

The Clean Water Act

A Blueprint For Reform

By William L. Andreen and Shana Campbell Jones

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About the Center for Progressive Reform

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Executive Summary

The 1972 passage of the Clean Water Act (CWA) marked an important milestone in the nation’s environmental history. Motivated by public outrage at oil spills covering hundreds of square miles, massive fish kills due to pollution, and rivers so laden with pollutants that they actually caught fire, Congress adopted the measure, overriding the veto of President Richard Nixon.

For its time, the bill was genuinely revolutionary, and in the years since, it has done much to clean up the nation’s waterways. The volume of pollutants discharged from factories and sewage treatment facilities has decreased significantly. Though we continue to lose wetlands, the rate of yearly wetlands loss has decreased. And the most important measure: many, but not all, of the nation’s waterways are cleaner today than they were when the CWA was passed.

TABLE 1.
Near-term reforms

Identify Impaired Waters and Strengthen Pollution Controls.

Amend § 303 to ensure impaired waters are identified in comprehensive fashion; to address waters that are impaired due to various hydrologic modifications; to address waters that are impaired due to climate change; to set reasonable deadlines for determining the total amount of a pollutant that an impaired water body can assimilate and still meet water quality standards (TMDLs); and to ensure that TMDLs are translated into both stricter permit limits and mandatory nonpoint source controls by a reasonable deadline.

Protect the Public’s Right to Know.

Require public notification when sewage spills occur.

Protect Wetlands and Prepare for Climate Change.

Amend § 404 to clarify that the CWA regulates activities that drain wetlands; to set forth explicit criteria and guidance to assess whether mitigation plans adequately compensate for wetlands loss; to provide that the discharge of dredged material includes any addition, including any redeposit, of dredged material, into waters of the United States which is incidental to any activity, including mechanized landclearing, ditching, channelization, or other excavation; and to require U.S. Army Corps of Engineers to factor in climate change when designing or permitting projects such as dams and levees and other projects involving wetlands.

Study Watersheds.

Appoint and fund a commission to conduct a comprehensive study of existing watershed management institutional structures.

Provide Resources to the States.

Fund state agencies adequately to expand the scope and accuracy of water quality monitoring efforts.

Control Nonpoint Source Pollution and Prepare for Climate Change.

Amend § 319 to require states to submit lists every two years of any additional waters impaired by nonpoint source pollution; to require states to review and submit, every two years, revised management plans subject to EPA review; to require that management plans include enforceable conditions and requirements; to give EPA the authority to promulgate all or a portion of a state’s nonpoint source management plan in the event EPA disapproves of a state’s plan; and to require states to factor climate change into their management plans.

Make the CWA Comprehensive.

Delete the term “navigable” from the CWA.

Provide Needed Resources.

Fund EPA adequately to permit it to thoroughly review existing Best Available Technology (BAT) limitations and permit revisions when necessary; to carry out its enforcement duties; and to exercise its oversight responsibilities under § 404. Provide additional staffing resources for the Corps to analyze, monitor, and enforce § 404 permit applications. Fund studies to assess in comprehensive fashion the long-term impact of point source regulation across the nation. Set aside more funding for state inspection of stormwater sources and enforcement of stormwater regulations.

Provide Access to the Courts.

Amend § 505 to allow citizen suits for “wholly past” violations.

Support Water Treatment.

Provide direct federal grants to municipal treatment facilities for construction and upgrades and/or expand funding for the State Revolving Fund (SRF).

While the law has accomplished much, and while it set the nation on a course toward significantly greater environmental responsibility, much more remains to be done. Almost half of the nation’s waters are still “impaired,” which is to say that they are too polluted to support the uses authorities have identified for them – to serve as sources of drinking water, recreational areas, or to support fish and wildlife. Wetlands continue to be lost to pollution and development. Nonpoint source pollution – runoff from farms, construction sites, and roads, for example – is the leading cause of water pollution today, but it is inadequately addressed by the CWA. Industrial facilities, meanwhile, are discharging toxics into sewer systems that then pass into waterways. In addition, the nation’s wastewater infrastructure is aging and showing its wear. All the while, enforcement has declined, particularly in the last few years. Since 2001, two Supreme Court decisions – *Rapanos* and *SWANCC* – have thrust the CWA into the spotlight, paring back the CWA’s protection of wetlands and other waters.

TABLE 1. (CONTINUED)
Near-term reforms

Hold Federal Facilities Accountable.

Amend § 313 to expressly waive federal sovereign immunity for civil and administrative penalties. Amend § 313 to authorize EPA to issue administrative penalties against other federal agencies for CWA violations. Amend § 502 to include each department, agency, and instrumentality of the United States in the CWA’s definition of a person so that federal facilities are subject to civil penalties under the CWA’s citizen suit provisions and clearly subject to administrative penalties assessed by EPA.

Reduce Stormwater Pollution by Supporting Green Infrastructure.

Amend § 402(q) to require communities with combined sewer systems to incorporate green infrastructure into their Long Term Control Plans. Require EPA to issue guidance that contains model stormwater ordinances for cities and other communities.

Mid-term reforms

Use Best Available Technology.

Amend § 301(b) to require Best Available Technology (BAT) for conventional pollutants and to make it clear that EPA has a mandatory duty to revise BAT limitations whenever technological improvements meet the BAT effluent guidelines set forth in § 304(b).

Make Sewage Treatment Loans Comply with NEPA.

Amend Title II to require that any loans for sewage treatment plant construction and upgrades comply with NEPA to ensure that these funds will not produce undesirable or avoidable environmental impacts.

Study Pharmaceutical Contamination in Wastewater.

Appoint and fund a taskforce to study what wastewater treatment most effectively removes pharmaceuticals from wastewater effluent.

Reduce Stormwater Pollution by Addressing Information Constraints.

Amend § 308(b) to make it clear that Notices of Intent and permittee-developed plans such as Storm Water Pollution Prevention Plans and Nutrient Management Plans submitted under general permits are subject to the CWA’s public availability provisions; authorize EPA to create a meaningful monitoring program for stormwater and animal waste discharges under general permits that is conducted by a governmental agency, whether it be local, state, or federal.

Reduce Conventional Pollutants.

Amend § 304(b) to apply BAT effluent guidelines to conventional pollutants.

Coordinate by Watershed.

Amend § 303 to create watershed-level institutions that would better coordinate and manage the wide range of activities that adversely affect the biological, physical, and chemical integrity of our waters.

While these all-too-familiar problems mount, climate change threatens to stress existing water resources and the ecosystems that depend upon them still further. Its effects will be far-reaching indeed. Competition for water among agricultural, municipal, industrial and ecological uses will increase. Rising sea levels will threaten already vulnerable salt marshes and other coastal habitats. Heavy precipitation caused by extreme weather events will increase sewer overflows, degrade water quality, and increase the likelihood of water-borne disease.

It is long past time for action to update the Clean Water Act. This Blueprint for Reform presents a number of specific and meaningful reforms for the CWA that address existing problems and prepare for the new problems climate change will create.

The proposed reforms are guided by clear principles. Among them are the belief that technological innovation is the best response when pollution controls are needed, and that polluters must install state-of-the-art controls to prevent pollution from harming our waters and public health. In addition, planning, without accountability, is not enough, because voluntary approaches do not achieve measurable results. Investing in wastewater infrastructure is also crucial if we are to keep pace with the water quality gains the CWA has made and prepare for extreme weather events caused by climate change. Finally, government must aggressively enforce the CWA if it is to work as designed.

Americans care about clean water; indeed, more than half of Americans view access to clean water as a right. But the vast majority is concerned, and for good reason, that the nation's waterways will not be clean enough for their children and grandchildren.

The United States has ample reason to take the next critical step to protect its waterways. The affirmative agenda for clean water must build upon the CWA's success, while making needed reforms to bring the Act into the 21st century.

Introduction

Immense. Majestic. Priceless. These are only some of the ways to describe the waters of the United States. The Great Lakes alone occupy 94,000 square miles. The Chesapeake Bay is the second-largest estuary in the world. Approximately 3.5 million miles of rivers and streams flow through the nation, with 278 million acres of wetlands lying between these open waters and dry land.¹

Our waters are also valuable. Half of the nation's population receives its drinking water from our surface waters.² Manufacturing goods and processing food consumes about 13 trillion gallons of water per year.³ Irrigated agriculture produces \$70 billion of crops, and the fishing industry produces \$3.4 billion of fish and shellfish annually.⁴ Water in various forms — ocean beaches, lakes, and rivers — constitutes the number one vacation destination in the nation.⁵

Americans love water and have benefited from this abundant resource, but our streams, rivers, lakes, estuaries, wetlands, and oceans are nevertheless imperiled.⁶ More than thirty years since it was passed, the CWA is at a critical juncture. On the one hand, the CWA has been remarkably successful at doing what it was designed to do.⁷ Through technology-based limits and the construction and renovation of thousands of municipal wastewater treatment plants, industrial pollution and municipal loadings have decreased dramatically.⁸ The rate of wetlands loss has also decreased largely due to CWA regulation.⁹ On the other hand, almost half of our waters are impaired. The Chesapeake Bay struggles. Significant portions of the Gulf of Mexico are dying. Fish advisories multiply. Wetlands remain threatened. Many beaches are closed in summer.

Why has this happened? **The problem is not that the CWA is not working; rather, the problem is that the CWA can only accomplish what it was designed to do.** The CWA, for example, does not directly address nonpoint source pollution or many kinds of habitat modification. Yet nonpoint source pollution — pollution from diffuse sources such as runoff from farmland, construction sites, and roads — is the leading cause of water pollution today.¹⁰ Habitat modifications and flow alterations cause many waters to fail to meet water quality standards. “In fact, experts are virtually unanimous that the biggest problem facing aquatic ecosystems is not pollution, but the destruction and alteration of aquatic habitats.”¹¹ Development at the water's edge continues practically unabated. To add to the problem, jurisdictional loopholes have been created, paring back the protection of wetlands and other waters. Many industrial facilities discharging toxics into municipal sewer systems do not meet pretreatment standards.¹² Our wastewater treatment infrastructure is aging. Enforcement has declined.¹³

Meanwhile, as these problems mount, climate change threatens to stress our existing water resources and the ecosystems that depend upon them even further.¹⁴ Competition for water



Almost half of American waters are impaired. For example, the Chesapeake Bay struggles, portions of the Gulf of Mexico are dying, beaches are closed, fish advisories multiply and wetlands remain threatened.
(USGS PHOTO)

among agricultural, municipal, industrial and ecological uses will increase, as rising temperatures affect the seasonal availability of water by diminishing snowpack and increasing evaporation.¹⁵ This problem will be exacerbated in areas such as the southwest which are likely to experience a severe decrease in rainfall.¹⁶ Rising sea levels will threaten already vulnerable salt marshes and other coastal habitats.¹⁷ Extreme weather events are likely to create heavy precipitation, increasing sewer overflows, degrading water quality, and increasing the likelihood of water-borne disease.¹⁸

When it enacted the CWA in 1972, Congress stated that its objective was to “restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.”¹⁹ “There was a new ethical premise, that water should simply be clean.”²⁰ Much progress has been made, but more must be done. The threat of climate change, meanwhile, leads the CWA to a new and serious crossroads. Climate change, a crisis not anticipated thirty-five years ago, will complicate our approaches to older problems as well as create new challenges.

This *Blueprint for Reform* proposes reforming the CWA based on the lessons learned from the CWA’s successes and failures while also taking into account the new problems climate change will bring. The Blueprint begins by briefly describing the causes of water quality problems and likely future problems caused by climate change. It then describes the CWA’s current design, dividing the CWA into the following parts:

- The CWA’s Jurisdiction: A Broad Scope
- A Comprehensive Strategy: End-of-Pipe Technology Plus Water Quality Standards
- Nonpoint Source Pollution: A Lesson in Ineffectiveness
- Sewage Treatment Infrastructure: A Smart Investment
- Regulating Wetlands: A Murky Landscape
- Enforcement: The Heart of the CWA
- The CWA’s Institutional Framework: Strengthening a Fragmented Approach

Each of these sections details what has worked and what has not, and concludes with concrete proposals for reform. As a segue between these sections, “snapshots” describe the current the state of our waters. Finally, the appendix of the report contains the following aids: a CWA ‘To Do’ list, which recaps the proposals for reform in a comprehensive way, and a chart of “Key Provisions and Proposed Reforms,” which maps the proposed reforms to the applicable statutory provisions.

The objective of the Clean Water Act is to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.

The Causes of Water Quality Problems

Waterborne microbes — E. coli, salmonella, hepatitis, to name a few — cause more than 900,000 infections in the United States every year.²¹ Sewage, manure, and other nutrients stimulate algae growth, resulting in low levels of oxygen that choke plant life, shellfish, and fish. Toxics accumulate in fish tissue and bottom sediment. Streams are choked with silt. Fish die from acidic water.

Where do these problems come from? Many of the pollutants and problems plaguing our waters have multiple sources. Some of these sources arise from what the CWA refers to as “point sources,” which constitute “any discernable, confined, and discrete conveyance” such as a pipe.²² Others arise from diffuse, “nonpoint” sources — runoff from agricultural operations, lawns, and urban streets are examples of these nonpoint sources of pollution. Point and nonpoint source pollutants, however, are not the only problems plaguing our waters. Wetlands are threatened by “unspecified filling and draining, agriculture, residential development, and urban growth, followed by highway and bridge construction, dredging, resource extraction, and impoundments.”²³ Hydrological modifications, such as dams and channelization projects alter and degrade aquatic habitats.²⁴

Polluted runoff is the primary source of pollution nationally, with nutrients — nitrogen and phosphorus — from agriculture the largest problem.²⁵ More than 35,000 miles of rivers have been polluted by waste generated by cattle, chicken, and hogs.²⁶ Groundwater has been contaminated by animal waste in 17 out of 22 states reporting animal waste figures.²⁷ Aside from agriculture, other important sources of runoff include hydrological and habitat modifications and runoff from urban areas, mining, construction, and silviculture (forestry) operations.²⁸ Each state contributes to polluted runoff in its own way. “The waters in northern Wisconsin are polluted by dairy farms, in North Carolina by hogs, in Maryland by chickens, in South Florida by sugar, in Wyoming by beef cattle, in Oregon by clearcuts, in Maine by logging roads, in California by irrigation return flows, and across suburban America by an expanding and irreversible crop of tract housing and subdivisions”²⁹ Although many of these sources may have relatively minor impacts, when viewed in isolation, as Professor Oliver Houck points out “it is their cumulative impacts that are the problem, and we have not yet in any medium found an easy way to persuade people to fix problems for which they are only a contributing factor.”³⁰

Additionally, although much progress has been made with curbing pollution from industrial facilities, in early 2003, EPA concluded that 25 percent of all major industrial dischargers were in “significant noncompliance” with their CWA permits.³¹ Rapid population growth also stresses many coastal and estuarine areas.³² And approximately three billion tons of sediment washes into our lakes and streams annually, most of it from agriculture, construction, and strip-mined lands.³³ Table 2 lists the primary causes of water quality problems in the nation today.



Polluted runoff is the primary source of water pollution. Here, a poultry-processing lagoon. (USGS PHOTO)

While categorizing water problems in this way is helpful and even necessary in order to begin to address them, the problem is more complex. Our streams, rivers, lakes, and estuaries follow natural boundaries — not political or jurisdictional ones. We have sliced and diced the jurisdictional landscape to such an extent that it is difficult to protect complex ecosystems effectively.⁴⁴ As Professor Holly Doremus has observed: “The core of the current problem is . . . our failure to bridge the land-water interface and other artificial boundaries we’ve created.”⁴⁵ EPA tackles point source pollution, for example, while leaving states to address nonpoint source pollution.⁴⁶ The Army Corps of Engineers regulates wetlands. The Fish and Wildlife Service enforces the Endangered Species Act in inland waters. Local governments conduct the lion’s share of land use management.⁴⁷ Such fragmentation only serves the divide-and-conquer purposes of those opposing comprehensive watershed

TABLE 2.
Primary Causes of Water Quality Problems

Pollutant/Problem	Source	Water Quality Harm
Oxygen-depleting substances (biochemical oxygen demand or “BOD”).	Sewage, food processing wastes, discharges from pulp and paper facilities, and animal waste.	Prolonged exposure to low levels of dissolved oxygen can retard development and even kill fish, eggs, and larvae. ³⁴
Nutrients (Nitrogen and Phosphorus).	Lawn and crop fertilizers, sewage, manure from fields and feedlots, detergents containing phosphorus, and air pollution from cars, coal-fired power plants, steel and coke manufacturing facilities, and other combustion sources.	Excessive amounts stimulate the growth of algae and aquatic weeds, which decay and cause low levels of oxygen. ³⁵
Bacteria and Pathogens.	Human and animal excrement that enters waterways through inadequately treated sewage, septic tanks, boats, stormwater discharges, and runoff from livestock feeding and grazing areas.	Waterborne microbes cause more than 900,000 infections in the U.S. per year. ³⁶
Suspended and Settleable Solids.	Sediment (sand, gravel, clay, and silt) caused by erosion from agriculture, construction in urban areas, and strip-mined lands. Solid particles suspended in sewage.	Sediment causes turbidity, which suffocates fish eggs and insect larvae, abrade fish gills, and reduces sunlight for aquatic vegetation, causing low levels of oxygen. ³⁷
Acidic Waters (“low pH”).	Mine acid drainage, runoff from mine tailings, and acid rain.	Acidic waters can cause fish kills and aggravate toxic contamination. ³⁸
Oil and Grease.	Spills from oil tankers, barges, and pipelines. Improper disposal of motor oil. Urban runoff.	Large amounts of oil can kill fish and other wildlife. Small amounts reduce reaeration rates and damage fish and wildlife. ³⁹
Toxic Substances and Metals.	Industrial and municipal discharges, agricultural runoff containing pesticides, and air pollution.	Toxic substances and metals may cause cancer and birth defects. ⁴⁰
Thermal Pollution.	Hot water produced by industry, fossil fuel-fired electric generating stations, and nuclear plants.	Heat reduces the capacity of water to absorb oxygen, increases stream temperature, and alters the native aquatic habitat. ⁴¹
Habitat Modifications.	Removal of vegetation from stream banks, burying of streams, dredging, filling and draining of wetlands, and construction.	Increases storm runoff; destroys riparian habitat. ⁴²
Hydrologic Modifications.	Dams and channelization.	Jeopardizes fish and wildlife, destroys habitat, and causes flooding problems. ⁴³

regulation.⁴⁸ No single regulator can be blamed for failures not under his or her jurisdiction. Concerned citizens, meanwhile, must wade through a multi-layered maze of programs, policies, and rules. The result: gaps in environmental protection are created, with politically unattractive problems convenient to ignore.⁴⁹

Climate change, in the meantime, threatens to complicate existing water problems and create new ones. In its report, *Climate Change 2007: Impacts, Adaptation and Vulnerability*, some of the disturbing findings made by the Intergovernmental Panel on Climate Change (IPCC) include:



Extreme weather caused by climate change is likely to impact unmaintained roads. The runoff shown here threatens five threatened or endangered species of fish in the Olympic National Forest. (EPA PHOTO)

Shifts in seasonal runoff will likely occur in western snowmelt-dominated watersheds. Because of rising temperatures, more runoff is predicted during the winter and earlier in the spring, which will stress current water resources management infrastructure in the western U.S.⁵⁰

*Annual mean precipitation is projected to decrease in the southwestern U.S. (with attendant stress upon water quality), but it is likely to increase elsewhere in the U.S., particularly in the form of extreme weather events.*⁵¹ Extreme weather events are likely to degrade water quality by increasing erosion and polluted runoff as well as increasing the likelihood of water-borne disease.⁵²

*Because of warming temperatures, the abundance and spatial distribution of species important to commercial and recreational fisheries will likely change.*⁵³ Pacific salmon, for example, are already appearing in Arctic rivers.⁵⁴

Cold-water ecosystems and high alpine areas are likely to be lost due to warming.

*Coastal wetlands are likely to be lost to rising sea levels.*⁵⁵ In the mid-Atlantic region, for example, up to 21 percent of remaining coastal wetlands are at risk of inundation.⁵⁶

Competition among agricultural, municipal, industrial and ecological uses will likely increase, as rising temperatures affect the seasonal availability of water by diminishing snowpack and increasing evaporation and as the southwest experiences a situation which will likely resemble a perpetual drought.⁵⁷

Water-borne diseases are likely to increase, as they are associated with heavy precipitation, extreme precipitation, and/or warmer temperatures.⁵⁸

*The surface and bottom temperatures of our streams, lakes, rivers, and estuaries is predicted to increase 2° to 7° C, causing oxygen depletion and adversely affecting fish survival and spawning.*⁵⁹

In addition to these problems, reductions in water supplies caused by climate change may disrupt U.S. electricity production. A 2007 report by the U.S. Climate Change Science Program found that regions dependant on hydropower and fossil-fuel-fired electric generating stations (which use prodigious amounts of water for cooling purposes) could find their electricity supply reduced as water supplies change and/or diminish.⁶⁰ If this happens, the need for power plants to secure sufficient water for electric generation could collide with the CWA's regulation regarding minimum flows for downstream uses, thus creating new pressures on existing CWA controls.⁶¹

The Clean Water Act: Current Design and Proposed Reforms

The CWA's design arose out of a water pollution crisis that had reached epic proportions by the early 1970s.⁶² The Cuyahoga River, thick with oil and waste, had burst into flames. Some 70 percent of the annual industrial discharge of over 14 trillion gallons of wastewater received absolutely no treatment whatsoever, and much of the rest enjoyed only rudimentary treatment. The discharge of organic pollutants from the nation's sewer systems was growing.⁶³ Record fish kills were reported. Almost one third of drinking water samples contained chemicals exceeding Public Health Service limits.⁶⁴ Local and state efforts to control water pollution had clearly failed.⁶⁵

Congress responded with the CWA in 1972, a complex and revolutionary piece of legislation. In an arena where states and local governments had long dominated, the CWA made the federal government the primary authority.⁶⁶ To combat water pollution, the CWA created broad federal jurisdiction over the waters of the United States; a comprehensive strategy that combined end-of-pipe, technology-based effluent limits with water quality standards; a permitting scheme designed to put that strategy into action; a mechanism for funding the building and upgrading of sewage treatment plants; a voluntary planning system to address nonpoint source pollution; a wetlands permitting program; and a robust array of enforcement tools. A detailed discussion of each of these strategies — some very successful, some less so — follows. Proposed reforms conclude each section. Because some of these proposals are either more crucial or more easily implemented than others, CPR identifies its reforms as either “near term” or “mid-term” in an effort to prioritize its solutions.

The CWA's Jurisdiction: A Broad Scope

The goal of the CWA is breathtakingly ambitious: “[t]he objective of [the Act] is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters.”⁶⁷ With this goal in mind, for three decades after the CWA's enactment, both Democratic and Republican administrations and their appointees to EPA embraced an expansive definition of what waters are protected by the CWA as jurisdictional waters of the United States.⁶⁸ Put simply, the very nature of controlling water pollution requires a broad and comprehensive approach, since discharges to the smallest streams can be carried to large rivers. As Russell Train, a past Republican EPA administrator, has explained, “a fundamental element of the Clean Water Act is broad jurisdiction for water control purposes. It has been well-established that water moves in interrelated and interdependent hydrologic cycles....”⁶⁹ Because water flows through our wetlands, headwaters, streams, rivers, lakes, and estuaries without regard to political boundaries, keeping our nation's waters clean has long been understood to require broad federal protection.

Since 2001, however, two Supreme Court decisions — *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers (SWANCC)* and *Rapanos v. United States* — have thrown this longstanding approach into chaos.⁷⁰ The CWA “speaks in terms of the discharge

Blueprint for Reform: Restore the CWA's Broad Jurisdiction

Delete the term “navigable” from the CWA to make clear that Congress intends the CWA to extend to isolated waters and wetlands, as well as headwaters and intermittent waters (near-term reform).

of pollutants to ‘navigable waters,’” and “it immediately defines “navigable waters” expansively as ‘waters of the United States.’”⁷¹ In *SWANCC* and *Rapanos*, however, the Supreme Court put many wetlands, headwaters, and intermittent streams arguably outside of the CWA’s scope by stressing the word “navigable.” *Rapanos*, in particular, is highly fractured decision, and great regulatory uncertainty has ensued.⁷² The result is that, even as climate change is complicating the ways in which the nation’s waters interconnect, the Court’s rulings take us backward in a time when proactive and comprehensive efforts to protect wetlands and intermittent streams and rivers from the consequences of climate change are sorely needed.

Blueprint for Reform: Restore the CWA's Broad Jurisdiction

SWANCC and *Rapanos* arose in the context of wetlands regulation — § 404. They are, therefore, more fully discussed in the wetlands section found later in this document. Professor William Buzbee has aptly noted, however, that, while this jurisdictional problem has arisen in § 404 context, the jurisdictional scope of the entire CWA is possibly narrowed as well, and “the issue of what waters are protected is critical to the whole functioning of the CWA.”⁷³ Accordingly, for the CWA to function as it was designed to function, this Blueprint recommends that the term “navigable” be deleted from the CWA to make clear that Congress intends the CWA to extend to all waters of the United States, including isolated waters, wetlands, headwaters, and intermittent streams.⁷⁴ As discussed in more detail in the wetlands section, measures such as the Clean Water Restoration Act would greatly reduce the regulatory and legal uncertainty that has accompanied the *SWANCC* and *Rapanos* decisions and restore the CWA’s jurisdiction to its initial scope. The proposed legislation would adopt a statutory definition of “waters (or water) of the United States” based on the longstanding definition in EPA’s and the Corps of Engineers’ regulations; clarify that the CWA is principally intended to restore and protect the chemical, biological, and physical integrity of all of the nation’s waters, not just navigable waters; and make findings that provide the basis for Congress’s assertion of constitutional authority over the nation’s waters, as defined in the Act, including so-called “isolated” waters, headwater streams, intermittent waters, small rivers, ponds, lakes and wetlands.⁷⁵ Such action is necessary to ensure that the many surface waters and wetlands which have been protected for approximately 30 years under the CWA remain protected.

A Comprehensive Strategy:

End-of-Pipe Technology Plus Water Quality Standards

The CWA made it illegal for any point source to discharge any pollutant into the waters of the United States unless specifically authorized by permit.⁷⁶ This approach reflects the principle that no person, municipality, or company has the right to pollute waters merely because the waters are capable of assimilating the waste.⁷⁷ By combining technology-based effluent limits with water quality standards, the CWA created a comprehensive scheme designed to combat the scourge of water pollution.

The First Step: Technology-Based Limitations

When Congress enacted the CWA, it prioritized the application of end-of-pipe, technology-based controls upon point sources to regulate how much pollution these sources could discharge into our waters. The concept for implementing these limitations is straightforward: in order to discharge a pollutant into our waters, every point source discharger must obtain a permit and comply with its terms, which, among other things, incorporate the relevant limitations.⁷⁸ Discharging without a permit or violating permit standards may result in administrative, civil or criminal penalties, and citizens may also enforce the terms of the Act.⁷⁹

A crucial aspect of this program is that it utilizes uniform technology-based standards, demanding the same basic level of wastewater treatment for a particular industry no matter where that industry is located.⁸⁰ In the context of the CWA, technology-based standards control pollution at its source, where it enters surface waters, or, in the case of toxics discharged into municipal sewer systems, where the pollutants enter the publicly owned treatment work's (POTW) collection system.⁸¹ This technology-focused approach requires EPA to consider what pollution-reduction controls are available and then select the technology that best meets congressional goals.⁸²

As part of this process, EPA first develops industrywide regulations, called effluent limitations, that establish performance limits for the discharge of industrial pollutants.⁸³ EPA has published more than 50 sets of effluent limitations for industries such as coal mining, pharmaceutical manufacturing, and leather tanning and finishing.⁸⁴ Once promulgated, the effluent limitations are incorporated into “national pollutant discharge elimination system” (“NPDES”) permits for specific facilities.⁸⁵ As a result, NPDES permits focus on limiting pollution at its source, setting forth precise numerical limits on the amount of pollutants that may be discharged.⁸⁶ While EPA was initially responsible for the issuance of all NPDES permits, the Act authorizes EPA to delegate permit issuance authority to the states. Forty-five states now administer the NPDES program within their borders.⁸⁷ These states, however, must comply with federal program requirements and are subject to EPA oversight.⁸⁸

Under the CWA, the effluent limitations that apply to industrial dischargers are treated separately from the effluent limitations that apply to POTWs, although both must comply with certain “technology-based standards.” The technology standard for industrial sources is based on the type of pollutant discharged — whether it be conventional, toxic, non-toxic, or nonconventional. Industrial dischargers must follow effluent limitations based upon the following standards: Best Practicable Control Technology Currently Available (BPT), Best Conventional Pollutant Control Technology (BCT), and Best Available Technology (BAT). New sources are required to meet new source performance standards,⁸⁹ which are based on Best Available Demonstrated Control Technology (BADT).⁹⁰ Table 3 describes these limitations and indicates how they are applied.



To discharge pollutants into American waters legally, polluters must get a permit from the EPA, and then follow its terms.
(EPA PHOTO)

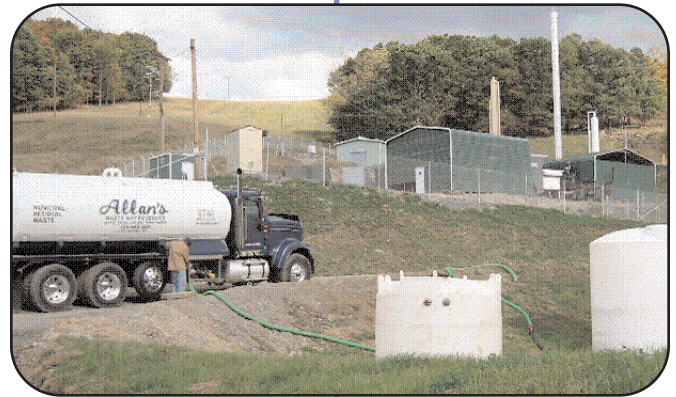
POTWs are required to implement “secondary treatment,” a standard which requires reducing the oxygen demand of organic waste and total suspended solids by 85 percent.¹⁰⁴ For those industrial facilities discharging toxic pollutants into a POTW system instead of directly to waters, “pretreatment standards” apply.¹⁰⁵ “Pretreatment standards require these indirect dischargers to eliminate or drastically reduce wastes that would either interfere with the operation of a POTW or pass through the POTW’s treatment systems to the receiving water.”¹⁰⁶ EPA has promulgated “general pretreatment requirements,” prohibiting certain discharges and requiring POTWs to establish local pretreatment limits to prevent pollutants from “passing through” or interfering with the POTW.¹⁰⁷ EPA also promulgates “categorical pretreatment standards,” which establish limits upon the amount of pollutants that facilities within particular industries may discharge.¹⁰⁸ Separate standards are promulgated for existing sources and new sources. POTWs, moreover, may impose additional requirements.¹⁰⁹

Through these technology-based standards, the CWA seeks to force technological innovation,¹¹⁰ “encourag[ing] the development of new pollution control technology by essentially guaranteeing a market for technological improvements.”¹¹¹ Uniform

TABLE 3.
Technology-Based Standards

Pollutant	Technology-Based Standard	How Set	Level of Protection
Conventional pollutants. Biological oxygen demanding material (BOD), total suspended solids, fecal coliform, pH, and oil and grease. ⁹¹	Best Practicable Control Technology Currently Available (BPT). ⁹² The original 1977 deadline requirement. (Originally used to regulate conventional pollutants and non-conventional, non-toxic pollutants.)	Reasonable efforts. Based on the “average of the best” by well-performing plants in an industrial category. ⁹³ Subject to some cost-benefit balancing. ⁹⁴	Baseline.
	Best Conventional Pollutant-Control Technology (BCT). ⁹⁵ BCT was to be implemented between 1983 and 1989.	Between reasonable efforts and best efforts. May be required if deemed to be cost-effective under two cost-benefit tests. ⁹⁶ Subject to stringent marginal cost analysis. ⁹⁷	Although envisioned as often more stringent than BPT, almost always the same as BPT.
Toxic and Nonconventional, Non-Toxic pollutants. EPA currently lists 126 priority toxic pollutants, including mercury, lead, and arsenic. ⁹⁸ Pollutants that fall into the nonconventional category, which includes, among others, heat, chlorine, and ammonia. ⁹⁹	Best Available Technology Economically Achievable (BAT). ¹⁰⁰ BAT was to be implemented between 1983 and 1989.	Best Efforts. Based on the “best of the best” performance within an industrial category. ¹⁰¹ Consideration of cost, but no requirement that cost be compared to benefit. ¹⁰²	Most stringent.
New sources of toxic, conventional and non-toxic, nonconventional pollutants.	Best Available Demonstrated Control Technology (BADT). ¹⁰³ All new sources must incorporate the most technologically advanced discharge treatment processes.		At least as stringent as BAT for toxics and non-conventional, non-toxic pollutants. Conventional pollutants are also encompassed within the standard.

technology-based standards are also even-handed, leveling the playing field within industries as well as among states.¹¹² The incorporation of these specific obligations into NPDES permits also greatly simplified compliance and enforcement.¹¹³ Industry knows exactly what is expected of it, and regulators know exactly what is required of the various sources.¹¹⁴ “A final virtue of technology-based standards is that they can easily be supplemented or even supplanted as improved approaches to controlling pollution become available.”¹¹⁵ In other words, technology-based standards provide a floor upon which other environmental programs can be built.¹¹⁶



During the past 15 years, EPA has updated only one effluent limitation out of the top thirteen for industrial discharges of toxic water pollution. (EPA PHOTO)

The CWA’s NPDES permitting program, in turn, transforms these standards and other regulatory requirements into enforceable obligations that each individual discharger must meet.¹¹⁷ Moreover, because each permittee must periodically file what is known as a “discharge monitoring report” (“DMR”), determining violations is relatively straightforward, as it “involve[s] a mere comparison of permit restrictions with the discharger’s actual performance.”¹¹⁸ As Professor Wendy Wagner explains, this innovation was particularly “brilliant” because it eliminates the “informational advantage” dischargers previously maintained about their actual pollution discharge.¹¹⁹ Because of this regulatory scheme, “dischargers have few choices but to monitor their effluent honestly and to disclose those effluent numbers to regulators and the public at large,”¹²⁰ as EPA and the states may conduct compliance inspections and the CWA provides for penalties for false reporting.¹²¹ According to EPA, as of September 2007, individual permits have been issued to more than 6,640 major and 39,275 minor facilities.¹²²

The CWA’s technology-based approach, implemented so effectively through its permit program, is responsible for dramatically reducing industrial and municipal discharges.¹²³ A 2000 EPA study found that, from 1973 to 1995, the amount of BOD discharges from industrial point sources fell 40 percent.¹²⁴ This represented a decline from 5,406 metric tons per day to 3,243 metric tons per day.¹²⁵ In 1998, EPA estimated that discharges of toxic pollutants had been reduced by almost 24 million pounds annually.¹²⁶ That reduction reflects, in part, significant declines in toxic discharges from the pulp and paper, aluminum, iron, steel, and leather industries.¹²⁷ The initial focus on technology, therefore, has proven to have been a wise approach.¹²⁸

Technology can only take us so far, however, if the technology-based limitations are outdated. During the past fifteen years, EPA has updated only one effluent limitation out of the top thirteen for industrial discharges of toxic water pollution.¹²⁹ Old effluent limitations mean old technology, and opportunities to take advantage of technological advances are lost. Meanwhile, EPA has yet to develop any effluent limitations for water-intensive industries like the coal bed methane production industry or the construction and development industry.¹³⁰

More than 240 million pounds of toxic chemicals were discharged in our waterways in 2005.

Similarly disturbing, in 2005, more than 240 million pounds of toxic chemicals were discharged in our waterways.¹³¹ Of this amount, approximately 51 million pounds were released from municipal sewage plants.¹³² And much of that loading came from indirect industrial dischargers subject to the pretreatment program.¹³³ The pretreatment program under the CWA is widely regarded as a failure.¹³⁴ Many facilities simply fail to meet pretreatment standards and enforcement is lax.¹³⁵ Under the pretreatment program, the POTW is the primary enforcement authority.¹³⁶ As a customer of the POTW, an indirect discharger generally “can expect more sympathetic monitoring and enforcement from the POTW than would a direct discharger from a state or federal permitting agency.”¹³⁷ Moreover, even if they had the political will to commence enforcement actions against powerful local interests, POTWs are rarely able to pinpoint the sources of “interference” caused by indirect dischargers, making enforcement difficult.¹³⁸

Although industrial facilities and publicly owned treatment works were the initial targets of the NPDES program (receiving individually-crafted, site-specific permits), they are not the only sources subject to NPDES requirements. EPA and the states also issue “general permits,” which regulate large numbers of sources in the aggregate based on their operations and types of discharge, among other things.¹³⁹ General permits focus primarily on “best management practices” to manage stormwater and certain animal feeding operations, since “end-of-pipe” controls are typically difficult to develop for these types of pollution.¹⁴⁰ In the concentrated animal feeding operation (CAFO) context, EPA’s 2003 CAFO rule allows states to issue statewide general permits, although very large CAFOs meeting certain requirements must apply for an individual NPDES permit.¹⁴¹ Unlike individual permits, general permits typically consist of “self-selected plans” that are “generally not reviewed by permit writers prior to the permittee being eligible for coverage.”¹⁴² Both the Second and the Ninth Circuits have concluded, however, that the CWA requires some regulatory and public review of management plans developed under general permits, although the Seventh Circuit has held otherwise.¹⁴³ More than 300 general permits have been issued.¹⁴⁴

General permitting efforts to control stormwater and runoff from CAFOs, however, have been ineffective in comparison to individual NPDES permits. “Polluted stormwater runoff is the leading cause of impairment to the nearly 40 percent of surveyed U.S. water bodies which do not meet water quality standards.”¹⁴⁵ Yet our progress in this area has been slow. EPA did not specifically address stormwater discharges until Congress amended the CWA in 1987 to require EPA to regulate municipal storm sewer systems and stormwater runoff associated with industrial activities such as construction.¹⁴⁶ EPA responded by establishing the NPDES Storm Water Program.¹⁴⁷ The program has been somewhat controversial and its implementation slow.¹⁴⁸ EPA, for example, did not publish regulations covering construction activities disturbing one to five acres until 2003.¹⁴⁹

The recipients of stormwater permits have been slow to implement their regulatory obligations. A 2007 report by the Government Accountability Office has concluded that “almost all” municipal storm sewer systems “are still in the early stages of program

implementation[,] gathering information on the types of storm water pollution they face and determining which activities they plan to implement to address this pollution.”¹⁵⁰ Likewise, compliance by the construction industry has lagged.¹⁵¹ In 1999, for example, “EPA estimated construction activities exceeded 62,000 starts per year, but . . . fewer than 20,000 construction sites applied for storm water coverage.”¹⁵² More concerning, however, is the fact that, unlike the NPDES permits for “end-of-pipe” industrial discharges, stormwater permits have “only loose self-monitoring requirements [that] leave the source with considerable discretion.”¹⁵³ This handicaps the regulator “in ensuring compliance and leaves the regulated source less concerned about the possibility of meaningful enforcement.”¹⁵⁴

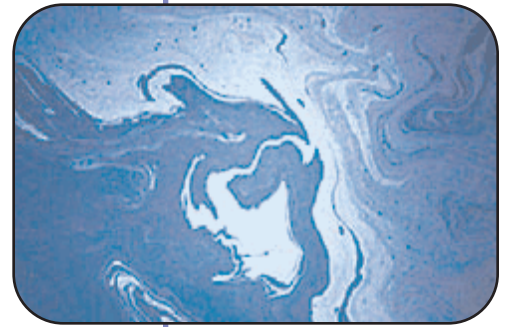
The rate at which permits for direct dischargers are violated is also high. From 2003 to 2005, almost 20 percent of major dischargers were not in compliance with their permits.¹⁵⁵ During 2005, more than 3600 major facilities (57 percent of about 7000)¹⁵⁶ exceeded their permit discharge limits at least once.¹⁵⁷ Astoundingly, also during 2005, 628 major facilities reported violating their permit requirements in at least half of their monthly reports.¹⁵⁸ When major facilities exceed their permits, they, on average, exceed them by four times the permitted amount.¹⁵⁹

Major facilities, meanwhile, “represent only the tip of the iceberg,”¹⁶⁰ as there are 80,000 minor NPDES permit holders as opposed to only 7000 major dischargers.¹⁶¹ Given that major facilities are inspected far more often than minor facilities, it is likely that compliance rates for the smaller facilities are lower.¹⁶² To make matters worse, enforcement rates have declined. Between 1997 and 2002, for example, EPA CWA referrals to the Department of Justice (DOJ) fell 55 percent.¹⁶³ Over the past ten years, from 1997 to 2006, EPA reduced the size of the regional enforcement workforce by approximately 5 percent, from 2,568 full-time equivalent (FTE) staff in fiscal year 1997 to 2,434 FTEs in fiscal year 2006.”¹⁶⁴

The Second Step: Water Quality Standards and TMDLs

Although crucial to improving water quality, point-source control by the use of uniform technology-based standards is only the first step under the CWA’s regulatory scheme, a way to establish a foundation for future water quality improvements.¹⁶⁵ The CWA also created a water-quality based program to augment the technology-based scheme.¹⁶⁶ A point source may therefore be subject to more stringent permit conditions if necessary to meet water quality standards. Unlike technology-based standards, which focus on the source of pollution, water quality based standards are based on how the pollution affects the quality of the receiving waters.¹⁶⁷

Under the CWA, a state’s development of water quality standards (WQS) consists of three components: 1) designating the “uses” of its waters (“beneficial uses”); 2) establishing the water quality criteria necessary to protect these designated uses; and 3) adopting an anti-degradation policy, which is designed to ensure that existing water quality is maintained.¹⁶⁸ “Beneficial



From 2003 to 2005, almost 20 percent of major dischargers were not in compliance with their permits, exceeding the permitted amount by four times, on average. (EPA PHOTO)



Water quality standards enable states to assess whether technology-based controls are providing an adequate level of clean-up. (CITY OF SOUTHFIELD, MICHIGAN PHOTO)

uses' constitute the purposes for which a water body is to be protected; while water quality criteria establish the technical conditions necessary to protect those beneficial uses."¹⁶⁹ Together, they provide a "legal basis for pollution control decisions under the Act."¹⁷⁰

Water quality standards enable states to assess whether technology-based controls are providing an adequate level of clean-up. States are required to (1) identify waters that violate water quality standards after the application of technology-based standards; (2) prioritize these waters by taking into account the severity of the pollution; and (3) establish "total maximum daily loads" (TMDLs) so that these waters meet applicable water quality standards.¹⁷¹ A TMDL sets the total loading for each of the relevant pollutants, which is then distributed between a Wasteload Allocation (WLA), the pollutant loading allocated to contributing point source dischargers, and a Load Allocation (LA), the amount allocated to nonpoint and natural sources.¹⁷² "In essence, a TMDL is the combined amount of pollution the state believes a water body can accept without exceeding the WQS, and an allocation of pollution reductions needed from existing sources to meet this target."¹⁷³

Once a TMDL is established, the states must work to reduce point and nonpoint sources of pollution to the established TMDL level.¹⁷⁴ Although § 303 does not expressly provide for the implementation of TMDLs, NPDES permits must include "any more stringent limitation . . . necessary to meet water quality standards."¹⁷⁵ Accordingly, when TMDLs are established, dischargers must comply with more stringent permit limitations to meet the WLA allocation under the TMDL. Nonpoint sources, however, are not subject to such permit implementation; thus achieving compliance with LA limits has been a daunting challenge.¹⁷⁶

Although it has tremendous potential, the water quality step in the CWA's overall strategy has not worked as well as the technology-based, effluent limitations approach. First, EPA did not initially focus a great deal of attention on water quality, as it was primarily occupied with establishing and implementing the effluent limitations.¹⁷⁷ Second, the quality and comprehensiveness of water quality monitoring data has been a problem.¹⁷⁸ States, typically strapped for funds, tend to monitor routinely the same rivers, lakes, and estuaries, leaving large gaps in information about other waters.¹⁷⁹ States also employ different monitoring standards.¹⁸⁰ Finally, the water quality standards themselves are not broad enough in scope, as they generally focus exclusively on water chemistry and do not specifically take into account the physical and biological health of the water.¹⁸¹ Water-dependent wildlife and indeed entire ecosystems are, therefore, left inadequately protected against various kinds of hydrological modifications.¹⁸²

Establishing TMDLs has also been difficult and painful.¹⁸³ The TMDL process only began in earnest when citizen suits forced EPA and the states to act, and the TMDL development process itself is complex and has been fraught with litigation.¹⁸⁴ Some progress in the listing of impaired waters and the development of TMDLs has been made, however. EPA currently reports that the states have listed 38,686 water segments as impaired, with 63,599 causes of impairment.¹⁸⁵ In addition, 25,789 TMDLs have been approved by EPA.¹⁸⁶

Completing TMDLs, however, only begins to address the problem. Without requirements and deadlines that translate TMDLs into actual pollution reductions, they will be nothing more than expensive and time-consuming exercises.¹⁸⁷ If states “assign” pollution reductions to nonpoint sources on paper but fail to actually implement and enforce these limits, less control will be required of point sources, and the stream or other water problem will remain impaired. Implementing and enforcing TMDLs, therefore, is crucial. Without it, the entire TMDL process becomes a sham.¹⁸⁸

Blueprint for Reform: Strengthen Pollution Controls

Thanks to the CWA, we have made significant strides in controlling pollution from point sources. In 1998, EPA estimated that the implementation of these uniform, technology-based standards had reduced discharges of conventional pollutants by 108 million pounds annually, and toxic pollutants by almost 24 million pounds annually.¹⁸⁹ This success is rooted in a technology-based approach to regulation that requires a pollution source to do its best to reduce water pollution.¹⁹⁰ A technology-based, best efforts approach starts with the premise that pollution is unacceptable; there is no right to pollute simply because a

TABLE 4.

Key Provisions: End-of-Pipe Controls Plus Water Quality Standards

Section of Act	Statutory Reference	Description	Type of Control
402	33 U.S.C. § 1342	NPDES Permit Program. In order to discharge a pollutant into our waters, every point source discharger must obtain a permit and comply with its terms. Permits incorporate effluent limitations unless more stringent permit limitations are necessary to meet water quality standards.	End-of-pipe plus water quality
301	33 U.S.C. § 1311	Effluent Limitations. Effluent limitations are industrywide regulations established by EPA that set performance limits for pollution discharge. Existing industrial discharges must meet the following: Best Conventional Pollutant Control Technology (BCT) and Best Available Technology (BAT). POTWs must implement “secondary treatment.”	End-of-pipe: Focus on the Source
304	33 U.S.C. § 1314	Effluent Guidelines. Effluent limitations are established by reference to the effluent guidelines which are promulgated under 304. Section 304 references factors that EPA must consider in setting effluent limitations.	
306	33 U.S.C. § 1316	New Source Performance Standards. New sources must meet new source performance standards, which are based on Best Available Demonstrated Control Technology (BADT).	
307	33 U.S.C. § 1317	Pretreatment Standards. Pretreatment standards apply to industrial facilities discharging toxic pollutants into a POTW.	
301	33 U.S.C. § 1311	Water Quality Standards. Requires compliance with more stringent conditions necessary to meet water quality standards.	Water quality: Focus on receiving waters
303	33 U.S.C. § 1313	Water Quality Standards & TMDLs. Every three years, states must review water quality standards. Any new or revised standards must be submitted to EPA for review. States must also identify which waters will remain polluted after technology-based standards are implemented, prioritize these waters, and establish “total maximum daily loads” (TMDLs) so that the waters meet applicable water quality standards.	

waterbody appears to be capable of assimilating waste.¹⁹¹ As such, polluters are required to install state-of-the-art controls to limit the amount of pollution they discharge.¹⁹²

Technology-based, best-efforts limitations work for several reasons:

<p>A Clear Moral Imperative:</p> <p><i>Technology-Based Limitations Mean "Do Your Best."</i></p> <p style="text-align: center;">▲</p> <p>"The moral message of technology-based [limitations] is that regulated entities must do their best, or nearly their best, when the public health and the environment are at stake."¹⁹³ In contrast, the message of "risk-based" regulation is that some level of risk is acceptable, and it places the burden on the government to justify an acceptable level of risk and the method to reduce the risk. Unlike the risk-based approach, the best-efforts approach assumes that pollution is unacceptable and that technological creativity and innovation — not cost-benefit analysis — is the appropriate response.¹⁹⁴</p>	<p>Doable and Straightforward:</p> <p><i>Technology-Based Limitations Are Relatively Easy To Make and Enforce</i></p> <p style="text-align: center;">▲</p> <p>Best-efforts, technology-based regulations are written three to 10 times faster than risk-based regulations.¹⁹⁵ This is so because they require less information and analysis than risk-based limitations. Although the "agency needs information about the availability and cost of relevant technologies, . . . it does not need to engage in extensive hazard assessments, exposure analyses, modeling projections, or politically controversial allocations of responsibility for risk reduction."¹⁹⁶ Regulated firms know what is required of them, and they know what technologies are available to meet standards at a reasonable cost.¹⁹⁷ Enforcement is easier because numerical limits create a clear reference point for regulators.¹⁹⁸ These very characteristics also make technology-based limitations easier for private citizens to enforce by means of citizen suits.¹⁹⁹</p>	<p>Even-handed:</p> <p><i>Technology-Based Limitations Are Fair</i></p> <p style="text-align: center;">▲</p> <p>When implemented properly, technology-based limitations treat members of the same category in the same industry in the same way.²⁰⁰ Not only do technology-based limitations level the playing field for industrial competitors, but the national character of the limits also diminishes competition among the states, thus preventing states from "racing to the bottom" by lowering standards to attract and retain industry.²⁰¹</p>	<p>Adaptable:</p> <p><i>Technology-Based Limitations Can Reflect Technological Innovation</i></p> <p style="text-align: center;">▲</p> <p>As other approaches to controlling pollution become available — such as pollution trading — technology-based limitations provide a floor upon which these innovations can be built.²⁰² Technology-based limitations are ideal "default requirements," as they can be uniformly and expeditiously applied across entire industries.²⁰³ Given the challenge of climate change, utilizing technology-based limitations is a way to allow for necessary flexibility, providing a baseline for implementing technological innovations to address new, climate change-related problems.</p>
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We need to build upon this initial success to ensure that the technology-based limitations are as comprehensive as possible and that the limits reflect the most modern and effective technologies available. CPR, therefore, recommends reforming the CWA with respect to its technology-based limitations in several respects, so that more pollutants are controlled, technological improvements are incorporated, and technological innovation is promoted.

First, Congress should amend § 301(b) to require Best Available Technology ("BAT") for conventional pollutants. While gains have been made, conventional pollutants — oxygen-depleting substances, suspended solids, and fecal coliform (bacteria), to name a few examples — continue to impair water quality. Currently, the technology-based limitation under the CWA for conventional pollutants are Best Practicable Control Technology Currently Available ("BPT") and Best Conventional Pollutant-Control Technology ("BCT") limits.²⁰⁴

Although BCT was envisioned as being more stringent than the older BPT limits, the actual limits are almost always the same. The result is that conventional pollutants are essentially controlled by BPT, the original 1977 baseline standard, which provided an initial level of protection. The CWA was designed to impose progressively more stringent controls on pollution.²⁰⁵ Requiring BAT for conventional pollutants would further the CWA's design of forcing technological innovation, increasing efficiency and effectiveness and thereby reducing the level of conventional pollutants in the nation's waters.

Second, coupled with the above proposal, Congress should amend § 304(b) to make the BAT effluent guidelines apply to conventional pollutants. BPT and BCT effluent guidelines, which apply to conventional pollutants, are subject to some cost-benefit balancing, while the BAT guidelines require the consideration of cost but no comparison of cost to benefits.²⁰⁶ Again, if we are serious about reaching the Act's zero discharge goal, we should hold conventional pollutants to the same standards as toxic and nonconventional pollutants. Instead of basing our effluent guidelines on the "average of the best," which is what actually happens under BPT and BCT standards, we must base our effluent guidelines for conventional pollutants on the "best of the best."

Third, Congress should amend § 301(d) and § 304 to make clear that EPA has a mandatory duty to revise BAT limitations whenever technological improvements meet the factors set forth in § 304(b). As Professor Oliver Houck explains, "[t]he central tenet of BAT [is] that it remain dynamic."²⁰⁷ BAT was never meant to be a "fixed floor"; rather, it was to be an "engine" promoting technologies that would eliminate water pollution.²⁰⁸ BAT cannot be such an engine, however, if the limitations are based on old technologies. Section 301(d) requires EPA to review effluent limitations every five years, but it only requires revision "if appropriate." The United States Court of Appeals for the Ninth Circuit has recently held that, because of this language, EPA's decision on whether or not to update an effluent limitation is discretionary.²⁰⁹ Unfortunately, given EPA's track record in this regard, old technologies have remained the model technologies for setting standards, regardless of whether they are "appropriate" or not. By amending § 301(d) as we recommend, EPA will have a mandatory duty to require polluters to keep pace with technological improvements. Section 304 should also be amended to make it clear that the effluent guidelines must be revised whenever new technologies meet the relevant factors.

Fourth, Congress should provide EPA the funding it needs to permit the agency to thoroughly review existing BAT limitations and permit revisions when necessary. According to a 2007 GAO analysis of EPA's budget and workforce for fiscal years 1997 through 2006, "EPA's total budget increased from \$7.3 billion to \$7.7 billion—a decline of 13 percent in real terms."²¹⁰ In 2004, EPA transferred at least 20 of the approximately 55 employees responsible for developing effluent limitations to another division within the Office of Water responsible for developing water quality criteria, primarily because of budget



(ISTOCK PHOTO)



Congress should require communities to manage stormwater runoff through green infrastructure. (EPA PHOTO)

constraints.²¹¹ Not surprisingly, only two effluent limitations have been revised or issued since this occurred.²¹² Without adequate funding, however, EPA will continue to be placed in the untenable position of choosing between reviewing and updating existing BCT and BAT limitations and performing other important regulatory duties.

Fifth, Congress should fund studies to assess in a comprehensive manner the long-term impact of point source regulation across the entire nation. Knowing how well our pollution control strategy has worked over the years is crucial. While EPA has done such a study for organic pollutants (BOD),²¹³ such a study is necessary for other relevant pollutants including bacteria, nutrients, suspended solids, and toxics.

Sixth, Congress should amend § 402(q) to require communities with combined sewer systems to incorporate green infrastructure into their Long Term Control Plans, which are required by the CWA. In the Wet Weather Water Quality Act of 2000, Congress codified EPA's "CSO Control Policy,"²¹⁴ which, among other things, required combined sewer systems to implement certain controls and develop a Long Term Control Plan (LTCP) to meet state water quality standards as part of their NPDES permits.²¹⁵ As Nancy Stoner of NRDC persuasively explains, however, "a shortcoming" of the CSO Control Policy is that it focuses primarily on huge storage projects and treatment of CSOs, overlooking the potential for reducing overflows by off-loading stormwater through green infrastructure.²¹⁶ Green infrastructure techniques such as preserving and restoring vegetated areas, utilizing porous pavements, and creating riparian buffers provide "rain management benefits" akin to many of the natural systems we have lost due to development.²¹⁷ By incorporating green infrastructure techniques, which could be tailored to fit each community's needs, combined sewer systems would be taking affirmative and proactive steps to manage and reduce stormwater before it enters the collection system, thus lowering a community's reliance on traditional stormwater structures and ultimately preventing pollution caused by sewage overflows.²¹⁸ As EPA recently reported, "low impact development" strategies and green infrastructure practices save communities money by cutting stormwater management costs.²¹⁹

Blueprint for Reform: Strengthen Pollution Controls

- Section 301(b) should be amended to require BAT for conventional pollutants (mid-term reform).
- Section 304(b) should be amended to hold conventional pollutants to the same standards as toxic and nonconventional pollutants (mid-term reform).
- Sections 301(d) and 304 should be amended to make clear that EPA has a mandatory duty to revise BAT limitations whenever technological improvements meet the guidelines set forth in Section 304(b) (mid-term reform).
- EPA's appropriation bill should contain adequate funds to permit the agency to thoroughly review existing BAT limitations and permit revisions when necessary (near-term reform).
- Fund studies to assess in comprehensive fashion the long-term impact of point source regulation across the nation (near-term reform).
- Amend § 402(q) to require communities with combined sewer systems to incorporate green infrastructure into their Long Term Control Plans (near-term reform).

Blueprint for Reform: Address Information Constraints

One of the reasons the CWA's NPDES permitting program has been such a success is that Congress "authorized EPA to impose substantial monitoring and reporting obligations upon the regulated community."²²⁰ Determining a violation is thus fairly straightforward, "involving a mere comparison of permit restrictions with the discharger's actual performance."²²¹ The same monitoring and reporting obligations are missing in the stormwater and CAFO context, however.²²² Granted, because of the pollution involved — stormwater from construction activities, for instance — monitoring is more difficult than for end-of-pipe discharges. Nevertheless, addressing the information constraints unique to stormwater runoff is necessary if we want cleaner waters.

First, Congress should amend § 308(b) to make it clear that Notices of Intent²²³ and permittee-developed plans such as Storm Water Pollution Prevention Plans and Nutrient Management Plans submitted under general permits are subject to the CWA's public availability provisions. In the stormwater and CAFO context, the federal circuits are split as to whether the CWA requires public review of management plans developed under general permits.²²⁴ "Both the [Notices of Intent] and permittee plans contain information and requirements that are typically included in permit applications and permits themselves, and the [CWA] mandates that both these documents be publically available."²²⁵ By making it clear that Notices of Intent and permittee-developed management plans submitted under general permits are subject to the CWA's public availability provisions, Congress would ensure that the public is informed about projects that impact their lives and their environment.²²⁶ Without access to such vital information, the ability of the public to monitor permit issuance and scrutinize agency enforcement efforts is severely limited.²²⁷

Second, Congress should authorize EPA to create a meaningful monitoring program for stormwater and CAFO discharges under general permits that is conducted by a governmental agency, whether it be local, state, or federal. Monitoring stormwater and animal waste discharge is not easy. "Unlike the NPDES industrial effluent program, which can involve the installation of end-of-the-pipe monitors that take samples at regular intervals, stormwater discharges occur predominantly during storm events and these monitors will not be able to sample runoff continuously or even at regular intervals."²²⁸ Similarly, in the CAFO context, the problem of animal waste arises from a variety of sources, from leaking lagoons to improperly applied manure on fields.²²⁹ Careful design, however, can address these problems.²³⁰

More importantly, however, we must recognize the unique difficulties inherent in stormwater and animal waste monitoring and depart from the "self-monitoring" approach utilized with industrial end-of-pipe dischargers.²³¹ As Professor Wagner points out, creating and funding a centralized monitoring system is a good idea for a number of reasons: 1) "it allows a group of experts to develop a systematic monitoring plan that gets the most information for its investment"; 2) it would improve the reliability of sampling by replacing "unsupervised 'visual' samples and sporadic grab samples" with a sampling plan implemented

Blueprint for Reform: Address Information Constraints

Amend § 308(b) to make it clear that Notices of Intent and permittee-developed plans such as Storm Water Pollution Prevention Plans and Nutrient Management Plans submitted under general permits are subject to the CWA's public availability provisions (near-term reform).

Authorize EPA to create a meaningful monitoring program for stormwater and animal waste discharges under general permits that is conducted by a governmental agency, whether it be local, state, or federal (near-term reform).

by a technical staff; 3) “[m]ajor sources of bias and incompetence” would be eliminated; and 4) economies of scale would reduce the overall cost of sampling.²³² More broadly, a full-scale monitoring would “also begin to redress a larger problem that has generally plagued the Clean Water Act”; namely that, “because of the NPDES’s success in circumventing the need for

science in setting effluent standards, there has been less attention paid to water quality monitoring.”²³³ Better information is crucial if we are to hold polluters accountable.

Blueprint for Reform: Strengthen TMDLs

As discussed above, the water quality step in the CWA’s overall pollution control strategy has not worked as well as the technology-based, effluent limitations approach. In particular, the water quality step has the potential to reduce nonpoint source pollution significantly.

Addressing nonpoint source pollution is a daunting task, but § 303 of the CWA “stands out as having sufficient promise to meet this challenge.”²³⁴ This is so because the TMDL process under § 303 requires that all sources of pollution in a waterbody be included in its calculations, with reduction allocations then made to both point and nonpoint sources in order to reduce the pollution. In short, TMDLs create a mechanism which could be used to reduce nonpoint source pollution when it is contributing to water quality impairment. In order for this to happen in a comprehensive and uniform manner across the country, Congress must clarify § 303 of the CWA in several ways.

First, Congress should amend § 303 to ensure that impaired waters are identified in comprehensive fashion. A waterbody is more than its chemistry. Wildlife and biological criteria also constitute important ways to assess a waterbody’s health.²³⁵ Under some applications of § 303, however, only pollutant concentration levels are considered when determining violations.²³⁶ Section 303(d) should be amended to clarify that a waterbody is impaired not just when particular chemical criteria are violated, but whenever it cannot meet its designated use. State water quality criteria (§ 303(c)) should be expanded to include biological criteria and minimum flows so that wildlife and aquatic ecosystems are protected.²³⁷

Second, Congress should fund state agencies adequately to expand the scope and accuracy of water quality monitoring efforts.²³⁸ TMDL development depends on water quality data. Under the CWA, water quality monitoring is largely a state’s responsibility.²³⁹ According to one estimate, however, “states are operating their monitoring programs with about one-half of the resources they need.”²⁴⁰ The proper development of TMDLs requires more federal resources than we have committed to date to improve the quantity and quality of water quality monitoring efforts.²⁴¹ In addition, because climate change will make it more difficult for the U.S. to achieve existing water quality goals,²⁴² accurate and comprehensive water

quality monitoring will be crucial in order for us to understand how climate change is altering flows and the quality of our waters.

Third, Congress should amend § 303 to directly address waters that are impaired, in whole or in part, due to various hydrologic modifications. The discharge of pollutants is not the only activity that affects the quality of our waters.²⁴³ Dam operations, water withdrawals, and channelization projects, among other activities, harm aquatic ecosystems in many ways. Indeed, hydrologic modification is second only to agriculture as the leading cause of water quality impairment for our rivers, lakes, and streams.²⁴⁴ Despite this, EPA's policy has been to conclude that, for the purposes of TMDLs, "flow, or lack of flow," is not a "pollutant" under the CWA.²⁴⁵ Consequently, by not requiring TMDLs for flow or hydrologic modifications, "EPA leaves no CWA remedy for one of the most serious problems facing American waters."²⁴⁶ As climate change is predicted to alter water flows and levels throughout the U.S.,²⁴⁷ this gap will only become more serious. Amending § 303(d) to make it clear that TMDLs must address waters whose biological or physical integrity is impaired by hydrologic modifications is therefore necessary if we are to begin to tackle this important problem.



Dams can have a harmful effect on aquatic ecosystems. The CWA should be modified to classify "flow" or "lack of flow" as a pollutant.
(US FISH AND WILDLIFE SERVICE PHOTO)

Fourth, Congress should amend § 303 to directly address waters that are impaired, in whole or in part, due to climate change. The prospect of increased precipitation variability and extreme weather events caused by climate change threatens to adversely impact water quality.²⁴⁸ Accordingly, there is a need to include the water-quality impacts of climate change in the assessment of water resources.²⁴⁹

Fifth, Congress should amend § 303 to set reasonable deadlines for the establishment of TMDLs. Section 303(d) provides that states shall submit their TMDLs to EPA "from time to time," hardly a fixed deadline.²⁵⁰ Although some progress has been made, thousands of TMDLs remain to be created. In July 2000, based on recommendations by a TMDL advisory committee,²⁵¹ EPA promulgated regulations to the TMDL program that, among other things, would have required TMDLs to be issued for all impaired waters within 15 years.²⁵² EPA, unfortunately, withdrew the regulation in 2003 in response to opposition from agricultural and industry groups.²⁵³ Amending § 303 to create an ultimate deadline, with periodic milestones, for the phased-in establishment of TMDLs would insert much-needed accountability into the TMDL program.

Sixth, Congress should amend § 303 to ensure that TMDLs are translated into stricter permit limits and mandatory nonpoint source controls by a reasonable deadline. If the TMDL process is to be more than an expensive paper exercise, the CWA must be clarified so that it ensures that the pollution reduction targets outlined in TMDLs are actually

achieved.²⁵⁴ TMDLs are particularly crucial if we are to begin to address nonpoint source pollution, but they must be implemented in a way that forces nonpoint sources of pollution to control their pollution. Indeed, as Professor Oliver Houck has bluntly put it, “unless TMDLs include quantified restrictions on nonpoint sources, they are worth no one’s time.”²⁵⁵

Because the CWA is unclear as to how TMDLs are to be implemented so that real water quality progress is made,²⁵⁶ two specific clarifications to § 303 are necessary: (1) states must be required to implement the Waste Load Allocations developed in the TMDL process in the relevant NPDES permits, and (2) states must implement the Load Allocations for relevant nonpoint sources by imposing enforceable conditions and requirements upon the relevant nonpoint sources. Put simply, TMDLs must be translated into stricter permit limits and nonpoint source controls if they are going to work. Moreover, to avoid the delays the TMDL program has seen in the past, § 303 must also be amended to require TMDL implementation by a reasonable deadline following the establishment of a TMDL.

Nonpoint Source Pollution: A Lesson in Ineffectiveness

The CWA’s success with controlling point sources of pollution contrasts starkly with its failure to address nonpoint sources of pollution.²⁷⁴ Indeed, the CWA does not even define the term “nonpoint source pollution.”²⁷⁵ Unlike point sources, nonpoint sources of pollution fall outside of the CWA’s permit requirements and enforcement mechanisms. Although the CWA authorizes state planning and management programs to deal with nonpoint source pollution, it is essentially unregulated by the CWA. Consequently, it has become the dominant cause of water pollution today, “dwarfing all other sources by volume, and in conventional contaminants, by far the leading cause of nonattainment for rivers, lakes, and estuaries alike.”²⁷⁶

When the CWA was first passed, Congress relied upon a state-implemented planning process to deal with nonpoint source pollution.²⁷⁷ This program proved so ineffective, that Congress revised its approach in 1987.²⁷⁸ In doing so, Congress first declared that “it is the national policy that programs for the control of nonpoint sources of pollution be developed and implemented in an expeditious manner” so that the goals of the Act would be met.²⁷⁹ The

Blueprint for Reform: Strengthen TMDLs

- Section 303 should be amended to ensure that impaired waters are identified in comprehensive fashion (near-term reform).
- State agencies should be funded adequately to expand the scope and accuracy of water quality monitoring efforts (near-term reform).
- Section 303 should be amended to directly address waters that are impaired, in whole or in part, due to various hydrologic modifications (near-term reform).
- Section 303 should be amended to directly address waters that are impaired, in whole or in part, due to climate change (near-term reform).
- Section 303 should be amended to set reasonable deadlines for the establishment of TMDLs (near-term reform).
- Section 303 should be amended to ensure that TMDLs are translated into stricter permit limits and mandatory nonpoint source controls by a reasonable deadline (near-term reform).

Our Streams and Rivers: A Snapshot

"Like the network of blood vessels that supply life-giving oxygen and nutrients to all parts of the human body, streams and rivers form a network that carries essential water to all parts of the nation."²⁵⁷ Approximately 19 percent of all stream and river miles were surveyed for the 2000 EPA § 305 National Water Quality Inventory, and, of those waters, 39 percent of these waters were deemed impaired.²⁵⁸ The report pinpoints agriculture, hydrologic modification, habitat modification, and urban runoff/storm sewers as the most common sources of impairment.²⁵⁹ In addition, because of our aging wastewater collection and treatment infrastructure, more than 860 billion gallons of raw and partially-treated sewage flow into our rivers and streams every year.²⁶⁰

The Fish and Wildlife Service estimates that 70 percent of riparian habitat nationwide has been lost or altered.²⁶¹ More than 90 percent of the nearly 900,000 riparian acres on Bureau of Land Management land are in degraded condition because of livestock grazing.²⁶² This destruction of riparian habitat results in erosion, increased sediment pollution, and higher water temperatures.²⁶³ Meanwhile, of the native freshwater fish species in North America, 30 percent are threatened, endangered, or at risk.²⁶⁴ Indeed, "[a]ccording to the Biological Resources Division of the U.S. Geological Survey, freshwater fishes are the single most imperiled vertebrate group in the United States."²⁶⁵ In the Pacific Northwest, for example, more than 100 stocks and subspecies of salmon and trout are now extinct.²⁶⁶ Another 200 are at risk, with dams and the loss of riparian habitat as the primary causes.²⁶⁷ Fish are not the only aquatic species struggling. "Fifty-one percent of crayfish and 40 percent of amphibians are either imperiled or vulnerable to extinction, while more than 70 percent of the freshwater mussel species in the United States are currently endangered, threatened, or at risk."²⁶⁸

Many of the problems our rivers, lakes, and coastal waters face may be traced to the small, wadeable streams feeding them. The health of these small streams, which constitute approximately 90 percent of perennial stream and river miles in the United States, is critical, as degraded headwater streams contribute to poor water quality, nuisance algal growth, and more frequent and/or higher floods.²⁶⁹ In December 2006, EPA released its first-ever evaluation using standardized sampling techniques of these small streams.²⁷⁰ The assessment found that 42 percent of U.S. stream miles are in poor condition, 25 percent are in fair condition, and 28 percent are in good condition.²⁷¹ Nitrogen and phosphorous, also known as "nutrients," constitute the most widespread causes of pollution in our wadeable streams, with streambed sediments and riparian disturbance contributing significantly also.²⁷² EPA is currently conducting a similar evaluation of large rivers, which is scheduled to be released in 2011.²⁷³



The Fish and Wildlife Service estimates that 70 percent of riparian habitation nationwide has been lost or altered.
(US FISH AND WILDLIFE SERVICE PHOTO)

substantive change came with the addition of § 319 to the CWA. This provision requires the states to identify waters impaired by nonpoint source pollution as well as the sources of that impairment.²⁸⁰ The states were then required to develop Best Management Plans (BMPs) for addressing those nonpoint source problems. State's having plans approved by EPA became eligible for federal assistance. By 1992, EPA had approved programs for 44 states.²⁸¹

Although "§ 319 funding is the largest EPA water-quality program implemented through payments to states,"²⁸² most commentators have concluded that § 319 has been ineffective in controlling nonpoint source pollution.²⁸³ **One major weakness of the § 319 program stems from the fact that many states adopted non-regulatory approaches, including voluntary BMPs, to deal with the problem.** Such voluntary programs have not produced

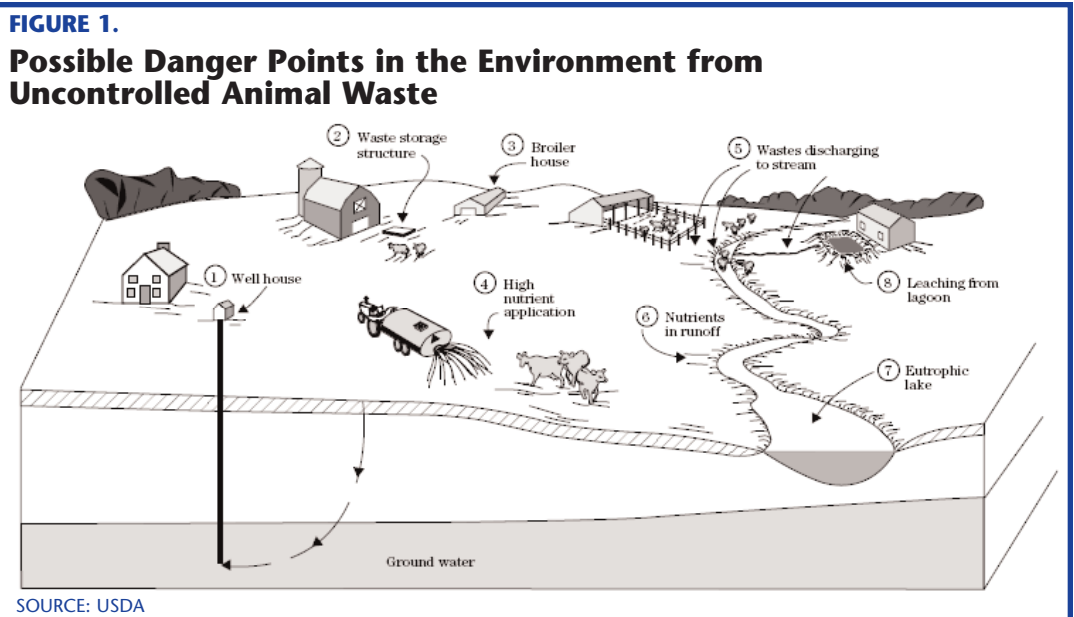
The 2007 Gulf of Mexico's 'dead zone' was the largest ever, covering 8,500 square miles.

significant improvement, and EPA was given little leverage to discourage such ineffective approaches.²⁸⁴ Section 319 provides EPA with only carrots — no sticks — to prod states towards effective solutions for nonpoint source pollution. Under § 319, EPA can only approve or disapprove of state plans; it has no power to promulgate a federal plan in lieu of an inadequate state plan.²⁸⁵ Approval results in the provision of grant funds to the state, while disapproval does not. EPA, therefore, is placed in the uncomfortable position of withholding the very funds that would otherwise allow the state to make at least some progress.²⁸⁶ Consequently, although a significant amount of time and money has been spent, nonpoint source pollution remains a significant problem.²⁸⁷

Due to climate change, the problem of nonpoint source pollution will become even more difficult to address. Nonpoint source pollution is fundamentally related to climate (for instance, storms and precipitation levels) and land use practices.²⁸⁸ Climate change, which is predicted to alter water flows throughout the U.S.,²⁸⁹ threatens to affect both of these variables. Not only will heavier rainfall events produce more runoff, but some of our efforts to adapt to climate change could increase sources of nonpoint source pollution by changing land use practices. For example, many water-quality scientists are concerned that increased ethanol production could seriously impair our waters since the production of corn is a large source of nonpoint source pollution and is a particularly “leaky” crop with respect to nitrogen.²⁹⁰ When it comes to nonpoint source pollution, climate change has the potential to make a serious problem even worse.

Blueprint for Reform: Strengthen Nonpoint Source Management Programs

Nonpoint source pollution is the dominant cause of water pollution today. And it will continue to be so as long as nonpoint sources of pollution fall outside of the CWA's permit



requirements and enforcement mechanisms. If we are to get serious about addressing the problem of nonpoint source pollution, in addition to reforming § 303 as described above, reforming § 319 is also necessary. If we have learned anything since the CWA was enacted, planning without accountability is not enough. The following proposals for reforming § 319 are designed to strengthen the program to ensure that the money we spend to address nonpoint source pollution results in meaningful pollution control.

First, Congress should amend § 319 to require that states update their lists of new waters impaired by nonpoint source pollution every two years. Prior to receiving federal assistance to implement their management programs under § 319(a), states submit to EPA “state assessment reports” that identify waters that cannot reasonably be expected to attain water quality standards.²⁹¹ Section § 319, however, does not require states to update their assessments. Not only will such a requirement in § 319 provide us with better and more up-to-date data, but it is also an important step if we are to begin to hold sources accountable for nonpoint source pollution.

Second, Congress should amend § 319 to require that states review and submit, when necessary, revised management plans, subject to EPA review, every two years. In order to receive federal funding, after states identify which of their waters have not met water quality standards because of nonpoint source pollution, they must submit a management program plan identifying best management practices to control nonpoint source pollution.²⁹² There is no requirement, however, that these plans be re-evaluated by the states and revised. As of now, in its 2003 guide for states applying for § 319 grants, EPA has suggested, and only parenthetically, that a state review and evaluate its program every five years.²⁹³ This is not sufficient oversight. Just as states should be required, by statute, to update state assessment reports biennially, state management plans should be updated and reviewed every two years as well. Moreover, the plans should be subject to EPA review and approval.

Third, Congress should amend § 319 to require that management plans include enforceable conditions and requirements. Put simply, § 319 does not require states to implement their management plans.²⁹⁴ No enforcement mechanism exists. Although EPA has stated in its § 319 funding guidelines that a “significant criteria” is that a state’s work plan “demonstrate that each funded element will be implemented,”²⁹⁵ EPA has no way to ensure that implementation actually occurs. In addition, EPA has no authority to require that specific conditions be included as part of a state’s management plan. As long as EPA’s role is one of “advice and encouragement” instead of active enforcement of specific criteria,²⁹⁶ our approach to nonpoint source pollution will remain unsuccessful.

Proclaiming the difficulty of establishing controls of nonpoint source pollution has been a convenient way for policymakers to avoid addressing the problem of nonpoint source pollution.²⁹⁷ In

TABLE 5.
Regulating Nonpoint Source Pollution

Excuses	And Responses
Nonpoint sources are too many and too various.	We regulate a great number and variety of point sources.
The “site-specific” nature of the pollution.	Each industrial discharge is also site-specific, with different effects on the receiving water.
Lack of “known control technologies.”	The control technologies for nonpoint pollution (e.g., shelter-belts, nutrient caps, retention ponds) are anything but unknown, complex, technologically difficult, or even very costly.



A stormwater drain.
(CHESAPEAKE BAY PROGRAM PHOTO)

fact, “nonpoint source pollution is not more varied, more site-specific, or more difficult technologically to control” than point source pollution.²⁹⁸ As Professor Oliver Houck has pointed out and as is indicated in Table 5, the rationales we have used to avoid dealing with nonpoint source pollution lack any foundation in fact.²⁹⁹

Fourth, Congress should amend § 319 to give EPA the authority to promulgate all or a portion of a state’s nonpoint source management plan in the event EPA disapproves of the state’s plan, in whole or in part, and the state fails to remedy the problem. As § 319 is currently written, EPA has a choice: fund a state nonpoint source management program, no matter how inadequate, or deny funding, with the result being that a

state is deprived of the very funds that might allow it to make some progress.³⁰⁰ There is no reason why § 319 should not look like other CWA programs, which give EPA the authority to take action when the states fail to do so.³⁰¹ Section 319, therefore, should be amended to give EPA the authority it needs to ensure that effective nonpoint source controls are, in fact, established and implemented.

Fifth, Congress should amend § 319 to require states to factor climate change in their management plans. Climate change and our efforts to adapt to climate change threaten to worsen nonpoint source pollution. States must plan for how climate change will affect their efforts to control nonpoint source pollution by taking into account, for example, the way in which increased rainfall and extreme weather events will increase runoff and erosion. In addition, states must also account for the costs and benefits associated with undertaking potentially harmful activities such as increased ethanol production, and EPA should be instructed to disapprove of state plans that fail to address the problems caused by such activities.

Sewage and Stormwater Treatment Infrastructure: A Smart Investment

Sewage contains hundreds of bacteria and pathogens, some of which come directly from infected people in the community.³¹⁴ **More than 900,000 waterborne illnesses occur every**

Blueprint for Reform: Strengthen Nonpoint Source Management Programs

- Section 319 should be amended to require that states submit lists of new waters impaired by nonpoint source pollution every two years (near-term reform).
- Section 319 should be amended to require that states review and submit, when necessary, revised management plans, subject to EPA review, every two years (near-term reform).
- Section 319 should be amended to require that management plans include enforceable conditions and requirements (near-term reform).
- Section 319 should be amended to give EPA the authority to promulgate all or a portion of a state’s nonpoint source management plan in the event EPA disapproves of the state’s plan, in whole or in part, and the state fails to remedy the problem (near-term reform).
- Section 319 should be amended to require states to factor climate change into their management plans (near-term reform).

Our Lakes, Reservoirs, and Ponds: A Snapshot

Our 39.9 million acres of lakes and reservoirs are not only recreational playgrounds for boating, fishing, and swimming, but provide other, vital functions as well. Seventy percent (70 percent) of the water we use for domestic and industrial purposes, irrigation, and hydropower comes from freshwater lakes and reservoirs.³⁰² Lakes also provide habitat for many species and help support our \$19 billion freshwater fishing industry.³⁰³

Forty-five percent (45 percent) of our lakes, reservoirs, and ponds, however, are impaired.³⁰⁴ Nutrients such as nitrogen and phosphorous, primarily from agriculture, affect more lake acres than any other pollutant or stressor.³⁰⁵ Metals are the second most common pollutant, with the detection of mercury in fish tissue samples widespread.³⁰⁶ Siltation, which is often caused by erosion from agriculture, construction sites, and strip-mined lands, is the third most common pollutant.³⁰⁷

The Great Lakes — the largest surface freshwater system on Earth — contain approximately 84 percent of North America’s fresh water.³⁰⁸ A 2007 assessment concludes that the state of the Great Lakes is “mixed” and that “the trend of Great Lakes ecosystem health remains unchanged.”³⁰⁹ In other words, hard-won gains in some areas are being swallowed by deteriorating conditions in other areas. For example, while levels of most contaminants in herring gull eggs continue to decrease, concentrations of flame-retardant polybrominated diphenyl ethers (PBDEs), a chemical of emerging concern, are increasing.³¹⁰ Similarly, while mercury concentrations in offshore waters are well below water quality guidelines, such concentrations in urban areas and harbors remain high.³¹¹ The frequency and severity of nuisance algae and Type E botulism outbreaks have increased.³¹² Habitat destruction and invasive species, most of which arrive in ship ballast, are the greatest threats to the biodiversity of the Great Lakes region.³¹³

Forty-five percent
of our lakes,
reservoirs, and ponds
are impaired.

year due to sewage in our waters.³¹⁵ These bacteria and pathogens also harm fish and aquatic life. Sewage also contains hormones, medicines and other drugs, either excreted by people or flushed down the toilet.³¹⁶ Several studies have shown that hormones and hormone-altering chemicals from wastewater are changing the sex characteristics of fish.³¹⁷

Industrial chemical wastes and commercial wastes enter our waters through sewage as well. **More than 240 million pounds of toxic chemicals were discharged in our waterways in 2005.**³¹⁸ Of this amount, approximately 51 million pounds were released from municipal sewage plants.³¹⁹ Finally, sewage is also a major source of nutrient pollution that overstimulates the growth of algae and various aquatic weeds, which later decay, producing a steep decline in the amount of oxygen available to fish, shellfish, and other organisms.³²⁰

When Congress passed the CWA, it did more than create pollution controls — it invested in local communities by building and upgrading sewage treatment plants. Since 1972, Congress has provided more than \$72 billion to build and upgrade new treatment plants, an amount roughly matched by state and local contributions.³²¹ Today, as a result, about 16,000 sewage treatment plants, serving over 75 percent of the U.S. population,³²² treat more than 32 billion gallons of household and industrial wastewater.³²³ The number of sewage treatment systems providing less than secondary treatment has fallen dramatically as a result, from 4278 in 1978 to less than 200 in 1996,³²⁴ and the total number of people served by sewage treatment plants with secondary or better treatment has almost doubled, from 85.9 million in 1968 to 164.8 million in 1996.³²⁵ This investment has produced

tremendous environmental results. According to a recent EPA study, municipal wastewater treatment plants discharged 23 percent less BOD in 1996 than in 1968, “despite the fact that loadings of BOD to municipal facilities had increased 35 percent between 1968 and 1996.”³²⁶

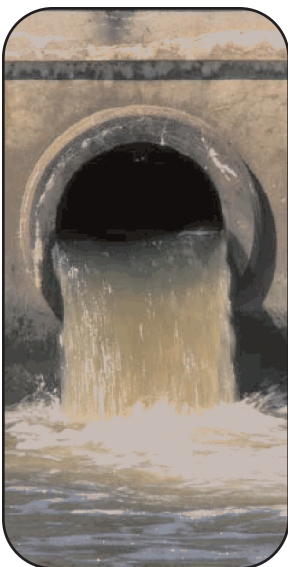
In spite of this investment, more remains to be done. **Approximately 850 billion gallons of raw sewage from combined sewer systems, which are typically older systems collecting both sewage and stormwater in a single system, overflow into our waters yearly.**³²⁷ About 46 million Americans are served by such combined sewer systems. Sanitary sewer systems, which convey only wastewater, also often overflow during rainfall events, discharging approximately 3 to 10 billion gallons of sewage per year.³²⁸

Sewage treatment facilities, as well as their collection systems, are aging.³²⁹ Population growth taxes these systems further, as well as creates a need for new plants.³³⁰ In its Report Card for America’s Infrastructure, the American Society of Civil Engineers gives our wastewater infrastructure a D-, observing that “[o]lder systems are plagued by chronic overflows during major rain storms and heavy snowmelt and, intentionally or not, are bringing about the discharge of raw sewage into U.S. surface waters.”³³¹ **An estimated \$390 billion will be required over the next 20 years to replace existing systems and build new ones to meet increasing demands.**³³² In spite of these great needs, the Clean Water State Revolving Fund (SRF), which funds the construction of waste treatment facilities is now at its lowest funding level in a decade.³³³ NRDC estimates that the gap between current funding levels and actual needs fall between \$17 to \$20 billion per year.³³⁴

And these estimates do not take into account climate change, which is predicted to impact sewage treatment facilities and collection systems significantly. In a draft report studying the impact of climate change on combined sewage overflows (“CSOs”), EPA predicts that, because climate change is expected to increase the amount of rainfall occurring during extreme weather events, increased stormwater runoff and high flow events are likely, with the result that additional untreated storm water and wastewater containing high concentrations of microbial pathogens, biochemical oxygen demand, suspended solids, and other pollutants will be discharged into our receiving waters.³³⁵ Investments in water treatment infrastructure are “capital-intensive, long-term in nature, and irreversible in the short- to medium term.”³³⁶ Unless current funding levels increase, however, our sewage treatment infrastructure will not be prepared for tomorrow’s climate.³³⁷

Blueprint for Reform: Improve Sewage and Stormwater Treatment

A large part of the success which the CWA has enjoyed over the past thirty-five years is due to the tremendous investment Congress made by funding the construction and upgrading of thousands of sewage treatment plants. But building an initial wastewater treatment infrastructure is not enough. **If we are to stop the billions of gallons of sewage that overflow into our waters every year and prepare for pressures on our wastewater infrastructure caused by climate change, we must upgrade our collection systems and**



The Clean Water State Revolving Fund, which pays for the construction of waste treatment facilities, is at its lowest funding level in a decade. (US COMMISSION ON OCEAN POLICY PHOTO)

modernize our treatment systems. Special efforts need to be aimed at eliminating sewer overflows and the problems posed by combined sewer systems. As discussed above, green infrastructure techniques, for example, which capture stormwater before it enters collection systems, are cost-effective ways to manage stormwater before it becomes a problem, “offloading the system before it becomes overloaded.”³³⁸ And we must be smart about the projects we fund — making sure that they do not have undesirable and avoidable environmental impacts — as well as take into account climate change and emerging problems such as pharmaceutical contamination.³³⁹ Finally, citizens should know about the sewage entering their waters. We should require public notification for sewage spills, including by-passes from sanitary sewer systems, so that citizens know about their local problems and can also protect themselves when sewage overflows occur.

First, Congress should provide direct federal grants to municipal treatment facilities (including collection systems) for construction and upgrades and/or expand funding for the State Revolving Fund. An estimated \$390 billion is required over the next 20 years to replace existing systems as well as build new ones to meet increasing demands.³⁴⁰ Yet the SRF is at its lowest funding level in a decade. “Unless investment in wastewater infrastructure substantially increases and treatment efficiency improves, EPA predicts that by 2025 sewage pollution will exceed 1968 levels — the highest in our nation’s history.”³⁴¹ Increased investment is necessary. Otherwise, pre-CWA sewage pollution levels will return.

Second, Congress should amend Title II of the CWA to require that any loans for sewage treatment plant construction and upgrades must comply with the National Environmental Policy Act (“NEPA”) to ensure that funds will not have undesirable and avoidable environmental impacts. According to NRDC, about “20 percent of SRF funds paid out [in 2006] built new sewer systems that fuel sprawl development, which has well documented adverse impacts on water resources.”³⁴² While direct grants to construct sewage treatment plants require NEPA compliance, SRF loans do not. All sewage construction funding should be reviewed vigorously in order to ensure that funding decisions do not, for example, contribute to urban sprawl or encourage growth in sensitive areas.



We must be smart about the projects we fund — making sure that they do not have undesirable and avoidable environmental impacts, as well as take into account climate change and emerging problems such as pharmaceutical pollution.
(EPA PHOTOS)

Blueprint for Reform: Improve Sewage Treatment and Stormwater Collection

- Provide direct federal grants to municipal treatment facilities (including collection systems) for construction and upgrades and/or expand funding for the SRF (near-term reform).
- Amend Title II of the CWA to require that any loans for sewage treatment plant construction and upgrades must comply with NEPA to ensure that funds will not have undesirable and avoidable environmental impacts (near-term reform).
- Require public notification when sewage spills occur (near-term reform).
- Fund a taskforce to study pharmaceutical contamination in wastewater (near-term reform).
- Require EPA to issue guidance that contains model stormwater ordinances for cities and other communities (near-term reform).

Third, Congress should require public notification when sewage spills (overflows such as bypasses and upsets) occur. Although NPDES permits require sanitary sewer systems to report sewage spills to the government, public notification is not required, and spills are rarely publicized.³⁴³ While EPA has developed a policy to require public notification when combined sewer overflows occur, compliance with the policy varies widely, with some states having no effective public notification requirements at all.³⁴⁴ Just as “code red” days alert us to dangerous air pollution, mandating that POTWs notify the public whenever sewage spills occur will allow citizens to protect themselves by avoiding contact with untreated sewage.³⁴⁵ S. 2080 and H.R. 2452, both Sewage Overflow Right-to-Know Acts, are examples of legislation that would achieve this purpose.

Fourth, Congress should fund a taskforce to study and recommend how we should address pharmaceutical contamination in wastewater. Standard wastewater treatment does not effectively remove pharmaceuticals from wastewater effluent.³⁴⁶ According to Dr. Steven Bay, a toxicologist with the Southern California Coastal Water Research Project, “[s]ewage-treatment plants only remove 50 percent to 70 percent of these chemicals.”³⁴⁷ Although it appears that more advanced treatment methods remove chemicals such as hormones and antibiotics from wastewater, much is not known about how these chemicals interact with each other, what treatment works best, and if they disrupt the treatment process.³⁴⁸

Fifth, Congress should require EPA to issue guidance that contains model stormwater ordinances for cities and other communities. Many local communities across the United States are implementing effective stormwater measures, but more should be done to improve stormwater management and to support, instead of discourage, the use of green infrastructure.³⁴⁹ To its great credit, EPA Region III has recently issued a pamphlet encouraging localities to form stormwater utilities funded by taxes on stormwater sources.³⁵⁰ Guidance providing model stormwater, erosion, and sediment control ordinances would also help municipalities and states implement better management practices and stronger enforcement measures.

Regulating Wetlands: A Murky Landscape

Thanks to the CWA, along with several conservation programs primarily administered by the U.S. Department of Agriculture, “annual wetlands losses in the coterminous United States have fallen from an average of 555,000 acres in the mid-1970s to approximately 58,500 acres by the mid-1990s.”³⁶⁵ Nevertheless, the CWA’s regulation of wetlands has been and remains controversial.³⁶⁶ As Professor Oliver Houck aptly notes, “section 404 of the Clean Water Act lies like an open wound across the body of environmental law, one of the simplest statutes to describe and one of the most painful to apply.”³⁶⁷

Overview of Section 404

Section 404 of the CWA is the primary federal provision regulating wetlands. Under § 404 of the CWA, those who wish to discharge dredged or fill material into waters of the United

Our Estuaries: A Snapshot

Fed by fresh water rivers and streams, estuaries are coastal bodies of water that connect to the sea. Nicknamed the “nurseries of the sea,” estuarine habitats provide critical spawning grounds, nurseries, shelter, and food for many fish and shellfish.³⁵¹ Indeed, more than 75 percent of the United States’ commercial fish catch and 80 percent to 90 percent of the recreational fish catch spend part of their life cycles in estuaries.³⁵² Estuaries also provide nesting, resting, feeding, and breeding habitats for 75 percent of waterfowl and other migratory birds, as well as for wildlife such as manatees, seals, porpoises, and whales.³⁵³ In addition, healthy estuaries, along with their associated wetlands and marshes, provide a variety of water quality functions, including sequestering many toxic substances and filtering nutrients from runoff. Healthy estuaries also have the ability to store additional quantities of water, which reduces both flooding and shoreline erosion due to storm surges.³⁵⁴

After twenty years of restoration efforts, however, the Chesapeake Bay — America’s largest estuary — is still at risk. Most of its waters are significantly degraded.³⁵⁵ In 2006, only 37 percent of the Bay was deemed to have enough oxygen to support aquatic life, with nutrient pollution the primary cause.³⁵⁶ Thanks to nutrients and sediment loads, only seven percent (7 percent) of the Bay’s water had acceptable water clarity.³⁵⁷ Fifty-three percent (53 percent) of the monitored tidal rivers entering the Bay contained contaminant levels — PCB tissue concentrations and mercury levels in particular — that warranted fish consumption advisories.³⁵⁸ Fish and shellfish populations, consequently, remain far below desired levels for species and eco-system health.³⁵⁹

In June 2007, EPA released its National Estuary Program Coastal Condition Report, which evaluated the twenty-eight nationally-significant estuaries deemed threatened by pollution and development — excluding the Chesapeake Bay, which is evaluated separately.³⁶⁰ The report concluded that 37 percent of these estuaries are in poor overall condition.³⁶¹ For these estuaries, habitat loss, species loss, nutrients, and toxics were listed as the top environmental concerns.³⁶²

More specifically, estuaries on the Northeast Coast, West Coast, and Puerto Rico received the lowest rating possible (one on a one-to-five scale) for sediment quality, which includes an assessment of sediment toxicity, contaminants, and total organic carbon. The Gulf Coast fared little better, receiving the next lowest ranking for sediment quality (two on a one-to-five scale). The Northeast Coast, West Coast, and Puerto Rico also received the lowest rating possible for fish tissue contaminants, which indicates the level of chemical contamination in target fish and shellfish species, and for benthic condition, which indicates the condition and diversity of organisms living in estuarine sediments.³⁶³ Again, the Gulf Coast fared little better, receiving the next lowest ranking for its benthic condition.³⁶⁴

States, including many wetlands, must obtain a permit from the U.S. Army Corps of Engineers (“Corps”).³⁶⁸ EPA provides guidance and oversight to the § 404 program, as well as sharing enforcement responsibility with the Corps.³⁶⁹ Although the Corps is authorized to issue general and regional permits for certain categories of activity, many discharges fall under the Corps’ individual permitting authority and require intensive case-by-case determinations.³⁷⁰

As EPA explains, “[t]he basic premise of the program is that no discharge of dredged or fill material may be permitted if: 1) a practicable alternative exists that is less damaging to the aquatic environment or 2) the nation’s waters would be significantly degraded.”³⁷¹ If a discharge is unavoidable, the Corps must include compensatory mitigation — creating, restoring, or enhancing a wetland — as a condition of the permit.

EPA regulations define wetlands as “those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal

A 2006 assessment showed that only 37 percent of the Chesapeake Bay has enough oxygen to support aquatic life.

circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas.”³⁷² As discussed below, the extent to which the CWA covers wetlands is hotly contested.

Section 404’s Murky Jurisdictional Landscape

Section 404 authorizes permits regulating the discharge of dredged or fill material into “navigable waters of the United States.”³⁷³ “In defining ‘navigable waters’ to mean ‘waters of the United States,’ the House-Senate conference committee wrote that it ‘fully intend[ed]’ to give the term ‘the broadest possible constitutional interpretation.’”³⁷⁴ Indeed, until the past several years, “waters of the United States” has been read expansively as protecting most surface waters and wetlands.³⁷⁵ In 1985, for example, the Supreme Court in *Riverside Bayview Homes* unanimously concluded that the term “navigable” was of “limited import” and held that wetlands adjacent to traditional navigable waters are covered by the CWA.³⁷⁶

Two recent Supreme Court decisions, however, have narrowed § 404’s jurisdictional scope by stressing the term “navigable” in the Act.³⁷⁷ In 2001, in *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers (SWANCC)*, the Supreme Court held that the CWA did not extend to isolated, non-navigable, intrastate waters and wetlands simply because these waters were used by migratory birds, rejecting what was known as the Corps’ “migratory bird rule.”³⁷⁸ Although decided on narrow grounds, *SWANCC* created a storm of controversy, shaking the general consensus that the Act protected almost all surface waters and wetlands.³⁷⁹ In 2003, the Bush Administration announced that EPA and the Corps would take public comments in preparation for proposing a rule to redefine CWA jurisdiction based on the *SWANCC* decision.³⁸⁰ The Administration subsequently abandoned the attempt to draft a new rule “after over forty states, countless conservation organizations, including several hunting and fishing groups, and 220 members of Congress, among others, weighed in against any regulatory rollbacks.”³⁸¹ However, a guidance document prohibiting Corps field staff from applying the CWA to most “isolated” waters, without prior EPA approval, was issued.³⁸²

The prospect that the CWA would be weakened further raised its head again in 2006. In *Rapanos v. United States*, the Supreme Court considered two lower court decisions that concluded that certain wetlands not adjacent to navigable waters were nevertheless covered by the CWA.³⁸³ Four justices would have upheld the lower courts’ conclusions that the wetlands fell under the CWA’s jurisdiction.³⁸⁴ Five justices, however, agreed the lower courts should be reversed; they could not, however, agree upon a common jurisdictional test to apply. Justice Kennedy’s concurring opinion would apply a test finding CWA jurisdiction wherever the wetlands have a “significant nexus” with traditional navigable waters.³⁸⁵ Justice Scalia’s test, representing the view of four justices, would find CWA jurisdiction would exist over wetlands not adjacent to navigable waters as long as the wetlands have a “continuous surface connection” with a “relatively permanent” body of water that is connected to a traditional interstate navigable water.³⁸⁶ In cases such as this where there is no majority

opinion, controlling legal principles may be derived from the principles set forth by five or more justices.³⁸⁷ The EPA and the Corps have, therefore, issued guidance arguing that either test may apply since the dissenting justices would have upheld the assertions of jurisdiction in the case. So far, however, most circuit courts that have addressed the issue have held that Justice Kennedy’s concurrence, representing the narrowest ground for decision, is the controlling test.³⁸⁸



The jurisdictional landscape — which bodies of water are covered by the Clean Water Act — have been confused because of a narrow interpretation of the word “navigable.”
(US FISH AND WILDLIFE SERVICE PHOTO)

The *Rapanos* decision did much to confuse and little to resolve how a “navigable waters” test should be applied, and the lower courts, citizens groups, the Corps, and EPA will be grappling with *Rapanos* for years to come.³⁸⁹ It must be emphasized that the opinion’s jurisdictional terms — “relatively permanent” and “significant nexus” — are legal, not scientific, concepts.³⁹⁰ Scientists do not categorize wetlands in this way, and developing the science to address these legal tests will not necessarily be easy. “One of the challenges posed by *Rapanos* is that the decision establishes jurisdictionally relevant characteristics for a water that involve not only a geographic understanding (i.e., spatial scale) of a water’s relationship to a traditional navigable water but also the nature of the relationship over time (i.e., temporal scale).”³⁹¹ Such determinations, done correctly, will take considerable case-by-case effort.³⁹²

The guidance issued by EPA and the Corps in response to the *Rapanos* decision also raises several concerns. First, the guidance arguably affects jurisdictional questions under the entire CWA, not just § 404,³⁹³ possibly narrowing, for example, the scope of the NPDES program for point source discharges, as well as the application of TMDLs to nonpoint source pollution.³⁹⁴ Already, one circuit court has reversed criminal convictions for violations of the CWA involving discharges to a perennial tributary at a point over 48 miles from a navigable river.³⁹⁵ In addition, the guidance limits agencies to aggregating wetlands associated only with a particular tributary even though Justice Kennedy’s opinion, in discussing how small streams in the Mississippi watershed contribute to the Gulf of Mexico’s dead zone, clearly contemplates that the “significant nexus” test protects waters over a regional area or watershed.³⁹⁶ This eviscerates necessary watershed-based approaches to controlling pollution and may well leave many headwaters unprotected.³⁹⁷ Moreover, the case-by-case determinations contemplated by the guidance will not protect many streams and rivers that flow only intermittently, and it will create tremendous burdens for citizens and agencies alike when they attempt to enforce the CWA.³⁹⁸ Finally, climate change is complicating how our waters connect with other waters. *Rapanos* takes us backward in a time when proactive and comprehensive efforts to protect wetlands and intermittent streams and rivers from the consequences of climate change are sorely needed.

Additional Problems with Our Current Wetlands Policy

As Professor Alyson Flournoy observes, a broad look at § 404 as it has been implemented over the past thirty-five years reveals structural flaws that have plagued wetlands protection



Case-by-case determinations for permitting are not only time-consuming, but they also do not take the cumulative effects of development and wetlands loss into account.
(US FISH AND WILDLIFE SERVICE PHOTO)

since the CWA's inception.³⁹⁹ For example, although § 404 is the primary federal statute regulating wetlands, the term “wetlands” is not mentioned in the CWA.⁴⁰⁰ A clear statement of Congress' purpose in enacting § 404 is similarly absent.⁴⁰¹ Consequently, wetlands policy has been in turmoil over the years.⁴⁰² Although “no net loss of wetlands” has ostensibly been a policy goal since 1989,⁴⁰³ given that approximately 60,000 wetland acres are lost annually, it is more accurate to “state that the goal of our policies as slowing the destruction of wetlands or destroying our remaining wetlands slowly.”⁴⁰⁴

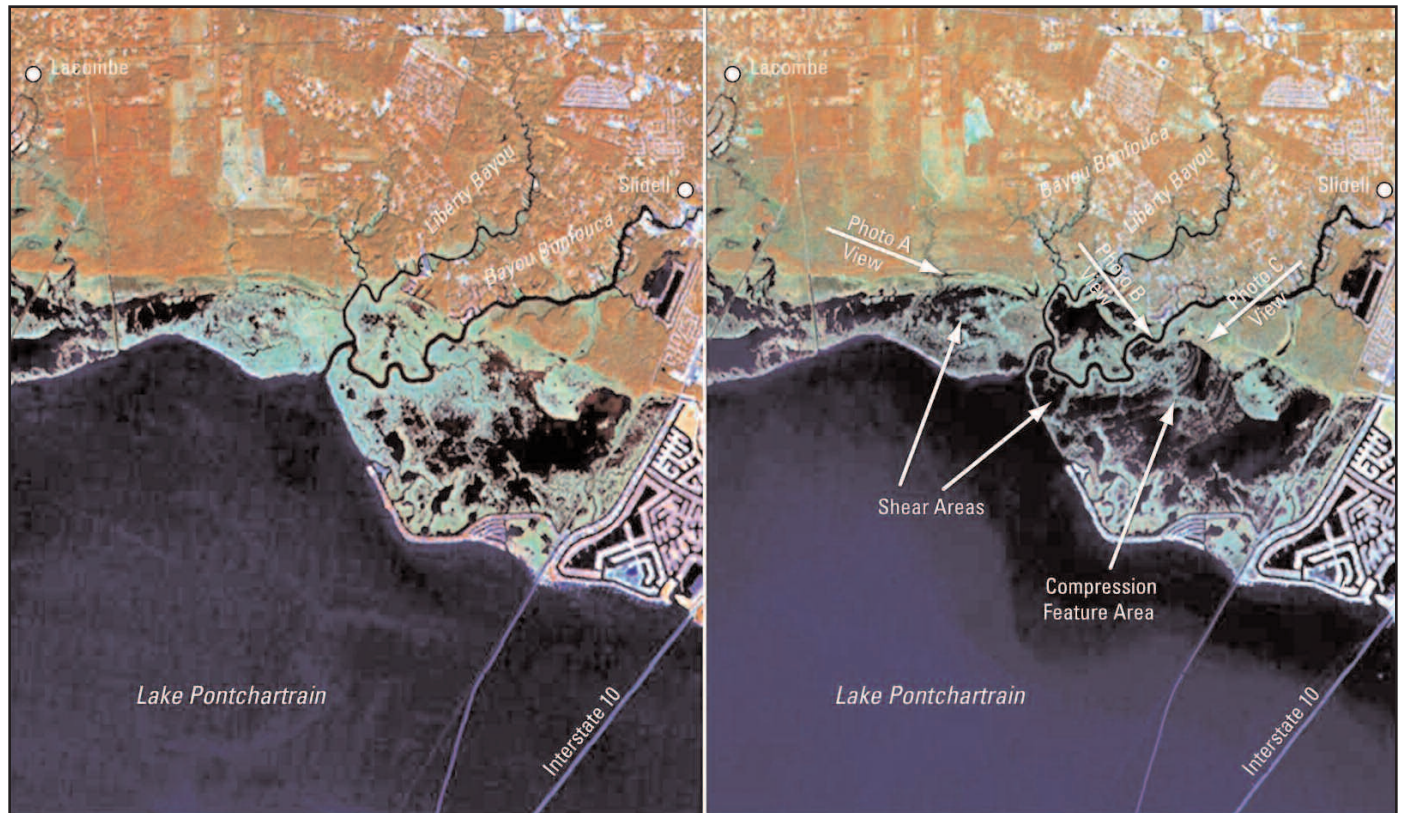
Relying on a water pollution statute to protect wetlands has not only generated the jurisdictional quagmires found in the *SWANCC* and *Rapanos* decisions, but has also prevented us from “confronting wetlands on their own terms,” since focusing on wetlands as waterbodies cannot fully capture their value.⁴⁰⁵ Similarly, § 404's permitting model “focus[es] on specific conduct that degrades the

wetland, rather than overall protection of the resource.”⁴⁰⁶ In addition, not only are case-by-case determinations time-consuming, but they do not take the cumulative effects of development and wetlands loss into account.⁴⁰⁷ This is not to say that § 404 permitting has no place in wetlands policy; rather, as our primary tool for addressing wetlands loss, it is insufficient.⁴⁰⁸

Mitigation projects — restored or created wetlands areas designed to compensate for wetlands loss caused by development — are also woefully inadequate to protect wetlands as currently implemented under EPA and Corps policy.⁴⁰⁹ As one ecologist has put it, “issuing a permit with mitigation requirements does not guarantee... that the required mitigation is achieved — or even attempted.”⁴¹⁰ In other words, many mitigation projects, although planned for, are either never begun or completed.⁴¹¹ And even if the project is completed, in many cases there is “no guarantee [of] full replacement of wetlands functions.”⁴¹²

The fact that the Corps rarely monitors or inspects mitigation projects contributes to the problem. In 2005, GAO concluded that the Corps “performed limited oversight to determine the status of required compensatory mitigation.”⁴¹³ The GAO findings are damning.

- Of permit files where the individual permittee was required to perform wetlands mitigation, only 24 percent contained required monitoring reports and only 15 percent contained evidence that the Corps had conducted a compliance inspection.
- Only 36 percent of mitigation banks had been inspected. Inspection of these banks by the various Corps districts ranged widely from 13 percent to 78 percent.
- In 2003, none of the seven GAO-audited Corps districts took enforcement action to obtain compliance with the mitigation conditions found in permits.

FIGURE 2.**Comparison of Marsh Shears Before and After Hurricanes Katrina and Rita**

Liberty Bayou, Louisiana. The image at left, taken with Landsat 5 Thematic Mapper Satellite Imagery, was taken on November 7, 2004. The image at right was taken one year later (October 25, 2005) after hurricanes Katrina and Rita made landfall. The images show new areas of water on the north side of Lake Pontchartrain. The EPA reports that more than half of the loss of America's wetlands will probably occur in Louisiana.

- When district officials want to pursue enforcement actions, they find that they are limited in doing so because they have not specified the permit conditions for compensatory mitigation in sufficient detail and have not established agreements with the necessary mitigation or “third-party” sponsors who are paid to perform mitigation.⁴¹⁴

Given that the Corps' oversight of wetlands mitigation efforts is, at best, spotty, the actual efficacy of mitigation projects and programs such as mitigation banking is highly questionable.⁴¹⁵ While Corps' oversight could be stronger under its own regulations or guidance documents, the CWA does not provide explicit criteria and guidance for the Corps to assess whether the mitigation plans actually provide an adequate and verifiable level of compensation for the proposed loss of wetlands. The result is little oversight; Corps-issued guidance that is described by GAO as “vague” and “internally inconsistent;” and continuing wetlands loss.⁴¹⁶

Congress should also act to close another regulatory gap that has resulted in the loss of thousands of acres of wetlands to drainage and excavation every year. This gap resulted from the D.C. Circuit's decision in *National Mining Association v. Army Corps of Engineers*.⁴¹⁷ The case invalidated EPA's and the Corps' "Tulloch" rule which required a § 404 permit for excavation channelization activities that redeposited dredged material, including excavated materials, into wetlands or other waters of the United States.⁴¹⁸ Although EPA and the Corps have acted by rulemaking to reduce the damage this decision has produced,⁴¹⁹ the loophole thus created cannot be entirely remedied absent congressional action. Consequently, § 404 should be amended to specifically provide that the discharge of dredged material includes any addition, including any redeposit, of dredged material, into waters of the United States which is incidental to any activity, including mechanized landclearing, ditching, channelization, or other excavation.

Finally, as if the current status of our wetlands policy was not bleak enough, climate change is likely to create serious threats to our wetlands. Rising sea levels caused by climate change are predicted to accelerate wetlands loss and increase flooding of coastal and estuarine areas.⁴²⁰ The IPCC has predicted that sea levels on North American coasts could rise between 0.6 and 2 feet (0.18 to 0.59 meters) in the next century,⁴²¹ "resulting in the inundation of 8,500 to 19,000 square kilometers of land and the elimination of as much as 43 percent of North America's wetlands."⁴²² EPA reports that more than half of this loss will probably occur in Louisiana.⁴²³ Indeed, Louisiana may experience sea level rises of up to four feet in this century.⁴²⁴

Blueprint for Reform: Protect Wetland and Aquatic Habitats

Although "no net loss of wetlands" has been a policy goal since 1989, some 60,000 wetlands are nevertheless destroyed annually. Many more acres are degraded. The word "navigable" must be deleted from the Act and § 404 must be strengthened if we want to protect our wetlands instead of destroying them. We must also commit the necessary resources to EPA, the Army Corps of Engineers, the Department of Agriculture, and the Fish and Wildlife Service so that these agencies are equipped to protect our wetlands.

First, Congress should delete the term "navigable" from the CWA to make clear that Congress intends the CWA to extend to all waters of the United States, including isolated waters and wetlands, as well as headwaters and intermittent waters. *SWANCC* and *Rapanos* have created havoc with our wetlands policy. Deleting the term "navigable" from the Act and adding "waters (or water) of the United States" would make it absolutely clear that Congress intended the Act to protect all waters of the United States from pollution. H.R. 2421 and S. 1870, both titled the Clean Water Restoration Act of 2007, are examples of legislation that would achieve this purpose. The proposed legislation would:

- 1) Adopt a statutory definition of "waters (or water) of the United States" based on the longstanding definition in EPA's (40 CFR 122.2) and the Corps' regulations (33 CFR 328.3);

- 2) Delete the word “navigable” from the Act to clarify that the Clean Water Act is principally intended to restore and protect the chemical, biological, and physical integrity of all of the nation’s waters, not just navigable waters;
- 3) Make findings that provide the basis for Congress’s assertion of constitutional authority over the nation’s waters, as defined in the Act, including so-called “isolated” waters, headwater streams, intermittent waters, small rivers, ponds, lakes and wetlands.⁴²⁵

Wetlands are as much waters of the United States as any flowing stream and deserve broad protection. Congress should adopt legislation such as the Clean Water Restoration Act to make it clear that this is so.

Second, Congress should amend § 404 to clarify that the CWA not only regulates discharges into wetlands but also regulates activities that drain them. Every year, thousands of acres of wetlands are lost because, unless a discharge of dredged or fill materials is involved, the act of draining wetlands is not subject to CWA jurisdiction.⁴²⁶ “A policy focused squarely on wetland conservation and the goals of the CWA would seek to regulate this activity.”⁴²⁷ Such a regulatory program would be virtually identical to the current dredge and fill project and would ensure that our nation’s wetlands were comprehensively protected from destruction regardless of the activity involved.

Third, Congress should amend § 404 to set forth explicit criteria and guidance to assess whether mitigation plans adequately compensate for wetlands loss. Our current mitigation policy has been critiqued by many organizations for years, including the National Academy of Sciences and the General Accounting Office.⁴²⁸ Mitigation efforts have simply not been carried out well in most Corps districts.⁴²⁹ While Corps’ oversight could be stronger under its own regulations or guidance documents,⁴³⁰ the CWA does not provide explicit criteria and guidance for the Corps to use in assessing whether the mitigation plans actually provide an adequate and verifiable level of compensation for the proposed loss of wetlands. Amending § 404 to establish concrete criteria and guidance for evaluating mitigation plans would improve greatly the likelihood of their success.⁴³¹

Fourth, Congress should amend § 404 to provide that the discharge of dredged material includes any addition, including any redeposit, of dredged material, into waters of the United States which is incidental to any activity, including mechanized landclearing, ditching, channelization, or other excavation. This action is necessary to close a regulatory gap that has resulted from a court decision that has resulted in the loss of thousands of acres of wetlands to drainage and excavation every year.

Fifth, Congress should provide additional staffing resources for the Corps to analyze § 404 permit applications and to monitor and enforce its § 404 permits, and for EPA and the Fish



Wetlands are as much waters of the United States as any flowing stream and deserve broad protection.
(USGS PHOTO)

and Wildlife Service to exercise their § 404 oversight responsibilities. Although the Corps has been routinely criticized for inadequately reviewing permit applications and failing to adequately monitor and enforce the resulting permits, including mitigation plans, new resources have not been added to address these well-documented problems.⁴³² Meanwhile, “pressures on the Corps to speed permit processing in recent years have been substantial.”⁴³³ Similarly, EPA and the Fish and Wildlife Service cannot fully exercise their § 404 oversight responsibilities without adequate funding for staff. We cannot expect these agencies to do more with less. Providing additional staffing resources is essential if we want to protect our wetlands.

Sixth, Congress should require the Corps to factor in climate change when designing or permitting water projects such as dams and levees and other projects involving wetlands. Wetlands act as natural barriers to protect communities from flooding caused by severe storms, yet Corps projects often end up destroying wetlands.⁴³⁴ In 2007, Senator John Kerry introduced legislation that would require the Corps to plan for climate change and to account for the costs and benefits associated with the loss and protection of wetlands, floodplains, and other natural systems that can buffer the effects of climate change.⁴³⁵ Such legislation is a good first step to making government consider climate change when undertaking potentially harmful projects. Senator Kerry’s bill, however, would only apply to Corps projects. Section 404, therefore, should be amended to ensure that the Corps considers climate change when issuing all § 404 permits as well.

Enforcement: The Heart of the CWA

Government Enforcement

Prior to 1972, federal efforts to address water pollution had languished due to lax enforcement.⁴⁵² Thoroughly disenchanted with that situation, Congress set out in the CWA to remedy the problem, not only by creating an enforceable pollution control strategy, but also by strengthening the enforcement process itself.⁴⁵³

Blueprint for Reform: Protect Wetland and Aquatic Habitats

- Delete the term “navigable” from the CWA to make clear that Congress intends the CWA to extend to isolated waters and wetlands, as well as headwaters and intermittent waters (near-term reform).
- Amend § 404 to clarify that Congress intends that the CWA not only regulates discharges into wetlands but also regulates activities that drain them (near-term reform).
- Amend § 404 to set forth explicit criteria and guidance to assess whether mitigation plans adequately compensate for wetlands loss (near-term reform).
- Amend § 404 to provide that the discharge of dredged material includes any addition, including any redeposit, of dredged material into waters of the United States which is incidental to any activity, including mechanized landclearing, ditching, channelization, or other excavation (near-term reform).
- Provide additional staffing resources for the Corps to fully analyze §404 permit applications and to monitor and enforce § 404 permits, and for EPA and the Fish and Wildlife Service to exercise their § 404 oversight responsibilities (near-term reform).
- Require the Corps to factor in climate change when designing or permitting water projects such as dams and levees and other projects involving wetlands (near-term reform).

Our Wetlands

Wetlands, a collective term for marshes, mangroves, swamps, bogs, and similar areas, are generally found at the edges of streams, rivers, lakes, and coastlines, but they also often occupy flat vegetated areas and depressions located elsewhere in the landscape.⁴³⁶ Rivaling rainforests in terms of biodiversity, wetlands are highly productive ecosystems, often having more plants and animals than the aquatic or terrestrial areas adjacent to them.⁴³⁷ An estimated forty percent (40 percent) of species listed as threatened or endangered live in wetlands.⁴³⁸ Seventy-five percent (75 percent) of commercially harvested fish and shellfish spend a portion of their life cycle in wetlands.⁴³⁹ At least half of all North American bird species nest or feed in wetlands.⁴⁴⁰

In addition to serving as crucial ecosystems, wetlands “are the primary pollution control systems of the nation’s waters,” removing “heavy metals at efficiencies ranging from twenty to one hundred percent” and “up to ninety-five percent of nutrients and other conventional pollutants.”⁴⁴¹ Wetlands minimize flood damage, as they store, filter, and slow flows of water,⁴⁴² and coastal wetlands serve as valuable storm buffers absorbing wave action and reducing erosion.⁴⁴³

Wetlands are seriously threatened. Draining and filling wetlands for new development and for agriculture have taken their toll.⁴⁴⁴ According to the Fish and Wildlife Service, “more than 247 million acres of United States’ wetlands have been filled, dredged or channelized — an area greater than the size of California, Nevada and Oregon combined.”⁴⁴⁵ Although the rate of loss has decreased since the 1970s, approximately 60,000 acres of wetlands are lost every year.⁴⁴⁶ “Six states — California, Ohio, Indiana, Illinois, Iowa, and Missouri — have lost 85 percent or more of their original wetlands, while twenty-two other states ranging from New York to Alabama to Idaho have lost 50 percent or more.”⁴⁴⁷ The widespread destruction of wetlands has resulted in increased drought damage and declining bird populations.⁴⁴⁸ Perhaps the most dramatic demonstration of the adverse impact produced by the loss of wetlands occurred in Louisiana in August 2005. Katrina proved much more destructive than it would have been if thousands of acres of coastal wetlands had not been destroyed and, instead, had been able to absorb and slow the hurricane’s devastating storm surge.⁴⁴⁹

Actual wetland losses, however, are only one part of the picture. Wetlands are also being degraded and modified by human activity. Sedimentation, primarily from agriculture and construction sites, flow alterations, and nutrient pollution degrade wetland integrity.⁴⁵⁰ The degradation of the Florida Everglades, “the largest hydrologically controlled system in the world,” is a glaring example, as flow alterations transform what were once huge “rivers of grass” into isolated islands of degraded wetlands trapped between farms and housing developments.⁴⁵¹



At least half of all North American bird species nest or feed in wetlands, like those found in Everglades National Park. (MW STEPHENSON COURTESY PHOTO)

At its heart, the CWA’s enforcement strategy centers on the NPDES permitting system, which “transform[ed] most of the requirements of the Act into specific obligations of the individual discharger.”⁴⁵⁴ The task of compliance as well as enforcement was thus greatly simplified. Proof of harm or any specific violation of water quality standards was no longer needed. Instead, it is illegal to either discharge a pollutant without a permit or in violation of a permit. In addition, permit holders must submit periodic discharge monitoring reports (DMRs) to EPA, which set forth the actual levels of pollutants in the permittee’s discharge.⁴⁵⁵ Thus, determining permit violations is a relatively simple comparison of a discharger’s permit conditions with its DMR.



Most enforcement work is done by regional EPA offices, which have endured staff cuts. (US GEOLOGICAL SERVICE PHOTO)

Section 309 provides for EPA's primary enforcement options: it may issue an administrative compliance order; it may assess administrative penalties; it may refer civil cases to the United States Department of Justice ("DOJ") for penalties and injunctive relief; and it may refer criminal cases to DOJ for prosecution.⁴⁵⁶ States also participate in the CWA's enforcement scheme. States which have been authorized to administer the NPDES program within their borders⁴⁵⁷ have concurrent enforcement power, a purposefully redundant back-up to EPA's enforcement authority.⁴⁵⁸

Although the CWA's enforcement tools are robust, even the strongest tools are rendered ineffective by disuse.⁴⁵⁹ Between 1997 and 2002, for example, the number of CWA cases EPA referred to DOJ fell 55 percent.⁴⁶⁰ The number of people convicted for environmental crimes dropped from 738 in 2001 to 470 in 2006.⁴⁶¹ Direct dischargers nevertheless violate their permits at a high rate. From 2003 to 2005, nearly 20 percent of all major dischargers were in significant noncompliance with their permits.⁴⁶² During 2005, more than 3600 of these major facilities (57 percent of about 7000)⁴⁶³ exceeded their permit discharge limits at least once.⁴⁶⁴ And that is only the tip of the iceberg. There are over 80,000 minor permit holders who receive fewer inspections and less regulatory attention. One would expect, therefore, that their noncompliance rates would be even higher than that prevailing among the larger facilities.⁴⁶⁵

Why aren't we using the CWA's robust enforcement tools more effectively? Funding is one source of the problem.⁴⁶⁶ Most of EPA's enforcement work is done by its regional offices. Yet, from 1997 to 2007, the GAO reports that enforcement funding to EPA regions decreased 8 percent in inflation-adjusted terms, and regional officials report that they reduced the number of enforcement staff by about 5 percent to address funding shortages.⁴⁶⁷ In 2003, the White House targeted more than 200 enforcement jobs for elimination.⁴⁶⁸ State enforcement efforts are also strapped. Over the past ten years, EPA's grants to states to implement federal environmental programs declined by 9 percent in inflation-adjusted terms, even though enforcement and other environmental program responsibilities increased.⁴⁶⁹ Not only do these budget cuts affect the number and quality of enforcement actions taken directly, but they also contribute to "EPA's loss of credibility as a stringent overseer of state enforcement and compliance. Until EPA displays a willingness to step in and fund enforcement in any state that is incapable of doing the enforcement itself, the states will have no hammer to require strict, legal enforcement."⁴⁷⁰

Likewise, EPA enforcement is vulnerable to administrative and political manipulation, "because the level and quality of EPA enforcement activity is not particularly transparent."⁴⁷¹ Environmental enforcement, unlike rulemaking, is not subject to public notice and comment. Agency employees have enormous discretion — "few areas of the law invest more discretion in agency employees or are more hidden from the public's view and

oversight than an agency's enforcement actions."⁴⁷² No alarm sounds when EPA's or a state's enthusiasm for enforcement wanes.⁴⁷³ Indeed, because the goals of the CWA are so popular, opponents "are far more likely to utilize 'indirect, less visible techniques' to undercut the Act."⁴⁷⁴ Due to its obscurity, gutting or cutting back on enforcement is an attractive target.⁴⁷⁵

Although regulatory failure is often due to lack of resources to enforce existing laws and regulations — some proponents of deregulation contend "that the government should adopt new, less-intrusive techniques to address the same problems without even considering closing the funding gap that undermined agency efforts in the first place."⁴⁷⁶ "Voluntary" or "self-regulatory" programs are often proposed as solutions to government failure in place of vigorous enforcement efforts.⁴⁷⁷ The problem with voluntary systems, however, is that sanctions, by definition, have no role to play in ensuring compliance.⁴⁷⁸ A good example of a program in which many states relied upon such a voluntary approach is the § 319 non-point source program — a program that despite years of effort has failed to produce substantial progress. While incentive programs may be useful, enforceable measures are essential to ensure that water quality improves.⁴⁷⁹

Citizen Suits

Citizens also play an integral role in the CWA's enforcement scheme, both in supplementing government enforcement efforts and spurring EPA to act. The CWA, first, empowers private citizens to commence civil actions against any discharger alleged to be discharging without a permit, in violation of a permit, or in violation of an EPA or state administrative order.⁴⁸⁰ These "citizen enforcement actions" require citizens to provide 60 days notice to EPA, the state, and the violator before the complaint may be filed, although action may be brought immediately for violations of new source performance standards or toxic effluent limitations.⁴⁸¹ The CWA specifies that, if federal or state authorities are "diligently prosecuting" a civil, criminal, or administrative penalty action, a citizen suit is barred.⁴⁸² District courts are authorized not only to enjoin the illegal conduct but to assess civil penalties as well, which are payable to the U.S. Treasury as miscellaneous receipts.⁴⁸³

The citizen suit provision also allows a citizen to bring suit against the EPA administrator when there is an alleged failure of the Administrator to perform any nondiscretionary act or duty.⁴⁸⁴ Often called "deadline suits," these cases have often challenged the agency's failure to take specific action by a statutory deadline.⁴⁸⁵ Citizen suits have also played an important role by forcing "the creation of new regulatory programs [and] . . . by assisting in shifts of focus of existing regulatory programs."⁴⁸⁶ For example, the Flannery Decree, which resulted from a consolidation of several citizen suits, required the EPA, among other things, to issue BAT effluent limitations for sixty-five toxic pollutants.⁴⁸⁷

Robust citizen suit activity is an important supplement to federal and state enforcement, but various barriers have constrained this use of citizen suits.⁴⁸⁸ Citizens, for example, cannot sue for wholly past violations, and they must be prepared to show that violations will likely

continue after they file suit.⁴⁸⁹ In other words, a polluter may cause tremendous harm with one illegal discharge, but citizens cannot sue the polluter under the CWA if they cannot show that the discharge might reasonably recur. In addition, meeting this evidentiary burden is much more difficult for citizens' groups to prove than merely proving the existence of past violations.⁴⁹⁰

Federal Facilities

The federal government is a notorious polluter, with the Department of Defense and the Department of Energy creating some of the largest and most polluted sites in the country.⁴⁹¹ While this is so, enforcement against federal facilities for violations of the CWA has been difficult for citizen groups, states, and EPA because of how the Supreme Court has interpreted the CWA's sovereign immunity provision and its definition of "person."

Although the CWA's provisions apply to federal facilities,⁴⁹² in *Department of Energy v. Ohio*, the United States Supreme Court held that federal facilities and agencies are immune from civil penalties for past violations under the CWA because the Act does not unequivocally waive sovereign immunity for civil penalties.⁴⁹³ This decision also applied to the Resource Conservation and Recovery Act (RCRA), which had a similar provision.⁴⁹⁴ In 1992, Congress enacted the Federal Facility Compliance Act (FFCA), amending RCRA to expressly waive federal sovereign immunity for fines or civil or administrative penalties.⁴⁹⁵ In 1996, Congress included the same express waiver in its amendments to the Safe Drinking Water Act.⁴⁹⁶ The CWA, however, has not been likewise amended, although there have been some efforts to do so.⁴⁹⁷ Consequently, because the CWA does not unequivocally waive sovereign immunity for civil penalties, EPA, citizens, and the states are deprived of a powerful tool to stop federal facilities from polluting the nation's waters.⁴⁹⁸

The Supreme Court also held in *Department of Energy v. Ohio* that federal facilities were immune from civil penalties under both the CWA's and RCRA's citizen suit provisions because the United States was not included in their definitions of "person."⁴⁹⁹ Again, when it enacted the FFCA, Congress corrected this problem for RCRA but did not do so for the CWA.⁵⁰⁰ Finally, in addition to reversing *Department of Energy v. Ohio*, the FFCA also strengthened EPA's hand by authorizing EPA to bring administrative enforcement actions against other agencies for RCRA violations.⁵⁰¹ The CWA, unfortunately, does not give EPA the same "credible threat of enforcement leverage" in the water pollution context.⁵⁰²

Blueprint for Reform: Recommit to Enforcement

Enforcing the law translates public policy into action.⁵⁰³ The CWA's design is based on the premise that EPA's ability to enforce violations of the Act ultimately improves water quality.⁵⁰⁴ While the Act contains solid enforcement tools as part of this design, these tools must be used aggressively for the Act to work. In addition, EPA must have the same tools under the CWA that it has under RCRA and the Safe Drinking Water Act to hold federal facilities accountable for their pollution. Finally, EPA enforcement professionals must

perceive that its leadership and the Administration support robust enforcement.⁵⁰⁵ “Ambiguous signals from the top can easily be read by the staff as a kind of coded message expressing reluctance about, perhaps even hostility towards, enforcement.”⁵⁰⁶ By making the following reforms, Congress will send a strong message that enforcement is a top priority.

First, Congress should fund an adequate enforcement staff. Unfortunately, enforcement has declined over the past ten years, primarily because of decreases in funding to EPA.⁵⁰⁷ Funding and institutional support are crucial to the CWA’s enforcement scheme. Unless EPA has the enforcement professionals it needs, it cannot exercise tough and effective law enforcement. “No piece of legislation realizes its full potential without the credible threat of enforcement against those who break the law.”⁵⁰⁸ Adequately funding EPA enforcement will send a message that Congress is serious about both law enforcement and the improvement of water quality.

Second, Congress should set aside more funding for state inspection of stormwater sources and enforcement of stormwater regulations. Thousands of previously unregulated stormwater sources are now regulated and, therefore, must be inspected and held to their permit requirements. Funding for CWA enforcement, however, has remained stagnant. Thus many states have been unable to devote adequate resources to ensuring compliance with the stormwater program. Oregon, for example, has only one inspector overseeing stormwater compliance.⁵⁰⁹ In Maryland, only 20 percent of permitted construction sites were inspected.⁵¹⁰ In Maine, less than 20 percent of the stormwater sources subject to the CWA program applied for permits before 2005 — “[y]et there is no record of enforcement action taken by Maine against the unpermitted sources during that interim period.”⁵¹¹ Similarly, the state Department of Ecology in Washington estimates “that between ten and twenty-five percent of all businesses covered by the federal stormwater permit program are actually permitted.”⁵¹² If we want stormwater regulations to work, states must have adequate resources for inspections and enforcement.

Third, Congress should amend § 505 to allow citizen suits for “wholly past” violations. A significant barrier constraining citizen enforcement is due to the fact that citizens cannot sue for wholly past violations of the CWA. Therefore, they must be prepared to show that violations will likely continue after suit is filed.⁵¹³ The Clean Air Act, in contrast, allows citizens to sue for wholly past violations if evidence exists that the alleged violation has been repeated.⁵¹⁴ Using the Clean Air Act as a model, Congress should amend § 505 to give citizens the ability to hold polluters accountable for a past discharge, if they can produce evidence showing that the violation as recurred.

Fourth, Congress should amend § 309 to require that EPA report annually on its enforcement achievements and those of the states from the prior year. Although EPA typically issues such a report, the variables reported often change, making year-to-year comparisons difficult. In addition, detailed data on state enforcement is often missing.



The Clean Water Act’s design is based on the premise that the EPA’s ability to enforce violations of the Act ultimately improves water quality.
(EPA PHOTO)

Congress, therefore, should specifically require the preparation of a detailed annual report which, among other things, shall itemize the number of enforcement actions undertaken by the agency or referred to the DOJ by statute and by type of action. In addition, the report shall set forth detailed statistics on the number and type of enforcement actions taken by the states, separately as well as collectively, by statutory program.

Fifth, Congress should amend § 313 to expressly waive federal sovereign immunity for civil and administrative penalties so that EPA, the states, and citizens groups can hold federal facilities accountable for polluting our waters. Congress has known for many years that the CWA needs its own FFCA, as no environmentally sound reason exists for the CWA not to be on the same footing as RCRA or the Safe Drinking Water Act with respect to holding federal facilities accountable for their pollution. The Federal Facilities Clean Water Compliance Act, which was introduced in 1993 but never passed, put it well: “[f]ederal violations of the CWA are no less serious than federal RCRA violations. . . .”⁵¹⁵ Congress should therefore expressly waive the federal government’s sovereign immunity under the CWA, so that federal facilities that violate the CWA are held accountable.

Sixth, Congress should amend § 313 to authorize EPA to issue administrative penalties against other federal agencies for CWA violations. When Congress gave EPA the authority to issue administrative enforcement actions against federal facilities violating RCRA, it gave EPA powerful enforcement leverage to bring federal facilities into compliance. EPA should have this same leverage in the water pollution context. Congress should therefore amend § 313 to authorize EPA to issue administrative penalties against federal agencies for CWA violations.

Seventh, Congress should amend § 502 to include the United States in the CWA’s definition of a person. In *Department of Energy v. Ohio*, part of the Supreme Court’s rationale that federal facilities were immune from civil penalties under the CWA’s and RCRA’s citizen suit provisions centered on the fact that the United States was not included in the CWA’s definition of “person.”⁵¹⁶ To remedy this problem, Congress should amend § 502 to include in its definition of “person” each department, agency, and instrumentality of the executive, legislative, and judicial branches of the United States.

Blueprint for Reform: Recommit to Enforcement

- Fund adequate enforcement staff (near-term reform).
- Set aside more funding for state inspection of stormwater sources and enforcement of stormwater regulations (near-term reform).
- Amend § 505 to allow citizen suits for “wholly past” violations (near-term reform).
- Amend § 309 to require that EPA report annually on its enforcement achievements and those of the states from the prior year (near-term reform).
- Amend § 313 to expressly waive federal sovereign immunity for civil and administrative penalties so that EPA, the states, and citizens groups can hold federal facilities accountable for polluting our waters (near-term reform).
- Amend § 313 to authorize EPA to issue administrative penalties against other federal agencies for CWA violations (near-term reform).
- Amend § 502 to include each department, agency, and instrumentality of the United States in the CWA’s definition of a person (near-term reform).

Our Beaches and Oceans

Americans love beaches, the top vacation destination in our country.⁵¹⁷ In 2000, beach and ocean tourism contributed roughly \$29 billion and 1.67 million jobs to our economy.⁵¹⁸ In 2006, however, the Natural Resources and Defense Council (NRDC) reported the highest number of beach closings and advisories in its 17-year history of tracking them — more than 25,000.⁵¹⁹ The number of advisory days caused by stormwater runoff, which washes infectious bacteria, viruses, and parasites into beachwater, doubled to more than 10,000 in 2006.⁵²⁰

The United States has jurisdiction over 3.4 million square nautical miles of ocean territory, which is larger than the combined land area of all fifty states.⁵²¹ The ocean economy contributes more than \$117 billion and two million jobs to our economy.⁵²²

The Gulf of Mexico, the ninth largest body of water in the world, is fed by thirty-three major rivers and receives drainage from 31 U.S. states.⁵²³ The Gulf of Mexico yields approximately forty percent (40 percent) of U.S. commercial fishery landings,⁵²⁴ which are estimated to be worth almost \$2.8 billion annually.⁵²⁵

Many pollutants that plague our freshwaters eventually enter the ocean. For example, nutrient enrichment from land-based sources such as agriculture has created a “dead zone” in the Gulf of Mexico, which extends for hundreds of miles from near the mouth of the Mississippi River, across the length of Louisiana, to Galveston, Texas.⁵²⁶ In the 1990s, the dead zone averaged 4,800 square miles.⁵²⁷ In 2007, the dead zone had grown to be approximately 8,500 square miles, about the size of New Jersey.⁵²⁸



Pollution in the form of stormwater runoff into the Gulf of Mexico threatens a beach after Hurricane Katrina. (NOAA PHOTO)

The CWA's Institutional Framework: Strengthening a Fragmented Approach

Although the goal of the CWA — “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters” — is broad and seemingly all-encompassing, the nation’s strategy for protecting our aquatic resources is badly fragmented. While EPA has primary authority over point source pollution, nonpoint source pollution is primarily left to the states. While the Corps tackles wetlands, the Fish and Wildlife Service is responsible for protecting endangered and threatened aquatic species. While the states regulate the allocation of water from our lakes and streams, our local governments are generally responsible for regulating land use practices which often degrade the quality of our waters. Flood control management, led primarily by the Corps, reflects a policy formulated out of a “hodgepodge of highly discretionary Flood Control Acts, coupled with piecemeal funding of pet projects through Water Resources Development Acts and other earmarks[.]”⁵²⁹ In the meantime, the Coastal Zone Management Act, which provides funds to states that adopt plans for managing development in coastal areas, requires coastal states to plan for the effects of climate change, but only in the most general manner: no long-term planning that takes the possibility of saltwater intrusion of waterways and water supplies, for example, is mandated.⁵³⁰ By creating these artificial boundaries, taking a piecemeal approach to protecting water resources, and focusing on “the effects of individual impairments,”⁵³¹ we have made it difficult to protect the aquatic ecosystem as a whole.⁵³² A more comprehensive, watershed-oriented approach is needed — one which would reflect the way in which our water resources actually work.

FIGURE 3.
Water Resource Regions



The nation's strategy for protecting waters is badly fragmented: the Corps tackles wetlands; Fish and Wildlife is responsible for protecting endangered and threatened aquatic species; states regulate water allocation from lakes and streams; and local governments are responsible for regulating land use which often degrades water quality. As shown in this map of water resources, all of our water delivery needs are interconnected. (USGS MAP)

The tremendous impact climate change is likely to have on our aquatic ecosystems only reinforces the need for a more comprehensive and collaborative approach. Mitigating and adapting to the consequences of climate change will require new ideas, nimble responses, and unprecedented cooperation among federal agencies, states, and local governments. Although states and local governments have been and will continue to make important innovations, as the thirty-five state members of the Coastal States Organization have put it, “a clear federal strategy for intergovernmental coordination” is necessary if we are to address and adapt to climate change.⁵³³ The IPCC couched the task before us in the following way: “[D]eveloping adaptation responses [to climate change] requires a long, interdisciplinary dialogue between researchers and stakeholders, with substantial changes in institutions and infrastructure.”⁵³⁴ The global nature of climate change demands that various governments, institutions, and groups listen to new voices and work together in new ways.⁵³⁵

Strengthening the CWA's institutional framework to accompany these new demands is therefore necessary.

Developing such a comprehensive approach will not be easy. “We have spent decades creating specialized disciplines and separate legal systems to govern land use, water use, and water pollution, and it will take considerable effort to demonstrate to voters, economic interests, and decisionmakers at all levels of government precisely how land use and water are inextricably connected throughout the whole of a watershed.”⁵³⁶ Nevertheless, action is required. “It is, after all, fundamental that activities that occur in one place in a watershed will have an inevitable impact on water quality and quantity elsewhere in that watershed.”⁵³⁷

Blueprint for Reform: Create Watershed-level Institutions

The creation of watershed institutions is the most promising way to address the artificial boundary problem and promote the kind of broad action and cooperation needed to abate the degradation of the nation's aquatic resources, particularly in light of the challenges to come due to climate change.⁵³⁸ Professor Robert Adler persuasively contends that three factors underlie the need for an institutional structure that reflects the interwoven complexity of our watersheds:

1. the basic nature of aquatic ecosystems, including the interaction between land and water resources, the links between water quantity and quality, the connections between groundwater and surface water, and the heterogeneity (variability) of aquatic ecosystems;

2. the ongoing decline of aquatic species and ecosystems despite the implementation of point source pollution control programs and other “engineered” solutions; and
3. the nature of the principal remaining sources of impairment, including habitat alteration and loss, polluted runoff (nonpoint source pollution), and declining instream flows, none of which are addressed well by existing source-specific programs.⁵³⁹

Watershed management is supported by economic and sociological reasons as well. Point-sources have shouldered the lion’s share of the burden under the CWA, while nonpoint sources of water pollution have generally borne minor costs by comparison.⁵⁴⁰ Municipal wastewater treatment authorities are particularly supportive of watershed management proposals designed to correct this imbalance.⁵⁴¹ Finally, and perhaps most profoundly, watershed management may be the best way to encourage local citizens to take action, change their behavior, and make sacrifices, because they would be doing so to protect a concrete place — a water they know and care about — instead of an abstract environmental good.⁵⁴² Indeed, myriad local and regional organizations of committed activists already exist, monitoring and advocating for the streams, rivers, and bays dear to them. A watershed approach would reflect and complement this important citizen network.

While the idea of watershed management is not new, the creation of truly effective watershed management programs has proven difficult. Some of the primary obstacles to establishing a successful watershed program involve questions related to scale, boundary, structure, mission, and consistency.⁵⁴³

Scale. Large-scale watershed programs will necessarily cross political boundaries, requiring coordination and cooperation among governmental and nongovernmental institutions.⁵⁴⁴ Logistical and technical challenges will abound, and identifying and accommodating regional needs will be difficult.⁵⁴⁵ Yet addressing these problems is precisely why a large-scale watershed approach is necessary, as it is these very problems that continue to threaten water quality.⁵⁴⁶ While regional coordination is essential, it cannot, however, completely replace small watershed programs that provide essential, on-the-ground planning and coordination and must compliment them.⁵⁴⁷ The Northwest Power Planning Council’s approach of nesting small-scale, sub-basin planning within a large-scale regional planning and coordinating process is an example of an approach that balances the scale between small-scale, local planning and large-scale policy goals.⁵⁴⁸ Legislation that creates large-scale watershed management institutions should therefore “refer to the larger policy goals of sustainable management and the conservation of biodiversity, the use of such tools as ecosystem and adaptive management, and the application of ‘local, collaborative processes that tailor the larger concepts to specific places.’”⁵⁴⁹

Boundary. Typically, geopolitical boundaries, instead of natural boundaries, have determined how water programs are organized.⁵⁵⁰ A watershed approach, in contrast, would draw lines based on natural instead of artificial boundaries. How natural boundaries should be defined

brings its own set of controversies, namely between advocates of hydrological boundaries and ecological boundaries.⁵⁵¹ A possible approach to resolve potential conflict is “to use hydrological watersheds to organize land use and pollution controls, but to set and measure attainment with goals on an ecoregion basis.”⁵⁵²

Structure. Institutional structures must be designed to facilitate the coordinated management of land use, water use, and water quality. Such institutions need not be organizations with actual management authority — although that might be the ideal — since a new institutional arrangement for regional planning and coordination would still constitute a significant improvement over the status quo ante. These institutions would bring together all of the relevant federal and state agencies, as well as tribal organizations, pre-existing regional organizations, local planning authorities, and concerned citizens, to develop a more comprehensive approach to protecting the environmental and hydrological integrity of particular watersheds.

Mission. Historically, watershed “planning and management” has meant programs designed to exploit water resources instead of restoring and protecting them.⁵⁵³ A clear watershed restoration mission would protect the entire aquatic ecosystem and the human and ecological communities that rely on it.⁵⁵⁴ The program would include all aspects of the hydrological cycle, all links between land and water, and all chemical, physical, and biological factors related to aquatic ecosystem health, including climate change.⁵⁵⁵ It would require that all activities affecting the ecological integrity of the watershed be addressed.⁵⁵⁶

Consistency. Fostering creative solutions to address specific, local concerns requires some flexibility, but equity and accountability demand that overall performance goals and requirements should be developed on a national scale.⁵⁵⁷

In short, our fragmented approach to water quality can only take us so far. A new approach, one which focuses upon comprehensive watershed management, would be a significant step forward, a step which would help our laws and institutions better reflect natural realities instead of artificial ones.⁵⁵⁸

First, Congress should appoint and fund a commission to conduct a comprehensive study of existing watershed management institutional structures, both in the United States and around the world. The commission should also conduct a review of the problems of fragmentation which have plagued our attempts to comprehensively manage and protect the ecological resources of our watersheds.⁵⁵⁹ Drafts of both the study and the review should be made available for public comment. Once the study and review have been completed, the commission should make recommendations regarding the way in which § 303 should be amended in order to create watershed-level institutions that would better coordinate and manage the activities that impact the health and well-being of our nation’s waters. Those recommendations should also be made available for public comment in draft form.

Second, Congress should amend § 303 to create watershed-level institutions that would better coordinate and manage the wide range of activities that adversely affect the

biological, physical, and chemical integrity of our waters. While we have done a fair job of tackling individual sources of water pollution, we have not succeeded in protecting the aquatic system as a whole. Just as Aldo Leopold wrote that is necessary to “think like a mountain” to understand a landscape, “we must now pause to ‘think like a river.’”⁵⁶⁰ A comprehensive, watershed-oriented approach would reflect the way in which our water resources actually work; would promote the broad action and cooperation needed to protect our waters; and would help to prepare for and adapt to the challenges which climate change will bring about.

Conclusion

The Clean Water Act is an extraordinary and valuable piece of legislation. It has served us well, but it is showing its age. Neither its design nor its implementation was or has been perfect. If we are to reach its objective of “restor[ing] and maintain[ing] the chemical, physical, and biological integrity of the Nation’s waters,” and if we are to deal with the problems caused by climate change, reforms are needed. Point-source controls must be strengthened. New technological innovations must form the basis of 21st century environmental protection. Nonpoint source pollution must be addressed. To protect wetlands, Congress must make it clear that the Act extends to intermittent and isolated waters. Increased funding for wastewater infrastructure and EPA enforcement is crucial.

Americans care about clean water. More than half of Americans believe that clean water is a right. Ninety-one percent (91 percent) are “concerned that America’s waterways will not be clean for their children and for their grandchildren.”⁵⁶¹ Thousands of citizens participate in state and local water protection groups. Millions of people vacation at beaches and lakes. An affirmative agenda for clean water in this country must build upon the CWA’s success and make the needed reforms to bring the Act into the 21st century. By doing so, Congress will send a clear message that it is committed to our nation’s public health, natural beauty, and one of our most precious and valued resources: clean water.

Blueprint for Reform: Strengthen the CWA’s Institutional Framework

- Appoint and fund a commission to conduct a comprehensive study of existing watershed management institutional structures, both in the United States and around the world (near-term reform).
- Amend § 303 to create watershed-level institutions that would better coordinate and manage the wide range of activities that adversely affect the biological, physical, and chemical integrity of our waters (mid-term reform).

APPENDIX A.**The CWA 'To Do' List****Near-term reforms**

- Amend § 303 to ensure that impaired waters are identified in comprehensive fashion.
- Amend § 303 to directly address waters that are impaired, in whole or in part, due to various hydrologic modifications.
- Amend § 303 to directly address waters that are impaired, in whole or in part, due to climate change.
- Amend § 303 to set reasonable deadlines for the establishment of TMDLs.
- Amend § 303 to ensure that TMDLs are translated into stricter permit limits and mandatory nonpoint source controls by a reasonable deadline.
- Amend § 308(b) to make it clear that Notices of Intent and permittee-developed plans such as Storm Water Pollution Prevention Plans and Nutrient Management Plans submitted under general permits are subject to the CWA's public availability provisions.
- Authorize EPA to create a meaningful monitoring program for stormwater and animal waste discharges under general permits that is conducted by a governmental agency, whether it be local, state, or federal.
- Amend § 309 to require that EPA report annually on its enforcement achievements and those of the states from the prior year.
- Amend § 313 to expressly waive federal sovereign immunity for civil and administrative penalties.
- Amend § 313 to authorize EPA to assess administrative penalties against other federal agencies for CWA violations.
- Amend § 319 to require states to update their lists every two years of new waters impaired by nonpoint source pollution.
- Amend § 319 to require states to review and submit, every two years, revised management plans subject to EPA review.
- Amend § 319 to require that management plans include enforceable conditions and requirements.
- Amend § 319 to give EPA the authority to promulgate all or a portion of a state's nonpoint source management plan in the event EPA disapproves or the state's plan, in whole or in part, and the state fails to remedy the problem.
- Amend § 319 to require states to factor in climate change in their management plans.
- Require public notification when sewage spills occur.
- Delete the term "navigable" from the CWA.
- Amend § 402(q) to require communities with combined sewer systems to incorporate green infrastructure into their Long Term Control Plans.
- Amend § 404 to clarify that the CWA regulates activities that drain wetlands.
- Amend § 404 to set forth explicit criteria and guidance to assess whether mitigation plans adequately compensate for wetlands loss.
- Amend § 404 to provide that the discharge of dredged material includes any addition, including any redeposit, of dredged material, into waters of the United States which is incidental to any activity, including mechanized landclearing, ditching, channelization, or other excavation.

- Amend § 404 to require the Corps to factor in climate change when designing or permitting water projects such as dams and levees and other projects involving wetlands.
- Require EPA to issue guidance that contains model stormwater ordinances for cities and other communities.
- Appoint and fund a taskforce to study pharmaceutical contamination of wastewater.
- Amend § 502 to include each department, agency, and instrumentality of the United States in the CWA's definition of a person.
- Amend § 505 to allow citizen suits for "wholly past" violations.
- Appoint a commission to conduct a comprehensive study of existing watershed management institutional structures, both in the United States and from around the world.

Near-term reforms*Funding*

- Fund EPA adequately to permit it to thoroughly review existing BAT limitations and permit revisions when necessary.
- Fund studies to assess in comprehensive fashion the long-term impact of point source regulation across the nation.
- Fund state agencies adequately to expand the scope and accuracy of water quality monitoring efforts.
- Provide direct federal grants to municipal treatment facilities for construction and upgrades and/or expand funding for the SRF.
- Provide additional staffing resources for the Corps to fully analyze § 404 permit applications and to monitor and enforce its § 404 permits, and for EPA and the Fish and Wildlife Service to exercise their § 404 oversight responsibilities.
- Fund enforcement staff.
- Set aside more funding for state inspection of stormwater sources and enforcement of stormwater regulations.
- Fund a commission to conduct a comprehensive study of existing watershed management institutional structures, both in the United States and from around the world.

Mid-term reforms

- Amend § 301(b) to require BAT for conventional pollutants.
- Amend § 304(b) to make the factors that apply to the adoption of BAT for toxics and nonconventional pollutants should also apply to conventional pollutants.
- Amend § 301(b) to make clear that EPA has a mandatory duty to revise BAT limitations whenever technological improvements meet the factors set forth in § 304(b).
- Amend Title II to require that any loans for sewage treatment plant construction and upgrades must comply with NEPA to ensure that funds will not have undesirable and unavoidable environmental impacts.
- Amend § 303 to create watershed-level institutions that would better coordinate and manage the wide range of activities that adversely affect the biological, physical, and chemical integrity of our waters.

Key Provisions and Proposed Reforms

Section of Act	Statutory Reference	Description	Proposed Reform	Reform Result
<i>End-of-pipe Controls Plus Water Quality Standards</i>				
402	33 U.S.C. § 1342	NPDES Permit Program. In order to discharge a pollutant into our waters, every point source discharger must obtain a permit and comply with its terms. Permits incorporate effluent limitations unless more stringent permit limitations are necessary to meet water quality standards.		
		Long Term Control Plans. Combined sewer systems must implement certain controls and develop a Long Term Control Plan (LTCP) to meet state water quality standards as part of their NPDES permits.	Section 402(q) should be amended to require communities with combined sewer systems to incorporate green infrastructure into their Long Term Control Plans.	Prevent pollution caused by sewage overflows and save money on storm-water management costs.
301	33 U.S.C. § 1311	Effluent Limitations. Effluent limitations are industry-wide regulations established by EPA that set performance limits for pollution discharge. Existing industrial discharges must meet the following: Best Conventional Pollutant Control Technology (BCT) and Best Available Technology (BAT). POTWs must implement “secondary treatment.”	Section 301(b) should be amended to require BAT for conventional pollutants. Section 301(d) should be amended to make clear that EPA has a mandatory duty to revise BAT limitations whenever technological improvements meet guideline factors set forth in § 304(b).	Force technological innovation and reduce the level of conventional pollutants in the nation’s waters. Require polluters to keep pace with technological improvements.
304	33 U.S.C. § 1314	Effluent Guidelines. Effluent limitations are established by reference to the effluent guidelines which are promulgated under § 304. Section 304 references factors that EPA is to consider in setting effluent limitations.	Section 304(b) should be amended to hold conventional pollutants to the same effluent guidelines as apply to toxic and nonconventional pollutants (BAT).	Force technological innovation and reduce the level of conventional pollutants in the nation’s waters.
303	33 U.S.C. § 1313	Water Quality Standards & TMDLs. Every three years, states must review water quality standards subject to EPA approval. States must also identify which waters will remain polluted after technology-based standards are implemented, prioritize these waters, and establish “total maximum daily loads” (TMDLs) so that the waters meet applicable water quality standards.	Section 303(d) should be amended to ensure impaired waters are identified in comprehensive fashion. Section 303(d) should clarify that a waterbody is impaired not just when particular chemical criteria are violated, but whenever it cannot meet a designated use. Section 303(c) should be amended to include biological criteria and minimum flows so that wildlife and aquatic ecosystems are protected. Section 303 should be amended to directly address waters that are impaired, in whole or in part, due to climate change. Section 303 should be amended to set reasonable deadlines for the establishment of TMDLs.	Protect wildlife and aquatic ecosystems, not just water chemistry. Make it clear that TMDLs must address waters whose biological or physical integrity is impaired by hydrological modifications. Respond to climate change. Insert accountability into the TMDL program

Key Provisions and Proposed Reforms (continued)

Section of Act	Statutory Reference	Description	Proposed Reform	Reform Result
303	33 U.S.C. § 1313	(continued)	Section 303 should be amended ensure that TMDLs are translated into stricter permit limits and mandatory nonpoint source controls by a reasonable deadline.	Ensure that pollution reduction targets outlined in TMDLs are actually achieved.
308	33 U.S.C. § 1318	Public participation. Copies of NPDES permit applications and copies of issued permits must be made available to the public. The federal circuits are split as to whether Notices of Intent and Stormwater Pollution Prevention Plans and Nutrient Management Plans submitted under general permits are subject to these public availability provisions. NPDES permit holders are required to monitor discharges regularly.	Section 308(b) should be amended to make it clear that Notices of Intent and Stormwater Pollution Prevention Plans and Nutrient Management Plans submitted to public availability provisions. Because of the unique difficulties inherent in stormwater and animal waste monitoring, EPA should be authorized to create a meaningful monitoring program for stormwater and CAFO discharges under general permits that is conducted by a governmental agency, whether it be local, state, or federal.	Ensure the ability of the public to monitor permit issuance and scrutinize agency enforcement. Address information constraints.
\$\$\$			EPA's authorization and appropriation bills should contain adequate funds to permit it to thoroughly review existing BAT limitations and and permit revisions when necessary. State agencies should be funded adequately to expand the scope and accuracy of water quality monitoring efforts.	Force technological innovation and require polluters to keep pace with technological improvements. Proper development of TMDLs; better understanding of how climate change is altering water quality.

Nonpoint Source Pollution

319	33 U.S.C. § 1329	Nonpoint Source Management Programs. This provision requires states to identify waters impaired by nonpoint source pollution, to identify sources of that impairment, and to develop Best Management Plans (BMPs) for addressing the problems. States having BMPs approved by EPA are eligible for federal assistance.	Section 319 should be amended to require that states submit updated lists of waters impaired by nonpoint source pollution every two years. Section 319 should be amended to require that states review and submit, when necessary, revised management plans, subject to EPA review, every two years. Section 319 should be amended to require that management plans include enforceable conditions and requirements. Section 319 should be amended to give EPA the authority to promulgate all or a portion of a state's nonpoint source management plan in the event EPA disapproves of the state's plan, in whole or in part, and the state fails to remedy the problem.	Better and up-to-date data. Better and up-to-date BMPs. Insert accountability into BMPs. Insert accountability into BMPs.
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Key Provisions and Proposed Reforms (continued)

Section of Act	Statutory Reference	Description	Proposed Reform	Reform Result
319	33 U.S.C. § 1329	(continued)	Section 319 should be amended to require states to factor climate change into their management plans.	Respond to climate change.

Sewage Treatment Infrastructure

201-219 601-607	33 U.S.C. §§ 1281-1301, 1383-87	Grants and loans for waste treatment plants and runoff control. Provisions by which Congress has funded the construction and upgrades of thousands of sewage treatment plants.	<p>Congress should provide direct federal grants to municipal treatment facilities (including collection systems) for construction and upgrades and/or expand funding for SRF.</p> <p>Title II should be amended to require that any loans for sewage treatment plant construction and upgrades must comply with the National Environmental Policy Act (“NEPA”).</p> <p>Require public notification when sewage spills (overflows such as bypasses and upsets) occur.</p> <p>Require EPA to issue guidance that contains model stormwater ordinances for cities and other communities.</p>	<p>Improve wastewater infrastructure and stop the billions of gallons of sewage that overflow into waters each year.</p> <p>Ensure that, like grants, loans for sewage treatment plant construction and upgrades will not have undesirable and avoidable environmental impacts.</p> <p>Allow citizens to protect themselves by avoiding contact with untreated sewage.</p> <p>Promote effective stormwater laws and ordinances.</p>
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Regulating Wetlands

404	33 U.S.C. § 1344	Permits for dredged and fill material. The primary federal provision regulating wetlands. Those who wish to discharge dredged or fill material into the waters of the United States must obtain a permit from the U.S. Army Corps of Engineers.	<p>The term “navigable” should be deleted from the CWA to make clear that jurisdiction extends to all waters of the United States, including isolated waters and wetlands, as well as headwater intermittent waters.</p> <p>Section 404 should be amended to clarify that Congress intends that the CWA not only regulates discharges into wetlands but also regulates activities that drain them.</p> <p>Section 404 should be amended to set forth explicit criteria and guidance to assess whether mitigation plans adequately compensate for wetlands loss.</p> <p>Section 404 should be amended to provide that the discharge of dredged material includes any addition, including any redeposit, of dredged material, into waters of the United States which is incidental to any activity, including mechanized land-clearing, ditching, channelization, or other excavation.</p>	<p>Make it clear that Congress intended the CWA to protect all waters of the United States from pollution.</p> <p>Protect wetlands from draining.</p> <p>Insert accountability into wetlands mitigation policy.</p> <p>Close a regulatory gap that resulted from a court decision that has resulted in the loss of thousands of acres of wetlands to drainage and excavation every year.</p>
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Key Provisions and Proposed Reforms (continued)

Section of Act	Statutory Reference	Description	Proposed Reform	Reform Result
404	33 U.S.C. § 1344	(continued)	Section 404 should be amended to require the Corps to factor in climate change when designing or permitting water projects such as dams and levees and other projects involving wetlands.	Respond to climate change.
§§§			Provide additional staffing resources for the Corps to analyze § 404 permit applications and to monitor and enforce § 404 permits, and for EPA and the Fish and Wildlife Service to exercise their § 404 oversight responsibilities.	Insert accountability into permit oversight.
			Fund a taskforce to study and recommend how pharmaceutical contamination in wastewater should be addressed.	Understand and respond to pharmaceutical contamination.
<i>Enforcement</i>				
505	33 U.S.C. § 1365	Citizen Suits. The CWA empowers citizens to commence civil actions against any dischargers alleged to be discharging without a permit, in violation of a permit, or in violation of an EPA or state administrative order.	Section 505 should be amended to allow citizen suits for “wholly past” violations.	Hold polluters accountable for past discharges.
309	33 U.S.C. § 1319	Enforcement. Section 309 provides for EPA’s primary enforcement options: it may issue an administrative compliance order; it may assess administrative penalties; it may refer civil cases to the United States Department of Justice for penalties and injunctive relief; and it may refer criminal cases to DOJ for prosecution.	Section 309 should be amended to require EPA report annually and comprehensively on its enforcement achievements and those of the states from the prior year.	Spotlight EPA enforcement efforts.
313	33 U.S.C. § 1323	Federal Facilities Pollution Control. Although federal facilities are subject to the CWA, the Supreme Court has held that the CWA’s sovereign immunity waiver provision applies only to fines designed to induce future compliance instead of penalties for past violations. This deprives states of a powerful tool to hold federal facilities accountable for water pollution. In addition, EPA is not authorized to issue administrative penalties against other agencies for CWA violations.	Modeled on the Federal Facility Compliance Act that amended RCRA, § 313 should be amended to expressly waive federal sovereign immunity for civil and administrative penalties and to authorize EPA to issue administrative orders and penalties against other agencies for CWA violations.	Hold federal facilities accountable for past discharges.
502	33 U.S.C. § 1362	Definitions. The CWA currently defines “person” as an “individual, corporation, partnership, association, State, municipality, commission, or political subdivision of a State, or any interstate body.”	Section 502 should be amended to include each department, agency, and instrumentality of the United States in the CWA’s definition of a person so that federal facilities are subject to civil penalties under the CWA’s citizen suit provisions.	Hold federal facilities accountable for past discharges.
§§§			Fund adequate enforcement staff.	Make the CWA work.
			Set aside more funding for state inspection of stormwater sources and enforcement of stormwater regulations.	Hold sources of stormwater pollution accountable.

Key Provisions and Proposed Reforms (continued)

Section of Act	Statutory Reference	Description	Proposed Reform	Reform Result
<i>Strengthen the CWA's Institutional Framework</i>				
303	33 U.S.C. 1313	Water Quality Standards & TMDLs.	<p>Congress should appoint and fund a commission to conduct a comprehensive study of existing watershed management institutional structures, both in the United States and around the world.</p> <p>Section 303 should be amended to create watershed-level institutions that would better coordinate and manage the wide range of activities that adversely affect the biological, physical, and chemical integrity of our waters.</p>	<p>Plan for better coordination and management of activities that affect water quality.</p> <p>A comprehensive, watershed-oriented approach to water quality that reflects the aquatic system as a whole.</p>

End Notes

- 1 William L. Andreen, *Developing a More Holistic Approach to Water Management in the United States*, 36 *Envtl. L. Rep.* 10277, 10277 (2006) [hereinafter “*Developing a More Holistic Approach*”].
- 2 William L. Andreen, *Water Quality Today – Has the Clean Water Act Been a Success?*, 55 *Ala. L. Rev.* 537, 552 (2004) [hereinafter “*Water Quality Today*”].
- 3 *Id.*
- 4 *Id.*
- 5 *Id.*
- 6 *Id.* at 554.
- 7 *Id.* at 542.
- 8 *Id.* at 538; Oliver A. Houck, *The Clean Water Act TMDL Program: Law, Policy, and Implementation 3-4* (2nd ed. 2002) [“*The CWA TMDL Program*”].
- 9 Andreen, *Water Quality Today*, *supra* note 2 at 538.
- 10 Environmental Protection Agency, *Non-point Source Pollution*, available at www.epa.gov/owow/nps/qa.html (last visited Sept. 28, 2007).
- 11 Robert W. Adler, *Restoring the Environment and Restoring Democracy: Lessons from the Colorado River*, 25 *Va. Env'tl. L. J.* 55, 61 (2007).
- 12 Andreen, *Water Quality Today*, *supra* note 2 at 543.
- 13 Clifford Rechtschaffen, *Enforcing the Clean Water Act in the Twenty-First Century: Harnessing the Power of the Public Spotlight*, 55 *Ala. L. Rev.* 775, 783 (2004) [hereinafter “*Enforcing the CWA in the Twenty-First Century*”].
- 14 Christopher B. Field, et al., *North America, Climate Change 2007: Impacts, Adaptation, and Vulnerability*, Intergovernmental Panel on Climate Change 617-652 (2007), available at <http://www.ipcc.ch/ipccreports/ar4-wg2.htm> (last visited Jan. 19, 2008) [hereinafter “*IPCC Climate Change 2007*”].
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- 17 *Id.*
- 18 *Id.*
- 19 33 U.S.C. § 1251(a).
- 20 Houck, *The Clean Water Act TMDL Program*, *supra* note 8 at 11.
- 21 Andreen, *Water Quality Today*, *supra* note 2 at 557. See also Will Hewes & Katherine Baer, *American Rivers, “American Rivers: What’s In Your Waters,”* 7 (2007)(citing EPA, *Report to Congress: Impacts and Control of CSOs and SSOs*, Office of Water EPA 833-R-04-001 (2004) at 10, available at www.americanrivers.org/site/DocServer/arswg.all.8_16_07_opt.pdf?docID=6521 (last visited Oct. 3, 2007) [hereinafter “*What’s In Your Waters*”] (listing acute and chronic effects from waterborne pathogens).
- 22 33 U.S.C. § 1363(a)(14).
- 23 Andreen, *Water Quality Today*, *supra* note 2 at 585.
- 24 *Id.*; see also Sandra Zellmer, *A Tale of Two Imperiled Rivers: Reflections from a Post-Katrina World*, 59 *Fla. L. Rev.* 599, 604 (2007) [hereinafter “*A Tale of Two Imperiled Rivers*”].
- 25 Environmental Protection Agency, *National Management Measures to Control Nonpoint Source Pollution from Agriculture*, 1-1, EPA 841-B-03-004 (2003) available at www.epa.gov/owow/nps/agmm/chap1.pdf (last visited Oct. 3, 2007); see also Robert V. Percival, et al., *Environmental Regulation: Law, Science, and Policy*, 3rd ed., 628 (2003) [hereinafter “*Environmental Regulation*”] and Andreen, *Water Quality Today*, *supra* note 2 at 564.
- 26 Karla A. Raettig, Environmental Integrity Project, *Improvements Needed in Permitting CAFOs Under the Clean Water Act*, 3 (Sept. 28, 2007), available at <http://www.environmentalintegrity.org/pub467.cfm> (last visited Mar. 18, 2008) [hereinafter “*Improvements Needed*”].
- 27 *Id.*
- 28 Andreen, *Water Quality Today*, *supra* note 2 at 563.
- 29 Houck, *The CWA TMDL Program*, *supra* note 8 at 4.
- 30 *Id.*
- 31 Rechtschaffen, *Enforcing the CWA in the Twenty-First Century*, *supra* note 13 at 782.
- 32 Percival, *Environmental Regulation*, *supra* note 25 at 628.
- 33 Andreen, *Water Quality Today*, *supra* note 2 at 558.
- 34 *Id.* at 555.
- 35 *Id.* at 556.
- 36 *Id.* at 557.
- 37 *Id.* at 558.
- 38 *Id.* at 558-59.
- 39 *Id.* at 561.
- 40 *Id.* at 559.
- 41 *Id.* at 560-61.
- 42 *Id.*
- 43 *Id.*; see also Zellmer, *A Tale of Two Imperiled Rivers*, *supra* note 24 at 604.
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- 45 Holly Doremus, *Crossing Boundaries: Commentary on “The Law at the Water’s Edge,”* in *Wet Growth: Should Water Law Control Land Use?* 271 (Craig Anthony (Tony) Arnold ed., *Envtl. L.Inst.* 2005) [hereinafter “*Crossing Boundaries*”]. See also Robert W. Adler, *Addressing Barriers to Ecosystem Protection*, 25 *Envtl. L.* 973, 981 (1995)(discussing how the CWA’s current approach does not adequately protect the “basic nature of aquatic ecosystems, including the interaction between land and water resources . . .”) [hereinafter “*Addressing Barriers*”].
- 46 Andreen, *Developing a Holistic Approach*, *supra* note 1 at 10279.
- 47 *Id.*
- 48 *Id.*; Adler, *Addressing Barriers*, *supra* note 45 at 990 (detailing the political fragmentation of water programs).
- 49 Andreen, *Developing a Holistic Approach*, *supra* note 1 at 10279 (citing William W. Buzbee, *Recognizing the Regulatory Commons: A Theory of Regulatory Gaps*, 89 *Iowa L. Rev.* 1, 22-23 (2003) (referring to the problem where no single regulator has primacy over an activity or its effects as one of “jurisdictional mismatch”); Doremus, *Crossing Boundaries*, *supra* note 45 at 300-01.
- 50 Field, *IPCC Climate Change 2007*, *supra* note 14 at 620.
- 51 *Id.* at 627.
- 52 *Id.*
- 53 *Id.*
- 54 *Id.* at 624.
- 55 *Id.*
- 56 *Id.* at 630.
- 57 *Id.* at 619.
- 58 *Id.* at 625.
- 59 *Id.* at 629.
- 60 Thomas J. Wilbanks et al., *Effects of Climate Change on Energy Production and Use in the United States*, Synthesis and Assessment Product 4.5, U.S. Climate Change Science Program & the Subcommittee on Global Change Research, 45 (2007), available at <http://www.climatechange.gov/Library/sap/sap4-5/final-report/sap4-5-final-all.pdf> (last visited Jan. 22, 2008).
- 61 *Id.* at 53.
- 62 Robert Adler, et al., *The Clean Water Act 20 Years Later*, 5 (1993) [hereinafter “*The CWA 20 Years Later*”].
- 63 William L. Andreen, *Delegated Federalism versus Devolution: Some Insights from the History of Water Pollution Control in, Preemption Choice: The Theory, Law, and Reality of Federalism Core Questions* 13 (William W. Buzbee, ed., Cambridge University Press) (forthcoming 2008) [hereinafter “*Delegated Federalism*”].
- 64 *Id.*

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- 65 See William L. Andreen, *The Evolution of Water Pollution Control in the United States – State, Local, and Federal Efforts, 1789-1972: Part II*, 22 Stan. Envtl. L.J. 215, 240-55 (2003).
- 66 *Id.* at 286.
- 67 33 U.S.C. 1251(a).
- 68 *The Clean Water Act Following the Recent Supreme Court Decisions in Solid Waste Agency of Northern Cook County and Rapanos-Carabell: Hearing before the Senate Committee on Environment and Public Works*, 110th Cong. at 5 (2007) (testimony of William W. Buzbee, Professor of Law, Emory University) [hereinafter “SWANCC and Rapanos Testimony”].
- 69 *Id.* (quoting Russell Train, Letter dated July 17, 2007 to Representative James Oberstar).
- 70 See *infra* notes 377-399 and accompanying text for a discussion of these cases. See also Buzbee, *SWANCC and Rapanos Testimony*, *supra* note 68 at 4-10.
- 71 William L. Andreen, *Motivating Enforcement: Institutional Culture and the Clean Water Act*, 24 Pace Envtl. L. Rev. 67, 78 n.70-2 (2007) [hereinafter “Motivating Enforcement”]. The CWA states that the “term ‘navigable waters’ means the waters of the United States, including the territorial seas.” 33 U.S.C. § 1362(7). “The term ‘discharge of a pollutant’ and the term ‘discharge of pollutants’ each means (A) any addition of any pollutant to navigable waters from any point source, (B) any addition of any pollutant to the waters of the contiguous zone or the ocean from any point source other than a vessel or other floating craft.” *Id.* § 1362(12).
- 72 Buzbee, *SWANCC and Rapanos Testimony*, *supra* note 68 at 3.
- 73 *Id.*
- 74 See *infra* note 425 and accompanying text for a discussion of The Clean Water Authority Restoration Act.
- 75 Natural Resources Defense Council, *The Clean Water Authority Restoration Act Fact Sheet*, available at www.nrdc.org/legislation/factsheets/leg_07070201C.pdf (last visited Oct. 20, 2007).
- 76 33 U.S.C. § 1311(a).
- 77 Christopher H. Schroeder & Rena Steinzor, Eds., *A New Progressive Agenda for Public Health and the Environment*, 67 (2005) [hereinafter “A New Progressive Agenda”].
- 78 Andreen, *Motivating Enforcement*, *supra* note 71 at 67.
- 79 33 U.S.C. § 1319; 33 U.S.C. § 1365.
- 80 Andreen, *Motivating Enforcement*, *supra* note 71 at 67.
- 81 Wendy E. Wagner, *The Triumph of Technology-Based Standards*, 2000 U. Ill. L. Rev. 83, 88 (2000) [hereinafter “The Triumph”].
- 82 *Id.*
- 83 Karen M. McGaffey, *Water Pollution Control Under the National Pollutant Discharge Elimination System*, The Clean Water Act Handbook, 2nd ed., Mark Ryan, ed., 23 (2003) [hereinafter “Water Pollution Control”].
- 84 *Id.*
- 85 33 U.S.C. § 1342.
- 86 Andreen, *Water Quality Today*, *supra* note 2 at 568.
- 87 *Id.* at 549. EPA’s authority to delegate the NPDES program to the states is found at 33 U.S.C. § 1342(b). For a list of the states that administer NPDES permits, see Environmental Protection Agency, *National Pollutant Discharge Elimination System: EPA State Program Status*, available at <http://cfpub.epa.gov/npdes/statestats.cfm> (last visited Mar. 17, 2008).
- 88 Andreen, *Water Quality Today*, *supra* note 2 at 549.
- 89 33 U.S.C. § 1316(a)(1).
- 90 McGaffey, *Water Pollution Control*, *supra* note 83 at 22.
- 91 33 U.S.C. § 1314(a)(4).
- 92 33 U.S.C. § 1314(b)(1)(A). For a critique of this standard, see David M. Driesen, *Distributing the Costs of Environmental, Health, and Safety Protection: The Feasibility Principle, Cost-Benefit Analysis, and Regulatory Reform*, 32 B.C. Envtl. Aff. L. Rev. 1, 23-24 (2005).
- 93 Thomas O. McGarity, *The Goals of Environmental Legislation*, 31 B.C. Envtl. Aff. L. Rev. 529, 540-41 (2004) [hereinafter “The Goals”]; Schroeder & Steinzor, *A New Progressive Agenda*, *supra* note 77 at 58; McGaffey, *Water Pollution Control*, *supra* note 83 at 20; see also Joel Gross & Lynn Dodge, *Clean Water Act 39* (2005) [hereinafter “Clean Water Act”] (explaining BPT is “the average of the best existing performance by well-operated plants within each industry category or subcategory.”).
- 94 33 U.S.C. § 1314(b)(1)(B).
- 95 33 U.S.C. § 1314(b)(4)(A).
- 96 McGaffey, *Water Pollution Control*, *supra* note 83 at 21.
- 97 *Id.*
- 98 33 U.S.C. § 1317(a)(1); 40 C.F.R. § 401.15; 40 C.F.R. 423, App. A.
- 99 33 U.S.C. § 1311(g).
- 100 33 U.S.C. §§ 1311(2)(A), 1314(b)(2)(A).
- 101 Garity, *The Goals*, *supra* note 93 at 540-41; Schroeder & Steinzor, *A New Progressive Agenda*, *supra* note 77 at 58; McGaffey, *Water Pollution Control*, *supra* note 83 at 22.
- 102 McGaffey, *Water Pollution Control*, *supra* note 83 at 22; 33 U.S.C. § 1314(b)(2)(A).
- 103 33 U.S.C. § 1316(b)(1)(B).
- 104 Andreen, *Water Quality Today*, *supra* note 2 at 548. By “using microorganisms to consume biodegradable organics,” secondary treatment removes BOD, suspended solids, and acidity. Gross & Dodge, *Clean Water Act*, *supra* note 93 at 64 (quoting EPA, *Introduction to the National Pretreatment Program* at 1 (1999)).
- 105 33 U.S.C. § 1317(b)(1).
- 106 Gross & Dodge, *Clean Water Act*, *supra* note 93 at 66.
- 107 Percival, *Environmental Regulation*, *supra* note 25 at 696.
- 108 *Id.* at 697.
- 109 *Id.*
- 110 Adler, *The CWA 20 Years Later*, *supra* note 62 at 139.
- 111 McGaffey, *Water Pollution Control*, *supra* note 83 at 19.
- 112 Wagner, *The Triumph*, *supra* note 81 at 104.
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- 114 Wagner, *The Triumph*, *supra* note 81 at 101-02.
- 115 *Id.* at 105-06.
- 116 Schroeder & Steinzor, *A New Progressive Agenda*, *supra* note 77 at 68.
- 117 *Id.* See also Jeffrey M. Gaba, *Generally Illegal: NPDES General Permits Under the Clean Water Act*, 31 Harv. Envtl. L. Rev. 409, 413 (2007) [hereinafter “Generally Illegal”].
- 118 Andreen, *Water Quality Today*, *supra* note 2 at 549.
- 119 Wendy Wagner, *Stormy Regulation: The Problems That Result When Stormwater (And Other) Regulatory Programs Neglect to Account for Limitations in Scientific and Technical Information*, 9 Chap. L. Rev. 191, 201 (2006) [hereinafter “Stormy Regulation”].
- 120 *Id.*
- 121 Andreen, *Water Quality Today*, *supra* note 2 at 549 (citing 33 U.S.C. § 1318(a)(B); 40 C.F.R. § 123.26; 33 U.S.C. § 1319).
- 122 Environmental Protection Agency, *Permit Status Report for Non-Tribal Individual Major Permits - September 2007 & Permit Status Report for Non-Tribal Individual Minor Permits - September 2007*, available at <http://cfpub.epa.gov/npdes/permitissuance/backlog.cfm> (last visited Mar. 23, 2007).
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- 124 Andreen, *Delegated Federalism*, *supra* note 63 at 14 (citing Andrew Stoddard, et al., *Municipal Wastewater Treatment: Evaluating Improvements in National Water Quality* 61(2002).
- 125 *Id.*
- 126 Andreen, *Water Quality Today*, *supra* note 2 at 573 n. 268; Schroeder & Steinzor, *A New Progressive Agenda*, *supra* note 77 at 63.
- 127 *Id.*
- 128 Andreen, *Water Quality Today*, *supra* note 2 at 591.
- 129 Brief of Amici for Natural Resources Defense Council and Waterkeeper Alliance at 4, *Our Children’s Earth Foundation v. EPA*, 506 F.3d 781 (9th Cir. 2007).
- 130 *Id.*
- 131 U.S. PIRG, *Troubled Waters: An Analysis of Clean Water Act Compliance 2* (Oct. 2007) [hereinafter “U.S. PIRG Troubled Waters”].

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- 132 Paul Bohannon & Patricia E. Lin, *Polluters and Protectors: Combined Sewer System Authorities and Urban Waterway Restorations*, 45 Nat. Resources J. 539, 544 (Summer 2005).
- 133 Percival, Environmental Regulation, *supra* note 25 at 696. Industrial discharges also avoid Resource Conservation and Recovery Act (RCRA) standards by discharging waste into sewers. *Id.*
- 134 *Id.* at 697; Oliver Houck, *Ending the War: A Strategy to Save America's Coastal Zone*, 47 Md. L. Rev. 358, 384-88 (1988).
- 135 Andreen, *Water Quality Today*, *supra* note 2 at 569.
- 136 40 C.F.R. § 403.8(f)(1). EPA may, after 30 days notice to the POTW and the state, commence an enforcement action. 33 U.S.C. § 1317(d).
- 137 William Goldfarb et al., *Unsafe Sewage Sludge or Beneficial Biosolids?: Liability, Planning, and Management Issues Regarding the Land Application of Sewage Treatment Residuals*, 26 B.C. Envtl. Aff. L. Rev. 687, 697-98 (1999).
- 138 *Id.* at 384.
- 139 *Id.* at 424 (providing a detailed description of the specific regulatory requirements for general permits).
- 140 *Id.* at 410-11, 425.
- 141 NPDES Regulation and Effluent Limitation Guidelines and Standards for CAFOs, 68 Fed. Reg. 7176 (Feb. 12, 2003); John H. Thorne, *NPDES Permits Have Come to the Animal Feeding Industry*, 19 Nat. Res. & Env't 76, 77 (2004).
- 142 Gaba, *Generally Illegal*, *supra* note 117 at 457.
- 143 *Id.* at 458. In *Environmental Defense Center v. U.S. EPA*, 344 F.3d 832, 856 (9th Cir. 2003), the Ninth Circuit held that provisions of Phase II of the storm water program that allowed small municipal storm sewer systems to submit Notices of Intent (NOIs) containing their storm water pollution prevention plan (SWPPP) without review by a regulatory entity or the public violated the CWA. In *Waterkeeper Alliance v. U.S. EPA*, 399 F.3d 486, 498(2nd Cir. 2005), the Second Circuit followed *Environmental Defense Center*, holding that the general permit governing concentrated animal feeding operations (CAFOs) violated the CWA because it allowed permits to be issued without regulatory review of or public access to the permittee's nutrient management plans. The Fifth Circuit, however, declined to follow *Environmental Defense Center in Texas Indep. Producers and Royalty Owners Ass'n v. U.S. EPA*, 410 F.3d 964, 978 (7th Cir. 2005), holding that NOIs and SWPPPs were not subject to the public notice procedures under the CWA.
- 144 *Id.* at 411 (citing *Draft Strategy for National Clean Water Industrial Regulations*, 67 Fed. Reg. 71,165, 71, 168 (Nov. 29, 2002)).
- 145 Environmental Protection Agency, *National Pollutant Discharge Elimination System: NPDES Frequently Asked Questions*, available at www.cfpub.epa.gov/npdes/allfaqs.cfm?program_id=0 (last visited Mar. 17, 2008).
- 146 33 U.S.C. § 1342(p).
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- 148 Government Accountability Office, *Further Implementation and Better Cost Data Needed to Determine Impact of EPA's Storm Water Program on Communities*, 4 (2007), available at www.gao.gov/new.items/d07479.pdf (last visited Mar. 17, 2008) [hereinafter "GAO 2007 Storm Water Program Report"].
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- 150 GAO 2007 Storm Water Program Report, *supra* note 148, at 4.
- 151 John H. Minan, *General Industrial Storm Water Permits and the Construction Industry: What Does the Clean Water Act Require?*, 9 Chap. L. Rev. 265, 271 (2007).
- 152 *Id.*
- 153 Wagner, *Stormy Regulation*, *supra* note 119 at 211.
- 154 *Id.*
- 155 Andreen, *Motivating Enforcement*, *supra* note 78 at 92 (citing EPA, Office of Enforcement and Compliance Assurance).
- 156 *Id.*
- 157 U.S. PIRG Troubled Waters, *supra* note 131 at 1.
- 158 *Id.* at 2.
- 159 *Id.*
- 160 Andreen, *Motivating Enforcement*, *supra* note 78 at 92 (quoting David L. Markell, *The Role of Deterrence-Based Enforcement in a "Reinvented" State/Federal Relationship: The Divide Between Theory and Reality*, 24 Harv. Envtl. L. Rev. 1, 56 (2000)).
- 161 *Id.*
- 162 *Id.* at 92-3.
- 163 *Id.* at 74.
- 164 Government Accountability Office, *EPA-STATE Enforcement Partnership Has Improved, but EPA's Oversight Needs Further Enhancement*, 13, GAO-07-883 (July 2007).
- 165 Houck, *The CWA TMDL Program*, *supra* note 8 at 49.
- 166 33 U.S.C. § 1312.
- 167 McGaffey, *Water Pollution Control*, *supra* note 83 at 26.
- 168 *Id.* (citing 40 C.F.R. § 131.6); 33 U.S.C. § 1313(c)(2)(A). "Designated uses" include recreation ("fishable/swimmable"), public water supply, agricultural use, and industrial use, among others. *Id.*; 40 C.F.R. § 131.2. When feasible, the general "fishable/swimmable" goal established by § 101(a)(2) of the CWA controls. If a state contends that this goal is not feasible, it must prepare a "use attainability analysis," 40 C.F.R. § 131.10(g), a scientific statement of the physical, chemical, biological, and economic factors influencing the waterbody's inability to attain a fishable/swimmable use. Gross & Dodge, *Clean Water Act*, *supra* note 93 at 51.
- 169 Robert W. Adler, *TMDLs, Nonpoint Source Pollution, and the Goals of the Clean Water Act*, CPR Perspectives, available at www.progressivereform.org/perspectives/TMDLs.cfm (last visited Oct. 30, 2007) [hereinafter "TMDLs, NPS, and the Goals of the CWA"].
- 170 *Id.*
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