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Water Quality

Water Trading

In the more than 40 years since the Clean Water Act was enacted, significant gains have been made in cleaning up U.S. waterways. However, even with the billions of dollars spent over this time to address water pollution, many water bodies still do not meet the fishable, swimmable goals articulated by Congress in 1972. EPA estimates that more than 40 percent of the nation's waters still do not meet applicable water quality standards, and the vast majority of impairments today come from ''nonpoint'' sources, such as urban and agricultural runoff. Without a new approach to address nonpoint source pollution in a cost-effective way, the increasing requirements on point sources will yield diminishing returns.

In this article, the authors promote the use of water quality trading as a flexible, market-based approach that offers greater efficiency—and perhaps also greater pace and scale—in achieving water quality goals on a watershed basis.

Water Quality Trading: Accelerating Restoration of U.S. Impaired Waters

By Brent Fewell and Brooks Smith

It's been more than 40 years since the Clean Water Act was enacted, and while our rivers no longer catch on fire, thanks in large measure to this important federal law, many of the nation's waterways have not achieved the level of restoration Congress intended. Specifically, Congress made it a national goal to eliminate water pollution, to provide for the propagation of fish, shellfish and wildlife, and to provide for safe recreational use by the public. Swimmable and fishable was the aspiration then, and while much progress has been made since the law was enacted in 1972, much more remains to be done.

The act and its regulatory requirements have helped enormously in eliminating deleterious pollution from ''point sources,'' such as industrial and municipal facilities. However, EPA estimates that more than 40 percent of the nation's waters still do not meet applicable water

quality standards, and the vast majority of impairments today come from unregulated ''nonpoint'' sources.

Diffuse nonpoint sources in the form of urban and agricultural runoff and other types of stormwater pollution remain the largest and most vexing challenge for 21st century water quality management. Scientific studies dating back to the 1960s reveal increased stresses to urban water bodies and estuaries, adversely impacted by heavy flows, extreme flooding and pollutants such as sediments, oils and grease, bacteria, heavy metals and nutrients. Stormwater pollution from urban runoff, impermeable surfaces and agriculture remains the leading contributor of water quality impairments across the U.S.

In the Foreword to its April 2007 report, ''Taking Environmental Protection to the Next Level,'' the National Academy of Public Administration described the scope of the problem.

''When we fertilize our lawns, drive our cars, wash our dishes, or go about our other daily routines, we contribute to making our streams, rivers, bays, and oceans unswimmable and toxic to marine life,'' the report said. ''The same potential arises as farmers grow the food we eat, when businesses dispose of the byproducts of their work, and when builders create new communities. In short, the necessities of life and pollution of our environment are inextricably linked.''

Compliance Costs in Billions. Although the costs of complying with the act have never been fully quantified, the price tag for implementing traditional regulatory tools would surely tally in the tens, if not hundreds, of billions of dollars. This is especially true when figuring in the costs of the infrastructure built to channel wastewater away from rivers and toward increasingly advanced treatment plants.

To compound the problem, under our technology-based regulations, more and more reductions in pollution continue to be squeezed from point sources, such as wastewater treatment plants and other industrial facilities, at enormous expense. Consequently, the marginal cost of reducing the next pound of pollutant from point sources continues to escalate.

For example, as part of the Chesapeake Bay restoration effort, the District of Columbia Water and Sewer Authority's 2005 wastewater discharge permit required a 58 percent reduction in nitrogen at a cost of $15 per pound. The 2010 permit requires an additional 31 percent reduction of nitrogen at a cost of $476 per pound, an increase of more than 3,000 percent. These clean water costs, combined with the costs of complying with other environmental regulations, such as the Safe Drinking Water Act, are unsustainable.

Meanwhile, EPA continues to ratchet up the requirements not only for municipal wastewater dischargers, but also for municipal stormwater from separate storm sewer systems.

This ''double squeeze'' is playing out especially in the Chesapeake Bay, where deadlines for meeting individualized state pollution budgets and loading reductions are being enforced by the EPA. For example, in June of this year, EPA Region 3, in Philadelphia, sent letters to 85 municipalities in Pennsylvania ordering them to come into compliance with the act's requirements by taking more decisive steps toward reducing stormwater pollution impacting the bay (123 DEN A-11, 6/26/14).

To address the reality of these escalating requirements and costs, EPA adopted a policy on integrated municipal stormwater and wastewater in 2012, which allows the prioritization and sequencing of environmental upgrades by communities to focus on addressing the more serious water pollution issues first (113 DEN A-11, 6/13/12).

In addition, in light of the enormous challenges and costs to address wastewater and stormwater pollution reduction, more and more states and communities are turning to alternative market-based approaches, such as water quality trading, to achieve cost-effective reductions and to accelerate the pace and scale of water quality restoration.

Innovating Through Water Quality Trading. Water quality trading is a flexible, market-based approach that offers greater efficiency in achieving water quality goals on a watershed basis. Water markets are a natural outgrowth of the successful efforts under the Clean Air Act to significantly cut acid rain—which was significantly harming aquatic and terrestrial ecological systems—by capping air emissions and allowing the trading of pollution allowances among industrial sources. Then, the reinventing government initiative during the Clinton administration specifically directed EPA to develop and adopt environmental markets to more cost-effectively comply with environmental requirements, such as effluent trading under the Clean Water Act.[1]

As highlighted in EPA's 2003 national water trading policy, trading ''provides greater flexibility and has potential to achieve water quality and environmental benefits greater than would otherwise be achieved under more traditional regulatory approaches.''[2] In essence, trading enables regulated entity X to achieve regulatory reductions at lower costs by offsetting its pollutant reductions by paying Y (regulated or unregulated) to reduce its pollutants at a fraction of X's cost. Thus, trading capitalizes on economies of scale and the control cost differentials among and between sources.

Trading can take a number of different forms, including intra-plant, point-to-point source, point-to-nonpoint source, and nonpoint-to-nonpoint source trades. Among the earliest and longest-running trading programs are those in the Long Island Sound in Connecticut and the Tar-Pamlico basin in North Carolina where publicly owned wastewater treatment plants, work together under a ''bubble approach'' to achieve an overall annual goal, capitalizing upon the control cost differentials between its participants. For example, between 1991-2003, the Tar/Pamlico program witnessed a 33 percent reduction in nitrogen and phosphorous loadings while flows to the basin increased 48 percent. And the net cost of the program was less than $2 million, compared to an estimated cost of a command and control approach ranging from $50 million to $100 million.[3] And in the Long Island Sound, the trading program has helped make significant progress toward achieving a 59

[1] See Reinventing Environmental Regulation, March 16, 1995, at http://govinfo.library.unt.edu/npr/library/rsreport/251a.html.

[2] See EPA final policy at http://water.epa.gov/type/watersheds/trading/finalpolicy2003.cfm.

[3] Gannon, Rich, NCDENR, Nutrient trading in the Tar-Pamlico River Basin, presentation at USDA seminar on trading, October 2003, and EPA water quality trading website at http://water.epa.gov/polwaste/nps/success319/nc_tar.cfm.

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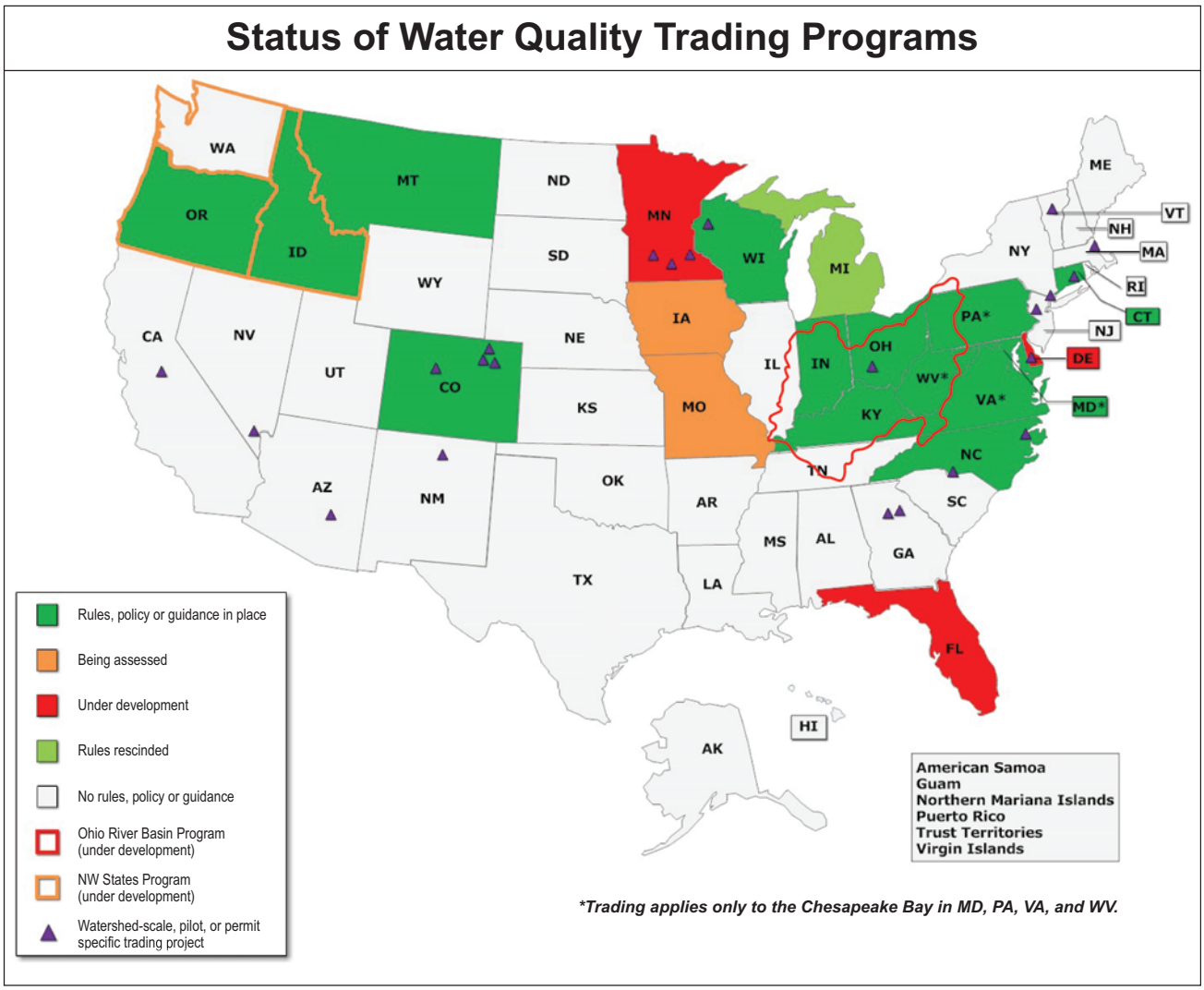
percent reduction in nitrogen loading, while saving between $200 million and $400 million in capital upgrades.[4]

Since the 1980s, trading and the use of offsets have grown from a handful of small local and regional projects in several states to widespread use in approximately 30 states. In recent years, and to capitalize on the potential benefits of scaling up trading platforms to address large and complex watershed problems, some states, such as Indiana, Kentucky and Ohio, have banded together to establish an interstate trading platform in the Ohio River Basin to reduce nutrients affecting both near-field and far-field water quality conditions. Most of the Chesapeake Bay states and DC have adopted trading regulations or policies in some form, but have yet to link their programs to create an interstate trading platform.

Opportunities for Accelerating Environmental Restoration. Tremendous opportunities exist to accelerate the pace and scale of environmental restoration through the use of water quality trading. Market opportunities are being driven in large part by the need to restore impaired waters for which total maximum daily loads (TMDLs) have been developed. To date, EPA and the states have developed or identified for development at least 60,000 TMDLs.

A prime example of where trading has been used to accelerate environmental restoration is in the Pacific Northwest where the health of migratory salmon habitat has been a concern. Groups, such as the Willamette Partnership and Freshwater Trust, have deployed trading regimes to lower water temperatures in streams to make them conducive to salmon spawning. In one example, the city of Medford, Ore., agreed to plant trees along miles of streams and rivers at a cost of $8 million, allowing Mother Nature to act as a natural cooling sys-



Source: Troutman Sanders based on information provided by Kieser & Associates, LLC

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[4] See EPA water quality trading website at http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/long_island_sound.cfm.

tem rather than install a $16 million chiller system to reduce the temperature of its wastewater effluent. The result is not only improved water quality benefitting the salmon, but the added ecological and aesthetic benefits that result from restoring the degraded riparian ecosystems.

Additionally, under the leadership of the Electric Power Research Institute, electric utilities in Indiana, Kentucky and Ohio are working hand-in-hand with farmers and environmental groups in the Ohio River Basin to explore the opportunities for point-to-nonpoint source trading, whereby point sources like power plants pay farmers to reduce agricultural nutrient runoff.

The Ohio River Basin Trading Project is historic because it created a credit transaction infrastructure that can serve as a national model. The March 11 sale of water ''stewardship'' credits from farmers who had implemented conservation programs to American Electric Power, Duke Energy and Hoosier Energy marked the launch of the world's largest and only interstate water quality trading program (48 DEN A-12, 3/12/14).

A recent article in the Wall Street Journal highlights the environmental and economic benefits and opportunities of this project for tackling the complicated and costly restoration of the Gulf of Mexico, which is affected by hypoxia or a ''dead zone'' the size of Delaware, caused by excess nutrients.[5]

Even still, new and emerging opportunities exist to leverage market approaches that compliment urban sustainability strategies. In July of last year, the District of Columbia, for example, became one of the first major metropolitan areas in the U.S. to formally adopt stormwater trading regulations aimed at helping to restore the Chesapeake Bay and its tributaries and meet Clean Water Act requirements. The district's program seeks to reduce impervious runoff by encouraging landowners and developers to go beyond what the regulations require, using innovative and cost-effective solutions (e.g., rain gardens, permeable pavement, green roof tops) to generate tradable credits that, in turn, can be sold to landowners whose ability to reduce post-construction stormwater runoff is cost-prohibitive or technically impracticable.

Similarly, the commonwealth of Virginia has a water quality trading program that authorizes developers, municipal separate storm sewer systems and even the Virginia Department of Transportation to offset their regulatory reduction requirements by paying environmental entrepreneurs to implement stormwater mitigation projects, thereby achieving the same, if not greater, level of water quality improvements at much reduced costs.

Some market proponents have been critical of the relatively slow pace at which water quality trading markets have developed. However, increasing frustration by the public, states and environmental groups at the slow pace of environmental progress has galvanized certain groups—many of whom haven't always worked together—to try innovative approaches, such as trading, to accelerate the pace of achieving water quality standards. Similarly, Congress remains interested in new ways to achieve the act's goals. Toward this end, the House Transportation and Infrastructure Subcommittee on Water Resources and Environment held a bipartisan hearing in March to explore the role of trading in meeting Clean Water Act objectives (59 DEN A-17, 3/27/14).[6] Among other things, witnesses called for some type of ''regulatory driver'' to ensure the success of trading programs, including giving states the authority to use trading as a tool to meet water quality objectives.

This renewed energy to find a better path forward has inspired the establishment of two new national groups, the National Water Quality Trading Network formed in 2013 and the National Water Quality Trading Alliance formed earlier this year. The work of the network, a coalition of regulators, regulated parties, trading experts and environmental non-profits, is focused on developing and promoting trading options and best practices that will improve the consistency, innovation and integrity of trading programs. The alliance, which will collaborate with and support the efforts of the network, is working to educate the public and advance comprehensive and coherent government rules and policies on trading, as well as the development of new and existing state and regional trading markets.

As these environmental markets continue to mature in terms of greater robustness and resiliency, the public's increasing acceptance of these alternative approaches versus traditional regulatory programs bodes well for restoration efforts, as well as the communities and regulated entities saddled with the costs of achieving the act's goals.

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The opinions expressed here do not represent those of Bloomberg BNA.

[5] See *Trading System Tackles Waste: New Plan Pays Farmers to Curb Agricultural Runoff that Pollutes the Gulf of Mexico* at http://online.wsj.com/news/articles/SB10001424052702304899704579391142078606468 (subscription required).

[6] Hearing transcript and video can be found at http://transportation.house.gov/calendar/eventsingle.aspx?EventID=373351.

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