Water Quality Trading: A Guide For The Perplexed

By G. Tracy Mehan III

In the spring of 2003, this publication featured a roundtable discussion on EPA's newly released Water Quality Trading Policy (THE FORUM: "Emissions Trading Moves To Water, But It's Not As Simple," March/April 2003). As a representative for the agency at the time, this reviewer was, and is, a full-throated advocate for the extension of this technique to the realm of water quality management, offering the view that "water quality trading is an idea whose time has come."

While none of the other contributors slammed the idea entirely, there were reservations expressed all around. The representative for the wastewater community was concerned that the policy did not transfer liability from point source dischargers (the big pipes in the water) to nonpoint sources (generators of diffuse runoff such as agricultural producers) when trading credits were purchased by the former from the latter. And a law professor and sometime advisor to an environmental group stated, flatly, that trading programs, even those in accord with EPA's new policy, "are not legal if they involve trades between point sources to meet water quality standards."

Given this ambivalence among some policy experts, not to mention the complexity inherent in water quality management and the Clean Water Act itself, one can be forgiven any doubts or confusion as to how trading can operate successfully in the watershed context. Fortunately, the Water Environment Federation has enabled a team of experts in the field to develop a practical guide to this subject which will be of use to attorneys, engineers, agriculturalists, environmentalists, and regulators working on the many aspects of water quality trading.

Water Quality Trading: A Guide for the Wastewater Community is "inspired" by five trading research projects sponsored by the Water Environment Research Foundation, WEF's sister organization. These projects included the Connecticut Long Island Sound nitrogen trading program; the Cherry Creek, Colorado, phosphorus trading program; and others in Maryland, Michigan, and Wisconsin. Most of the other known cases, both those implemented and those awaiting implementation, are discussed throughout the book to illuminate a systematic approach to evaluating the efficacy of trading in any given circumstances.

Trading is a technique which has demonstrated tremendous success in cost-effectively reducing air pollution, as proven by the Clean Air Act's acid rain trading program as well as in the earlier phase-out of lead in gasoline. It is the approach taken by several northeastern states which hope to achieve "progressively decreasing carbon dioxide emissions from power plants" by relying "on a cap-and-trade system that will go into effect in 2009," says ELI's John Pendergrass ("Seven States Forge Power Plant Pact," *The Environmental Forum*, January/February 2006).

Trading capitalizes on the economies of scale and the control-cost differentials among and between various sources of pollution. By allowing one source to meet its regulatory obligations by using pollutant reductions created by another source with lower control costs, be it regulated or unregulated, as is the case with agricultural nonpoint sources under the CWA, it creates economic incentives to improve water quality.

In the case of water quality trading, water quality standards remain inviolable, but efficiency in attaining them is increased, costs decreased, and, as the authors of *Water Quality Trading* demonstrate, multiple environmental benefits are generated beyond just complying with the requirements of the CWA.

Regarding this last point, the authors cite an example of a wastewater treatment plant that enters into a trade to purchase phosphorus credits from a nonpoint source, which could result in best management practices on the land and stream restoration and stabilization activities that would produce a restoration of a natural flow regime, improving aquatic habitat; reduction in sediment loads; reduction in streambank erosion, lower bacteria loadings from the exclusion of livestock from a stream; the creation of stream buffers; and shading of the stream. To these might be added carbon sequestration in the case of tree planting and native grass restoration.

The World Resources Institute has even proposed a provocative plan to integrate trading for nitrous oxide reductions as a greenhouse gas and a nutrient contributing to the hypoxic zone in the Gulf of Mexico. One ton of nitrous oxide emissions has the same warming impact as 310 tons of carbon dioxide. Since approximately 74 percent of all U.S. nitrous oxide emissions come from agriculture, primarily from soil management activities such as commercial fertilizer application and other cropping factors, WRI envisions a trading program which has water quality and climate benefits.

Imagine Chicago, the largest point source discharger to the Gulf, via the Illinois and Mississippi Rivers, working through brokers to enlist farmers in reducing nutrient loadings pursuant to its water permit and mitigating climate change in the process.

This volume does a fine job presenting a systematic review of water quality trading in the context of the main elements of the CWA: water quality standards; anti-degradation; antibacksliding; the Total Maximum Daily Load program; and, of course, the intricacies of the National Pollutant Discharge Elimination System permitting scheme. Moreover, it explores challenges in data quality, monitoring, and the dark arts of modeling. Indeed, a lawyer or program manager new to the mysteries of the CWA could do no better than to read

Water Quality Trading: A Guide for the Wastewater Community. *Cy Jones, Lisa Bacon, Mark S. Kieser, and David Sheridan. McGraw-Hill/WEF Press; 329 pages; $125.00.*

National Forum on Synergies Between Water Quality Trading and Wetland Mitigation Banking — Forum Report, *Environmental Law Institute; 64 pages; $19.20 (members).*

these sections of *Water Quality Trading* in order to get a clear overview of the of the law.

The heart of this volume, and the sections probably of greatest interest to practitioners and their clients, is the economic framework it provides for assessing the advantages and disadvantages of various trading options. It is "a logical, almost stepwise sequence for evaluating and making decisions about trading."

The authors, all of whom bring great experience and knowledge to this subject, outline a process for estimating credit needs as well as identifying, characterizing, and evaluating trading options with a view toward developing a specific proposal. They provide helpful matrices, figures, and checklists.

"By drawing on multiattribute utility analysis approaches, [the evaluation framework] offers a systematic process specifically designed to address the problem of assessing the relative benefits, programs, or projects for organizations with multiple (and often competing) objectives." In other words, this framework allows the wastewater treatment plant to consider economic efficiency goals side-by-side with its overall mission of protecting water quality as well as the other goals and aspirations of myriad watershed stakeholders. In this and many other ways, the authors of *Water Quality Trading* demonstrate real wisdom as to the social and political realities in which water quality management is practiced in the United States.

"The water quality-management process is, in the end, a political process. We develop models to indicate general directions, but we must always remember that the 'science' will always be limited, by funding, but also practicality," say the authors. "The TMDL program and any associated pollution-credit trading activity would be guided by our models, but decisions as to which parties remove how much pollution need to be made at the stakeholder table. The process is not easy, but nothing of worth ever is."

So it is no surprise that the authors go to great lengths to address tough issues such as avoiding pollution "hotspots" which might result from a trading plan and the importance of sustained engagement with all stakeholders no matter how skeptical they may be at the outset of any public dialogue on water quality trading.

The authors face, head-on, the issue of uncertainty in measuring pollutant reductions in point-to-nonpoint source trading. For instance, they provide a very good overview of the use of trading ratios of all kinds — uncertainty, delivery, retirement, and cross-pollutant ratios — to satisfy regulators, stakeholders, and wastewater treatment plants themselves as to the efficacy of the trades and the safeguards against violating water quality standards.

The authors of *Water Quality Trading* astutely point out "the central contradiction of the CWA — it has been extremely successful in controlling point-source pollution, but because it does not regulate most nonpoint-source pollution, '… unregulated sources have blossomed like algae to consume the gain,'" to cite Tulane's Oliver Houck. Thus, prospective traders must look to establishing adequate baselines for nonpoint sources in order to make sure progress is made toward net environmental improvements in the watershed when these sources sell credits to point sources.

In many, if not most, cases, nonpoint trading partners will be small, numerous, dispersed agricultural producers who seek distance from regulatory processes and require technical support for the identification, generation, measurement, and marketing of water quality credits. The authors of this book correctly emphasize "the great potential for third parties to play active roles in trading through various means." They maintain that "brokers or companies functioning as middlemen could contract with farmers or other sources for pollutant-reduction measures, and then package these reductions as credits for sale." They cite, as a model, the important role of private contractors in the disposal of biosolids generated by WWTPs, which farmers use to fertilize and enrich their fields.

The authors probably understate the potential of this kind of entrepreneurship in facilitating greater use of point-to-point source trading. Brokers, bankers, or middlemen could assist in aggregating multiple environmental benefits — wetlands mitigation, habitat, carbon sequestration, and water quality — inherent in point-nonpoint source trading. Fortunately, ELI's recent publication fills this need in the discussion of water quality trading.

National Forum on Synergies Between Water Quality Trading and Wetland Mitigation Banking is a report of a stimulating discussion sponsored by EPA last summer and facilitated by ELI. It was designed to advance point-nonpoint source trading on a watershed scale by identifying lessons learned from wetlands mitigation banking and to explore the potential role wetlands can play in providing water quality credits as part of a watershed-scale trading program. This reviewer had the pleasure of participating in this dialogue, as did several of the authors of *Water Quality Trading.* Full disclosure: this reviewer is a member of both WEF and ELI.

The meeting was not designed to achieve consensus, and in this it was successful. Nevertheless, there are reported in this slim, useful document several interesting presentations, case studies, and lively dialogue as to the role of third parties as credit brokers or certifiers of water quality credits while ensuring legitimacy and managing risk, uncertainty, or liability.

Forum participants discussed differences between stackable and multiple credits types, double-counting, and the like. As the report makes clear, the dialogue was lively, engaged, and thought-provoking — not unlike the public conversation over water quality trading in general.

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