹⁴

One of the major methodological barriers to assessing natural conditions is determining what water quality would look like in pre-development or completely undeveloped watersheds. This is virtually impossible within the United States, except perhaps in the most remote Alaskan or montane streams, as almost every watershed is impacted to some extent by human intervention.¹⁹⁵ Furthermore, reliable historical data is incredibly limited as extensive monitoring is a relatively recent undertaking.¹⁹⁶ Therefore, it is difficult to even intellectually grasp what a natural condition should look like. How far removed from human impact must one be?

Another major methodological obstacle is the inherent spatial and temporal variability of aquatic systems. Many water quality standards already assume a one-size-fits-all approach.¹⁹⁷ Such an approach, however, is incredibly misleading and is incongruent with the intrinsic variability in these systems.¹⁹⁸ Snapshot monitoring efforts and limited datasets can rarely accurately depict existing water quality conditions in a dynamic system such as a stream or river.¹⁹⁹ Although this is a level of error that must be implicitly or explicitly included in any scientific endeavor, it is especially worrisome where one is trying to assess whether humans have had *any* impact on the water quality conditions in the ecosystem.

¹⁹²R.C. Nijboer et al., *Establishing Reference Conditions for European Streams*, 516 HYDROBIOLOGIA 91, 92 (2004) (discussing the dearth of reliable data on pre-human impact conditions).

¹⁹³See, e.g., R.L. Vannote et al., *The River Continuum Concept*, 37 CAN. J. FISH. AQUAT. SCI. 130 (1980); R.J. NAIMAN ET AL, RIPARIA: ECOLOGY, CONSERVATION, AND MANAGEMENT OF STREAMSIDE COMMUNITIES (Nancy Maragioglio & Kelly Sonnack eds., 2005).

¹⁹⁴U.S. ENVTL. PROT. AGENCY, OFFICE OF WETLANDS, OCEANS AND WATERSHEDS, *supra* note 5, at 62. See also U.S. ENVTL. PROT. AGENCY, EPA REGION 10, OFFICE OF WATER AND WATERSHEDS, *supra* note 5, at 23 (describing the inherent difficulty in finding ideal reference sites).

¹⁹⁵See, e.g., U.S. DEP'T OF AGRIC., ECON. RESEARCH SERV., MAJOR USES OF LAND IN THE UNITED STATES 25 (2002) (finding that over 70% of US land is dedicated towards human uses and of the remaining 28.8% listed as forested land, over two-thirds is considered timberland, that is land capable of commercial timber production).

¹⁹⁶Nijboer et al., *supra* note 192, at 101. Moreover, federal law mandated water quality standards for the first time in 1965. Consequently, there has only been a centralized monitoring effort for forty-five years.

¹⁹⁷See, e.g., OHIO ADMIN. CODE § 3745:1-07 (2007) (providing virtually uniform numeric water quality criteria for all aquatic life designated uses for water bodies across the entire state of Ohio).

¹⁹⁸See Gene E. Likens & Donald C. Buso, *Variations in Streamwater Chemistry Throughout the Hubbard Brook Valley*, 78 BIOGEOCHEMISTRY 1, 20-26 (2006). See also Vannote et. al., *supra* note 191.

¹⁹⁹U.S. ENVTL. PROT. AGENCY, DRAFT REPORT ON THE ENVIRONMENT 2-21 (2003).

The third and final barrier is the inadequate and insufficient criteria and contemporary datasets that are often relied upon to make the determinations that the water quality infraction is driven exclusively by natural conditions. The EPA recommends that natural conditions be identified “by assessing the results of water quality monitoring efforts, by the use of predictive models, or a characterization based on data from a watershed with similar hydrologic, land use and pollutant loading characteristics.”²⁰⁰ While all of these methods produce pertinent information, they hardly reassure that accurate measures of natural conditions are available. Monitoring efforts often suffer from limited spatial and temporal scope.²⁰¹ Thus, the results of monitoring efforts require a fair amount of inference to inform any regulatory decision. Using data that already includes no small amount of error to extrapolate to natural conditions would likely be statistically weak. Additionally, predictive models are notoriously fallible and are by definition imperfect representations of real-world activities.²⁰² Although modeling has improved dramatically over the past two decades, with the advent of super high-speed processing, there is still considerable debate over the value of models.²⁰³ Finally, the use of reference watersheds is subject to risks of incongruence between the reference sites and the segments in question.²⁰⁴ No two water bodies in nature are identical and thus, there is inherent error in translating from one water body to another.²⁰⁵

Despite all of the objections raised, there is nothing unique about these particular problems. Many scientific enterprises confront the same issues, especially when dealing with uncontrollable natural systems.²⁰⁶ Error and uncertainty are hallmarks of ecology and environmental science and are incorporated into all of the scientific underpinnings of the Clean Water Act.²⁰⁷ Nevertheless, there is a certain qualitative difference between assigning water quality criteria for a particular designated use and claiming that natural conditions are the sole reason for a water quality standard

²⁰⁰U.S. ENVTL. PROT. AGENCY, OFFICE OF WETLANDS, OCEANS AND WATERSHEDS, *supra* note 5, at 62.

²⁰¹*See, e.g.*, OHIO ENVTL. PROT. AGENCY, DIV. OF SURFACE WATER, 2006 MUSKINGUM RIVER FINAL STUDY PLAN 8-9 tbl.2 (2006) (limiting chemistry and physical water quality sampling to seventeen sites over 110 river miles with samples collected five times over the course of a year).

²⁰²*See* “model,” Merriam-Webster Online Dictionary, <http://www.m-w.com/dictionary/model> (defining “model” as “a system of postulates, data, and inferences presented as a mathematical description of an entity or state of affairs”). *See also* U.S. ENVTL. PROT. AGENCY, EPA REGION 10, OFFICE OF WATER AND WATERSHEDS, *supra* note 5, at 24-25 (describing the limitations of modeling).

²⁰³*See* Robert V. Thomann, *The Future “Golden Age” of Predictive Models for Surface Water Quality and Ecosystem Management*, 124 J. OF ENVTL. ENG’G 94, 99-102 (1998).

²⁰⁴*See generally* Nijboer et al., *supra* note 192.

²⁰⁵*Id.* at 92.

²⁰⁶*See generally* L.L. Eberhardt & J.M. Thomas, *Designing Environmental Field Experiments*, 61 ECOLOGICAL MONOGRAPHS 53 (1991).

²⁰⁷*See, e.g.*, *supra* note 51, the Margin of Safety, which represents the degree of uncertainty and error built into TMDL loading allocation calculations.

violation. The significant problem is that any claim of natural conditions as the singular basis for a violation would be refuted by any quantifiable human impact.²⁰⁸ This means that even where dissolved oxygen or pH levels are so low that no known human impact could create such conditions, in stating that the observed levels should become the new water quality standards for the water body one risks making numerous erroneous assumptions regarding the relative contributions of natural versus anthropogenic pollutants.²⁰⁹

In the end, however, it could be argued that scientific barriers are minor when compared with the importance of creating flexible listing mechanisms for states. If the best available data point to natural conditions as the sole agent for nonattainment of water quality standards, then states may be drawing the most rational conclusion under the circumstances and should be granted the natural conditions presumption until data indicate to the contrary.

2. Public Policy Framework

Evaluation within the public policy framework in many ways is a diametrically opposite pursuit from within the scientific framework. The scientific framework, when working effectively, provides an objective basis for evaluating a program.²¹⁰ The public policy framework, on the other hand, examines the social and cultural dynamics that inform and influence decision-making.²¹¹ Thus, within the public

²⁰⁸The EPA has recently acknowledged that any application of a natural condition exception necessitates that the water quality excursion arise exclusively from natural background sources. U.S. ENVTL. PROT. AGENCY, OFFICE OF WETLANDS, OCEANS & WATERSHEDS, INFORMATION CONCERNING 2008 CLEAN WATER ACT SECTIONS 303(D), 305(B), AND 314 INTEGRATED REPORTING AND LISTING DECISIONS 11 fig.1, available at http://www.epa.gov/owow/tmdl/2008_ir_memorandum.pdf. Therefore, where anthropogenic sources contribute even one-tenth of one percent to pollutant loadings leading to a water quality exceedance, the natural condition exception may not be invoked.

²⁰⁹A hypothetical example may help elucidate this point. State Agency has initially set the water quality criterion for dissolved oxygen at 5.0 mg/l. Water chemistry monitoring at *Site A* has yielded dissolved oxygen levels measured at 2.0 mg/l, far below what is required under the regulations. There are no municipal wastewater facilities on the stream or excessive nutrient loads in the water column that could create such low dissolved oxygen conditions. Because of the natural stagnant water flow at *Site A*, State Agency declares the water quality violation the result of natural conditions and, pursuant to a regulatory provision, sets the measured level as the new water quality criterion for *Site A*. However, recent construction in the watershed has increased sediments entering the stream, which can contribute to a decrease in dissolved oxygen levels. Although the increased sedimentation could not manifest such low dissolved oxygen levels on its own, its contribution to low dissolved oxygen levels in combination with natural conditions may have caused the water quality deviation. See *id.* for a visual representation of the problem.

²¹⁰For instance, from a scientific perspective, empirical measurements through physiochemical assays and biological surveys can evaluate the success of a water quality improvement program. In a highly reductionistic formulation, the scientific perspective might merely ask whether dissolved oxygen levels are at “X mg/l” or arsenic concentration is “X parts per billion.”

²¹¹Stella Z. Theodoulou, *The Contemporary Language of Public Policy: A Starting Point*, in PUBLIC POLICY: THE ESSENTIAL READINGS 1, 4-5 (Stella Z. Theodoulou & Matthew A. Cahn eds., 1995).

policy framework, motivations of key actors and stakeholders play an important role.²¹² Moreover, the reasonableness or superiority of a policy or regulation is determined by how closely fit the ends are to the means.²¹³ The public policy framework also allows one to investigate whether a regulation creates unanticipated outcomes that may undermine the original rationale for creating the regulation.²¹⁴

Initially, it seems clear that the natural conditions exception serves a legitimate public policy interest. State funding for environmental programming is limited and it is ostensibly senseless to require a state to invest monies in developing and implementing TMDLs for segments that would not benefit one iota from TMDLs.²¹⁵ The question then becomes whether the natural conditions exceptions as they are currently conceived best serve this interest.

One of the initial perversions of a natural conditions exception is that it exacerbates the existing incentives to delist water bodies. There is nothing intrinsically wrong with a state's desire to delist. However, in practice, with each additional tool provided to a state to delist water bodies, there is additional potential for abuse.²¹⁶ States have existing incentive to find ways to delist water bodies due to the cost of developing and implementing TMDLs.²¹⁷ The direct costs incurred by states and industry are compounded by the economic and social costs that may accompany TMDLs, including increased household water and sewer rates and reduced agricultural production as farmers are forced to implement agricultural Best Management Practices.²¹⁸ Finally, the delisting of water bodies may play an important political role by creating the appearance of improving water quality within the state. Raw numbers are important and while delisting for natural conditions does not mean that water quality has improved within the state, it will likely be reported or interpreted as improving by citizens who have neither the time nor the inclination to examine the specific reasons for the reduction in impaired water bodies.

²¹²See generally, Matthew A. Cahn, *The Players: Institutional and Noninstitutional Actors in the Policy Process*, in PUBLIC POLICY: THE ESSENTIAL READINGS 201 (Stella Z. Theodoulou & Matthew A. Cahn eds., 1995).

²¹³Stuart Nagel, *Trends in Policy Analysis*, in PUBLIC POLICY: THE ESSENTIAL READINGS 181, 181-84 (Stella Z. Theodoulou & Matthew A. Cahn eds., 1995).

²¹⁴Andrea Meier & Charles L. Usher, *New Approaches to Program Evaluation*, in SKILLS FOR EFFECTIVE MANAGEMENT OF NONPROFIT ORGANIZATIONS 371, 381-85 (Richard L. Edwards, John A. Yankey, Mary A. Altpeter eds., 1998).

²¹⁵It can, however, be persuasively argued that priority ranking provides the equivalent benefit of delisting because states can rank sites where natural conditions appear to be the basis for exceedance at the bottom of their TMDL priorities.

²¹⁶That is not to imply that Florida abused its discretion in delisting water bodies for natural conditions. If one examines FDEP's responses to public comments, it appears that FDEP resisted pressure to delist additional water bodies and was reticent to apply the natural conditions exception. See generally FLA. DEP'T OF ENVTL. PROT., *supra* note 4.

²¹⁷U.S. ENVTL. PROT. AGENCY, OFFICE OF WATER, 841-D-01-003, THE NATIONAL COSTS OF THE TOTAL MAXIMUM DAILY LOAD PROGRAM (DRAFT REPORT) 20, 34 tbl.VI-1 (2001) (estimating the annual cost to the states for developing TMDLs to be \$68 million to \$75 million dollars and the annual costs to polluting sources for implementing TMDLs at \$900 million to \$4.3 billion).

²¹⁸*Id.* at 26.

The natural conditions exception creates a second public policy dilemma at the level of regulatory discretion and deference it provides to states. There is arguably a lack of an appropriate review mechanism to determine if an exceedance was exclusively due to natural conditions. A review of EPA administrative decisions revealed a single instance where the EPA rejected a state's determination that water bodies violated water quality standards due to natural conditions.²¹⁹ Since then, there has not been a single case in which the EPA has rejected a state's conclusion when relying on the natural conditions exception. Consequently, states have either reserved the natural conditions exception for those circumstances in which there was no doubt that natural conditions were the cause of exceedances or the EPA lacks the necessary financial and manpower resources to make a reasonable and thorough investigation. One should be careful, however, not to overstate the potential for abuse. The state's list must undergo public review and some level of scrutiny by the EPA and, in most circumstances, the state will be required to show good cause for excluding water bodies.²²⁰ Thus, there is more than a modicum of oversight throughout the process.²²¹

Although it can be argued that there should be stronger oversight by the EPA, one of the great policy insights inhered in the structure of the CWA is the acknowledgment that local conditions demand local solutions.²²² A national agency hardly has the level of intimate knowledge of local aquatic ecosystems that a state agency has. Consequently, it makes perfect sense to allow a state agency a fair amount of deference in determining the status of state waters. Therefore, when a state agency declares that a state water body violates water quality standards due to natural conditions, the EPA is in a relatively weak position to deny the assertion, given its rather limited knowledge of state water bodies relative to the state.

3. Legal Framework

The final framework for interpreting the natural conditions exception is a legal framework. The legal framework examines both legal ramifications of natural conditions exceptions as well as how they fit within the structure and purpose of the CWA. Although no court has formally raised the legal issues explicated below, this

²¹⁹Press Release, Washington, *supra* note 170.

²²⁰*See generally* 40 C.F.R. § 130.7 (2007).

²²¹It is worth distinguishing between the site-specific water quality standard exceptions and narrative natural conditions exceptions: site-specific water quality exceptions contain an additional level of EPA scrutiny because whenever added to state regulations they must undergo EPA approval for modifying existing water quality standards. Furthermore, whenever they are implicated for a site, public review is necessary pursuant to 40 C.F.R. § 131.20 (2007).

²²²This notion seems to permeate the allocation of responsibility within the CWA. *See* 40 C.F.R. § 130.0(a) (2007) (describing the water quality components of the CWA as "allowing States to implement the most effective individual programs"). While the EPA ultimately is the final arbiter of water quality standards for water bodies, the CWA implicitly recognizes the necessity of partnerships with state and local agencies. *See* 33 U.S.C. § 1251(g) (2006) ("Federal agencies shall co-operate with State and local agencies to develop comprehensive solutions to prevent, reduce and eliminate pollution in concert with programs for managing water resources.").

does not mean that they are trivial. The legal framework raises questions of responsibility and authority that implicate the primary division of labor among local, state, and federal governments in carrying out the provisions of the CWA.²²³ Therefore, these legal inquiries should be taken just as seriously as questions of public policy and science.

The first major point to be made is to reiterate the *Leavitt* court's assertion that a natural conditions exception coheres with the underlying purpose of the CWA.²²⁴ The CWA's goals are maintenance and restoration.²²⁵ A water body that violates water quality standards due exclusively to natural conditions cannot be said to require restoration.²²⁶ Rather, it is performing exactly as it would in the absence of any human intervention. Therefore, at its core, the natural conditions exception is legally sound.

More interesting problems emerge when looking at the responsibilities of state and federal agencies within the CWA. The EPA is the central administrative body in the context of the CWA.²²⁷ While state agencies play a complementary role, the EPA is the final arbiter in regulatory decision-making concerning water quality standards.²²⁸ The case can be made that the EPA, by permitting a natural conditions exception, abdicated a portion of its oversight responsibility in allowing too much deference to state agencies. The EPA's formal authority to approve or disapprove section 303(d) lists may not be sufficient to advance the restoration goals of the CWA if segments are granted natural conditions exceptions in the absence of definitive supporting evidence. Of course, one can only speculate that the EPA is permitting the exception in the absence of sufficient evidence. However, the single instance where the EPA has disapproved of a state's application of the exception evinces perhaps too much deference to state decisions or a lack of requisite diligence in review by the EPA.

Coupled with the EPA's abdication is arrogation by the states of the EPA's administrative charge and oversight. The states are partners in maintaining and restoring water quality, but they are not lead partners.²²⁹ Although the CWA encourages the states to play a role in determining water quality standards, the EPA should retain a meaningful review role. It is in this role as reviewer that the

²²³In one sense, the fundamental aim of the legal framework is to illuminate what the EPA means when it states that "[t]he [Water Quality Management] process is *implemented jointly* by EPA, the States, interstate agencies, and areawide, local and regional planning organizations." 40 C.F.R. § 130.0(a) (emphasis added).

²²⁴*Sierra Club, Inc. v. Leavitt*, 488 F.3d 904, 920-21 (11th Cir. 2007).

²²⁵CWA § 101(a), 33 U.S.C. § 1251(a).

²²⁶*Leavitt*, 488 F.3d at 921 ("The phrase 'restore and maintain' indicates that Congress sought to return waterbodies to their natural conditions, not modify waterbodies' natural conditions.").

²²⁷U.S. ENVTL. PROT. AGENCY, EPA REPORT NO. 335, THE CHALLENGE OF THE ENVIRONMENT: A PRIMER ON EPA'S STATUTORY AUTHORITY 13 (1972), available at http://www.eric.ed.gov/ERICDocs/data/ericdocs2sql/content_storage_01/0000019b/80/39/45/37.pdf.

²²⁸*See* 33 U.S.C. § 1313(c)(2) (2006); 40 C.F.R. § 131.5(a) (2007).

²²⁹33 U.S.C. § 1313(c)(2); 40 C.F.R. § 131.5(a).

distinction between the two approaches to the exception adopted by the states takes on significance. Setting site-specific water quality standards is no different from the basic partnership function of the states in crafting water quality standards for all water bodies within its borders.²³⁰ The narrative exception, which applies to the selection of impaired water bodies and does not constitute a modification of water quality standards, shifts the partnership in favor of the states.²³¹ By eliminating a level of mandated EPA review, the state has in essence arrogated to itself the role as reviewer of the validity of natural conditions exceptions.

The EPA's potential dereliction of responsibility is further evidenced by the manner in which it has decided to advance the natural conditions exception. Instead of developing a regulation that deliberately addresses the express exception, the EPA merely advises states that such an exception is permitted so long as it is incorporated into state administrative law.²³² Guidance avoids the contentious political process of formulating new regulations.²³³ If the EPA's recent experience in trying to alter its TMDL regulations is any indication, the EPA would face serious opposition to any proposed regulatory changes.²³⁴ However, in the absence of an express regulation, the natural conditions exception is still subject to controversy and political influence. By avoiding the more democratic process of regulation creation, the EPA's exception loses some semblance of its legitimacy.

IV. SOLUTIONS

The natural conditions exception raises numerous problems prompting a multitude of solutions ranging from straightforward to novel. No solution can solve every problem presented, but some are more plainly functional and readily adoptable by the EPA. This section proffers three potential solutions and concludes with a recommendation that balances the needs of the EPA against the desire for a legitimate process that will more accurately capture water bodies not attaining water quality standards due to natural conditions.

²³⁰The EPA must approve the site-specific water quality standards pursuant to 33 U.S.C. § 1313(c)(2) and 40 C.F.R. § 131.5(a).

²³¹Under the express exception, because they do not alter the state's water standards, the EPA does not conduct a 33 U.S.C. § 1313(c)(2) review and its review is thus restricted to the 303(d) list.

²³²U.S. ENVTL. PROT. AGENCY, OFFICE OF WETLANDS, OCEANS AND WATERSHEDS, *supra* note 5, at 62 ("If the state's water quality standards include a specific exclusion for exceedances caused by 'natural conditions', these segments would not be considered impaired . . .").

²³³Creating regulations occurs through a three-step process of proposal, public comments and review, and issuance of a final opinion. See U.S. ENVTL. PROT. AGENCY, CREATING A REGULATION (Jan. 17, 2008), <http://www.epa.gov/lawsregs/basic/index.html> (last visited Oct. 18, 2008). The public comment and review period can be especially difficult for an agency as evidenced by the EPA's latest attempt at overhauling the TMDL regulations, which was met with such vociferous opposition that the EPA was forced to withdraw its proposed changes. Notice of Withdrawal, 68 Fed. Reg. 13,608.

²³⁴*Id.*

A. Prohibiting the Natural Conditions Exception

The most obvious solution is to eliminate the natural conditions exception altogether. Under this approach, the EPA would institute peremptory water quality standards and require states to meet those standards under all circumstances. In application, peremptory water quality standards would not change the approach of those states that incorporate site-specific water quality standards into their regulations.²³⁵ Because water quality standards are set to the particular conditions at a site, there will never be a deviation from water quality standards. Thus, the site-specific natural conditions exception in such water bodies will still be available as long as a state is willing to undergo the process of modifying its water quality standards.²³⁶ For narrative natural conditions exceptions, on the other hand, peremptory water quality standards would restrict states' ability to select water bodies for exclusion from their section 303(d) list. Thus, even if the violation of water quality standards was exclusively due to natural conditions, the state would still need to include the site in its section 303(d) list.

B. Expanding the Review Process

A second solution is to mandate more extensive review of segments delisted as a result of natural conditions. The EPA has not demonstrated that it will reject a state's assertion that exceedances are solely due to natural conditions.²³⁷ Moreover, the EPA should not be forced to ask a state to provide good cause for its invocation of the exception.²³⁸ This solution consists of three parts: (1) the EPA should require states to take a proactive approach, providing the EPA with a thorough explication of the methodology and data employed in reaching its decision.²³⁹ Once this is available, (2) the EPA should direct further sampling and monitoring of questionable sites if there appears to be insufficient information to reach a well-informed conclusion. Finally, once the EPA has compiled the necessary data to reach a conclusion, (3) it should hand off the information to anonymous third-party reviewers from the scientific community to determine whether natural conditions exist. The third-party review system eliminates the potential for abuse and politicization. There is precedent for third-party review within the federal structure as other federal agencies, including the National Science Foundation and the USDA,

²³⁵ See 40 C.F.R. § 131.11(b)(1)(ii) (2007).

²³⁶ See 33 U.S.C. § 1313(c)(2); 40 C.F.R. § 131.5(a) (2007).

²³⁷ Research only uncovered a single instance where the EPA rejected a state's assertion that water bodies deserved delisting due to natural background conditions. See Press Release, Washington, *supra* note 170.

²³⁸ 40 C.F.R. § 130.7(b)(6)(iv) (2007) (“*Upon request* by the Regional Administrator, each State must demonstrate good cause for not including a water or waters on the list.”) (emphasis added).

²³⁹ Region 10 currently advises states under its jurisdiction to provide extensive documentation for its natural condition exclusion whenever an exception is implicated. See U.S. ENVTL. PROT. AGENCY, EPA REGION 10, OFFICE OF WATER AND WATERSHEDS, *supra* note 5, at 12-13.

rely on third-party review and certification as part of their regulatory structure.²⁴⁰ Any costs incurred by the review process should be shared by the state invoking the exception and the federal government. This solution would allow both types of natural conditions exceptions to remain in place and would place the onus on the national government to determine whether the exception is valid in each instance it is applied.

C. Codifying the Exception in Federal Regulation

The third solution is for the EPA to promulgate a regulation that specifically allows the natural conditions exception. This solution would eliminate any question of legitimacy and would provide for a more stable interpretation of the exception going forward. Nonetheless, it fails to confront all of the issues arising from the scientific and public policy frameworks. Moreover, it may not be politically feasible, given the difficulties the EPA has had in promulgating regulations in the area of water quality.²⁴¹

If a single solution had to be selected, the second solution would be the most comprehensive. It would not require serious alteration of state regulations and would thus be readily implemented at the state level. Furthermore, it places the burden where it belongs—on the federal government. If the EPA allows a natural conditions exception, it should bear any encumbrances, even if the benefits are largely reaped by the states. Moreover, the second solution satisfies scientific and public policy concerns. From a scientific perspective it maximizes available data and utilizes the scientific community in reaching the decision whether natural conditions are the sole cause for exceedance. From a public policy standpoint it decreases federal deference to the states and ensures that even where the states abuse their discretion, the EPA will ferret out these abuses. Moreover, if the EPA finds the second solution too onerous, it may invoke the first solution and eliminate the natural conditions exception altogether. Thus, the second solution has the added effect of creating incentives to eliminate the exception where the regulatory requirements become unwieldy.

V. CONCLUSION

The CWA continues to be a monumental piece of legislation that has improved and will hopefully continue to improve water quality within the United States. One of the main mechanisms within the CWA for ensuring continued improvement is the TMDL program, which requires states to broadcast their impaired waterways and to develop tools to eliminate impairment.²⁴² Unfortunately, the success and legitimacy of the TMDL program may be undermined if states can invoke natural conditions as a means of avoiding the program. The Eleventh Circuit and the EPA have recently expanded the scope of the natural conditions exception, allowing states to incorporate the exception without undergoing the rigorous review process associated

²⁴⁰The NSF has long relied on third-party reviewers of grant applications. *See* NAT'L SCI. FOUND., PROPOSAL AND AWARD POLICIES AND PROCEDURES GUIDE III-2 (2007). The USDA currently relies, at least partially, on third-party organic certification. *See generally* 7 C.F.R. §§ 205.500-205.510 (2007).

²⁴¹*See, e.g.*, Notice of Withdrawal, 68 Fed. Reg. 13,608.

²⁴²*See generally*, 40 C.F.R. § 130.7.

with water quality standard modification.²⁴³ This creates issues of legitimacy and potential abuse that must be resolved. The EPA may decide to eliminate the exception altogether or formally promulgate regulations that incorporate the exception. However, to ensure that states continue to benefit from the exception where genuinely applicable, the EPA may be better served by introduction of a stiffer review process that maximizes available information and integrates third-party review.

²⁴³Sierra Club, Inc. v. Leavitt, 488 F.3d 904, 920-21 (11th Cir. 2007); Fla. Pub. Interest Research Group Citizen Lobby v. United States Env'tl. Prot. Agency, No. 4:02cv408-WS, 2007 U.S. Dist. LEXIS 84039, *32 (N.D. Fla. Feb. 15, 2007).